

ORDINARY COUNCIL

Wednesday 17 April 2019

Ordinary Council Meeting

Wednesday, 17 April 2019

Items of Business

Item	Subject	Page
09.04	CODE OF MEETING PRACTICE	
	Attachment : Draft Code of Meeting Practice	5
09.05	MONTHLY BUDGET REVIEW - MARCH 2019	
	Attachment : March 2019 Budget Review	47
09.06	INVESTMENTS - MARCH 2019	
	Attachment 1: Port Macquarie-Hastings Council Monthly Report - March 2019	52
	Attachment 2: Port Macquarie-Hastings Council Portfolio as at 31 March 2019	69
10.01	RECOMMENDED ITEMS FROM THE MAYOR'S SPORTING FUND SUB-COMMITTEE - MARCH 2019	
	Attachment : Extract Item 8 - Mayor's Sporting Fund - March 22 Meeting	73
12.01	LAND ACQUISITION - 201 BEECHWOOD ROAD, YIPPIN CREEK	
	Attachment 1: Plan Indicating Location of Land to be Acquired.....	76
	Attachment 2: Plan of Acquisition Lot 1 DP1248433	77
12.03	AUGMENTATION OF THE BEECHWOOD WATER SUPPLY - ACQUISITION OF EASEMENT	
	Attachment 1: Council Report dated 19 September 2018	78
	Attachment 2: Plan Depicting Location of Easement to be Acquired DP1242345	80
12.04	LAND ACQUISITION - LONG FLAT SEWERAGE SCHEME	
	Attachment 1: Council Report dated 18 July 2018	83
	Attachment 2: Location of Land to be Acquired for the culvert headwall	85
	Attachment 3: Plan of Acquisition Lot 4 DP1246722	86
12.07	THE RUINS WAY, INNES PENINSULA ENVIRONMENTAL MANAGEMENT LAND PLANNING AGREEMENT	
	Attachment : The Ruins Way, Innes Peninsula Environmental Management Land Planning Agreement.....	87
12.09	PLANNING PROPOSAL: LAND AT THE INTERSECTION OF HOUSTON MITCHELL DRIVE AND OCEAN DRIVE, BONNY HILLS	
	Attachment 1: Applicant's Planning Proposal - May 2018	120
	Attachment 2: Supporting Studies - June 2018	149
	Attachment 3: Supporting Studies - October 2018	332
	Attachment 4: Supporting Studies - February 2019	453
	Attachment 5: Concept Plan v4 - April 2019	483
	Attachment 6: Draft Amendment to DCP 2013 - Houston Mitchell Drive Employment Lands	484
	Attachment 7: Draft Amendment to DCP 2013 - CI 2.4.3.4 Bushfire Hazard Management	489

12.11	DA2018 - 562.1 DEMOLITION OF EXISTING BUILDINGS, CONSOLIDATION AND BOUNDARY ADJUSTMENT, AND CONSTRUCTION OF SENIORS HOUSING AT LOTS 10 - 13 DP 861177, LOT 1 DP 782560, LOT 1 DP 393967, LOT 1 DP 390610, LOT 1 DP 1053812, LOT 1 DP 121189, LOT 1 DP 795534, LOT 1 DP 151300, LOT 3 AND 4 DP 347796, NO. 15 - 21 CAMERON STREET AND 3 YOUNG STREET, WAUCHOPE	
	Attachment : DA2018 - 562.1 Ordinary Council Report 20 February 2019	490
12.12	DA2016 - 1000.1 WASTE MANAGEMENT FACILITY AND CARETAKER'S RESIDENCE AT LOT 315 DP 1075670, NO. 6 ENTERPRISE PLACE, WAUCHOPE	
	Attachment 1: DA2016 - 1000.1 Recommended Conditions	551
	Attachment 2: DA2016 - 1000.1 General Terms of Approval - NSW Environment Protection Authority	561
	Attachment 3: DA2016 - 1000.1 Contribution Estimate	577
	Attachment 4: DA2016 - 1000.1 Plans	578
12.13	DRAFT KOOLOONBUNG CREEK FLYING-FOX CAMP MANAGEMENT PLAN	
	Attachment : Draft Kooloonbung Creek Flying-fox Management Plan	582
12.14	SAVE OUR RECYCLING CAMPAIGN	
	Attachment 1: Save of Recycling logo1	703
	Attachment 2: Save of Recycling logo2	704

1 Leadership and Governance

17/04/2019

What we are trying to achieve

A community that works together in decision making that is defined as ethically, socially and environmentally responsible.

What the result will be

We will have:

- A community that has the opportunity to be involved in decision making
- Open, easy, meaningful, regular and diverse communication between the community and decision makers
- Partnerships and collaborative projects, that meet the community's expectations, needs and challenges
- Knowledgeable, skilled and connected community leaders
- Strong corporate management that is transparent

How we will get there

- 1.1 Inform and engage with the community about what Council does using varied communication channels
- 1.2 Maintain strong partnerships between all stakeholders - local, state and federal — so that they are effective advocates for the community
- 1.3 Demonstrate leadership
- 1.4 Use innovative, efficient and sustainable practices
- 1.5 Ensure strong corporate and financial management that is transparent and accountable

CODE OF MEETING PRACTICE
PORT MACQUARIE-HASTINGS COUNCIL

2019

Table of Contents

1	INTRODUCTION	3
2	MEETING PRINCIPLES	3
3	BEFORE THE MEETING.....	4
4	PUBLIC FORUMS.....	9
	<i>Public Forum: Part A - matters on the agenda.....</i>	<i>9</i>
	<i>Public Forum: Part B – matters not on the agenda.....</i>	<i>11</i>
5	COMING TOGETHER.....	12
6	THE CHAIRPERSON.....	15
7	MODES OF ADDRESS.....	16
8	ORDER OF BUSINESS FOR ORDINARY COUNCIL MEETINGS	16
9	CONSIDERATION OF BUSINESS AT COUNCIL MEETINGS.....	17
10	RULES OF DEBATE.....	20
11	VOTING	23
12	COMMITTEE OF THE WHOLE.....	24
13	DEALING WITH ITEMS BY EXCEPTION.....	25
14	CLOSURE OF COUNCIL MEETINGS TO THE PUBLIC	26
15	KEEPING ORDER AT MEETINGS.....	29
16	CONFLICTS OF INTEREST.....	32
17	DECISIONS OF THE COUNCIL	32
18	TIME LIMITS ON COUNCIL MEETINGS.....	34
19	AFTER THE MEETING.....	35
20	COUNCIL COMMITTEES.....	36
21	IRREGULARITIES	39
22	DEFINITIONS	41

1 INTRODUCTION

This Code of Meeting Practice is made under section 360 of the *Local Government Act 1993* (the Act) and the *Local Government (General) Regulation 2005* (the Regulation).

This Code incorporates:

- the mandatory provisions of the Model Code of Meeting Practice prescribed by the Regulation on 14 December 2018 (Model Code),
- some non-mandatory provisions of the Model Code, and
- supplementary provisions prepared by the Council, which must not be inconsistent with the mandatory provisions of the Model Code.

In this Code:

- the mandatory provisions are written in black font,
- the non-mandatory provisions are written in red font,
- the Council's supplementary provisions are written in green font.

This code and all its provisions applies to all meetings of Port Macquarie-Hastings Council (Council) and committees of the Council of which all the members are councillors.

The Council and such committees must conduct meetings in accordance with this Code.

Council committees whose members include persons other than councillors may adopt their own rules for meetings unless the Council determines otherwise.

2 MEETING PRINCIPLES

2.1 Council and committee meetings should be:

Transparent: Decisions are made in a way that is open and accountable.

Informed: Decisions are made based on relevant, quality information.

Inclusive: Decisions respect the diverse needs and interests of the local community.

Principled: Decisions are informed by the principles prescribed under Chapter 3 of the Act.

Trusted: The community has confidence that councillors and staff act ethically and make decisions in the interests of the whole community.

Respectful: Councillors, staff and meeting attendees treat each other with respect.

Effective: Meetings are well organised, effectively run and skilfully chaired.

Orderly: Councillors, staff and meeting attendees behave in a way that contributes to the orderly conduct of the meeting.

Note: A point of order cannot be made by a councillor with respect to adherence to the meeting principles: see clause 15.2.

3 BEFORE THE MEETING

Timing of ordinary council meetings

3.1 [Not used]

3.2 The council shall, by resolution, set the frequency, time, date and place of its ordinary meetings.

Note: Under section 365 of the Act, councils are required to meet at least ten (10) times each year, each time in a different month unless the Minister for Local Government has approved a reduction in the number of times that a council is required to meet each year under section 365A.

Extraordinary meetings

3.3 If the mayor receives a request in writing, signed by at least two (2) councillors, the mayor must call an extraordinary meeting of the council to be held as soon as practicable, but in any event, no more than fourteen (14) days after receipt of the request. The mayor can be one of the two councillors requesting the meeting.

Note: Clause 3.3 reflects section 366 of the Act.

Notice to the public of council meetings

3.4 The council must give notice to the public of the time, date and place of each of its meetings, including extraordinary meetings and of each meeting of committees of the council.

Note: Clause 3.4 reflects section 9(1) of the Act.

3.5 For the purposes of clause 3.4, notice of a meeting of the council and of a committee of council is to be published before the meeting takes place. The notice must be published on the council's website, and in such other manner that the council is satisfied is likely to bring notice of the meeting to the attention of as many people as possible.

3.6 For the purposes of clause 3.4, notice of more than one (1) meeting may be given in the same notice.

Notice to councillors of ordinary council meetings

- 3.7 The general manager must send to each councillor, at least three (3) days before each meeting of the council, a notice specifying the time, date and place at which the meeting is to be held, and the business proposed to be considered at the meeting.

Note: Clause 3.7 reflects section 367(1) of the Act.

- 3.8 The notice and the agenda for, and the business papers relating to, the meeting may be given to councillors in electronic form, but only if all councillors have facilities to access the notice, agenda and business papers in that form.

Note: Clause 3.8 reflects section 367(3) of the Act.

Notice to councillors of extraordinary meetings

- 3.9 Notice of less than three (3) days may be given to councillors of an extraordinary meeting of the council in cases of emergency.

Note: Clause 3.9 reflects section 367(2) of the Act.

Note: Notices of motion will only be dealt with at an ordinary meeting of council unless they are the subject on which an extra-ordinary meeting of council is called, or ruled by the general manager as a matter of great urgency

Giving notice of business to be considered at council meetings

- 3.10 A councillor may give notice of any business they wish to be considered by the council at its next ordinary meeting by way of a notice of motion. To be included on the agenda of the meeting, the notice of motion must be in writing and must be submitted by 5:00pm on the Monday that is not less than seven (7) business days before the meeting is to be held.

- 3.11 A councillor may, in writing to the general manager, request the withdrawal of a notice of motion submitted by them prior to its inclusion in the agenda and business paper for the meeting at which it is to be considered.

Note: A councillor who submitted a notice of motion may request the withdrawal of the motion when it is before the Council: see clause 10.3.

- 3.12 If the general manager considers that a notice of motion submitted by a councillor for consideration at an ordinary meeting of the council has legal, strategic, financial or policy implications which should be taken into consideration by the meeting, the general manager may prepare a report in relation to the notice of motion for inclusion with the business papers for the meeting at which the notice of motion is to be considered by the council.

- 3.13 A notice of motion for the expenditure of funds on works and/or services other than those already provided for in the council's current adopted operational plan must identify the source of funding for the expenditure that is the subject of the notice of motion. If the notice of motion does not identify a funding source, the general manager must either:

- (a) prepare a report on the availability of funds for implementing the motion if adopted for inclusion in the business papers for the meeting at which the notice of motion is to be considered by the council, or
- (b) by written notice sent to all councillors with the business papers for the meeting for which the notice of motion has been submitted, defer consideration of the matter by the council to such a date specified in the notice, pending the preparation of such a report.

Questions with notice

- 3.14 A councillor may, by way of a notice submitted under clause 3.10, ask a question for response by the general manager about the performance or operations of the council.
- 3.15 A councillor is not permitted to ask a question with notice under clause 3.14 that comprises a complaint against the general manager or a member of staff of the council, or a question that implies wrongdoing by the general manager or a member of staff of the council.
- 3.16 The general manager or their nominee may respond to a question with notice submitted under clause 3.14 by way of a report included in the business papers for the relevant meeting of the council or orally at the meeting.

Note: Nothing here prevents an initial answer being provided orally at the meeting and formally by way of a later report in writing.

Agenda and business papers for ordinary meetings

- 3.17 The general manager must cause the agenda for a meeting of the council or a committee of the council to be prepared as soon as practicable before the meeting.
- 3.18 The general manager must ensure that the agenda for an ordinary meeting of the council states:
 - (a) all matters to be dealt with arising out of the proceedings of previous meetings of the council, and
 - (b) if the mayor is the chairperson – any matter or topic that the chairperson proposes, at the time when the agenda is prepared, to put to the meeting, and
 - (c) all matters, including matters that are the subject of staff reports and reports of committees, to be considered at the meeting, and
 - (d) any business of which due notice has been given under clause 3.10.
- 3.19 Nothing in clause 3.18 limits the powers of the mayor to put a mayoral minute to a meeting under clause 9.6.
- 3.20 The general manager must not include in the agenda for a meeting of the council any business of which due notice has been given if, in the opinion of the general manager, the business is, or the implementation of the business would be, unlawful. The general manager must report, without giving details of the item of business, any such exclusion to the next meeting of the council.

- 3.21 Where the agenda includes the receipt of information or discussion of other matters that, in the opinion of the general manager, is likely to take place when the meeting is closed to the public, the general manager must ensure that the agenda of the meeting:
- (a) identifies the relevant item of business and indicates that it is of such a nature (without disclosing details of the information to be considered when the meeting is closed to the public), and
 - (b) states the grounds under section 10A(2) of the Act relevant to the item of business.

Note: Clause 3.21 reflects section 9(2A)(a) of the Act.

- 3.22 The general manager must ensure that the details of any item of business which, in the opinion of the general manager, is likely to be considered when the meeting is closed to the public, are included in a business paper provided to councillors for the meeting concerned. Such details must not be included in the business papers made available to the public, and must not be disclosed by a councillor or by any other person to another person who is not authorised to have that information.

Availability of the agenda and business papers to the public

- 3.23 Copies of the agenda and the associated business papers, such as correspondence and reports for meetings of the council and committees of council, are to be published on the council's website, and must be made available to the public for inspection, or for taking away by any person free of charge at the offices of the council, at the relevant meeting and at such other venues determined by the council.

Note: Clause 3.23 reflects section 9(2) and (4) of the Act.

- 3.24 Clause 3.23 does not apply to the business papers for items of business that the general manager has identified under clause 3.21 as being likely to be considered when the meeting is closed to the public.

Note: Clause 3.24 reflects section 9(2A)(b) of the Act.

- 3.25 For the purposes of clause 3.23, copies of agendas and business papers must be published on the council's website and made available to the public at a time that is as close as possible to the time they are available to councillors.

Note: Clause 3.25 reflects section 9(3) of the Act.

- 3.26 A copy of an agenda, or of an associated business paper made available under clause 3.23, may in addition be given or made available in electronic form.

Note: Clause 3.26 reflects section 9(5) of the Act.

Agenda and business papers for extraordinary meetings

- 3.27 The general manager must ensure that the agenda for an extraordinary meeting of the council deals only with the matters stated in the notice of the meeting.
- 3.28 Despite clause 3.27, business may be considered at an extraordinary meeting of the council, even though due notice of the business has not been given, if:
- (a) a motion is passed to have the business considered at the meeting, and
 - (b) the business to be considered is ruled by the chairperson to be of great urgency on the grounds that it requires a decision by the council before the next scheduled ordinary meeting of the council.
- Note: The procedure in relation to 3.28 includes:
- 1. Councillor moves a motion to be dealt with as it is an emergency.
 - 2. Chair calls for a seconder.
 - 3. If there is a seconder, then the mover of the motion can speak as to why they believe it should be considered and the emergency nature.
 - 4. Council votes on considering it as an item of business.
 - 5. The chairperson makes a decision as to whether it should be considered due to its emergency nature.
- 3.29 A motion moved under clause 3.28(a) can be moved without notice but only after the business notified in the agenda for the extraordinary meeting has been dealt with.
- 3.30 Despite clauses 10.20–10.30, only the mover of a motion moved under clause 3.28(b) can speak to the motion before it is put.
- 3.31 A motion of dissent cannot be moved against a ruling of the chairperson under clause 3.28(a) on whether a matter is of great urgency.

Pre-meeting briefing sessions

- 3.32 Prior to each ordinary meeting of the council, the general manager may arrange a pre-meeting briefing session to brief councillors on business to be considered at the meeting. Pre-meeting briefing sessions may also be held for extraordinary meetings of the council and meetings of committees of the council.
- 3.33 Pre-meeting briefing sessions are to be held in the absence of the public.
- 3.34 The general manager or a member of staff nominated by the general manager is to preside at pre-meeting briefing sessions.
- 3.36 Councillors must not use pre-meeting briefing sessions to debate or make preliminary decisions on items of business they are being briefed on, and any debate and decision-making must be left to the formal council or committee meeting at which the item of business is to be considered.
- 3.37 Councillors (including the mayor) must declare and manage any conflicts of interest they may have in relation to any item of business that is the subject of

a briefing at a pre-meeting briefing session, in the same way that they are required to do so at a council or committee meeting. The council is to maintain a written record of all conflict of interest declarations made at pre-meeting briefing sessions and how the conflict of interest was managed by the councillor who made the declaration.

4 PUBLIC FORUMS

Note in Model Code of Meeting Practice: Where a public forum is held as part of a council or committee meeting, it must be conducted in accordance with the other requirements of this code relating to the conduct of council and committee meetings.

Public Forum: Part A - matters on the agenda

- 4.1 The council may hold a public forum during each ordinary meeting of the council for the purpose of hearing oral submissions from members of the public on items of business to be considered at the meeting.

Applying to speak

- 4.3 To speak at a public forum, a person must first make an application to the council in the approved form. Applications to speak at the public forum must be received by 4:30pm on the last business day before the public forum is to be held, and must identify the item of business on the agenda of the council meeting the person wishes to speak on, and whether they wish to speak 'for' or 'against' the item.
- 4.4 Legal representatives, consultants and persons acting on behalf of others are not to be permitted to speak at a public forum unless they identify their status when applying to speak at the public forum.
- 4.5 Approved speakers at the public forum are to register with the council any written, visual or audio material to be presented in support of their address to the council at the public forum, and to identify any equipment needs, not later than 12 pm on the last business day before the public forum. The general manager or their delegate may refuse to allow such material to be presented.
- 4.6 The general manager or their delegate may refuse an application to speak at a public forum. The general manager or their delegate must give reasons in writing for a decision to refuse an application.

Number and order of speakers

- 4.7 A person may apply to speak on no more than two (2) items of business on the agenda of the council meeting.
- 4.8 No more than two (2) speakers are to be permitted to speak 'for' and no more than two (2) speakers are to be permitted to speak 'against' each item of business on the agenda for the council meeting.
- 4.9 The general manager or their delegate is to determine the order of speakers at the public forum.

- 4.10 If more than the permitted number of speakers apply to speak on 'for' or 'against' any item of business, the general manager or their delegate may either:
- (a) request the speakers to nominate from among themselves the persons who are to address the council on the item of business. If the speakers are not able to agree on whom to nominate to address the council, the general manager or their delegate is to determine who will address the council at the public forum, or
 - (b) Council may resolve to increase the number of speakers permitted to speak on an item of business, where they are satisfied that it is necessary to do so to allow the council to hear a fuller range of views on the relevant item of business.

Speaking at the public forum

- 4.11 Public forums are to be chaired by the mayor or their nominee.
- 4.12 Each speaker will be allowed five (5) minutes to address the council. This time is to be strictly enforced by the chairperson.
- 4.13 Speakers at public forums must not digress from the item on the agenda of the council meeting they have applied to address the council on. If a speaker digresses to irrelevant matters, the chairperson is to direct the speaker not to do so. If a speaker fails to observe a direction from the chairperson, the speaker will not be further heard.
- 4.14 A councillor (including the chairperson) may, through the chairperson, ask questions of a speaker following their address at a public forum. Questions put to a speaker must be direct, succinct and without argument and must be limited to thirty (30) seconds in length.
- 4.15 Speakers are under no obligation to answer a question put under clause 4.14. Answers by the speaker, to each question are to be limited to two (2) minutes in length.
- 4.16 Speakers at public forums cannot ask questions of the council, councillors or council staff.
- 4.17 The general manager or their nominee may, with the concurrence of the chairperson, address the council for up to two (2) minutes in response to an address to the council at a public forum after the address and any subsequent questions and answers have been finalised.
- 4.18 Where an address made at a public forum raises matters that require further consideration by council staff, the general manager may recommend that the council defer consideration of the matter pending the preparation of a further report on the matters.

Order and Disorder

- 4.19 Where a speaker at a public forum engages in disorderly conduct or alleges a breach of council's code of conduct or makes defamatory statements or otherwise acts contrary to law, the general manager or their delegate may refuse further applications from that person to speak at public forums for such a period as the general manager or their delegate considers appropriate.

Conflicts of interest

- 4.20 Councillors (including the mayor) must declare and manage any conflicts of interest they may have in relation to any item of business that is the subject of an address at a public forum, in the same way that they are required to do so at a council or committee meeting. The council is to maintain a written record of all conflict of interest declarations made at public forums and how the conflict of interest was managed by the councillor who made the declaration.

Public Forum: Part B – matters not on the agenda

- 4.21 The council may hold an open forum either prior to or as part of the order each ordinary meeting of the council for the purpose of hearing oral submissions from members of the public on items not to be considered at the meeting.
- 4.22 Open forums are to be chaired by the mayor or their nominee.
- 4.23 To speak at an open forum, a person must first make an application to the council in writing. Applications to speak at the open forum must be received by 4:30pm on the last business day before the date on which the open forum is to be held, must identify the topic the person wishes to speak.
- 4.24 The general manager or their delegate may refuse an application to speak at an open forum. The general manager or their delegate must give reasons in writing for a decision to refuse an application (this may include reasons as per 4.25 of this code).
- 4.25 The following submissions may not be made at a public forum:
- (a) a submission on a proposed or pending planning proposal, development application, application to modify a development consent, application to review a determination or any related matter,
 - (b) a submission by an applicant or objector in respect of development who made an oral submission at an on-site inspection,
 - (c) a submission by a person on a matter on which they have made submissions at two (2) previous public forums in the same calendar year, unless otherwise approved in writing by the general manager,
 - (d) a submission relating to a current or pending procurement, contract negotiation or dispute resolution involving the council,
 - (e) a submission on any matter which the general manager or their delegate considers is inappropriate to be made at a public forum.

- 4.26 There will be only up to five (5) speakers permitted in the open forum.
- 4.27 The general manager or their delegate is to determine the order of speakers at the open forum.
- 4.28 Each speaker will be allowed five (5) minutes to address the council. This time is to be strictly enforced by the chairperson.
- 4.29 A councillor (including the chairperson) may ask questions of a speaker following their address at an open forum.
- 4.30 Speakers at open forums cannot ask questions of councillors or council staff.
- 4.31 Speakers at open forums must comply with this code and all other relevant council codes, policies and procedures.

5 COMING TOGETHER

Attendance by councillors at meetings

- 5.1 All councillors must make reasonable efforts to attend meetings of the council and of committees of the council of which they are members.

Note: A councillor may not attend a meeting as a councillor (other than the first meeting of the council after the councillor is elected or a meeting at which the councillor takes an oath or makes an affirmation of office) until they have taken an oath or made an affirmation of office in the form prescribed under section 233A of the Act.

- 5.2 A councillor cannot participate in a meeting of the council or of a committee of the council unless personally present at the meeting.
- 5.3 Relates to Joint Organisations [Not applicable]
- 5.4 Where a councillor is unable to attend one or more ordinary meetings of the council, the councillor should request that the council grant them a leave of absence from those meetings. This clause does not prevent a councillor from making an apology if they are unable to attend a meeting. However the acceptance of such an apology does not constitute the granting of a leave of absence for the purposes of this code and the Act.
- 5.5 A councillor's request for leave of absence from council meetings should, if practicable, identify (by date) the meetings from which the councillor intends to be absent and the grounds upon which the leave of absence is being sought.
- 5.6 The council must act reasonably when considering whether to grant a councillor's request for a leave of absence.
- 5.7 A councillor's civic office will become vacant if the councillor is absent from three (3) consecutive ordinary meetings of the council without prior leave of the council, or leave granted by the council at any of the meetings concerned, unless the holder is absent because they have been suspended from office under the Act, or because the council has been suspended under the Act, or as a consequence of a compliance order under section 438HA.

Note: Clause 5.7 reflects section 234(1)(d) of the Act.

- 5.8 A councillor who intends to attend a meeting of the council despite having been granted a leave of absence should, if practicable, give the general manager at least two (2) days' notice of their intention to attend.

The quorum for a meeting

- 5.9 The quorum for a meeting of the council is a majority of the councillors of the council who hold office at that time and are not suspended from office.

Note: Clause 5.9 reflects section 368(1) of the Act.

Note: If an even number of councillors holds office at the time, a majority is half that number plus one.

- 5.10 Clause 5.9 does not apply if the quorum is required to be determined in accordance with directions of the Minister in a performance improvement order issued in respect of the council.

Note: Clause 5.10 reflects section 368(2) of the Act.

- 5.11 A meeting of the council must be adjourned if a quorum is not present:

- (a) at the commencement of the meeting where the number of apologies received for the meeting indicates that there will not be a quorum for the meeting, or
- (b) within half an hour after the time designated for the holding of the meeting, or
- (c) at any time during the meeting.

Note 1: A Councillor who has been granted leave of absence for a meeting by the Council is an apology for the meeting for the purposes of clause 5.11(a). A councillor can be an apology for a meeting without having been granted a leave of absence by the Council.

Note 2: A councillor who leaves the meeting room during a meeting is absent from the meeting for the purpose of determining whether a quorum is present.

Note 3: Refer to the Code of Conduct in the event that a majority of councillors are precluded from consideration of a matter, by reason of having disclosed a pecuniary or non-pecuniary significant interest.

- 5.12 In either case, the meeting must be adjourned to a time, date and place fixed:

- (a) by the chairperson, or
- (b) in the chairperson's absence, by the majority of the councillors present, or
- (c) failing that, by the general manager.

- 5.13 The general manager must record in the council's minutes the circumstances relating to the absence of a quorum (including the reasons for the absence of a quorum) at or arising during a meeting of the council, together with the names of the councillors present.

- 5.14 Where, prior to the commencement of a meeting, it becomes apparent that a quorum may not be present at the meeting, or that the safety and welfare of councillors, council staff and members of the public may be put at risk by attending the meeting because of a natural disaster (such as, but not limited to flood or bushfire), the mayor may, in consultation with the general manager and, as far as is practicable with each councillor, cancel the meeting. Where a meeting is cancelled, notice of the cancellation must be published on the council's website and in such other manner that the council is satisfied is likely to bring notice of the cancellation to the attention of as many people as possible.
- 5.15 Where a meeting is cancelled under clause 5.14, the business to be considered at the meeting may instead be considered, where practicable, at the next ordinary meeting of the council or at an extraordinary meeting called under clause 3.3.

Entitlement of the public to attend council meetings

- 5.16 Everyone is entitled to attend a meeting of the council and committees of the council. The council must ensure that all meetings of the council and committees of the council are open to the public.

Note: Clause 5.16 reflects section 10(1) of the Act.

- 5.17 Clause 5.16 does not apply to parts of meetings that have been closed to the public under section 10A of the Act.

- 5.18 A person (whether a councillor or another person) is not entitled to be present at a meeting of the council or a committee of the council if expelled from the meeting:

- (a) by a resolution of the meeting, or
- (b) by the person presiding at the meeting if the council has, by resolution, authorised the person presiding to exercise the power of expulsion.

Note: Clause 5.18 reflects section 10(2) of the Act.

Note: Part 15 specifies powers to expel persons from a meeting.

Webcasting of meetings

- 5.19 All meetings of the council and committees of the council are to be webcast on the council's website.

Note: Council will make an audio-visual recording of the meeting and will make this recording available through the Council website as soon as practicable after the completion of the meeting.

- 5.20 Clause 5.19 does not apply to parts of a meeting that have been closed to the public under section 10A of the Act.

- 5.21 At the start of each meeting the chairperson is to make a statement informing those in attendance that the meeting is being webcast and that those in attendance should refrain from making any defamatory statements.
- 5.22 A recording of each meeting of the council and committee of the council is to be retained on the council's website for **no less than twelve (12) months**. Recordings of meetings may be disposed of in accordance with the *State Records Act 1998*.

Attendance of the general manager and other staff at meetings

- 5.23 The general manager is entitled to attend, but not to vote at, a meeting of the council or a meeting of a committee of the council of which all of the members are councillors.

Note: Clause 5.23 reflects section 376(1) of the Act.

- 5.24 The general manager is entitled to attend a meeting of any other committee of the council and may, if a member of the committee, exercise a vote.

Note: Clause 5.24 reflects section 376(2) of the Act.

- 5.25 The general manager may be excluded from a meeting of the council or a committee while the council or committee deals with a matter relating to the standard of performance of the general manager or the terms of employment of the general manager.

Note: Clause 5.25 reflects section 376(3) of the Act.

- 5.26 The attendance of other council staff at a meeting, (other than as members of the public) shall be with the approval of the general manager.

6 THE CHAIRPERSON

The chairperson at meetings

- 6.1 The mayor, or at the request of or in the absence of the mayor, the deputy mayor (if any) presides at meetings of the council.

Note: Clause 6.1 reflects section 369(1) of the Act.

- 6.2 If the mayor and the deputy mayor (if any) are absent, a councillor elected to chair the meeting by the councillors present presides at a meeting of the council.

Note: Clause 6.2 reflects section 369(2) of the Act.

Election of the chairperson in the absence of the mayor and deputy mayor

- 6.3 If no chairperson is present at a meeting of the council at the time designated for the holding of the meeting, the first business of the meeting must be the election of a chairperson to preside at the meeting.

- 6.4 The election of a chairperson must be conducted:
- (a) by the general manager or, in their absence, an employee of the council designated by the general manager to conduct the election, or
 - (b) by the person who called the meeting or a person acting on their behalf if neither the general manager nor a designated employee is present at the meeting, or if there is no general manager or designated employee.
- 6.5 If, at an election of a chairperson, two (2) or more candidates receive the same number of votes and no other candidate receives a greater number of votes, the chairperson is to be the candidate whose name is chosen by lot.
- 6.6 For the purposes of clause 6.5, the person conducting the election must:
- (a) arrange for the names of the candidates who have equal numbers of votes to be written on similar slips, and
 - (b) then fold the slips so as to prevent the names from being seen, mix the slips and draw one of the slips at random.
- 6.7 The candidate whose name is on the drawn slip is the candidate who is to be the chairperson.
- 6.8 Any election conducted under clause 6.3, and the outcome of the vote, are to be recorded in the minutes of the meeting.

Chairperson to have precedence

- 6.9 When the chairperson rises or speaks during a meeting of the council:
- (a) any councillor then speaking or seeking to speak must cease speaking and, if standing, immediately resume their seat, and
 - (b) every councillor present must be silent to enable the chairperson to be heard without interruption.

7 MODES OF ADDRESS

- 7.1 If the chairperson is the mayor, they are to be addressed as 'Mr Mayor' or 'Madam Mayor'.
- 7.2 Where the chairperson is not the mayor, they are to be addressed as either 'Mr Chairperson' or 'Mr Chair' or 'Madam Chairperson' or 'Madam Chair'.
- 7.3 A councillor is to be addressed as 'Councillor [surname]'.
- 7.4 A council officer is to be addressed by their official designation or as Mr/Ms [surname].

8 ORDER OF BUSINESS FOR ORDINARY COUNCIL MEETINGS

- 8.1 [Not used]
- 8.2 The general order of business for an ordinary meeting of the council shall be:

Opening meeting

- 01 Acknowledgement of country
 - 02 Local Government Prayer
 - 03 Apologies and applications for leave of absence by councillors
 - 04 Confirmation of minutes
 - 05 Disclosures of interests
 - 06 Mayoral minute(s)
 - 07 Confidential attachments to ordinary Council meeting
 - 08 Public Forum- matters not on the agenda
 - 09 Public forum- matter on the agenda
 - 10 Items to be dealt with by exception
 - 10 Ensuring good governance
 - 11 Looking after our people
 - 12 Helping our community prosper
 - 13 Looking after our environment
 - 13 Planning and providing our infrastructure
 - 14 Notices of motion / Questions with notice
 - 15 Confidential matters
- Close of meeting

- 8.3 The order of business as fixed under clause 8.2 may be altered for a particular meeting of the council if a motion to that effect is passed at that meeting. Such a motion can be moved without notice.
- 8.4 Despite clauses 10.20–10.30, only the mover of a motion referred to in clause 8.3 may speak to the motion before it is put.

9 CONSIDERATION OF BUSINESS AT COUNCIL MEETINGSBusiness that can be dealt with at a council meeting

- 9.1 The council must not consider business at a meeting of the council:
- (a) unless a councillor has given notice of the business, as required by clause 3.10, and
 - (b) unless notice of the business has been sent to the councillors in accordance with clause 3.7 in the case of an ordinary meeting or clause 3.9 in the case of an extraordinary meeting called in an emergency.
- 9.2 Clause 9.1 does not apply to the consideration of business at a meeting, if the business:
- (a) is already before, or directly relates to, a matter that is already before the council, or
 - (b) is the election of a chairperson to preside at the meeting, or
 - (c) subject to clause 9.9, is a matter or topic put to the meeting by way of a mayoral minute, or
 - (d) is a motion for the adoption of recommendations of a committee, including, but not limited to, a committee of the council.

9.3 Despite clause 9.1, business may be considered at a meeting of the council even though due notice of the business has not been given to the councillors if:

- (a) a motion is passed to have the business considered at the meeting, and
- (b) the business to be considered is ruled by the chairperson to be of great urgency on the grounds that it requires a decision by the council before the next scheduled ordinary meeting of the council.

Note: The procedure in relation to 9.3 includes:

- 1. Councillor moves a motion to be dealt with as it is an emergency.
- 2. Chair calls for a seconder.
- 3. If there is a seconder, then the mover of the motion can speak as to why they believe it should be considered and the emergency nature.
- 4. Council votes on considering it as an item of business.
- 5. The chairperson makes a decision as to whether it should be considered due to its emergency nature.

9.4 A motion moved under clause 9.3(a) can be moved without notice. Despite clauses 10.20–10.30, only the mover of a motion referred to in clause 9.3(a) can speak to the motion before it is put.

9.5 A motion of dissent cannot be moved against a ruling by the chairperson under clause 9.3(b).

Mayoral minutes

9.6 Subject to clause 9.9, if the mayor is the chairperson at a meeting of the council, the mayor may, by minute signed by the mayor, put to the meeting without notice any matter or topic that is within the jurisdiction of the council, or of which the council has official knowledge.

9.7 A mayoral minute, when put to a meeting, takes precedence over all business on the council's agenda for the meeting. The chairperson (but only if the chairperson is the mayor) may move the adoption of a mayoral minute without the motion being seconded.

Note: A motion to adopt a Mayoral Minute can be debated and amended as with any other substantive motion.

9.8 A recommendation made in a mayoral minute put by the mayor is, so far as it is adopted by the council, a resolution of the council.

9.9 A mayoral minute must not be used to put without notice matters that are routine and not urgent, or matters for which proper notice should be given because of their complexity. For the purpose of this clause, a matter will be urgent where it requires a decision by the council before the next scheduled ordinary meeting of the council.

9.10 Where a mayoral minute makes a recommendation which, if adopted, would require the expenditure of funds on works and/or services other than those already provided for in the council's current adopted operational plan, it must identify the source of funding for the expenditure that is the subject of the recommendation. If the mayoral minute does not identify a funding source, the council must defer consideration of the matter, pending a report from the

general manager on the availability of funds for implementing the recommendation if adopted.

Staff reports

- 9.11 A recommendation made in a staff report is, so far as it is adopted by the council, a resolution of the council.

Reports of committees of council

- 9.12 The recommendations of a committee of the council are, so far as they are adopted by the council, resolutions of the council.
- 9.13 If in a report of a committee of the council distinct recommendations are made, the council may make separate decisions on each recommendation.

Adopting recommendations in reports

- 9.13A If in any report other than the report of a committee distinct recommendations are made, the council may make separate decisions on each recommendation.

Questions

- 9.14 A question must not be asked at a meeting of the council unless it concerns a matter on the agenda of the meeting or notice has been given of the question in accordance with clauses 3.10 and 3.14.
- 9.15 A councillor may, through the chairperson, put a question to another councillor about a matter on the agenda.
- 9.16 A councillor may, through the general manager, put a question to a council employee about a matter on the agenda. Council employees are only obliged to answer a question put to them through the general manager at the direction of the general manager.
- 9.17 A councillor or council employee to whom a question is put is entitled to be given reasonable notice of the question and, in particular, sufficient notice to enable reference to be made to other persons or to documents. Where a councillor or council employee to whom a question is put is unable to respond to the question at the meeting at which it is put, they may take it on notice and report the response to the next meeting of the council.

Note: Councillors are encouraged to provide the general manager with advance notice of significant questions intended to be asked by a councillor during the meeting regarding any item on the agenda.

- 9.18 Councillors must put questions directly, succinctly, respectfully and without argument.
- 9.19 The chairperson must not permit discussion on any reply to, or refusal to reply to, a question put to a councillor or council employee.

10 RULES OF DEBATE

Motions to be seconded

10.1 Unless otherwise specified in this code, a motion or an amendment cannot be debated unless or until it has been seconded.

10.1A The mover of a substantive motion that has been seconded will be given the opportunity to speak for the motion before any amendment to the motion will be accepted.

Notices of motion

10.2 A councillor who has submitted a notice of motion under clause 3.10 is to move the motion the subject of the notice of motion at the meeting at which it is to be considered.

10.3 If a councillor who has submitted a notice of motion under clause 3.10 wishes to withdraw it after the agenda and business paper for the meeting at which it is to be considered have been sent to councillors, the councillor may request the withdrawal of the motion when it is before the council.

10.4 In the absence of a councillor who has placed a notice of motion on the agenda for a meeting of the council:

- (a) any other councillor may, with the leave of the chairperson, move the motion at the meeting, or
- (b) the chairperson may defer consideration of the motion until the next meeting of the council.

Chairperson's duties with respect to motions

10.5 It is the duty of the chairperson at a meeting of the council to receive and put to the meeting any lawful motion that is brought before the meeting.

10.6 The chairperson must rule out of order any motion or amendment to a motion that is unlawful or the implementation of which would be unlawful.

10.6A Before ruling out of order a motion or an amendment to a motion under clause 10.6, the chairperson must explain to the mover of the motion the reason or reasons why the chairperson proposes to do so.

10.7 Before ruling out of order a motion or an amendment to a motion under clause 10.6, the chairperson is to give the mover an opportunity to clarify or amend the motion or amendment.

10.8 Any motion, amendment or other matter that the chairperson has ruled out of order is taken to have been lost.

Motions requiring the expenditure of funds

10.9 A motion or an amendment to a motion which if passed would require the expenditure of funds on works and/or services other than those already provided for in the council's current adopted operational plan must identify the

source of funding for the expenditure that is the subject of the motion. If the motion does not identify a funding source, the council must defer consideration of the matter, pending a report from the general manager on the availability of funds for implementing the motion if adopted.

Amendments to motions

- 10.10 An amendment to a motion must be moved and seconded before it can be debated.
- 10.11 An amendment to a motion must relate to the matter being dealt with in the original motion before the council and must not be a direct negative of the original motion. An amendment to a motion which does not relate to the matter being dealt with in the original motion, or which is a direct negative of the original motion, must be ruled out of order by the chairperson.
- 10.12 The mover of an amendment is to be given the opportunity to explain any uncertainties in the proposed amendment before a seconder is called for.
- 10.13 If an amendment has been lost, a further amendment can be moved to the motion to which the lost amendment was moved, and so on, but no more than one (1) motion and one (1) proposed amendment can be before council at any one time.
- 10.14 While an amendment is being considered, debate must only occur in relation to the amendment and not the original motion. Debate on the original motion is to be suspended while the amendment to the original motion is being debated.
- 10.15 If an amendment is carried, it becomes the motion and is to be debated. If the amendment is lost, debate is to resume on the original motion.
- 10.16 An amendment may become the motion without debate or a vote where it is accepted by the councillor who moved the original motion.

Note: If an amendment is accepted by the mover of the original motion, the amended motion becomes the motion with the same original mover, and debate is continued until a vote.

Note: Where a motion or amendment is developed by councillors as a consequence of debate during the meeting, the general manager will cause the draft motion or amendment to be displayed on screens to provide councillors with the opportunity to review the motion or amendment prior to voting, to ensure the intent of the motion or amendment is accurately reflected.

Note: Councillors are encouraged to provide the general manager and Councillors with advance notice of significant variations to the staff recommendations.

Foreshadowed motions

- 10.17 A councillor may propose a foreshadowed motion in relation to the matter the subject of an original motion before the council, without a seconder during debate on the original motion. The foreshadowed motion is only to be considered if the original motion is lost or withdrawn and the moved foreshadowed motion is then seconded. If an original motion is carried, the foreshadowed motion lapses.

- 10.18 Where an amendment has been moved and seconded, a councillor may, without a seconder, foreshadow a further amendment that they propose to move after the first amendment has been dealt with. There is no limit to the number of foreshadowed amendments that may be put before the council at any time. However, no discussion can take place on foreshadowed amendments until the previous amendment has been dealt with and the foreshadowed amendment has been moved and seconded.
- 10.19 Foreshadowed motions and foreshadowed amendments are to be considered in the order in which they are proposed. However, foreshadowed motions cannot be considered until all foreshadowed amendments have been dealt with.

Limitations on the number and duration of speeches

- 10.20 A councillor who, during a debate at a meeting of the council, moves an original motion, has the right to speak on each amendment to the motion and a right of general reply to all observations that are made during the debate in relation to the motion, and any amendment to it at the conclusion of the debate before the motion (whether amended or not) is finally put.

Note: If an amendment is carried then it becomes an original motion, and can be debated before a vote. If it is debated, then its mover shall be given the right of reply which will then close the debate.

- 10.21 A councillor, other than the mover of an original motion, has the right to speak once on the motion and once on each amendment to it.
- 10.20 A councillor who, during a debate at a meeting of the council, moves an original motion, has the right to speak on each amendment to the motion and a right of general reply to all observations that are made during the debate in relation to the motion, and any amendment to it, at the conclusion of the debate before the motion (whether amended or not) is finally put.
- 10.22 A councillor must not, without the consent of the council, speak more than once on a motion or an amendment, or for longer than five (5) minutes at any one time.
- 10.23 Despite clause 10.22, the chairperson may permit a councillor who claims to have been misrepresented or misunderstood to speak more than once on a motion or an amendment, and for longer than five (5) minutes on that motion or amendment to enable the councillor to make a statement limited to explaining the misrepresentation or misunderstanding.
- 10.24 Despite clause 10.22, the council may resolve to shorten the duration of speeches to expedite the consideration of business at a meeting.
- 10.25 Despite clauses 10.20 and 10.21, a councillor may move that a motion or an amendment be now put:
- (a) if the mover of the motion or amendment has spoken in favour of it and no councillor expresses an intention to speak against it, or

- (b) if at least two (2) councillors have spoken in favour of the motion or amendment and at least two (2) councillors have spoken against it.
- 10.26 The chairperson must immediately put to the vote, without debate, a motion moved under clause 10.25. A seconder is not required for such a motion.
- 10.27 If a motion that the original motion or an amendment be now put is passed, the chairperson must, without further debate, put the original motion or amendment to the vote immediately after the mover of the original motion has exercised their right of reply under clause 10.20.
- 10.28 If a motion that the original motion or an amendment be now put is lost, the chairperson must allow the debate on the original motion or the amendment to be resumed.
- 10.29 All councillors must be heard without interruption and all other councillors must, unless otherwise permitted under this code, remain silent while another councillor is speaking.
- Note- As a general rule Councillors (but not the chair person) will if practicable stand when speaking.
- 10.30 Once the debate on a matter has concluded and a matter has been dealt with, the chairperson must not allow further debate on the matter.
- 10.31 Joint Organisation matter [Not applicable]

11 VOTING

Voting entitlements of councillors

- 11.1 Each councillor is entitled to one (1) vote.
- Note: Clause 11.1 reflects section 370(1) of the Act.*
- 11.2 The person presiding at a meeting of the council has, in the event of an equality of votes, a second or casting vote.
- Note: Clause 11.2 reflects section 370(2) of the Act.*
- 11.3 Where the chairperson declines to exercise, or fails to exercise, their second or casting vote, in the event of an equality of votes, the motion being voted upon is lost.
- 11.4 Joint Organisation matter [Not applicable]

Voting at council meetings

- 11.5 A councillor who is present at a meeting of the council but who fails to vote on a motion put to the meeting is taken to have voted against the motion.
- 11.6 [Not used]

- 11.7 The decision of the chairperson as to the result of a vote is final, unless the decision is immediately challenged and not fewer than two (2) councillors rise and call for a division.
- 11.8 [Not used]
- 11.9 When a division on a motion is called, any councillor who fails to vote will be recorded as having voted against the motion in accordance with clause 11.5 of this code.
- 11.10 Voting at a meeting, including voting in an election at a meeting, is to be by open means (such as on the voices, by show of hands or by a visible electronic voting system). However, the council may resolve that the voting in any election by councillors for mayor or deputy mayor is to be by secret ballot.
- 11.11 All voting at council meetings, (including meetings that are closed to the public), must be recorded in the minutes of meetings with the names of councillors who voted for and against each motion or amendment, (including the use of the casting vote), being recorded.

Voting on planning decisions

- 11.12 The general manager must keep a register containing, for each planning decision made at a meeting of the council or a council committee (including, but not limited to a committee of the council), the names of the councillors who supported the decision and the names of any councillors who opposed (or are taken to have opposed) the decision.
- 11.13 For the purpose of maintaining the register, a division is taken to have been called whenever a motion for a planning decision is put at a meeting of the council or a council committee.
- 11.14 Each decision recorded in the register is to be described in the register or identified in a manner that enables the description to be obtained from another publicly available document.
- 11.15 Clauses 11.12 and 11.14 apply also to meetings that are closed to the public.

Note: Clauses 11.12–11.15 reflect section 375A of the Act.

Note: The requirements of clause 11.12 may be satisfied by maintaining a register of the minutes of each planning decision.

12 COMMITTEE OF THE WHOLE

- 12.1 The council may resolve itself into a committee to consider any matter before the council.

Note: Clause 12.1 reflects section 373 of the Act.

- 12.2 All the provisions of this code relating to meetings of the council, so far as they are applicable, extend to and govern the proceedings of the council when in

committee of the whole, except the provisions limiting the number and duration of speeches.

Note: Clauses 10.20–10.30 limit the number and duration of speeches.

- 12.3 The general manager or, in the absence of the general manager, an employee of the council designated by the general manager, is responsible for reporting to the council the proceedings of the committee of the whole. It is not necessary to report the proceedings in full but any recommendations of the committee must be reported.
- 12.4 The council must ensure that a report of the proceedings (including any recommendations of the committee) is recorded in the council's minutes. However, the council is not taken to have adopted the report until a motion for adoption has been made and passed.

13 DEALING WITH ITEMS BY EXCEPTION

- 13.1 The council or a committee of council may, at any time, resolve to adopt multiple items of business on the agenda together by way of a single resolution.
- 13.2 Before the council or committee resolves to adopt multiple items of business on the agenda together under clause 13.1, the chairperson must list the items of business to be adopted and ask councillors to identify any individual items of business listed by the chairperson that they intend to vote against the recommendation made in the business paper or that they wish to speak on.
- 13.3 The council or committee must not resolve to adopt any item of business under clause 13.1 that a councillor has identified as being one they intend to vote against the recommendation made in the business paper or to speak on or in respect of which a councillor has declared a pecuniary interest or a significant conflict of interest under the council's adopted code of conduct.
- 13.4 Where the consideration of multiple items of business together under clause 13.1 involves a variation to the order of business for the meeting, the council or committee must resolve to alter the order of business in accordance with clause 8.3.
- 13.5 A motion to adopt multiple items of business together under clause 13.1 must identify each of the items of business to be adopted and state that they are to be adopted as recommended in the business paper.
- 13.6 Items of business adopted under clause 13.1 are to be taken to have been adopted unanimously.
- 13.7 Councillors must ensure that they declare and manage any conflicts of interest they may have in relation to items of business considered together under clause 13.1 in accordance with the requirements of the council's code of conduct.

14 CLOSURE OF COUNCIL MEETINGS TO THE PUBLICGrounds on which meetings can be closed to the public

14.1 The council or a committee of the council may close to the public so much of its meeting as comprises the discussion or the receipt of any of the following types of matters:

- (a) personnel matters concerning particular individuals (other than councillors),
- (b) the personal hardship of any resident or ratepayer,
- (c) information that would, if disclosed, confer a commercial advantage on a person with whom the council is conducting (or proposes to conduct) business,
- (d) commercial information of a confidential nature that would, if disclosed:
 - (i) prejudice the commercial position of the person who supplied it, or
 - (ii) confer a commercial advantage on a competitor of the council, or
 - (iii) reveal a trade secret,
- (e) information that would, if disclosed, prejudice the maintenance of law,
- (f) matters affecting the security of the council, councillors, council staff or council property,
- (g) advice concerning litigation, or advice that would otherwise be privileged from production in legal proceedings on the ground of legal professional privilege,
- (h) information concerning the nature and location of a place or an item of Aboriginal significance on community land,
- (i) alleged contraventions of the council's code of conduct.

Note: Clause 14.1 reflects section 10A(1) and (2) of the Act.

14.2 The council or a committee of the council may also close to the public so much of its meeting as comprises a motion to close another part of the meeting to the public.

Note: Clause 14.2 reflects section 10A(3) of the Act.

Matters to be considered when closing meetings to the public

14.3 A meeting is not to remain closed during the discussion of anything referred to in clause 14.1:

- (a) except for so much of the discussion as is necessary to preserve the relevant confidentiality, privilege or security, and
- (b) if the matter concerned is a matter other than a personnel matter concerning particular individuals, the personal hardship of a resident or ratepayer or a trade secret – unless the council or committee concerned is satisfied that discussion of the matter in an open meeting would, on balance, be contrary to the public interest.

Note: Clause 14.3 reflects section 10B(1) of the Act.

14.4 A meeting is not to be closed during the receipt and consideration of information or advice referred to in clause 14.1(g) unless the advice concerns

legal matters that:

- (a) are substantial issues relating to a matter in which the council or committee is involved, and
- (b) are clearly identified in the advice, and
- (c) are fully discussed in that advice.

Note: Clause 14.4 reflects section 10B(2) of the Act.

- 14.5 If a meeting is closed during the discussion of a motion to close another part of the meeting to the public (as referred to in clause 14.2), the consideration of the motion must not include any consideration of the matter or information to be discussed in that other part of the meeting other than consideration of whether the matter concerned is a matter referred to in clause 14.1.

Note: Clause 14.5 reflects section 10B(3) of the Act.

- 14.6 For the purpose of determining whether the discussion of a matter in an open meeting would be contrary to the public interest, it is irrelevant that:

- (a) a person may misinterpret or misunderstand the discussion, or
- (b) the discussion of the matter may:
 - (i) cause embarrassment to the council or committee concerned, or to councillors or to employees of the council, or
 - (ii) cause a loss of confidence in the council or committee.

Note: Clause 14.6 reflects section 10B(4) of the Act.

- 14.7 In deciding whether part of a meeting is to be closed to the public, the council or committee concerned must consider any relevant guidelines issued by the Chief Executive of the Office of Local Government.

Note: Clause 14.7 reflects section 10B(5) of the Act.

Notice of likelihood of closure not required in urgent cases

- 14.8 Part of a meeting of the council, or of a committee of the council, may be closed to the public while the council or committee considers a matter that has not been identified in the agenda for the meeting under clause 3.21 as a matter that is likely to be considered when the meeting is closed, but only if:

- (a) it becomes apparent during the discussion of a particular matter that the matter is a matter referred to in clause 14.1, and
- (b) the council or committee, after considering any representations made under clause 14.9, resolves that further discussion of the matter:
 - (i) should not be deferred (because of the urgency of the matter), and
 - (ii) should take place in a part of the meeting that is closed to the public.

Note: Clause 14.8 reflects section 10C of the Act.

Representations by members of the public

- 14.9 The council, or a committee of the council, may allow members of the public

to make representations to or at a meeting, before any part of the meeting is closed to the public, as to whether that part of the meeting should be closed.

Note: Clause 14.9 reflects section 10A(4) of the Act.

- 14.10 A representation under clause 14.9 is to be made after the motion to close the part of the meeting is moved and seconded.
- 14.11 Where the matter has been identified in the agenda of the meeting under clause 3.21 as a matter that is likely to be considered when the meeting is closed to the public, in order to make representations under clause 14.9, members of the public must first make an application to the council in the approved form. Applications must be received by **4:30 PM the last day** before the meeting at which the matter is to be considered.
- 14.12 The general manager (or their delegate) may refuse an application made under clause 14.11. The general manager or their delegate must give reasons in writing for a decision to refuse an application.
- 14.13 No more than **two (2) speakers** are to be permitted to make representations under clause 14.9.
- 14.14 If more than the permitted number of speakers apply to make representations under clause 14.9, the general manager or their delegate may request the speakers to nominate from among themselves the persons who are to make representations to the council. If the speakers are not able to agree on whom to nominate to make representations under clause 14.9, the general manager or their delegate is to determine who will make representations to the council.
- 14.15 The general manager (or their delegate) is to determine the order of speakers.
- 14.16 Where the council or a committee of the council proposes to close a meeting or part of a meeting to the public in circumstances where the matter has not been identified in the agenda for the meeting under clause 3.21 as a matter that is likely to be considered when the meeting is closed to the public, the chairperson is to invite representations from the public under clause 14.9 after the motion to close the part of the meeting is moved and seconded. The chairperson is to permit no more than **two (2) speakers** to make representations in such order as determined by the chairperson.
- 14.17 Each speaker will be allowed five (5) minutes to make representations, and this time limit is to be strictly enforced by the chairperson. Speakers must confine their representations to whether the meeting should be closed to the public. If a speaker digresses to irrelevant matters, the chairperson is to direct the speaker not to do so. If a speaker fails to observe a direction from the chairperson, the speaker will not be further heard.

Expulsion of non-councillors from meetings closed to the public

- 14.18 If a meeting or part of a meeting of the council or a committee of the council is closed to the public in accordance with section 10A of the Act and this code, any person who is not a councillor and who fails to leave the meeting when requested, may be expelled from the meeting as provided by section 10(2)(a)

or (b) of the Act.

- 14.19 If any such person, after being notified of a resolution or direction expelling them from the meeting, fails to leave the place where the meeting is being held, a police officer, or any person authorised for the purpose by the council or person presiding, may, by using only such force as is necessary, remove the first-mentioned person from that place and, if necessary restrain that person from re-entering that place for the remainder of the meeting.

Information to be disclosed in resolutions closing meetings to the public

- 14.20 The grounds on which part of a meeting is closed must be stated in the decision to close that part of the meeting and must be recorded in the minutes of the meeting. The grounds must specify the following:
- (a) the relevant provision of section 10A(2) of the Act,
 - (b) the matter that is to be discussed during the closed part of the meeting,
 - (c) the reasons why the part of the meeting is being closed, including (if the matter concerned is a matter other than a personnel matter concerning particular individuals, the personal hardship of a resident or ratepayer or a trade secret) an explanation of the way in which discussion of the matter in an open meeting would be, on balance, contrary to the public interest.

Note: Clause 14.20 reflects section 10D of the Act.

Resolutions passed at closed meetings to be made public

- 14.21 If the council passes a resolution during a meeting, or a part of a meeting, that is closed to the public, the chairperson must make the resolution public as soon as practicable after the meeting, or the relevant part of the meeting, has ended, and the resolution must be recorded in the publicly available minutes of the meeting.
- 14.22 Resolutions passed during a meeting, or a part of a meeting, that is closed to the public must be made public by the chairperson under clause 14.21 during a part of the meeting that is webcast.

15 KEEPING ORDER AT MEETINGS

Points of order

- 15.1 A councillor may draw the attention of the chairperson to an alleged breach of this code by raising a point of order. A point of order does not require a seconder.
- 15.2 A point of order cannot be made with respect to adherence to the principles contained in clause 2.1.
- 15.3 A point of order must be taken immediately it is raised. The chairperson must suspend the business before the meeting and permit the councillor raising the point of order to state the provision of this code they believe has been

breached. The chairperson must then rule on the point of order – either by upholding it or by overruling it.

Questions of order

- 15.4 The chairperson, without the intervention of any other councillor, may call any councillor to order whenever, in the opinion of the chairperson, it is necessary to do so.
- 15.5 A councillor who claims that another councillor has committed an act of disorder, or is out of order, may call the attention of the chairperson to the matter.
- 15.6 The chairperson must rule on a question of order immediately after it is raised but, before doing so, may invite the opinion of the council.
- 15.7 The chairperson's ruling must be obeyed unless a motion dissenting from the ruling is passed.

Motions of dissent

- 15.8 A councillor can, without notice, move to dissent from a ruling of the chairperson on a point of order or a question of order. If that happens, the chairperson must suspend the business before the meeting until a decision is made on the motion of dissent.
- 15.10 Despite any other provision of this code, only the mover of a motion of dissent and the chairperson can speak to the motion before it is put. The mover of the motion does not have a right of general reply.
- 15.9 If a motion of dissent is passed, the chairperson must proceed with the suspended business as though the ruling dissented from had not been given. If, as a result of the ruling, any motion or business has been rejected as out of order, the chairperson must restore the motion or business to the agenda and proceed with it in due course.

Acts of disorder

- 15.11 A councillor commits an act of disorder if the councillor, at a meeting of the council or a committee of the council:
 - (a) contravenes the Act or any regulation in force under the Act or this code, or
 - (b) assaults or threatens to assault another councillor or person present at the meeting, or
 - (c) moves or attempts to move a motion or an amendment that has an unlawful purpose or that deals with a matter that is outside the jurisdiction of the council or the committee, or addresses or attempts to address the council or the committee on such a motion, amendment or matter, or
 - (d) insults or makes personal reflections on or imputes improper motives to any other council official, or alleges a breach of the council's code of conduct, or

- (e) says or does anything that is inconsistent with maintaining order at the meeting or is likely to bring the council or the committee into disrepute.

15.12 The chairperson may require a councillor:

- (a) to apologise without reservation for an act of disorder referred to in clauses 15.11(a) or (b), or
- (b) to withdraw a motion or an amendment referred to in clause 15.11(c) and, where appropriate, to apologise without reservation, or
- (c) to retract and apologise without reservation for an act of disorder referred to in clauses 15.11(d) and (e).

Note: Acts of disorder committed by councillors during council or committee meetings may constitute a breach of clause 3.22 of the council's code of conduct and is councillor misconduct for the purposes of s440F of the Local Government Act 1993.

How disorder at a meeting may be dealt with

15.13 If disorder occurs at a meeting of the council, the chairperson may adjourn the meeting for a period of not more than fifteen (15) minutes and leave the chair. The council, on reassembling, must, on a question put from the chairperson, decide without debate whether the business is to be proceeded with or not. This clause applies to disorder arising from the conduct of members of the public as well as disorder arising from the conduct of councillors.

15.14 [Not applicable]

Expulsion from meetings

15.15 All chairpersons of meetings of the council and committees of the council are authorised under this code to expel any person other than a councillor, from a council or committee meeting, for the purposes of section 10(2)(b) of the Act. Councillors may only be expelled by resolution of the council or the committee of the council.

15.16 Clause 15.15 does not limit the ability of the council or a committee of the council to resolve to expel a person, including a councillor, from a council or committee meeting, under section 10(2)(a) of the Act.

15.17 A councillor may, as provided by section 10(2)(a) or (b) of the Act, be expelled from a meeting of the council for having failed to comply with a requirement under clause 15.12. The expulsion of a councillor from the meeting for that reason does not prevent any other action from being taken against the councillor for the act of disorder concerned.

15.18 A member of the public may, as provided by section 10(2)(a) or (b) of the Act, be expelled from a meeting of the council for engaging in or having engaged in disorderly conduct at the meeting.

15.19 Where a councillor or a member of the public is expelled from a meeting, the expulsion and the name of the person expelled, if known, are to be recorded in the minutes of the meeting.

- 15.20 If a councillor or a member of the public fails to leave the place where a meeting of the council is being held immediately after they have been expelled, a police officer, or any person authorised for the purpose by the council or person presiding, may, by using only such force as is necessary, remove the councillor or member of the public from that place and, if necessary, restrain the councillor or member of the public from re-entering that place for the remainder of the meeting.

Use of mobile phones and the unauthorised recording of meetings

- 15.21 Councillors, council staff and members of the public must ensure that mobile phones are turned to silent during meetings of the council and committees of the council.
- 15.22 A person must not live stream or use an audio recorder, video camera, mobile phone or any other device to make a recording of the proceedings of a meeting of the council or a committee of the council without the prior authorisation of the council or the committee.
- 15.22A The proceedings of a meeting that is open to the public may be recorded and broadcast by television broadcasters licensed by the Australian Communications and Media Authority (ACMA) provided that the broadcaster has made application to the general manager or their delegate to do so before the meeting and the application has been approved by the general manager.
- 15.23 Any person who contravenes or attempts to contravene clause 15.22, may be expelled from the meeting as provided for under section 10(2) of the Act.
- 15.24 If any such person, after being notified of a resolution or direction expelling them from the meeting, fails to leave the place where the meeting is being held, a police officer, or any person authorised for the purpose by the council or person presiding, may, by using only such force as is necessary, remove the first-mentioned person from that place and, if necessary, restrain that person from re-entering that place for the remainder of the meeting.

16 CONFLICTS OF INTEREST

- 16.1 All councillors and, where applicable, all other persons, must declare and manage any conflicts of interest they may have in matters being considered at meetings of the council and committees of the council in accordance with the council's code of conduct. All declarations of conflicts of interest and how the conflict of interest was managed by the person who made the declaration must be recorded in the minutes of the meeting at which the declaration was made.

17 DECISIONS OF THE COUNCIL

Council decisions

- 17.1 A decision supported by a majority of the votes at a meeting of the council at which a quorum is present is a decision of the council.

Note: Clause 17.1 reflects section 371 of the Act.

- 17.2 Decisions made by the council must be accurately recorded in the minutes of the meeting at which the decision is made.

Rescinding or altering council decisions

- 17.3 A resolution passed by the council may not be altered or rescinded except by a motion to that effect of which notice has been given under clause 3.10.

Note: Clause 17.3 reflects section 372(1) of the Act.

- 17.4 If a notice of motion to rescind a resolution is given at the meeting at which the resolution is carried, the resolution must not be carried into effect until the motion of rescission has been dealt with.

Note: Clause 17.4 reflects section 372(2) of the Act.

- 17.5 If a motion has been lost, a motion having the same effect must not be considered unless notice of it has been duly given in accordance with clause 3.10.

Note: Clause 17.5 reflects section 372(3) of the Act.

- 17.6 A notice of motion to alter or rescind a resolution, and a notice of motion which has the same effect as a motion which has been lost, must be signed by three (3) councillors if less than three (3) months has elapsed since the resolution was passed, or the motion was lost.

Note: Clause 17.6 reflects section 372(4) of the Act.

- 17.7 If a motion to alter or rescind a resolution has been lost, or if a motion which has the same effect as a previously lost motion is lost, no similar motion may be brought forward within three (3) months of the meeting at which it was lost. This clause may not be evaded by substituting a motion differently worded, but in principle the same.

Note: Clause 17.7 reflects section 372(5) of the Act.

- 17.8 The provisions of clauses 17.5–17.7 concerning lost motions do not apply to motions of adjournment.

Note: Clause 17.8 reflects section 372(7) of the Act.

- 17.9 A notice of motion submitted in accordance with clause 17.6 may only be withdrawn under clause 3.11 with the consent of all signatories to the notice of motion.

- 17.10 A notice of motion to alter or rescind a resolution relating to a development application must be submitted to the general manager no later than 12:00 PM on the next business day after the meeting at which the resolution was adopted.

- 17.11 A motion to alter or rescind a resolution of the council may be moved on the report of a committee of the council and any such report must be recorded in

the minutes of the meeting of the council.

Note: Clause 17.11 reflects section 372(6) of the Act.

- 17.12 Subject to clause 17.7, in cases of urgency, a motion to alter or rescind a resolution of the council may be moved at the same meeting at which the resolution was adopted, where:
- (a) a notice of motion signed by three councillors is submitted to the chairperson, and
 - (b) a motion to have the motion considered at the meeting is passed, and
 - (c) the chairperson rules the business that is the subject of the motion is of great urgency on the grounds that it requires a decision by the council before the next scheduled ordinary meeting of the council.
- 17.13 A motion moved under clause 17.12(b) can be moved without notice. Despite clauses 10.20–10.30, only the mover of a motion referred to in clause 17.12(b) can speak to the motion before it is put.
- 17.14 A motion of dissent cannot be moved against a ruling by the chairperson under clause 17.12(c).

Recommitting resolutions to correct an error

- 17.15 Despite the provisions of this Part, a councillor may, with the leave of the chairperson, move to recommit a resolution adopted at the same meeting to correct any error, ambiguity or imprecision in the council's resolution.
- 17.17 The chairperson must not grant leave to recommit a resolution for the purposes of clause 17.15, unless they are satisfied that the proposed alternative wording of the resolution would not alter the substance of the resolution previously adopted at the meeting.
- 17.16 In seeking the leave of the chairperson to move to recommit a resolution for the purposes of clause 17.15, the councillor is to propose alternative wording for the resolution.
- 17.18 A motion moved under clause 17.15 can be moved without notice. Despite clauses 10.20–10.30, only the mover of a motion referred to in clause 17.15 can speak to the motion before it is put.
- 17.19 A motion of dissent cannot be moved against a ruling by the chairperson under clause 17.15.
- 17.20 A motion moved under clause 17.15 with the leave of the chairperson cannot be voted on unless or until it has been seconded.

18 TIME LIMITS ON COUNCIL MEETINGS

- 18.1 Meetings of the council and committees of the council are to conclude no later than **10:00PM**.
- 18.2 If the business of the meeting is unfinished at **10:00PM**, the council or the

committee may, by resolution, extend the time of the meeting.

- 18.3 If the business of the meeting is unfinished at **10:00PM**, and the council does not resolve to extend the meeting, the chairperson must either:
- (a) defer consideration of the remaining items of business on the agenda to the next ordinary meeting of the council, or
 - (b) adjourn the meeting to a time, date and place fixed by the chairperson.
- 18.4 Clause 18.3 does not limit the ability of the council or a committee of the council to resolve to adjourn a meeting at any time. The resolution adjourning the meeting must fix the time, date and place that the meeting is to be adjourned to.
- 18.5 Where a meeting is adjourned under clause 18.3 or 18.4, the general manager must:
- (a) individually notify each councillor of the time, date and place at which the meeting will reconvene, and
 - (b) publish the time, date and place at which the meeting will reconvene on the council's website and in such other manner that the general manager is satisfied is likely to bring notice of the time, date and place of the reconvened meeting to the attention of as many people as possible.

19 AFTER THE MEETING

Minutes of meetings

- 19.1 The council is to keep full and accurate minutes of the proceedings of meetings of the council.
- Note: Clause 19.1 reflects section 375(1) of the Act.*
- 19.2 At a minimum, the general manager must ensure that the following matters are recorded in the council's minutes:
- (a) details of each motion moved at a council meeting and of any amendments moved to it,
 - (b) the names of the mover and seconder of the motion or amendment,
 - (c) whether the motion or amendment was passed or lost, and
 - (d) such other matters specifically required under this code.
- 19.3 The minutes of a council meeting must be confirmed at a subsequent meeting of the council.
- Note: Clause 19.3 reflects section 375(2) of the Act.*
- 19.4 Any debate on the confirmation of the minutes is to be confined to whether the minutes are a full and accurate record of the meeting they relate to.
- 19.5 When the minutes have been confirmed, they are to be signed by the person presiding at the subsequent meeting.

Note: Clause 19.5 reflects section 375(2) of the Act.

- 19.6 The confirmed minutes of a meeting may be amended to correct typographical or administrative errors after they have been confirmed. Any amendment made under this clause must not alter the substance of any decision made at the meeting.
- 19.7 The confirmed minutes of a council meeting must be published on the council's website. This clause does not prevent the council from also publishing unconfirmed minutes of its meetings on its website prior to their confirmation.

Access to correspondence and reports laid on the table at, or submitted to, a meeting

- 19.8 The council and committees of the council must, during or at the close of a meeting, or during the business day following the meeting, give reasonable access to any person to inspect correspondence and reports laid on the table at, or submitted to, the meeting.

Note: Clause 19.8 reflects section 11(1) of the Act.

- 19.9 Clause 19.8 does not apply if the correspondence or reports relate to a matter that was received or discussed or laid on the table at, or submitted to, the meeting when the meeting was closed to the public.

Note: Clause 19.9 reflects section 11(2) of the Act.

- 19.10 Clause 19.8 does not apply if the council or the committee resolves at the meeting, when open to the public, that the correspondence or reports are to be treated as confidential because they relate to a matter specified in section 10A(2) of the Act.

Note: Clause 19.10 reflects section 11(3) of the Act.

- 19.11 Correspondence or reports to which clauses 19.9 and 19.10 apply are to be marked with the relevant provision of section 10A(2) of the Act that applies to the correspondence or report.

Implementation of decisions of the council

- 19.12 The general manager is to implement, without undue delay, lawful decisions of the council.

Note: Clause 19.12 reflects section 335(b) of the Act.

20 COUNCIL COMMITTEES

Application of this Part

- 20.1 This Part only applies to committees of the council whose members are all councillors.

Council committees whose members are all councillors

- 20.2 The council may, by resolution, establish such committees as it considers

necessary.

- 20.3 A committee of the council is to consist of the mayor and such other councillors as are elected by the councillors or appointed by the council.
- 20.4 The quorum for a meeting of a committee of the council is to be:
- (a) such number of members as the council decides, or
 - (b) if the council has not decided a number – a majority of the members of the committee.

Functions of committees

- 20.5 The council must specify the functions of each of its committees when the committee is established, but may from time to time amend those functions.

Notice of committee meetings

- 20.6 The general manager must send to each councillor, regardless of whether they are a committee member, at least three (3) days before each meeting of the committee, a notice specifying:
- (a) the time, date and place of the meeting, and
 - (b) the business proposed to be considered at the meeting.
- 20.7 Notice of less than three (3) days may be given of a committee meeting called in an emergency.

Attendance at committee meetings

- 20.8 A committee member (other than the mayor) ceases to be a member of a committee if the committee member:
- (a) has been absent from three (3) consecutive meetings of the committee without having given reasons acceptable to the committee for the member's absences, or
 - (b) has been absent from at least half of the meetings of the committee held during the immediately preceding year without having given to the committee acceptable reasons for the member's absences.
- 20.9 Clause 20.8 does not apply if all of the members of the council are members of the committee.

Non-members entitled to attend committee meetings

- 20.10 A councillor who is not a member of a committee of the council is entitled to attend, and to speak at a meeting of the committee. However, the councillor is not entitled:
- (a) to give notice of business for inclusion in the agenda for the meeting, or
 - (b) to move or second a motion at the meeting, or
 - (c) to vote at the meeting.

Chairperson and deputy chairperson of council committees

- 20.11 The chairperson of each committee of the council must be:
- (a) the mayor, or
 - (b) if the mayor does not wish to be the chairperson of a committee, a member of the committee elected by the council, or
 - (c) if the council does not elect such a member, a member of the committee elected by the committee.
- 20.12 The council may elect a member of a committee of the council as deputy chairperson of the committee. If the council does not elect a deputy chairperson of such a committee, the committee may elect a deputy chairperson.
- 20.13 If neither the chairperson nor the deputy chairperson of a committee of the council is able or willing to preside at a meeting of the committee, the committee must elect a member of the committee to be acting chairperson of the committee.
- 20.14 The chairperson is to preside at a meeting of a committee of the council. If the chairperson is unable or unwilling to preside, the deputy chairperson (if any) is to preside at the meeting, but if neither the chairperson nor the deputy chairperson is able or willing to preside, the acting chairperson is to preside at the meeting.

Procedure in committee meetings

- 20.15 Subject to any specific requirements of this code, each committee of the council may regulate its own procedure. The provisions of this code are to be taken to apply to all committees of the council unless the council or the committee determines otherwise in accordance with this clause.
- 20.16 Whenever the voting on a motion put to a meeting of the committee is equal, the chairperson of the committee is to have a casting vote as well as an original vote unless the council or the committee determines otherwise in accordance with clause 20.15.
- 20.17 Joint Organisation [Not applicable]
- 20.18 Voting at a council committee meeting is to be by open means (such as on the voices, by show of hands or by a visible electronic voting system).

Closure of committee meetings to the public

- 20.19 The provisions of the Act and Part 14 of this code apply to the closure of meetings of committees of the council to the public in the same way they apply to the closure of meetings of the council to the public.
- 20.20 If a committee of the council passes a resolution, or makes a recommendation, during a meeting, or a part of a meeting that is closed to the public, the chairperson must make the resolution or recommendation public as soon as practicable after the meeting or part of the meeting has ended, and report the

resolution or recommendation to the next meeting of the council. The resolution or recommendation must also be recorded in the publicly available minutes of the meeting.

- 20.21 Resolutions passed during a meeting, or a part of a meeting that is closed to the public must be made public by the chairperson under clause 20.20 during a part of the meeting that is webcast.

Disorder in committee meetings

- 20.22 The provisions of the Act and this code relating to the maintenance of order in council meetings apply to meetings of committees of the council in the same way as they apply to meetings of the council.

Minutes of council committee meetings

- 20.23 Each committee of the council is to keep full and accurate minutes of the proceedings of its meetings. At a minimum, a committee must ensure that the following matters are recorded in the committee's minutes:

- (a) details of each motion moved at a meeting and of any amendments moved to it,
- (b) the names of the mover and seconder of the motion or amendment,
- (c) whether the motion or amendment was passed or lost, and
- (d) such other matters specifically required under this code.

- 20.24 All voting at meetings of committees of the council (including meetings that are closed to the public), must be recorded in the minutes of meetings with the names of councillors who voted for and against each motion or amendment, (including the use of the casting vote), being recorded.

- 20.25 The minutes of meetings of each committee of the council must be confirmed at a subsequent meeting of the committee.

- 20.26 Any debate on the confirmation of the minutes is to be confined to whether the minutes are a full and accurate record of the meeting they relate to.

- 20.27 When the minutes have been confirmed, they are to be signed by the person presiding at that subsequent meeting.

- 20.28 The confirmed minutes of a meeting may be amended to correct typographical or administrative errors after they have been confirmed. Any amendment made under this clause must not alter the substance of any decision made at the meeting.

- 20.29 The confirmed minutes of a meeting of a committee of the council must be published on the council's website. This clause does not prevent the council from also publishing unconfirmed minutes of meetings of committees of the council on its website prior to their confirmation.

21 IRREGULARITIES

- 21.1 Proceedings at a meeting of a council or a council committee are not
- Port Macquarie-Hastings Council Code of Meeting Practice 39

invalidated because of:

- (a) a vacancy in a civic office, or
- (b) a failure to give notice of the meeting to any councillor or committee member, or
- (c) any defect in the election or appointment of a councillor or committee member, or
- (d) a failure of a councillor or a committee member to declare a conflict of interest, or to refrain from the consideration or discussion of, or vote on, the relevant matter, at a council or committee meeting in accordance with the council's code of conduct, or
- (e) a failure to comply with this code.

Note: Clause 21.1 reflects section 374 of the Act.

22 DEFINITIONS

the Act	means the <i>Local Government Act 1993</i>
act of disorder	means an act of disorder as defined in clause 15.11 of this code
amendment	in relation to an original motion, means a motion moving an amendment to that motion
audio recorder	any device capable of recording speech
business day	means any day except Saturday or Sunday or any other day the whole or part of which is observed as a public holiday throughout New South Wales
chairperson	in relation to a meeting of the council – means the person presiding at the meeting as provided by section 369 of the Act and clauses 6.1 and 6.2 of this code, and in relation to a meeting of a committee – means the person presiding at the meeting as provided by clause 20.11 of this code
this code	means the council's adopted code of meeting practice
committee of the council	means a committee established by the council in accordance with clause 20.2 of this code (being a committee consisting only of councillors) or the council when it has resolved itself into committee of the whole under clause 12.1
council official	has the same meaning it has in the Model Code of Conduct for Local Councils in NSW
day	means calendar day
division	means a request by two councillors under clause 11.7 of this code requiring the recording of the names of the councillors who voted both for and against a motion
foreshadowed amendment	means a proposed amendment foreshadowed by a councillor under clause 10.18 of this code during debate on the first amendment
foreshadowed motion	means a motion foreshadowed by a councillor under clause 10.17 of this code during debate on an original motion
open voting	means voting on the voices or by a show of hands or by a visible electronic voting system or similar means
planning decision	means a decision made in the exercise of a function of a council under the <i>Environmental Planning and Assessment Act 1979</i> including any decision relating to a development application, an environmental planning instrument, a development control plan or a development contribution plan under that Act, but not including the making of an order under Division 9.3 of Part 9 of that Act
performance improvement order	means an order issued under section 438A of the Act

quorum	means the minimum number of councillors or committee members necessary to conduct a meeting
the Regulation	means the <i>Local Government (General) Regulation 2005</i>
webcast	a video or audio broadcast of a meeting transmitted across the internet either concurrently with the meeting or at a later time
year	means the period beginning 1 July and ending the following 30 June

BUDGET VARIATIONS - MARCH 2019													
Section	Project	Project Description	Capital/ Operating	Item	Report Note No	Full Year Original Budget	Full Year Current Budget	Actuals to 31 March 2019	New Yearly Proposed Budget - March 2019	Movement	Funding Source	EFFECT ON FUNDING POSITION	Comment
Corporate													
Depreciation	Various	Buildings Depreciation	Operating	a	8	2,336,405	2,336,405	3,147,469	3,936,405	-1,600,000	Non Cash	0	Council undertook a buildings revaluation in the 2017/18 financial year. This revaluation had a significant impact on the depreciation expense due to changes in the remaining useful lives of Council's buildings.
General Purpose Revenues	00394	Legal Fees on Debt Recovery	Operating	Budget Impact		120,000	120,000	61,446	82,000	38,000	Revenue	38,000	With increased debt recovery action by staff legal fees have been reduced.
General Purpose Revenues	10890	General Rates - Extra Charges	Operating	Budget Impact		-263,300	-263,300	-194,667	-201,000	-62,300	Revenue	-62,300	With increased debt recovery action by staff extra charges from outstanding rates have been reduced.
General Purpose Revenues	10900	Business General Rates - Defined Urban Centres	Operating	Budget Impact		-3,741,783	-3,741,783	-3,754,088	-3,754,088	12,305	Revenue	12,305	Adjustment to business rates in line with actual income received.
General Purpose Revenues	10901	Business General Rates - PM CBD	Operating	Budget Impact		-1,989,859	-1,989,859	-1,935,155	-1,935,155	-54,704	Revenue	-54,704	Adjustment to business rates in line with actual income received.
General Purpose Revenues	10902	Business General Rates - Other	Operating	Budget Impact		-342,643	-342,643	-340,952	-340,952	-1,691	Revenue	-1,691	Adjustment to business rates in line with actual income received.
General Purpose Revenues	10903	Residential General Rates - Defined Urban Centres	Operating	Budget Impact		-32,359,426	-32,359,426	-32,352,175	-32,345,000	-14,426	Revenue	-14,426	Adjustment to business rates in line with actual income received.
General Purpose Revenues	10904	Residential General Rates - Other	Operating	Budget Impact		-5,067,887	-5,067,887	-5,231,544	-5,220,821	152,934	Revenue	152,934	Adjustment to business rates in line with actual income received. Some assessment previously categorised as farmland have been moved to Residential Other.
General Purpose Revenues	10905	Farmland General Rates	Operating	Budget Impact		-2,582,539	-2,582,539	-2,261,056	-2,347,056	-235,483	Revenue	-235,483	Adjustment to business rates in line with actual income received. Some assessment previously categorised as farmland have been moved to Residential Other.
General Purpose Revenues	10910	Interest on Investments - General Fund	Operating	Budget Impact		-3,400,000	-3,400,000	-2,389,039	-3,585,000	185,000	Revenue	185,000	To bring interest on investments in line with expected receipts. Cash levels have been higher than expected due to project delays.
Development Contributions	09050	Transfer to Restricted Assets - Interest on \$7.11 contributions	Operating	Budget Impact		470,000	470,000		600,000	-130,000	Revenue	-130,000	Additional interest on investments applicable to \$7.11 contributions has to be transferred to the \$7.11 restricted asset.
Corporate Total										-1,710,365		-110,365	

BUDGET VARIATIONS - MARCH 2019													
Section	Project	Project Description	Capital/ Operating	Item	Report Note No	Full Year Original Budget	Full Year Current Budget	Actuals to 31 March 2019	New Yearly Proposed Budget - March 2019	Movement	Funding Source	EFFECT ON FUNDING POSITION	Comment
Strategy and Growth													
Library	40835	Library Local Priority Grant	Capital	b	1	60,000	45,029		130,899	-85,870	Grant	0	This is to correct the balance of the Library Local Priority Grant so that it is consistent with grant approvals.
Library	19172	Grants W/P Capital - Library	Capital	b	1	-60,000	-45,029		-130,899	85,870	Grant	0	Adjustment to grant funding received from the NSW State Library
Assets & Property Investment	41915	Emily Avenue - Sale and Development Costs	Capital	c	6			18,290	20,000	-20,000	Reserve	0	Council is proceeding with pre-development activities for its landholding at Emily Avenue in Port Macquarie. DA approval will add value to this parcel should Council wish to sell in the future and also protect the ability to develop this land.
Assets & Property Investment	41611	Lot 139 Greenmeadows Drive - Sale and Development Costs	Capital	c	6	40,000	67,574	2,500	47,574	20,000	Reserve	0	As this project will be put on hold whilst the Emily Avenue project is progressing it is appropriate to transfer the funds from this project to allow the Emily Avenue project to proceed.
Strategy and Growth Total													
Development & Environment										0		0	
Building Certification	10730	Building Certification Revenue	Operating	Budget Impact		-1,532,000	-1,532,000	-1,271,806	-1,632,000	100,000	Revenue	100,000	Activity in this area has been greater than anticipated.
Natural Resources	19184	Contributions - Operating Environment & Compliance	Operating	Budget Impact				-10,365	-10,365	10,365	Revenue	10,365	This is to recognise the contribution received from NSW Department of Industry for Asbestos removal investigations.
Natural Resources	41770	Diamond Head Road/The Boulevard Flood Access Sg 1A	Capital	d	1		1,420,000		1,500,000	-80,000	Grant/Env Levy	0	Council has received a grant from the Office of Environment and Heritage for this project. The grant is slightly higher than originally budgeted for but as the grant is a 2:1 grant the council contribution also needs to be increased.
Natural Resources	41531	Coastal/Estuary Management	Operating	d	1	520,000	520,000		53,334	466,666	Grant/Env Levy	0	This project was subject to grant funding. The grant funding has not become available so is being deleted. \$26,666 of the available council funding has been transferred to 41770 Diamond Head Road project to allow the matching of grant funding.
Natural Resources	19232	Grants Capital - Diamond Head Road	Operating	d	1	-946,666	-946,666		-1,000,000	53,334	Grant	0	This is to reflect the increase in grant funding received from the Office of Environment and Heritage for project 41770 Diamond Head Road.

BUDGET VARIATIONS - MARCH 2019												
Section	Project	Project Description	Capital/ Operating	Item	Report Note No	Full Year Original Budget	Full Year Current Budget	Actuals to 31 March 2019	New Yearly Proposed Budget - March 2019	Movement/ Funding Source	EFFECT ON FUNDING POSITION	Comment
Natural Resources	19231	Grants Operating - Coastal/Estuary Management	Operating	d	1	-80,000	-440,000		0	-440,000 Grant	0	This is to recognise the deletion of grant funding for project 41531 Coastal/Estuary Management
PM Town Centre Masterplan	41471	TCMP- Preconstruction of the Foreshore Walkway - Town Beach to Kooloonburg Creek	Capital	e	2				150,000	-150,000 Reserve	0	The construction of this walkway is included in the 2019/20 draft operational plan. This \$150,000 is to allow all pre-construction activities to be undertaken in this financial year. The TCMP committee recommended that this budget be allocated at its 28 February 2019 meeting.
PM Town Centre Masterplan	19359	Transfer from Reserve - Town Centre Masterplan	Operating	e	2	-1,080,000	-1,147,166		-1,297,166	150,000 Reserve	0	Associated reserve funding for project 41471 Precon of the Foreshore Walkway
Parks & Gardens	41649	Bunny's Corner - Riverbank Erosion Management	Operating	f	6	10,000	10,000		0	10,000 Revenue	10,000	These two reserves are both located within the one crown reserve. The two projects are being combined to allow the reconstruction of a pathway which has collapsed due to tidal events and erosion.
Parks & Gardens	41356	Riverfront Reserve - Reserve Improvements	Capital	f	6	30,000	30,000	1,676	40,000	-10,000 Revenue	-10,000	
Waste Management	11630	Domestic Waste Management Annual Charges	Operating	g	2	-12,931,646	-12,931,646	-12,994,420	-13,011,011	79,365 Revenue	79,365	Growth in meter numbers has necessitated an increase in this budget.
Waste Management	11610	Interest on Investments - Waste	Operating	g	2	-340,000	-340,000	-323,977	-460,000	120,000 Revenue	120,000	Higher levels of cash have increased the amount of income received from investments
Waste Management	00740	Port Macquarie Waste Depot	Operating	g	2	1,191,200	1,191,200	948,818	1,291,200	-100,000 Revenue	-100,000	Increased expenditure on hazardous waste has made this adjustment necessary.
Waste Management	09400	Transfer to Reserve - Waste Management	Operating	g	2	2,449,050	2,449,050		2,548,415	-99,365 Revenue	-99,365	Increased revenue from the waste fund must be transferred to the waste reserves.
Development & Environment Total										110,365	110,365	
Infrastructure												
Infrastructure Delivery	41457	Hartys Creek Bridge Replacement	Capital	h	5	700,000	1,139,491	1,741,731	1,746,000	-606,509 Reserve	0	This adjustment is in line with the approved project plan for the project. A total project cost of \$2,136,434 was foreshadowed in the June 20 2018 Committee of the Whole Agenda (Item 14.02).
Infrastructure Delivery	19349	Transfer from Reserves - Road Renewal	Capital	h	5	-200,000	-2,066,266		-2,672,775	606,509 Reserve	0	Funding transferred from the road renewal reserve to fund 41457 Hartys Creek Bridge Replacement
Emergency Management	41409	RFS - Bushfire Mitigation Works	Operating	i	1				17,630	-17,630 Grant	0	Council has received a grant from the Rural Fire Service to undertake hazard reduction works at Bold Street and works on the Kenwood Trail.

BUDGET VARIATIONS - MARCH 2019													
Section	Project	Project Description	Capital/ Operating	Item	Report Note No	Full Year Original Budget	Full Year Current Budget	Actuals to 31 March 2019	New Yearly Proposed Budget - March 2019	Movement	Funding Source	EFFECT ON FUNDING POSITION	Comment
Emergency Management	19251	Grants Operating - Fire Control	Operating	i	1		-196,920		-214,550	17,630	Grant	0	Grant funding received from the Rural Fire Service for 41409 Bushfire Mitigation Works
Transport & Traffic	41882	Lighthouse Road East - Tourism Connectivity Project Management	Capital	j	5		50,000	61,938	500,000	-450,000	Reserve, Revenue, Contribution	-100,000	Executive have approved a budget variation request for this project. The additional funds are required for: - \$52,400 for revised design and environmental assessment due to changes in legislation - \$100,000 to allow the inclusion of the Lighthouse turnaround area - \$50,000 to upgrade existing aged watermain - \$247,600 incorporation of the Matthew Flinders Drive Intersection These funds have been transferred to 41882 Lighthouse Road East
Transport & Traffic	41465	Road Reseals	Capital	j	5	2,000,000	2,000,000	711,103	1,900,000	100,000	Revenue	100,000	
Transport & Traffic	19345	Contributions - Water Fund	Operating	j	5				-50,000	50,000	Contrib	0	This is to recognise the contribution by water fund towards 41882 Lighthouse Road East
Transport & Traffic	19349	Transfer from Reserves - Infrastructure Priorities	Operating	j	5		-140,000		-440,000	300,000	Reserve	0	To recognise the use of the Infrastructure Priorities reserve in funding 41882 Lighthouse Road East
Sewerage Services	11060	Sewerage Annual Charges	Operating	k	2	-26,694,016	-26,694,016	-26,560,226	-26,560,695	-133,321	Revenue	-133,321	An allowance for growth was included in all rating budgets for 2018/19. Growth has not been as high as expected so this budget needs to be reduced.
Sewerage Services	11050	Interest on Investments - Sewer	Operating	k	2	-1,250,000	-1,250,000	-1,086,434	-1,590,000	340,000	Revenue	340,000	Higher levels of cash have increased the amount of income received from investments
Sewerage Services	09301	Transfer to S64 Restricted Asset	Operating	k	2	200,000	200,000		230,000	-30,000	Revenue	-30,000	Any increase in interest attributable to S64 contributions needs to be transferred to the S64 Restricted asset account.
Sewerage Services	09300	Transfer to Reserve - Sewerage Services	Operating	k	2	10,538,061	10,538,061		10,714,740	-176,679	Revenue	-176,679	Increased revenue from the sewer fund must be transferred to the sewer reserves.
Water Supply	11350	Interest on Investments - Water Supply	Operating	l	2	-2,300,000	-2,300,000	-1,861,867	-2,792,800	492,800	Revenue	492,800	Higher levels of cash have increased the amount of income received from investments.
Water Supply	09200	Transfer to Reserves - Water Supply	Operating	l	2	13,788,150	14,108,150		14,460,950	-352,800	Revenue	-352,800	Increased revenue from the water fund must be transferred to the water reserves.

BUDGET VARIATIONS - MARCH 2019												
Section	Project	Project Description	Capital/ Operating	Item	Report Note No	Full Year Original Budget	Full Year Current Budget	Actuals to 31 March 2019	New Yearly Proposed Budget - March 2019	Movement/ Funding Source	EFFECT ON FUNDING POSITION	Comment
Water Supply		09201 Transfer to S64 Restricted Asset	Operating	1	2	500,000	500,000		640,000	-140,000 Revenue	-140,000	Any increase in interest attributable to S64 contributions needs to be transferred to the S64 Restricted asset account.
Infrastructure Total										0	0	
ORGANISATIONAL TOTAL - THIS REVIEW												
FORECAST FOR FINANCIAL YEAR ENDED 30 JUNE 2019												
Original Budget as at 1 July 2018						Shortfall	-511,873					
Plus: Adjustments												
July Review						Balanced	0					
August Review						Balanced	0					
September Review						Balanced	0					
October Review						Surplus	147,265					
November Review						Balanced	0					
December Review						-	-					
January Review						Balanced	0					
February Review						Balanced	0					
March Review						Balanced	0					
FORECAST FOR 30 JUNE 2019						Shortfall	-364,608					
Notes:	1 The result shown above is the general fund result. All surpluses/deficits in the water, sewerage and waste funds are transferred to/from reserves.											
	2 Reserve are internal restrictions that hold funds for a specific purpose, e.g. The airport has its own reserve and all income and expenditure relating to the airport is credited/debited to that reserve.											
	3 Council projects are funded from a variety of funding sources. Below is a definition of the various types of funding that are used to fund projects.											
	Revenue - All funds that are generated through rates, annual charges, fees and charges, interest etc. These funds are untied and can be expended on any project that Council considers appropriate.											
	Grants - Government grants can either be monetary or otherwise and may be tied or untied. Tied grants are required to be used for a specific purpose such as the construction of a road. Untied grants may be applied for any purpose council considers appropriate.											
	Contributions - Contributions are non-reciprocal transfers to Council in the sense that Council is not required to give value in exchange for the contributions directly to the contributor. Examples are contributions given by ratepayers towards capital works in their vicinity.											
	Reserves - Reserves are internal restrictions held for a specific purpose, e.g. The airport has its own reserve and all income and expenditure relating to the airport is credited/debited to that reserve.											
	S7.11 and S64 Contributions - Section 7.11 of the NSW Environmental and Planning Act (1979) and section 64 of the Local Government Act (1993) provides NSW local government with a formal legal framework for levying developers for the provision of infrastructure, services and amenities - known as developer contributions.											
	4 Some projects are funded by multiple funding sources, e.g. a capital project may be funded by s7.11 funds, grants and revenue. The effect on capital column will only show the revenue funding adjustment as the other types of funding will have an income line budget adjustment shown in the report.											



Monthly Investment Report

March 2019

IMPERIUM MARKETS

Level 14, 5 Martin Place
Sydney, NSW 2000
Website: <http://www.imperiummarkets.com.au>
Email: michael.chandra@imperiummarkets.com.au
Phone: +61 414 738 121
ABN: 87 616 579 527
ACN: 616 579 527
AFSL No: 429718
Holder of an [Australian Market Licence](#)



Executive Summary

Compliance

Compliance Measure	Within Policy Limits (Y/N)	Reason if Not Compliant
Term to Maturity	Yes – Compliant	n/a
Counterparty	No – Compliant	Westpac by ~\$8m (but \$18m held in cash)
Credit Quality	Yes – Compliant	n/a

Performance

As at 31/03/2019	1m (actual)	1m (% p.a.)	FYTD (actual)	FYTD (% p.a.)
AusBond Bank Bill Index	0.17%	1.97%	1.52%	2.03%
Council's Portfolio[^]	0.25%	3.00%	2.25%	3.00%
Outperformance	0.08%	1.03%	0.73%	0.97%

[^]Total portfolio performance excludes Council's cash account holdings. Overall returns would be lower if cash was included.

Council's Portfolio

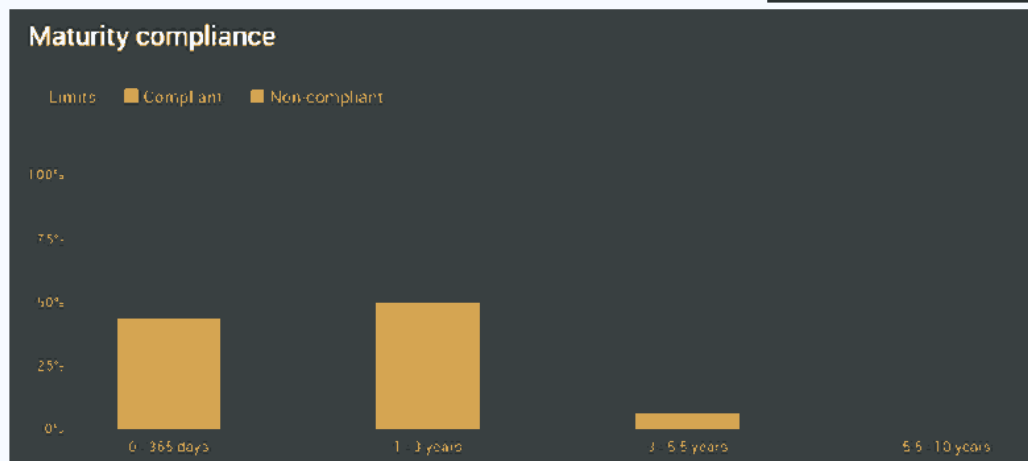
Asset Allocation

The entire portfolio is directed to fixed term deposits (93.60%) and the Cash Notice Saver Account with Westpac (6.34%). With credit securities widening and becoming more attractive, we suggest Council consider introducing liquid senior floating rate notes (FRNs) into the portfolio. This will not only offer additional upside with regards to the portfolio's investment returns, but also provide additional liquidity (FRNs are saleable – generally accessible within 2 business days). FRNs are also dominated by the higher rated ADIs which allows Council to maintain a bias towards to the higher rated banks.



Term to Maturity

All maturity limits (minimum and maximum) comply with the Investment Policy. Medium-Term (3-5 years) assets account for around 6% of the total investment portfolio, with capacity of around \$72m at month-end.



Where there is (counterparty) capacity to invest in attractive 3-5½ year investments, we recommend this be allocated to new senior FRN issues and fixed or floating rate term deposits (refer to respective sections below).

Compliant	Horizon	Invested (\$)	Invested (%)	Min. Limit (%)	Max. Limit (%)	Available (\$)
✓	0 – 365 days	\$128,751,320	43.53%	0%	100%	\$167,000,000
✓	1 – 3 years	\$148,000,000	50.04%	0%	60%	\$29,450,792
✓	3 – 5.5 years	\$19,000,000	6.42%	0%	40%	\$99,300,528
✓	5.5 – 10 years	\$0	0.00%	0%	20%	\$59,150,264
		295,751,320	100.00%			



Counterparty

As at the end of March, following the adoption of a new policy, Council had a minor overweight position to Westpac (policy limits fell from 40% to 30%). There are no issues with this given around \$18m is held in a cash account with Westpac and can easily be redistributed to another ADI. Overall, the portfolio is diversified across the investment grade credit spectrum (rated BBB- or higher), with no exposure to unrated ADIs.

Compliant	Issuer	Rating	Invested (\$)	Invested (%)	Max. Limit (%)	Available (\$)
✓	CBA	AA-	\$3,000,000	1.01%	30.00%	\$85,725,396
✓	NAB	AA-	\$51,000,000	17.24%	30.00%	\$37,725,396
X	WBC (St George)	AA-	\$96,751,320	32.71%	30.00%	-\$8,025,924
✓	Rabobank	A+	\$19,000,000	6.42%	20.00%	\$40,150,264
✓	AMP	A	\$5,000,000	1.69%	20.00%	\$54,150,264
✓	ICBC Sydney	A	\$42,000,000	14.20%	20.00%	\$17,150,264
✓	ING Bank	A	\$38,000,000	12.85%	20.00%	\$21,150,264
✓	BOQ	BBB+	\$10,000,000	3.38%	10.00%	\$19,575,132
✓	Bendigo	BBB+	\$5,000,000	1.69%	10.00%	\$24,575,132
✓	ME Bank	BBB	\$9,000,000	3.04%	10.00%	\$20,575,132
✓	Newcastle PBS	BBB	\$17,000,000	5.75%	10.00%	\$12,575,132
			\$295,751,320	100.00%		

We remain supportive of the regional and unrated ADI sector (and have been even throughout the GFC period). They continue to remain solid, incorporate strong balance sheets, while exhibiting high levels of capital – typically, much higher compared to the higher rated ADIs. Some unrated ADIs have up to 25-40% more capital than the domestic major banks, and well above the Basel III requirements.

APRA's Chairman affirmed that the banks had satisfactorily moved towards an '*unquestionably strong*' capital position and that bank's stress testing contingency plans were now far better positioned than was previously the case years ago. APRA's stress test which hypothetically increased the unemployment rate to 11% (more than double the current rate) and for house prices to fall 35% showed the banks remained above the minimum capital levels. We note that APRA's latest discussion paper also highlighted that the domestic major banks were required to raise more capital while the lower rated ADIs were already deemed to be at a satisfactory level.

Overall, the lower rated ADIs (BBB and unrated) are generally now in a better financial position than they have been historically (see the Capital Ratio figure below). We believe that deposit investments with the lower rated ADIs should be continued going forward, particularly when they offer 'above market' specials. Not only would it diversify the investment portfolio and reduce credit risk, it would also improve the portfolio's overall returns.

In the current environment of high regulation and scrutiny, all domestic ADIs continue to carry high levels of capital, particularly amongst the lower ("BBB") and unrated ADIs. There is minimal (if any)



probability of any ADI defaulting on their deposits going forward – this was stress tested during the GFC.

The biggest single risk that depositors face in the current low interest rate environment is not credit risk, but reinvestment risk.



Credit Quality

The portfolio remains lightly diversified from a credit ratings perspective. The portfolio is entirely directed to the investment grade ADIs (BBB- or higher), with zero allocation to unrated ADIs. There is high capacity to invest in the higher rated ADIs (A or higher), particularly after the downgrades of BoQ and Bendigo-Adelaide Bank in May 2017, which now fall back into the “BBB” rated category.

There is also considerable capacity to invest with the “BBB” rated ADIs following the adoption of a new policy.

Given the large number of “BBB” rated ADIs currently in the market (and conversely, the low number of “A” or higher rated ADIs), we suggest Council direct new funds into this sector. We note that it is within this category where the most value is currently experienced. Above market ‘specials’ are frequently offered in this sector.

All ratings categories are within the Policy limits:

Compliant	Credit Rating	Invested (\$)	Invested (%)	Max. Limit (%)	Available (\$)
✓	AA Category	\$150,751,320	50.97%	100%	\$145,000,000
✓	A Category	\$104,000,000	35.16%	60%	\$73,450,792
✓	BBB Category	\$41,000,000	13.86%	30%	\$47,725,396
✓	Unrated ADIs	\$0	0.00%	10%	\$29,575,132
		\$295,751,320	100.00%		



Performance

Council's performance for the month ending 31 March 2019 is summarised as follows:

Performance	1 month	3 months	6 months	FYTD	1 year
Official Cash Rate	0.13%	0.37%	0.75%	1.12%	1.50%
AusBond Bank Bill Index	0.17%	0.52%	1.00%	1.52%	2.02%
Council's Portfolio [^]	0.25%	0.73%	1.48%	2.25%	3.01%
Outperformance	0.09%	0.21%	0.48%	0.73%	0.99%

[^]Total portfolio performance excludes Council's cash account holdings. Overall returns would be lower if cash was included.

For the month of March, the deposit portfolio provided a solid return of +0.25% (actual), outperforming the benchmark AusBond Bank Bill Index return by +0.09% (actual). The strong performance continues to be driven by the handful of deposits still yielding above 3½% p.a. However, most of these individual deposits have now matured and will be reinvested at lower prevailing rates.

Over the past year, the deposit portfolio returned +3.01% p.a., outperforming bank bills by 0.99% p.a. and more than double the official cash rate of 1½%. This has been relatively strong given deposit rates reached their all-time lows and margins have generally contracted over the past 2½ years.

Investors using the Imperium Markets platform have reduced the invisible costs associated with brokerage, and thereby lift client portfolio returns as investors are able to deal in deposits directly with the ADIs and execute at the best price possible. Council has experienced this over the past 12 months, receiving on average, 2-4bp higher for every deposit dealt on the platform.



Council's Term Deposit Portfolio & Recommendation

As at the end of March 2019, Council's deposit portfolio was yielding 3.00% p.a. (down 1bp from the previous month), with an average duration of ~1½ years. Where possible, we recommend Council extends or at least maintains this average duration. In the low interest rate environment, the biggest collective risk that the local government sector has faced over the post-GFC era has been the dramatic fall in interest rates - from 7¼% to the current historical low levels of 1½%.

As the past decade has highlighted (post-GFC era), we have seen too many portfolios' roll a high proportion of their deposits between 3-6 months, resulting in their deposits being reinvested at lower prevailing rates. That is, depositors have generally not insured themselves against the low interest rate environment by diversify their funding across various tenors (out to 5 years) but rather placed all their 'eggs in one basket' and kept all their deposits short. **Reinvestment risk has collectively been and continues to be the biggest detriment to depositors' interest income over the post-GFC period. Another interest rate cut is factored in over coming months.**

At the time of writing (early April), we see value in:

ADI	LT Credit Rating	Term	T/D Rate
Police CU SA	Unrated	3 years	~2.93% p.a.
Police CU SA	Unrated	2 years	~2.90% p.a.
Auswide Bank	BBB	3 years	~2.75% p.a.
Newcastle Permanent BS	BBB	2 years	~2.70% p.a.
Auswide Bank	BBB	3 years	~2.70% p.a.

For those investors that have capacity issues with the "BBB" and unrated ADI sector, we see value in:

ADI	LT Credit Rating	Term	T/D Rate
AMP	A-	3 years	^2.85% p.a.
AMP	A-	2 years	^2.85% p.a.

[^] AMP T/Ds – these are grossed up rates which includes a 0.20% p.a. rebated commission from Imperium Markets. Temporarily lift to around \$7m cap (requires approval), applies per individual investor.

The above deposits are suitable for investors looking to provide some income protection and mitigate reinvestment/rollover risk in the low interest rate environment.



For terms under 12 months, we believe the strongest value is currently being offered by a number of lower and unrated ADIs offering above-market specials (dependent on daily funding requirements):

ADI	LT Credit Rating	Term	T/D Rate
Police Credit Union SA	Unrated ADI	6 months	2.94% p.a.
Police Credit Union SA	Unrated ADI	12 months	2.89% p.a.
Nexus Mutual	Unrated ADI	6-9 months	2.82% p.a.
Nexus Mutual	Unrated ADI	12 months	2.80% p.a.
Australian Military Bank	Unrated ADI	6 months	2.78% p.a.
BoQ	BBB+	12 months	2.65% p.a.
Auswide	BBB	12 months	2.60% p.a.

Excluding AMP (A-), we note the spread between the higher rated ADIs and the lower rated regional and unrated ADIs is becoming wider. Amongst the higher rated ADIs ("A" rated or higher), the following deposits remain attractive for terms under 12 months:

ADI	LT Credit Rating	Term	T/D Rate
AMP	A-	6-7 months	^2.95% p.a.
AMP	A-	8-12 months	^2.90% p.a.
ICBC Sydney Branch	A	12 months	2.60% p.a.
NAB	AA-	4-10 months	2.50% p.a.

[^] AMP T/Ds – these are grossed up rates which includes a 0.20% p.a. rebated commission from Imperium Markets. Temporarily lift to around \$7m cap (requires approval), applies per individual investor.



Senior FRNs & Recommendations

Over March, amongst the senior major bank FRNs, physical credit securities were marked significantly tighter across the curve. All four domestic major banks issued benchmark issues earlier in the year – we expect further new primary issuances over coming months.

Despite the rally over the month, we still see good relative value for a new 5 year major bank FRN (at around +92bp), given the slight premium offered in the primary market, and particularly once factoring in the potential capital gains which could be realised from as early as two years after being launched. The **grossed up returns would be around +130bp over a 2 year holding period in a relatively stable credit environment**, over and above where the highest margins are paying compared to the medium to longer-dated deposits.

We continue to see better value in longer tenors (i.e. favour 5 year terms over 3 year terms) amongst the “AA” rated ADIs due to their high liquidity and ability to ‘roll down the curve’ over a 2-2½ year holding period.

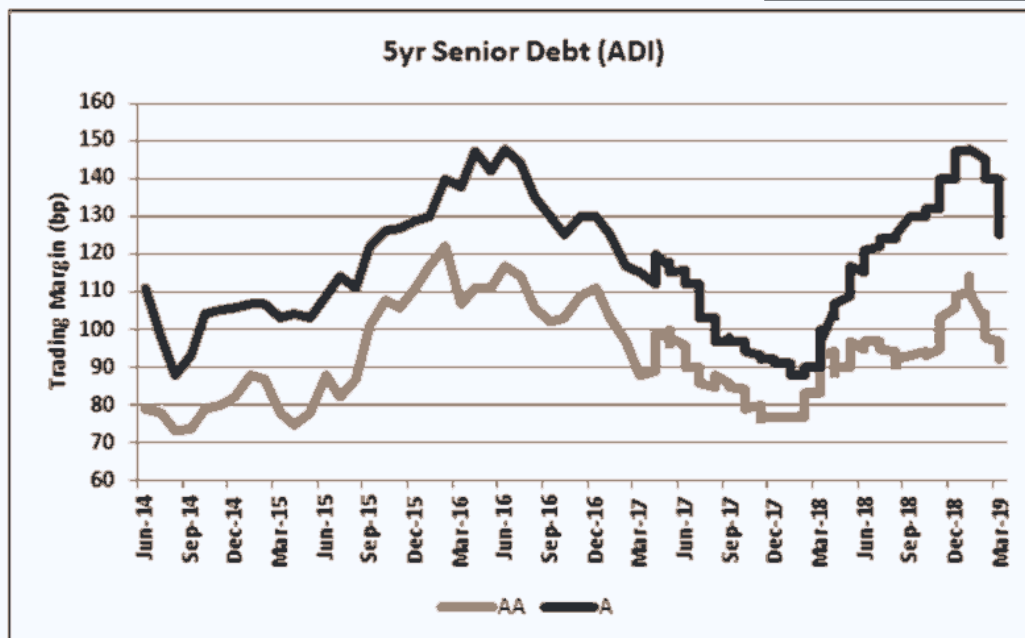
Collectively over the month, the “A” rated cohort tightened around -15bp for both 3 and 5 year terms as AMP (A-) was downgraded by one notch to “A-”. During the month, Rabobank (A+) issued a new 3½ year FRN at +79bp which we thought as being relatively tight, particularly for those investors with the ability to ‘roll down the curve’ and realise capital gains in future years – there continues to be better value in the 5 year part of the curve. We saw better value in ICBC’s (A) 3 year senior FRN deal at +100bp, which has since tightened around -5bp in the secondary market.

Meanwhile, the “BBB” rated ADIs tightened -3bp to +120bp over the month, following the broader markets movement. There remains very little turnover (traditionally) in the secondary market amongst the lower regional ADIs.

Overall, credit remains tight on a historical basis but much more attractive after the recent correction experienced in credit markets over December / early January. The relative movement in spreads between medium-longer dated deposits and FRNs has seen the latter become much more attractive over the past few months.

Senior FRNs (ADIs)	31/03/2019	28/02/2019
“AA” rated – 5yrs	+92bp	+98bp
“AA” rated – 3yrs	+66bp	+72bp
“A” rated – 5yrs	+125bp	+140bp
“A” rated – 3yrs	+100bp	+115bp
“BBB” rated – 3yrs	+120bp	+123bp

Source: IBS Capital



Source: IBS Capital

We now generally **recommend switches** ('benchmark' issues only) into new primary issues, out of the following senior FRNs that are maturing:

- On or before early 2022 for the "AA" rated ADIs (domestic major banks);
- On or before 2020 for the "A" rated ADIs; and
- Within 12 months for the "BBB" rated ADIs (consider case by case).

Investors holding onto the above senior FRNs ('benchmark' issues only) in their last 1-2 years are now generally holding sub-optimal investments and are not maximising returns by foregoing realised capital gains. In the current low interest rate environment, any boost in overall returns should be locked in when it is advantageous to do so.

We recommend Council starts introducing liquid senior FRNs into the portfolio, potentially starting with the domestic major banks.



Economic Commentary Review

International Market

Global equity markets posted modest gains in March, continuing their momentum from the previous month. In the US, the S&P 500 Index gained +1.79% while the NASDAQ rose +2.61%. Across Europe, the main economies also rallied, led by UK's FTSE (+2.89%) and France's CAC (+2.10%). Meanwhile, Germany's DAX (+0.09%) finished the month off marginally in positive territory.

The US unemployment rate fell to 3.8% in February, back close to the cyclical low of 3.7% during Q4 2018. **US headline CPI rose +0.2% as expected, taking annual CPI down to +1.5% from +1.6%**. Core CPI rose by a softer than expected +0.1% or +2.1% on an annual basis (missing by one tenth).

The US Federal Reserve (Fed) acknowledged that economic growth has slowed and that they will *"will be patient as it determines what future adjustments to the target range for the federal funds rate may be appropriate"*.

The Fed will taper its balance sheet reduction programme from \$30bn to \$15bn per month from May and end the process completely by September. They revised downwards their GDP and core CPI inflation forecasts for 2019 and 2020, while also anticipating for unemployment to rise over the coming two years.

There was **no resolution to the ongoing commotion surrounding Brexit**, with PM May appealing to her party and offered to resign as Prime Minister so long as the Brexit deal passes.

Euro-area core CPI data came in lower than expected at +1.0% in February, confirming core inflation remains stuck around the figure with no evidence of renewed upward pressures. **Eurozone GDP growth was well below expectations in Q4 at +1.2% y/y**, against +1.9% projected in December.

UK labour market data came in better than expected with a +222k leap in employment driving the unemployment rate down to 3.9%. The Bank of England has not been keen to raise rates due to the *"fog of Brexit"*, but any clarity around Brexit is likely to prompt the bank into consider hiking rates.

China announced a 6.0%-6.5% GDP growth target for 2019 (as previously flagged). CPI was targeted at around 3% and a budget deficit of 2.8% of GDP, up from 2.6% in 2018.

The Bank of Canada left its policy rate unchanged and softened its tightening bias. The previous language of seeing the need for rates to rise over time was replaced by a comment that borrowing costs will remain below neutral for now and there is increased uncertainty about the timing of future rate increases.

The **MSCI World ex-AUS gained +1.08%** for the month of March.

Index	1m	3m	1yr	3yr	5yr	10yr
S&P 500 Index	+1.79%	+13.07%	+7.33%	+11.23%	+8.65%	+13.51%
MSCI World ex-AUS	+1.08%	+11.94%	+2.04%	+8.67%	+4.94%	+10.24%
S&P ASX 200 Accum. Index	+0.73%	+10.89%	+12.06%	+11.46%	+7.40%	+10.35%

Source: S&P, MSCI



Domestic Market

The RBA left interest rates on hold at 1.50% at its March Board Meeting, as widely expected. The Bank reiterated its central scenario is for growth in the economy to be around 3% this year, despite signs that Q4 2018 growth is likely to be softer than the 2.8% the RBA had forecasted. Their forecast relies on rising business investment, increased spending on infrastructure and increased employment.

Q4 GDP revealed weak growth of +0.2% q/q, a touch below market consensus and 0.4% below the RBA's implied forecast of +0.6% q/q. **Annual growth is now at +2.3%**, at the low end of most estimates of trend.

Retail sales grew just +0.1% in January, below market expectations of a +0.3% rebound, with annual growth slowing slightly to +2.7%. Retail spending is now growing at a trend pace of +0.1% per month, raising the risk that consumer spending is still weak in Q1.

The trade surplus grew to a strong \$4.549bn in January, way above market expectations of a \$2.75bn surplus. A \$1.373bn monthly lift in gold exports accounted for over 70% of the out-sized +5% rise in exports. Imports rose by a solid +3%.

Home loan approvals continue to fall at a relatively rapid rate, down another -4% in January. After a sharp fall in December, the number of owner-occupied home loan approvals declined another -1.2% in January. Building approvals in January rose +2.5% after two big declines approaching 10% per month.

The Council of Financial Regulators (Treasury, RBA, APRA and ASIC) continue to closely monitor the correction in the domestic housing market. They believe that the *"adjustment in housing prices and activity has been orderly and does not raise material financial stability concerns"*, although it said that while mortgage arrears remain low, they have reached a post-financial crisis high.

The unemployment rate fell from 5.0% to 4.9% in February (employment up +4.6k), its lowest level since 2009. The participation rate ticked down to 65.6%.

The Australian dollar fell over -0.8% this month, finishing at US70.87 cents (from US71.46 cents the previous month).

Credit Market

The main global credit indices rally ended over March, as all were marked wider between 3-7bp. Credit spreads are now back to where they were in late 2018 and remain very tight on a historical basis:

Index	March 2019	February 2019
CDX North American 5yr CDS	63bp	60bp
iTraxx Europe 5yr CDS	65bp	61bp
iTraxx Australia 5yr CDS	76bp	69bp

Source: Markit



Fixed Interest Review

Benchmark Index Returns

Index	March 2019	February 2019
Bloomberg AusBond Bank Bill Index (0+YR)	+0.17%	+0.17%
Bloomberg AusBond Composite Bond Index (0+YR)	+1.82%	+0.94%
Bloomberg AusBond Credit FRN Index (0+YR)	+0.40%	+0.43%
Bloomberg AusBond Credit Index (0+YR)	+1.44%	+0.87%
Bloomberg AusBond Treasury Index (0+YR)	+2.15%	+1.03%
Bloomberg AusBond Inflation Gov't Index (0+YR)	+1.75%	+0.50%

Source: Bloomberg

Other Key Rates

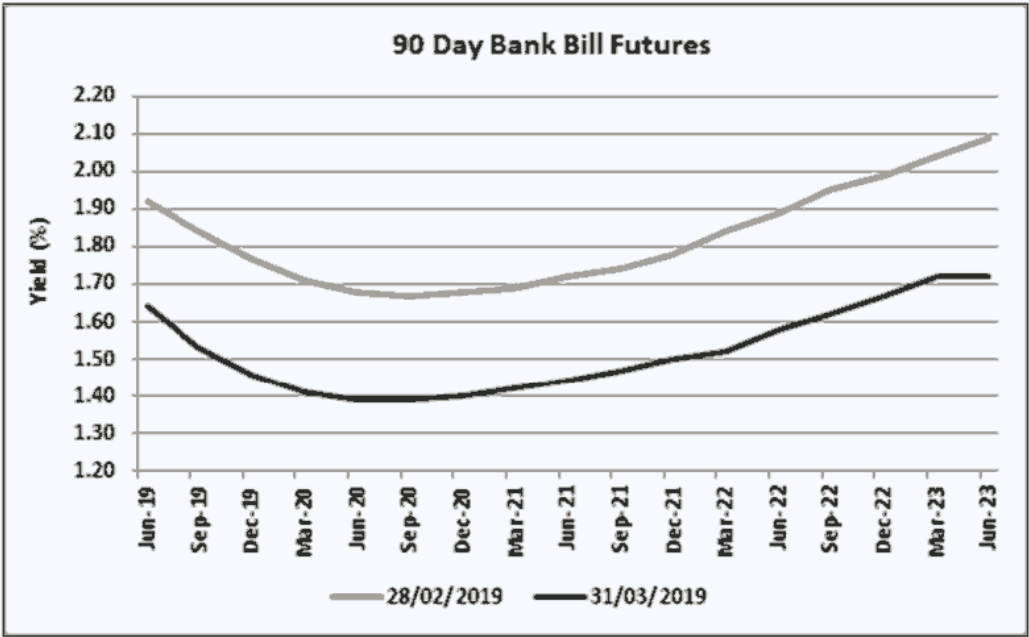
Index	March 2019	February 2019
RBA Official Cash Rate	1.50%	1.50%
90 Day (3 month) BBSW Rate	1.77%	1.87%
3yr Australian Government Bonds	1.40%	1.63%
10yr Australian Government Bonds	1.78%	2.10%
US Fed Funds Rate	2.25%-2.50%	2.25%-2.50%
10yr US Treasury Bonds	2.41%	2.73%

Source: RBA, AFMA, US Department of Treasury



90 Day Bill Futures

Over March, bill futures fell significantly across the board with growing expectations of an immediate interest rate gathered momentum. Domestically, the **futures market is now factoring in around a 50% chance of a rate cut by July 2019 and fully pricing in one rate cut September 2019**. This resulted in the significant reduction in the bill futures curve over the month:



Source: ASX



Fixed Interest Outlook

The US Fed was more dovish over March with the median 'dot plots' indicating no rate rises for 2019 (previously one rate hike). The market forecasts around a 50% chance of a 25bp rate cut from the Fed by year-end.

Fed Chair Powell said *"we're trying to think of ways of making that inflation 2% target highly credible, so that inflation averages around 2%, rather than only averaging 2% in good times and then averaging way less than that in bad times."*

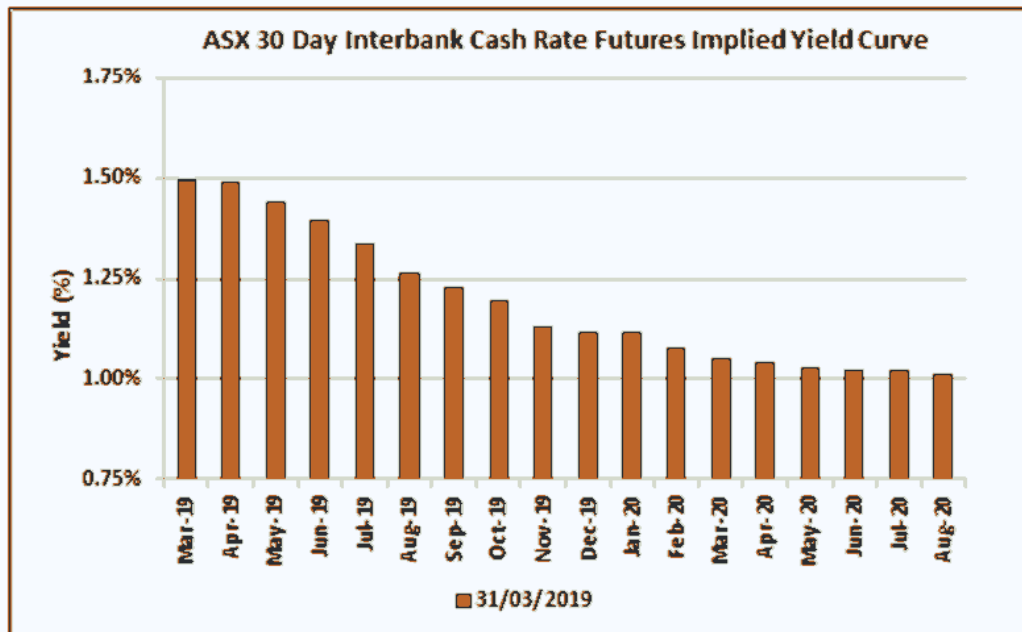
The ECB expects *"rates to remain at their present level at least through the end of 2019"*, citing headwinds ranging from colder weather in 2018, trade wars, as well as Brexit.

Domestically, the RBA shifted its view and signalled the next movement in interest rates is now finely balanced. For now, they remain on a neutral bias. Housing concerns are being monitored as house prices in the main capital cities continue to trend downwards, while the level of household debt remains high. The banks have also carried their 'out of cycle' rate hikes, which in turn has assisted in the downturn in the domestic property market.

Governor Lowe indicated that the adjustment in the housing market was not expected to derail the economy, arguing that income growth mattered more for consumer spending than the wealth effect from house prices.

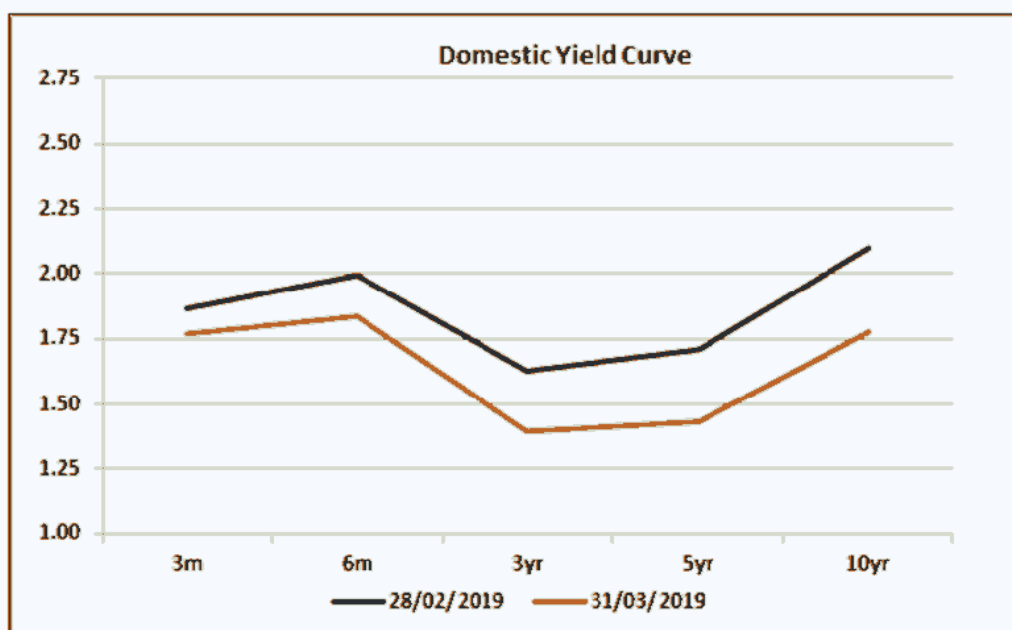
The key risks for the RBA stem from the impact of international trade wars and a slowdown in the Chinese economy, US inflation and a broader slowdown in the global economy. Domestically, they are focused on employment, wage growth, housing and consumption. As a result of these uncertainties, the Bank continues to be cautious and remain neutral, but ready to adjust interest rates should any downside risks materialise.

The futures market is now clearly focused on a rate cut with the prospect of a 25bp cut by July 2019 seen as a 50% scenario, while fully factoring in one cut by September 2019. Some economists are predicting the RBA will be forced to cut multiple times this year on expectations of a slowdown in the domestic and global economy, household finances impacting consumer confidence and a further downturn in residential property.



Source: ASX

Longer-term, the bond market continues to suggest a 'lower-for-longer' period of interest rates. The domestic yield curve fell across the board during March, with yields falling as much as -32bp, on the back of the market factoring in a potential interest rate cut over coming months.



Source: AFMA, RBA



Disclaimer

The information provided in this document is intended for investors of Imperium Markets only and does not constitute a recommendation or an offer to invest. Market sections of this document are descriptive and do not take into account the investment objectives, financial situation or particular needs of any particular investor. Before making an investment decision or acting on any of the information or recommendations contained in this report, the investor should consider whether such recommendation is appropriate given the investor's particular investment needs, objectives and financial circumstances. We recommend you consult your investment adviser for updated advice that addresses your specific needs and situation before making investment decisions. All information and recommendations expressed herein constitute judgements as of the date of this report and may change without notice.

Portfolio as at : 31/03/2019

Type	Rating	Issuer	Allocation	Frequency	Principal	Purchase	Maturity	Rate	Accrued	Accr MTD	Reference
TD	BBB+	Bendigo and Adelaide	GENERAL	Annual	3,000,000	11/04/2017	11/04/2019	3.0000	87,534.25	7,643.84	2240503
TD	BBB	Members Equity Bank	GENERAL	Annual	4,000,000	27/04/2017	27/04/2019	2.9300	108,851.51	9,953.97	24460
TD	A-	AMP Bank	GENERAL	Maturity	5,000,000	17/05/2018	07/05/2019	2.7500	120,171.23	11,678.08	TD364564047-478891
TD	BBB	Members Equity Bank	GENERAL	Annual	3,000,000	19/05/2017	20/05/2019	2.8700	74,305.48	7,312.60	24821
TD	A+	Rabobank Australia Branch	GENERAL	Annual	6,000,000	23/05/2016	23/05/2019	3.1500	162,073.97	16,052.05	18843
TD	AA-	Westpac	GENERAL	Quarterly	3,000,000	29/05/2018	11/06/2019	2.7100	7,127.67	6,904.93	6775257
TD	BBB+	Bendigo and Adelaide	GENERAL	Annual	2,000,000	07/07/2016	08/07/2019	3.1500	45,912.33	5,350.68	1986640
TD	AA-	NAB	GENERAL	Maturity	2,000,000	17/07/2018	16/07/2019	2.7800	39,300.82	4,722.19	GMI-DEAL-10549241
TD	AA-	Westpac	GENERAL	Annual	4,000,000	24/07/2017	24/07/2019	2.9400	80,870.14	9,987.95	032-697 114230
TD	AA-	Westpac	GENERAL	Annual	3,000,000	15/08/2016	15/08/2019	3.1000	58,347.95	7,898.63	032-586 511-284
TD	BBB	Newcastle Permanent	GENERAL	Annual	2,000,000	15/08/2016	15/08/2019	3.0000	37,643.84	5,095.89	31125
TD	A	ING Direct	GENERAL	Annual	5,000,000	22/08/2017	22/08/2019	2.7500	83,630.14	11,678.08	26932
TD	AA-	Westpac	GENERAL	Annual	3,000,000	22/08/2017	22/08/2019	2.9000	52,915.07	7,389.04	032-697 115436
TD	AA-	Commonwealth Bank	GENERAL	Annual	3,000,000	04/09/2017	29/08/2019	2.7300	46,896.16	6,955.89	B379429046
TD	AA-	Westpac	GENERAL	Annual	3,000,000	04/09/2017	04/09/2019	2.9600	50,847.12	7,541.92	032-697 115 794
TD	AA-	St George Bank	GENERAL	Annual	5,000,000	08/09/2016	08/09/2019	3.2000	88,986.30	13,589.04	355290684
TD	AA-	St George Bank	GENERAL	Annual	4,000,000	27/09/2016	27/09/2019	3.2000	65,227.40	10,871.23	355333138
TD	AA-	NAB	GENERAL	Annual	3,000,000	11/07/2018	15/10/2019	2.8500	61,841.10	7,261.64	GMI-DEAL-10547992
TD	A	ICBC Sydney Branch	GENERAL	Annual	4,000,000	31/10/2018	29/10/2019	2.8300	47,140.82	9,614.25	00001
TD	A	ICBC Sydney Branch	GENERAL	Maturity	5,000,000	20/11/2018	12/11/2019	2.8600	51,715.07	12,145.21	0125001100000186702
TD	A	ICBC Sydney Branch	GENERAL	Annual	4,000,000	13/11/2018	19/11/2019	2.8600	43,566.03	9,716.16	00003
TD	A	ICBC Sydney Branch	GENERAL	Annual	5,000,000	28/11/2018	26/11/2019	2.8200	47,901.37	11,975.34	00006
TD	AA-	Westpac	GENERAL	Quarterly	3,000,000	14/12/2018	10/12/2019	2.7300	4,038.90	4,038.90	7389786
TD	AA-	Westpac	GENERAL	Quarterly	4,000,000	14/12/2018	17/12/2019	2.7300	5,385.21	5,385.21	7389774
TD	AA-	Westpac	GENERAL	Quarterly	5,000,000	14/01/2019	14/01/2020	2.7200	28,690.41	11,550.68	7448784
TD	BBB	Members Equity Bank	GENERAL	Annual	2,000,000	24/01/2017	24/01/2020	3.2600	11,968.22	5,537.53	22835
TD	A	ICBC Sydney Branch	GENERAL	Maturity	1,000,000	20/02/2019	04/02/2020	2.7200	2,980.82	2,310.14	00010
TD	A	ING Direct	GENERAL	Annual	4,000,000	15/02/2018	17/02/2020	2.8700	14,153.42	9,750.14	30810
TD	A	ING Direct	GENERAL	Annual	4,000,000	28/02/2018	03/03/2020	2.8900	10,134.79	9,818.08	378133
TD	BBB	Newcastle Permanent	GENERAL	Annual	2,000,000	10/03/2016	10/03/2020	3.7000	4,257.53	4,257.53	29843
TD	A	ING Direct	GENERAL	Annual	4,000,000	02/03/2018	17/03/2020	2.8800	8,837.26	8,837.26	378677
TD	BBB+	BOQ	GENERAL	Annual	3,000,000	19/05/2017	19/05/2020	3.0000	77,671.23	7,643.84	453470
TD	A	ING Direct	GENERAL	Annual	4,000,000	22/05/2018	26/05/2020	2.9400	101,168.22	9,987.95	403498

Type	Rating	Issuer	Allocation	Frequency	Principal	Purchase	Maturity	Rate	Accrued	Accr MTD	Reference
TD	A	ING Direct	GENERAL	Annual	3,000,000	29/05/2018	09/06/2020	2.8800	72,670.68	7,338.08	6775257
TD	AA-	Westpac	GENERAL	Quarterly	5,000,000	06/06/2018	16/06/2020	2.9100	10,364.38	10,364.38	6795148
TD	AA-	NAB	GENERAL	Annual	5,000,000	03/07/2018	07/07/2020	2.9000	108,054.79	12,315.07	10545823
TD	AA-	NAB	GENERAL	Annual	3,000,000	11/07/2018	14/07/2020	2.9200	63,360.00	7,440.00	GMI-DEAL-10547993
TD	A	ING Direct	GENERAL	Annual	4,000,000	21/08/2018	25/08/2020	2.8500	69,649.32	9,682.19	424329
TD	A	ING Direct	GENERAL	Annual	4,000,000	13/09/2018	08/09/2020	2.8700	62,904.11	9,750.14	429068
TD	AA-	Westpac	GENERAL	Annual	3,000,000	13/09/2017	14/09/2020	3.1700	52,109.59	8,076.99	032-697 116017
TD	A	ING Direct	GENERAL	Annual	4,000,000	13/09/2018	22/09/2020	2.8700	62,904.11	9,750.14	429067
TD	AA-	NAB	GENERAL	Annual	4,000,000	17/10/2018	13/10/2020	2.7800	50,573.15	9,444.38	GMI-DEAL-10573417
TD	A	ICBC Sydney Branch	GENERAL	Annual	6,000,000	31/10/2018	27/10/2020	2.9300	73,209.86	14,930.96	00002
TD	A	ICBC Sydney Branch	GENERAL	Annual	5,000,000	13/11/2018	10/11/2020	2.9300	55,790.41	12,442.47	00004
TD	A	ICBC Sydney Branch	GENERAL	Annual	2,000,000	05/12/2018	08/12/2020	2.8600	18,335.34	4,858.08	0125001100000186702
TD	A	ICBC Sydney Branch	GENERAL	Annual	6,000,000	14/12/2018	15/12/2020	2.8900	51,307.40	14,727.12	00009
TD	BBB+	BOQ	GENERAL	Annual	2,000,000	24/01/2017	25/01/2021	3.6500	13,400.00	6,200.00	438425
TD	AA-	Westpac	GENERAL	Annual	2,000,000	21/02/2017	22/02/2021	3.3900	7,244.38	5,758.36	032-586 519825
TD	BBB+	BOQ	GENERAL	Annual	3,000,000	10/03/2016	10/03/2021	3.8000	6,558.90	6,558.90	391843
TD	A	ING Direct	GENERAL	Annual	2,000,000	20/02/2019	16/03/2021	2.8200	6,180.82	4,790.14	475707
TD	AA-	Westpac	GENERAL	Quarterly	4,000,000	22/03/2018	23/03/2021	3.0200	3,309.59	3,309.59	6791206
TD	AA-	Westpac	GENERAL	Quarterly	4,000,000	22/05/2018	25/05/2021	3.1000	12,909.59	10,531.51	6927394
TD	A+	Rabobank Australia Branch	GENERAL	Annual	5,000,000	08/06/2017	07/06/2021	3.0200	122,868.49	12,824.66	25359
TD	AA-	Westpac	GENERAL	Quarterly	3,000,000	06/06/2018	15/06/2021	3.1000	6,624.66	6,624.66	6795153
TD	AA-	NAB	GENERAL	Annual	4,000,000	03/07/2018	22/06/2021	3.0000	89,424.66	10,191.78	10545826
TD	AA-	NAB	GENERAL	Annual	3,000,000	03/07/2018	06/07/2021	3.0000	67,068.49	7,643.84	083-375 99-999-9947
TD	AA-	Westpac	GENERAL	Quarterly	5,000,000	17/07/2018	13/07/2021	3.0400	30,816.44	12,909.59	7052868
TD	AA-	NAB	GENERAL	Annual	4,000,000	26/07/2018	20/07/2021	3.0400	82,954.52	10,327.67	GMI-DEAL-10552065
TD	AA-	NAB	GENERAL	Annual	5,000,000	02/08/2018	03/08/2021	3.0700	101,772.60	13,036.99	GMI-DEAL-10554251
TD	AA-	Westpac	GENERAL	Quarterly	5,000,000	13/09/2018	14/09/2021	2.8800	7,495.89	7,495.89	7180013
TD	AA-	NAB	GENERAL	Annual	5,000,000	27/09/2018	28/09/2021	3.0500	77,712.33	12,952.05	GMI-DEAL-10568550
TD	AA-	Westpac	GENERAL	Quarterly	5,000,000	13/09/2018	12/10/2021	2.8900	7,521.92	7,521.92	7179943
TD	A	ICBC Sydney Branch	GENERAL	Annual	4,000,000	05/12/2018	07/12/2021	3.0100	38,593.97	10,225.75	0125001100000186702
TD	BBB	Newcastle Permanent	GENERAL	Quarterly	4,000,000	07/02/2019	08/02/2022	3.0500	17,715.07	10,361.64	1381/37459
TD	AA-	Westpac	GENERAL	Annual	2,000,000	21/02/2017	21/02/2022	3.6100	7,714.52	6,132.05	23294
TD	AA-	NAB	GENERAL	Annual	5,000,000	21/02/2017	21/02/2022	3.4600	18,484.93	14,693.15	10420935
TD	BBB+	BOQ	GENERAL	Annual	2,000,000	15/03/2017	15/03/2022	3.8000	3,539.73	3,539.73	445483
TD	BBB	Newcastle Permanent	GENERAL	Quarterly	4,000,000	12/03/2019	22/03/2022	2.9000	6,356.16	6,356.16	1684

Type	Rating	Issuer	Allocation	Frequency	Principal	Purchase	Maturity	Rate	Accrued	Accr MTD	Reference
TD	BBB	Newcastle Permanent	GENERAL	Annual	5,000,000	27/03/2019	29/03/2022	2.8000	1,917.81	1,917.81	
TD	A+	Rabobank Australia Branch	GENERAL	Annual	5,000,000	08/06/2017	07/06/2022	3.2200	131,005.48	13,673.97	25360
TD	AA-	NAB	GENERAL	Annual	4,000,000	02/08/2018	02/08/2022	3.2200	85,396.16	10,939.18	GMI-DEAL-10554252
TD	AA-	NAB	GENERAL	Annual	4,000,000	16/08/2018	16/08/2022	3.0500	76,208.22	10,361.64	GMI-DEAL-10557367
TD	A+	Rabobank Australia Branch	GENERAL	Annual	3,000,000	13/09/2017	13/09/2022	3.3800	55,561.64	8,612.05	27388
TD	AA-	Westpac	GENERAL	Annual	3,000,000	13/09/2017	13/09/2022	3.4100	56,054.79	8,688.49	032-697 116 009
CAS H	AA-	Westpac	GENERAL	Monthly	18,751,320.1	31/05/2017	01/04/2019	2.2000	35,036.71	35,036.71	WESTPAC COMMERCIAL BANK 31 DAY NOTICE SAVER ACCOUNT
TOTAL					\$295,751,320.1				\$3,626,866.93	\$690,791.75	
LS											

2 Your Community Life

17/04/2019

What we are trying to achieve

A healthy, inclusive and vibrant community.

What the result will be

We will have:

- Community hubs that provide access to services and social connections
- A safe, caring and connected community
- A healthy and active community that is supported by recreational infrastructure
- A strong community that is able to identify and address social issues
- Community participation in events, programs, festivals and activities

How we will get there

- 2.1 Create a community that feels safe
- 2.2 Advocate for social inclusion and fairness
- 2.3 Provide quality programs, community facilities and public spaces, for example, community halls, parks and vibrant town centres
- 2.4 Empower the community through encouraging active involvement in projects, volunteering and events
- 2.5 Promote a creative and culturally rich community

08 MAYOR'S SPORTING FUND - APPLICATIONS RECEIVED

CONSENSUS:

That

1. Claire McIntosh be allocated the amount of \$500.00 to assist with the expenses she will incur travelling to and competing at the 2019 Hancock Prospecting Australian Age Swimming Championships to be held in Adelaide, South Australia from 15 – 22 April 2019 inclusive.
2. Sarah McIntosh be allocated the amount of \$500.00 to assist with the expenses she will incur travelling to and competing at the 2019 Hancock Prospecting Australian Age Swimming Championships to be held in Adelaide, South Australia from 15 – 22 April 2019 inclusive.
3. Ryan Payne be allocated the amount of \$350.00 to assist with expenses he will incur travelling to and competing as a member of the Under 18's NSW Men's Blues Team to compete at the 2019 Australian Hockey Championships to be held in Hobart, Tasmania from 9th – 17th April 2019.

3 Your Business and Industry

17/04/2019

What we are trying to achieve

A region that is a successful place that has vibrant, diversified and resilient regional economy that provides opportunities for people to live, learn, work, play and invest.

What the result will be

We will have:

- A strong economy that fosters a culture supportive of business and ensures economic development of the region
- Townships, villages and business precincts that are vibrant commercial, cultural, tourism, recreational and/or community hubs
- A region that attracts investment to create jobs
- Partnerships that maximise economic return and create an efficient and effective business environment

How we will get there

- 3.1 Embrace business and a stronger economy
- 3.2 Create vibrant and desirable places
- 3.3 Embrace opportunity and attract investment to support the wealth and growth of the community
- 3.4 Partner for success with key stakeholders in business, industry, government, education and the community

4 Your Natural and Built Environment

17/04/2019

What we are trying to achieve

A connected, sustainable, accessible community and environment that is protected now and into the future.

What the result will be

We will have:

- Effective management and maintenance of essential water, waste and sewer infrastructure
- A community that is prepared for natural events and climate change
- Sustainable and environmentally sensitive development outcomes that consider the impact on the natural environment
- Accessible transport network for our communities
- Infrastructure provision and maintenance that meets community expectations and needs
- Well planned communities that are linked to encourage and manage growth
- Accessible and protected waterways, foreshores, beaches and bushlands
- An environment that is protected and conserved for future generations
- Renewable energy options that are understood and accessible by the community

How we will get there

- 4.1 Provide (appropriate) infrastructure and services including water cycle management, waste management, and sewer management
- 4.2 Aim to minimise the impact of natural events and climate change, for example, floods, bushfires and coastal erosion
- 4.3 Facilitate development that is compatible with the natural and built environment
- 4.4 Plan for integrated transport systems that help people get around and link our communities
- 4.5 Plan for integrated and connected communities across the Port Macquarie-Hastings area
- 4.6 Restore and protect natural areas
- 4.7 Provide leadership in the development of renewable energy opportunities
- 4.8 Increase awareness of issues affecting our environment, including the preservation of flora and fauna



DISCLAIMER

This map was produced by the Geographic Information Services section of the Port Macquarie-Hastings Council using information available to Port Macquarie-Hastings Council and the Department of Lands, Bathurst. The data was captured at a scale of 1:25000 for rural areas and 1:4000 for urban areas. The positional accuracy of plots becomes less reliable when viewed at scales greater than the capture scale. Port Macquarie-Hastings Council accepts no responsibility either in contract or tort (and particularly in negligence) for any errors, omissions or inaccuracies whatsoever contained within or arising from this map. NOTE: Cadastral information outside the Port Macquarie-Hastings Council LGA not included.

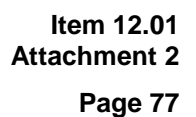
Land Acquisition - 201 Beechwood Road

Lot 1 to be Acquired



Printed on 18/03/2019
Compiled by IR





AGENDA

ORDINARY COUNCIL
19/09/2018

Item: 12.02Subject: AUGMENTATION OF THE BEECHWOOD WATER SUPPLY -
ACQUISITION OF EASEMENTSPresented by: Corporate Performance, Rebecca Olsen

Alignment with Delivery Program

4.1.1 Plan, investigate, design and construct water supply assets ensuring health, safety, environmental protection and security of supply for the future growth of the region.

RECOMMENDATION**That Council:**

1. Pay compensation in the amount of \$2,600 (GST Exclusive) to the owner of Lot 8 DP814540, A J Huzarek, for the acquisition of an easement for water supply 5 metres wide depicted as (A) in the plan of acquisition DP1242345 as it affects Lot 8 DP814540.
2. Pay compensation in the amount of \$21,000 (GST Exclusive) to the owners of Lot 4 DP799432, C W & J Latimore, for the acquisition of an easement for water supply 5 metres wide depicted as (A) in the plan of acquisition DP1242345 as it affects Lot 4 DP799432.
3. Pay compensation in the amount of \$8,000 (GST Exclusive) to the owner of Lot 2 DP556833, B L Coombes, for the acquisition of an easement for water supply 5 metres wide depicted as (A) in the plan of acquisition DP1242345 as it affects Lot 2 DP556833.
4. Delegate authority to the General Manager to execute, electronically or otherwise, all documents included but not limited to any authorisation form as required associated with the acquisitions in accordance with the *Electronic Transactions Act 2000*.

Executive Summary

To provide water supply security to Beechwood Village, augmentation of the water supply is intended through the laying of an additional water main from the Rosewood Reservoir. Where the water main is placed within private lands, an easement is required.

Negotiations on compensation with several landowners have been satisfactorily concluded.

Discussion

In order to provide water supply security to Beechwood Village to allow for further development of the residential growth area identified in Council's Urban Growth Management Strategy, and to provide water flexibility via a supply loop from the Rosewood Water Supply Reservoir, an additional water main is intended to be laid as

YOUR NATURAL AND
BUILT ENVIRONMENT

Item 12.02

Page 166

AGENDA

ORDINARY COUNCIL
19/09/2018

indicated by the red line in the plan attached. Where possible, the water main will be laid within Council's road reserves. An underbore of the Hastings River is also required.

Where it is not possible to locate the water main within the existing road reserves, the main will be laid within private property necessitating the creation of an easement. The 5 metre wide easement has been surveyed and is depicted as (A) in the attached copy of plan of acquisition DP1242345. There are four private properties affected. Negotiations on compensation for the creation of the easement have successfully concluded with three of the four properties affected. Negotiations with the fourth property owner are ongoing and will be reported to Council at a later date.

Options

Given Council's commitment to the growth of Beechwood Village through the Urban Growth Management Strategy and given the agreement as to compensation for the acquisition of the easements, it is considered there are no alternative options.

Community Engagement & Internal Consultation

There has been ongoing consultation with the affected landowners.

There has been ongoing consultation between the Infrastructure and Corporate Performance Divisions.

Planning & Policy Implications

There are no planning and policy implications in relation to this report.

Financial & Economic Implications

The acquisition of the easements on private property entitles the owners to the payment of compensation. Council's Consulting Valuer has assessed compensation pursuant to the terms of the *Land Acquisition (Just Terms Compensation) Act 1991* with offers being made to the owners in accord with the valuation. Three of the four affected owners have agreed in writing to the offers of compensation. The fourth owner has elected to retain a valuer of their choosing with further negotiations continuing.

In addition to the payment of compensation for the easements, Council is also required to meet the owners' out of pocket expenses such as legal/conveyancing fees. These fees are estimated at \$5,000 (GST Exclusive).

Funding is available under the approved project to meet the compensation and acquisition costs.

Attachments

1[View](#). Route of Proposed Water Main

2[View](#). Plan of acquisition DP1242345

YOUR NATURAL AND
BUILT ENVIRONMENT





PLAN FORM 6 (2017)	DEPOSITED PLAN ADMINISTRATION SHEET	Sheet 1 of 1 sheet(s)
Registered:  21.5.2018 Title System: TORRENS	Office Use Only  DP1242345 S	Only
PLAN OF PROPOSED EASEMENT FOR WATER SUPPLY 5 WIDE OVER LOT 2 DP 629354, LOT 8 DP 814540, LOT 4 DP 799432 & LOT 2 DP 556833	LGA: PORT MACQUARIE - HASTINGS Locality: BEECHWOOD & ROSEWOOD Parish: REDBANK & KOREE County: MACQUARIE	
<p align="center">Survey Certificate</p> <p>I, CHRISTOPHER BRIAN MORRISON of KING + CAMPBELL P/L PO Box 243 PORT MACQUARIE a surveyor registered under the <i>Surveying and Spatial Information Act 2002</i>, certify that:</p> <p>*(e) The land shown in the plan was surveyed in accordance with the Surveying and Spatial Information Regulation 2017, is accurate and the survey was completed on or</p> <p>*(b) The part of the land shown in the plan (being Easement & Connections) was surveyed in accordance with the <i>Surveying and Spatial Information Regulation 2017</i>, the part surveyed is accurate and the survey was completed on, 18th October 2017 the part not surveyed was compiled in accordance with that Regulation.</p> <p>*(c) The land shown in this plan was compiled in accordance with the Surveying and Spatial Information Regulation 2017.</p> <p>Datum Line: SSM 80752 – PM 83895 Type: Rural The terrain is *Level-Undulating / *Steep-Mountainous.</p> <p>Signature:  Dated: 29/3/2018</p> <p>Surveyor Identification No: 1664 Surveyor registered under the <i>Surveying and Spatial Information Act 2002</i></p> <p>*Strike out inappropriate words. **Specify the land actually surveyed or specify any land shown in the plan that is not the subject of the survey.</p>	<p align="center">Crown Lands NSW/Western Lands Office Approval</p> <p>I, (Authorised Officer) in approving this plan certify that all necessary approvals in regard to the allocation of the land shown herein have been given.</p> <p>Signature: Date: File Number: Office:</p>	
<p align="center">Subdivision Certificate</p> <p>I, *Authorised Person/*General Manager/*Accredited Certifier, certify that the provisions of s.109J of the <i>Environmental Planning and Assessment Act 1979</i> have been satisfied in relation to the proposed subdivision, new road or reserve set out herein.</p> <p>Signature: Accreditation number: Consent Authority: Date of endorsement: Subdivision Certificate number: File number:</p> <p>*Strike through if inapplicable.</p>	<p align="center">Subdivision Certificate</p> <p>I, *Authorised Person/*General Manager/*Accredited Certifier, certify that the provisions of s.109J of the <i>Environmental Planning and Assessment Act 1979</i> have been satisfied in relation to the proposed subdivision, new road or reserve set out herein.</p> <p>Signature: Accreditation number: Consent Authority: Date of endorsement: Subdivision Certificate number: File number:</p> <p>*Strike through if inapplicable.</p>	
Plans used in the preparation of survey/compilation. DP 47395 DP 550592 DP 556833 DP 558095 DP 578556 DP 583467 DP 629354 DP 707921 DP 731873 DP 736740 DP 799432 DP 814540 DP 858579 DP 860439 DP 863920 DP 1161426 DP 1199979 M22-666 R2119-1603 R23312-1603	Statements of intention to dedicate public roads, create public reserves and drainage reserves, acquire/resume land. PROPOSED EASEMENT TO BE ACQUIRED	
Surveyor's Reference: 6136 REPORT 2017M7100(1328)	Signatures, Seals and Section 88B Statements should appear on PLAN FORM 6A	

AGENDA

ORDINARY COUNCIL
18/07/2018

Item: 12.02Subject: ACQUISITION OF LAND AND EASEMENT - LONG FLAT
SEWERAGE SCHEMEPresented by: Corporate Performance, Rebecca Olsen

Alignment with Delivery Program

4.1.3 Plan, investigate, design and construct sewerage assets ensuring health, safety, environmental protection and the future growth of the region.

RECOMMENDATION**That Council:**

1. Pay the negotiated amount of \$70,000 (GST free) as compensation to the owner of Lot A DP381856, K J Camilleri, for the acquisition of:
 - a) the easement for the drainage of sewage and right of access marked (A) in Mark Rogers' draft plan of survey reference 17380DP01 and,
 - b) the land shown as Lot 2 in Mark Rogers' draft plan of survey reference 17380DP01.
2. Pay the owner's legal costs for the property conveyance.
3. Delegate authority to the General Manager to execute, electronically or otherwise, all documents including but not limited to any authorisation form as required, associated with the acquisition in accordance with the Electronic Transactions Act 2000.

Executive Summary

A report to consider the acquisition of land and easement to enable the construction of the Long Flat Sewerage Scheme.

Discussion

At the Ordinary Meeting of Council held on 20 June 2018, Council resolved to pay compensation of the acquisition of land and easement to facilitate the construction of the sewer treatment plant. Access to the treatment plant is required over property in different ownership to that the subject of the 20 June 2018 Ordinary Council meeting report. Negotiations on compensation for the land and easement required for the access have concluded and are now reported to Council for consideration.

Options

There is the option to:

1. Pay the compensation as recommended in this report.
2. Not pay the compensation as recommended.

YOUR NATURAL AND
BUILT ENVIRONMENT

Item 12.02

Page 78

AGENDA

ORDINARY COUNCIL
18/07/2018**Community Engagement & Internal Consultation**

There has been ongoing consultation with the landowner, K J Camilleri. Valuations were obtained by Council and the landowner. Following negotiations, the landowner has agreed to accept \$70,000 (GST Free). This figure is between the valuation amounts specified by the valuers.

Planning & Policy Implications

As the proposed treatment plant has been designed specifically for the land acquired as reported to the Ordinary Council meeting of 20 June 2018, similarly the access to the treatment plant is also dependant.

Financial & Economic Implications

The acquisition of the land and easement entitles the landowner to the payment of monetary compensation assessed under the provisions of the *Land Acquisition (Just Terms Compensation) Act 1991*.

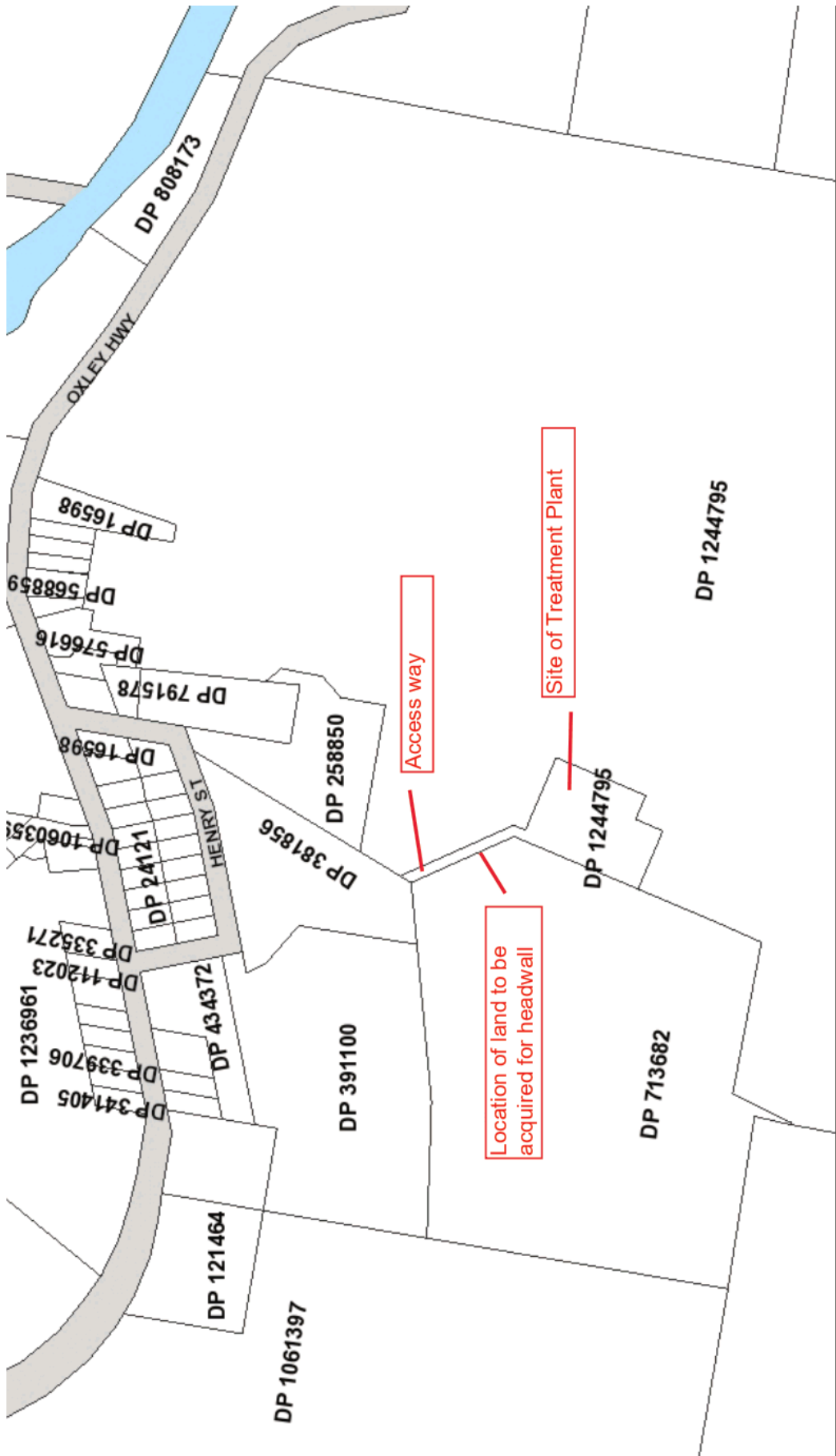
Compensation valuations were obtained from Council's consulting valuer and the landowner's valuer. Following this, direct negotiations with the landowner, K J Camilleri, have resulted in the landowner agreeing to accept \$70,000 (GST free).

There is funding available under OP 4.1.3.4 CW to meet the negotiated compensation assessment and the landowner's legal expenses arising from the acquisition.

Attachments

1 [View](#). Plan Showing Location of Land and Easement to be Acquired

YOUR NATURAL AND
BUILT ENVIRONMENT



DISCLAIMER

This map was produced by the Geographic Information Services section of the Port Macquarie-Hastings Council using information available to Port Macquarie-Hastings Council and the Department of Lands, Bathurst. The data was captured at a scale of 1:25000 for rural areas and 1:4000 for urban areas. The positional accuracy of plots becomes less reliable when viewed at scales greater than the capture scale. Port Macquarie-Hastings Council accepts no responsibility either in contract or tort (and particularly in negligence) for any errors, omissions or inaccuracies whatsoever contained within or arising from this map. NOTE: Cadastral information outside the Port Macquarie-Hastings Council LGA not included.

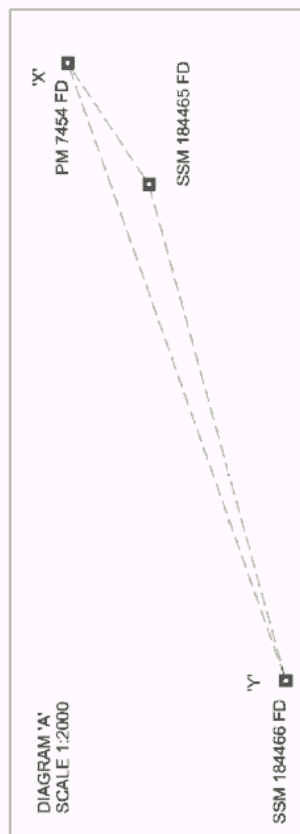
Land Acquisition Long Flat Sewer Scheme

Concrete Drainage Headwall



Printed on 03/04/2019
Compiled by IR





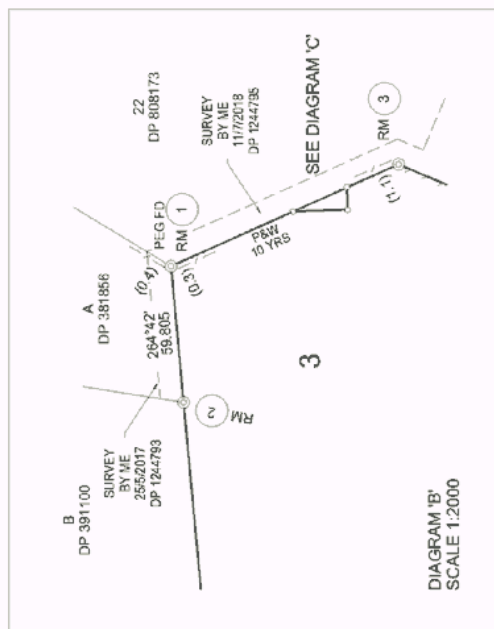
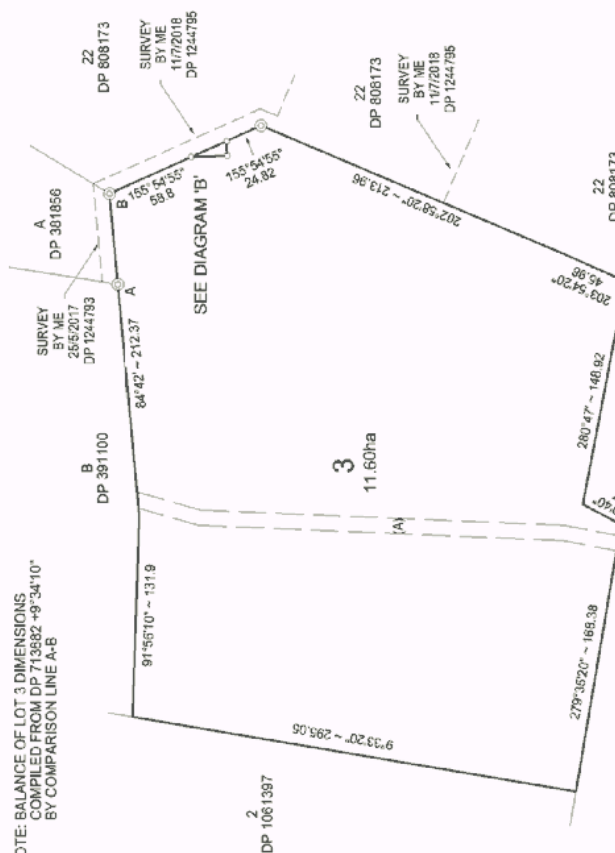
SURVEYING & SPATIAL INFORMATION REGULATION 2017							
MARK	M.G.A. CO-ORDINATES			CLASS	ORDER	METHOD	STATE
	EASTING	NORTHING					
SSM 184465	451944.090	6521806.491	C	3	SCIMS	FOUND	
SSM 184466	451243.086	6521836.555	C	3	SCIMS	FOUND	
PM 7454	451683.145	6521921.953	A	1	SCIMS	FOUND	
DATE OF SCIMS COORDINATES: 01-08-2016 MGA ZONE: 58 MGA DATUM: GDA 94 COMBINED SCALE FACTOR: 0.9999516							

FROM	TO	BEARING	DISTANCE	METHOD
SSM 1044605	PM 7454	70°32'47"	286.552	MGA GROUND SURVEY
		70°32'47"	286.548	
SSM 184465	SSM 184466	254°33'33"	225.206	MGA GROUND SURVEY
		254°33'33"	225.202	
PM 7454	SSM 184465	238°15'40"	63.874	MGA GROUND SURVEY
		238°15'50"	63.871	

SEE DIAGRAM 'A'

(A) DP 713682 - RIGHT OF CARRIAGEWAY 10 WIDE
IT IS PROPOSED TO ACQUIRE LOT 4 FOR SEWER PURPOSES

NOTE: BALANCE OF LOT 3 DIMENSIONS
COMPILED FROM DP 713682 +9°34'10"
BY COMPARISON LINE A-B



REF	BEARING	REFERENCE MARK	TABLE FROM	DISTANCE	PLAN
1	264'42"	GI PIPE	FD	1.175	D ³ 381856
2	84'42"	GI PIPE	FD	0.815	D ³ 381856
3	114'00"	GI PIPE	FD	0.82	D ³ 1242706

SURVEYOR
Name: MARK WILLIAM ROGERS
Date: 11/7/2018
Reference: 17380DP03

PLAN OF LAND TO BE ACQUIRED
BEING PART OF LOT 4 DP 713682

LGA: PORT MACQUARIE -
HASTINGS
Locality: LONG FLAT
Reduction Ratio 1 : 3000

REGISTERED
22/03/2019

DP1246722



Deed

The Ruins Way, Innes Peninsula Environmental Management Land Planning Agreement

Under s7.4 of the *Environmental Planning and Assessment Act 1979*

Port Macquarie Hastings Council

John Miller and Elsinia Miller

J & E Miller (Builder) Pty Ltd

Date:

© Lindsay Taylor Lawyers

Lindsay Taylor lawyers
Level 9, Suite 3, 420 George Street, Sydney NSW 2000, Australia
T 02 8235 9700 • F 02 8235 9799 • W www.lindsaytaylorlawyers.com.au • E mail@lindsaytaylorlawyers.com.au
ABN 15 695 894 345

Liability limited by a scheme approved under Professional Standards Legislation

**The Ruins Way, Innes Peninsula Environmental Management Land
Planning Agreement****Port Macquarie Hastings Council****John Miller and Elsinia Miller****J & E Miller (Builder) Pty Ltd****The Ruins Way, Innes Peninsula Environmental
Management Land Planning Agreement****Table of Contents**

Summary Sheet	4
Parties	6
Background	6
Operative provisions	6
Part 1 - Preliminary	6
1 Interpretation	6
2 Status of this Deed	10
3 Commencement	10
4 Application of this Deed	10
5 Warranties	10
6 Further agreements	11
7 Surrender of right of appeal, etc	11
8 Application of s7.11, s7.12 and s7.24 of the Act to the Development	11
Part 2 – Environmental Management Land	11
9 Approval of Vegetation Management Plan	11
10 Establishment and Management of Environmental Management Land by the Developer	11
11 Dedication of Environmental Management Land to the Council	12
12 Management Contribution	12
13 Alternative Funding	13
14 Restriction on development and use of Environmental Management Land	13
Part 3 - Development Contributions Generally	13
15 Payment of monetary Development Contributions	13
16 Dedication of land	13
17 Variation to Work	14
18 Not Used	14
19 Access to land by Council	14
20 Council's obligations relating to Work	14
21 Protection of people, property & utilities	15
22 Repair of damage	15
23 Completion of Work	15
24 Not Used	16

**The Ruins Way, Innes Peninsula Environmental Management Land
Planning Agreement****Port Macquarie Hastings Council****John Miller and Elsin Miller****J & E Miller (Builder) Pty Ltd**

25	Removal of Equipment	16
Part 4 – Dispute Resolution		16
26	Dispute resolution – expert determination	16
27	Dispute Resolution - mediation	16
Part 5 - Enforcement		17
28	Security for performance of obligations	17
29	Acquisition of land required to be dedicated	18
30	Breach of obligations	19
31	Enforcement in a court of competent jurisdiction	19
Part 6 – Registration & Restriction on Dealings		20
32	Registration of this Deed	20
33	Restriction on dealings	20
Part 7 – Indemnities & Insurance		21
34	Risk	21
35	Release	21
36	Indemnity	21
37	Insurance	21
Part 8 – Other Provisions		22
38	Annual report by Developer	22
39	Review of Deed	22
40	Notices	22
41	Approvals and Consent	23
42	Costs	23
43	Entire Deed	23
44	Further Acts	24
45	Governing Law and Jurisdiction	24
46	Joint and Individual Liability and Benefits	24
47	No Fetter	24
48	Illegality	24
49	Severability	24
50	Amendment	25
51	Waiver	25
52	GST	25
53	Explanatory Note	26
Schedule		27
Execution		28
Appendix		30

The Ruins Way, Innes Peninsula Environmental Management Land
Planning Agreement
Port Macquarie Hastings Council
John Miller and Elsin Miller
J & E Miller (Builder) Pty Ltd



The Ruins Way, Innes Peninsula Environmental Management Land Planning Agreement

Summary Sheet

Council:

Name: Port Macquarie Hastings Council
Address: Corner Lord and Burrawan Streets, Port Macquarie, New South Wales
2444
Telephone: (02) 6581 8111
Facsimile: (02) 6581 8123
Email: council@pmhc.nsw.gov.au
Representative: Vanessa Penfold

Developer:

Name: John Miller, Elsin Miller and J & E Miller (Builder) Pty Ltd
Address: PO Box 5103, Port Macquarie
Telephone: (02) 6581 1500
Facsimile: N/A
Email: john@jemillerbuilders.com.au
Representative: Tony Blue, Blueprint Planning Consultants

Land:

See definition of *Land* in clause 1.1.

Development:

See definition of *Development* in clause 1.1.

Development Contributions:

See Part 2 and Part 3.

**The Ruins Way, Innes Peninsula Environmental Management Land
Planning Agreement**

Port Macquarie Hastings Council

John Miller and Elsinia Miller

J & E Miller (Builder) Pty Ltd



Application of s7.11, s7.12 and s7.24 of the Act:

See clause 8.

Security:

See Part 5.

Registration:

See clause 32.

Restriction on dealings:

See clause 33.

Dispute Resolution:

See Part 4.

**The Ruins Way, Innes Peninsula Environmental Management Land
Planning Agreement****Port Macquarie Hastings Council****John Miller and Elsin Miller****J & E Miller (Builder) Pty Ltd****The Ruins Way, Innes Peninsula Environmental
Management Land Planning Agreement**

Under s7.4 of the *Environmental Planning and Assessment Act 1979*

Parties

Port Macquarie Hastings Council ABN 11 236 901 601 of Corner Lord and
Burrawan Streets, Port Macquarie, New South Wales 2444 (**Council**)

and

John Miller and Elsin Miller of 146 The Ruins Way, Port Macquarie, New
South Wales 2444

and

J & E Miller (Builder) Pty Ltd ACN 055 074 587 of 38 Acacia Avenue, Port
Macquarie, New South Wales 2444

(together referred to as '**Developer**')

Background

- A John Miller and Elsin Miller own part of the Land. J & E Miller (Builder) Pty Ltd own the remaining part of the Land.
- B The Developer has lodged a Development Application for subdivision of the Land.
- C The Developer agrees to establish and manage vegetation works on the Land in accordance with a vegetation management plan approved by Council and dedicate land to the Council, in connection with the carrying out of the subdivision.

Operative provisions**Part 1 - Preliminary****1 Interpretation**

- 1.1 In this Deed the following definitions apply:

Act means the *Environmental Planning and Assessment Act 1979* (NSW).

**The Ruins Way, Innes Peninsula Environmental Management Land
Planning Agreement****Port Macquarie Hastings Council****John Miller and Elsin Miller****J & E Miller (Builder) Pty Ltd**

Alternative Funding means funding obtained by the Council for the ongoing management of Environmental Management Land dedicated to the Council under this Deed that does not rely on monetary Development Contributions.

Approval includes approval, consent, licence, permission or the like.

Authority means the Commonwealth or New South Wales government, a Minister of the Crown, a government department, a public authority established by or under any Act, a council or county council constituted under the *Local Government Act 1993*, or a person or body exercising functions under any Act including a commission, panel, court, tribunal and the like.

Bank Guarantee means an irrevocable and unconditional undertaking without any expiry or end date in favour of the Council to pay an amount or amounts of money to the Council on demand issued by:

- (a) one of the following trading banks:
 - (i) Australia and New Zealand Banking Group Limited,
 - (ii) Commonwealth Bank of Australia,
 - (iii) Macquarie Bank Limited,
 - (iv) National Australia Bank Limited,
 - (iv) St George Bank Limited,
 - (v) Westpac Banking Corporation, or
- (b) any other financial institution approved by the Council in its absolute discretion.

Claim includes a claim, demand, remedy, suit, injury, damage, loss, Cost, liability, action, proceeding or right of action.

Cost means a cost, charge, expense, outgoing, payment, fee and other expenditure of any nature.

Deed means this Deed and includes any schedules, annexures and appendices to this Deed.

Development means development described in Development Application DA2017- 1041 lodged with Council on 24 November 2017 the subject of Development Consent.

Development Application has the same meaning as in the Act.

Development Consent has the same meaning as in the Act.

Development Contribution means a monetary contribution, the dedication of land free of cost, the carrying out of work, or the provision of any other material public benefit, or any combination of them, to be used for, or applied towards a public purpose, but does not include any Security or other benefit provided by a Party to the Council to secure the enforcement of that Party's obligations under this Deed for the purposes of s7.4(3)(g) of the Act.

Dispute means a dispute or difference between the Parties under or in relation to this Deed.

Environmental Management Land means the part of the Land marked as 'Reserve' on the plan in the Schedule, or any other part of the Land agreed between the Parties in writing to be Environmental Management Land for the purposes of this Deed before such land is required to be dedicated to the Council under this Deed.

**The Ruins Way, Innes Peninsula Environmental Management Land
Planning Agreement****Port Macquarie Hastings Council****John Miller and Elsin Miller****J & E Miller (Builder) Pty Ltd**

Equipment means any equipment, apparatus, vehicle or other equipment or thing to be used by or on behalf of the Developer in connection with the performance of its obligations under this Deed.

Establishment Obligation means the establishment of Environmental Management Land in accordance with:

- (a) the relevant requirements of any Development Consent relating to the Development, and
- (b) to the extent not inconsistent with such a Development Consent:
 - (i) any Vegetation Management Plan approved by the Council, and
 - (ii) otherwise to the satisfaction of the Council.

Establishment Period means the period commencing when the Development is commenced (within the meaning of the Act) or such other period or periods commencing at such other time or times as the Parties agree and ending when the Establishment Obligation is completed to the satisfaction of the Council.

Final Lot means a lot created in the Development for separate residential occupation and disposition or a lot of a kind or created for a purpose that is otherwise agreed by the Parties, not being a lot created by a subdivision of the Land:

- (a) that is to be dedicated or otherwise transferred to the Council, or
- (b) on which is situated a dwelling-house that was in existence on the date of this Deed.

GST has the same meaning as in the GST Law.

GST Law has the same meaning as in *A New Tax System (Goods and Services Tax) Act 1999* (Cth) and any other Act or regulation relating to the imposition or administration of the GST.

Just Terms Act means the *Land Acquisition (Just Terms Compensation) Act 1991*.

Land means Lot 321 DP 1199939, Lot 31 DP 835437, Lot 2 DP 813302 situated at The Ruins Way, Port Macquarie, and any lot created by the subdivision of those lots.

LEP means *Port Macquarie-Hastings Local Environmental Plan 2011*.

Management Contribution means a monetary Contribution of \$28,326.00 indexed quarterly after 31 December 2018 in accordance with the Consumer Price Index (All Groups- Sydney) published by the Australian Bureau of Statistics.

Management Obligation means the management of Environmental Management Land in accordance with:

- (a) the relevant requirements of any Development Consent relating to the Development, and
- (b) to the extent not inconsistent with such a Development Consent:
 - (i) any Vegetation Management Plan approved by the Council, and

**The Ruins Way, Innes Peninsula Environmental Management Land
Planning Agreement****Port Macquarie Hastings Council****John Miller and Elsin Miller****J & E Miller (Builder) Pty Ltd**

- (ii) otherwise to the satisfaction of the Council.

Management Period means the period of three years commencing immediately at the end of the Establishment Period, or such other period or periods commencing at such other time or times as the Parties agree.

Party means a party to this Deed.

Residue Lot means a lot to be created in the Development that is not a Final Lot.

Regulation means the *Environmental Planning and Assessment Regulation 2000*.

Security means a Bank Guarantee, or a bond or other form of security to the satisfaction of the Council indexed in accordance with Consumer Price Index (All Groups- Sydney) published by the Australian Bureau of Statistics from the date of this Deed.

Stage means a stage of the Development approved by a Development Consent or otherwise approved in writing by the Council for the purposes of this Deed.

Subdivision has the same meaning as in the Act.

Subdivision Certificate has the same meaning as in the Act.

Vegetation Management Plan means a plan that contains provisions relating to the establishment and maintenance of the Environmental Management Land including provision for the dedication of the Environmental Management Land as a public reserve in conjunction with the Development.

Work means the physical result of any building, engineering or construction work or any work required to be carried out as part of the Establishment Obligation and Management Obligation in, on, over or under land.

- 1.2 In the interpretation of this Deed, the following provisions apply unless the context otherwise requires:
- 1.2.1 Headings are inserted for convenience only and do not affect the interpretation of this Deed.
 - 1.2.2 A reference in this Deed to a business day means a day other than a Saturday or Sunday on which banks are open for business generally in Sydney.
 - 1.2.3 If the day on which any act, matter or thing is to be done under this Deed is not a business day, the act, matter or thing must be done on the next business day.
 - 1.2.4 A reference in this Deed to dollars or \$ means Australian dollars and all amounts payable under this Deed are payable in Australian dollars.
 - 1.2.5 A reference in this Deed to a \$ value relating to a Development Contribution is a reference to the value exclusive of GST.
 - 1.2.6 A reference in this Deed to any law, legislation or legislative provision includes any statutory modification, amendment or re-enactment, and any subordinate legislation or regulations issued under that legislation or legislative provision.
 - 1.2.7 A reference in this Deed to any agreement, deed or document is to that agreement, deed or document as amended, novated, supplemented or replaced.

**The Ruins Way, Innes Peninsula Environmental Management Land
Planning Agreement****Port Macquarie Hastings Council****John Miller and Elsin Miller****J & E Miller (Builder) Pty Ltd**

- 1.2.8 A reference to a clause, part, schedule or attachment is a reference to a clause, part, schedule or attachment of or to this Deed.
- 1.2.9 An expression importing a natural person includes any company, trust, partnership, joint venture, association, body corporate or governmental agency.
- 1.2.10 Where a word or phrase is given a defined meaning, another part of speech or other grammatical form in respect of that word or phrase has a corresponding meaning.
- 1.2.11 A word which denotes the singular denotes the plural, a word which denotes the plural denotes the singular, and a reference to any gender denotes the other genders.
- 1.2.12 References to the word 'include' or 'including' are to be construed without limitation.
- 1.2.13 A reference to this Deed includes the agreement recorded in this Deed.
- 1.2.14 A reference to a Party to this Deed includes a reference to the servants, agents and contractors of the Party, the Party's successors and assigns.
- 1.2.15 Any schedules, appendices and attachments form part of this Deed.
- 1.2.16 Notes appearing in this Deed are operative provisions of this Deed.

2 Status of this Deed

- 2.1 This Deed is a planning agreement within the meaning of s7.4(1) of the Act.

3 Commencement

- 3.1 This Deed commences and has force and effect on and from the date when the Parties have:
 - 3.1.1 both executed the same copy of this Deed, or
 - 3.1.2 each executed separate counterparts of this Deed and exchanged the counterparts.
- 3.2 The Parties are to insert the date when this Deed commences on the front page and on the execution page.

4 Application of this Deed

- 4.1 This Deed applies to the Land and to the Development.

5 Warranties

- 5.1 The Parties warrant to each other that they:
 - 5.1.1 have full capacity to enter into this Deed, and
 - 5.1.2 are able to fully comply with their obligations under this Deed.

**The Ruins Way, Innes Peninsula Environmental Management Land
Planning Agreement****Port Macquarie Hastings Council****John Miller and Elsin Miller****J & E Miller (Builder) Pty Ltd****6 Further agreements**

- 6.1 The Parties may, at any time and from time to time, enter into agreements relating to the subject-matter of this Deed that are not inconsistent with this Deed for the purpose of implementing this Deed.

7 Surrender of right of appeal, etc.

- 7.1 The Developer is not to commence or maintain, or to cause or procure the commencement or maintenance, of any proceedings in any court or tribunal or similar body appealing against, or questioning the validity of this Deed, or an Approval relating to the Development in so far as the subject-matter of the proceedings relates to this Deed.

8 Application of s7.11, s7.12 and s7.24 of the Act to the Development

- 8.1 This Deed does not exclude the application of s7.11, s7.12 or s7.24 of the Act to the Development.
- 8.2 The benefits under this Deed are not to be taken into consideration when determining a Development Contribution under s7.11 of the Act in relation to the Development.

Part 2 – Environmental Management Land**9 Approval of Vegetation Management Plan**

- 9.1 The Developer is not to establish or maintain the Environmental Management Land except in accordance with:
- 9.1.1 a Vegetation Management Plan that has been approved by the Council, and
- 9.1.2 the terms of any relevant Approval (as modified from time to time).
- 9.2 The Developer is to ensure that any Development Application that seeks Development Consent for the establishment and maintenance of the Environmental Management Land is accompanied by a Vegetation Management Plan.

10 Establishment and Management of Environmental Management Land by the Developer

- 10.1 The Developer, at its own cost, is to perform:
- 10.1.1 the Establishment Obligation during the Establishment Period; and
- 10.1.2 the Management Obligation during the Management Period.

**The Ruins Way, Innes Peninsula Environmental Management Land
Planning Agreement****Port Macquarie Hastings Council****John Miller and Elsin Miller****J & E Miller (Builder) Pty Ltd**

- 10.2 The Developer is to perform its obligations under clause 10.1 in accordance with:
- 10.2.1 this Deed, and
 - 10.2.2 any further agreement that is entered into by the Parties under clause 6, and
 - 10.2.3 any requirements and directions notified in writing by the Council to the Developer at any time before the Establishment Obligation and Management Obligation are taken to have been completed in accordance with this Deed that are not inconsistent with:
 - (a) this Deed, or
 - (b) any agreement referred to in clause 10.2.2, or
 - (c) any Approval relating to the Development, the Establishment obligation or the Management Obligation.

11 Dedication of Environmental Management Land to the Council

- 11.1 The Developer is to dedicate the Environmental Management Land to the Council free of cost to the Council upon registration of the first plan of subdivision that creates a Final Lot in Stage 11, or, if the Parties agree in writing to another time, then that other time.
- 11.2 The Environmental Management Land is to be held by the Council for the purpose of the conservation and enhancement of the natural environment.

12 Management Contribution

- 12.1 The Management Contribution is to be paid to the Council as a lump sum prior to the issuing of any Subdivision Certificate that creates a Final Lot in Stage 11.
- 12.2 Nothing in this Deed requires the Developer to pay to the Council the Management Contribution in respect of the creation of a Residue Lot unless the Council is of the opinion that the lot will not be further subdivided.
- 12.3 The Council is to deposit the Management Contribution paid by the Developer into the consolidated fund referred to in s409 of the *Local Government Act 1993*.
- 12.4 The Management Contribution and any interest earned on its investment is to be held and applied by the Council for a period of 17 years on and from the expiration of the Management Period towards the ongoing environmental management of the Environmental Management Land shown coloured on the map marked.
- 12.5 The Management Contribution payable by the Developer may be reduced by agreement in writing between the Developer and the Council but only if the agreement also provides for a Management Period that exceeds three years.

**The Ruins Way, Innes Peninsula Environmental Management Land
Planning Agreement****Port Macquarie Hastings Council****John Miller and Elaina Miller****J & E Miller (Builder) Pty Ltd****13 Alternative Funding**

- 13.1 This clause applies if Council obtains any Alternative Funding and the Developer has paid a Management Contribution to the Council.
- 13.2 The Council is to reimburse to the Developer from the Alternative Funding an amount, to be determined by the Council, not exceeding the amount of Management Contribution that has been paid by the Developer to the Council.

14 Restriction on development and use of Environmental Management Land

- 14.1 The Developer must not make, or cause suffer or permit to be made any application for any Approval for the carrying out of, or carry out any development on the Environmental Management Land which is inconsistent with the Vegetation Management Plan.

Part 3 - Development Contributions Generally**15 Payment of monetary Development Contributions**

- 15.1 A monetary Development Contribution is made for the purposes of this Deed when the Council receives the full amount of the contribution payable under this Deed in cash or by unendorsed bank cheque or by the deposit by means of electronic funds transfer of cleared funds into a bank account nominated by the Council.

16 Dedication of land

- 16.1 A Development Contribution comprising the dedication of land is made for the purposes of this Deed when:
 - 16.1.1 a deposited plan is registered in the register of plans held with the Registrar-General that dedicates land as a public road (including a temporary public road) under the *Roads Act 1993* or creates a public reserve or drainage reserve under the *Local Government Act 1993*, or
 - 16.1.2 the Council is given:
 - (a) an instrument in registrable form under the *Real Property Act 1900* duly executed by the Developer as transferor that is effective to transfer the title to the land to the Council when executed by the Council as transferee and registered,
 - (b) the written consent to the registration of the transfer of any person whose consent is required to that registration, and
 - (c) a written undertaking from any person holding the certificate of title to the production of the certificate of title for the purposes of registration of the transfer.

**The Ruins Way, Innes Peninsula Environmental Management Land
Planning Agreement****Port Macquarie Hastings Council****John Miller and Elsin Miller****J & E Miller (Builder) Pty Ltd**

- 16.2 The Developer is to do all things reasonably necessary to enable registration of the instrument of transfer to occur.
- 16.3 The Developer is to ensure that land dedicated to the Council under this Deed is free of all encumbrances and affectations (whether registered or unregistered and including without limitation any charge or liability for rates, taxes and charges) except as otherwise agreed in writing by the Council.
- 16.4 If, having used all reasonable endeavours, the Developer cannot ensure that land to be dedicated to the Council under this Deed is free from all encumbrances and affectations, the Developer may request that Council agree to accept the land subject to those encumbrances and affectations, but the Council may withhold its agreement in its absolute discretion.

17 Variation to Work

- 17.1 The design or specification of any Work that is required to be carried out by the Developer under this Deed may be varied by agreement in writing between the Parties, acting reasonably, without the necessity for an amendment to this Deed.
- 17.2 Without limiting clause 17.1, the Developer may make a written request to the Council to approve a variation to the design or specification of a Work in order to enable it to comply with the requirements of any Authority imposed in connection with any Approval relating to the carrying out of the Work.
- 17.3 The Council is not to unreasonably delay or withhold its Approval to a request made by the Developer under clause 17.2.
- 17.4 The Council, acting reasonably, may from time to time give a written direction to the Developer requiring it to vary the design or specification of a Work before the Work is carried out in a specified manner and submit the variation to the Council for Approval.
- 17.5 The Developer is to comply promptly with a direction referred to in clause 17.4 at its own cost.
- 17.6 Nothing in this clause 17 operates to excuse from the Developer from obtaining any Approval required in respect of the variation to the Work.

18 Not Used**19 Access to land by Council**

- 19.1 The Council may enter any land on which Work is being carried out by the Developer under this Deed in order to inspect, examine or test the Work, or to remedy any breach by the Developer of its obligations under this Deed relating to the Work.
- 19.2 The Council is to give the Developer prior reasonable notice before it enters any land pursuant to this clause 19.

20 Council's obligations relating to Work

**The Ruins Way, Innes Peninsula Environmental Management Land
Planning Agreement****Port Macquarie Hastings Council****John Miller and Elsin Miller****J & E Miller (Builder) Pty Ltd**

- 20.1 The Council is not to unreasonably delay, hinder or otherwise interfere with the performance by the Developer of its obligations under this Deed, and is to use its reasonable endeavours to ensure third parties unrelated to the Developer do not unreasonably delay, hinder or otherwise interfere with the performance of those obligations.

21 Protection of people, property & utilities

- 21.1 The Developer is to ensure to the fullest extent reasonably practicable in relation to the performance of its obligations under this Deed that:
- 21.1.1 all necessary measures are taken to protect people and property,
 - 21.1.2 unnecessary interference with the passage of people and vehicles is avoided, and
 - 21.1.3 nuisances and unreasonable noise and disturbances are prevented.
- 21.2 Without limiting clause 21.1, the Developer is not to obstruct, interfere with, impair or damage any public road, public footpath, public cycleway or other public thoroughfare, or any pipe, conduit, drain, watercourse or other public utility or service on any land except as authorised in writing by the Council or any relevant Authority.

22 Repair of damage

- 22.1 The Developer is to maintain any Work required to be carried out by the Developer under this Deed until the Work is completed for the purposes of this Deed or such later time as agreed between the Parties.
- 22.2 The Developer is to carry out its obligation under clause 22.1 at its own cost and to the satisfaction of the Council.

23 Completion of Work

- 23.1 The Developer is to give the Council written notice of the date on which it will complete Work required to be carried out under this Deed or any Stage.
- 23.2 The Council is to inspect the Work the subject of the notice referred to in clause 23.1 within 14 days of the date specified in the notice for completion of the Work.
- 23.3 Work required to be carried out by the Developer under this Deed, or a Stage, is completed for the purposes of this Deed when the Council, acting reasonably, gives a written notice to the Developer to that effect.
- 23.4 If the Council is the owner of the land on which Work the subject of a notice referred to in clause 23.3 is issued, the Council assumes responsibility for the Work upon the issuing of the notice, but if it is not the owner at that time, it only assumes that responsibility if and when it later becomes the owner.
- 23.5 Before the Council gives the Developer a notice referred to in clause 23.3, it may give the Developer a written direction to complete, rectify or repair any specified part of the Work to the reasonable satisfaction of the Council.
- 23.6 The Developer, at its own cost, is to promptly comply with a direction referred to in clause 23.5.

**The Ruins Way, Innes Peninsula Environmental Management Land
Planning Agreement****Port Macquarie Hastings Council****John Miller and Elsin Miller****J & E Miller (Builder) Pty Ltd****24 Not Used****25 Removal of Equipment**

- 25.1 When Work on any Council owned or controlled land is completed for the purposes of this Deed, the Developer, without delay, is to:
 - 25.1.1 remove any Equipment from Land and make good any damage or disturbance to the land as a result of that removal, and
 - 25.1.2 leave the land in a neat and tidy state, clean and free of rubbish.

Part 4 – Dispute Resolution**26 Dispute resolution – expert determination**

- 26.1 This clause applies to a Dispute between any of the Parties to this Deed concerning a matter arising in connection with this Deed that can be determined by an appropriately qualified expert if:
 - 26.1.1 the Parties to the Dispute agree that it can be so determined, or
 - 26.1.2 the Chief Executive Officer of the professional body that represents persons who appear to have the relevant expertise to determine the Dispute gives a written opinion that the Dispute can be determined by a member of that body.
- 26.2 A Dispute to which this clause applies is taken to arise if one Party gives another Party a notice in writing specifying particulars of the Dispute.
- 26.3 If a notice is given under clause 26.2, the Parties are to meet within 14 days of the notice in an attempt to resolve the Dispute.
- 26.4 If the Dispute is not resolved within a further 28 days, the Dispute is to be referred to the President of the NSW Law Society to appoint an expert for expert determination.
- 26.5 The expert determination is binding on the Parties except in the case of fraud or misfeasance by the expert.
- 26.6 Each Party is to bear its own costs arising from or in connection with the appointment of the expert and the expert determination.
- 26.7 The Parties are to share equally the costs of the President, the expert, and the expert determination.

27 Dispute Resolution - mediation

- 27.1 This clause applies to any Dispute arising in connection with this Deed other than a Dispute to which clause 26 applies.
- 27.2 Such a Dispute is taken to arise if one Party gives another Party a notice in writing specifying particulars of the Dispute.

**The Ruins Way, Innes Peninsula Environmental Management Land
Planning Agreement****Port Macquarie Hastings Council****John Miller and Elsin Miller****J & E Miller (Builder) Pty Ltd**

- 27.3 If a notice is given under clause 27.2, the Parties are to meet within 14 days of the notice in an attempt to resolve the Dispute.
- 27.4 If the Dispute is not resolved within a further 28 days, the Parties are to mediate the Dispute in accordance with the Mediation Rules of the Law Society of New South Wales published from time to time and are to request the President of the Law Society to select a mediator.
- 27.5 If the Dispute is not resolved by mediation within a further 28 days, or such longer period as may be necessary to allow any mediation process which has been commenced to be completed, then the Parties may exercise their legal rights in relation to the Dispute, including by the commencement of legal proceedings in a court of competent jurisdiction in New South Wales.
- 27.6 Each Party is to bear its own costs arising from or in connection with the appointment of a mediator and the mediation.
- 27.7 The Parties are to share equally the costs of the President, the mediator, and the mediation.

Part 5 - Enforcement**28 Security for performance of obligations**

- 28.1 This clause 28 applies if the Developer intends to dedicate the Environmental Management Land to Council:
 - 28.1.1 before it has completed the Management Obligation under clause 10; or
 - 28.1.2 before it has paid the Management Contribution to Council under clause 12, or both (**the Secured Obligations**).
- 28.2 The Developer is to provide Security to the Council in the following amounts in relation to the performance of each of the Secured Obligations under this Deed:
 - 28.2.1 in relation to the obligation in clause 28.1.1, an amount equal to the Council's estimate of the cost to the Developer to complete the Management Obligation; and
 - 28.2.2 in relation to the obligation in clause 28.1.2, an amount equal to the amount of the Management Contribution, plus an interest component
- 28.3 For the purpose of clause 28.2.2, the interest component is the interest on the Management Contribution calculated on a simple basis over a 1 year period based on the average rate of return on Council's investments over the 12 months preceding the provision of the relevant Security, plus 1% as advised by Council acting reasonably.
- 28.4 The Developer is to provide the Security to the Council before it dedicates the Environmental Management Land to the Council.
- 28.5 The Council, in its absolute discretion may refuse to allow the Developer to enter, occupy or use any land owned or controlled by the Council or refuse to provide the Developer with any plant, equipment, facilities or assistance

**The Ruins Way, Innes Peninsula Environmental Management Land
Planning Agreement****Port Macquarie Hastings Council****John Miller and Elsin Miller****J & E Miller (Builder) Pty Ltd**

- relating to the carrying out the Development if the Developer has not provided the Security to the Council in accordance with this Deed.
- 28.6 The Council is to release and return the Security or any unused part of it to the Developer within 14 days of completion of the Secured Obligation to which the Security relates.
- 28.7 The Developer may at any time provide the Council with a replacement Security.
- 28.8 On receipt of a replacement Security, the Council is to release and return the Security that has been replaced to the Developer.
- 28.9 If the Council calls-up the Security or any portion of it, it may, by written notice to the Developer, require the Developer to provide a further or replacement Security to ensure that the amount of Security held by the Council equals the amount it is entitled to hold under this Deed.
- 28.10 The Developer is to ensure that the Security provided to the Council is at all times maintained to the full current indexed value.

29 Acquisition of land required to be dedicated

- 29.1 If the Developer does not dedicate land required to be dedicated under this Deed at the time at which it is required to be dedicated, the Developer consents to the Council compulsorily acquiring the land for compensation in the amount of \$1 without having to follow the pre-acquisition procedure under the Just Terms Act.
- 29.2 The Council is to only acquire land pursuant to clause 29.1 if it considers it reasonable to do so having regard to the circumstances surrounding the failure by the Developer to dedicate the land required to be dedicated under this Deed.
- 29.3 Clause 29.1 constitutes an agreement for the purposes of s30 of the Just Terms Act.
- 29.4 If, as a result of the acquisition referred to in clause 29.1, the Council is required to pay compensation to any person other than the Developer, the Developer is to reimburse the Council that amount, upon a written request being made by the Council, or the Council can call on any Security provided under clause 28.
- 29.5 The Developer indemnifies and keeps indemnified the Council against all Claims made against the Council as a result of any acquisition by the Council of the whole or any part of the land concerned except if, and to the extent that, the Claim arises because of the Council's negligence or default.
- 29.6 The Developer is to promptly do all things necessary, and consents to the Council doing all things necessary, to give effect to this clause 29, including without limitation:
- 29.6.1 signing any documents or forms,
- 29.6.2 giving land owner's consent for lodgement of any Development Application,
- 29.6.3 producing certificates of title to the Registrar-General under the *Real Property Act 1900*, and
- 29.6.4 paying the Council's costs arising under this clause 29.

**The Ruins Way, Innes Peninsula Environmental Management Land
Planning Agreement****Port Macquarie Hastings Council****John Miller and Elsin Miller****J & E Miller (Builder) Pty Ltd****30 Breach of obligations**

- 30.1 If the Council reasonably considers that the Developer is in breach of any obligation under this Deed, it may give a written notice to the Developer:
- 30.1.1 specifying the nature and extent of the breach,
- 30.1.2 requiring the Developer to:
- (a) rectify the breach if it reasonably considers it is capable of rectification, or
 - (b) pay compensation to the reasonable satisfaction of the Council in lieu of rectifying the breach if it reasonably considers the breach is not capable of rectification,
- 30.1.3 specifying the period within which the breach is to be rectified or compensation paid, being a period that is reasonable in the circumstances.
- 30.2 If the Developer fails to comply with a notice given under clause 30.1 relating to the carrying out of Work under this Deed, the Council may step-in and remedy the breach and may enter, occupy and use any land owned or controlled by the Developer and any Equipment on such land for that purpose.
- 30.3 Any costs incurred by the Council in remedying a breach in accordance with clause 30.2 may be recovered by the Council by calling up the Security provided by the Developer under this Deed or as a debt due in a court of competent jurisdiction.
- 30.4 For the purpose of clause 30.3, the Council's costs of remedying a breach the subject of a notice given under clause 30.1 include, but are not limited to:
- 30.4.1 the costs of the Council's servants, agents and contractors reasonably incurred for that purpose,
- 30.4.2 all fees and charges necessarily or reasonably incurred by the Council in remedying the breach, and
- 30.4.3 all legal costs and expenses reasonably incurred by the Council, by reason of the breach.
- 30.5 Nothing in this clause 34 prevents the Council from exercising any rights it may have at law or in equity in relation to a breach of this Deed by the Developer, including but not limited to seeking relief in an appropriate court.

31 Enforcement in a court of competent jurisdiction

- 31.1 Without limiting any other provision of this Deed, the Parties may enforce this Deed in any court of competent jurisdiction.
- 31.2 For the avoidance of doubt, nothing in this Deed prevents:
- 31.2.1 a Party from bringing proceedings in the Land and Environment Court to enforce any aspect of this Deed or any matter to which this Deed relates, or
- 31.2.2 the Council from exercising any function under the Act or any other Act or law relating to the enforcement of any aspect of this Deed or any matter to which this Deed relates.

**The Ruins Way, Innes Peninsula Environmental Management Land
Planning Agreement**

Port Macquarie Hastings Council

John Miller and Elaina Miller

J & E Miller (Builder) Pty Ltd



Part 6 – Registration & Restriction on Dealings

32 Registration of this Deed

- 32.1 The Parties agree to register this Deed for the purposes of s7.6(1) of the Act.
- 32.2 Upon the commencement of this Deed, the Developer is to deliver to the Council in registrable form:
 - 32.2.1 an instrument requesting registration of this Deed on the title to the Land duly executed by the Developer, and
 - 32.2.2 the written irrevocable consent of each person referred to in s7.6(1) of the Act to that registration.
- 32.3 The Developer is to do such other things as are reasonably necessary to enable registration of this Deed to occur.
- 32.4 The Parties are to do such things as are reasonably necessary to remove any notation relating to this Deed from the title to the Land:
 - 32.4.1 in so far as the part of the Land concerned is a Final Lot,
 - 32.4.2 in relation to any other part of the Land, once the Developer has completed its obligations under this Deed to the reasonable satisfaction of the Council or this Deed is terminated or otherwise comes to an end for any other reason.

33 Restriction on dealings

- 33.1 The Developer is not to:
 - 33.1.1 sell or transfer the Land, other than a Final Lot, or
 - 33.1.2 assign the Developer's rights or obligations under this Deed, or novate this Deed,to any person unless:
 - 33.1.3 the Developer has, at no cost to the Council, first procured the execution by the person to whom the Land or part is to be sold or transferred or the Developer's rights or obligations under this Deed are to be assigned or novated, of a deed in favour of the Council on terms reasonably satisfactory to the Council, and
 - 33.1.4 the Council has given written notice to the Developer stating that it reasonably considers that the purchaser, transferee, assignee or novatee, is reasonably capable of performing its obligations under this Deed, and
 - 33.1.5 the Developer is not in breach of this Deed, and
 - 33.1.6 the Council otherwise consents to the transfer, assignment or novation, such consent not to be unreasonably withheld.
- 33.2 Clause 33.1 does not apply in relation to any sale or transfer of the Land if this Deed is registered on the title to the Land at the time of the sale.

**The Ruins Way, Innes Peninsula Environmental Management Land
Planning Agreement****Port Macquarie Hastings Council****John Miller and Elsin Miller****J & E Miller (Builder) Pty Ltd****Part 7 – Indemnities & Insurance****34 Risk**

- 34.1 The Developer performs this Deed at its own risk and its own cost.

35 Release

- 35.1 The Developer releases the Council from any Claim it may have against the Council arising in connection with the performance of the Developer's obligations under this Deed except if, and to the extent that, the Claim arises because of the Council's negligence or default.

36 Indemnity

- 36.1 The Developer indemnifies the Council from and against all Claims that may be sustained, suffered, recovered or made against the Council arising in connection with the performance of the Developer's obligations under this Deed except if, and to the extent that, the Claim arises because of the Council's negligence or default.

37 Insurance

- 37.1 The Developer is to take out and keep current to the satisfaction of the Council the following insurances in relation to Work which comprises building engineering or construction work, required to be carried out by the Developer under this Deed up until the Work is taken to have been completed in accordance with this Deed:
- 37.1.1 contract works insurance, noting the Council as an interested party, for the full replacement value of the Works (including the cost of demolition and removal of debris, consultants' fees and authorities' fees), to cover the Developer's liability in respect of damage to or destruction of the Works,
 - 37.1.2 public liability insurance for at least \$20,000,000.00 for a single occurrence, which covers the Council, the Developer and any subcontractor of the Developer, for liability to any third party,
 - 37.1.3 workers compensation insurance as required by law, and
 - 37.1.4 any other insurance required by law.
- 37.2 If the Developer fails to comply with clause 37.1, the Council may effect and keep in force such insurances and pay such premiums as may be necessary for that purpose and the amount so paid shall be a debt due from the Developer to the Council and may be recovered by the Council as it deems appropriate including:
- 37.2.1 by calling upon the Security provided by the Developer to the Council under this Deed, or
 - 37.2.2 recovery as a debt due in a court of competent jurisdiction.

**The Ruins Way, Innes Peninsula Environmental Management Land
Planning Agreement****Port Macquarie Hastings Council****John Miller and Elsin Miller****J & E Miller (Builder) Pty Ltd**

- 37.3 The Developer is not to commence to carry out any Work unless it has first provided to the Council satisfactory written evidence of all of the insurances specified in clause 37.1.

Part 8 – Other Provisions**38 Annual report by Developer**

- 38.1 The Developer is to provide to the Council by not later than each anniversary of the date on which this Deed is entered into a report detailing the performance of its obligations under this Deed.
- 38.2 The report referred to is to be in such a form and to address such matters as required by the Council from time to time.

39 Review of Deed

- 39.1 The Parties agree to review this Deed if either party is of the opinion that any change of circumstance has occurred, or is imminent, that materially affects the operation of this Deed.
- 39.2 For the purposes of clause 39.1, the relevant changes include (but are not limited to) any change to a law that restricts or prohibits or enables the Council or any other planning authority to restrict or prohibit any aspect of the Development.
- 39.3 For the purposes of addressing any matter arising from a review of this Deed referred to in clause 39.1, the Parties are to use all reasonable endeavours to agree on and implement appropriate amendments to this Deed.
- 39.4 If this Deed becomes illegal, unenforceable or invalid as a result of any change to a law, the Parties agree to do all things necessary to ensure that an enforceable agreement of the same or similar effect to this Deed is entered into.
- 39.5 A failure by a Party to agree to take action requested by the other Party as a consequence of a review referred to in clause 39.1 (but not 39.4) is not a Dispute for the purposes of this Deed and is not a breach of this Deed.

40 Notices

- 40.1 Any notice, consent, information, application or request that is to or may be given or made to a Party under this Deed is only given or made if it is in writing and sent in one of the following ways:
- 40.1.1 delivered or posted to that Party at its address set out in the Summary Sheet,
- 40.1.2 faxed to that Party at its fax number set out in the Summary Sheet, or
- 40.1.3 emailed to that Party at its email address set out in the Summary Sheet.

**The Ruins Way, Innes Peninsula Environmental Management Land
Planning Agreement****Port Macquarie Hastings Council****John Miller and Elsin Miller****J & E Miller (Builder) Pty Ltd**

- 40.2 If a Party gives the other Party 3 business days notice of a change of its address, fax number or email, any notice, consent, information, application or request is only given or made by that other Party if it is delivered, posted, faxed or emailed to the latest address or fax number.
- 40.3 Any notice, consent, information, application or request is to be treated as given or made if it is:
- 40.3.1 delivered, when it is left at the relevant address,
 - 40.3.2 sent by post, 2 business days after it is posted,
 - 40.3.3 sent by fax, as soon as the sender receives from the sender's fax machine a report of an error free transmission to the correct fax number, or
 - 40.3.4 sent by email and the sender does not receive a delivery failure message from the sender's internet service provider within a period of 24 hours of the email being sent.
- 40.4 If any notice, consent, information, application or request is delivered, or an error free transmission report in relation to it is received, on a day that is not a business day, or if on a business day, after 5pm on that day in the place of the Party to whom it is sent, it is to be treated as having been given or made at the beginning of the next business day.

41 Approvals and Consent

- 41.1 Except as otherwise set out in this Deed, and subject to any statutory obligations, a Party may give or withhold an Approval or consent to be given under this Deed in that Party's absolute discretion and subject to any conditions determined by the Party.
- 41.2 A Party is not obliged to give its reasons for giving or withholding consent or for giving consent subject to conditions.

42 Costs

- 42.1 The Developer is to pay to the Council the Council's costs not exceeding \$3,500 (ex GST) of preparing, negotiating, executing and stamping this Deed, and any document related to this Deed within 7 days of a written demand by the Council for such payment.
- 42.2 The Developer is also to pay to the Council the Council's reasonable costs of enforcing this Deed within 7 days of a written demand by the Council for such payment.

43 Entire Deed

- 43.1 This Deed contains everything to which the Parties have agreed in relation to the matters it deals with.
- 43.2 No Party can rely on an earlier document, or anything said or done by another Party, or by a director, officer, agent or employee of that Party, before this Deed was executed, except as permitted by law.

**The Ruins Way, Innes Peninsula Environmental Management Land
Planning Agreement****Port Macquarie Hastings Council****John Miller and Elaina Miller****J & E Miller (Builder) Pty Ltd**

44 Further Acts

- 44.1 Each Party must promptly execute all documents and do all things that another Party from time to time reasonably requests to effect, perfect or complete this Deed and all transactions incidental to it.

45 Governing Law and Jurisdiction

- 45.1 This Deed is governed by the law of New South Wales.
- 45.2 The Parties submit to the non-exclusive jurisdiction of its courts and courts of appeal from them.
- 45.3 The Parties are not to object to the exercise of jurisdiction by those courts on any basis.

46 Joint and Individual Liability and Benefits

- 46.1 Except as otherwise set out in this Deed:
- 46.1.1 any agreement, covenant, representation or warranty under this Deed by 2 or more persons binds them jointly and each of them individually, and
- 46.1.2 any benefit in favour of 2 or more persons is for the benefit of them jointly and each of them individually.

47 No Fetter

- 47.1 Nothing in this Deed shall be construed as requiring Council to do anything that would cause it to be in breach of any of its obligations at law, and without limitation, nothing shall be construed as limiting or fettering in any way the exercise of any statutory discretion or duty.

48 Illegality

- 48.1 If this Deed or any part of it becomes illegal, unenforceable or invalid as a result of any change to a law, the Parties are to co-operate and do all things necessary to ensure that an enforceable agreement of the same or similar effect to this Deed is entered into.

49 Severability

- 49.1 If a clause or part of a clause of this Deed can be read in a way that makes it illegal, unenforceable or invalid, but can also be read in a way that makes it legal, enforceable and valid, it must be read in the latter way.
- 49.2 If any clause or part of a clause is illegal, unenforceable or invalid, that clause or part is to be treated as removed from this Deed, but the rest of this Deed is not affected.

**The Ruins Way, Innes Peninsula Environmental Management Land
Planning Agreement****Port Macquarie Hastings Council****John Miller and Elsin Miller****J & E Miller (Builder) Pty Ltd****50 Amendment**

- 50.1 No amendment of this Deed will be of any force or effect unless it is in writing and signed by the Parties to this Deed in accordance with clause 25D of the Regulation.

51 Waiver

- 51.1 The fact that a Party fails to do, or delays in doing, something the Party is entitled to do under this Deed, does not amount to a waiver of any obligation of, or breach of obligation by, another Party.
- 51.2 A waiver by a Party is only effective if it
- 51.2.1 is in writing,
 - 51.2.2 is addressed to the Party whose obligation or breach of obligation is the subject of the waiver,
 - 51.2.3 specifies the obligation or breach of obligation the subject of the waiver and the conditions, if any, of the waiver,
 - 51.2.4 is signed and dated by the Party giving the waiver.
- 51.3 Without limitation, a waiver may be expressed to be conditional on the happening of an event, including the doing of a thing by the Party to whom the waiver is given.
- 51.4 A waiver by a Party is only effective in relation to the particular obligation or breach in respect of which it is given, and is not to be taken as an implied waiver of any other obligation or breach or as an implied waiver of that obligation or breach in relation to any other occasion.
- 51.5 For the purposes of this Deed, an obligation or breach of obligation the subject of a waiver is taken not to have been imposed on, or required to be complied with by, the Party to whom the waiver is given.

52 GST

- 52.1 In this clause:

Adjustment Note, Consideration, GST, GST Group, Margin Scheme, Money, Supply and Tax Invoice have the meaning given by the GST Law.

GST Amount means in relation to a Taxable Supply the amount of GST payable in respect of the Taxable Supply.

GST Law has the meaning given by the *A New Tax System (Goods and Services Tax) Act 1999* (Cth).

Input Tax Credit has the meaning given by the GST Law and a reference to an Input Tax Credit entitlement of a party includes an Input Tax Credit for an acquisition made by that party but to which another member of the same GST Group is entitled under the GST Law.

Taxable Supply has the meaning given by the GST Law excluding (except where expressly agreed otherwise) a supply in respect of which the supplier chooses to apply the Margin Scheme in working out the amount of GST on that supply.

**The Ruins Way, Innes Peninsula Environmental Management Land
Planning Agreement****Port Macquarie Hastings Council****John Miller and Elsin Miller****J & E Miller (Builder) Pty Ltd**

-
- 52.2 Subject to clause 52.4, if GST is payable on a Taxable Supply made under, by reference to or in connection with this Deed, the Party providing the Consideration for that Taxable Supply must also pay the GST Amount as additional Consideration.
- 52.3 Clause 52.2 does not apply to the extent that the Consideration for the Taxable Supply is expressly stated in this Deed to be GST inclusive.
- 52.4 No additional amount shall be payable by the Council under clause 52.2 unless, and only to the extent that, the Council (acting reasonably and in accordance with the GST Law) determines that it is entitled to an Input Tax Credit for its acquisition of the Taxable Supply giving rise to the liability to pay GST.
- 52.5 If there are Supplies for Consideration which is not Consideration expressed as an amount of Money under this Deed by one Party to the other Party that are not subject to Division 82 of the *A New Tax System (Goods and Services Tax) Act 1999*, the Parties agree:
- 52.5.1 to negotiate in good faith to agree the GST inclusive market value of those Supplies prior to issuing Tax Invoices in respect of those Supplies;
- 52.5.2 that any amounts payable by the Parties in accordance with clause 52.2 (as limited by clause 52.4) to each other in respect of those Supplies will be set off against each other to the extent that they are equivalent in amount.
- 52.6 No payment of any amount pursuant to this clause 52, and no payment of the GST Amount where the Consideration for the Taxable Supply is expressly agreed to be GST inclusive, is required until the supplier has provided a Tax Invoice or Adjustment Note as the case may be to the recipient.
- 52.7 Any reference in the calculation of Consideration or of any indemnity, reimbursement or similar amount to a cost, expense or other liability incurred by a party, must exclude the amount of any Input Tax Credit entitlement of that party in relation to the relevant cost, expense or other liability.
- 52.8 This clause continues to apply after expiration or termination of this Deed.

53 Explanatory Note

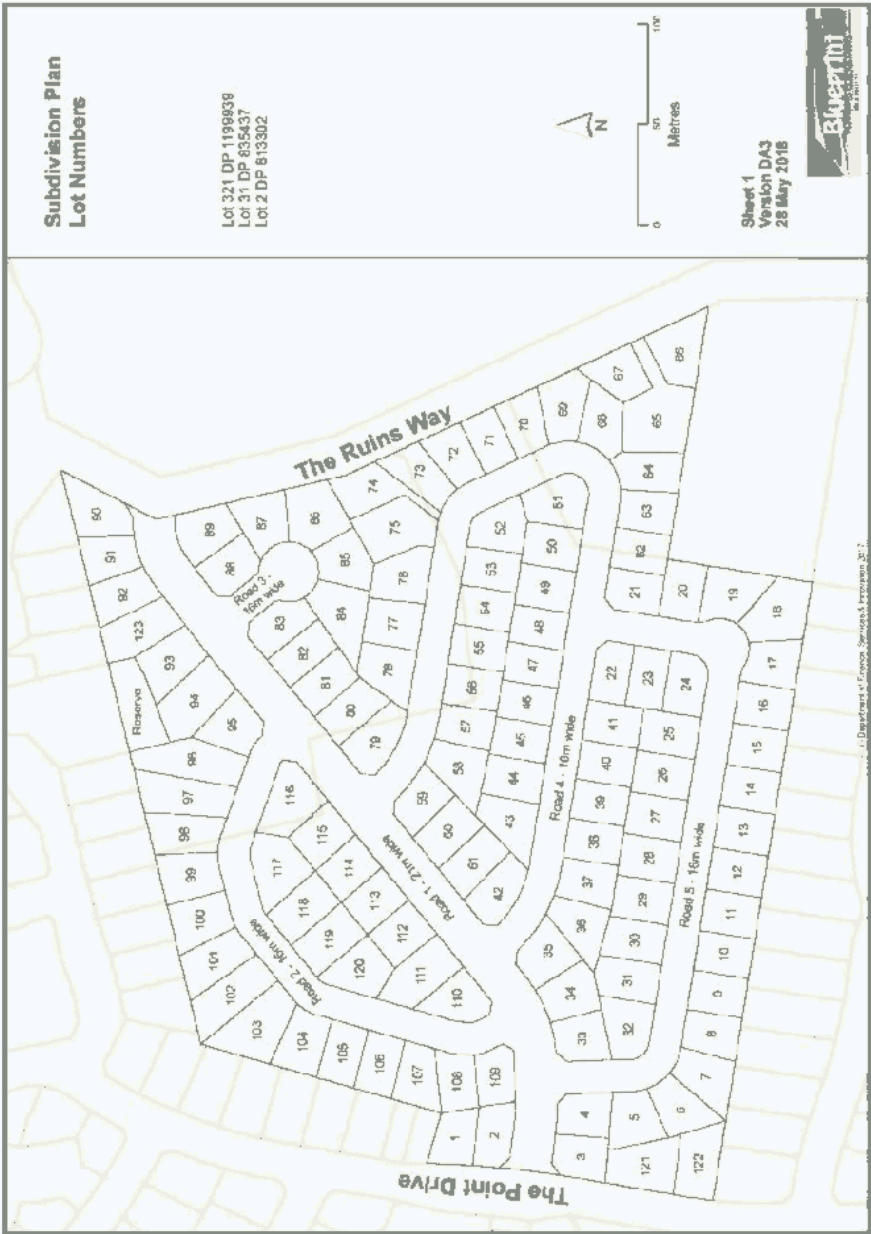
- 53.1 The Appendix contains the Explanatory Note relating to this Deed required by clause 25E of the Regulation.
- 53.2 Pursuant to clause 25E(7) of the Regulation, the Parties agree that the Explanatory Note is not to be used to assist in construing this Planning Deed.

The Ruins Way, Innes Peninsula Environmental Management Land
Planning Agreement
Port Macquarie Hastings Council
John Miller and Elsin Miller
J & E Miller (Builder) Pty Ltd



Schedule

Environmental Management Land



The Ruins Way, Innes Peninsula Environmental Management Land
Planning Agreement
Port Macquarie Hastings Council
John Miller and Elsinia Miller
J & E Miller (Builder) Pty Ltd



Execution

Executed as a Deed

Dated:

Executed on behalf of the Council

General Manager

Witness

Executed on behalf of J & E Miller (Builder) Pty Ltd in accordance with
s127(1) of the Corporations Act (Cth) 2001

Name/Position

Name/Position

The Ruins Way, Innes Peninsula Environmental Management Land
Planning Agreement
Port Macquarie Hastings Council
John Miller and Elsina Miller
J & E Miller (Builder) Pty Ltd



Executed by John Miller

Signature of John Miller

Signature of Witness

Executed on behalf of Elsina Miller

Signature of Elsina Miller

Signature of Witness

**The Ruins Way, Innes Peninsula Environmental Management Land
Planning Agreement**

Port Macquarie Hastings Council

John Miller and Elsin Miller

J & E Miller (Builder) Pty Ltd



Appendix

(Clause 53)

Environmental Planning and Assessment Regulation 2000

(Clause 25E)

Explanatory Note

Draft Planning Agreement

Under s7.4 of the *Environmental Planning and Assessment Act 1979*

Parties

Port Macquarie Hastings Council ABN 11 236 901 601 of Corner Lord and Burrawan Streets, Port Macquarie, New South Wales 2444 (**Council**)

John Miller and Elsin Miller of 146 The Ruins Way, Port Macquarie, New South Wales 2444

and

J & E Miller (Builder) Pty Ltd ACN 055 074 587 of 38 Acacia Avenue, Port Macquarie, New South Wales 2444

(together the '**Developer**')

Description of the Land to which the Draft Planning Agreement Applies

Lot 321 DP 1199939, Lot 31 DP 835437, Lot 2 DP 813302

Description of Proposed Development

Development means development described in Development Application DA2017- 1041 lodged with Council on 24 November 2017 the subject of Development Consent.

**The Ruins Way, Innes Peninsula Environmental Management Land
Planning Agreement****Port Macquarie Hastings Council****John Miller and Elaina Miller****J & E Miller (Builder) Pty Ltd****Summary of Objectives, Nature and Effect of the Draft
Planning Agreement****Objectives of Draft Planning Agreement**

The objective of the Draft Planning Agreement is to require the establishment and management of environmental lands, dedication of such environmental lands to the Council and to require the provision of funding for the Council's ongoing management of the environmental lands in conjunction with urban development.

Nature of Draft Planning Agreement

The Draft Planning Agreement is a planning agreement under s7.4 of the *Environmental Planning and Assessment Act 1979* (Act). The Draft Planning Agreement is a voluntary agreement under which Development Contributions (as defined in clause 1.1 of the Draft Planning Agreement) are made by the Developer for various public purposes (as defined in s7.4(3) of the Act).

Effect of the Draft Planning Agreement

The Draft Planning Agreement:

- relates to the carrying out by the Developer of subdivision of the Land,
- does not exclude the application of s7.11, s7.12 or s7.24 of the Act to the Development (as defined in clause 1.1 of the Draft Planning Agreement),
- the Council is not to take into consideration the benefits under the Deed in determining a development contribution under s7.11 of the Act in relation to the Development,
- requires monetary Development Contributions of a specified amount to be made towards management of the environmental land to be dedicated under the Draft Planning Agreement,
- requires the carrying out of specified Works by the Developer for the purposes of establishing and maintaining environmental lands,
- requires the dedication of the environmental lands to the Council,
- requires the Council to apply monetary Development Contributions made under the agreement towards the specified purpose for which they were made and at the location, in the manner and to the standard (if any) specified in the agreement,
- imposes obligations on the Developer in relation to the carrying out of specified Works and the handing over of those Works to the Council,
- requires the Developer to provide the Council with security to be called upon in the event that the Council is required to enforce the terms of the agreement,
- is to be registered on the title to the Land,
- imposes restrictions on the Parties transferring the Land or part of the Land (unless the agreement is registered) or assigning an interest under the agreement,
- provides two dispute resolution methods for a dispute under the agreement, being expert determination and mediation,

The Ruins Way, Innes Peninsula Environmental Management Land Planning Agreement**Port Macquarie Hastings Council****John Miller and Elsin Miller****J & E Miller (Builder) Pty Ltd**

- provides that the agreement is governed by the law of New South Wales, and
- provides that the *A New Tax System (Goods and Services Tax) Act 1999* (Cth) applies to the agreement.

Assessment of the Merits of the Draft Planning Agreement**The Planning Purposes Served by the Draft Planning Agreement**

The Draft Planning Agreement reasonably provides for the achievement of the following planning purposes:

- promote and co-ordinate the orderly and economic use and development of the Land to which the agreement applies,
- provide land for public purposes in connection with the Development,
- provide increased opportunity for public involvement and participation in environmental planning and assessment of the Development,
- provide for the mitigation of any potential impact of the Development by providing for the Developer to make contributions to the Council.

How the Draft Planning Agreement Promotes the Public Interest

The draft Planning Agreement, by making provision for the establishment and management and dedication of environmental land to the Council and by making provision for the Developer to make contributions to the Council towards ongoing environmental management of that land, promotes the public interest by promoting the following objects of the Act as set out in s5 of that Act:

- to facilitate ecologically sustainable development by integrating relevant economic, environmental and social considerations in decision-making about environmental planning and assessment,
- to encourage the promotion and co-ordination of the orderly and economic use and development of land,
- to encourage the provision of land for public purposes
- to encourage the protection of the environment, including the protection and conservation of native animals and plants, including threatened species, populations and ecological communities, and their habitats,
- to provide increased opportunity for public involvement and participation in environmental planning and assessment.

For Planning Authorities:***Development Corporations - How the Draft Planning Agreement Promotes its Statutory Responsibilities***

N/A

**The Ruins Way, Innes Peninsula Environmental Management Land
Planning Agreement****Port Macquarie Hastings Council****John Miller and Elsin Miller****J & E Miller (Builder) Pty Ltd*****Other Public Authorities – How the Draft Planning Agreement
Promotes the Objects (if any) of the Act under which it is
Constituted***

N/A

***Councils – How the Draft Planning Agreement Promotes the
Principles of Local Government in s8A of the Local Government Act
199, previously the elements of the Council's Charter***

The Draft Planning Agreement promotes the principles of local government by:

- managing lands and other assets so that current and future local community needs can be met in an affordable way,
- working with others to secure appropriate services for local community needs, and
- actively engaging with their local communities, through the use of the integrated planning and reporting framework and other measures.

***All Planning Authorities – Whether the Draft Planning Agreement
Conforms with the Authority's Capital Works Program***

The Draft Planning Agreement requires the works to be carried out by the Developer for the purposes of Environmental Land Management. These works are not included in Council's relevant current capital works program. However, the Council's management plan identifies these types of works in the relevant capital works program. The provision of the works is considered consistent and conforms with other capital works.

***All Planning Authorities – Whether the Draft Planning Agreement
specifies that certain requirements must be complied with before a
construction certificate, occupation certificate or subdivision
certificate is issued***

Yes. Certain requirements must be complied with before a Subdivision Certificate is issued.

KING + CAMPBELL

Draft Planning Proposal
Lot 10 DP 615775 & Lot 1 DP 1117908
cnr Ocean Drive & Houston Mitchell Drive, Lake Cathie

draft

Prepared for:

Mr Angelo Mifsud

Prepared by:

King & Campbell Pty Ltd
1st Floor, Colonial Arcade
25-27 Hay Street
Port Macquarie
PO Box 243
Port Macquarie 2444
Ph: (02) 6583 2666
Fax: (02) 6583 4064
info@kingcampbell.com.au

Date: May, 2018

SURVEYING : PLANNING : CIVIL ENGINEERING : URBAN DESIGN

Table of Contents

Introduction and background.....	1
1.1 Introduction	1
1.2 The Site.....	1
1.3 Consultation and background.....	2
PLANNING PROPOSAL	6
PART 1 - Objectives or Intended Outcomes	7
PART 2 - Explanation of Provisions	9
PART 3 - Justification	10
Section A – Need for the planning proposal	10
Section B – Relationship to strategic planning framework.....	15
Section C – Environmental, social and economic impact	20
Section D – State and Commonwealth interests.....	23
PART 4 - Mapping.....	24
PART 5 - Community consultation.....	25
PART 6 - Project timeline	26
Conclusion	27

List of Appendices

Appendix A – Proposed Zone Plan

SURVEYING : PLANNING : CIVIL ENGINEERING : URBAN DESIGN

King & Campbell Pty Ltd

Draft Planning Proposal
Cnr Ocean Drive & Houston Mitchell Drive
Lake Cathie

Section 1

Introduction and background

1.1 Introduction

This submission has been prepared in support of the rezoning of Lot 10 DP 615775 and Lot 1 DP 1117908, corner Ocean Drive and Houston Mitchell Drive, Lake Cathie.

The site is identified in the Port Macquarie-Hastings Urban Growth Management Strategy (adopted by Council on the 14th December, 2010) for investigation in the immediate/short-term for *service industrial development*.

Section 4 of this submission is consistent with Section 3.33 of the Environmental Planning and Assessment Act 1979 and the Department of Planning and Environment's *A guide to preparing planning proposals*:

PART 1 – Objectives or intended outcomes;

PART 2 – Explanation of provisions;

PART 3 – Justification, including:

Section A – Need for the planning proposal;

Section B – Relationship to strategic planning framework;

Section C – Environmental, social and economic impact; and

Section D – State and Commonwealth interests; and

PART 4 – Mapping

PART 5 – Community consultation

PART 6 – Project timeline

1.2 The Site

The site is known as Lot 10 DP 615775 and Lot 1 DP 1117908, corner Ocean Drive and Houston Mitchell Drive, Lake Cathie, with the following existing site areas:

- Lot 10 - 8.96 ha; and
- Lot 1 - 6,207m².

King & Campbell Pty Ltd

Draft Planning Proposal
Cnr Ocean Drive & Houston Mitchell Drive
Lake Cathie

1.3 Consultation and background

Consultation with Council with respect to both the context of the site within Council's strategic planning vision for the locality and to the site specific studies required to be undertaken has been on-going since 2007.

- 8 June, 2007 – Correspondence to Council on behalf of the landowner, supporting the recommendation of the **Draft Industrial Lands Strategy** that the subject property be included as a future investigation area to provide light industrial uses for Area 14, noting that:
 - This site is well located from an accessibility point of view with frontages to both Houston Mitchell Drive and Ocean Drive;
 - Infrastructure Services are expected to be available to the site as part of the early release of land in Area 14; and
 - That the ultimate design of the light industrial precinct can provide many of the design solutions required to resolve any potential environmental impacts or land use conflicts with adjoining land uses.
- 15 September, 2010 – Correspondence to Council on behalf of the land owner, in support of the public exhibition of the **Draft Urban Growth Management Strategy**, including:
 - Endorsing the identification of the site as an Employment Investigation Area;
 - Providing Council with a copy of the site specific Flood Impact Assessment (FIA) dated 10 September 2010 prepared by Worley Parsons with respect to the Rezoning and Industrial Development of the subject property;
 - Table the concept layout used in the Floodplain Encroachment Analysis component of the Flood Impact Assessment as the likely footprints for the proposed industrial and environmental management lands.
 - Seek Council's agreement to amend the timing for the land use investigation on the subject property from 'short term' as shown in the draft UGMS to 'immediate/short term'.
 - Seek Council's agreement to King & Campbell preparing a Planning Proposal for the rezoning of the subject property.

King & Campbell Pty Ltd

Draft Planning Proposal
Cnr Ocean Drive & Houston Mitchell Drive
Lake Cathie

- 12 October, 2011 – Pre-lodgement submission to Council, prepared on the basis of the identification of the site within the Urban Growth Management Strategy for investigation in the immediate/short-term for *service industrial development*.

The purpose of the submission included:

- To provide background information and reports in relation to the proposed rezoning;
 - To identify the key issues in the use of the site for industrial purposes; and
 - To seek Council's agreement for King & Campbell to prepare a draft Planning Proposal for the site.
- 2 November, 2011 – Pre-lodgement meeting minutes from Council noted the following:
 - That there are a number of issues that will need to be addressed, in particular the resolution of water and sewerage infrastructure issues in the short and with regard to the longer term servicing of the precinct; and
 - That the applicant may provide Council with a submission however the planning proposal is prepared by Council for submission to the Department of Planning and Infrastructure.
 - 8 December, 2016 – correspondence to Council following a site meeting and subsequent discussions with Council staff that provided the following information for Council consideration:
 - Ecological Assessment, FloraFauna Consulting;
 - Concept layout plan that includes 5.44 ha of future IN2 lands and 3.86ha of future environmental lands; and
 - Flood Impact Assessment, Worley Parsons (this assessment was previously provided to Council as part of the pre lodgement package).
 - 3 April, 2017 – email from Council in response to above submission of 8 December, 2016, advising the following:
 - a. Flora and fauna - a KPOM will be required;

King & Campbell Pty Ltd

Draft Planning Proposal
Cnr Ocean Drive & Houston Mitchell Drive
Lake Cathie

- b. VPA – confirmation that the submission of 8 December, 2016 can be accepted as the offer to enter into a Planning Agreement and that environmental land dedication is the only matter to be included in the Agreement.
 - c. Access and Traffic – accepted that the rezoning has been likely for some time and that a 4-way intersection with Forest Way may be the only feasible option.
 - d. Sewer – the development is reliant on the St Vincent's Foundation land on the eastern side of Ocean Drive, with a preference that development the site to be serviced via gravity into SVF.
 - e. Water - Recent modelling indicates the water network has sufficient capacity to meet the demand of the proposed 24 light industrial sites. The development site can be serviced with a connection to the existing 300mm water main off Ocean Dr with a link through to the 200mm water main located on Houston Mitchell Drive.
- 5 May, 2017 – email from Council confirming that the need for a Koala Plan of Management can be deferred until the DA stage, subject to a commitment from the landowner to *providing koala proof fencing along the Ocean Drive boundary linking back along Houston Mitchell Drive and around the food trees in this area of the site.*

This email also confirmed Council's position that a loop/perimeter road should be provided in lieu of the initially proposed cul-de-sac.
 - 6 September, 2017 – correspondence from Council confirming the following:
 - The revised concept plan satisfactorily addresses the matters raised in by email dated 5 May 2015 regarding internal connectivity and vehicle manoeuvring, bushfire protection, stormwater run-off and environmental edge effects;
 - Council's Transport and Stormwater Network staff have advised a preference for the proposed site access to be located as far from the Houston Mitchell Drive/Ocean Drive intersection as is possible. Therefore, option No 2 (Drawing No 4661P_Rezone_Opt2) is preferred for safety reasons.
 - It will be necessary to submit a Planning Proposal and pay fees in accordance with Council's Fees and Charges Policy to progress a rezoning.

King & Campbell Pty Ltd

Draft Planning Proposal
Cnr Ocean Drive & Houston Mitchell Drive
Lake Cathie

- The studies submitted to date have included a Flood Impact Assessment (Sep 2010) and Ecological Assessment (Oct 2016). Please note that an addendum to the Ecological Assessment report, confirming that the findings and conclusions are consistent with the new land management and biodiversity conservation legislation, will be required to support a Planning Proposal.
- 23 November, 2017 – email confirmation from Council that a survey of the site by the Local Aboriginal Land Council will be sufficient for pre-gateway to address Aboriginal Archaeology issues.
- 20 December, 2017 – correspondence to Council on behalf of the land owner in support of the *Draft Urban Growth Management Study 2017* and the continued nomination of the site as an *Industrial Investigation Area*.
- 17 April, 2018 – correspondence to Council that included the following attachments in support of the Planning Proposal:
 - a. Plan of Proposed Rezoning – Option 2, being Council's preferred location for the future intersection on Houston Mitchell Drive;
 - b. Aboriginal Cultural Heritage Assessment, prepared by the Birpai LALC;
 - c. Addendum to the Ecological Report prepared by FloraFauna Consulting, confirming that the findings and conclusions are consistent with the new land management and biodiversity conservation legislation; and
 - d. Bushfire Hazard Assessment, confirming that the bushfire risk is manageable subject to the implementation of the recommended bushfire threat reduction measures.

King & Campbell Pty Ltd

Draft Planning Proposal
Cnr Ocean Drive & Houston Mitchell Drive
Lake Cathie

Section 2

PLANNING PROPOSAL

This is a Planning Proposal prepared under Section 3.33 of the Environmental Planning and Assessment Act 1979, in relation to a proposed amendment to Port Macquarie-Hastings Local Environmental Plan (PMHLEP) 2011. It will be assessed by Port Macquarie-Hastings Council, the NSW Department of Planning and Environment and used for public participation on the proposed LEP amendment.

Background

Proposal	Rezoning of land
Property details	Lot 10 DP 615775 and Lot 1 DP 1117908, corner Ocean Drive and Houston Mitchell Drive, Lake Cathie
Current land zone	RU1 Primary Production
Applicant details	King and Campbell Pty Ltd
Land owner	Mr Angelo Mifsud

King & Campbell Pty Ltd

Draft Planning Proposal
Cnr Ocean Drive & Houston Mitchell Drive
Lake Cathie

PART 1 - Objectives or Intended Outcomes

The intended outcomes of this planning proposal are:

1. To permit future Light Industrial development of approximately 5.44 ha of the site (Lot 10 DP 615775 and Lot 1 DP 1117908) that will provide local employment opportunities for existing and future residents within the Lake Cathie/Bonny Hills Urban Release Area;
2. To protect ecological values of the site through the rezoning of approximately 3.86ha to future environmental lands and providing a habitat link between the nature reserve on the adjoining western property and the Rainbow Beach Central Corridor on the St Vincent's Foundation Land on the eastern side of Ocean Drive. This is consistent with the Lake Cathie/Bonny Hills Masterplan 2007; and
3. To ensure the future service industrial development is carried out in a manner that will integrate with the existing adjoining development and address environmental hazards, including flood and bushfire.

The site adjoins zoned residential land to the north (separated by Houston Mitchell Drive) and east (separated by Ocean Drive) that are currently undergoing development as part of the Lake Cathie/Bonny Hills Urban Release Area. The site adjoins a State Forest to the west and rural zoned lands to the south that have been identified for further investigation for urban land uses in the current review of the UGMS 2010.

Figure 1 below shows the location of the site in context with the Lake Cathie/Bonny Hills Urban Release Area and the Lake Cathie locality generally:

King & Campbell Pty Ltd

Draft Planning Proposal
Cnr Ocean Drive & Houston Mitchell Drive
Lake Cathie

Figure 1: Locality context (source: NearMap 017.12.18)

The plan at Figure 2 shows the location of the site in relation to the adjoining zoned lands:



Figure 2: Site context (source: PMHC LEP 2011 Map LZN 13E)

King & Campbell Pty Ltd

Draft Planning Proposal
Cnr Ocean Drive & Houston Mitchell Drive
Lake Cathie

PART 2 - Explanation of Provisions

The intended outcomes are proposed to be achieved by making the following changes to Council's principle planning instrument, Port Macquarie-Hastings Local Environmental Plan (PMHLEP) 2011:

- Amendment to the PMHLEP 2011 Land Zoning Map to change the zoning of the site from RU1 Primary Production to part IN2 Light Industrial and part E3 Environmental Management, as indicated in Figure 3.
- Amendment to the PMHLEP 2011 Lot Size Map to allow a minimum lot size of 1000 m² for the industrial zone land and minimum 3 hectare lot size for the proposed environmental lands, as indicated in Figure 4.

PMHC to INSERT MAP CHANGES FOR FIGURES 3 and 4

draft

King & Campbell Pty Ltd

Draft Planning Proposal
Cnr Ocean Drive & Houston Mitchell Drive
Lake Cathie

PART 3 - Justification

Section A – Need for the planning proposal

Q1. Is the planning proposal a result of any strategic study or report?

The site has been identified for investigation within both the Mid North Coast Regional Strategy 2006-31 (*Proposed Employment Lands*) and within the North Coast Regional Plan 2036 (*Investigation Area - Employment Lands*).

At the local level the site was initially identified in Council's Industrial Lands Strategy 2007 as a *Future Investigation Area*.

The Industrial Land Strategy noted that the site presents an opportunity to meet the future local service based industrial needs of the Lake Cathie/Bonny Hills Urban Release Area population.

Environmental and broader community benefits are associated with the creation of a habitat link between Queens Lake Nature Reserve to the west and the Rainbow Beach Central Corridor on the St Vincent's Foundation Land to the east, as initially identified within the Lake Cathie Bonny Hills Urban Design Master Plan.

More recently the site is identified in the Port Macquarie Urban Growth Management Strategy 2011 – 2031 (the UGMS) for investigation in the immediate/short-term for *service industrial development*.

The UGMS is currently under review and the Draft Urban Growth Management Strategy 2017 – 2036 (Draft UGMS 2017) was placed on public exhibition from 1 November to 13 December 2017. A key aim of the UGMS 2017 for Economic Development and Employment is:

... to promote economic development and employment to create a prosperous and diversified economy.

To achieve this, we need an ample supply of business and industrial land in locations that best serve the needs of businesses and users and that are well connected to one another.

In this Strategy we review retail and industrial development trends, such as the growth in online retail, and the status of our planning for employment areas to ensure that we have the right opportunities for growth in the right places.

King & Campbell Pty Ltd

Draft Planning Proposal
Cnr Ocean Drive & Houston Mitchell Drive
Lake Cathie

The Draft UGMS 2017 recognises that there is currently no zoned land for local service industry in the Lake Cathie/Bonny Hills locality, noting that:

About 8 hectares of industrial land is required to meet the projected demand from the Lake Cathie and Bonny Hills communities for service industry by 2036.

An industrial investigation area was identified at the intersection of Houston Mitchell Drive and Ocean Drive in the 2011 Urban Growth Management Strategy.

Investigations have commenced into this area, which is centrally located in terms of access to planned development in Lake Cathie and Bonny Hills. It has capacity for coordinated services, access to Houston Mitchell Drive and for buffers to surrounding areas.

This existing investigation area is expected to yield around 4 hectares of land zoned for industrial development, excluding buffers and environmental zones,

The following Economic Development Action is identified in the Draft UGMS 2017 for investigation in Year 1-5:

Investigate the capacity of land at the intersections of Ocean Drive with Houston Mitchell Drive and Bonny View Drive for service industrial development.

The Draft UGMS 2017 proposes to continue investigations at the intersection of Houston Mitchell Drive and Ocean Drive (Action 15). Accordingly the land owner has commissioned a number of site specific studies to support the identification of the site as being suitable for industrial uses, including:

1. Ecological Assessment, October, 2016 (FloraFauna Consulting)

This Assessment considered the impact of removing the majority of the existing vegetation within the proposed IN2 zone. The Assessment recommended a number of ameliorative measures to mitigate potential impacts including:

- Pre-tree removal inspections;
- Nest Box Strategy;
- Compensatory plantings of koala food trees and non-koala food trees within the proposed E3 zone;
- Regeneration of the native groundcover and understory layers within the proposed E3 zone; and

King & Campbell Pty Ltd

Draft Planning Proposal
Cnr Ocean Drive & Houston Mitchell Drive
Lake Cathie

- Retention of the 3 of the 4 existing dams including the large dam on the southern part of the site, weed management and long-term management of the proposed E3 zone.

These ameliorative measures can be detailed in a Vegetation Management Plan (VMP) that will accompany the future Development Application for subdivision.

2. Addendum to Ecological Report, December, 2017 (FloraFauna Consulting)

The purpose of the Addendum is to confirm that the finding and conclusions of the 2016 Assessment are consistent with the new land management and biodiversity conservation legislation (Biodiversity Conservation Act 2016).

The Addendum notes that the initial ecological assessment embraced the same fundamental principles embodied in the new legislation with respect to avoid, minimise and offset, including;

- Recognition that the site was largely cleared previously to form derived grassland that are dominated by exotic graminoids and herbs;
- That the proposed removal of remnant native vegetation has been avoided and minimised where possible; and
- That vegetation removal will be offset by setting aside approximately 3.86 ha as environmental lands, including revegetation and compensatory plantings.

The Addendum also notes that the Planning Proposal will be accompanied by a Voluntary Planning Agreement (VPA) offer to Council.

The purpose of the VPA is to establish landowner obligations with respect to the establishment, maintenance and dedication of the future Environmental Management Lands.

The landowner has also agreed to commit to providing koala proof fencing along the Ocean Drive boundary, linking back along Houston Mitchell Drive and around the food trees in that adjacent area of the site.

The VPA and VMP process will provide certainty with respect to environmental management and the compensatory measures which will assist in mitigating any impacts on biodiversity. These measures are generally consistent with the objectives and intended outcomes associated with the new Biodiversity Conservation Act 2016.

King & Campbell Pty Ltd

Draft Planning Proposal
Cnr Ocean Drive & Houston Mitchell Drive
Lake Cathie

FloraFauna Consulting conclude that Council can be satisfied that the proposed zoning of the site, including 3.86 ha of E3 zoned lands will ensure the proposed rezoning achieves the aim of the UGMS to avoid significant environmental impacts.

3. Flood Impact Assessment, Worley Parsons, 2010

A Site Flood Assessment Report was initially prepared by Worley Parsons in January, 2009 to establish the peak 100 year recurrence flood level at the site. This level was estimated to be 7.6 m AHD. The information contained in this initial report was then used to develop an indicative layout for the site, including an indicative extent of proposed fill to support the future industrial subdivision and use of the land.

The approximate extent of land to be filled is noted on the attached conceptual layout. The required volume of fill equates to approximately 5,000m³. Given the increase in potential storm-water runoff and that the potential for reduced flood storage as a result of the required fill, Worley Parsons were engaged to carry out additional investigations to characterise the existing flood conditions and to document the magnitude and extent of the impact as a result of the fill.

The 2010 assessment concludes the following:

The results of the modelling indicate that filling for the proposed development will have minimal impact on the peak 100 year A1 flood level. The peak 100 year ARI flood level at the site is predicted to increase by 10mm due to the filling and will lead to no increase in the reported 100 year ARI flood level for the site. A minor increase in the peak flood discharge through the culvert system is predicted to occur. However, this increase is less than 2% of the pre-development flow and is not considered to present any concerns for the site located downstream.

Worley Parsons conclude that Council can be satisfied that the 2010 assessment provides satisfactory demonstration that the site is suitable for development for industrial purposes.

4. Aboriginal Cultural Heritage Assessment, Birpai Local Aboriginal Land Council, March, 2018

This Assessment concludes the following with respect to the proposed industrial zoning:

Consultation with local Aboriginal peoples with a relationship to the area revealed no knowledge of occupation or cultural heritage associations with the subject lands.

No site recording is required as there are no material traces, evidence or expressed knowledge of Aboriginal land use of the site.

King & Campbell Pty Ltd

Draft Planning Proposal
Cnr Ocean Drive & Houston Mitchell Drive
Lake Cathie

The proposed rezoning and future subdivision of Lot 10 is not considered likely to impact upon or have any significance for the local Aboriginal community and their cultural heritage.

The assessing sites officer can see no reason why the proposal cannot continue.

Accordingly Council can be satisfied that the assessment provides satisfactory demonstration that the site is suitable for development for industrial purposes.

5. Bushfire Hazard Assessment, January 2018

The Assessment concluded that subject to the implementation of appropriate bushfire threat reduction measures, bushfire risk is manageable.

Accordingly Council can be satisfied that the development of the proposed industrial zone is capable of satisfying Planning for Bushfire Protection 2006 without significant loss of ecological values of the land.

Q2. Is the planning proposal the best means of achieving the objectives or intended outcomes, or is there a better way?

The goal of Council's UGMS 2010 and Draft UGMS 2017 is to identify opportunities for new economic development and housing that will meet the future needs of our growing community.

The site is recognised in the Draft UGMS 2017 as being a suitable industrial investigation area, as it is centrally located in terms of access to planned development in Lake Cathie and Bonny Hills Urban Release Area and has capacity for coordinated services, access to Houston Mitchell Drive and for buffers to surrounding areas. The site will provide for approximately half of the land area needed for industrial development in the Lake Cathie/Bonny Hills Urban Release Area and locality.

The site specific investigations carried out to date support the use of the land for future industrial use, which will also include the rezoning of approximately 3.86 ha of the lands to E3 Environmental Management, ensuring that the rezoning achieves the aim of the UGMS to avoid significant environmental impacts. The planning proposal achieves the avoidance of significant ecological impacts and will allow appropriate development that will manage environmental hazards. The site is capable of connection to existing water and sewerage services without significant costs.

It is considered the planning proposal is the best way to achieve the objectives of the UGMS and Draft UGMS 2017.

King & Campbell Pty Ltd

Draft Planning Proposal
Cnr Ocean Drive & Houston Mitchell Drive
Lake Cathie**Section B – Relationship to strategic planning framework****Q3. Is the planning proposal consistent with the objectives and actions of the North Coast Regional Plan 2036 (NCRP)?**

The Planning Proposal is consistent with the objectives and actions of the NCRP, noting that:

- The site is identified as *Investigation Area - Employment Lands*.
- The Planning Proposal will rezone the least sensitive areas of the site for industrial development, and protect the valuable areas of the site by applying an environmental management zone. In addition, the site will provide for offsetting of some tree removal within the future environmental zone, achieving both the minimise and the offset hierarchy to biodiversity.
- Assessment of bushfire hazard and flooding hazard has been undertaken and demonstrated that industrial development will comply with Planning for Bushfire protection 2006 and satisfy Council's adopted flood policy.
- The Planning Proposal will allow development of land that will make use of existing infrastructure.
- The rezoning of the land is consistent with the planned delivery of supply of industrial land in the UGMS

Q4. Is the planning proposal consistent with a council's Towards 2030 Community Strategic Plan and Urban Growth Management Strategy 2010 – 2031?**1. Towards 2030 Community Strategic Plan**

The Towards Community Strategic Plan (CSP) is an overarching 10 year plan prepared by Council and the community and is based on community priorities. It enables Council to coordinate its funding priorities, activities and services.

The Planning Proposal satisfies the key strategies of this Plan for both *business and industry* and *natural and built environment*. The Planning Proposal will:

- Provide for industrial zoned lands in close proximity to existing urban areas, assisting residents to live and work in close proximity;
- Attract investment to create jobs;

King & Campbell Pty Ltd

Draft Planning Proposal
Cnr Ocean Drive & Houston Mitchell Drive
Lake Cathie

- Provide for effective management and maintenance of urban services (water, sewer);
- Assist in minimising the impact of natural events and climate change (floods, bushfires), through appropriate environmental zoning and mitigation measures; and
- Facilitate development that is compatible with the natural and built environment.

2. Urban Growth Management Strategy 2010 – 2031

The UGMS is the local response to the Mid North Coast Regional Plan and is closely integrated with Council's Towards 2030 Community Strategic Plan. The UGMS was adopted by Council on 14 December 2010.

The site is identified in this Strategy for investigation in the immediate/short-term for *service industrial development*.

The UGMS is currently under review and the Draft Urban Growth Management Strategy 2017 – 2036 (Draft UGMS 2017) was placed on public exhibition from 1 November to 13 December 2017. A key aim of the UGMS 2017 for *Economic Development and Employment* is:

... to promote economic development and employment to create a prosperous and diversified economy.

The Draft UGMS 2017 recognises that there is currently no zoned land for local service industry in the Lake Cathie/Bonny Hills locality and that the site will provide approximately half of the required land area to satisfy this existing shortfall.

The Draft UGMS 2017 proposes to continue investigations at the intersection of Houston Mitchell Drive and Ocean Drive (Action 15), noting the following attributes of the site:

- centrally located in terms of access to planned development in Lake Cathie and Bonny Hills;
- capacity for coordinated services, including access to Houston Mitchell Drive; and
- land for buffers to surrounding areas.

King & Campbell Pty Ltd

Draft Planning Proposal
Cnr Ocean Drive & Houston Mitchell Drive
Lake Cathie**Q5. Is the planning proposal consistent with applicable State Environmental Planning Policies?**

An assessment of consistency with State Environmental Planning Policies (SEPPs) of relevance is below.

SEPP	Consistent	Reason for inconsistency/consistency
44 Koala Habitat Protection	Yes	Encourages the conservation and management of natural vegetation areas that provide habitat for koalas to ensure permanent free-living populations will be maintained over their present range. The site was assessed as not qualifying as Potential Koala Habitat under the SEPP 44 assessment criteria.
55 Remediation of Land	Yes	Introduces state-wide planning controls for the remediation of contaminated land. The policy states that land must not be developed if it is unsuitable for a proposed use because it is contaminated. The site is not registered on Councils contaminated lands register nor does it have a history that includes a use that would preclude a future industrial use.
(Coastal Management) 2018	Yes	The aim of this Policy is to promote an integrated and co-ordinated approach to land use planning in the coastal zone in a manner consistent with the objects of the Coastal Management Act 2016 The site is partially mapped as within the <i>Proximity Area of Coastal Wetlands</i> . The mapped <i>Coastal Wetlands</i> are located to the east of the site and separated by the Ocean Drive road corridor. We note that this mapped <i>Coastal Wetland</i> does not reflect the existing ground conditions as the northern extent has been removed to facilitate the construction of the existing Lake Cathie Primary School. Given the separation distance and the Ocean Drive road corridor, potential impacts from development of the site will be negligible.
(Infrastructure) 2007	Yes	The aim of this Policy is to facilitate the effective delivery of infrastructure across the State The site has frontage to Ocean Drive which is a classified road. However as access to the site will be via Houston Mitchell Drive, the future industrial use will be compliant with this Policy.
(Rural Lands) 2008	Yes	The aim of this policy is to facilitate the orderly and economic use and development of rural lands for rural and related purposes. The SEPP contains a number of 'Rural Planning Principles' that must be considered in preparing any planning proposals affecting rural land.

King & Campbell Pty Ltd

Draft Planning Proposal
Cnr Ocean Drive & Houston Mitchell Drive
Lake Cathie

SEPP	Consistent	Reason for inconsistency/consistency
		The site has not been identified as regionally significant farmland and is considered to have limited agricultural value due to its size and location.

Q6. Is the planning proposal consistent with applicable Ministerial Directions (s.9.1 directions)?

An assessment of consistency with Ministerial Directions of relevance is below (as of 2 April, 2018).

Section 9.1 Direction	Consistent	Reason for inconsistency/consistency
1. Employment and Resources		
1.1 Business and Industrial Zones	Yes	The proposal is consistent with this direction as the location of the site for the proposed industrial lands is accordance with an approved strategy (UGMS).
1.2 - Rural Zones	Yes	The proposal is consistent with this direction as the site is identified in Councils UGMS for investigation in the immediate/short-term for <i>service industrial development</i> (clause (5)(a) and (c)).
1.4 Rural Lands	Yes	The proposal is consistent with this direction as in addition to the identification of the site for <i>service industrial development</i> in Councils UGMS, the land is identified as <i>proposed employment lands</i> within the Mid North Coast Farmland Mapping Project (clause (6)(a)).
2. Environment and Heritage		
2.1 - Environmental Protection Zones	Yes	The proposal is consistent with this direction as approximately 3.86ha of the site will be rezoned for environmental management. The applicant has offered to enter into a Planning Agreement in relation to the dedication of the environmental lands.
2.3 - Heritage Conservation	Yes	The proposal is consistent with this direction as the Birpai Local Aboriginal Land Council (March, 2018) did not identify any evidence of Aboriginal occupation and confirmed that the rezoning proposal can continue, subject to monitoring of any future earthworks during development of the site.
3. Housing, Infrastructure and Urban Development		
3.4 - Integrating Land Use and Transport	Yes	The proposal is consistent with this direction as the site is located on the corner of Ocean Drive, being a classified road and Houston Mitchell Drive, a location that is easily accessible for transport.
4. Hazard and Risk		
4.1 - Acid Sulfate Soils	Yes	Part of the site is mapped as Class 5 Land, meaning works within 500 metres of adjacent Class 1, 2, 3 or 4 land that is below 5 metres Australian Height Datum and by which the watertable is likely to be lowered below 1 metre Australian Height Datum on adjacent Class 1, 2, 3 or 4 land will require consent.

King & Campbell Pty Ltd

Draft Planning Proposal
Cnr Ocean Drive & Houston Mitchell Drive
Lake Cathie

Section 9.1 Direction	Consistent	Reason for inconsistency/consistency
		The adjoining Class 4 lands are located to the east of the Ocean Drive road corridor and for a distance of 500m, are currently above 5m AHD. These adjoining lands have been approved to be finished to a level of approximately 6m AHD, to provide district sporting fields and residential lots. Therefore the proposal is consistent with this direction.
4.3 - Flood Prone Land	Yes	The proposal is consistent with this direction as the site specific <i>Flood Assessment Report</i> (2010) prepared by Worley Parsons concluded that filling for the future industrial development will have minimal impact on the peak 100 year AI flood level. The peak 100 year ARI flood level at the site is predicted to increase by 10mm due to the filling and will lead to no increase in the reported 100 year ARI flood level for the site. A minor increase in the peak flood discharge through the culvert system is predicted to occur. However, this increase is less than 2% of the pre-development flow and is not considered to present any concerns for the site located downstream (clause (9)(b)).
4.4 - Planning for Bushfire Protection	Yes	The site is mapped bushfire prone. A site specific Bushfire Hazard Assessment (January 2018) concluded that subject to the implementation of appropriate bushfire threat reduction measures, bushfire risk is manageable. The proposal is consistent with this direction as the Assessment had regard to Planning for Bushfire Protection 2006 and recommends measures to regulate future building placement. controls to avoid placing inappropriate developments
5. Regional Planning		
5.10 - Implementation of Regional Strategies	Yes	The proposal is consistent with this direction as the site is identified for investigation within both the Mid North Coast Regional Strategy 2006-31 (Proposed Employment Lands) and within the North Coast Regional Plan 2036 (Investigation Area - Employment Lands).
6. Local Plan Making		
No 6.1 - Approval and Referral Requirements	Yes	The proposal is consistent with this direction through encouraging the efficient and appropriate use of lands identified in regional and local planning strategies.

King & Campbell Pty Ltd

Draft Planning Proposal
Cnr Ocean Drive & Houston Mitchell Drive
Lake Cathie**Section C – Environmental, social and economic impact****Q7. Is there any likelihood that critical habitat or threatened species, populations or ecological communities, or their habitats, will be adversely affected as a result of the proposal?**

This Planning Proposal is accompanied by an Ecological Assessment (Flora Fauna Consulting, October, 2016).

This Assessment considered the impact of removing the majority of the existing vegetation within the proposed IN2 zone and recommended a number of ameliorative measures to mitigate potential impacts including pre-tree removal inspections, Nest Box Strategy, compensatory plantings of koala food trees and non-koala food trees within the proposed E3 zone, regeneration of the native groundcover and understory layers within the proposed E3 zone, retention of the 3 of the 4 existing dams including the large dam on the southern part of the site, weed management and long-term management of the proposed E3 zone.

These ameliorative measures can be detailed in a Vegetation Management Plan (VMP) that will accompany the future Development Application for subdivision.

An Addendum to Ecological Report (Flora Fauna Consulting, December, 2017), also accompanies this Planning Proposal. The purpose of the Addendum is to confirm that the finding and conclusions of the 2016 Assessment are consistent with the new land management and biodiversity conservation legislation.

The Addendum notes that the initial ecological assessment embraced the same fundamental principles embodied in the new legislation with respect to avoid, minimise and offset, including;

- Recognition that the site was largely cleared previously to form derived grassland that are dominated by exotic graminoids and herbs;
- That the proposed removal of remnant native vegetation has been avoided and minimised where possible; and
- That vegetation removal will be offset by setting aside approximately 3.86 ha as environmental lands, including revegetation and compensatory plantings.

The Addendum also notes that the planning proposal will be accompanied by a Voluntary Planning Agreement (VPA) offer to Council for the future Environmental Management Lands that will set out their establishment, maintenance and dedication requirements. The landowner has also agreed to commit to providing koala proof fencing along the Ocean Drive boundary, linking back along Houston Mitchell Drive and around the food trees in that adjacent area of the site.

King & Campbell Pty Ltd

Draft Planning Proposal
Cnr Ocean Drive & Houston Mitchell Drive
Lake Cathie

The VPA and VMP process will provide certainty with respect to environmental management and the compensatory measures will assist in mitigating any impacts on biodiversity and generally, these measures are consistent with the new land management and biodiversity conservation legislation

Broader community benefits are associated with the creation of a habitat link between Queens Lake Nature Reserve to the west and the open space / habitat corridor on the St Vincent's Foundation land to the east, as initially identified within the Area 14 Urban Design Master Plan.

Q8. Are there any other likely environmental effects as a result of the planning proposal and how are they proposed to be managed?

Flood

The Site Flood Assessment Report (Worley Parsons, 2009 and 2010) has established the peak 100 year recurrence flood level of 7.6 m AHD. The information contained in the initial 2009 report and the 2010 assessment have been used to develop an indicative layout for the site, including an indicative extent of proposed fill to support the future industrial subdivision and use of the land.

The Worley Parsons 2010 assessment concludes the following:

The results of the modelling indicate that filling for the proposed development will have minimal impact on the peak 100 year A1 flood level. The peak 100 year ARI flood level at the site is predicted to increase by 10mm due to the filling and will lead to no increase in the reported 100 year ARI flood level for the site. A minor increase in the peak flood discharge through the culvert system is predicted to occur. However, this increase is less than 2% of the pre-development flow and is not considered to present any concerns for the site located downstream.

The indicative industrial subdivision layout attached at Appendix A to support the Planning Proposal has been designed to ensure all future allotments are above the 7.6m AHD level.

Bushfire

The accompanying Bushfire Hazard Assessment (January 2018) concludes that subject to the implementation of appropriate bushfire threat reduction measures, bushfire risk is manageable.

The recommended measures, including adequate defendable space and appropriate road design and access, have been accommodated within the indicative industrial subdivision layout attached at Appendix A to support the Planning Proposal.

King & Campbell Pty Ltd

Draft Planning Proposal
Cnr Ocean Drive & Houston Mitchell Drive
Lake Cathie

Q9. Has the planning proposal adequately addressed any social and economic effects?

The site has been recognised as future industrial/employment lands since 2006 and has consistently been included in all local and regional studies since this time.

The rezoning of the site will be consistent with a key economic and employment aim of Council's UGMS, to provide industrial/employment lands in close proximity to the Area 14 Urban Growth Area, at a location that is well serviced and accessible and where there is currently no zoned land for local service industry. The site will provide approximately half of the land area recognised as being needed in the Lake Cathie Bonny Hills locality.

The proposed rezoning will:

- more appropriately reflect the local planning strategies for the area and complement the existing land uses in the locality;
- provide employment opportunities for existing and future residents within walking distance to their place of residence (given proximity of the Lake Cathie/Bonny Hills Urban Release Area);
- manage the environmental constraints (flooding, bushfire, ecological); and
- create an opportunity to facilitate a wildlife linkage.

Accordingly, social and economic impacts are expected to be negligible.

King & Campbell Pty Ltd

Draft Planning Proposal
Cnr Ocean Drive & Houston Mitchell Drive
Lake Cathie**Section D – State and Commonwealth interests****Q10. Is there adequate public infrastructure for the planning proposal?**

This site is well located from an accessibility point of view with frontages to both Houston Mitchell Drive and Ocean Drive. In that regard the light industrial area can be established in a manner that ensures that there will be a minimal number of trips generated by industrial based traffic through future residential areas.

In addition to this, Houston Mitchell Drive provides a direct link to the Pacific Highway while Ocean Drive provides a direct link to the southern end of Port Macquarie and Laurieton to the south. Road accessibility is not considered to be a constraint to the development of the subject property as a light industrial precinct. Sewer and water services are available and considered satisfactory to service future

Infrastructure Services are available to the site as part of the development of the adjoin Area 14 Urban Release Area lands.

The treatment and retention of stormwater are intended to be carried out on a lot by lot basis with Development Control Plan provisions designed in conjunction with the Planning Proposal. In relation to the proposed road, the zone boundary will allow for the treatment and retention of stormwater within the IN2 zone and it is noted that the preliminary plan allows for an area in excess of 5% for this provision (700m² at the end of the proposed cul-de-sac).

Q11. What are the views of state and Commonwealth public authorities consulted in accordance with the Gateway determination?

Should the proposal be supported, the Department of Planning and Environment's gateway determination will specify consultation requirements.

Consultation with State agencies is expected to occur with the NSW Office of Environment and Heritage, the NSW Rural Fire Service and the relevant electricity and telecommunications providers.

King & Campbell Pty Ltd

Draft Planning Proposal
Cnr Ocean Drive & Houston Mitchell Drive
Lake Cathie

PART 4 - Mapping

Proposed map amendments to PMHLEP 2011 are described in Part 2 of this planning proposal.

draft

King & Campbell Pty Ltd

Draft Planning Proposal
Cnr Ocean Drive & Houston Mitchell Drive
Lake Cathie

PART 5 - Community consultation

It is proposed to undertake community consultation for 28 days including notification in a local newspaper and written notification to adjoining landowners. In addition, the exhibition material will be available on Council's website and at the Port Macquarie Administration building for the duration.

draft

King & Campbell Pty Ltd

Draft Planning Proposal
Cnr Ocean Drive & Houston Mitchell Drive
Lake Cathie**PART 6 - Project timeline**

This project timeline is based on anticipated dates and timeframes, though there can be unexpected delays.

Anticipated dates	2018									
	M	J	J	A	S	O	N	D		
Commencement (date of Gateway determination)										
Timeframe for the completion of required technical information										
Timeframe for government agency consultation (pre and post exhibition as required by Gateway determination)										
Commencement and completion dates for public exhibition period										
Dates for public hearing (if required)										
Timeframe for consideration of submissions										
Timeframe for the consideration of a proposal post exhibition										
Date of submission to the department to finalise the LEP										
Date Council will make the plan (if delegated)										
Date Council will forward to the department for notification.										

draft

King & Campbell Pty Ltd

Draft Planning Proposal
Cnr Ocean Drive & Houston Mitchell Drive
Lake Cathie

Section 4

Conclusion

This submission seeks the rezoning of the site from RU1 Primary Production to part IN2 Light Industrial and part E3 Environmental Management. The site is identified within the Port Macquarie Urban Growth Management Strategy 2011 – 2031 (the UGMS) for investigation in the immediate/short-term for *service industrial development*.

Councils Draft UGMS 2017 proposes to continue the investigations at the site (Action 15), recognising that the site will provide for approximately half of the industrial land that is required to meet the projected demand from the Lake Cathie and Bonny Hills communities for service industry by 2036.

This submission has confirmed that the site is well positioned for servicing of future industrial lots and that potential environmental hazards can be suitably managed.

draft



Birpai Local Aboriginal Land Council

Aboriginal Cultural Heritage Assessment

Lot 10 DP 615775

Ocean Drive

Lake Cathie

Prepared by

Birpai Local Aboriginal Land Council

In response to a

Rezoning proposal by King and Campbell

PO Box 876 Port Macquarie NSW 2444

Tel: 02 65849066

Email: birpailalo@midcoast.com.au

Table of Contents

Table of Contents

1. Introduction	3
2. Investigator and Contributors	4
3. Previous Archaeological work	4
4. Landscape context	5
General Coastal character & predictive model	5
Local Aboriginal History	6
Location of the site	6
6 Site Survey & Results	6
Sampling Strategy	6
Survey Coverage	6
7. Results of Survey of 2 December 2016	7
Analysis & Discussion	7
Recommendation	7

1. Introduction

The subject land is located at the corner of Mitchell Houston Drive and Ocean Drive Lake Cathie (Lot 10 DP 615775). The land is in just under 10 ha and is located approximately 20km south of the Port Macquarie CBD.

It is proposed to rezone most of the Northern portion into light industrial (Zone IN2) with balance dedicated Hastings Council as Environmental Management Lands

The objectives of this Inspection and report are:

- To identify whether the subject land contains objects or artefacts that are culturally relevant to the Birpai people.
- To determine if any potential harm on Aboriginal Cultural heritage would be likely to occur from the proposed development.
- To make recommendations to be Included in the application to Hastings Council.

This report has been prepared for King and Campbell for the proposed rezoning. It is not to be used for any other purpose

2. Investigator and Contributors

The Site Investigations have been undertaken by:

Mr. Jason Holten, Sites Officer of the Birpai Local Aboriginal Land Council

The site investigator has significant local experience in carrying out site survey investigations and regularly undertakes Sites works in the Port Macquarie area. Mr. Holten has a wealth of knowledge of Aboriginal Culture and Heritage in the local area.

3. Previous Archaeological work

Search of the Aboriginal Heritage Information Management System (AHIMS) – Basic search conducted 13 April 2018 Lot 10 DP615775 with a buffer of 50 m identified no Aboriginal Places and no Aboriginal Site in the vicinity of the 50 m buffer.

Cultural Heritage records held with Birpai Land Council include:

The Birpai Local Aboriginal Land Council holds no records of any items of cultural significance in the vicinity of the land in question.

Of the above resources, references to this area and the Birpai Aboriginal People were the primary search focus. Information relevant to the site or its immediate surrounds was identified as follows:

There are no known aboriginal cultural heritage sites within the subject land. Especially in the area of the proposed industrial land.

4. Landscape context

General Coastal character & predictive model

The results of reviews of archaeological investigations to date indicate that rocky shore, sandy beach, estuarine and hinterland environments were typically utilised by Aboriginal groups. The densest and most diverse archaeological remains are generally found along the coast where food resources were richer. Reliance on estuarine and adjacent hinterland areas was probably sporadic, possibly using freshwater swamps as a primary resource.

A large proportion of recorded sites indicate they have been found on flat terrain, predominantly in coastal heath, along estuarine stream banks, some woodland and dry sclerophyll eucalypt forest and in subtropical rainforest. Less commonly, sites are also found in undulating to hilly terrain either in dry sclerophyll eucalypt forest. Even less so in steep rugged terrain.

There is a greater likelihood of the existence and discovery of Aboriginal sites into the coastal plain. Particularly the crests and basal slopes of low spurlines that extend into and are situated adjacent to flood prone valley floors.

Stone artefacts may occur as open artefact scatters and isolated finds. Midden deposits may occur subsurface on former beach ridges and other alluvial or colluvial deposits which fringe valley floors. Including the former shoreline of the marine embayment and subsequent estuary which formed following the last sea level rise at around 6000 years BP.

Open artefact scatters (or campsites) are considered more likely to occur on relatively flat terrain, well-drained and not too distant from sources of freshwater or along the crests of low ridgelines.

Scarred trees may occur wherever old-growth trees remain. Potential locations include road reserves, remnant riparian vegetation on farmlands, and isolated trees within the state forests.

Prehistoric burial sites are most likely to be found in locally elevated landforms with a relatively deep profile of soft sediments of in the deposits of midden sites.

Local Aboriginal History

Before European settlement, Aboriginal people roamed the area and used the land to hunt and gather food. Aboriginal ties to the land can be identified with the significant sites in and around the Port Macquarie area with some sites recorded, including burial sites at the Town Green in the CBD.

Location of the site

The subject land is located approximately 20km southwest of the Port Macquarie CBD. The site is generally surrounded by forested rural land to the west and north as well as residential land and public school in other directions.

On site is predominantly cleared with a significant number of established trees.

6 Site Survey & Results

Sampling Strategy

The sampling strategy is to attend the property by vehicle and undertake intensive walking inspection of the part of the site likely to be impacted upon by the proposed rezoning and future residential lots.

In a landscape context, this area is consistent with the landscape unit "crests and basal slopes of low spurlines that extend into and are situated adjacent to flood prone valley floors". In this context intensive walking survey of the area is considered the most appropriate survey strategy.

The site survey was undertaken on 7 March 2018 by Mr Jason Holten, Senior Site Officer of Birpai Local Aboriginal Land Council.

Survey Coverage

On 7 March 2018 exposure and visibility across the site is described as generally good.

No test excavations were considered necessary and were not undertaken.

7. Results of Survey of 7 March 2018

After a lot of walking over the proposed rezoning area the senior site officer, Mr Jason Holten noted that there had been a lot of disturbance over the years, with the removal of trees and stumps from the site and movement of topsoil. Any sign of Aboriginal activity in the area is believed to have been lost or destroyed.

Mr Holten, Senior Sites Officer who attended the property and undertook the survey concluded that no evidence of Aboriginal activity was located on Lot 1 DP 1066820

Analysis & Discussion

Consultation with local Aboriginal peoples with a relationship to the area revealed no knowledge of occupation or cultural heritage associations with the subject land.

No site recording is required as there are no material traces, evidence or expressed knowledge of Aboriginal land use of the site.

The proposed rezoning and future subdivision of lot 1 is not considered likely to impact upon or have any significance for the local Aboriginal community and their cultural heritage.

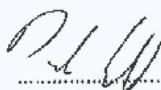
The assessing site officers can see no reason why the proposal cannot continue.

Recommendation

Based on the Site Inspection and other investigation, there is no reason from an Aboriginal Cultural and Heritage perspective that this next stage of the development cannot proceed.

At such time as development site works start, should any artefacts be turned up or located, Birpai Local Aboriginal Site officers are to be contacted immediately and work on site stopped pending further assessment.

Signed



Mr David Carroll

CEO - Birpai Local Aboriginal Land Council

PO Box 876 Port Macquarie NSW 2444

Tel: 02 65849066

Email: b.pailalc@midcoast.com.au



WorleyParsons
resources & energy

EcoNomics

KING & CAMPBELL

MIFSUD REZONING & INDUSTRIAL DEVELOPMENT, LAKE CATHIE

Flood Impact Assessment

rp7551arm_crt090730-Mifsud Lake Cathie FIA.doc

Issue No 2

10th September 2010

Water Resources

Level 10, 141 Walker Street
North Sydney 2060 Australia
Tel: +61 2 8456 7200
Fax: +61 2 8923 6877
www.worleyparsons.com
WorleyParsons Services Pty Ltd
ABN 61 001 279 812

© Copyright 2010 WorleyParsons Services Pty Ltd


WorleyParsons

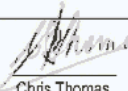
resources & energy

EcoNomics

KING & CAMPBELL**MIFSUD REZONING & INDUSTRIAL DEVELOPMENT, LAKE CATHIE
Flood Impact Assessment****Disclaimer**

This report has been prepared on behalf of and for the exclusive use of King & Campbell, and is subject to and issued in accordance with the agreement between King & Campbell and WorleyParsons, as well as by relevant agencies for assessment purposes. WorleyParsons accepts no liability or responsibility whatsoever for it in respect of any use of or reliance upon this report by any third party.

Project: 7551 - MIFSUD REZONING & INDUSTRIAL DEVELOPMENT, LAKE CATHIE

REV	DESCRIPTION	AUTHOR	REVIEWER	WORLEY- PARSONS APPROVAL	DATE	CLIENT APPROVAL	DATE
A	Issued for Review	AM	CRT		30/7/09	N/A	
B	Final	AM	CRT		10/9/10	N/A	
		Andrew Morris	Chris Thomas	Chris Thomas			


WorleyParsons

resources & energy

EcoNomics

KING & CAMPBELL

 MIFSUD REZONING & INDUSTRIAL DEVELOPMENT, LAKE CATHIE
Flood Impact Assessment

CONTENTS

1. INTRODUCTION	1
2. SITE FLOOD ASSESSMENT.....	3
2.1 HYDROLOGIC ANALYSIS	3
2.2 PREDICTED PEAK FLOOD LEVEL.....	4
3. FLOOD IMPACT ASSESSMENT	5
3.1 DESCRIPTION OF PROPOSED DEVELOPMENT	5
3.2 PROPOSED DEVELOPMENT FLOOD MODELLING SCENARIOS.....	5
3.3 FLOOD MODELLING RESULTS.....	6
3.4 DISCUSSION OF RESULTS	7
4. CONCLUSIONS	8
5. REFERENCES	9

**WorleyParsons**

resources & energy

EcoNomics™

KING & CAMPBELL

MIFSUD REZONING & INDUSTRIAL DEVELOPMENT, LAKE CATHIE
Flood Impact Assessment

1. INTRODUCTION

Mifsud Industrial Pty Ltd (*Mifsud*) plans to develop a parcel of land that is referred to as Lot 10 DP 615775 Ocean Drive, Lake Cathie. As shown in **Figure 1**, the land is located along the western frontage of Ocean Drive and extends south from its intersection with Houston-Mitchell Drive. It is currently zoned 1(a1) *Rural* under the Hastings Local Environmental Plan (2001).

The site is located near the downstream end of a 252 ha catchment that drains to an undeveloped area on the eastern side of Ocean Drive. The extent of the catchment and the location of the site within it is shown in **Figure 2**.

The western boundary of the site adjoins dense bushland. The area to the east of the site has been cleared for grazing and drains to a series of constructed wetlands that are situated along the northern limit of the urban precinct of Bonny Hills.

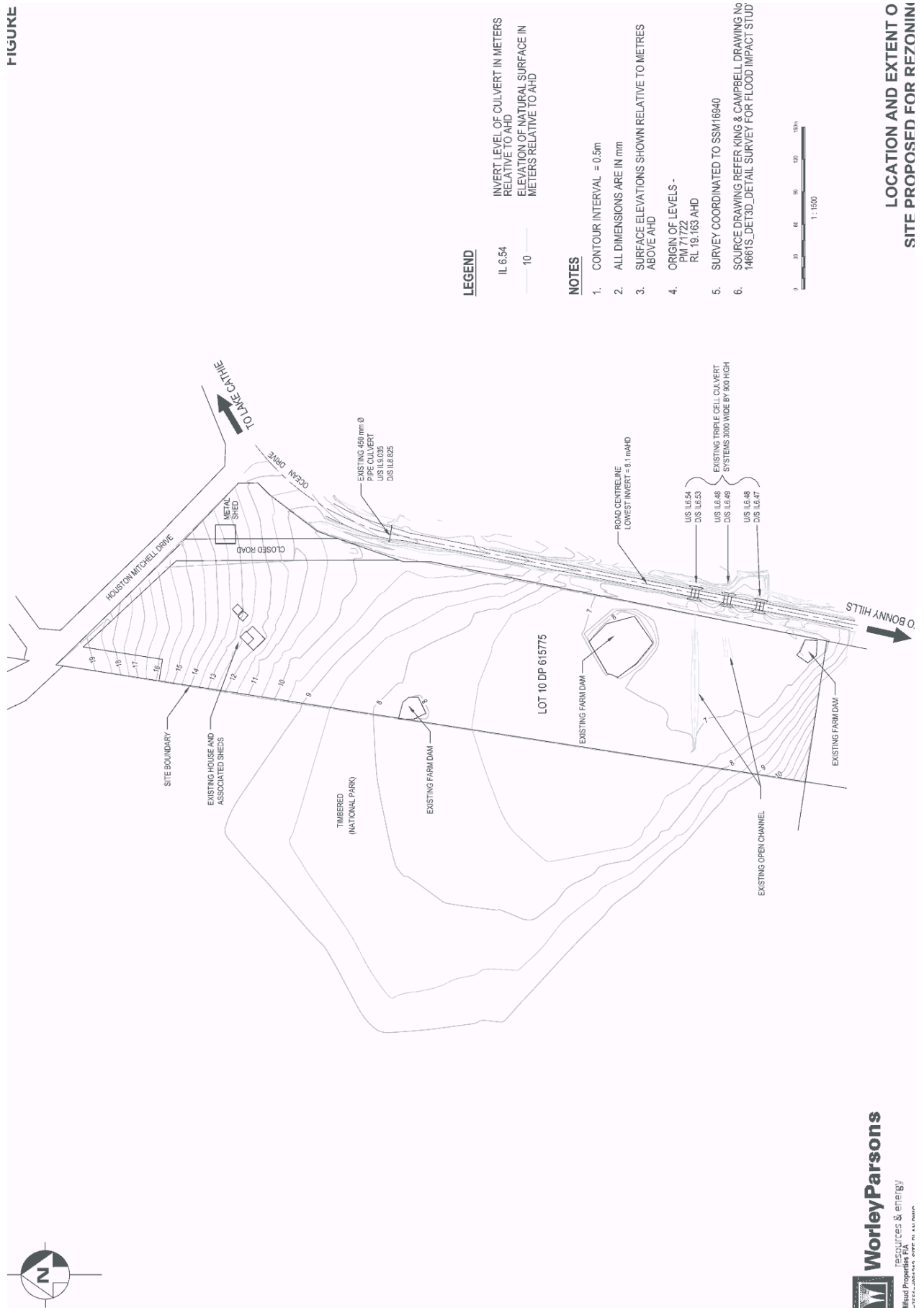
As shown in **Figure 1**, an ephemeral stream that drains the catchment traverses through the Mifsud Site. The Ocean Drive roadway embankment (*refer Figure 1*) presents as a barrier to the easterly discharge of floodwaters, but incorporates three triple cell culvert systems that concentrate runoff and discharge it to the east of the site. The locations of the three culvert systems are highlighted in **Figure 1**.

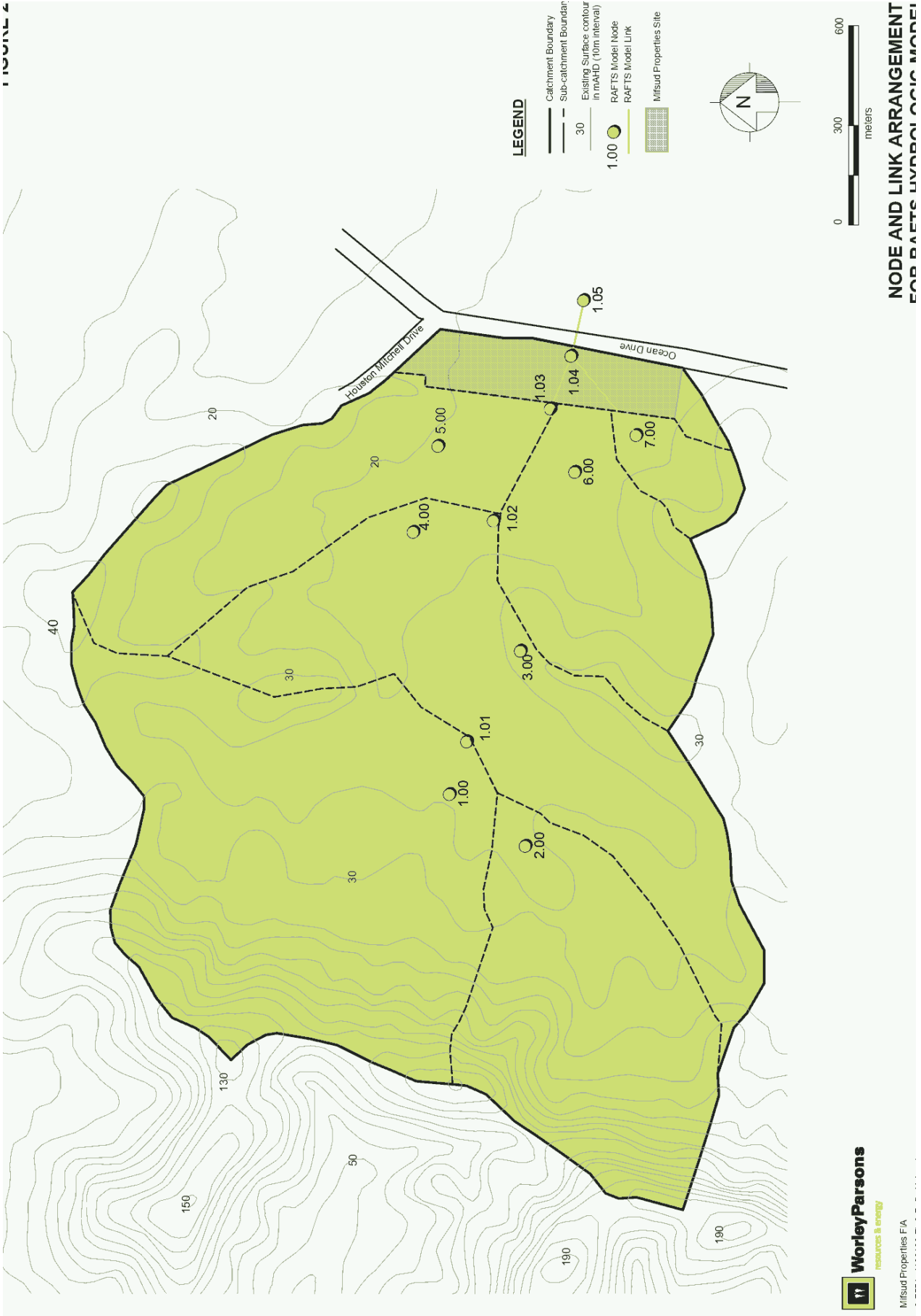
Notwithstanding, there is potential for floodwaters to pond in the area upstream from the roadway embankment leading to inundation of a large proportion of the Mifsud Site.

Accordingly, King and Campbell Pty Ltd, acting on behalf of Mifsud, engaged WorleyParsons to undertake flood investigations aimed at determining the 100 year recurrence flood level at the site. The results of these investigations are discussed in a draft Site Flood Assessment Report that was issued to King & Campbell in January 2009. The Site Flood Assessment Report established that the peak 100 year recurrence flood level at the site is estimated to be 7.6 mAHD. The findings of the Site Flood Assessment Report have been included in this document.

Following submission of the Site Flood Assessment Report, King & Campbell provided WorleyParsons with a plan showing the layout for the proposed development of the site. The plan included a lot layout and an indicative extent of proposed fill. The fill is required to raise the level of the terrain where development is being proposed and is necessary in order for the land to be rezoned for industrial development.

FIGURE





**WorleyParsons**

resources & energy

EcoNomics**KING & CAMPBELL****MIFSUD REZONING & INDUSTRIAL DEVELOPMENT, LAKE CATHIE
Flood Impact Assessment**

However, the proposed filling has the potential to reduce the available flood storage and could lead to an increase in peak 100 year recurrence flood levels upstream from the site. This could also increase the peak flood discharge through the culvert system located underneath Ocean Drive, potentially creating adverse conditions for properties located downstream. In addition, the development will result in an increase in stormwater run-off and has the potential to increase the peak of the hydrograph entering the flood storage area.

This report documents the results of investigations that have been undertaken to characterise existing flood conditions at the site. It also documents the magnitude and extent of the impact that the proposed filling of the land may have on existing flood characteristics.

**WorleyParsons**

resources & energy

EcoNomics

KING & CAMPBELL

MIFSUD REZONING & INDUSTRIAL DEVELOPMENT, LAKE CATHIE
Flood Impact Assessment

2. SITE FLOOD ASSESSMENT

2.1 HYDROLOGIC ANALYSIS

The catchment draining to the Mifsud Site extends 2 kilometres to the west of Ocean Drive and rises to an elevation of 190 mAHD. It has an area upstream of Ocean Drive of 252 ha. Almost all of this area is densely vegetated.

In order to determine peak flood flows that could potentially be discharged to the site, a hydrologic model of the catchment was developed. The hydrologic model was developed using the Runoff Analysis and Flow Training Simulation (RAFTS-XP) software package.

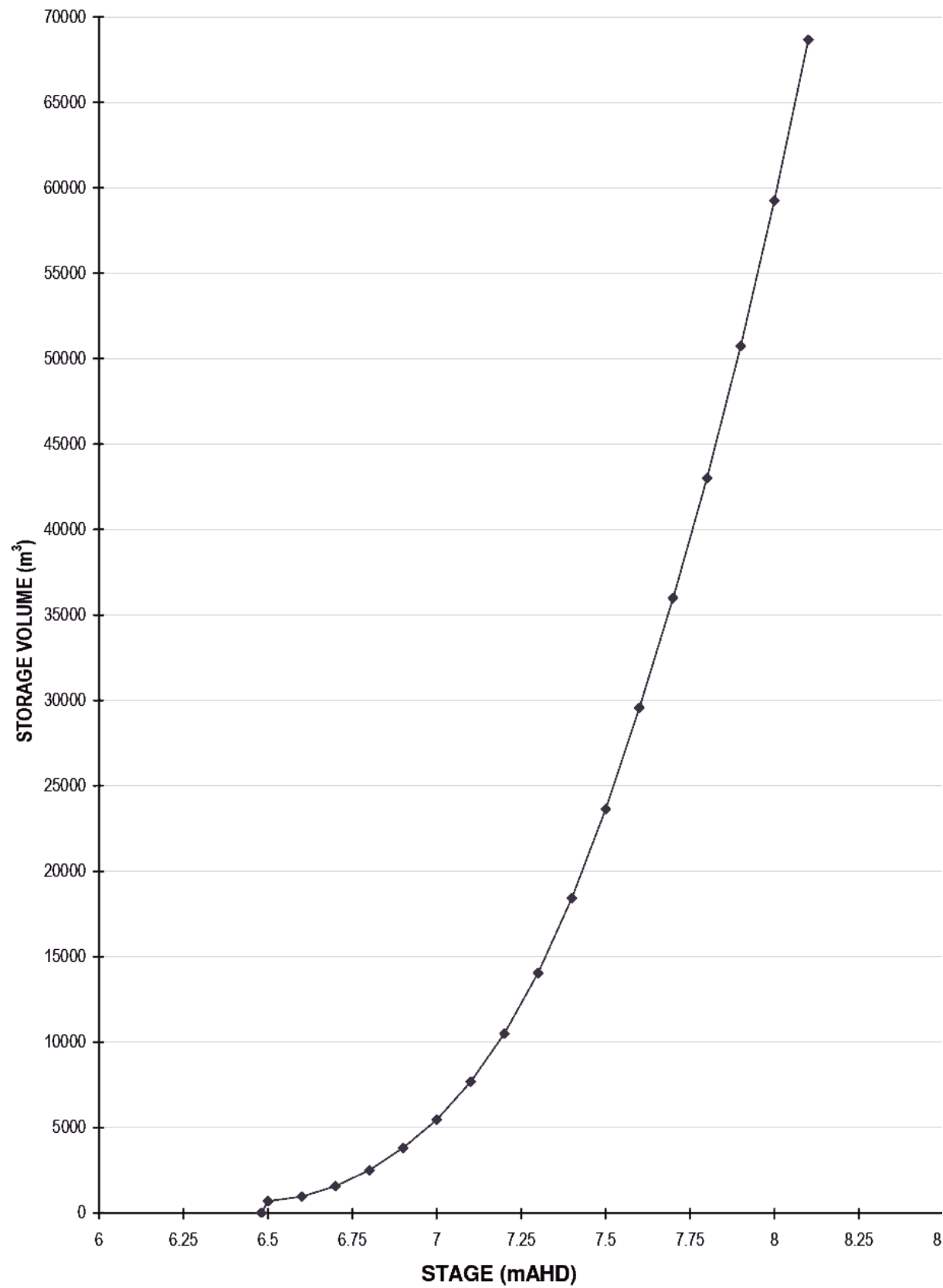
RAFTS-XP is a deterministic runoff routing model that simulates catchment runoff processes. It is recognised in 'Australian Rainfall and Runoff – A Guideline to Flood Estimation' (ARR 1998), as one of the available tools for use in flood routing within Australian catchments. The layout of the RAFTS model is shown superimposed over a plan of the catchment as shown in **Figure 2**.

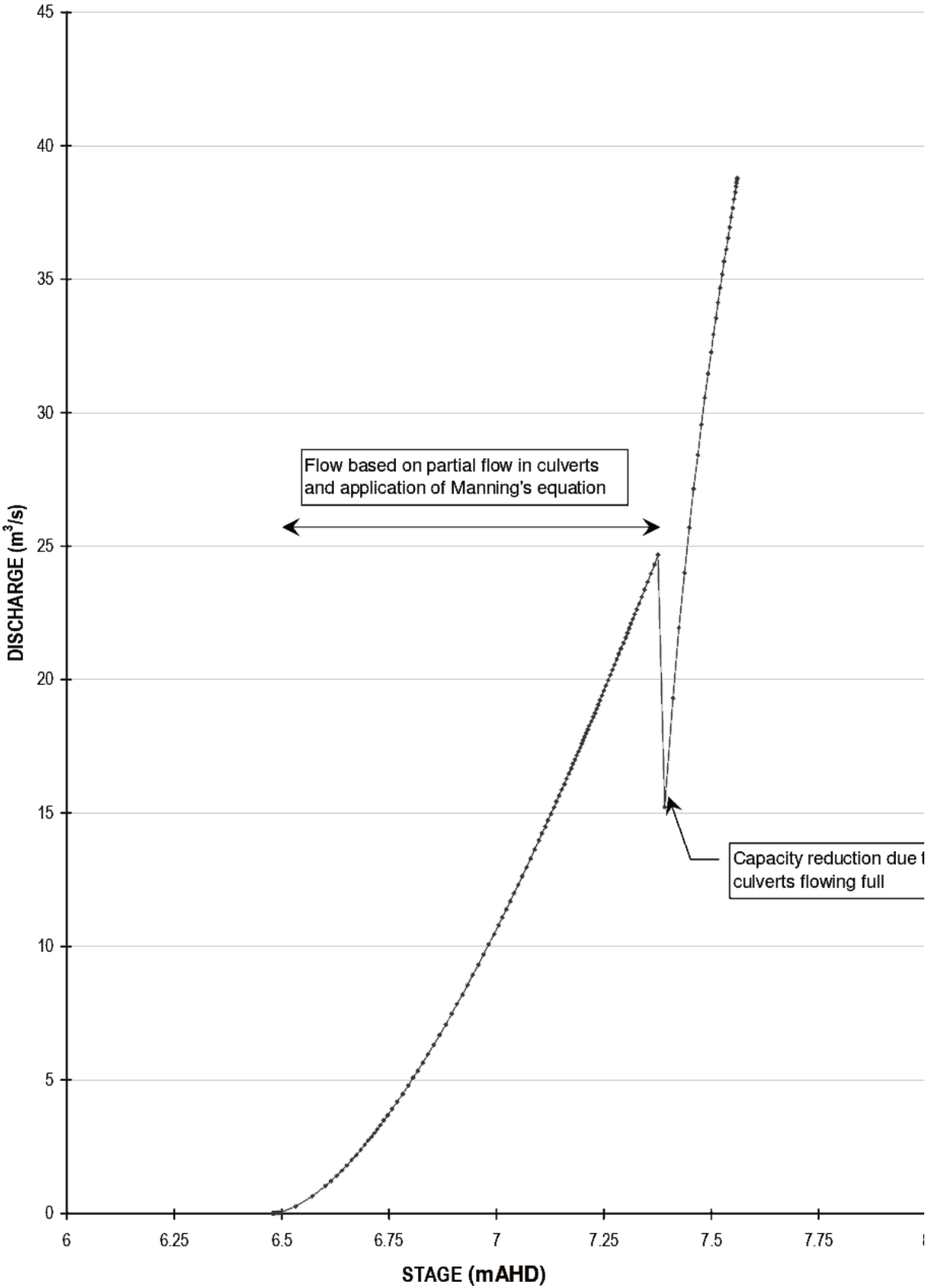
As shown in **Figure 2**, the upper catchment was subdivided according to drainage lines interpreted from available aerial photography and topographic mapping. Catchment subdivision also considered the homogeneity of existing land use and vegetation cover. Subcatchment characteristics such as area, slope, percentage imperviousness and roughness, were extracted from the mapping and incorporated within the model data-set.

As outlined in **Section 1**, the Ocean Drive roadway embankment effectively "blocks" the free discharge of overland flows and in conjunction with the culvert system, acts as a hydraulic control. As a result, areas of the Mifsud Site upstream from the culverts act as a flood storage area in a similar manner to a detention basin.

Accordingly, the RAFTS model was developed to incorporate the storage afforded by these areas and created by the roadway embankment. The storage was quantified by analysis of the topographic data shown in **Figure 1**, which resulted in determination of the stage-storage relationship presented in **Figure 3**.

In addition, hydraulic analyses were undertaken to determine the flow that would be discharged through the culvert system at different levels of storage. This resulted in development of the stage-discharge relationship shown in **Figure 4**.





**WorleyParsons**

resources & energy

EcoNomics**KING & CAMPBELL****MIFSUD REZONING & INDUSTRIAL DEVELOPMENT, LAKE CATHIE
Flood Impact Assessment**

The stage-discharge relationship indicates that a sharp reduction in the discharge capacity occurs as the upstream water level reaches the obvert of culverts within the three culvert systems. At this point, the culvert is predicted to be "drowned out". The increase in friction causes a reduction in discharge capacity. The relatively large reduction is due to the number of culverts and the relatively large ratio of width to depth.

The RAFTS model was used to simulate the design 100 year recurrence storm event for the full range of standard storm durations defined in ARR 1998. The results of the analysis were interrogated to determine the critical storm duration for the catchment draining to Ocean Drive.

The 270 minute storm was identified as the critical storm duration for the design 100 year recurrence event. This event generated a peak flow of 41 m³/s at the western boundary of the site. The simulation also showed that the storage afforded by the roadway embankment and culvert system led to a 5% attenuation of the peak flow. The 100 year recurrence flood discharge at the downstream side of Ocean Drive is estimated to be 38.8 m³/s.

2.2 PREDICTED PEAK FLOOD LEVEL

The results of the design flood simulations for existing conditions indicate that under a "no-blockage scenario", the 100 year recurrence flood is predicted to reach an elevation of 7.6 mAHD. This is about 500 mm below the minimum crest level of the section of Ocean Drive that fronts the eastern side of the site. Accordingly, all runoff from the upstream catchment must be discharged via the three culvert systems shown in **Figure 1**.

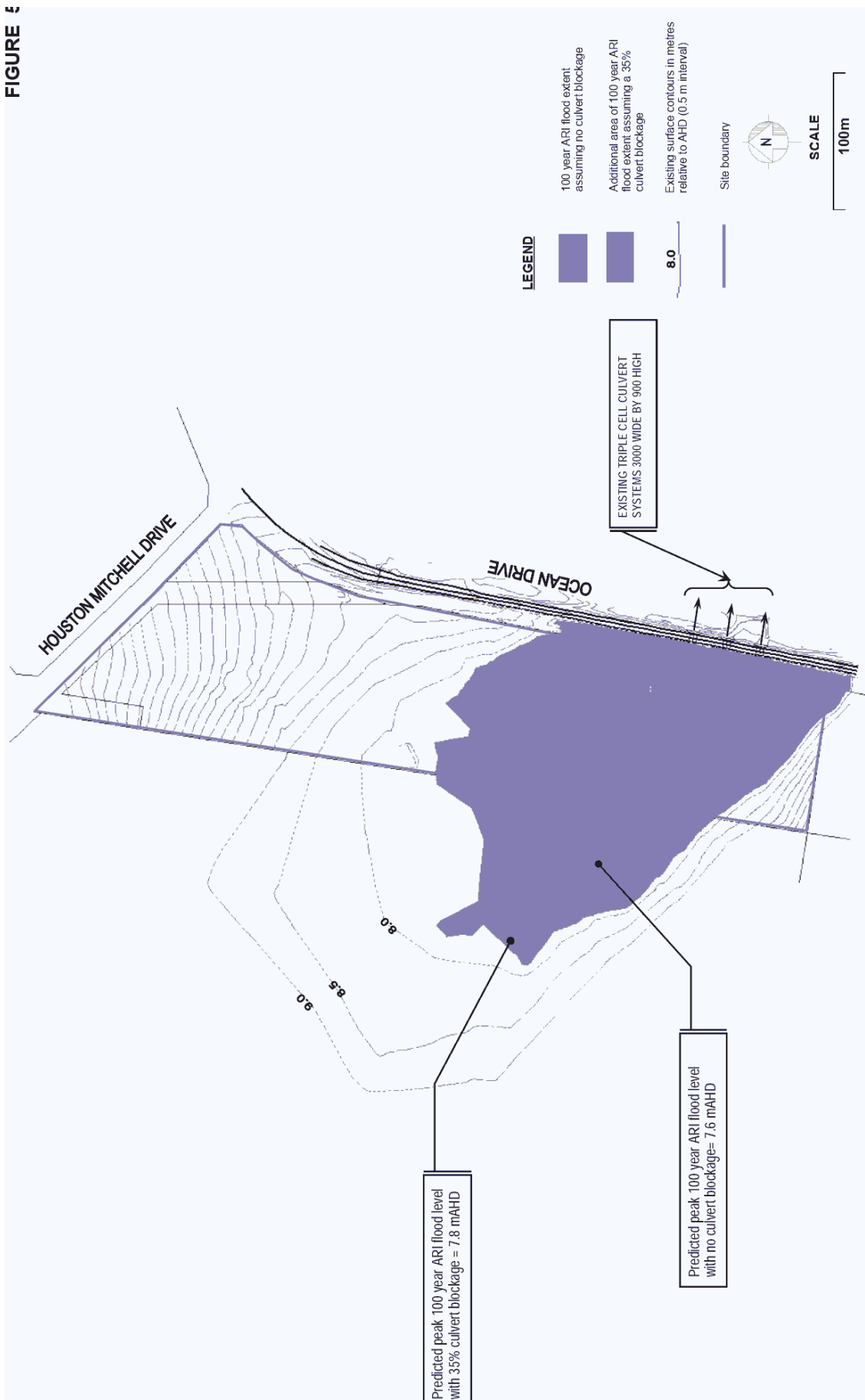
In order to determine the sensitivity of peak flood levels to culvert blockage, a simulation was undertaken assuming 35% blockage of all three culvert systems. This assumption was based on typical blockage scenarios adopted by local government in NSW. In that regard, it is noted that Port Macquarie-Hastings Council's stormwater design guidelines do not require a blockage scenario to be considered.

The blockage factor was applied by reducing the culvert width by 35% in order to simulate the maximum impact on culvert performance through the range of storage elevations.

In this regard, it should be noted that the application of a blockage factor of this magnitude to all three culvert systems simultaneously is considered to be extremely conservative. It is highly unlikely that the blockage of culverts that are 30 metres apart would occur simultaneously.

Notwithstanding, application of the 35% blockage factor across all culverts only resulted in a 0.2 metre increase in peak 100 year recurrence flood level; that is, an increase from 7.6 mAHD to 7.8 mAHD. The associated increase in flood extent is shown in **Figure 5**.

FIGURE 3

PREDICTED 100 YEAR ARI FLOOD EXTENT
FOR EXISTING CONDITION

**WorleyParsons**

resources & energy

EcoNomics

KING & CAMPBELL

MIFSUD REZONING & INDUSTRIAL DEVELOPMENT, LAKE CATHIE
Flood Impact Assessment

3. FLOOD IMPACT ASSESSMENT

3.1 DESCRIPTION OF PROPOSED DEVELOPMENT

The proposed development involves the subdivision of the Mifsud Site into sixteen separate allotments. The lots are arranged around a centrally located road which joins Houston Mitchell Drive. The proposed layout is shown in **Figure 6**.

Guidelines for determining minimum floor levels for development are contained in the Port Macquarie Hastings Council (PMHC) Interim Local Government Area (LGA) Flood Policy. The Policy was adopted by Council in April 2007 and states that the flood planning level for commercial and industrial development is defined by the peak level of the 100 year recurrence flood. In addition, at least 25% of the floor area of any commercial/industrial development must be located a specified distance above the peak 100year ARI flood level. For areas east of the Pacific Highway, this distance or "freeboard" is 800 mm.

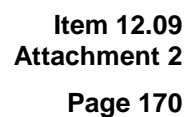
The existing site contour information indicates that all of Lots 7 and 8 and sections of Lots 6 and 9 are located on land that is below the predicted 100 year recurrence flood level. Therefore, filling of these lots, up to the peak 100 year ARI flood level of 7.6 mAHD is proposed in order to meet the requirements of Council's Flood Policy. The same sites will require extra filling to meet the additional freeboard requirements outlined above.

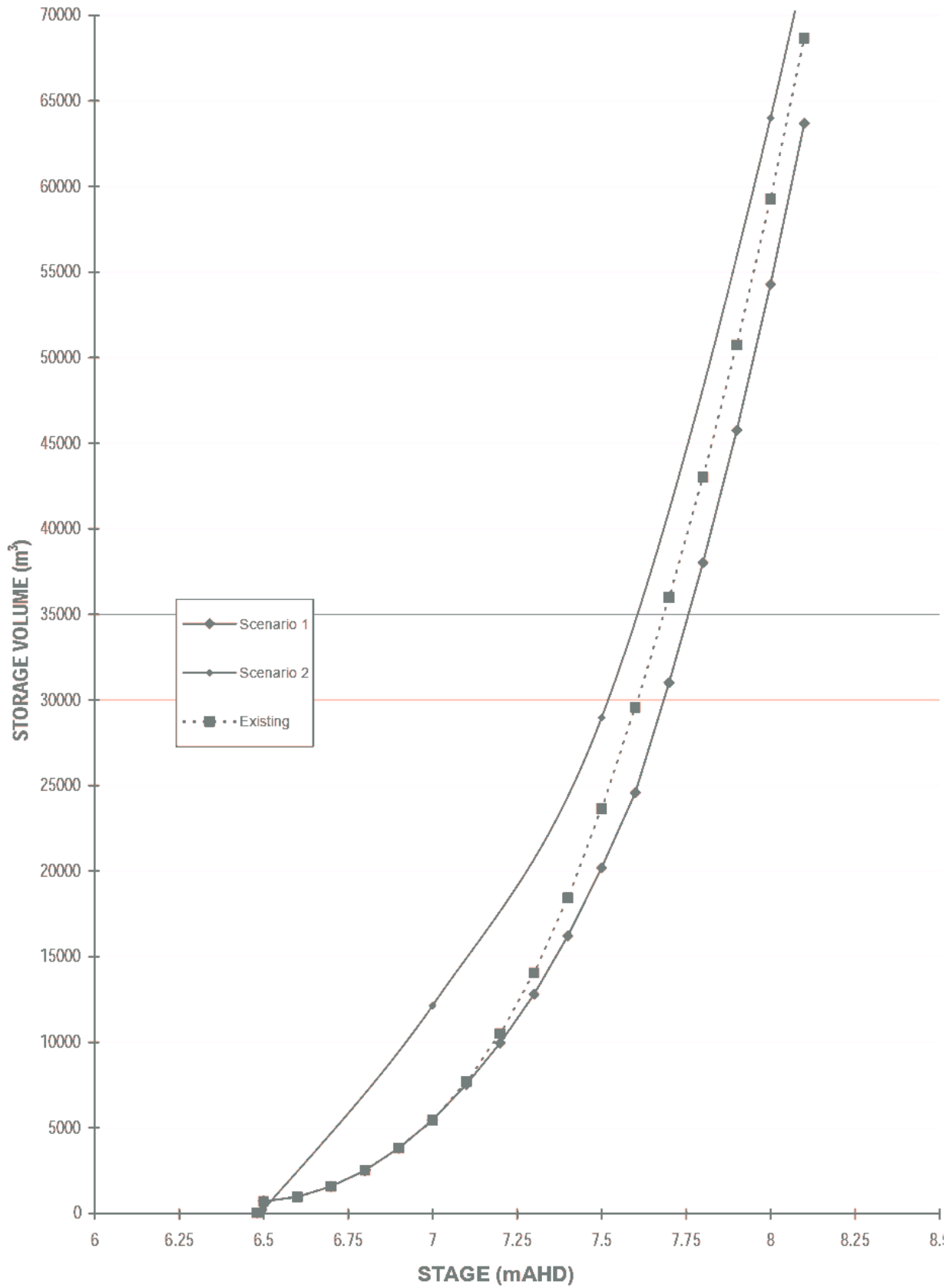
In addition, some filling of Lot 10 and possibly Lot 11 and 5 will also be necessary. While alternative methods could be employed to meet the freeboard requirements, it has been assumed that filling would be undertaken to facilitate slab on ground construction for future development on the site. This is considered to provide the worst possible conditions in terms of floodplain encroachment. The approximate location of the 8.4 metre AHD contour effectively defines the extent of the lots that would need to be filled if the additional freeboard requirement applied to the entire area of each lot.

The fill requirements discussed above are estimated to lead to a reduction in the storage volume of 5,600 m³ up to the existing 100 year ARI peak flood level at the site. The modified stage storage relationship, including a comparison against the existing stage storage relationship is included in **Figure 7**.

3.2 PROPOSED DEVELOPMENT FLOOD MODELLING SCENARIOS

Two scenarios were modelled to determine the potential impact of the proposed development on the predicted 100 year recurrence flood level at the site.





**WorleyParsons**

resources & energy

EcoNomics**KING & CAMPBELL****MIFSUD REZONING & INDUSTRIAL DEVELOPMENT, LAKE CATHIE
Flood Impact Assessment**

Scenario 1 involves simulation of flooding for the proposed development layout as described above. The existing hydrologic model was modified to incorporate the stage-storage relationship shown in **Figure 7** and run-off parameters for the development site were modified to reflect a post development scenario (ie. greater imperviousness).

Scenario 2 involves simulation of flooding based on the proposed development layout but with the area south of the proposed fill platform excavated to 6.5 mAHD. This is equivalent to the invert level of the existing culverts. The extent of the proposed excavation area is shown on **Figure 6**. The additional storage volume that would be achieved by undertaking this additional excavation is estimated to be 9, 200 m³.

Modifications to run-off parameters for the development site are included in the hydrologic models that were developed for both scenarios. The proposed development has the effect of reducing permeability in the area as a result of the construction of roads and buildings.

3.3 FLOOD MODELLING RESULTS

Design flood simulations were completed for the two scenarios to determine the impact on the peak 100 year recurrence flood level at the site and associated flood characteristics. The results of the simulations are discussed in the following.

Scenario 1

The results of the design flood simulations for the proposed site conditions associated with Scenario 1 indicate that the peak of the 100 year recurrence flood is predicted remain unchanged at an elevation of 7.6 mAHD. A minor increase in peak flood level is predicted, but it is much less than 0.1 metres and therefore makes no change to the reported flood level. It is considered to be less than the margin of error generally associated with flood modelling.

The associated peak 100 year ARI discharge through the culvert system is estimated to be 39.5 m³/s, which represents an increase in the peak discharge of 0.7 m³/s.

Scenario 2

Inclusion of the additional storage volume that would be achieved by excavation to 6.5 mAHD results in no measurable increase in the peak 100 year ARI flood level at the site. The model predicts the peak flood level will remain at 7.6 mAHD and the peak discharge through the culvert system will remain at 38.8 m³/s.

**WorleyParsons**

resources & energy

EcoNomics**KING & CAMPBELL****MIFSUD REZONING & INDUSTRIAL DEVELOPMENT, LAKE CATHIE
Flood Impact Assessment**

3.4 DISCUSSION OF RESULTS

The negligible difference in peak flood level can be attributed to the large discharge capacity of the culvert system that drains the site. The culverts have sufficient capacity to carry the peak 100 year ARI flow without causing substantial backwater flooding. Although the storage capacity is reduced in Scenario 1, there is little attenuation of the inflow hydrograph. The modified stage-storage condition leads to only minimal impacts on peak flood level.

The minor increase in the peak discharge through the culvert system is not considered to be an issue. It is not anticipated to cause any measurable increase in peak flood levels on the downstream side of Ocean Drive.

The increase in run-off resulting from the proposed development also makes no difference to the overall inflow hydrograph. In this case, the peak flow from the local catchment does not coincide with the peak of the hydrograph entering the flood storage area from the upstream catchment. This is due to the close proximity of the development area to the culvert outlet, relative to the rest of the catchment.

The results indicate that the provision of additional cut to offset the proposed filling is unnecessary. The additional fill that is required for the proposed development to proceed and the associated loss of flood storage will not lead to any adverse impacts on adjoining properties.

**WorleyParsons**

resources & energy

EcoNomics

KING & CAMPBELL

MIFSUD REZONING & INDUSTRIAL DEVELOPMENT, LAKE CATHIE
Flood Impact Assessment

4. CONCLUSIONS

Hydrologic modelling for the catchment draining to Ocean Drive indicates that the peak 100 year recurrence flood level at the Mifsud Site for existing conditions is estimated to be 7.6 mAHd. This will result in 44% of the site being inundated at the peak of the flood under existing conditions.

As part of a proposal to rezone and develop the site it is proposed that a section of the site be filled as shown in **Figure 6**. The fill is required to allow development to proceed in accordance with Council's Interim Flood Policy.

Design flood simulations were completed for the proposed site layout to assess potential adverse impacts on the peak 100 year recurrence flood level. The potential impact on peak discharge through the existing culvert system underneath Ocean Drive was also considered.

The results of the modelling indicate that filling for the proposed development will have minimal impact on the peak 100 year ARI flood level. The peak 100 year ARI flood level at the site is predicted to increase by 10mm due to the filling and will lead to no increase in the reported 100 year ARI flood level for the site. A minor increase in the peak flood discharge through the culvert system is predicted to occur. However, this increase is less than 2% of the pre-development flow and is not considered to present any concerns for the site located downstream.

**WorleyParsons**

resources & energy

EcoNomics

KING & CAMPBELL

MIFSUD REZONING & INDUSTRIAL DEVELOPMENT, LAKE CATHIE
Flood Impact Assessment

5. REFERENCES

- Port Macquarie - Hastings Council (2007), *'Interim Port Macquarie-Hastings LGA Flood Policy'*
- Willing & Partners Pty Ltd (1996), *'RAFTS-XP User Manual'*.
- Institution of Engineers (1987 and 1998), *'Australian Rainfall and Runoff – A Guide to Flood Estimation'*; edited by DH Pilgrim.
- Port Macquarie - Hastings Council (2001), *'Hastings Local Environment Plan (2001)'*



PO Box 3212 West Kempsey NSW 2440

Phone: (02) 6561 5263 Mobile: 0429 727 010
mail@florafauna.com.au www.florafauna.com.au
ABN: 22 167 601 074

Ecological Assessment EA-2015-1611

In relation to:

Proposed Rezoning of Land

**Lot 10 DP 615775 & Lot 1 DP 1117908
19 Houston Mitchell Bonny Hills**

Prepared for Angelo Mifsud



Report Title	Ecological Assessment
Project	Proposed rezoning of land
Property	Lot 10 DP 615775 & Lot 10 DP 1117908 19 Houston Mitchell Drive Bonny Hills
Client	Angelo Mifsud
Report No.:	EA-2015-1611
Draft/Final	Final – 27 October 2016

The preparation of this report has been undertaken in accordance with the project brief provided by the client and has relied upon the information, data and results provided or collected from the sources and under the conditions outlined in the report.

All information contained within this report are prepared for the exclusive use of the client and with respect to the land described herein and are not to be used for any other purpose or by any other person or entity. No reliance should be placed on the information contained in this report for any purposes other than those stated herein.

Prepared by:

Steve Britt

Bachelor of Science (Botany)
Grad. Dip. Design for Bushfire Prone Areas
Master of Wildlife Management (Habitat)

Signed:



Date:

27 October 2016

Table of Contents

1. EXECUTIVE SUMMARY	5
2. GLOSSARY OF TERMS AND ACRONYMS	7
3. INTRODUCTION	9
3.1 Background	9
3.2 Locality	9
3.3 Study Area	12
3.4 Proposed Development	14
3.5 Legislative Context	14
3.6 Objectives of the Report	15
4. SURVEY METHODOLOGY	16
4.1 Licencing	16
4.2 Nomenclature	16
4.3 Literature Review	17
4.4 Desktop Assessment	17
4.5 Field Survey	18
4.6 Koala Habitat Assessment and Survey	21
4.7 Survey Timing and Weather Conditions	25
4.8 Survey Limitations	26
4.9 Significance Assessments	26
4.10 Aboriginal Heritage	27
5. RESULTS	28
5.1 Soil Landscape	28
5.2 Flora	30
5.3 Habitat Assessment	38
5.4 Threatened Flora Targeted Search	43
5.5 Fauna	45
5.6 Protected Matters	49
5.7 Koala Habitat Assessment and Koala Survey	51
5.8 Significance Assessments	56
5.9 Aboriginal Heritage	56
6. POTENTIAL IMPACTS ON BIODIVERSITY	57
6.1 Vegetation Removal	57
6.2 Interruption to Ecosystem Processes	58
6.3 Weed Invasion	58
6.4 EPBC Act Koala Guideline Referral Considerations	59
6.5 Koala DCP Legislative Requirements	59
6.6 Other Impacts Associated with Human Activities	60
FloraFauna Consulting	3

7. MANAGING POTENTIAL IMPACTS	62
7.1 Vegetation	62
7.2 Interruption to Ecosystem Processes	66
7.3 Weed Management	66
7.4 Koala DCP Considerations	66
7.5 Changes in Animal Behaviour and Artificial Lighting	67
8. CONCLUSION	68
9. REFERENCES	70
10. Appendix A: Layout Plan	74
11. Appendix B: Flora Species List	75
12. Appendix C: Tree Survey	78
13. Appendix D: Hollow-bearing Trees Assessment Form	82
14. Appendix E: Bat Analysis Report	83
15. Appendix F: Assessment of Significance	93
16. Appendix F: AHIMS Report	116

1. Executive Summary

This report describes the ecological impact of the proposed rezoning of the land within the subject site identified as Lot 10 in DP 615775 and Lot 1 in DP 1117908, Houston Mitchell Drive Bonny Hills. The site is identified for investigation for future local service industrial land within Council's Urban Growth Management Strategy. This ecological assessment therefore describes the ecological impact of the rezoning from its current Primary Production (RU1) zone to part Light Industrial (IN2) and part Environmental (E3/E2) zone. The ecological assessment will be used to assist in the preparation of a Structure Plan for a Planning Proposal (rezoning), which will identify the future development area and the areas that can be used for compensatory measures.

The northern end of the study area (adjacent to Houston Mitchell Drive) lies on a small hillslope that has a southern aspect with the slope generally ranging between 0 and 5 degrees. The land becomes flat and low-lying approximately at the midway point before gradually rising again at the southern margin. An existing dwelling and associated outbuildings as well as a large metal clad shed are located on the land in the northern part of site.

The Port Macquarie-Hastings Council (PMHC) vegetation mapping indicates that there are two (2) areas of mapped vegetation within the study area comprising a disjunct remnant patch in the northern part of the site and small area of vegetation in the southwest corner of the site that forms part of the eastern margin of a large area of vegetation within the Queens Lake State Conservation Area that extends into the Queens Lake Nature Reserve. These areas of vegetation within the study area are mapped as White Stringybark – Tallowwood dry forest. The mapping also indicates that the larger proportion of the land within the study area does not contain a classified vegetation community. The floristics data and landscape position of the site suggests that the area probably contained a swamp forest community prior to land clearing. Currently, much of the land within the study area has been cleared of native vegetation and is maintained as managed grassland with retained 'paddock' trees. The retained trees within the canopy generally ranged from the mature growth stage with some trees recorded in the late-mature growth stage. This management regime appears to have been in place for a considerable number of years. The habitat within the study area contained very few terrestrial habitat features due to its cleared condition across the larger proportion of the site. The understorey was reduced to small remnants generally confined to parts of the site that are inaccessible to regular grass slashing, at the bases of trees, along fence lines and occasionally within the groundcover as resprouts and juvenile plants. Other habitat features such as fallen timber normally associated with forest communities were absent from the study area. However, there was a small number of hollow-bearing trees recorded within the study area.

In relation to Koala habitat assessment, the Atlas of NSW Wildlife database search returned 463 records of the Koala within a 0.1 degree by 0.1 degree search area around the study area. The Atlas records suggest that a local Koala population is patchily distributed across the Bonny Hills and Queens Lake area with concentrations of records in the developing areas of Lake Cathie to the north and Bonny Hills to the south as well as within the Lake Innes Nature Reserve to the north, the Queens Lake

State Conservation Area and the Queens Lake State Forest to the west and the Queens Lake Nature Reserve to the southwest. These concentrations of records are perhaps more a reflection of where ecological surveys have been undertaken previously rather than a true indication of the species distribution across the broader area. The survey work undertaken by Phillips et al (2009) in relation to the Area 14 Koala Plan of Management was wider ranging than other individual surveys and shows clusters of records immediately to the north and southwest of the site and further to the southeast around the Seafront Circuit/Beach Street area. During the field survey a search of the habitat within the study area was undertaken for actual Koala sightings as well as a search for Koala scats at the bases of trees and other indicators including scratch marks and disturbed bark on tree trunks. As all trees within the study area were surveyed for other purposes, each tree was also assessed for signs of Koala activity. No Koala scats were found; however, it was impossible to draw any conclusions from this alone given the recent heavy rain associated with the intense east coast low pressure system and extent of surface water within the site at the time of the assessment. Several trees showed signs of Koala activity, including scratches consistent with those made by Koalas on the trunk of a Forest Red Gum tree (tag no. 873) located near the eastern boundary adjacent to the larger dam within the site and disturbed bark on the trunks of four (4) Tallowood trees (tag nos. 853, 854, 857 and 858) located adjacent to the western boundary of the site. Given the evidence recorded during the Koala survey there seems little doubt that on occasion the habitat within the study area is utilised by the species. There are food resources available to the Koala within the site, which is contiguous with a large expanse of forest habitat within the Queens Lake State Conservation Area, the Queens Lake Nature Reserve and the Queens Lake State Forest. Therefore, it is likely that a population of the Koala would periodically utilise the food resources within the study area. However, the habitat is unlikely to be core Koala habitat for the purposes of SEPP 44 but is a valuable component of a larger home range of the local Koala population.

The Planning Proposal will be accompanied by a Voluntary Planning Agreement (VPA) offer to Council for the future Environmental Management Lands that will set out their establishment, maintenance and dedication requirements. The VPA will also require the preparation of a Vegetation Management Plan (VMP) to accompany the future Development Application (DA) for the industrial subdivision. The VMP will set out the detailed compensatory measures, including for example, weed control, compensatory planting numbers and locations, a hollow-bearing tree (HBT) removal strategy, a nest box strategy, a Koala fencing strategy and other measures. The VPA and VMP process will provide certainty with respect to environmental management and the compensatory measures will assist in mitigating any impacts on biodiversity.

From the habitat assessment and database/literature review, it was considered that sixteen (16) threatened species of fauna as listed under the *Threatened Species Conservation Act 1995* and *Environment Protection and Biodiversity Conservation Act 1999* could potentially utilise the habitat within the study area. The Section 5A Assessment appended to this report as Appendix F concluded that the proposal has the potential to impact on several threatened species and populations. Measures to mitigate the impact on biodiversity are outlined in Section 7 of this report.

2. Glossary of Terms and Acronyms

AABR: Australian Association of Bush Regenerators

Abundance: Means a quantification of the population of the species or community

Affected species: Means subject species likely to be affected by the proposal

AHD: Australian height datum

APZ: Asset protection zone (for bushfire protection purposes)

Assessment guidelines: Means assessment guidelines issued and in force under Section 94A of the *Threatened Species Conservation Act 1995* or, subject to Section 5C of the *Fisheries Management Act 1994*

CAVS: Census of Australian Vertebrates

Conservation status: Is regarded as the degree of representation of a species or community in formal conservation reserves

Critical habitat: The area declared to be critical habitat under Part 3 of the *Threatened Species Conservation Act 1995*

DBH: Diameter at breast height being the measurement of the tree trunk at 1.3 m above ground level

DCP: Port Macquarie-Hastings Development Control Plan 2013

DECC: Department of Environment, Conservation and Climate Change

Development: The erection of a building on that land, the carrying out of work in, on, over or under that land, the use of that land or of a building or work on that land, and the subdivision of that land

Endangered ecological community: An ecological community specified in Part 1 of Schedule 1 of the *Threatened Species Conservation Act 1995*

Endangered population: A population specified under Part 1 of Schedule 1 of the *Threatened Species Conservation Act 1995*

Endangered species: a species listed under Schedule 1 of the *Threatened Species Conservation Act 1995*

EP&A Act: *Environmental Planning and Assessment Act, 1979*

EPBC Act: *Environment Protection and Biodiversity Conservation Act 1999*

Field survey: Means on the ground flora and fauna assessment

Habitat: An area or areas occupied, or periodically or occasionally occupied by a species, population or ecological community and includes any abiotic component

Key Threatening Process: Is a threatening process listed under the *Threatened Species Conservation Act 1995*

LEP: Port Macquarie-Hastings Local Environmental Plan 2011

Locality: the area within a 5 km radius of the study area

NPW Act: *National Parks and Wildlife Act 1974*

OEH: NSW Office of Environment and Heritage

PBP: *Planning for Bushfire Protection 2006*

PCT: NSW Plant Community Type classification

PMHC: Port Macquarie-Hastings Council

PMST: Protected matters search tool

Recovery and threat abatement plan: A plan to promote the recovery of threatened species, population or an ecological community with the aim of returning the species, population, or ecological community to a position of viability in nature

ROTAP: Rare or threatened Australian plant

SEPP: State Environmental and Planning Policy

Subject Site: The identified land (Lot(s) and DP(s))

Study area: The geographic extent of the ecological assessment (may be the subject site or a portion of it)

Threatened species: A species specified in Part 1 or 4 of Schedule 1 or in Schedule 2 of the *Threatened Species Conservation Act 1995*

Threatening process: Means a threatening process that threatens, or could potentially threaten, the survival or evolutionary development of a species, population or ecological community

TSC Act: *Threatened Species Conservation Act 1995*

UIA: Urban Investigation Area

VIS: NSW Vegetation Information System (classification database)

VMP: Vegetation Management Plan

Vulnerable species: A species listed under Schedule 2 of the *Threatened Species Conservation Act 1995* or when a fish, listed under the *Fisheries Management Act 1994*.

3. Introduction

3.1 Background

FloraFauna Consulting has been engaged by Angelo Mifsud to prepare an ecological assessment report to assess the potential impacts in relation to a proposed rezoning of land situated at Houston Mitchell Drive (corner of Ocean Drive) Bonny Hills.

3.2 Locality

The locality is defined as the area within a five (5) kilometre radius around the subject site and extends from Lake Cathie and the Lake Innes Nature Reserve in the north to Limeburners Creek and the Camden Haven River in the south to the Queens Lake Nature Reserve in the west. The subject site is situated just to the north of the village of Bonny Hills within rapidly developing area.

Outside of the residential areas there are large expanses of rural zoned land in which agricultural and forestry activities are carried out. Considerable areas of land within the locality are reserved in Lake Innes Nature Reserve in the north, Dooragan National Park in the south and Queens Lake State Conservation Area, the Queens Lake Nature Reserve and the Queens Lake State Forest in the west. Significant environmental features of the locality include Lake Innes, Lake Cathie, Queens Lake, Jolly Nose Hill, the Camden River, North Brother and the Pacific Ocean.

The locality is strongly influenced by its proximity to the Pacific Ocean and associated coastal environments, which is exhibited in many of the plant communities present such as coastal swamp forest, coastal floodplain wetland forest and swamp woodland, sedgeland and seagrass meadows. In addition, significant areas of land within the locality contain dry sclerophyll forest and wet sclerophyll forest communities. The locality map indicating the relative location of the subject site is provided at Figure 3.1.

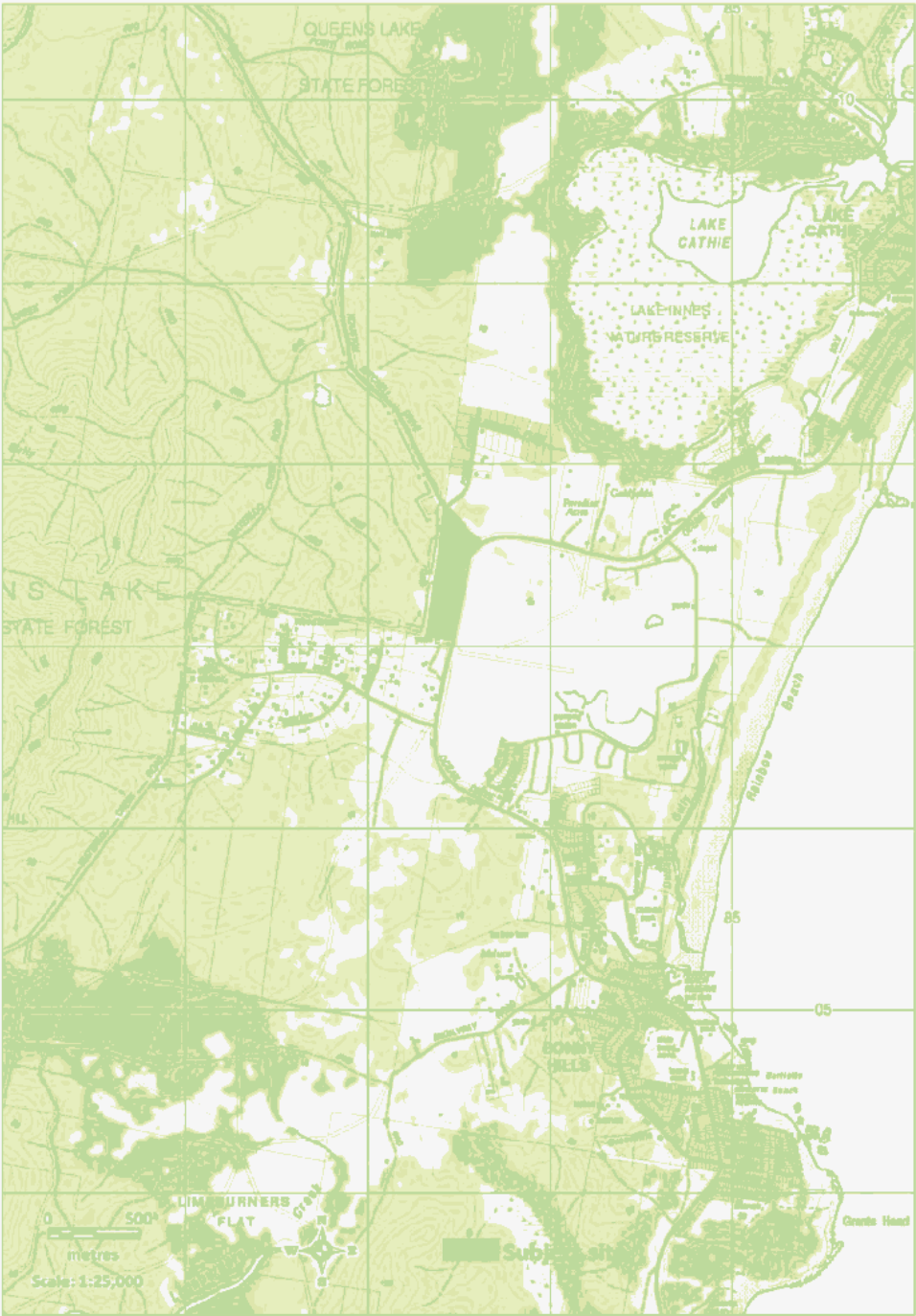


Figure 3.1: Locality map of the study area

The relative position of the subject site and its position in the landscape is shown in Figure 3.2.



Figure 3.2: Aerial view of the subject site and surrounding landscape

3.3 Study Area

The study area comprised the whole of the land within the subject site identified as Lot 10 in DP 615775 and Lot 1 in DP 1117908, 19 Houston Mitchell Drive Bonny Hills, which is approximately 9.58 hectares in size. The site is situated at the northern outskirts of Bonny Hills and the land is currently zoned RU1 – Primary Production under the *Port Macquarie-Hastings Local Environmental Plan 2011* (LEP).

The northern end of the study area (adjacent to Houston Mitchell Drive) lies on a small hillslope that has a southern aspect with the slope generally ranging between 0 and 5 degrees. The land becomes flat and low-lying approximately at the midway point before gradually rising again at the southern margin. An existing dwelling and associated outbuildings as well as a large metal clad shed are located on the land in the northern part of site. Most the land within the study area has been cleared for many years in conjunction with its rural use. Remnants of the native vegetation observed during the field survey included some retained trees and small patches of remnant understorey vegetation. Generally, the land is managed through regular slashing as derived grassland that is comprised of an assemblage of mostly exotic species with some native species persisting.

The Houston Mitchell Drive road reserve adjoins the site to the north. Beyond the road reserve further to the north the lands are zoned for residential development and a Development Application for its residential subdivision is currently with Council for consideration. These lands adjoin existing large lot residential development on their northern boundary and the Ocean Club Resort on their eastern boundary. The Ocean Drive road reserve adjoins the site to the east. The recently developed Lake Cathie Public School is located further to the east, which is surrounded by cleared residentially zoned lands. There is a Development Application for the residential subdivision of these lands currently with Council for consideration. The western boundary of the study area adjoins the Queens Lake State Conservation Area. The southern boundary of the study area adjoins a small rural holding, which is situated adjacent to a large lot residential development associated with Bonny View Drive. Further to the south there are more rural landholdings comprising areas of cleared land and areas with retained native vegetation. The northern margin of the Bonny Hills urban area is situated approximately 600 metres to the southeast of the study area. An aerial image of the study area and the adjacent land is shown in Figure 3.3.



Figure 3.2: Aerial image of the study area

3.4 Proposed Development

The site is identified for investigation for future local service industrial land within Council's Urban Growth Management Strategy. The ecological assessment therefore describes the ecological impact of the rezoning from its current Primary Production (RU1) zone to part Light Industrial (IN2) zone and part Environmental (E2/E3) zone. The proposed development area comprises:

- Land with an area of approximately 5.31 hectares in the northern half of the site forming the footprint of a future industrial subdivision that will be zoned Light Industrial (IN2);
- An allotment of land with an area of approximately 0.43 hectares in the northern part of the site that will be zoned Environmental (E2/E3); and
- A residue lot with an area of approximately 3.86 hectares occupying the southern part of the site that will be zoned Environmental (E2/E3).

The ecological assessment will be used to assist in the preparation of a Structure Plan for its rezoning, which will identify the future development area and the areas that can be used for compensatory measures. The Planning Proposal will be accompanied by a Voluntary Planning Agreement (VPA) requiring the preparation of a Vegetation Management Plan (VMP). The VPA will also set out the requirements for the establishment, maintenance and dedication of the Environmental (E2/E3) lands. The proposed Structure Plan and indicative industrial subdivision is appended to this report as Appendix A.

3.5 Legislative Context

In NSW, the *Environmental Planning and Assessment Act 1979* (EP&A Act) provides the framework for the assessment of development activities. Clause 5A of the Act requires that the significance of the impact of a proposal on threatened species, populations and endangered ecological communities is assessed by preparing a seven-part test in accordance with Clause 5A (2) of the Act.

Other State legislation relevant to the ecological assessment includes the following:

- *Threatened Species Conservation Act 1995* (TSC Act);
- *National Parks and Wildlife Act 1974* (NPW Act);
- *Noxious Weeds Act 1993* (NW Act);
- *Fisheries Management Act 1994* (FM Act);
- *State Environmental Planning Policy No. 14 – Coastal Wetlands* (SEPP 14);
- *State Environmental Planning Policy No. 26 – Littoral Rainforests* (SEPP 26);
- *State Environmental Planning Policy No. 44 – Koala Habitat* (SEPP 44).

Commonwealth legislation relevant to the ecological assessment is the:

- *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act).

The EPBC Act protects nationally and internationally important flora, fauna, ecological communities and heritage places, which are defined in the Act as matters of national environmental significance. Matters of national environmental significance relevant to biodiversity are:

- Wetlands of international importance;
- Nationally threatened species and ecological communities;
- Migratory species; and
- Commonwealth marine areas.

Significance of impacts is determined in accordance with the *Significance impact guidelines 1.1 – matters of national environmental significance* (Department of Environment, Water, Heritage and the Arts, 2006). Where a proposal is likely to have a significant impact on a matter of national environmental significance, the proposal is referred to the Federal Environment Minister. The referral process involves a decision on whether the proposal is a 'controlled action'. When a proposal is declared a controlled action, approval from the Minister is required.

3.6 Objectives of the Report

The objectives of the ecological assessment are to:

- Describe the ecological characteristics of the study area including identifying protected and threatened flora and fauna species, populations and ecological communities and their habitats;
- Identify the direct and indirect impacts of the proposed activity on flora and fauna species, populations, ecological communities and critical habitat;
- Assess the nature, extent, frequency, duration and timing of impacts;
- Assess the extent to which the proposed activity contributes to processes threatening the survival of biota on the site;
- Assess the significance of the impact of the proposed activities on species, ecological communities and populations listed under the TSC Act, FM Act and EPBC Act; and
- Propose management measures to minimise or mitigate and if necessary offset impacts.

4. Survey Methodology

4.1 Licencing

All work in relation to this ecological assessment was undertaken with appropriate licences and authorisations including:

- A Scientific Licence to conduct field surveys of flora and fauna for environmental assessment purposes issued subject to the provisions of Section 132C of the NPW Act and regulations; and
- An Animal Research Authority issued by the Department of Industries and Investment (formerly the Department of Primary Industries) Director-General's Animal Care and Ethics Committee to conduct biodiversity survey and habitat assessment at various locations throughout New South Wales.

4.2 Nomenclature

The names of plants used in this document follow the *Flora of New South Wales* (Harden, 2000) with updates from the PlantNet website (Royal Botanic Gardens Sydney, 2012).

The description of plant communities used in this document follow the Port Macquarie-Hastings Council (PMHC) vegetation community mapping. For clarity, a description based on observations recorded during the field survey has also been provided.

Tree growth stage descriptions used in this document are adapted from Jacobs, M.R. (1955) *Growth Habits of the Eucalypts*, Woodgate et al, 1994, *A Study of Old-growth Forests of East Gippsland*, and the Joint Old Growth Forest Project (JOGFP), 1996 as is currently utilised by the NSW Environmental Protection Agency (EPA) for the purposes of old growth forest field verification. Table 4.1 sets out the growth stages adopted for this document:

Table 4.1: Relationship between growth stage classifications used in this document

Jacobs (1955) Growth Stages	Woodgate et al (1994) Growth Stages	Amalgamated Major Growth Stages
Juvenile		
Sapling	Sapling	Regrowth
Pole	Pole	
Mature	Early-mature	Mature
	Mature	
	Late-mature	Senescing
Overmature	Overmature	

The names of vertebrate animals used in this document broadly follow that of Strahan (1995) and the Australian Faunal Directory (FDS) database maintained by the Australian Government, Department of the Environment.

4.3 Literature Review

The following literature was reviewed in relation to this ecological assessment:

- *Port Macquarie-Hastings Local Environmental Plan 2011* (LEP);
- *Koala Plan of Management for the Area 14 Master Planning Area*;
- Pre-lodgement meeting minutes, Port Macquarie-Hastings Council correspondence dated 12 November 2011; and
- Flood Impact Assessment Report, prepared by WorleyParsons dated 10 September 2010.

4.4 Desktop Assessment

The desktop assessment involved database searches as summarised in Table 4.2 were undertaken on 21 November 2015 and 6-20 June 2016.

Table 4.2: Database Searches

Database	Source
eSPADE – NSW Soil and Land Information	NSW Government Office of Environment and Heritage
Atlas of NSW Wildlife (0.1 degree by 0.1 degree search area)	NSW Government Office of Environment and Heritage
PlantNet: ROTAP/Threatened Species Spatial Search (10 km radius)	Sydney Royal Botanic Gardens
EPBC Act Protected Matters Search Tool (10 km buffer)	Department of Sustainability, Environment, Water, Population and Communities

4.4.1 eSPADE – NSW Soil and Land Information

The Camden Haven soil landscape mapping is unavailable. As an alternative source of information, the eSPADE database was searched to investigate any soil survey sites in proximity to the study area that could provide soil and landscape information relevant to the study area.

4.4.2 Atlas of NSW Wildlife

The Atlas of NSW wildlife database was searched to inform of threatened species records within a 0.1 degree by 0.1 degree (approximately 10 km x 10 km) default search area around the study area. This information was used to determine:

- The threatened species recorded;
- The proximity of any threatened species records to the study area; and
- If a population of a threatened species such as the Koala is indicated.

4.4.3 EPBC Act Protected Matters Search Tool

The Protected Matters Search Tool (PMST) was utilised to generate a report that provides general guidance on matters of national environmental significance and other matters protected by the EPBC Act around the study area employing a ten (10) kilometre buffer.

i. Matters of National Environmental Significance

This part of the report summarises the matters of national environmental significance that may occur in, or may relate to, the nominated area within the ten (10) kilometre buffer.

ii. Other Matters Protected by the EPBC Act

This part of the report summarises other matters protected under the EPBC Act that may relate to the nominated area within the ten (10) kilometre buffer. Approval may be required for a proposed activity that significantly affects the environment on Commonwealth land, when the action is outside the Commonwealth land or the environment anywhere when the action is taken on Commonwealth land. Approval may also be required for the Commonwealth or Commonwealth agencies proposing to take an action that is likely to have a significant impact on the environment anywhere.

The EPBC Act protects the environment on Commonwealth land, the environment from the actions taken on Commonwealth land, and the environment from actions taken by Commonwealth agencies. As heritage values of a place are part of the 'environment', these aspects of the EPBC Act protect the Commonwealth heritage values of a Commonwealth Heritage Place and the heritage values of a place on the Register of the National Estate.

4.5 Field Survey

An investigation of the study area was undertaken during 2-3 June 2016 to assess the flora, fauna and habitat as detailed below.

4.5.1 Flora Assessment

Because of the relatively small size of the study area and disturbed condition of the habitat therein, the assessment of the flora was conducted using the random meander method after Cropper (1993). The following tasks were undertaken:

- Identification of the plant communities;
- Assessment of the species assemblage within the canopy and determination of the percentage each of the recorded species constituted to assist with identification of the plant communities and the Koala assessment;
- Identification of species and populations;
- Targeted survey of threatened species identified in the database search where suitable habitat exists;
- Spatial distribution of the vegetation in the survey area;
- Assessment of the vegetation's condition; and
- Determination of the vegetation's conservation significance.

For the purposes of this ecological assessment a tree is defined as a perennial plant having a trunk diameter at breast height (DBH) of not less than 100 mm where DBH is the measurement of the trunk at 1.3 metres above ground level.

4.5.2 Habitat Assessment

The habitat assessment focused on the potential for species to occur within the survey area based on the type, suitability and condition of the habitat, and the habitat features present. Although recording threatened species during field survey can confirm their presence in an area, the lack of threatened species records does not necessarily indicate that threatened species are absent. Threatened species tend to be rare and in many cases, are cryptic by nature, consequently they are often difficult to detect. Suitable habitat is, therefore, a useful indicator and an important matter for consideration when determining the potential for the presence of threatened species. During the field survey the following information was collected:

- Habitat type;
- Habitat features including locating and mapping potentially impacted hollow-bearing trees within the study area;
- Threatened species and populations likely to be present based on the type of habitat and the habitat features present; and
- Habitat connectivity; and conservation significance (individuals, species, populations and communities).

4.5.3 Fauna Assessment

The ecological assessment incorporated a fauna survey that focussed on identifying the distribution and abundance of threatened fauna species known or likely to use the habitats in the study area. The survey effort was undertaken in accordance with the *Threatened Biodiversity Survey and Assessment Guidelines* (DEC, 2004). An assessment of the occurrence or likely occurrence of any threatened fauna species, endangered fauna populations or their habitats, in the study areas was also conducted. The fauna survey comprised the following aspects:

i. Habitat Search

The terrestrial habitat within the study area was searched for a minimum of sixty (60) minutes on two separate days.

ii. Diurnal Bird Survey

A diurnal bird survey employing the standardised search method after Watson (2007) was conducted in which a results-based stopping rule was applied with sampling continuing until two or less previously unencountered species were recorded in a forty-minute period. In addition, opportunistic species sightings were recorded continuously while undertaking other aspects of the ecological assessment.

iii. Scats and Signs

The entire site was searched for scats and signs including trees for disturbance of bark and scratch marks on the trunks.

iv. Koala Habitat Assessment and Survey

A Koala habitat assessment and survey was conducted as detailed under Section 4.6 of this report.

v. Stag Watch

Stag watch was conducted by observing potential roost hollows for 30 minutes prior to sunset and 60 minutes following sunset on two separate nights.

vi. Spotlighting

Spotlighting utilising a VariSpot variable 5~100-watt quartz halogen handheld spotlight primarily to target arboreal species including the Yellow-bellied Glider and Squirrel Glider was conducted. The survey effort was in accordance with the Guidelines i.e. 2 x 1 hour surveys across the whole of the site and immediate adjacent land on 2 separate nights.

v. Amphibian Survey

The amphibian survey comprised:

- A systematic day habitat search around each of the dams, associated overflows and ephemeral streams within the study area;
- Night search of the habitat utilising a VariSpot variable 5-100-watt quartz halogen handheld spotlight; and

Nocturnal call playback of each target species (Green and Golden Bell Frog and Green-thighed Frog) in proximity to the dams and associated streams, pools and puddles utilising an MP3 player coupled to a Toa 15-watt megaphone

vii. Bat Ultrasonic Echolocation Detection

The ultrasonic echolocation detection survey was conducted utilising one (1) Wildlife Acoustics EM3+ Echo Meter and one (1) AnaBat Express over two (2) separate nights beginning at dusk for a minimum of 4 hours per night. The most suitable time to conduct bat surveys is between October and March when bats are active. However, the relatively mild conditions experienced on site during the survey provided reasonable conditions to conduct an ultrasonic echolocation detection survey during the current study.

The region-based guide to the echolocation calls of Microchiropteran Bats; *Bat Calls of New South Wales* (Pennay et al 2001) was used for the initial analysis of call identification. Records obtained from the Atlas of NSW Wildlife (OEH, 2015) as well as distributional information provided in relevant literature including *Australian Bats* (Churchill, 2008), *A Field Guide to the Mammals of Australia* (Menkhorst and Knight, 2004) and *The Mammals of Australia* (Strahan, 1998) were used to determine the potential for the occurrence of species within the study area.

Previously obtained recording and analysis report prepared by Anna McConville of Echo Ecology, a specialist fauna call identification consultancy from a nearby site were also reviewed. The Echo Ecology analysis is provided in the results.

4.6 Koala Habitat Assessment and Survey

4.6.1 SEPP 44

State Environmental Planning Policy No. 44 – Koala Habitat Protection (SEPP 44) “aims to encourage the proper conservation and management of areas of natural vegetation that provide habitat for Koalas to ensure a permanent free-living population over their present range and reverse the current trend of Koala population decline.” The ecological assessment included a SEPP 44 Koala Habitat Assessment including the following points of consideration:

- Local Government Area (LGA) listing under Schedule 1 of SEPP 44;
- Determination of ‘Potential Koala Habitat’; and
- Determination of ‘Core Koala Habitat’.

Potential Koala Habitat is defined as:

“Areas of native vegetation where the trees of the types listed in Schedule 2 constitute at least 15 % of the total number of trees in the upper or lower strata of the tree component.”

For the purposes of SEPP 44 – ‘Potential Koala Habitat’, trees within the study area were surveyed as detailed in Section 4.5.1 of this report to determine the proportion of Koala feed trees as listed in Schedule 2 of SEPP 44 that were present in the upper and lower strata of the tree component. The tree species listed under Schedule 2 of SEPP 44 are provided in Table 4.2.

Table 4.2: SEPP 44 Schedule 2 Koala feed tree species

Scientific Name	Common Name
<i>Eucalyptus tereticornis</i>	Forest Red Gum
<i>Eucalyptus microcorys</i>	Tallowwood
<i>Eucalyptus punctata</i>	Grey Gum
<i>Eucalyptus viminalis</i>	Ribbon or Manna Gum
<i>Eucalyptus camaldulensis</i>	River Red Gum
<i>Eucalyptus haemastoma</i>	Broad-leaved scribbly gum
<i>Eucalyptus signata</i>	Scribbly Gum
<i>Eucalyptus albens</i>	White Box
<i>Eucalyptus populnea</i>	Bimble Box or Poplar Box
<i>Eucalyptus robusta</i>	Swamp Mahogany

Note: *Eucalyptus signata* (Scribbly Gum) is listed as a feed tree species in Schedule 2 of SEPP 44, however this is widely regarded as erroneous and Scribbly Gum is not regarded as a Koala food tree species. This view is supported by Dr Stephen Phillips of Biolink Ecological Consultants who prepared the Area 13 and Area 14 KPOM.

Core Koala Habitat is defined as:

“An area of land with a resident population of Koalas, evidenced by attributes such as breeding females (that is, females with young) and recent sightings of and historical records of a population).”

For the purposes of determining the presence of Core Koala habitat, a search of the Atlas of NSW Wildlife database for Koala records was undertaken in conjunction with a search of the habitat during the site investigation for direct Koala sightings. This was supported by a search for Koala scats at the bases of trees and other indicators such as scratch marks and disturbed bark on the trunks of trees. As there was a relatively small number of trees present on the site, of which the majority were surveyed for other purposes, all surveyed trees were also assessed for Koala activity and signs.

4.6.2 EPBC Act

Koala (*Phascolarctos cinereus*) populations in Queensland (QLD), New South Wales (NSW) and the Australian Capital Territory (ACT) have been listed as vulnerable under the *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act). This listing came into legal effect on 2 May 2012. The Department of the Environment has prepared *EPBC Act referral guidelines for the vulnerable Koala (combined populations of Queensland, New South Wales and the Australian Capital Territory)* (the Guidelines), which are designed to assist proponents in deciding whether a proposed action is likely to have a significant impact on the Koala. The objectives of the Guidelines are to:

- Promote avoidance and mitigation of impacts on the Koala;
- Promote a clear, consistent and transparent approach for making decisions on whether an action is likely to result in a significant impact on the Koala;
- Promote streamlined decision-making and approval processes; and
- Promote the recovery of the Koala.

The Guidelines advise that for the most up-to-date report of whether the Koala may occur in the project area, always use the Department's Protected Matters Search Tool (PMST).

For the purposes of determining significant impacts under the EPBC Act, the distribution of the Koala has been split into two contexts (the inland and the coastal). These contexts exhibit different climatic and ecological attributes and therefore each have different considerations regarding habitat critical to the survival of the Koala and the significance of impacts on the species. To separate the coastal and inland geographic contexts the Guidelines uses the 800 mm per annum rainfall isohyet. As the study area receives more than 800 mm of rainfall per annum it falls within the coastal context. The attributes of the coastal context applicable to the study area are provided in Table 4.3 below:

Table 4.3: Koala attributes – coastal context

Attributes	Applicable to Coastal Geographic Context
Koala Habitat	<ul style="list-style-type: none"> • Large, connected areas of native vegetation, including in forests and woodlands where logging has altered tree species composition; • Small, isolated patches of native vegetation in rural or urban areas; • Windbreaks and narrow areas of native vegetation along riparian areas or linear infrastructure; and • Isolated food and/or shelter trees (i.e. on farm lands, in suburban streetscapes, parks and yards).
Primary threats	<ul style="list-style-type: none"> • Loss, fragmentation and degradation of habitat including dispersal habitats; • Mortality due to vehicle strikes, dog attacks and disease; and • High-intensity fire.
Interim recovery objective	<ul style="list-style-type: none"> • Protect and conserve large, connected areas of Koala habitat, particularly large, connected areas that support Koalas that are: <ul style="list-style-type: none"> ➢ Of sufficient size to be generally robust/operate as a viable sub-population; or ➢ Free of disease or have a very low incidence of disease; or ➢ Breeding. • Maintain corridors and connective habitat that allow movement of Koalas between large areas of habitat.

If the PMST indicates that the Koala or its habitat is known to or may occur within an area, a Koala survey and habitat assessment is necessary to establish whether habitat critical to the survival of the species occurs in the area as detailed below.

i. Koala Survey and Habitat Assessment

Appropriate surveys should be undertaken prior to assessing the proposed action or submitting a referral to the Department to gather adequate information on the following attributes:

- Koala presence (and potentially abundance or density);
- Vegetation composition;
- Habitat connectivity;
- Existing threats to Koalas; and
- Recovery value.

The Guidelines advise that the following methodology should be adopted when undertaking a Koala survey and Koala habitat assessment for the purposes of the EPBC Act:

a) Desktop Survey

A desktop survey was undertaken that included a search of Koala records in the Atlas of NSW Wildlife database and the EPBC Act Protected Matters Search Tool. To assist with the assessment of habitat quality, habitat size, habitat connectivity and Koala occurrence, aerial imagery of the study (impact) area was examined. Information regarding the intensity of existing threats to the Koala in the area was also gathered.

b) Field (On-ground) Survey

An 'on-ground' survey was undertaken. As the study area was relatively small and contained a relatively small number the entire habitat within the study area was investigated during the field survey. For the purposes of the EPBC Act, the Koala survey of the study area involved a diurnal search for direct Koala sightings. This was supported by a search for Koala scats at the bases of trees and other indicators such as scratch marks and disturbed bark on the trunks of trees. As there was a relatively small number of trees present on the site, of which the majority were surveyed for other purposes, all surveyed trees were also assessed for Koala activity and signs.

ii. Koala Habitat Assessment Tool

Habitat critical to the survival of the Koala is habitat that is important for the long-term survival and recovery of the species. The Guidelines contain a Koala habitat assessment tool to assist in determining the sensitivity, value and quality of the impact area and whether it contains habitat critical to the survival of the species. The Koala habitat assessment tool categorises five primary Koala habitat attributes, including;

- Koala occurrence;
- Vegetation composition;
- Habitat connectivity;
- Existing threats; and
- Recovery value.

Each habitat attribute is scored between zero (0) and two (2) and the scores are added together to give a total out of ten (10), providing an indication of the overall value of habitat in the impact area. An impact area that scores five (5) or more under the habitat assessment tool for the Koala is deemed to contain habitat critical to the species survival and may require referral to the Department of the Environment, subject to the assessment protocol set out in Figure 2 of the Guidelines (assessing adverse effects on habitat critical to the survival of the Koala). An extract of the Koala habitat assessment tool relevant to the study area (coastal context) is provided in Table 4.4 below:

Table 4.4: Extract of the Koala habitat assessment tool relevant to the study area

Attribute	Score	Coastal Criteria
Koala occurrence	2 (High)	Evidence of one or more Koalas within the last 2 years.
	1 (Medium)	Evidence of one or more Koalas within 2 km of the edge of the impact area within the last 5 years.
	0 (Low)	None of the above.
Vegetation composition	2 (High)	Has forest or woodland with 2 or more known Koala food tree species in the canopy; or 1 food tree species that alone accounts for >50 % of the vegetation in the relevant strata.
	1 (Medium)	Has forest or woodland with only 1 species of known Koala food tree present in the canopy.
	0 (Low)	None of the above.
Habitat connectivity	2 (High)	Area is part of a contiguous landscape ≥ 500 ha.
	1 (Medium)	Area is part of a contiguous landscape < 500 ha, but ≥ 300 ha.
	0 (Low)	None of the above.
Key existing threats	2 (High)	Little or no evidence of Koala mortality from vehicle strike or dog attack at present in areas that score 1 or 2 for Koala occurrence; or Areas which score 0 for Koala occurrence and have no dog or vehicle threat present.
	1 (Medium)	Evidence of infrequent or irregular Koala mortality from vehicle strike or dog attack at present in areas that score 1 or 2 for Koala occurrence; or Areas which score 0 for Koala occurrence and are likely to have some degree of dog or vehicle threat present.
	0 (Low)	Evidence of frequent or regular Koala mortality from vehicle strike or dog attack in the study area at present, or Areas which score 0 for Koala occurrence and have a significant dog or vehicle threat present.
Recovery value	2 (High)	Habitat is likely to be important for achieving the interim recovery objectives for the relevant context (see Table 4.3).
	1 (Medium)	Uncertainty exists as to whether the habitat is important for achieving the interim recovery objectives for the relevant context (see Table 4.3).
	0 (Low)	Habitat is unlikely to be important for achieving the interim recovery objectives for the relevant context (see Table 4.3).

The study (impact) area was assessed in accordance with the Koala habitat assessment tool – coastal criteria as detailed in Table 4.4.

4.7 Survey Timing and Weather Conditions

The field survey was conducted between 7 and 8 June 2016. Weather conditions during these times was mild with no rainfall recorded. The maximum and minimum temperatures at Bonny Hills during the survey period are detailed in Table 4.5.

Table 4.5: Temperature ranges during survey period

Date	Maximum Temp (C)	Minimum Temp (C)
7.06.2016	20	11
8.06.2016	21	11

The actual temperatures during the night fauna surveys ranged between 15°-11° C on 7 June and between 16°-12° C on 8 June. In the preceding days a large east coast low pressure system impacted the area bringing significant falls of rain. During the period 4-6 June Bonny Hills received nearly 121 mm of rain as detailed in Table 4.6.

Table 4.6: Rainfall recorded immediately prior to field survey

Date	Rainfall (mm)
4.06.2016	26
5.06.2016	89.4
6.06.2016	5

4.8 Survey Limitations

Ecological surveys are limited in their capacity to document all the species of flora and fauna likely to occur or are present at a given site. There are numerous factors that will influence whether a species is detected or not, including climatic and seasonal conditions, the issue of migratory species movements, availability of shelter and food resources, and how readily a species is observed or otherwise recorded given the cryptic nature of some species making them difficult to detect. The absence of a species from survey results does not necessarily indicate that the species is not present. Similarly, there are limitations applicable to the interpretation of records held in databases for the presence or absence of a species at a site. For instance, the Atlas of NSW Wildlife is a database of limited available information and it should not be assumed that the absence of records indicates that a species is not present. Therefore, to address these limitations, the habitat components of the study area have been assessed to help predict those species likely to occur within the study area based on habitat preferences.

4.9 Significance Assessments

Significance assessments were carried out for threatened species, populations and ecological communities listed under the *Threatened Species Conservation Act 1995* (TSC Act) and the *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act). In the case of the TSC Act, the significance assessments were undertaken in accordance with the *Threatened Species Assessment Guidelines – The Assessment of Significance* (Department of Environment and Climate Change, 2007). In the case of the EPBC Act, the significance assessments were undertaken in accordance with the *Significance Impact Guidelines 1.1 – Matters of National Environmental* (Department of Environment, Water, Heritage and the Arts, 2009).

The conclusions drawn in this report are based upon information obtained from the review of literature and database searches, and from the ecological assessment undertaken of the study area at the time of the field investigation. These results are not exhaustive but rather are indicative of the environmental conditions, including the presence or otherwise of threatened species, populations and ecological communities. It should also be recognised that environmental conditions are dynamic and will change over the course of time.

Habitat assessments were completed for all threatened species and populations identified in the database searches (Table 4.1) to determine whether suitable habitat exists within the subject site. This is a conservative approach that is likely to include cryptic species as well those that are otherwise difficult to detect.

4.10 Aboriginal Heritage

Aboriginal objects are physical evidence of the use of an area by Aboriginal people. These objects can also be referred to as 'Aboriginal sites', 'relics' or 'cultural material'. Aboriginal objects include:

- Physical objects, such as stone tools, Aboriginal-built fences and stockyards, scarred trees and the remains of fringe camps;
- Material deposited on the land, such as middens; and
- The ancestral remains of Aboriginal people.

Known Aboriginal objects and sites are recorded on the Aboriginal Heritage Information Management System (AHIMS) administered by the Office of Environment and Heritage (OEH). The Due Diligence Code of Practice for the Protection of Aboriginal Objects in NSW sets out the process which must be followed to satisfy due diligence requirements. The first step in this process is to check for Aboriginal sites on AHIMS by conducting an AHIMS Basic Search in proximity to your proposed activity. If the results of the initial AHIMS Basic Search indicate that AHIMS contains information about an Aboriginal site in proximity to the proposed activity an Extensive Search must be undertaken. For the purposes of due diligence, the AHIMS Basic Search results may be relied upon for twelve (12) months.

5. Results

5.1 Soil Landscape

The NSW soil and land information (eSPADE) website administered by the NSW Office of Environment and Heritage was consulted to investigate soil survey sites near the study area. The eSPADE search indicated two (2) soil survey sites with similar elevation and vegetation are located nearby. These survey sites were used to generate soil profile reports. The soil profile summary is provided below.

5.1.1 Soil Survey Site Details:

a. Soil Survey Site 1 (comparable to the northern part of the study area)

Site Location: Pacific (Ocean) Drive 400 metres east of Houston Mitchell Drive;

Map Reference: MGA Grid Reference: Zone 56, Easting 484044, Northing 6507529
CAMDEN HAVEN (9434) 1:100 000 sheet;

Profile Details: Soil Landscapes of the Camden Haven 1:100 000 sheet (1000351)), Profile 227, collected from a batter by Michael Eddie on 25 August 1999;

Physiography: Hillcrest under wet sclerophyll forest on dolerite lithology with nil rock outcrop; Slope 7 % (measured), elevation 20 metres, local relief very low (9-30 m), run-on is low, run-off is low;

Vegetation/Land Use: Wet sclerophyll forest, with extensive clearing at the site, used for pasture, improved pasture in the general area;

Surface Conditions: Expected to be self-mulching when dry, ground cover 99 %;

Erosion/Land Degradation: No salting evident;

Soil Hydrology: Profile is moderately permeable and well drained, no free water;

Soil Type: Melanic-Mottled Eutrophic Brown Dermosol (ASC), Prairie Soil (GSG).

Soil Description:

Layer 0: Coarse fragments are common (10-20 %), as substrate, coarse gravel (20-60 mm), cobbles (60-200 mm);

Layer 1 (A horizon): Very dark grey (brownish black) (10YR 3/1) light medium clay with strong pedality (polyhedral, 10-20 mm, rough-faced peds), abundant (>100/10x10cm) roots (<1mm), field pH is 6; Coarse fragments are common (10-20 %), as substrate, pans are not evident, segregations are not evident; gradual (50-100 mm);

Layer 2 (BC horizon): Light olive brown (yellowish brown) (2.5Y 5/4) medium silty clay with strong pedality (angular blocky, 10 - 20 mm, smooth-faced peds), common (10-

25/10x10cm) roots (<1mm), field pH is 7; Coarse fragments are abundant (50-90%), as substrate, coarse gravel (20-60 mm), cobbles (60-200 mm), stones (200-600 mm), pans are not evident, segregations are not evident; gradual (50-100 mm);

Layer 99: Strong moderately weathered rock, dolerite bedrock reached.

b. Soil Survey Site 2 (comparable to low-lying central part of the study area)

Site Location: Drain, Forest Parkway, 350 metres northeast of junction

Map Reference: MGA Grid Reference: Zone 56, Easting 483504, Northing 6508089
CAMDEN HAVEN (9434) 1:100 000 sheet;

Profile Details: Soil Landscapes of the Camden Haven 1:100 000 Sheet Survey (1000351), Profile 219, collected from a gully by Michael Eddie on December 02, 1998;

Physiography: Drainage depression under swamp complex on metamorphic lithology with nil rock outcrop; Slope 3 % (measured), elevation 5 metres, local relief extremely low (< 9m), aspect southeast, run-on is low, run-off is high;

Vegetation/Land Use: Swamp complex, with extensive clearing at the site, used for timber/scrub/unused, with urban in the general area;

Surface Conditions: Expected to be self-mulching when dry, ground cover 99 %;

Erosion/Land Degradation: No salting evident;

Soil Hydrology: Profile is moderately permeable and imperfectly drained, no free water;

Soil Type: Mottled Petroferric Brown Dermosol (ASC), Xanthozem (GSG);

Profile Field Notes: Impeded drainage due to ferruginous pan.

Soil Description:

Layer 0:

Layer 1 (A Horizon): Very dark greyish brown (brownish black) (10YR 3/2) light medium clay with strong pedality (polyhedral, 5 - 10 mm, rough-faced peds), many (25-100/10x10cm) roots (<1mm), field pH is 6; Coarse fragments are few (2-10 %), as parent material, fine gravel (2-6 mm), gravel (6-20 mm), segregations are not evident; smooth gradual (50-100 mm);

Layer 2 (B Horizon): Light olive brown (yellowish brown) (2.5Y 5/4) medium heavy silty clay with strong pedality (sub-angular blocky, 5 - 10 mm, smooth-faced peds), common (10-25/10x10cm) roots (<1mm), field pH is 7.5; Coarse fragments are common (10-20%), as parent material, fine gravel (2-6 mm), gravel (6-20 mm), segregations are not evident; wavy abrupt (5-20 mm);

Layer 3: Dark brown (7.5YR 3/3) with massive structure, none roots (<1mm). Coarse fragments are many (20-50%), as substrate, gravel (6-20 mm), coarse gravel (20-60 mm), pans are moderately cemented, continuous, concretionary, ferricrete, segregations are abundant (> 50%), ferromanganiferous; smooth gradual (50-100 mm);

Layer 99: Moderately strong ferruginised metamorphic layer continues.

5.1.2 Field Observations of Soil

During the field survey exposed areas of soil within the study area were assessed. These observations were analogous with observations recorded at the nearby soil survey sites summarised in in Section 5.1.1.

5.2 Flora

5.2.1 Port Macquarie-Hastings Council Vegetation Mapping

The Port Macquarie-Hastings Council (PMHC) vegetation mapping indicates that there are two (2) areas of mapped vegetation within the study area comprising a disjunct remnant patch in the northern part of the site and small area of vegetation in the southwest corner of the site that is the eastern margin of a large area of vegetation within the Queens Lake State Conservation Area that extends into the Queens Lake Nature Reserve. These areas of vegetation within the study area are mapped as White Stringybark – Tallowwood dry forest. The mapping also indicates that the larger proportion of the land within the study area does not contain a classified vegetation community. The PMHC vegetation community description for White Stringybark – Tallowwood dry forest is provided below:

Vegetation Formation: Dry Sclerophyll Forests

Sub-formation: Grassy

Class: Hunter-Macleay Dry Sclerophyll Forests

Floristic Type: *Eucalyptus globoidea*

Association: *Eucalyptus globoidea* – *Allocasuarina littoralis* – *Themeda australis* (*triandra*) (See Note)

Community Description:

Tallest stratum (Canopy)

A tall to very tall open forest co-dominated by *Eucalyptus globoidea* (White Stringybark) and *Eucalyptus microcorys* (Tallowwood) growing in association with *Corymbia gummifera* (Red Bloodwood) and *Syncarpia glomulifera* (Turpentine), less commonly *Eucalyptus pilularis* (Blackbutt) and *Eucalyptus carnea* (Thick-leaved Mahogany).

Mid stratum

A low to mid-high woodland dominated by *Allocasuarina littoralis* (Black She-oak) growing in association with *Ceratopetalum gummifera* (Christmas Bush), *Glochidion ferdinandi* (Cheese Tree) *Callicoma serratifolia* (Black Wattle) and other species.

Lowest stratum

A low to mid-high grassland or sedgeland co-dominated by *Imperata cylindrica* (Blady Grass), *Entolasia stricta* (Wiry Panic) and *Lomandra longifolia* (Spiny-headed Mat-rush), less commonly *Banksia spinulosa* (Hairpin Banksia) and *Breynia oblongifolia* (Coffee Bush). Other associates include *Caladenia catenata* (White Caladenia), *Calochlaena dubia* (Rainbow Fern), *Cordyline stricta* (Narrow-leaved Palm-lily), *Gymnostachys anceps* (Settlers' Twine), *Leucopogon lanceolatus*, *Lomatia silaifolia* (Crinkle Bush), *Oplismenus imbecillis* (Creeping Beard Grass), *Ottocloa gracillima* (Slender Shade Grass) and *Viola hederacea* (Ivy-leaved Violet).

Climbers include *Hardenbergia violacea* (Purple Coral Pea), *Hibbertia scandens* (Climbing Guinea Flower), *Kennedia rubicunda* (Dusky Coral Pea) and *Parsonsia straminea* (Common Silkpod).

Note: The reference to *Themeda australis* in the PMVC vegetation mapping in the association for this community is an outdated synonym. The correct species is *Themeda triandra*.

An extract of the PMHC vegetation community mapping showing the mapped White Stringybark – Tallowwood dry forest vegetation community within the study area is provided at Figure 5.1.



Figure 5.1: Mapped White Stringybark – Tallowwood dry forest vegetation community

5.2.2 Field Observations

i. Structural Characteristics

Generally, the vegetation across most of the site has been significantly modified through land clearing so that the structural characteristics across the larger proportion of the site resemble a grassland community. At the northern margin of the site a

relatively small disjunct patch of remnant vegetation occurs, which retains the structural characteristics of an open forest community despite ongoing disturbance associated with the activities of a transport/trucking business at the site. Throughout the derived grassland across the wider areas of the site numerous trees were observed, which were mostly isolated individuals and occasionally within small clumps.

ii. Floristics

There was a distinct difference in the floristics recorded in the more elevated northern part of the site and the remaining lower lying areas of the site. The principal species recorded in the canopy of the remnant vegetation in the northern part of the site were *Eucalyptus microcorys* (Tallowwood) and *Eucalyptus globoidea* (White Stringybark). Associate species recorded included *Corymbia intermedia* (Pink Bloodwood), *Eucalyptus siderophloia* (Grey Ironbark) and *Eucalyptus propinqua* (Small-fruited Grey Gum). Other, less common species included *Syncarpia glomulifera* (Turpentine) and *Lophostemon confertus* (Brush Box).

The mid-stratum has largely been removed from the remnant patch in the northern part of the study area, however various species from the understorey including both native and exotic species were recorded in parts of the site inaccessible to regular grass cutting, at the bases of some trees, along fence lines and within the groundcover as resprouts and juvenile plants. The more common native species recorded in the remnant understorey during the field survey included *Acacia longifolia* subsp. *longifolia* (Sydney Golden Wattle), *Breynia oblongifolia* (Coffee Bush), *Polyscias sambucifolia* (Elderberry Panax), *Acacia implexa* (Hickory Wattle), *Allocasuarina littoralis* (Black She-oak) and *Callitris rhomboidea* (Port Jackson Pine). The more common exotic species recorded in the remnant understorey included *Lantana camara* (Lantana) and *Bidens pilosa* (Cobbler's Pegs).

Within the remnant vegetation the more common native species in the groundcover included *Imperata cylindrica* (Blady Grass), *Pteridium esculentum* (Common Bracken), *Lomandra longifolia* (Spiny-headed Mat-rush), *Entolasia marginata* (Bordered Panic), *Entolasia stricta* (Wiry Panic), *Themeda triandra* (Kangaroo Grass), *Echinopogon caespitosus* var. *caespitosus* (Tufted Hedgehog Grass), *Geitonoplesium cymosum* (Scrambling Lily), *Pratia purpurascens* (Whiteroot), *Desmodium rhytidophyllum*. Other relatively common native species in the remnant understorey included *Dianella caerulea* (Blue Flax-lily), *Eustrephus latifolius* (Wombat Berry), *Viola hederacea* (Ivy-leaved Violet), *Oplismenus aemulus* (Basket Grass), *Rubus parvifolius* (Native Raspberry), *Rubus moluccanus* var. *trilobus* (Molucca Bramble), *Hibbertia scandens* (Climbing Guinea Flower) and *Parsonsia straminea* (Common Silkpod). There were also several exotic species that were common in the groundcover of the remnant vegetation including *Andropogon virginicus* (Whisky Grass), *Paspalum mandiocanum* (Broadleaf Paspalum) and *Plantago lanceolata* (Lamb's Tongue).

Within the derived grassland across the wider low-lying areas of the site the more common species were generally exotic grasses including *Andropogon virginicus* (Whisky Grass), *Axonopus fissifolius* (Narrow-leafed Carpet Grass), *Chloris gayana* (Rhodes Grass), *Paspalum dilatatum* (Paspalum), *Paspalum urvillei* (Vasey Grass), *Paspalum mandiocanum* (Broadleaf Paspalum), *Panicum repens* (Torpedo Grass) and *Sporobolus africanus* (Parramatta grass). The more common native grasses included

Cynodon dactylon (Common Couch), *Imperata cylindrica* (Blady Grass) and *Themeda triandra* (Kangaroo Grass). There were numerous herbs that were common in the managed grassland, the majority of which were exotic species generally regarded as weeds including *Trifolium repens* (White Clover), *Hydrocotyle bonariensis*, *Hypochaeris radicata* (Catsear), *Leucanthemum vulgare* (Ox-eye daisy), *Taraxacum officinale* (Dandelion), *Plantago lanceolata* (Lamb's Tongue), *Ageratum houstonianum* (Blue Billygoat Weed), *Verbena bonariensis* (Purpletop), *Senecio madagascariensis* (Fireweed), *Sida rhombifolia* (Paddy's Lucerne), *Veronica persica* (Creeping Speedwell), *Rumex obtusifolius* (Broad-leaf Dock) and *Gladiolus* spp. The introduced sedge *Cyperus eragrostis* (Umbrella Sedge) was also widespread. Several native herb species were recorded in the derived grassland, the more common being *Viola hederacea* (Ivy-leaved Violet), *Pratia purpurascens* (Whiteroot), *Ranunculus lappaceus* (Common Buttercup), *Geranium homeanum*. In the lower lying areas, species typically associated with wetter habitats, including *Ranunculus inundatus* (River Buttercup), *Persicaria decipiens* (Slender Knotweed) and *Mitrasacme paludosa* were recorded.

The derived grassland also contained numerous trees, which were mostly isolated individuals with some occasionally occurring together in small clumps. The species recorded included *Casuarina glauca* (Swamp Oak), *Melaleuca quinquenervia* (Broad-leaved Paperbark), *Eucalyptus tereticornis* (Forest Red Gum), *Eucalyptus robusta* (Swamp Mahogany), *Eucalyptus patentinervis* (*E. tereticornis* x *robusta* hybrid), *Melaleuca styphelioides* (Prickly-leaved Tea Tree) and *Melaleuca linariifolia* (Flax-leaved Paperbark). Remnants of the understorey were recorded at the bases of some trees, around the margins of several farm dams and along the fence lines at the site boundaries. Native species recorded in the remnant understorey included *Acacia implexa* (Hickory Wattle), *Callitris rhomboidea* (Port Jackson Pine), *Leptospermum polygalifolium* subsp. *cismontanum* (Tantoon), *Glochidion ferdinandi* (Cheese Tree), *Pittosporum undulatum* (Sweet Pittosporum), *Leucopogon juniperinus* (Prickly Beard-heath), *Monotoca scoparia*, *Daviesia ulicifolia* (Gorse Bitter Pea), *Breynia oblongifolia* (Coffee Bush), *Solanum densevestitum* and *Trochocarpa laurina* (Tree Heath). Two exotic species; *Lantana camara* (Lantana) and *Senna pendula* var. *glabrata* (Easter Cassia) were relatively common in the remnant understorey.

The areas of remnant understorey were also accompanied by remnants of the native groundcover. These included *Entolasia marginata* (Bordered Panic), *Oplismenus aemulus* (Basket Grass), *Pteridium esculentum* (Bracken), *Calochlaena dubia* (Rainbow Fern), *Lomandra longifolia* (Spiny-headed Mat-rush), *Blechnum cartilagineum* (Gristle Fern) and *Centella asiatica* (Indian Pennywort). Exotic species formed a relatively large proportion of the remnant understorey, which largely comprised species from the derived grassland community. Due to its tolerance of shady conditions *Paspalum mandiocanum* (Broadleaf Paspalum) was common in these remnants.

Four (4) farm dams collectively formed an aquatic habitat that has been colonised by an assemblage of aquatic plant species. There was some variation between the water bodies (dams), particularly with respect to the size of the individual water bodies, and in the species assemblage recorded, which is discussed in more detail under Section 5.3.3. The more common native aquatic plant species recorded during the flora survey

included *Eleocharis equisetina*, *Schoenoplectiella mucronata* and *Juncus continuus*. Other aquatic plant species recorded included *Typha orientalis* (Broad-leaved Cumbungi), *Philydrum lanuginosum* (Frogmouth) and introduced species; *Nymphaea capensis* (Cape Waterlily).

The floristics data supports the mapping of the remnant forest in the northern part of the site as White Stringybark – Tallowwood dry forest. Except for a small area in the southwest corner of the site that is also mapped as White Stringybark – Tallowwood dry forest, no mapped plant community is indicated across the remainder of the site. The floristics data collected during the flora survey and observations made of the vegetation on the adjacent land suggests that prior to land clearing the that was likely to have occurred in the unmapped parts of the site was a swamp forest community. The PMHC vegetation community mapping indicates several swamp forest communities in proximity to the study area including Swamp Oak – Mixed Eucalypt Coastal Floodplain Wetland Forest Complex on similar geology immediately to the east of the site, Broad-leaved Paperbark – Swamp Mahogany Swamp Forest to the south and southeast, and Broad-leaved Paperbark – Mixed Eucalypt Swamp Forest Complex to the southeast. It is noted that these plant communities are listed as an endangered ecological community (EEC). The full list of flora species recorded within the study area is appended to this report as Appendix B. The following images show the general condition of the plant community within the study area during the field survey.



Figure 5.2: Current conditions in the northern part of the study area



Figure 5.3: Remnant White Stringybark – Tallowwood dry forest



Figure 5.4: View looking south from the northern part of the study area



Figure 5.5: View of remnant vegetation in the central part of the site



Figure 5.6: View looking north from the southern part of the study area

5.2.3 Tree Survey

All trees located within the proposed development footprint that potentially will be impacted by the development of the site were surveyed. The tree survey indicated that the remnants of at least two (2) plant communities were present within the study area. In the northern part of the site the principal species recorded during the tree survey were *Eucalyptus microcorys* (Tallowwood) and *Eucalyptus globoidea* (White Stringybark). Associate species recorded included *Corymbia intermedia* (Pink Bloodwood), *Eucalyptus siderophloia* (Grey Ironbark) and *Eucalyptus propinqua* (Small-fruited Grey Gum). Other, less common species included *Syncarpia glomulifera* (Turpentine) and *Lophostemon confertus* (Brush Box). This species assemblage was indicative of a White Stringybark – Tallowwood dry forest community as described under the PMHC vegetation community mapping.

In the other areas of the site containing remnant trees the species recorded included *Casuarina glauca* (Swamp Oak), *Melaleuca quinquenervia* (Broad-leaved Paperbark), *Eucalyptus tereticornis* (Forest Red Gum), *Eucalyptus robusta* (Swamp Mahogany), *Eucalyptus patentinervis* (*E. tereticornis* x *robusta* hybrid), *Melaleuca styphelioides* (Prickly-leaved Tea Tree) and *Melaleuca linariifolia* (Flax-leaved Paperbark). While no plant community is indicated in these parts of the study area, the assemblage of species was indicative of a swamp forest community. The tree survey plan and data table are appended to this report as Appendix C.

5.3 Habitat Assessment

5.3.1 Terrestrial Habitat

As previously discussed in Section 5.2, the habitat within the study area comprised the remnants of a White Stringybark – Tallowwood dry forest community, which is mapped under the PMHC vegetation community mapping. No mapped plant community is indicated under the PMHC vegetation community mapping across the remainder of the site. However, the floristics data and landscape position of the site suggests that the area probably contained a swamp forest community prior to land clearing. Currently, the majority of the land within the study area has been cleared of native vegetation and is maintained as managed grassland with retained 'paddock' trees. The retained trees within the canopy generally ranged from the mature growth stage with some trees recorded in the late-mature growth stage. This management regime appears to have been in place for a considerable number of years.

The habitat within the study area contained very few terrestrial habitat features due to its cleared condition across the larger proportion of the site. The understorey was reduced to small remnants generally confined to parts of the site that are inaccessible to regular grass slashing, at the bases of trees, along fence lines and occasionally within the groundcover as resprouts and juvenile plants. Other habitat features such as fallen timber normally associated with forest communities were absent from the study area. However, there was a small number of hollow-bearing trees recorded within the study area as detailed in Section 5.3.3.

5.3.2 Hollow-bearing Trees

Several trees containing visible hollows were recorded within the study area. Three (3) of these trees are situated within the proposed development footprint and therefore are potentially impacted by the proposed rezoning of the land to IN2 – Light Industrial. The remaining hollow-bearing trees observed within the study are situated within the proposed E3 – Environmental Management zone, and therefore will be afforded protection in line with the intent of that zoning. The details of the three (3) potentially impacted hollow-bearing trees are provided in Table 5.1.

Table 5.1: Trees containing visible hollows

Tree No.	Species	Notes
835	<i>Eucalyptus robusta</i>	3 visible hollows (2 >100 mm, 1 >50 mm)
872	<i>Eucalyptus tereticornis</i>	>5 visible hollows (2 >100 mm (+ >50 & <50
881	<i>Eucalyptus tereticornis</i>	3-4 visible hollows (1 >100 mm, 2-4 <50 mm)

The completed PMHC hollow-bearing tree assessment forms are appended to this report as Appendix D.

5.3.3 Aquatic Habitat

Four (4) farm dams collectively formed an aquatic habitat within the study area. The largest dam is situated adjacent to the eastern boundary in the southern part of the site. There is also a small dam located in the southeast corner of the site and together with the larger dam lies within the proposed E3 – Environmental Management zone. Another small dam is located within the unformed road (Lot 1) in the northern part of the site adjacent to the eastern boundary. This dam sits within the ten (10) metre vegetated buffer to Ocean Drive and therefore is outside the development footprint along with the associated regrowth vegetation surrounding it. The remaining small dam is located adjacent to the western boundary, approximately midway between the northern and southern boundaries of the site and lies within the proposed development footprint. The introduced predatory fish; *Gambusia holbrooki* (Plague Minnow) was observed in all the dams located within the study area. The relative positions of the components of the aquatic habitat within the study area are shown in Figure 5.7 below.

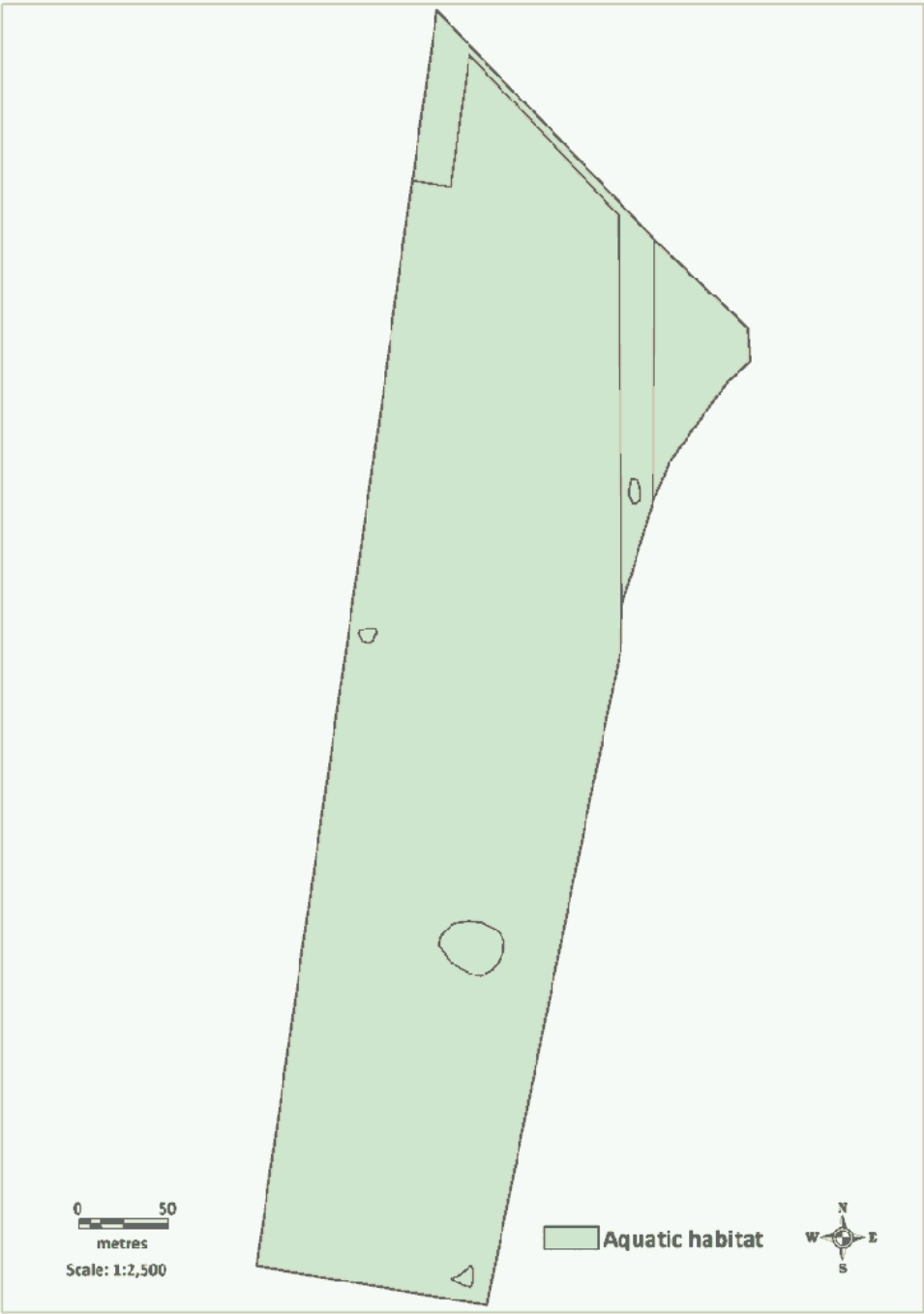


Figure 5.7: Aquatic habitat within the study area

The larger dam adjacent to the eastern boundary appeared to be in a healthy condition. Two (2) native aquatic plant species; *Eleocharis equisetina* and *Schoenoplectiella mucronata* dominated the habitat. The introduced species; *Nymphaea capensis* (Cape Waterlily) was also common and restricted to this dam only. The immediate surrounds of the dam contained vegetation that was predominantly regrowth with trees generally ranging from the early-mature to mature growth stages. The species of trees recorded

growing near the edge of the dam included *Casuarina glauca* (Swamp Oak), *Melaleuca quinquenervia* (Broad-leaved Paperbark), *Eucalyptus tereticornis* (Forest Red Gum), *Eucalyptus robusta* (Swamp Mahogany) and *Eucalyptus patentinervis* (*E. tereticornis* x *robusta* hybrid). The understorey was relatively dense due to the dam surrounds generally being inaccessible to slashing equipment. The more common species recorded included *Callitris rhomboidea* (Port Jackson Pine), *Leptospermum polygalifolium* subsp. *cismontanum* (Tantoon), *Leucopogon juniperinus* (Prickly Beard-heath), *Breynia oblongifolia* (Coffee Bush) and two exotic species; *Lantana camara* (Lantana) and *Senna pendula* var. *glabrata* (Easter Cassia). Graminoids from the adjacent derived grassland were also common. The large dam and the associated vegetation occurring in its immediate surrounds is shown in Figure 5.8.



Figure 5.8: The larger dam within the study area

The small dam in the southeast corner was relatively shallow and would likely become dry after prolonged dry periods. However, at the time of the field survey it contained water after significant rainfall associated with a large east coast low pressure system was received during the previous 48 hours. There was also a small amount of regrowth vegetation associated with this water body, however the surrounding terrestrial habitat was essentially grassland that has been subjected to an ongoing slashing regime.

The dam in the northern part of the study area adjacent to the eastern boundary, although relatively small was more substantial than the dam in the southeast corner and less likely to become dry. There was a dense stand of regrowth vegetation associated with this dam in which the canopy was dominated by *Casuarina glauca* (Swamp Oak) in association with other species typically found in swamp forest communities. One individual of the invasive weed; *Cinnamomum camphora* (Camphor Laurel) was recorded in this clump of trees as well as another serious environmental weed; *Panicum repens* (Torpedo Grass), which was recorded in the adjacent grassland. The associated vegetation occurring in the immediate surrounds of this dam is shown in Figure 5.9.

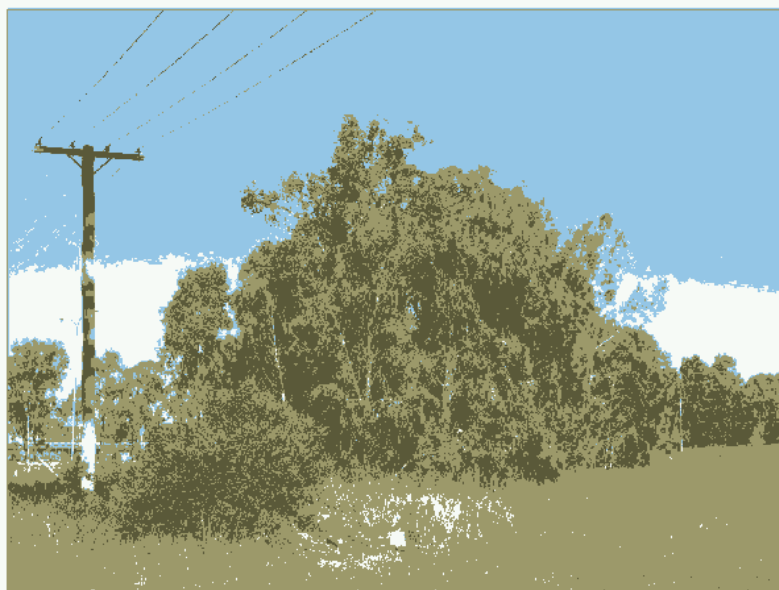


Figure 5.9: Vegetation associated with the dam in the north of the site

The dam centrally located at the western boundary of the study area differed from the other dams as it contained two (2) additional aquatic plant species; *Typha orientalis* (Broad-leaved Cumbungi) and *Philydrum lanuginosum* (Frogmouth), although *Eleocharis equisetina* and *Schoenoplectiella mucronata* were the dominant species. This dam was small and shallow, however the aquatic plants recorded suggest that the water body is most likely permanent. The terrestrial habitat immediately surrounding the dam was a derived grassland with two (2) small trees and remnant understorey plants such as *Lomandra longifolia* (Spiny-headed Mat-rush) occurring near the water's edge. Swamp forest is located nearby on the adjoining land to the west within the Queens Lake State Conservation Area. The terrestrial habitat within the study area adjacent to the dam is currently subject to disturbance associated with the placement of mulch and wood chip on the land to the north of the dam. The dam lies within the proposed IN2 – Light Industrial zone and would be impacted by the proposed development of the land, while the other three dams are situated outside the proposed development footprint and are unlikely to be impacted. The dam and adjacent habitat are shown in Figure 5.10.



Figure 5.8: Small dam adjacent to the western boundary

5.4 Threatened Flora – Targeted Search

The Atlas of NSW Wildlife database search indicated six (6) records of three (3) species of threatened flora listed under the TSC Act within a 0.1 degree by 0.1 degree (default) search area. The Protected Matters Search Tool report indicated that ten (10) threatened species listed under the EPBC Act or their habitat may occur within a ten (10) kilometre radius of the study area. Details of the threatened species of flora returned in the database searches are provided in Table 5.2 below.

Table 5.2: Threatened flora returned in database searches

Species and Listing	Habitat and Distribution	Potential Occurrence
Apocynaceae		
<i>Cynanchum elegans</i> (White-flowered Wax Plant) EPBC Act & TSC Act (4 records)	Restricted to eastern NSW from Brunswick Heads to Gerroa; Usually occurs on the edge of dry rainforest; Also in littoral rainforest, Coastal Tea-tree - Coastal Banksia scrub, <i>Eucalyptus tereticornis</i> aligned open forest and woodland, <i>Corymbia maculata</i> aligned open forest and woodland, and Bracelet Honeymyrtle scrub	Unlikely
Casuarinaceae		
<i>Allocasuarina defungens</i> (Dwarf Heath Casuarina) EPBC Act	Found only in NSW in Nariac area and farther north in the North Coast region; In tall heath on sand, but can also occur on clay soils and sandstone	Unlikely
Fabaceae		
<i>Acacia courtii</i> (North Brother Wattle) EPBC Act	Usually grows on steep, dry, rocky slopes and in mixed dry forest on shallow soils, often under White Mahogany and Grey Gum	Unlikely

Myrtaceae		
<i>Callistemon pungens</i> EPBC Act	Grows in or near rocky watercourses, usually in sandy creek beds on granite or sometimes on basalt; from near Inverell to the eastern escarpment at New England N.P.	Unlikely
<i>Eucalyptus nicholii</i> (Narrow-leaved Black Peppermint) TSC Act (2 records)	Sparsely distributed on the New England Tablelands from Nundle to north of Tenterfield; rows in dry grassy woodland, on shallow soils of slopes and ridges	Unlikely
<i>Hakea archaeoides</i> (Big Nellie Hakea) EPBC Act	Restricted to the hinterland between Kempsey and Taree, around Mt Boss, Broken Bago and Lansdowne; Found on steep, rocky, sheltered slopes and in deep gullies in open eucalypt forest	Unlikely
<i>Melaleuca biconvexa</i> (Biconvex Paperbark) EPBC Act	Generally, grows in damp places, often near streams or low-lying areas on alluvial soils of low slopes or sheltered aspects	Unlikely
Orchidaceae		
<i>Cryptostylis hunteriana</i> (Leafless Tongue-orchid) EPBC Act	Grows in swamp-heath on sandy soils, chiefly in coastal districts, south from the Gibraltar Range	Unlikely
<i>Diuris</i> sp. aff. <i>Chrysantha</i> (Byron Bay Diuris) TSC Act (1 record)	Known from a single location only, at Byron Bay in north-east NSW where only about 20 plants have been recorded; Occurs in low-growing grassy heath on clay soil	Unlikely
<i>Phaius australis</i> (Lesser Swamp-orchid) EPBC Act	Grows in <i>Melaleuca quinquenervia</i> swamps and in swampy sclerophyll forest, on the coast, at or near sea level; Reported north from Lake Cathie, but chiefly north from the Evans Head district	Possible
Orobanchaceae		
<i>Euphrasia arguta</i> EPBC Act	Recorded from Bathurst to Walcha area (possibly extinct). Historical information suggests the species could be found in open forest in subhumid places or on the grassy country near Bathurst	Unlikely
Poaceae		
<i>Arthraxon hispidus</i> (Hairy-joint Grass) EPBC Act	Occurs over a wide area in southeast Queensland and on the northern tablelands and north coast of NSW; Grows in rainforest	Unlikely
Santalaceae		
<i>Thesium australe</i> (Austral Toadflax) EPBC Act	Grows in grassland or woodland, often in damp sites; widespread but rare	Unlikely

Based on the habitat assessment and the habitat requirements of the threatened species of flora as listed in Table 5.2, potential habitat was present within the study area for *Phaius australis* (Lesser Swamp Orchid). Information obtained from the Department of Environment's species profile and threats database indicates that the

species should be surveyed during the warmer months when it is flowering. The Lesser Swamp-orchid can only be distinguished from other swamp orchids by characteristics of its flowers, which are present during spring. As the study was conducted outside the flowering season for the Lesser Swamp-orchid it was not possible to conduct a survey that directly targeted the species exclusively. However, it was possible to target Swamp-orchid species generally, which could inform as to whether further surveys targeting *Phaius australis* would be warranted. Following the targeted survey for Swamp-orchid species it was concluded that the species was unlikely to be present within the study area.

5.5 Fauna

5.5.1 Habitat Search

The entire habitat within the study area was systematically searched during the field survey. During the habitat search one (1) exotic and three (3) native species were recorded as detailed in Table 5.3.

Table 5.3: Species of (non-avian) fauna recorded during the habitat search

Family	Species	Common Name
Malacostraca		
Parastacidae	<i>Gambusia holbrooki</i> *	Plague Minnow*
Amphibia		
Myobatrachidae	<i>Crinia signifera</i>	Common Eastern Froglet
	<i>Litoria peronii</i>	Peron's Tree Frog
Mammalia		
Macropodidae	<i>Macropus giganteus</i>	Eastern Grey Kangaroo

* Indicates an introduced species

The Common Eastern Froglet was recorded across the site and as a winter breeder and following significant rain resulting in the low-lying areas of the site being inundated the species was active. Peron's tree Frog was recorded by its call only in the northern part of the site and was most likely be a brief response to the recent rainfall event. There is a small population of the Eastern Grey Kangaroo that appears to be resident at the site. These native species are both common and are not listed as threatened under the TSC Act or the EPBC Act.

5.5.2 Diurnal Bird Survey

Seven (7) avian species were recorded during the diurnal bird survey. These were all common species, none of which is listed as threatened under the TSC Act or EPBC Act. The avian species recorded within the study area during the diurnal bird survey are listed in Table 5.4.

Table 5.4: Avian species recorded during the diurnal bird survey

Family	Scientific Name	Common Name
Alcedinidae	<i>Dacelo novaeguineae</i>	Laughing Kookaburra
Anatidae	<i>Chenonetta jubata</i>	Australian Wood Duck
Artamidae	<i>Cracticus torquatus</i>	Grey Butcherbird
	<i>Cracticus tibicen</i>	Australian Magpie
Campephagidae	<i>Coracina novaehollandiae</i>	Black-faced Cuckoo-shrike
Charadriidae	<i>Vanellus miles</i>	Masked Lapwing
Columbidae	<i>Ocyphaps lophotes</i>	Crested Pigeon
Meliphagidae	<i>Anthochaera chrysoptera</i>	Little Wattlebird
	<i>Caligavis chrysops</i>	Yellow-faced Honeyeater
	<i>Lichmera indistincta</i>	Brown Honeyeater
	<i>Manorina melanocephala</i>	Noisy Miner
	<i>Meliphaga lewinii</i>	Lewin's Honeyeater
	<i>Philemon corniculatus</i>	Noisy Friarbird
Monarchidae	<i>Grallina cyanoleuca</i>	Magpie-lark
Psittacidae	<i>Platycercus eximius</i>	Eastern Rosella
	<i>Trichoglossus chlorolepidotus</i>	Scaly-breasted Lorikeet
	<i>Trichoglossus haematodus</i>	Rainbow Lorikeet

The relatively small number of avian species recorded was attributed to the cleared condition of the habitat and associated lack of resources. The presence of a resident population of the Noisy Miner that occupied the habitat in the northern part of the study area is also likely to be excluding a significant number of smaller, less aggressive species from that part of the site. There were significant numbers of Honeyeaters recorded across the central and southern parts of the site due to several species of eucalypt situated in those parts of the site that were flowering including *Eucalyptus tereticornis* (Forest Red Gum), *Eucalyptus robusta* (Swamp Mahogany) and *Eucalyptus patentinervis* (*E. tereticornis* x *robusta* hybrid). It was noted that *Eucalyptus microcorys* (Tallowwood) situated in the northern part of the study area was also flowering, however it is likely that the presence of the Noisy Miners is likely rendering these resources unavailable to several of the smaller species of Honeyeater.

5.5.3 Scats and Signs Survey

Several scats were recorded within the study area during the survey. These scats were identified as those of the Eastern Grey Kangaroo. Scratch marks were also recorded on two (2) Forest Red Gum trees situated adjacent to the eastern boundary near the large dam. Disturbed bark was observed on the trunks of several Tallowwood trees situated adjacent to the western boundary in the northern part of the study area. Details of these trees are provided in the tree survey table and plan appended to this report as Appendix C.

5.5.4 Stag Watch

Stag watching was conducted at the hollow-bearing tree with tag number 872. As this tree is proposed to be removed to facilitate the development of the site, stag watching formed part of a suit of survey methods aimed at determining what species may be

utilising the hollows within the tree. No species were observed directly utilising the hollows, however at least one (1) Microchiropteran Bat was observed flying in the immediate surrounds of the tree. Given that the tree is essentially an isolated 'paddock' tree it is likely that the utilisation of the hollows would be restricted to some avian and Microchiropteran Bat species. Most avian species were not breeding at the time of the survey and therefore no avian species were observed entering the hollows despite large numbers of Lorikeets being observed feeding in the canopy of flowering trees within the site.

5.5.5 Spotlight Survey

During the spotlight survey numerous individuals of the Grey-headed Flying-fox were recorded flying above the canopy and observed feeding in the canopy of the trees within the site that are currently flowering. The Grey-headed Flying-fox is listed as vulnerable under Schedule 2 of the TSC Act.

5.5.6 Amphibian Survey

Two (2) amphibian species; *Crinia signifera* (Common Eastern Froglet) and *Litoria peronii* (Peron's Tree Frog) were recorded during the amphibian survey. The Common Eastern Froglet was recorded across the site and as a winter breeder and following significant rain resulting in the low lying areas of the site being inundated the species was active. Peron's tree Frog was recorded by its call only in the northern part of the site and was most likely a brief response to the recent rainfall event.

5.5.6 Microchiropteran Bat Ultrasonic Echolocation Detection

At least one (1) Microchiropteran Bat was active during the current study, which was recorded by ultrasonic echolocation detection and analysed using the Wildlife Acoustics Kaleidoscope software. One species; *Vespadelus pumilus* (Eastern Forest Bat) was identified with a reasonable degree of confidence based on the region-based guide to the echolocation calls of Microchiropteran Bats; *Bat Calls of New South Wales* (Pennay et al 2001).

However, as the current study was conducted in early June, which is outside the survey period recommended by the Guidelines (October – March) and evening temperatures were relatively cool (minimum overnight temperature was 10° Celsius) it is likely that at least some Microchiropteran Bat species were inactive and may have been present within the study but not recorded. To address this deficiency in the current survey, the findings of a study conducted during last September at a nearby site at Bundarra Way Bonny Hills have been included to assist in predicting the Microchiropteran Bat species likely to utilise the habitat within the study area. The ultrasonic echolocation detection recordings collected at the Bundarra Way site were forwarded to Echo Ecology; a specialist fauna call identification consultancy for identification. Four (4) species were identified with confidence, as detailed in Table 5.5.

Table 5.5: Microchiropteran Bats recorded with confidence within the study area

Family	Species	Common Name
Vespertilionidae	<i>Chalinolobus gouldii</i>	Gould's Wattled Bat
	<i>Chalinolobus morio</i>	Chocolate Wattled Bat
	<i>Miniopterus australis</i>	Little Bentwing Bat
	<i>Vespadelus pumilus</i>	Eastern Forest Bat

One of these species; *Miniopterus australis* (Little bentwing Bat) is listed as vulnerable in NSW under Schedule 2 of the TSC Act.

There was a further ten (10) species of Microchiropteran Bats that potentially occurred at the Bundarra Way site that could not be confidently identified. The species of Microchiropteran Bat that could not be identified with confidence but could potentially occur within the study area based on the Echo Ecology analysis are shown below in Table 5.6.

Table 5.6: Microchiropteran Bats recorded without confidence within the study area

Family	Species	Common Name
Molossidae	<i>Mormopterus (Ozimops) ridei</i>	Eastern Free-tailed Bat
Vespertilionidae	<i>Chalinolobus nigrogriseus</i>	Hoary Wattled bat
	<i>Falsistrellus tasmaniensis</i>	Eastern Falsistrelle
	<i>Miniopterus schreibersii oceanensis</i>	Eastern Bentwing-bat
	<i>Scoteanax rueppellii</i>	Greater Broad-nosed Bat
	<i>Scotorepens orion</i>	Eastern Broad-nosed Bat
	<i>Vespadelus darlingtoni</i>	Large Forest Bat
	<i>Vespadelus regulus</i>	Southern forest bat
	<i>Vespadelus troughtoni</i>	Eastern Cave Bat
	<i>Vespadelus vulturnus</i>	Little Forest Bat

Three of the Microchiropteran Bats species recorded without confidence are listed as vulnerable in NSW under Schedule 2 of the TSC Act including:

- *Falsistrellus tasmaniensis* (Eastern Falsistrelle);
- *Scoteanax rueppellii* (Greater Broad-nosed Bat); and
- *Vespadelus troughtoni* (Eastern Cave Bat).

It should be noted that the Bundarra Way survey was undertaken in early September, which is outside the survey period recommended by the Guidelines (October – March). However, weather conditions up to and including the time of the survey had been warm and mild, therefore it could be reasonably assumed that most species of Microchiropteran Bats were active. The detailed Bat call identification report prepared by Echo Ecology is appended to this report as Appendix E.

To further ensure that the threatened species of Microchiropteran Bats that could potentially occur within the study area were adequately considered a search of the Atlas of NSW Wildlife database was conducted to determine what additional threatened Microchiropteran Bat species have been recorded in proximity to the study

area. Based on the Atlas of NSW Wildlife records, no additional threatened species of Microchiropteran Bats were recorded within two (2) kilometres of the study area. Therefore, the threatened species of Microchiropteran Bats, which are known or are considered to have potential to utilise the habitat within the study area include:

- *Miniopterus australis* (Little bentwing Bat);
- *Falsistrellus tasmaniensis* (Eastern Falsistrelle);
- *Scoteanax rueppellii* (Greater Broad-nosed Bat); and
- *Vespadelus troughtoni* (Eastern Cave Bat)

5.5.7 Threatened Species

Five (5) threatened mammalian species including *Pteropus poliocephalus* (Grey-headed Flying-fox) and four (4) Microchiropteran bats as detailed in Section 5.5.6 were recorded within the study area or at the nearby Bundarra Way site. These and other species which could potentially utilise the habitat within the study area have been included for consideration under the Assessment of Significance (Seven Part Test) appended to this report as Appendix F.

5.6 Protected Matters

Under the provisions of the EPBC Act approval is required for any action that may have a significant impact on matters of National Environmental Significance (NES) or on Commonwealth land. A search of the Department of Environment web site employing the Protected Matters Search Tool with a ten (10) kilometre buffer was undertaken to identify the matters of NES that may occur in, or may relate to the site.

5.6.1 Matters of National Environmental Significance

World Heritage Properties:	None
National Heritage Places:	None
Wetlands of International Significance:	None
Great Barrier Marine Parks	None
Commonwealth Marine Areas:	1
Threatened Ecological Communities:	3
Threatened Species:	60
Migratory Species:	56

The threatened species returned in the Protected Matters Search Tool have been considered under the Assessment of Significance in Appendix F of this report.

The three (3) threatened ecological communities listed in the Protected Matters Search Tool report are detailed below:

- Littoral Rainforest and Coastal Vine Thickets of Eastern Australia
- Lowland Rainforest of Subtropical Australia; and
- Subtropical and Temperate Coastal Saltmarsh.

None of these plant communities were recorded within the site during the field survey.

5.6.2 Other Matters Protected by the EPBC Act

Commonwealth Land :	2
Commonwealth Heritage Places:	None
Listed Marine Species:	73
Whales and other Cetaceans:	14
Critical Habitats:	None
Commonwealth Reserves (Terrestrial):	None
Commonwealth Reserves (Marine):	None
State and Territory Reserves:	7
Regional Forest Agreements:	1
Invasive Species:	37
Nationally Important Wetlands:	1
Key Ecological Features (Marine):	None

With respect to the thirty-seven (37) invasive species returned in the Protected Matters Search, three avian and five mammalian species are considered to have potential to occur within or utilise the habitat within the study area. The Protected Matters report also lists sixteen (16) weed species under Invasive Species, which includes some of the weeds of national significance (WoNS), along with other introduced plants that are considered by the States and Territories to pose a particularly significant threat to biodiversity. Three (3) WoNS were recorded within the study area during the field survey, including *Asparagus aethiopicus* (Asparagus Fern), *Senecio madagascariensis* (Fireweed) and *Lantana camara* (Lantana). The invasive species that are known or are considered to have potential to occur within the study area are listed in Table 5.7 below.

Table 5.7: Invasive species known or likely to occur within the study area

Scientific Name	Common Name
Plantae (Weeds)	
<i>Asparagus aethiopicus</i>	Asparagus Fern*
<i>Chrysanthemoides monilifera</i> subsp. <i>rotundata</i>	Bitou Bush
<i>Senecio madagascariensis</i> *	Fireweed*
<i>Lantana camara</i> *	Lantana*
Aves	
<i>Acridotheres tristis</i>	Indian Myna
<i>Passer domesticus</i>	House Sparrow
<i>Streptopelia chinensis</i>	Spotted Turtle-dove
Mammalia	
<i>Canis lupus familiaris</i>	Domestic Dog
<i>Felis catus</i>	Domestic Cat
<i>Cervus spp.</i>	Feral Deer
<i>Mus musculus</i>	House Mouse
<i>Rattus rattus</i>	Black Rat
<i>Vulpes vulpes</i>	Red Fox

* Indicates species recorded within the study area during the field survey

5.7 Koala Habitat Assessment and Koala Survey

5.7.1 SEPP 44

The study area is situated in the Port Macquarie-Hastings Council LGA, which is listed on Schedule 1 – Local Government Areas of SEPP 44.

As per SEPP 44, *Potential Koala Habitat* is defined as:

“Areas of native vegetation where the trees of the types listed in Schedule 2 constitute at least 15 % of the total number of trees in the upper or lower strata of the tree component.”

Three (3) species listed in Schedule 2 of SEPP 44 were recorded within the study area. These included *Eucalyptus microcorys* (Tallowwood), *Eucalyptus robusta* (Swamp Mahogany) and *Eucalyptus tereticornis* (Forest Red Gum) and collectively constituted more than 15 % of the ‘remnant’ tree component. Therefore, the habitat within the site satisfies the criteria for Potential Koala Habitat under SEPP 44.

As per SEPP 44, *Core Koala Habitat* is defined as:

“An area of land with a resident population of Koalas, evidenced by attributes such as breeding females (that is, females with young) and recent sightings of and historical records of a population.”

The Atlas of NSW Wildlife database search returned 463 records of the Koala within a 0.1 degree by 0.1 degree search area around the study area. The Atlas records suggest that a local Koala population is patchily distributed across the Bonny Hills and Queens Lake area with concentrations of records in the developing areas of Lake Cathie to the north and Bonny Hills to the south as well as within the Lake Innes Nature Reserve to the north, the Queens Lake State Conservation Area and the Queens Lake Stater Forest to the west and the Queens Lake Nature Reserve to the southwest. These concentrations of records are perhaps more a reflection of where ecological surveys have been undertaken previously rather than a true indication of the species distribution across the broader area. The survey work undertaken by Phillips et al (2009) in relation to the Area 14 Koala Plan of Management was wider ranging than other individual surveys and shows clusters of records immediately to the north and southwest of the site and further to the southeast around the Seafront Circuit/Beach Street area. The locations of the Koala records within the search area from the Atlas of NSW Wildlife (OEH, 2016) are shown in Figure 5.9.



FloraFauna Consulting



Figure 5.10: Scratch marks on the trunk of a Forest Red Gum tree



Figure 5.11: Disturbed bark on the trunk of a Tallowwood tree

Given the evidence recorded during the Koala survey there seems little doubt that on occasion the habitat within the study area is utilised by the species. There are food resources available to the Koala within the site, which is contiguous with a large expanse of forest habitat within the Queens Lake State Conservation Area, the Queens Lake Nature Reserve and the Queens Lake State Forest. Therefore, it is likely that a population of the Koala would utilise the food resources within the study area. However, the habitat is unlikely to be core Koala habitat for the purposes of SEPP 44 but is a valuable component of a larger home range of the local Koala population.

5.7.2 EPBC Act

For the purposes of the EPBC Act a desktop survey, 'on-ground' (field) survey and habitat assessment (utilising the habitat assessment tool) were undertaken as per the EPBC Act Referral Guidelines.

i. Desktop Survey

The Atlas of NSW Wildlife database search returned 463 records of the Koala within a 0.1 degree by 0.1 degree search area around the study area. This indicates that there is a local Koala population in the search area. The locations of the Koala records within the search area from the Atlas of NSW Wildlife (OEH, 2016) are shown previously in Figure 5.9. The search results of the Atlas of NSW Wildlife database show a cluster of records near within the Queens Lake State Conservation Area to the west of the site as well as a few records on the land to the north of Houston Mitchell Drive. The survey work undertaken by Phillips et al (2009) in relation to the Area 14 Koala Plan of Management, which was wider ranging than other individual surveys shows clusters of records immediately to the north and southwest of the site and further to the southeast around the Seafront Circuit/Beach Street area. Aerial imagery indicates that the study area is contiguous with forest habitat within the Queens Lake State Conservation Area, the Queens Lake Nature Reserve and the Queens Lake State Forest. The EPBC Act Protected Matters Search Tool advises that the Koala (combined populations of Queensland, New South Wales and the Australian Capital Territory) or the species habitat is known to occur in the area.

Advice received from the Koala Hospital at Port Macquarie indicates that there have been several Koala rescues undertaken in the Bonny Hills area. Most these rescues were associated with vehicle strikes on Ocean Drive near the headland near the local fuel station/general store within the village to the south of the study area. There have also been a small number of rescues of sick Koalas from the Panorama Drive area as well.

ii. On-ground (Field) Survey

The entire habitat within the study area was investigated. This included searching the site for actual Koala sightings as well as searching for Koala scats at the base of all trees within the study area and looking for other indicators such as scratch marks on tree trunks. No Koala scats were found; however, it was impossible to draw any conclusions from this alone given the recent heavy rain associated with the intense east coast low pressure system and extent of subsequent surface water within the site. Several trees showed signs of Koala activity, including scratches consistent with those made by Koalas on the trunk of a Forest Red Gum tree (tag no. 873) located near the eastern boundary adjacent to the larger dam within the site and disturbed bark on the trunks of four (4) Tallowood trees (tag nos. 853, 854, 857 and 858) located adjacent to the western boundary of the site. Five (5) species of Koala food tree as listed under the Recovery Plan for the Koala (DECC, 2008) were recorded within the study area. These included three (3) primary Koala food tree species; *Eucalyptus microcorys* (Tallowood), *Eucalyptus robusta* (Swamp Mahogany) and *Eucalyptus tereticornis* (Forest red Gum), and two (2) secondary/supplementary Koala food tree species; *Eucalyptus propinqua* (Small-fruited Grey Gum) and *Eucalyptus globoides* (White

Stringybark)). An additional species; *Melaleuca quinquenervia* (Broad-leaved Paperbark) is listed as an 'other' browse species under the DCP.

iii. Koala Habitat Assessment

The Koala habitat assessment tool score is detailed in Table 5.9.

Table 5.9: Koala habitat assessment (coastal criteria)

Attribute	Coastal Criteria	Score
Koala occurrence	Evidence of 1 or more Koalas within the last 2 years (current study)	2
Vegetation composition	Has 2 or more known Koala food tree species in the canopy (of the remnant vegetation)	2
Habitat connectivity	Study is part of a contiguous landscape ≥ 500 hectares	2
Key existing threats	Evidence of infrequent or irregular Koala mortality from vehicle strike or dog attack at present in areas that score 1 or 2 for Koala occurrence	1
Recovery value	Uncertainty exists as to whether the habitat is important for achieving the interim recovery objectives	1
Total		8

The Koala habitat assessment tool score of 8 indicates that the habitat within the study area may contain habitat critical to the species survival for the purposes of the EPBC Act.

Note: The mitigation of impacts which may interfere with the recovery of the Koala only applies to impact areas which score ≥ 5 using the habitat assessment tool, as these areas are considered likely to be important for the long-term survival of the species.

iv. Assessing adverse effects on habitat critical to the survival of the Koala (Figure 2 of the Guidelines)

Applying Figure 2 of the Guidelines:

- Koala habitat assessment tool (habitat) score of 8 – the habitat within the study area may contain habitat critical to the survival of the Koala;
- The land to be cleared within the study area contains known Koala food trees;
- The amount of land to be cleared under the current proposal is less than two (2) hectares (given the extent of site that is currently cleared).

Based on the assessment under Figure 2 of the Guidelines, as the amount of proposed clearing is less than two (2) hectares, referral to the Department of the Environment for adversely affecting habitat critical to the survival of the Koala is not recommended.

5.8 Significance Assessments

From the habitat assessment and database/literature review, it was considered that sixteen (16) threatened species as listed under the *Threatened Species Conservation Act 1995* and *Environment Protection and Biodiversity Conservation Act 1999* could potentially utilise the habitat within the study area. The Section 5A Assessment is appended to this report as Appendix F.

5.9 Aboriginal Heritage

For the purposes of determining the details and location of any Aboriginal object or Aboriginal place that may be situated on the subject site a search of the Aboriginal Heritage Information Management System (AHIMS) on the NSW Office of Environment and Heritage (OEH) website was undertaken on 8 September. The basic search indicated that no Aboriginal sites are recorded in or near the subject site and that no Aboriginal places have been declared in or near the subject site. The AHIMS Web Services search result form is appended to this report as Appendix G.

6. Potential Impacts on Biodiversity

It is proposed to rezone the land from RU1 – Primary Production zoned to part IN2 – Light Industrial and part E3 – Environmental Management, consistent with Council's Urban Growth Management Strategy. Much of the land within the study area has been cleared of native vegetation for many years and is maintained as managed grassland with retained 'paddock' trees as well as small patches of regrowth vegetation. In the longer term, there would be a continuation of a human presence on the site. The potential impacts on biodiversity associated with the proposed development are detailed below.

6.1 Vegetation and Habitat Removal

6.1.1 Terrestrial Habitat

Vegetation removal to facilitate the proposed rezoning and development of the land for light industrial purposes will essentially be confined to tree removal as the habitat within the study largely comprises a derived grassland containing remnant trees. It will be necessary to remove a total of fifty-three (53) trees (including a small stand of juvenile Swamp Oak saplings with tag number 833, which have been counted as a single tree) located within the proposed development footprint as detailed in the tree survey plan and data table are appended to this report as Appendix C. There are two main issues associated with the removal of the trees from within the study area. The first is the loss of habitat features including the small number of tree hollows that were recorded within one (1) hollow-bearing tree (tag no. 881) during the habitat assessment, which is proposed to be removed. The second is the removal of food resources, particularly with respect to the removal of preferred Koala food trees.

In relation to the removal of tree hollows, the results of the fauna survey suggest that the small number of hollows observed in the hollow-bearing tree proposed to be removed are likely to retain limited ecological value due to the tree being an isolated 'paddock' tree and the extent of human impact (artificial lighting and disturbance within the site) that currently exists. The fauna survey did not detect any species of fauna utilising the tree hollows directly, however a single individual of *Vespadelus pumilus* (Eastern Forest Bat) was observed in the immediate vicinity of the tree in question during the stag watching survey and concurrently recorded by ultrasonic echolocation detection. As the eastern Forest Bat roosts, primarily in tree hollows it would be a reasonable assumption that the observed Bat may roost in the hollow-bearing tree. The other likely candidates for utilising the tree hollows are other undetected species of Microchiropteran Bat and several avian species. Based on the tree's position in the landscape, present conditions of the habitat, the size of the observed tree hollows and previous observations of similar hollow-bearing trees in the general area, the species considered most likely to utilise the tree hollows are *Trichoglossus haematodus* (Rainbow Lorikeet) and *Eolophus roseicapillus* (Galah).

In relation to the removal of preferred Koala food trees, it will be necessary to remove twenty-two (22) Koala browse trees (as detailed in Table 2.6.1 of the DCP) that are situated within the proposed development footprint as detailed in Section 6.5. It is noted that the larger proportion of the trees located in the northern patch of remnant

vegetation will be retained within a proposed parcel of public land. Most trees proposed to be removed are in the central part of the site. All trees located within the proposed Environmental (E2/E3) zone will be retained. This part of the site will form the revegetation area containing compensatory plantings as detailed in Section 7.1.

6.1.2 Aquatic Habitat

One component of the aquatic habitat, comprising the small dam located within the proposed IN2 – Light Industrial zone and would be impacted by the proposed development of the land. It is noted that the terrestrial habitat within the study area adjacent to the dam is currently subject to disturbance associated with the placement of mulch and wood chip on the land to the north of the dam. However, the dam could provide potential habitat for several amphibian species including the green and Golden Bell Frog.

6.2 Interruption to Ecosystem Processes

Ecosystems require a suite of processes to function properly. These processes include climatic processes, primary processes (production of biomass), hydrological processes, nutrient cycling, interspecific and intraspecific interactions, movement of organisms and natural disturbance regimes such as fire and flooding (Gleeson et al, 2012). Ecosystem processes are complex and therefore difficult to quantify. Most development in natural environments has the potential to interrupt ecosystem processes.

6.3 Weed Invasion

Weed invasion could potentially have a negative impact on biodiversity in the future. It is generally accepted that weeds are a significant threat to biodiversity as well as being an economic problem. Depending on the species, weeds can increase shading, compete with native plants for nutrients, smother native plants or chemically suppress their germination or growth through allelopathy. Much of the land within the study area has been cleared to form a derived grassland largely dominated by graminoids. Because of the modified condition of the habitat an assemblage of introduced species including several species regarded as weeds are already established within the study area. It is noted that three (3) established weeds within the study area; *Asparagus aethiopicus* (Asparagus Fern), *Senecio madagascariensis* (Fireweed) and *Lantana camara* (Lantana) are listed as weeds of national significance and that further disturbance of the habitat within the site and lack of weed management has the potential to further escalate their progression. It is also noted that invasion, establishment and spread of *Lantana camara* (Lantana) is listed in NSW as Key Threatening Processes.

6.4 EPBC Act Koala Guideline Referral Considerations

The following impacts as detailed in Section 8 of the EPBC Act referral guidelines are considered likely to substantially interfere with the recovery of the Koala:

- Increasing Koala fatalities in habitat critical to the survival of the Koala due to dog attacks to a level that is likely to result in multiple, ongoing mortalities;
- Increasing Koala fatalities in habitat critical to the survival of the Koala due to vehicle-strikes to a level that is likely to result in multiple, ongoing mortalities;
- Facilitating the introduction or spread of disease or pathogens to an area, for example *Chlamydia* or *Phytophthora cinnamomi*, to habitat critical to the survival of the Koala that are likely to significantly reduce the reproductive output of female Koalas or reduce the carrying capacity of the habitat;
- Creating a barrier to movement to, between or within habitat critical to the survival of the Koala that is likely to result in a long-term reduction in genetic fitness or access to habitat critical to the survival of the Koala;
- Changing hydrology which degrades habitat critical to the survival of the Koala to the extent that the carrying capacity of the habitat is reduced in the long-term.

Several isolated 'paddock' trees are proposed to be removed from within the study area, however much of the land has been previously cleared of native vegetation and no further significant clearing in terms of area is necessary. As the amount of clearing proposed is less than two (2) hectares, referral under the EPBC Act Koala referral guidelines for adversely affecting habitat critical to the survival of the Koala is not recommended by the Department of the Environment.

6.5 Koala DCP Legislative Requirements

Six (6) species of trees recorded within the study area are listed as Koala browse trees in Table 2.6.1 of the DCP. These included *Eucalyptus microcorys* (Tallowwood), *Eucalyptus robusta* (Swamp Mahogany) and *Eucalyptus tereticornis* (Forest Red Gum), which are listed as primary browse species, *Eucalyptus propinqua* (Small-fruited Grey Gum) and *Eucalyptus globoides* (White Stringybark), which are listed as secondary/supplementary browse species and *Melaleuca quinquenervia* (Broad-leaved Paperbark), which is listed as 'other' browse species. The details of the twenty-two (22) Koala food trees that are proposed to be removed from the site are provided in Table 6.1.

Table 6.1: Koala Food Trees

Tree Tag	Species	Common Name	Category
803	<i>Eucalyptus globoidea</i>	White Stringybark	Secondary
807	<i>Eucalyptus microcorys</i>	Tallowwood	Primary
829	<i>Eucalyptus tereticornis</i>	Forest Red Gum	Primary
830	<i>Eucalyptus tereticornis</i>	Forest Red Gum	Primary
832	<i>Melaleuca quinquenervia</i>	Broad-leaved Paperbark	Other
836	<i>Eucalyptus robusta</i>	Swamp Mahogany	Primary
838	<i>Eucalyptus robusta</i>	Swamp Mahogany	Primary
839	<i>Eucalyptus robusta</i>	Swamp Mahogany	Primary
840	<i>Eucalyptus robusta</i>	Swamp Mahogany	Primary
841	<i>Eucalyptus tereticornis</i>	Forest Red Gum	Primary
843	<i>Eucalyptus globoidea</i>	White Stringybark	Secondary
853	<i>Eucalyptus microcorys</i>	Tallowwood	Primary
866	<i>Eucalyptus tereticornis</i>	Forest Red Gum	Primary
867	<i>Melaleuca quinquenervia</i>	Broad-leaved Paperbark	Other
869	<i>Eucalyptus tereticornis</i>	Forest Red Gum	Primary
878	<i>Melaleuca quinquenervia</i>	Broad-leaved Paperbark	Other
879	<i>Melaleuca quinquenervia</i>	Broad-leaved Paperbark	Other
881	<i>Eucalyptus tereticornis</i>	Forest Red Gum	Primary
882	<i>Eucalyptus tereticornis</i>	Forest Red Gum	Primary
887	<i>Eucalyptus robusta</i>	Swamp Mahogany	Primary
892	<i>Melaleuca quinquenervia</i>	Broad-leaved Paperbark	Other
894	<i>Melaleuca quinquenervia</i>	Broad-leaved Paperbark	Other

The DCP indicates that the removal of Koala browse tree species is to be offset by compensatory planting at a ratio of two (2) replacement trees for each Koala browse tree that is removed.

6.6 Other Impacts Associated with Human Activities

6.6.1 Changes in Animal Behaviour

Behavioural changes in species of native fauna can occur because of the physical presence of a development or due to interaction with humans at the site of a development. There are various types of behavioural changes possible such as changes in the choice of foraging and reproductive behaviour. In some cases, animals may be drawn to a development by an improved food supply associated with the presence of humans. For example, species like the Eastern Grey Kangaroo, Brushtail Possum, Magpie, Pied Butcherbird, Kookaburra and Noisy Miner often live near humans because of the improved foraging opportunities. Other more secretive or cryptic species such as the large forest Owls and the Bush Rat are more likely to avoid areas near a development. In other cases, modification of the habitat in proximity to a development such as removal of the understory to create a parkland-like setting favours particular species that can result in the absence of other species. For example, a parkland cleared site is favoured habitat of the Noisy Miner, an aggressive, cooperative breeder that will exclude many other avian species from an area. Such

conditions already exist within the study area and the Noisy Miner was recorded during the diurnal bird survey. It is noted that aggressive exclusion of birds by the Noisy miner (*Manorina melanocephala*) is listed in NSW as a Key Threatening Process.

In addition, there is an existing trucking business and associated workshop located in the northern part of the study area that is undoubtedly influencing animal behaviour. The use of machinery, significant human presence and associated modification of the habitat has contributed to the exclusion of numerous species from the site. Similarly, the adjacent public road system, including the recent upgrading of the intersection of Houston Mitchell Drive and Ocean Drive as well as the recently developed school on the adjacent land to the east would have contributed to changes in animal behaviour.

6.6.2 Artificial Lighting

Artificial lighting can cause disruption of foraging behaviour, increased potential for collision with structures, and disruption of reproduction and movement. The effects of artificial lighting on most Australian fauna are not fully understood, nor has it been sufficiently studied. The site is currently impacted significantly by artificial light, particularly from the recently upgraded intersection of Houston Mitchell Drive and Ocean Drive as well as the recently developed school on the adjacent land to the east, as indicated in the image of artificial street lighting at Figure 6.1 taken from within the study area during the field survey.



Figure 6.1: Image of artificial lighting impacting the study area

7. Managing Potential Impacts

7.1 Vegetation

As previously detailed in the habitat assessment the land within the study area is maintained as managed grassland and it is likely that this management regime would continue. To facilitate the development of the land within the study area it will be necessary to remove a total of fifty-three (53) trees (including a small stand of juvenile Swamp Oak saplings with tag number 833, which have been counted as a single tree) that are located within the proposed development footprint as detailed in the tree survey plan and data table are appended to this report as Appendix C. The trees to be removed include one (1) hollow-bearing tree and twenty-two (22) preferred Koala food trees as previously detailed in Section 6 of this report. Mitigation measures to offset the removal of these trees, including hollow-bearing trees and preferred Koala food trees from within the study area are detailed below.

7.1.1 Tree Removal (General)

Prior to the commencement of any land clearing operations the ecologist shall undertake the following tasks:

- Survey the area to determine if species of fauna are present; and
- If any species of fauna is found, then clearing operations must not occur within 25 metres of the fauna until it moves away of its own volition.

7.1.2 Hollow-bearing Tree Removal

Hollow-bearing trees are those trees that contain hollows or other features that potentially provide nesting or refuge sites for fauna species. It is proposed to remove one (1) hollow-bearing tree. Any hollow-bearing trees approved for removal shall be removed as follows:

- A qualified ecologist shall be present on site during removal of all hollow-bearing trees;
- All hollow-bearing trees are to be left in place until at least 48 hours after all other trees and vegetation located within 25 metres of the hollow-bearing tree has been removed;
- Once the other trees and vegetation have been removed from around a hollow-bearing tree, the hollow-bearing tree is to be bumped on the side at least twice per day, using the on-site clearing equipment or other appropriate means, to encourage any resident fauna to depart the tree;
- The bumping is to be repeated at one minute intervals over a period of at least 5 minutes immediately prior to the felling of the tree;
- During the bumping the contractor is to take precautions to ensure that there is no risk of personal injury or equipment damage from falling limbs.
- Hollow-bearing trees are to be either cut (from the top down) in sections following examination of all hollows or carefully felled on to stockpiles of previously felled timber or other material to adequately soften the impact of felling;

- Immediately following the felling of a hollow-bearing tree the Ecologist is to properly inspect the tree for signs of fauna occupation. If hollows cannot be viewed over their full length, then they are to be sectioned carefully to enable a full inspection of the hollow. When the ecologist is satisfied, the tree is free of fauna, the tree can be removed;
- An inventory of the number and size of all tree hollows shall be maintained to determine the number and type of nest boxes to be provided in the nest box strategy;
- Where fauna is found within a hollow of the felled hollow-bearing tree all work within 25 metres of the fauna shall cease until it has moved away of its own volition or is captured for later release; and
- The ecologist will need to make a judgement call in some instances as to whether fauna found within a hollow of a felled hollow-bearing tree should be left to move away of its own volition or should be captured for later release or placed into care with a member of FAWNA NSW Inc.

7.1.3 Captured Fauna

Where tree hollows or other habitat features are found to contain species of fauna that did not leave the area prior to removal of the vegetation and are subsequently captured for their welfare and protection, the following specifications shall apply:

- Fauna captured shall be kept in a dark environment prior to release in retained vegetation at dusk on the day of capture;
- If fauna is injured during the process, the animals are to be taken to the nearest veterinarian for treatment prior to release; and
- Any injured fauna should be immediately taken to veterinarian for treatment.

7.1.4 Nest Box Strategy

Due to the modified condition of the habitat within the study area the threatened species most likely to be impacted include a small number of hollow-dependant Microchiropteran Bats as detailed in Table 7.1.

Table 7.1: Target hollow-bearing dependent threatened species

Species	Common Name	Nest Box Type
<i>Mormopterus norfolkensis</i>	Eastern Freetail-bat	Micro Bat
<i>Kerivoula papuensis</i>	Golden-tipped Bat	Micro Bat
<i>Myotis macropus</i>	Southern Myotis	Micro Bat
<i>Scoteanax rueppellii</i>	Greater Broad-nosed Bat	Micro Bat

The nest box strategy shall incorporate the following measures:

- Nest boxes shall be provided at a ratio of two (2) nest boxes for each tree hollow to be removed as determined by the tree hollow inventory (approximately six (6) nest boxes);
- Nestboxes shall be installed in trees that do not contain existing hollows located within the proposed Environmental (E2/E3) zone;

- Nest boxes shall be suitable for Microchiropteran Bats with (typical) dimensions of 500 mm high x 360 mm wide x 150 mm deep, with 20 hole/15 slit and fixed to a tree at a height of 2-5 metres;
- Nest boxes will be manufactured to reduce the likelihood of occupation by feral animals such as the Common Myna and Honey Bee per industry standards;
- Nest boxes are to be installed in trees (both rough-barked and smooth-barked eucalypts) that do not already have hollows;
- A 40 mm to 50 mm thick layer of wood shavings is to be placed in the base of nest boxes to simulate decaying hollows and provide extra insulation;
- All nest boxes will be attached to the tree using the *Habisure* system, which involves:
 - A length of 3.15 mm plastic-coated soft fencing wire passed through the nest box and around the tree trunk;
 - The wire must be folded into at least four folds about 60 mm tall and 15 mm apart at the sides of the box to allow for tree growth;
 - Where the wire is in contact with the tree trunk or branch, it must be threaded through a length of garden hose to protect the tree;
 - Where possible the wire around the tree should pass over a branch behind the trunk, although nest boxes can be installed directly on a straight-stemmed tree; and
 - Nest boxes will be positioned on the north-west to east sector of tree trunks to avoid hot afternoon sun and the predominant aspect of severe storms

7.1.5 Tree Replacement

All trees to be removed should be offset by compensatory planting of replacement trees within the proposed Environmental (E2/E3) zone. Each tree shall be of the same species as detailed below.

i. Preferred Koala Food Trees

The twenty-two (22) preferred Koala food trees that are proposed to be removed from the site are detailed in Section 6.5. The DCP indicates that the removal of Koala browse tree species is to be offset by compensatory planting at a ratio of two (2) replacement trees for each Koala browse tree that is removed. Therefore, forty-four (44) replacement Koala browse trees are required as detailed below in Table 7.2.

Table 7.2: Replacement Koala food trees

Species	Common Name	Replacement Trees Required
<i>Eucalyptus microcorys</i>	Tallowwood	4
<i>Eucalyptus robusta</i>	Swamp Mahogany	10
<i>Eucalyptus tereticornis</i>	Forest Red Gum	14
<i>Eucalyptus globoidea</i>	White Stringybark	4
<i>Melaleuca quinquenervia</i>	Broad-leaved Paperbark	12

ii. Non-Koala Food Trees

In addition to the preferred Koala food trees to be removed as detailed above, thirty-one (31) non-Koala food trees are proposed to be removed. Removal of non-Koala browse tree species is to be offset by compensatory planting at a ratio of one (1) replacement trees for each tree that is removed as detailed below in Table 7.3.

Table 7.2: Replacement non-Koala food trees

Species	Common Name	Replacement Trees Required
<i>Casuarina glauca</i>	Swamp Oak	16
<i>Corymbia intermedia</i>	Pink Bloodwood	6
<i>Eucalyptus patentinervis</i>	<i>E. tereticornis</i> x <i>E. robusta</i>	5
<i>Eucalyptus siderophloia</i>	Grey Ironbark	2
<i>Melaleuca linariifolia</i>	Flax-leaved Paperbark	1
<i>Melaleuca styphelioides</i>	Prickly-leaved Teatree	1

7.1.6 Regeneration Within Retained Vegetation

It is proposed to retain a significant number of trees located in the northern part of the site within an allotment that will be zoned E2/E3 environmental management. Currently, this area is parkland cleared and consequently has become preferred habitat for a population of *Manorina melanocephala* (Noisy Miner). The Noisy Miner is an undesirable communal species that excludes numerous avian species from an occupied area due to its aggressive behaviour. The species is also known to attack reptiles and some small mammals. To help minimise the opportunities available to the Noisy Miner within the site it is recommended that the understorey and native groundcover within the proposed E2/E3 environmental management land in the northern part of the site be restored. Similarly, the revegetation of the E2/E3 environmental management zoned land in the southern part of the site should also incorporate restoration of the understorey and native groundcover. The specific management actions in relation to these measures shall be provided under a Vegetation Management Plan.

7.1.7 Aquatic Habitat

The aquatic habitat comprised four (4) dams of which three (3) including the large dam located in the southern part of the site will be retained within either the proposed E3 – Environmental Management zone or the vegetated buffer adjacent to the eastern boundary. An on-balance approach has been taken and although the small dam within the development footprint (where frogs were not recorded) is to be removed, the remaining three dams will be retained within the future environmental (E2/E3) zone, which comprises an area of approximately 3.86 hectares. The dam that is situated within the development footprint is small and could be readily investigated prior to its removal during appropriate weather/climatic conditions to confirm the presence or absence of the Green and Golden Bell Frog as well as any other amphibian species.

7.2 Interruption to Ecosystem Processes

There is considerable complexity associated with the functioning of an ecosystem that are largely outside the parameters of this report. Clearly there is significant disturbance of the habitat within the study area as well as on the adjacent land to the north, east and south, which is likely to have impacted ecosystem processes generally. The proposed revegetation and associated restoration of the habitat within the Environmental (E2/E3) zone will mitigate these impacts to some extent.

7.3 Weed Management

As discussed previously in Section 5 most the land within the study is cleared and contains some remnant native in association with a significant assemblage of exotic/weed species. The major areas where weeds are most likely to be of ecological concern are at the interface between areas of the native vegetation and the development footprint, particularly along the western boundary adjoining the Queens Lake State Conservation Area. In the long term an integrated weed management program could be implemented. This would involve a long-term approach that incorporates several weed management techniques including:

- Physical control such as hand removal, mulching, tilling and mowing;
- Chemical control using appropriate herbicides;
- Biological control where available; and
- Cultural control by encouraging the competitiveness of desired species that helps to suppress weed growth by reducing access to available sunlight, nutrients and moisture.

In the longer term, the potential for garden escapes and inappropriate disposal of green waste will remain as a potential impact on biodiversity. The measures to mitigate these potential impacts will be provided separately under a Vegetation Management Plan.

7.4 Koala (DPC) Considerations

As per the DCP, removal of Koala food trees from the site should be offset by a compensatory replanting strategy within the proposed E3 zoned residue lot at a ratio of two (2) replacement trees for each primary Koala food tree that is removed as previously detailed previously in Section 7.1.5. It is proposed to install Koala proof fencing along the western boundary of the site as part of the overall strategy to encourage Koala movements through the Environmental (E2/E3) zone land in the south of the site where habitat linkage has been identified under the Area 14 Master Plan. It is envisaged that a solid fence will be constructed along the western boundary to prevent Koala movement onto the site and to create a visual barrier to reduce edge effects and discourage undesirable actions such as littering and dumping of waste material. It is also envisaged that the proponent will work cooperatively with Council through the Vegetation Management Plan (VMP) process to ensure that future on-site fencing can work in association with the recently upgraded culvert in Ocean Drive, located adjacent to the site.

7.5 Changes in Animal and Artificial Lighting

Due to the extent of existing development in proximity to the study area there is currently a significant human presence in the general area that is potentially impacting on some more sensitive species. It is also noted that artificial lighting is already in play due to the existing street lighting and other infrastructure in proximity to the study area. Therefore, it is considered unlikely that the proposed development will contribute significantly to changes in animal behaviour or to impacts associated with artificial lighting. No specific recommendations are made in relation to these impacts given the relatively small scale of the proposed development and the extent of the human presence that currently exists in the surrounding area.

8. Conclusion

This report has been prepared to assess the ecological impact of a proposed rezoning of the land within the subject site identified as Lot 10 in DP 615775 and Lot 1 in DP 1117908, Houston Mitchell Drive Bonny Hills. The site is identified for investigation for future local service industrial land within Council's Urban Growth Management Strategy. This ecological assessment therefore describes the ecological impact of the rezoning from its current Primary Production (RU1) zone to part Light Industrial (IN2) and part Environmental (E3/E2) zone. The ecological assessment will be used to assist in the preparation of a Structure Plan for a Planning Proposal (rezoning), which will identify the future development area and the areas that can be used for compensatory measures.

The northern end of the study area (adjacent to Houston Mitchell Drive) lies on a small hillslope that has a southern aspect with the slope generally ranging between 0 and 5 degrees. The land becomes flat and low-lying approximately at the midway point before gradually rising again at the southern margin. An existing dwelling and associated outbuildings as well as a large metal clad shed are located on the land in the northern part of site.

The Port Macquarie-Hastings Council (PMHC) vegetation mapping indicates that there are two (2) areas of mapped vegetation within the study area comprising a disjunct remnant patch in the northern part of the site and small area of vegetation in the southwest corner of the site that forms part of the eastern margin of a large area of vegetation within the Queens Lake State Conservation Area that extends into the Queens Lake Nature Reserve. These areas of vegetation within the study area are mapped as White Stringybark – Tallowood dry forest. The mapping also indicates that the larger proportion of the land within the study area does not contain a classified vegetation community. The floristics data and landscape position of the site suggests that the area probably contained a swamp forest community prior to land clearing. Currently, most the land within the study area has been cleared of native vegetation and is maintained as managed grassland with retained 'paddock' trees. The retained trees within the canopy generally ranged from the mature growth stage with some trees recorded in the late-mature growth stage. This management regime appears to have been in place for a considerable number of years. The habitat within the study area contained very few terrestrial habitat features due to its cleared condition across the larger proportion of the site. The understorey was reduced to small remnants generally confined to parts of the site that are inaccessible to regular grass slashing, at the bases of trees, along fence lines and occasionally within the groundcover as resprouts and juvenile plants. Other habitat features such as fallen timber normally associated with forest communities were absent from the study area. However, there was a small number of hollow-bearing trees recorded within the study area.

In relation to Koala habitat assessment, the Atlas of NSW Wildlife database search returned 463 records of the Koala within a 0.1 degree by 0.1 degree search area around the study area. The Atlas records suggest that a local Koala population is patchily distributed across the Bonny Hills and Queens Lake area with concentrations of records in the developing areas of Lake Cathie to the north and Bonny Hills to the south as well as within the Lake Innes Nature Reserve to the north, the Queens Lake

State Conservation Area and the Queens Lake Stater Forest to the west and the Queens Lake Nature Reserve to the southwest. These concentrations of records are perhaps more a reflection of where ecological surveys have been undertaken previously rather than a true indication of the species distribution across the broader area. The survey work undertaken by Phillips et al (2009) in relation to the Area 14 Koala Plan of Management was wider ranging than other individual surveys and shows clusters of records immediately to the north and southwest of the site and further to the southeast around the Seafront Circuit/Beach Street area. During the field survey a search of the habitat within the study area was undertaken for actual Koala sightings as well as a search for Koala scats at the bases of trees and other indicators including scratch marks and disturbed bark on tree trunks. As all trees within the study area were surveyed for other purposes, each tree was also assessed for signs of Koala activity. No Koala scats were found; however, it was impossible to draw any conclusions from this alone given the recent heavy rain associated with the intense east coast low pressure system and extent of surface water within the site at the time of the assessment. Several trees showed signs of Koala activity, including scratches consistent with those made by Koalas on the trunk of a Forest Red Gum tree (tag no. 873) located near the eastern boundary adjacent to the larger dam within the site and disturbed bark on the trunks of four (4) Tallowood trees (tag nos. 853, 854, 857 and 858) located adjacent to the western boundary of the site. Given the evidence recorded during the Koala survey there seems little doubt that on occasion the habitat within the study area is utilised by the species. There are food resources available to the Koala within the site, which is contiguous with a large expanse of forest habitat within the Queens Lake State Conservation Area, the Queens Lake Nature Reserve and the Queens Lake State Forest. Therefore, it is likely that a population of the Koala would periodically utilise the food resources within the study area. However, the habitat is unlikely to be core Koala habitat for the purposes of SEPP 44 but is a valuable component of a larger home range of the local Koala population.

The Planning Proposal will be accompanied by a Voluntary Planning Agreement (VPA) offer to Council for the future Environmental Management Lands that will set out their establishment, maintenance and dedication requirements. The VPA will also require the preparation of a Vegetation Management Plan (VMP) to accompany the future Development Application (DA) for the industrial subdivision. The VMP will set out the detailed compensatory measures, including for example, weed control, compensatory planting numbers and locations, a hollow-bearing tree (HBT) removal strategy, a nest box strategy, a Koala fencing strategy etc. The VPA and VMP process will provide certainty with respect to environmental management and the compensatory measures will assist in mitigating any impacts on biodiversity.

From the habitat assessment and database/literature review, it was considered that sixteen (16) threatened species of fauna as listed under the *Threatened Species Conservation Act 1995* and *Environment Protection and Biodiversity Conservation Act 1999* could potentially utilise the habitat within the study area. The Section 5A Assessment appended to this report as Appendix F concluded that the proposal has the potential to impact on several threatened species and populations. Measures to mitigate the impact on biodiversity are outlined in Section 7 of this report.

9. References

- Auld, B. A., Medd, R. W., 1992, *Weeds: An Illustrated Botanical Guide to the Weeds of Australia*, Reed International Books Australia, Port Melbourne, Australia
- Bibby, C. J., Burgess, N. D., Hill, D. A., 1992, *Bird Census Techniques*, Academic Press, New York
- Boland, D. J., Brooker, M. I. H., Chippendale, G. M., Hall, N., Hyland, B. P. M., Johnston, R. D., Kleinig, D. A., Turner, J. D., 1992, *Forest Trees of Australia*, CSIRO Publishing, Collingwood, Victoria, Australia
- Churchill, S., 2008, *Australian Bats*, Allen and Unwin, Crows Nest, NSW, Australia
- Cogger, H. G., 1986, *Reptiles and Amphibians of Australia*, Reed Books Pty Ltd, Sydney, Australia
- Costermans, L., 2008, *Native Trees and Shrubs of South-Eastern Australia*, New Holland Publishers, Australia
- Cropper, S. C., 1993, *Management of Endangered Plants*, CSIRO Publishing, Collingwood, Victoria, Australia
- Department of Environment and Climate Change, 2007, Yellow-bellied Glider Feed Trees
- Department of Environment and Climate Change, 2008, *Recovery Plan for the Koala (Phascolarctos cinereus)*
- Department of Environment, 2015, Census of Australian Vertebrates, from; www.environment.gov.au/biodiversity/abrs/onlineresources/fauna/afd/home
- Department of Environment, 2015, EPBC Act Protected Matters report, retrieved 2.06.2016, from; <http://www.environment.gov.au/epbc/pmst/index.html>
- Department of Environment, 2014, *EPBC Act referral guidelines for the vulnerable Koala (combined populations of Queensland, New South Wales and the Australian Capital Territory)*
- Gleeson, J., Gleeson, D., 2012, *Reducing the Impacts of Development on Wildlife*, CSIRO Publishing, Collingwood Victoria, Australia
- Floyd, A. G., 2008, *Rainforest Trees of Mainland South-eastern Australia*, Terania Rainforest Publishing, Australia
- Goldingay, R. L., Kavanagh, R. P., 1990; Socioecology of the Yellow-bellied Glider (*Petaurus australis*), at Waratah Creek NSW, *Australian Journal of Zoology* 38, pp 327-341

- Goldingay, R. L., Kavanagh, R. P., (Lunney, D., Ed), 1991, The Yellow-bellied Glider: a review of its ecology and management considerations, *Conservation of Australia's Forest Fauna*, Royal Zoological Society NSW, pp 365-375
- Goldingay, R. L., Kavanagh, R. P., 1993, Home-range estimates and habitat of the Yellow-bellied Glider (*Petaurus australis*) at Waratah Creek NSW, *Wildlife Research* 20, pp 387-404
- Greig, D., 1999, *Field Guide to Australian Wildflowers*, New Holland Publishers, Chatswood, Australia
- Harden, G. J., McDonald, W. J. F., Williams, J. B., 2007, *Rainforest Climbing Plants: A Field Guide to Their Identification*, Gwen Harden Publishing, Nambucca Heads, Australia
- Harden, G. J., McDonald, W. J. F., Williams, J. B., 2006, *Rainforest Trees and Shrub: A Field Guide to their Identification*, Gwen Harden Publishing, Nambucca Heads, Australia
- Harden, G. J., Ed, 2000 (revised), *Flora of New South Wales*, University Press, Sydney, Australia
- Irish, P., Kavanagh, R. P., 2011, Distribution, habitat preference and conservation status of the Yellow-bellied Glider (*Petaurus australis*) in the Hills Shire, north-western Sydney, *Zoologist* 35(4), pp 941-952
- Jones, D. L., 2006, *Native Orchids of Australia*, Reed New Holland, Sydney, Australia
- Kavanagh, R. P., 1987, Forest Phenology and its Effect on Foraging Behaviour and Selection of Habitat by the Yellow-bellied Glider, *Petaurus australis* Shaw, *Australian Wildlife Research* (14), pp 371-384
- Klaphake, V., 2004, *Key to the Commoner Species of Sedges and Rushes of Sydney and the Blue Mountains*, Byabarra, NSW, Australia
- Keith, D., 2004, *Ocean Shores to Desert Dunes: The Native Vegetation of New South Wales and the ACT*, Department of Environment and Conservation, Hurstville, NSW Australia
- Lamp, C. A., Forbes, S. J., Cade, J. W., 2001, *Grasses of Temperate Australia A Field Guide*, Bloomings Books, Melbourne, Australia
- Lunney, D., Matthews, A., Moon, C., Ferrier, S., 2000, Incorporating habitat mapping into practical Koala conservation on private land, *Conservation Biology* 14(3), pp. 669-680
- Mackowski, C. M., 1984, The ontogeny of hollows in Blackbutt, *Eucalyptus pilularis* and its relevance to the management of forests for possums, gliders and timber, in *Possums and Gliders*, Eds. Smith, A. P., Hume, I. D., pp. 517-525, Surrey, Beatty and Sons, Sydney

- Mallet, K., Orchard, A. E., Eds., 2002, *Flora of Australia Volume 43 Poaceae 1 Introduction and Atlas*, CSIRO Publishing, Collingwood, Australia
- Mallet, K., Ed. 2005, *Flora of Australia Volume 44B Poaceae 3*, CSIRO Publishing, Collingwood, Australia
- Menkhorst, P., Knight, F., 2004, *A Field Guide to the Mammals of Australia*, Oxford University Press, Melbourne, Australia
- National Parks and Wildlife Service, 2003, *The Bioregions of New South Wales Their biodiversity, conservation and history*, National Parks and Wildlife Service (NSW), Hurstville
- National Parks and Wildlife Service, 2003, Recovery Plan for the Yellow-bellied Glider (*Petaurus australis*), National Parks and Wildlife Service (NSW), Hurstville
- NSW Office of the Environment and Heritage, 2015, Aboriginal Heritage Information Management System (AHIMS), retrieved 08.09.2015 from; <http://www.environment.nse.gov/awssapp>
- NSW Office of the Environment and Heritage, 2015, Atlas of NSW Wildlife, retrieved 6.06.2016 – 20.06.2016 from; <http://www.bionet.nsw.gov.au>
- NSW Rural Fire Service, 2006, *Planning for Bushfire Protection 2006*, NSW Rural Fire Service and Department of Planning, Sydney, Australia
- NSW Office of Environment and Heritage, 2014, Threatened Species Search Site, retrieved 6.06.2016 – 20.06.2016, from; www.environment.nsw.gov.au/threatened-species
- Phillips, S., and Callaghan, J., 2011, The Spot Assessment Technique: a tool for determining localised levels of habitat use by Koalas (*Phascolarctos cinereus*), *Australian Zoologist* 35, pp. 774–780.
- Phillips, S., 2009, *Koala Plan of Management for Area 14 Master Planning Area*, Prepared for Port Macquarie-Hastings Council, Biolink Ecological Consultants.
- Richardson, F. J., Richardson, R. G., Shepherd, R. C. H., 2007, *Weeds of the South-East: An Identification Guide for Australia*, Second Edition, R. G. and F. J. Richardson, Victoria, Australia
- Robinson, M., 1998, *A Field Guide to Frogs of Australia*, New Holland Publishers, Australia
- Rose, H., Rose, C., 2012, *Grasses of coastal NSW*, NSW Department of Primary Industries, Sydney

- Royal Botanic Gardens, 2015, PlantNet – Flora Online Spatial Search, retrieved 6.06.2016 – 20.06.2016, from;
plantnet.rbgsyd.nsw.gov.au/search/spatial.htm, Sydney, NSW, Australia
- Schodde, R., Tideman, S. C., 1993, *Complete Book of Australian Birds*, Readers Digest Australia Ltd, Surrey Hills, NSW, Australia
- Scott, D., 2003, *Key Habitats and Corridors for Forest Fauna; A landscape Framework for conservation in north-east New South Wales*, Occasional Paper No. 32, NSW National Parks and Wildlife Service, Hurstville
- Slater, P., Slater, P., Slater, R., 2003, *The Slater Field Guide to Australian Birds*, New Holland Publishers, Australia
- Smith, A. P., Andrews, S., 1997, *Koala Habitat, Abundance and Distribution in the Pine Creek Study Area, A report to State Forests NSW*, Austeco, Environmental Consultants, Armidale
- Strahan, R., Ed, 1998, *The Mammals of Australia*, New Holland Publishers, Sydney, Australia
- Swan, G., Shea, G., Sadler, R., 2004, *A Field Guide to Reptiles of New South Wales*
- Triggs, B., 1996, *Tracks, Scats and Other Signs- A Field Guide to Australian Mammals*, Oxford University Press, Melbourne, Australia
- Watson, D. M., 2003, The 'standardised search': An improved way to conduct bird Surveys, *Austral Ecology* 28, pp. 515-525
- White, N. A., 1999, Ecology of the Koala (*Phascolarctos cinereus*) in rural south-east Queensland, Australia, *Wildlife Research* 26, pp. 731-744
- Wilson, A., Ed., 2009, *Flora of Australia Volume 44A Poaceae 2*, CSIRO Publishing, Collingwood, Australia Wilson, S. K., Swan, G., 2005, *A Complete Guide to Reptiles of Australia*, Reed New Holland, Sydney, Australia
- Woodgate, P. W., Ritman, K., Coram, J., Brady, A., Rule, A., Banks, J., 1994, A Study of Old-growth Forests of East Gippsland, Conservation and Natural Resources Department, Melbourne
- Wormington, K., Lamb, D., 1999, Tree hollow development in wet and dry Sclerophyll eucalypt forest in south-east Qld, Australia, *Australian Forestry* 62, pp. 336-345

[illegible]

11. Appendix B: Flora Species List

The species of flora recorded within the study area during the field survey are detailed in Table B.1 below.

Table B.1: Flora species recorded within the study area

Family	Species	Common Name
Adiantaceae	<i>Adiantum aethiopicum</i>	Common Maidenhair
Apiaceae	<i>Centella asiatica</i>	Indian Pennywort
	<i>Hydrocotyle bonariensis</i> *	
	<i>Hydrocotyle tripartita</i>	Pennywort
	<i>Parsonsia straminea</i>	Common Silkpod
Araliaceae	<i>Polyscias sambucifolia</i>	Elderberry Panax
Asparagaceae	<i>Asparagus aethiopicus</i> *	Asparagus Fern*
Asteraceae	<i>Ageratum houstonianum</i> *	Blue Billygoat Weed*
	<i>Bidens pilosa</i> *	Cobbler's Pegs*
	<i>Cirsium vulgare</i> *	Spear Thistle*
	<i>Conyza bonariensis</i> *	Flax-leaf Fleabane*
	<i>Hypochaeris radicata</i> *	Catsear*
	<i>Senecio madagascariensis</i> *	Fireweed*
	<i>Taraxacum officinale</i> *	Dandelion*
	<i>Tripleurospermum maritimum</i> subsp. <i>inodorum</i> *	Scentless Mayweed*
Blechnaceae	<i>Blechnum cartilagineum</i>	Gristle Fern
Casuarinaceae	<i>Allocasuarina littoralis</i>	Black She-oak
	<i>Casuarina glauca</i>	Swamp Oak
Convolvulaceae	<i>Dichondra repens</i>	Kidney Weed
Cupressaceae	<i>Callitris rhomboidea</i>	Port Jackson Pine
Cyperaceae	<i>Carex appressa</i>	
	<i>Cyperus breviculmis</i> *	Umbrella Sedge*
	<i>Eleocharis equisetina</i>	
	<i>Fimbristylis dichotoma</i>	Common Fringe-sedge
	<i>Lepidosperma laterale</i>	Variable Sword-sedge
	<i>Schoenoplectiella mucronata</i>	
Dennstaedtiaceae	<i>Pteridium esculentum</i>	Common Bracken
Dicksoniaceae	<i>Calochlaena dubia</i>	Rainbow Fern
Dilleniaceae	<i>Hibbertia scandens</i>	Climbing Guinea Flower
Ericaceae	<i>Leucopogon juniperinus</i>	Prickly Beard-heath
	<i>Monotoca scoparia</i>	
	<i>Trochocarpa laurina</i>	Tree Heath
Fabaceae (Caesalpinioideae)	<i>Senna pendula</i> var. <i>glabrata</i> *	Easter Cassia*
Fabaceae (Faboideae)	<i>Daviesia ulicifolia</i>	Gorse Bitter Pea
	<i>Desmodium rhytidophyllum</i>	
	<i>Glycine clandestina</i>	Twining Glycine
	<i>Glycine microphylla</i>	Small-leaf Glycine
	<i>Trifolium repens</i> *	White Clover*
Fabaceae (Mimosoideae)	<i>Acacia implexa</i>	Hickory Wattle
	<i>Acacia longifolia</i> subsp. <i>longifolia</i>	Sydney Golden Wattle

Iridaceae	<i>Gladiolus sp.*</i>	Gladiola*
Juncaceae	<i>Juncus continuus</i>	
Lauraceae	<i>Cinnamomum camphora*</i>	Camphora Laurel*
Lobeliaceae	<i>Pratia purpurascens</i>	Whiteroot
Loganiaceae	<i>Mitrasacme alsinoides</i>	
Lomandraceae	<i>Lomandra longifolia</i>	Spiny-headed Mat-rush
Loranthaceae	<i>Amyema congener</i> subsp. <i>congener</i>	
Luzuriagaceae	<i>Eustrephus latifolius</i>	Wombat Berry
	<i>Geitonoplesium cymosum</i>	Scrambling Lily
Malvaceae	<i>Sida rhombifolia*</i>	Paddy's Lucerne*
Myrtaceae	<i>Corymbia intermedia</i>	Pink Bloodwood
	<i>Eucalyptus globoidea</i>	White Stringybark
	<i>Eucalyptus microcorys</i>	Tallowwood
	<i>Eucalyptus patentinervis</i>	<i>E. tereticornis</i> x <i>E. robusta</i>
	<i>Eucalyptus propinqua</i>	Small-fruited Grey Gum
	<i>Eucalyptus robusta</i>	Swamp Mahogany
	<i>Eucalyptus siderophloia</i>	Grey Ironbark
	<i>Eucalyptus tereticornis</i>	Forest Red Gum
	<i>Leptospermum laevigatum</i>	Coast Teatree
	<i>Leptospermum polygalifolium</i> subsp. <i>cismontanum</i>	Tantoon
	<i>Lophostemon confertus</i>	Brush Box
	<i>Melaleuca linariifolia</i>	Flax-leaved Paperbark
	<i>Melaleuca quinquenervia</i>	Broad-leaved Paperbark
	<i>Melaleuca styphelioides</i>	Prickly-leaved Tea Tree
	<i>Syncarpia glomulifera</i>	Turpentine
Nymphaeaceae	<i>Nymphaea caerulea</i> subsp. <i>zanzibarensis*</i>	Cape Waterlily
Ochnaceae	<i>Ochna serrulata*</i>	Micky Mouse Plant*
Oxalidaceae	<i>Oxalis exilis</i>	
Phormiaceae	<i>Dianella caerulea</i>	Blue Flax Lily
Philydraceae	<i>Philydrum lanuginosum</i>	Frogsmouth
Phyllanthaceae	<i>Breynia oblongifolia</i>	Coffee Bush
	<i>Glochidion ferdinandi</i>	Cheese Tree
Pittosporaceae	<i>Pittosporum undulatum</i>	Sweet Pittosporum
Plantaginaceae	<i>Plantago lanceolata*</i>	Lamb's Tongues*
	<i>Veronica persica*</i>	Creeping Speedwell*
Poaceae	<i>Andropogon virginicus*</i>	Whisky Grass*
	<i>Aristida vagans</i>	Threeawn Speargrass
	<i>Axonopus fissifolius*</i>	Narrow-leaved Carpet Grass*
	<i>Chloris gayana*</i>	Rhodes Grass*
	<i>Cynodon dactylon</i>	Common Couch
	<i>Digitaria parviflora</i>	Small-flowered Finger Grass
	<i>Echinopogon caespitosus</i> var. <i>caespitosus</i>	Tufted Hedgehog Grass
	<i>Entolasia marginata</i>	Bordered Panic
	<i>Entolasia stricta</i>	Wiry Panic
	<i>Eragrostis brownii</i>	Brown's Lovegrass
	<i>Imperata cylindrica</i>	Blady Grass
	<i>Oplismenus aemulus</i>	Basket Grass
	<i>Panicum repens*</i>	Torpedo Grass*

	<i>Paspalum dilatatum</i> *	Paspalum*
	<i>Paspalum mandiocanum</i> *	Broadleaf Paspalum*
	<i>Paspalum urvillei</i> *	Vasey Grass*
	<i>Sporobolus africanus</i> *	Parramatta Grass*
	<i>Themeda triandra</i>	Kangaroo Grass
Polygonaceae	<i>Persicaria decipiens</i>	Slender Knotweed
	<i>Rumex obtusifolia</i> *	Broad-leaf Dock*
Proteaceae	<i>Banksia spinulosa</i>	Hairpin Banksia
	<i>Persoonia levis</i>	Broad-leaved Geebung
Ranunculaceae	<i>Ranunculus lappaceus</i>	Common Buttercup
Rosaceae	<i>Rubus moluccanus</i> var. <i>trilobus</i>	Molucca Bramble
	<i>Rubus parvifolius</i>	Native Raspberry
Solanaceae	<i>Solanum hapalum</i>	
Thymelaeaceae	<i>Pimelea linifolia</i> subsp. <i>linifolia</i>	Slender Rice Flower
Typhaceae	<i>Typha orientalis</i>	Broad-leaved Cumbungi
Verbenaceae	<i>Lantana camara</i> *	Lantana*
	<i>Verbena bonariensis</i> *	Purpletop*
Violaceae	<i>Viola hederaceae</i>	Ivy-leaved Violet

* Indicates an introduced species

12. Appendix C: Tree Survey

Tag No.	Species	DBH (cm)	Height (m)	Notes
801	<i>Eucalyptus siderophloia</i>	43	15	
802	<i>Corymbia intermedia</i>	97	20	
803	<i>Eucalyptus globoidea</i>	58	15	
804	<i>Corymbia intermedia</i>	34	15	
805	<i>Corymbia intermedia</i>	14	12	
806	<i>Eucalyptus siderophloia</i>	33	15	
807	<i>Eucalyptus microcorys</i>	17	8	
808	<i>Eucalyptus microcorys</i>	52	20	
809	<i>Eucalyptus microcorys</i>	42	20	
810	<i>Eucalyptus microcorys</i>	34	15	
811	<i>Eucalyptus microcorys</i>	49	20	
812	<i>Corymbia intermedia</i>	23	15	
813	<i>Eucalyptus globoidea</i>	50	15	2 trunks
814	<i>Eucalyptus microcorys</i>	58	20	
815	<i>Eucalyptus microcorys</i>	32	20	
816	<i>Eucalyptus microcorys</i>	44	20	
817	<i>Eucalyptus microcorys</i>	82	25	
818	<i>Eucalyptus siderophloia</i>	20	10	
819	<i>Eucalyptus microcorys</i>	48	20	
820	<i>Eucalyptus microcorys</i>	72	20	2 trunks
821	<i>Eucalyptus microcorys</i>	72	20	
822	<i>Eucalyptus globoidea</i>	48	20	
823	<i>Eucalyptus globoidea</i>	41	20	
824	<i>Eucalyptus siderophloia</i>	41	20	
825	<i>Eucalyptus globoidea</i>	87	25	
826	<i>Eucalyptus siderophloia</i>	43	12	
827	<i>Casuarina glauca</i>	51	10	
828	<i>Melaleuca styphelioides</i>	35	8	3 trunks
829	<i>Eucalyptus tereticornis</i>	65	12	
830	<i>Eucalyptus tereticornis</i>	44	12	
831	<i>Eucalyptus patentinervis</i>	82	15	Hybrid
832	<i>Melaleuca quinquenervia</i>	65	10	
833	<i>Casuarina glauca</i>		8	Stand of small trees
834	<i>Casuarina glauca</i>	54	12	
835	<i>Eucalyptus robusta</i>	81	12	
836	<i>Eucalyptus robusta</i>	15	8	
837	<i>Eucalyptus robusta</i>	45	15	
838	<i>Eucalyptus robusta</i>	15	8	
839	<i>Eucalyptus robusta</i>	39	15	
840	<i>Eucalyptus robusta</i>	35	12	

841	<i>Eucalyptus tereticornis</i>	44	10	
842	<i>Eucalyptus patentinervis</i>	32	12	Hybrid
843	<i>Eucalyptus globoidea</i>	19	10	
844	<i>Corymbia intermedia</i>	33	12	2 trunks
845	<i>Melaleuca quinquenervia</i>	40	12	
846	<i>Eucalyptus globoidea</i>	51	15	
847	<i>Corymbia intermedia</i>	23	10	
848	<i>Corymbia intermedia</i>	25	12	
849	<i>Casuarina glauca</i>	48	12	
850	<i>Eucalyptus robusta</i>	15	8	
851	<i>Eucalyptus globoidea</i>	40	15	
852	<i>Eucalyptus microcorys</i>	21	12	
853	<i>Eucalyptus microcorys</i>	47	15	Disturbed bark (Koala)
854	<i>Eucalyptus microcorys</i>	34	15	Disturbed bark (Koala)
855	<i>Melaleuca quinquenervia</i>	57	15	
856	<i>Eucalyptus globoidea</i>	34	15	
857	<i>Eucalyptus microcorys</i>	45	20	Disturbed bark (Koala)
858	<i>Eucalyptus microcorys</i>	64	20	Disturbed bark (Koala)
859	<i>Casuarina glauca</i>	32	12	
860	<i>Casuarina glauca</i>	34	12	
861	<i>Casuarina glauca</i>	22	12	
862	<i>Casuarina glauca</i>	20	12	
863	<i>Casuarina glauca</i>	27	15	
864	<i>Eucalyptus tereticornis</i>	66	12	2 trunks
865	<i>Eucalyptus tereticornis</i>	42	12	
866	<i>Eucalyptus tereticornis</i>	57	15	
867	<i>Melaleuca quinquenervia</i>	49	12	5 trunks
868	<i>Corymbia intermedia</i>	16	8	
869	<i>Eucalyptus tereticornis</i>	16	8	
870	<i>Melaleuca linariifolia</i>	24	8	
871	<i>Melaleuca quinquenervia</i>	28	8	3 trunks
872	<i>Eucalyptus tereticornis</i>	104	25	HBT
873	<i>Eucalyptus tereticornis</i>	74	25	Scratch marks (Koala)
874	<i>Casuarina glauca</i>	48	15	2 trunks
875	<i>Casuarina glauca</i>	21	10	
876	<i>Casuarina glauca</i>	26	12	
877	<i>Casuarina glauca</i>	17	8	
878	<i>Melaleuca quinquenervia</i>	22	8	2 trunks
879	<i>Melaleuca quinquenervia</i>	49	10	5 trunks
880	<i>Melaleuca linariifolia</i>		8	Multiple trunks
881	<i>Eucalyptus tereticornis</i>	107	20	HBT (Tree 613)
882	<i>Eucalyptus tereticornis</i>	21	10	
883	<i>Eucalyptus patentinervis</i>	21	10	Hybrid
884	<i>Eucalyptus patentinervis</i>	103	20	Hybrid

885	<i>Eucalyptus patentinervis</i>	39	15	Hybrid
886	<i>Eucalyptus patentinervis</i>	73	20	Hybrid
887	<i>Eucalyptus robusta</i>	26	15	
888	<i>Casuarina glauca</i>	46	15	
889	<i>Casuarina glauca</i>	47	15	
890	<i>Casuarina glauca</i>	30	12	
891	<i>Casuarina glauca</i>	23	12	
892	<i>Melaleuca quinquenervia</i>	42	12	2 trunks
893	<i>Casuarina glauca</i>	36	12	
894	<i>Melaleuca quinquenervia</i>		10	Multiple trunks

Note: Trees shown red sit within the proposed development footprint in such a position that their retention is considered unviable.

Item 12.09
Attachment 2
Page 256

13. Appendix D: HBT Assessment Forms

Port Macquarie – Hastings Council

Hollow-bearing tree assessment

LGA/Project: Houston Mitchell Drive

Date: 7/6/16 Easting: 152:82552 Northing: 31:54684 Datum: GDA

Tree species (if known): E. tereticornis

Tag no. 881

Height (m): 20 DBH (cm): 107

Alive	Dead	Score
✓		3

DBH Score
3

Number of visible hollows:

> 5	2-4	0-1	Score
	✓		1.5

Hollow Size (variable: 1 or more):

>100mm	>50mm	<50mm	Score
1		2	3

Habitat Proximity:

In situ	< 30m	> 30m	Score
		✓	0

Longevity:

High	Medium	Low	Score
✓			3

TOTAL SCORE: 13.5


Evidence of existing use Possibly *Vespertilio pumilus*
(Eastern Forest Bat)

Recommendation(s):

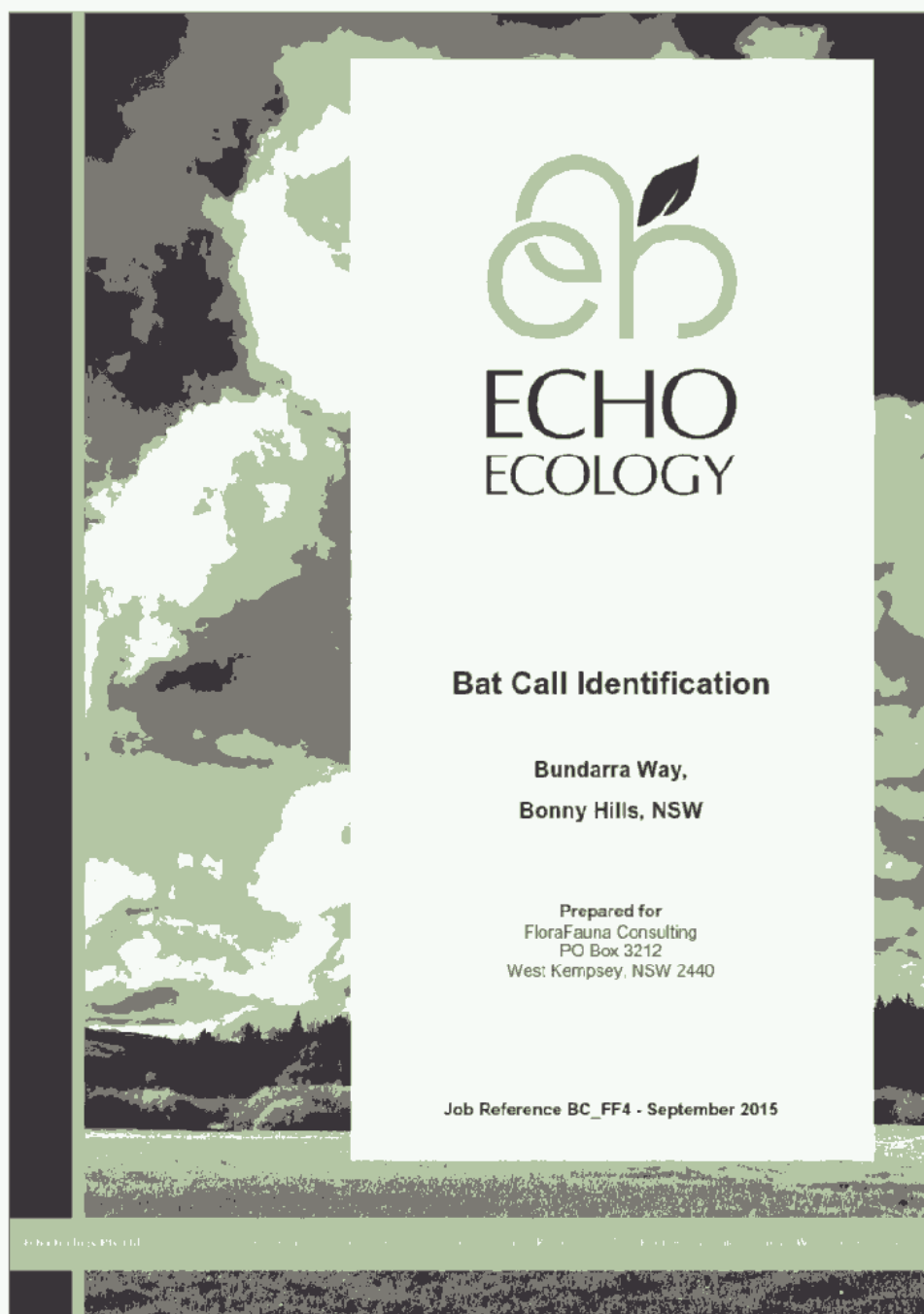
.....

.....

Explanatory Notes:
Hollow-bearing trees (HBTs) are an important element in the Australian landscape and a significant factor affecting biodiversity values. This assessment sheet is intended to provide a more quantitative and ecologically meaningful approach to the ranking of HBTs than is otherwise currently applied. As advocated by Gibbons & Lindenmayer (2002), the emphasis


**PORT MACQUARIE
HASTINGS**

14. Appendix E: Bat Analysis Report





Bat Call Analysis
Bonny Hills, NSW

This report has been prepared to document the analysis of digital ultrasonic bat echolocation calls received from a third party. The data was not collected by the author and as such no responsibility is taken for the quality of data collection or for the suitability of its subsequent use.

This report was authored by

A handwritten signature in black ink, appearing to read 'Anna McConville', followed by a period.

Dr Anna McConville
PhD, B.Env.Sc.

Job Reference: BC_FF4
15 September 2015



Bat Call Analysis
Bonny Hills, NSW

Contents

1.0 Introduction 2

2.0 Methods 2

2.1 Characteristics Used to Differentiate Species 3

3.0 Results..... 3

4.0 Sample Calls 6

5.0 References 7

List of Tables

Table 3-1: Results of bat call analysis (number of passes per site per night) 5

List of Figures

Figure 4-1: *Chalinolobus gouldii* probable call..... 6

Figure 4-2: *Chalinolobus morio* probable call 6

Figure 4-3: *Miniopterus australis* definite call 6

Figure 4-4: *Vespadelus pumilus* probable call..... 7



Bat Call Analysis
Bonny Hills, NSW

1.0 INTRODUCTION

This report has been commissioned by FloraFauna Consulting to analyse bat echolocation call data (EM3, Wildlife Acoustics) collected from Bundarra Way, Bonny Hills, NSW. Data was provided electronically to the author. This report documents the methods involved in analysing bat call data and the results obtained only.

2.0 METHODS

The identification of bat echolocation calls recorded during surveys was undertaken using AnalookW (Version 4.1t) software. The identification of calls was undertaken with reference to Pennay *et al.* (2004) and through the comparison of recorded reference calls from north-eastern NSW. Reference calls were obtained from the NSW database and from the authors personal collection.

Each call sequence ('pass') was assigned to one of five categories, according to the confidence with which an identification could be made, being:

- Definite - Pass identified to species level and could not be confused with another species
- Probable - Pass identified to species level and there is a low chance of confusion with another species
- Possible - Pass identified to species level but short duration or poor quality of the pass increases the chance of confusion with another species
- Species group - Pass could not be identified to species level and could belong to one of two or more species. Occurs more frequently when passes are short or of poor quality
- Unknown - Either background 'noise' files or passes by bats which are too short and/or of poor quality to confidently identify.

Call sequences that were less than three pulses in length were not analysed and were assigned to 'Unknown' and only search phase calls were analysed. Furthermore, some species are difficult to differentiate using bat call analysis due to overlapping call frequencies and similar shape of plotted calls and in these cases calls were assigned to species groups.

The total number of passes (call sequences) per unit per night was tallied to give an index of activity.

Job Reference: BC_FF4
September 2015

Page 2



Bat Call Analysis
Bonny Hills, NSW

It should be noted that the activity levels recorded at different sites may not be readily able to be compared. Such comparisons are dependent on many variables which need to be carefully controlled during data collection and statistically analysed. Influential variables include wind, rain, temperature, duration of recording, season, detector and microphone sensitivity, detector placement, weather protection devices etc.

2.1 Characteristics Used to Differentiate Species

Miniopterus australis was differentiated from *Vespadelus pumilus*, by characteristic frequency or the presence of a down-sweeping tail on pulses. Call sequences which had a majority of pulses containing an up-sweeping tail were assigned to *Vespadelus pumilus*.

Chalinolobus gouldii was differentiated from other species by the presence of curved, alternating call pulses.

Scotorepens onon, *Scoteanax rueppellii*, *Chalinolobus nigrogriseus* and *Falsistrellus tasmaniensis* were unable to be differentiated from one another.

Chalinolobus morio calls were differentiated from those of *Vespadelus* sp. by the presence of a down-sweeping tail on the majority of pulses.

3.0 RESULTS

A total of 243 call sequences were recorded, of which 102 call sequences were able to be analysed (ie were not 'noise' files or bat calls of short length). Of the bat calls, 29 call sequences (28 %) were able to be confidently identified (those classified as either definite or probable identifications) to species level (Table 3-1). Species recorded confidently within the site include:


- *Chalinolobus gouldii* (Gould's wattled bat)
- *Chalinolobus morio* (Chocolate wattled bat)
- *Miniopterus australis* (Little bentwing bat)
- *Vespadelus pumilus* (Eastern forest bat)

Additionally, the following bat species potentially occurred within the site, but could not be confidently identified (those calls classified as possible or as a species group):

- *Chalinolobus nigrogriseus* (Hoary wattled bat)
- *Falsistrellus tasmaniensis* (Eastern falsistrelle)
- *Miniopterus schreibersii oceanensis* (Eastern bentwing bat)
- *Mormopterus (Ozimops) ridei* (Eastern free-tailed bat)
- *Scoteanax rueppellii* (Greater broad-nosed bat)

Job Reference: BC_FF4
September 2015

Page 3

	Bat Call Analysis Bonny Hills, NSW
<ul style="list-style-type: none">• <i>Scolorepens orion</i>• <i>Vespadelus darlingtoni</i>• <i>Vespadelus regulus</i>• <i>Vespadelus troughtoni</i>• <i>Vespadelus vulturnus</i>	<ul style="list-style-type: none">(Eastern broad-nosed bat)(Large forest bat)(Southern forest bat)(Eastern cave bat)(Little forest bat)
<p>It should be noted that additional bat species may be present within the site but were not recorded by the detectors and habitat assessment should be used in conjunction with these results to determine the likelihood of occurrence of other bat species.</p> <p>Table 3-1 below summarises the results of the bat call analysis.</p>	
Job Reference: RC_FF-4 September 2015	Page 4



Bat Call Analysis
Bonny Hills, NSW

Table 3-1: Results of bat call analysis (number of passes per site per night)

DEFINITE	
<i>Miniopterus australis</i>	16
PROBABLE	
<i>Chalinolobus gouldii</i>	1
<i>Chalinolobus morio</i>	4
<i>Miniopterus australis</i>	5
<i>Vespudelus pumilus</i>	3
SPECIES GROUPS	
<i>Chalinolobus gouldii</i> / <i>Mormopterus (Ozimops) ndei</i>	1
<i>Chalinolobus morio</i> / <i>Vespudelus pumilus</i> / <i>Vespudelus vulturinus</i> / <i>Vespudelus troughtoni</i>	46
<i>Chalinolobus nigrogriseus</i> / <i>Falsistrellus tasmaniensis</i> / <i>Scotorepens orion</i>	1
<i>Falsistrellus tasmaniensis</i> / <i>Scotorepens orion</i> / <i>Scoteanax ruspellii</i>	2
<i>Miniopterus australis</i> / <i>Vespudelus pumilus</i>	16
<i>Miniopterus schreibersii oceanensis</i> / <i>Vespudelus darlingtoni</i> / <i>Vespudelus regulus</i>	2
<i>Vespudelus pumilus</i> / <i>Vespudelus vulturinus</i> / <i>Vespudelus troughtoni</i>	5
UNKNOWN	
'Noise' files	134
Unknown	7
TOTAL	243

Jcb Reference: BC_FF4
September 2015

Page 5



Bat Call Analysis
Bunny Hills, NSW

4.0 SAMPLE CALLS

A sample of the calls actually identified from the site for each species is given below.

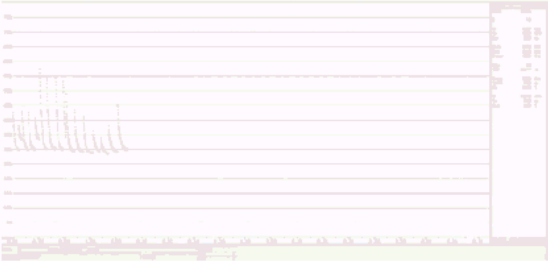


Figure 4-1: *Chalinolobus gouldii* probable call

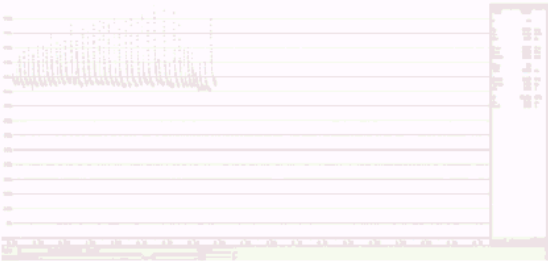


Figure 4-2: *Chalinolobus morio* probable call

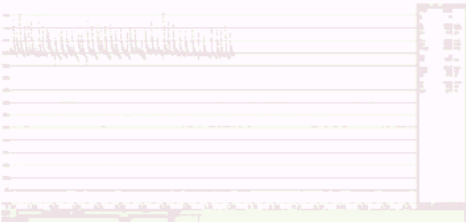


Figure 4-3: *Miniotropus australis* definite call

Job Reference: SC_FF4
September 2018

Page 6

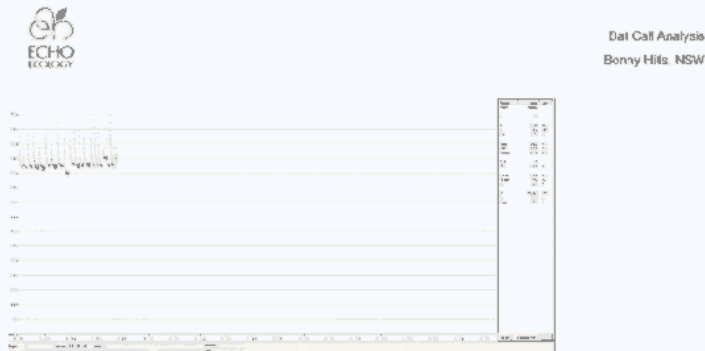


Figure 4-4: *Vespadelus pumilus* probable call

5.0 REFERENCES

Adams, M., Reardon, T.R., Baverstock, P.R. and Watts, C.H.S. (1988). Electrophoretic resolution of species boundaries in Australian Microchiroptera. IV. The Molossidae (Chiroptera). *Australian Journal of Biological Sciences* 41: 315-326.

Australasian Bat Society Incorporated (undated). *Standards for reporting bat detector surveys*, http://batcall.csu.edu.au/abs/issues/ABS_Anabat_survey_standards.pdf

Churchill, S. (2008). *Australian Bats*. Second Edition Allen & Unwin; Crows Nest, NSW.

Hoye, G.A. Law, B.S. and Lumsden, L.F. (2008). Eastern Free-tailed Bat *Mormopterus* sp. Pp. 493-495 in *The Mammals of Australia*: Third Edition (S. van Dyck and R. Strahan, Eds.); New Holland; Sydney.

Law, B.S., Turbill, C. and Parnaby, H. (2008). Eastern Forest Bat *Vespadelus pumilus*. Pp. 567-568 in *The Mammals of Australia*: Third Edition (S. van Dyck & R. Strahan; Eds.); New Holland; Sydney.

Law, B.S., Reinhold, L. and Pennay, M. (2002). Geographic variation in the echolocation calls of *Vespadelus* spp. (Vespertilionidae) from New South Wales and Queensland, Australia. *Acta Chiropterologica* 4: 201-215.

Pennay, M., Law, B. and Reinhold, L. (2004). *Bat calls of New South Wales: Region based guide to the echolocation calls of Microchiroptera bats*. NSW Department of Environment and Conservation, Hurstville.

Reinhold, L., Law, B., Ford, G. and Pennay, M. (2001a). *Key to the bat calls of south-east Queensland and north-east New South Wales*. Queensland Department of Natural

Job Reference: BC_FF4

September 2015

Page 7



Bat Call Analysis
Bonny Hills, NSW

Resources and Mines, State Forests of New South Wales, University of Southern Queensland, and New South Wales National Parks and Wildlife Service, Australia.

Reinhold, L., Herr, A., Lumsden, L., Reardon, T., Corben, C., Law, B., Prevett, P., Ford, G., Conole, L., Kutt, A., Milne, D. and Hoye, G. (2001b). Geographic variation in the echolocation calls of Gould's wattled bat *Chalinolobus gouldii*. *Australian Zoologist* 31: 618-624.

Richards, G.C., Ford, G.I. and Penny, M. (2009). Inland Free-tailed Bat *Mormopterus* sp. Pp. 494-495 in *The Mammals of Australia: Third Edition* (S. van Dyck and R. Strahan, Eds.); New Holland; Sydney.

Thomas, D.W., Bell, G.P. and Fenton, M.B. (1987). Variation in echolocation call frequencies recorded from North American vespertilionid bats: a cautionary note. *Journal of Mammalogy* 68: 842-847.

Van Dyck, S. and Strahan, R. (Eds.) (2008). *The Mammals of Australia: Third Edition*. New Holland; Sydney.

Jcb Reference: BC_FF4
September 2015

Page 8

15. Appendix F: Assessments of Significance

F1.1 Listed Threatened Species

Threatened species listed under the *Threatened Species Conservation Act 1995*, which have been recorded within the default 0.1 degree by 0.1 degree (approximately 10 km x 10 km) search area around the study area are shown below in Table F.1. Note the list excludes estuarine and marine species.

Table F.1: Threatened species listed under the TSC Act

Species	Habitat and Distribution	Potential Occurrence
Plantae		
<i>Cynanchum elegans</i> (White-flowered Wax Plant)	Recorded from rainforest gullies scrub and scree slopes (rare); From Wollongong, north to southeast Queensland and west to Mt Danger; Most common in the Kempsey region	Unlikely
<i>Eucalyptus nicholii</i> (Narrow-leaved Black Peppermint)	Sparsely distributed but widespread on the New England Tablelands from Nundle to north of Tenterfield, being most common in central portions of its range. Found largely on private property and roadsides, and occasionally in conservation reserves. Planted as urban trees, windbreaks and corridors; Typically grows in dry grassy woodland, on shallow soils of slopes and ridges	Unlikely
<i>Diuris</i> sp. aff. <i>chrysantha</i> (Byron Bay Diuris)	Known from a single location only, at Byron Bay in north-east NSW where only about 20 plants	Unlikely
Amphibia		
<i>Crinia tinnula</i> (Wallum Froglet)	Found along the coastal margin from Litabella National Park in south-east Queensland to Kurnell in Sydney; Occurs in a range of habitats, usually associated with acidic swamps on coastal sand plains	Unlikely
<i>Litoria aurea</i> (Green and Golden Bell Frog)	Inhabits marshes, dams and stream-sides, particularly those containing bullrushes (<i>Typha</i> spp.) or spikerushes (<i>Eleocharis</i> spp.)	Possible
Aves		
<i>Ptilinopus magnificus</i> (Wompoo Fruit-Dove)	Occurs in or near rainforest, low elevation moist eucalypt forest and brush box forests	Unlikely
<i>Ephippiorhynchus asiaticus</i> (Black-necked Stork)	Key habitat in NSW includes floodplain wetlands (swamps, billabongs, watercourses and dams) of the major coastal rivers; Secondary habitat includes minor floodplains, coastal sandplain wetlands and estuaries	Possible
<i>Hieraetus morphnoides</i> (Little Eagle)	Occupies open eucalypt forest and woodland. Sheoak or <i>Acacia</i> woodlands and riparian woodlands of interior NSW are also used; Nests in tall living trees within a remnant patch	Unlikely
<i>Lophoictinia isura</i> (Square-tailed Kite)	Found in a variety of timbered habitats including dry woodlands and open forests. Shows a preference for timbered watercourses; Is a specialist hunter of passerines; Appears to occupy large hunting ranges of more than 100km ²	Possible

<i>Pandion cristatus</i> (Eastern Osprey)	Favour coastal areas, especially the mouths of large rivers, lagoons and lakes; Feed on fish over clear, open water; Nests are made high up in dead trees or in dead crowns of live trees, usually within one kilometre of the sea	Unlikely
<i>Calyptorhynchus lathamii</i> (Glossy Black-Cockatoo)	Inhabits open forest and woodlands of the coast and the Great Dividing Range where stands of She-oak occur; <i>Allocasuarina littoralis</i> (Black She-oak) and <i>A. torulosa</i> (Forest Oak) are important food sources	Unlikely
<i>Ninox strenua</i> (Powerful Owl)	Inhabits a range of vegetation types, from woodland and open sclerophyll forest to tall open wet forest and rainforest; Roosts by day in dense vegetation; Nest in large tree hollows	Unlikely
<i>Tyto novaehollandiae</i> (Masked Owl)	Lives in dry eucalypt forests and woodlands from sea level to 1100 metres; A forest owl, but often hunts along the edges of forests, including roadsides; Roosts and breeds in moist eucalypt forested gullies, using large tree hollows or sometimes caves for nesting	Unlikely
<i>Tyto tenebricosa</i> (Sooty Owl)	Occurs in rainforest as well as moist eucalypt forests; Roosts by day in the hollow of a tall forest tree or in heavy vegetation; Nests in very large tree-hollows	Unlikely
<i>Anthochaera phrygia</i> (Regent Honeyeater)	In NSW, the Regent Honeyeater has an area of occupancy of less than 200 km ² (NSW SC 2010) and is now largely absent from many areas where it was formerly recorded. This is most notably the Riverina and South-West Slopes, but also in many areas of the Central-West and North-West Slopes, and on the Central Coast around Sydney; Mostly occur in dry Box-Ironbark eucalypt woodland and dry sclerophyll forest associations in areas of low to moderate relief, wherein they prefer moister, more fertile sites available	Unlikely
<i>Daphoenositta chrysoptera</i> (Varied Sittella)	Inhabits eucalypt forests and woodlands, especially those containing rough-barked species and mature smooth-barked gums with dead branches, mallee and <i>Acacia</i> woodland	Unlikely
<i>Petroica boodang</i> (Scarlet Robin)	Found from southeast Queensland to southeast South Australia, also Tasmania and southwest Western Australia. In NSW, it occurs from the coast to the inland slopes. After breeding, some Scarlet Robins disperse to the lower valleys and plains of the tablelands and slopes; Lives in dry eucalypt forests and woodlands. The understorey is usually open and grassy with few scattered shrubs	Unlikely
Mammalia		
<i>Dasyurus maculatus</i> (Spotted-tailed Quoll)	Recorded across a range of habitat types, including rainforest, open forest, woodland, coastal heath and inland riparian forest; Individual animals use hollow-bearing trees, fallen logs, small caves, rock outcrops and rocky-cliff faces as den sites	Unlikely

<i>Phascogale tapoatafa</i> (Brush-tailed Phascogale)	Prefer dry sclerophyll open forest with sparse groundcover of herbs, grasses, shrubs or leaf litter; Also inhabit heath, swamps, rainforest and wet sclerophyll forest; Agile climber foraging preferentially in rough barked trees of 25 cm DBH or greater	Unlikely
<i>Planigale maculata</i> (Common Planigale)	Inhabits rainforest, eucalypt forest, heathland, marshland, grassland and rocky areas where there is surface cover, and usually close to water; A fierce carnivorous hunters and agile climbers, preying on insects and small vertebrate	Unlikely
<i>Phascolarctos cinereus</i> (Koala)	Inhabit eucalypt woodlands and forests; Feed on the foliage of more than 70 eucalypt species and 30 non-eucalypt species, but in any one area will select preferred browse species	Possible
<i>Petaurus australis</i> (Yellow-bellied Glider)	Occur in tall mature eucalypt forest generally in areas with high rainfall and nutrient rich soils; Feed primarily on plant and insect exudates, including nectar, sap, honeydew and manna with pollen and insects providing protein; Den, often in family groups, in hollows of large trees	Possible
<i>Petaurus norfolcensis</i> (Squirrel Glider)	Inhabits dry sclerophyll forest and woodland, generally absent from rainforest and closed forest; Recorded in a range of vegetation communities, including Blackbutt, Forest Red Gum and Red Bloodwood forests, Coastal Banksia heathland and Grey Gum/Spotted Gum/ Grey Ironbark dry hardwood forests of the Central NSW Coast	Possible
<i>Pteropus poliocephalus</i> (Grey-headed Flying-fox)	Occur in subtropical and temperate rainforests, tall sclerophyll forests and woodlands, heaths and swamps as well as urban gardens and cultivated fruit crops	Possible
<i>Mormopterus norfolkensis</i> (Eastern Freetail-bat)	Occur in dry sclerophyll forest, woodland, swamp forests and mangrove forests east of the Great Dividing Range; Roost mainly in tree hollows but will also roost under bark or in man-made structures	Possible
<i>Kerivoula papuensis</i> (Golden-tipped Bat)	Found in rainforest and adjacent wet and dry sclerophyll forest up to 1000 m; Also recorded in tall open forest, <i>Casuarina</i> -dominated riparian forest and coastal <i>Melaleuca</i> forest	Possible
<i>Miniopterus australis</i> (Little Bentwing-bat)	Moist eucalypt forest, rainforest, vine thicket, wet and dry sclerophyll forest, <i>Melaleuca</i> swamps, dense coastal forests and banksia scrub; Usually in well-timbered areas; Roosts in caves, tunnels, tree hollows, abandoned mines, stormwater drains, culverts, bridges and sometimes buildings	Possible
<i>Miniopterus schreibersii</i> (Eastern Bentwing-bat)	Caves are the primary roosting habitat, but also use derelict mines, storm-water tunnels, buildings and other man-made structures; Hunts in forested areas	Possible
<i>Myotis macropus</i> (Southern Myotis)	Generally, roost in groups of 10 - 15 close to water in caves, mine shafts, hollow-bearing trees, stormwater channels, buildings, under bridges and in dense foliage. Forage over streams and pools catching insects and small fish by raking their feet across the water surface	Possible

<i>Scoteanax rueppellii</i> (Greater Broad-nosed Bat)	Commonly found in tall wet forest but utilises a variety of habitats from woodland through to moist and dry eucalypt forest and rainforest; Usually roosts in tree hollows but it has also been found in buildings	Possible
<i>Vespadelus troughtoni</i> (Eastern Cave Bat)	Very little is known about the biology of this uncommon species; Cave-roosting species that is usually found in dry open forest and woodland	Possible
<i>Pseudomys gracilicaudatus</i> (Eastern Chestnut Mouse)	Mostly found, in low numbers, in heathland (usually dense, wet heath and swamps); Optimal habitat appears to be regenerating heathland burnt from 18 months to four years previously	Unlikely

The list of threatened species returned in the EPBC Act Protected Matters Report where the species or the species habitat is known to occur within the area 10 km buffer around the subject site) is provided below in Table F.2. Note: the list excludes all marine species.

Table F.2: Threatened species returned in the Protected Matters Search Tool Report

Species	Habitat and Distribution	Potential Occurrence
Plantae		
<i>Cynanchum elegans</i> (White-flowered Wax Plant)	Recorded from rainforest gullies scrub and scree slopes (rare); From Wollongong, north to southeast Queensland and west to Mt Danger; Most common in the Kempsey region	Unlikely
<i>Allocasuarina defungens</i> (Dwarf Heath Banksia)	Confined to the north coast region of NSW, between Raymond Terrace and Port Macquarie; Two-thirds of the 31 000 plants known are found near Nabyac; In tall heath on sand, in Nabyac area and farther north in the North Coast region	Unlikely
<i>Acacia courtii</i> (North Brother Wattle)	Usually grows on steep, dry, rocky slopes and in mixed dry forest on shallow soils, often under a canopy of White Mahogany and Grey Gum	Unlikely
<i>Callistemon pungens</i>	Grows in or near rocky watercourses, usually in sandy creek beds on granite or sometimes on basalt; From near Inverell to the eastern escarpment at New England National Park	Unlikely
<i>Hakea archaeoides</i> (Big Nellie Hakea)	Restricted to the hinterland between Kempsey and Taree, around Mt Boss, Broken Bago and Lansdowne; Found on steep, rocky, sheltered slopes and in deep gullies in open eucalypt forest	Unlikely
<i>Melaleuca biconvexa</i> (Biconvex Paperbark)	Generally, grows in damp places, often near streams or low-lying areas on alluvial soils of low slopes or sheltered aspects; Coastal districts and adjacent tablelands from Jervis Bay north to the Port Macquarie district	Unlikely
<i>Cryptostylis hunteriana</i> (Leafless Tongue-orchid)	Grows in swamp-heath on sandy soils, chiefly in coastal districts, south from the Gibraltar Range; Soils are generally considered to be moist and sandy, however this species is also known to grow in dry or peaty soils	Unlikely

<i>Phaius australis</i> (Lesser Swamp-orchid)	Grows in <i>Melaleuca quinquenervia</i> swamps & in sclerophyll forest, on the coast, at or near sea level; Reported north from Lake Cathie, but chiefly north from the Evans Head district	Possible
<i>Euphrasia arguta</i>	Grows in grassy areas near rivers, recorded from Bathurst to Walcha area (possibly extinct). Historical information suggests the species could be found in open forest in subhumid places or on the grassy country near Bathurst	Unlikely
<i>Arthraxon hispidus</i> (Hairy-joint Grass)	Occurs over a wide area in south-east Queensland and on the northern tablelands and north coast of NSW; uncommon; grows in rainforest	Unlikely
<i>Thesium australe</i> (Austral Toadflax)	Grows in grassland or woodland, often in damp sites; widespread but rare; The species is semi-parasitic on roots of a range of grass species most notably <i>Themeda triandra</i> (Kangaroo Grass)	Unlikely
Amphibia		
<i>Mixophyes balbus</i> (Stuttering Frog)	Typically found in association with permanent streams through temperate and sub-tropical rainforest and wet sclerophyll forest, rarely in dry open tableland riparian vegetation, and in moist gullies in dry forest	Unlikely
<i>Mixophyes iterates</i> (Giant Barred Frog)	Found along freshwater streams with permanent or semi-permanent water, generally (but not always) at lower elevation; Moist riparian habitats such as rainforest or wet sclerophyll forest are favoured for the deep leaf litter that they provide for shelter and foraging, as well as open perching sites on the forest floor	Unlikely
<i>Litoria aurea</i> (Green & Golden Bell Frog)	Inhabits marshes, dams and stream-sides, particularly those containing bullrushes (<i>Typha</i> spp.) or spikerushes (<i>Eleocharis</i> spp.)	Unlikely
Aves		
<i>Botaurus poiciloptilus</i> (Australasian Bittern)	Favours permanent freshwater wetlands with tall, dense vegetation, particularly bullrushes (<i>Typha</i> spp.) and spikerushes (<i>Eleocharis</i> spp.)	Unlikely
<i>Dasyornis brachypterus</i> (Eastern Bristlebird)	Currently confined to three disjoint areas of south-eastern Australia including the NSW/Queensland border, the Illawarra and the NSW/Victorian border; Favours dense low vegetation	Unlikely
<i>Anthochaera phrygia</i> (Regent Honeyeater)	In NSW, the Regent Honeyeater has an area of occupancy of less than 200 km ² (NSW SC 2010) and is now largely absent from many areas where it was formerly recorded. This is most notably the Riverina and South-West Slopes, but also in many areas of the Central-West and North-West Slopes, and on the Central Coast around Sydney; Mostly occur in dry Box-Ironbark eucalypt woodland and dry sclerophyll forest associations in areas of low to moderate relief, wherein they prefer moister, more fertile sites available	Unlikely

<i>Lathamus discolor</i> (Swift Parrot)	Endemic to south-eastern Australia, breeds only in Tasmania and migrates to mainland Australia in autumn; Key habitats for the species on the coast and coastal plains of New South Wales include <i>Corymbia maculata</i> (Spotted Gum), <i>Eucalyptus robusta</i> (Swamp Mahogany), <i>Eucalyptus gummifera</i> (Red Bloodwood) and <i>Eucalyptus tereticornis</i> (Forest Red Gum) forests	Possible
<i>Rostratula australis</i> (Australian Painted Snipe)	The Australian Painted Snipe generally inhabits shallow terrestrial freshwater (occasionally brackish) wetlands, including temporary and permanent lakes, swamps and claypans. They also use inundated or waterlogged grassland or saltmarsh, dams, rice crops, sewage farms and bore drains. Typical sites include those with rank emergent tussocks of grass, sedges, rushes or reeds, or samphire	Unlikely
Mammalia		
<i>Dasyurus maculatus</i> (Spotted-tailed Quoll)	Recorded across a range of habitat types, including rainforest, open forest, woodland, coastal heath and inland riparian forest; Individual animals use hollow-bearing trees, fallen logs, small caves, rock outcrops and rocky-cliff faces as den sites	Unlikely
<i>Pseudomys novaehollandiae</i> (New Holland Mouse)	The species is now largely restricted to the coast of central and northern NSW; Deeper top soils and softer substrates being preferred for digging burrows; Inhabit open heathland, open woodland with a heathland understorey and vegetated sand dunes	Unlikely
<i>Phascolarctos cinereus</i> (Koala)	Inhabit eucalypt woodlands and forests; Feed on the foliage of more than 70 eucalypt species and 30 non-eucalypt species, but in any one area will select preferred browse species	Possible
<i>Petauroides Volans</i> (Greater Glider)	Occurs in eucalypt forests and woodlands along the east coast of Australia from north east Queensland to the Central Highlands of Victoria; Feeds exclusively on eucalypt leaves, buds, flowers and mistletoe; Shelter during the day in tree hollows and will use up to 18 hollows in their home range; Occupy a relatively small home range with an average size of 1 to 3 hectares	Unlikely
<i>Pteropus poliocephalus</i> (Grey-headed Flying-fox)	Occur in subtropical and temperate rainforests, tall sclerophyll forests and woodlands, heaths and swamps as well as urban gardens and cultivated fruit crops	Possible
<i>Chalinolobus dwyeri</i> (Large-eared Pied Bat)	The species current distribution is poorly known; Roosts in caves (near their entrances), crevices in cliffs, old mine workings and in the disused, bottle-shaped mud nests of the Fairy Martin; Found in well-timbered areas containing gullies	Unlikely

F1.2 Threatened Species for Consideration

The following Assessment of Significance (Seven-Part Test) relies on the ecological assessment provided in Section 4 and 5 of this report. Based on the plant community and habitat assessment, it is considered that the land within the study area constitutes potential habitat for the following fifteen (15) threatened species (Table F.3). Note: Threatened species of flora have also been considered separately under Section 5.4.

Table F.3: Subject species for Section 5A Assessment (see key below for listings)

Family	Scientific Name	Common Name
Plantae		
Orchidaceae	<i>Phaius australis</i>	Lesser Swamp-orchid
Amphibia		
Hylidae	<i>Litoria aurea</i>	Green and Golden Bell Frog
Aves		
Ciconiidae	<i>Ephippiorhynchus asiaticus</i>	Black-necked Stork
Accipitridae	<i>Lophoictinia isura</i>	Square-tailed Kite
Psittacidae	<i>Lathamus discolor</i>	Swift Parrot
Neosittidae	<i>Daphoenositta chrysoptera</i>	Varied Sittella
Mammalia		
Phascolarctidae	<i>Phascolarctos cinereus</i>	Koala
Petauridae	<i>Petaurus australis</i>	Yellow-bellied Glider
	<i>Petaurus norfolcensis</i>	Squirrel Glider
Pteropodidae	<i>Pteropus poliocephalus</i>	Grey-headed Flying-fox
Molossidae	<i>Mormopterus norfolkensis</i>	Eastern Freetail Bat
Vespertilionidae	<i>Miniopterus australis</i>	Little Bentwing-bat
	<i>Miniopterus schreibersii</i>	Eastern Bentwing-bat
	<i>Myotis macropus</i>	Southern Myotis
	<i>Scoteanax rueppellii</i>	Greater Broad-nosed Bat
	<i>Vespadelus troughtoni</i>	Eastern Cave Bat

Assessment of Significance

a) In the case of a threatened species, whether the action proposed is likely to have an adverse effect on the life cycle of the species such that a viable population of the species is likely to be placed at risk of extinction:

Plantae

Lesser Swamp Orchid (*Phaius australis*)

The lesser Swamp Orchid has flower stems up to 2 m tall and large broad leaves with a pleated appearance, both arising from a fleshy bulb near ground level. The large, showy flowers, with up to 20 per stem, have four petals which are white on the outside and brown with white or yellow veins on the inside. The central tongue of the flower is pink and yellow with lobes slightly curved inwards.

The species occurs in Queensland and north-east NSW as far south as Coffs Harbour. Historically, it extended farther south, to Port Macquarie. The preferred habitat is swampy grassland or swampy forest including rainforest, eucalypt or paperbark forest,

mostly in coastal areas. The species can only be distinguished from other swamp orchids by characteristics of its flowers. Therefore, surveys for the species can only be undertaken during spring when the Southern Swamp Orchid is flowering.

The Lesser Swamp Orchid is listed as endangered in NSW under the *Threatened Species Conservation Act 1995*. There are no records of the species listed under the Atlas of NSW Wildlife within a 0.1 degree by 0.1 degree search area around the study area.

The remnant swamp forest community within the study area may be suitable habitat for the Lesser Swamp Orchid. The species can only be distinguished from other swamp orchids by characteristics of its flowers, which are present during spring. As the study was conducted during winter it was unlikely that the species could be detected by direct observation of flowers. However, it was possible to target Swamp-orchid species generally, which could inform as to whether further surveys targeting *Phaius australis* would be warranted. Following the targeted survey, it was concluded that the species was unlikely to be present within the study area. Therefore, the action proposed is unlikely to have an adverse effect on the life cycle of this species such that a viable population of the species is likely to be placed at risk of extinction.

Amphibia

Green and Golden Bell Frog

The Green and Golden Bell Frog is a relatively large ranging in size from approximately 45 mm to approximately 100 mm snout to vent length. Diagnostic features are a gold or creamish white stripe running along the side, extending from the upper eyelids almost to the groin, with a narrow dark brown stripe beneath it, from nostril to eye. It also has blue or bluish-green colour on the inside of the thighs. The colour of the body varies. Usually a vivid pea-green, splotched with an almost metallic brassy brown or gold. The backs of some individuals may be almost entirely green; in other individuals golden-brown markings may dominate.

The species was formerly distributed from the NSW north coast near Brunswick Heads, southwards along the NSW coast to Victoria where it extended into east Gippsland with records from west to Bathurst, Tumut and the ACT region. Since 1990 there have been approximately 50 recorded locations in NSW, most of which are small, coastal, or near coastal populations. These locations occur over the species' former range; however, they are widely separated and isolated. Large populations in NSW are located around the metropolitan areas of Sydney, Shoalhaven and mid-north coast (one an island population). There is only one known population on the NSW Southern Tablelands.

The Green and Golden Bell Frog inhabits marshes, dams and stream-sides, particularly those containing bullrushes (*Typha* spp.) or spikerushes (*Eleocharis* spp.). Optimum habitat includes water-bodies that are unshaded, free of predatory fish such as Plague Minnow (*Gambusia holbrooki*), have a grassy area nearby and diurnal sheltering sites available. The species is active by day and usually breeds during summer when conditions are warm and wet. The Green and Golden Bell Frog is listed as endangered in NSW under the *Threatened Species Conservation Act 1995* and as

vulnerable nationally under the *Environment Protection and Biodiversity Conservation Act 1999*. The Atlas of NSW Wildlife database search indicated two (2) records of the species within a 0.1 degree by 0.1 degree search area around the study area.

The aquatic habitat may provide potential habitat for the Green and Golden Bell Frog, however a population of the alien predatory fish species *Gambusia holbrooki* (Eastern Gambusia or Plague Minnow) was recorded in all components of the aquatic habitat. The presence of Eastern Gambusia is likely to reduce viability of the habitat for amphibian species, particularly for breeding purposes as Eastern Gambusia is known to prey on tadpoles. The Green and Golden Bell Frog was a targeted species in the amphibian survey but was not detected. However, it is noted that although recent rainfall produced conditions that might encourage amphibian species to be active, the cool winter temperatures at the time of the survey are likely to have prevented many amphibians from becoming active.

The aquatic habitat comprised four (4) dams of which three (3) including the large dam located in the southern part of the site will be retained within either the proposed E2/E3 Environmental zone or the vegetated buffer adjacent to the eastern boundary. The dam that is within the development footprint is small and could be readily investigated prior to its removal during appropriate weather/climatic conditions to confirm the presence or absence of the Green and Golden Bell Frog as well as other amphibian species. On this basis, it is unlikely that the action will have an adverse effect on the life cycle of this species such that a viable population of the species is likely to be placed at risk of extinction.

Aves

Black-necked Stork (*Ephippiorhynchus asiaticus*)

The Black-necked Stork is the only species of stork found in Australia. It is a distinctive tall black and white waterbird that is usually seen as a lone individual or in loose pairs. Adults stand 1.3 metres high, with a wingspan of approximately 2 metres and have a massive powerful black beak. The head and neck are black with an iridescent green and purple gloss. The rest of the body is white but the folded wings, which are mostly black largely, cover this. The tail is short and black, and the long legs are orange-red to red. Females have yellow eyes, whereas males have dark-brown eyes.

The Black-necked Stork is widespread in coastal and sub-coastal northern and eastern Australia, although vagrants have been recorded well away from the coast. The species is mainly found on shallow, permanent, freshwater terrestrial wetlands and surrounding marginal vegetation including swamps, floodplains, watercourses and billabongs, freshwater meadows, wet heathland, farm dams and shallow floodwaters, as well as extending into adjacent grasslands, paddocks and open savannah woodlands. They also forage within or around estuaries and along intertidal shorelines, such as saltmarshes, mudflats and sandflats, and mangrove vegetation. The species mainly forages in shallow, still water preferring open wetlands and taking a variety of prey including fish, frogs, turtles, snakes and small invertebrates such as crabs and insects. In NSW, Black-necked Storks breed in late spring-summer.

The Black-necked Stork is listed as vulnerable in NSW under the *Threatened Species Conservation Act 1995* and nationally under the *Environment Protection and*

Biodiversity Conservation Act 1999. The Atlas of NSW Wildlife database search indicated twenty-two (22) records of the species within a 0.1 degree by 0.1 degree search area around the study area.

The habitat within and adjacent to the larger water body (dam) situated at the eastern perimeter in the southern part of the study area is potential foraging habitat for the Black-necked Stalk. This is part of the proposed residue Lot to be zoned Environmental (E2/E3) and is situated well clear of the proposed development footprint. As there is no direct impact on this part of the study area associated with the proposed development it is unlikely that the action will have an adverse effect on the life cycle of this species such that a viable population of the species is likely to be placed at risk of extinction.

Square-tailed Kite (*Lophoictinia isura*)

The Square-tailed Kite is a medium sized long-winged raptor with a square tail and upturned wings when in flight. Adults have a white face with thick black streaks on the crown and finer streaks elsewhere. The saddle, rump and central upper tail-coverts are blackish with grey-brown barring. The underparts are predominately grey-brown with black tips on the grey tail and wings. There is an obscure bullseye on the wings and when sitting the legs are barely visible. The species is usually silent; however, it may utter a hoarse or plaintive yelp and a weak twitter near its nest.

The species is found in a variety of habitats including open forest, and shows a preference for timbered watercourses. The species is a specialist hunter of passerine birds, especially honeyeaters and appears to occupy large hunting ranges of more than 100 km². Nesting occurs between July and October, with birds constructing a large stick nest lined with eucalypt leaves generally located on a large horizontal branch of a eucalypt 12-26 metres above the ground.

The Square-tailed Kite is listed as vulnerable in NSW under the *Threatened Species Conservation Act 1995*. The Atlas of NSW Wildlife database search indicated eight (8) records of the species within a 0.1 degree by 0.1 degree search area around the study area.

There is limited foraging habitat is available to this species within the study area due its cleared condition and existing development with better quality habitat present on the adjacent land to the west. Therefore, the action proposed is unlikely to have an adverse effect on the life cycle of this species such that a viable population of the species is likely to be placed at risk of extinction.

Swift Parrot (*Lathamus discolor*)

The Swift Parrot is a small parrot about 25 cm long. It is bright green with red around the bill and forehead, red with a yellow edge on the throat, a blue crown and bright red patches under the wing. The species most distinguishing feature however, is its dark red, long thin tail. The Swift Parrot breeds in Tasmania during spring and summer, migrating in the autumn and winter to south-eastern Australia. In NSW, it mainly occurs on the coast and south west slopes.

On the mainland, the Swift Parrot inhabits areas where eucalypts are flowering profusely or where there are abundant lerp infestations. The favoured feed trees are winter flowering species including local species such as *Eucalyptus robusta* (Swamp Mahogany), *Corymbia maculata* (Spotted Gum) and *C. gummifera* (Red Bloodwood). Commonly favoured lerp infested tree species include *E. pilularis* (Blackbutt).

The Swift Parrot is listed as endangered in NSW under the *Threatened Species Conservation Act 1995* and nationally under the *Environment Protection and Biodiversity Conservation Act 1999*. There are no records of the species listed under the Atlas of NSW Wildlife within a 0.1 degree by 0.1 degree search area around the study area.

There is limited foraging habitat available to this species in the canopy of the remnant trees located within the study area. The proposed development will result in a net increase in habitat for this species through revegetation and conservation of the land within the proposed residue lot, which will be zoned Environmental (E2/E3). On this basis it is considered that the action proposed is unlikely to have an adverse effect on the life cycle of this species such that a viable population of the species is likely to be placed at risk of extinction.

Mammalia

Koala (*Phascolarctos cinereus*)

The Koala is an arboreal marsupial that feeds almost exclusively on the foliage of specific Eucalypts. The species has a fragmented distribution throughout eastern Australia from north-east Queensland to the Eyre Peninsula in South Australia. In NSW, the species mainly occurs on the central and north coast areas. The Koala inhabits eucalypt woodland and forest and are known to feed on the foliage of 70 eucalypts and 30 non-eucalypt species, but typically select preferred browse species, which varies from one area to another. The species is inactive during the day, foraging and feeding by night and occupies a variable home range from less than two hectares up to several hundred hectares in size.

The Koala is listed as vulnerable in NSW under the *Threatened Species Conservation Act 1995* and the Koala (Combined populations of Queensland, New South Wales and the Australian Capital Territory) is listed as a vulnerable species nationally under the *Environment Protection and Biodiversity Conservation Act 1999*. The Atlas of NSW Wildlife database search indicated 463 records of the species within a 0.1 degree by 0.1 degree search area around the study area.

The search results of the Atlas of NSW Wildlife database show a cluster of records near within the Queens Lake State Conservation Area to the west of the site as well as a few records on the land to the north of Houston Mitchell Drive. The survey work undertaken by Phillips et al (2009) in relation to the Area 14 Koala Plan of Management, which was wider ranging than other individual surveys shows clusters of records immediately to the north and southwest of the site and further to the southeast around the Seafront Circuit/Beach Street area. Aerial imagery indicates that the study area is contiguous with forest habitat within the Queens Lake State

Conservation Area, the Queens Lake Nature Reserve and the Queens Lake State Forest.

Six (6) species of trees recorded within the study area are listed as Koala food trees in Table 2.6.1 of the DCP. These included *Eucalyptus microcorys* (Tallowwood), *Eucalyptus robusta* (Swamp Mahogany) and *Eucalyptus tereticornis* (Forest Red Gum), which are listed as primary browse species, *Eucalyptus propinqua* (Small-fruited Grey Gum) and *Eucalyptus globoidea* (White Stringybark), which are listed as secondary/supplementary browse species and *Melaleuca quinquenervia* (Broad-leaved Paperbark), which is listed as other browse species. Many these trees are isolated 'paddock' trees except for the remnant patch of trees located in the northern part of the site, most which will be retained within a proposed public reserve that will be subject to less disturbance associated with human activities than the current situation. Several Koala food trees that are situated in the proposed development footprint however will need to be removed. The removal of these trees will be mitigated through planting replacement trees at a 2:1 ratio within the proposed residue lot in the southern part of the site, which will be zoned Environmental (E2/E3). On this basis, it is considered that the action proposed is unlikely to have an adverse effect on the life cycle of this species such that a viable population of the species is likely to be placed at risk of extinction.

Yellow-bellied Glider (*Petaurus australis*)

The Yellow-bellied Glider is a large, active, sociable and vocal glider. Adults weigh 450 - 700 grams and have a head and body length of about 30 cm with a large bushy tail that is about 45 cm long. The species has grey to brown fur above with a cream to yellow belly, which is paler in young animals. The dark stripe down the back is characteristic of the group. It has a large gliding membrane that extends from the wrist to the ankle. It has a loud, distinctive call, beginning with a high-pitched shriek and subsiding into a throaty rattle.

The Yellow-bellied Glider is found along the eastern coast to the western slopes of the Great Dividing Range, from southern Queensland to Victoria. The species occurs in tall mature eucalypt forest generally in areas with high rainfall and nutrient rich soils. Forest type preferences vary with latitude and elevation; mixed coastal forests to dry escarpment forests in the north; moist coastal gullies and creek flats to tall montane forests in the south. The Yellow-bellied Glider feeds primarily on plant and insect exudates, including nectar, sap, honeydew and manna with pollen and insects providing protein. It extracts sap by incising (or biting into) the trunks and branches of favoured food trees, often leaving a distinctive 'V'-shaped scar. The species lives in small family groups of 2-6 individuals and are nocturnal and usually den in family groups, in hollows of large living trees. The species is very mobile and occupy large exclusive home ranges of 20 – 85 hectares to encompass dispersed and seasonally variable food resources. The Yellow-bellied Glider is listed as vulnerable in NSW under the *Threatened Species Conservation Act 1995*. The Atlas of NSW Wildlife database search indicated that twenty-four (24) records of the species within a 0.1 degree by 0.1 degree search area around the study area including some in the immediate vicinity of the site.

There is limited foraging habitat and some potential denning sites available to the Yellow-bellied Glider in the canopy of the study area. However, the habitat and potential denning sites are unlikely to be utilised by the species due to the site's position in the landscape and the extent of disturbance associated with human activities both within the site and on the adjacent land. Within the site the habitat is highly modified through land clearing. There is also ongoing disturbance occurring in conjunction with management of the site to maintain the derived grassland, and in association with an existing dwelling and trucking operation in the northern part of the site. The site adjoins two (2) major roads; Houston Mitchell Drive in the north and Ocean Drive in the east. The intersection of these roads located adjacent to the northeast corner of the study area has recently been upgraded and is now provided with artificial lighting that spills across the site throughout the night. The recently constructed public school on the land to the east of the site also involved the provision of significant infrastructure, including road upgrading and street lighting, which spills across the study area throughout the night. This development and increasing human activities is likely to discourage the Yellow-bellied Glider and other nocturnal species from utilising the habitat within the study area. It is proposed to mitigate the proposed development of the site by improving the habitat within the residue allotment situated in the southern part of the site through offset planting and revegetation. This will be given certainty in the long-term through zoning the residue lot Environmental (E2/E3). Therefore, it is considered that the action proposed is unlikely to have an adverse effect on the life cycle of this species such that a viable population of the species is likely to be placed at risk of extinction.

Squirrel Glider (*Petaurus norfolcensis*)

The Squirrel Glider is widely, though sparsely, distributed in eastern Australia from northern Queensland to western Victoria. West of the Great Dividing Range, the Squirrel Glider inhabits mature or old growth Box, Box-Ironbark and River Red Gum forest, while in coastal areas the species inhabits Blackbutt-Bloodwood forest with heath understorey, with a preference for mixed species stands having a shrub or Acacia mid-storey. Squirrel gliders live in family groups of a single male, one or more adult females and their offspring. The diet varies seasonally and consists of Acacia gum, eucalypt sap, nectar, honeydew and manna, with invertebrates and pollen providing protein. Abundant tree hollows are required for refuge and nest sites. Evidence of gliders utilising the site for foraging purposes was not observed during the site survey. The Squirrel Glider is listed as vulnerable in NSW under the *Threatened Species Conservation Act 1995*. The Atlas of NSW Wildlife database search indicated twelve (12) records of the species within a 0.1 degree by 0.1 degree search area around the study area.

There is limited foraging habitat and some potential denning sites available to the Squirrel Glider in the canopy of the study area. However, the habitat and potential denning sites are unlikely to be utilised by the species due to the site's position in the landscape and the extent of disturbance associated with human activities both within the site and on the adjacent land. Within the site the habitat is highly modified through land clearing. There is also ongoing disturbance occurring in conjunction with management of the site to maintain the derived grassland, and in association with an existing dwelling and trucking operation in the northern part of the site. The site adjoins two (2) major roads; Houston Mitchell Drive in the north and Ocean Drive in the east.

The intersection of these roads located adjacent to the northeast corner of the study area has recently been upgraded and is now provided with artificial lighting that spills across the site throughout the night. The recently constructed public school on the land to the east of the site also involved the provision of significant infrastructure, including road upgrading and street lighting, which spills across the study area throughout the night. This development and increasing human activities is likely to discourage the Squirrel Glider and other nocturnal species from utilising the habitat within the study area. It is proposed to mitigate the proposed development of the site by improving the habitat within the residue allotment situated in the southern part of the site through offset planting and revegetation. This will be given certainty in the long-term through zoning the residue lot Environmental (E2/E3). Therefore, it is considered that the action proposed is unlikely to have an adverse effect on the life cycle of this species such that a viable population of the species is likely to be placed at risk of extinction.

Grey-headed Flying-fox (*Pteropus poliocephalus*)

The Grey-headed Flying-fox is the largest Australian bat species and is found within 200km of the eastern coast of Australia from Bundaberg in Queensland to Melbourne, Victoria. The species occurs in subtropical and temperate rainforest, tall sclerophyll forest and woodland and individuals travel up to 50 km to feed on the nectar and pollen of native trees, particularly eucalypts, *Melaleuca spp.* and *Banksia spp.* and the fruits of rainforest trees and vines. The Grey-headed Flying-fox is listed as endangered in NSW under the *Threatened Species Conservation Act 1995* and as vulnerable nationally under the *Environment Protection and Biodiversity Conservation Act 1999*. The Atlas of NSW Wildlife database search indicated twenty-eight (28) records of the species within a 0.1 degree by 0.1 degree search area around the study area.

The Grey-headed Flying-fox was observed foraging when the remnant trees in the canopy during the spotlighting survey. Grey-headed Flying-foxes congregate in large numbers at roosting sites (camps) that may be found in rainforest patches, *Melaleuca* stands, mangroves, riparian woodland or modified vegetation in urban areas. However, there were no signs of a camp within the site. The proposed development will result in a net increase in foraging habitat for this species through revegetation and conservation of the land within the proposed residue lot, which will be zoned Environmental (E2/E3). On this basis, it is considered that the action proposed is unlikely to have an adverse effect on the life cycle of this species such that a viable population of the species is likely to be placed at risk of extinction.

Eastern Freetail-bat (*Mormopterus norfolkensis*)

The Eastern Freetail-bat is uniformly rich brown in colour, has a body length of 50-55 mm, a tail length of 35-45 mm and weighs 7-10 grams. The species habitat is poorly known but is believed to occur in a variety of habitats including wet sclerophyll forest, dry sclerophyll forest and woodland east of the Great Dividing Range. The species is believed to be solitary, feeding mostly on insects and roosting mainly in tree hollows.

The Eastern Freetail-bat is listed as vulnerable in NSW under the *Threatened Species Conservation Act 1995*. The Atlas of NSW Wildlife database search indicated three

(3) records of the species within a 0.1 degree by 0.1 degree search area around the study area.

Potential foraging habitat and roosting habitat comprising several hollow-bearing trees is available to this species within study area. Several trees, including one hollow-bearing trees located within the proposed development footprint will need to be removed. It is proposed to mitigate the proposed development of the site by improving the habitat within the residue allotment situated in the southern part of the site through offset planting and revegetation. This will be given certainty in the long-term through zoning the residue lot; Environmental (E2/E3). It is also proposed to offset removal of the hollow-bearing tree by provision of nest boxes specifically targeting Microchiropteran Bats within the Environmental (E2/E3) zoned land as detailed in Section 7 of the report. Therefore, it is considered that the action proposed is unlikely to have an adverse effect on the life cycle of this species such that a viable population of the species is likely to be placed at risk of extinction.

Golden-tipped Bat (*Kerivoula papuensis*)

The Golden-tipped Bat has dark brown, curly fur with bright golden tips that extends along the wings, legs and tail. It has a short, pointed, over-hanging muzzle and pointy, funnel-shaped ears. Adults weigh about 6 grams and have a wingspan of about 25 cm.

The Golden-tipped Bat is distributed along the east coast of Australia in scattered locations from Cape York Peninsula in Queensland to south of Eden in southern NSW and is also found in New Guinea. The species is found in rainforest and adjacent wet and dry sclerophyll forest up to 1000 metres. It is also recorded in tall open forest, *Casuarina*-dominated riparian forest and coastal *Melaleuca* forests. It roosts mainly in abandoned hanging Yellow-throated Scrubwren and Brown Gerygone nests, as well as in tree hollows, dense foliage and epiphytes; located in rainforest gullies on small first-order and second-order streams. The species will fly up to two kilometres from roosts to forage in rainforest and sclerophyll forest on mid and upper-slopes, where it feeds on small web-building spiders. The Golden-tipped Bat is listed as vulnerable in NSW under the *Threatened Species Conservation Act 1995*. The Atlas of NSW Wildlife database search indicated one (1) record of the species within a 0.1 degree by 0.1 degree search area around the study area.

Potential foraging habitat and roosting habitat comprising several hollow-bearing trees is available to this species within study area. Several trees, including one hollow-bearing trees located within the proposed development footprint will need to be removed. It is proposed to mitigate the proposed development of the site by improving the habitat within the residue allotment situated in the southern part of the site through offset planting and revegetation. This will be given certainty in the long-term through zoning the residue lot E3 – Environmental Management. It is also proposed to offset removal of the hollow-bearing tree by provision of nest boxes specifically targeting Microchiropteran Bats within the Environmental (E2/E3) zoned land as detailed in Section 7 of the report. Therefore, it is considered that the action proposed is unlikely to have an adverse effect on the life cycle of this species such that a viable population of the species is likely to be placed at risk of extinction.

Little Bentwing-bat (*Miniopterus Australia*)

The Little Bentwing-bat occurs along the east coast of Australia from north-eastern Queensland to the central coast of New South Wales. The species mainly forages for insects between the canopy and understorey of well-timbered habitats including wet and dry sclerophyll forest, woodland, rainforest and coastal swamp forest. The Little Bentwing-bat is regarded as a cave-obligate species that roosts by day in caves, tunnels and mine shafts. Maternity colonies are formed during summer in roost sites with high humidity, which are often shared with the Eastern Bentwing-bat. The Little Bentwing-bat is listed as vulnerable in NSW under the *Threatened Species Conservation Act 1995*. The Atlas of NSW Wildlife database search indicated twenty-five (25) records of the species within a 0.1 degree by 0.1 degree search area around the study area.

This species forages across a wide range of habitats but requires caves, tunnels and mine shafts for roosting. As these types of habitat features are not present within the study area it is unlikely that the species could utilise the habitat for roosting or shelter. The proposed development will result in the retention of foraging habitat for this species within the residue lot, zoned Environmental (E2/E3). It is proposed to mitigate the development of the site by improving the habitat within the residue lot through revegetation and offset planting. On this basis, it is considered that the action proposed is unlikely to have an adverse effect on the life cycle of this species such that a viable population of the species is likely to be placed at risk of extinction.

Eastern Bentwing-bat (*Miniopterus schreibersii*)

The Eastern Bentwing-bat occurs in eastern Australia from north Queensland to south-eastern South Australia. In New South Wales, the species is found along the coast and western slopes including high elevations of the Great Dividing Range. The Eastern Bentwing-bat forages for insects mainly above the tree canopy in a range of timbered habitats including rainforest, coastal swamp forest, heathland, woodland and sclerophyll forest. The species is regarded as a cave-obligate, roosting in caves, tunnels, mine shafts and closed stormwater drains. The Eastern Bentwing-bat is listed as vulnerable in NSW under the *Threatened Species Conservation Act 1995*. The Atlas of NSW Wildlife database search indicated three (3) records of the species within a 0.1 degree by 0.1 degree search area around the study area.

This species forages across a wide range of habitats but requires caves, tunnels and mine shafts for roosting. As these types of habitat features are not present within the study area it is unlikely that the species could utilise the habitat for roosting or shelter. The proposed development will result in the retention of foraging habitat for this species within the residue lot zoned Environmental (E2/E3). It is proposed to mitigate the development of the site by improving the habitat within the residue lot through revegetation and offset planting. On this basis, it is considered that the action proposed is unlikely to have an adverse effect on the life cycle of this species such that a viable population of the species is likely to be placed at risk of extinction.

Southern Myotis (*Myotis macropus*)

The Southern Myotis has disproportionately large feet with widely-spaced toes, which are distinctly hairy and with long, curved claws. The species has dark-grey to reddish-

brown fur above and is paler below. It weighs up to 15 grams and has a wingspan of approximately 28 cm.

The Southern Myotis is found along the coastal strip from the northwest of Australia, across northern Australia and south to western Victoria. The species is rarely found more than 100 km inland, except along major rivers. It is always found close to water, from small creeks to large lakes and mangrove-lined estuaries. The species utilises a range of roost sites including caves, mineshafts, culverts, dense foliage and tree hollows in which it roosts in groups of 10-15 individuals. It forages low over water taking flying insects as well as aquatic insects and small fish, which it captures by raking the claws across the water surface. The Southern Myotis is listed as vulnerable in NSW under the *Threatened Species Conservation Act 1995*. The Atlas of NSW Wildlife database search indicated that four (4) records of the species within a 0.1 degree by 0.1 degree search area around the study area.

Potential foraging habitat and roosting habitat comprising several hollow-bearing trees is available to this species within study area. Several trees, including one hollow-bearing trees located within the proposed development footprint will need to be removed. It is proposed to mitigate the proposed development of the site by improving the habitat within the residue allotment situated in the southern part of the site through offset planting and revegetation. This will be given certainty in the long-term through zoning the residue lot E3 – Environmental Management. It is also proposed to offset removal of the hollow-bearing tree by provision of nest boxes specifically targeting Microchiropteran Bats within the Environmental (E2/E3) zoned land as detailed in Section 7 of the report. Therefore, it is considered that the action proposed is unlikely to have an adverse effect on the life cycle of this species such that a viable population of the species is likely to be placed at risk of extinction.

Greater Broad-nosed Bat (*Scoteanax rueppellii*)

The Greater Broad-nosed Bat is a large robust bat with a broad head and short, squarish muzzle. The ears are widely spaced, short and have a rounded apex with a concave rear edge immediately below the apex. The upper parts vary from mid-brown to dark cinnamon-brown and the underparts are tawny-olive in colour.

The species occurs in a range of habitats including cleared grazing land, heathland, coastal swamp forest, woodland, rainforest as well as wet sclerophyll forest and dry sclerophyll forest. The species usually roosts in tree hollows and forages after sunset, flying slowly along watercourses at an altitude of 3 metres to 6 metres. The Greater Broad-nosed Bat is listed as vulnerable in NSW under the *Threatened Species Conservation Act 1995*. The Atlas of NSW Wildlife database search indicated that three (3) records of the species within a 0.1 degree by 0.1 degree search area around the study area.

Potential foraging habitat and roosting habitat comprising several hollow-bearing trees is available to this species within study area. Several trees, including one hollow-bearing trees located within the proposed development footprint will need to be removed. It is proposed to mitigate the proposed development of the site by improving the habitat within the residue allotment situated in the southern part of the site through offset planting and revegetation. This will be given certainty in the long-term through

zoning the residue lot E3 – Environmental Management. It is also proposed to offset removal of the hollow-bearing tree by provision of nest boxes specifically targeting Microchiropteran Bats within the Environmental (E2/E3) zoned land as detailed in Section 7 of the report. Therefore, it is considered that the action proposed is unlikely to have an adverse effect on the life cycle of this species such that a viable population of the species is likely to be placed at risk of extinction.

Eastern Cave Bat (*Vespadelus troughtoni*)

This species remains one of the least known members of its genus in eastern Australia. It is a cave-dweller, known to occur in drier forest and tropical woodland from the coast and Dividing Range to the semi-arid zone. It has been found roosting in small groups in sandstone overhangs, mine shafts and occasionally in buildings. The Eastern Cave Bat is listed as vulnerable in NSW under the *Threatened Species Conservation Act 1995*. The Atlas of NSW Wildlife database search indicated four (4) records of the species within a 0.1 degree by 0.1 degree search area around the study area.

This species forages across a wide range of habitats but requires caves, tunnels and mine shafts for roosting. As these types of habitat features are not present within the study area it is unlikely that the species could utilise the habitat for roosting or shelter. The proposed development will result in the retention of foraging habitat for this species within the residue lot zoned Environmental (E2/E3). It is proposed to mitigate the development of the site by improving the habitat within the residue lot through revegetation and offset planting. On this basis, it is considered that the action proposed is unlikely to have an adverse effect on the life cycle of this species such that a viable population of the species is likely to be placed at risk of extinction.

b) In the case of an endangered population, whether the action proposed is likely to have an adverse effect on the life cycle of the species that constitutes the endangered population such that a viable population of the species is likely to be placed at risk of extinction:

The Koala (Combined populations of Queensland, New South Wales and the Australian Capital Territory)

This population has been listed as vulnerable under the EPBC Act as it has undergone a substantial decline over three generations due to a combination of several factors including loss and fragmentation of habitat, vehicle strike, disease and predation by dogs.

The Atlas of NSW Wildlife database search returned 463 records of the Koala within a 0.1 degree by 0.1 degree search area around the study area. This indicates that there is a local Koala population in the search area. The survey work undertaken by Phillips et al (2009) in relation to the Area 14 Koala Plan of Management, which was wider ranging than other individual surveys in the area shows clusters of records immediately to the north and southwest of the site and further to the southeast around the Seafront Circuit/Beach Street area. Aerial imagery indicates that the study area is contiguous with forest habitat within the Queens Lake State Conservation Area, the Queens Lake Nature Reserve and the Queens Lake State Forest. Advice received from the Koala Hospital at Port Macquarie indicates that there have been several Koala rescues

undertaken in the Bonny Hills area. Most these rescues were associated with vehicle strikes on Ocean Drive near the headland near the local fuel station/general store within the village to the south of the study area. There have also been a small number of rescues of sick Koalas from the Panorama Drive area as well.

The entire habitat within the study area was investigated. This included searching the site for actual Koala sightings as well as searching for Koala scats at the base of all trees within the study area and looking for other indicators such as scratch marks on tree trunks. No Koala scats were found; however, it was impossible to draw any conclusions from this alone given the recent heavy rain associated with the intense east coast low pressure system and extent of subsequent surface water within the site. Several trees showed signs of Koala activity, including scratches consistent with those made by Koalas on the trunk of a Forest Red Gum tree located near the eastern boundary adjacent to the larger dam within the site and disturbed bark on the trunks of four (4) Tallowood trees located adjacent to the western boundary of the site. Five (5) species of Koala food tree as listed under the Recovery Plan for the Koala (DECC, 2008) were recorded within the study area. These included three (3) primary Koala food tree species; *Eucalyptus microcorys* (Tallowood), *Eucalyptus robusta* (Swamp Mahogany) and *Eucalyptus tereticornis* (Forest red Gum), and two (2) secondary/supplementary Koala food tree species; *Eucalyptus propinqua* (Small-fruited Grey Gum) and *Eucalyptus globoidea* (White Stringybark)). An additional species; *Melaleuca quinquenervia* (Broad-leaved Paperbark) is listed as an 'other' browse species under the DCP.

Based on the EPBC Act Referral Guidelines Koala habitat assessment tool score of 8, the habitat within the study area may contain habitat critical to the species survival for the purposes of the EPBC Act. As per the DCP, removal of Koala food trees from the site will be offset by a compensatory replanting strategy at a ratio of two (2) replacement trees for each primary Koala food tree that is removed. All such replacement trees will be planted within the proposed E3 zoned residue lot located in the southern part of the site, resulting in a net increase in suitable habitat with direct connectivity to other suitable existing forest habitat within the Queens Lake Nature Reserve adjoining the western boundary of the site. On this basis, it is considered that the action is unlikely to have an adverse effect on the life cycle of this species such that a viable population of the species is likely to be placed at risk of extinction.

c) In the case of an endangered ecological community or critically endangered ecological community, whether the action proposed:

(i) is likely to have an adverse effect on the extent of the ecological community such that its local occurrence is likely to be placed at risk of extinction;

Remnants comprising isolated 'paddock' trees situated within the central parts of the site were indicative of a swamp forest community that likely occurred prior to land clearing. However, this part of the site is essentially a derived grassland and is not mapped under the Port Macquarie-Hastings Council vegetation community mapping. On this basis, no endangered ecological community was recorded within the study area (proposed development site) during the field survey for the purposes of the assessment of significance.

(ii) is likely to substantially and adversely modify the composition of the ecological community such that its local occurrence is likely to be placed at risk of extinction;

Remnants comprising isolated 'paddock' trees situated within the central parts of the site were indicative of a swamp forest community that likely occurred prior to land clearing. However, this part of the site is essentially a derived grassland and is not mapped under the Port Macquarie-Hastings Council vegetation community mapping. On this basis, no endangered ecological community was recorded within the study area (proposed development site) during the field survey for the purposes of the assessment of significance.

d) In relation to the habitat of a threatened species, population or ecological community:

(i) The extent to which habitat is likely to be removed or modified as a result of the action proposed;

The habitat within the study area (proposed development site) is a highly disturbed habitat, largely comprising a derived grassland with remnant trees. The habitat to be removed or modified because of the proposed action comprises a small number of trees, which will be offset through compensatory plantings within an E3 zoned residue lot. Therefore, the habitat likely to be removed or modified because of the action proposed is not considered to be significant with respect to a threatened species, population or ecological community.

(ii) Whether an area of habitat is likely to become fragmented or isolated from other areas of habitat as a result of the proposed action;

The habitat within the study area (proposed development site) has been previously cleared of native for a considerable number of years. The proposed action is unlikely to fragment habitat areas or isolate habitat areas from other areas of habitat. The site is located adjacent to extensive areas of forest habitat reserved within the Queens Lake Nature Reserve adjoining the western boundary of the site. It is proposed to undertake revegetation of the land within an E3 zoned residue lot located in the southern part of the site, resulting in a net increase in natural habitat with direct connectivity to the Queens Lake Nature Reserve.

(iii) The importance of the habitat to be removed, modified, fragmented or isolated to the long-term survival of the species, population or ecological community in the locality;

The habitat within the study area (proposed development site) to be removed, modified, fragmented or isolated is a highly disturbed habitat, largely comprising a derived grassland with remnant trees. It is proposed to undertake revegetation of the land within an E3 zoned residue lot located in the southern part of the site, resulting in a net increase in natural habitat with direct connectivity to the Queens Lake Nature Reserve. Therefore, the habitat within the proposed development footprint is not considered to be important to the long-term survival of any species, population or ecological community in the locality.

e) Whether the action proposed is likely to have an adverse effect on critical habitat (either directly or indirectly):

The EPBC Act Koala Guideline habitat assessment tool score indicated that the study area may contain habitat critical to the Koala's survival. However, further assessment under the Guideline indicated that the study area is unlikely to contain habitat critical to the species survival. The habitat within the study area contains food resources for the Koala, however as the amount of proposed clearing is less than two (2) hectares, referral to the Department of the Environment for adversely affecting habitat critical to the survival of the Koala is not required. As per the DCP, removal of Koala food trees from the site will be offset by a compensatory replanting strategy at a ratio of two (2) replacement trees for each Koala browse tree (as listed in Table 2.6.1 of the DCP) that is removed. All such replacement trees will be planted within the proposed E3 zoned residue lot located in the southern part of the site, resulting in a net increase in suitable habitat with direct connectivity to other suitable existing forest habitat within the Queens Lake Nature Reserve adjoining the western boundary of the site.

f) Whether the action proposed is consistent with the objectives or actions of a recovery plan or threat abatement plan:

There is a recovery plan in place for the Koala. Mitigation measures are proposed in Section 7 of this report to offset removal of the trees within the study area. As per the DCP, removal of Koala food trees from the site will be offset by a compensatory replanting strategy at a ratio of two (2) replacement trees for each Koala browse tree (as listed in Table 2.6.1 of the DCP) that is removed. All such replacement trees will be planted within the proposed E3 zoned residue lot located in the southern part of the site, resulting in a net increase in suitable habitat with direct connectivity to other suitable existing forest habitat within the Queens Lake Nature Reserve adjoining the western boundary of the site. On this basis, it is considered that the action proposed is consistent with the objectives or actions of the aforementioned recovery plan.

g) Whether the action proposed constitutes or is part of a key threatening process or is likely to result in the operation of, or increase the impact of a key threatening process:

Key threatening processes (KTPs) are listed in Schedule 3 of the TSC Act. Those considered to be applicable to the proposed development are:

Aggressive exclusion of birds from woodland and forest habitat by abundant Noisy Miners (Manorina melanocephala):

In NSW the Noisy Miner is found throughout the coastal plains, foothills, ranges and tablelands (up to 1200 metres), as well as on the inland slopes and plains of the semi-arid zone, favouring open, lightly timbered areas and habitat edges and so has benefitted from the large-scale vegetation changes that accompanied the European settlement of Australia. This includes clearing of forest and woodland, fragmentation of forest and woodland and reduction of understory vegetation by livestock grazing, invasion of exotic grasses, altered fire regimes and parkland clearing.

The removal of vegetation within the study area has the potential to create conditions that suite the Noisy Miner. However, it is noted that such conditions already exist in

association with the current residential use of the adjacent land and that a significant population of the species is already occupying the site. Therefore, this KTP is already in play. The revegetation of the E2/E3 environmental management zoned land in the southern part of the site and restoration of the understorey and groundcover within the proposed E2/E3 environmental management land in the northern part of the site will lead to the formation of a more natural forest habitat that is less likely to be suitable habitat for the Noisy Miner and will help to reduce its distribution within the local area.

Anthropogenic Climate Change:

The use of machinery and power tools during any future earthworks or mining activities will contribute to anthropogenic climate change through release of stored carbon from vegetation and greenhouse gas emissions associated with use of fossil fuels. However, the overall impact of the action is considered negligible in the context of other human activities in the region.

Clearing of native vegetation:

Clearing refers to the destruction of a sufficient proportion of one or more strata within native vegetation. There are numerous impacts because of clearing native vegetation, including:

- Destruction of habitat causing a loss of biological diversity, and may result in total extinction of species or loss of local genotypes;
- Fragmentation of populations resulting in limited gene flow between small isolated populations, reduced potential to adapt to environmental change and loss or severe modification of the interactions between species;
- Riparian zone degradation, such as bank erosion leading to sedimentation that affects aquatic communities;
- Disturbed habitat which may permit the establishment and spread of exotic species which may displace native species; and
- Loss of leaf litter, removing habitat for a wide variety of vertebrates and invertebrates.

Given the extent of clearing that currently exists within the development site and the proposed revegetation of the land within the E3 zoned residual lot it is considered unlikely that the proposed development will contribute significantly to this KTP.

Invasion, establishment and spread of Lantana (Lantana camara):

Lantana has significant adverse effects on biodiversity. It typically forms dense thickets, suppressing native vegetation and seedlings through shading, nutrient competition, smothering and allelopathy (chemically suppresses the germination and/or growth of other plant species). Lantana readily invades disturbed sites and communities, including edges and canopy breaks in dense forest communities. In open forests and woodlands Lantana often becomes a dominant understorey species. In warmer, moister areas Lantana often becomes dominant in regenerating pastures. In NSW, Lantana has been identified as a threat to numerous threatened species of flora, at least two threatened species of fauna and several endangered ecological communities. Lantana was recorded in low abundance within the study area. The proposed development is unlikely to significantly contribute to further invasion of the

site by Lantana. The proposed development of the site and recommended weed control will help to mitigate this KTP.

Invasion of native plant communities by (*Chrysanthemoides monilifera*):

Two subspecies are recognised:

- *Chrysanthemoides monilifera* subsp. *monilifera* (Boneseed); and
- *Chrysanthemoides monilifera* subsp. *rotundata* (Bitou Bush).

Both species are invasive and are known to invade and displace native plants. Boneseed is the less important of the two weeds in New South Wales but it has the potential to be a serious threat to inland areas in the future if it is left uncontrolled. Bitou Bush was first recorded in New South Wales in 1908 near Newcastle, and between 1946 and 1968 was planted for dune stabilisation at numerous locations along the New South Wales coastline. It has spread rapidly from these plantings and is now found along 80 % of the coastline, covering more than 900 kilometres. Neither species was recorded within the study area during the field survey but *Chrysanthemoides monilifera* subsp. *rotundata* (Bitou Bush) is common and widespread throughout the local area. While the proposed development is unlikely to significantly contribute to invasion of the site by these weeds, the presence of Bitou Bush in the local area means the habitat within the site is vulnerable. Weed control has been recommended in Section 7 of this report.

16. Appendix G: AHIMS Report



Office of
Environment
& Heritage

AHIMS Web Services (AWS) Search Result

Purchase Order/Reference : EA-2015-1611
Client Service ID : 230289

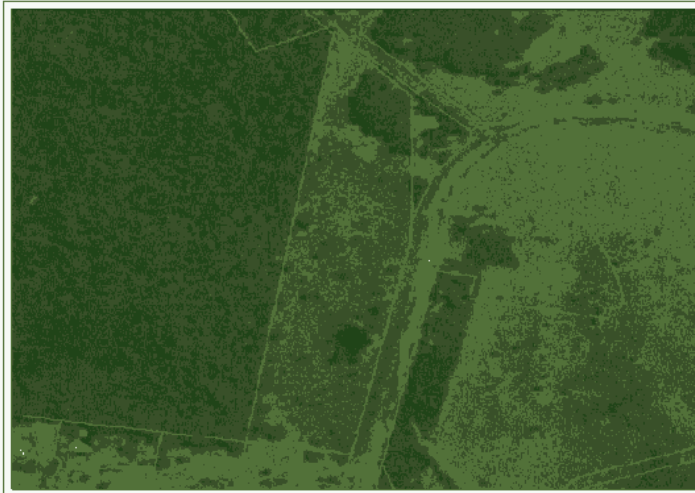
Steve Britt
PO Box 3212
West Kempsey New South Wales 2440
Attention: Steve Britt
Email: steve@florafuna.com.au

Date: 17 June 2016

Dear Sir or Madam,

AHIMS Web Service search for the following area at Lot: 10, DP:DP615775 with a Buffer of 50 meters, conducted by Steve Britt on 17 June 2016.

The context area of your search is shown in the map below. Please note that the map does not accurately display the exact boundaries of the search as defined in the paragraph above. The map is to be used for general reference purposes only.



A search of the Office of the Environment and Heritage AHIMS Web Services (Aboriginal Heritage Information Management System) has shown that:

- | | |
|---|---|
| 0 | Aboriginal sites are recorded in or near the above location. |
| 0 | Aboriginal places have been declared in or near the above location. * |



PO BOX 3212 WEST KEMPSEY 2440

Phone: (02) 6561 5263

Mobile: 0429 727 010

mail@florafauna.com.au

www.florafauna.com.au

ABN: 22 167 601 074

Ref: EA-2015-1611

20 December 2017

Mr Angelo Mifsud
C/- King and Campbell Pty Ltd
PO Box 243
Port Macquarie NSW 2444

Dear Mr Mifsud,

Addendum to the Ecological Report – Ref. No. EA-2015-1611
Lot 10 DP 615775 & Lot 10 DP 1117908, 19 Houston Mitchell Drive Bonny Hills

This document is an addendum to the ecological assessment report; EA-2015-1611 prepared by FloraFauna Consulting and dated 27 October 2016 in relation to the proposed rezoning of land identified as Lot 10 DP 615775 & Lot 10 DP 1117908, 19 Houston Mitchell Drive Bonny Hills. It should be noted that changes will not be made to the original report and that this addendum forms part of the documentation of the ongoing rezoning proposal. The addendum has been prepared in response to the following request from Port Macquarie-Hastings Council:

"Please note that an addendum to the Ecological Assessment report, confirming that the findings and conclusions are consistent with the new land management and biodiversity conservation legislation, will be required to support a Planning Proposal"

The purpose of the *Biodiversity Conservation Act 2016* is to maintain a healthy, productive and resilient environment for the greatest well-being of the community, now and into the future, consistent with the principles of ecologically sustainable development. With respect to proposed development of land the Act aims to:

- establish a framework to avoid, minimise and offset the impacts of proposed development and land use change on biodiversity;
- establish a scientific method for assessing the likely impacts on biodiversity values of proposed development and land use change, for calculating measures to offset those impacts and for assessing improvements in biodiversity values; and
- establish market-based conservation mechanisms through which the biodiversity impacts of development and land use change can be offset at landscape and site scales.



The Act establishes the Biodiversity Offsets Scheme, which sets out the framework for addressing impacts on biodiversity from development and land clearing. This is largely achieved by the Biodiversity Assessment Method (BAM), which is the manual that outlines how a person accredited under the Biodiversity Offsets Scheme assesses impacts on biodiversity at development sites and stewardship sites. The purpose of the BAM is to identify a site's biodiversity values, determine the impacts of a proposal and to investigate measures to avoid or minimise the impact and quantify and describe the offset requirements for unavoidable impacts. Avoid, minimise and offset are the fundamental principles underpinning the new legislation including the Biodiversity Offsets Scheme and the BAM.

In relation to the proposed rezoning of land at the subject site, whilst the ecological assessment was undertaken under the old, now repealed legislation, the same fundamental principles of avoid, minimise and offset are applicable. In this regard, the site was largely cleared previously to form derived grassland dominated by exotic graminoids and herbs. Proposed removal of remnant native vegetation has been avoided and minimised, however some native vegetation will need to be removed. This will be offset by setting aside significant areas of the site for revegetation and compensatory planting as detailed on the proposed rezoning plan prepared by King and Campbell. In addition, the planning proposal will be accompanied by a Voluntary Planning Agreement (VPA) offer to Council for the future Environmental Management Lands that will set out their establishment, maintenance and dedication requirements. The VPA will also require the preparation of a Vegetation Management Plan (VMP) to accompany the future Development Application (DA) for the industrial subdivision. The VMP will set out the detailed compensatory measures, including for example, weed control, compensatory planting numbers and locations, a hollow-bearing tree (HBT) removal strategy, a nest box strategy, a Koala fencing strategy etc. The VPA and VMP process will provide certainty with respect to environmental management and the compensatory measures will assist in mitigating any impacts on biodiversity. Generally, these measures are consistent with the new land management and biodiversity conservation legislation. Furthermore, an ecological report addressing the current legislation will accompany the DA for the future industrial subdivision of the property, thereby ensuring consistency with the legislation.

Yours faithfully,



Steve Britt

Bachelor of Science (Botany)
Master of Wildlife Management (Habitat)
Graduate Diploma in Design for Bushfire Prone Area

DAVID PENSINI
Building Certification and
Environmental Services

BUSHFIRE HAZARD ASSESSMENT

**PROPOSED REZONING
AND TORRENS TITLE
SUBDIVISION**

**LOT 1 DP 11117908 &
LOT 10 DP 615775
19 HOUSTON MITCHELL DRIVE,
BONNY HILLS**

CLIENT: A MIFSUD

JANUARY 2018

3 Blair Street, Port Macquarie NSW 2444 – PO Box 5581, Port Macquarie NSW 2444 – Phone 0434 166 150 – Email kdpensini@bigpond.com
ABN 55 183 050 741

This report has been prepared by David Pensini – Building Certification and Environmental Services with all reasonable skill, care and diligence for A Mifsud.

The information contained in this report has been gathered from discussions with representatives of A Mifsud, a review of the plans provided on behalf of A Mifsud and experience.

No inspection or assessment has been undertaken on other aspects of the proposed development outside the scope of this report.

This report does not imply, nor should it be implied, that the proposed development will comply fully with relevant legislation.

The report shall not be construed as relieving any other party of their responsibilities or obligations.

David Pensini – Building Certification and Environmental Services disclaims any responsibility A Mifsud and others in respect of any matters outside the scope of this report.

The report is confidential, and the writer accepts no responsibility of whatsoever nature, to third parties who use this report, or part thereof is made known. Any such party relies on this report at their own risk.

For and on behalf of David Pensini – Building Certification and Environmental Services.

Prepared by: David Pensini

Signed:



Dated: 27th January 2018

BUSHFIRE HAZARD ASSESSMENT (REZONING)
19 HOUSTON MITCHELL DRIVE, BONNY HILLS

JANUARY 2018



Version	Date	Information relating to report			
		Reason for issue			
1.0	20 th January 2018		Draft		
2.0	27 th January 2018		Issued to Client		
3.0	17 th February 2018		Report updated to reflect requirements for industrial development		
			Prepared by	Verified by	Approved by
		Name	David Pensini		David Pensini
		Signature			

Table of Contents

1.0 INTRODUCTION	5
1.1 Objectives	5
1.2 Legislative Framework	5
1.2.1 Strategic Planning Considerations	6
1.2.2 Objectives for Residential Subdivision Developments	7
1.3 Location Description	7
1.4 Site Description and History	9
1.5 Development Proposal	14
2.0 BUSHFIRE HAZARD ASSESSMENT	15
2.1 Procedure	15
2.2 Hazard Vegetation	15
2.3 Slope Assessment	16
2.4 Vegetation Assessment	17
2.4.1 Vegetation within Subject Site	18
2.4.2 Vegetation on Adjoining and Adjacent Land to Subject Site	19
2.5 Fire Danger Index	23
3.0 BUSHFIRE THREAT REDUCTION MEASURES	23
3.1 NSW Rural Fire Services, <i>Planning for Bushfire Protection</i> , 2006	23
3.1.1 Defendable Space/Asset Protection Zone	23
3.1.2 Defendable Space/Asset Protection Zone Management	25
3.1.3 Operational Access and Egress	25
3.1.4 Services - Water, Gas and Electricity	28
3.1.5 Landscaping	30
3.2 Construction of Buildings in Bushfire Prone Areas	30
3.2.1 General	30
4.0 SUMMARY OF FINDINGS	31
5.0 CONCLUSION	31
6.0 REFERENCES	32
APPENDIX 1 - Subject Site	
APPENDIX 2 - Proposed Development	
APPENDIX 3 - Approved Development Concept (Northern Aspect)	
APPENDIX 4 - Worst Case Defendable Space/APZ Compliance Concept	

1.0 INTRODUCTION

The land which comprises the subject site is known as Lot 1 DP 11117908 and Lot 10 DP 615775, 19 Houston Mitchell Drive, Bonny Hills.

It is proposed to rezone the subject site so as to support the Torrens Title industrial subdivision of the subject site. The rezoning of the land is required in order to provide for twenty-seven (27) separate Torrens Title lots together with residual lots which would be rezoned to an Environmental Management (E3) land use zone.

This report is based on site assessments carried out on 25th January 2018.

The purpose of this report is to demonstrate that the bushfire risk is manageable for the proposed rezoning and associated Torrens Title industrial subdivision of the subject site and to determine the bushfire protection management measures which are applicable to the development of the subject site.

The development is not an integrated development and has no requirement for a Bush Fire Safety Authority under Section 100B of the *Rural Fires Act 1997*.

NOTE

The report has been prepared with all reasonable skill, care and diligence.

The information contained in this report has been gathered from field survey, experience and has been completed in consideration of the following legislation.

1. Rural Fires Act 1997.
2. Environmental Planning and Assessment Act 1979.
3. Building Code of Australia.
4. Council Local Environment Plans and Development Control Plans where applicable.
5. NSW Rural Fire Services, Planning for Bushfire Protection, 2006.
6. AS 3959 - 2009 Construction of Buildings in Bushfire Prone Areas.

The report recognizes the fact that no property and lives can be guaranteed to survive a bushfire attack. The report examines ways the risk of bushfire attack can be reduced where the site falls within the scope of the legislation.

The report is confidential, and the writer accepts no responsibility of whatsoever nature, to third parties who use this report or part thereof is made known. Any such party relies on this report at their own risk.

This report has been based upon the vegetation characteristics observed at the time of site inspection. No responsibility is taken where the vegetation characteristics of the subject site or surrounding areas is changed or modified beyond that which is presented within this report.

1.1 Objectives

The objectives of this report are to:

- Ensure that the proposed rezoning of the land has measures sufficient to minimize the impact of bushfires; and
- Ensure that the proposed Torrens Title industrial subdivision of the land has measures sufficient to minimize the impact of bushfires; and
- Reduce the risk to property and the community from bushfire.

1.2 Legislative Framework

On 1st August 2002, the Environmental Planning and Assessment Act 1979 and the Rural Fires Act 1997 were both amended to enhance bush fire protection through the development assessment process.

In broad terms, the planning considerations provide two main steps. These involve:

(a) Strategic Planning through;

- the mapping of bush fire prone;
- determining suitable bush fire requirements during the preparation of a Local Environmental Plan and/or Development Control Plan; and
- the identification of the extent to which land is bushfire prone.

(b) Development assessment through;

- obtaining a bush fire safety authority for residential or rural-residential subdivision and special fire protection purpose developments in bushfire prone areas from the Rural Fire Service (RFS);
- seeking advice from the RFS in relation to infill and other developments in bushfire prone areas that cannot comply with the requirements of NSW Rural Fire Service, **Planning for Bushfire Protection**, 2006; and
- the application of additional requirements of the Building Code of Australia (BCA) in relation to construction standards for Class 1, 2, 3, 4 and some Class 9 buildings in bushfire prone areas.

It is noted that this report focuses upon the strategic planning processes associated with the proposed rezoning of the subject site in the context of the proposed industrial subdivision concept for the subject site.

1.2.1 Strategic Planning Considerations

Local Environmental Plans, (LEP's), and Development Control Plans, (DCP's), are the best way of strategically achieving bush fire protection objectives. Inclusion of bush fire planning provisions in an LEP:

- gives weight to bush fire management planning principles, ensuring they are considered at subdivision and construction stages;
- can allow for sufficient space to be incorporated into land use zones for setbacks and adequate access for firefighting and evacuation; and
- controls inappropriate land uses in Bushfire Prone Areas.

LEP amendments that affect Bushfire Prone Areas are required to address the planning principles of NSW Rural Fire Service, **Planning for Bushfire Protection**, 2006. Where appropriate the proposed land uses must be considered with respect to bush fire protection, (including appropriate setbacks).

If a proposed amendment to land use zoning or land use affects a designated Bushfire Prone Area, then the Section 117(2) Direction No 19 must be applied, (Section 117 of the Environmental Planning and Assessment Act, 1979) provides for the Minister for Planning to direct a council, in relation to the preparation of a draft LEP, to apply the planning principles specified in that direction. The Section 117 Direction No 19 requires councils to:

- *consult with the Commissioner of the Rural Fire Service (RFS) under section 62 of the Environmental Planning and Assessment Act, 1979, and to take into account any comments by the Commissioner; and*
- *have regard to the relevant planning principles of NSW Rural Fire Service, **Planning for Bushfire Protection**, 2006.*

If a council proceeds with a draft LEP that does not comply with the provisions in the Section 117 Direction, the council must obtain written advice from the Commissioner of the Rural Fire Service to the effect that the RFS does not object to that non-compliance.

The requirement to review LEP's in accordance with the Standard LEP is an opportunity to consider appropriate uses on Bush Fire Prone Land as well as exempt and complying development provisions.

1.2.2 Objectives for Industrial Subdivision Developments

It is noted that all classes of development, (including industrial subdivision), within bushfire prone areas are required to meet the general aims and objectives of NSW Rural Fire Services, **Planning for Bushfire Protection**, 2006 rather than meeting the specific bushfire threat management objectives which are relevant to residential subdivision, Special Fire Protection developments and infill developments. In this regard NSW Rural Fire Services, **Planning for Bushfire Protection**, 2006 states;

*'for other classes of building, (such as factories, shops and warehouses), bushfire protection measures will only apply at the Development Application stage. Consent will be developed on a case by case basis without the need to refer the development application to the RFS. However, if the council is concerned that the development does not meet the aim and objectives of NSW Rural Fire Services, **Planning for Bushfire Protection**, 2006, then the matter may be referred to the RFS for advice. The provisions under the Building Code of Australia for fire safety will be accepted for bushfire purposes where the aims and objectives of NSW Rural Fire Services, **Planning for Bushfire Protection**, 2006 can be met'.*

The general aims and objectives of NSW Rural Fire Services, **Planning for Bushfire Protection**, 2006 which are therefore relevant to industrial subdivision development are as follows;

- (i) afford occupants of any building adequate protection from exposure to a bush fire;*
- (ii) provide for a defendable space to be located around buildings;*
- (iii) provide appropriate separation between a hazard and buildings which, in combination with other measures, prevent direct flame contact and material ignition;*
- (iv) ensure that safe operational access and egress for emergency service personnel and residents is available;*
- (v) provide for ongoing management and maintenance of bush fire protection measures, including fuel loads in the asset protection zone (APZ); and*
- (vi) ensure that utility services are adequate to meet the needs of firefighters (and others assisting in bush firefighting).*

The proposed industrial subdivision of the subject site and any future industrial development of the areas of land which are the subject of this report must meet the above objectives together with the relevant acceptable solutions/standards which are applicable to the industrial subdivision development.

As the proposed development does not involve the residential subdivision of the subject site nor does it involve Special Protection Purpose development, the development of the subject site for the purposes of an industrial subdivision is not considered to be an integrated development and does not have a requirement for a Bush Fire Safety Authority under Section 100B of the *Rural Fires Act 1997*.

1.3 Location Description

The subject site is known as Lot 1 DP 11117908 and Lot 10 DP 615775, 19 Houston Mitchell Drive, Bonny Hills and is situated within the Port Macquarie-Hastings local government area.

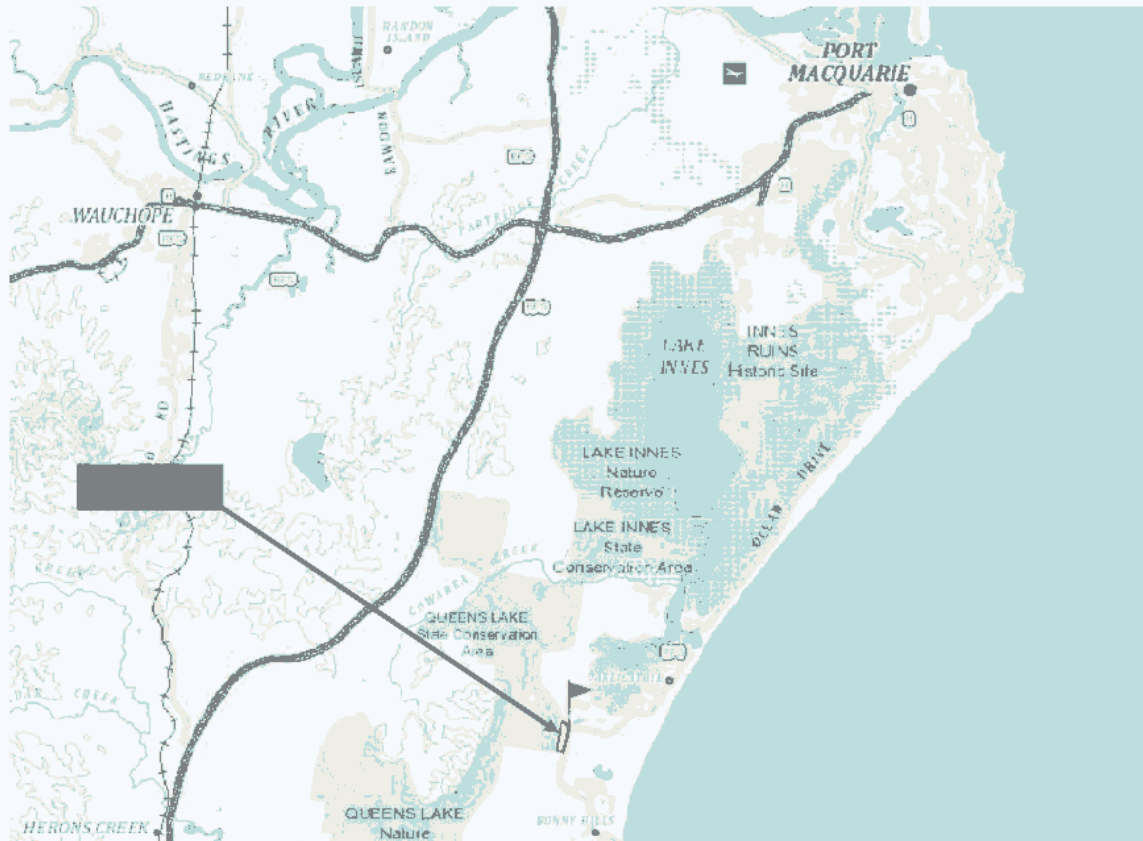
The subject site is located approximately 17km to the southwest of Port Macquarie Central Business District (CBD) and approximately 700m to the southwest of the coastal village of Lake Cathie and approximately 700m to the northwest of the coastal village of Bonny Hills.

BUSHFIRE HAZARD ASSESSMENT (REZONING)
19 HOUSTON MITCHELL DRIVE, BONNY HILLS

JANUARY 2018

The general location of the area that is the subject of this report can be seen in **Figure 1** below.

Figure 1 - Site Location



Forming part of the Area 14 Urban Growth Precinct, (which is located between the existing urbanized areas of Lake Cathie and Bonny Hills), the land within this area has recently and will continue to experience significant urban expansion with residential development expanding into residentially zoned but undeveloped land with a rural/rural residential land use history and character.

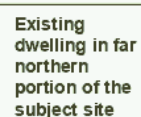
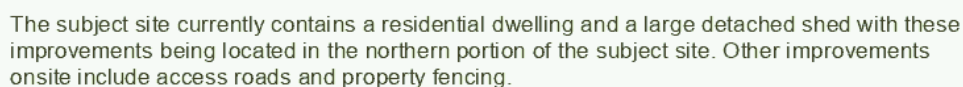
Therefore, the character of the locality is that of an urban fringe area with residential development expanding into undeveloped residentially zoned parcels of land. The subject site is located to the southwest of the southernmost extent of the urban footprint of Lake Cathie.

Rural/rural residential development is present to the south and southeast of the subject site with the Lake Cathie Public School on adjacent land to the east. The recent construction of the school in this aspect reinforces the transition in land use which is occurring in the locality. Extensive areas of bushland are present to the west of the subject site, (Queens Lake State Conservation Area). Larger residential sized allotments of land are present at distance to the north of the subject site although a large area of residentially zoned land separates the subject site from the developed larger residential lots. The residentially zoned land to the north of the subject site has been approved for residential subdivision with the first stages of the subdivision present to the northeast of the subject site.

At distance to the northeast of the subject site is the 'Ocean Club Resort' Manufactured Housing Estate (MHE). This complex encompasses detached residential dwellings within a managed community environment, refer to **Figure 2** below.

1.4 Site Description and History

Figure 2 – Subject Site



BUSHFIRE HAZARD ASSESSMENT (REZONING)
19 HOUSTON MITCHELL DRIVE, BONNY HILLS

JANUARY 2018



Existing shed
in far northern
portion of the
subject site

The topography of the subject site and the immediate area is influenced by a northwest to southeast ridgeline the crest of which is roughly defined by the east west alignment of the Houston Mitchell Drive road reserve. Being located on the southern foot slopes of the ridgeline the subject site and surrounding land contains gentle north to south downslopes. The presence of a small intermittently easterly flowing creek in the southern central portion of the subject site defines a transition in slope conditions to upslopes.

Access to the subject site is available via Houston Mitchell Drive which adjoins the subject site along its northern property boundary. Houston Mitchell Drive is the main connecting road between the Pacific Highway in the west and Ocean Drive in the east. It is noted that whilst the subject site has frontage to Ocean Drive along its eastern property boundary although no vehicle access is available to the subject site from the Ocean Drive road reserve.

Grasslands with scattered trees occupy the majority of the subject site whilst a remnant area of highly disturbed Dry Sclerophyll Forest is present in the far central northern portion of the site. Grasslands with scattered and small clusters of trees are present to the south although some isolated remnants of Forest vegetation are present to the southwest. A narrow area of Forested Wetland vegetation amongst grasslands is present to the east of the subject site with extensive areas of Wet Sclerophyll Forest and Forested Wetland present to the west of the subject site. A remnant area of highly disturbed Dry Sclerophyll Forest is present to the north of the subject site, (to the north of the Houston Mitchell Drive road reserve), which is surrounded by Grasslands.

The vegetation characteristics of the subject site and adjoining and adjacent land are shown in **Figure 3** below;

BUSHFIRE HAZARD ASSESSMENT (REZONING)
19 HOUSTON MITCHELL DRIVE, BONNY HILLS

JANUARY 2018

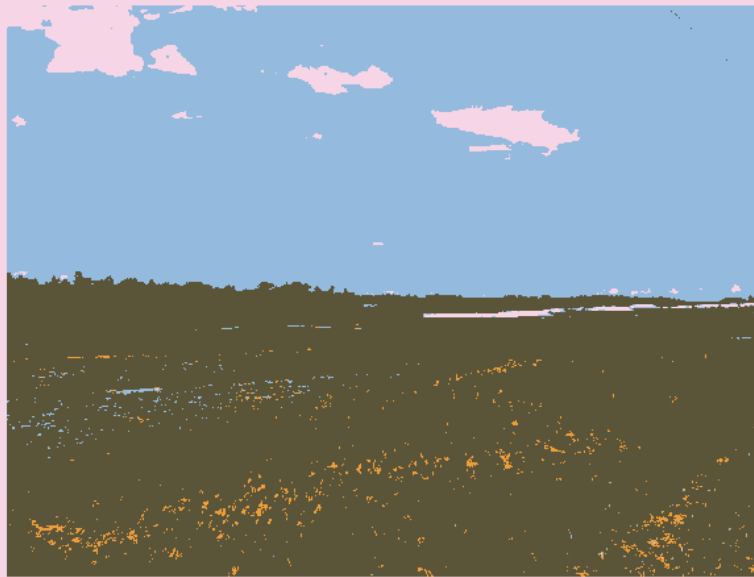
Figure 3 – Vegetation Characteristics



Being located within the Area 14 Urban Growth Area, (which is located between the urbanized areas of the Lake Cathie and Bonny Hill villages), the land within this area has recently and will continue to experience significant urban expansion with residential development expanding into residentially zoned but undeveloped land with a rural/rural residential land use history up until more recent times. It is noted that the residential subdivision, (151 residential lots), of the land to the north/northeast of the subject site has recently been approved by Port Macquarie Hastings Council with Stage 1 of the approved development having been completed.

BUSHFIRE HAZARD ASSESSMENT (REZONING)
19 HOUSTON MITCHELL DRIVE, BONNY HILLS

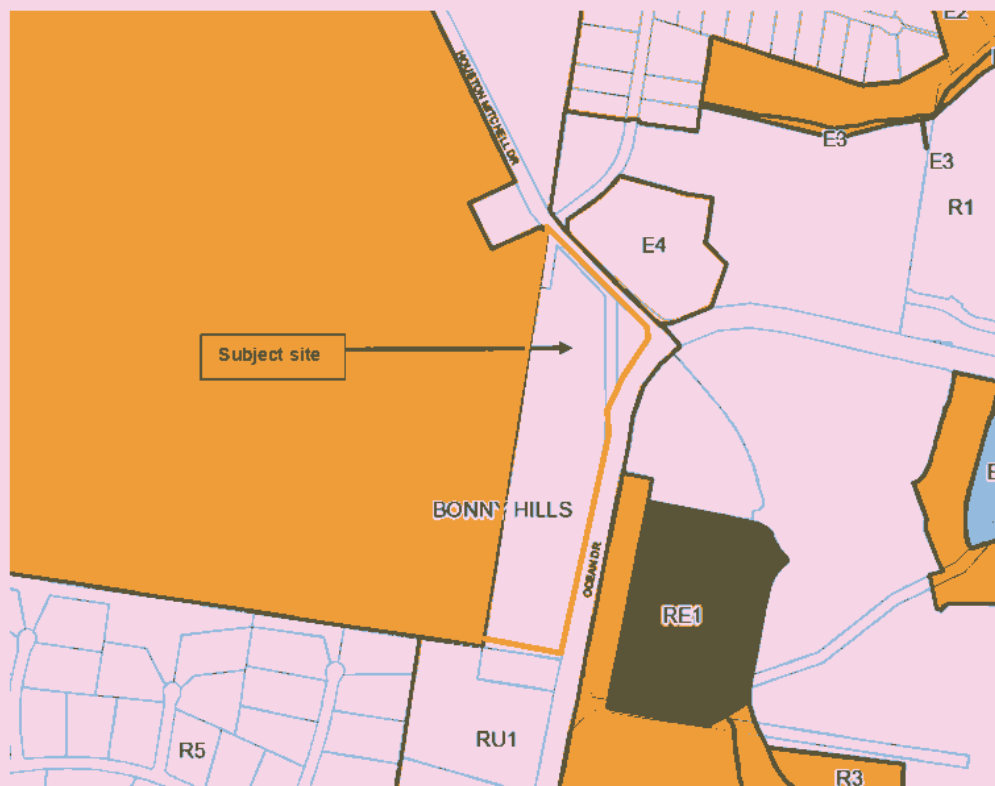
JANUARY 2018



Recently completed stage of approved residential subdivision to the north of the subject site

The area of land within the subject site has a current land use zoning of Rural (RU1) with a similar land use zone applying to the adjoining land to the south. It is noted that land with an Environmental Living land use zoning (E4) is present to the north of the subject site together with land zoned for Residential (R1) development. Land with an Environmental Conservation Zoning, (E3), is present to the west whilst there is a mixture of land use in the eastern aspect which includes Residential (R1), Environmental Management (E2) and Public Recreation (RE1), refer to **Figure 4** below.

Figure 4 – Landuse Zoning



DAVID PENSINI - BUILDING CERTIFICATION AND ENVIRONMENTAL SERVICES

12


BUSHFIRE HAZARD ASSESSMENT (REZONING)
19 HOUSTON MITCHELL DRIVE, BONNY HILLS

JANUARY 2018

Fire has not recently occurred on the subject site or on adjoining and adjacent land.

The environmental and heritage features of the area of the subject site which forms the basis of this report are summarized as follows;

Table 1 – Environmental and Heritage Features

ENVIRONMENTAL/HERITAGE FEATURE	COMMENT
Riparian Corridors	The subject site does not contain any identified riparian corridors.
SEPP 14 – Coastal Wetland	The subject site is not identified as being subject to SEPP 14 – Coastal Wetlands in the area of the proposed development.
SEPP 26 – Littoral Rainforest	The subject site is not identified as being subject to SEPP 26 – Littoral Rainforest.
SEPP 44 – Koala Habitat	The application of SEPP 44 to the subject site requires assessment. For the purposes of this report it has been assumed that the provisions of SEPP 44 are not applicable in relation to the proposed development given the highly disturbed and modified floristic characteristics which are present.
Areas of geological interest	<p>The central and southern portions of the subject site is identified as potentially containing Class 5 Acid Sulphate Soils in accordance with Port Macquarie - Hastings Local Environmental Plan, 2011.</p>  <p>Given the nature of the proposed development the presence of Acid Sulphate Soils is not expected to be of any significance to the proposed development.</p> <p>Based upon previous land use it is expected that no land contamination issues will be relevant to the subject site.</p>

DAVID PENSINI - BUILDING CERTIFICATION AND ENVIRONMENTAL SERVICES

13

BUSHFIRE HAZARD ASSESSMENT (REZONING)
19 HOUSTON MITCHELL DRIVE, BONNY HILLS

JANUARY 2018

Environmental Protection Zones	The subject site is currently zoned Rural (RU1), refer to Figure 3 above.
Land slip	Given the topography of the subject site and surrounding areas land slip is not considered to be an issue for the subject site.
Flood prone land	The subject site is not identified as being flood prone land and as such the land is not affected by the probable maximum flood level. As such the flood planning provisions of Port Macquarie-Hastings Councils LEP, 2011 are not applicable to the subject site.
National Park Estate or other Reserves	The subject land does not form part of the National Park Estate or other Reserves.
Threatened species, populations, endangered ecological communities and critical habitat	Given the level of historic disturbance of the subject site no threatened flora or fauna species are expected to be present on the subject site. The presence of threatened species, populations, endangered ecological communities and critical habitat on the subject site requires specific assessment.
Ecologically Endangered Communities (EEC's)	Given the level of historic disturbance of the subject site it is unlikely to contain or support EEC's. The presence of EEC's on the subject site requires specific assessment.
OEH Key Habitats and Corridors	The subject site is unlikely to form part of OEH key habitats and corridors.
Aboriginal Heritage	Items of aboriginal heritage are unlikely to be present given the active vegetation modification and management which has occurred on the subject site and the level of site disturbance which is likely to have occurred over the years.

1.5 Development Proposal

It is proposed to rezone the subject site as part of the ongoing urban development of the general area.

The proposed rezoning reflects the Area 14 Employment Lands Structure Plan which identifies the subject site as being potentially suitable for industrial subdivision. In this regard, the proposed rezoning is required in order to support twenty-seven (27) Torrens Title industrial lots, refer to **Appendix 2**.

The proposed rezoning also proposes two (2) residual areas which will be zoned for Environmental Management (E3) purposes.

The areas to be rezoned are;

- Light Industrial (IN2) Zone – 5.81 hectares;
- Environmental Management (E3) Zone – 3.73 hectares

The proposed industrial lots range in size from 1043m² to 4108m².

Access to proposed industrial lots will be via new public road infrastructure which will connect with Houston Mitchell Drive which is an existing bitumen sealed two way all weather public road which services as a main connecting road within the area.

All new roads within the proposed development will be two-way and will be constructed to normal public road standards.

The design of the proposed subdivision layout provides for a perimeter road approach to areas of bushfire hazard vegetation. The utilization of a perimeter road approach provides for the utilization of the road reserve as part of meeting the minimum APZ requirements for the majority of lots. In this regard it is noted that the main perimeter road reserve is typically 20m in width which provides for compliance with the worst case APZ requirement for the proposed development of 20m.

1.6 Fauna and Flora Issues

A fauna and flora evaluation has not been undertaken in conjunction with this bushfire hazard assessment and as such issues pertaining to fauna and flora are outside the scope of this report.

2.0 BUSHFIRE HAZARD ASSESSMENT

2.1 Procedure

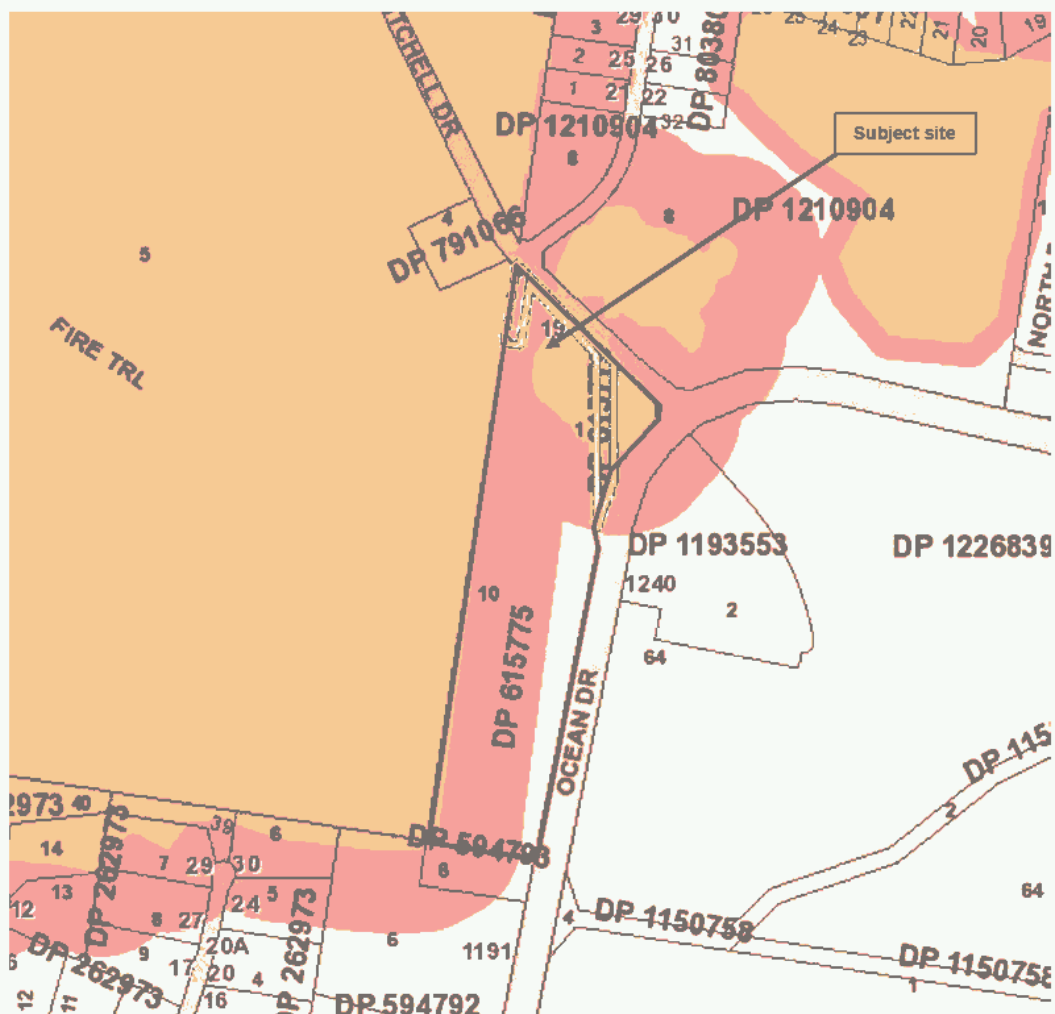
Several factors need to be considered in determining the bushfire hazard for the proposed rezoning and lots being slope, vegetation type, distance from vegetation and access/egress. Each of these factors has been reviewed in determining a bushfire hazard rating for the subject site and proposed development.

2.2 Hazard Vegetation

Port Macquarie-Hastings Councils Bushfire Prone Land Risk Mapping provides that areas of Category 1 bushfire hazard vegetation are located on adjoining and adjacent land to the north and west of the subject site with a small area of Category 1 bushfire hazard vegetation located in the far northern portion of the subject site. The majority of the subject site is affected by the 100m buffer zone which has been applied to the identified areas of Category 1 hazard vegetation; refer to **Figure 5**.

JANUARY 2018

Figure 5 – Extract from Port Macquarie – Hastings Bushfire Risk Mapping



2.3 Slope Assessment

The topography of the subject site and the immediate area is influenced by a northwest to southeast ridgeline the crest of which is roughly defined by the east west alignment of the Houston Mitchell Drive road reserve. Being located on the southern foot slopes of the ridgeline the subject site and surrounding land contains gentle north to south downslopes. The presence of a small intermittently easterly flowing creek in the southern central portion of the subject site defines a transition in slope conditions to upslopes.

DAVID PENSINI - BUILDING CERTIFICATION AND ENVIRONMENTAL SERVICES

16

JANUARY 2018

Figure 6 – Topographic Conditions

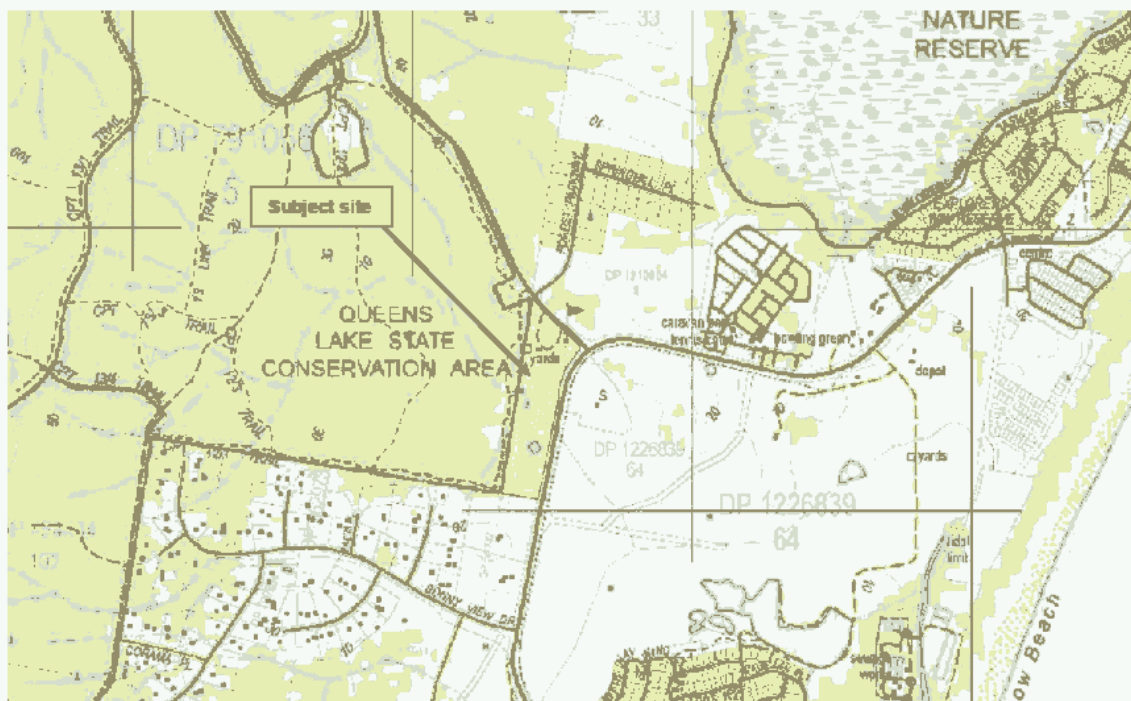


Table 2 - Slope Assessment Results

DIRECTION OF HAZARD	SLOPE degrees)	UPSLOPE/DOWN SLOPE
North	2° - 3°	Down slope
South	0° - 1°	Down slope
East	0° - 1°	Down slope
West	4° - 5°	Down slope

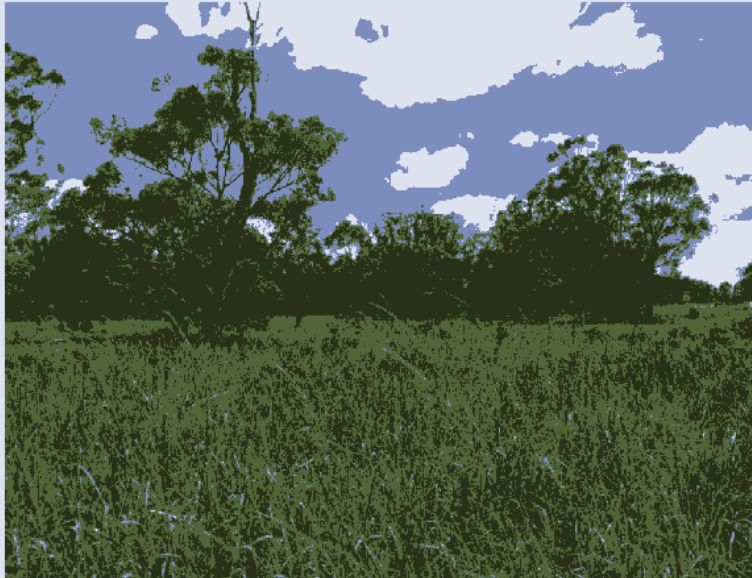
The above slopes were considered when assessing the required defensible spaces and indicative Bushfire Attack Levels, (BAL's), for any future development/s.

The vegetation on and surrounding the subject site was assessed over a distance of 140m from the proposed development.

The following information is provided in relation to the floristic characteristics of the subject site and adjoining and adjacent land. In adopting a conservative approach to bushfire hazard assessment worst case vegetation characteristics have been identified.

2.4.1 Vegetation within Subject Site

The subject site currently contains a mix of grasslands and areas of remnant Forest. A small area remnant Dry Sclerophyll Forest occupies the far northern central portion of the subject site whilst grasslands are present over the remaining areas of the site.



Grasslands with scattered trees over the majority of the subject site



Small remnant of Dry Sclerophyll Forest in far northern central portion of subject site

It is noted that the development concept for the subject site involves the retention and possible embellishment of vegetation within the proposed residual undeveloped areas of the site which are located in the far northern and southern areas of the subject sites. On the basis that the revegetation of the residual areas will involve the establishment of trees in an unmanaged understorey the following assessment of hazard vegetation has been determined as being applicable to this report;

- Northern portion of subject site – it is noted that the size of the proposed residual revegetation area is in the order of 7000m² which is less than the 1-hectare size criteria which is used to determine the relevance of a remnant vegetation classification. Therefore, based upon the revegetation area being less than 1 hectare

and the disconnection which will be available between other areas of hazard vegetation to the north and west a specification similar to Rainforest has been adopted for the purposes of this report.

- Southern portion of the subject site – given the size of this residual undeveloped area and its connectivity with hazard vegetation to the west a specification similar to Wet Sclerophyll Forest has been adopted for the purposes of this report.

As a result of proposed vegetation removal and modification in order to provide for the construction of the proposed industrial lots no areas of hazard vegetation will remain on the proposed industrial lots or with in supporting infrastructure such as roads.

2.4.2 Vegetation on Adjoining and Adjacent Land to Subject Site

The following vegetation characteristics were identified as being relevant to the proposed industrial subdivision having regard to the vegetation characteristics of adjoining and adjacent land.

To the north of the subject site is an area of remnant Dry Sclerophyll Forest which has been retained within a recently approved residential subdivision. It is noted that this area of vegetation has been approved for substantial modification in order to accommodate the building envelopes which are required within the residential lots which will occupy the land to the north of the Houston Mitchell Drive road reserve, refer to **Appendix 3**. Given the relatively small size of this area of vegetation, the absence of shrub and understorey vegetation and the level of fragmentation which will be created through the integration of building envelopes into this area of vegetation, a specification similar to Rainforest has been adopted for the purposes of this report as it reflects its remnant context and characteristics.

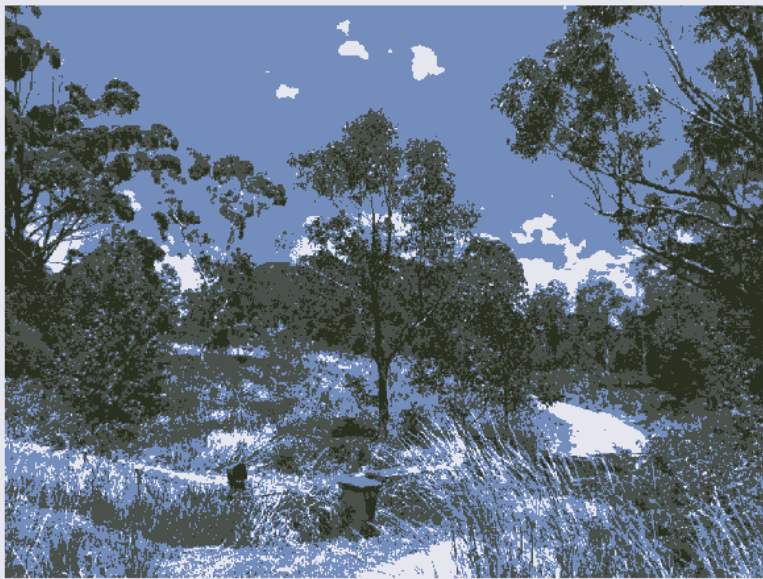


Remnant of
Dry Sclerophyll
Forest on
adjacent land
to the north of
the subject site

To the south of the subject site are extensive areas of Grasslands with scattered and clusters of trees within the rural residential lots which are present in this aspect.

BUSHFIRE HAZARD ASSESSMENT (REZONING)
19 HOUSTON MITCHELL DRIVE, BONNY HILLS

JANUARY 2018



Grasslands with scattered trees on adjoining and adjacent lots to the south of the subject site

The eastern aspect comprises managed vegetation within the developed footprint of the recently constructed Lake Cathie Public School, grasslands to the northeast and areas of remnant Forested Wetland to the southeast. In adopting a conservative approach to bushfire hazard assessment, a Forested Wetland classification has been adopted for this aspect.



Managed land within the grounds of Lake Cathie Public School

BUSHFIRE HAZARD ASSESSMENT (REZONING)
19 HOUSTON MITCHELL DRIVE, BONNY HILLS

JANUARY 2018



Grasslands to the northeast of the subject site



Forested Wetland to the east and southeast of the subject site

Areas of Wet Sclerophyll Forest and Forested Wetland are present to the west of the subject site. A Wet Sclerophyll Forest classification has therefore been adopted for the western aspect.

BUSHFIRE HAZARD ASSESSMENT (REZONING)
19 HOUSTON MITCHELL DRIVE, BONNY HILLS

JANUARY 2018



An indication of the relationship of the vegetation of bushfire significance to the proposed development is presented in **Figure 7** below.

Figure 7 - Vegetation Relationships to the Subject Land



DAVID PENSINI - BUILDING CERTIFICATION AND ENVIRONMENTAL SERVICES

22

BUSHFIRE HAZARD ASSESSMENT (REZONING)
19 HOUSTON MITCHELL DRIVE, BONNY HILLS

JANUARY 2018

The following table summarizes the various vegetation structures which are of bushfire significance to the proposed rezoning and proposed industrial allotments.

Table 3 – Summary of Vegetation Characteristics

ASPECT	VEGETATION DESCRIPTION	VEGETATION CLASSIFICATION – (Keith, 2004)
North	Isolated area of revegetation in the residual area of the subject site (area proposed to be rezoned Environmental Management (E3))	Similar in specification to Rainforest
South	Revegetation in the residual area of the subject site (area proposed to be rezoned Environmental Management (E3))	Similar in specification to Wet Sclerophyll Forest
East	Grasslands and remnant areas of Forested Wetland vegetation on land to the east of the Ocean Drive road reserve	Forested Wetland
West	Wet Sclerophyll Forest and Forested Wetland within the Queens Lake State Conservation Area.	Wet Sclerophyll Forest

2.5 Fire Danger Index

The fire weather for the site is assumed on the worst-case scenario. In accordance with NSW Rural Fire Services, **Planning for Bushfire Protection**, 2006 and Table 2.1 of AS 3959 - 2009, the fire weather for the site is based upon the 1:50 year fire weather scenario and has a Fire Danger Index (FDI) of 80.

3.0 BUSHFIRE THREAT REDUCTION MEASURES

3.1 NSW Rural Fire Services, **Planning for Bushfire Protection**, 2006

The following issues and constraints have been identified through considering the requirements of NSW Rural Fire Service, **Planning for Bushfire Protection**, 2006 as they apply to the rezoning of the subject site and future industrial development of the proposed industrial lots.

3.1.1 Defendable Space/Asset Protection Zone

To ensure that the aims and objectives of NSW Rural Fire Service, **Planning for Bushfire Protection**, 2006 are achieved for the proposed Torrens Title industrial subdivision, a defendable space between the asset and the hazard should be provided. NSW Rural Fire Service, **Planning for Bushfire Protection**, 2006 provides that a defendable space is;

'an area within the asset protection zone that provides an environment in which a person can undertake property protection after the passage of a bush fire with some level of safety'.

It is noted that NSW Rural Fire Service, **Planning for Bushfire Protection**, 2006 does not prescribe an acceptable solution for the provision of a defendable space/asset protection zone with the acceptable solutions provided for by Section 4.1.3 of NSW Rural Fire Service, **Planning for Bushfire Protection**, 2006 applying the residential and Special Fire Protection Purpose developments. Accordingly, the provision of a defendable space/asset protection zone for the proposed development must satisfy the general objectives of NSW Rural Fire Service, **Planning for Bushfire Protection**, 2006.

The following objectives are therefore relevant to the provision of a defendable space/asset protection zone to the proposed development;

- *afford occupants of any building adequate protection from exposure to a bush fire;*
- *provide for a defendable space to be located around buildings;*
- *provide appropriate separation between a hazard and buildings which, in combination with other measures, prevent direct flame contact and material ignition;*

DAVID PENSINI - BUILDING CERTIFICATION AND ENVIRONMENTAL SERVICES

23

- provide for ongoing management and maintenance of bush fire protection measures, including fuel loads in the asset protection zone (APZ);

It is noted that NSW Rural Fire Service, **Planning for Bushfire Protection**, 2006, provides for no methodology as to how a performance-based approach to meeting the above objectives is to be determined nor assessed. Therefore in adopting a conservative approach to bushfire threat management the asset protection zone acceptable solutions for residential development have been adopted for the purposes of this report as;

- NSW Rural Fire Service, **Planning for Bushfire Protection**, 2006 provides that industrial subdivision should take into consideration the potential for residential dwellings, (managers residences – BCA Class 4), to be incorporated into any future industrial developments on the proposed lots; and
- The APZ 'Acceptable Solution' requirements which would typically apply to residential subdivisions incorporate the concept of a defensible space and as such compliance with the APZ standard will ensure compliance with the concept for the provision of a defensible space albeit that compliance with the minimum APZ requirements may potentially exceed the site based requirements for a defensible space; and
- The adoption of the APZ 'Acceptable Solution' requirements which would typically apply to residential subdivisions represents a worst case scenario to the identification of an appropriate Defendable Space for the future development of the proposed industrial lots.

Section 4.1.3 of NSW Rural Fire Service, **Planning for Bushfire Protection**, 2006 provides the acceptable solutions that have been applied to the proposed development in relation to the provision of APZ's to each of the proposed industrial lots in order to demonstrate compliance with the defensible space requirements. The following table indicates the minimum APZ's between the various hazards and the proposed industrial lots which have been adopted for the purposes of demonstrating compliance with the performance objectives of NSW Rural Fire Service, **Planning for Bushfire Protection**, 2006.

Table 4 – Asset Protection Zone/Defendable Space Requirements (PFBP 2006)

DIRECTION OF HAZARD	VEGETATION TYPE	SLOPE	IPA	OPA	TOTAL REQUIRED APZ	MINIMUM APZ ACHIEVABLE (to development within Lots)	COMPLIANCE (with Minimum APZ Requirements)
North	Similar in specification to Rainforest	2° - 3° Down slope	10m	-	10m	Minimum 10m	✓
South	Similar in specification to Wet Sclerophyll Forest	0° - 1° Down slope	15m	5m	20m	Minimum 20m	✓
East	Forested Wetland	0° - 1° Down slope	20m	-	20m	>30m	✓
West	Wet Sclerophyll Forest	4° - 5° Down slope	15m	5m	20m	Minimum 20m	✓

Having regard to the above it is noted that the minimum 'acceptable solution' Asset Protection Zones **can** be provided for any future industrial development within the boundaries of the proposed industrial lots in compliance with the performance objectives of NSW Rural Fire Service, **Planning for Bushfire Protection**, 2006 and summarized as follows;

Table 6 - Asset Protection Zone Acceptable Solutions

PERFORMANCE CRITERIA	ACCEPTABLE SOLUTIONS
<p>The intent may be achieved where in relation to Asset Protection Zones:</p> <ul style="list-style-type: none"> • a defensible space is provided onsite. • an asset protection zone is provided and maintained for the life of the development. 	<p>An APZ is provided in accordance with the relevant tables/figures in Appendix 2 of NSW Rural Fire Services, <i>Planning for Bushfire Protection</i>, 2006</p>

A concept plan for the provision of Defendable Spaces/APZ's to the proposed industrial lots is included as **Appendix 3**.

It is however noted that lessor Defendable Spaces than that adopted in **Table 4** above could be justified for specific development proposals for each of the proposed industrial lots as the approach taken in this report in demonstrating compliance with NSW Rural Fire Service, *Planning for Bushfire Protection*, 2006 is highly conservative.

In this regard the objectives based approach to the determination of an appropriate Defendable Space for future industrial developments provides for flexibility in design and construction being used in combination to meet the relevant performance objectives of NSW Rural Fire Service, *Planning for Bushfire Protection*, 2006.

3.1.2 Defendable Space/Asset Protection Zone Management

Areas identified as forming part of the Defendable Space/APZ requirements for any future industrial subdivision development must be created and managed so as to be consistent with the standards which are applicable to Inner Protection Areas as follows;

(i) Inner Protection Area (IPA)

An IPA should provide a tree canopy cover of less than 15% and should be located greater than 2 metres from any part of the roofline of a building.

Garden beds of flammable shrubs are not to be located under trees and should be no closer than 10m from an exposed window or door.

Trees should have lower limbs removed up to a height of 2 metres above the ground.

3.1.3 Operational Access and Egress

Access to the proposed industrial subdivision will be via new public road infrastructure which will connect with Houston Mitchell Drive which is an existing bitumen sealed two way all weather public road which services as a major connecting road between the Pacific Highway to the west and the Bonny Hills/Lake Cathie residential areas to the northeast and southeast. Houston Mitchell Drive adjoins the subject site along its northern property boundary.

BUSHFIRE HAZARD ASSESSMENT (REZONING)
19 HOUSTON MITCHELL DRIVE, BONNY HILLS

JANUARY 2018



Houston Mitchell Drive to the north of the subject site



Ocean Drive to the east of the subject site

It is noted that whilst Ocean Drive adjoins the subject site to the east it is not proposed to gain access to the proposed subdivision from this existing public road infrastructure.

All new roads within the proposed subdivision will be two-way and will be constructed to normal public road standards.

The design of the proposed subdivision layout provides for a perimeter road approach to most areas of bushfire hazard vegetation with the road design providing for alternative means of movement to and from the subdivision via the loop road approach which is proposed for the subdivision. The utilization of a perimeter road approach provides for the utilization of the road reserve as part of meeting the minimum defendable space/APZ requirements for the majority of lots. In this regard it is noted that the main perimeter road reserve is typically 20m – 23m in width which provides for compliance with the worst case APZ requirement which has been applied to the proposed subdivision development of 20m.

In order to provide for compliant access and egress to the proposed industrial lots it will be necessary to provide for new public road infrastructure/systems which comply with Section

DAVID PENSINI - BUILDING CERTIFICATION AND ENVIRONMENTAL SERVICES




26

BUSHFIRE HAZARD ASSESSMENT (REZONING)
19 HOUSTON MITCHELL DRIVE, BONNY HILLS

JANUARY 2018

4.1.3 of NSW Rural Fire Services, *Planning for Bushfire Protection*, 2006 and summarized as follows;

Table 7 - Public Road Requirements (PiBP 2006)

Intent of measures: to provide safe operational access to structures and water supply for emergency services, while residents are seeking to evacuate from an area.		
Performance Criteria	Acceptable Solutions	Compliance Comment
The intent may be achieved where:		
<ul style="list-style-type: none"> • firefighters are provided with safe all-weather access to structures (thus allowing more efficient use of firefighting resources) 	<ul style="list-style-type: none"> • public roads are two-wheel drive, all weather roads. 	 Design of road infrastructure complies
<ul style="list-style-type: none"> • public road widths and design that allow safe access for firefighters while residents are evacuating an area. 	<ul style="list-style-type: none"> • urban perimeter roads are two-way, that is, at least two traffic lane widths (carriageway 8 metres minimum kerb to kerb), allowing traffic to pass in opposite directions. Non-perimeter roads comply with Table 4.1 – Road widths for Category 1 Tanker (Medium Rigid Vehicle). • the perimeter road is linked to the internal road system at an interval of no greater than 500 metres in urban areas. • traffic management devices are constructed to facilitate access by emergency services vehicles. • public roads have a cross fall not exceeding 3 degrees. • all roads are through roads. Dead end roads are not recommended, but if unavoidable, dead ends are not more than 200 metres in length, incorporate a minimum 12 metres outer radius turning circle, and are clearly sign posted as a dead end and direct traffic away from the hazard. • curves of roads (other than perimeter roads) are a minimum inner radius of six metres and minimal in number, to allow for rapid access and egress. • the minimum distance between inner and outer curves is six metres. • maximum grades for sealed roads do not exceed 15 degrees and an average grade of not more than 10 degrees or other gradient specified by road design standards, whichever is the lesser gradient. • there is a minimum vertical clearance to a height of four metres above the road at all times. 	 Design of all road infrastructure to comply
<ul style="list-style-type: none"> • the capacity of road surfaces and bridges is 	<ul style="list-style-type: none"> • the capacity of road surfaces and bridges is sufficient to carry fully loaded 	 Design of road

DAVID PENSINI - BUILDING CERTIFICATION AND ENVIRONMENTAL SERVICES

27

BUSHFIRE HAZARD ASSESSMENT (REZONING)
19 HOUSTON MITCHELL DRIVE, BONNY HILLS

JANUARY 2018

sufficient to carry fully loaded fire fighting vehicles.	firefighting vehicles (approximately 15 tonnes for areas with reticulated water, 28 tonnes or 9 tonnes per axle for all other areas). Bridges clearly indicate load rating.	infrastructure to comply
• roads that are clearly sign- posted (with easily distinguishable names) and buildings/properties that are clearly numbered.	• public roads greater than 6.5 metres wide to locate hydrants outside of parking reserves to ensure accessibility to reticulated water for fire suppression. • public roads between 6.5 metres and 8 metres wide are No Parking on one side with the services (hydrants) located on this side to ensure accessibility to reticulated water for fire suppression.	✓ Design of road infrastructure to comply
• there is clear access to reticulated water supply	• public roads up to 6.5 metres wide provide parking within parking bays and locate services outside of the parking bays to ensure accessibility to reticulated water for fire suppression. • one way only public access roads are no less than 3.5 metres wide and provide parking within parking bays and locate services outside of the parking bays to ensure accessibility to reticulated water for fire suppression.	✓ Design of road infrastructure to comply

Subject to compliance with the requirements of **Table 7** above in relation to the design and construction of new public roads, it is considered that future access and egress arrangements will be acceptable for the proposed development of the subject land having regard to the nature, construction and extent of the existing road infrastructure which is present and the new public road system which is required to be provided to serve the future industrial subdivision development of the subject site.

3.1.4 Services - Water, Gas and Electricity

As set out in Section 4.1.3 of NSW Rural Fire Services, **Planning for Bushfire Protection**, 2006, industrial developments in bushfire prone areas must maintain a water supply reserve dedicated to firefighting purposes.

Given that the proposed rezoning and associated Torrens Title subdivision provides for industrial allotments, all proposed lots will have access to the reticulated water supply, the extension of which will be required by Port Macquarie-Hastings Council to service the proposed industrial subdivision. It is however noted that in accordance with NSW Rural Fire Services, **Planning for Bushfire Protection**, 2006 the determination of a guaranteed water supply is to be made by the water supply authority where mains water supply is available.

Electricity supply is available and will be accessible to the proposed subdivision of the land.




Reticulated gas services are not available in the locality and are therefore not available to the subject site.

The incorporation into the industrial subdivision of the subject site of the relevant provisions of the following acceptable solutions as provided for by Section 4.1.3 of NSW Rural Fire Services, **Planning for Bushfire Protection**, 2006 will ensure compliance with the intent for the provision of services to the proposed development of the subject site.

BUSHFIRE HAZARD ASSESSMENT (REZONING)
19 HOUSTON MITCHELL DRIVE, BONNY HILLS

JANUARY 2018

Table 8 – Service Provision Requirements

Intent of measures: to provide adequate services of water for the protection of buildings during and after the passage of a bush fire, and to locate gas and electricity so as not to contribute to the risk of fire to a building		
Performance Criteria	Acceptable Solutions	Compliance Comment
The intent may be achieved where:		
Reticulated water supplies <ul style="list-style-type: none"> • water supplies are easily accessible and located at regular intervals 	<ul style="list-style-type: none"> • reticulated water supply to urban subdivisions uses a ring main system for areas with perimeter roads. • fire hydrant spacing, sizing and pressures comply with AS 2419.1 – 2005. Where this cannot be met, the RFS will require a test report of the water pressures anticipated by the relevant water supply authority. In such cases, the location, number and sizing of hydrants shall be determined using fire engineering principles. • hydrants are not located within any road carriageway • all above ground water and gas service pipes external to the building are metal, including and up to any taps. • the provisions of parking on public roads are met. 	 To comply
Electricity Services <ul style="list-style-type: none"> • location of electricity services limits the possibility of ignition of surrounding bush land or the fabric of buildings • regular inspection of lines is undertaken to ensure they are not fouled by branches. 	<ul style="list-style-type: none"> • where practicable, electrical transmission lines are underground. • where overhead electrical transmission lines are proposed: <ul style="list-style-type: none"> - lines are installed with short pole spacing (30 metres), unless crossing gullies, gorges or riparian areas; and - no part of a tree is closer to a power line than the distance set out in accordance with the specifications in 'Vegetation Safety Clearances' issued by Energy Australia (NS179, April 2002). 	 To comply
Gas services <ul style="list-style-type: none"> • location of gas services will not lead to ignition of surrounding bush land or the fabric of buildings 	<ul style="list-style-type: none"> • reticulated or bottled gas is installed and maintained in accordance with AS 1596 and the requirements of relevant authorities. Metal piping is to be used. • all fixed gas cylinders are kept clear of all flammable materials to a distance of 10 metres and shielded on the hazard side of the installation. • if gas cylinders need to be kept close to the building, the release valves are directed away from the building and at least 2 metres away from any combustible material, so that they do not act as a catalyst to combustion. Connections to and from gas cylinders are metal. • polymer sheathed flexible gas supply lines to gas meters adjacent to buildings are not used. 	 To comply (where applicable)

3.1.5 Landscaping

Landscaping is a major cause of fire spreading to buildings, and therefore any landscaping on the proposed new lots and throughout the industrial subdivision will need consideration when planning, to produce gardens that do not contribute to the spread of a bushfire.

When planning any future landscaping surrounding the future industrial buildings, consideration should be given to the following:

- The choice of vegetation – consideration should be given to the flammability of the plant and the relation of their location to their flammability and ongoing maintenance to remove flammable fuels.
- Trees as windbreaks/firebreaks – Trees in the landscaping can be used as windbreaks and also firebreaks by trapping embers and flying debris.
- Vegetation management – Maintain a garden that does not contribute to the spread of bushfire.
- Maintenance of property – Maintenance of the property is an important factor in the prevention of losses from bushfire.

Appendix 5 of NSW Rural Fire Service, **Planning for Bushfire Protection**, 2006, contains standards that are applicable to the provision and maintenance of landscaping. Any landscaping proposed to be undertaken in conjunction with the proposed development concept to comply with the principles contained in Appendix 5 of NSW Rural Fire Service, **Planning for Bushfire Protection**, 2006.

Compliance with Appendix 5 of NSW Rural Fire Services, NSW Rural Fire Service, **Planning for Bushfire Protection**, 2006, will satisfy the intent of the bush fire protection measures that are applicable to the provision of landscaping.

3.2 Construction of Buildings in Bushfire Prone Areas

3.2.1 General

The construction requirements of AS3959 – 2009, (Construction of Buildings in Bushfire Prone Areas), are unlikely to be relevant to future development as these provisions are not considered to be applicable by virtue of the buildings assumed intended uses, (not being a residential/accommodation or Special Fire Protection Purpose development), and the Building Code of Australia classification as Class 8 industrial buildings.

In this regard it is noted that the application of Part G5, (Construction Requirements in Bushfire Prone Areas), of the BCA in NSW only applies to;

- a Class 2 or 3 building;
- a Class 4 part of a building;
- a Class 9 building that is a Special Fire Protection Purpose; or
- a Class 10a building or deck associated with a building referred to in the above dot points.

Accordingly, the determination of Bushfire Attack Levels, (BAL's), in accordance with AS3959 – 2009 has not been undertaken as Part G5 of the BCA and hence AS3959 – 2009 are not considered to be applicable in this instance.

Any future industrial building constructed on the proposed industrial lots will be required to comply with the relevant fire safety requirements of the Building Code of Australia which will be accepted for bushfire purposes where the aim and objectives of NSW Rural Fire Services, **Planning for Bushfire Protection**, 2006.

Notwithstanding the above the following Bushfire Attack Levels (BAL's) would be applicable to any industrial building developments which incorporate BCA Class 4 residential dwellings;

BUSHFIRE HAZARD ASSESSMENT (REZONING)
19 HOUSTON MITCHELL DRIVE, BONNY HILLS

JANUARY 2018

Table 9 – BAL Provisions

VEGETATION (AS PER SPECHT)	SLOPE	DISTANCE TO HAZARD VEGETATION	AS 3959-2009 BUSHFIRE ATTACK LEVEL (BAL) METHOD 1
Southern, Eastern and Western Aspects			
Forest	<5° Down slope	<20m	Flame Zone
	<5° Down slope	20m – <27m	BAL 40
	<5° Down slope	27m – <37m	BAL 29
	<5° Down slope	37m – <50m	BAL 19
	<5° Down slope	50m – <100m	BAL 12.5
Northern Aspect			
Rainforest Specification	<5° Down slope	<8m	Flame Zone
	<5° Down slope	8m – <11m	BAL 40
	<5° Down slope	11m – <17	BAL 29
	<5° Down slope	17m – <24m	BAL 19
	<5° Down slope	24m – <100m	BAL 12.5

Having regard to the above the size of the proposed industrial lots is such that the any future industrial buildings which incorporate residential dwellings can be designed in such a way so as to provide for a worst-case BAL 29 outcome for the residential component of any future development.

4.0 SUMMARY OF FINDINGS

The following recommendations are provided in response to the proposed rezoning and associated Torrens Title industrial subdivision layout provided as **Appendix 2**.

- (i) Adopt Landscaping principals in accordance with Section 3.1.4 of this report.
- (ii) The determination of Defendable Spaces which will be relevant to the development of each industrial lot is to be the subject of individual lot based assessments which reflect individual development proposals for each lot.
- (iii) Water and other services are to be provided to proposed industrial subdivision in accordance with the requirements detailed in Section 3.1.3 of this report.
- (iv) The design and construction of all public roads within the proposed industrial subdivision layout are to comply with the acceptable solutions provided for in Section 4.1.3 of NSW Rural Fire Services, **Planning for Bushfire Protection**, 2006.

5.0 CONCLUSION

It is considered that the proposed rezoning and associated Torrens Title industrial subdivision of land known as Lot 1 DP 11117908 and Lot 10 DP 615775, 19 Houston Mitchell Drive, Bonny Hills is at risk of bushfire attack; however, it is in our opinion that with the implementation of the bushfire threat reduction measures and consideration of the recommendations in this report, the bushfire risk is manageable for the proposed rezoning and associated subdivision.

DAVID PENSINI - BUILDING CERTIFICATION AND ENVIRONMENTAL SERVICES

31

With the implementation of the recommendations it is considered that it will be possible for the proposed industrial subdivision layout to meet the applicable acceptable solutions as provided for in NSW Rural Fire Service, **Planning for Bushfire Protection**, 2006.

This report is however contingent upon the following assumptions and limitations.

Assumptions

- (i) For a satisfactory level of bushfire safety to be achieved regular inspection and testing of proposed measures, building elements and methods of construction, specifically nominated in this report, is essential and is assumed in the conclusion of this assessment.
- (ii) There are no re-vegetation plans in respect to hazard vegetation and therefore the assumed fuel loading will not alter.
- (iii) It is assumed that the building works will comply with the DTS provisions of the BCA including the relevant requirements of Australian Standard 3959 – 2009.
- (iv) Any future industrial subdivision developments are constructed and maintained in accordance with the risk reduction strategy in this report.
- (v) The vegetation characteristics of the subject site and surrounding land remains unchanged from that observed at the time of inspection or from that specified within this report.
- (vi) The information contained in this report is based upon the information provided for review, refer to **Appendix 2**.

No responsibility is accepted for the accuracy of the information contained within the above plans.

Limitations

- (i) The data, methodologies, calculations and conclusions documented within this report specifically relate to the building and must not be used for any other purpose.
- (ii) A reassessment will be required to verify consistency with this assessment if there is building alterations and/or additions, change in use, or changes to the risk reduction strategy contained in this report

6.0 REFERENCES

NSW Rural Fire Services, **Planning for Bushfire Protection**, 2006

AS 3959-2009, **Construction of Buildings in Bushfire Prone Areas**

Keith David 2004, Ocean **Shores to Desert Dunes, The Native Vegetation of New South Wales and the ACT**, Department of Environment and Conservation

NSW State Government, **Rural Fires Act**, 1997

Port Macquarie-Hastings Councils, **Bushfire Prone Land Mapping**

NSW Rural Fire Service, **Guideline for Bushfire Prone Land Mapping**, 2002

Australian Building Codes Board, **Building Code of Australia**, 2011

NSW Rural Fire Service – **Guideline for Bushfire Prone Land Mapping 2002**

Disclaimer

The findings referred to in this report are those which, in the opinion of the author, are required to meet the requirements of NSW Rural Fire Service, *Planning for Bushfire Protection*, 2006. It should be noted that the Local Authority having jurisdiction for the area in which the property is located may, within their statutory powers, require different, additional or alternative works/requirements to be carried out other than those referred to in this report.

This report has been prepared partially on information provided by the client. Information provided by the client in respect of details of construction.

The author denies any legal liability for action taken as a consequence of the following:

- The Local Authority requiring alternative or additional requirements to those proposed or recommended in this report.
- Incorrect information, or mis-information, provided by the client with regard the proposed development which is in good faith included in the strategies proposed in this report and later found to be false.

BUSHFIRE HAZARD ASSESSMENT (REZONING)
19 HOUSTON MITCHELL DRIVE, BONNY HILLS

JANUARY 2018

APPENDIX 1
Subject Site



JANUARY 2018

PRELIMINAR
08.08.2017

JANUARY 2018

STAGE 7

STAGE 3

STAGE 2

STAGE 5

STAGE 4

EXISTING STAGE 1

STAGE 6

STAGE 1

STAGE 2

STAGE 3

STAGE 4

STAGE 5

STAGE 6

STAGE 7

STAGE 8

STAGE 9

STAGE 10

STAGE 11

STAGE 12

STAGE 13

STAGE 14

STAGE 15

STAGE 16

STAGE 17

STAGE 18

STAGE 19

STAGE 20

STAGE 21

STAGE 22

STAGE 23

STAGE 24

STAGE 25

STAGE 26

STAGE 27

STAGE 28

STAGE 29

STAGE 30

STAGE 31

STAGE 32

STAGE 33

STAGE 34

STAGE 35

STAGE 36

STAGE 37

STAGE 38

STAGE 39

STAGE 40

STAGE 41

STAGE 42

STAGE 43

STAGE 44

STAGE 45

STAGE 46

STAGE 47

STAGE 48

STAGE 49

STAGE 50

STAGE 51

STAGE 52

STAGE 53

STAGE 54

STAGE 55

STAGE 56

STAGE 57

STAGE 58

STAGE 59

STAGE 60

STAGE 61

STAGE 62

STAGE 63

STAGE 64

STAGE 65

STAGE 66

STAGE 67

STAGE 68

STAGE 69

STAGE 70

STAGE 71

STAGE 72

STAGE 73

STAGE 74

STAGE 75

STAGE 76

STAGE 77

STAGE 78

STAGE 79

STAGE 80

STAGE 81

STAGE 82

STAGE 83

STAGE 84

STAGE 85

STAGE 86

STAGE 87

STAGE 88

STAGE 89

STAGE 90

STAGE 91

STAGE 92

STAGE 93

STAGE 94

STAGE 95

STAGE 96

STAGE 97

STAGE 98

STAGE 99

STAGE 100

STAGE 101

STAGE 102

STAGE 103

STAGE 104

STAGE 105

STAGE 106

STAGE 107

STAGE 108

STAGE 109

STAGE 110

STAGE 111

STAGE 112

STAGE 113

STAGE 114

STAGE 115

STAGE 116

STAGE 117

STAGE 118

STAGE 119

STAGE 120

STAGE 121

STAGE 122

STAGE 123

STAGE 124

STAGE 125

STAGE 126

STAGE 127

STAGE 128

STAGE 129

STAGE 130

STAGE 131

STAGE 132

STAGE 133

STAGE 134

STAGE 135

STAGE 136

STAGE 137

STAGE 138

STAGE 139

STAGE 140

STAGE 141

STAGE 142

STAGE 143

STAGE 144

STAGE 145

STAGE 146

STAGE 147

STAGE 148

STAGE 149

STAGE 150

STAGE 151

STAGE 152

STAGE 153

STAGE 154

STAGE 155

STAGE 156

STAGE 157

STAGE 158

STAGE 159

STAGE 160

STAGE 161

STAGE 162

STAGE 163

STAGE 164

STAGE 165

STAGE 166

STAGE 167

STAGE 168

STAGE 169

STAGE 170

STAGE 171

STAGE 172

STAGE 173

STAGE 174

STAGE 175

STAGE 176

STAGE 177

STAGE 178

STAGE 179

STAGE 180

STAGE 181

STAGE 182

STAGE 183

STAGE 184

STAGE 185

STAGE 186

STAGE 187

STAGE 188

STAGE 189

STAGE 190

STAGE 191

STAGE 192

STAGE 193

STAGE 194

STAGE 195

STAGE 196

STAGE 197

STAGE 198

STAGE 199

STAGE 200

STAGE 201

STAGE 202

STAGE 203

STAGE 204

STAGE 205

STAGE 206

STAGE 207

STAGE 208

STAGE 209

STAGE 210

STAGE 211

STAGE 212

STAGE 213

STAGE 214

STAGE 215

STAGE 216

STAGE 217

STAGE 218

STAGE 219

STAGE 220

STAGE 221

STAGE 222

STAGE 223

STAGE 224

STAGE 225

STAGE 226

STAGE 227

STAGE 228

STAGE 229

STAGE 230

STAGE 231

STAGE 232

STAGE 233

STAGE 234

STAGE 235

STAGE 236

STAGE 237

STAGE 238

STAGE 239

STAGE 240

STAGE 241

STAGE 242

STAGE 243

STAGE 244

STAGE 245

STAGE 246

STAGE 247

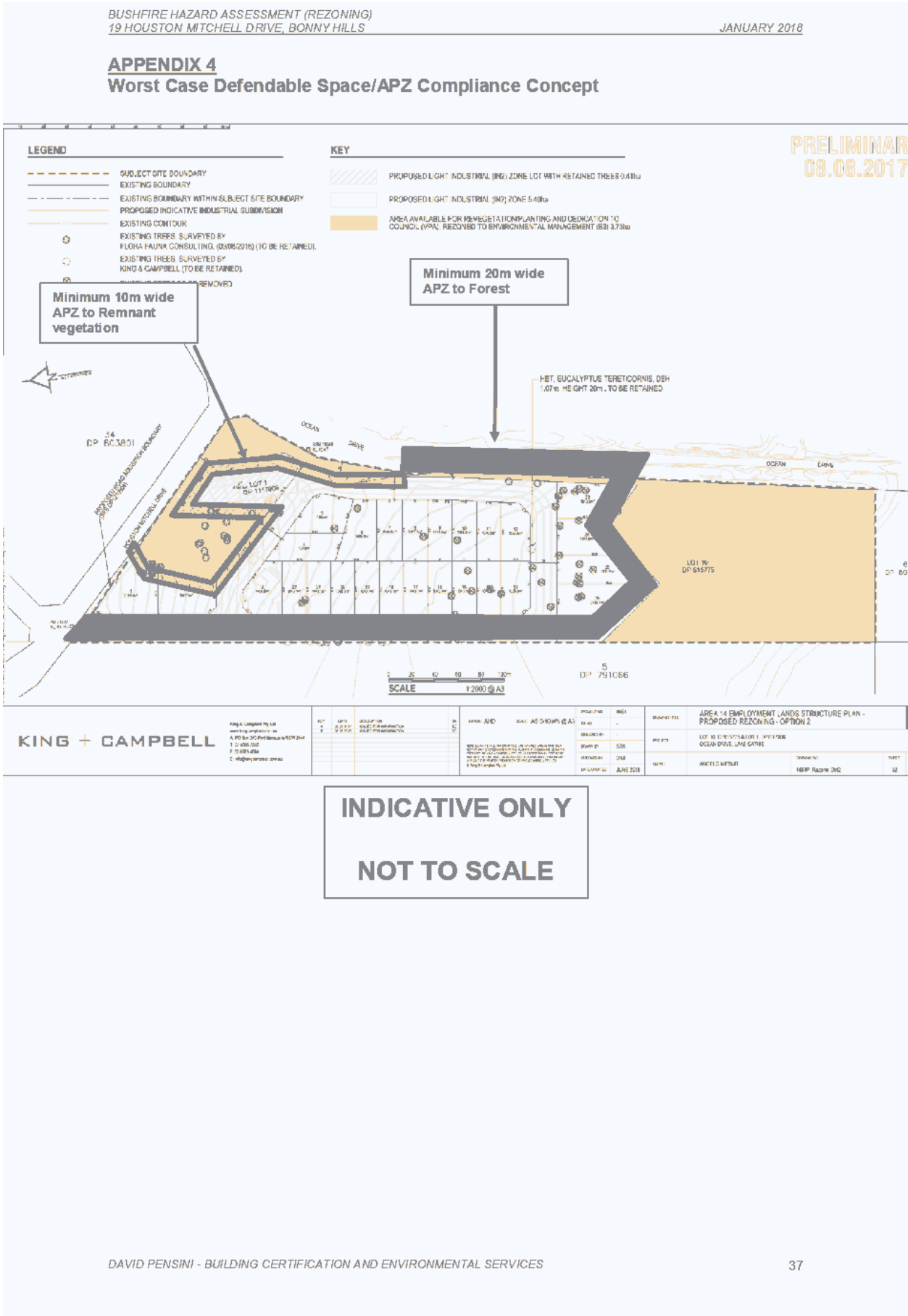
STAGE 248

STAGE 249

STAGE 250

STAGE 251

STAGE



KM/AJT 4661
Please quote our ref no: 4661_118_AddInfo

KING + CAMPBELL

8 October, 2018

The General Manager
Port Macquarie Hastings Council (PMHC)
P O Box 84
PORT MACQUARIE NSW 2444

ATTENTION: Ms Stephanie Baker

Dear Stephanie

**RE: PLANNING PROPOSAL EMPLOYMENT LANDS
LOT 10 DP 615774 & LOT 1 DP 1117908
CNR OCEAN DRIVE AND HOUSTON MITCHELL DRIVE, LAKE CATHIE**

Reference is made to:

- PMHC correspondence dated 5 October, 2018, advising PMHC had provided comments on the draft Planning Proposal on 2 August, 2018, and requesting a timeframe for submission of additional information. (**Attachment 06**)
- Our meeting with PMHC strategic planning, natural resources and transport staff on 13 September, 2018, (minutes attached – **Attachment 06**). The meeting was requested by PMHC staff to review the ongoing internal PMHC discussions about the future possibility of the link road to the land to the South.
- Correspondence to and from PMHC (9, 14 & 16 August 2018) (copy attached **Attachment 06**) to confirm the scope of the additional ecological advice requested by PMHC in its correspondence dated 2 August, 2018.

We provide the following additional information in response to the PMHC correspondence of 2 August, 2018.

1. Ecology

An Ecological Assessment has been prepared by Biodiversity Australia, undertaken in accordance with the new BAM methodology pursuant to the *Biodiversity Conservation Act 2016*. This assessment is enclosed as **Attachment 01**.

The additional ecological assessment has been undertaken in accordance with the scope provide by PMHC by email on 16 August 2018.

The findings of the ecological assessment confirm that the proposed future subdivision of the northern extent of the property for industrial purposes will be achievable on the basis that the required offset area will be available on-site, within the future environmental zone. The assessment concludes the following:

The proposal is to rezone the 9.54ha subject site to Light Industrial and Environmental Management. Subsequent development of the 5.81ha industrial zoned area will require some native vegetation removal, which is generally in poor condition.

urban design
civil engineering
architecture
town planning
landscape architecture
surveying

directors

Anthony Thorne
B Surv, MIS Aust
Grad Dip Planning (UTS)

David Tooby
B L Arch, AAILA
Registered Landscape Architect

Scott Marchant
B Surv (Hons)

Nigel Swift
B Arch, BA Arch, AIA
Nominated Architect
NSW Architects Registration Board No 7625
QLD Architects Registration Board No 3937

consultant

Paul Rowlandson
B Surv (Hons), MIS Aust

King & Campbell Pty Ltd
1st Floor, Colonial Arcade
25-27 Hay Street
Port Macquarie
PO Box 243
Port Macquarie, NSW, 2444
ABN 44 564 476 716
T: 02 6586 2555
F: 02 6583 4064
info@kingcampbell.com.au
www.kingcampbell.com.au

integrated solutions | enhancing community

To offset the loss of vegetation and habitat, a 3.73ha offset conservation area is proposed. This area would be rezoned to Environmental Management and subject to rehabilitation measures to assist in restoring native vegetation cover and habitat features, and reducing weeds.

The rezoning proposal has been previously subject to a comprehensive ecological assessment by FloraFauna Consulting in 2016, however due to changes in legislation, the proposal has now been assessed as per the Stage 1 and 2 of the Biodiversity Assessment Method.

The credit calculations undertaken found that a credit match between the development site and offset has been achieved, and as such, the offset area is considered to be of a sufficient size to offset the impacts of the development. The offset area also contains the same vegetation types as those that will be impacted by the development.

The offset area will need to be subject to active restoration management actions to create the number of credits described in this report. These actions would be detailed in a management plan for the offset site.

In summary, the rezoning proposal is considered to meet the principles of the Biodiversity Conservation Act 2016 and will achieve a balance between development and conservation. Application of the Biodiversity Assessment Method has demonstrated that subsequent industrial development over the site can comply with offset requirements through minimising vegetation removal and dedication of the environmental offset area.

2. Servicing

Your correspondence of 2 August, 2018, requests the submission of a water and sewer strategy based on King and Campbell correspondence of 8 December, 2016.

However PMHC has already responded to this matter via email of 3 April, 2017. A copy of this updated advice from PMHC is enclosed as **Attachment 02**.

Accordingly we provide the following with respect to sewerage and water supply services:

2.1. Sewerage Services

PMHC's Water and Sewer section have advised the following (by email of 3 April, 2017):

- *The Development of the site is entirely reliant on the development of Area 14 - St Vincent's (SVF) residential land to the east to be serviced with sewer. There is no capacity within the Bonny Hills sewerage network for interim connection.*
- *Bonny Hills/ Lake Cathie STP has sufficient capacity to service the development from a treatment perspective*
- *Subject to SVF staging and design the site may be able to be serviced via a conventional gravity scheme. However, it is Council's preference not to open cut Ocean Drive, with Under boring or thrust boring being the preferred method for crossing Ocean Drive.*
- *It is Council's preference for the site to be serviced via gravity into SVF. However, if the site cannot be serviced via conventional gravity sewer; a Council dedicated SPS would be required with the SRM discharging into the SVF residential development.*

- *In accordance with PMHC's Design Specification D12.05, the depth of the sewer shall be sufficient to allow 100 per cent of available building area of each lot to be serviced in accordance with AS 3500*

We confirm that the Sewer Pump Station within the St Vincent's Foundation (SVF) property has been designed and is currently with PMHC for assessment as part of the SVF Precinct A Civil Construction Certificate Application.

The sewer design has included capacity for the proposed employment lands to drain through the gravity sewerage infrastructure to be constructed as part of the Precinct A works.

Enclosed at **Attachment 03** is the relevant page from the SVF Construction Certificate documentation that has been lodged with PMHC. The documentation confirms that a 225mm gravity sewer main stub has been provided for the future connection to the proposed employment lands.

In the preparation of the Construction Certificate documentation discussions were held with PMHC's Sewer and Water Section where it was noted that the preliminary design to service the proposed employment lands will work under gravity and include the under-bore of Ocean Drive.

2.2 Water Supply

PMHC's Water and Sewer section have advised the following (by email of 3 April, 2018):

- *Recent modelling indicates the water network has sufficient capacity to meet the demand of the proposed 24 light industrial sites*
- *The development site can be serviced with a connection to the existing 300mm water main off Ocean Dr with a link through to the 200mm water main located on Houston Mitchell Drive. Council's standard requirements for industrial developments require a DN 150mm water main within the development*

On the basis of this previous advice from PMHC advice we confirm that the future development application for the employment lands subdivision of the property will adopt PMHC's strategy for water reticulation.

3. Flooding

A Flood Impact Assessment by Worley Parsons, accompanied the pre-lodgement submission to Council in October, 2011. This assessment was prepared to establish the peak 100 year recurrence flood level at the site. This level was estimated to be 7.6 m AHD. The information contained in this initial report was then used to develop an indicative layout for the site.

We note PMHC's advice dated 2 August, 2018, that this assessment was required to be amended so that a 50% culvert blockage is modelled in accordance with Clause 5.24.4 of Councils AUSPEC D5 design guidelines. The update was also required to take into consideration a 900mm freeboard level consistent with Council Resolution of 24 March, 2010.

A fee proposal was requested from Advisian on 2 August, 2018 and received on 27 August, 2018. A 50% deposit for the fees for the additional flood assessment was paid to Advisian on 30 August, 2018. Advisian have advised that the additional flood assessment is currently undergoing final checking.

4661_118_AddInfo

Page 4 of 4

8 October 2018

PMHC's previous advice was that all of the additional information requested in the correspondence dated 2 August, 2018, should be submitted to PMHC as a single submission. Given the request in the PMHC correspondence dated 5 October, 2018, for a timeframe for submission of this information by 19 October, 2018, we are not able to comply with PMHC's request for a single submission.

The updated Flood Assessment addressing the issues raised by PMHC will be submitted under separate cover once received from Advisian.

4. Urban Growth Management Strategy (UGMS)

PMHC's comments with respect to the submissions received as part of the exhibition of the draft UGMS are noted.

Attachment 5 is the Updated Employment Lands Concept Plan which shows a 5-10m and variable width visual buffer area generally with larger areas of retained vegetation on the corner of Ocean Drive and Houston Mitchell Drive. This visual buffer has been included in previous concept plans provided to PMHC.

Additionally the Concept Plan shows an internal employment lands road proposed on the western side of the visual buffer.

The proposed Concept Plan provides the basis for future development applications for employment land subdivision to include detailed landscaping and vegetation management provisions to address the concerns raised by submissions on the draft UGMS.

Please review the attached Concept Plan and provide confirmation that the Plan provides sufficient detail to address this issue.

5. Bushfire

Attachment 04 is an updated Bushfire Assessment that correctly refers to the landscaping principles at Section 3.1.5 on page 31.

6. Zone boundary

Attachment 05 is an updated Employment Lands Concept Plan with an amended proposed zone boundary at the rear of proposed Lots 23 to 26.

Should you require any further information regarding this matter please contact Kylie Moore or the writer.

Yours faithfully
King & Campbell Pty Ltd



Anthony Thorne

cc client
Encl. as listed



Sustainable Partners

Wednesday, 19th September 2018

Ms Kylie Moore
King and Campbell
PO Box
Port Macquarie NSW 2444

Delivery via: Email [kylie@kingcampbell.com.au]

ABN 81 127 154 787

Head Office
PO Box 721
Upper Coomera
QLD 4219
Phone 1300 319 954
info@biodiversityaust.com.au
www.biodiversityaust.com.au

Dear Kylie,

RE: Ecological Assessment for Rezoning Proposal over Lot 1 DP 1117908 and Lot 10 DP615775, Houston Mitchell Drive, Lake Cathie

As requested, we have conducted an ecological assessment of the property as per the BAM methodology.

1.0 Background Information

1.1. Location and Description

The subject site comprises a 9.54ha property on the corner of Houston Mitchell Drive and Ocean Drive at Lake Cathie. It largely comprises slashed exotic grassland and scattered trees. A patch of open forest is located in the north. Part of the site is currently used for industrial activities and storage and a dwelling is located in the north of the site.

The site adjoins Queens Lake State Conservation Area to the west. The location of the subject site is shown in Figure 1.

The site is mostly level at 10m elevation, increasing to 15m in the north. There are no watercourses on the site, however a farm dam is located in the southeast. The site is underlain by a bedrock of the Watonga Formation which comprises slate, chert and slaty sandstone. An alluvial formation passes through the central and southern portion of the site. This formation is defined as an Alluvial and Colluvial fan comprising fluvial sand, gravel, clay and silt (Troedson and Hashimoto 2008).

1.2. Rezoning Proposal

The subject site is currently zoned Primary Production (RU1). The proposal is to rezone Lot 1 and Lot 10 to Light Industrial (IN2) and Environmental Management (E3). The area proposed for Industrial is located in the northern half of the site and covers 5.81ha. The remaining 3.73ha of the site is proposed as a conservation offset area which would be rezoned to E3. The rezoning proposal plan is provided in Figure 2.



Sustainable Partners

Most of the forested vegetation in the north of the site will be retained in the offset area. The development area comprises slashed grassland and scattered trees.

The rezoning proposal has been previously subject to an ecological assessment by FloraFauna Consulting in 2016. Since these surveys and assessments, the NSW Biodiversity legislation has changed and the new *Biodiversity Conservation Act 2016* (BC Act) was introduced. This requires certain developments to be assessed under the Biodiversity Offset Scheme (BOS) which requires application of the Biodiversity Assessment Method (BAM).

Council has requested that the rezoning proposal is re-assessed under the BC Act. This requires application of Stage 1 and 2 of the BAM and additional reporting to determine if the rezoning proposal meets the current legislative requirements under the Act.

The site is not mapped on the Biodiversity Values map. The proposal qualifies for the Small Area Development streamlined assessment module as per Section 3.2 of the BAM.

1.3. Key Definitions

The **subject site** is defined as Lot 1 and Lot 10 which are 9.54ha in area. The **locality** is land within 10km of the subject site. The **development site** refers to the 5.81ha development area that is proposed to be rezoned to industrial. The **offset area** refers to the 3.73ha portion of the site to be protected and rezoned to E3.



Sustainable Partners

Figure 1: Location of the subject site

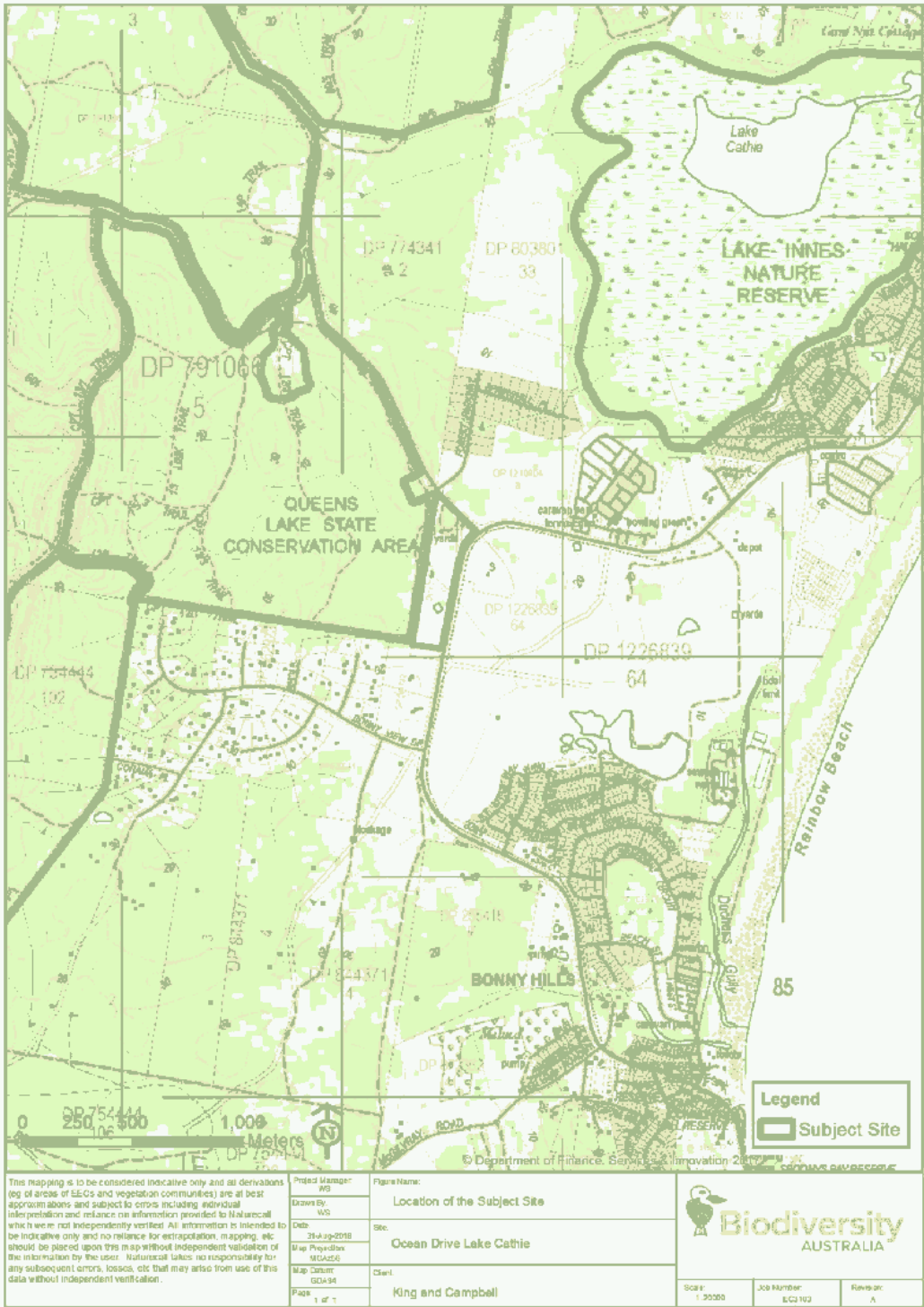
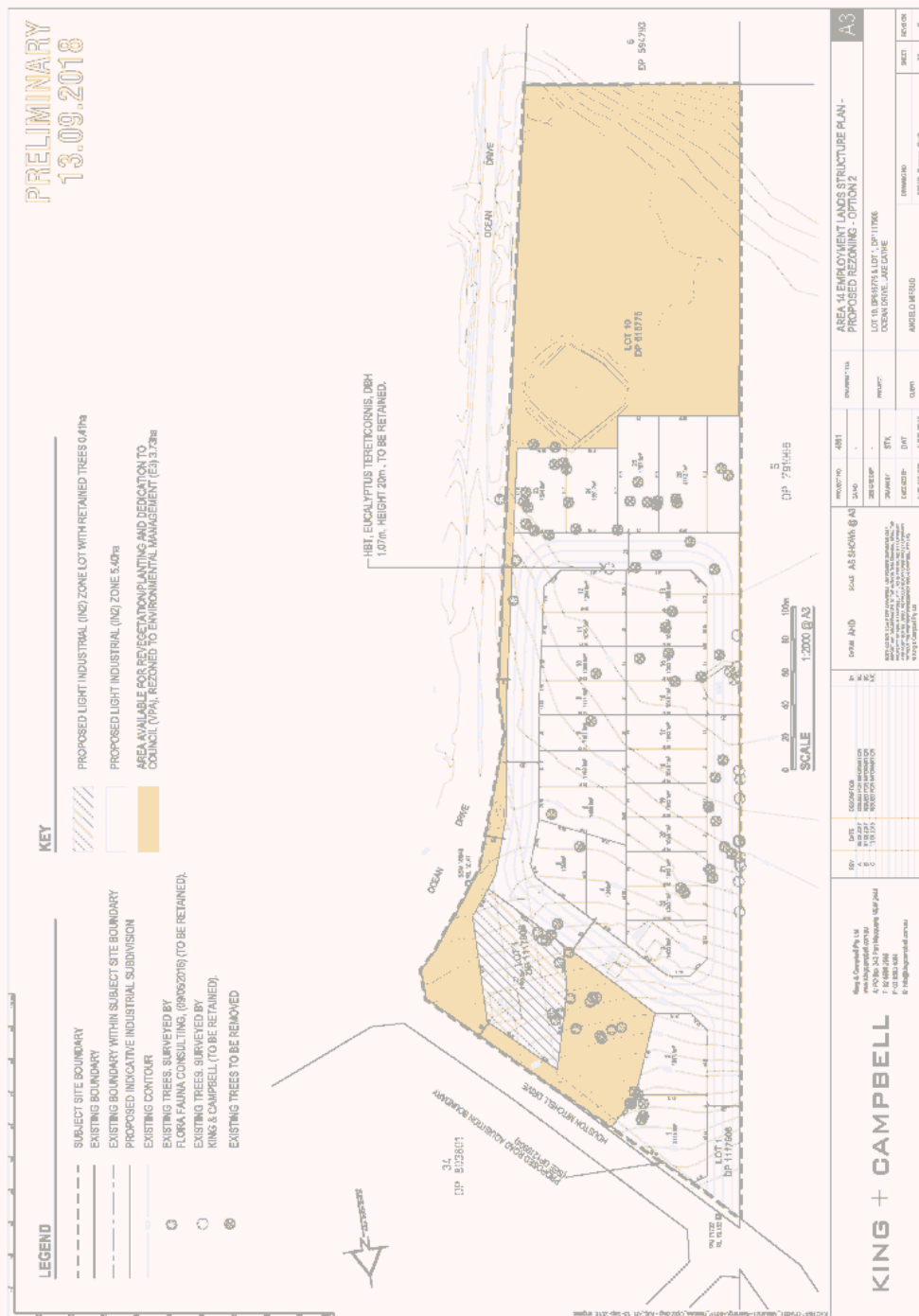


Figure 2: Proposed rezoning layout





2.0 Summary of Previous Ecological Surveys

2.1.1. FloraFauna Consulting

FloraFauna Consulting conducted ecological investigations over the site in 2016. The objectives of the assessment were to:

- Describe the ecological characteristics of the study area including identifying
- protected and threatened flora and fauna species, populations and ecological communities and their habitats;
- Identify the direct and indirect impacts of the proposed activity on flora and fauna species, populations, ecological communities and critical habitat;
- Assess the nature, extent, frequency, duration and timing of impacts;
- Assess the extent to which the proposed activity contributes to processes threatening the survival of biota on the site;
- Assess the significance of the impact of the proposed activities on species, ecological communities and populations listed under the TSC Act, FM Act and
- EPBC Act; and
- Propose management measures to minimise or mitigate and if necessary offset impacts.

Survey Methods

Field surveys were conducted from 2-6 June 2016. The survey methods employed were as follows:

- | | |
|--------------------------------|---|
| • Random meander flora surveys | • Koala habitat assessment and survey |
| • Threatened flora searches | • Stag watch (2 nights) |
| • Habitat assessment | • Spotlighting (2 nights) |
| • Habitat search | • Amphibian survey (day and night searches) |
| • Diurnal bird survey | • Microbat call detection (2 nights) |
| • Scat and sign search | |

Results

Vegetation Communities

The vegetation communities over the site were described as Dry Sclerophyll Forest and Derived Grassland. The Dry Sclerophyll Forest was limited to the north of the site and dominated by White Stringybark and Tallowood with mid stratum species dominated by Black Oak. Ground cover was largely a mix of native grass species.



Sustainable Partners

The derived grassland was described as being dominated by Whisky grass, Narrow-leaved Carpet grass, Rhodes Grass and Paspalum, along with common pasture weeds such as White Clover, Paddy's Lucerne and Lambs Tongue.

Neither of these communities qualified as Endangered Ecological Communities under the NSW BC Act or EPBC Act.

Habitat Features

Koala Food Trees were recorded and surveyed during the field survey. A total of 22 were recorded and these comprised the primary species Tallowwood, Forest Red Gum, Swamp Mahogany; secondary species Small-fruited Grey Gum and White Stringybark and 'other' species comprising Broad-leaved Paperbark.

Hollow-bearing Trees were recorded and surveyed during the field survey. A total of 3 hollow-bearing trees were recorded. Some of these can be retained and only one hollow-bearing tree is nominated for removal.

Aquatic habitat was recorded on the site. This consisted of four farm dams which had been colonized by native sedge and rush species. The introduced Plague Minnow was recorded in all of the dams.

Recorded and Potentially Occurring Threatened Species

Only two threatened fauna species was confidently recorded during the survey comprising the Little Bent-wing Bat (Vulnerable BC Act) and the Grey-headed Flying Fox (Vulnerable BC Act and EPBC Act). The Koala (Vulnerable BC Act and EPBC Act) was also considered highly likely to occur, although direct evidence was not found.

The following species were listed as potential occurrences:

- Lesser Swamp Orchid
- Green and Golden Bell Frog
- Black-necked Stork
- Square-tailed Kite
- Swift Parrot
- Varied Sittella
- Koala
- Squirrel Glider
- Yellow-bellied Glider
- Eastern Free-tail bat
- Golden-tipped Bat
- Eastern Bent-wing bat
- Southern Myotis
- Greater Broad-nosed Bat
- Eastern Cave Bat

SEPP 44 – Koala Habitat Protection

A Potential and Core Koala habitat assessment was undertaken. This found that the site qualified as Potential Koala Habitat due to the presence of SEPP 44 Listed food trees on the site. The assessment however concluded that the site would be unlikely to comprise Core Koala Habitat due to the lack of evidence of a resident Koala population or breeding females.

*TSC Act Significance Assessments*

The recorded and potentially occurring threatened species were subject to the 7 Part test. This concluded that the proposal is unlikely to result in a significant impact and a Species Impact Statement is not required.

EPBC Act 1999 – MNES Assessment Results

The recorded and potentially occurring threatened species that are listed under the EPBC Act (Koala, Grey-headed Flying Fox, Swift Parrot) were subject to MNES Assessment of Significance. This concluded that the proposal is unlikely to result in a significant impact on EPBC Act listed species and a referral is not required.

2.1.1.1. Recommendations

The ecological report provided the following recommendations:

- Pre-clearing survey
- Hollow-bearing tree removal protocol
- Replacement nest boxes
- Tree replacement
- Regeneration of retained vegetation
- Weed management



3.0 Survey Methods

3.1. Desktop Study and Literature Review

A desktop study was carried out prior to the field survey to gather relevant information and data. The following databases and Geographic Information System (GIS) layers were searched/obtained:

- Department of Environment and Energy Protected Matters Search Tool (DEE 2018)
- Office of Environment and Heritage NSW Atlas of Wildlife (OEH 2018a)
- Port Macquarie LGA Vegetation Communities and EECs digital data layer (Biolink 2013)
- Port Macquarie LGA Koala Habitat digital data layer (Biolink 2013)
- NSW Biodiversity Value Map (OEH 2018)
- Coastal Quaternary Geology – North and South Coast of NSW digital data layer (Troedson & Hashimoto 2008)

3.2. Vegetation Survey (BAM Methodology)

Vegetation Integrity survey plots were undertaken on the site as per the BAM methodology (OEH 2018). This consisted of a 20x20m plot in which floristic composition and structural attributes are collected, and 20x50m plot which collected ecosystem function attributes.

Seven vegetation plots were undertaken over the site. Location of the vegetation plots was selected based on existing vegetation mapping and analysis of satellite imagery, and aimed to sample a representative coverage of the site vegetation. The location of these plots are shown in Figure 3.

The following information was collected at each of the vegetation plots:

- | | |
|--|---|
| • Observer, location and date; | • Growth form, cover and abundance of each species; |
| • Plot dimensions and orientation; | • Exotic and High Threat Exotic (HTE) plant cover; |
| • Photographic record of vegetation; | • Number of large trees; |
| • Vegetation Class and Plant Community Type (PCT); | • Recruitment; |
| • Physical features and disturbance history; | • Presence of hollow-bearing trees; |
| • Full flora list; | • Length of logs; and |
| | • Litter cover. |

The field data collected was tallied and input into the BAM calculator to determine a vegetation integrity score for the vegetation zone.



3.2.1. Vegetation Classification and Mapping

The vegetation communities were identified and described from data collected during the vegetation survey. The vegetation classification is based on the NSW Plant Community Type (PCT) Classification.

Flora species were identified to species or subspecies level and nomenclature conforms to that currently recognised by the Royal Botanic Gardens and follows Harden and PlantNET for changes since Harden.

3.3. Credit Assessment

The rezoning proposal qualified for the Small Area Development streamlined module as per Section 3.2 of the BAM.

Vegetation data obtained was entered into the BAM calculator in order to determine the species and ecosystem credits applicable to the subject site. Species credit species are threatened species or species in which elements of their habitat cannot be confidently predicted by vegetation surrogates and landscape features. Ecosystem species are threatened species which can be reliably predicted to occur by vegetation surrogates and landscape features.

Some species which have specialised breeding requirements have dual credit classes to account for differences in foraging and breeding habitat. The BAM calculator produces a list of species and ecosystem credit species based on a number of attributes including bioregion and subregion, patch size and the vegetation and habitat data collected in the field.

3.4. Habitat Assessment and Opportunistic Fauna Survey

The site was assessed to determine the available potential habitats, and the support value of these habitats for threatened species. This information, along with results of the previous ecological survey was used to determine the potentially occurring threatened species listed in Section 5.

A full fauna survey of the site was not conducted however opportunistic fauna sightings and secondary evidence of fauna were recorded whilst conducting vegetation and habitat tree surveys. This involved the following:

- Active habitat searches
- Binocular searches for birds ,
- Actively listening for birds,
- Scat, track and secondary evidence searches



AUSTRALIA

Sustainable Partners

Figure 3: Vegetation survey plot locations





4.0 Native Vegetation

4.1. Development Site

4.1.1. Plant Community Types and Description

The following provides a description of the Plant Community Type (PCT) within the development site that will be affected by the proposal. As described below, two PCTs were recorded in the footprint. As per the streamlined BAM methodology, only the dominant PCT is required to be assessed.

This community is not listed as a Threatened Ecological Community (TEC) or Endangered Ecological Community (EEC) under the EPBC Act or *BC Act*.

The vegetation community sampled is displayed in Photos 1-3 and a map of the vegetation is provided in Figure 4. The vegetation zone details and vegetation integrity score are provided in Appendix 1.

4.1.1.1. Community 1

Table 1: Vegetation community 1 description

Vegetation Community (NSW PCT)	Tallowwood - Small-fruited Grey Gum dry grassy open forest
Vegetation Class	Northern Hinterland Wet Sclerophyll Forests
Mapped PMHC Community	White Stringybark - Tallowwood Dry Forest
EEC Status	Not an EEC
Key Species for ID	Tallowwood, Small-fruited Grey Gum
Vegetation Zone	1
Number of Plots	1
Percent cleared	30%
Location and area	Occurs in the north of the site. The area in the development site totals 0.5ha. This has been split into two management zones of 0.2ha and 0.3ha given that trees will be retained over part of this community post development.
Condition	This community has been largely cleared in the past and currently represents mature regrowth. Understorey and shrub layers are largely absent and weed cover is moderate in the ground layer.



AUSTRALIA

4.1.1.2. Community 2

Table 2: Vegetation community 2 description

Vegetation Community (NSW PCT)	Swamp Mahogany swamp forest on coastal lowlands
Vegetation Class	Coastal Swamp Forests
Mapped PMHC Community	Not mapped
EEC Status	Not an EEC
Key Species for ID	Swamp Mahogany, Broad-leaved Paperbark
Vegetation Zone	2
Number of Plots	2
Percent cleared	75
Location and area	Occurs as small isolated patches in the central portion of the site. Surrounded by managed exotic grassland. Area in the development site totals 0.6ha
Condition	Poor condition - only comprises scattered trees and small patches of native groundcover. Exotic pasture grasses dominate the groundcover.

Photo 1: Community 1 at plot 3





Department of Environment and Heritage
AUSTRALIA

Sustainable Partners

Photo 2: Community 2 at plot 1



Photo 3: Community 2 at Plot 2





Sustainable Partners

4.1.2. Vegetation Integrity Assessment

One PCT has been mapped over the development footprint as required in the streamlined assessment module. This has been split into two vegetation zones based on condition. The table below provides the vegetation integrity score for each zone which has been derived from the BAM field plots undertaken. Figure 4 shows the location of the vegetation zone and PCTs.

Sustainable Partners									
Biodiversity AUSTRALIA									
Table 3: Vegetation integrity scores									
Vegetation Zone	Condition class	Plant Community Type	Patch size category	Area Impacted	Composition	Structure	Function	Total	
1	Moderate to good	Tallowwood - Small-fruited Gum dry grassy open forest	>100	0.5	42.4	37.2	27	34.9	
2	Poor	Tallowwood - Small-fruited Gum dry grassy open forest	>100	0.6	21	31.1	80	37.4	



AUSTRALIA

Sustainable Partners

Figure 4: Vegetation zones and PCTs within the development site





4.2. Offset Site

4.2.1. Plant Community Types and Description

The following provides a description of the Plant Community Types (PCTs) and vegetation zones within the offset area. As described below, three PCTs were recorded in the offset area.

The vegetation communities are displayed in Photos 4-6 and a map of the vegetation distribution is provided in Figure 5.

4.2.1.1. Community 1

Table 4: Vegetation community 1 description

Vegetation Community (NSW PCT)	Blackbutt – Turpentine – Tallowwood shrubby open forest
Vegetation Class	North Coast Wet Sclerophyll Forests
Mapped PMHC Community	White Stringybark – Tallowwood Dry Forest
EEC Status	Not an EEC
Key Species for ID	Blackbutt, Turpentine, Tallowwood
Vegetation Zone	1
Number of Plots	1
Percent cleared	5
Location and area	Located on the southwest corner of the subject site. Comprises the disturbed edge of a larger body of forest contained within Queens Lake SCA
Condition	Moderate condition. Contains mature trees and native shrubs and groundcover species, however understorey vegetation and shrub layer very sparse. Ground layer is dominated by exotic grasses.

4.2.1.2. Community 2

Table 5: Vegetation community 2 description

Vegetation Community (NSW PCT)	Swamp Mahogany swamp forest on coastal lowlands
Vegetation Class	Coastal Swamp Forests
Mapped PMHC Community	Not mapped
EEC Status	Not an EEC
Key Species for ID	Swamp Mahogany, Broad-leaved Paperbark



Sustainable Partners

Vegetation Zone	2
Number of Plots	2
Percent cleared	75
Location and area	Occurs as scattered trees and a small patch around the dam. Surrounded by managed exotic grassland. Area in the offset site totals 2.6ha
Condition	Poor condition - only comprises scattered trees and small patches of native groundcover. Exotic pasture grasses dominate the groundcover.

4.2.1.3. Community 3

Table 6: Vegetation community 3 description

Vegetation Community (NSW PCT)	Tallowwood - Small-fruited Grey Gum dry grassy open forest
Vegetation Class	Northern Hinterland Wet Sclerophyll Forests
Mapped PMHC Community	White Stringybark - Tallowwood Dry Forest
EEC Status	Not an EEC
Key Species for ID	Tallowwood, Small-fruited Grey Gum
Vegetation Zone	3
Number of Plots	1
Percent cleared	30%
Location and area	Occurs in the north of the site. The area in the offset site totals 0.6ha
Condition	This community has been largely cleared in the past and currently represents mature regrowth. Reasonable species diversity is present. Understorey and shrub layers are largely absent and weed cover is moderate in the ground layer.



AUSTRALIA

Photo 4: Vegetation community 1 at Plot 1



Photo 5: Vegetation community 2 at Plot 2





Sustainable Partners

Photo 6: Vegetation community 3 at plot 4



4.2.2. Vegetation Integrity Assessment

Three vegetation zones have been mapped over the offset site. The table below provides the vegetation integrity score for each zone which has been derived from the BAM field plots undertaken. Figure 5 shows the location of the vegetation zone and PCTs.



Sustainable Partners

Table 7: Vegetation zones and integrity scores

Vegetation Zone	Condition class	Plant Community Type	Patch size category	Area	Vegetation Integrity Score		
					Composition	Structure	Function
1	Moderate	Blackbutt - Turpentine - Tallowwood shrubby open forest	>100	0.32	26.4	22.7	62.6
2	Poor	Swamp Mahogany swamp forest on coastal lowlands	>100	2.6	43.3	9	23.7
3	Moderate	Tallowwood - Small-fruited Grey Gum dry grassy open forest	>100	0.6	60.4	51.4	39.9
							33.5
							21
							49.8





5.0 Threatened Species

5.1. Development Site

5.1.1. Ecosystem Credit Species

Ecosystem credit species are threatened species which can be reliably predicted to occur by vegetation surrogates and landscape features. Targeted survey is not required for these species.

Some species which have specialised breeding requirements have dual credit classes to account for differences in foraging and breeding habitat. For example, Glossy Black Cockatoo foraging habitat can be reliably predicted through vegetation associations, however breeding habitat is specialised and requires hollow-bearing trees with hollows greater than 15cm diameter and greater than 5m above the ground (OEH Bionet 2018).

The BAM calculator produces a list of ecosystem credit species based on the vegetation and habitat data that has been collected in the field.

Refer to Appendix 3 for a list of the Ecosystem credit species derived on the development site.

5.2. Species Credit Species

Species credit species are threatened species or elements of their habitat that cannot be confidently predicted by vegetation surrogates and landscape features. Targeted survey is required for these species if the development site contains suitable habitat and is within the predicted range of the species.

Refer to Appendix 5 for a list of species credit species that have been predicted by the BAM calculator.

Suitable habitat and/or breeding habitat requirements do not occur on the site for most of these species. The following species are considered potential occurrences based on local/regional records and habitat types present and level of disturbance:

- Square-tailed Kite
- Squirrel Glider
- Brushtailed Phascogale
- Koala

These species have been surveyed during previous ecological surveys of the site and hence no further targeted survey is required. None of these species were confidently recorded on the site and as such, there is no species credit requirement for the development site.



5.3. Offset Site

5.3.1. Ecosystem Credit Species

Ecosystem credit species are threatened species which can be reliably predicted to occur by vegetation surrogates and landscape features. Targeted survey is not required for these species.

Some species which have specialised breeding requirements have dual credit classes to account for differences in foraging and breeding habitat. For example, Glossy Black Cockatoo foraging habitat can be reliably predicted through vegetation associations, however breeding habitat is specialised and requires hollow-bearing trees with hollows greater than 15cm diameter and greater than 5m above the ground (OEH Bionet 2018).

The BAM calculator produces a list of ecosystem credit species based on the vegetation and habitat data that has been collected in the field.

Refer to Appendix 4 for a list of the Ecosystem credit species derived on the offset site.

5.3.2. Species Credit Species

Species credit species are threatened species or elements of their habitat that cannot be confidently predicted by vegetation surrogates and landscape features. Targeted survey is required for these species if the development site contains suitable habitat and is within the predicted range of the species.

Refer to Appendix 6 for a list of species credit species that have been predicted by the BAM calculator for the offset site.

Suitable habitat and/or breeding habitat requirements do not occur on the site for most of these species. The following species are considered potential occurrences based on local/regional records and habitat types present and level of disturbance:

- Square-tailed Kite
- Squirrel Glider
- Brushtailed Phascogale
- Koala
- Masked Owl (breeding)
- Maundia triglochinos
- Biconvex Paperbark

These species have been surveyed during previous ecological surveys of the site and hence no further targeted survey has been undertaken. None of these species were confidently recorded on the site and as such, the offset area will not create any species credits.

5.4. Opportunistic Fauna Recorded

The opportunistic fauna surveys mainly detected common medium sized woodland birds on and adjacent to the survey area. These included species such as Scarlet Honeyeater, Pied Currawong, Noisy Friarbird, and Eastern Rosella. Most were heard calling from within the subject site or from adjacent habitats with a seen flying over-head.

One threatened bird species was recorded during the survey comprising the Little Lorikeet (Vulnerable BC Act). A small flock was heard calling and observed flying over the site. The site contains a minor potential foraging resource for this species and a few trees which contain potential hollows for nesting. This species is however unlikely to breed on the site given high competition for hollows with common Lorikeets and Galahs.

No reptiles were recorded and the only amphibian recorded was the Common Eastern Froglet.

Table 8 below provides a list of all the fauna species detected opportunistically during the opportunistic surveys.

Table 8: Fauna species recorded

	Common Name	Species	Detection Method
Amphibians	Common Eastern Froglet	<i>Crinia signifera</i>	HC
Birds	Eastern Yellow-robin	<i>Eopsaltria australis</i>	HC
	Laughing Kookaburra	<i>Dacelo novaeguineae</i>	HC
	Masked Lapwing	<i>Vanellus miles</i>	HC
	Noisy Friarbird	<i>Philemon corniculatus</i>	HC
	Pied Currawong	<i>Strepera graculina</i>	HC
	Scarlet Honeyeater	<i>Myzomela sanguinolenta</i>	HC
	Silvereye	<i>Zosterops lateralis</i>	HC
	Superb Fairywren	<i>Malurus cyaneus</i>	HC
	Torresian Crow	<i>Corvus orru</i>	HC
	Yellow-faced Honeyeater	<i>Lichenostomus chrysops</i>	HC
	Australian White Ibis	<i>Threskiornis molucca</i>	Vis
	Eastern Rosella	<i>Platycercus eximius</i>	Vis
	Little Lorikeet	<i>Glossopsitta pusilla</i>	Vis
	Scaly-breasted Lorikeet	<i>Trichoglossus chlorolepidotus</i>	Vis
	Willy Wagtail	<i>Rhipidura leucophrys</i>	Vis
	Magpie Lark	<i>Grallina cyanoleuca</i>	Vis, HC
	Rainbow Lorikeet	<i>Trichoglossus haematodus</i>	Vis, HC
	Rooster	<i>Gallus gallus</i>	Vis, HC
Mammals	Eastern Grey Kangaroo	<i>Macropus giganteus</i>	Vis, Sc



6.0 Avoidance and Minimisation

6.1. Impact Avoidance

6.1.1. General

The development proposal has minimised vegetation removal and indirect impacts over the subject site through the following measures:

- Retaining mature open forest in the north of the site and large portion of the south of the site as offset conservation areas.
- Retaining a number of the trees falling within the northern portion of the development site
- Retention of a significant hollow-bearing tree within the development footprint
- Design of the layout using the perimeter road next to the nature reserve

6.1.2. Areas of Outstanding Biodiversity Value

There are no Areas of Outstanding Biodiversity Value listed in the subject site or surrounds.

6.1.3. Serious and Irreversible Impacts

Section 6.5 of the *Biodiversity Conservation Act 2016* requires developments to consider Serious and Irreversible Impacts on threatened species and ecological communities which meet the following criteria:

- are in a rapid rate of decline
- have a very small population size
- have a very limited geographic distribution
- are unlikely to respond to measures to improve habitat.

These criteria have been applied to all threatened species and ecological communities listed under the BC Act. Entities that meet the criteria under one or more principles are identified as 'potential' SAI species/communities in the guidance document *Guide to assist decision-maker to determine a serious and irreversible impact* (OEH 2017).

Review of this document has determined that none of the species recorded on the development site are listed as potential SAI species, and hence no assessment of SAI is required.

6.2. Measures to Minimise Impacts

Future development of the site would be subject to a number of mitigation measures and environmental controls to reduce the overall impact of the development on biodiversity and ensure potential offsite impacts are minimised.



Sustainable Partners

The previous ecological report by FloraFauna Consulting recommended a number of mitigation measures that should be adhered to. No additional recommendations are provided.

6.2.1. Mitigation Measure summary

The following table provides a summary of the proposed mitigation measures and the responsibility.

Table 9: Mitigation measure summary

Mitigation measure	Responsibility
Cessation of slashing in offset site	Landowner
Nest box instillation	Ecologist
Pre-clearing survey	Ecologist
Hollow-tree removal supervision	Ecologist
Preparation of VMP for offset area	Ecologist
Offset plantings	Bush regenerator/Landowner
Erosion and sedimentation control	Earthworks contractor
Weed control	Bush regenerator

6.3. Impacts Unable to be Avoided

6.3.1. Vegetation and Habitat Removal

There will be some vegetation removal associated with the rezoning proposal which comprises approximately 0.2ha of dry sclerophyll/open forest and 0.6ha of poor condition swamp sclerophyll forest. FloraFauna Consulting (2016) calculated that a total of 53 trees would require removal.

This vegetation removal is required to establish the proposed industrial area and the impact of this action would be assessed as part of a subsequent DA once the rezoning has occurred. The vegetation affected may provide foraging habitat for a number of fauna species. This includes a nectar source for birds and flying foxes.

Vegetation removal is likely to be long-term and in line with the lifespan of the overall use of the proposed industrial development area. No further vegetation loss will be required through the operational phase of the development.

Sustainable Partners

The loss of this vegetation is proposed to be offset through dedication of an offset area on the subject site which would be subject to vegetation rehabilitation measures. The number of credits required to offset the development and the number of credits that would be created by the offset area are detailed in the following section.



7.0 Credit Assessment

A full credit assessment has been undertaken to determine the number and type of ecosystem and species credits that would be required to offset the impact of clearing for the subsequent industrial subdivision and the number of credits that would be created by preserving and rehabilitating the vegetation in the offset area.

The objective is to get a match between the development site and offset site in terms of credit numbers and credit type.

7.1. Development Site

7.1.1. Ecosystem Credits Required

The following Ecosystem credit types and numbers were generated from the BAM calculator. The credit summary report is provided in Appendix 7.

Table 10: Ecosystem credits

Zone	PCT*ID/Condition	PCT Name	Area (ha)	No. of Credits required
1	1262_good	Tallowwood - Small-fruited Grey Gum dry grassy open forest	0.5	4
2	1262_poor	Tallowwood - Small-fruited Grey Gum dry grassy open forest	0.6	8
Total			1.1	12

7.1.2. Species Credits Required

There is no species credit requirement for the development.

7.2. Offset Site

7.2.1. Ecosystem Credits Generated

The following Ecosystem credit types and numbers were generated from the BAM calculator. The credit summary report is provided in Appendix 8.



Sustainable Partners

Table 11: Ecosystem credits

Zone	PCT*ID/Condition	PCT Name	Area (ha)	No. of Credits generated
1	695_Moderate	Blackbutt - Turpentine - Tallowwood shrubby open forest	0.3	1
2	1230_poor	Swamp Mahogany swamp forest on coastal lowlands	2.6	9
3	1262_moderate	Swamp Mahogany swamp forest on coastal lowlands	0.6	2
Total			3.5	12

7.2.2. Species Credits

The assessment determined that the offset site did not generate any species credits.

7.3. Justification for Modified Vegetation Integrity Values

7.3.1. Development Site

Canopy trees will be retained over part of vegetation zone 1 in the north of the development site as illustrated in Figure 3. As such, this zone was split into two management zones comprising a 0.2ha tree removal area and a 0.3ha tree retention area. The vegetation integrity scores for the tree removal area will be reduced to zero post development. The tree retention area will however retain tree canopy cover and native species diversity, and as such it will retain some vegetation integrity post development. The scores have been adjusted accordingly in this management zone based on estimated cover and diversity values post development.

7.3.2. Offset Site

The offset site will be subject to both standard management actions such as weeds removal and active management actions including tree planting, instillation of nest boxes and placement of hollow logs. This will largely occur in vegetation zone 2 which is highly degraded.

As per Section 13.3.3 of the BAM, the additional credits can be created where these active management actions are undertaken. The predicted future vegetation integrity scores for vegetation zone 1 have been increased based on the likely outcomes of active management (eg higher species diversity, greater vegetation cover and greater coarse woody debris).



Sustainable Partners

8.0 Conclusion

The proposal is to rezone the 9.54ha subject site to Light Industrial and Environmental Management. Subsequent development of the 5.81ha industrial zoned area will require some native vegetation removal, which is generally in poor condition.

To offset the loss of vegetation and habitat, a 3.73ha offset conservation area is proposed. This area would be rezoned to Environmental Management and subject to rehabilitation measures to assist in restoring native vegetation cover and habitat features, and reducing weeds.

The rezoning proposal has been previously subject to a comprehensive ecological assessment by FloraFauna Consulting in 2016, however due to changes in legislation, the proposal has now been assessed as per the Stage 1 and 2 of the Biodiversity Assessment Method.

The credit calculations undertaken found that a credit match between the development site and offset has been achieved, and as such, the offset area is considered to be of a sufficient size to offset the impacts of the development. The offset area also contains the same vegetation types as those that will be impacted by the development.

The offset area will need to be subject to active restoration management actions to create the number of credits described in this report. These actions would be detailed in a management plan for the offset site.

In summary, the rezoning proposal is considered to meet the principles of the Biodiversity Conservation Act 2016 and will achieve a balance between development and conservation. Application of the Biodiversity Assessment Method has demonstrated that subsequent industrial development over the site can comply with offset requirements through minimising vegetation removal and dedication of the environmental offset area.

If you have any queries regarding this assessment, please contact the undersigned.

Yours faithfully,

Will Steggall

B. Env't. Sc. and Mgt

Principal Ecologist (NSW)

BAM Accredited Assessor No. BAAS17107



Head Office

Phone: 1300 319 954

Email: info@biodiversityaust.com.au

Office: Level 1, 9 Harbour Village Parade, Coomera, QLD

All Mail: PO Box 3401 Helensvale Town Centre QLD 4212

NSW Office

Phone: 1300 319 954

Email: info@biodiversityaust.com.au

Office: Level 1, Suite 3, 64 Clarence Street, Port Macquarie



9.0 References

Biolink (2013a). Vegetation of the Port Macquarie-Hastings Local Government Area. Unpublished report to PMHC, Port Macquarie. Biolink Ecological Consultants, Uki, NSW.

Biolink (2013b). Port Macquarie – Hastings Koala Habitat and Population Assessment. Unpublished report to PMHC, Port Macquarie. Biolink Ecological Consultants, Uki, NSW.

Department of Energy and Environment (DEE) (2018). Matters of National Environmental Significance Search Tool. www.environment.gov.au/epbc

FloraFauna Consulting (2016). Ecological Assessment for Propsoed Rezoning of Land: Lot 10 DP 615775 & Lot 1 DP 1117908 19 Houston Mitchell Drive Bonny Hills. FloraFauna Consulting, West Kempsey.

Office of Environment and Heritage (2018a) Bionet/Atlas of Wildlife (<http://www.bionet.nsw.gov.au/>)

OEH (2018b) Threatened Species. www.threatenedspecies.environment.nsw.gov.au

OEH (2018d). Biodiversity Values Map Viewer: <https://www.lmbc.nsw.gov.au/Maps/index.html?viewer=BVMap>

OEH (2017). Biodiversity Assessment Method. Office of Environment and Heritage, Sydney.

Port Macquarie-Hastings Council (2011). Port Macquarie-Hastings (Area 15) Local Environment Plan 2011.

Royal Botanical Gardens. Plantnet website (www.plantnet.rbgsyd.nsw.gov.au/search)

Troedson, A.L. and Hashimoto, T.R. (2008). Coastal Quaternary Geology – north and south coast of NSW. Geological Survey of New South Wales, Bulletin 34.



Sustainable Partners

Appendix 1: Vegetation Zone Report – Development Site



BAM Vegetation Zones Report

Proposal Details

Assessment Id	00012287/BAAS17107/18/00012288	Assessment name	Houston Mitchell Drive Rezoning	BAM data last updated *	24/02/2018
Assessor Name	Will Steggall	Report Created	11/09/2018	BAM Data version *	3

Assessor Number
BAAS17107

* Disclaimer: BAM data last updated may indicate either complete or partial update of the BAM calculator database. BAM calculator database may not be completely aligned with Bionet.

Vegetation Zones

#	Name	PCT	Condition	Area	Minimum number of plots	Management zones
1	1262_Good	1262-Tallowood - Small-fruited Grey Gum dry grassy open forest of the foothills of the NSW North Coast	Good	0.5	1	Treeremove (0.2 ha) Treeretaim (0.3 ha)



BAM Vegetation Zones Report

2	1262_Poor	1262-Tallowood - Small-fruited Grey Gum dry grassy open forest of the foothills of the NSW North Coast	Poor	0.6	1
---	-----------	--	------	-----	---



Sustainable Partners

Appendix 2: Vegetation Zone Report – Offset Site



BAM Vegetation Zones Report

Proposal Details

Assessment Id	00012289/BAAS17107/18/00012290	Assessment name	Houston Mitchell Drive Rezoning	BAM data last updated *	24/02/2018
Assessor Name	Will Steggall	Report Created	10/09/2018	BAM Data version *	3

Assessor Number
BAAS17107

* Disclaimer: BAM data last updated may indicate either complete or partial update of the BAM calculator database. BAM calculator database may not be completely aligned with Bionet.

Vegetation Zones

#	Name	PCT	Condition	Area	Minimum number of plots	Management zones
1	695_Moderate	695-Blackbutt - Turpentine - Tallowwood shrubby open forest of the coastal foothills of the central NSW North Coast Bioregion	Moderate	0.32	1	



BAM Vegetation Zones Report

2	1230_Poor	1230-Swamp Mahogany swamp forest on coastal lowlands of the NSW North Coast Bioregion and northern Sydney Basin Bioregion	Poor	2.6	2	
3	1262_Moderate	1262-Tallowood - Small-fruited Grey Gum dry grassy open forest of the foothills of the NSW North Coast	Moderate	0.6	1	



Sustainable Partners

Appendix 3: Ecosystem Credit Species – Development Site



BAM Predicted Species Report

Proposal Details

Assessment Id	Proposal Name	BAM data last updated *
00012287/BAAS17107/18/00012288	Houston Mitchell Drive Rezoning	24/02/2018
Assessor Name	Report Created	BAM Data version *
Will Steggall	10/09/2018	3
Assessor Number	* Disclaimer: BAM data last updated may indicate either complete or partial update of the BAM calculator database. BAM calculator database may not be completely aligned with Bionet.	
BAAS17107		

Threatened species reliably predicted to utilise the site. No surveys are required for these species. Ecosystem credits apply to these species.

Common Name	Scientific Name	Vegetation Types(s)
Brown Treecreeper (eastern subspecies)	Climacteris picumnus victoriae	1262-Tallowwood - Small-fruited Grey Gum dry grassy open forest of the foothills of the NSW North Coast
Eastern Bentwing-bat	Miniopterus schreibersii oceanensis	1262-Tallowwood - Small-fruited Grey Gum dry grassy open forest of the foothills of the NSW North Coast
Eastern Freetail-bat	Mormopterus norfolkensis	1262-Tallowwood - Small-fruited Grey Gum dry grassy open forest of the foothills of the NSW North Coast
Greater Broad-nosed Bat	Scoteanax rueppellii	1262-Tallowwood - Small-fruited Grey Gum dry grassy open forest of the foothills of the NSW North Coast
Grey-headed Flying-fox	Pteropus poliocephalus	1262-Tallowwood - Small-fruited Grey Gum dry grassy open forest of the foothills of the NSW North Coast
Hoary Wattled Bat	Chalinolobus nigrogriseus	1262-Tallowwood - Small-fruited Grey Gum dry grassy open forest of the foothills of the NSW North Coast
Koala	Phascolarctos cinereus	1262-Tallowwood - Small-fruited Grey Gum dry grassy open forest of the foothills of the NSW North Coast
Little Bentwing-bat	Miniopterus australis	1262-Tallowwood - Small-fruited Grey Gum dry grassy open forest of the foothills of the NSW North Coast
Little Lorikeet	Glossopsitta pusilla	1262-Tallowwood - Small-fruited Grey Gum dry grassy open forest of the foothills of the NSW North Coast
Masked Owl	Tyto novaehollandiae	1262-Tallowwood - Small-fruited Grey Gum dry grassy open forest of the foothills of the NSW North Coast
Powerful Owl	Ninox strenua	1262-Tallowwood - Small-fruited Grey Gum dry grassy open forest of the foothills of the NSW North Coast



BAM Predicted Species Report

Regent Honeyeater	<i>Anthochaera phrygia</i>	1262-Tallowwood - Small-fruited Grey Gum dry grassy open forest of the foothills of the NSW North Coast
Square-tailed Kite	<i>Lophoictinia isura</i>	1262-Tallowwood - Small-fruited Grey Gum dry grassy open forest of the foothills of the NSW North Coast
Swift Parrot	<i>Lathamus discolor</i>	1262-Tallowwood - Small-fruited Grey Gum dry grassy open forest of the foothills of the NSW North Coast
Varied Sittella	<i>Daphoenositta chrysoptera</i>	1262-Tallowwood - Small-fruited Grey Gum dry grassy open forest of the foothills of the NSW North Coast
Yellow-bellied Sheath-tail-bat	<i>Saccolaimus flaviventris</i>	1262-Tallowwood - Small-fruited Grey Gum dry grassy open forest of the foothills of the NSW North Coast

Threatened species not within the area of these PCT's

Common Name	Scientific Name	Vegetation Type(s)
Barking Owl	<i>Ninox connivens</i>	1262-Tallowwood - Small-fruited Grey Gum dry grassy open forest of the foothills of the NSW North Coast
Barred Cuckoo-shrike	<i>Coracina lineata</i>	1262-Tallowwood - Small-fruited Grey Gum dry grassy open forest of the foothills of the NSW North Coast
Common Blossom-bat	<i>Syconycteris australis</i>	1262-Tallowwood - Small-fruited Grey Gum dry grassy open forest of the foothills of the NSW North Coast
Diamond Firetail	<i>Stagonopleura guttata</i>	1262-Tallowwood - Small-fruited Grey Gum dry grassy open forest of the foothills of the NSW North Coast
Eastern Chestnut Mouse	<i>Pseudomys gracilicaudatus</i>	1262-Tallowwood - Small-fruited Grey Gum dry grassy open forest of the foothills of the NSW North Coast
Eastern False Pipistrelle	<i>Falsistrellus tasmaniensis</i>	1262-Tallowwood - Small-fruited Grey Gum dry grassy open forest of the foothills of the NSW North Coast
Glossy Black-Cockatoo	<i>Calyptrorhynchus lathami</i>	1262-Tallowwood - Small-fruited Grey Gum dry grassy open forest of the foothills of the NSW North Coast
Golden-tipped Bat	<i>Kerivoula papuensis</i>	1262-Tallowwood - Small-fruited Grey Gum dry grassy open forest of the foothills of the NSW North Coast
Long-nosed Potoroo	<i>Potorous tridactylus</i>	1262-Tallowwood - Small-fruited Grey Gum dry grassy open forest of the foothills of the NSW North Coast
Pale-vented Bush-hen	<i>Amaurornis moluccana</i>	1262-Tallowwood - Small-fruited Grey Gum dry grassy open forest of the foothills of the NSW North Coast
Spotted-tailed Quoll	<i>Dasyurus maculatus</i>	1262-Tallowwood - Small-fruited Grey Gum dry grassy open forest of the foothills of the NSW North Coast
Yellow-bellied Glider	<i>Petaurus australis</i>	1262-Tallowwood - Small-fruited Grey Gum dry grassy open forest of the foothills of the NSW North Coast



Sustainable Partners

Appendix 4: Ecosystem Credit Species – Offset Site



BAM Predicted Species Report

Proposal Details

Assessment Id	Proposal Name	BAM data last updated *
00012289/BAAS17107/18/00012290	Houston Mitchell Drive Rezoning	24/02/2018
Assessor Name	Report Created	BAM Data version *
Will Steggall	10/09/2018	3
Assessor Number	* Disclaimer: BAM data last updated may indicate either complete or partial update of the BAM calculator database. BAM calculator database may not be completely aligned with Bionet.	
BAAS17107		

Threatened species reliably predicted to utilise the site. No surveys are required for these species. Ecosystem credits apply to these species.

Common Name	Scientific Name	Vegetation Types(s)
Black-necked Stork	Ephippiorhynchus asiaticus	1230-Swamp Mahogany swamp forest on coastal lowlands of the NSW North Coast Bioregion and northern Sydney Basin Bioregion
Brown Treecreeper (eastern subspecies)	Climacteris picumnus victoriae	1230-Swamp Mahogany swamp forest on coastal lowlands of the NSW North Coast Bioregion and northern Sydney Basin Bioregion 1262-Tallowwood - Small-fruited Grey Gum dry grassy open forest of the foothills of the NSW North Coast
Eastern Bentwing-bat	Miniopterus schreibersii oceanensis	695-Blackbutt - Turpentine - Tallowwood shrubby open forest of the coastal foothills of the central NSW North Coast Bioregion 1230-Swamp Mahogany swamp forest on coastal lowlands of the NSW North Coast Bioregion and northern Sydney Basin Bioregion 1262-Tallowwood - Small-fruited Grey Gum dry grassy open forest of the foothills of the NSW North Coast
Eastern False Pipistrelle	Falsistrellus tasmaniensis	695-Blackbutt - Turpentine - Tallowwood shrubby open forest of the coastal foothills of the central NSW North Coast Bioregion 1262-Tallowwood - Small-fruited Grey Gum dry grassy open forest of the foothills of the NSW North Coast
Eastern Freetail-bat	Mormopterus norfolkensis	695-Blackbutt - Turpentine - Tallowwood shrubby open forest of the coastal foothills of the central NSW North Coast Bioregion



BAM Predicted Species Report

Eastern Freetail-bat	Mormopterus norfolkensis	1230-Swamp Mahogany swamp forest on coastal lowlands of the NSW North Coast Bioregion and northern Sydney Basin Bioregion 1262-Tallowwood - Small-fruited Grey Gum dry grassy open forest of the foothills of the NSW North Coast
Glossy Black-Cockatoo	Calyptrorhynchus lathamii	695-Blackbutt - Turpentine - Tallowwood shrubby open forest of the coastal foothills of the central NSW North Coast Bioregion
Greater Broad-nosed Bat	Scoteanax rueppellii	695-Blackbutt - Turpentine - Tallowwood shrubby open forest of the coastal foothills of the central NSW North Coast Bioregion 1230-Swamp Mahogany swamp forest on coastal lowlands of the NSW North Coast Bioregion and northern Sydney Basin Bioregion 1262-Tallowwood - Small-fruited Grey Gum dry grassy open forest of the foothills of the NSW North Coast
Grey-headed Flying-fox	Pteropus poliocephalus	695-Blackbutt - Turpentine - Tallowwood shrubby open forest of the coastal foothills of the central NSW North Coast Bioregion 1230-Swamp Mahogany swamp forest on coastal lowlands of the NSW North Coast Bioregion and northern Sydney Basin Bioregion 1262-Tallowwood - Small-fruited Grey Gum dry grassy open forest of the foothills of the NSW North Coast
Hoary Wattled Bat	Chalinolobus nigrogriseus	695-Blackbutt - Turpentine - Tallowwood shrubby open forest of the coastal foothills of the central NSW North Coast Bioregion 1230-Swamp Mahogany swamp forest on coastal lowlands of the NSW North Coast Bioregion and northern Sydney Basin Bioregion 1262-Tallowwood - Small-fruited Grey Gum dry grassy open forest of the foothills of the NSW North Coast
Koala	Phascolarctos cinereus	695-Blackbutt - Turpentine - Tallowwood shrubby open forest of the coastal foothills of the central NSW North Coast Bioregion 1230-Swamp Mahogany swamp forest on coastal lowlands of the NSW North Coast Bioregion and northern Sydney Basin Bioregion 1262-Tallowwood - Small-fruited Grey Gum dry grassy open forest of the foothills of the NSW North Coast



BAM Predicted Species Report

Little Bentwing-bat	Miniopterus australis	695-Blackbutt - Turpentine - Tallowwood shrubby open forest of the coastal foothills of the central NSW North Coast Bioregion
		1230-Swamp Mahogany swamp forest on coastal lowlands of the NSW North Coast Bioregion and northern Sydney Basin Bioregion
		1262-Tallowwood - Small-fruited Grey Gum dry grassy open forest of the foothills of the NSW North Coast
Little Eagle	Hieraaetus morphnoides	1230-Swamp Mahogany swamp forest on coastal lowlands of the NSW North Coast Bioregion and northern Sydney Basin Bioregion
Little Lorikeet	Glossopsitta pusilla	695-Blackbutt - Turpentine - Tallowwood shrubby open forest of the coastal foothills of the central NSW North Coast Bioregion
		1230-Swamp Mahogany swamp forest on coastal lowlands of the NSW North Coast Bioregion and northern Sydney Basin Bioregion
		1262-Tallowwood - Small-fruited Grey Gum dry grassy open forest of the foothills of the NSW North Coast
Masked Owl	Tyto novaehollandiae	695-Blackbutt - Turpentine - Tallowwood shrubby open forest of the coastal foothills of the central NSW North Coast Bioregion
		1230-Swamp Mahogany swamp forest on coastal lowlands of the NSW North Coast Bioregion and northern Sydney Basin Bioregion
		1262-Tallowwood - Small-fruited Grey Gum dry grassy open forest of the foothills of the NSW North Coast
Powerful Owl	Ninox strenua	695-Blackbutt - Turpentine - Tallowwood shrubby open forest of the coastal foothills of the central NSW North Coast Bioregion
		1230-Swamp Mahogany swamp forest on coastal lowlands of the NSW North Coast Bioregion and northern Sydney Basin Bioregion
		1262-Tallowwood - Small-fruited Grey Gum dry grassy open forest of the foothills of the NSW North Coast
Regent Honeyeater	Anthochaera phrygia	695-Blackbutt - Turpentine - Tallowwood shrubby open forest of the coastal foothills of the central NSW North Coast Bioregion
		1230-Swamp Mahogany swamp forest on coastal lowlands of the NSW North Coast Bioregion and northern Sydney Basin Bioregion



BAM Predicted Species Report

Regent Honeyeater	<i>Anthochaera phrygia</i>	1262-Tallowwood - Small-fruited Grey Gum dry grassy open forest of the foothills of the NSW North Coast
Spotted-tailed Quoll	<i>Dasyurus maculatus</i>	695-Blackbutt - Turpentine - Tallowwood shrubby open forest of the coastal foothills of the central NSW North Coast Bioregion
Square-tailed Kite	<i>Lophoictinia isura</i>	695-Blackbutt - Turpentine - Tallowwood shrubby open forest of the coastal foothills of the central NSW North Coast Bioregion 1230-Swamp Mahogany swamp forest on coastal lowlands of the NSW North Coast Bioregion and northern Sydney Basin Bioregion 1262-Tallowwood - Small-fruited Grey Gum dry grassy open forest of the foothills of the NSW North Coast
Swift Parrot	<i>Lathamus discolor</i>	1230-Swamp Mahogany swamp forest on coastal lowlands of the NSW North Coast Bioregion and northern Sydney Basin Bioregion 1262-Tallowwood - Small-fruited Grey Gum dry grassy open forest of the foothills of the NSW North Coast
Varied Sittella	<i>Daphoenositta chrysoptera</i>	695-Blackbutt - Turpentine - Tallowwood shrubby open forest of the coastal foothills of the central NSW North Coast Bioregion 1262-Tallowwood - Small-fruited Grey Gum dry grassy open forest of the foothills of the NSW North Coast
Yellow-bellied Sheath-tail-bat	<i>Saccolaimus flaviventris</i>	695-Blackbutt - Turpentine - Tallowwood shrubby open forest of the coastal foothills of the central NSW North Coast Bioregion 1230-Swamp Mahogany swamp forest on coastal lowlands of the NSW North Coast Bioregion and northern Sydney Basin Bioregion 1262-Tallowwood - Small-fruited Grey Gum dry grassy open forest of the foothills of the NSW North Coast

Threatened species not within the area of these PCT's

Common Name	Scientific Name	Vegetation Types(s)
Australasian Bittern	<i>Botaurus poiciloptilus</i>	1230-Swamp Mahogany swamp forest on coastal lowlands of the NSW North Coast Bioregion and northern Sydney Basin Bioregion
Barking Owl	<i>Ninox connivens</i>	1230-Swamp Mahogany swamp forest on coastal lowlands of the NSW North Coast Bioregion and northern Sydney Basin Bioregion



BAM Predicted Species Report

Barking Owl	<i>Ninox connivens</i>	1262-Tallowwood - Small-fruited Grey Gum dry grassy open forest of the foothills of the NSW North Coast
Barred Cuckoo-shrike	<i>Coracina lineata</i>	695-Blackbutt - Turpentine - Tallowwood shrubby open forest of the coastal foothills of the central NSW North Coast Bioregion 1230-Swamp Mahogany swamp forest on coastal lowlands of the NSW North Coast Bioregion and northern Sydney Basin Bioregion 1262-Tallowwood - Small-fruited Grey Gum dry grassy open forest of the foothills of the NSW North Coast
Black Bittern	<i>Ixobrychus flavicollis</i>	1230-Swamp Mahogany swamp forest on coastal lowlands of the NSW North Coast Bioregion and northern Sydney Basin Bioregion
Common Blossom-bat	<i>Syconycteris australis</i>	695-Blackbutt - Turpentine - Tallowwood shrubby open forest of the coastal foothills of the central NSW North Coast Bioregion 1230-Swamp Mahogany swamp forest on coastal lowlands of the NSW North Coast Bioregion and northern Sydney Basin Bioregion 1262-Tallowwood - Small-fruited Grey Gum dry grassy open forest of the foothills of the NSW North Coast
Diamond Firetail	<i>Stagonopleura guttata</i>	1262-Tallowwood - Small-fruited Grey Gum dry grassy open forest of the foothills of the NSW North Coast
Eastern Chestnut Mouse	<i>Pseudomys gracilicaudatus</i>	695-Blackbutt - Turpentine - Tallowwood shrubby open forest of the coastal foothills of the central NSW North Coast Bioregion 1230-Swamp Mahogany swamp forest on coastal lowlands of the NSW North Coast Bioregion and northern Sydney Basin Bioregion 1262-Tallowwood - Small-fruited Grey Gum dry grassy open forest of the foothills of the NSW North Coast
Eastern False Pipistrelle	<i>Falsistrellus tasmaniensis</i>	1230-Swamp Mahogany swamp forest on coastal lowlands of the NSW North Coast Bioregion and northern Sydney Basin Bioregion
Eastern Osprey	<i>Pandion cristatus</i>	1230-Swamp Mahogany swamp forest on coastal lowlands of the NSW North Coast Bioregion and northern Sydney Basin Bioregion
Glossy Black-Cockatoo	<i>Calyptorhynchus lathami</i>	1230-Swamp Mahogany swamp forest on coastal lowlands of the NSW North Coast Bioregion and northern Sydney Basin Bioregion



BAM Predicted Species Report

Glossy Black-Cockatoo	<i>Calyptrorhynchus lathamii</i>	1262-Tallowwood - Small-fruited Grey Gum dry grassy open forest of the foothills of the NSW North Coast
Golden-tipped Bat	<i>Kerivoula papuensis</i>	695-Blackbutt - Turpentine - Tallowwood shrubby open forest of the coastal foothills of the central NSW North Coast Bioregion 1230-Swamp Mahogany swamp forest on coastal lowlands of the NSW North Coast Bioregion and northern Sydney Basin Bioregion 1262-Tallowwood - Small-fruited Grey Gum dry grassy open forest of the foothills of the NSW North Coast
Long-nosed Potoroo	<i>Potorous tridactylus</i>	695-Blackbutt - Turpentine - Tallowwood shrubby open forest of the coastal foothills of the central NSW North Coast Bioregion 1230-Swamp Mahogany swamp forest on coastal lowlands of the NSW North Coast Bioregion and northern Sydney Basin Bioregion 1262-Tallowwood - Small-fruited Grey Gum dry grassy open forest of the foothills of the NSW North Coast
Pale-vented Bush-hen	<i>Amaurornis moluccana</i>	695-Blackbutt - Turpentine - Tallowwood shrubby open forest of the coastal foothills of the central NSW North Coast Bioregion 1230-Swamp Mahogany swamp forest on coastal lowlands of the NSW North Coast Bioregion and northern Sydney Basin Bioregion 1262-Tallowwood - Small-fruited Grey Gum dry grassy open forest of the foothills of the NSW North Coast
Red-legged Pademelon	<i>Thylogale stigmatica</i>	695-Blackbutt - Turpentine - Tallowwood shrubby open forest of the coastal foothills of the central NSW North Coast Bioregion
Spotted-tailed Quoll	<i>Dasyurus maculatus</i>	1230-Swamp Mahogany swamp forest on coastal lowlands of the NSW North Coast Bioregion and northern Sydney Basin Bioregion 1262-Tallowwood - Small-fruited Grey Gum dry grassy open forest of the foothills of the NSW North Coast
Superb Fruit-Dove	<i>Ptilinopus superbus</i>	1230-Swamp Mahogany swamp forest on coastal lowlands of the NSW North Coast Bioregion and northern Sydney Basin Bioregion
Varied Sittella	<i>Daphoenositta chrysoptera</i>	1230-Swamp Mahogany swamp forest on coastal lowlands of the NSW North Coast Bioregion and northern Sydney Basin Bioregion



BAM Predicted Species Report

White-bellied Sea-Eagle	<i>Haliaeetus leucogaster</i>	1230-Swamp Mahogany swamp forest on coastal lowlands of the NSW North Coast Bioregion and northern Sydney Basin Bioregion
Wompoo Fruit-Dove	<i>Ptilinopus magnificus</i>	695-Blackbutt - Turpentine - Tallowwood shrubby open forest of the coastal foothills of the central NSW North Coast Bioregion
Yellow-bellied Glider	<i>Petaurus australis</i>	695-Blackbutt - Turpentine - Tallowwood shrubby open forest of the coastal foothills of the central NSW North Coast Bioregion 1230-Swamp Mahogany swamp forest on coastal lowlands of the NSW North Coast Bioregion and northern Sydney Basin Bioregion 1262-Tallowwood - Small-fruited Grey Gum dry grassy open forest of the foothills of the NSW North Coast



Sustainable Partners

Appendix 5: Species Credit Report – Development Site



BAM Candidate Species Report

Proposal Details

Assessment Id	Proposal Name	BAM data last updated *
00012287/BAAS17107/18/00012288	Houston Mitchell Drive Rezoning	24/02/2018
Assessor Name	Report Created	BAM Data version *
Will Steggall	10/09/2018	3
Assessor Number	* Disclaimer: BAM data last updated may indicate either complete or partial update of the BAM calculator database. BAM calculator database may not be completely aligned with Bionet.	
BAAS17107		

List of Species Requiring Survey

Name	Presence	Survey Months
<i>Lophoictinia isura</i> Square-tailed Kite	No (surveyed)	<div>Jan Feb Mar Apr May Jun</div> <div>Jul Aug Sep Oct Nov Dec</div>
<i>Petaurus norfolcensis</i> Squirrel Glider	No (surveyed)	<div>Jan Feb Mar Apr May Jun</div> <div>Jul Aug Sep Oct Nov Dec</div>
<i>Phascogale tapoatafa</i> Brush-tailed Phascogale	No (surveyed)	<div>Jan Feb Mar Apr May Jun</div> <div>Jul Aug Sep Oct Nov Dec</div>
<i>Phascolarctos cinereus</i> Koala	No (surveyed)	<div>Jan Feb Mar Apr May Jun</div> <div>Jul Aug Sep Oct Nov Dec</div>

List of Species Not On Site

Name
<i>Acacia courtii</i> North Brother Wattle
<i>Aepyprymnus rufescens</i> Rufous Bettong
<i>Niemeyera whitei</i> Rusty Plum, Plum Boxwood
<i>Burhinus grallarius</i> Bush Stone-curlew
<i>Calyptorhynchus lathami</i> Glossy Black-Cockatoo
<i>Cercartetus nanus</i> Eastern Pygmy-possum



BAM Candidate Species Report

<i>Cryptostylis hunteriana</i> Leafless Tongue Orchid
<i>Diuris disposita</i> Willawarrin Doubletail
<i>Hakea archaeoides</i> Big Nellie Hakea
<i>Hibbertia hexandra</i> Tree Guinea Flower
<i>Hoplocephalus bitorquatus</i> Pale-headed Snake
<i>Hoplocephalus stephensii</i> Stephens' Banded Snake
<i>Melaleuca groveana</i> Grove's Paperbark
<i>Lathamus discolor</i> Swift Parrot
<i>Litoria brevipalmata</i> Green-thighed Frog
<i>Litoria daviesae</i> Davies' Tree Frog
<i>Macropus parma</i> Parma Wallaby
<i>Miniopterus australis</i> Little Bentwing-bat
<i>Miniopterus schreibersii oceanensis</i> Eastern Bentwing-bat
<i>Mixophyes balbus</i> Stuttering Frog
<i>Mixophyes iteratus</i> Giant Barred Frog
<i>Myotis macropus</i> Southern Myotis
<i>Ninox connivens</i> Barking Owl
<i>Tinospora smilacina</i> Tinospora Vine
<i>Tyto novaehollandiae</i> Masked Owl
<i>Vespadelus troughtoni</i> Eastern Cave Bat
<i>Anthochaera phrygia</i> Regent Honeyeater
<i>Turnix maculosus</i> Red-backed Button-quail
<i>Ninox strenua</i> Powerful Owl
<i>Parsonia dorrigoensis</i> Milky Silkpod
<i>Petrogale penicillata</i> Brush-tailed Rock-wallaby
<i>Planigale maculata</i> Common Planigale
<i>Pomaderris queenslandica</i> Scant Pomaderris
<i>Pteropus poliocephalus</i> Grey-headed Flying-fox



Sustainable Partners

Appendix 6: Species Credit Report – Offset Site



BAM Candidate Species Report

Proposal Details

Assessment Id	Proposal Name	BAM data last updated *
00012289/BAAS17107/18/00012290	Houston Mitchell Drive Rezoning	24/02/2018
Assessor Name	Report Created	BAM Data version *
Will Steggall	10/09/2018	3
Assessor Number	* Disclaimer: BAM data last updated may indicate either complete or partial update of the BAM calculator database. BAM calculator database may not be completely aligned with Bionet.	
BAAS17107		

List of Species Requiring Survey

Name	Presence	Survey Months
<i>Melaleuca biconvexa</i> Biconvex Paperbark	No (surveyed)	<div>Jan Feb Mar Apr May Jun</div> <div>Jul Aug Sep Oct Nov Dec</div>
<i>Lophoictinia isura</i> Square-tailed Kite	No (surveyed)	<div>Jan Feb Mar Apr May Jun</div> <div>Jul Aug Sep Oct Nov Dec</div>
<i>Maundia triglochinos</i> Maundia triglochinos	No (surveyed)	<div>Jan Feb Mar Apr May Jun</div> <div>Jul Aug Sep Oct Nov Dec</div>
<i>Petaurus norfolcensis</i> Squirrel Glider	No (surveyed)	<div>Jan Feb Mar Apr May Jun</div> <div>Jul Aug Sep Oct Nov Dec</div>
<i>Phascogale tapoatafa</i> Brush-tailed Phascogale	No (surveyed)	<div>Jan Feb Mar Apr May Jun</div> <div>Jul Aug Sep Oct Nov Dec</div>
<i>Phascolarctos cinereus</i> Koala	No (surveyed)	<div>Jan Feb Mar Apr May Jun</div> <div>Jul Aug Sep Oct Nov Dec</div>

List of Species Not On Site

Name
<i>Acacia courtii</i> North Brother Wattle



BAM Candidate Species Report

<i>Acronychia littoralis</i>	Scented Acronychia
<i>Aepyprymnus rufescens</i>	Rufous Bettong
<i>Alexfloydia repens</i>	Floyd's Grass
<i>Allocasuarina defungens</i>	Dwarf Heath Casuarina
<i>Niemeyera whitei</i>	Rusty Plum, Plum Boxwood
<i>Argynnis hyperbius</i>	Laced Fritillary
<i>Arthropteris palisotii</i>	Lesser Creeping Fern
<i>Asperula asthenes</i>	Trailing Woodruff
<i>Burhinus grallarius</i>	Bush Stone-curlew
<i>Calyptorhynchus lathami</i>	Glossy Black-Cockatoo
<i>Cercartetus nanus</i>	Eastern Pygmy-possum
<i>Coeranoscincus reticulatus</i>	Three-toed Snake-tooth Skink
<i>Crinia tinnula</i>	Wallum Froglet
<i>Cryptostylis hunteriana</i>	Leafless Tongue Orchid
<i>Dendrobium melaleucaphilum</i>	Spider orchid
<i>Diuris disposita</i>	Willawarrin Doubletail
<i>Grevillea guthrieana</i>	Guthrie's Grevillea
<i>Hakea archaeoides</i>	Big Nellie Hakea
<i>Hibbertia hexandra</i>	Tree Guinea Flower
<i>Hoplocephalus bitorquatus</i>	Pale-headed Snake
<i>Hoplocephalus stephensi</i>	Stephens' Banded Snake
<i>Melaleuca groveana</i>	Grove's Paperbark
<i>Lathamus discolor</i>	Swift Parrot
<i>Gavicalis fasciogularis</i>	Mangrove Honeyeater
<i>Litoria aurea</i>	Green and Golden Bell Frog
<i>Litoria brevipalmata</i>	Green-thighed Frog
<i>Litoria daviesae</i>	Davies' Tree Frog
<i>Carterornis leucotis</i>	White-eared Monarch
<i>Macropus parma</i>	Parma Wallaby



BAM Candidate Species Report

<i>Marsdenia longiloba</i>	Slender Marsdenia
<i>Miniopterus australis</i>	Little Bentwing-bat
<i>Miniopterus schreibersii oceanensis</i>	Eastern Bentwing-bat
<i>Mixophyes balbus</i>	Stuttering Frog
<i>Mixophyes iteratus</i>	Giant Barred Frog
<i>Myotis macropus</i>	Southern Myotis
<i>Ninox connivens</i>	Barking Owl
<i>Tinospora smilacina</i>	Tinospora Vine
<i>Tyto novaehollandiae</i>	Masked Owl
<i>Vespadelus troughtoni</i>	Eastern Cave Bat
<i>Anthochaera phrygia</i>	Regent Honeyeater
<i>Lindernia alsinoides</i>	Noah's False Chickweed
<i>Tumix maculosus</i>	Red-backed Button-quail
<i>Banksia conferta subsp. conferta</i>	Banksia conferta subsp. conferta
<i>Dracophyllum macranthum</i>	Dracophyllum macranthum
<i>Hieraaetus morphnoides</i>	Little Eagle
<i>Haliaeetus leucogaster</i>	White-bellied Sea-Eagle
<i>Eucalyptus seeana - endangered population</i>	Eucalyptus seeana population in the Greater Taree local government area
<i>Ninox strenua</i>	Powerful Owl
<i>Oberonia titania</i>	Red-flowered King of the Fairies
<i>Ocybadistes knightorum</i>	Black Grass-dart Butterfly
<i>Pandion cristatus</i>	Eastern Osprey
<i>Parsonsia dorrigoensis</i>	Milky Silkpod
<i>Petalura gigantea</i>	Giant Dragonfly
<i>Petrogale penicillata</i>	Brush-tailed Rock-wallaby
<i>Phaius australis</i>	Southern Swamp Orchid
<i>Planigale maculata</i>	Common Planigale
<i>Pomaderris queenslandica</i>	Scant Pomaderris



BAM Candidate Species Report

Pteropus poliocephalus Grey-headed Flying-fox

Senna acclinis Rainforest Cassia



Sustainable Partners

Appendix 7: Credit Summary Report – Development Site



BAM Credit Summary Report

Proposal Details

Assessment Id	00012287/BAAS17107/18/00012288	Proposal Name	Houston Mitchell Drive Rezoning	BAM data last updated *	24/02/2018
Assessor Name	Will Steggall	Report Created	11/09/2018	BAM Data version *	3
Assessor Number	BAAS17107	* Disclaimer: BAM data last updated may indicate either complete or partial update of the BAM calculator database. BAM calculator database may not be completely aligned with Bionet.			

Ecosystem credits for plant communities types (PCT), ecological communities & threatened species habitat

Zone	Vegetation zone name	Vegetation integrity loss / gain	Area (ha)	Constant	Species sensitivity to gain class (for BRW)	Biodiversity risk weighting	Candidate SAI	Ecosystem credits
Tallowwood - Small-fruited Grey Gum dry grassy open forest of the foothills of the NSW North Coast								
1	1262_Good	21.6	0.5	0.25	High Sensitivity to Potential Gain	1.50		4



BAM Credit Summary Report

2 1262_Poor	37.4	0.6	0.25	High Sensitivity to Potential Gain	1.50		8
					Subtotal		12
					Total		12

Species credits for threatened species

Vegetation zone name	Habitat condition (HC)	Area (ha) / individual (HI)	Constant	Biodiversity risk weighting	Candidate SAI	Species credits
----------------------	------------------------	-----------------------------	----------	-----------------------------	---------------	-----------------



Sustainable Partners

Appendix 8: Credit Summary Report – Offset Site



BAM Credit Summary Report

Proposal Details

Assessment Id	00012289/BAAS17107/18/00012290	Proposal Name	Houston Mitchell Drive Rezoning	BAM data last updated *	24/02/2018
Assessor Name	Will Steggall	Report Created	10/09/2018	BAM Data version *	3

Assessor Number
BAAS17107

* Disclaimer: BAM data last updated may indicate either complete or partial update of the BAM calculator database. BAM calculator database may not be completely aligned with Bionet.

Ecosystem credits for plant communities types (PCT), ecological communities & threatened species habitat

Zone	Vegetation zone name	Vegetation integrity loss / gain	Area (ha)	Constant	Ecosystem credits
Blackbutt - Turpentine - Tallowood shrubby open forest of the coastal foothills of the central NSW North Coast Bioregion					
1	695_Moderate		16.6	0.3	0.25
					1
				Subtotal	1



BAM Credit Summary Report

Swamp Mahogany swamp forest on coastal lowlands of the NSW North Coast Bioregion and northern Sydney Basin Bioregion					
2	1230_Poor	14.4	2.6	0.25	9
				Subtotal	9
Tallowood - Small-fruited Grey Gum dry grassy open forest of the foothills of the NSW North Coast					
3	1262_Moderate	13.9	0.6	0.25	2
				Subtotal	2
				Total	12

Species credits for threatened species

Vegetation zone name	Habitat condition (HC)	Area (ha) / individual (HL)	Constant	Species credits
----------------------	------------------------	-----------------------------	----------	-----------------



Sustainable Partners

Appendix 9: Vegetation Plot Data Sheets

Biodiversity
AUSTRALIA

BAM Plot - Field Survey Form

Page no. 1 / 1

Survey Name: EC5103- Houston Mitchell	Date: 30.8.18	Plot #: 1 - development area
Surveyers: W	IBRA Region:	Plot Dimensions: 20x20 + 20x50
Likely Vegetation Class	Zone ID 1	
Plant Community Type		
EEC: Y / N	Orientation of midline from the 0m point: S - 177° north = 0, south = 180	

Record easting and northing from the plot marker.

Dimensions (shape) of 0.04 ha base plot inside 0.1 ha FA plot should be identified, magnetic bearing taken along midline.

BAM Attribute (400m2 plot)		Sum values
Count of Native Richness	Trees	4
	Shrubs	2
	Grasses etc.	1
	Forbs	5
	Ferns	0
	Other	2
Sum of Cover of native vascular plants by growth form group	Trees	13.2
	Shrubs	5.1
	Grasses etc.	4.0
	Forbs	0.9
	Ferns	0
	Other	0.3
High Threat Weed cover %		45.50

BAM Attribute (20 x 50 m plot)		Stem Classes and Hollows		Record living eucalypt* (Euc*) and living native non-eucalypt (Non Euc) stems separately. Data needed is presence only (tick) unless a 'large tree' for that veg class.
dbh	Euc*	Non Euc	Hollows^	
80 + cm	1			1
50 - 79 cm	1			
30 - 49 cm	✓			Hollows 20cm+
20 - 29 cm	✓			
10 - 19 cm	x			
5 - 9 cm	✓			
< 5 cm	✓			This size class records tree regeneration
Length of logs (m) (> 10cm diameter, > 50 cm in length)		3		
				total
				3

* Includes all species of Eucalyptus, Corymbia, Angophora, Lophostemon and Syncarpia

^ For hollows count only the presence of a stem containing hollows, not the count of hollows in that stem. Only count as 1 stem per tree where tree is multi-stemmed. The hollow-bearing stem may be a dead stem.

Each size class is noted as present by the living tree stems only. Depending on the Vegetation Class, DBH values and counts may be needed for a size class. For a multi-stemmed tree, only the largest living stem is included in the count/estimate if it is required by the large tree category for that vegetation class.

Hollows at least 20cm across are recorded for the purposes of habitat of some threatened species

The totals may be calculated after field component.

Hollows at least 20cm across are recorded for the purposes of habitat of some threatened species

BAM Attribute (1 x 1 m plots)	Litter cover (%)					Bare ground cover (%)					Cryptogam cover (%)					Rock cover (%)				
Subplot score (% in each)	100	100	100	100	100	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Average of the 5 subplots	100					0					0					0				

The average percentage recorded from five 1m x 1m plots on alternate sides of midline at locations 5, 15, 25, 35 and 45 m along midline. Litter cover includes leaves, seeds, twigs, branchlets and branches <10cm diameter.

Physiography & site features

Morphological type		Soil colour	
Landform element		Soil depth	
Landform pattern		Slope	0
Microrelief		Aspect	-
Lithology		Site drainage	impeded
Soil surface texture		Dist. to nearest water and type	Dam 25m to south


Plot Disturbance	Severity code	Age code		Severity code	Age code
Clearing (inc. logging)	3	0	Fire damage	-	
Cultivation (inc. pasture)	-		Storm damage	-	
Soil erosion	-		Weediness	2	2
Firewood/CWD removal	-		Other slashing		
Grazing (identify native/stock)	?		Other		

Height range

Severity: 0= no evidence, 1= light, 2= moderate, 3= severe.
Age: R= recent (<2yrs), NR= not recent (3-10yrs), O= old (>10yrs).

Height range		Height range	
Canopy	18-30	Shrub Layer	-
Understorey	8-12	Ground Layer	0.05-0.2
Midstorey		Vines & scramblers	

Additional Notes:

Survey Name: HMP BAM survey		Date:				Canopy, Understory, Midstory, Shrub layer, Ground layer			
Surveyors: Will		Plot: 1							

#	GF Code	Species Name	N, E or HTE	Cover	Abund	Dominant top 3 in each str.	Stratum	Height range
1		Eucalyptus tereticornis		10	2	Y	C	18m
2		Gymnura intermedia		1	1		C	
3		Melaleuca quinqueveneria		2	1	Y	U	
4		Melaleuca linariifolia		5	2	Y	U	
5		Glochidion ferrugineum		0.2	1		S	
6	-	Senna pendula		0.2	8		S	
7	-	Lantana camara		0.1	2		S	
8		Melaleuca styphalioides		0.1	1		S	
9		Parsonsia straminea		0.2	2		U	
10		Cestropium gymnosum		0.1	3			
11	-	Paspalum dilatatum		50	7,000	Y		
12		Imperata cylindrica		40	7,000	Y		
13		Cestropium sp. Dianella caerulea		0.1	10			
14	-	Plantago lanceolata		0.5				
15	-	Bidens pilosa		0.1				
16		Dichondra repens		0.1				
17		Ranunculus inundatus - Buttermilk		0.5				
18		Ranunculus sp. 2		0.1				
19	-	Fireweed		0.1				
20		Poranthera microphylla		0.1				
21		Hypochaeris radicata		0.5				
22								
23								
24								
25		offsite:						
26		Swamp Oak						
27		willow bottlebrush						
28		Swamp Mahogany						
29								
30								
31								
32								
33								
34								
35								
36								
37								
38								
39								
40								
41								
42								
43								
44								
45								
46								
47								
48								

Cover: 0.1, 0.2, 0.3, ..., 1, 2, 3, ..., 10, 15, 20, 25, ..., 100% (foliage cover). Note: 0.1% cover represents an area of approx. 63 x 63 cm or a circle about 71 cm across, 0.5% cover represents an area of approx. 1.4 x 1.4 m, and 1% = 2 x 2 m, 5% = 4 x 5 m, 25% = 10 x 10 m. Abundance: 1, 2, 3, ..., 10, 20, 30, ..., 100, 200, ..., 1000, ...

Biodiversity
AUSTRALIA

BAM Plot - Field Survey Form

Page no. 1 / 1

Survey Name: EC3103-Hausien Mitchell	Date: 30.8.18	Plot #: 2 - development area
Surveyers: Will	IBRA Region:	Plot Dimensions: 20x20 + 20x50
Likely Vegetation Class	Zone ID 1	
Plant Community Type		
EEC: Y / N	Orientation of midline from the 0m point: 180° S north = 0, south = 180	

Record easting and northing from the plot marker.

Dimensions (shape) of 0.04 ha base plot inside 0.1 ha FA plot should be identified, magnetic bearing taken along midline.

BAM Attribute (400m2 plot)		Sum values	BAM Attribute (20 x 50 m plot)			Stem Classes and Hollows			Record living eucalypt* (Euc*) and living native non-eucalypti (Non Euc) stems separately. Data needed is presence only (tick) unless a large tree for that veg class.
			dbh	Euc*	Non Euc	Hollows^			
Count of Native Richness	Trees	1	80 + cm	—			0	* includes all species of Eucalyptus, Corymbia, Angophora, Lophostemon and Syncarpia ^ For hollows count only the presence of a stem containing hollows, not the count of hollows in that stem. Only count as 1 stem per tree where tree is multi-stemmed. The hollow-bearing stem may be a dead stem.	
	Shrubs	1	50 - 79 cm	—					
	Grasses etc.	2	30 - 49 cm	✓					
	Forbs	1	20 - 29 cm	—			Hollows 20cm+		
	Ferns	0	10 - 19 cm	—					
	Other	1	5 - 9 cm	—					
Sum of Cover of native vascular plants by growth form group	Trees	8	< 5 cm	—			This size class records tree regeneration	total 0	
	Shrubs	0.1	Length of logs (m) (> 10cm diameter, > 50 cm in length)	—					
	Grasses etc.	15.1							
	Forbs	0.1							
	Ferns	0							
Other	0.5								
High Threat Weed cover %		23.15							

The totals may be calculated after field component.

Hollows at least 20cm across are recorded for the purposes of habitat of some threatened species

BAM Attribute (1 x 1 m plots)	Litter cover (%)					Bare ground cover (%)					Cryptogam cover (%)					Rock cover (%)				
Subplot score (% in each)	100	100	95	100	100	—	—	5	—	—	—	—	—	—	—	—	—	—	—	—
Average of the 5 subplots	99					1					0					0				

The average percentage recorded from five 1m x 1m plots on alternate sides of midline at locations 5, 15, 25, 35 and 45 m along midline. Litter cover includes leaves, seeds, twigs, branchlets and branches <10cm diameter.

Physiography & site features

Morphological type		Soil colour	Grey-brown
Landform element		Soil depth	
Landform pattern		Slope	< 5
Microrelief		Aspect	
Lithology		Site drainage	Impeded
Soil surface texture		Dist. to nearest water and type	

Plot Disturbance	Severity code	Age code		Severity code	Age code
Clearing (inc. logging)	3	NR	Fire damage	—	
Cultivation (inc. pasture)			Storm damage	—	
Soil erosion			Weediness	2	R
Firewood/CWD removal	—		Other Slashing	3	R
Grazing (identify native/stock)	?		Other		

Severity: 0 = no evidence, 1 = light, 2 = moderate, 3 = severe

Age: R = recent (<3yrs), NR = not recent (3-10yrs), O = old (>10yrs)

Height range	
Canopy	15-18
Understorey	8-12
Midstorey	—
Shrub Layer	—
Ground Layer	0.05-0.2
Vines & scramblers	

Additional Notes:

Mound of fill in plot, covered in weeds

Survey Name: HMD rezoning		Date: 30.8.18		<div style="border: 1px solid black; padding: 2px; font-size: 0.8em;"> Canopy, Understorey Midstorey Shrub layer Ground layer </div>	
Surveyors: WS		Plot: 2			

#	GF Code	Species Name	N, E or HTE	Cover	Abund	Dominant (top 3 in each str.)	Stratum	Height range
1		Casuarina glauca		8	4	Y	C, U	
2		Melaleuca styphelioides		0.1	1		U	
3		Parsonsia straminea		0.5	1		U	
4	-	Ageratum houstonianum		2			G	
5	-	Paspalum meridionale		60		Y		
6	-	Bidens pilosa		1				
7	-	Paspalum dilatatum		25				
8		Carex appressa		0.5				
9		Pratia purpurascens		0.1				
10	-	Hydrocotyle - Pennywort		0.2				
11	-	Scarlet Pimpernel		0.1				
12		Lomandra longifolia		0.1	1			
13	-	Setaria sphacelata		0.2				
14								
15								
16								
17								
18								
19								
20								
21								
22								
23								
24								
25								
26								
27								
28								
29								
30								
31								
32								
33								
34								
35								
36								
37								
38								
39								
40								
41								
42								
43								
44								
45								
46								
47								
48								

Cover: 0.1, 0.2, 0.3, ..., 1, 2, 3, ..., 10, 15, 20, 25, ..., 100% (foliage cover). Note: 0.1% cover represents an area of approx. 63 x 63 cm or a circle about 71 cm across, 0.5% cover represents an area of approx. 1.4 x 1.4 m, and 1% = 2 x 2 m, 5% = 4 x 5 m, 25% = 10 x 10 m. Abundance: 1, 2, 3, ..., 10, 20, 30, ..., 100, 200, ..., 1000, ...

Biodiversity
AUSTRALIA

BAM Plot - Field Survey Form

Page no. 11

Survey Name: <i>HMO Industrial</i>	Date: <i>30.8.18</i>	Plot #: <i>3 - Development area</i>
Surveyers: <i>Will</i>	IBRA Region: <i>MNR</i>	Plot Dimensions:
Likely Vegetation Class		Zone ID <i>2</i>
Plant Community Type		
EEC: <i>Y 1 (K)</i>	Orientation of midline from the 0m point: <i>185°</i> north = 0, south = 180	

Record easting and northing from the plot marker.

Dimensions (shape) of 0.04 ha base plot inside 0.1 ha FA plot should be identified, magnetic bearing taken along midline.

BAM Attribute (400m2 plot)	Sum values
Trees	7
Shrubs	2
Grasses etc.	8
Forbs	4
Ferns	0
Other	2
Count of Native Richness	
Trees	26.3
Shrubs	0.3
Grasses etc.	37.6
Forbs	0.3
Ferns	0
Other	0.6
Sum of Cover of native vascular plants by growth form group	
High Threat Weed cover %	24.37

The totals may be calculated after field component.

BAM Attribute (20 x 50 m plot)	Stem Classes and Hollows	Record living eucalypt* (Euc*) and living native non-eucalypt (Non Euc) stems separately. Data needed is presence only (tick) unless a large tree for that veg class.
dbh	Euc*	Non Euc
80 + cm	0	
50 - 79 cm	5	
30 - 49 cm	✓	
20 - 29 cm	✓	
10 - 19 cm	x	
5 - 9 cm	x	
< 5 cm	x	
Length of logs (m) (> 10cm diameter, > 50 cm in length)	3.1, 0.9, 0.8, 1.0, 7	
		total 6.5

Each size class is noted as present by the living tree stems only. Depending on the Vegetation Class, DBH values and counts may be needed for a size class. For a multi-stemmed tree, only the largest living stem is included in the count/estimate if it is required by the large tree category for that vegetation class.

Hollows at least 20cm across are recorded for the purposes of habitat of some threatened species

BAM Attribute (1 x 1 m plots)	Litter cover (%)	Bare ground cover (%)	Cryptogam cover (%)	Rock cover (%)
Subplot score (% in each)	100 100 40 0 0	0 0 10 20 20	0 0 0 0 0	0 0 50 80 80
Average of the 5 subplots	48	8	0	42

The average percentage recorded from five 1m x 1m plots on alternate sides of midline at locations 5, 15, 25, 35 and 45 m along midline. Litter cover includes leaves, seeds, twigs, branchlets and branches <10cm diameter.

Physiography & site features

Morphological type	Soil colour	
Landform element	Soil depth	
Landform pattern	Slope	<5
Microrelief	Aspect	S
Lithology	Site drainage	Good
Soil surface texture	Dist. to nearest water and type	

Plot Disturbance	Severity code	Age code	Severity code	Age code
Clearing (inc. logging)	3	NR	Fire damage	-
Cultivation (inc. pasture)	-		Storm damage	-
Soil erosion	-		Weediness	1 R
Firewood/CWD removal	-		Other slashing	3 R
Grazing (identify native/stock)	?		Other	


Height range

Canopy	18-25	Shrub Layer	-
Understorey	-	Ground Layer	0.05-0.2
Midstorey	-	Vines & scramblers	-

Severity: 0 = no evidence, 1 = light, 2 = moderate, 3 = severe.
Age: R = recent (<3yrs), NR = not recent (3-10yrs), O = old (>10yrs).

Additional Notes:

Modified DSOF - regularly slashed, no understorey or shrub layer except few *lantana* patches
Ground cover is mix of native & exotic grasses
Rock/dirt pile in larger plot.

Survey Name: EC3103- Houston Mitchell		Date: 30-8-18					Canopy, Understory, Midstory, Shrub layer, Ground layer		
Surveyers: Will		Plot: 3							

#	GF Code	Species Name	N, E or HTE	Cover	Abund	Dominant top 3 in each str.	Stratum	Height range
1		<i>Eucalyptus microcorys</i>		5	1			
2		<i>E. siderophloia</i>		3	1			
3		<i>E. propinqua</i>		5	2			
4		<i>E. globoides</i>		5	1			
5		<i>C. gummifera</i>		8	3			
6		<i>Acacia maidenii</i>		0.2	4			
7		<i>Metaleuca styphelioides</i>		0.1	1			
8		<i>Notelaea longifolia</i>		0.1	1			
9		<i>Breynia oblongifolia</i>		0.2	5			
10	-	<i>Lantana camara</i>	HTE	0.5	15			
11		<i>Eustrephus latifolius</i>		0.5	10			
12		<i>Imperata cylindrica</i>		30	many			
13		<i>Gynopogon refractus</i>		5	" "			
14		<i>Themeda triandra</i>		1				
15		<i>Eufolasia marginata</i>		1				
16		<i>Dianella caerulea</i>		0.1				
17		<i>Desmodium rhynchophyllum</i>		0.1				
18		<i>Dichondra repens</i>		0.1				
19		<i>Hibbertia scandens</i>		0.1	2			
20		<i>Eufolasia stricta</i>		0.3				
21	-	<i>Plantago lanceolata</i>		0.2	10			
22	-	<i>Bidens pilosa</i>		0.1	10			
23		<i>Lomandra longifolia</i>		0.3	5			
24	-	<i>Paspalum mandiocanum</i>		30	many			
25	-	<i>Paspalum dilatatum</i>		30	" "			
26		<i>Fireweed</i>		0.1				
27		<i>Paranthera microphylla</i>						
28		<i>Eragrostis</i> (cutland buegrass)						
29		<i>Croesbill geranium</i>						
30		<i>Sida rhombifolia</i>	E					
31		<i>Lomandra filiformis</i>						
32								
33								
34								
35								
36								
37								
38								
39								
40								
41								
42								
43								
44								
45								
46								
47								
48								

Cover: 0.1, 0.2, 0.3, ..., 1, 2, 3, ..., 10, 15, 20, 25, ..., 100% (foliage cover). Note: 0.1% cover represents an area of approx. 63 x 63 cm or a circle about 71 cm across, 0.5% cover represents an area of approx. 1.4 x 1.4 m, and 1% = 2 x 2 m, 5% = 4 x 5 m, 25% = 10 x 10 m. Abundance: 1, 2, 3, ..., 10, 20, 30, ..., 100, 200, ..., 1000, ...

Biodiversity
AUSTRALIA

BAM Plot - Field Survey Form

Page no. 1 / 1

Survey Name: <u>HMD rezoning EC3103</u>	Date: <u>7.9.18</u>	Plot #: <u>4</u> <u>1 - Observed</u>
Surveyers: <u>WS</u>	IBRA Region: <u>NNE</u>	Plot Dimensions: <u>20x20</u>
Likely Vegetation Class		Zone ID
Plant Community Type		
EEC: <u>Y / N</u>	Orientation of midline from the 0m point: <u>N = 0</u> north = 0, south = 180	

Record easting and northing from the plot marker.

Dimensions (shape) of 0.04 ha base plot inside 0.1 ha FA plot should be identified, magnetic bearing taken along midline.

BAM Attribute (400m2 plot)	Sum values
Count of Native Richness	
Trees	5
Shrubs	3
Grasses etc.	2
Forbs	4
Ferns	2
Other	1
Sum of Cover of native vascular plants by growth form group	
Trees	33.1
Shrubs	0.1
Grasses etc.	2.6
Forbs	0.4
Ferns	0.2
Other	0
High Threat Weed cover %	0.15

The totals may be calculated after field component.

BAM Attribute (20 x 50 m plot)	Stem Classes and Hollows	Record living eucalypt* (Euc*) and living native non-eucalypt (Non Euc) stems separately. Data needed is presence only (tick) unless a 'large tree' for that veg class
dbh	Euc*	Non Euc
80 + cm	3	
50 - 79 cm	5	
30 - 49 cm	-	
20 - 29 cm	✓	
10 - 19 cm	-	
5 - 9 cm	-	
< 5 cm	-	
Length of logs (m) (> 10cm diameter, > 50 cm in length)	2.2, 2.5, 3.1, 1.4, 3.4	
		total 12.6

Each size class is noted as present by the living tree stems only. Depending on the Vegetation Class, DBH values and counts may be needed for a size class. For a multi-stemmed tree, only the largest living stem is included in the count/estimate if it is required by the large tree category for that vegetation class.

Hollows at least 20cm across are recorded for the purposes of habitat of some threatened species

BAM Attribute (1 x 1 m plots)	Litter cover (%)	Bare ground cover (%)	Cryptogam cover (%)	Rock cover (%)
Subplot score (% in each)	100 95 100 100 100	- 5 - - -	- - - - -	- - - - -
Average of the 5 subplots	99	1	0	0

The average percentage recorded from five 1m x 1m plots on alternate sides of midline at locations 5, 15, 25, 35 and 45 m along midline. Litter cover includes leaves, seeds, twigs, branchlets and branches <10cm diameter.

Physiography & site features

Morphological type	Soil colour	
Landform element	Soil depth	
Landform pattern	Slope	<5
Microrelief	Aspect	N
Lithology	Site drainage	Good
Soil surface texture	Dist. to nearest water and type	

Plot Disturbance	Severity code	Age code	Severity code	Age code
Clearing (inc. logging)	3	0	Fire damage	1 10 if C
Cultivation (inc. pasture)			Storm damage	
Soil erosion			Weediness	1 R
Firewood/CWD removal			Other slashburn	3 R
Grazing (identify native/stock)			Other	


Height range

Severity: 0= no evidence, 1= light, 2= moderate, 3= severe
Age: R= recent (<3yrs), NR= not recent: (3-10yrs), O=old (>10yrs)

Canopy	20-30	Shrub Layer	2
Understory		Ground Layer	0.5
Midstory		Vines & scramblers	

Additional Notes:

Recently slashed

Survey Name: HMD REZONING		Date: 7.9.16		Canopy, Understorey, Midstory, Shrub layer, Ground layer			
Surveyors: WS		Plot: 4					

#	GF Code	Species Name	N, E or HTE	Cover	Abund	Dominant top 3 in each str.	Stratum	Height range
1		<i>S. granulifera</i>		20	2	Y	C	
2		<i>E. pilularis</i>		10	2	Y	C	
3		<i>Begonia oblongifolia</i>		0.1	1		S	
4	-	<i>Senna pendula</i>		0.1	2		S	
5		<i>E. microcorys</i>		3	1		C	
6		<i>Glochidion forsterianum</i>		0.1	1		S	
7		<i>Adiantum acrostichum</i> - Maidenhair fern		0.1			S	
8	-	<i>Paspalum mandiocarum</i>		70				
9		<i>Entolasia stricta</i>		1				
10		<i>Poranthera microphylla</i>		0.1				
11		<i>Imperata cylindrica</i>		25				
12	-	<i>Plantago lanceolata</i>		0.2				
13		<i>Dichondra repens</i>		0.1				
14	-	<i>Lantana camara</i>		0.1	1			
15		<i>Pratia purpurascens</i>		0.1				
16		<i>Hydrocotyle pedunculata</i>		0.1				
17		<i>Pteridium esculentum</i>		0.1				
18		<i>Syntherisma glandulosum</i>						
19		<i>Cryptocarya glaucescens</i>						
20		<i>Carludovicia selaginella</i>						
21		<i>Cestrum diurnum</i>						
22								
23								
24								
25								
26								
27								
28								
29								
30								
31								
32								
33								
34								
35								
36								
37								
38								
39								
40								
41								
42								
43								
44								
45								
46								
47								
48								

Cover: 0.1, 0.2, 0.3, ..., 1, 2, 3, ..., 10, 15, 20, 25, ..., 100% (foliage cover). Note: 0.1% cover represents an area of approx. 63 x 63 cm or a circle about 71 cm across, 0.5% cover represents an area of approx. 1.4 x 1.4 m, and 1% = 2 x 2 m, 5% = 4 x 5 m, 25% = 10 x 10 m. Abundance: 1, 2, 3, ..., 10, 20, 30, ..., 100, 200, ..., 1000, ...

Biodiversity
AUSTRALIA

BAM Plot - Field Survey Form

Page no. 1 / 1

Survey Name: EC3103-HMQ rezoning	Date: 7.9.18	Plot #: 5
Surveyers: WS	IBRA Region:	Plot Dimensions:
Likely Vegetation Class		Zone ID
Plant Community Type		
EEC: Y / N	Orientation of midline from the 0m point: N = 0 north = 0, south = 180	

Record easting and northing from the plot marker.

Dimensions (shape) of 0.04 ha base plot inside 0.1 ha FA plot should be identified, magnetic bearing taken along midline.

BAM Attribute (400m2 plot)		Sum values
Count of Native Richness	Trees	3
	Shrubs	1
	Grasses etc.	5
	Forbs	4
	Ferns	0
	Other	0
Sum of Cover of native vascular plants by growth form group	Trees	7.5
	Shrubs	5
	Grasses etc.	10.7
	Forbs	0.4
	Ferns	0
	Other	0
High Threat Weed cover %		67.07

The totals may be calculated after field component.

BAM Attribute (20 x 50 m plot)		Stem Classes and Hollows		Record living eucalypt* (Euc*) and living native non-eucalypt (Non Euc) stems separately. Data needed is presence only (tick) unless a large tree for that veg class.
dbh	Euc*	Non Euc	Hollows^	
80 + cm	-		0	^ Includes all species of Eucalyptus, Corymbia, Angophora, Lophostemon and Syncarpia
50 - 79 cm	-			
30 - 49 cm	✓		Hollows 20cm+	^ For hollows count only the presence of a stem containing hollows, not the count of hollows in that stem. Only count as 1 stem per tree where tree is multi-stemmed. The hollow-bearing stem may be a dead stem.
20 - 29 cm	✓			
10 - 19 cm	-			
5 - 9 cm	-			
< 5 cm	-		This size class records tree regeneration	
Length of logs (m) (≥ 10cm diameter, > 50 cm in length)	0			total

Each size class is noted as present by the living tree stems only. Depending on the Vegetation Class, DBH values and counts may be needed for a size class. For a multi-stemmed tree, only the largest living stem is included in the count/estimate if it is required by the large tree category for that vegetation class.

Hollows at least 25cm across are recorded for the purposes of habitat of some threatened species

BAM Attribute (1 x 1 m plots)	Litter cover (%)					Bare ground cover (%)					Cryptogam cover (%)					Rock cover (%)				
Subplot score (% in each)	5	10	85	90	85	95	2	15	10	15	-	-	-	-	-	-	-	-	-	-
Average of the 5 subplots	55					27.4					0					0				

The average percentage recorded from five 1m x 1m plots on alternate sides of midline at locations 5, 15, 25, 35 and 45 m along midline. Litter cover includes leaves, seeds, twigs, branchlets and branches <10cm diameter.

* remain at 15m was living grass.

Physiography & site features

Morphological type		Soil colour	
Landform element		Soil depth	
Landform pattern		Slope	-
Microrelief		Aspect	-
Lithology		Site drainage	Poor
Soil surface texture		Dist. to nearest water and type	

Plot Disturbance	Severity code	Age code		Severity code	Age code
Clearing (inc. logging)	3	0	Fire damage	-	
Cultivation (inc. pasture)			Storm damage		
Soil erosion			Weediness	2	R
Firewood/CWD removal			Other slashing		
Grazing (identify native/stock)	?		Other		


Height range

Severity: 0 = no evidence, 1 = light, 2 = moderate, 3 = severe.
Age: R = recent (<3yrs), NR = not recent (3-10yrs), C = old (>10yrs).

Canopy	12-18	Shrub Layer	
Understory		Ground Layer	0.1-0.5
Midstory	6-8	Vines & scramblers	

Additional Notes:

Slashed pasture grassland with scattered paperbarks & swamp mahogany
No understorey. Saturated clay soils
Exotic dominated groundcover

Survey Name: VIMS rezoning		Date: 7.8.16				Canopy, Understorey, Midstorey, Shrub layer, Ground layer			
Surveyers: WS		Plot: 5							

#	GF Code	Species Name	N, E or HTE	Cover	Abund	Dominant top 5 in each str.	Stratum	Height range
1		M. guineensis		2	21			
2		M. linearifolia		5	2			
3		E. robusta		5	2			
4		E. patentensis Red FRA x SM hybrid		0.5	1			
5		Commersonia longifolia		0.2				
6		Hydrocotyle pedunculata		0.2				
7	-	Paspalum dilatatum		50				
8		Viola heterocarpa		0.1				
9		Dianella caerulea		0.1				
10		Impatiens cylindrica		10				
11	-	Fireweed		0.1				
12		Cyperus gracilis		0.2				
13		Sedge sp.		0.1				
14		Baumea sp.		0.2				
15		Philydium laugosum		0.1				
16		Gonocarpus sp.		0.1				
17								
18								
19								
20								
21								
22								
23								
24								
25								
26								
27								
28								
29								
30								
31								
32								
33								
34								
35								
36								
37								
38								
39								
40								
41								
42								
43								
44								
45								
46								
47								
48								

Cover: 0.1, 0.2, 0.3, ..., 1, 2, 3, ..., 10, 15, 20, 25, ..., 100% (foliage cover). Note: 0.1% cover represents an area of approx. 63 x 63 cm or a circle about 71 cm across, 0.5% cover represents an area of approx. 1.4 x 1.4 m, and 1% = 2 x 2 m. 5% = 4 x 5 m. 20% = 10 x 10 m. Abundance: 1, 2, 3, ..., 10, 20, 30, ..., 100, 200, ..., 1000, ...



Biodiversity
AUSTRALIA

BAM Plot - Field Survey Form

Page no. 1 / 1

Survey Name: EC 3103-HMD rezoning	Date: 7.9.18	Plot #: 6
Surveyers: WS	IBRA Region: ANC	Plot Dimensions:
Likely Vegetation Class		Zone ID
Plant Community Type		
ECC: Y / N	Orientation of midline from the 0m point: N - 0	

Record easting and northing from the plot marker.

Dimensions (shape) of 0.04 ha base plot inside 0.1 ha FA plot should be identified, magnetic bearing taken along midline.

BAM Attribute (400m2 plot)	Sum values	
Count of Native Richness	Trees	0
	Shrubs	0
	Grasses etc.	1
	Forbs	6
	Ferns	0
	Other	0
Sum of Cover of native vascular plants by growth form group	Trees	0
	Shrubs	0
	Grasses etc.	5
	Forbs	1.5
	Ferns	0
	Other	0
High Threat Weed cover %	91.13	

The totals may be calculated either field component

BAM Attribute (20 x 50 m plot)		Tree Classes and Hollows		Record living eucalypt* (Euc*) and living native non-eucalypt (Non Euc) stems separately. Data needed is presence only (tick) unless a large tree for that vag class.
dbh	Euc*	Non Euc	Hollows^	
80 + cm	/		○	<p>* includes all species of Eucalyptus, Corymbia, Angophora, Lophoslemon and Syncarpia</p> <p>^ For hollows count only the presence of a stem containing hollows, not the count of hollows in that stem. Only count as 1 stem per tree where tree is multi-stemmed. The hollow-bearing stem may be a dead stem.</p>
50 - 79 cm				
30 - 49 cm			Hollows 20cm+	
20 - 29 cm				
10 - 19 cm				
5 - 9 cm				
< 5 cm			This size class records tree regeneration	
Length of logs (m) (≥ 10cm diameter, > 50 cm in length)				total

Each size class is noted as present by the living tree stems only. Depending on the Vegetation Class, DBH values and counts may be needed for a size class. For a multi-stemmed tree, only the largest living stem is included in the count/estimate if it is required by the large tree category for that vegetation class.

Hollows at least 20cm across are recorded for the purposes of habitat of some threatened species.

BAM Attribute (1 x 1 m plots)	Litter cover (%)					Bare ground cover (%)					Cryptogam cover (%)					Rock cover (%)				
Subplot score (% in each)	95	98	100	90	100	5	2	0	10	0	-	-	-	-	-	-	-	-	-	-
Average of the 5 subplots	96.6					3.4					0					0				

The average percentage recorded from five 1 m x 1 m plots on alternate sides of midline at locations 5, 15, 25, 35 and 45 m along midline. Litter cover includes leaves, seeds, twigs, branchlets and branches <10 cm diameter

Physiography & site features

Morphological type		Soil colour	
Landform element		Soil depth	
Landform pattern		Slope	—
Microrelief		Aspect	—
Lithology		Site drainage	poor
Soil surface texture		Dist. to nearest water and type	

Plot Disturbance


Plot Disturbance	Severity code	Age code		Severity code	Age code
Clearing (inc. logging)	3	0	Fire damage		
Cultivation (inc. pasture)			Storm damage		
Soil erosion			Weediness	3	R
Firewood/CWD removal			Other slashings	3	R
Grazing (identify native stock)	?		Other		

Severity: 0= no evidence, 1= light, 2 = moderate, 3= severe.
Age: R= recent (<3yrs), NR= not recent (3-10yrs), Q=cld (>10yrs)

Height range

Canopy	Shrub Layer
Understory	Ground Layer
Midstory	Vines & scramblers

Additional Notes: slashed exotic grassland . Rare scattered trees

Survey Name: HMO rezoning		Date: 7.9.18				Canopy, Understorey, Midstorey, Shrub layer, Ground layer			
Surveyers: WS		Plot: 6							

#	GF Code	Species Name	N, E or HTE	Cover	Abund	Dominant top 3 in each str.	Stratum	Height range
1		Paspalum dilatatum		80				
2	-	Medicago sp.		0.1				
3		Hydrocotyle pedicellata		1				
4		Ranunculus inundatus		0.5				
5		Ranunculus sp.		0.5				
6		Hydrocotyle peduncularis		0.2				
7		Cyperus gracilis		5				
8	-	Plantago lanceolata		0.2				
9		Centella asiatica		0.1				
10		Gonocarpus sp. - wide round leaves		0.1				
11		Philydium lanuginosum		0.1				
12	-	Fireweed		0.1				
13								
14								
15								
16								
17								
18								
19								
20								
21								
22								
23								
24								
25								
26								
27								
28								
29								
30								
31								
32								
33								
34								
35								
36								
37								
38								
39								
40								
41								
42								
43								
44								
45								
46								
47								
48								

Cover: 0.1, 0.2, 0.3, ..., 1, 2, 3, ..., 10, 15, 20, 25, ..., 100% (leafage cover). Note: 0.1% cover represents an area of approx. 63 x 63 cm or a circle about 71 cm across, 0.5% cover represents an area of approx. 1.4 x 1.4 m, and 1% = 2 x 2 m. 5% = 4 x 5 m, 25% = 10 x 10 m. Abundance: 1, 2, 3, ..., 10, 20, 30, ..., 100, 200, ..., 1000, ...

Biodiversity
AUSTRALIA

BAM Plot - Field Survey Form

Page no. { / }

Survey Name: EC303 - HWD rezoning	Date: 7.9.18	Plot #: 7
Surveyers: WS	IBRA Region: NNC	Plot Dimensions:
Likely Vegetation Class		Zone ID
Plant Community Type		
EEC: Y / N	Orientation of midline from the 0m point: N = 0 north = 0, south = 180	

Record easting and northing from the plot marker.

Dimensions (shape) of 0.04 ha base plot inside 0.1 ha FA plot should be identified, magnetic bearing taken along midline.

BAM Attribute (400m2 plot)		Sum values	BAM Attribute (20 x 50 m plot)		Stem Classes and Hollows		Record living eucalypt* (Euc*) and living native non-eucalypt (Non Euc) stems separately. Data needed in presence only (tick) unless a 'large tree' for that veg class. * includes all species of Eucalyptus, Corymbia, Angophora, Lophospermum and Syncarpia ^ For hollows count only the presence of a stem containing hollows, not the count of hollows in that stem. Only count as 1 stem per tree where tree is multi-stemmed. The hollow-bearing stem may be a dead stem.
			dbh	Euc*	Non Euc	Hollows^	
Count of Native Richness	Trees	5	80 + cm	—		0	
	Shrubs	5	50 - 79 cm	4			
	Grasses etc.	8	30 - 49 cm	✓			
	Forbs	5	20 - 29 cm	—		Hollows 20cm+	
	Ferns	1	10 - 19 cm	—			
	Other	5	5 - 9 cm	—			
Sum of Cover of native vascular plants by growth form group	Trees	48.2	< 5 cm	—		This size class records tree regeneration	total 13.8
	Shrubs	0.5	Length of logs (m) (≥ 10cm diameter, > 50 cm in length)	1.1, 0.9, 0.9, 0.8, 0.7, 1.1, 0.7, 0.9, 0.6, 0.9, 2.2, 2.0, 1.0			
	Grasses etc.	28.6					
	Forbs	0.5					
	Ferns	0.1					
	Other	0.5					
High Threat Weed cover %		6.08					

The totals may be calculated after field component

Hollows at least 20cm across are recorded for the purposes of habitat of some threatened species

BAM Attribute (1 x 1 m plots)	Litter cover (%)					Bare ground cover (%)					Cryptogam cover (%)					Rock cover (%)				
Subplot score (% in each)	50	95	5	95	40	40	5	85	5	60	10	—	10	—	—	—	—	—	—	
Average of the 5 subplots	57					39					4					0				

The average percentage recorded from five 1m x 1m plots on alternate sides of midline at locations 5, 15, 25, 35 and 45 m along midline. Litter cover includes leaves, seeds, twigs, branchlets and branches <10cm diameter.

Physiography & site features

Morphological type		Soil colour	
Landform element		Soil depth	
Landform pattern		Slope	5
Microrelief		Aspect	sth
Lithology		Site drainage	wood
Soil surface texture		Dist. to nearest water and type	

Plot Disturbance


	Severity code	Age code		Severity code	Age code
Clearing (inc. logging)			Fire damage		
Cultivation (inc. pasture)			Storm damage		
Soil erosion			Weediness		
Firewood/CWD removal			Other		
Grazing (identify native/stock)			Other		

Height range

Severity: 0= no evidence, 1= light, 2= moderate, 3= severe.
Age: R= recent (<3yrs), NR= not recent (3-10yrs), O= old (>10yrs).

Height range		Shrub Layer	
Canopy			
Understory		Ground Layer	
Midstory		Vines & scramblers	

Additional Notes:

Survey Name: HMD rezoning		Date: 7.9.18			Canopy, Understory, Midstory, Shrub layer, Ground layer			
Surveyors: WS		Plot: 7						

#	GF Code	Species Name	N, E or HTE	Cover	Abund	Dominant (top 3 in each str.)	Stratum	Height range
1		<i>E. propinqua</i>		15	4			
2		<i>E. microcomys</i>		25	6			
3		<i>E. resinifera</i>		23	1			
4		<i>E. siderophylla</i>		5	2			
5		<i>Acacia maidenii</i>		0.2				
6	-	<i>Lantana camara</i>		0.1				
7		<i>Polyscias sambucifolia</i>		0.1				
8		<i>Begonia oblongifolia</i>		0.1				
9		<i>Cleistanthus cyathophyllus</i>		0.1				
10		<i>Comandra longifolia</i>		1				
11		<i>Impatiens cylindrica</i>		10				
12		<i>Themeda triandra</i>		10				
13		<i>Rubus parviflorus</i>		0.1				
14		<i>Eustrephus latifolius</i>		0.1				
15		<i>Oplismenus aemulus</i>		0.1				
16		<i>Comandra filiformis</i>		2				
17		<i>Eragrostis brownii</i>		5				
18		<i>Desmodium thyridophyllum</i>		0.1				
19		<i>Glycine clandestina</i>		0.1				
20		<i>Pratia purpurea</i>		0.1				
21	-	Fireweed		0.1				
22	-	<i>Paspalum dilatatum</i>		5				
23		<i>Oenothera repens</i>		0.1				
24		<i>Billardiera scandens</i>		0.1				
25		<i>Poranthera microphylla</i>		0.1				
26	-	<i>Verbena bonariensis</i>		0.1				
27		<i>Paspalum mandiocanum</i>		5				
28		Pas-el flower		0.1				
29		<i>Ozothamnus diurnifolius</i>		0.1				
30		<i>Bidens pilosa</i>		0.1				
31		Grass sp.1		0.2				
32		<i>Daviesia alvifolia</i>		0.1				
33		maidenhair fern <i>Adiantum</i>		0.1				
34		<i>Echinopogon mespilus</i>		0.2				
35		<i>Kennedia rubicunda</i>		0.1				
36								
37								
38								
39								
40								
41								
42								
43								
44								
45								
46								
47								
48								

Cover: 0.1, 0.2, 0.3, ..., 1, 2, 3, ..., 10, 15, 20, 25, ..., 100% (foliage cover). Note: 0.1% cover represents an area of approx. 63 x 63 cm or a circle about 71 cm across, 0.5% cover represents an area of approx. 1.4 x 1.4 m, and 1% = 2 x 2 m, 5% = 4 x 4 m, 25% = 10 x 10 m. Abundance: 1, 2, 3, ..., 10, 20, 30, ..., 100, 200, ..., 1000, ...

DAVID PENSINI
Building Certification and
Environmental Services

BUSHFIRE HAZARD ASSESSMENT

**PROPOSED REZONING
AND TORRENS TITLE
SUBDIVISION**

**LOT 1 DP 11117908 &
LOT 10 DP 615775
19 HOUSTON MITCHELL DRIVE,
BONNY HILLS**

CLIENT: A MIFSUD

JANUARY 2018

3 Blair Street, Port Macquarie NSW 2444 – PO Box 5581, Port Macquarie NSW 2444 – Phone 0434 166 150 – Email kdpensini@bigpond.com
ABN 55 183 050 741

This report has been prepared by David Pensini – Building Certification and Environmental Services with all reasonable skill, care and diligence for A Mifsud.

The information contained in this report has been gathered from discussions with representatives of A Mifsud, a review of the plans provided on behalf of A Mifsud and experience.

No inspection or assessment has been undertaken on other aspects of the proposed development outside the scope of this report.

This report does not imply, nor should it be implied, that the proposed development will comply fully with relevant legislation.

The report shall not be construed as relieving any other party of their responsibilities or obligations.

David Pensini – Building Certification and Environmental Services disclaims any responsibility A Mifsud and others in respect of any matters outside the scope of this report.

The report is confidential, and the writer accepts no responsibility of whatsoever nature, to third parties who use this report, or part thereof is made known. Any such party relies on this report at their own risk.

For and on behalf of David Pensini – Building Certification and Environmental Services.

Prepared by: David Pensini

Signed:



Dated: 27th January 2018

BUSHFIRE HAZARD ASSESSMENT (REZONING)
19 HOUSTON MITCHELL DRIVE, BONNY HILLS

JANUARY 2018



Version	Date	Information relating to report			
		Reason for issue			
1.0	20 th January 2018		Draft		
2.0	27 th January 2018		Issued to Client		
3.0	17 th February 2018		Report updated to reflect requirements for industrial development		
			Prepared by	Verified by	Approved by
		Name	David Pensini		David Pensini
		Signature			

Table of Contents

1.0 INTRODUCTION.....	5
1.1 Objectives	5
1.2 Legislative Framework	5
1.2.1 Strategic Planning Considerations	6
1.2.2 Objectives for Residential Subdivision Developments.....	7
1.3 Location Description.....	7
1.4 Site Description and History	9
1.5 Development Proposal	14
2.0 BUSHFIRE HAZARD ASSESSMENT	15
2.1 Procedure.....	15
2.2 Hazard Vegetation	15
2.3 Slope Assessment.....	16
2.4 Vegetation Assessment.....	17
2.4.1 Vegetation within Subject Site	18
2.4.2 Vegetation on Adjoining and Adjacent Land to Subject Site	19
2.5 Fire Danger Index	23
3.0 BUSHFIRE THREAT REDUCTION MEASURES	23
3.1 NSW Rural Fire Services, <i>Planning for Bushfire Protection</i> , 2006	23
3.1.1 Defendable Space/Asset Protection Zone	23
3.1.2 Defendable Space/Asset Protection Zone Management	25
3.1.3 Operational Access and Egress	25
3.1.4 Services - Water, Gas and Electricity	28
3.1.5 Landscaping	30
3.2 Construction of Buildings in Bushfire Prone Areas	30
3.2.1 General	30
4.0 SUMMARY OF FINDINGS.....	31
5.0 CONCLUSION	31
6.0 REFERENCES.....	32
APPENDIX 1 - Subject Site	
APPENDIX 2 - Proposed Development	
APPENDIX 3 - Approved Development Concept (Northern Aspect)	
APPENDIX 4 - Worst Case Defendable Space/APZ Compliance Concept	

1.0 INTRODUCTION

The land which comprises the subject site is known as Lot 1 DP 11117908 and Lot 10 DP 615775, 19 Houston Mitchell Drive, Bonny Hills.

It is proposed to rezone the subject site so as to support the Torrens Title industrial subdivision of the subject site. The rezoning of the land is required in order to provide for twenty-seven (27) separate Torrens Title lots together with residual lots which would be rezoned to an Environmental Management (E3) land use zone.

This report is based on site assessments carried out on 25th January 2018.

The purpose of this report is to demonstrate that the bushfire risk is manageable for the proposed rezoning and associated Torrens Title industrial subdivision of the subject site and to determine the bushfire protection management measures which are applicable to the development of the subject site.

The development is not an integrated development and has no requirement for a Bush Fire Safety Authority under Section 100B of the *Rural Fires Act 1997*.

NOTE

The report has been prepared with all reasonable skill, care and diligence.

The information contained in this report has been gathered from field survey, experience and has been completed in consideration of the following legislation.

1. Rural Fires Act 1997.
2. Environmental Planning and Assessment Act 1979.
3. Building Code of Australia.
4. Council Local Environment Plans and Development Control Plans where applicable.
5. NSW Rural Fire Services, Planning for Bushfire Protection, 2006.
6. AS 3959 - 2009 Construction of Buildings in Bushfire Prone Areas.

The report recognizes the fact that no property and lives can be guaranteed to survive a bushfire attack. The report examines ways the risk of bushfire attack can be reduced where the site falls within the scope of the legislation.

The report is confidential, and the writer accepts no responsibility of whatsoever nature, to third parties who use this report or part thereof is made known. Any such party relies on this report at their own risk.

This report has been based upon the vegetation characteristics observed at the time of site inspection. No responsibility is taken where the vegetation characteristics of the subject site or surrounding areas is changed or modified beyond that which is presented within this report.

1.1 Objectives

The objectives of this report are to:

- Ensure that the proposed rezoning of the land has measures sufficient to minimize the impact of bushfires; and
- Ensure that the proposed Torrens Title industrial subdivision of the land has measures sufficient to minimize the impact of bushfires; and
- Reduce the risk to property and the community from bushfire.

1.2 Legislative Framework

On 1st August 2002, the Environmental Planning and Assessment Act 1979 and the Rural Fires Act 1997 were both amended to enhance bush fire protection through the development assessment process.

In broad terms, the planning considerations provide two main steps. These involve:

(a) Strategic Planning through;

- the mapping of bush fire prone;
- determining suitable bush fire requirements during the preparation of a Local Environmental Plan and/or Development Control Plan; and
- the identification of the extent to which land is bushfire prone.

(b) Development assessment through;

- obtaining a bush fire safety authority for residential or rural-residential subdivision and special fire protection purpose developments in bushfire prone areas from the Rural Fire Service (RFS);
- seeking advice from the RFS in relation to infill and other developments in bushfire prone areas that cannot comply with the requirements of NSW Rural Fire Service, **Planning for Bushfire Protection**, 2006; and
- the application of additional requirements of the Building Code of Australia (BCA) in relation to construction standards for Class 1, 2, 3, 4 and some Class 9 buildings in bushfire prone areas.

It is noted that this report focuses upon the strategic planning processes associated with the proposed rezoning of the subject site in the context of the proposed industrial subdivision concept for the subject site.

1.2.1 Strategic Planning Considerations

Local Environmental Plans, (LEP's), and Development Control Plans, (DCP's), are the best way of strategically achieving bush fire protection objectives. Inclusion of bush fire planning provisions in an LEP:

- gives weight to bush fire management planning principles, ensuring they are considered at subdivision and construction stages;
- can allow for sufficient space to be incorporated into land use zones for setbacks and adequate access for firefighting and evacuation; and
- controls inappropriate land uses in Bushfire Prone Areas.

LEP amendments that affect Bushfire Prone Areas are required to address the planning principles of NSW Rural Fire Service, **Planning for Bushfire Protection**, 2006. Where appropriate the proposed land uses must be considered with respect to bush fire protection, (including appropriate setbacks).

If a proposed amendment to land use zoning or land use affects a designated Bushfire Prone Area, then the Section 117(2) Direction No 19 must be applied, (Section 117 of the Environmental Planning and Assessment Act, 1979) provides for the Minister for Planning to direct a council, in relation to the preparation of a draft LEP, to apply the planning principles specified in that direction. The Section 117 Direction No 19 requires councils to:

- *consult with the Commissioner of the Rural Fire Service (RFS) under section 62 of the Environmental Planning and Assessment Act, 1979, and to take into account any comments by the Commissioner; and*
- *have regard to the relevant planning principles of NSW Rural Fire Service, **Planning for Bushfire Protection**, 2006.*

If a council proceeds with a draft LEP that does not comply with the provisions in the Section 117 Direction, the council must obtain written advice from the Commissioner of the Rural Fire Service to the effect that the RFS does not object to that non-compliance.

The requirement to review LEP's in accordance with the Standard LEP is an opportunity to consider appropriate uses on Bush Fire Prone Land as well as exempt and complying development provisions.

1.2.2 Objectives for Industrial Subdivision Developments

It is noted that all classes of development, (including industrial subdivision), within bushfire prone areas are required to meet the general aims and objectives of NSW Rural Fire Services, **Planning for Bushfire Protection**, 2006 rather than meeting the specific bushfire threat management objectives which are relevant to residential subdivision, Special Fire Protection developments and infill developments. In this regard NSW Rural Fire Services, **Planning for Bushfire Protection**, 2006 states;

*'for other classes of building, (such as factories, shops and warehouses), bushfire protection measures will only apply at the Development Application stage. Consent will be developed on a case by case basis without the need to refer the development application to the RFS. However, if the council is concerned that the development does not meet the aim and objectives of NSW Rural Fire Services, **Planning for Bushfire Protection**, 2006, then the matter may be referred to the RFS for advice. The provisions under the Building Code of Australia for fire safety will be accepted for bushfire purposes where the aims and objectives of NSW Rural Fire Services, **Planning for Bushfire Protection**, 2006 can be met'.*

The general aims and objectives of NSW Rural Fire Services, **Planning for Bushfire Protection**, 2006 which are therefore relevant to industrial subdivision development are as follows;

- (i) afford occupants of any building adequate protection from exposure to a bush fire;*
- (ii) provide for a defendable space to be located around buildings;*
- (iii) provide appropriate separation between a hazard and buildings which, in combination with other measures, prevent direct flame contact and material ignition;*
- (iv) ensure that safe operational access and egress for emergency service personnel and residents is available;*
- (v) provide for ongoing management and maintenance of bush fire protection measures, including fuel loads in the asset protection zone (APZ); and*
- (vi) ensure that utility services are adequate to meet the needs of firefighters (and others assisting in bush firefighting).*

The proposed industrial subdivision of the subject site and any future industrial development of the areas of land which are the subject of this report must meet the above objectives together with the relevant acceptable solutions/standards which are applicable to the industrial subdivision development.

As the proposed development does not involve the residential subdivision of the subject site nor does it involve Special Protection Purpose development, the development of the subject site for the purposes of an industrial subdivision is not considered to be an integrated development and does not have a requirement for a Bush Fire Safety Authority under Section 100B of the *Rural Fires Act 1997*.

1.3 Location Description

The subject site is known as Lot 1 DP 11117908 and Lot 10 DP 615775, 19 Houston Mitchell Drive, Bonny Hills and is situated within the Port Macquarie-Hastings local government area.

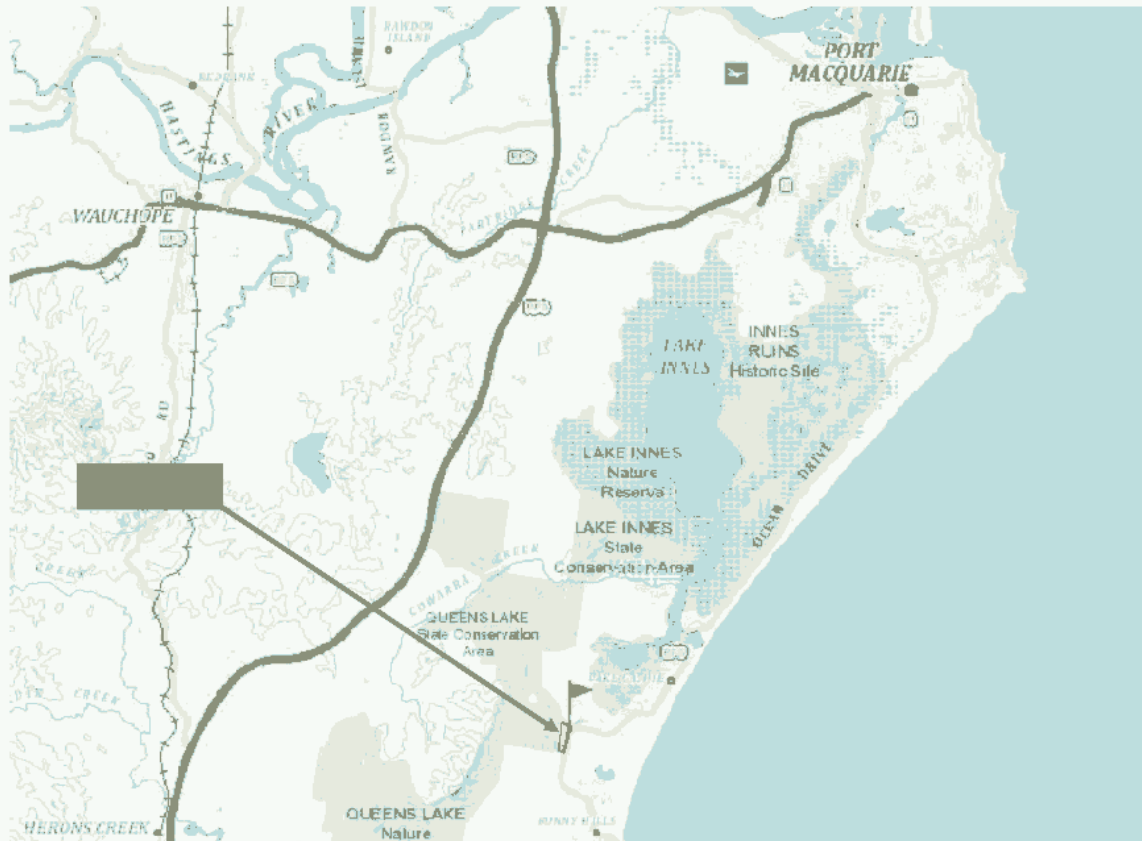
The subject site is located approximately 17km to the southwest of Port Macquarie Central Business District (CBD) and approximately 700m to the southwest of the coastal village of Lake Cathie and approximately 700m to the northwest of the coastal village of Bonny Hills.

BUSHFIRE HAZARD ASSESSMENT (REZONING)
19 HOUSTON MITCHELL DRIVE, BONNY HILLS

JANUARY 2018

The general location of the area that is the subject of this report can be seen in **Figure 1** below.

Figure 1 - Site Location



Forming part of the Area 14 Urban Growth Precinct, (which is located between the existing urbanized areas of Lake Cathie and Bonny Hills), the land within this area has recently and will continue to experience significant urban expansion with residential development expanding into residentially zoned but undeveloped land with a rural/rural residential land use history and character.

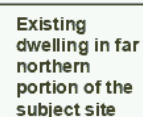
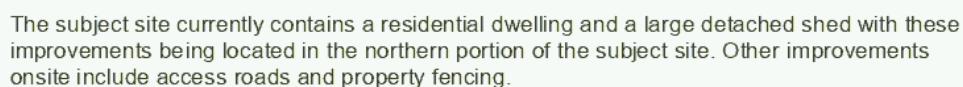
Therefore, the character of the locality is that of an urban fringe area with residential development expanding into undeveloped residentially zoned parcels of land. The subject site is located to the southwest of the southernmost extent of the urban footprint of Lake Cathie.

Rural/rural residential development is present to the south and southeast of the subject site with the Lake Cathie Public School on adjacent land to the east. The recent construction of the school in this aspect reinforces the transition in land use which is occurring in the locality. Extensive areas of bushland are present to the west of the subject site, (Queens Lake State Conservation Area). Larger residential sized allotments of land are present at distance to the north of the subject site although a large area of residentially zoned land separates the subject site from the developed larger residential lots. The residentially zoned land to the north of the subject site has been approved for residential subdivision with the first stages of the subdivision present to the northeast of the subject site.

At distance to the northeast of the subject site is the 'Ocean Club Resort' Manufactured Housing Estate (MHE). This complex encompasses detached residential dwellings within a managed community environment, refer to **Figure 2** below.

1.4 Site Description and History

Figure 2 – Subject Site



BUSHFIRE HAZARD ASSESSMENT (REZONING)
19 HOUSTON MITCHELL DRIVE, BONNY HILLS

JANUARY 2018



Existing shed
in far northern
portion of the
subject site

The topography of the subject site and the immediate area is influenced by a northwest to southeast ridgeline the crest of which is roughly defined by the east west alignment of the Houston Mitchell Drive road reserve. Being located on the southern foot slopes of the ridgeline the subject site and surrounding land contains gentle north to south downslopes. The presence of a small intermittently easterly flowing creek in the southern central portion of the subject site defines a transition in slope conditions to upslopes.

Access to the subject site is available via Houston Mitchell Drive which adjoins the subject site along its northern property boundary. Houston Mitchell Drive is the main connecting road between the Pacific Highway in the west and Ocean Drive in the east. It is noted that whilst the subject site has frontage to Ocean Drive along its eastern property boundary although no vehicle access is available to the subject site from the Ocean Drive road reserve.

Grasslands with scattered trees occupy the majority of the subject site whilst a remnant area of highly disturbed Dry Sclerophyll Forest is present in the far central northern portion of the site. Grasslands with scattered and small clusters of trees are present to the south although some isolated remnants of Forest vegetation are present to the southwest. A narrow area of Forested Wetland vegetation amongst grasslands is present to the east of the subject site with extensive areas of Wet Sclerophyll Forest and Forested Wetland present to the west of the subject site. A remnant area of highly disturbed Dry Sclerophyll Forest is present to the north of the subject site, (to the north of the Houston Mitchell Drive road reserve), which is surrounded by Grasslands.

The vegetation characteristics of the subject site and adjoining and adjacent land are shown in **Figure 3** below;

BUSHFIRE HAZARD ASSESSMENT (REZONING)
19 HOUSTON MITCHELL DRIVE, BONNY HILLS

JANUARY 2018

Figure 3 – Vegetation Characteristics



Being located within the Area 14 Urban Growth Area, (which is located between the urbanized areas of the Lake Cathie and Bonny Hill villages), the land within this area has recently and will continue to experience significant urban expansion with residential development expanding into residentially zoned but undeveloped land with a rural/rural residential land use history up until more recent times. It is noted that the residential subdivision, (151 residential lots), of the land to the north/northeast of the subject site has recently been approved by Port Macquarie Hastings Council with Stage 1 of the approved development having been completed.

BUSHFIRE HAZARD ASSESSMENT (REZONING)
19 HOUSTON MITCHELL DRIVE, BONNY HILLS

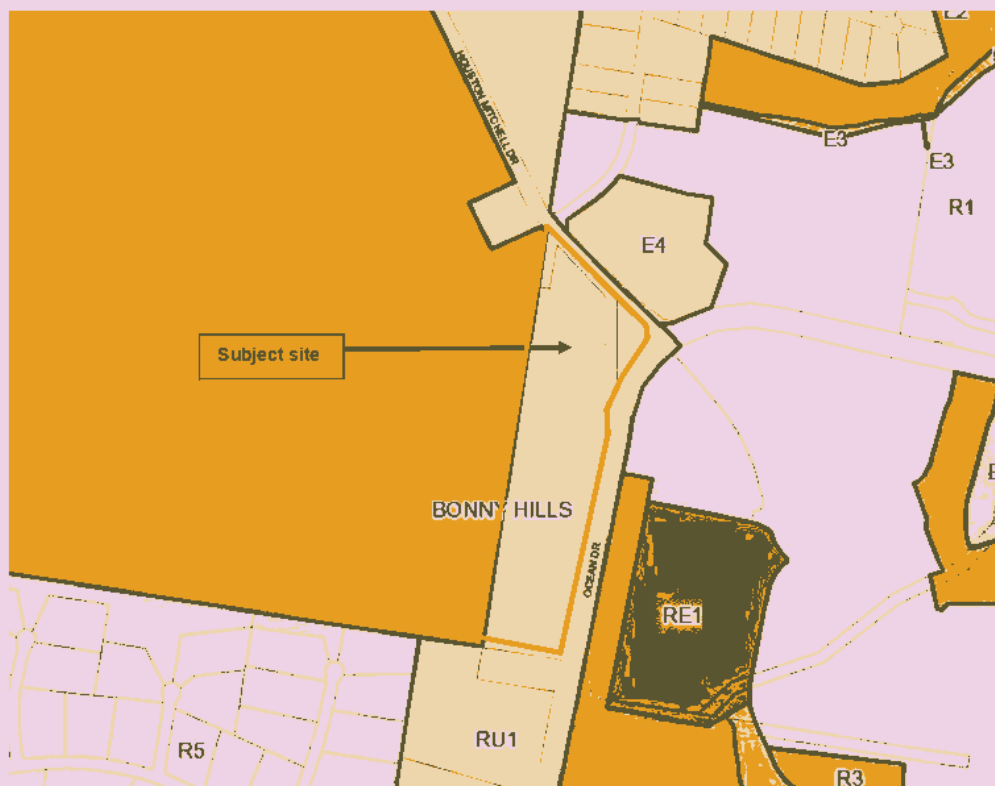
JANUARY 2018

Recently
completed
stage of
approved
residential
subdivision to
the north of the
subject site



The area of land within the subject site has a current land use zoning of Rural (RU1) with a similar land use zone applying to the adjoining land to the south. It is noted that land with an Environmental Living land use zoning (E4) is present to the north of the subject site together with land zoned for Residential (R1) development. Land with an Environmental Conservation Zoning, (E3), is present to the west whilst there is a mixture of land use in the eastern aspect which includes Residential (R1), Environmental Management (E2) and Public Recreation (RE1), refer to **Figure 4** below.

Figure 4 – Landuse Zoning



DAVID PENSINI - BUILDING CERTIFICATION AND ENVIRONMENTAL SERVICES

12

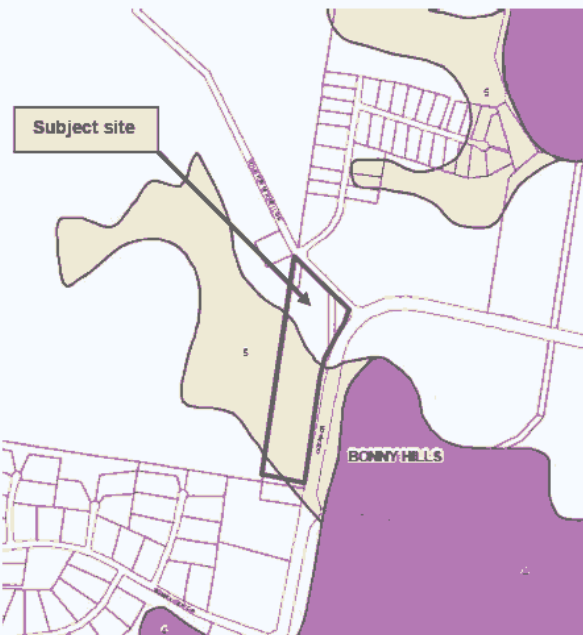
BUSHFIRE HAZARD ASSESSMENT (REZONING)
19 HOUSTON MITCHELL DRIVE, BONNY HILLS

JANUARY 2018

Fire has not recently occurred on the subject site or on adjoining and adjacent land.

The environmental and heritage features of the area of the subject site which forms the basis of this report are summarized as follows;

Table 1 – Environmental and Heritage Features

ENVIRONMENTAL/HERITAGE FEATURE	COMMENT
Riparian Corridors	The subject site does not contain any identified riparian corridors.
SEPP 14 – Coastal Wetland	The subject site is not identified as being subject to SEPP 14 – Coastal Wetlands in the area of the proposed development.
SEPP 26 – Littoral Rainforest	The subject site is not identified as being subject to SEPP 26 – Littoral Rainforest.
SEPP 44 – Koala Habitat	The application of SEPP 44 to the subject site requires assessment. For the purposes of this report it has been assumed that the provisions of SEPP 44 are not applicable in relation to the proposed development given the highly disturbed and modified floristic characteristics which are present.
Areas of geological interest	<p>The central and southern portions of the subject site is identified as potentially containing Class 5 Acid Sulphate Soils in accordance with Port Macquarie - Hastings Local Environmental Plan, 2011.</p>  <p>Given the nature of the proposed development the presence of Acid Sulphate Soils is not expected to be of any significance to the proposed development.</p> <p>Based upon previous land use it is expected that no land contamination issues will be relevant to the subject site.</p>

DAVID PENSINI - BUILDING CERTIFICATION AND ENVIRONMENTAL SERVICES

13

BUSHFIRE HAZARD ASSESSMENT (REZONING)
19 HOUSTON MITCHELL DRIVE, BONNY HILLS

JANUARY 2018

Environmental Protection Zones	The subject site is currently zoned Rural (RU1), refer to Figure 3 above.
Land slip	Given the topography of the subject site and surrounding areas land slip is not considered to be an issue for the subject site.
Flood prone land	The subject site is not identified as being flood prone land and as such the land is not affected by the probable maximum flood level. As such the flood planning provisions of Port Macquarie-Hastings Councils LEP, 2011 are not applicable to the subject site.
National Park Estate or other Reserves	The subject land does not form part of the National Park Estate or other Reserves.
Threatened species, populations, endangered ecological communities and critical habitat	Given the level of historic disturbance of the subject site no threatened flora or fauna species are expected to be present on the subject site. The presence of threatened species, populations, endangered ecological communities and critical habitat on the subject site requires specific assessment.
Ecologically Endangered Communities (EEC's)	Given the level of historic disturbance of the subject site it is unlikely to contain or support EEC's. The presence of EEC's on the subject site requires specific assessment.
OEH Key Habitats and Corridors	The subject site is unlikely to form part of OEH key habitats and corridors.
Aboriginal Heritage	Items of aboriginal heritage are unlikely to be present given the active vegetation modification and management which has occurred on the subject site and the level of site disturbance which is likely to have occurred over the years.

1.5 Development Proposal

It is proposed to rezone the subject site as part of the ongoing urban development of the general area.

The proposed rezoning reflects the Area 14 Employment Lands Structure Plan which identifies the subject site as being potentially suitable for industrial subdivision. In this regard, the proposed rezoning is required in order to support twenty-seven (27) Torrens Title industrial lots, refer to **Appendix 2**.

The proposed rezoning also proposes two (2) residual areas which will be zoned for Environmental Management (E3) purposes.

The areas to be rezoned are;

- Light Industrial (IN2) Zone – 5.81 hectares;
- Environmental Management (E3) Zone – 3.73 hectares

The proposed industrial lots range in size from 1043m² to 4108m².

Access to proposed industrial lots will be via new public road infrastructure which will connect with Houston Mitchell Drive which is an existing bitumen sealed two way all weather public road which services as a main connecting road within the area.

All new roads within the proposed development will be two-way and will be constructed to normal public road standards.

The design of the proposed subdivision layout provides for a perimeter road approach to areas of bushfire hazard vegetation. The utilization of a perimeter road approach provides for the utilization of the road reserve as part of meeting the minimum APZ requirements for the majority of lots. In this regard it is noted that the main perimeter road reserve is typically 20m in width which provides for compliance with the worst case APZ requirement for the proposed development of 20m.

1.6 Fauna and Flora Issues

A fauna and flora evaluation has not been undertaken in conjunction with this bushfire hazard assessment and as such issues pertaining to fauna and flora are outside the scope of this report.

2.0 BUSHFIRE HAZARD ASSESSMENT

2.1 Procedure

Several factors need to be considered in determining the bushfire hazard for the proposed rezoning and lots being slope, vegetation type, distance from vegetation and access/egress. Each of these factors has been reviewed in determining a bushfire hazard rating for the subject site and proposed development.

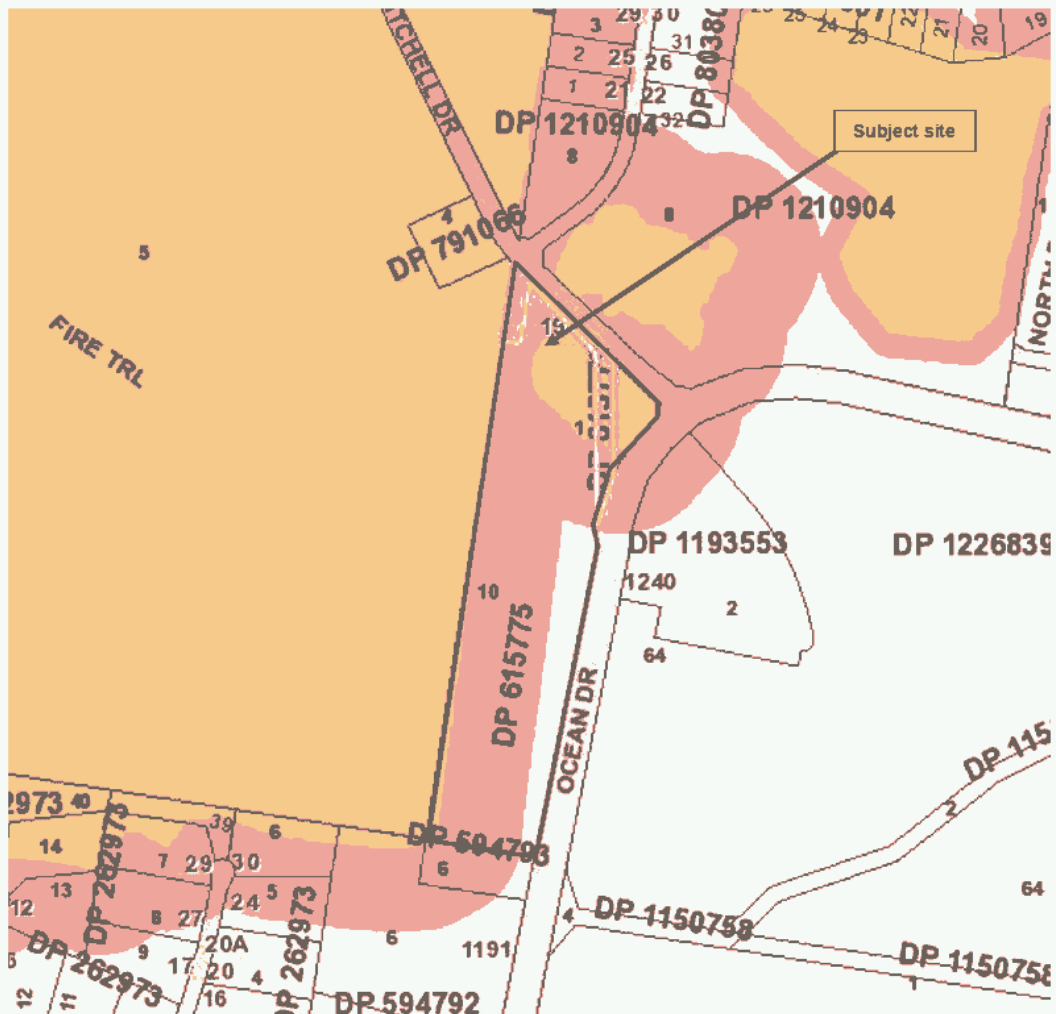
2.2 Hazard Vegetation

Port Macquarie-Hastings Councils Bushfire Prone Land Risk Mapping provides that areas of Category 1 bushfire hazard vegetation are located on adjoining and adjacent land to the north and west of the subject site with a small area of Category 1 bushfire hazard vegetation located in the far northern portion of the subject site. The majority of the subject site is affected by the 100m buffer zone which has been applied to the identified areas of Category 1 hazard vegetation; refer to **Figure 5**.

BUSHFIRE HAZARD ASSESSMENT (REZONING)
19 HOUSTON MITCHELL DRIVE, BONNY HILLS

JANUARY 2018

Figure 5 – Extract from Port Macquarie – Hastings Bushfire Risk Mapping



It is however noted that the above bushfire prone land mapping does not indicate the presence of Grasslands which are now considered to be bushfire hazard vegetation by virtue of amendments to AS3959 – 2009. In this regard, the adjoining and adjacent land to the south and east of the subject site contains areas of Grassland.

2.3 Slope Assessment

Slope is a major factor to consider when assessing the bushfire risk of any development which is subject to compliance with the requirements of NSW Rural Fire Service, **Planning for Bushfire Protection**, 2006. Therefore, the slope of the subject site and surrounding area, (to a distance of 100m), was measured using a Suunto PM-5/360 PC Clinometer.

The following information is provided in relation to the topographic characteristics of the subject site and adjoining and adjacent land. In adopting a conservative approach to bushfire hazard assessment worst case slope conditions have been identified.

The topography of the subject site and the immediate area is influenced by a northwest to southeast ridgeline the crest of which is roughly defined by the east west alignment of the Houston Mitchell Drive road reserve. Being located on the southern foot slopes of the ridgeline the subject site and surrounding land contains gentle north to south downslopes. The presence of a small intermittently easterly flowing creek in the southern central portion of the subject site defines a transition in slope conditions to upslopes.

DAVID PENSINI - BUILDING CERTIFICATION AND ENVIRONMENTAL SERVICES

16

Figure 6 – Topographic Conditions

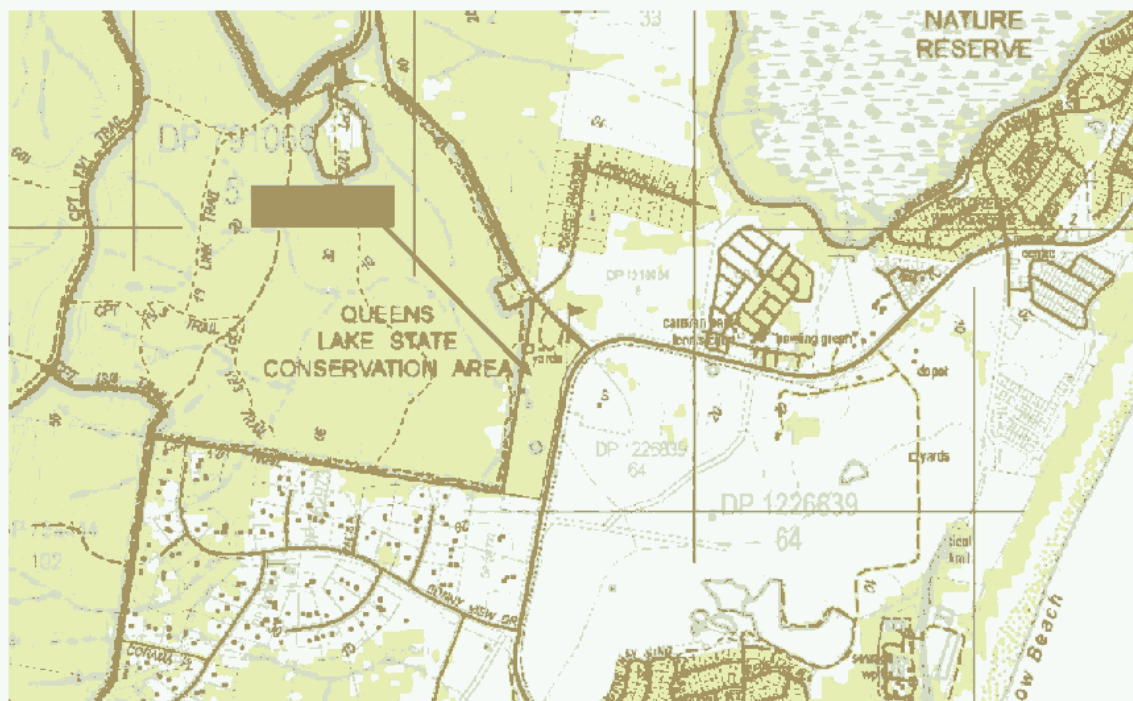


Table 2 - Slope Assessment Results

DIRECTION OF HAZARD	SLOPE degrees)	UPSLOPE/DOWN SLOPE
North	2° - 3°	Down slope
South	0° - 1°	Down slope
East	0° - 1°	Down slope
West	4° - 5°	Down slope

The above slopes were considered when assessing the required defensible spaces and indicative Bushfire Attack Levels, (BAL's), for any future development/s.

The vegetation on and surrounding the subject site was assessed over a distance of 140m from the proposed development.

The following information is provided in relation to the floristic characteristics of the subject site and adjoining and adjacent land. In adopting a conservative approach to bushfire hazard assessment worst case vegetation characteristics have been identified.

BUSHFIRE HAZARD ASSESSMENT (REZONING)
19 HOUSTON MITCHELL DRIVE, BONNY HILLS

JANUARY 2018

2.4.1 Vegetation within Subject Site

The subject site currently contains a mix of grasslands and areas of remnant Forest. A small area remnant Dry Sclerophyll Forest occupies the far northern central portion of the subject site whilst grasslands are present over the remaining areas of the site.



Grasslands with scattered trees over the majority of the subject site



Small remnant of Dry Sclerophyll Forest in far northern central portion of subject site

It is noted that the development concept for the subject site involves the retention and possible embellishment of vegetation within the proposed residual undeveloped areas of the site which are located in the far northern and southern areas of the subject sites. On the basis that the revegetation of the residual areas will involve the establishment of trees in an unmanaged understorey the following assessment of hazard vegetation has been determined as being applicable to this report;

- Northern portion of subject site – it is noted that the size of the proposed residual revegetation area is in the order of 7000m² which is less than the 1-hectare size criteria which is used to determine the relevance of a remnant vegetation classification. Therefore, based upon the revegetation area being less than 1 hectare

DAVID PENSINI - BUILDING CERTIFICATION AND ENVIRONMENTAL SERVICES

18

and the disconnection which will be available between other areas of hazard vegetation to the north and west a specification similar to Rainforest has been adopted for the purposes of this report.

- Southern portion of the subject site – given the size of this residual undeveloped area and its connectivity with hazard vegetation to the west a specification similar to Wet Sclerophyll Forest has been adopted for the purposes of this report.

As a result of proposed vegetation removal and modification in order to provide for the construction of the proposed industrial lots no areas of hazard vegetation will remain on the proposed industrial lots or with in supporting infrastructure such as roads.

2.4.2 Vegetation on Adjoining and Adjacent Land to Subject Site

The following vegetation characteristics were identified as being relevant to the proposed industrial subdivision having regard to the vegetation characteristics of adjoining and adjacent land.

To the north of the subject site is an area of remnant Dry Sclerophyll Forest which has been retained within a recently approved residential subdivision. It is noted that this area of vegetation has been approved for substantial modification in order to accommodate the building envelopes which are required within the residential lots which will occupy the land to the north of the Houston Mitchell Drive road reserve, refer to **Appendix 3**. Given the relatively small size of this area of vegetation, the absence of shrub and understorey vegetation and the level of fragmentation which will be created through the integration of building envelopes into this area of vegetation, a specification similar to Rainforest has been adopted for the purposes of this report as it reflects its remnant context and characteristics.

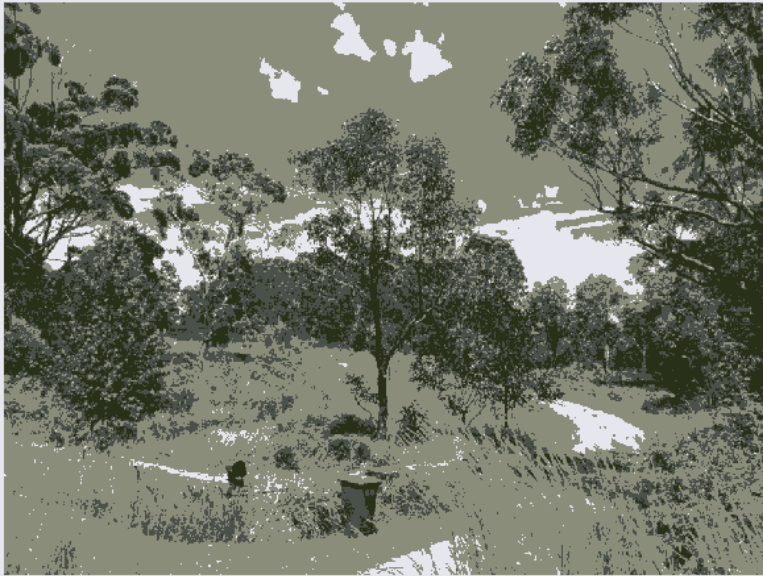


Remnant of
Dry Sclerophyll
Forest on
adjacent land
to the north of
the subject site

To the south of the subject site are extensive areas of Grasslands with scattered and clusters of trees within the rural residential lots which are present in this aspect.

BUSHFIRE HAZARD ASSESSMENT (REZONING)
19 HOUSTON MITCHELL DRIVE, BONNY HILLS

JANUARY 2018



Grasslands with scattered trees on adjoining and adjacent lots to the south of the subject site

The eastern aspect comprises managed vegetation within the developed footprint of the recently constructed Lake Cathie Public School, grasslands to the northeast and areas of remnant Forested Wetland to the southeast. In adopting a conservative approach to bushfire hazard assessment, a Forested Wetland classification has been adopted for this aspect.



Managed land within the grounds of Lake Cathie Public School

BUSHFIRE HAZARD ASSESSMENT (REZONING)
19 HOUSTON MITCHELL DRIVE, BONNY HILLS

JANUARY 2018



Grasslands to the northeast of the subject site



Forested Wetland to the east and southeast of the subject site

Areas of Wet Sclerophyll Forest and Forested Wetland are present to the west of the subject site. A Wet Sclerophyll Forest classification has therefore been adopted for the western aspect.

BUSHFIRE HAZARD ASSESSMENT (REZONING)
15 HOUSTON MITCHELL DRIVE, BONNY HILLS

JANUARY 2018



An indication of the relationship of the vegetation of bushfire significance to the proposed development is presented in **Figure 7** below.

Figure 7 - Vegetation Relationships to the Subject Land



DAVID PENSINI - BUILDING CERTIFICATION AND ENVIRONMENTAL SERVICES

22

BUSHFIRE HAZARD ASSESSMENT (REZONING)
19 HOUSTON MITCHELL DRIVE, BONNY HILLS

JANUARY 2018

The following table summarizes the various vegetation structures which are of bushfire significance to the proposed rezoning and proposed industrial allotments.

Table 3 – Summary of Vegetation Characteristics

ASPECT	VEGETATION DESCRIPTION	VEGETATION CLASSIFICATION – (Keith, 2004)
North	Isolated area of revegetation in the residual area of the subject site (area proposed to be rezoned Environmental Management (E3))	Similar in specification to Rainforest
South	Revegetation in the residual area of the subject site (area proposed to be rezoned Environmental Management (E3))	Similar in specification to Wet Sclerophyll Forest
East	Grasslands and remnant areas of Forested Wetland vegetation on land to the east of the Ocean Drive road reserve	Forested Wetland
West	Wet Sclerophyll Forest and Forested Wetland within the Queens Lake State Conservation Area.	Wet Sclerophyll Forest

2.5 Fire Danger Index

The fire weather for the site is assumed on the worst-case scenario. In accordance with NSW Rural Fire Services, *Planning for Bushfire Protection*, 2006 and Table 2.1 of AS 3959 - 2009, the fire weather for the site is based upon the 1:50 year fire weather scenario and has a Fire Danger Index (FDI) of 80.

3.0 BUSHFIRE THREAT REDUCTION MEASURES

3.1 NSW Rural Fire Services, *Planning for Bushfire Protection*, 2006

The following issues and constraints have been identified through considering the requirements of NSW Rural Fire Service, *Planning for Bushfire Protection*, 2006 as they apply to the rezoning of the subject site and future industrial development of the proposed industrial lots.

3.1.1 Defendable Space/Asset Protection Zone

To ensure that the aims and objectives of NSW Rural Fire Service, *Planning for Bushfire Protection*, 2006 are achieved for the proposed Torrens Title industrial subdivision, a defendable space between the asset and the hazard should be provided. NSW Rural Fire Service, *Planning for Bushfire Protection*, 2006 provides that a defendable space is;

'an area within the asset protection zone that provides an environment in which a person can undertake property protection after the passage of a bush fire with some level of safety'.

It is noted that NSW Rural Fire Service, *Planning for Bushfire Protection*, 2006 does not prescribe an acceptable solution for the provision of a defendable space/asset protection zone with the acceptable solutions provided for by Section 4.1.3 of NSW Rural Fire Service, *Planning for Bushfire Protection*, 2006 applying the residential and Special Fire Protection Purpose developments. Accordingly, the provision of a defendable space/asset protection zone for the proposed development must satisfy the general objectives of NSW Rural Fire Service, *Planning for Bushfire Protection*, 2006.

The following objectives are therefore relevant to the provision of a defendable space/asset protection zone to the proposed development;

- *afford occupants of any building adequate protection from exposure to a bush fire;*
- *provide for a defendable space to be located around buildings;*
- *provide appropriate separation between a hazard and buildings which, in combination with other measures, prevent direct flame contact and material ignition;*

DAVID PENSINI - BUILDING CERTIFICATION AND ENVIRONMENTAL SERVICES

23

- provide for ongoing management and maintenance of bush fire protection measures, including fuel loads in the asset protection zone (APZ);

It is noted that NSW Rural Fire Service, **Planning for Bushfire Protection**, 2006, provides for no methodology as to how a performance-based approach to meeting the above objectives is to be determined nor assessed. Therefore in adopting a conservative approach to bushfire threat management the asset protection zone acceptable solutions for residential development have been adopted for the purposes of this report as;

- NSW Rural Fire Service, **Planning for Bushfire Protection**, 2006 provides that industrial subdivision should take into consideration the potential for residential dwellings, (managers residences – BCA Class 4), to be incorporated into any future industrial developments on the proposed lots; and
- The APZ 'Acceptable Solution' requirements which would typically apply to residential subdivisions incorporate the concept of a defensible space and as such compliance with the APZ standard will ensure compliance with the concept for the provision of a defensible space albeit that compliance with the minimum APZ requirements may potentially exceed the site based requirements for a defensible space; and
- The adoption of the APZ 'Acceptable Solution' requirements which would typically apply to residential subdivisions represents a worst case scenario to the identification of an appropriate Defendable Space for the future development of the proposed industrial lots.

Section 4.1.3 of NSW Rural Fire Service, **Planning for Bushfire Protection**, 2006 provides the acceptable solutions that have been applied to the proposed development in relation to the provision of APZ's to each of the proposed industrial lots in order to demonstrate compliance with the defensible space requirements. The following table indicates the minimum APZ's between the various hazards and the proposed industrial lots which have been adopted for the purposes of demonstrating compliance with the performance objectives of NSW Rural Fire Service, **Planning for Bushfire Protection**, 2006.

Table 4 – Asset Protection Zone/Defendable Space Requirements (PfBP 2006)

DIRECTION OF HAZARD	VEGETATION TYPE	SLOPE	IPA	OPA	TOTAL REQUIRED APZ	MINIMUM APZ ACHIEVABLE (to development within Lots)	COMPLIANCE (with Minimum APZ Requirements)
North	Similar in specification to Rainforest	2° - 3° Down slope	10m	-	10m	Minimum 10m	✓
South	Similar in specification to Wet Sclerophyll Forest	0° - 1° Down slope	15m	5m	20m	Minimum 20m	✓
East	Forested Wetland	0° - 1° Down slope	20m	-	20m	>30m	✓
West	Wet Sclerophyll Forest	4° - 5° Down slope	15m	5m	20m	Minimum 20m	✓

Having regard to the above it is noted that the minimum 'acceptable solution' Asset Protection Zones can be provided for any future industrial development within the boundaries of the proposed industrial lots in compliance with the performance objectives of NSW Rural Fire Service, **Planning for Bushfire Protection**, 2006 and summarized as follows;

Table 6 - Asset Protection Zone Acceptable Solutions

PERFORMANCE CRITERIA	ACCEPTABLE SOLUTIONS
<p>The intent may be achieved where in relation to Asset Protection Zones:</p> <ul style="list-style-type: none"> • a defensible space is provided onsite. • an asset protection zone is provided and maintained for the life of the development. 	<p>An APZ is provided in accordance with the relevant tables/figures in Appendix 2 of NSW Rural Fire Services, Planning for Bushfire Protection, 2006</p>

A concept plan for the provision of Defendable Spaces/APZ's to the proposed industrial lots is included as **Appendix 3**.

It is however noted that lessor Defendable Spaces than that adopted in **Table 4** above could be justified for specific development proposals for each of the proposed industrial lots as the approach taken in this report in demonstrating compliance with NSW Rural Fire Service, **Planning for Bushfire Protection**, 2006 is highly conservative.

In this regard the objectives based approach to the determination of an appropriate Defendable Space for future industrial developments provides for flexibility in design and construction being used in combination to meet the relevant performance objectives of NSW Rural Fire Service, **Planning for Bushfire Protection**, 2006.

3.1.2 Defendable Space/Asset Protection Zone Management

Areas identified as forming part of the Defendable Space/APZ requirements for any future industrial subdivision development must be created and managed so as to be consistent with the standards which are applicable to Inner Protection Areas as follows;

(i) Inner Protection Area (IPA)

An IPA should provide a tree canopy cover of less than 15% and should be located greater than 2 metres from any part of the roofline of a building.

Garden beds of flammable shrubs are not to be located under trees and should be no closer than 10m from an exposed window or door.

Trees should have lower limbs removed up to a height of 2 metres above the ground.

3.1.3 Operational Access and Egress

Access to the proposed industrial subdivision will be via new public road infrastructure which will connect with Houston Mitchell Drive which is an existing bitumen sealed two way all weather public road which services as a major connecting road between the Pacific Highway to the west and the Bonny Hills/Lake Cathie residential areas to the northeast and southeast. Houston Mitchell Drive adjoins the subject site along its northern property boundary.

BUSHFIRE HAZARD ASSESSMENT (REZONING)
19 HOUSTON MITCHELL DRIVE, BONNY HILLS

JANUARY 2018



Houston Mitchell Drive to the north of the subject site



Ocean Drive to the east of the subject site

It is noted that whilst Ocean Drive adjoins the subject site to the east it is not proposed to gain access to the proposed subdivision from this existing public road infrastructure.

All new roads within the proposed subdivision will be two-way and will be constructed to normal public road standards.

The design of the proposed subdivision layout provides for a perimeter road approach to most areas of bushfire hazard vegetation with the road design providing for alternative means of movement to and from the subdivision via the loop road approach which is proposed for the subdivision. The utilization of a perimeter road approach provides for the utilization of the road reserve as part of meeting the minimum defendable space/APZ requirements for the majority of lots. In this regard it is noted that the main perimeter road reserve is typically 20m – 23m in width which provides for compliance with the worst case APZ requirement which has been applied to the proposed subdivision development of 20m.

In order to provide for compliant access and egress to the proposed industrial lots it will be necessary to provide for new public road infrastructure/systems which comply with Section

DAVID PENSINI - BUILDING CERTIFICATION AND ENVIRONMENTAL SERVICES

26

BUSHFIRE HAZARD ASSESSMENT (REZONING)
19 HOUSTON MITCHELL DRIVE, BONNY HILLS

JANUARY 2018

4.1.3 of NSW Rural Fire Services, *Planning for Bushfire Protection*, 2006 and summarized as follows;

Table 7 - Public Road Requirements (PBP 2006)

Intent of measures: to provide safe operational access to structures and water supply for emergency services, while residents are seeking to evacuate from an area.		
Performance Criteria	Acceptable Solutions	Compliance Comment
The intent may be achieved where:		
<ul style="list-style-type: none"> • firefighters are provided with safe all-weather access to structures (thus allowing more efficient use of firefighting resources) 	<ul style="list-style-type: none"> • public roads are two-wheel drive, all weather roads. 	 Design of road infrastructure complies
<ul style="list-style-type: none"> • public road widths and design that allow safe access for firefighters while residents are evacuating an area. 	<ul style="list-style-type: none"> • urban perimeter roads are two-way, that is, at least two traffic lane widths (carriageway 8 metres minimum kerb to kerb), allowing traffic to pass in opposite directions. Non-perimeter roads comply with Table 4.1 – Road widths for Category 1 Tanker (Medium Rigid Vehicle). • the perimeter road is linked to the internal road system at an interval of no greater than 500 metres in urban areas. • traffic management devices are constructed to facilitate access by emergency services vehicles. • public roads have a cross fall not exceeding 3 degrees. • all roads are through roads. Dead end roads are not recommended, but if unavoidable, dead ends are not more than 200 metres in length, incorporate a minimum 12 metres outer radius turning circle, and are clearly sign posted as a dead end and direct traffic away from the hazard. • curves of roads (other than perimeter roads) are a minimum inner radius of six metres and minimal in number, to allow for rapid access and egress. • the minimum distance between inner and outer curves is six metres. • maximum grades for sealed roads do not exceed 15 degrees and an average grade of not more than 10 degrees or other gradient specified by road design standards, whichever is the lesser gradient. • there is a minimum vertical clearance to a height of four metres above the road at all times. 	 Design of all road infrastructure to comply
<ul style="list-style-type: none"> • the capacity of road surfaces and bridges is 	<ul style="list-style-type: none"> • the capacity of road surfaces and bridges is sufficient to carry fully loaded 	 Design of road

DAVID PENISINI - BUILDING CERTIFICATION AND ENVIRONMENTAL SERVICES

27

BUSHFIRE HAZARD ASSESSMENT (REZONING)
19 HOUSTON MITCHELL DRIVE, BONNY HILLS

JANUARY 2018

sufficient to carry fully loaded fire fighting vehicles.	firefighting vehicles (approximately 15 tonnes for areas with reticulated water, 28 tonnes or 9 tonnes per axle for all other areas). Bridges clearly indicate load rating.	infrastructure to comply
• roads that are clearly sign- posted (with easily distinguishable names) and buildings/properties that are clearly numbered.	• public roads greater than 6.5 metres wide to locate hydrants outside of parking reserves to ensure accessibility to reticulated water for fire suppression. • public roads between 6.5 metres and 8 metres wide are No Parking on one side with the services (hydrants) located on this side to ensure accessibility to reticulated water for fire suppression.	✓ Design of road infrastructure to comply
• there is clear access to reticulated water supply	• public roads up to 6.5 metres wide provide parking within parking bays and locate services outside of the parking bays to ensure accessibility to reticulated water for fire suppression. • one way only public access roads are no less than 3.5 metres wide and provide parking within parking bays and locate services outside of the parking bays to ensure accessibility to reticulated water for fire suppression.	✓ Design of road infrastructure to comply

Subject to compliance with the requirements of **Table 7** above in relation to the design and construction of new public roads, it is considered that future access and egress arrangements will be acceptable for the proposed development of the subject land having regard to the nature, construction and extent of the existing road infrastructure which is present and the new public road system which is required to be provided to serve the future industrial subdivision development of the subject site.

3.1.4 Services - Water, Gas and Electricity

As set out in Section 4.1.3 of NSW Rural Fire Services, **Planning for Bushfire Protection**, 2006, industrial developments in bushfire prone areas must maintain a water supply reserve dedicated to firefighting purposes.

Given that the proposed rezoning and associated Torrens Title subdivision provides for industrial allotments, all proposed lots will have access to the reticulated water supply, the extension of which will be required by Port Macquarie-Hastings Council to service the proposed industrial subdivision. It is however noted that in accordance with NSW Rural Fire Services, **Planning for Bushfire Protection**, 2006 the determination of a guaranteed water supply is to be made by the water supply authority where mains water supply is available.

Electricity supply is available and will be accessible to the proposed subdivision of the land.




Reticulated gas services are not available in the locality and are therefore not available to the subject site.

The incorporation into the industrial subdivision of the subject site of the relevant provisions of the following acceptable solutions as provided for by Section 4.1.3 of NSW Rural Fire Services, **Planning for Bushfire Protection**, 2006 will ensure compliance with the intent for the provision of services to the proposed development of the subject site.

BUSHFIRE HAZARD ASSESSMENT (REZONING)
19 HOUSTON MITCHELL DRIVE, BONNY HILLS

JANUARY 2018

Table 8 – Service Provision Requirements

Intent of measures: to provide adequate services of water for the protection of buildings during and after the passage of a bush fire, and to locate gas and electricity so as not to contribute to the risk of fire to a building		
Performance Criteria	Acceptable Solutions	Compliance Comment
The intent may be achieved where:		
Reticulated water supplies <ul style="list-style-type: none"> • water supplies are easily accessible and located at regular intervals 	<ul style="list-style-type: none"> • reticulated water supply to urban subdivisions uses a ring main system for areas with perimeter roads. • fire hydrant spacing, sizing and pressures comply with AS 2419.1 – 2005. Where this cannot be met, the RFS will require a test report of the water pressures anticipated by the relevant water supply authority. In such cases, the location, number and sizing of hydrants shall be determined using fire engineering principles. • hydrants are not located within any road carriageway • all above ground water and gas service pipes external to the building are metal, including and up to any taps. • the provisions of parking on public roads are met. 	 To comply
Electricity Services <ul style="list-style-type: none"> • location of electricity services limits the possibility of ignition of surrounding bush land or the fabric of buildings • regular inspection of lines is undertaken to ensure they are not fouled by branches. 	<ul style="list-style-type: none"> • where practicable, electrical transmission lines are underground. • where overhead electrical transmission lines are proposed: <ul style="list-style-type: none"> - lines are installed with short pole spacing (30 metres), unless crossing gullies, gorges or riparian areas; and - no part of a tree is closer to a power line than the distance set out in accordance with the specifications in 'Vegetation Safety Clearances' issued by Energy Australia (NS179, April 2002). 	 To comply
Gas services <ul style="list-style-type: none"> • location of gas services will not lead to ignition of surrounding bush land or the fabric of buildings 	<ul style="list-style-type: none"> • reticulated or bottled gas is installed and maintained in accordance with AS 1596 and the requirements of relevant authorities. Metal piping is to be used. • all fixed gas cylinders are kept clear of all flammable materials to a distance of 10 metres and shielded on the hazard side of the installation. • if gas cylinders need to be kept close to the building, the release valves are directed away from the building and at least 2 metres away from any combustible material, so that they do not act as a catalyst to combustion. Connections to and from gas cylinders are metal. • polymer sheathed flexible gas supply lines to gas meters adjacent to buildings are not used. 	 To comply (where applicable)

3.1.5 Landscaping

Landscaping is a major cause of fire spreading to buildings, and therefore any landscaping on the proposed new lots and throughout the industrial subdivision will need consideration when planning, to produce gardens that do not contribute to the spread of a bushfire.

When planning any future landscaping surrounding the future industrial buildings, consideration should be given to the following:

- The choice of vegetation – consideration should be given to the flammability of the plant and the relation of their location to their flammability and ongoing maintenance to remove flammable fuels.
- Trees as windbreaks/firebreaks – Trees in the landscaping can be used as windbreaks and also firebreaks by trapping embers and flying debris.
- Vegetation management – Maintain a garden that does not contribute to the spread of bushfire.
- Maintenance of property – Maintenance of the property is an important factor in the prevention of losses from bushfire.

Appendix 5 of NSW Rural Fire Service, **Planning for Bushfire Protection**, 2006, contains standards that are applicable to the provision and maintenance of landscaping. Any landscaping proposed to be undertaken in conjunction with the proposed development concept to comply with the principles contained in Appendix 5 of NSW Rural Fire Service, **Planning for Bushfire Protection**, 2006.

Compliance with Appendix 5 of NSW Rural Fire Services, NSW Rural Fire Service, **Planning for Bushfire Protection**, 2006, will satisfy the intent of the bush fire protection measures that are applicable to the provision of landscaping.

3.2 Construction of Buildings in Bushfire Prone Areas

3.2.1 General

The construction requirements of AS3959 – 2009, (Construction of Buildings in Bushfire Prone Areas), are unlikely to be relevant to future development as these provisions are not considered to be applicable by virtue of the buildings assumed intended uses, (not being a residential/accommodation or Special Fire Protection Purpose development), and the Building Code of Australia classification as Class 8 industrial buildings.

In this regard it is noted that the application of Part G5, (Construction Requirements in Bushfire Prone Areas), of the BCA in NSW only applies to;

- a Class 2 or 3 building;
- a Class 4 part of a building;
- a Class 9 building that is a Special Fire Protection Purpose; or
- a Class 10a building or deck associated with a building referred to in the above dot points.

Accordingly, the determination of Bushfire Attack Levels, (BAL's), in accordance with AS3959 – 2009 has not been undertaken as Part G5 of the BCA and hence AS3959 – 2009 are not considered to be applicable in this instance.

Any future industrial building constructed on the proposed industrial lots will be required to comply with the relevant fire safety requirements of the Building Code of Australia which will be accepted for bushfire purposes where the aim and objectives of NSW Rural Fire Services, **Planning for Bushfire Protection**, 2006.

Notwithstanding the above the following Bushfire Attack Levels (BAL's) would be applicable to any industrial building developments which incorporate BCA Class 4 residential dwellings;

BUSHFIRE HAZARD ASSESSMENT (REZONING)
19 HOUSTON MITCHELL DRIVE, BONNY HILLS

JANUARY 2018

Table 9 – BAL Provisions

VEGETATION (AS PER SPECHT)	SLOPE	DISTANCE TO HAZARD VEGETATION	AS 3959-2009 BUSHFIRE ATTACK LEVEL (BAL) METHOD 1
Southern, Eastern and Western Aspects			
Forest	<5° Down slope	<20m	Flame Zone
	<5° Down slope	20m – <27m	BAL 40
	<5° Down slope	27m – <37m	BAL 29
	<5° Down slope	37m – <50m	BAL 19
	<5° Down slope	50m – <100m	BAL 12.5
Northern Aspect			
Rainforest Specification	<5° Down slope	<8m	Flame Zone
	<5° Down slope	8m – <11m	BAL 40
	<5° Down slope	11m – <17	BAL 29
	<5° Down slope	17m – <24m	BAL 19
	<5° Down slope	24m – <100m	BAL 12.5

Having regard to the above the size of the proposed industrial lots is such that the any future industrial buildings which incorporate residential dwellings can be designed in such a way so as to provide for a worst-case BAL 29 outcome for the residential component of any future development.

4.0 SUMMARY OF FINDINGS

The following recommendations are provided in response to the proposed rezoning and associated Torrens Title industrial subdivision layout provided as **Appendix 2**.

- (i) Adopt Landscaping principals in accordance with Section 3.1.5 of this report.
- (ii) The determination of Defendable Spaces which will be relevant to the development of each industrial lot is to be the subject of individual lot based assessments which reflect individual development proposals for each lot.
- (iii) Water and other services are to be provided to proposed industrial subdivision in accordance with the requirements detailed in Section 3.1.3 of this report.
- (iv) The design and construction of all public roads within the proposed industrial subdivision layout are to comply with the acceptable solutions provided for in Section 4.1.3 of NSW Rural Fire Services, **Planning for Bushfire Protection**, 2006.

5.0 CONCLUSION

It is considered that the proposed rezoning and associated Torrens Title industrial subdivision of land known as Lot 1 DP 11117908 and Lot 10 DP 615775, 19 Houston Mitchell Drive, Bonny Hills is at risk of bushfire attack; however, it is in our opinion that with the implementation of the bushfire threat reduction measures and consideration of the recommendations in this report, the bushfire risk is manageable for the proposed rezoning and associated subdivision.

DAVID PENSINI - BUILDING CERTIFICATION AND ENVIRONMENTAL SERVICES

31

With the implementation of the recommendations it is considered that it will be possible for the proposed industrial subdivision layout to meet the applicable acceptable solutions as provided for in NSW Rural Fire Service, **Planning for Bushfire Protection**, 2006.

This report is however contingent upon the following assumptions and limitations.

Assumptions

- (i) For a satisfactory level of bushfire safety to be achieved regular inspection and testing of proposed measures, building elements and methods of construction, specifically nominated in this report, is essential and is assumed in the conclusion of this assessment.
- (ii) There are no re-vegetation plans in respect to hazard vegetation and therefore the assumed fuel loading will not alter.
- (iii) It is assumed that the building works will comply with the DTS provisions of the BCA including the relevant requirements of Australian Standard 3959 – 2009.
- (iv) Any future industrial subdivision developments are constructed and maintained in accordance with the risk reduction strategy in this report.
- (v) The vegetation characteristics of the subject site and surrounding land remains unchanged from that observed at the time of inspection or from that specified within this report.
- (vi) The information contained in this report is based upon the information provided for review, refer to **Appendix 2**.

No responsibility is accepted for the accuracy of the information contained within the above plans.

Limitations

- (i) The data, methodologies, calculations and conclusions documented within this report specifically relate to the building and must not be used for any other purpose.
- (ii) A reassessment will be required to verify consistency with this assessment if there is building alterations and/or additions, change in use, or changes to the risk reduction strategy contained in this report

6.0 REFERENCES

NSW Rural Fire Services, **Planning for Bushfire Protection**, 2006

AS 3959-2009, **Construction of Buildings in Bushfire Prone Areas**

Keith David 2004, Ocean **Shores to Desert Dunes, The Native Vegetation of New South Wales and the ACT**, Department of Environment and Conservation

NSW State Government, **Rural Fires Act**, 1997

Port Macquarie-Hastings Councils, **Bushfire Prone Land Mapping**

NSW Rural Fire Service, **Guideline for Bushfire Prone Land Mapping**, 2002

Australian Building Codes Board, **Building Code of Australia**, 2011

NSW Rural Fire Service – **Guideline for Bushfire Prone Land Mapping 2002**

Disclaimer

The findings referred to in this report are those which, in the opinion of the author, are required to meet the requirements of NSW Rural Fire Service, *Planning for Bushfire Protection*, 2006. It should be noted that the Local Authority having jurisdiction for the area in which the property is located may, within their statutory powers, require different, additional or alternative works/requirements to be carried out other than those referred to in this report.

This report has been prepared partially on information provided by the client. Information provided by the client in respect of details of construction.

The author denies any legal liability for action taken as a consequence of the following:

- The Local Authority requiring alternative or additional requirements to those proposed or recommended in this report.
- Incorrect information, or mis-information, provided by the client with regard the proposed development which is in good faith included in the strategies proposed in this report and later found to be false.

BUSHFIRE HAZARD ASSESSMENT (REZONING)
19 HOUSTON MITCHELL DRIVE, BONNY HILLS

JANUARY 2018

APPENDIX 1
Subject Site



JANUARY 2018

PRELIMINAR
08.08.2017

JANUARY 2018

STAGE 7

STAGE 3

STAGE 2

STAGE 5

STAGE 6

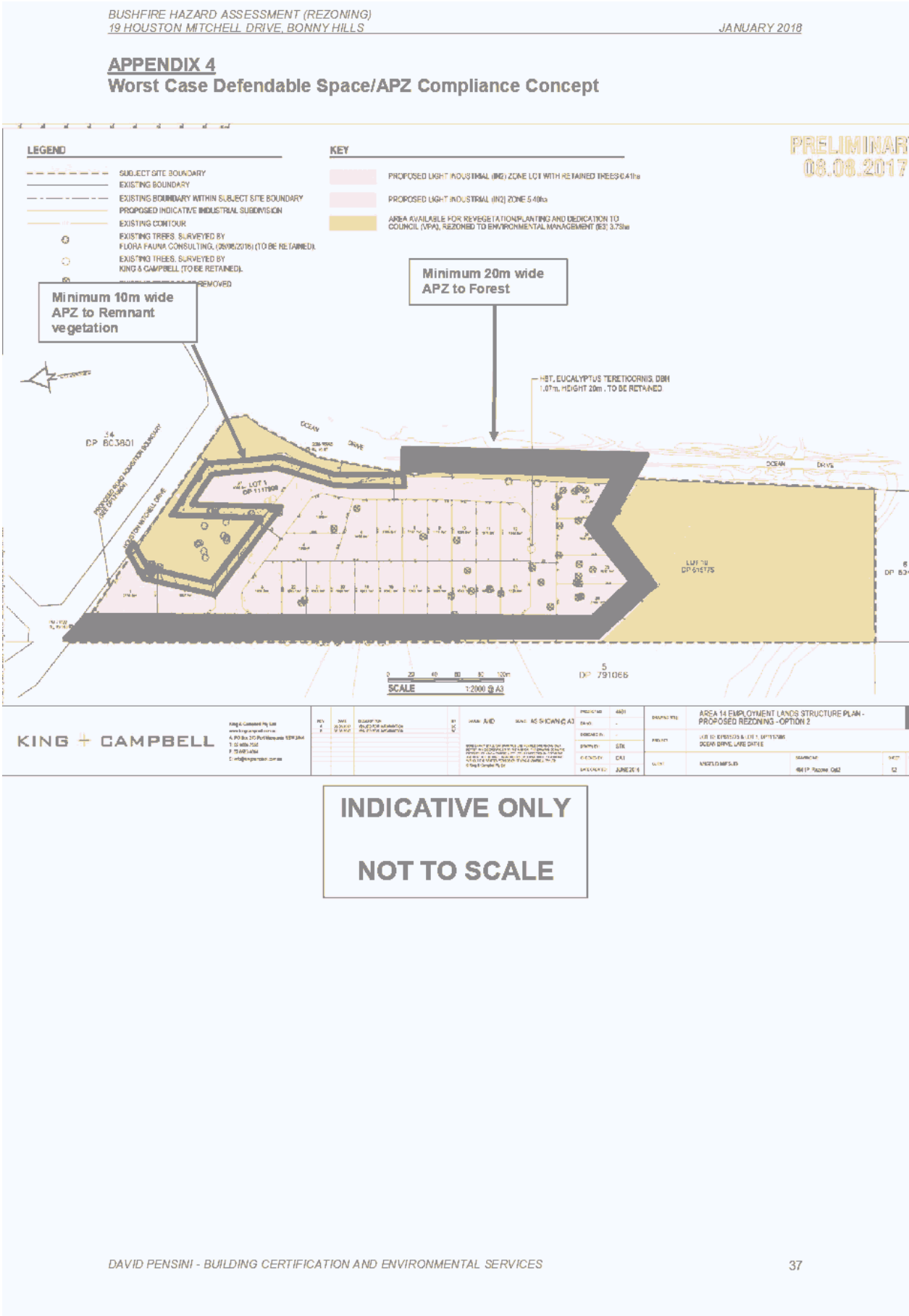
STAGE 4

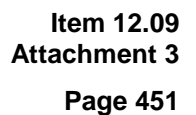
EXISTING STAGE 1

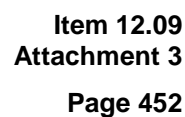
HOUSTON MITCHELL DRIVE

OCEAN DRIVE

STAGE	NO. LOTS
2	33
3	16
4	23
5	24
6	17
7	6







KM/AJT 4661
Please quote our ref no: 4661_120

KING + CAMPBELL

28 February 2019

The General Manager
Port Macquarie Hastings Council (PMHC)
P O Box 84
PORT MACQUARIE NSW 2444

ATTENTION: Ms Stephanie Baker

Dear Stephanie

**RE: PLANNING PROPOSAL EMPLOYMENT LANDS
LOT 10 DP 615774 & LOT 1 DP 1117908
CNR OCEAN DRIVE AND HOUSTON MITCHELL DRIVE, LAKE CATHIE**

Reference is made to:

- PMHC's correspondence of 14 November, 2018 (see **Attachment 01**), which provides comment on the recent Ecological Assessment undertaken by *Biodiversity Australia*;
- Our meeting with PMHC staff on 19 November, 2018, to review the matters identified in the above correspondence;
- Advice dated 11 December, 2018 received from Council's Environmental Projects Officer with respect to the scope for updating the flood assessment (see **Attachment 02**); and
- The proposed zone plan, revision E (see **Attachment 03**).

The purpose of this correspondence is to provide PMHC with the additional information requested to facilitate the completion of the Planning Proposal and its reporting to Council.

1. Ecology

We confirm our understanding of the outcome of the meeting on 19 November, 2018, is that Council is satisfied that the ecological assessment provides enough certainty to support the Planning Proposal, noting that a full assessment pursuant to the Biodiversity Conservation Act 2016 will be required to accompany the future Development Application for the industrial subdivision of the site. We also confirm our understanding that additional information is to be provided in relation to the hollow bearing trees within the site.

Council's correspondence of 14 November, 2018, was also reviewed by the project ecologist *Biodiversity Australia* (see **Attachment 04**). We therefore provide the following comments as a response to the items identified in your correspondence of 14 November, 2018:

PMHC comment:

Avoid, Minimise, Offset

The Biodiversity Conservation Act 2016 legally enshrines the principle of 'Avoid, Minimise and Offset'. 'Avoid' lands cannot be used towards offsets. Under these principles, the impacts within Plant Community Type (PCT) 1262 should be further avoided. The avoided area cannot be

urban design

civil engineering

architecture

town planning

landscape architecture

surveying

directors

Anthony Thorne
B Surv, MIS Aust
Grad Dip Planning (UTS)

David Tooby
B L Arch, AAILA
Registered Landscape Architect

Scott Marchant
B Surv (Hons)

Nigel Swift
B Arch, BA Arch, AIA
Nominated Architect
NSW Architects Registration Board No 7625
QLD Architects Registration Board No 3937

consultant

Paul Rowlandson
B Surv (Hons), MIS Aust

King & Campbell Pty Ltd
1st Floor, Colonial Arcade
25-27 Hay Street
Port Macquarie

PO Box 243
Port Macquarie, NSW, 2444

ABN 44 564 476 716

T: 02 6586 2555
F: 02 6583 4064

info@kingcampbell.com.au

www.kingcampbell.com.au

integrated solutions | enhancing community

4661_119

Page 2 of 7

28 January 2019

used as an offset and therefore the BAM will need to be recalculated. If areas of PCT 1262 within the current development footprint are not avoided, no on-site offset will be available.

Comment:

We confirm that the proposed zone plan supports the principles of *avoid, minimise and offset* through setting aside an area to be zoned *E2 Environmental Conservation* (3.73 ha) and through retaining the identified four (4) hollow bearing trees (HBT) either within the future public road reserve or within the future E2 zoned lands (see below for discussion of the HBT's).

We also confirm our understanding that the vegetation that has been avoided can be used as an offset, should the land qualify for a Biodiversity Stewardship site. This principle has been confirmed through advice provided by Ms Blayne West in email correspondence of 18 December, 2018 (see **Attachment 05**).

PMHC comment:

Plant Community Type 1262 and proposed IN2 Zone with Retained Trees
The Ecological Assessment does not consider any bushfire considerations with regard to retained trees scattered amongst the industrial units in this proposed zone. Further losses could be encountered for bushfire mitigation measures (or even in time as the trees age and are deemed dangerous). Consideration of these issues is required.

Comment:

This area is within the footprint of proposed Lot 27 and was assessed in the ecological report as an area of impact. No further vegetation loss within the allotment is anticipated.

With respect to bushfire mitigation measures, a Bushfire Hazard Assessment was prepared by David Pensini of Building Certification and Environmental Services to inform the Planning Proposal. This report was provided to Council in the first instance on 17 April 2018, with an amended version provided on the 8 October, 2018, which correctly refers to the landscaping principles at Section 3.1.5 on page 31.

The Bushfire Hazard Assessment includes at Appendix 4 the defensible space requirements for an industrial subdivision. We confirm that all future APZ's are located outside of the proposed environmental zone. The required APZ in the vicinity of the retained remnant vegetation adjacent Houston Mitchell Drive is 10m and provided within the future industrial zone.

PMHC comment:

Core Koala Habitat

Council's Biodiversity staff strongly consider this area meets the legal definition for core koala habitat. There are numerous koala records throughout this area, including on the boundaries of the property. Council's draft Coastal Koala Plan of Management has mapped this area as being core koala habitat.

Biodiversity Australia did not undertake any formal surveys for koalas, instead relying on the previous surveys undertaken by Flora and Fauna Consulting. That Ecological Assessment stated, "no Koala scats were found; however, it was impossible to draw any conclusions from this alone given the recent heavy rain associated with the intense east coast low pressure

system and extent of surface water within the site at the time of the assessment. Several trees showed signs of Koala activity, including scratches consistent with those made by Koalas on the trunk of a Forest Red Gum tree". This indicates that koalas are present.

Furthermore, the Ecological Assessment goes on to state that, "However, the habitat is unlikely to be core Koala habitat for the purposes of SEPP 44 but is a valuable component of a larger home range of the local Koala population". This statement is inconsistent but indicates that the area is part of local koala's home range (and therefore is core koala habitat). Species credits will be required for this species. These credits and site offset provisions will need to be considered in more detail in a Koala Plan of Management, which will be required as part of any future Development Application.

The Federal Koala Habitat Assessment Tool (EPBC Act referral guidelines) and potential referral has not been discussed to determine whether referral to the Minister is required.

Comment

By email correspondence of 3 April, 2017 (see **Attachment 06**), Council advised that in their opinion the site forms part of a larger home range for the local Koala population. By email correspondence of 5 May, 2017 (see **Attachment 07**), Council have further advised that any need for a Koala Plan of Management can be deferred until the DA stage.

Further assessment pursuant to SEPP 44 will therefore be undertaken at the DA stage for the industrial subdivision of the site and should it be determined that a KPOM is required, the Plan will accompany the DA submission at that time.

We note that a federal referral assessment was initially undertaken as part of the Ecological Assessment prepared by FloraFauna Consulting (27 October, 2016) to inform the rezoning process (see **Attachment 08**). This assessment determined that a referral would not be required.

PMHC comment:

Dominant Plant Community Type

No justification was provided as to why PCT 1262 was chosen as the "dominant PCT" for the site. This might seem an incongruous choice given that PCT 1230 occupies a considerably larger portion of the development site (and the site's context which must also be considered under the BAM i.e. In the offset site) and had a higher vegetation integrity score. Justification (including consideration of local context) must be provided as to why PCT 1262 was selected.

Comment

The project ecologist has noted that due to the extent of modification of the original vegetation on the site, it is difficult to determine what would have been the dominant PCT. However, further justification for choosing PCT 1262 as the dominant community will be provided in the BDAR to be prepared at the DA stage.

PMHC comment:

Plant Community Type 1230: A Threatened Ecological Community?

No justification was given to whether PCT 1230 met the criteria to be a listed Threatened Ecological Community. This is important given the "Swamp Mahogany swamp forest on coastal lowlands" species composition and general location. It is also noted that area calculations for

4661_119

Page 4 of 7

28 January 2019

this community did not include individual scattered trees, only consolidated polygons. The extent of total clearing to be undertaken is required.

Comment

The project ecologist has noted that a full assessment as to whether this community qualifies as a TEC can be provided within a BDAR to be prepared with the DA. Additionally, updated mapping to include scattered trees in the community can also be undertaken at the DA stage.

PMHC comment:

Species Credits

A number of ecosystem and species credit species that either have been recorded on the site, or in its immediate proximity (as revealed by BioNet), or were considered as potential occurrences on the study site by Flora and Fauna Consulting, have been placed in the "List of Species Not On Site" tables.

(table not reproduced)

Detailed justification for why these species were not included amongst the "List of Species Requiring Survey" is required, or alternatively and preferentially these species should be surveyed as they do have a strong potential for occurrence, and particularly given Section 6.4.1.5 of the BAM which states, "If any past surveys undertaken on the subject land, regardless of whether or not the data is within BioNet, have recorded the presence of a threatened species, this species must be identified as being a species that requires assessment at the subject land" (as is the case for Swift Parrot).

The species detailed in the "List of Species Requiring Survey" have not actually been surveyed appropriately. For instance, the surveys conducted by Flora and Fauna Consulting were conducted outside the formal survey period for the Square-tailed Kite and the dates and the nature of the 'opportunistic surveys' later undertaken by Biodiversity Australia are also considered insufficient. The surveys for Squirrel Glider, Brush-tailed Phascogale and Koala were also insufficient. Such surveys (limited effort over 2 days in winter and following a significant east coast low, which the consultant considered reduced their ability to detect koala scat) would not meet requirements for 'best practice' under BAM. These species will require resurveying for potential presence using appropriate 'best practice' techniques.

In addition to the species above, there may be other species on the current "List of Species Not On Site" table for which the site is potential habitat given better knowledge of the diversity of existing habitat opportunities on the site e.g. Giant Barred Frog. In addition, should the 'dominant' PCT have been Swamp Mahogany on Coastal Lowlands, a different set of species, such as Southern Swamp Orchid, may well require detailed survey to ensure all species credits for the PCTs are assessed. No specific species credits have been identified for the offset sites.

Comment

The project ecologist has noted that many of the species listed were excluded from further assessment due to the disturbance history of the site, low condition of vegetation, lack of suitable habitat requirements and current management regime (e.g. regular slashing). A full habitat assessment and justification as to why certain species have been excluded can be provided in the BDAR. If it is determined that additional species have the potential to occur on the site, appropriate targeted surveys can then be undertaken.

PMHC comment:*Hollow-bearing Trees*

No consideration has been given to the loss of the two hollow-bearing trees on-site and their replacement on the offset site, nor to the requirements of PMHC's DCP and whether the hollow-bearing trees can be removed or require mandatory retention. It should be noted that Appendix D of the Flora and Fauna Consultants Assessment Report is incomplete (containing data for only 1 of the 3 hollow-bearing trees) but that this tree scores 13.5- therefore requiring mandatory retention. It is unknown which of the two hollow-bearing E. tereticornis this represents, however examination of Table 5.1 suggests all three hollow-bearing trees would have scored quite highly. The identity and scoring of the trees will require consideration.

Comment

As previously noted the proposed zone plan (**Attachment 03**) supports the principles of avoid, minimise and offset through setting aside an area to be zoned E2 Environmental Conservation (3.73 ha) and through retaining the identified four (4) hollow bearing trees (HBT) either within the future public road reserve or within the future E2 zoned lands (see below for discussion of the HBT's).

By way of background, Steve Britt of *Flora Fauna Consulting* (**Attachment 08**) initially recorded 3 HBT's within/adjacent the development footprint of the future industrial subdivision (Tags 872, 881 and 835).

At the time of his assessment the indicative subdivision layout provided for a cul-de-sac and tree 881 was identified as the only HBT to be removed. Accordingly a HBT tree assessment form was only completed for tree 881.

Further assessment by Council resulted in an amendment to the indicative subdivision layout, to provide for an edge road and the retention of tree 881 (**Attachment 07**). Therefore the amended indicative subdivision layout provided for the removal of tree 872 (within proposed Lot 23) and the retention of trees 835 and 881. At the time a HBT assessment form was not prepared in relation to tree 872.

In response to our recent meeting at Council offices, Will Steggall of *Biodiversity Australia* has undertaken a HBT assessment of tree 872. In the course of this review an additional HBT (tag 873) has been identified in proximity to proposed Lot 23. The completed HBT assessment forms for both trees are attached (see **Attachment 09**).

Both tree 872 and 873 have scored greater than 12 on the HBT assessment form and their retention is mandatory pursuant to Council's DCP.

Please find attached an amended indicative layout plan (revision E – **Attachment 03**) that includes a minor adjustment to the boundary of proposed Lot 23 to ensure the retention of both tree 872 and 873.

This amendment results in an additional 377 m² of land that will be zoned E2 Environmental Conservation on the eastern boundary of proposed Lot 23. This outcome will ensure that the HBT 872 and 873 will be retained at a location that consolidates the primary habitat area on the site.

Additionally, to maintain a consistent loss and offset ratio in accordance with the ecological assessment, the amended indicative layout plan (revision E) also includes a proposed amendment to the area of proposed Lot 27 that will include an additional 377 m² of future IN2 zoned lands. The additional IN2 land area comprises an existing

4661_119

Page 6 of 7

28 January 2019

driveway access between the existing sheds within the site. It is the intention that the existing trees within proposed Lot 27 will be retained.

PMHC comment:

Location of Plots

Plots seems to have been undertaken relative to the offset/development lands, rather than clearly stratified with an adequate number of plots per area of PCT/Condition. The Ecological Report should state the required number of plots based on these grounds to ensure that the appropriate number of plots have been conducted.

Comment

The project ecologist has noted that the minimum number of plots required per vegetation zone have been undertaken. Additionally, the survey effort in the development footprint has also exceeded the survey requirements for the streamlined assessment module.

PMHC comment:

Rezoning of Offset Lands

The BDAR states that the offset lands will be rezoned to E3 Environmental Management. Please note that Council will require the offset lands to be rezoned to E2 Environmental Conservation. This advice is also consistent with previous advice by Council on 3 April 2017 in relation to the Planning Proposal. This would be in accordance with the principles that would apply should the offset lands have been achieved through the Biodiversity Conservation Trust pathway.

Comment

The proposed offset lands are identified on the attached zone plan at **Attachment 03** as proposed *E2 Environmental Conservation*.

2. Flooding

Please find attached an updated *Flood Impact Assessment* (Advision), dated 19 February, 2019 (see **Attachment 10**). The updated assessment has been undertaken following consultation with Councils Environmental Project Officer (see **Attachment 02**) and builds on a previous assessment provided to Council in 2010.

The updated assessment notes that since the 2010 assessment Council has adopted the Hastings Council Flood Policy (October 2015) and the AUSPEC D5 design guidelines and that Ocean Drive was upgraded in 2012.

The updated assessment has found the following with respect to Council policy and guidelines:

- (i) *For a "zero culvert blockage" scenario, the filling proposed as part of the development will result in an increase in peak 100 year ARI flood level at the upstream site boundary of less than 10 mm. This increase in 100 year ARI flood level is within the allowable limit specified in the Council's Flood Policy.*

4661_119

Page 7 of 7

28 January 2019

- (ii) *For the "50 / 20 / 20% culvert blockage" scenario, the difference in the peak 100 year ARI flood level in existing and post-development conditions is less than 20 mm. This is greater than the 10 mm difference that is noted in the Council's Flood Policy. However, due to the nature of the catchment whereby it is a densely vegetated State Conservation Area the estimated change in the flood level is unlikely to have a significant impact.*
- (iii) *The difference in the 100 year ARI flow velocity between existing and post-development no blockage scenarios is estimated to be 0.15 m/s through the culverts. This is greater than the maximum allowable velocity difference of 0.1 m/s specified in the Council's Flood Policy. However, given the nature of the catchment and the low absolute magnitude of flood flow velocities through the culverts, the predicted increase is unlikely to have a significant impact.*
- (iv) *In addition to Council's Flood Policy requirements, Council's AUSPEC D5 design guidelines for Stormwater Drainage Design require that all major structures be designed for the 100 year ARI storm event with a maximum afflux of no greater than 300 mm. Council's AUSPEC D5 design guidelines for Stormwater Drainage Design also require that major culverts be designed with a blockage factor of 50%. Under this scenario it was found that the afflux is predicted to be less than 300 mm.*

Should you require any further information regarding this matter please contact Kylie Moore or the writer.

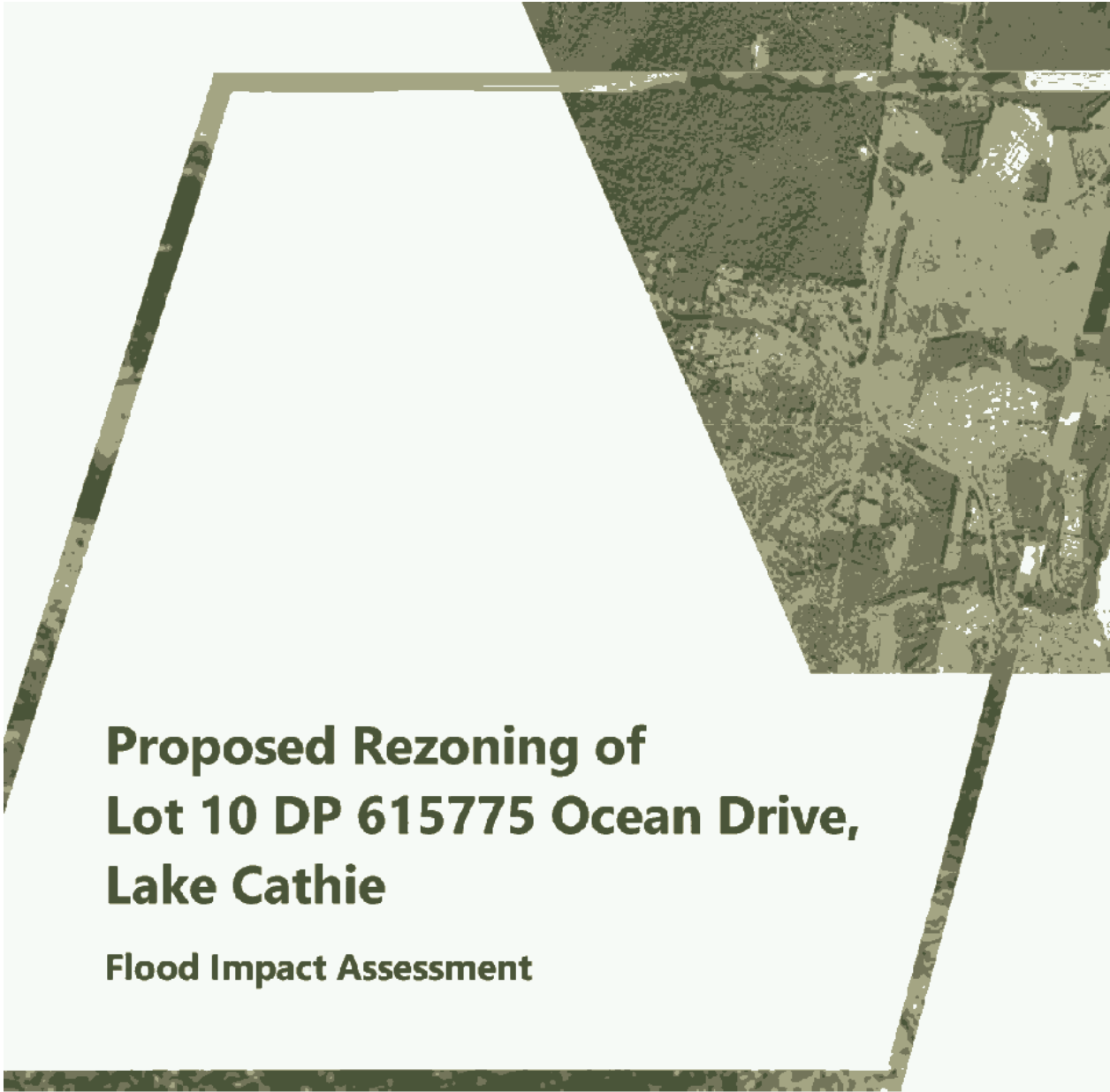
Yours faithfully
King & Campbell Pty Ltd



Anthony Thorne

cc client

Encl. Attachment 01_PMHC corro 20181114
Attachment 02_PMHC email 20181211
Attachment 03_Proposed rezoning plan (and dwg), rev.E
Attachment 04_Biodiversity Australia email 20181128
Attachment 05_PMHC email 20181218
Attachment 06_PMHC email 20170403
Attachment 07_PMHC email 20170505
Attachment 08_Ecological Assessment_20161027
Attachment 09_HBT forms
Attachment 10_Flood Impact Assessment 20190219



Proposed Rezoning of Lot 10 DP 615775 Ocean Drive, Lake Cathie

Flood Impact Assessment

Level 17, 141 Walker St
North Sydney NSW 2060
Australia

www.advisian.com



Advisian

WorleyParsons Group



Proposed Rezoning of
Lot 10 DP 615775 Ocean Drive,
Lake Cathie

Flood Impact Assessment Report


Disclaimer

This report has been prepared on behalf of and for the exclusive use of SJ Mifsud Insulation Pty Ltd, and is subject to and issued in accordance with the agreement between SJ Mifsud Insulation Pty Ltd and Advisian.

Advisian accepts no liability or responsibility whatsoever for it in respect of any use of or reliance upon this report by any third party.

Copying this report without the permission of SJ Mifsud Insulation Pty Ltd and Advisian is not permitted.

Project: Proposed Rezoning of Lot 10 DP 615775 Ocean Drive, Lake Cathie Flood Impact Assessment

Rev	Description	Author	Review	Advisian Approval	Date
A	Draft Report – Issued for Review	ARM A Morris	CRT C Thomas		30/07/2009
B	Final Report	ARM A Morris	CRT C Thomas	CRT C Thomas	10/9/2010
C	Updated Report for modified development layout and revised Council policies	AJD A Dunphy	CRT C Thomas	 C Thomas	19/02/2019

rp301015-04004ajd_crt190219 Mifsud Lake Cathie FIA.docx

Revision C

**Advisian**

Engineering & Construction Group

Proposed Rezoning of
Lot 10 DP 615775 Ocean Drive,
Lake Cathie

Flood Impact Assessment Report

Table of Contents

1	Introduction	1
2	Site Flood Assessment	3
2.1	Hydrologic Analysis	3
2.2	Predicted Peak Flood Level	4
3	Flood Impact Assessment	6
3.1	Description of Proposed Development	6
3.2	Proposed Development Flood Modelling	7
3.3	Flood Modelling Results	7
3.3.1	Impact on Upstream Flood Levels	7
3.3.2	Impact on Downstream Flood Levels	8
3.3.3	Impact on Flow Velocities	8
3.3.4	Afflux Assessment	8
4	Conclusions	9
5	References	10

**Advisian**

WorleyParsons Group

**Proposed Rezoning of
Lot 10 DP 615775 Ocean Drive,
Lake Cathie**

Flood Impact Assessment Report

1 Introduction

SJ Mifsud Insulation Pty Ltd (*Mifsud*) plans to develop a parcel of land that is referred to as Lot 10 DP 615775 Ocean Drive, Lake Cathie. As shown in **Figure 1**, the land is located along the western frontage of Ocean Drive and extends south from its intersection with Houston-Mitchell Drive. It is currently zoned *RU1 Primary Production* under the *Port Macquarie - Hastings Local Environmental Plan 2011*.

The site is located near the downstream end of a 252 ha catchment that drains to an undeveloped area on the eastern side of Ocean Drive. The extent of the catchment and the location of the site within it is shown in **Figure 2**.

The western boundary of the site adjoins dense bushland. The area to the east of the site has been cleared for grazing and drains to a series of constructed wetlands that are situated along the northern limit of the urban precinct of Bonny Hills.

As shown in **Figure 1**, an ephemeral stream that drains the catchment traverses through the Mifsud Site. The Ocean Drive roadway embankment (*refer Figure 1*) presents as a barrier to the easterly discharge of floodwaters, but incorporates three triple cell culvert systems that concentrate runoff and discharge it to the east of the site. The locations of the three culvert systems are highlighted in **Figure 1**.

Notwithstanding, there is potential for floodwaters to pond in the area upstream from the roadway embankment leading to inundation of a large proportion of the Mifsud Site.

Accordingly, King and Campbell Pty Ltd, acting on behalf of Mifsud, engaged Advisian (*operating as WorleyParsons*) to undertake flood investigations aimed at determining the 100 year average recurrence interval (ARI) flood level at the site. The results of these investigations are discussed in a draft Site Flood Assessment Report that was issued to King & Campbell in January 2009. The Site Flood Assessment Report established that the estimated peak 100 year ARI flood level at the site was 7.6 mAHd for a "no-blockage scenario". The findings of the Site Flood Assessment Report (2009) are re-stated in this document in **Section 2**.

Following submission of the Site Flood Assessment Report, King & Campbell provided Advisian (*operating as WorleyParsons*) with a plan showing the layout for the proposed development of the site. The plan included a lot layout and an indicative extent of proposed fill. The fill is required to raise the level of the terrain where development is being proposed and is necessary in order for the land to be rezoned for industrial development.

However, the proposed filling has the potential to reduce the available flood storage and could lead to an increase in peak 100 year ARI flood levels across areas upstream from the site. This could also increase the peak flood discharge through the culvert system located underneath Ocean Drive, potentially creating adverse conditions for properties located downstream.

In addition, the proposed development will result in an increase in stormwater run-off from the site itself, which has the potential to increase the peak discharge entering the flood storage area extending upstream from Ocean Drive.

FIGURE 1

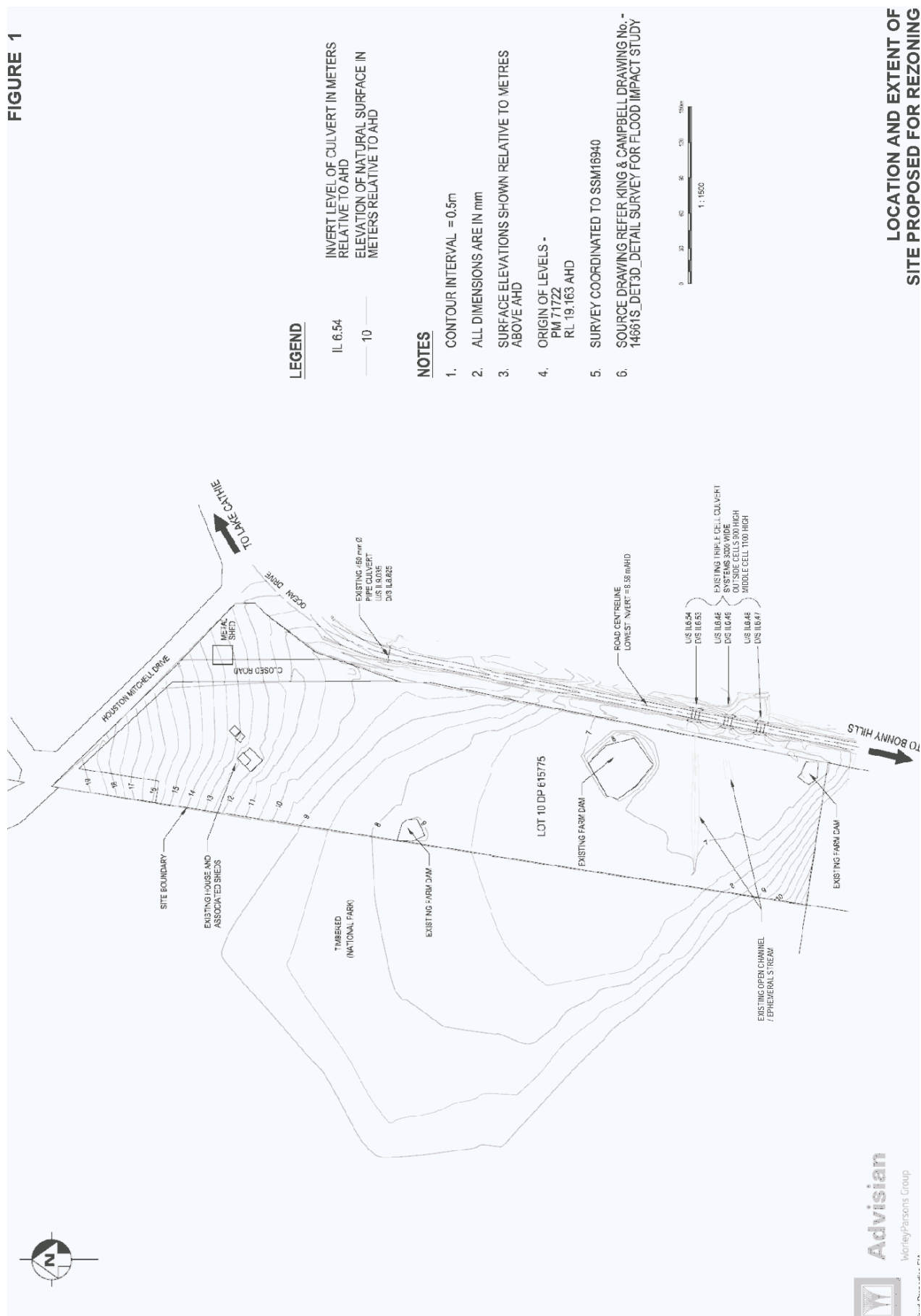
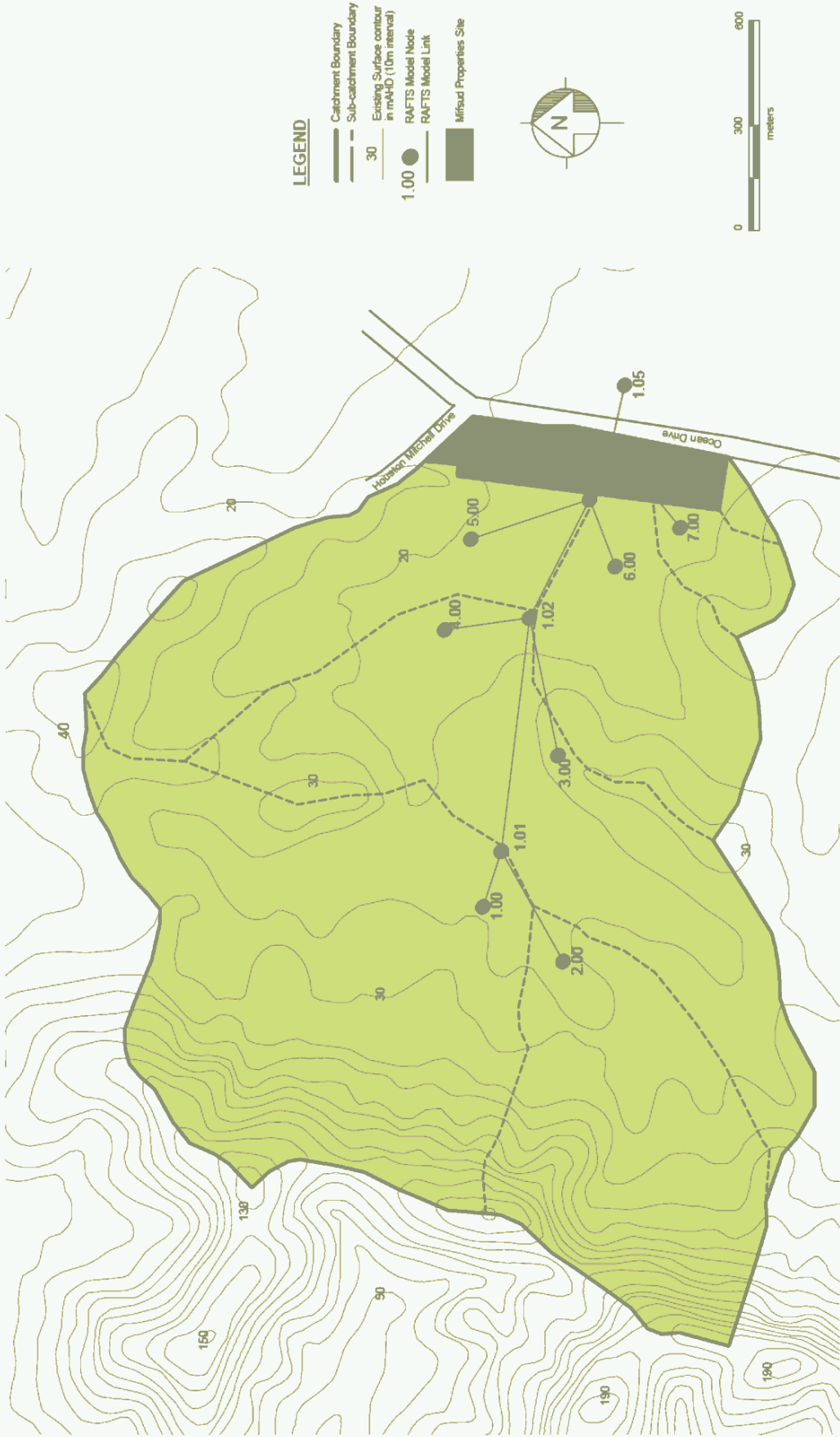


FIGURE 2



NODE AND LINK ARRANGEMENT
FOR RAFTS HYDROLOGIC MODEL



Proposed Rezoning of
Lot 10 DP 615775 Ocean Drive,
Lake Cathie

Flood Impact Assessment Report

In 2010 WorleyParsons submitted a previous version of this Flood Impact Assessment Report (*Revision B*) which documented the results of investigations that were undertaken to characterise existing flood conditions at the site. The report also documented the magnitude and extent of the impact that the proposed filling of the land could have on existing flood characteristics.

Since submission of the 2010 Report (*Rev B*), the concept layout plan has been revised. In addition, Port Macquarie-Hastings Council (*Council*) has requested an update of the report to align the proposed development with Council's updated policies, including the *Port Macquarie-Hastings Council Flood Policy*, which was adopted by Council in October 2015 and the AUSPEC D5 design guidelines. In addition, Ocean Drive was upgraded in 2012 and therefore the investigations need to consider the latest road crest levels.

Accordingly, King and Campbell, acting on behalf of Mifsud, engaged Advisian to update the flood investigations that were completed in 2009/10 to account for the requirements of Council's updated policies, the current concept layout plan and the latest road levels for Ocean Drive. The results of these investigations are outlined in this report.

**Advisian**

HorleyParsons Group

**Proposed Rezoning of
Lot 10 DP 615775 Ocean Drive,
Lake Cathie**

Flood Impact Assessment Report

2 Site Flood Assessment

2.1 Hydrologic Analysis

The catchment draining to the Mifsud Site extends 2 kilometres to the west of Ocean Drive and rises to an elevation of 190 mAHD. It has an area upstream of Ocean Drive of 252 ha. Almost all of this area is densely vegetated.

In order to determine peak flood flows that could potentially be discharged to the site, a hydrologic model of the catchment was developed. The hydrologic model was developed using the Runoff Analysis and Flow Training Simulation (RAFTS-XP) software package.

RAFTS-XP is a deterministic runoff routing model that simulates catchment runoff processes. It is recognised in *'Australian Rainfall and Runoff – A Guideline to Flood Estimation' (ARR 1987)*, as one of the available tools for use in flood routing within Australian catchments. The layout of the RAFTS model is shown in **Figure 2** superimposed over a plan of the catchment.

As shown in **Figure 2**, the upper catchment has been subdivided according to drainage lines interpreted from available aerial photography and topographic mapping. Catchment subdivision also considered the homogeneity of existing land use and vegetation cover. Subcatchment characteristics such as area, slope, percentage imperviousness and roughness, were extracted from the mapping and incorporated within the model data-set.

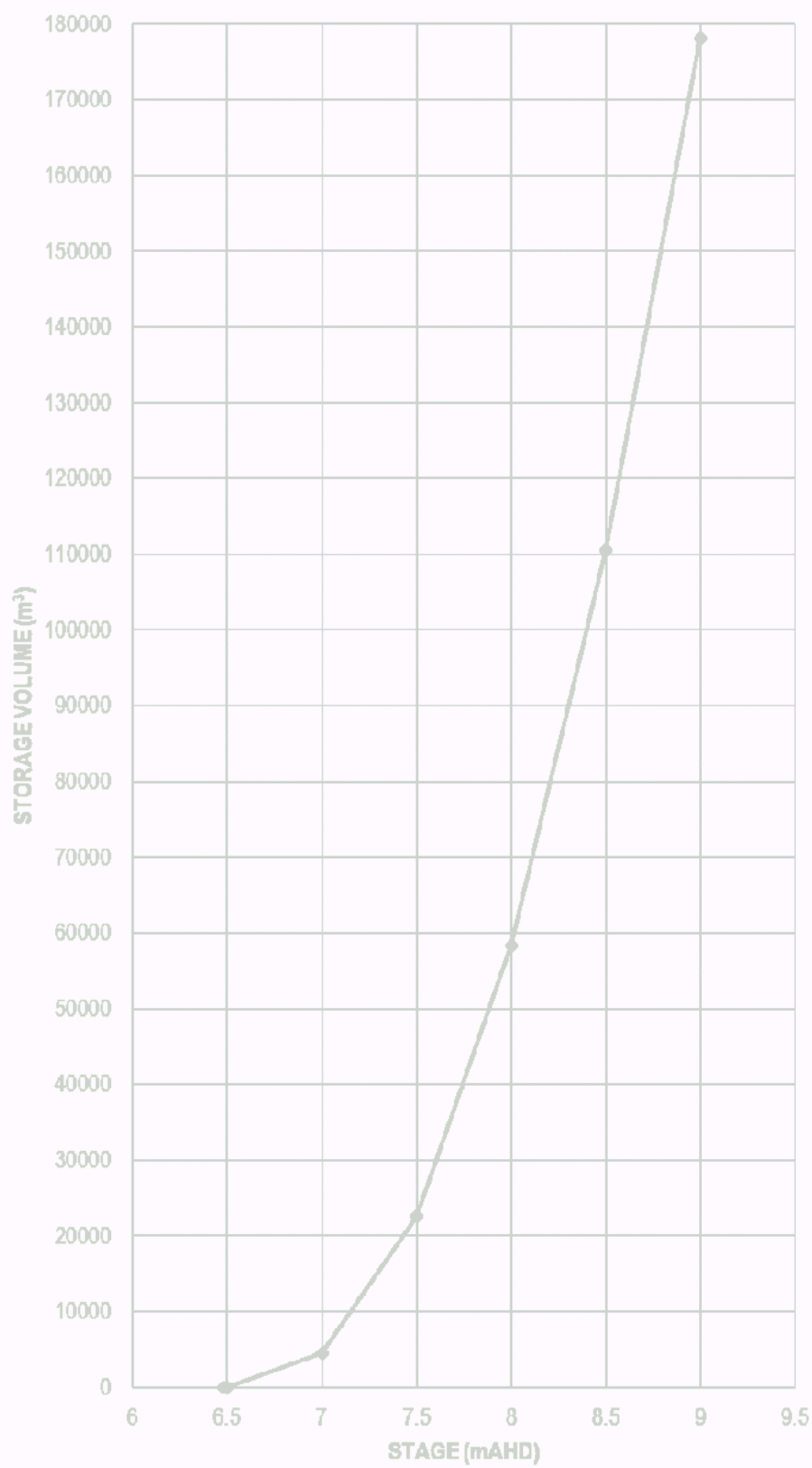
As outlined in **Section 1**, the Ocean Drive roadway embankment effectively “blocks” the free discharge of overland flows and in conjunction with the culvert system, acts as a hydraulic control. As a result, areas of the Mifsud Site upstream from the culverts act as a flood storage area in a similar manner to a detention basin.

Accordingly, the RAFTS model was developed to incorporate the storage afforded by these areas and created by the roadway embankment. The storage was quantified by analysis of the topographic data shown in **Figure 1**, which resulted in determination of the stage-storage relationship presented in **Figure 3**.

In addition, hydraulic analyses were undertaken to determine the flow that would be discharged through the culvert system at different levels of storage. This resulted in development of the stage-discharge relationship shown in **Figure 4**.

The stage-discharge relationship indicates that a sharp reduction in the discharge capacity occurs as the upstream water level reaches the obvert of culverts within the three culvert systems. At this point, the culverts are predicted to be “drowned out”. The increase in friction causes a reduction in discharge capacity. The relatively large reduction is due to the number of culverts and the relatively large ratio of width to depth.

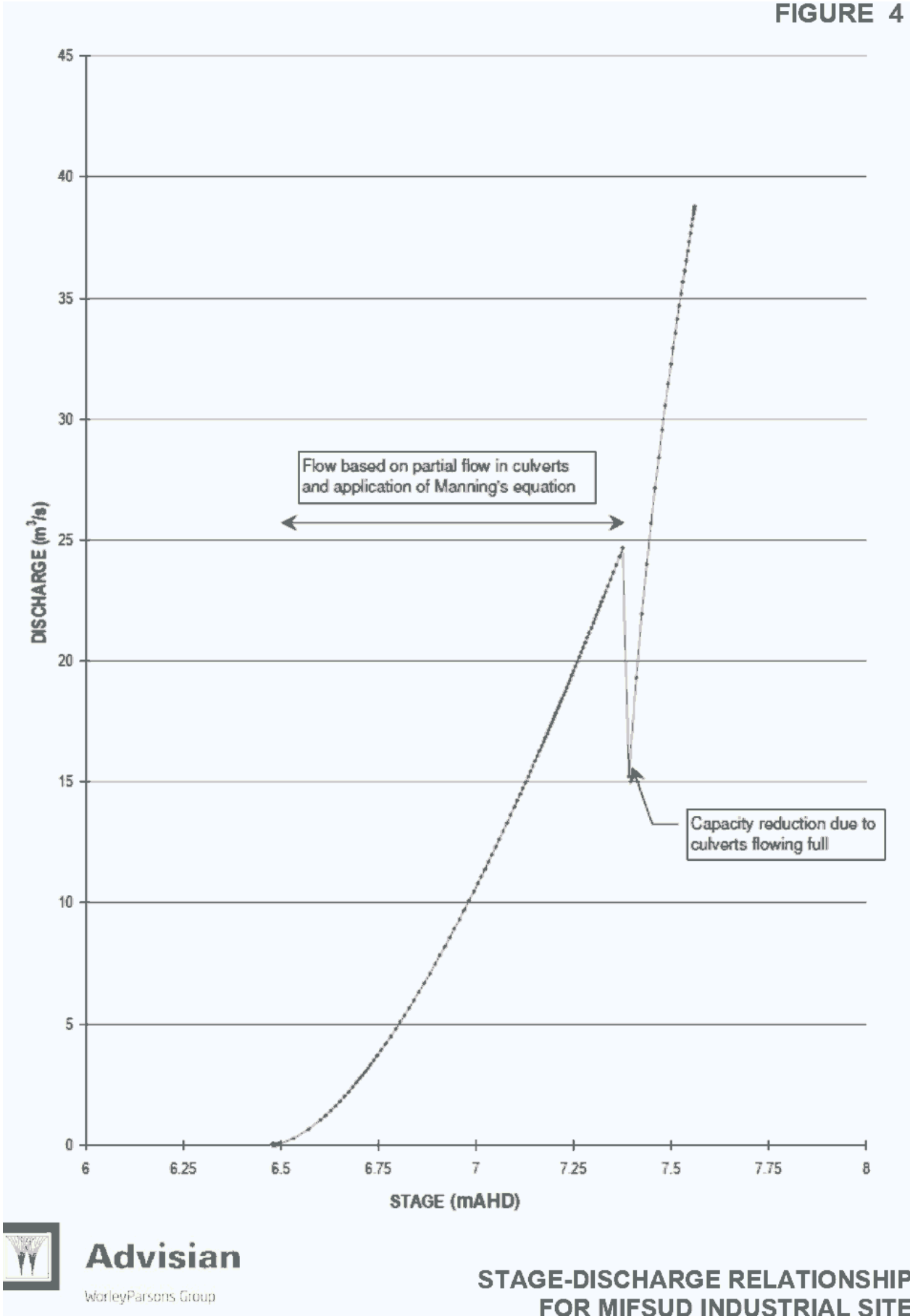
FIGURE 3



Advisian
WorleyParsons Group

**STAGE-STORAGE RELATIONSHIP
FOR MIFSUD INDUSTRIAL SITE**

FIGURE 4



**Advisian**

WorleyParsons Group

**Proposed Rezoning of
Lot 10 DP 615775 Ocean Drive,
Lake Cathie**

Flood Impact Assessment Report

The RAFTS model was used to simulate the design 100 year ARI storm event for the full range of standard storm durations defined in ARR 1987. The 1987 Intensity-Frequency-Duration (IFD) data were adopted as the Council has chosen to retain the procedures and IFD data associated with ARR 1987 for other projects within the local government area, including several government funded flood studies. Hence, we opted to retain the previously adopted 1987 IFD data for the catchment. The results of the analysis were interrogated to determine the critical storm duration for the catchment draining to Ocean Drive.

The 120 minute storm was identified as the critical storm duration for the design 100 year ARI event. This event generated a peak flow of 41.8 m³/s at the western boundary of the site (*no blockage scenario*). The simulation also showed that the storage afforded by the roadway embankment and culvert system led to an 8.4% attenuation of the peak flow. The 100 year ARI flood discharge at the downstream side of Ocean Drive is estimated to be 38.3 m³/s.

2.2 Predicted Peak Flood Level

The catchment draining to the Mifsud Site, and ultimately to the culvert system, forms part of the Queens Lake State Conservation Area and is densely vegetated. There is potential for vegetative debris from this area to travel downstream and become lodged within the culverts or across their face. This debris may block the passage of flow through the culverts and impact on predicted upstream flood levels. A photograph of one of the culvert systems is shown in **Plate 1**.



Plate 1 Three Cell Culvert System Beneath Ocean Drive

It was agreed with the Council (*refer email correspondence from Council (Jesse Dick) to King & Campbell (Kylie Moore) on 11th December 2018*) that the blockage factor that should be applied in the current flood impact assessment should be derived using the methodology outlined in the 2016 edition of *Australian Rainfall and Runoff (ARR 2016)*. A summary of the considerations made when deriving the blockage factor is provided in the following.

- Based on the ARR 2016 methodology, the debris potential (*average exceedance probability (AEP) adjusted*) at the culverts along Ocean Drive would be classified as "High". This is because of the presence of the natural forested area (*i.e., an area of high debris availability*) and because the creek traverses through a forested area (*i.e., an area of high debris mobility*).


Advisian

WorleyParsons Group

**Proposed Rezoning of
Lot 10 DP 615775 Ocean Drive,
Lake Cathie**

Flood Impact Assessment Report

- The blockage level (or percentage blockage) is then selected by considering the ratio of the culvert opening (defined as W and equal to 3 metres at the site) to the average length of the longest 10% of the debris that could make its way to the culverts (defined as L_{10}).
- The vegetation upstream of the site is very tall and therefore there is potential for a tree of significant size to block the culverts. However, the clear distance between each of the three culvert banks is approximately 20 metres. Therefore, it is highly unlikely that all three culvert banks will be blocked simultaneously.
- In recognition of this, and for the purpose of this flood impact assessment, it has been assumed that "blockage" corresponds to one culvert bank being 50% blocked and the other two 20% blocked. The scenario where all culvert banks are 20% blocked ($L_{10} \leq W \leq 3 * L_{10}$) has also been considered for comparison.
- The blockage factor was applied by reducing the culvert width by the percentages outlined above. The RAFTS model was then used to simulate the 100 year ARI event and estimate the maximum impact on culvert performance over a range of storage elevations.

Table 1 lists the results of the design flood simulations for existing conditions.

Table 1 100 year ARI Flood Levels for Existing Conditions

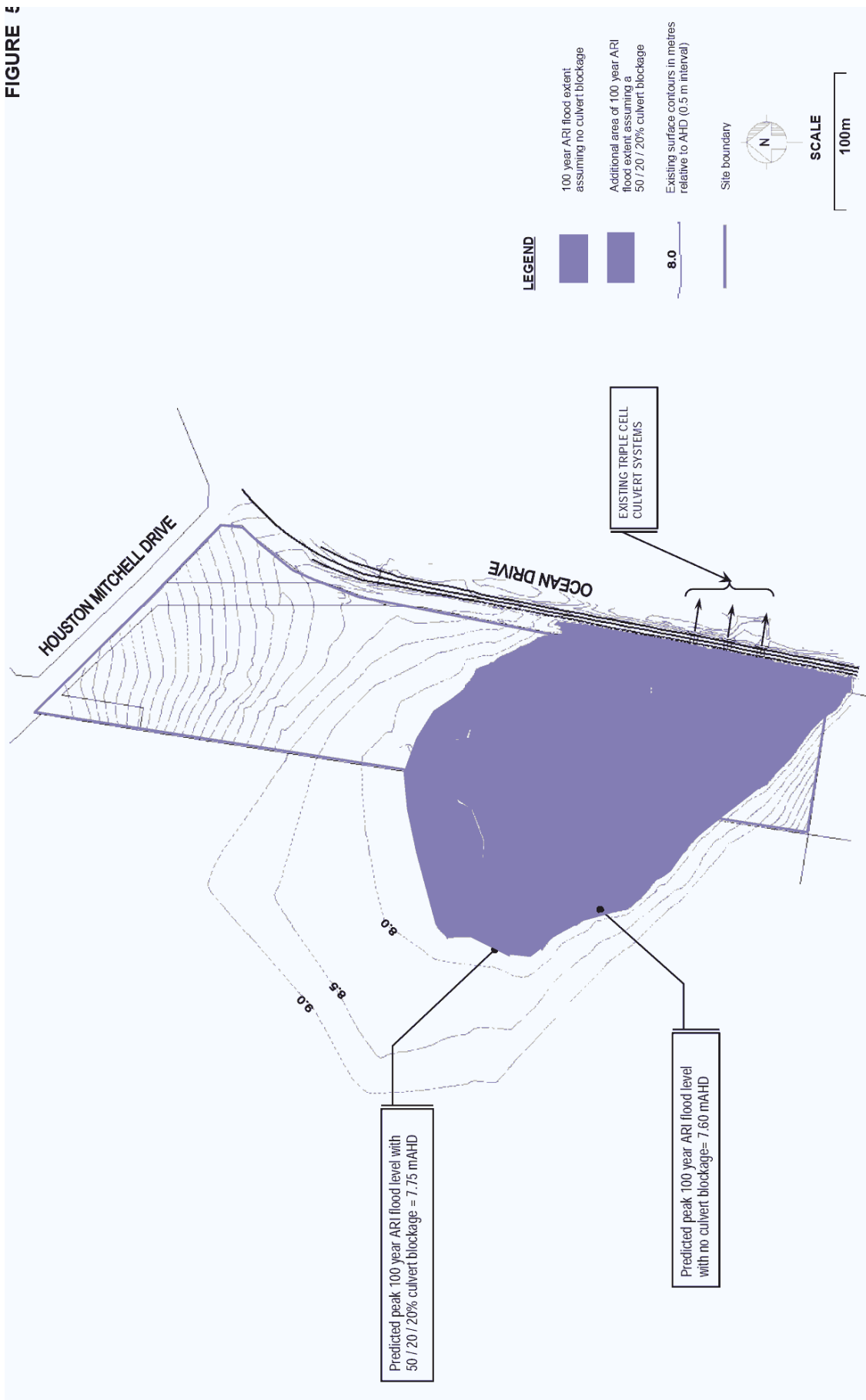
Blockage (%)	Existing 100 year ARI Flood Level (mAHD)
0	7.598
20	7.686
50 / 20 / 20	7.752

Note: Peak Flood Levels are shown to 3 decimal places to allow comparison to post-development levels only. Absolute peak flood levels should be determined based on rounding to 2 decimal places in all cases.

In the "50 / 20 / 20%" blockage scenario, the 100 year ARI flood is predicted to reach an elevation of 7.75 mAHD. This is about 800 mm below the minimum crest level of the section of Ocean Drive that fronts the eastern side of the site. Accordingly, all runoff from the upstream catchment must be discharged via the three culvert systems shown in **Figure 1**.

The results of the modelling indicate that 50% of the site is estimated to be inundated at the peak of the flood under existing conditions in the "50 / 20 / 20%" blockage scenario. The increase in flood extent between the no blockage scenario and the "50 / 20 / 20%" blockage scenario are shown in **Figure 5**.

FIGURE 3

PREDICTED 100 YEAR ARI FLOOD EXTENT
FOR EXISTING CONDITIONS



Advisian

WorleyParsons Group

Proposed Rezoning of
Lot 10 DP 615775 Ocean Drive,
Lake Cathie

Flood Impact Assessment Report

3 Flood Impact Assessment

3.1 Description of Proposed Development

The proposed development involves subdivision of the Mifsud Site into twenty-seven separate allotments as shown in **Figure 6**. The lots are arranged on the northern two-thirds of the site. A road extends along the eastern and western boundaries of the site and forms a circular loop around the majority of the lots. The road joins Houston Mitchell Drive near the north-eastern corner of the Site.

The *Port Macquarie-Hastings Council Flood Policy* was adopted by the Council in October 2015. The policy contains guidelines for determining minimum floor levels for developments. For commercial and industrial development, the flood planning level (FPL) is defined as the 100 year ARI flood level plus an allowance for climate change; referred to as FPL2 in the Flood Policy. The Flood Policy highlights that flood modelling incorporating an allowance for climate change has not been finalised for the Lake Cathie catchment. The Policy indicates that an 'interim' allowance of 400 mm should be adopted (*based on location of east (downstream) of the Pacific Highway*) where modelling for climate change has not been carried out.

Table 2 lists the FPL2 levels associated with the different blockage scenarios.

Table 2 Flood Planning Levels (FPL2)

Blockage (%)	Flood Planning Level (FPL2) (mAHD)
0	7.998
20	8.086
20 / 50 / 20	8.152

Note: FPL2 Levels are shown to 3 decimal places to allow comparison to pre-development (or post-development) levels only. Absolute peak flood levels should be determined based on rounding to 2 decimal places in all cases.

The existing site contour information indicates that Lots 13 to 15 and 23 to 26 and sections of Lots 9 to 12 and 17, are located on land that is below the predicted FPL (8.15 mAHD) in the "50 / 20 / 20%" blockage scenario. Therefore, filling of these lots up to the FPL is proposed in order to meet the requirements of the Council's Flood Policy.

The fill requirements discussed above are estimated to lead to a reduction in the storage volume of approximately 10,000 m³ up to the existing 100 year ARI peak flood level at the site in the "50 / 20 / 20%" blockage scenario. The modified stage storage relationship, including a comparison against the existing stage storage relationship is included in **Figure 7**.

FIGURE 6

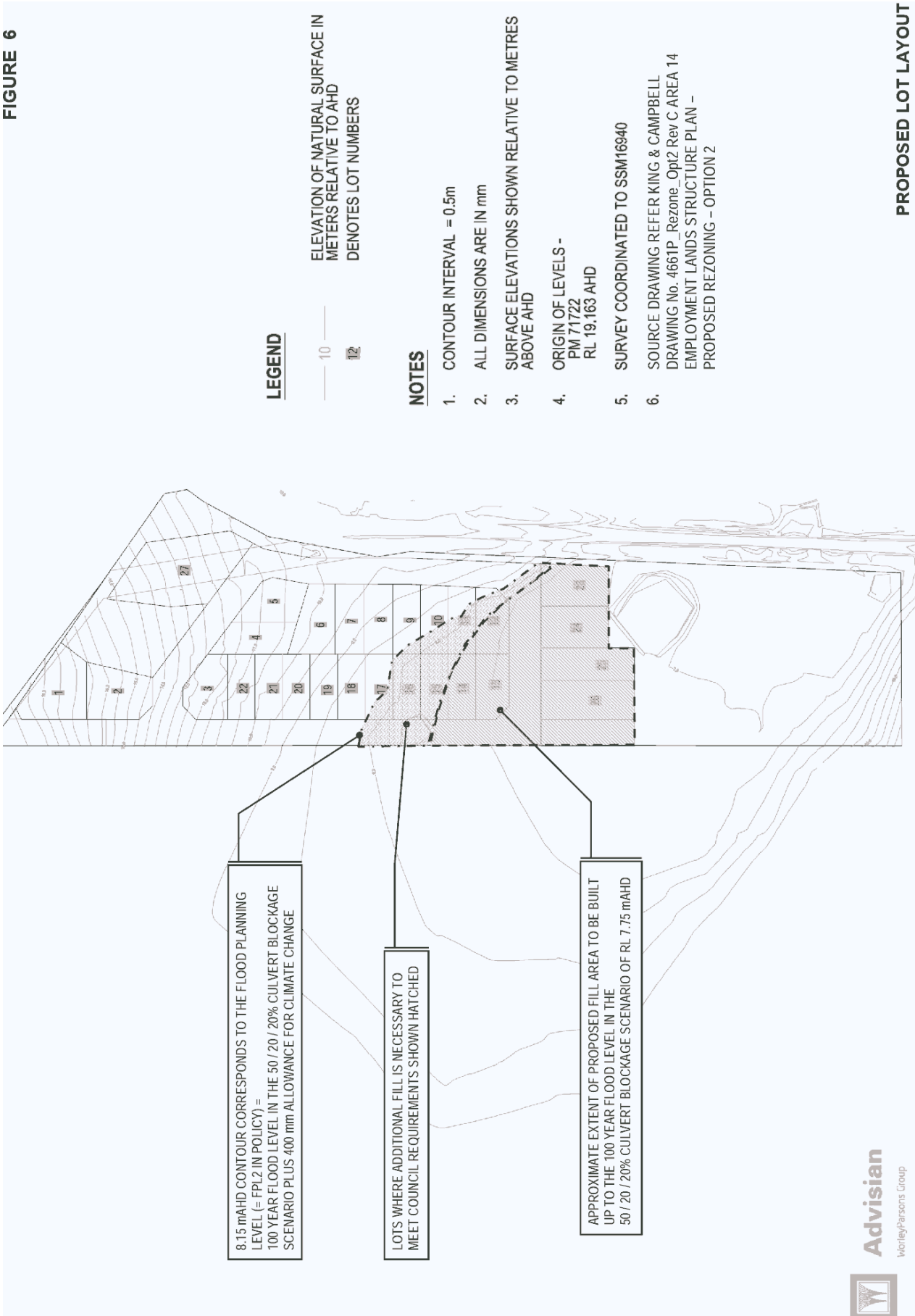
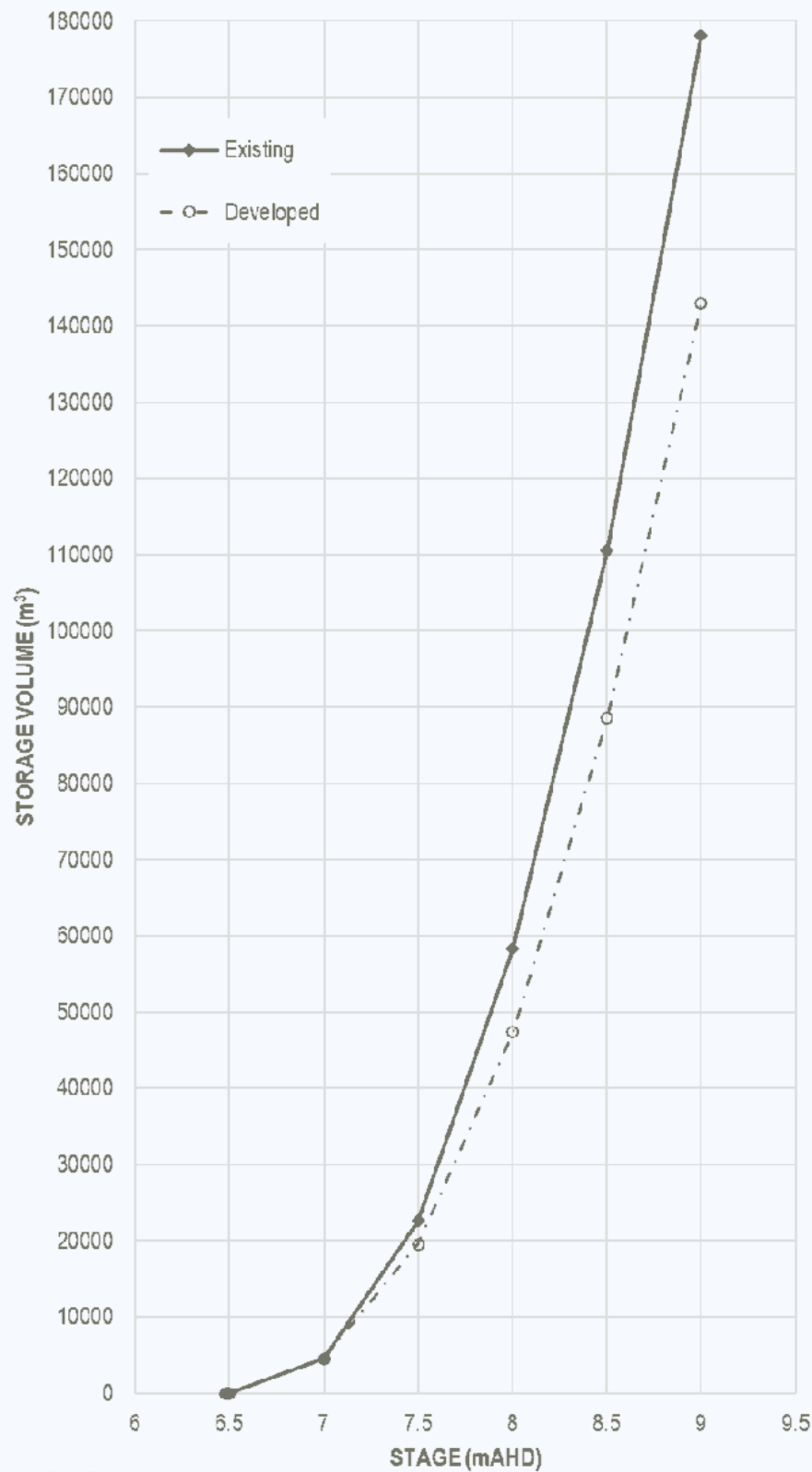


FIGURE 7



Advisian

WorleyParsons Group

**STAGE-STORAGE RELATIONSHIP
FOR EXISTING CONDITIONS AND POST DEVELOPMENT**



Advisian

WorleyParsons Group

Proposed Rezoning of
Lot 10 DP 615775 Ocean Drive,
Lake Cathie

Flood Impact Assessment Report

3.2 Proposed Development Flood Modelling

The potential impact of the proposed development on the predicted 100 year ARI flood level at the site was determined by simulating flooding under post-development conditions based on the development layout described above. The existing hydrologic model was modified to incorporate the stage-storage relationship shown in **Figure 7** and runoff parameters for the development site were modified to reflect the post development conditions (*i.e. greater imperviousness*). The proposed development has the effect of reducing the perviousness of the land surface due to the construction of roads and buildings.

3.3 Flood Modelling Results

3.3.1 Impact on Upstream Flood Levels

Design flood simulations were completed to determine the impact of the proposed development on the peak 100 year ARI flood level at the site. **Table 3** lists the post-development flood levels, along with the difference between the existing and post-development levels.

Table 3 Post-Development 100 year ARI Flood Levels and Predicted Increase at Upstream Site Boundary

Blockage (%)	Post-Development 100 year ARI Flood Level (mAHD)	Difference Between Existing and Post-Development Levels (mm)
0	7.605	7
20	7.699	13
50 / 20 / 20	7.770	18

Note: Peak Flood Levels are shown to 3 decimal places to allow comparison to pre-development levels only. Absolute peak flood levels should be determined based on rounding to 2 decimal places in all cases.

Section 5.4(c) of the *Port Macquarie-Hastings Council Flood Policy* states,

"Where development will take place in a designated Flood Storage Area, the applicant must demonstrate that the impact on peak 100 year ARI flood levels is less than 10 mm, and on peak 100 year ARI flood velocities is less than 0.1 m/s".

The results listed in **Table 3** indicate that the maximum flood level increase requirement is met for the "no blockage" scenario. However, for blockage scenarios involving both uniform 20% blockage and "50 / 20 / 20%" blockage, the post-development 100 year ARI flood levels at the upstream site boundary are predicted to increase by more than the specified 10 mm. Notwithstanding, the predicted increase at the upstream site boundary in both cases is less than 20 mm.

The minor increase in peak flood level can be attributed to the large discharge capacity of the culvert system that drains the catchment extending upstream from the site. The culverts have sufficient capacity to carry the peak 100 year ARI flow without causing substantial backwater flooding.

**Advisian**

WorleyParsons Group

**Proposed Rezoning of
Lot 10 DP 615775 Ocean Drive,
Lake Cathie**

Flood Impact Assessment Report

As the area upstream from the site is a densely vegetated State Conservation Area, the predicted increase in peak 100 year ARI flood level at the upstream site boundary (*i.e.*, less than 20 mm) is unlikely to have any impact on flood behaviour or result in any measurable impact on flood damages. Hence, the predicted increases are considered to be acceptable in the context of the intent of the Flood Policy.

3.3.2 Impact on Downstream Flood Levels

The peak 100 year ARI discharge through the culvert system in the post-development no blockage scenario is estimated to be 39.1 m³/s, which represents a decrease in the peak discharge of 2.7 m³/s (*from 41.8 m³/s*). The minor decrease in the peak discharge through the culvert system is not considered to be an issue as it is not anticipated to cause any measurable increase in peak flood levels.

The increase in run-off resulting from the proposed development also makes no difference to the overall inflow hydrograph. In this case, the peak flow from the local catchment does not coincide with the peak of the hydrograph entering the flood storage area from the upstream catchment. This is due to the close proximity of the development area to the culvert outlet, relative to the rest of the catchment.

3.3.3 Impact on Flow Velocities

The total area of the nine culvert cells is 26.1 m² and therefore using the estimated flow, the corresponding velocity is 1.5 m/s ($= 39.1 \text{ m}^3/\text{s} / 26.1 \text{ m}^2$) in the post-development scenario. In the existing scenario the velocity is 1.6 m/s ($= 41.8 \text{ m}^3/\text{s} / 26.1 \text{ m}^2$). Therefore, the impact on the velocity is in accordance with the flood policy (*i.e.*, it does not exceed 0.1 m/s).

In the "50 / 20 / 20%" blockage scenario the difference between the existing and post-development velocities is 0.15 m/s. This is greater than the maximum allowable velocity increase of 0.1 m/s specified in the Council's Flood Policy, but given the nature of the catchment and the low absolute magnitude of flood flow velocities, it is unlikely to have a significant impact.

3.3.4 Afflux Assessment

In addition to Council's Flood Policy requirements, Council's AUSPEC D5 design guidelines for *Stormwater Drainage Design* require that all major structures be designed for the 100 year ARI storm event with a maximum afflux of no greater than 300 mm. Council's AUSPEC D5 design guidelines for *Stormwater Drainage Design* also require that major culverts be designed with a blockage factor of 50%.

Therefore, a simulation was undertaken assuming 50% blockage of all three culvert systems. The results from this analysis established that the afflux is predicted to be less than 300 mm.

**Advisian**

WorleyParsons Group

**Proposed Rezoning of
Lot 10 DP 615775 Ocean Drive,
Lake Cathie**

Flood Impact Assessment Report

4 Conclusions

Hydrologic modelling of the catchment draining to Lot 10 DP 615775 Ocean Drive, Lake Cathie (referred to as the Mifsud Site), and through the culvert system beneath Ocean Drive, indicates that the peak 100 year ARI flood level at the site for existing conditions in the "50 / 20 /20%" culvert blockage scenario is estimated to be 7.75 mAHD. This level is lower than the road crest elevation of Ocean Drive. Therefore, all runoff from the upstream catchment must be discharged via the three culvert systems that cross Ocean Drive at this location.

As part of a proposal to rezone and develop the site it is proposed that a section of the site be filled as shown in **Figure 6**. The fill is required to allow development to proceed in accordance with the Council's requirements.

Design flood simulations have been completed to assess the impact of the filling proposed as part of development of the site. The findings from the analysis are summarised as follows.

- (i) For a "zero culvert blockage" scenario, the filling proposed as part of the development will result in an increase in peak 100 year ARI flood level at the upstream site boundary of less than 10 mm. This increase in 100 year ARI flood level is within the allowable limit specified in the Council's Flood Policy.
- (ii) For the "50 / 20 /20% culvert blockage" scenario, the difference in the peak 100 year ARI flood level in existing and post-development conditions is less than 20 mm. This is greater than the 10 mm difference that is noted in the Council's Flood Policy. However, due to the nature of the catchment whereby it is a densely vegetated State Conservation Area the estimated change in the flood level is unlikely to have a significant impact.
- (iii) The difference in the 100 year ARI flow velocity between existing and post-development no blockage scenarios is estimated to be 0.15 m/s through the culverts. This is greater than the maximum allowable velocity difference of 0.1 m/s specified in the Council's Flood Policy. However, given the nature of the catchment and the low absolute magnitude of flood flow velocities through the culverts, the predicted increase is unlikely to have a significant impact.
- (iv) In addition to Council's Flood Policy requirements, Council's AUSPEC D5 design guidelines for *Stormwater Drainage Design* require that all major structures be designed for the 100 year ARI storm event with a maximum afflux of no greater than 300 mm. Council's AUSPEC D5 design guidelines for *Stormwater Drainage Design* also require that major culverts be designed with a blockage factor of 50%. Under this scenario it was found that the afflux is predicted to be less than 300 mm.



Advisian
WorleyParsons Group

Proposed Rezoning of
Lot 10 DP 615775 Ocean Drive,
Lake Cathie

Flood Impact Assessment Report

5 References

- Port Macquarie – Hastings Council (2008), 'AUSPEC-01 D05 – Stormwater Drainage Design'
- Port Macquarie - Hastings Council (2015), 'Port Macquarie-Hastings Council Flood Policy'
- Willing & Partners Pty Ltd (1996), 'RAFTS-XP User Manual'
- Institution of Engineers (1987), 'Australian Rainfall and Runoff – A Guide to Flood Estimation'; edited by DH Pilgrim.
- Institution of Engineers (2016), 'Chapter 6. Blockage of Hydraulic Structures' (Draft) in 'Australian Rainfall and Runoff – A Guide to Flood Estimation'; W Weeks and T Rigby.
- Port Macquarie - Hastings Council (2011), 'Port Macquarie - Hastings Local Environment Plan 2011'
- WorleyParsons (2009), 'Proposed Rezoning of Lot 10 DP 615775 Ocean Drive, Lake Cathie - Site Flood Assessment' (Draft)

Kylie Moore

From: Will Steggall <Will.Steggall@biodiversityaust.com.au>
Sent: Wednesday, 28 November 2018 1:23 PM
To: Tony Thorne
Cc: Kylie Moore
Subject: Response to Council comments for Houston Mitchell Drive rezoning

Hi Tony,

Following on from the meeting with Council, I can provide some responses to Council's comments on the ecological assessment.

Avoid, minimize offset: Clarification required as to whether 'avoid' lands can be used as offsets. A review of the legislation and OEH guidance material did not find any reference to this. The areas of vegetation that have been avoided should be able to be used as offsets so long as the land qualifies for a Biodiversity Stewardship site.

PCT 1262 and proposed IN2 Zone with retained trees: No further tree loss in this zone is anticipated. Regardless, this zone has been included as an impacted area in the assessment and contributes towards credit requirements.

Core Koala Habitat: Previous discussions have acknowledged that Core Koala Habitat may be present and a Koala Plan of management will be prepared at the DA stage. A federal referral assessment was undertaken in the Flora and Fauna report and this determined that a referral would not be required.

Dominant Plant Community Type: Due to the extent of modification of the original vegetation on the site it is difficult to determine what would have been the dominant PCT. Further justification for choosing PCT 1262 as the dominant community can be provided in the BDAR to be prepared at the DA stage.

PCT1230 – TEC: A full assessment as to whether this community qualifies as a TEC can be provided within a BDAR to be prepared with the DA. Updated mapping to include scattered trees in the community can also be undertaken.

Species credits: Many of the species listed were excluded from further assessment due to the disturbance history of the site, low condition of vegetation, lack of suitable habitat requirements and current management regime (eg regular slashing). A full habitat assessment and justification as to why certain species have been excluded can be provided in the BDAR. If it is determined that additional species have the potential to occur on the site, appropriate targeted surveys will be undertaken.

Hollow-bearing Trees: Number and location of HBTs to be removed to be determined. Further HBT assessment can be undertaken in subsequent ecological assessment with the DA if required. Nest boxes are proposed to be installed in the conservation zone to offset any hollow-bearing tree loss.

Location of Plots: The minimum number of plots required per vegetation zone have been undertaken. The survey effort in the development zone has also exceeded the survey requirements for the streamlined assessment module.

Rezoning: Offset land can be rezoned to E2 as discussed at the meeting.

Let me know if any further information is needed at this stage.

Regards,

Will Steggall
Principal Ecologist



Phone: 1300 319 954

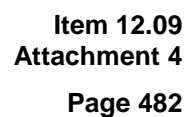
Mobile: 0438 590 961

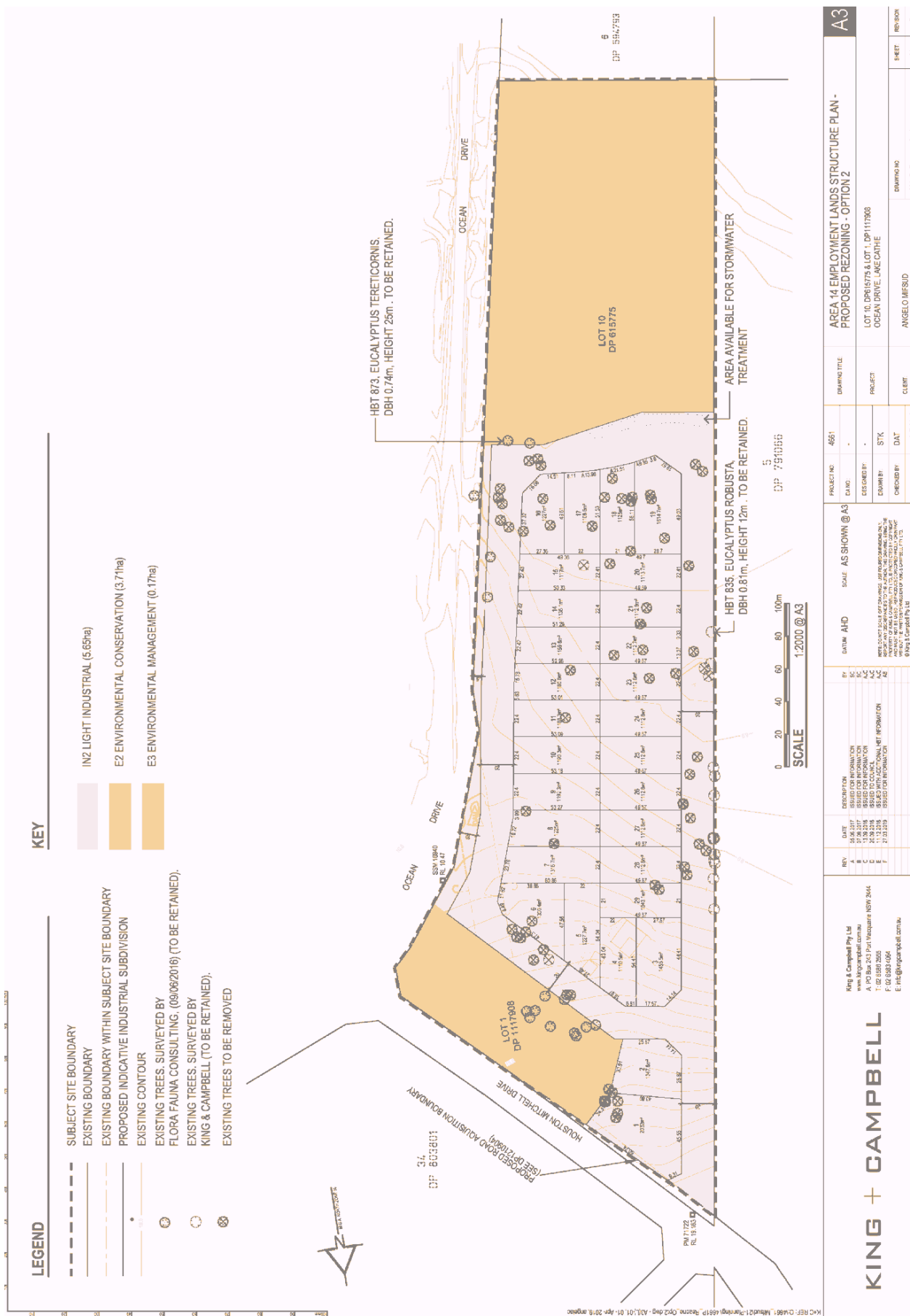
Building D, Level 2A/19 Harbour Village Parade, Coomera QLD 4209

PO Box 721 Upper Coomera QLD 4209

www.biodiversityaust.com.au







Draft Amendment to Port Macquarie-Hastings Development Control Plan 2013 (Part 4 Houston Mitchell Drive Employment Lands)

Area Context

Land to which this section applies

This section applies to the land shown below in Figure 1.



Figure 1: Land to which this section applies

Strategic Context

The site is recognised in Council's Urban Growth Management Strategy 2017 - 2036 as being a suitable investigation area for light industry. It is centrally located in terms of access to planned development in Lake Cathie and Bonny Hills Urban Release Area.

The site has the capacity to provide approximately half of the land area needed for industrial development in Lake Cathie and Bonny Hills to 2036.

The Bonny Hills community has expressed (through the Bonny Hills Community Plan 2018) a strong desire for any industrial development on the site to be buffered from Ocean Drive and for access to be from Houston Mitchell Drive, not Ocean Drive.

The following development controls are predominantly designed to reduce the visibility of future light industrial development from Ocean Drive through the provision of a landscaped buffer.

Purpose

The purpose of these provisions is to minimise the potential for visual and amenity impacts as a result of future development and to provide for an internal perimeter road layout.

These provisions supplement the relevant provisions in Parts 2 and 3 of the Port Macquarie Development Control Plan. Where there is inconsistency between these Area Based Provisions and the provisions in Parts 2 and 3, for the extent of the inconsistency these Area Based Provisions prevail.

Note: The figures in this plan are conceptual, not to scale and show indicative locations only.

Development Guide

Visual amenity

Objective

- To screen industrial development as viewed by the travelling public along Ocean Drive.
- To ensure an attractive site boundary is achieved that retains the landscape character of the area and is of high scenic quality.
- To provide a fauna fence which moulds into the vegetated landscape.

Development Provisions

- a) Landscaping within the site and along Houston Mitchell Drive is to include plantings which are in scale with the height and bulk of industrial development.
- b) A minimum 5m wide strip of E3 Environmental Management zoned land adjacent to Ocean Drive is to be provided and densely vegetated and fenced to provide a robust natural buffer to screen buildings, parking areas, loading areas and any other associated uses of the site from the adjoining street frontages. Refer to **Figure 2** for details.

Trees are to be selected from those that are on Council's Indigenous Street and Open Space Planting list and be planted at the time of subdividing the land.

Each 10 metre buffered section should comprise:

- Four medium trees (5-15m high and 25 litre stock)
- Eight large shrubs (2-4m high and 200mm stock)
- 24 medium shrubs (1-2m high and 140mm stock)
- 60 groundcovers (tube stock)

Planting notes:

- The buffer to be planted should be cultivated to a 300mm depth with a 300mm mound of topsoil and 100mm forest mulch.
- Allow breaks in mounding for overland drainage.
- Provide at least three species of each plant for tree, large shrub, and groundcover in alternating groupings.
- Maintenance during the establishment period to include watering during dry periods, periodical weeding and replacement of failed stock.

Figure 2: Landscape buffer to Ocean Drive frontage

Objective

- To discourage Koalas from crossing Houston Mitchell Drive and Ocean Drive.

Development Provisions

- a) Provide a fauna fence which moulds into the vegetated landscape. The fence should not be visually intrusive and should be constructed using PVC coated black chain mesh. The indicative location of this fence is provided in **Figure 3**. Note: The fauna fence must provide access to the environmental lands in the north and south to enable its future management.

Draft Area Based Provisions | Houston Mitchell Drive Employment Lands

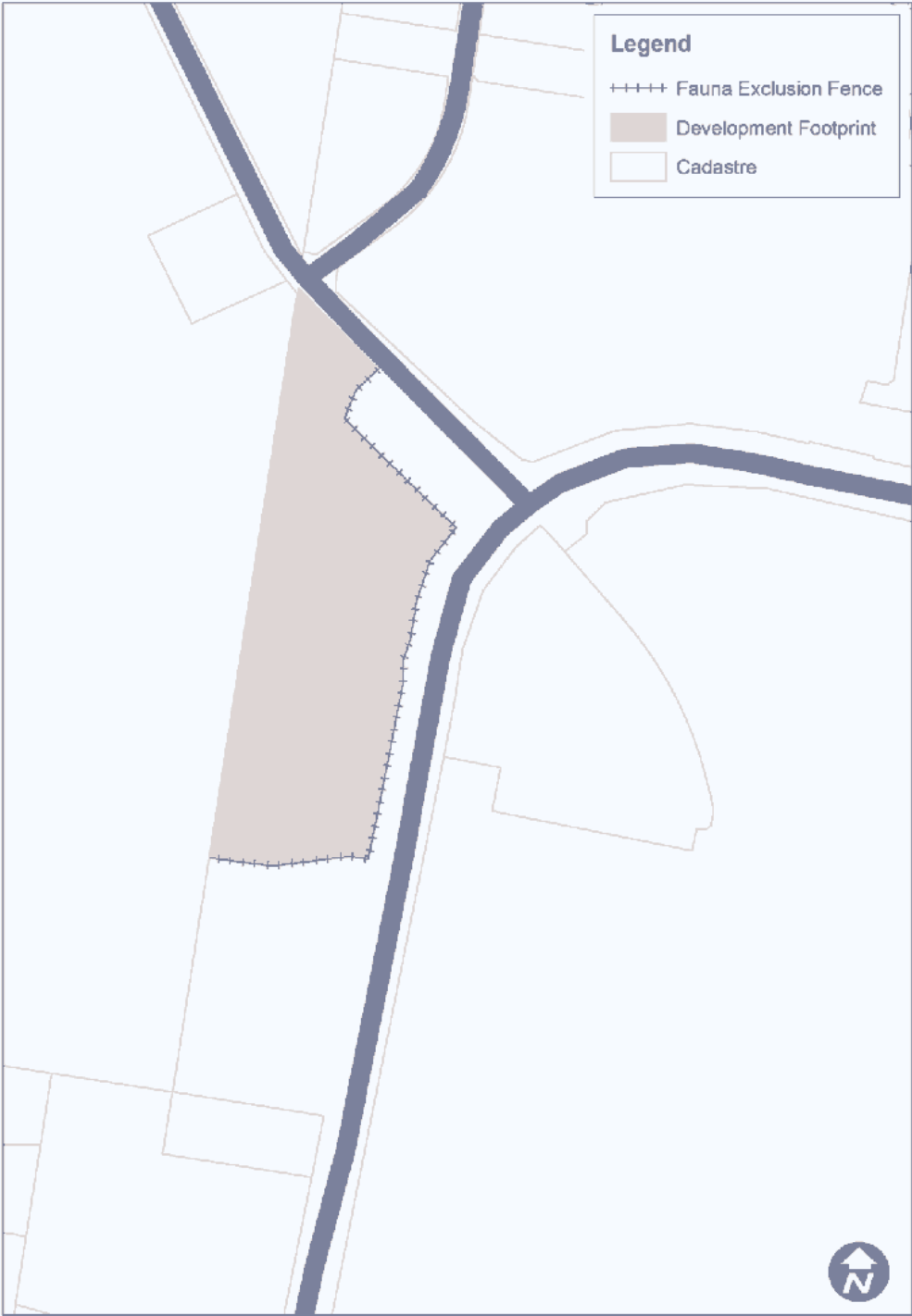


Figure 3: Indicative location of fauna exclusion fence

Draft Area Based Provisions | Houston Mitchell Drive Employment Lands

Roads, access and transport**Objective**

- To mitigate against the potential for environmental conflict and degradation at the industrial interface.
- To ensure safe and appropriate access to the site.

Development Provisions

- a) A perimeter road between the industrial footprint and environmental lands is to be designed to control the industrial interface and manage potential conflicts of bushfire hazard and environmental conservation.
- b) All access is to be provided from Houston Mitchell Drive. Access is not permitted via Ocean Drive.

Water Quality**Objective**

- To control and manage all stormwater generated as a result of land development.

Development Provisions

- a) Each individual industrial lot is to be provided with on-site stormwater detention facilities. Sufficient detention storage must be provided within each lot to ensure that peak flow rates and/or flood levels at any point within the downstream drainage system do not increase as a result of the development from the 50% Annual Exceedance Probability (AEP) storm to the 1% AEP storm events (for all relevant storm durations).
- b) For modelling purposes, pre-development conditions shall be assumed to be 'greenfields'.

Objective

- To ensure incorporation of Water Sensitive Urban Design techniques on-site and building design to minimise reliance on reticulated water.

Development Provisions

- c) All industrial lots are to be provided with on-site stormwater water quality control facilities designed and constructed to achieve the pollutant reduction targets specified within Council's Aus-Spec D7 specification.
- d) All public road pit and pipe drainage is to be designed to drain to trash racks followed by a vegetated water quality control facility sized to achieve the pollutant reduction targets specified within Council's Aus-Spec D7 specification.
- e) End-of-line water quality controls designed to treat stormwater runoff from the road reserves are to be provided prior to discharge.

Bushfire Hazard management

Objective

To ensure bushfire management measures do not result in the loss of important habitat areas.

To ensure that Council is not burdened with the ongoing costs associated with the maintenance of Asset Protection Zones.

To provide a public interface to environmental assets.

Development Provisions

Asset Protection Zones are to be located outside of environmental protection zones and wholly provided within private land. Note perimeter roads provided as part of a residential subdivision are classified as being part of the subdivision and not a separate permissible land use within environment protection zones.

Perimeter roads are to be provided to all urban areas adjoining environmental management areas and their buffers.

Refer to Figure 1.

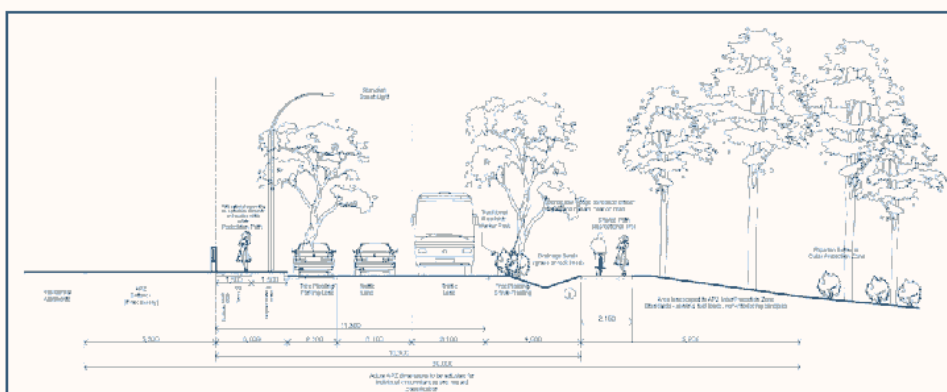


Figure 1. Road Section - Indicative Bushland or Riparian Edge Street.

Source: Anterra Design Pty Ltd, 2007

AGENDA

ORDINARY COUNCIL
20/02/2019

Item: 12.14

Subject: DA2018 - 562.1 DEMOLITION OF EXISTING BUILDINGS, CONSOLIDATION AND BOUNDARY ADJUSTMENT, AND CONSTRUCTION OF SENIORS HOUSING AT LOTS 10 - 13 DP 861177, LOT 1 DP 782560, LOT 1 DP 393967, LOT 1 DP 390610, LOT 1 DP 1053812, LOT 1 DP 121189, LOT 1 DP 795534, LOT 1 DP 151300, LOT 3 AND 4 DP 347796, NO. 15 - 21 CAMERON STREET AND 3 YOUNG STREET, WAUCHOPE

Report Author: Melissa Watkins

Applicant:	Wauchope RSL Club Ltd
Owner:	Wauchope RSL Club Ltd
Estimated Cost:	\$3,400,000
Parcel no:	48892, 29551, 29550, 29549, 41145, 25876, 29212, 41146, 29214, 3551, 29215, 29210

Alignment with Delivery Program

4.3.1 Undertake transparent and efficient development assessment in accordance with relevant legislation.

RECOMMENDATION

That DA2018 – 562.1 for Demolition of Existing Buildings, Consolidation and Boundary Adjustment, and Construction of Seniors Housing at Lots 10 - 13 DP 861177, Lot 1 DP 782560, Lot 1 DP 393967, Lot 1 DP 390610, Lot 1 DP 1053812, Lot 1 DP 121189, Lot 1 DP 795534, Lot 1 DP 151300, Lot 3 and 4 DP 347796, No. 15 – 21 Cameron Street and No. 3 Young Street, Wauchope be determined by granting consent subject to the recommended conditions.

Executive Summary

This report considers a development application for demolition of existing buildings, consolidation and boundary adjustment, and construction of seniors housing at the subject site and provides an assessment of the application in accordance with the Environmental Planning and Assessment Act 1979.

Following exhibition of the application, one submission has been received.

The proposal was considered by Council's Development Assessment Panel on 23 January 2019 with the following recommendation from staff:

"That DA2018 – 562.1 for Demolition of Existing Buildings, Consolidation and Boundary Adjustment, and Construction of Seniors Housing at Lots 10 - 13 DP

YOUR NATURAL AND
BUILT ENVIRONMENT

Item 12.14

Page 208

Item 12.11
Attachment 1

Page 490

AGENDA

ORDINARY COUNCIL
20/02/2019

861177, Lot 1 DP 782560, Lot 1 DP 393967, Lot 1 DP 390610, Lot 1 DP 1053812, Lot 1 DP 121189, Lot 1 DP 795534, Lot 1 DP 151300, Lot 3 and 4 DP 347796, No. 15 – 21 Cameron Street and No. 3 Young Street, Wauchope, be determined by granting consent subject to the recommended conditions.”

In considering the matter the Development Assessment Panel was unable to reach consensus as follows:

Robert Hussey moved the following motion:

“That DA2018 – 562 for Demolition of Existing Buildings, Consolidation and Boundary Adjustment, and Construction of Seniors Housing at Lots 10 - 13 DP 861177, Lot 1 DP 782560, Lot 1 DP 393967, Lot 1 DP 390610, Lot 1 DP 1053812, Lot 1 DP 121189, Lot 1 DP 795534, Lot 1 DP 151300, Lot 3 and 4 DP 347796, No. 15 – 21 Cameron Street and No. 3 Young Street, Wauchope be refused on the grounds that insufficient on-site parking spaces have been provided in the development as required by Port Macquarie-Hastings Council Development Control Plan 2013. The public interest is not well serviced by the degree of the departure to the DCP and such a departure would lead to an unsatisfactory precedent. The case for the significant variation has not been satisfactorily justified”.

For: Robert Hussey

Against: Paul Drake and Dan Croft.

Upon the Motion being lost subsequently Paul Drake proposed an alternate motion as follows:

“That DA2018 – 562 for Demolition of Existing Buildings, Consolidation and Boundary Adjustment, and Construction of Seniors Housing at Lots 10 - 13 DP 861177, Lot 1 DP 782560, Lot 1 DP 393967, Lot 1 DP 390610, Lot 1 DP 1053812, Lot 1 DP 121189, Lot 1 DP 795534, Lot 1 DP 151300, Lot 3 and 4 DP 347796, No. 15 – 21 Cameron Street and No. 3 Young Street, Wauchope be deferred to address the issues raised by Mr Hussey in his proposed motion and that the applicant be invited to submit additional information to provide for additional parking to serve the development and further information on the 1967 agreement between the Club and Council.”

For: Robert Hussey and Paul Drake

Against: Dan Croft

Given this dissent the matter is now presented to Council for determination. This report recommends that the development application be approved subject to the recommended conditions.

1. BACKGROUND

Existing sites features and surrounding development

The site has an area of approximately 1.1 hectares.

The site is zoned B4 Mixed Use in accordance with the Port Macquarie-Hastings Local Environmental Plan 2011, as shown in the following zoning plan:

YOUR NATURAL AND
BUILT ENVIRONMENT



Item 12.14

Page 209

Item 12.11
Attachment 1

Page 491

ORDINARY COUNCIL
20/02/2019



The existing subdivision pattern and location of existing development within the locality is shown in the following aerial photograph:



AGENDA

ORDINARY COUNCIL
20/02/2019YOUR NATURAL AND
BUILT ENVIRONMENT**2. DESCRIPTION OF DEVELOPMENT**

Key aspects of the proposal include the following:

- Demolition of existing dwellings and outbuildings;
- Consolidation and boundary adjustment to create one lot containing the RSL Club, and one lot containing the seniors housing;
- Construction of seniors housing comprising 15 single storey self-care units.

Refer to attachments at the end of this report.

Application Chronology

- 27 July 2018 – Application lodged.
- 3 August 2018 to 16 August 2018 – Neighbour notification.
- 7 September 2018 – Site inspected by assessing officer.
- 17 September 2018 – Additional information requested from Applicant.
- 19 October 2018 – Additional information submitted.
- 23 January 2019 – Application considered by Development Assessment Panel.

3. STATUTORY ASSESSMENT**Section 4.15(1) Matters for Consideration**

In determining the application, Council is required to take into consideration the following matters as are relevant to the development that apply to the land to which the development application relates:

- (a) The provisions (where applicable) of:
- (i) any **Environmental Planning Instrument**:

State Environmental Planning Policy No. 44 - Koala Habitat Protection

In accordance with Clause 6, the land has an area greater than 1 hectare and the SEPP applies.

The land does not meet the definition of potential koala habitat in accordance with Clause 7. Therefore, no further consideration of the SEPP is required.

State Environmental Planning Policy No. 55 – Remediation of Land

Lot 1 DP 782560, which comprises the existing car park to the west of the RSL Club building, is identified as being potentially contaminated. This lot is included in the development only to the extent that it is part of the proposed consolidation of the existing lots on which the RSL Club is located.

The proposed seniors housing development is located well clear of this lot and is considered to be suitable for the intended use.



Item 12.14

Page 211

Item 12.11
Attachment 1

Page 493

AGENDA

ORDINARY COUNCIL
20/02/2019**State Environmental Planning Policy No. 62 – Sustainable Aquaculture**

Given the nature of the proposed development and proposed stormwater controls the proposal will be unlikely to have any adverse impact on existing aquaculture industries.

State Environmental Planning Policy No. 64 – Advertising and Signage

The proposed development includes proposed signage in the form of business/building identification.

In accordance with clause 7, this SEPP prevails over the Port Macquarie-Hastings LEP 2011 in the event of any inconsistency.

The following assessment table provides an assessment checklist against the Schedule 1 requirements of this SEPP:

Applicable clauses for consideration	Comments	Satisfactory
Clause 8(a) Consistent with objectives of the policy as set out in Clause 3(1)(a).	Signage consistent with the objectives of the SEPP.	Yes
Schedule 1(1) Character of the area.	The site is in an area characterised by a mix of residential and commercial uses. The proposed signage wall adjacent to the Cameron Street access is compatible with the residential character of the development as well as nearby commercial uses.	Yes
Schedule 1(2) Special areas.	Proposal would not detract from the character of any special areas.	Yes
Schedule 1(3) Views and vistas.	The sign would not obscure any existing views or vistas.	Yes
Schedule 1(4) Streetscape, setting or landscape.	The scale and proportions of the signage are appropriate for the existing, and likely future streetscape.	Yes
Schedule 1(5) Site and building.	The signage wall is consistent with the height and scale of the proposed buildings and would not dominate the streetscape.	Yes
Schedule 1(6) Associated devices and logos with advertisements and advertising structures.	None proposed.	N/A
Schedule 1(7) Illumination.	Signage not proposed to be illuminated.	Yes
Schedule 1(7) Safety.	The sign is not expected to adversely affect traffic, cyclist, or pedestrian safety.	Yes

YOUR NATURAL AND
BUILT ENVIRONMENTItem 12.14
Page 212Item 12.11
Attachment 1
Page 494

AGENDA

ORDINARY COUNCIL
20/02/2019YOUR NATURAL AND
BUILT ENVIRONMENT**State Environmental Planning Policy (Coastal Management) 2018**

The site is located within a coastal environment area.

In accordance with clause 7, this SEPP prevails over the Port Macquarie-Hastings LEP 2011 in the event of any inconsistency.

Having regard to clauses 13 of the SEPP the proposed development is not considered likely to result in any of the following:

- a) any adverse impact on integrity and resilience of the biophysical, hydrological (surface and groundwater) and ecological environment;
- b) any adverse impacts coastal environmental values and natural coastal processes;
- c) any adverse impacts on marine vegetation, native vegetation and fauna and their habitats, undeveloped headlands and rock platforms;
- d) any adverse impact on marine vegetation, native vegetation and fauna and their habitats, undeveloped headlands and rock platforms;
- e) any adverse impact on Aboriginal cultural heritage, practices and places;
- f) any adverse impacts on the cultural and built environment heritage;
- g) any adverse impacts the use of the surf zone;

State Environmental Planning Policy (Building Sustainability Index: BASIX) 2004

A BASIX certificate has been submitted demonstrating that the proposal will comply with the requirements of the SEPP. It is recommended that a condition be imposed to ensure that the commitments are incorporated into the development and certified at Occupation Certificate stage.

State Environmental Planning Policy (Housing for Seniors or People with a Disability) 2004

Clause	Proposed	Complies
4. Land to which Policy applies		
Policy applies to land within New South Wales that is land zoned primarily for urban purposes or land that adjoins land zoned primarily for urban purposes, but only if: (a) development for the purpose of any of the following is permitted on the land: (i) dwelling-houses, (ii) residential flat buildings, (iii) hospitals, (iv) development of a kind identified in respect of land zoned as special uses, including (but not limited to) churches, convents, educational establishments, schools and seminaries, or	The site is zoned B4 within the urban context of Wauchope. Residential flat buildings are permissible in the zone. Part of the land subject the application currently contains a registered club, but the boundary adjustment and consolidation proposed in the application would ultimately result in the seniors housing being on a separate lot to the registered club.	Yes



Item 12.14

Page 213

Item 12.11
Attachment 1

Page 495

AGENDA

ORDINARY COUNCIL
20/02/2019

Clause	Proposed	Complies
(b) the land is being used for the purposes of an existing registered club.		
5. Relationship to other environmental planning instruments		
If this Policy is inconsistent with any other environmental planning instrument, made before or after this Policy, this Policy prevails to the extent of the inconsistency.	Consistent with other planning instruments.	Yes
8. Seniors		
In this Policy, <i>seniors</i> are any of the following: (a) people aged 55 or more years, (b) people who are resident at a facility at which residential care (within the meaning of the Aged Care Act 1997 of the Commonwealth) is provided, (c) people who have been assessed as being eligible to occupy housing for aged persons provided by a social housing provider.	The development is proposed to be occupied by seniors. A restriction on the occupation of the units in accordance with the SEPP will be applied in the conditions of approval for the development.	Yes
9. People with a disability		
In this Policy, <i>people with a disability</i> are people of any age who have, either permanently or for an extended period, one or more impairments, limitations or activity restrictions that substantially affect their capacity to participate in everyday life.	The development is proposed to be occupied by seniors. A restriction on the occupation of the units in accordance with the SEPP has been included in the recommended conditions of approval for the development.	Yes
10. Seniors housing		
In this Policy, <i>seniors housing</i> is residential accommodation that is, or is intended to be, used permanently for seniors or people with a disability consisting of: (a) a residential care facility, or (b) a hostel, or (c) a group of self-contained dwellings, or (d) a combination of these, but does not include a hospital. Note. The concept of seniors housing is intended to be a shorthand phrase encompassing both housing for seniors and for	The proposal is defined as self-contained dwellings.	Yes

YOUR NATURAL AND
BUILT ENVIRONMENTItem 12.14
Page 214Item 12.11
Attachment 1
Page 496

AGENDA

ORDINARY COUNCIL
20/02/2019

Clause	Proposed	Complies
<p>people with a disability. This Policy deals with both kinds of housing. Accommodation provided by seniors housing does not have to be limited to seniors or people with a disability. Clause 18 provides that seniors housing may be used for the accommodation of the following:</p> <ul style="list-style-type: none"> (a) seniors or people who have a disability, (b) people who live within the same household with seniors or people who have a disability, (c) staff employed to assist in the administration of and provision of services to housing provided under this Policy. <p>Relevant classifications in the <i>Building Code of Australia</i> for the different types of residential accommodation are as follows:</p> <ul style="list-style-type: none"> (a) Class 3, 9a or 9c in relation to residential care facilities, (b) Class 1b or 3 in relation to hostels, (c) Class 1a or 2 in relation to self contained dwellings. 		
13. Self-contained dwellings		
<p>1) General term: "self-contained dwelling"</p> <p>In this Policy, a <i>self-contained dwelling</i> is a dwelling or part of a building (other than a hostel), whether attached to another dwelling or not, housing seniors or people with a disability, where private facilities for significant cooking, sleeping and washing are included in the dwelling or part of the building, but where clothes washing facilities or other facilities for use in connection with the dwelling or part of the building may be provided on a shared basis.</p> <p>(2) Example: "in-fill self-care housing"</p> <p>In this Policy, <i>in-fill self-care housing</i> is seniors housing on land zoned primarily for urban purposes that consists of 2 or more self-contained dwellings where none of the</p>	<p>Each unit is provided with its own kitchen, living areas, laundry, bathroom and bedrooms. Occupants will live independently.</p>	<p>Yes</p>

YOUR NATURAL AND
BUILT ENVIRONMENT

AGENDA

ORDINARY COUNCIL
20/02/2019

Clause	Proposed	Complies
<p>following services are provided on site as part of the development: meals, cleaning services, personal care, nursing care.</p> <p>(3) Example: "serviced self-care housing"</p> <p>In this Policy, <i>serviced self-care housing</i> is seniors housing that consists of self-contained dwellings where the following services are available on the site: meals, cleaning services, personal care, nursing care.</p>		
18. Restrictions on occupation of seniors housing allowed under this Chapter		
<p>(1) Development allowed by this Chapter may be carried out for the accommodation of the following only:</p> <p>(a) seniors or people who have a disability,</p> <p>(b) people who live within the same household with seniors or people who have a disability,</p> <p>(c) staff employed to assist in the administration of and provision of services to housing provided under this Policy.</p> <p>(2) A consent authority must not consent to a development application made pursuant to this Chapter unless:</p> <p>(a) a condition is imposed by the consent authority to the effect that only the kinds of people referred to in subclause (1) may occupy any accommodation to which the application relates, and</p> <p>(b) the consent authority is satisfied that a restriction as to user will be registered against the title of the property on which development is to be carried out, in accordance with section 88E of the Conveyancing Act 1919, limiting the use of any accommodation to which the application relates to the kinds of people referred to in subclause (1).</p> <p>(3) Subclause (2) does not limit the kinds of conditions that may be imposed on a development consent,</p>	<p>A restriction on the occupants in accordance with the SEPP will be applied as a condition of consent.</p>	<p>Yes</p>

YOUR NATURAL AND
BUILT ENVIRONMENT

AGENDA

ORDINARY COUNCIL
20/02/2019

Clause	Proposed	Complies
or allow conditions to be imposed on a development consent otherwise than in accordance with the Act.		
19. Use of seniors housing in commercial zones		
Development allowed by this chapter for the purposes of seniors housing does not include the use for residential purposes of any part of the ground floor of a building that fronts a street if the building is located on land that is zoned primarily for commercial purposes unless another environmental planning instrument permits the use of all of the building for residential purposes.	The site is zoned B4 which permits residential flat buildings. Provision of residential units are permissible on the ground floor within the zone.	Yes
23. Development on land used for the purposes of an existing registered club (1) A consent authority must not consent to a development application made pursuant to this Chapter to carry out development on land that is used for the purposes of an existing registered club unless the consent authority is satisfied that: (a) the proposed development provides for appropriate measures to separate the club from the residential areas of the proposed development in order to avoid land use conflicts, and (b) an appropriate protocol for managing the relationship between the proposed development and the gambling facilities on the site of the club in order to minimise harm associated with the misuse and abuse of gambling activities by residents of the proposed development. (2) For the purposes of subclause (1) (a), some of the measures to which a consent authority may have regard include (but are not limited to) the following: (a) any separate pedestrian access points for the club and the residential areas of the proposed development,	Not applicable. Part of the land subject the application currently contains a registered club, but the boundary adjustment and consolidation proposed in the application would ultimately result in the seniors housing being on a separate lot to the registered club. Potential landuse conflicts between the RSL club and the proposed seniors housing are considered elsewhere in this report.	Yes

YOUR NATURAL AND
BUILT ENVIRONMENTItem 12.14
Page 217Item 12.11
Attachment 1
Page 499

AGENDA

ORDINARY COUNCIL
20/02/2019

Clause	Proposed	Complies
(b) any design principles underlying the proposed development aimed at ensuring acceptable noise levels in bedrooms and living areas in the residential areas of the proposed development.		
26. Location and access to facilities		
<p>(1) A consent authority must not consent to a development application made pursuant to this Chapter unless the consent authority is satisfied, by written evidence, that residents of the proposed development will have access that complies with subclause (2) to:</p> <p>(a) shops, bank service providers and other retail and commercial services that residents may reasonably require, and</p> <p>(b) community services and recreation facilities, and</p> <p>(c) the practice of a general medical practitioner.</p> <p>(2) Access complies with this clause if:</p> <p>(a) the facilities and services referred to in subclause (1) are located at a distance of not more than 400 metres from the site of the proposed development that is a distance accessible by means of a suitable access pathway and the overall average gradient for the pathway is no more than 1:14, although the following gradients along the pathway are also acceptable:</p> <p>(i) a gradient of no more than 1:12 for slopes for a maximum of 15 metres at a time,</p> <p>(ii) a gradient of no more than 1:10 for a maximum length of 5 metres at a time,</p> <p>(iii) a gradient of no more than 1:8 for distances of no more than 1.5 metres at a time, or</p> <p>(c) in the case of a proposed development on land in a local government area that is not within the Sydney Statistical Division—</p>	<p>The site is located centrally within the Wauchope township.</p> <p>Access to a variety of shops, services, community facilities and medical practitioners is available within short distances.</p> <p>Footpaths and access within the town centre have satisfactory grades. Public transport links are available within the town centre and to adjoining larger centres. Given the location and transport linkages available no transport service is required.</p>	Yes

YOUR NATURAL AND
BUILT ENVIRONMENTItem 12.14
Page 218Item 12.11
Attachment 1
Page 500

AGENDA

ORDINARY COUNCIL
20/02/2019

Clause	Proposed	Complies
<p>there is a transport service available to the residents who will occupy the proposed development:</p> <p>(i) that is located at a distance of not more than 400 metres from the site of the proposed development and the distance is accessible by means of a suitable access pathway, and</p> <p>(ii) that will take those residents to a place that is located at a distance of not more than 400 metres from the facilities and services referred to in subclause (1), and</p> <p>(iii) that is available both to and from the proposed development during daylight hours at least once each day from Monday to Friday (both days inclusive),</p> <p>and the gradient along the pathway from the site to the public transport services (and from the transport services to the facilities and services referred to in subclause (1)) complies with subclause (3).</p> <p>Note. Part 5 contains special provisions concerning the granting of consent to development applications made pursuant to this Chapter to carry out development for the purpose of certain seniors housing on land adjoining land zoned primarily for urban purposes. These provisions include provisions relating to transport services.</p> <p>(3) For the purposes of subclause (2) (b) and (c), the overall average gradient along a pathway from the site of the proposed development to the public transport services (and from the transport services to the facilities and services referred to in subclause (1)) is to be no more than 1:14, although the following gradients along the pathway are also acceptable:</p> <p>(i) a gradient of no more than 1:12 for slopes for a maximum of 15 metres at a time,</p> <p>(ii) a gradient of no more than 1:10 for a maximum length of 5 metres at a time,</p>		

YOUR NATURAL AND
BUILT ENVIRONMENTItem 12.14
Page 219Item 12.11
Attachment 1
Page 501

AGENDA

ORDINARY COUNCIL
20/02/2019

Clause	Proposed	Complies
<p>(iii) a gradient of no more than 1:8 for distances of no more than 1.5 metres at a time.</p> <p>(4) For the purposes of subclause (2):</p> <p>(a) a <i>suitable access pathway</i> is a path of travel by means of a sealed footpath or other similar and safe means that is suitable for access by means of an electric wheelchair, motorised cart or the like, and</p> <p>(b) distances that are specified for the purposes of that subclause are to be measured by reference to the length of any such pathway.</p> <p>(5) In this clause:</p> <p><i>bank service provider</i> means any bank, credit union or building society or any post office that provides banking services.</p>		
28. Water and sewer		
<p>(1) A consent authority must not consent to a development application made pursuant to this Chapter unless the consent authority is satisfied, by written evidence, that the housing will be connected to a reticulated water system and have adequate facilities for the removal or disposal of sewage.</p> <p>(2) If the water and sewerage services referred to in subclause (1) will be provided by a person other than the consent authority, the consent authority must consider the suitability of the site with regard to the availability of reticulated water and sewerage infrastructure. In locations where reticulated services cannot be made available, the consent authority must satisfy all relevant regulators that the provision of water and sewerage infrastructure, including environmental and operational considerations, are satisfactory for the proposed development.</p>	See comments under water and sewer sections later in this report.	Yes
29 Consent authority to consider certain site compatibility criteria for development applications to which clause 24 does not apply		
(1) This clause applies to a development application made	The relevant considerations in clause 25 (5) are:	Yes

YOUR NATURAL AND
BUILT ENVIRONMENTItem 12.14
Page 220Item 12.11
Attachment 1
Page 502

AGENDA

ORDINARY COUNCIL
20/02/2019

Clause	Proposed	Complies
<p>pursuant to this Chapter in respect of development for the purposes of seniors housing (other than dual occupancy) to which clause 24 does not apply.</p> <p>Note.</p> <p>Clause 24 (1) sets out the development applications to which that clause applies.</p> <p>(2) A consent authority, in determining a development application to which this clause applies, must take into consideration the criteria referred to in clause 25 (5) (b) (i), (iii) and (v).</p> <p>(3) Nothing in this clause limits the matters to which a consent authority may or must have regard (or of which a consent authority must be satisfied under another provision of this Policy) in determining a development application to which this clause applies.</p>	<p>(i) the natural environment (including known significant environmental values, resources or hazards) and the existing uses and approved uses of land in the vicinity of the proposed development,</p> <p>(iii) the services and infrastructure that are or will be available to meet the demands arising from the proposed development (particularly, retail, community, medical and transport services having regard to the location and access requirements set out in clause 26) and any proposed financial arrangements for infrastructure provision,</p> <p>(v) without limiting any other criteria, the impact that the bulk, scale, built form and character of the proposed development is likely to have on the existing uses, approved uses and future uses of land in the vicinity of the development.</p> <p>The subject site is not identified as having any known environmental values and the proposal is considered to be compatible with existing and approved development in the locality.</p> <p>The site has access to the infrastructure and services required for the proposal.</p> <p>The proposed development is single storey and consistent with the bulk and scale of existing development to the existing development to the north, east, and west of the site.</p>	

YOUR NATURAL AND
BUILT ENVIRONMENTItem 12.14
Page 221Item 12.11
Attachment 1
Page 503

AGENDA

ORDINARY COUNCIL
20/02/2019

Clause	Proposed	Complies
	The existing RSL club to the south is of a greater bulk and scale than the proposal.	
30. Site analysis		
(1) A consent authority must not consent to a development application made pursuant to this Chapter unless the consent authority is satisfied that the applicant has taken into account a site analysis prepared by the applicant in accordance with this clause.	A satisfactory site analysis has been prepared and forms part of the architectural plans.	Yes
31. Design of in-fill self-care housing		
In determining a development application made pursuant to this Chapter to carry out development for the purpose of in-fill self-care housing, a consent authority must take into consideration (in addition to any other matters that are required to be, or may be, taken into consideration) the provisions of the <i>Seniors Living Policy: Urban Design Guideline for Infill Development</i> published by the Department of Infrastructure, Planning and Natural Resources in March 2004.	The applicant has demonstrated consideration of the urban design guidelines. Satisfactory compliance demonstrated.	Yes
32. Design of residential development		
A consent authority must not consent to a development application made pursuant to this Chapter unless the consent authority is satisfied that the proposed development demonstrates that adequate regard has been given to the principles set out in Division 2.	Addressed – See comments under clauses 33-39 below.	Yes
33. Neighbourhood amenity and streetscape		
The proposed development should: (a) recognise the desirable elements of the location's current character (or, in the case of precincts undergoing a transition, where described in local planning controls, the desired future character) so that new buildings contribute to the quality and identity of the area, and	The area has been zoned B4 to encourage a higher density and mix of commercial and residential development within the Wauchope town centre. The area is the transition point between the existing commercial and business development and the older	Yes

YOUR NATURAL AND
BUILT ENVIRONMENTItem 12.14
Page 222Item 12.11
Attachment 1
Page 504

AGENDA

ORDINARY COUNCIL
20/02/2019

Clause	Proposed	Complies
<p>(b) retain, complement and sensitively harmonise with any heritage conservation areas in the vicinity and any relevant heritage items that are identified in a local environmental plan, and</p> <p>(c) maintain reasonable neighbourhood amenity and appropriate residential character by:</p> <p>(i) providing building setbacks to reduce bulk and overshadowing, and</p> <p>(ii) using building form and siting that relates to the site's land form, and</p> <p>(iii) adopting building heights at the street frontage that are compatible in scale with adjacent development, and</p> <p>(iv) considering, where buildings are located on the boundary, the impact of the boundary walls on neighbours, and</p> <p>(d) be designed so that the front building of the development is set back in sympathy with, but not necessarily the same as, the existing building line, and</p> <p>(e) embody planting that is in sympathy with, but not necessarily the same as, other planting in the streetscape, and</p> <p>(f) retain, wherever reasonable, major existing trees, and</p> <p>(g) be designed so that no building is constructed in a riparian zone.</p>	<p>smaller scale residential development.</p> <p>The zoning permits a higher density and it is anticipated that future development will further define the character of the area.</p> <p>The development provides a front setback comparable to the existing dwellings proposed to be demolished and other existing development to the north of the site. The proposal would sit appropriately within the existing and likely future streetscape. A lesser front setback would be expected for street front commercial uses.</p> <p>Landscaping will be provided in the streetscape along Cameron Street and also along the shared internal access on the southern side of the development. The design is complimentary to the character of the area.</p> <p>No listed heritage items are located adjacent to the site however a heritage character exists within the precinct.</p>	
34. Visual and acoustic privacy		
<p>The proposed development should consider the visual and acoustic privacy of neighbours in the vicinity and residents by:</p> <p>(a) appropriate site planning, the location and design of windows and balconies, the use of screening devices and landscaping, and</p> <p>(b) ensuring acceptable noise levels in bedrooms of new dwellings by locating them away from driveways, parking areas and paths.</p>	<p>An acoustic report has been submitted as part of the application and further comments are provided under Noise and Vibration later in this report.</p>	Yes

YOUR NATURAL AND
BUILT ENVIRONMENT

Item 12.14

Page 223

Item 12.11
Attachment 1

Page 505

AGENDA

ORDINARY COUNCIL
20/02/2019

Clause	Proposed	Complies
Note. The Australian and New Zealand Standard entitled AS/NZS 2107–2000, <i>Acoustics—Recommended design sound levels and reverberation times for building interiors</i> and the Australian Standard entitled AS 3671—1989, <i>Acoustics—Road traffic noise intrusion—Building siting and construction</i> , published by Standards Australia, should be referred to in establishing acceptable noise levels.		
35. Solar access and design for climate		
The proposed development should: (a) ensure adequate daylight to the main living areas of neighbours in the vicinity and residents and adequate sunlight to substantial areas of private open space, and (b) involve site planning, dwelling design and landscaping that reduces energy use and makes the best practicable use of natural ventilation solar heating and lighting by locating the windows of living and dining areas in a northerly direction. Note. AMCORD: A National Resource Document for Residential Development, 1995, may be referred to in establishing adequate solar access and dwelling orientation appropriate to the climatic conditions.	It is considered that adequate solar access is available to adjoining residential sites as the development is single storey. Main private open space areas are located on the eastern and northern sides of the buildings and would receive adequate sunlight.	Yes
36. Stormwater		
The proposed development should: (a) control and minimise the disturbance and impacts of stormwater runoff on adjoining properties and receiving waters by, for example, finishing driveway surfaces with semi-pervious material, minimising the width of paths and minimising paved areas, and (b) include, where practical, on-site stormwater detention or re-use for second quality water uses.	A stormwater management plan has been submitted with this application. On-site detention is proposed. The application has been assessed by Council's stormwater engineers and appropriate conditions of consent applied.	Yes
37. Crime prevention		
The proposed development should provide personal property security	The proposed development provides passive	Yes

YOUR NATURAL AND
BUILT ENVIRONMENTItem 12.14
Page 224Item 12.11
Attachment 1
Page 506

AGENDA

ORDINARY COUNCIL
20/02/2019

Clause	Proposed	Complies
for residents and visitors and encourage crime prevention by: (a) site planning that allows observation of the approaches to a dwelling entry from inside each dwelling and general observation of public areas, driveways and streets from a dwelling that adjoins any such area, driveway or street, and (b) where shared entries are required, providing shared entries that serve a small number of dwellings and that are able to be locked, and (c) providing dwellings designed to allow residents to see who approaches their dwellings without the need to open the front door.	surveillance of Cameron Street from the living and outdoor areas of Units 1-6. The perimeter of the site is fenced and the vehicular/pedestrian access points from the internal road and car park are proposed to be gated. Individual access points are proposed for Units 1-6 from Cameron Street, which would increase pedestrian use of the public areas.	
38. Accessibility The proposed development should: (a) have obvious and safe pedestrian links from the site that provide access to public transport services or local facilities, and (b) provide attractive, yet safe, environments for pedestrians and motorists with convenient access and parking for residents and visitors.	The perimeter of the site is fenced and the pedestrian access points from the internal road and car park are well defined. Individual access points are proposed for Units 1-6 from Cameron Street.	Yes
39. Waste management The proposed development should be provided with waste facilities that maximise recycling by the provision of appropriate facilities.	Common bin storage areas have been nominated adjacent to each of the vehicular access points.	Yes
40. Development standards—minimum sizes and building height		
(1) General A consent authority must not consent to a development application made pursuant to this Chapter unless the proposed development complies with the standards specified in this clause. (2) Site size The size of the site must be at least 1,000 square metres. (3) Site frontage The site frontage must be at least 20 metres wide measured at the building line.	Proposed seniors housing site is approximately 4089m ² Site frontage- 68.17m Residential flat buildings are permitted in the zone. The height of the buildings does not exceed 8m.	Yes

YOUR NATURAL AND
BUILT ENVIRONMENT

AGENDA

ORDINARY COUNCIL
20/02/2019

Clause	Proposed	Complies
<p>(4) Height in zones where residential flat buildings are not permitted If the development is proposed in a residential zone where residential flat buildings are not permitted:</p> <p>(a) the height of all buildings in the proposed development must be 8 metres or less, and</p> <p>Note. Development consent for development for the purposes of seniors housing cannot be refused on the ground of the height of the housing if all of the proposed buildings are 8 metres or less in height. See clauses 48 (a), 49 (a) and 50 (a).</p> <p>(5) Development applications to which clause does not apply Subclauses (2), (3) and (4) (c) do not apply to a development application made by any of the following:</p> <p>(a) the Department of Housing, (b) any other social housing provider.</p>		
41. Standards for hostels and self-contained dwellings		
<p>(1) A consent authority must not consent to a development application made pursuant to this Chapter to carry out development for the purpose of a hostel or self-contained dwelling unless the proposed development complies with the standards specified in Schedule 3 for such development.</p> <p>(2) Despite the provisions of clauses 2, 7, 8, 9, 10, 11, 12, 13 and 15–20 of Schedule 3, a self-contained dwelling, or part of such a dwelling, that is located above the ground floor in a multi-storey building does not have to comply with the requirements of those provisions if the development application is made by, or by a person jointly with, a social housing provider.</p>	See comments below on relevant Schedule 3 requirements.	
50. Standards that cannot be used to refuse development consent for self-contained dwellings		

YOUR NATURAL AND
BUILT ENVIRONMENT

AGENDA

ORDINARY COUNCIL
20/02/2019

Clause	Proposed	Complies
<p>A consent authority must not refuse consent to a development application made pursuant to this Chapter for the carrying out of development for the purpose of a self-contained dwelling (including in-fill self-care housing and serviced self-care housing) on any of the following grounds:</p> <p>(a) building height: if all proposed buildings are 8 metres or less in height (and regardless of any other standard specified by another environmental planning instrument limiting development to 2 storeys),</p> <p>(b) density and scale: if the density and scale of the buildings when expressed as a floor space ratio is 0.5:1 or less,</p> <p>(c) landscaped area: if:</p> <p>(i) in the case of a development application made by a social housing provider—a minimum 35 square metres of landscaped area per dwelling is provided, or</p> <p>(ii) in any other case—a minimum of 30% of the area of the site is to be landscaped,</p> <p>(d) Deep soil zones: if, in relation to that part of the site (being the site, not only of that particular development, but also of any other associated development to which this Policy applies) that is not built on, paved or otherwise sealed, there is soil of a sufficient depth to support the growth of trees and shrubs on an area of not less than 15% of the area of the site (the <i>deep soil zone</i>). Two-thirds of the deep soil zone should preferably be located at the rear of the site and each area forming part of the zone should have a minimum dimension of 3 metres,</p> <p>(e) solar access: if living rooms and private open spaces for a minimum of 70% of the dwellings of the development receive a minimum of 3 hours direct sunlight between 9am and 3pm in mid-winter,</p>	<p>These controls cannot be used for reasons of refusal if satisfied.</p> <p>(a) Building height is less than 8m.</p> <p>(b) Density and scale - proposal has FSR of 0.37:1.</p> <p>(c) Formal landscaped area provided within the site only 19% of the site area. Landscaping considered adequate to integrate the development with the existing streetscape and soften visual impact. Landscaping provides for small canopy trees, which will improve streetscape.</p> <p>(d) Adequate deep soil zone proposed.</p> <p>(e) Solar access – 11 of the 15 units (73%) would receive 3 hours of direct sunlight between 9am and 3pm midwinter. Units 1, 3, 5, and 15 would receive less than 3 hours direct sunlight to living areas and private open space during this period.</p> <p>(f) Private open space provided – minimum 15m² per dwelling including 3m x 3m area off living space.</p> <p>(h) 15 x 2 bedroom dwellings. 30 x 0.5 spaces = minimum 15 spaces required. Proposed provides 15 parking spaces in garages and an additional 2 visitor parking spaces in the RSL car park adjacent to the site.</p>	<p>No- however considered satisfactory in context of development - refer to LEP comments in relation to building height.</p>

YOUR NATURAL AND
BUILT ENVIRONMENT

Item 12.14

Page 227

Item 12.11
Attachment 1

Page 509

AGENDA

ORDINARY COUNCIL
20/02/2019

Clause	Proposed	Complies
<p>(f) private open space for in-fill self-care housing: if:</p> <p>(i) in the case of a single storey dwelling or a dwelling that is located, wholly or in part, on the ground floor of a multi-storey building, not less than 15 square metres of private open space per dwelling is provided and, of this open space, one area is not less than 3 metres wide and 3 metres long and is accessible from a living area located on the ground floor, and</p> <p>(ii) in the case of any other dwelling, there is a balcony with an area of not less than 10 square metres (or 6 square metres for a 1 bedroom dwelling), that is not less than 2 metres in either length or depth and that is accessible from a living area, Note. The open space needs to be accessible only by a continuous accessible path of travel (within the meaning of AS 1428.1) if the dwelling itself is an accessible one. See Division 4 of Part 4.</p> <p>(g) (Repealed)</p> <p>(h) parking: if at least the following is provided:</p> <p>(i) 0.5 car spaces for each bedroom where the development application is made by a person other than a social housing provider, or</p> <p>(ii) 1 car space for each 5 dwellings where the development application is made by, or is made by a person jointly with, a social housing provider.</p> <p>Note. The provisions of this clause do not impose any limitations on the grounds on which a consent authority may grant development consent.</p>		
Schedule 3 Standards concerning accessibility and useability for hostels and self-contained dwellings		
<p>Part 1 – Standards applying to hostels and self-contained dwellings</p> <p>1 Application of standards in this Part</p>	The submitted plans demonstrate that the proposal is capable of complying with these	Yes

YOUR NATURAL AND
BUILT ENVIRONMENTItem 12.14
Page 228Item 12.11
Attachment 1
Page 510

AGENDA

ORDINARY COUNCIL
20/02/2019

Clause	Proposed	Complies
<p>The standards set out in this Part apply to any seniors housing that consists of hostels or self-contained dwellings.</p> <p>2 Siting standards</p> <p>(1) Wheelchair access</p> <p>If the whole of the site has a gradient of less than 1:10, 100% of the dwellings must have wheelchair access by a continuous accessible path of travel (within the meaning of AS 1428.1) to an adjoining public road.</p> <p>(2) If the whole of the site does not have a gradient of less than 1:10:</p> <p>(a) the percentage of dwellings that must have wheelchair access must equal the proportion of the site that has a gradient of less than 1:10, or 50%, whichever is the greater, and</p> <p>(b) the wheelchair access provided must be by a continuous accessible path of travel (within the meaning of AS 1428.1) to an adjoining public road or an internal road or a driveway that is accessible to all residents.</p> <p>Note. For example, if 70% of the site has a gradient of less than 1:10, then 70% of the dwellings must have wheelchair access as required by this subclause. If more than 50% of the site has a gradient greater than 1:10, development for the purposes of seniors housing is likely to be unable to meet these requirements.</p> <p>(3) Common areas</p> <p>Access must be provided in accordance with AS 1428.1 so that a person using a wheelchair can use common areas and common facilities associated with the development.</p> <p>3 Security</p> <p>Pathway lighting:</p> <p>(a) must be designed and located so as to avoid glare for pedestrians and adjacent dwellings, and</p> <p>(b) must provide at least 20 lux at ground level.</p> <p>4 Letterboxes</p>	<p>standards. Conditions recommended requiring the Construction Certificate plans to demonstrate compliance.</p>	

YOUR NATURAL AND
BUILT ENVIRONMENTItem 12.14
Page 229Item 12.11
Attachment 1
Page 511

AGENDA

ORDINARY COUNCIL
20/02/2019

Clause	Proposed	Complies
<p>Letterboxes:</p> <p>(a) must be situated on a hard standing area and have wheelchair access and circulation by a continuous accessible path of travel (within the meaning of AS 1428.1), and</p> <p>(b) must be lockable, and</p> <p>(c) must be located together in a central location adjacent to the street entry or, in the case of self-contained dwellings, must be located together in one or more central locations adjacent to the street entry.</p> <p>5 Private car accommodation</p> <p>If car parking (not being car parking for employees) is provided:</p> <p>(a) car parking spaces must comply with the requirements for parking for persons with a disability set out in AS 2890, and</p> <p>(b) 5% of the total number of car parking spaces (or at least one space if there are fewer than 20 spaces) must be designed to enable the width of the spaces to be increased to 3.8 metres, and</p> <p>(c) any garage must have a power-operated door, or there must be a power point and an area for motor or control rods to enable a power-operated door to be installed at a later date.</p> <p>6 Accessible entry</p> <p>Every entry (whether a front entry or not) to a dwelling, not being an entry for employees, must comply with clauses 4.3.1 and 4.3.2 of AS 4299.</p> <p>7 Interior: general</p> <p>(1) Internal doorways must have a minimum clear opening that complies with AS 1428.1.</p> <p>(2) Internal corridors must have a minimum unobstructed width of 1,000 millimetres.</p> <p>(3) Circulation space at approaches to internal doorways must comply with AS 1428.1.</p> <p>8 Bedroom</p> <p>At least one bedroom within each dwelling must have:</p>		

YOUR NATURAL AND
BUILT ENVIRONMENTItem 12.14
Page 230Item 12.11
Attachment 1
Page 512

AGENDA

ORDINARY COUNCIL
20/02/2019

Clause	Proposed	Complies
<p>(a) an area sufficient to accommodate a wardrobe and a bed sized as follows:</p> <p>(i) in the case of a dwelling in a hostel—a single-size bed,</p> <p>(ii) in the case of a self-contained dwelling—a queen-size bed, and</p> <p>(b) a clear area for the bed of at least:</p> <p>(i) 1,200 millimetres wide at the foot of the bed, and</p> <p>(ii) 1,000 millimetres wide beside the bed between it and the wall, wardrobe or any other obstruction, and</p> <p>(c) 2 double general power outlets on the wall where the head of the bed is likely to be, and</p> <p>(d) at least one general power outlet on the wall opposite the wall where the head of the bed is likely to be, and</p> <p>(e) a telephone outlet next to the bed on the side closest to the door and a general power outlet beside the telephone outlet, and</p> <p>(f) wiring to allow a potential illumination level of at least 300 lux.</p> <p>9 Bathroom</p> <p>(1) At least one bathroom within a dwelling must be on the ground (or main) floor and have the following facilities arranged within an area that provides for circulation space for sanitary facilities in accordance with AS 1428.1:</p> <p>(a) a slip-resistant floor surface,</p> <p>(b) a washbasin with plumbing that would allow, either immediately or in the future, clearances that comply with AS 1428.1,</p> <p>(c) a shower that complies with AS 1428.1, except that the following must be accommodated either immediately or in the future:</p> <p>(i) a grab rail,</p> <p>(ii) portable shower head,</p> <p>(iii) folding seat,</p> <p>(d) a wall cabinet that is sufficiently illuminated to be able to read the labels of items stored in it,</p>		

YOUR NATURAL AND
BUILT ENVIRONMENT

Item 12.14

Page 231

Item 12.11
Attachment 1

Page 513

AGENDA

ORDINARY COUNCIL
20/02/2019

Clause	Proposed	Complies
<p>(e) a double general power outlet beside the mirror.</p> <p>(2) Subclause (1) (c) does not prevent the installation of a shower screen that can easily be removed to facilitate future accessibility.</p> <p>10 Toilet</p> <p>A dwelling must have at least one toilet on the ground (or main) floor and be a visitable toilet that complies with the requirements for sanitary facilities of AS 4299.</p> <p>11 Surface finishes</p> <p>Balconies and external paved areas must have slip-resistant surfaces.</p> <p>Note. Advice regarding finishes may be obtained from AS 1428.1.</p> <p>12 Door hardware</p> <p>Door handles and hardware for all doors (including entry doors and other external doors) must be provided in accordance with AS 4299.</p> <p>13 Ancillary items</p> <p>Switches and power points must be provided in accordance with AS 4299.</p> <p><u>Part 2 – Additional standards for self-contained dwellings</u></p> <p>14 Application of standards in this Part</p> <p>The standards set out in this Part apply in addition to the standards set out in Part 1 to any seniors housing consisting of self-contained dwellings.</p> <p>15 Living room and dining room</p> <p>(1) A living room in a self-contained dwelling must have:</p> <p>(a) a circulation space in accordance with clause 4.7.1 of AS 4299, and</p> <p>(b) a telephone adjacent to a general power outlet.</p> <p>(2) A living room and dining room must have wiring to allow a potential illumination level of at least 300 lux.</p> <p>16 Kitchen</p> <p>A kitchen in a self-contained dwelling must have:</p>		

YOUR NATURAL AND
BUILT ENVIRONMENTItem 12.14
Page 232Item 12.11
Attachment 1
Page 514

AGENDA

ORDINARY COUNCIL
20/02/2019

Clause	Proposed	Complies
<p>(a) a circulation space in accordance with clause 4.5.2 of AS 4299, and</p> <p>(b) a circulation space at door approaches that complies with AS 1428.1, and</p> <p>(c) the following fittings in accordance with the relevant subclauses of clause 4.5 of AS 4299:</p> <p>(i) benches that include at least one work surface at least 800 millimetres in length that comply with clause 4.5.5 (a),</p> <p>(ii) a tap set (see clause 4.5.6),</p> <p>(iii) cooktops (see clause 4.5.7), except that an isolating switch must be included,</p> <p>(iv) an oven (see clause 4.5.8), and</p> <p>(d) "D" pull cupboard handles that are located towards the top of below-bench cupboards and towards the bottom of overhead cupboards, and</p> <p>(e) general power outlets:</p> <p>(i) at least one of which is a double general power outlet within 300 millimetres of the front of a work surface, and</p> <p>(ii) one of which is provided for a refrigerator in such a position as to be easily accessible after the refrigerator is installed.</p> <p>17 Access to kitchen, main bedroom, bathroom and toilet In a multi-storey self-contained dwelling, the kitchen, main bedroom, bathroom and toilet must be located on the entry level.</p> <p>18 Lifts in multi-storey buildings In a multi-storey building containing separate self-contained dwellings on different storeys, lift access must be provided to dwellings above the ground level of the building by way of a lift complying with clause E3.6 of the <i>Building Code of Australia</i>.</p> <p>19 Laundry A self-contained dwelling must have a laundry that has:</p>		

YOUR NATURAL AND
BUILT ENVIRONMENTItem 12.14
Page 233Item 12.11
Attachment 1
Page 515

AGENDA

ORDINARY COUNCIL
20/02/2019

Clause	Proposed	Complies
(a) a circulation space at door approaches that complies with AS 1428.1, and (b) provision for the installation of an automatic washing machine and a clothes dryer, and (c) a clear space in front of appliances of at least 1,300 millimetres, and (d) a slip-resistant floor surface, and (e) an accessible path of travel to any clothes line provided in relation to the dwelling. 20 Storage for linen A self-contained dwelling must be provided with a linen storage in accordance with clause 4.11.5 of AS 4299. 21 Garbage A garbage storage area must be provided in an accessible location.		

Port Macquarie-Hastings Local Environmental Plan 2011

The proposal is consistent with the LEP having regard to the following:

- Clause 2.2, the subject site is zoned B4 Mixed Use. In accordance with clause 2.3(1) and the B4 zone landuse table, the proposed development for seniors housing is a permissible landuse with consent.

The objectives of the B4 zone are as follows:

- To provide a mixture of compatible land uses.
- To integrate suitable business, office, residential, retail and other development in accessible locations so as to maximise public transport patronage and encourage walking and cycling.
- To ensure that new developments make a positive contribution to the public domain and streetscape.

In accordance with Clause 2.3(2), the proposal is consistent with the zone objectives having regard to the following:

- The proposal is a permissible landuse;
- The development is associated with the existing RSL club.
- The development will provide additional variety of housing types in Wauchope that will be well situated and maximise walking opportunities to surrounding services.
- Clause 2.7, the demolition requires consent as it does not fit within the provisions of SEPP (Exempt and Complying Development Codes) 2008.
- Clause 4.1 - No minimum lot size for subdivision applies to the land.
- Clause 4.3, the maximum overall height of the buildings above ground level (existing) is 4.7m which complies with the standard height limit of 8.5m and 11.5m applying to the site.

YOUR NATURAL AND
BUILT ENVIRONMENT

Item 12.14

Page 234

Item 12.11
Attachment 1

Page 516

AGENDA

ORDINARY COUNCIL
20/02/2019

- Clause 4.4, the floor space ratio of the proposal is 0.37:1 which complies with the maximum 1.5:1 floor space ratio applying to the site.
- Clause 5.10 – Heritage. The site does not contain or adjoin any known heritage items or sites of significance.

However, it is noted that given the older style dwellings proposed to be demolished, a previous application (DA2015 – 230) involving demolition of the same buildings was referred to Council's Heritage advisor who provided the following comments:

"The proposal necessitates the demolition of 5 residential properties numbered 15 to 21 Cameron Street. The properties are owned by the RSL Club. Three of the said properties have cultural heritage value in their streetscape contribution as a record of early 20th century timber dwellings in the Wauchope town area. They are #21, #17, #15 Cameron Street appear to have been constructed pre World War 1. #19 is a later 1950-60s building, #13 is a 1940 – 50s building and is clad with asbestos. Both buildings are considered of lesser streetscape contribution value, while collectively they provide a contiguous form on the street edge.

There is continuity of streetscape and building character, form and scale in this area of Cameron Street. Site consolidation will destroy the historical pattern of subdivision, which is an important element in defining the character of Wauchope residential areas on the commercial perimeter. The fact that three residences that have potential Environmental Heritage Value are proposed to be demolished as a result of this development again highlights that the Heritage Study is in desperate need for revision and expansion.

The heritage value of these buildings should be recognized. Wauchope representatives have been asking for more attention to be given to Wauchope and its character and its better promotion and articulation. Time and funds for the heritage advisor to follow this through have not been available. There is an urgent need for a heritage DCP for Wauchope and the controls over the town centre, either in the form of establishment of a heritage conservation area or character precinct or even individual review and listing of buildings to avail protection and to articulate the reasons for listing and preservation. The heritage list in schedule 5 of the LEP should not be static schedule.

The proponent could be asked to reconsider the redevelopment in the light of the potential heritage value of the buildings and redesign with a view to incorporate them, or seek appropriate sites for reuse and relocation as opposed to demolition."

In the assessment of DA2015 – 230 it was considered that in the absence of a statutory listing of the property under the LEP, there were insufficient grounds to request a redesign of the proposal to incorporate the dwellings. It was additionally considered that it would not be possible to sustain a refusal on heritage grounds given the lack of statutory weight. Conditions of consent were imposed to require photographic evidence to be collected prior to demolition and recommending that the dwellings be relocated if possible.

YOUR NATURAL AND
BUILT ENVIRONMENTItem 12.14
Page 235Item 12.11
Attachment 1
Page 517

AGENDA

ORDINARY COUNCIL
20/02/2019

The dwellings on No's 19 and 21 Cameron Street have subsequently been removed in accordance with that consent, and only the dwellings on No's 15 and 17 remain. The dwelling on No. 15 appeared to have been prepared for relocation at the time of the site inspection.

As the demolition/removal of the buildings has previously been granted consent, the current application could not be refused on the basis of heritage impact. However, conditions similar to those imposed on DA2015 – 230 are recommended.

- Clause 7.13, satisfactory arrangements are in place for provision of essential services including water supply, electricity supply, sewer infrastructure, stormwater drainage and suitable road access to service the development.

(ii) **Any draft instruments that apply to the site or are on exhibition:**

No draft instruments apply to the site.

(iii) **Any Development Control Plan in force:**

Port Macquarie-Hastings Development Control Plan 2013

Requirements	Proposed	Complies
Chapter 2.3 Environmental Management		
2.3.3.1 Cut and fill max 1.0m	Cut and fill <1m change.	Yes
2.3.3.2 - Max height retaining wall along road 1m. - Retaining wall and fence combination not to exceed 1.8m	No front fence and retaining wall combination proposed.	N/A
Chapter 2.4 Hazards Management	The site is not affected by any hazards.	N/A
Chapter 2.5 Traffic, Access, Parking		Yes, subject to parking contribution
2.5.3.2 Minimal driveway numbers and width	The proposal would involve removal of the existing crossovers in Cameron Street, with all vehicular access to the development via the RSL car park. The development would improve the available street parking.	
2.5.3.3 Off-street parking <u>Residential</u> 1 space per 1 & 2 bed plus 1 visitor space per 4 units 45 x 2 bed units proposed = 45 spaces for units and 12 visitor	See comments regarding parking later in this report.	

YOUR NATURAL AND
BUILT ENVIRONMENT

Item 12.14

Page 236

Item 12.11
Attachment 1

Page 518

AGENDA

ORDINARY COUNCIL
20/02/2019

Requirements	Proposed	Complies
spaces, which equates 67 spaces total. <u>RSL Club</u> 1 per 6m2 of serviced floor area plus 1 per 2 employees.		
Chapter 2.6 Tree management	The proposal does not involve removal of any Koala food trees or hollow bearing trees.	Yes
Chapter 2.7 Social Impact and Crime Prevention	See comments later in this report regarding social impact and crime prevention.	Yes

- (iiia) **Any planning agreement that has been entered into under section 7.4, or any draft planning agreement that a developer has offered to enter into under section 7.4:**

No planning agreement has been offered or entered into relating to the site.

- iv) **Any matters prescribed by the Regulations:**

Demolition of buildings AS 2601:

Demolition of the existing building on the site is capable of compliance with this Australian Standard and is recommended to be conditioned.

- (b) **The likely impacts of that development, including environmental impacts on both the natural and built environments, social and economic impacts in the locality:**

The site has a general easterly street frontage orientation to Cameron Street. Adjoining the site to the north, west and east are residential allotments generally containing single storey dwellings and some small scale commercial businesses.

Adjoining the site to the south is the existing RSL Club and other commercial development.

The proposal will be unlikely to have any adverse impacts to existing adjoining properties and satisfactorily addresses the public domain.

The proposal is considered to be compatible with the mix of land uses in the locality and adequately addresses planning controls for the area.

The proposal does not have a significant adverse impact on existing view sharing.

The proposal does not have significant adverse lighting impacts.

AGENDA

ORDINARY COUNCIL
20/02/2019YOUR NATURAL AND
BUILT ENVIRONMENT

There are no significant adverse privacy impacts. Privacy within the development and for existing residential properties adjoining the site would be adequately protected by building design and fencing.

There is no adverse overshadowing impacts.

Roads

The site is on the corner of Young Street and Cameron Street with frontage and vehicle / pedestrian access to both roads. Vehicle access will be to the existing driveways on Young Street and Cameron Street to the RSL Club.

Adjacent to the site, Cameron Street is a sealed public road under the care and control of Council. Cameron Street is a local commercial road with a 14.4 metre carriageway within a 21 metre road reserve.

Adjacent to the site, Young Street is a sealed public road under the care and control of Council. Young Street is a local commercial road with a 12.9 metre carriageway within a 20 metre road reserve.

Traffic and Transport

The Statement of Environmental Effects states:

"The proposed seniors living housing is not anticipated to be a high traffic generator. The proposed car parking arrangements and manoeuvring within the site is acceptable. The residents of the site are well located to walk to existing shops and services and bus stops which provide service to Port Macquarie."

The application also includes a Traffic Impact Assessment from SECA Solution on 30 March 2015 in support of a similar development on the same site. Findings of the study determined:

"The proposed seniors living housing is not anticipated to be a high traffic generator. The proposed car parking arrangements and manoeuvring within the site is acceptable. The residents of the site are well located to walk to existing shops and services and bus stops which provide service to Port Macquarie."

The site is ideally situated for this form of development being flat and within easy walking distance to Wauchope Town Centre. Public transport services which provide access further afield, including Port Macquarie and the nearby train station which connects to Sydney and Brisbane. The existing operations of the Wauchope RSL Club will continue unchanged and remaining parking has been shown to be sufficient for the club attendances. Wauchope RSL intend to own and manage the seniors housing with the intent of making it available to RSL club members."

Council's engineers agree with the traffic assessment in this regard and it is considered that the existing road network is capable of accommodating the additional traffic generated by the development.



Item 12.14

Page 238

Item 12.11
Attachment 1

Page 520

AGENDA

ORDINARY COUNCIL
20/02/2019YOUR NATURAL AND
BUILT ENVIRONMENT**Site Frontage & Access**

Vehicle access to the site is proposed via the existing access driveways in Cameron Street and Young Street.

Parking and ManoeuvringExisting parking (RSL Club):

The site currently contains 125 off-street parking spaces associated with the RSL Club use. A further 3 spaces are line marked adjacent to the Cameron Street access, which are currently not useable due to the presence of barriers associated with a former LPG tank in this location.

Previous approvals:

DA2004 – 599 assessed the existing parking demand for the club in accordance with (former) DCP 18 to be 349 spaces. 128 spaces were available on the site at the time, and the conditions of consent required 128 spaces to be retained on the site for the RSL Club.

DA2015 – 230 – A Traffic Impact Assessment (TIA) prepared by SECA Solution and dated 30 March 2015 was submitted in support of this proposal. The TIA provided an existing count of 113 onsite spaces in use by the RSL. As the proposed reconfiguration of parking resulted in 108 spaces for the RSL and 4 commercial spaces which can be used by the RSL during the evenings, the TIA implied that the resulting site shortfall would be only 1 space.

However, the count of existing spaces by Council staff based on aerial photography at the time was 121 spaces. This discrepancy appears to have arisen due to 6 spaces under a carport on the western boundary, and 2 spaces with faded line marking nearby. The proposal therefore resulted in a reduction by 13 spaces within the RSL car park compared to the existing scenario. A credit for the 4 commercial spaces which were assumed to be available during the evening, there was a resulting shortfall of 9 spaces, which would occur at least weekly. The actual number of cars parking within the public road was considered to be even higher than suggested in the TIA.

Current application:

Parking for the seniors housing component of the development satisfies the requirements in the SEPP (minimum 15 spaces required). The proposal provides 15 parking spaces in garages and an additional 2 visitor parking spaces in the RSL Club car park adjacent to the site.

Available parking for the RSL Club would be reduced with the loss of parking on the northern side of the internal access road and the northern end of the current car park. The plans show a total of 40 spaces retained in the northern parking area (including the 2 visitor spaces for the seniors housing), with an additional 61 spaces available in the western car park (total 101 spaces).

The parking provisions for the RSL Club is therefore 24 spaces short of the existing parking that is available on the site, 20 spaces less than the 121 spaces that were accepted to be existing at the time of DA2015 – 230, and 27 spaces short of the number of spaces required by the conditions of DA2004 – 599. Given that the most recent consent accepted that 121 spaces was appropriate for the RSL Club, it is



Item 12.14

Page 239

Item 12.11
Attachment 1

Page 521

AGENDA

ORDINARY COUNCIL
20/02/2019YOUR NATURAL AND
BUILT ENVIRONMENT

considered reasonable to base the parking shortfall on this figure. The 101 spaces proposed to be provided in the current application is therefore 20 spaces short of the previously accepted parking demand.

Parking credits can be applied for the additional street parking that would be created in Cameron Street by the removal of existing driveway crossovers (equivalent to 2 spaces).

The overall shortfall in parking is therefore considered to be 18 spaces. The land is located within the area of the Wauchope Town Centre parking contributions in the Port Macquarie-Hastings Contributions Plan 1993 – Part C – Car Parking. A condition is recommended requiring Section 7.11 contributions for the shortfall in parking.

The Applicant has also provided a copy of a 20 February 1967 resolution of Hastings Council, as follows:

47. That the letter from the Wauchope R.S.L. Sub-Branch Club offering to repay a loan of \$4,000 plus interest charges, if the Council will raise such a loan for the purpose of purchasing land in Bransdon Street for the purpose of a car park and requesting that a motion be placed on Council's books for future reference, that i at any time Council wishes to dispose of the land, the R.S.L. Club be offered the opportunity to purchase the land at the present figure, i.e., \$4,000, be received and the R.S.L. Club be given an assurance that in the event of subsequent disposal of the land that the Club would be given the opportunity to purchase the land at \$4,000.

The Applicant has submitted that the above payment for purchase of land by Council for the purpose of town centre car parking in Wauchope should be considered as an appropriate contribution for the parking shortfall in the current application. However, there is insufficient information on Council's records as to the background of the land purchase and whether it was associated with the parking demands of an earlier development. It is therefore not possible to quantify what credits (if any) should be applied for the historic purchase of this land. There is also a substantial historic shortfall in parking for the site (more than 200 spaces at the rates in the DCP) that would need to be taken into account. The Applicant could request the parking contributions be reviewed through a Section 4.55 application, if further evidence could be provided in this regard.

Due to the type of development, car park circulation is required to enable vehicles to enter and exit the site in a forward manner. Site plans show adequate area is available and conditions have been imposed to reflect these requirements. Refer to relevant conditions of consent.

Water Supply Connection

Council records indicate that the development site has existing 20mm metered water services.

Each dwelling shall be individually metered for water supply with a master meter installed at the Cameron Street road frontage. Final water service sizing will need to be determined by a hydraulic consultant to suit the domestic and commercial



Item 12.14

Page 240

Item 12.11
Attachment 1

Page 522

AGENDA

ORDINARY COUNCIL
20/02/2019YOUR NATURAL AND
BUILT ENVIRONMENT

components of the development, as well as fire service and backflow protection requirements in accordance with AS3500.

Detailed plans will be required to be submitted for assessment with the S.68 application.

Refer to relevant conditions of consent.

Sewer Connection

Council records indicate that the development site has multiple connections to Council's sewer system. A sewer reticulation plan shall be submitted to Sewer Section for approval. Any redundant sewer junctions shall be capped at the main.

Refer to relevant conditions of consent.

Stormwater

The site naturally grades towards the street frontage and is currently serviced via a direct connection to the public piped drainage system.

The legal point of discharge for the proposed development is defined as a direct connection to Council's stormwater pit. Extension of Council's piped drainage in Cameron Street is required to service the frontage of proposed Lot 2 (containing the seniors housing development).

The design is to make provision for the natural flow of stormwater runoff from uphill/upstream properties/lands. The design must include the collection of such waters and discharge to the Council drainage system. The Stormwater Drainage Strategy prepared by Hopkins Consultants makes provision for an ultimate interallotment drainage system serving adjoining properties to the west of the site (No. 22 to 30 Hastings Street). The strategy relies upon construction of parts of the system by the relevant property owners. There is no nexus to require the developer to carry out construction of the full interallotment drainage system for the benefit of these properties. However, the system will need to have the necessary capacity, and include creation of the required easements to allow for future connection by upstream properties.

Flows from the surcharge pit across the northern end of the RSL car park are considered safe in nature (depth/velocity) and the proposed easement (B) provides the legal right to drain. The substantial easement serves a dual purpose, also acting as an incentive to construct the ultimate drainage arrangement prior to proceeding with any further development within the easement's footprint.

A detailed site stormwater management plan will be required to be submitted for assessment with the S.68 application and prior to the issue of a Construction Certificate.

In accordance with Councils AUSPEC requirements, the following must be incorporated into the stormwater drainage plan:

- On site stormwater detention facilities.
- Water quality controls.



Item 12.14

Page 241

Item 12.11
Attachment 1

Page 523

AGENDAORDINARY COUNCIL
20/02/2019

- Provision of interallotment drainage to allow the proposed development to drain to the nominated point of discharge via a single suitably sized conduit.

Refer to relevant conditions of consent.

Other Utilities

Telecommunication and electricity services are available to the site.

Heritage

Refer to LEP comments relating to heritage.

Other land resources

The site is within an established urban context and will not sterilise any significant mineral or agricultural resource.

Water cycle

The proposed development will be unlikely to have any adverse impacts on water resources and the water cycle.

Soils

The proposed development will be unlikely to have any adverse impacts on soils in terms of quality, erosion, stability and/or productivity subject to a standard condition requiring erosion and sediment controls to be in place prior to and during construction.

Air and microclimate

The construction and/or operations of the proposed development will be unlikely to result in any adverse impacts on the existing air quality or result in any pollution. Standard precautionary site management condition recommended.

Flora and fauna

Construction of the proposed development will not require any removal/clearing of any significant vegetation and therefore will be unlikely to have any significant adverse impacts on biodiversity or threatened species of flora and fauna. Part 7 of the Biodiversity Conservation Act is considered to be satisfied.

Waste

The proposal includes common waste storage facilities adjacent to each of the vehicular access points. A condition is recommended requiring a private waste collection service for the development. The Construction Certificate plans will need to demonstrate that the swept path of a waste collection vehicle can be accommodated in accordance with AS 2890. The western access may need to be altered in this regard.

YOUR NATURAL AND
BUILT ENVIRONMENTItem 12.14
Page 242Item 12.11
Attachment 1
Page 524

AGENDA

ORDINARY COUNCIL
20/02/2019YOUR NATURAL AND
BUILT ENVIRONMENT

Standard precautionary site management condition recommended for construction and demolition waste.

Energy

The proposal includes measures to address energy efficiency and will be required to comply with the requirements of BASIX. No adverse impacts anticipated.

Noise and vibration

The application relies on previous acoustic assessment carried out as part of DA2015 – 230 by Reverb Acoustics, which assessed the impacts on residential development of noise from the RSL activities and plant, as well as road traffic noise. The noise criteria required to be satisfied are detailed below.

Living Areas:

Road Traffic (Day)	40dB(A),Leq (internal) windows closed 45dB(A),Leq (internal) windows open
Noise Sources	31dB(A),Leq (internal)

Bedrooms:

Road Traffic (Night)	35dB(A),Leq (internal) windows closed 40dB(A),Leq (internal) windows open
Noise Sources	25dB(A),Leq (internal) 35dB(A),L1 (internal)

The report provides detailed construction recommendations that would achieve the above internal noise criteria. However, the recommendations were specific to the building proposed under the previous DA2015 – 230 and are not able to be directly applied to this proposal.

A condition is recommended requiring certification from an appropriately qualified acoustic consultant that the plans submitted with the application for a Construction Certificate will achieve the relevant noise criteria.

Condition also recommended to restrict construction to standard construction hours.

Bushfire

The site is not identified as being bushfire prone.

Safety, security and crime prevention

The proposed development will be unlikely to create any concealment/entrapment areas or crime spots that would result in any identifiable loss of safety or reduction of security in the immediate area. The increase in housing density will improve natural surveillance within the locality and openings from each dwelling overlook common and private areas.



AGENDA

ORDINARY COUNCIL
20/02/2019YOUR NATURAL AND
BUILT ENVIRONMENT**Social impacts in the locality**

Given the nature of the proposed development and its location the proposal is unlikely to result in any adverse social impacts. The site is located in proximity to the types of goods and services that are likely to be needed by future residents of the seniors housing. A public transport route is available in proximity to the site, which provides access to higher order services in Port Macquarie.

The provision of additional housing for seniors in an accessible location is considered to be of social benefit.

Economic impact in the locality

No adverse impacts. A likely positive impact is that the development will maintain employment in the construction industry, which will lead to flow impacts such as expenditure in the area.

Site design and internal design

The proposed development design satisfactorily responds to the site attributes and will fit into the locality. No adverse impacts likely.

Construction

No potential adverse impacts identified to neighbouring properties with the construction of the proposal.

Cumulative Impacts

The proposed development is not expected to have any adverse cumulative impacts on the natural or built environment or the social and economic attributes of the locality.

(c) The suitability of the site for the development:

The proposal will fit into the locality and the site attributes are conducive to the proposed development. Site constraints have been adequately addressed and appropriate conditions of consent recommended.

(d) Any submissions made in accordance with this Act or the Regulations:

One written submission has been received following public exhibition of the application.

Key issues raised in the submission received and comments in response to these issues are provided as follows:



Item 12.14

Page 244

Item 12.11
Attachment 1

Page 526

AGENDA

ORDINARY COUNCIL
20/02/2019

Submission Issue/Summary	Planning Comment/Response
The development will further block existing surface water runoff from No. 22 Hastings Street, causing stormwater impacts on adjoining properties.	See comments earlier under Stormwater. The design is required to make provision for the natural flow of stormwater runoff from uphill/upstream properties/lands. The design must include the collection of such waters and discharge to the Council drainage system. The Stormwater Drainage Strategy prepared by Hopkins Consultants makes provision for an ultimate interallotment drainage system serving adjoining properties to the west of the site (including No. 22 Hastings Street). The strategy relies upon construction of parts of the system by the relevant property owners. There is no nexus to require the developer to carry out construction of the full interallotment drainage system for the benefit of these properties. However, the system will need to have the necessary capacity, and include creation of the required easements to allow for future connection by upstream properties.

(e) The Public Interest:

The proposed development satisfies relevant planning controls and is unlikely to impact on the wider public interest.

4. DEVELOPMENT CONTRIBUTIONS APPLICABLE

- Development contributions will be required towards augmentation of town water supply and sewerage system head works under Section 64 of the Local Government Act 1993.
- Development contributions will be required under Section 94 of the Environmental Planning and Assessment Act 1979 towards roads, open space, community cultural services, emergency services and administration buildings.

5. CONCLUSION AND STATEMENT OF REASON

The application has been assessed in accordance with Section 4.15 of the Environmental Planning and Assessment Act 1979.

Issues raised during assessment and public exhibition of the application have been considered in the assessment of the application. Where relevant, conditions have been recommended to manage the impacts attributed to these issues.

YOUR NATURAL AND
BUILT ENVIRONMENTItem 12.14
Page 245Item 12.11
Attachment 1
Page 527

AGENDA

ORDINARY COUNCIL
20/02/2019

The site is considered suitable for the proposed development and the proposal adequately addresses relevant planning controls. The development is not considered to be contrary to the public's interest and will not result a significant adverse social, environmental or economic impact. It is recommended that the application be approved, subject to the recommended conditions of consent provided in the attachment section of this report.

Attachments

1[View](#). DA2018- 562.1 Recommended Conditions

2[View](#). DA2018 - 562.1 DA Plans

YOUR NATURAL AND
BUILT ENVIRONMENT

Item 12.14

Page 246

Item 12.11
Attachment 1

Page 528

**FOR USE BY PLANNERS/SURVEYORS TO PREPARE LIST OF
PROPOSED CONDITIONS - 2011****NOTE: THESE ARE DRAFT ONLY****DA NO: 2018/562****DATE: 11/12/2018****PRESCRIBED CONDITIONS**

The development is to be undertaken in accordance with the prescribed conditions of Part 6 - Division 8A of the *Environmental Planning & Assessment Regulations* 2000.

A – GENERAL MATTERS

- (1) (A001) The development is to be carried out in accordance with the plans and supporting documents set out in the following table, as stamped and returned with this consent, except where modified by any conditions of this consent.

Plan / Supporting Document	Reference	Prepared by	Date
Plans	1719 Drawing No: 01 – 09 Rev A	Craig Teasdell Architect	25 July 2018
Deep Soil Diagram	1719 Drawing No: 10 Rev B	Craig Teasdell Architect	8 October 2018
Stormwater and Subdivision Plans	7265-0002, 003 and 004 Rev A	Hopkins Consultants	18 July 2018
BASIX Certificate	946465M_02	Concept Designs Australia	27 July 2018
Statement of Environmental Effects	-	Gern Planning Projects	July 2018
Noise Impact Assessment	15-1889-R1	Reverb Acoustics	June 2015

In the event of any inconsistency between conditions of this development consent and the plans/supporting documents referred to above, the conditions of this development consent prevail.

- (2) (A002) No work shall commence until a Construction Certificate has been issued and the applicant has notified Council of:
- the appointment of a Principal Certifying Authority; and
 - the date on which work will commence.
- Such notice shall include details of the Principal Certifying Authority and must be submitted to Council at least two (2) days before work commences.
- (3) (A004) An application for a Construction Certificate will be required to be lodged with Council prior to undertaking subdivision works and a Subdivision Certificate is required to be lodged with Council on completion of works.
- (4) (A008) Any necessary alterations to, or relocations of, public utility services to be carried out at no cost to council and in accordance with the requirements of

the relevant authority including the provision of easements over existing and proposed public infrastructure.

- (5) (A009) The development site is to be managed for the entirety of work in the following manner:
1. Erosion and sediment controls are to be implemented to prevent sediment from leaving the site. The controls are to be maintained until the development is complete and the site stabilised with permanent vegetation;
 2. Appropriate dust control measures;
 3. Building equipment and materials shall be contained wholly within the site unless approval to use the road reserve has been obtained. Where work adjoins the public domain, fencing is to be in place so as to prevent public access to the site;
 4. Building waste is to be managed via an appropriate receptacle;
 5. Toilet facilities are to be provided on the work site at the rate of one toilet for every 20 persons or part of 20 persons employed at the site.
 6. Building work being limited to the following hours, unless otherwise permitted by Council;
 - Monday to Saturday from 7.00am to 6.00pm
 - No work to be carried out on Sunday or public holidays
 The builder to be responsible to instruct and control his sub-contractors regarding the hours of work.
- (6) (A011) The design and construction of all public infrastructure works shall be in accordance with Council's adopted AUSPEC Specifications.
- (7) (A030) The restoration of any vehicle access rendered redundant by the development, to standard kerb and footpath formation at no cost to Council, in accordance with Council's current AUSPEC Specifications and Standards. All works must be approved by Council pursuant to Section 138 of the Roads Act.
- (8) (A032) The developer is responsible for any costs relating to minor alterations and extensions to ensure satisfactory transitions of existing roads, drainage and Council services for the purposes of the development.
- (9) (A033) The applicant shall provide security to the Council for the payment of the cost of the following:
- a. making good any damage caused to any property of the Council as a consequence of doing anything to which the consent relates,
 - b. completing any public work (such as road work, kerbing and guttering, footway construction, utility services, stormwater drainage and environmental controls) required in connection with the consent,
 - c. remedying any defects in any such public work that arise within twelve (12) months after the work is completed.

Such security is to be provided to Council prior to the issue of the Subdivision Certificate/Construction Certificate or Section 138 of the Roads Act, 1993.

The security is to be for such reasonable amount as is determined by the consent authority, being an amount that is 10% of the contracted works for Torrens Title subdivision development/the estimated cost plus 30% for building development of public works or \$5000, whichever is the greater of carrying out the development by way of:

- i. deposit with the Council, or

ii. an unconditional bank guarantee in favour of the Council.

The security may be used to meet any costs referred to above and on application being made to the Council by the person who provided the security any balance remaining is to be refunded to, or at the direction of, that person. Should Council have to call up the bond and the repair costs exceed the bond amount, a separate invoice will be issued. If no application is made to the Council for a refund of any balance remaining of the security within 6 years after the work to which the security relates has been completed the Council may pay the balance to the Chief Commissioner of State Revenue under the Undaunted Money Act 1995.

- (10) (A057) The applicant is to ensure the proposed development will drain to the existing point of connection to Council's sewerage system.

B – PRIOR TO ISSUE OF A CONSTRUCTION CERTIFICATE

- (1) (B001) Prior to release of the Construction Certificate, approval pursuant to Section 68 of the Local Government Act, 1993 to carry out water supply, stormwater and sewerage works is to be obtained from Port Macquarie-Hastings Council. The following is to be clearly illustrated on the site plan to accompany the application for Section 68 approval:
- Position and depth of the sewer (including junction)
 - Stormwater drainage termination point
 - Easements
 - Water main
 - Proposed water meter location
- (2) (B003) Submission to the Principal Certifying Authority prior to the issue of a Construction Certificate detailed design plans for the following works associated with the developments. Public infrastructure works shall be constructed in accordance with Port Macquarie-Hastings Council's current AUSPEC specifications and design plans are to be accompanied by AUSPEC DQS:
1. Public parking areas including:
 - a. Driveways and access aisles;
 - b. Parking bays;
 - c. Delivery vehicle service bays & turning areas in accordance with AS2890.
 2. Sewerage reticulation.
 3. Water supply plans shall include hydraulic plans for internal water supply services and associated works in accordance with AS 3500, Plumbing Code of Australia and Port Macquarie-Hastings Council Policies.
 4. Stormwater systems.
 5. Erosion & Sedimentation controls.
 6. Location of all existing and proposed utility services including:
 - a. Conduits for electricity supply and communication services (including fibre optic cable).
 - b. Water supply
 - c. Sewerage
 - d. Stormwater
 7. Provision of a 1.5m (unless varied in writing by Council) concrete footpath across the full road frontage of the property.

- (3) (B006) An application pursuant to Section 138 of the Roads Act, 1993 to carry out works required by the Development Consent on or within public road is to be submitted to and obtained from Port Macquarie-Hastings Council prior to release of the Construction Certificate.

Such works include, but not be limited to:

- Civil works
- Traffic management
- Work zone areas
- Hoardings
- Concrete foot paving

- (4) (B009) The applicant shall surrender the consent relating to DA No. DA2015 - 230 for Demolition of Dwellings, Lot Consolidation, Boundary Adjustment, Construction of Residential Flat Building for the Purpose of Seniors Housing and Construction of Commercial Premises at 15 - 27 Cameron Street, 28 - 30 Hastings Street, and Young Street, Wauchope by submitting an application for "Surrender of a Consent" to Council in accordance with the Environmental Planning and Assessment Regulation 2000, prior to release of the Construction Certificate.

- (5) (B010) Payment to Council, prior to the issue of the Construction Certificate of the Section 94 contributions set out in the "Notice of Payment – Developer Charges" schedule attached to this consent unless deferral of payment of contributions has been approved by Council. The contributions are levied, pursuant to the Environmental Planning and Assessment Act 1979 as amended, and in accordance with the provisions of the following plans:

- Port Macquarie-Hastings Administration Building Contributions Plan 2007
- Hastings S94 Administration Levy Contributions Plan
- Port Macquarie-Hastings Contributions Plan 1993 - Part C – Car Parking
- Port Macquarie-Hastings Open Space Contributions Plan 2018
- Hastings S94 Major Roads Contributions Plan
- Port Macquarie-Hastings Community Cultural and Emergency Services Contributions Plan 2005

The plans may be viewed during office hours at the Council Chambers located on the corner of Burrawan and Lord Streets, Port Macquarie, 9 Laurie Street, Laurieton, and High Street, Wauchope.

The attached "Notice of Payment" is valid for the period specified on the Notice only. The contribution amounts shown on the Notice are subject to adjustment in accordance with CPI increases adjusted quarterly and the provisions of the relevant plans. Payments can only be made using a current "Notice of Payment" form. Where a new Notice of Payment form is required, an application in writing together with the current Notice of Payment application fee is to be submitted to Council.

- (6) (B011) As part of Notice of Requirements by Port Macquarie-Hastings Council as the Water Authority under Section 306 of the Water Management Act 2000, the payment of a cash contribution, prior to the issue of a Construction Certificate, of the Section 64 contributions, as set out in the "Notice of Payment – Developer Charges" schedule attached to this consent unless deferral of payment of contributions has been approved by Council. The contributions are levied in accordance with the provisions of the relevant Section 64 Development Servicing Plan towards the following:

- augmentation of the town water supply headworks
 - augmentation of the town sewerage system headworks
- (7) (B024) Submission to Council of an application for water meter hire, which is to be referred to the Water Supply section so that a quotation for the installation can be prepared and paid for prior to the issue of a Construction Certificate. This application is also to include an application for the disconnection of any existing service not required.
- (8) (B038) Footings and/or concrete slabs of buildings adjacent to sewer lines or stormwater easements are to be designed so that no loads are imposed on the infrastructure. Detailed drawings and specifications prepared by a practising chartered professional civil and/or structural engineer are to be submitted to the Principal Certifying Authority with the application for the Construction Certificate.
- (9) (B048) Prior to the issue of a Construction Certificate, provision shall be made for the storage of garbage containers and containers for recyclable material in designated garbage areas. If an external area is used for the storage of putrescible material then the area shall be:
- a. Bunded with a minimum volume of the bund being capable of containing 110% of the capacity of the largest container stored, or 25% of the total storage volume, whichever is the greatest.
 - b. Provided with a hose tape connected to the water supply;
 - c. Paved with impervious material;
 - d. Graded and drained to the sewer system, and
 - e. Designed to prevent the entry rainwater.
- (10) (B072) A stormwater drainage design is to be submitted and approved by Council prior to the issue of a Construction Certificate. The design must be prepared in accordance with Council's AUSPEC Specifications and the requirements of Relevant Australian Standards and make provision for the following:
- a) The legal point of discharge for the proposed development is defined as Council's piped drainage system.

In this regard, Council's piped drainage system Cameron Street must be extended by an appropriately sized pipeline (minimum 375mm diameter) to the frontage of the site, where a kerb inlet pit (minimum 2.4m lintel) must be installed, to allow direct piped connection from the development site into the public drainage system.

The pipeline must be designed to have the capacity to convey flows that would be collected at that section of street as generated by a 20 year Average Recurrence Interval storm event.
 - b) The design is to be generally in accordance with the stormwater drainage concept plan on Drawing No 7265-0002 prepared by Hopkins Consultants and dated 18 July 2018.
 - c) All allotments must be provided with a direct point of connection to the public piped drainage system. Kerb outlets are not permitted.
 - d) The design requires the provision of interallotment drainage in accordance with AUSPEC D5
 - e) The design shall incorporate on-site stormwater detention facilities to limit site stormwater discharge to pre development flow rates for all storm events up to and including the 100 year ARI event. Note that pre

development discharge shall be calculated assuming that the site is a 'greenfield' development site as per AUSPEC requirements.

- f) The design shall include water quality controls designed to achieve the targets specified within AUSPEC D7.
 - g) Where works are staged, a plan is to be provided which demonstrates which treatment measure/s is/are to be constructed with which civil works stage. Separate plans are required for any temporary treatment (where applicable e.g. for building phase when a staged construction methodology is adopted) and ultimate design.
 - h) The design is to make provision for the natural flow of stormwater runoff from uphill/upstream properties/lands. The design must include the collection of such waters and discharge to the Council drainage system.
 - i) An inspection opening or stormwater pit must be installed inside the property, adjacent to the boundary, for all stormwater outlets.
 - j) The design shall provide details of any components of the existing stormwater drainage system servicing the site that are to be retained.
- (11) (B053) The design of the carpark and accesses is to be in accordance with Australian Standard 2890 (including AS 2890.1, AS 2890.2 and AS 2890.6). Certification of the design by a suitably qualified consultant is to be provided to the Principal Certifying Authority prior to release of the Construction Certificate.
 - (12) (B057) The existing sewer including junction and/or stormwater drainage shall be located on the site and the position and depth indicated on the plans which accompany the application for the Construction Certificate.
 - (13) (B063) Prior to release of the Construction Certificate submission of a detailed landscape plan to the Principal Certifying Authority.
 - (14) (B071) Prior to the issue of any Construction Certificate, the provision of water and sewer services to the land are to be approved by the relevant Water Authority and relevant payments received.
 - (15) (B195) Each dwelling shall be individually metered for water supply with a master meter installed at the Cameron Street road frontage. Final water service sizing will need to be determined by a hydraulic consultant to suit the domestic and commercial components of the development, as well as fire service and backflow protection requirements in accordance with AS3500. Details are to be submitted with the application for a Construction Certificate.
 - (16) (B196) Council records indicate that the development site has multiple connections to Council's sewer system. A sewer reticulation plan shall be submitted to Sewer Section for approval prior to the issue of a Construction Certificate. Redundant sewer junctions shall be capped at the main.
 - (17) (B197) Prior to the issue of a Construction Certificate, certification is to be submitted to the Principal Certifying Authority from a suitably qualified acoustic consultant that the buildings will satisfy the noise criteria in Section 5 of the Noise Impact Assessment prepared by Reverb Acoustics and dated June 2015.
 - (18) (B198) Prior to the issue of a Construction Certificate, the Applicant shall demonstrate that the internal access roads are capable of accommodating the swept path of a garbage collection vehicle in accordance with AS 2890. The western access may be widened if necessary to meet this requirement.
 - (19) (B199) Prior to release of a construction certificate, an accessibility report and certification prepared by a suitably qualified access consultant is to be

submitted confirming that the design of building satisfies the design and construction criteria contained in SEPP (Housing for Seniors or People with a Disability) 2004.

- (20) (B200) Prior to the issue of the Construction Certificate, the developer shall submit to Council written acknowledgement that:
- a) Prior to the removal of the existing buildings occurring, all lead, asbestos or Asbestos Containing Materials (ACM) in the buildings shall be removed and disposed of properly by an appropriately licensed asbestos remover; and
 - b) All landfill receipts for the disposal of all asbestos and/or ACM will be required to be submitted to Council prior to the issuing of the Occupation Certificate; and
 - c) Certification of all asbestos/lead removal work and asbestos/lead disposal will be required to be submitted to Council prior to the issue of the Occupation Certificate; and
 - d) A Clearance Certificate for all premises where asbestos/ACM was removed will be required to be submitted to Council prior to the issuing of the Occupation Certificate.

C – PRIOR TO ANY WORK COMMENCING ON SITE

- (1) (C001) A minimum of one (1) week's notice in writing of the intention to commence works on public land is required to be given to Council together with the name of the principal contractor and any major sub-contractors engaged to carry out works. Works shall only be carried out by a contractor accredited with Council.
- (2) (C013) Where a sewer manhole and Vertical Inspection Shaft exists within a property, access to the manhole/VIS shall be made available at all times. Before during and after construction, the sewer manhole/VIS must not be buried, damaged or act as a stormwater collection pit. No structures, including retaining walls, shall be erected within 1.0 metre of the sewer manhole or located so as to prevent access to the manhole.
- (3) (C195) Prior to works commencing a photographic heritage record of dwellings at numbers 15 & 21 Cameron Street is to be made and submitted to Council. In recognition of their potential heritage value it is recommended that these dwellings are preserved and relocated off site.

D – DURING WORK

- (1) (D001) Development works on public property or works to be accepted by Council as an infrastructure asset are not to proceed past the following hold points without inspection and approval by Council. Notice of required inspection must be given 24 hours prior to inspection, by contacting Council's Customer Service Centre on (02) 6581 8111. You must quote your Construction Certificate number and property description to ensure your inspection is confirmed:
 - a. at completion of installation of erosion control measures
 - b. at completion of installation of traffic management works
 - c. when trenches are open, stormwater/water/sewer pipes and conduits jointed and prior to backfilling;
 - d. prior to the pouring of concrete for sewerage works and/or works on public property;

All works at each hold point shall be certified as compliant in accordance with the requirements of AUSPEC Specifications for Provision of Public Infrastructure and any other Council approval, prior to proceeding to the next hold point.

- (2) (D003) The site is in an area known to contain rock that may contain naturally occurring asbestos (NOA). Should potential NOA be located on site notification shall be provided to Council and Workcover prior to works proceeding. No work shall recommence until a NOA management plan has been approved by Council or Workcover.
- (3) (D006) A copy of the current stamped approved construction plans must be kept on site for the duration of site works and be made available upon request to either the Principal Certifying Authority or an officer of the Council.
- (4) (D029) The demolition of any existing structure shall be carried out in accordance with Australian Standard AS 2601-1991: *The Demolition of Structures*. No demolition materials shall be burnt or buried on site. The person responsible for the demolition works shall ensure that all vehicles leaving the site carrying demolition materials have their loads covered and do not track soil or waste materials onto the road. Should the demolition works obstruct or inconvenience pedestrian or vehicular traffic on an adjoining public road or reserve, separate application shall be made to Council to enclose the public place with a hoarding fence.

Should asbestos be present, its removal shall be carried out in accordance with the National OH&S Committee – *Code of Practice for Safe Removal of Asbestos* and *Code of Practice for the Management and Control of Asbestos in Workplaces*.

For further information on asbestos handling and safe removal practices refer to the following links:

[Safely disposing of asbestos waste from your home](#)

[Fibro & Asbestos - A Renovator and Homeowner's Guide](#)

[Asbestos Awareness](#)

- (5) (D040) Wastes shall not be disposed of by burning.
- (6) (D195) Prior to the removal of the existing buildings any lead, asbestos or Asbestos Containing Materials (ACM) in the buildings shall be removed and disposed in full accordance with all current legislation, standards, codes of practice and guidelines. Please note that certification of the satisfactory removal of all lead and/or asbestos will be required to be submitted to Council, prior to the buildings being removed.

E – PRIOR TO OCCUPATION OR THE ISSUE OF SUBDIVISION CERTIFICATE

- (1) (E001) The premises shall not be occupied or used in whole or in part until an Occupation Certificate has been issued by the Principal Certifying Authority.
- (2) (E004) Evidence of the registration of the proposed consolidation and boundary adjustment shall be submitted to the Principal Certifying Authority prior to the issue of an Occupation Certificate.
- (3) (E005) Prior to the release of any bond securities held by Council for infrastructure works associated with developments, a formal written application is to be submitted to Council specifying detail of works and bond amount.

- (4) (E010) Driveways, access aisles and parking areas shall be provided with a concrete surface. Such a surface shall be on a suitable pavement, constructed and maintained in accordance with Council's Development, Design and Construction Manuals (as amended).
- (5) (E030) Vehicle ramps, driveways, turning circles and parking spaces being paved, sealed and line marked prior to occupation or the issue of the Occupation Certificate or commencement of the approved land use.
- (6) (E031) Provision of a sign at the front vehicular access point within the property, prior to occupation or the issue of the Occupation Certificate, indicating that visitor/customer parking is available on-site.
- (7) (E034) Prior to occupation or the issuing of the Occupation (Final or Interim) or Subdivision Certificate provision to the Principal Certifying Authority of documentation from Port Macquarie-Hastings Council being the local roads authority certifying that all matters required by the approval issued pursuant to Section 138 of the Roads Act have been satisfactorily completed.
- (8) (E036) Certification by a suitably qualified consultant is to be submitted to the Principal Certifying Authority (PCA) confirming that the car park and internal accesses have been constructed in accordance with Port Macquarie-Hastings Development Control Plan 2013 and Australian Standard 2890 (including AS 2890.1, AS 2890.2 and AS 2890.6) prior to occupation or issue of the Occupation Certificate.
- (9) (E038) Interallotment drainage shall be piped and centrally located within an inter-allotment drainage easement, installed in accordance with Council's current AUSPEC standards (minimum 225mm pipe diameter within a minimum 1.5m easement). Details shall be provided:
 - As part of a Construction Certificate application for subdivision works with dedication of the easement as part of any Subdivision Certificate associated with interallotment drainage.
- (10) (E040) Each onsite detention system is to be marked by a plate in a prominent position which states:

"This is an onsite detention system. It is an offence to reduce the volume of the tank or basin or interfere with any part of the structure that controls the outflow".

This plate is to be fixed into position prior to occupation or the issue of the Occupation or Subdivision Certificate.
- (11) (E046) Prior to the issue of an Occupation Certificate, a positive covenant is to be created under Section 88E of the Conveyancing Act 1919, burdening the owner(s) with the requirement to maintain the on-site stormwater detention facilities on the property.

The terms of the 88E instrument with positive covenant shall include, but not be limited to, the following:

 - a. The Proprietor of the property shall be responsible for maintaining and keeping clear all pits, pipelines, trench barriers and other structures associated with the on-site stormwater detention facilities ("OSD").
 - b. The Proprietor shall have the OSD inspected annually by a competent person.
 - c. The Council shall have the right to enter upon the land referred to above, at all reasonable times to inspect, construct, install, clean, repair and maintain in good working order all pits, pipelines, trench barriers and other structures in or upon the said land which comprise the OSD or which

convey stormwater from the said land; and recover the costs of any such works from the proprietor.

- d. The registered proprietor shall indemnify the Council and any adjoining land owners against damage to their land arising from the failure of any component of the OSD, or failure to clean, maintain and repair the OSD.

The proprietor or successor must bear all costs associated in the preparation of the subject 88E instrument. Evidence of registration with the Lands and Property Information NSW shall be submitted to and approved by the Principal Certifying Authority prior to the issue of an Occupation Certificate.

- (12) (E047) Prior to the issue of any Occupation Certificate, a positive covenant is to be created under Section 88E of the Conveyancing Act 1919, burdening the owner(s) with the requirement to ensure the ongoing maintenance of the existing overland flowpath through the site.

The terms of the 88E instrument with positive covenant are to include, but not be limited to, the following:

- a. The proprietor of the property shall be responsible for maintaining and keeping clear the overland flowpath traversing the site.
- b. The Council shall have the right to enter upon the land referred to above, at all reasonable times to inspect, construct, install, clean, repair and maintain in good working order all components or structures in or upon the said land which comprise the overland flowpath; and recover the costs of any such works from the proprietor.
- c. The registered proprietor shall indemnify the Council and any adjoining land owners against damage to their land arising from the failure of any component of the overland flowpath, or failure to clean, maintain and repair the overland flowpath.

Evidence of registration with the Lands and Property Information NSW shall be submitted to and approved by the Principal Certifying Authority prior to the issue of any Occupation Certificate.

- (13) (E048) Prior to the issue of an Occupation Certificate, a positive covenant is to be created under Section 88E of the Conveyancing Act 1919, burdening the owner(s) with the requirement to maintain the water quality control facilities within the site.

In addition, a maintenance schedule for the water quality controls must be submitted to Council for approval with the stormwater work-as executed plans. This maintenance schedule and work as executed plan shall be registered and referred to as part of the positive covenant.

The terms of the 88E instrument with positive covenant shall include, but not be limited to, the following:

- a. The Proprietor of the property shall be responsible for inspecting, maintaining and keeping clear all components of and structures associated with the stormwater quality improvement device (SQID) in accordance with the maintenance plan in order to achieve the design system performance targets.
- b. The Proprietor shall have the SQID inspected annually by a competent person.
- c. The Council shall have the right to enter upon the land referred to above, at all reasonable times to inspect, construct, install, clean, repair and maintain in good working order all components or structures in or upon the said land

which comprise the SQID and recover the costs of any such works from the proprietor.

- d. The registered proprietor shall indemnify the Council and any adjoining land owners against damage to their land arising from the failure of any component of the SQID, or failure to clean, maintain and repair the SQID.

The instrument shall be created and registered on the title of the relevant lot(s) with the Lands and Property Information (LPI) NSW. The plan and terms of the easement must be endorsed by Council through formal application prior to lodgement at the Lands and Property Information NSW. Evidence of registration shall be submitted to and approved by the Principal Certifying Authority prior to the issue of an Occupation Certificate.

- (14) (E050) Prior to Council accepting new stormwater infrastructure, a CCTV inspection of all new and modified stormwater assets must be undertaken in accordance with the Conduit Inspection Reporting Code of Australia WSA 05.

A copy of the CCTV inspection footage and inspection report prepared and certified by a suitably qualified person shall be provided to Council prior to the acceptance of works into the nominated 'into maintenance period'.

- (15) (E051) Prior to occupation or the issuing of any Occupation Certificate a Section 68 Certificate of Completion shall be obtained from Port Macquarie-Hastings Council.

- (16) (E056) A Certificate of Compliance under the provisions of Section 307 of the *Water Management Act* must be obtained prior to the issue of any occupation or subdivision certificate.

- (17) (E058) Written confirmation being provided to the Principal Certifying Authority (PCA) from any properly qualified person (eg the builder), stating that all commitments made as part of the BASIX Certificate have been completed in accordance with the certificate.

- (18) (E061) Landscaped areas being completed prior to occupation or issue of the Occupation Certificate.

- (19) (E062) Prior to occupation or the issue of any Occupation Certificate, evidence must be provided to the Principal Certifying Authority that satisfactory arrangements are in place for collection of general waste (rubbish), recycling and food and garden organics from the premises by a private waste contractor. All wastes are to be collected as separate waste streams.

- (20) (E068) Prior to the issue of a Subdivision or Occupation Certificate (whichever occurs first), evidence to the satisfaction of the Certifying Authority from the electricity and telecommunications providers that satisfactory services arrangements have been made to the lots and dwellings (including street lighting and fibre optic cabling where required).

- (21) (E076) The plan of subdivision and Section 88B instrument shall establish the following restrictions, easements and/or covenants; with Council having the benefit and having the sole authority to release, vary or modify each restriction, easement and/or covenant. Wherever possible the extent of the land affected by these covenants shall be defined by bearings and distances shown on the plan of subdivision.

- a. Easement for access and parking over Lot 3, benefitting Lot 2.

Details are to be submitted to Council prior to issue of the Subdivision Certificate.

- (22) (E079) Submission to the Principal Certifying Authority of certification by a Registered Surveyor prior to the issue of a Subdivision Certificate that all

services and domestic drainage lines are wholly contained within the respective lots and easements.

- (23) (E082) Submission of a compliance certificate accompanying Works as Executed plans with detail included as required by Council's current AUSPEC Specifications. The information is to be submitted in electronic format in accordance with Council's "CADCHECK" requirements detailing all infrastructure for Council to bring into account its assets under the provisions of AAS27. This information is to be approved by Council prior to issue of the Subdivision or Occupation Certificate. The copyright for all information supplied, shall be assigned to Council.
- (24) (E195) Prior to the issue of the Occupation Certificate, all receipts for the asbestos and/or ACM disposal at a licensed waste facility shall be submitted to Council.
- (25) (E196) Prior to release of an occupation certificate, an accessibility report and certification prepared by a suitably qualified access consultant is to be submitted confirming that the completed building satisfies the design and construction criteria contained in SEPP (Housing for Seniors or People with a Disability) 2004.
- (26) (E197) Residents are restricted to persons specified in Clause 18(1) of State Environmental Planning Policy (Housing for Seniors or People with a Disability) 2004. The application for a Subdivision Certificate shall include a restriction on proposed Lot 2 in accordance with section 88E of the Conveyancing Act 1919, limiting the use of any accommodation to which the application relates to the kinds of people referred to above.
- (27) (E198) Prior to the issue of an Occupation Certificate, certification is to be submitted to the Principal Certifying Authority from a suitably qualified acoustic consultant that the completed buildings satisfy the noise criteria in Section 5 of the Noise Impact Assessment prepared by Reverb Acoustics and dated June 2015.

F – OCCUPATION OF THE SITE

- (1) (F001) On site car parking in accordance with the approved plans to be provided in an unrestricted manner at all times during the operations of development for use by both staff and patrons of the RSL Club and residents and visitors of the seniors housing. A minimum of 15 spaces are to be provided on Lot 2 for the seniors housing, and a minimum of 101 spaces are to be provided on Lot 3 for the RSL Club.
- (2) (F003) All loading and unloading operations associated with servicing the site must be carried out within the confines of the site, at all times and must not obstruct other properties/units or the public way.
- (3) (F004) The dwellings are approved for permanent residential use and not for short term tourist and visitor accommodation.
- (4) (F036) Any exterior lighting on the site shall be designed and installed so as not to cause a nuisance or adverse impact on the amenity of the surrounding area by light overspill. The lighting shall be the minimum level of illumination necessary for safe operation and must be designed, installed and used in accordance with AS 4282 - 1997 control of the obtrusive effects of outdoor lighting. No flashing, moving or intermittent lighting is permitted on the site.



CONCEPT VIEW FROM CAMERON STREET

DEVELOPMENT APPLICATION

DRAWING LIST

01	CONTENT
02	LOCALITY PLAN
03	SITE PLAN
04	ROOF PLAN
05	NORTH + EAST ELEVATIONS
06	SOUTH + WEST ELEVATIONS
07	UNITS 1 - 6
08	UNITS 7 - 12
09	UNITS 13 - 15

NOTE TO BE READ IN CONJUNCTION WITH THE DEVELOPMENT APPLICATION DOCUMENTS PREPARED BY SEVP PLANNED PROJECTS PTY LTD

CAMERON GRANGE - SELF CONTAINED DWELLINGS
SEPP (HOUSING FOR SENIORS OR PEOPLE WITH A DISABILITY) 2004
15-21 CAMERON STREET
WALUCHOPE





2 DRAFT SUBDIVISION

LOCALITY PLAN

 <p>Ministry of Agriculture and Rural Development of the Republic of Serbia Department for the Fight Against Corruption 11000 Belgrade, Bulevar Oslobođenja 158 Tel: +381 (0)11 2604 1234 E: mrd@minpol.rs</p>	<p>Project Name: PROJECT CAMBODIA BRIDGE</p> <p>Location: 15-70 CAMBODIA STREET, PHNOM PENH</p> <p>Client: PHNOM PENH CITY</p>	<p>Project No: 1719</p> <p>Rev: A</p>
	<p>Date: 27.10.2018</p> <p>Drawing No.: 02</p>	





ATTACHMENT

ORDINARY COUNCIL
20/02/2019



NORTH BOUNDARY ELEVATION 1:100

EAST CAMERON ST ELEVATION 1:100

HOUSE

1719

05

CRAIG TEASDALE

1719

[illegible]



UNIT 5 EAST ELEVATION



UNIT 5 WEST ELEVATION



UNIT 5 NORTH ELEVATION



PROPOSED
SUBMITTER
PROJECT NAME
15-17 CAMERON STREET PALMERSTON
15-17 CAMERON STREET PALMERSTON
LOCALITY NAME
LOCALITY NAME

1719
07
A

UNIT AREA DATA

APPROX.	PER	PER
1.6 FLOOR AREA	103M ²	103M ²
1.6 GARAGE	24M ²	24M ²



CAMERON STREET UNITS



UNIT 5 SOUTH ELEVATION



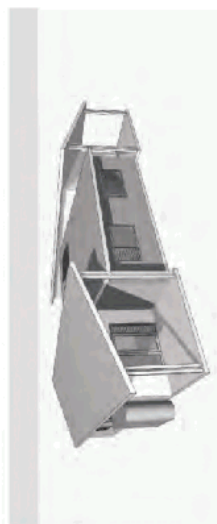
PROPOSED
SUBMITTER
PROJECT NAME
15-17 CAMERON STREET PALMERSTON
15-17 CAMERON STREET PALMERSTON
LOCALITY NAME
LOCALITY NAME

1719
07
A



PROPOSED
SUBMITTER
PROJECT NAME
15-17 CAMERON STREET PALMERSTON
15-17 CAMERON STREET PALMERSTON
LOCALITY NAME
LOCALITY NAME

1719
07
A



NORTH VIEW



U10 NORTH ELEVATION



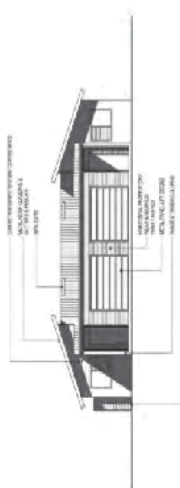
UP? EAST ELEVATION



110 WEST ELEVATION

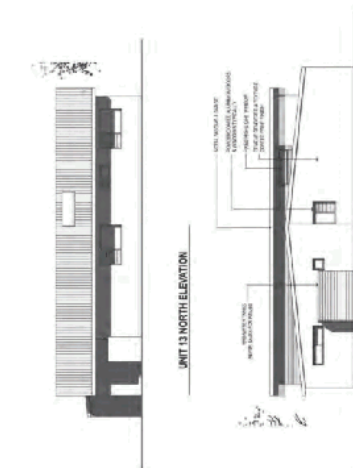


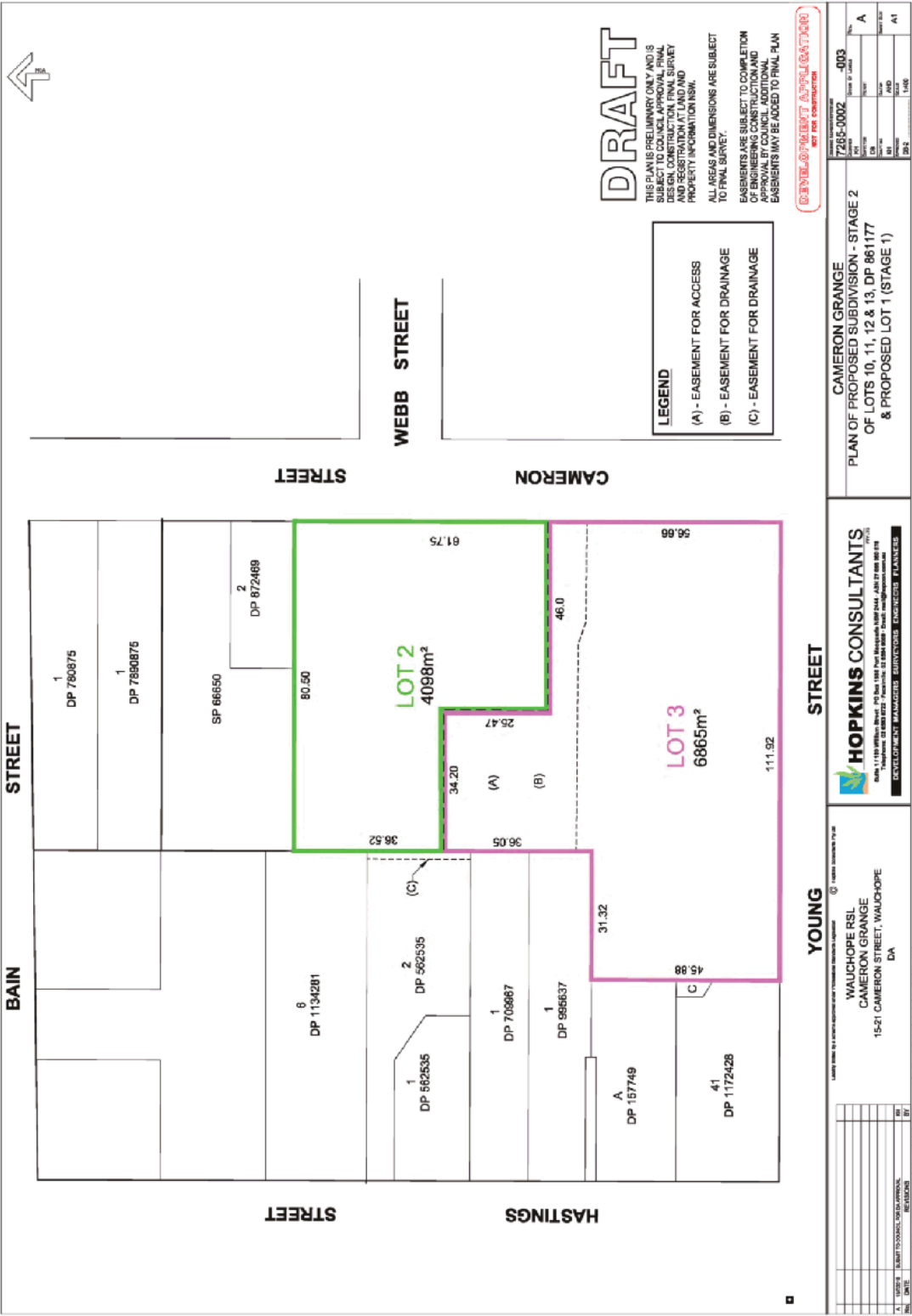
Unit Plans North



SOUTH ELEVATION







**FOR USE BY PLANNERS/SURVEYORS TO PREPARE LIST OF
PROPOSED CONDITIONS - 2011****NOTE: THESE ARE DRAFT ONLY****DA NO: 2016/1000****DATE: 19/03/2019****PRESCRIBED CONDITIONS**

The development is to be undertaken in accordance with the prescribed conditions of Part 6 - Division 8A of the *Environmental Planning & Assessment Regulations* 2000.

A – GENERAL MATTERS

- (1) (A001) The development is to be carried out in accordance with the plans and supporting documents set out in the following table, as stamped and returned with this consent, except where modified by any conditions of this consent.

Plan / Supporting Document	Reference	Prepared by	Date
Plans	D3514 Sheet 1, 3 and 4 Issue E	Collins W Collins Pty Ltd	20 June 2017
Ground Floor Plan	D3514 Sheet 2 Issue G	Collins W Collins Pty Ltd	9 March 2018
Statement of Environmental Effects	-	David Pensini Building Certification and Environmental Services	December 2016
BASIX Certificate	790256S	Collins W Collins Pty Ltd	24 January 2017
Noise Impact Assessment	M18859.01	Matrix Thornton	20 December 2018
Construction Noise Assessment	M18859.02	Matrix Thornton	20 December 2018
Odour Impact Assessment	Q2148-01 Version 2.2	The Odour Unit (QLD) Pty Ltd	March 2018

In the event of any inconsistency between conditions of this development consent and the plans/supporting documents referred to above, the conditions of this development consent prevail.

- (2) (A002) No work shall commence until a Construction Certificate has been issued and the applicant has notified Council of:
- the appointment of a Principal Certifying Authority; and
 - the date on which work will commence.

Such notice shall include details of the Principal Certifying Authority and must be submitted to Council at least two (2) days before work commences.

- (3) (A008) Any necessary alterations to, or relocations of, public utility services to be carried out at no cost to council and in accordance with the requirements of the relevant authority including the provision of easements over existing and proposed public infrastructure.
- (4) (A009) The development site is to be managed for the entirety of work in the following manner:
1. Erosion and sediment controls are to be implemented to prevent sediment from leaving the site. The controls are to be maintained until the development is complete and the site stabilised with permanent vegetation;
 2. Appropriate dust control measures;
 3. Building equipment and materials shall be contained wholly within the site unless approval to use the road reserve has been obtained. Where work adjoins the public domain, fencing is to be in place so as to prevent public access to the site;
 4. Building waste is to be managed via an appropriate receptacle;
 5. Toilet facilities are to be provided on the work site at the rate of one toilet for every 20 persons or part of 20 persons employed at the site.
 6. Building work being limited to the following hours, unless otherwise permitted by Council;
 - Monday to Saturday from 7.00am to 6.00pm
 - No work to be carried out on Sunday or public holidaysThe builder to be responsible to instruct and control his sub-contractors regarding the hours of work.
- (5) (A011) The design and construction of all public infrastructure works shall be in accordance with Council's adopted AUSPEC Specifications.
- (6) (A013) The general terms of approval from the following authorities, as referred to in section 4.50 of the Environmental Planning and Assessment Act 1979, and referenced below, are attached and form part of the consent conditions for this approval.
- **NSW Environment Protection Authority** - The General Terms of Approval, Reference 1575672 and dated 6 February 2019, as modified by Notice No. 1577388 and dated 15 March 2019 are attached and form part of this consent.
- (7) (A017) A separate development application for any proposed advertising signs (other than signs which are exempt development or approved under this consent) must be submitted to and approved by council prior to the erection or display of any such signs.
- (8) (A032) The developer is responsible for any costs relating to minor alterations and extensions to ensure satisfactory transitions of existing roads, drainage and Council services for the purposes of the development.
- (9) (A033) The applicant shall provide security to the Council for the payment of the cost of the following:
- a. making good any damage caused to any property of the Council as a consequence of doing anything to which the consent relates,
 - b. completing any public work (such as road work, kerbing and guttering, footway construction, utility services, stormwater drainage and environmental controls) required in connection with the consent,

- c. remedying any defects in any such public work that arise within twelve (12) months after the work is completed.

Such security is to be provided to Council prior to the issue of the Subdivision Certificate/Construction Certificate or Section 138 of the Roads Act, 1993.

The security is to be for such reasonable amount as is determined by the consent authority, being an amount that is 10% of the contracted works for Torrens Title subdivision development/the estimated cost plus 30% for building development of public works or \$5000, whichever is the greater of carrying out the development by way of:

- i. deposit with the Council, or
- ii. an unconditional bank guarantee in favour of the Council.

The security may be used to meet any costs referred to above and on application being made to the Council by the person who provided the security any balance remaining is to be refunded to, or at the direction of, that person. Should Council have to call up the bond and the repair costs exceed the bond amount, a separate invoice will be issued. If no application is made to the Council for a refund of any balance remaining of the security within 6 years after the work to which the security relates has been completed the Council may pay the balance to the Chief Commissioner of State Revenue under the Unclaimed Money Act 1995.

- (10) (A062) The applicant shall submit to Port Macquarie-Hastings Council plans for the management of trade waste including pre-treatment facilities to the sewerage authority for approval pursuant to Section 68 of the Local Government Act. Upon approval the proponent shall enter into a written "Trade Waste Agreement" with Council prior to discharging wastes.
- (11) (A070) The existing tree marked on the approved plan shall be removed.

B – PRIOR TO ISSUE OF A CONSTRUCTION CERTIFICATE

- (1) (B001) Prior to release of the Construction Certificate, approval pursuant to Section 68 of the Local Government Act, 1993 to carry out water supply, stormwater and sewerage works is to be obtained from Port Macquarie-Hastings Council. The following is to be clearly illustrated on the site plan to accompany the application for Section 68 approval:
 - Position and depth of the sewer (including junction)
 - Stormwater drainage termination point
 - Easements
 - Water main
 - Proposed water meter location
- (2) (B003) Submission to the Principal Certifying Authority prior to the issue of a Construction Certificate detailed design plans for the following works associated with the developments. Public infrastructure works shall be constructed in accordance with Port Macquarie-Hastings Council's current AUSPEC specifications and design plans are to be accompanied by AUSPEC DQS:
 - 1. Public parking areas including;
 - a. Driveways and access aisles;
 - b. Parking bays;
 - c. Delivery vehicle service bays & turning areas in accordance with AS2890.
 - 2. Sewerage reticulation.

3. Water supply plans shall include hydraulic plans for internal water supply services and associated works in accordance with AS 3500, Plumbing Code of Australia and Port Macquarie-Hastings Council Policies.
 4. Stormwater systems.
 5. Location of all existing and proposed utility services including:
 - a. Conduits for electricity supply and communication services (including fibre optic cable).
 - b. Water supply
 - c. Sewerage
 - d. Stormwater
 6. Detailed driveway profile in accordance with Australian Standard 2890, AUSPEC D1, and ASD202 and ASD207, Port Macquarie-Hastings Council current version.
- (3) (B006) An application pursuant to Section 138 of the Roads Act, 1993 to carry out works required by the Development Consent on or within public road is to be submitted to and obtained from Port Macquarie-Hastings Council prior to release of the Construction Certificate.
- Such works include, but not be limited to:
- Civil works
 - Traffic management
 - Work zone areas
 - Hoardings
 - Footway and gutter crossing
 - Functional vehicular access
- (4) (B010) Payment to Council, prior to the issue of the Construction Certificate of the Section 7.11 contributions set out in the "Notice of Payment – Developer Charges" schedule attached to this consent unless deferral of payment of contributions has been approved by Council. The contributions are levied, pursuant to the Environmental Planning and Assessment Act 1979 as amended, and in accordance with the provisions of the following plans:
- Port Macquarie-Hastings Administration Building Contributions Plan 2007
 - Hastings S94 Administration Levy Contributions Plan
 - Port Macquarie-Hastings Open Space Contributions Plan 2018
 - Hastings S94 Major Roads Contributions Plan
 - Port Macquarie-Hastings Community Cultural and Emergency Services Contributions Plan 2005

The plans may be viewed during office hours at the Council Chambers located on the corner of Burrawan and Lord Streets, Port Macquarie, 9 Laurie Street, Laurieton, and High Street, Wauchope.

The attached "Notice of Payment" is valid for the period specified on the Notice only. The contribution amounts shown on the Notice are subject to adjustment in accordance with CPI increases adjusted quarterly and the provisions of the relevant plans. Payments can only be made using a current "Notice of Payment" form. Where a new Notice of Payment form is required, an application in writing together with the current Notice of Payment application fee is to be submitted to Council.

- (5) (B011) As part of Notice of Requirements by Port Macquarie-Hastings Council as the Water Authority under Section 306 of the Water Management Act 2000, the payment of a cash contribution, prior to the issue of a Construction Certificate, of the Section 64 contributions, as set out in the "Notice of Payment – Developer Charges" schedule attached to this consent unless deferral of payment of contributions has been approved by Council. The contributions are levied in accordance with the provisions of the relevant Section 64 Development Servicing Plan towards the following:
- augmentation of the town water supply headworks
 - augmentation of the town sewerage system headworks
- (6) (B024) Submission to Council of an application for water meter hire, which is to be referred to the Water Supply section so that a quotation for the installation can be prepared and paid for prior to the issue of a Construction Certificate. This application is also to include an application for the disconnection of any existing service not required.
- (7) (B039) Detailed drawings and specifications prepared by a professional engineer for all retaining walls supporting:
- i. earthworks that are more than 600mm above or below ground level (existing); or
 - ii. located within 1m of the property boundaries; or
 - iii. earthworks that are more than 1m above or below ground level (existing) in any other location;
- are to be submitted to the Principal Certifying Authority with the application for Construction Certificate.
- (8) (B045) A schedule of proposed fire safety measures is to be submitted to the Principal Certifying Authority with the application for the Construction Certificate.
- (9) (B046) The caretaker's residence shall be designed and constructed so as to comply with the Bush Fire Attack (BAL) 12.5 requirements of Australian Standard 3959 and the specifications and requirements of Planning for Bush Fire Protection. Details shall be submitted to the Principal Certifying Authority with the application for Construction Certificate demonstrating compliance with this requirement.
- Please note: Compliance with the requirements of Planning for Bush Fire Protection 2006 to prevail in the extent of any inconsistency with the Building Code of Australia.
- (10) (B072) A stormwater drainage design is to be submitted and approved by Council prior to the issue of a Construction Certificate. The design must be prepared in accordance with Council's AUSPEC Specifications and the requirements of Relevant Australian Standards and make provision for the following:
- a) The legal point of discharge for the proposed development is defined as Council's piped drainage system.
 - b) All allotments must be provided with a direct point of connection to the public piped drainage system. Kerb outlets are not permitted.
 - c) The design shall incorporate on-site stormwater detention facilities to limit site stormwater discharge to pre development flow rates for all storm events up to and including the 100 year ARI event. Note that pre

development discharge shall be calculated assuming that the site is a 'greenfield' development site as per AUSPEC requirements.

- d) The design shall include water quality controls designed to achieve the targets specified within AUSPEC D7.
 - e) An inspection opening or stormwater pit must be installed inside the property, adjacent to the boundary, for all stormwater outlets.
 - f) Note that the parent subdivision included a downstream stormwater detention and quality treatment train and the applicant may (by numeric analysis of this proposal compared with the subdivision design) be able to demonstrate that no or reduced detention and/or quality treatment controls are required, to the satisfaction of Council's stormwater engineer.
- (11) (B053) The design of the car park and accesses is to be in accordance with Australian Standard 2890 (including AS 2890.1, AS 2890.2 and AS 2890.6). Certification of the design by a suitably qualified consultant is to be provided to the Principal Certifying Authority prior to release of the Construction Certificate.
 - (12) (B054) A driveway longitudinal section shall accompany the section 138 application pursuant to section 138 of the *Roads Act, 1993*. The section shall demonstrate compliance with Council's adopted AUSPEC Design and Construction Guidelines.
 - (13) (B063) Prior to release of the Construction Certificate submission of a detailed landscape plan to the Principal Certifying Authority. The plan shall be amended to include a minimum 3m wide landscaped area for at least 2/3 of the site's frontage to King Creek Road.
 - (14) (B071) Prior to the issue of any Construction Certificate, the provision of water and sewer services to the land are to be approved by the relevant Water Authority and relevant payments received.
 - (15) (B195) Prior to the issue of the Construction Certificate the Principal Certifying Authority shall be provided with certification from a suitably qualified and practising consultant shall determine that the effective volume of the bunded area inside the building is a minimum 110% of the largest container proposed to be installed inside the building, allowing for the reduction in the effective volume due to the cumulative volume of all stored containers including future proposed containers. Refer to the EPA Guideline "Storing and Handling Liquids: Environmental Protection Participant's Manual" May 2007.
 - (16) (B196) Final water service sizing will need to be determined by a hydraulic consultant to suit the domestic and commercial components of the development, as well as fire service and backflow protection requirements. Details are to be submitted with the engineering plans prior to the issue of a Construction Certificate.
 - (17) (B197) The proponent is required to install and maintain a flow-meter on the discharge outlet to Council's sewer system. Details are to be submitted with the engineering plans prior to the issue of a Construction Certificate.
 - (18) (B198) Prior to the issue of a Construction Certificate, amended plans are to be submitted to the Principal Certifying Authority, demonstrating that a minimum 5m vertical clearance has been provided for the loading dock roller door.
 - (19) (B199) Prior to the issue of a Construction Certificate, the Principal Certifying Authority is to be provided with evidence that the developer has made satisfactory arrangements with Council for the provision of two (2) Koala food trees in a suitable off site location.

C – PRIOR TO ANY WORK COMMENCING ON SITE

- (1) (C001) A minimum of one (1) weeks' notice in writing of the intention to commence works on public land is required to be given to Council together with the name of the principal contractor and any major sub-contractors engaged to carry out works. Works shall only be carried out by a contractor accredited with Council.
- (2) (C015) Tree protection fencing, compliant with *AS 4970/2009 Protection of trees on development sites* must be provided. The fencing shall be in place prior to the commencement of any works or soil disturbance and maintained for the entirety of the works.

D – DURING WORK

- (1) (D001) Development works on public property or works to be accepted by Council as an infrastructure asset are not to proceed past the following hold points without inspection and approval by Council. Notice of required inspection must be given 24 hours prior to inspection, by contacting Council's Customer Service Centre on (02) 6581 8111. You must quote your Construction Certificate number and property description to ensure your inspection is confirmed:
 - a. at completion of installation of erosion control measures
 - b. at completion of installation of traffic management works
 - c. when trenches are open, stormwater/water/sewer pipes and conduits jointed and prior to backfilling;
 - d. prior to the pouring of concrete for sewerage works and/or works on public property;

All works at each hold point shall be certified as compliant in accordance with the requirements of AUSPEC Specifications for Provision of Public Infrastructure and any other Council approval, prior to proceeding to the next hold point.

- (2) (D003) The site is in an area known to contain rock that may contain naturally occurring asbestos (NOA). Should potential NOA be located on site notification shall be provided to Council and Workcover prior to works proceeding. No work shall recommence until a NOA management plan has been approved by Council or Workcover.
- (3) (D006) A copy of the current stamped approved construction plans must be kept on site for the duration of site works and be made available upon request to either the Principal Certifying Authority or an officer of the Council.
- (4) (D042) The washing of equipment and/or the disposal of building materials, including cement slurry, shall not occur within the drip line of any tree that has been nominated for retention on the site or adjacent land.
- (5) (D043) Any damage to a tree nominated for retention/protection during the construction phase shall be treated by an Arborist with a minimum qualification AQF level 5 (diploma level) or an international qualification considered equivalent by Council, or a person deemed suitable by Council at the developer's expense.
- (6) (D045) A suitably qualified ecological consultant shall inspect all native trees that have been approved for removal before they are felled. If there are any koala or other fauna species in the tree, work in the vicinity is to cease until the animal has moved from the area. If it is likely that hollows are providing

habitat for native species, traps shall be set for several nights and any native species found shall be relocated to an appropriate nearby location.

- (7) (D050) The capacity and effectiveness of tree protection fencing, compliant with *AS 4970/2009 Protection of trees on development sites* shall be maintained at all times in accordance with the approved management plan until such time as the site is no longer subject to any construction or earth moving works.

E – PRIOR TO OCCUPATION OR THE ISSUE OF OCCUPATION CERTIFICATE

- (1) (E001) The premises shall not be occupied or used in whole or in part until an Occupation Certificate has been issued by the Principal Certifying Authority.
- (2) (E005) Prior to the release of any bond securities held by Council for infrastructure works associated with developments, a formal written application is to be submitted to Council specifying detail of works and bond amount.
- (3) (E007) The owner/applicant is responsible for ensuring that any imported fill is either Virgin Excavated Natural Material (VENM) or Excavated Natural Material (ENM). Prior to the issue of an Occupation Certificate, certification is to be provided to Council demonstrating that the fill is either VENM or ENM.
- (4) (E010) Driveways, access aisles and parking areas shall be provided with a concrete surface. Such a surface shall be on a suitable pavement, constructed and maintained in accordance with Council's Development, Design and Construction Manuals (as amended).
- (5) (E030) Vehicle ramps, driveways, turning circles and parking spaces being paved, sealed and line marked prior to occupation or the issue of the Occupation Certificate or commencement of the approved land use.
- (6) (E034) Prior to occupation or the issuing of the Final Occupation Certificate provision to the Principal Certifying Authority of documentation from Port Macquarie-Hastings Council being the local roads authority certifying that all matters required by the approval issued pursuant to Section 138 of the Roads Act have been satisfactorily completed.
- (7) (E036) Certification by a suitably qualified consultant is to be submitted to the Principal Certifying Authority (PCA) confirming that the car park and internal accesses have been constructed in accordance with Port Macquarie-Hastings Development Control Plan 2013 and Australian Standard 2890 (including AS 2890.1, AS 2890.2 and AS 2890.6) prior to occupation or issue of the Occupation Certificate.
- (8) (E051) Prior to occupation or the issuing of any Occupation Certificate a section 68 Certificate of Completion shall be obtained from Port Macquarie-Hastings Council.
- (9) (E056) A Certificate of Compliance under the provisions of Section 307 of the *Water Management Act* must be obtained prior to the issue of any occupation or subdivision certificate.
- (10) (E058) Written confirmation being provided to the Principal Certifying Authority (PCA) from any properly qualified person (eg the builder), stating that all commitments made as part of the BASIX Certificate have been completed in accordance with the certificate.
- (11) (E061) Landscaped areas being completed prior to occupation or issue of the Occupation Certificate.
- (12) (E066) Ancillary works shall be undertaken at no cost to Council to make the engineering works required by this Consent effective to the satisfaction of

Director of Council's Infrastructure Division. Such works shall include, but are not limited to the following:

- a. The relocation of underground services where required by civil works being carried out.
 - b. The relocation of above ground power and telephone services
 - c. The relocation of street lighting
 - d. The matching of new infrastructure into existing or future design infrastructure
- (13) (E195) Prior to the issue of an Occupation Certificate, the external door to the delivery dock is to be fitted with an appropriate seal to prevent the escape of odours, or provide for an air lock.
- (14) (E196) Prior to the issue of an Occupation Certificate, the internal door between the processing area and the bioreactor area is to be self-closing and fitted with an appropriate seal to prevent the escape of odours, or provide for an air lock.
- (15) (E197) Prior to the issue of an Occupation Certificate, the developer is to obtain an Environment Protection Licence from the NSW Environment Protection Authority.
- (16) (E198) Prior to the issue of an Occupation Certificate, a forced ventilation system shall be designed by a suitably qualified and practising consultant and installed in the facility in accordance with relevant NSW EPA requirements and/or Guidelines, any relevant Australian Standards and the Odour Impact Assessment" prepared by The Odour Unit (Qld) Pty Ltd dated March 2018:
- a) The suitably qualified and practising consultant shall certify that the system is fit for purpose and has been installed properly; and
 - b) The suitably qualified and practising consultant shall make suitable recommendations regarding maintenance and testing of the system; and
 - c) The suitably qualified and practising consultant shall submit the documents required by points a) and b) above to council within forty (40) days of the system being installed in the facility.

F – OCCUPATION OF THE SITE

- (1) (F001) On site car parking in accordance with the approved plans to be provided in an unrestricted manner at all times during the operations of development for use by both staff and patrons. A total of 11 spaces are to be provided onsite.
- (2) (F004) The caretaker's residence is approved for permanent residential use and not for short term tourist and visitor accommodation. The residential use must remain ancillary to the approved use at all times.
- (3) (F009) All new and existing essential fire safety measures shall be maintained in working condition at all times.
- (4) (F010) Within each 12 months after completion of the building, the owner of the building must cause Council to be given an annual fire safety statement in accordance with Clause 177 of the Environmental Planning and Assessment Regulation 2000 for each measure listed in the schedule. The statement must only be in the form specified by clause 181 of the Regulation. A copy of the statement is to be given to the Commissioner of the New South Wales Fire Brigade and a copy is to be prominently displayed in the building.

- (5) (F013) All garbage areas are to be screened from the street, create no adverse odour impact on adjoining properties and be kept free of pests at all times.
- (6) (F015) All work, maintenance and testing of transport vehicles, liquid wastewater treatment plant and equipment shall be carried out within the building.
- (7) (F016) Offensive odours shall not be generated by the development, including the process of liquid wastewater treatment.
- (8) (F020) Liquid materials, including liquid wastewater are to be stored in roofed and imperviously bund area. The bund shall be capable of containing 110% of the capacity of the largest container stored, or 25% of the total storage volume, whichever is greatest.
- (9) (F021) All solid waste generated by the development which cannot be reused or recycled, shall be disposed of at Council's waste management facilities.
- (10) (F023) Spills and contaminated runoff from the delivery dock and processing area where necessary should be prevented from entering the stormwater system. In this regard, adequate spill containment equipment should be maintained on site at all times.
- (11) (F024) Offensive noise as defined under the Protection of the Environment Operations Act 1997, shall not be generated as a result of the operation of the development.
- (12) (F195) The liquid wastewater treatment facility shall be properly operated and maintained in accordance with industry best practice; any relevant legislation and/or Australian Standards, and Environment Protection Licence (EPL).
- (13) (F196) All wastewater loading and unloading activities shall be undertaken within the designated delivery dock with the access roller door and other doors closed at all times during loading and unloading activities. Delivery vehicles are to remain within the delivery dock for a sufficient period to allow all odorous air to be mechanically extracted prior to the roller door being opened and the delivery vehicle exiting the building.
- (14) (F197) Sludge and/or solid waste from the liquid wastewater treatment process shall be reused and/or disposed of properly in accordance with any relevant legislation or standards.
- (15) (F198) The delivery of wastewater to the facility shall be carried out between 10.00am and 3.00pm Monday to Friday.
- (16) (F199) The facility must not receive more than 10,000 litres of liquid waste per week.
- (17) (F200) The amount of sewage discharged into Council's sewer system shall not exceed 520 kilolitres per year. Discharge rates are to be monitored via a flow-meter on the discharge outlet to Council's sewer system.

Protection of the Environment Operations Act 1997

General Terms of Approval - Issued



Notice No: 1575672

Port Macquarie-Hastings Council
PO Box 84
PORT MACQUARIE NSW 2444

Attention: Ms Melissa Watkins

Notice Number 1575672
Date 06-Feb-2019

**Re: Industrial building including waste management facility and caretaker's residence - 6
Enterprise Place - DA No. 2016/1000.1**

Issued pursuant to Section 4.46 Environmental Planning and Assessment Act 1979

I refer to the development application and accompanying information provided for the proposed industrial building including waste management facility and caretaker's residence (**Proposed Facility**) received by the Environment Protection Authority (EPA) on 23 March 2017 (with additional information received on 28 July 2017 (amended odour DOC17/418377), 15 March 2018 (amended odour DOC18/319210-01), 6 September 2018 (noise impact and construction noise assessment DOC18/656259) and 24 December 2018 (amended noise impact and construction noise assessment DOC19/15045).

EPA has reviewed the information provided and has determined that it is able to issue a licence for the proposal, subject to a number of conditions. The applicant will need to make a separate application to EPA to obtain this licence.

The general terms of approval for this proposal are provided at attachment A. If Port Macquarie-Hastings Council grants development consent for this proposal these conditions should be incorporated into the consent.

These general terms relate to the development as proposed in the documents and information currently provided to EPA. In the event that the development is modified either by the applicant prior to the granting of consent or as a result of the conditions proposed to be attached to the consent, it will be necessary to consult with EPA about the changes before the consent is issued. This will enable EPA to determine whether its general terms need to be modified in light of the changes.

In assessing the proposal EPA has also identified a number of environmental issues that Port Macquarie-Hastings Council may wish to consider in its overall assessment of the application. These issues are discussed in attachment B and include the following issues:

1. Noise limits for construction activities

Page 1

Protection of the Environment Operations Act 1997

General Terms of Approval - Issued



Notice No: 1575672

- 2. Hours of operation, including delivery, transfer and dispatch times
- 3. Odour limits

If you have any questions, or wish to discuss this matter further please contact Kim Stuart on (02) 6659 8292.

Yours sincerely

A handwritten signature in blue ink, appearing to read 'S. Hunter', positioned above a horizontal dotted line.

Scott Hunter

Unit Head

Waste & Resource Recovery

(by Delegation)

Protection of the Environment Operations Act 1997

General Terms of Approval - Issued



Notice No: 1575672

Administrative conditions

Note: Mandatory conditions for all general terms of approval

A1. Information supplied to the EPA

A1.1 Except as expressly provided by these general terms of approval, works and activities must be carried out in accordance with the proposal contained in:

- the development application DA No. 2016/1000.1 submitted to Port Macquarie-Hastings Council on 22 December 2016; and
- all additional documents supplied to the EPA in relation to the development, including:
 - *Information in support of a development application for the establishment and operation of a grease trap wastewater processing facility at Lot 315 DP 1075670 6 Enterprise Drive, Wauchope, David Pensini, December 2016;*
 - *Grease Trap and Oily Water Treatment Facility - Level Three Odour Impact Assessment, Final Report March 2018, The Odour Unit*
 - *Noise Impact Assessment of Proposed Grease Trap Wastewater Processing Facility for Fair Dinkum Liquid Waste, Matrix Thornton, 20 December 2018 (NIA)*
 - *Construction Noise Assessment of Proposed Grease Trap Wastewater Processing Facility for Fair Dinkum Liquid Waste, Matrix Thornton, 20 December 2018 (CNA)*

A2. Fit and Proper Person

A2.1 The applicant must, in the opinion of the EPA, be a fit and proper person to hold a licence under the Protection of the Environment Operations Act 1997, having regard to the matters in s.83 of that Act.

Limit conditions

Note: Mandatory condition

L1. Pollution of waters

L1.1 Except as may be expressly provided by a licence under the Protection of the Environment Operations Act 1997 in relation of the development, section 120 of the Protection of the Environment Operations Act 1997 must be complied with in and in connection with the carrying out of the development.

L2. Waste

Note: Mandatory conditions to be placed on all general terms of approval

L2.1 The licensee must not cause, permit or allow any waste generated outside the premises to be received at the premises for storage, treatment, processing, reprocessing or disposal or any waste generated at the premises to be disposed of at the premises, except as expressly permitted by a licence under the Protection of the Environment Operations Act 1997.

Protection of the Environment Operations Act 1997

General Terms of Approval - Issued



Notice No: 1575672

Any waste received at the premises must only be used for the activities referred to in relation to that waste in the column titled 'Activity' in the table below.

Any waste received at the premises is subject to those limits or conditions, if any, referred to in relation to that waste contained in the column titled 'Other Limits' in the table below.

Condition L2.1 does not limit any other conditions in this approval.

Code	Waste	Description	Activity	Other Limits
K110	Grease trap waste	As defined in Schedule 1 of the POEO Act, in force from time to time	Waste processing (non-thermal treatment of waste)	The total waste received must not exceed 10, 000 litres

L2.2 This condition only applies to the storage, treatment, processing, reprocessing or disposal of waste at the premises if it requires an environment protection licence under the Protection of the Environment Operations Act 1997.

Note: Condition L2.2 is included to ensure that a premises based activity is not used as a waste facility (unless that scheduled activity is permitted by another condition).

L3. Noise limits

L3.1 Noise from the premises must not exceed:

- a. For residence at 481 King Creek Road, Wauchope
 - an LAeq (15 minute) noise emission criterion of 46 dB(A) during the day (7am to 6 pm Monday to Saturday or 8 am to 6 pm on Sundays and public holidays); and
 - an LAeq (15 minute) noise emission criterion of 40 dB(A) during the evening (6pm to 10pm); and
 - at all other times, an LAeq (15 minute) noise emission criterion of 38 dB(A), except as expressly provided by these general terms of approval.
- b. For the caretaker's residence at 4 Enterprise Place, Wauchope
 - an LAeq (15 minute) noise emission criterion of 53 dB(A) during the day (7am to 6 pm Monday to Saturday or 8 am to 6 pm on Sundays and public holidays); and
 - an LAeq (15 minute) noise emission criterion of 48 dB(A) during the evening (6pm to 10pm); and
 - at all other times, an LAeq (15 minute) noise emission criterion of 43 dB(A), except as expressly provided by these general terms of approval.

L3.2 To determine compliance with the LAeq (15 minute) noise limits in conditions L3.1, the noise measurement equipment must be located:

- approximately on the property boundary, where any dwellings are situated 30 metres or less from the property boundary closest to the premises; or
- within 30 metres of a dwelling facade, but not closer than 3 metres, where any dwelling on the property is located more than 30 metres from the property boundary closest to the premises.

L3.3 The noise emission limits identified in L3.1 (a) and (b) apply for prevailing meteorological conditions (winds up to 3m/s), except under conditions of temperature inversions. Noise impacts that may be enhanced by temperature inversions must be addressed by:

Protection of the Environment Operations Act 1997

General Terms of Approval - Issued



Notice No: 1575672

- documenting noise complaints received to identify any higher level of impacts or patterns of temperature inversions;
- where levels of noise complaints indicate a higher level of impact then actions to quantify and ameliorate any enhanced impacts under temperature inversions conditions should be developed and implemented.

Note: The issue of temperature inversions is complex both in determining when they occur and how they influence noise impacts. Therefore the extent of their impact should be managed in the licence using a noise monitoring and complaints based approach. Where complaints are significant the company should be required to develop management strategies.

L3.4 During construction, all feasible and reasonable work practices in Section 6 of the *Industrial Construction Noise Guidelines* 2009 (ICNG) should be applied. These practices comprise, but are not limited to:

- Consultation and notification (Strategy 2, Table 5)
- Plant and equipment (Strategy 3, Table 6)
- On-site (Strategy 4, Table 7)
- Work scheduling (Strategy 5, Table 8)

Hours of operation

L3.5 All construction work at the premises must only be conducted between 7 am and 6 pm Mondays to Fridays, and 8 am to 1 pm Saturdays. No construction work is permitted on Sundays or public holidays without prior approval from Port Macquarie-Hastings Council and prior notification of potential affected residents.

L3.6 Receipt, transfer and removal of wastewater at or from the premises may only be carried on between 10 am and 3 pm Monday to Friday

L3.7 This condition does not apply to the delivery of material outside the hours of operation permitted by condition L3.5 or L3.6, if that delivery is required by police or other authorities for safety reasons; and/or the operation or personnel or equipment are endangered. In such circumstances, prior notification is provided to the EPA and affected residents as soon as possible, or within a reasonable period in the case of emergency.

L3.8 The hours of operation specified in conditions L3.5 and L3.6 may be varied with written consent if the EPA is satisfied that the amenity of the residents in the locality will not be adversely affected.

Operating conditions

Note: Operating conditions to be used where applicable.

O1. Activities must be carried out in a competent manner

O1.1 Licensed activities must be carried out in a competent manner.

This includes:

- a. The processing, handling, movement and storage of materials and substances used to carry out the activity; and
- b. the treatment storage, processing, reprocessing, transport and disposal of waste generated by the activity.

Protection of the Environment Operations Act 1997

General Terms of Approval - Issued



Notice No: 1575672

O1.2 All plant and equipment installed at the premises or used in connection with the licensed activity:

- a. must be maintained in a proper and efficient condition; and
- b. must be operated in a proper and efficient manner.

O2. Potentially offensive odour

O2.1 The proponent must not cause or permit the emission of offensive odour beyond the boundary of the premises

O2.2 No condition in this approval identifies a potentially offensive odour for the purposes of Section 129 of the POEO Act 1997.

Note: Section 129 of the POEO Act 1997, provides that the licensee must not cause or permit the emission of any odour from the premises but provides a defence if the emission is identified in the relevant protection license as a potentially offensive odour and the odour was emitted in accordance with the conditions of the license directed at minimising odour

O2.3 All operations and activities occurring at the premises must be carried out in a manner that prevents and minimises the emission of air pollutants from the premises.

O2.4 The premises must be maintained in a manner that prevents and minimises the emission of air pollutants

O2.5 The facility must maintain a register for odour complaints and keep a record of the actions taken to investigate each complaint and any actions taken to reduce odour emissions

O2.6 The proponent must develop and implement an air quality management plan prior to the commencement of project operations. As a minimum, the air quality management plan must include the following parts:

- Key performance indicators;
- Monitoring method(s);
- Location, frequency and duration of monitoring;
- Record keeping;
- Response mechanisms; and
- Compliance monitoring

O2.7 During the life of the project, the proponent shall ensure that there is suitable meteorological station operating on the premises

O2.8 For the purposes of air pollution control:

- all waste must be received and processed in a fully enclosed area provided with mechanical ventilation fitted with a stack; and
- all sludge tank breather pipes must be fitted with carbon filters.

Note: The POEO Act states that no offensive odour may be emitted from particular premises unless potentially offensive odours are identified in the licence and the odours are emitted in accordance with conditions specifically directed at minimising the odours are permitted. Where it is appropriate for a licence to identify and control offensive odours, conditions for the licence should be developed in consultation with Air Policy.

Protection of the Environment Operations Act 1997

General Terms of Approval - Issued



Notice No: 1575672

O3. Dust

O3.1 Activities occurring at the premises must be carried out in a manner that will minimise emissions of dust from the premises.

O3.2 Trucks entering and leaving the premises that are carrying loads must be covered at all times, except during loading and unloading.

Note: For activities that are likely to have major dust impacts (for example, coal mines and extractive industries), additional, more detailed general terms of approval may be appropriate. These may require dust control measures for traffic areas, open stockpiles, processing and loading areas, including ceasing dust generating activities during certain meteorological conditions.

O4. Stormwater/sediment control

O4.1 During Construction - An Erosion and Sediment Control Plan (ESCP) must be prepared and implemented. The plan must describe the measures that will be employed to minimise soil erosion and the discharge of sediment and other pollutants to lands and/or waters during construction activities. The ESCP should be prepared in accordance with the requirements for such plans outlined in *Managing Urban Stormwater: Soils and Construction - Volume 1: The Blue Book* (4th ed. 2004); Landcom (available from the Office of Environment & Heritage website).

Note: ESCPs are required generally for smaller sites, typically involving the disturbance of less than 2,500 square metres. SWMPs are necessary for large scale developments (greater than 2,500 square metres disturbed area).

O4.2 During Operation - Stormwater must be managed such that sediment laden water or surface pollutants (eg. spilled liquid wastes, treated wastewater, or other materials required for the operation of the facility) do not leave the premises.

O5. Emergency response

O5.1 The licensee must maintain, and implement as necessary, a current response plan for the premises. The licensee must keep the emergency response plan on the premises at all times. The emergency response plan must document systems and procedures to deal with all types of incidents (e.g. spills, explosion or fire) that may occur at the premise or may be associated with activities that occur at the premises and which are likely to cause environmental harm. If a current emergency response plan does not exist on the date on which this condition is attached to the license, the licensee must develop an emergency response plan within three months of that date.

O6. Waste management

O6.1 All liquid wastes must be stored within a suitably bunded area. Bunds on the premises must be constructed and maintained in accordance with the relevant Australian Standards.

O6.2 Waste water from activities such as vehicle wash out or tank cleaning must be disposed of at a facility that can lawfully receive the waste/s.

O6.3 Any vehicle wash out at the facility must be undertaken in a suitably bunded area.

Monitoring and recording conditions

Note: Conditions should be used where applicable (i.e. where the general terms of approval have indicated limits). If it is proposed to include monitoring conditions in the general terms of approval, condition M1 will need to be included as a general term.

Page 7

Protection of the Environment Operations Act 1997

General Terms of Approval - Issued



Notice No: 1575672

M1. Monitoring records

M1.1 The results of any monitoring required to be conducted by the EPA's general terms of approval, or a licence under the Protection of the Environment Operations Act 1997, in relation to the development or in order to comply with the load calculation protocol must be recorded and retained as set out in conditions M1.2 and M1.3.

M1.2 All records required to be kept by the licence must be:

- a. in a legible form, or in a form that can readily be reduced to a legible form;
- b. kept for at least 4 years after the monitoring or event to which they relate took place; and
- c. produced in a legible form to any authorised officer of the EPA who asks to see them.

M1.3 The following records must be kept in respect of any samples required to be collected: the date(s) on which the sample was taken;

- a. the date(s) on which the sample was taken;
- b. the time(s) at which the sample was collected;
- c. the point at which the sample was taken; and
- d. the name of the person who collected the sample.

M2. Weather monitoring

M2.1 At the point(s) identified below, the licensee must monitor (by sampling and obtaining results by analysis) the parameters specified in Column 1 of the table below, using the corresponding sampling method, units of measure, averaging period and sampling frequency, specified opposite in the columns 2, 3, 4 and 5 respectively.

Point 1

Parameter	Sampling method	Units of measure	Averaging period	Frequency
Rainfall	AM-4	Millimetres per hour	1 hour	Continuous
Sigma Theta (10 metres)	AM-2 & AM-4	Degrees	15 minutes	Continuous
Siting	AM-1	-	-	-
Wind Direction at 10 metres	AM-2 & AM-4	Degrees	15 minutes	Continuous
Wind Speed at 10 metres	AM-2 & AM-4	Metres per second	15 minutes	Continuous
Temperature at 2 metres	AM-4	Kelvin	15 minutes	Continuous

M3. Recording of pollution complaints

M3.1 The licensee must keep a legible record of all complaints made to the licensee or any employee or agent of the licensee in relation to pollution arising from any activity to which this approval applies

Protection of the Environment Operations Act 1997

General Terms of Approval - Issued



Notice No: 1575672

M3.2 the record must include details of the following:

- a. the date and time of the complaint;
- b. the method by which the complaint was made;
- c. any personal details of the complainant which were provided by the complainant or, if no such details were provided, a note to that effect;
- d. the nature of the complaint;
- e. any action taken by the licensee in relation to the complaint, including any follow-up contact with the complainant; and,
- f. if no action was taken by the licensee, the reasons why no action was taken.

M4. Telephone complaints line

M4.1 The licensee must operate during its operating hours a telephone complaints line for the purpose of receiving any complaints from members of the public in relation to activities conducted at the premises or by the vehicle or mobile plant, unless otherwise specified in this license.

M4.2 The licensee must notify the public of the complaints line telephone number and the fact that it is a complaints line so that the impacted community knows how to make a complaint

M4.3 The preceding two conditions do not apply until the premises becomes operational and after the date of the issue of the license

Reporting conditions

R1. Annual return documents

R1.1 The applicant must provide an annual return to the EPA in relation to the development as required by any license under the POEO Act 1997 in relation to the development. In the return the applicant must report on the annual monitoring undertaken (where the activity results in pollutant discharges), provide a summary of complaints relating to the development, report on compliance with license conditions and provide a calculation of license fees (administrative fees and, where relevant, load-based fees) that are payable. If load based fees apply to the activity the applicant will be required to submit load-based fee calculation worksheet with the return.

Special conditions

E1. Financial Assurance

E1.1 a financial assurance in the form of an unconditional and irrevocable and on-demand guarantee from a bank, building society or credit union operating in Australia as 'Authorised Deposit-taking Institutions' under the Banking Act 1959 of the Commonwealth of Australia and supervised by the Australian Prudential Regulatory Authority (APRA) must be provided to the EPA prior to the issue of the license. The financial assurance must be in favour of the EPA; the value is to be determined by the EPA upon issuing of an Environmental Protection License. The financial assurance is required to be secure or guarantee funding for works or programs required by or under the license.

Page 9

Protection of the Environment Operations Act 1997

General Terms of Approval - Issued



Notice No: 1575672

E1.2 The licensee must provide to the EPA, along with the original counterpart guarantee, confirmation in writing that the financial institution providing the guarantee is subject to supervision by APRA.

E1.3 The financial assurance must contain a term that provides that any money claimed can be paid to the EPA or, at written direction of the EPA, to any other person.

E1.4 The financial assurance must be maintained during the operation of the facility and thereafter until such time as the EPA is satisfied the premises is environmentally secure

E1.5 The financial assurance must be replenished by the full amount claimed or realised if the EPA has claimed on or realised the financial assurance or any part of it undertaken by the license holder

E1.6 The EPA may require an increase in the amount of the financial assurance at any time as a result of reassessment of the total cost and expenses of the rehabilitation of the premises

E1.7 The licensee may provide to the EPA the original counterpart guarantee within five working days of the issue of:

- a. the financial assurance required by condition E1.1; and
- b. the adjusted financial assurance by condition E1.5 and E1.6

E1.8 The EPA may claim on a financial assurance under s303 of the POEO Act if a licensee fails to carry out any work or program required to comply with the conditions of this license

E2. Environmental Management Obligations

E2.1 While the licensee's premises are being used for the purpose to which the license relates, the licensee must:

- a. Clean up any spill, leak, or discharge of any waste(s) or other material(s) as soon as practicable after it becomes known to the licensee or to one of the licensee's employees or agents.
- b. In the event(s) that any liquid and non-liquid is unlawfully deposited on the premises, such waste(s) must be removed and lawfully disposed of as soon as practicable or in accordance with any direction given by the EPA
- c. Provide all monitoring data as required by the conditions of the license or as directed by the EPA

E2.2 In the event of an earthquake, storm, fire, flood or any other event where it is reasonable to suspect that a pollution event has occurred, is occurring or is likely to occur, the licensee (whether or not the premises continues to be used for the purpose to which the license relates) must:

- a. Make all efforts to contain all firewater on the licensee's premises;
- b. Make all efforts to contain air pollution from the licensee's premises;
- c. Make all efforts to contain any discharge from the licensee's premises;
- d. Make all efforts to prevent flood water from entering the licensee's premises;
- e. Remediate and rehabilitate any exposed areas of soil and/or waste;
- f. Lawfully dispose of all liquid and solid waste(s) stored on the premises that is not already securely disposed of; At the request of the EPA, monitor groundwater beneath the licensee's premises and its potential to migrate from the licensee's premises;
- g. At the request of the EPA monitor surface water leaving the licensee's premises; and
- h. Ensure the licensee's premises is secure

Protection of the Environment Operations Act 1997

General Terms of Approval - Issued



Notice No: 1575672

E2.3 After the licensee's premises cease to be used for the purpose to which the license relates or in the event that the licensee ceases to carry out the activity that is subject of this license, the licensee must:

- a. Remove and lawfully dispose of all liquid and non-liquid waste stored on the licensee's premises; and
- b. rehabilitate the site, including conducting an assessment of and if required remediation of any site contamination

Protection of the Environment Operations Act 1997

General Terms of Approval - Issued

Notice No: 1575672



Attachment – Mandatory Conditions for all EPA licences

Administrative conditions

Operating conditions

Activities must be carried out in a competent manner

Licensed activities must be carried out in a competent manner.

This includes:

- a. the processing, handling, movement and storage of materials and substances used to carry out the activity; and
- b. the treatment, storage, processing, reprocessing, transport and disposal of waste generated by the activity.

Maintenance of plant and equipment

All plant and equipment installed at the premises or used in connection with the licensed activity:

- c. must be maintained in a proper and efficient condition; and
- d. must be operated in a proper and efficient manner.

Monitoring and recording conditions

Recording of pollution complaints

The licensee must keep a legible record of all complaints made to the licensee or any employee or agent of the licensee in relation to pollution arising from any activity to which this licence applies.

The record must include details of the following:

- the date and time of the complaint;
- the method by which the complaint was made;
- any personal details of the complainant which were provided by the complainant or, if no such details were provided, a note to that effect;
- the nature of the complaint;
- the action taken by the licensee in relation to the complaint, including any follow-up contact with the complainant; and
- if no action was taken by the licensee, the reasons why no action was taken.

The record of a complaint must be kept for at least 4 years after the complaint was made.

The record must be produced to any authorised officer of the EPA who asks to see them.

Protection of the Environment Operations Act 1997

General Terms of Approval - Issued



Notice No: 1575672

Telephone complaints line

The licensee must operate during its operating hours a telephone complaints line for the purpose of receiving any complaints from members of the public in relation to activities conducted at the premises or by the vehicle or mobile plant, unless otherwise specified in the licence.

The licensee must notify the public of the complaints line telephone number and the fact that it is a complaints line so that the impacted community knows how to make a complaint.

This condition does not apply until 3 months after this condition takes effect.

Reporting conditions

Annual Return documents

What documents must an Annual Return contain?

The licensee must complete and supply to the EPA an Annual Return in the approved form comprising:

- a. Statement of Compliance; and
- b. Monitoring and Complaints Summary.

A copy of the form in which the Annual Return must be supplied to the EPA accompanies this licence. Before the end of each reporting period, the EPA will provide to the licensee a copy of the form that must be completed and returned to the EPA.

Period covered by Annual Return

An Annual Return must be prepared in respect of each reporting, except as provided below

Note: The term "reporting period" is defined in the dictionary at the end of this licence. Do not complete the Annual Return until after the end of the reporting period.

Where this licence is transferred from the licensee to a new licensee,

- a. the transferring licensee must prepare an annual return for the period commencing on the first day of the reporting period and ending on the date the application for the transfer of the licence to the new licensee is granted; and
- b. the new licensee must prepare an annual return for the period commencing on the date the application for the transfer of the licence is granted and ending on the last day of the reporting period.

Note: An application to transfer a licence must be made in the approved form for this purpose.

Where this licence is surrendered by the licensee or revoked by the EPA or Minister, the licensee must prepare an annual return in respect of the period commencing on the first day of the reporting period and ending on

- a. in relation to the surrender of a licence - the date when notice in writing of approval of the surrender is given; or
- b. in relation to the revocation of the licence - the date from which notice revoking the licence operates.

Protection of the Environment Operations Act 1997

General Terms of Approval - Issued



Notice No: 1575672

Deadline for Annual Return

The Annual Return for the reporting period must be supplied to the EPA by registered post not later than 60 days after the end of each reporting period or in the case of a transferring licence not later than 60 days after the date the transfer was granted (the 'due date').

Notification where actual load can not be calculated

(Licences with assessable pollutants)

Where the licensee is unable to complete a part of the Annual Return by the due date because the licensee was unable to calculate the actual load of a pollutant due to circumstances beyond the licensee's control, the licensee must notify the EPA in writing as soon as practicable, and in any event not later than the due date.

The notification must specify:

- a. the assessable pollutants for which the actual load could not be calculated; and
- b. the relevant circumstances that were beyond the control of the licensee.

Licensee must retain copy of Annual Return

The licensee must retain a copy of the annual return supplied to the EPA for a period of at least 4 years after the annual return was due to be supplied to the EPA.

Certifying of Statement of Compliance and Signing of Monitoring and Complaints Summary

Within the Annual Return, the Statement of Compliance must be certified and the Monitoring and Complaints Summary must be signed by:

- a. the licence holder; or
- b. by a person approved in writing by the EPA to sign on behalf of the licence holder.

A person who has been given written approval to certify a Statement of Compliance under a licence issued under the Pollution Control Act 1970 is taken to be approved for the purpose of this condition until the date of first review this licence.

Notification of environmental harm

Note: The licensee or its employees must notify the EPA of incidents causing or threatening material harm to the environment immediately after the person becomes aware of the incident in accordance with the requirements of Part 5.7 of the Act

Notifications must be made by telephoning the EPA's Pollution Line service on 131 555.

The licensee must provide written details of the notification to the EPA within 7 days of the date on which the incident occurred.

Written report

Where an authorised officer of the EPA suspects on reasonable grounds that:

- a. where this licence applies to premises, an event has occurred at the premises; or

Protection of the Environment Operations Act 1997

General Terms of Approval - Issued



Notice No: 1575672

- b. where this licence applies to vehicles or mobile plant, an event has occurred in connection with the carrying out of the activities authorised by this licence,

and the event has caused, is causing or is likely to cause material harm to the environment (whether the harm occurs on or off premises to which the licence applies), the authorised officer may request a written report of the event.

The licensee must make all reasonable inquiries in relation to the event and supply the report to the EPA within such time as may be specified in the request.

The request may require a report which includes any or all of the following information:

- a. the cause, time and duration of the event;
 - b. the type, volume and concentration of every pollutant discharged as a result of the event;
 - c. the name, address and business hours telephone number of employees or agents of the licensee, or a specified class of them, who witnessed the event; and
- the name, address and business hours telephone number of every other person (of whom the licensee is aware) who witnessed the event, unless the licensee has been unable to obtain that information after making reasonable effort;
- d. action taken by the licensee in relation to the event, including any follow-up contact with any complainants;
 - e. details of any measure taken or proposed to be taken to prevent or mitigate against a recurrence of such an event;
 - f. any other relevant matters.

The EPA may make a written request for further details in relation to any of the above matters if it is not satisfied with the report provided by the licensee. The licensee must provide such further details to the EPA within the time specified in the request.

General conditions

Copy of licence kept at the premises or on the vehicle or mobile plant

A copy of this licence must be kept at the premises or on the vehicle or mobile plant to which the licence applies.

The licence must be produced to any authorised officer of the EPA who asks to see it.

The licence must be available for inspection by any employee or agent of the licensee working at the premises or operating the vehicle or mobile plant.

Environmental Planning and Assessment Act 1979

Part 4 Modification Application - EPA Comments



Notice No. - 1577388

L2. Waste

Note: Mandatory conditions to be placed on all general terms of approval

L2.1 The licensee must not cause, permit or allow any waste generated outside the premises to be received at the premises for storage, treatment, processing, reprocessing or disposal or any waste generated at the premises to be disposed of at the premises, except as expressly permitted by a licence under the Protection of the Environment Operations Act 1997.

Any waste received at the premises must only be used for the activities referred to in relation to that waste in the column titled 'Activity' in the table below.

Any waste received at the premises is subject to those limits or conditions, if any, referred to in relation to that waste contained in the column title 'Other Limits' in the table below.

Condition L2.1 does not limit any other conditions in this approval.

Code	Waste	Description	Activity	Other Limits
K110	Grease trap waste	As defined in Schedule 1 of the POEO Act, in force from time to time	Waste processing (non-thermal treatment of waste)	The total waste received must not exceed 10, 000 litres per week.

O2. Potentially offensive odour

O2.8 For the purposes of air pollution control:

- all waste must be received and processed in a fully enclosed area provided with mechanical ventilation;
- all building ventilation points designed for ventilating odour emissions must discharge ventilated air at a minimum height of 7.4m above ground level; and
- all sludge tank breather pipes must be fitted with carbon filters.

Note: The POEO Act states that no offensive odour may be emitted from particular premises unless potentially offensive odours are identified in the licence and the odours are emitted in accordance with conditions specifically directed at minimising the odours are permitted. Where it is appropriate for a licence to identify and control offensive odours, conditions for the licence should be developed in consultation with Air Policy.

Developer Charges - Estimate

Applicants Name: G Peckham
 Property Address: 6 Enterprise Place, Wauchope
 Lot & Dp: Lot(s):315,DP(s):1075670
 Development: Waste Management Facility and Caretaker's Residence



Water and Sewerage Headworks Levies are levied under S64 of the LGA Act & S306 of the Water Management Act 2000.
 Other contributions are levied under Section 7.11 of the Environmental Planning and Assessment Act and Council's Contribution Plans.

Levy Area	Units	Cost	Estimate
1 Water Supply	1.071	\$10,129.00 Per ET	\$10,848.10
2 Sewerage Scheme Wauchope	4.2	\$3,843.00 Per ET	\$16,140.60
3 Since 1.7.04 - Major Roads - Wauchope - Per ET	0.5	\$7,095.00 Per ET	\$3,547.50
4 Since 31.7.18 - Open Space - Wauchope - Per ET	0.5	\$5,204.00 Per ET	\$2,602.00
5 Commenced 3 April 2006 - Com, Cul and Em Services CP - Wauchope	0.5	\$4,705.00 Per ET	\$2,352.50
6 Com 1.3.07 - Administration Building - All areas	0.5	\$904.00 Per ET	\$452.00
7 N/A			
8 N/A			
9 N/A			
10 N/A			
11 N/A			
12 N/A			
13 N/A			
14 N/A			
15 Admin General Levy - Applicable to Consents approved after 11/2/03	2.2% S94 Contribution		\$196.90
16			
17			
18			
Total Amount of Estimate (Not for Payment Purposes)			\$36,139.60

NOTES: These contribution rates apply to new development and should be used as a guide only.
 Contributions will be determined in conjunction with a Development Application (DA) or Complying Development Application (CDA).
 DAs will be subject to the contributions plans in force at the time of issue of the Consent and for CDCs at time of lodgement.
 Contribution Rates are adjusted quarterly in line with the CPI.

DATE OF ESTIMATE:

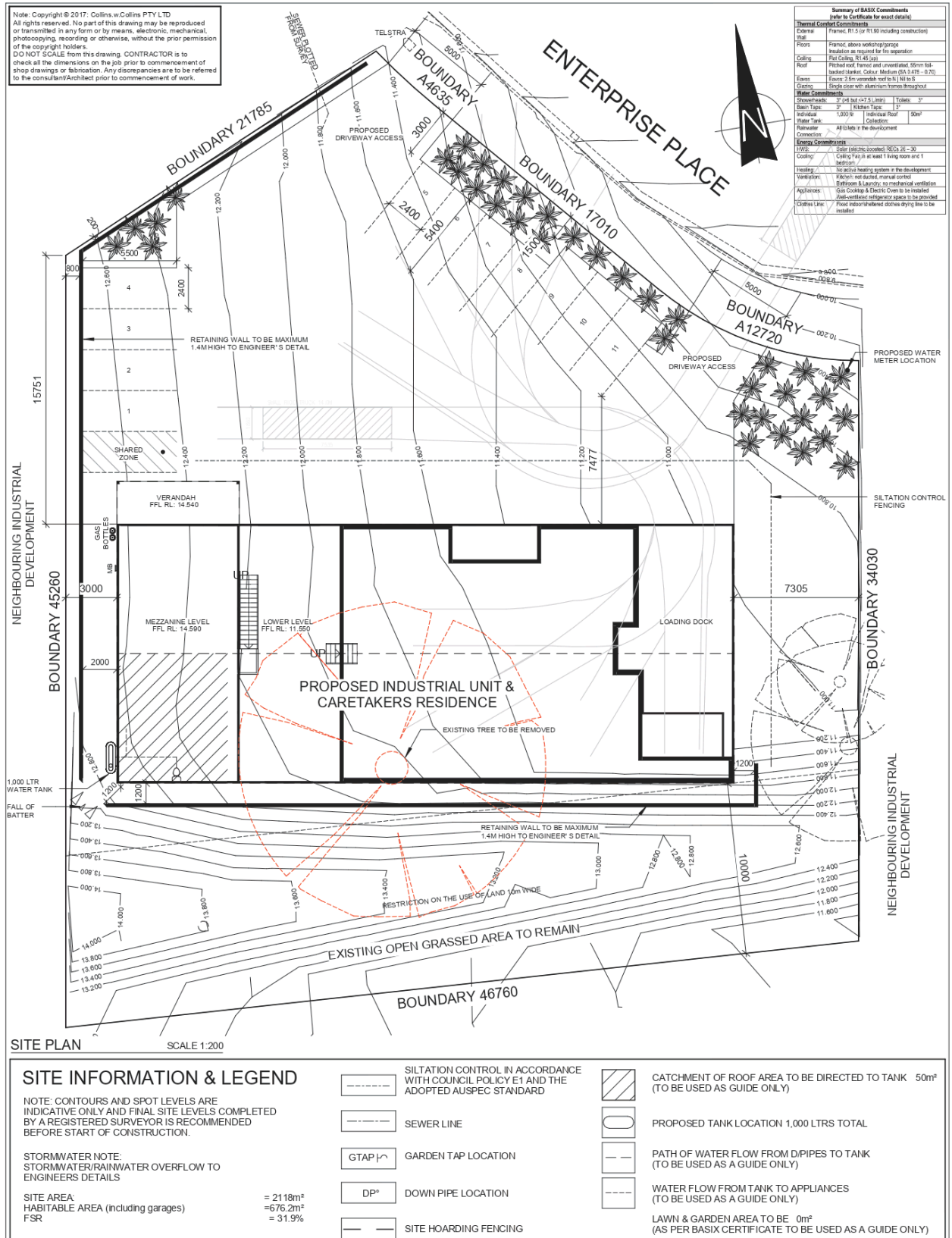
19-Mar-2019

Estimate Prepared By Chris Gardiner

This is an ESTIMATE ONLY - NOT for Payment Purposes

3 Peckham, 6 Enterprise Place, Wauchope, 19-Mar-2019.xls

PORT MACQUARIE-HASTINGS COUNCIL



collinswcollins PTY LTD
BUILDING DESIGNERS + LANDSCAPES + COLOURS + GRAPHICS
89 LORD STREET (PO Box 5667), PORT MACQUARIE NSW 2444

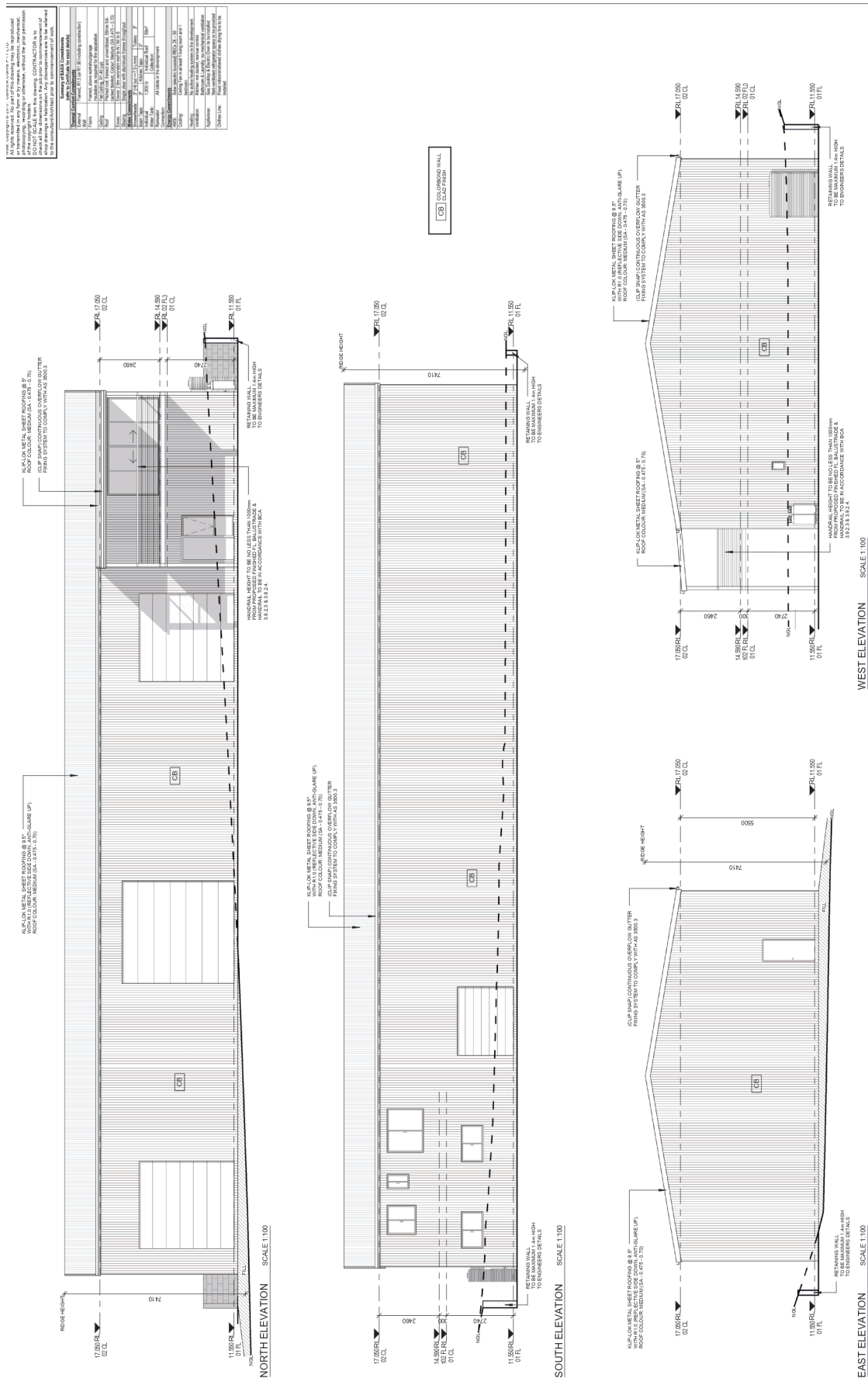
BDA
Project: **INDUSTRIAL**
LOT No: 315 DP No: 1075670
STREET No: TBC
STREET: ENTERPRISE PLACE, WAUCHOPE
CLIENT: PENSINI PECKHAM

SITE PLAN
SCALE: As indicated
SHEET SIZE: A3
START DATE: 07.12.16
DWG No: D3514

AMENDMENTS:

Date	Detail	Issue	Drawn
08.12.16	INITIAL ISSUE	A	MS
22.12.16	DA PLANS	B	DC
25.01.17	ENERGY ADDED	C	MS
20.06.17	CHANGES	E	MS





		INDUSTRIAL		ELEVATIONS		AMERIKONISTS		Issue	
Project		LOT NO. 315 OF 107950		SCALE		Date		Date	
LOT NO. 315 OF 107950		SHEET: 4 OF 5		SHEET NO. 1		08.12.16 INITIAL ISSUE		A	
SHEET NO. 1		SHEET NO. 2		25.01.17 ENHANCED		B		C	
CLIENT: ENTERPRISE BUILD WAJDOHO		START DATE		25.01.17		25.01.17		D	
CLIENT: PESHU POKHARI		END DATE		20.06.17		20.06.17		E	

CHECK ALL DIMENSIONS ON SITE. THIS DRAWING IS TO BE READ IN CONJUNCTION WITH ALL RELEVANT CONTRACTS, SPECIFICATIONS, REPORTS, DRAWINGS, ENGINEERING & COUNCIL APPROVALS

**THESE NOTES MUST BE READ AND UNDERSTOOD BY ALL INVOLVED IN THE PROJECT.
THIS INCLUDES (but is not limited to): OWNER, BUILDER, SUB-CONTRACTORS, CONSULTANTS, RENOVATORS,
OPERATORS, MAINTENORS, DEMOLISHERS.**

**BUILDING SPECIFICATIONS FOR CLASS
1 AND 10 BUILDINGS**

All works to be completed in accordance with the current version of the National Construction Code Series, including Building Code of Australia (BCA), Volume 2 and the Plumbing Code of Australia (PCA), Volume 3 as applicable.
All Australian Standards listed are the versions that have been adopted by the relevant version of the National Construction Code Series at the time of Construction Certificate or Complying Development Certificate Application.

SITE PREPARATION

Earthworks – Earthworks are to be undertaken in accordance with Part 3.1.1 of the BCA.
Drainage – Stormwater drainage is to be undertaken in accordance with AS/NZS 3500.3, or, Section 5 of 3500.5, or, the Acceptable Construction Practice as detailed in Part 3.1.2 of the BCA.

Termite Risk Management – Where a primary building element is considered susceptible to termite attack the building shall be protected in accordance with the following:

- a) AS 3600.1, and
- b) A durable notice is permanently fixed to the building in a prominent location, such as in a meter box or the like, including the details listed in Part 3.1.3.2 of the BCA, or
- c) The Acceptable Construction Practice as detailed in accordance with Part 3.1.3 of the BCA.

FOOTINGS AND SLABS

The footing or slab is to be constructed in accordance with AS 2870, except that for the purposes of Clause 5.3.3.1 of AS 2870, a damp-proofing membrane is required to be provided, or, the Acceptable Construction Practice detailed in Part 3.2 of the BCA.

Piled footings are to be designed in accordance with AS 2159.

MASONRY

Unreinforced Masonry – to be designed and constructed in accordance with;

- a) AS 3700; or
 - b) AS 4773 Parts 1 and 2
- Reinforced Masonry – to be designed and constructed in accordance with;
- a) AS 3700; or
 - b) AS 4773 parts 1 and 2

Masonry Accessories – to be constructed and installed in accordance with;

- a) AS 3700; or
- b) AS 4773 Parts 1 and 2

Weatherproofing of Masonry
This Part applies to an external wall (including the junction between the wall and any window or door) of a Class 1 Building.

This Part does not apply to any Class 10 building except where its construction contributes to the weatherproofing of the Class 1 building.

The weatherproofing of masonry is to be carried out in accordance with;

- a) AS 3700; or
- b) AS 4773 Part 2 and 2

FRAMING

Structural Software – Must comply with the Australian Building Codes Board (ABCB) Protocol for Structural Software and Part 3.4.0.2 of the BCA.

Sub-Floor Ventilation – Is to comply with the Acceptable Construction Practice of Part 3.4.1 of the BCA.

Steel Framing – is to be designed and constructed in accordance with the Acceptable Construction Practice of Part 3.4.2 of the BCA, or, one of the following manuals:

- a) Steel structures: AS 4100.
 - b) Cold-formed steel structures: AS/NZS 4600.
 - c) Residential and low-rise steel framing: NASH Standard.
- Timber Framing – is to be designed and constructed in accordance with the following, as appropriate:

- a) AS 1684.2
- b) AS 1684.4

Structural Steel Members – is to be designed and constructed in accordance with the Acceptable Construction Practice of Part 3.4.4 of the BCA, or, one of the following manuals:

- a) Steel Structures: AS 4100.
- b) Cold-formed steel structures: AS/NZS 4600.

ROOF AND WALL CLADDING

Roof Cladding – is to comply with the Acceptable Construction Practice of Part 3.5.1 of the BCA, or, one of the following:

- a) Roofing tiles: AS 2049 and AS 2050.
- b) Metal roofing: AS 1562.1
- c) Plastic sheet roofing: AS/NZS 4256 Parts 1, 2, 3 and 5; and AS/NZS 1562.3.
- d) Corrugated fibre-reinforced cement sheet roofing: AS/NZS 1562.2.
- e) Asphalt shingles: ASTM D3018-90.

f) Pliable membrane and underlay: AS/NZS 4200 Parts 1 and 2.
Gutters and Downpipes – are to be designed and constructed in accordance with the Acceptable Construction Practice of Part 3.5.2 of the BCA, or, AS/NZS 3500.3 – Stormwater drainage, or AS/NZS 3500.5 – Domestic installations, Section 5 – Stormwater drainage.

Wall Cladding – to be designed and constructed in accordance with Acceptable Construction Practice of Part 3.5.3.1 of the BCA, or, for metal wall cladding if it is designed and constructed in accordance with AS 1562.1.

GLAZING

Glazing – to be designed and constructed in accordance with the Acceptable Construction Practice of Part 3.6.1 of the BCA, or, one of the following manuals as applicable:

- a) AS 2047.
- b) AS 1289.

FIRE SAFETY

Fire Separation – to be designed and constructed in accordance with the Acceptable Construction Practice of Part 3.7.1 of the BCA.

Smoke Alarms – to be designed, connected and located in accordance with the Acceptable Construction Practice of Part 3.7.2 of the BCA.

Heating Appliances – are to be installed in accordance with the Acceptable Construction Practice of Part 3.7.3 of the BCA, or, one of the following manuals:

- a) Domestic solid-fuel burning appliances are installed in accordance with AS/NZS 2918.
- b) Boilers and pressure vessels are installed in accordance with AS/NZS 1200.

BUSHFIRE AREAS

Bushfire Areas – This section relates to:

- a) A Class 1 building; or
- b) A Class 10a building or deck associated with a Class 1 building. It is constructed in accordance with the following:
- c) AS 3959, except for Section 9 Construction for Bushfire Attack Level FZ (BAL-FZ). Buildings subject to BAL-FZ must comply with specific conditions of development consent for construction at this level; or
- d) The requirements of (c) above as modified by the development consent following consultation with the NSW Rural Fire Service under section 79BA of the Environmental Planning and Assessment Act 1979; or
- e) The requirements of (c) above as modified by the development consent with a bushfire safety authority issued under section 100B of the Rural Fire Act for the purposes of integrated development.

Alpine Areas – to be constructed in accordance with the Acceptable Construction Practice of Part 3.7.5 of the BCA if located in an alpine area, as identified in Figure 3.7.5.2 of the BCA.

HEALTH AND AMENITY

Wet Areas and External Waterproofing – building elements in wet areas within a building must:

- a) Be waterproof or water resistant in accordance with Table 3.8.1.1 of the BCA; and
- b) Comply with AS 3740.

Room Heights – are to be constructed in accordance with the Acceptable Construction Practice of Part 3.8.2 of the BCA.

Facilities – are to be constructed in accordance with Acceptable Practice of Part 3.8.3 of the BCA.

Ventilation – is to be provided in accordance with the Acceptable Construction Practice of Part 3.8.4 of the BCA.

Light – is to be provided in accordance with the Acceptable Construction Practice of Part 3.8.5 of the BCA.

Sound Insulation – (only applies to a separating wall between two or more class 1 buildings) is to be provided in accordance with the Acceptable Construction Practice of Part 3.8.6 of the BCA.

SAFE MOVEMENT AND ACCESS

Safe Movement and Access

Stair Construction – to be constructed and installed in accordance with the Acceptable Construction Practice of Part 3.9.1 of the BCA.

Balustrades and Handrails – to be constructed and installed in accordance with the Acceptable Construction Practice of Part 3.9.2 of the BCA.

Swimming Pool Access – to be designed and installed in accordance with the Swimming Pools Act 1992, Swimming Pool Regulation 2008 and AS 1926 Parts 1 and 2.

Swimming Pool Water recirculation Systems – is to be designed and constructed in accordance with AS1926.3.

ADDITIONAL CONSTRUCTION REQUIREMENTS

High Wind Areas – Applies to a region that is subject to design wind speeds more than N3 or C1 (see table 1.1.1 of the BCA). To be constructed in accordance with one or more of the relevant manuals of Part 3.10.1 of the BCA.

Earthquake Areas – relates to areas subject to seismic activity. To be constructed in accordance with the Acceptable Construction Manuals listed in Part 3.11 of the BCA.

Flood Hazard Areas – applies to areas on a site (weather or not mapped) encompassing the land lower than the flood hazard level (as defined by the BCA) which has been determined by the appropriate authority (statutory authority), are to be constructed in accordance with the ABCB Standard for Construction of Buildings in Flood Hazard Areas.

Structural Design Manuals – is satisfied by complying with: a) 3.11.2, 3.11.3 and 3.11.6 of the BCA; or b) the relevant provisions of other Parts of Section 3 of the Housing Provisions of the BCA relating to structural elements; or c) any combination thereof.

STRUCTURAL DESIGN MANUALS

Structural Design Manuals – is satisfied by complying with:

- a) 3.11.2, 3.11.3 and 3.11.6 of the BCA; or
- b) the relevant provisions of other Parts of Section 3 of the Housing Provisions of the BCA relating to structural elements; or
- c) any combination thereof.

ENERGY EFFICIENCY

Energy Efficiency – to comply with the measures contained in the relevant BASIX certificate.

collinswcollins PTY LTD
BUILDING DESIGNERS + LANDSCAPES + COLOURS + GRAPHICS
89 LORD STREET (PO BOX 5667), PORT MACQUARIE NSW 2444

BDA
REGISTERED
ARCHITECTS

Project		BUILDING SPECIFICATIONS		AMENDMENTS:			
INDUSTRIAL				Date:	Detail:	Issue:	Drawn:
LOT No: 315 DP No: 1075670	SHEET: 5 OF 5	SCALE:	1 : 100	08.12.16	INITIAL ISSUE	A	MS
STREET No: TBC		SHEET SIZE:	A3	22.12.16	DA PLANS	B	DC
STREET: ENTERPRISE PLACE, WAUCHOPE		START DATE:	07.12.16	25.01.17	ENERGY ADDED	C	MS
CLIENT: PENSIN, PECKHAM		DWG No:	D3514	20.06.17	CHANGES	E	MS



Kooloonbung Creek
Flying-fox Camp Management Plan
Draft 4
March 2019

PORT MACQUARIE-HASTINGS COUNCIL



ecology / vegetation / wildlife / aquatic ecology / GIS



Acknowledgements

Port Macquarie-Hastings Council would like to thank everyone who participated in community consultation, with all comments considered in the development of this plan and incorporated where possible. Council acknowledges input by the New South Wales Office of Environment and Heritage to the Plan in developing the template upon which this Camp Management Plan is based, and Dr Peggy Eby who provided advice which was included in the template.



Acronyms and abbreviations

ABLV	Australian bat lyssavirus
BAM	Biodiversity Assessment Method
BC Act	<i>Biodiversity Conservation Act 2016</i> (NSW)
BDAR	Biodiversity Development Assessment Report
BFF	Black flying-fox (<i>Pteropus alecto</i>)
the camp	Kooloonbung Creek flying-fox camp
CE	Critically endangered
Council	Port Macquarie-Hastings Council
DoEE	Department of the Environment and Energy (Commonwealth)
DPI	Department of Primary Industries (NSW)
E	Endangered
EEC	Endangered Ecological Communities
EP&A Act	<i>Environmental Planning and Assessment Act 1979</i> (NSW)
EPA	Environment Protection Authority
EPBC Act	<i>Environment Protection and Biodiversity Conservation Act 1999</i> (Commonwealth)
FKCNP	Friends of Kooloonbung Creek Nature Park
GHFF	Grey-headed flying-fox (<i>Pteropus poliocephalus</i>)
the Guideline	Referral guideline for management actions in grey-headed and spectacled flying-fox camps 2015 (Commonwealth)
HeV	Hendra virus
KCPoM	Kooloonbung Creek Plan of Management 2012
LEP	Local Environmental Plan
LGA	Local Government Area
LGNSW	Local Government of New South Wales
LRFF	Little red flying-fox (<i>Pteropus scapulatus</i>)
MNES	Matters of national environmental significance
NFFMP	National flying-fox monitoring program



NPW Act	<i>National Parks and Wildlife Act 1974 (NSW)</i>
NPWS	National Parks and Wildlife Service (NSW)
OEH	Office of Environment and Heritage (NSW)
the Park	Kooloonbung Creek Nature Park
the Plan	this Camp Management Plan
POEO Act	<i>Protection of the Environment Operations Act 1997 (NSW)</i>
the Policy	Flying-fox Camp Management Policy 2015 (NSW)
SEPPs	State Environmental Planning Policies
SIS	Species impact statement
TEC	Threatened ecological community
V	Vulnerable



Contents

Acknowledgements	i
Acronyms and abbreviations	ii
List of figures	v
List of tables.....	vii
1 Introduction	1
1.1 Flying-foxes in urban areas	1
1.2 Plan objectives.....	2
2 Context	5
2.1 Camp description.....	5
2.2 Tenure	11
2.3 Other ecological values.....	11
2.4 History of the camp	15
2.5 Sensitive receptors	16
2.6 Management to date	18
3 Community engagement.....	22
3.1 Stakeholders.....	22
3.2 Engagement methods and results.....	23
3.2.1 Community consultation meeting	23
3.2.2 Survey responses	25
3.2.3 Public submissions on draft Plan	26
4 Camp management options	28
4.1 Level 1 actions: routine camp management.....	28
4.1.1 Education and awareness programs	28
4.1.2 Property modification without subsidies	29
4.1.3 Property modification subsidies.....	30
4.1.4 Service subsidies	30
4.1.5 Routine camp maintenance and operational activities.....	30
4.1.6 Revegetation and land management to create alternative habitat	31
4.1.7 Provision of artificial roosting habitat	32
4.1.8 Protocols to manage incidents	32
4.1.9 Participation in research	32
4.1.10 Appropriate land-use planning	32
4.1.11 Property acquisition	32
4.1.12 Do nothing	32
4.2 Level 2 actions: in-situ management.....	33
4.2.1 Buffers	33
4.2.2 Noise attenuation fencing	34
4.3 Level 3 actions: disturbance or dispersal	35
4.3.1 Nudging	35



4.3.2	Dispersal.....	35
4.4	Unlawful activities	37
4.4.1	Culling.....	37
4.5	Camp management options analysis	38
5	Planned management approach	44
5.1	Level 1 management	44
5.2	Level 2 management	45
5.2.1	Canopy-mounted sprinklers	45
5.2.1.1	Installation and operational considerations	46
5.3	Level 3 management	47
6	Evaluation and review	52
7	Plan administration	53
7.1	Monitoring of the camp	53
7.2	Responsibilities.....	53
7.3	Funding commitment	53
	References and further resources	54
	Appendix 1 Legislation	61
	Appendix 2 Flying-fox ecology & behaviour.....	66
	Appendix 3 Protected Matters	72
	Appendix 4 Human and animal health.....	83
	Appendix 5 Survey results	86
	Appendix 6 Standard measures to avoid impacts to flying-foxes.....	98
	Appendix 7 Community feedback.....	102

List of figures

Figure 1	Camp locations in Port-Macquarie-Hastings Council.....	4
Figure 2	Kooloonbung Creek	5
Figure 3	Mown areas between the camp and residents	5
Figure 4	Boardwalk through mangroves.....	5
Figure 5	Vegetation communities in Kooloonbung Creek camp	6
Figure 6	Friends of Kooloonbung interpretive signage	7
Figure 7	Council sign	7
Figure 8	GHFF resting in camp	7
Figure 9	Vegetation overhanging property boundaries	8
Figure 10	Hollingworth street acts as a buffer from roosting flying-foxes in the Park.	8
Figure 11	Maximum camp extent	9
Figure 12	Total seasonal occupation 2015-18.....	10
Figure 13	Ecological values: threatened species.....	13



Figure 14 Ecological values: endangered ecological communities	14
Figure 15 Numbers of flying-foxes at Kooloonbung Creek camp (Source: OEH 2017; PMHC 2018). Count methods are consistent with those described in Westcott et al. 2011.....	15
Figure 16 Sensitive receptors surrounding the camp	17
Figure 17 Bush restoration works in the understory of the Park	21
Figure 18 Vegetation mapped as EEC overhanging behind Glebe Close properties	21
Figure 19 Asset protection zone behind properties in Glebe Close	21
Figure 20 Impact areas indicated by community	27
Figure 21 Possible components of an education program	29
Figure 22 Proposed management areas	51
Figure 23 Black flying-fox indicative species distribution, adapted from OEH 2015a	67
Figure 24 Grey-headed flying-fox indicative species distribution, adapted from OEH 2015a.....	68
Figure 25 Little red flying-fox indicative species distribution, adapted from OEH 2015a	69
Figure 26 Indicative flying-fox reproductive cycle.	70
Figure 27 Responses regarding participation in the development of 'Kooloonbung Creek Nature Park Plan of Management' in 2012.....	86
Figure 28 Knowledge of the classification of the camp as a Nationally Important Camp.....	86
Figure 29 Knowledge of the status of flying-foxes	87
Figure 30 Disease from flying-foxes	87
Figure 31 Protection of flying-foxes	88
Figure 32 Experience with flying-foxes	88
Figure 33 Main concerns about flying-foxes	89
Figure 34 Financial impacts to ratepayers.....	89
Figure 35 Educational options.....	90
Figure 36 Management options to assist.....	91
Figure 37 Buffer creation to reduce flying-fox related impacts	92
Figure 39 Management options that participants are interested in learning	93
Figure 38 Survey distribution.....	93



List of tables

Table 1 Properties comprising the maximum camp extent. Lot and plans are mapped in Section 2.1.....	11
Table 2 Other ecological values known to occur or recorded within 1km of the camp	12
Table 3 Sensitive receptors surrounding the camp.....	16
Table 4 Progress of 2012 actions for flying-fox issues. Adapted from Table 2 and Appendix A KCPoM (PMHC 2012).....	19
Table 5 Stakeholders of Kooloonbung Creek camp	22
Table 6 Community engagement methods.....	23
Table 7 Camp management options analysis.....	38
Table 8 Staged approach to management at Kooloonbung Creek flying-fox camp. Note all actions must be done in accordance with measures in Appendix 6. Authorisation for Level 2 and 3 actions is required , and additional approvals may be required under other legislation (see Appendix 1).	48
Table 9 Responses to question; Do any of the proposed management options not appeal to you? And if so which ones and for what reason?	94
Table 10 Further comments to survey from participants.....	95
Table 11 Planned action for potential impacts during any works under or near the camp. A person with experience in flying-fox behaviour (as per Appendix 6) will monitor for welfare triggers and direct works in accordance with the criteria below.	101
Table 12 Community feedback from consultative meeting 2.....	102



1 Introduction

The Kooloonbung Creek Camp Management Plan (the Plan) provides Port Macquarie-Hastings Council (Council) with a framework for managing community impacts associated with flying-foxes roosting along Kooloonbung Creek, whilst ensuring flying-foxes and their ecological services are conserved.

Three species of flying-foxes occur in New South Wales (NSW):

- grey-headed flying-fox (*Pteropus poliocephalus*) (GHFF)
- black flying-fox (*P. alecto*) (BFF)
- little red flying-fox (*P. scapulatus*) (LRFF).

Kooloonbung Creek flying-fox camp (the camp) is mainly occupied by GHFF, and at times by BFF and the highly transient LRFF. All three species of flying-foxes, and their habitats, are protected under NSW legislation. The GHFF is also listed as Vulnerable under Commonwealth legislation, affording it additional protection.

Detail of relevant legislation and policy related to flying-foxes is provided in Appendix 1. Flying-fox ecology, species profiles and roost characteristics are provided in Appendix 2.

The Kooloonbung Creek camp is one of eight flying-fox camps in the Port Macquarie-Hastings local government area (LGA), monitored as part of the National Flying-fox Monitoring Program (NFFMP) (Figure 1).

1.1 Flying-foxes in urban areas

Flying-foxes are highly nomadic, moving across their range between a network of camps. Camps may be permanently occupied, seasonal, temporary or sporadic, and numbers can fluctuate significantly on a daily/seasonal basis. Flying-foxes may travel up to 100 km a night in search of food resources (nectar, pollen and fruit), and their occurrence within the region is tightly linked to flowering and fruiting of foraging trees. Typically, the abundance of resources within a 20–50 km radius of a camp site will be a key determinant of the size of a camp (SEQ Catchments 2012). However, understanding the availability of foraging resources is difficult because flowering and fruiting are not reliable every year and vary between locations (SEQ Catchments 2012). This highlights the need for a multi-faceted approach to management that is continually adapted as situations change or further research improves our understanding of flying-foxes and their management.

Living near a flying-fox camp can be challenging for communities, with impacts associated with noise, odour, faecal drop, damage to vegetation and concern about potential health risks. There are also challenges associated with management. State approval is required under legislation to manage a camp, and actions which may affect the GHFF must also adhere to federal policy. Attempts to relocate flying-foxes are extremely costly, and often splinter a camp to multiple undesirable locations that are difficult to predict. Flying-foxes will also regularly



attempt to recolonise their preferred camp site when resources are available, and it is not appropriate or possible to remove all of the flowering and fruiting trees that attract them to the region.

Flying-foxes appear to be roosting and foraging in urban areas more frequently. During a study of national flying-fox camp occupation, almost three quarters of the 310 active GHFF camps (72%) were located in urban areas, 22% on agricultural land and only 4% in protected areas (Timmiss 2017). Furthermore, the number of camps increased with increasing human population densities (up to ~4000 people per km²) (Timmiss 2017).

There are many possible drivers for this urbanising trend, as summarised by Tait et al. (2014):

- loss of native habitat and urban expansion
- opportunities presented by year-round food availability from native and exotic species found in expanding urban areas
- disturbance events such as drought, fires, cyclones
- human disturbance or culling at non-urban camps or orchards
- urban effects on local climate
- refuge from predation
- movement advantages, e.g. ease of manoeuvring in flight due to the open nature of the habitat or ease of navigation due to landmarks and lighting.

These drivers mean that flying-foxes are likely to continuing occupying the camp into the future. Favourable habitat and food resources within the local government area (LGA) mean that camps may also establish in new locations.

Regular stakeholder engagement during the development of this plan aims to ensure the values of the Port Macquarie community are considered, and concerns of residents who have been directly impacted are addressed.

1.2 Plan objectives

The Plan has been prepared in accordance with the NSW Flying-fox Camp Management Policy (2015) framework, administered by the Office of Environment and Heritage (OEH).

The objectives of this Plan are to:

- manage community impacts and concerns associated with the camp, whilst conserving flying-foxes and their habitat
- improve community understanding and appreciation of flying-foxes, including their critical ecological role
- enable land managers and other stakeholders to use a range of suitable management responses to sustainably manage flying-foxes



- effectively communicate with stakeholders during planning and implementation of management activities
- clearly outline the camp management actions that have been approved and will be utilised at the camp
- ensure camp management does not contribute to loss of biodiversity or increase threats to threatened species/communities
- ensure management actions are consistent with legislative responsibilities
- ensure flying-fox welfare is a priority during works
- ensure long-term conservation of flying-foxes in appropriate locations.



Figure 1: Camp locations in Port Maquaire-Hastings Council

Port Maquarie-Hastings Council
Kooloonbung Creek CMP

- Nationally important
- Active
- Inactive
- Local Government Area



Job number: PR3995
Revision: 0
Author: KF
Date: 23/11/2018



0 1 2 4
Kilometers

GDA 1994 MGA Zone 56
Projection: Transverse Mercator
Datum: GDA 1994
Units: Meter

2 Context

2.1 Camp description

The camp is located within Kooloonbung Creek Nature Park (the Park) in Port Macquarie, along an estuarine waterway that includes Wrights Creek. The camp is bordered by residential areas to the east, west and south, a historical cemetery and recreational area adjoin the Park in the north.

Kooloonbung Creek camp meets the criteria for a Nationally Important camp under the Referral Guidelines for Management Actions in GHFF and SFF camps (DoE 2015) as it has contained over 10,000 GHFF for two consecutive years and 2,500 permanently or seasonally every year for the last 10 years (OEH 2017).

Vegetation within the camp mainly consists of:

- Broad-leaved Paperbark Swamp Woodland/Forest
- Grey Mangrove Woodland/Forest.



Figure 2 Kooloonbung Creek

Vegetation throughout the Park also consists of Broad-leaved Paperbark – Mixed Eucalypt Swamp Forest; Sand couch Saltmarsh Grassland and Swamp Oak Coastal Floodplain Wetland Forest (Figure 5). There are also a number of mown areas between residences and the Park (Figure 3).



Figure 3 Mown areas between the camp and residents

Figure 4 Boardwalk through mangroves

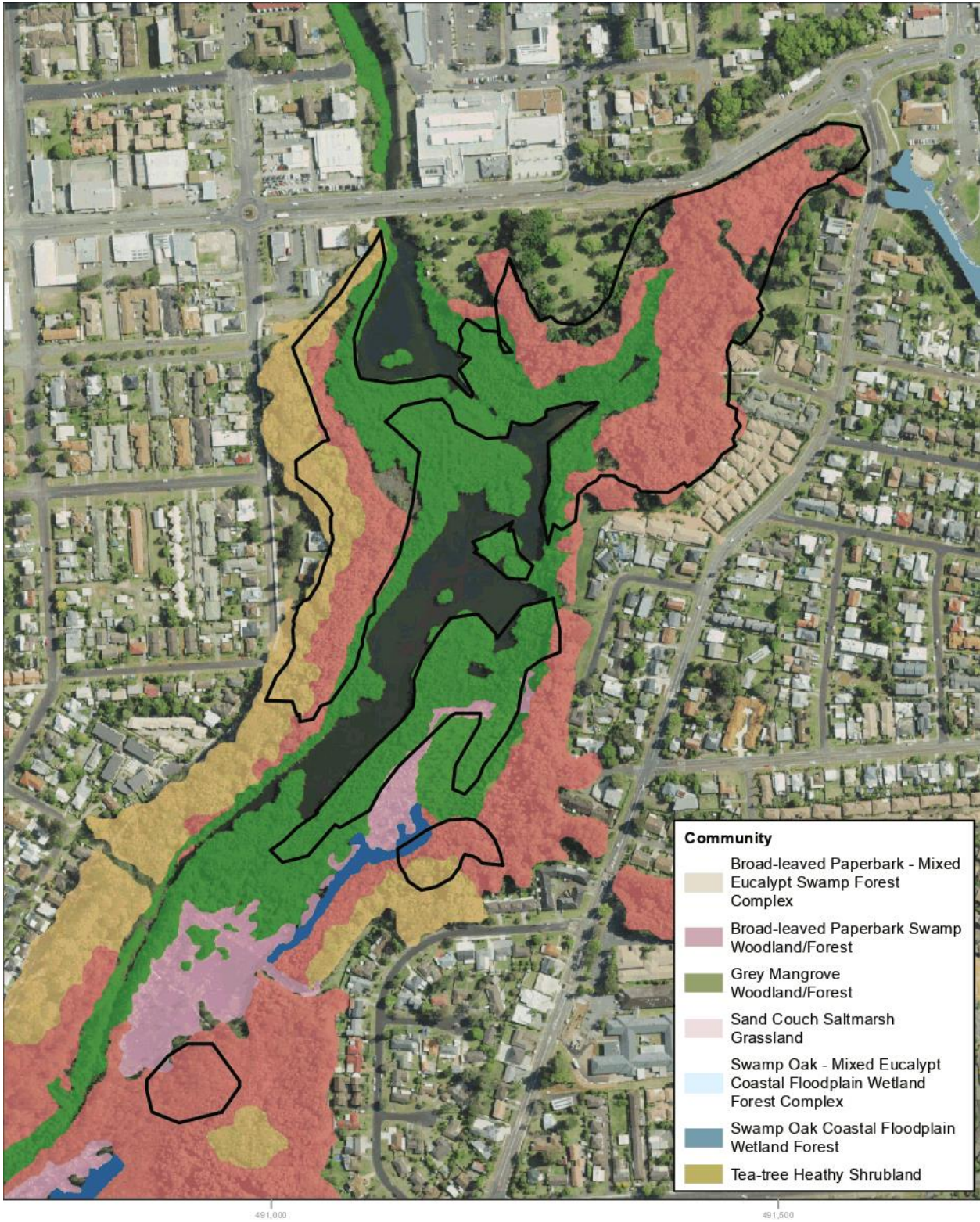


Figure 5: Vegetation communities

Maximum camp extent

Port Macquarie-Hastings Council
Kooloonbung Creek CMP



Job number: PR3995
Revision: 0
Author: KF
Date: 26/11/2018



0 25 50 100
Metres

GDA 1994 MGA Zone 56
Projection: Transverse Mercator
Datum: GDA 1994
Units: Meter



In 1985, volunteer group Friends of Kooloonbung Creek Nature Park (FKCNP) formed with a goal to regenerate the natural bushland and make the Park accessible to the public. FKCNP in conjunction with Council have continued with ongoing bush regeneration and park maintenance as well as establishing facilities such as seats and interpretive signage. A public footpath and extensive boardwalk network (Figure 4) extend throughout the Park offering educational and recreational opportunities for cycling, walking or bird watching. Various interpretive signage exists through the Park (Figure 6), however the only flying-fox related messaging is "Flying Foxes at rest – please do not disturb" (Figure 7).

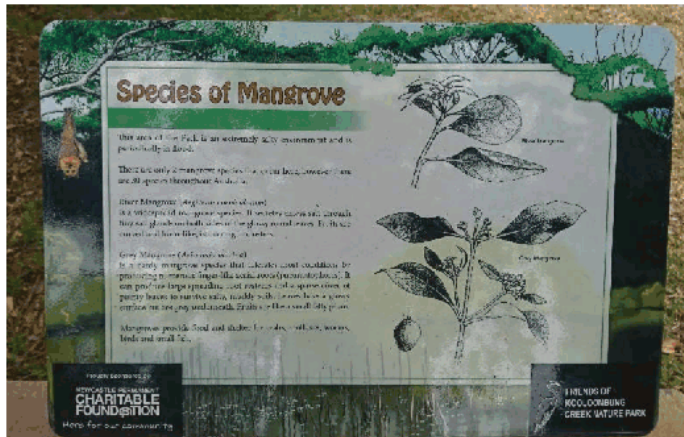


Figure 6 Friends of Kooloonbung interpretive signage



Figure 7 Council sign

A large number of pups on mothers was observed during the November site assessment by



Figure 8 GHFF resting in camp

Ecosure (Figure 8). The area occupied by flying-foxes during the November site assessment was 2.9 ha. The maximum known camp extent is 77.01 ha (PMHC 2018). Both are shown in Figure 11.

Whilst Figure 11 illustrates the maximum camp extent, and Figure 12 shows the changes in the area occupied seasonally by flying-foxes between the years 2015 and 2018.

Some properties on Glebe Close side of the camp have 5m of cleared vegetation in the asset protection zone, although a few properties still have vegetation from the reserve close to or overhanging boundaries (Figure 9). Hollingworth road side of the camp (Figure 10) provides a 15m road buffer plus a 15m vegetative buffer between homes and the maximum known camp extent on the western side of the Park.



Figure 9 Vegetation overhanging property boundaries

Figure 10 Hollingworth street acts as a buffer from roosting flying-foxes in the Park.



Figure 11: Kooloonbung maximum camp extent
2018)

Port Macquarie-Hastings Council

Kooloonbung Creek CMP



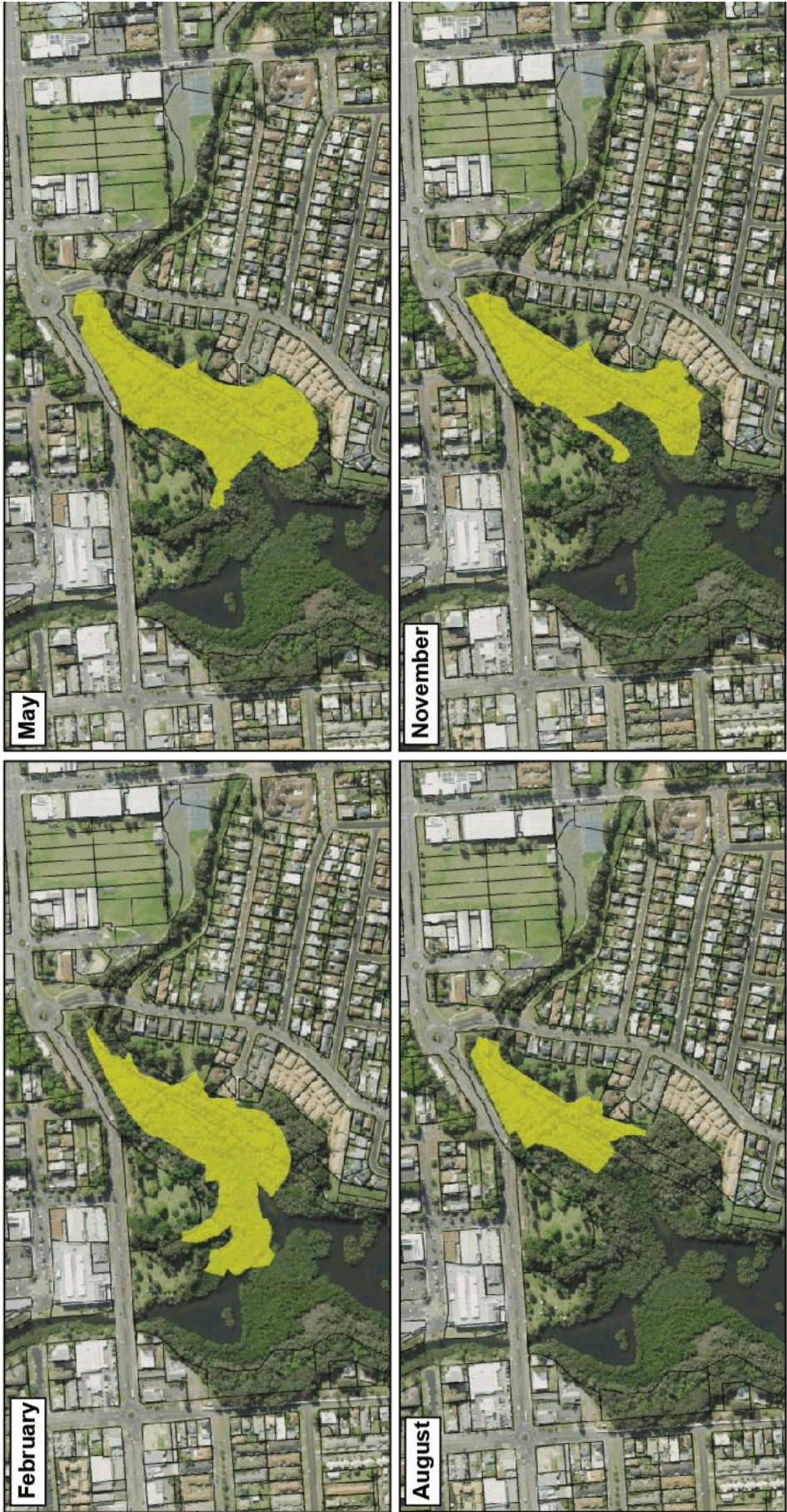
- Camp extent (November 2018)
- Maximum camp extent
- Property boundary

Job number: PR3995
Revision: 0
Author: KF
Date: 26/11/2018



0 25 50 100
Metres

GCS GDA 1994
Datum: GDA 1994
Units: Degree





2.2 Tenure

The camp is located on multiple land parcels including freehold, Council land and Crown land for which Council is appointed Trustee. Table 1 provides a list of properties that comprise the maximum camp extent. This will assist in identifying the location/s for potential management actions.

Table 1 Properties comprising the maximum camp extent. Lot and plans are mapped in Section 2.1.

Lot and DP	Tenure	Zoning
7300/DP1154392	Council	RE1 Public recreation (Historical cemetery)
7301/DP1154392	Council	E2 Environmental conservation
7302/DP1154392	Council	E2 Environmental conservation
7303/DP1154392	Council	E2 Environmental conservation
7304/DP1154392	Crown	E2 Environmental Conservation (Kooloonbung Creek Nature Park)
9/DP243243	Freehold	R2 Low Density Residential
21/DP249270	Freehold	R1 General residential
23/DP249270	Freehold	R1 General residential
26/DP249270	Council	RE1 Public recreation
7011/DP1024184	Council	E2 Environmental conservation (behind girl guides)
14/DP223700	Council	E2 Environmental conservation
12/DP246438	Freehold	E2 Environmental conservation
355/DP754434	Crown	E2 Environmental conservation
596/DP754434	Crown	E2 Environmental conservation
2/DP575680	Freehold	B2 Local centre
SP70635	Strata Freehold	R1 General residential
SP73183	Strata Freehold	R1 General residential
2/DP1038008	Freehold	R1 General residential

2.3 Other ecological values

Thirty-three threatened species are known to occur or have been recorded within 1 km of Kooloonbung Creek camp (Table 2) (Figure 13). Migratory and marine species found within the area have been excluded from this list but are provided in Appendix 3. The Park also contains five threatened plant communities; subtropical coastal floodplain forest (Endangered Ecological Community {EEC}), freshwater wetlands on coastal floodplains (EEC), coastal saltmarsh (EEC), swamp oak floodplain forest (EEC) and coastal upland swamp (EEC) (PMHC 2012) (Figure 14).



Table 2 Other ecological values known to occur or recorded within 1km of the camp

Protection level	Source	Category	Values/significance	Details
Federal	NFFMP (DoEE 2018)	Nationally important camp	See definition Appendix 1.	Site meets criteria.
	Protected Matters Search Tool (DoEE 2018) Atlas of Living Australia 2019	Threatened species [^]	Regent Honeyeater (<i>Anthochaera phrygia</i>) (CE) Australasian Bittern (<i>Botaurus poiciloptilus</i>) (E) Red Knot (<i>Calidris canutus</i>) (E) Curlew Sandpiper (<i>Calidris ferruginea</i>) (CE) Lesser Sand Plover (<i>Charadrius mongolus</i>) (E) Eastern Curlew (<i>Numenius madagascariensis</i>) (CE) Fairy Prion (<i>Pachyptila turtur subantarctica</i>) (V) Spot-tailed Quoll (<i>Dasyurus maculatus maculatus</i>) (E) Koala (<i>Phascolarctos cinereus</i>) (V) <i>Allocasuarina thalassoscopia</i> (E)	10 species (2 mammals, 7 birds and 1 plant) known to occur within the area (SPRAT data not mapped)
State	Bionet (OEH 2018) Atlas of Living Australia 2019	Threatened species	Magpie Goose (<i>Anseranas semipalmata</i>) (V) Bush Stone-Curlew (<i>Burhinus grallarius</i>) (E) Glossy Black Cockatoo (<i>Calyptorhynchus lathami</i>) (V) White-eared Monarch (<i>Carterornis leucotis</i>) (V) Spotted Harrier (<i>Circus assimilis</i>) (V) Barred Cuckoo-shrike (<i>Coracina lineata</i>) (V) Varied Sittella (<i>Daphoenositta chrysoptera</i>) (V) Black-necked Stork (<i>Ephippiorhynchus asiaticus</i>) (E) Black Falcon (<i>Falco subniger</i>) (V) Pied Oystercatcher (<i>Haematopus longirostris</i>) (V) Swift Parrot (<i>Lathamus discolor</i>) (E) Square-tailed Kite (<i>Lophoictinia isura</i>) (V) Eastern Curlew (<i>Numenius madagascariensis</i>) (CE) Eastern Osprey (<i>Pandion cristatus</i>) (V) Little Lorikeet (<i>Parvipsitta pusilla</i>) (V) Koala (<i>Phascolarctos cinereus</i>) (V) Eucalyptus nicholii (V)	15 species (13 birds, 1 mammal and 1 plant) have been recorded within 1 km of camp
Local	KCPoM (2012)	Threatened species identified in the reserve	Black-necked Stork (<i>Ephippiorhynchus asiaticus</i>) (E) Black Bittern (<i>Ixobrychus flavicollis</i>) (V) Freckled Duck (<i>Stictonetta naevosa</i>) (V) Eastern Osprey (<i>Pandion cristatus</i>) (V) Little Bent-wing Bat (<i>Miniopterus australis</i>) (V) Eastern Bent-wing Bat (<i>Miniopterus schreibersii oceanensis</i>) (V) Eastern Freetail-bat (<i>Mormopterus norfolkensis</i>) (V) Southern Myotis (<i>Myotis macropus</i>) (V) Greater Broad-nosed Bat (<i>Scoteanax rueppellii</i>) (V) Biconvex paperbark (<i>Melaleuca biconvexa</i>) (V)	10 species identified in the park (not recorded in database searches)

[^] listing status: CE – Critically Endangered, EN – Endangered, VU – Vulnerable

**Figure 13: Bionet threatened species records**

Port Macquarie-Hastings Council
Kooloonbung Creek CMP

- 1 km buffer
- Camp extent (November 2018)
- Maximum camp extent



Job number: PR3995
Revision: 1
Author: KF
Date: 3/01/2019



0 75 150 300
Metres

GDA 1994 MGA Zone 56
Projection: Transverse Mercator
Datum: GDA 1994
Units: Meter

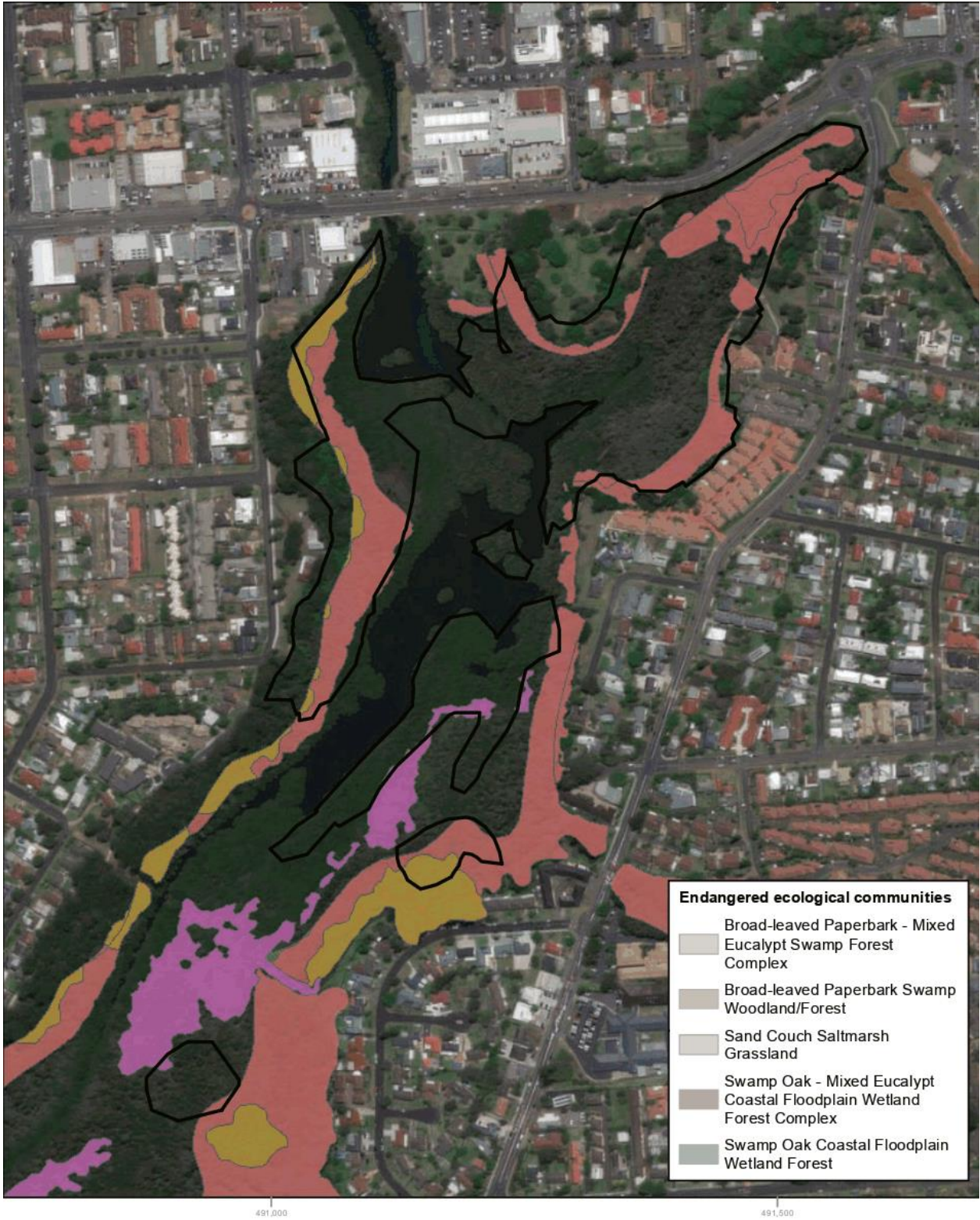


Figure 14: Endangered ecological communities

Maximum camp extent

Port Macquarie-Hastings Council
Kooloonbung Creek CMP



Job number: PR3995
Revision: 0
Author: SR
Date: 26/11/2018



0 25 50 100
Metres

GDA 1994 MGA Zone 58
Projection: Transverse Mercator
Datum: GDA 1994
Units: Metre



2.4 History of the camp

Flying-foxes arrived at the Kooloonbung Creek camp in the 1990s (PMHC 2012). Prior to this, flying-foxes had occupied Sea Acres Nature Reserve, approximately 3.5 km to the south east (Figure 1). The camp has recorded a maximum of 173,000 flying-foxes in January 2014 since quarterly monitoring began in 2012 as part of the NFFMP (OEH 2017). This influx mainly comprised the highly nomadic LRFF. Camp numbers are usually below 20,000 with some influxes over 100,000 flying-foxes in 2014 and 2016. As this site is a maternity camp, it is likely that some individuals have a strong site fidelity, returning year after year as part of seasonal migrations.

The GHFF population will generally move south within their range (see Appendix 2) in spring and summer, then return to the coastal forests of north-east NSW and south-east Queensland in winter (Ratcliffe 1932; Eby 1991; Parry-Jones & Augee 1992; Roberts et al. 2012). In autumn they occupy primarily coastal lowland camps. LRFF travel south within their range (see Appendix 2) to visit the coastal areas of south-east Queensland and NSW during the summer months.

The LRFF has the most nomadic distribution, strongly influenced by availability of food resources (predominantly the flowering of eucalypt species) (Churchill 2008), which means the duration of their stay in any one place is generally very short. LRFF travel south to visit the coastal areas of south-east Queensland and NSW during the summer months. Flying-foxes also occupy Brombin camp and two camps in Kendall: Bakers Creek and Logans crossing.

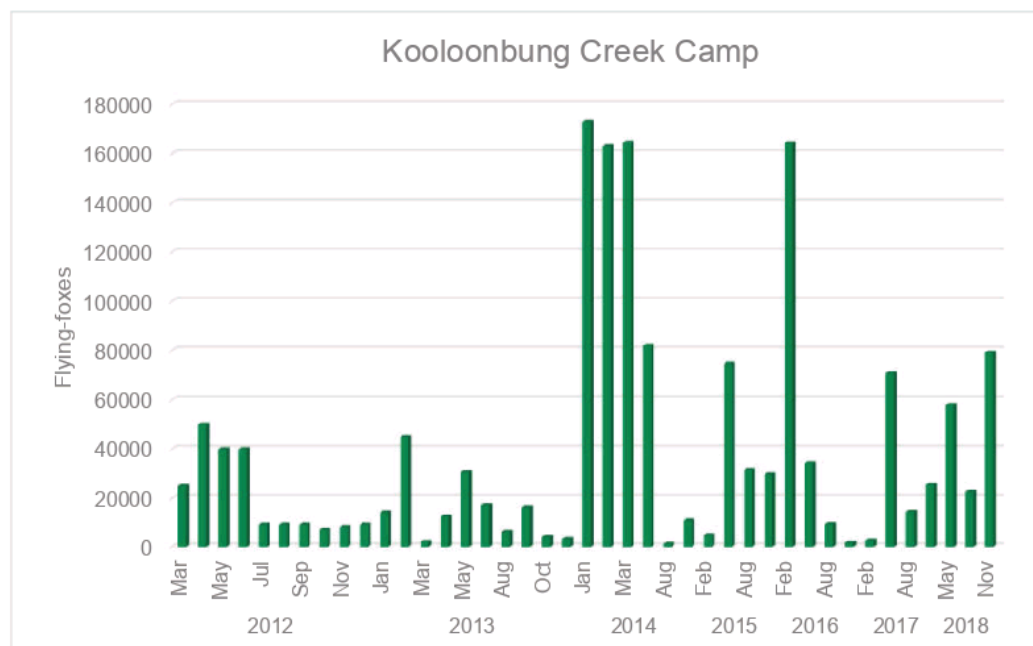


Figure 15 Numbers of flying-foxes at Kooloonbung Creek camp (Source: OEH 2017; PMHC 2018). Count methods are consistent with those described in Westcott et al. 2011.



2.5 Sensitive receptors

Sensitive receptors are those locations that host vulnerable people where risks need to be managed. Sensitive receptors (i.e. schools, hospitals with helipads, airports, equine facilities) within 2 km of the maximum camp extent and within 13 km for aerodromes are provided in Table 3 and Figure 16. Identifying sensitive receptors is necessary with regards to any management actions that could inadvertently cause the camp to splinter to undesirable or sensitive locations surrounding the camp.

Table 3 Sensitive receptors surrounding the camp

Sensitive receptor	Distance from maximum camp extent (m)
Port Macquarie community preschool	54
Hastings family day care	282
Port Macquarie public school	487
St Agnes primary school	660
Hastings Secondary College	869
Hastings preschool and long day care	1030
Hastings Secondary College Westport campus	1049
Portside preschool and long day care	1057
St Josephs primary school	1127
Westport public school	1342
MacKillop College	1420
St Peters primary school	1588
Hastings public school	1728
Port Macquarie race club	2332
Port Macquarie airport	3530

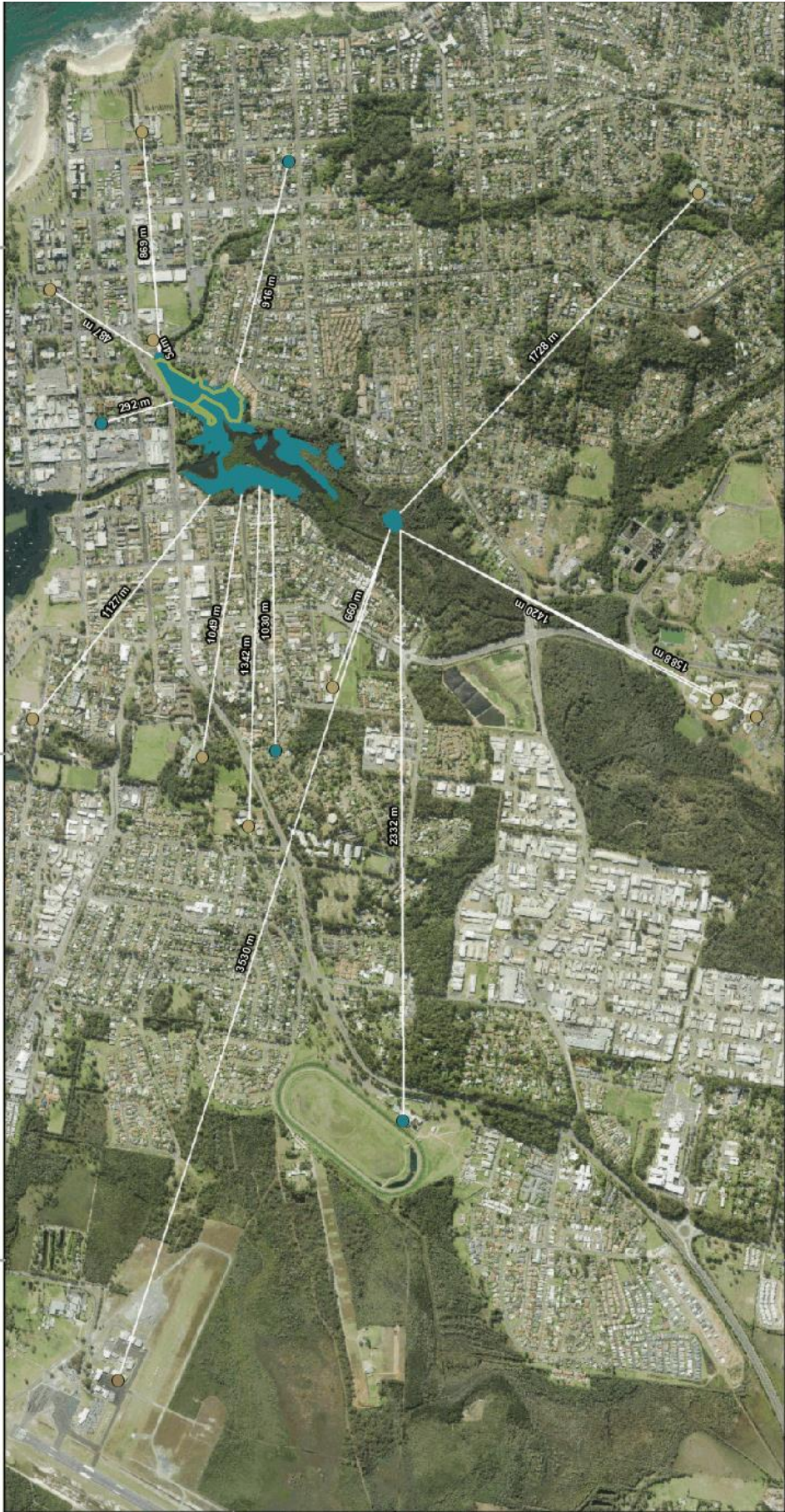


Figure 16: Sensitive receptors

Port Macquarie-Hastings Council
Kooloonbung Creek CMP



Job number: PR3395
Revision: 0
Date: 26/11/2018



0 250 500 1000
Metres

GDA 1984 MGA Zone 56
Projection: Transverse
Mercator
Datum: GDA
Units: Metre



2.6 Management to date

A number of plans have been developed for the park:

- Catchment Management Plan 1992
- Reserve Management Plan 1996
- Kooloonbung Creek Nature Park Plan of Management (KCPoM) (Port-Macquarie-Hastings Council 2012).

During the development of the 2012 KCPoM, Dr Peggy Eby provided a presentation on bat ecology to residents at a community forum. Council also provided an on-line survey and subsequent issues paper (PVHC 2012). The KCPoM produced a number of management actions to address flying-fox issues. Table 4 provides a review on the progress of actions outlined in the KCPoM for consideration within this Plan.

Bush fire management and weed removal also have consequences for roost occupation patterns, and vegetation removal may exacerbate the effects of Heat Stress Events (HSE). Friends of Kooloonbung (FOK) have been undertaking bush regeneration (Figure 17) in the Park since 1985, improving public access, facilities and providing interpretational signage. Although FOK signage includes a flying-fox logo/illustration, no signs with flying-fox ecology information were observed in the Park.

The Inaugural Committee Meeting for the Flying-fox Camp Management Plan was held on Tuesday 4th September 2018 opened by Mayor Peta Pinson, with attendance by the Community Consultative Committee and Ecosure. Residents were provided legislative background on flying-fox management and information regarding the ecological importance and behaviour of flying-foxes.

When Council commissioned the development of this Plan, two further community consultative meetings were scheduled. Outcomes of these meetings held on Wednesday 14 November 2018 and 12 December 2018 are provided in Section 3 Community Engagement.



Table 4 Progress of 2012 actions for flying-fox issues. Adapted from Table 2 and Appendix A KCPoM (PMHC 2012)

Management action	Actions to be taken	Progress	Ecosure review
Undertake monthly flying-fox habitat mapping and broad population size estimations	Fluctuations in population and roosting area monitored; roost boundaries adjacent to residents identified. Mapping uploaded to Council Website for Community access	Commenced: Council undertakes quarterly monitoring of camp and produces. The public is able to access this information on the interactive flying fox mapping tool on the Department of Environment and Energy's website. http://www.environment.gov.au/webgis-framework/apps/ffc-wide/ffc-wide.jstf	Highly informative and a beneficial action to continue. Enables temporal and spatial analysis for this Plan and future management.
Community Health Risk	Annual inspection of advisory signage. Annual check on recorded Lyssavirus, Hendra Virus, Menangle Virus and Leptospirosis infections	These actions have not been initiated	Educational messaging including prevention of risk is better than the collation of incident data alone. Residents should be informed that disease transmission is extremely low and vaccines are available for post exposure.
Community and Council monitoring of the Flying-fox population	Develop a web based community monitoring system and movements of flying foxes in the Park and to record complaints.	Commenced: Council undertake the census which records movements of the camp. Council website has not been updated with this information.	Update Council's webpage with quarterly monitoring of camp extent. Recording and promoting positive stories of rehabilitation, educational visits and tours or observations of fly outs (not just complaints).
Community education	Install signage on bats to inform park users to avoid contact and to not disturb them. Provide NSW Dept. of Health fact sheets for all Flying Fox diseases to adjacent residents.	Commenced: Some basic warning signage installed Facts sheets produced in 2013	Avoidance messaging on its own is inadequate and promotes negative attitudes and fear towards flying-foxes. Educational signage could be interwoven with indigenous values for flying-foxes. The bat logo/ illustration on Friends of Kooloonbung signage should be continued on future signage.



Management action	Actions to be taken	Progress	Ecosure review
Vegetation removal	Glebe Close (1st priority) Removal of vegetation within 10m of the Glebe Close properties. Hollingworth Street. (2nd Priority) Vegetation removal within the Hollingworth Street road reserve between Table Street and Koorong Avenue intersections (equates to a 25 - 30m buffer from residential properties). Vegetation removal within the Hollingworth Street Road Reserve between Ackroyd and Table Street intersections to the change of grade on roadside batter (equates to a 15m wide buffer from residential boundaries). Fischer Street (3rd Priority) Removal of overhanging branches back the trunk of trees that are within 10m of the Fischer Street property boundary.	Completed: 1st Priority in Glebe Close (figure 18) 2nd Priority Hollingworth Street	Trees overhanging properties in Glebe are mapped EECs (figure 17). The previously proposed buffer distances are considered adequate to provide relief from issues such as faecal drop to improve amenity. However, canopy area inside Kooloonbung Park must be considered with regards for the available roosting area for maximum number of bats. Noise and odour may need to be addressed using other management options such as improving building insulation and using air deodorisers. Important for residents to acknowledge the mobility of camp and the temporary nature of impacts in order to build resilience within community
Desk top assessment	Additional roosting site for the flying foxes	Not yet initiated	Whilst assessing suitable nearby vegetation may be beneficial for identifying potential habitat, it can not be guaranteed that flying-fox will take up alternative sites either temporarily or permanently.
Bush regeneration/ weed control	Proposed bush regeneration works zones	Ongoing	Any habitat improvement will benefit the flying-foxes however the timing of work zones ought to consider areas occupied by bats especially during breeding and summer months. Need to coordinate with Council mapping that shows seasonally occupied roost space. Do volunteers know what to do if they see a sick or injured bat?



Figure 17 Bush restoration works in the understory of the Park



Figure 19 Asset protection zone behind properties in Glebe Close



Figure 18 Vegetation mapped as EEC overhanging behind Glebe Close properties



3 Community engagement

3.1 Stakeholders

There are a range of stakeholders directly or indirectly affected by flying-foxes, or who are interested in management of the camp. Stakeholders include those shown in Table 5.

Table 5 Stakeholders of Kooloonbung Creek camp

Stakeholder group	Stakeholder	Interest/reported impacts
Community	Residents and business owners	The location of the camp within a residential area means there are many residents affected by amenity issues (e.g. noise, smell, faecal drop), including residents of: <ul style="list-style-type: none"> Glebe Close Gordon Street Hollingworth St Lake Road Anita Crescent Lake Road
	Conservation groups	Friends of Kooloonbung have been undertaking bush regeneration in the Park since 1985
	Indigenous community	Traditional owners have a general interest in flying-foxes, including the ecological services they provide and the potential for sustainable harvesting for food or medicinal purposes.
Industry	Horse owners and managers	Horse owners, equine facility managers and local vets should be aware that Hendra virus risk is associated with foraging flying-foxes (e.g. risk is present across the entire flying-fox range), and appropriate mitigation measures.
	Orchardists and fruit growers	Fruit growers may be impacted by flying-foxes raiding orchards and should have access to wildlife friendly netting information.
	Port Macquarie Airport	Airport managers have a responsibility to reduce the risk of wildlife-aircraft strike. Port Macquarie Airport is located 3.5 km to the west of Kooloonbung camp and should be consulted regarding any management that may influence flying-fox movements or behaviour.
Government	Port Macquarie-Hastings Council	Council is responsible for administering local laws, plans and policies, and appropriately managing assets (including land) for which it is responsible.
	OEHL	OEHL is responsible for administering state legislation relating to (among other matters) the conservation and management of native plants and animals, including threatened species and ecological communities.
	Commonwealth Department of the Environment and Energy (DoEE)	DoEE is responsible for administering federal legislation relating to matters of national environmental significance, such as the grey-headed flying-fox which roosts at Kooloonbung Creek camp.
	Local Government NSW (LGNSW)	LGNSW is an industry association that represents the interests of councils in NSW. LGNSW also administered funds under the NSW Flying-fox Grants Program.
Non-government organisations	Wildlife carers and conservation organisations	Wildlife carers and conservation organisations have an interest in flying-fox welfare and conservation of flying-foxes and their habitat.
	Researchers/universities/CSIRO	Researchers have an interest in flying-fox behaviour, biology and conservation.



3.2 Engagement methods and results

Extensive effort has been made to engage with the community in the development of this plan. The aim of the engagement was to:

- seek feedback from the community concerning the impact of flying-foxes and advice on potential mitigation options
- understand the impacts, positive and negative, directly and indirectly affecting the community
- share information and seek ideas about possible future management options
- correct misinformation and alleviate fears regarding health risks to people and domestic animals (see Appendix 4 for information about human and animal health)
- raise awareness about the ecological importance of flying-foxes.

During development of the Plan, three methods will be used to engage with the Port Macquarie community; an online survey, community consultation meetings and public exhibition of the draft Plan (Table 6).

Table 6 Community engagement methods

Engagement method	Key dates	Outcomes
Inaugural Committee Meeting	4 September 2018	21 attendees. Minutes of Flying-fox Camp Management Plan 2018 Inaugural Committee Meeting available from Council.
Community consultation meeting #2	14 November 2018	23 attendees provided feedback to Ecosure on their preferred management options for inclusion in the Plan.
Online survey	20-30 November 2018	Online survey results will be included in section 3.2.2
Community consultation meeting #3	12 December 2018	Outcomes of meeting included in section 3.2.1
Public exhibition of draft Plan	5 December 2018 – 11 February	Submissions received by Council on the draft Plan incorporated into the final plan
Community consultation meeting #4	27 February 2018	TBA

3.2.1 Community consultation meeting

Concerns reported by the Port Macquarie-Hastings community include:

- fear of disease transfer to humans and domestic animals
- excessive noise, particularly depriving sleep and contributing to other health issues, and reduced amenity
- odour entering homes and reduced lifestyle amenity
- faecal drop on vehicles and outdoor areas
- damage to vegetation.



Impacts reported by residents are confined to the northern extent of Kooloonbung Creek Nature Park, particularly behind properties on Glebe Close, the Glebe Terraces Villas and Grove Terraces and the northern most end of Lake Road (Figure 20).

Attendees at the consultation meeting on November 14, 2018 provided feedback to Ecosure on which camp management actions (Section 4) to prioritise or disregard. Attendees were also invited to suggest how or where best to implement those actions. Comments in 'Actions to Prioritise', 'Actions to Disregard' and 'How and Where to Implement' have come directly from the consultation committee (Appendix 7). Actions were attributed to a corresponding level of management outlined in Section 4.

Meeting 2 revealed that the committee preferred, or were interested in learning more about, the following management actions:

- education and awareness programs specifically:
 - removal of non-natives
 - information on flying-fox diseases
 - advice on tree trimming
 - banning barbed wire in residential areas
 - promoting wildlife friendly netting.
- property acquisition
- creating alternative habitat or roost site
- subsidies for water and power use
- buffers through tree trimming or removal
- canopy-mounted sprinklers.

Concerns regarding flying-fox disease need to be addressed as part of an educational strategy. One resident at the meeting enquired about bat dander. Dander is an airborne allergen associated with the shedding of fur, hair or feathers (ALA 2017). The two flying-fox diseases; Australian Bat Lyssavirus and Hendra Virus (Appendix 4) cannot be transmitted through air-borne particles. Suspected allergies to flying-fox dander should be treated the same way as reactions to other general allergens such as dust and pollen. It is also possible that allergies perceived to be associated with flying-foxes may be due to coinciding increases in flowering (and pollen) that attracted an increased number of flying-foxes.

Although some committee members indicated that signage had already been installed and was an action that could be disregarded, the current signage only states, 'do not disturb' and does not improve knowledge or awareness of flying-fox ecology or conservation.

Some attendees had concern for removal of vegetation and making sure that the Park's other values such as koala movement was not impeded through actions such as noise attenuation fencing. Endangered ecological communities mapped to the border of some property boundaries exclude the option of tree removal within asset protection zones according the



Council Development Control Plan (Appendix 1).

The committee is in favour of subsidies to assist with the costs associated with water for cleaning and high electricity use from air-conditioners due to not being able to open windows when the camp is emitting odour. A distance-based subsidy program could be created for residents to apply for financial assistance or professional advice regarding building insulation or double-glazed windows.

The third community consultative meeting discussed a dispersal scenario for the camp with reference to other Councils' dispersal results between 1990-2013 (Roberts and Eby 2013). Matters for consideration included financial cost, duration and resources required, likelihood of long-term success and, consequences of moving the camp to unknown or more problematic locations.

In 2013, Roberts and Eby summarised dispersals between 1990 and 2013:

- In all cases, dispersed animals did not abandon the local area.
- In 16 of the 17 cases, dispersals did not reduce the number of flying-foxes in the local area.
- Dispersed animals did not move far (63% of the time within 600m).
- In 85% of cases, new camps established nearby.
- In all cases it was not possible to predict where replacement camps would form.
- Conflict was often not resolved. In 71% of cases conflict still being reported either at the original site or within the local area years after the initial dispersal actions.
- Repeat dispersal was always required except where extensive vegetation removal occurred.

3.2.2 Survey responses

The community was invited to participate in an online survey linked to Council's website. The survey period was open for two weeks and contained 21 questions that comprised:

- flying-fox awareness (7 questions)
- flying-fox interaction (3 questions)
- flying-fox management (8 questions)
- respondent demographic (2 questions)
- open comment (1).

Results from the community survey are provided in Appendix 5.

A total of 43 survey respondents answered all or some of the questions. Some questions were optional while others requested more details depending upon the response, e.g. if a respondent answered 'no' to 'is the protection of flying-foxes important to you as a community member?' they were then prompted to respond to questions about why they had responded



in this way i.e. why they did not consider the protection of flying-foxes important. There were also opportunities for respondents to provide additional information if their points of view were not included in the available options.

3.2.3 Public submissions on draft Plan

The public submission period for the draft Plan is 5 December 2018 – 11 February 2019.



Figure 20: Community impact area

Port Macquarie-Hastings Council
Kooloonbung Creek CMP

- Maximum camp extent
- Impacted resident 1
- Impacted resident 2
- Impacted resident 3
- Impacted resident 4



Job number: PR3995
Revision: 0
Author: KF
Date: 27/11/2018



0 25 50 100
Metres

GDA 1994 MGA Zone 58
Projection: Transverse Mercator
Datum: GDA 1994
Units: Metre



4 Camp management options

Below is an overview of management options commonly used throughout NSW and Australia which were considered in the development of the Plan. These are categorised as Level 1, 2 or 3 in accordance with the Policy.

4.1 Level 1 actions: routine camp management

4.1.1 Education and awareness programs

This management option involves undertaking a comprehensive and targeted flying-fox education and awareness program to provide accurate information to the local community about flying-foxes.

Such a program would include information about managing risk and alleviating concern about health and safety issues associated with flying-foxes, options available to reduce impacts from roosting and foraging flying-foxes, an up-to-date program of works being undertaken at the camp, and information about flying-fox numbers and flying-fox behaviour at the camp.

Residents should also be made aware that faecal drop and noise at night is mainly associated with plants that provide food, independent of camp location. Staged removal of foraging species such as fruit trees and palms from residential yards, or management of fruit (e.g. bagging, pruning) will greatly assist in mitigating this issue.

Collecting and providing information should always be the first response to community concerns in an attempt to alleviate issues without the need to actively manage flying-foxes or their habitat. Where it is determined that management is required, education should similarly be a key component of any approach.

The likelihood of improving community understanding of flying-fox issues is high. However, the extent to which that understanding will help alleviate conflict issues is probably less so. Extensive education for decision-makers, the media and the broader community may be required to overcome negative attitudes towards flying-foxes.

It should be stressed that a long-term solution to the issue resides with better understanding flying-fox ecology and applying that understanding to careful urban planning and development.

An education program may include components shown in Figure 21.



Figure 21 Possible components of an education program

4.1.2 Property modification without subsidies

The managers of land on which a flying-fox camp is located would promote or encourage the adoption of certain actions on properties adjacent to or near the camp to minimise impacts from roosting and foraging flying-foxes:

- Create visual/sound/smell barriers with fencing or hedges. To avoid attracting flying-foxes, species selected for hedging should not produce edible fruit or nectar-exuding flowers, should grow in dense formation between two and five metres (Roberts 2006) (or be maintained at less than 5 metres). Vegetation that produces fragrant flowers can assist in masking camp odour where this is of concern.
- Manage foraging trees (i.e. plants that produce fruit/nectar-exuding flowers) within properties through pruning/covering with bags or wildlife friendly netting, early removal of fruit, or tree replacement.
- Cover vehicles, structures and clothes lines where faecal contamination is an issue, or remove washing from the line before dawn/dusk.
- Move or cover eating areas (e.g. BBQs and tables) within close proximity to a camp or foraging tree to avoid contamination by flying-foxes.



- Install double-glazed windows, insulation and use air-conditioners when needed to reduce noise disturbance and smell associated with a nearby camp.
- Follow horse husbandry and property management guidelines provided at the NSW Department of Primary Industries Hendra virus web page (DPI 2015a).
- Include suitable buffers and other provisions (e.g. covered car parks) in planning of new developments.
- Turn off lighting at night which may assist flying-fox navigation and increase fly-over impacts.
- Consider removable covers for swimming pools and ensure working filter and regular chlorine treatment.
- Appropriately manage rainwater tanks, including installing first-flush systems.
- Avoid disturbing flying-foxes during the day as this will increase camp noise.

The cost would be borne by the person or organisation who modifies the property; however, opportunities for funding assistance (e.g. environment grants) may be available for management activities that reduce the need to actively manage a camp.

4.1.3 Property modification subsidies

Fully funding or providing subsidies to property owners for property modifications may be considered to manage the impacts of the flying-foxes. Providing subsidies to install infrastructure may improve the value of the property, which may also offset concerns regarding perceived or actual property value or rental return losses.

The level and type of subsidy would need to be agreed to by the entity responsible for managing the flying-fox camp.

4.1.4 Service subsidies

This management option involves providing property owners with a subsidy to help manage impacts on the property and lifestyle of residents. The types of services that could be subsidised include clothes washing, cleaning outside areas and property, car washing or power bills. Rate reductions could also be considered.

Critical thresholds of flying-fox numbers at a camp and distance to a camp may be used to determine when subsidies would apply.

4.1.5 Routine camp maintenance and operational activities

Examples of routine camp management actions (permissible subject to animal welfare measures listed in Appendix 6) are provided in the Policy. These include:

- removal of tree limbs or whole trees that pose a genuine health and safety risk, as determined by a qualified arborist



- weed removal, including removal of noxious weeds under the *Noxious Weeds Act 1993*, or species listed as undesirable by a council
- trimming of understorey vegetation
- the planting of vegetation
- minor habitat augmentation for the benefit of the roosting animals
- mowing of grass and similar grounds-keeping actions that will not create a major disturbance to roosting flying-foxes
- application of mulch or
- removal of leaf litter or other material on the ground.

Protocols should be developed for carrying out operations that may disturb flying-foxes, which can result in excess camp noise. Such protocols could include limiting the use of disturbing activities to certain days or certain times of day in the areas adjacent to the camp and advising adjacent residents of activity days. Such activities could include lawn-mowing, using chainsaws, whipper-snippers, using generators and testing alarms or sirens.

4.1.6 Revegetation and land management to create alternative habitat

This management option involves revegetating and managing land to create alternative flying-fox roosting habitat through improving and extending existing low-conflict camps or developing new roosting habitat in areas away from human settlement.

Selecting new sites and attempting to attract flying-foxes to them has had limited success in the past, and ideally habitat at known camp sites would be dedicated as a flying-fox reserve. However, if a staged and long-term approach is used to make unsuitable current camps less attractive, whilst concurrently improving appropriate sites, it is a viable option (particularly for the transient and less selective LRFF). Supporting further research into flying-fox camp preferences may improve the potential to create new flying-fox habitat.

When improving a site for a designated flying-fox camp, preferred habitat characteristics detailed in Appendix 3 Alternative camp site investigation report Section 1.3 Roosting preferences should be considered.

Foraging trees planted amongst and surrounding roost trees (excluding in/near horse paddocks) may help to attract flying-foxes to a desired site. They will also assist with reducing foraging impacts in residential areas. Consideration should be given to tree species that will provide year-round food, increasing the attractiveness of the designated site. Depending on the site, the potential negative impacts to a natural area will need to be considered if introducing non-indigenous plant species.

The presence of a water source is likely to increase the attractiveness of an alternative camp location. Supply of an artificial water source should be considered if unavailable naturally, however this may be cost-prohibitive.

Potential habitat mapping using camp preferences and suitable land tenure can assist in initial



alternative site selection. A feasibility study would then be required prior to site designation to assess likelihood of success and determine the warranted level of resource allocated to habitat improvement.

4.1.7 Provision of artificial roosting habitat

This management option involves constructing artificial structures to augment roosting habitat in current camp sites or to provide new roosting habitat. Trials using suspended ropes have been of limited success as flying-foxes only used the structures that were very close to the available natural roosting habitat. It is thought that the structure of the vegetation below and around the ropes is important.

4.1.8 Protocols to manage incidents

This management option involves implementing protocols for managing incidents or situations specific to particular camps. Such protocols may include monitoring at sites within the vicinity of aged care or child care facilities, management of compatible uses such as dog walking or sites susceptible to heat stress incidents (when the camp is subjected to extremely high temperatures leading to flying-foxes changing their behaviour and/or dying).

4.1.9 Participation in research

This management option involves participating in research to improve knowledge of flying-fox ecology to address the large gaps in our knowledge about flying-fox habits and behaviours and why they choose certain sites for roosting. Further research and knowledge sharing at local, regional and national levels will enhance our understanding and management of flying-fox camps.

4.1.10 Appropriate land-use planning

Land-use planning instruments may be able to be used to ensure adequate distances are maintained between future residential developments and existing or historical flying-fox camps. While this management option will not assist in the resolution of existing land-use conflict, it may prevent issues for future residents.

4.1.11 Property acquisition

Property acquisition may be considered if negative impacts cannot be sufficiently mitigated using other measures. This option will clearly be extremely expensive, however is likely to be more effective than dispersal and in the long-term may be less costly.

4.1.12 Do nothing

The management option to 'do nothing' involves not undertaking any management actions in relation to the flying-fox camp and leaving the situation and site in its current state.



4.2 Level 2 actions: in-situ management

4.2.1 Buffers

Buffers can be created through vegetation removal and/or the installation of permanent/semi-permanent deterrents.

Creating buffers may involve planting low-growing or spiky plants between residents or other conflict areas and the flying-fox camp. Such plantings can create a visual buffer between the camp and residences or make areas of the camp inaccessible to humans.

The Kooloonbung Creek camp exists in relatively narrow strips of vegetation around a treeless wetland and therefore it is necessary to devise a suitable buffer distance that provides relief for residents and avoids forcing flying-foxes into backyards or splintering the camp to other problematic locations, and maintains the ecological and amenity values of the vegetation. This requires consideration of the approximate total area of the camp, the area that would need to be modified/removed to create a suitable buffer, and whether there is an equivalent replacement area available in an appropriate location for the displaced flying-foxes.

Previous studies have recommended that vegetation buffers consisting of habitat not used by flying-foxes, should be 300 m or as wide as the site allows to mitigate amenity impacts for a community (SEQ Catchments 2012). Buffers need to take into consideration the variability of use of a camp site by flying-foxes within and across years, including large, seasonal influxes of flying-foxes. The usefulness of a buffer declines if the flying-fox camp is within 50 m of human habitation (section 4.2.1).

Buffers through vegetation removal

Vegetation removal aims to alter the area of the buffer habitat sufficiently so that it is no longer suitable as a camp. The amount required to be removed varies between sites and camps, ranging from some weed removal to removal of most of the canopy vegetation.

Any vegetation removal should be done using a staged approach, with the aim of removing as little native vegetation as possible. This is of particular importance at sites with other values (e.g. ecological or amenity), and in some instances the removal of any native vegetation will not be appropriate. Thorough site assessment will inform whether vegetation management is suitable (e.g. can impacts to other wildlife and/or the community be avoided?).

Removing vegetation can also increase visibility into the camp and noise issues for neighbouring residents which may create further conflict.

Suitable experts should be consulted to assist selective vegetation trimming/removal to minimise vegetation loss and associated impacts.

The importance of under- and mid-storey vegetation in the buffer area for flying-foxes during heat stress events also requires consideration.



Buffers without vegetation removal

Permanent or semi-permanent deterrents can be used to make buffer areas unattractive to flying-foxes for roosting, without the need for vegetation removal. This is often an attractive option where vegetation has high ecological or amenity value.

While many deterrents have been trialled in the past with limited success, there are some options worthy of further investigation:

Visual deterrents – Visual deterrents such as plastic bags, fluoro vests (GeoLINK 2012) and balloons (Ecosure, pers. comm.) in roost trees have shown to have localised effects, with flying-foxes deterred from roosting within 1–10 metres of the deterrents. The type and placement of visual deterrents would need to be varied regularly to avoid habituation. Potential for litter pollution should be considered and managed when selecting the type and placement of visual deterrents. In the absence of effective maintenance, this option could potentially lead to an increase in rubbish in the natural environment.

- Noise emitters on timers – Noise needs to be random, varied and unexpected to avoid flying-foxes habituating. As such these emitters would need to be portable, on varying timers and a diverse array of noises would be required. It is likely to require some level of additional disturbance to maintain its effectiveness, and ways to avoid disturbing flying-foxes from desirable areas would need to be identified. This is also likely to be disruptive to nearby residents.
- Smell deterrents – For example, bagged python excrement hung in trees has previously had a localised effect (GeoLINK 2012). The smell of certain deterrents may also impact nearby residents, and there is potential for flying-foxes to habituate.
- Canopy-mounted water sprinklers – This method has been effective in deterring flying-foxes during dispersals (Ecosure personal experience), and current trials in Queensland are showing promise for keeping flying-foxes out of designated buffer zones. This option can be logistically difficult (installation and water sourcing) and may be cost-prohibitive. Design and use of sprinklers need to be considerate of animal welfare and features of the site. For example, misting may increase humidity and exacerbate heat stress events, and overuse may impact other environmental values of the site.

Note that any deterrent with a high risk of causing inadvertent dispersal may be considered a Level 3 action.

4.2.2 Noise attenuation fencing

Noise attenuation fencing could be installed in areas where the camp is particularly close to residents. This may also assist with odour reduction, and perspex fencing could be investigated to assist fence amenity. Although expensive to install, this option could negate the need for habitat modification, maintaining the ecological values of the site, and may be more cost-effective than ongoing management.



4.3 Level 3 actions: disturbance or dispersal

4.3.1 Nudging

Noise and other low intensity active disturbance restricted to certain areas of the camp can be used to encourage flying-foxes away from high conflict areas. This technique aims to actively 'nudge' flying-foxes from one area to another, while allowing them to remain at the camp site.

Unless the area of the camp is very large, nudging should not be done early in the morning as this may lead to inadvertent dispersal of flying-foxes from the entire camp site. Disturbance during the day should be limited in frequency and duration (e.g. up to four times per day for up to 10 minutes each) to avoid welfare impacts. As with dispersal, it is also critical to avoid periods when dependent young are present (as identified by a flying-fox expert).

4.3.2 Dispersal

Dispersal aims to encourage a camp to move to another location, through either disturbance or habitat modification.

There is a range of potential risks, costs and legal implications that are greatly increased with dispersal (compared with in-situ management as above). See Appendix 6 for more details. These include:

- impact on animal welfare and flying-fox conservation
- splintering the camp into other locations that are equally or more problematic
- shifting the issue to another area
- impact on habitat value
- effects on the flying-fox population, including disease status and associated public health risk
- impacts to nearby residents associated with ongoing dispersal attempts
- excessive initial and/or ongoing capacity and financial investment
- negative public perception and backlash
- increased aircraft strike risk associated with changed flying-fox movement patterns
- unsuccessful management requiring multiple attempts, which may exacerbate all of the above.

Despite these risks, there are some situations where camp dispersal may be considered. Dispersal can broadly be categorised as 'passive' or 'active' as detailed below.

Passive dispersal

Removing vegetation in a staged manner can be used to passively disperse a camp, by gradually making the habitat unattractive so that flying-foxes will disperse of their own accord over time with little stress (rather than being more forcefully moved with noise, smoke, etc.).



This is less stressful to flying-foxes, and greatly reduces the risk of splinter colonies forming in other locations (as flying-foxes are more likely to move to other known sites within their camp network when not being forced to move immediately, as in active dispersal).

Generally, a significant proportion of vegetation needs to be removed in order to achieve dispersal of flying-foxes from a camp or to prevent camp re-establishment. For example, flying-foxes abandoned a camp in Bundall, Queensland once 70% of the canopy/mid-storey and 90% of the understorey had been removed (Ecosure 2011). Ongoing maintenance of the site is required to prevent vegetation structure returning to levels favourable for colonisation by flying-foxes. Importantly, at nationally important camps (Appendix 1) sufficient vegetation must be retained to accommodate the maximum number of flying-foxes recorded at the site.

This option may be preferable in situations where the vegetation is of relatively low ecological and amenity value, and alternative known permanent camps are located nearby with capacity to absorb the additional flying-foxes. While the likelihood of splinter colonies forming is lower than with active dispersal, if they do form following vegetation modification there will no longer be an option to encourage flying-foxes back to the original site. This must be carefully considered before modifying habitat.

There is also potential to make a camp site unattractive by removing access to water sources. However, at the time of writing this method had not been trialled so the likelihood of this causing a camp to be abandoned is unknown. It would also likely only be effective where there are no alternative water sources in the vicinity of the camp.

Active dispersal through disturbance

Dispersal is more effective when a wide range of tools are used on a randomised schedule with animals less likely to habituate (Ecosure pers. obs. 1997–2015). Each dispersal team member should have at least one visual and one aural tool that can be used at different locations on different days (and preferably swapped regularly for alternate tools). Exact location of these and positioning of personnel will need to be determined on a daily basis in response to flying-fox movement and behaviour, as well as prevailing weather conditions (e.g. wind direction for smoke drums).

Active dispersal will be disruptive for nearby residents given the timing and nature of activities, and this needs to be considered during planning and community consultation.

This method does not explicitly use habitat modification as a means to disperse the camp, however if dispersal is successful, some level of habitat modification should be considered. This will reduce the likelihood of flying-foxes attempting to re-establish the camp and the need for follow-up dispersal as a result. Ecological and aesthetic values will need to be considered for the site, with options for modifying habitat the same as those detailed for buffers above.

Early dispersal before a camp is established at a new location

This management option involves monitoring local vegetation for signs of flying-foxes roosting in the daylight hours and then undertaking active or passive dispersal options to discourage the animals from establishing a new camp. Even though there may only be a few animals



initially using the site, this option is still treated as a dispersal activity, however it may be simpler to achieve dispersal at these new sites than it would in an established camp. It may also avoid considerable issues and management effort required should the camp be allowed to establish in an inappropriate location.

It is important that flying-foxes feeding overnight in vegetation are not mistaken for animals establishing a camp.

Maintenance dispersal

Maintenance dispersal refers to active disturbance following a successful dispersal to prevent the camp from re-establishing. It differs from initial dispersal by aiming to discourage occasional over-flying individuals from returning, rather than attempting to actively disperse animals that have been recently roosting at the site. As such, maintenance dispersal may have fewer timing restrictions than initial dispersal, provided that appropriate mitigation measures are in place.

4.4 Unlawful activities

4.4.1 Culling

Culling is addressed here as it is often raised by community members as a preferred management method; however, culling is contrary to the object of the *Biodiversity Conservation Act* and will not be permitted as a method to manage flying-fox camps.

Culling was used in the early 1800's and into the 1920s.



4.5 Camp management options analysis

Table 7 provides an analysis of the camp management options described in Section 4 and their suitability for implementation at Kooloonbung Creek Camp. An appraisal is provided for the options to be either adopted, investigated further or disregarded within this plan.

Table 7 Camp management options analysis

Management options	Relevant impacts	Cost \$-\$-\$ Low-high	Advantages	Disadvantages	Suitability for site
Level 1 options					
Education and awareness programs	Fear of disease Noise Smell Faecal drop	\$	Low cost, increasing awareness will help the community coexist with flying-foxes, providing options for landholders to reduce impacts is an effective long-term solution and can be undertaken quickly.	Education and advice itself will not mitigate all issues, and on its own would not be acceptable to the community.	Early consultation indicates the community is in favour of a range of educational tools and methods. There appears to be some fears and concerns regarding disease risk that needs addressing. Ongoing education is a good way to manage expectations around achievable flying-fox management actions
Property modification / service subsidies	Noise Smell Faecal drop Health/wellbeing Property devaluation Lost rental return	\$-\$	Property modification is one of the most effective ways to reduce amenity impacts of a camp without dispersal, relatively low cost, promotes conservation of FFs, can be undertaken quickly, will not impact on the site and may add value to the property. Property modification, such as glazing windows or installing insulation, will greatly assist with noise impacts inside residences and businesses. Installing shade sails, a car port or covering other affected areas will reduce the impacts of faecal drop.	May be cost-prohibitive for private landholders, however subsidies would assist.	Property modification can assist in reducing all amenity concerns, although may be cost prohibitive for residents – subsidies would assist. Appraisal: Adopt distance-based subsidies program.

PR3995 Kooloonbung Creek Camp Management Plan

ecosure.com.au | 38



Management options	Relevant impacts	Cost \$-\$\$\$ Low-high	Advantages	Disadvantages	Suitability for site
			Council could provide car covers, clothesline covers, free hire of pressure cleaners or consider rate reductions to assist with faecal drop impacts.		
Odour reducing / masking plants	Noise Smell Health/wellbeing Property devaluation	\$	Planting dense screens and fragrant plants to assist with odour and noise. Provide for the trimming of vegetation to maintain a low growing form. Tall trees to be assessed and modified only by a suitably qualified arborist.	May take time for plants to provide the desired effect. May not work effectively for residents located immediately next to the camp but would assist for residents living in the vicinity of the reserve	Residents could be encouraged to modify properties by planting dense screens and fragrant plants. If paired in conjunction with cleared buffers, could replace gaps with low shrubs to mitigate visual or odour impacts from camp. Appraisal: Adopt
Routine camp management	Health/well-being	\$	Weed removal has the potential to reduce roost availability and reduce numbers of roosting FFs.	Will not generally mitigate amenity impacts for nearby landholders.	Friends of Kooloonbung and Council regularly undertake bush regeneration and maintenance in the Park Appraisal: Adopt (ongoing)
Alternative habitat creation	Noise Smell Faecal drop Health/wellbeing Property devaluation Lost rental return	\$\$-\$\$\$	If successful in attracting FFs away from high conflict areas, dedicated habitat in low conflict areas will mitigate all impacts and helps FF conservation. Rehabilitation of degraded habitat that is likely to be suitable for FF use could be a more practical and faster approach than habitat creation. Improving potential alternative camp habitat should be part of a medium-long term plan.	Generally costly, long-term approach so cannot be undertaken quickly, previous attempts to attract FFs to a new site have not been known to succeed.	Undertake a desktop investigation into nearby suitable flying-fox habitat and potential alternative camp sites. A risk assessment of the alternative sites against the current site would help in determining feasibility of moving the camp. Appraisal: Adopt



Management options	Relevant impacts	Cost \$-\$-\$ Low-high	Advantages	Disadvantages	Suitability for site
Provision of artificial roosting habitat	Noise Smell Faecal drop Health/wellbeing Property devaluation Lost rental return	\$-\$-\$	Artificial roosting habitat could be considered to supplement the narrow available roosting space between the wetland and residential properties	No guarantee that flying-foxes would use artificial habitat, but collaborating with a researcher on varying design options would increase the likelihood of success.	Not enough evidence to explore this as a viable option to support habitat restoration. Appraisal: Disregard
Protocols to manage incidents	Health/wellbeing Fear of disease	\$	Low cost, will reduce actual risk of negative human/pet-FF interactions, promotes conservation of FFs, can be undertaken quickly.	Will not mitigate amenity impacts, but will reduce fear of disease.	Previous management actions (Table 4) recommended annual check on recorded Lyssavirus, Hendra Virus, Menangle Virus and Leptospirosis infections. Need to develop understanding of records or incidents and whether protocols are needed to reduce exposure to risk such as for staff, subcontractors or volunteers working in the Park. Appraisal: Investigate further
Research	Noise Smell Faecal drop Health/wellbeing Property devaluation Lost rental return	\$	Support research that improve understanding and more effectively mitigates impacts. Develop understanding of native flowering event in area.	Generally cannot be undertaken quickly, management trials may require cost input.	Not considered an urgent action at this site. Council will endeavour to stay up to date with contemporary research as it arises. Appraisal: Investigate further



Management options	Relevant impacts	Cost \$-\$\$\$ Low-high	Advantages	Disadvantages	Suitability for site
Appropriate land-use planning	Noise Smell Faecal drop Health/wellbeing Property devaluation Lost rental return	\$	Suitable planning for future development will reduce potential for future conflict. Identification of degraded sites that may be suitable for long-term rehabilitation for FFs could reduce impacts.	Will not generally mitigate current impacts.	Council may consider including additional management buffer zones within their codes in future planning scheme updates where properly documented and justified. Appraisal: Investigate further
Property acquisition	All for specific property owners Nil for broader community	\$\$\$	Option to lease properties back to community	Extremely expensive	Some consultation committee members wanted this option considered. Appraisal: Investigate further
Do nothing	Nil	Nil	No resource expenditure.	Will not mitigate impacts and would not be considered acceptable by impacted members of the community.	Not appropriate. Appraisal: Disregard
Level 2 options					
Buffers through vegetation removal	Noise Smell Health/wellbeing	\$-\$\$	Any vegetation removal should be done using a staged approach, with the aim of removing as little native vegetation as possible and only in vegetation directly affecting residents subject to a Vegetation Management Plan. Asset protection zones provide a buffering function in other areas of the Kooloonbung Creek where residents have not indicated high levels of impact.	Removing vegetation can also increase visibility into the camp and noise issues for neighbouring residents which may create further conflict. No certainty that removal of vegetation will improve condition for impacted residents. Vegetation removed too quickly could cause inadvertent dispersal.	TEC vegetation in KCNP also is protected by coastal SEPP. Biodiversity Values mapped will require a Biodiversity Development Assessment Report in accordance with a Biodiversity Assessment Method. Further assessment and offsetting of this vegetation may not bring the intended mitigation and should be investigated further. Appraisal: Investigate further
Buffers without vegetation removal – canopy-mounted	Noise Smell Health/wellbeing	\$\$	Canopy-mounted water sprinklers – This method has been effective in deterring flying-foxes from designated buffer zones in Queensland (Ecosure pers. comm.).	This option can be logistically difficult regarding installation and water sourcing. Could alter design using flagpole structures. Would	Some residents were in favour of this technique. TS licence require on private property or assessed under Part 5 EP&A Act on public land

PR3995 Kooloonbung Creek Camp Management Plan

ecasure.com.au | 41



Management options	Relevant impacts	Cost \$-\$\$\$ Low-high	Advantages	Disadvantages	Suitability for site
sprinklers	Damage to vegetation or habitat			require guidelines regarding frequency and duration of use to mitigate exacerbating HSE effects.	Appraisal: Investigate further for boundary between Lot 26/DP249270 and 3/SP70635 and 3/SP73183
Noise attenuation fencing	Noise Smell Health/wellbeing Property devaluation Lost rental return/income	\$\$	Standard noise attenuation fencing is intended to alleviate amenity issues for residents. Advice from an acoustic consultant may provide site-specific alternatives (see Section 9).	Noise attenuation fencing is costly and can be considered unsightly for property fencing. Concerns regarding permeability of the landscape for animal movement particularly koalas. Area is also subject to some flooding	The committee did not show preference for this method. Appraisal: Disregard
Level 3 options					
Nudging	All	\$\$-\$\$\$	Can encourage flying-foxes to shift away from high conflict areas next to residential areas.	May lead to inadvertent dispersal if not done at the correct time, frequency or duration.	Level 2 management actions that have been proposed will serve to nudge flying-foxes away from high impact areas. Active nudging will only be considered if Level 2 actions are deemed to have been unsuccessful for the community. Appraisal: Investigate further
Active dispersal	All at that site but not generally appropriate for amenity impacts only	\$\$\$	If successful can mitigate all impacts at that site.	Dispersal is rarely successful without significant vegetation removal (not appropriate at this location) or ongoing effort and excessive expenditure (e.g. several years and \$1M for Sydney Botanic Gardens). Flying-foxes will almost always continue to roost in the area (generally within 600m), and often splinter into several locations nearby (including many remaining at the original site) (e.g. a single camp	This option is not considered appropriate at this site. Appraisal: Disregard



Management options	Relevant impacts	Cost \$-\$\$\$ Low-high	Advantages	Disadvantages	Suitability for site
				permanently splintered to numerous sites as a result of dispersal in Maclean, including remaining at the original site).	

If flying-foxes are being unlawfully and intentionally disturbed, this should be reported to NSW Office of Environment and Heritage's Environment Line by calling 131 555. Native animals are protected under the BC Act 2016 and EPBC Act and there are penalties for people found guilty of an offence. Offences are dealt with before the Local Court or before the Land and Environment Court. The RSPCA (NSW) is legally able to prosecute infringements that directly contradict the *Prevention to Cruelty Act 1979*.



5 Planned management approach

Council will take a risk-based approach to management based on:

- potential health, safety, wellbeing and economic implications for the community
- likelihood of management success
- potential flying-fox welfare and conservation impacts
- cost of management, and who would contribute to these costs
- risk of splintering the camp to other locations that are equally or more problematic.

Management options provided herein are intended primarily to provide relief for residents living in close proximity to the camp. Management options have been staged to prevent exacerbating issues associated with the camp whilst ensuring the welfare of flying-foxes.

Management options for adoption or further investigation are outlined in Actions in Table 8 contingent on securing funds and staff resourcing levels. Funds for actions will be sourced via grants and Council commitments.

Table 8 along with proposed timing: short-term (within 12 months), medium-term (within 2 years) or long-term (within 3-5 years). Note also that all management, and routine maintenance, must be done in accordance with mitigation measures detailed in Appendix 6.

The proposed management approach considers feedback received during community engagement, with the community indicating a preference for those below.

N.B. All management must be consistent with legislation detailed in Appendix 1, and any other applicable legislation.

5.1 Level 1 management

Level 1 management actions include:

- education and awareness programs specifically:
 - options for property modification such as removal of non-native foraging vegetation
 - information on flying-fox diseases
 - wearing a hat when walking through the park to reduce contact with faecal drop
 - advice on tree trimming or odour masking plants on private properties
 - banning barbed wire in residential areas
 - promoting wildlife friendly netting.
- property acquisition
- creating alternative habitat or camp site



- subsidies for water and power use.

Misconceptions that flying-foxes are not threatened, are pests and about health risks can be reduced by adopting an education and awareness program to reduce misconceptions and appease fears. Residents are in favour of upgrading of the boardwalk to improve their enjoyment of and ability to use the park safely. This work will be undertaken as a separate item to this Plan.

A distance based subsidy program will be investigated to assist with cost associated cleaning and using air-conditioning. For instance, power rebates for residents living within 50m (Figure 22) and then within 100m. The community survey indicated a preference for driveway and roof cleaning.

Finding an alternative camp site for the flying-foxes to inhabit could be beneficial to residents living around Kooloonbung Creek. A desktop investigation of alternative flying-fox camp sites will be undertaken by Council along with a comparable risk assessment of alternative sites against Kooloonbung camp.

5.2 Level 2 management

Level 2 management actions include:

- buffers through tree trimming or removal
- canopy-mounted sprinklers.

Level 2 buffers may consist of a combination of vegetation removal and sprinklers where tree removal is not preferred or constrained by the presence of EECs (Figure 22). **Level 2 actions require OEH authorisation prior to commencing (Appendix 1). Additional approvals may also be required under other legislation (Appendix 1).** An arborist should be engaged to investigate which trees are suitable for trimming or removal in line with the aforementioned provisions.

The Code of Practice Authorising Flying-fox Camp Management Actions 2018 under the Biodiversity Conservation Regulation does not exempt Council from meeting its responsibilities under the *Biodiversity Conservation Act 2016* and *Environmental Planning and Assessment Act 1979*.

Due to the presence of EECs behind the villas in Lake Road, the installation of canopy-mounted sprinklers in this area may trigger the need for a threatened species 'test of significance' under the *Biodiversity Conservation Act 2016*. Alternative or innovative designs for the sprinkler installation may include using poles instead of attaching to sprinklers to trees, and locating the poles on the border of Council and private property to avoid impacts to the EEC.

5.2.1 Canopy-mounted sprinklers

Canopy sprinklers have been used successfully elsewhere to deter flying-foxes from areas of



conflict. It is not the intention to disperse flying-foxes away from the camp, but maintain a buffer between residents and the flying-fox camp.

Canopy sprinklers have been effectively used at several camps in south-east Queensland, with adjacent residents given the option to activate sprinklers for short periods during the day if flying-foxes enter the buffer zone. By limiting flying-foxes in the buffer zones (the high conflict areas), there was also less disturbance of the camp, which provided the secondary benefit of reduced noise, smell, daytime fly-overs and faecal drop. Residents report a sense of regained control, which combined with the increased distance to roosting flying-foxes achieved with the sprinklers, has greatly assisted in reducing conflict with the camp. It is recommended residents near the Kooloonbung Creek camp should be able to activate sprinklers when necessary (with consideration to guidelines below).

Provided that adequate water pressure can be achieved (with a pump station), each sprinkler should have approximately a 13-15 m reach (radius). Figure 22 shows approximate locations where four sprinklers are planned for installation as soon as practicable to minimise current conflict.

Note that consultation is still required with irrigation/sprinkler specialists to confirm feasibility at this site, however based on previous Ecosure experience this option should be achievable.

Installation costs for similar programs elsewhere, including all infrastructure and eight sprinklers, were approximately \$30,000. The majority of this cost is in infrastructure (pump shed, control board, plumbing, etc.) with individual sprinklers costing less than \$1,000. As such the installation of four sprinklers, and associated infrastructure (pump, control board, etc.) will cost an estimated \$20,000 (plus maintenance and operation costs, including ~100 L water/week/sprinkler).

5.2.1.1 Installation and operational considerations

Placement - Exact placement will be dependent on finding suitable location to install poles. These will be designed to withstand high wind and vegetation debris fall, and will be highly visible to flying-foxes to avoid collisions.

Water pressure – Water pressure must be firm so it is sufficient to deter flying-foxes, however must not risk injuring flying-foxes (or other fauna) or knocking an animal from the tree. Water misting should be minimised as this is unlikely to deter flying-foxes.

Noise – Sprinklers should release a jet of air prior to water, as an additional deterrent and to cue animals to move prior to water being released. The intention of the sprinklers is to make the buffer unattractive, and effectively 'train' individuals to stay out of the buffer area.

Potential for additional sprinklers – Infrastructure should accommodate additional sprinklers if possible should they be required in the future.

Residents involved in a similar approved trial elsewhere also reported noise impacts associated with the water hammer.



Access for maintenance/adjustments – Sprinklers should be designed and attached in a way that allows the easiest possible access for future maintenance, replacement and sprinkler head adjustments.

Sprinkler control – The system control station should allow independent programming of each individual sprinkler. The number of times per day each sprinkler is activated, duration of each activation and sequence of sprinkler activation needs to be fully adjustable (minutes and seconds programming required). The operational time of day also needs to be adjustable. Ideally water pressure to individual sprinklers could also be adjusted.

Sprinklers will operate on a random schedule, and in a staggered manner (i.e. not all sprinklers operating at the same time, to avoid excessive disturbance). Each activation will be for approximately 20 seconds per sprinkler. It is anticipated each sprinkler will be activated up to four times per hour between 0600 and 1700, totalling approximately 15 minutes run time per sprinkler per day. Sprinklers will not operate during fly-in or fly-out periods to avoid inadvertent dispersal.

Sprinkler settings will need to be changed regularly to avoid flying-foxes habituating, and to account for seasonal changes (e.g. not in the heat of the day during summer when they may be an attractant). Individual sprinklers may also need to be temporarily turned off depending on location of creching young, or if it appears likely that animals will be displaced to undesirable locations.

Flying-fox heat stroke generally occurs when the temperature reaches 42°C, however can occur at lower temperatures in more humid conditions (Bishop 2015). Given that humidity is most likely to be increased with water mist, if sprinkler design cannot limit mist, sprinklers may need to be turned off in higher temperatures (e.g. >30°C) to avoid exacerbating heat stress.

5.3 Level 3 management

Some people have an expectation that flying-foxes can be moved or controlled. Level 3 dispersal actions are extremely expensive, resource intense and very rarely successful in the long term due to flying-foxes returning year after year. Dispersal should only be considered once Level 1 and Level 2 management methods have been implemented and impacts have not been mitigated. OEH approval would be required.




Actions in Table 8 contingent on securing funds and staff resourcing levels. Funds for actions will be sourced via grants and Council commitments.

Table 8 Staged approach to management at Kooloonbung Creek flying-fox camp. Note all actions must be done in accordance with measures in Appendix 6. **Authorisation for Level 2 and 3 actions is required**, and additional approvals may be required under other legislation (see Appendix 1).

Management option	Management level	Appraisal	Action(s)	Timing	Estimated cost
Education and awareness programs	Level 1	Adopt	Increase community understanding and improve perceptions of flying-foxes.	Short term (within 12 months)	\$4,000
			<ul style="list-style-type: none">· mail out flyers; disease risk; removal of non-natives in gardens (i.e. Cocos palms), removal of barbed wire fencing, using wildlife friendly netting		\$2,000
			<ul style="list-style-type: none">· produce webpage on Council's website summarising Council's approach to flying-fox management (or refer to sites such as http://littleaussiebat.com.au/health/)		\$10,000
			<ul style="list-style-type: none">· design and install signage promoting flying-fox ecology and conservation		\$2,000
			<ul style="list-style-type: none">· train staff on positive flying-fox messaging Continue to consult with affected community members.		\$18,000
Property modification / service subsidies	Level 1	Adopt	Investigate a subsidy program to assist with property modification for PMHC residents. The subsidy program will identify an eligibility matrix for subsidies based on the following parameters	Short term (within 12 months)	
			<ul style="list-style-type: none">· location of flying-fox camp		\$20,000
			<ul style="list-style-type: none">· proximity to residential areas		
			<ul style="list-style-type: none">· level of likely impacts from noise, odour, visibility Rebates/subsidies will be offered for		\$5,000
			<ul style="list-style-type: none">· water or electricity bills· double glazed windows· cleaning services· car covers		\$25,000
Routine camp management	Level 1	Adopt (ongoing)	Friends of Kooloonbung have been undertaking bush regeneration in the Park since 1985.	(ongoing)	Friends of Kooloonbung in kind
Alternative habitat creation	Level 1	Adopt	Stage 1 - Undertake an investigation of nearby alternative flying-fox camp sites to determine feasibility of identified sites. This will include a risk	Short term	\$10,000 (assumes up to three sites, additional



Management option	Management level	Appraisal	Action(s)	Timing	Estimated cost
			assessment to determine sensitive receptor areas, zoning conflicts and potential current and future use conflicts, assessment of current vegetation condition to determine what resource investment would be required to improve the sites suitability. Stage 2 – Select feasible sites for investment. Write plan of management / rehabilitation plans for selected sites. Stage 3 – Implementation of plans of management.	(within 12 months)	\$5,000 per additional site)
Canopy-mounted sprinklers	Level 2	Investigate further	Liaise with landholders and an irrigation specialist regarding feasibility and costs associated with installing canopy-mounted sprinklers in the buffer zone between Lot 26/DP249270 and 3/SP70635 and 3/SP73183 Design and frequency/ duration of use must also be considerate of animal welfare and other ecological values of the site. Level 2 action and so licence from OEH required prior to installing. Action may trigger a test of significance.	Medium term (within 2-3 years)	~ \$10,000 for each sprinkler including installation.
Buffers through vegetation trimming and removal	Level 2	Investigate further	Improve buffers for residents in high impact areas in Lots 3/SP70635 and 3/SP73183. An arborist should be engaged to investigate which trees are suitable for trimming or removal in line with Council's Planning Provisions. Level 2 action and authorisation from OEH required prior to commencing.	Long term (4-5 years after sprinklers deemed ineffective)	\$50,000 Estimate based on previous vegetation works
Protocols to manage incidents	Level 1	Investigate further	Previous management actions (Table 4) recommended annual check on recorded Lyssavirus. Hendra Virus, Menangle Virus and Leptospirosis infections. Develop understanding of records or incidents and whether protocols are needed to reduce exposure to risk such as for staff, subcontractors or volunteers working in the Park. Gather data during heat stress events and provide to researchers via https://www.animalecologylab.org/heat-stress-data-form.html	Short term (1-2 years)	Council in kind
Research	Level 1	Investigate further	Support research through continued flying-fox census data collection. Develop understanding of native flowering events in area.	Long term (ongoing)	Council in kind
Appropriate land-use planning	Level 1	Investigate further	Identification of zoning for FFs to mitigate impacts to residents.	Long term (within 3 years)	Council in kind

 ecosure

Management option	Management level	Appraisal	Action(s)	Timing	Estimated cost
			Measures to avoid future impacts will be considered when assessing development applications.		



Figure 22: Community impact area and proposed management options

Port Macquarie-Hastings Council
Kooloonbung Creek CMP

- Sprinkler
- Maximum camp extent
- Impact area 1
- Impact area 2
- Impact area 3
- Impact area 4
- Optional tree thinning/removal - 10 m
- Subsidy area



Job number: PR3995
Revision: 1
Author: KF
Date: 4/01/2019



0 25 50 100
Metres

GDA 1994 MGA Zone 56
Projection: Transverse Mercator
Datum: GDA 1994
Units: Meter



6 Evaluation and review

This Plan will be in operation for five years (2019-2023) with annual review of management actions set out in Section 5.

The following will trigger a reactive internal review of the Plan:

- completion of a management activity
- progression to a higher level of management
- changes to relevant policy/legislation
- new management techniques becoming available
- outcomes of research that may influence the Plan
- incidents associated with the camp.

Monitoring and reporting requirements are detailed in Section 7.

If the Plan is to remain current, a full review including stakeholder consultation and expert input will be undertaken in the final year of the Plan prior to being re-submitted to OEH.



7 Plan administration

7.1 Monitoring of the camp

Reports for Level 1 actions that comply with this Plan are not required to be submitted to OEH. It is recommended that Council keep internal records to allow the effectiveness of each management action to be evaluated.

Reports for Level 2 actions will be submitted to OEH one month after commencement of works and then quarterly in periods where works have occurred. Each report is to include:

- results of pre- and post-work population monitoring
- any information on new camps that have formed in the area
- further management actions planned to include a schedule of works
- an assessment of how the community responded to the works, including details on the number and nature of complaints before and after the works
- detail on any compensatory planting
- expenditure and contributors
- outcomes from evaluation and review (Section 6).

7.2 Responsibilities

Council is responsible for implementation of the Plan once it has been endorsed by OEH, licences have been obtained for Level 2 actions and resources have been allocated for implementation. Council will seek advice from OEH and other flying-fox experts as required during implementation.

Administration may also include determining residents' eligibility for subsidies for services such as arborist advice, vegetation trimming/removal and green waste removal or providing details of suppliers for canopy-mounted sprinklers.

All Council personnel, contractors and volunteers working in Kooloonbung Creek are responsible for complying with mitigation measures detailed in Appendix 6. Council will ensure non-Council staff and volunteers are aware of this responsibility and will provide assistance if required. All on-ground works towards implementation of this Plan, will be performed in accordance with a Safe Work Method Statement that includes risks and mitigation measures for working in a flying-fox camp.

7.3 Funding commitment

Council will commit available funds on an annual basis over the life of the five year Plan to implement actions in Table 8. Allocation of Council funding will be dependent on resources available and annual priorities. Council will also seek opportunities for funding through relevant grant programs, such as the NSW Flying-fox Grants Program.



References and further resources

Aich, P, Potter, AA and Griebel, PJ 2009, 'Modern approaches to understanding stress and disease susceptibility: A review with special emphasis on respiratory disease', *International Journal of General Medicine*, vol. 2, pp. 19–32.

AIHW 2012, *Risk factors contributing to chronic disease*, Cat no. PHE 157, Australian Institute of Health and Welfare, viewed 12 January 2016, www.aihw.gov.au/WorkArea/DownloadAsset.aspx?id=10737421546.

ALA 2017, Pet Dander, American Lung Association, available: <https://www.lung.org/our-initiatives/healthy-air/indoor/indoor-air-pollutants/pet-dander.html>

Atlas of Living Australia 2015, viewed 12 January 2016, www.ala.org.au.

Australasian Bat Society 2013, viewed 12 January 2016, ausbats.org.au/.

Australian Museum 2010, *Little Red Flying-fox*, viewed 12 January 2016, australianmuseum.net.au/little-red-flying-fox.

AVA 2015, *Hendra virus*, Australian Veterinary Association, viewed 12 January 2016, www.ava.com.au/hendra-virus.

Birt, P 2000, 'Summary information on the status of the Grey-headed (*Pteropus poliocephalus*) and Black (*P. alecto*) Flying-Fox in New South Wales,' Proceedings of workshop to assess the status of the grey-headed flying-fox in New South Wales. University of Sydney, Sydney, New South Wales, Australia, pp. 78-86.

Bishop T, 2015, The Management, Treatment and Physiology of Heat Stroke in Flying-foxes, presentation

CDC 2014, *Hendra virus disease (HeV): Transmission*, Centers for Disease Control and Prevention, updated 17 March 2014, viewed 12 January 2016, www.cdc.gov/vhf/hendra/transmission/index.html.

Churchill, S 2008, *Australian Bats*, Allen & Unwin, Crows Nest, NSW.

DECC 2007, *Threatened species assessment guidelines: the assessment of significance*, Department of Environment and Climate Change NSW, Sydney, viewed 12 January 2016, www.environment.nsw.gov.au/resources/threatenedspecies/tsaguide07393.pdf.

DECC 2008, *Best practice guidelines for the grey-headed flying-fox*, Department of Environment and Climate Change NSW, Sydney, viewed 12 January 2016, www.environment.nsw.gov.au/resources/threatenedspecies/08540tsdsflyingfoxbpg.pdf.

DECCW 2009, *Draft National Recovery Plan for the Grey-headed Flying-fox Pteropus poliocephalus*, prepared by Dr Peggy Eby for Department of Environment, Climate Change and Water NSW, Sydney, viewed 12 January 2016, www.environment.nsw.gov.au/resources/threatenedspecies/08214dnrpflyingfox.pdf.



DoE 2013, *Matters of National Environmental Significance: Significant Impact Guidelines 1.1*, Environment Protection and Biodiversity Conservation Act 1999, Australian Government Department of the Environment, www.environment.gov.au/system/files/resources/42f84df4-720b-4dcf-b262-48679a3aba58/files/neg-guidelines_1.pdf.

DoE 2014, *How can flying-foxes be managed in accordance with national environmental law?* Australian Government Department of the Environment, Canberra, viewed 12 January 2016, www.environment.gov.au/biodiversity/threatened/species/flying-fox-law.

DoE 2015, *Referral guideline for management actions in grey-headed and spectacled flying-fox camps*, Australian Government Department of the Environment, Canberra, viewed 12 January 2016, www.environment.gov.au/system/files/resources/6d4f8ebc-f6a0-49e6-a6b6-82e9c8d55768/files/referral-guideline-flying-fox-camps.pdf.

DoE 2016a, *Pteropus poliocephalus in Species Profile and Threats Database*, Australian Government Department of the Environment, Canberra, viewed 12 January 2016, www.environment.gov.au/cgi-bin/sprat/public/publicspecies.pl?taxon_id=186.

DoE 2016b, *Monitoring Flying-fox Populations*, Australian Government Department of the Environment, Canberra, viewed 12 January, www.environment.gov.au/biodiversity/threatened/species/flying-fox-monitoring.

DPI 2013, *Australian bat lyssavirus*, June 2013 Primefact 1291 2nd edition, Department of Primary Industries, NSW, viewed 12 January 2016, www.dpi.nsw.gov.au/__data/assets/pdf_file/0011/461873/Australian-Bat-lyssavirus.pdf.

DPI 2014, *Hendra virus*, June 2014 Primefact 970 9th edition, Department of Primary Industries, NSW, viewed 12 January 2016, www.dpi.nsw.gov.au/__data/assets/pdf_file/0019/310492/hendra_virus_primefact_970.pdf.

DPI 2015a, *Hendra virus*, Department of Primary Industries, NSW, viewed 12 January 2016, www.dpi.nsw.gov.au/agriculture/livestock/horses/health/general/hendra-virus.

DPI 2015b, *Lyssavirus and other bat health risks*, Department of Primary Industries, Primary Industry Biosecurity, NSW, viewed 12 January 2016, www.dpi.nsw.gov.au/biosecurity/animal/humans/bat-health-risks.

DSDIP 2014, *Queensland State Planning Policy July 2014*, Department of State Development, Infrastructure and Planning, Brisbane.

Eby, P 1991, 'Seasonal movements of Grey-headed Flying-foxes, *Pteropus poliocephalus* (Chiroptera: Pteropodidae) from two maternity roosts in northern New South Wales', *Wildlife Research*, vol. 18, pp. 547–59.

Eby, P 1995, *The biology and management of flying-foxes in NSW*, Species management report number 18, Llewellyn, L. (ed.), National Parks and Wildlife Service, Hurstville.

Eby, P 2000, 'The results of four synchronous assessments of relative distribution and abundance of Grey-headed Flying-fox *Pteropus poliocephalus*', *Proceedings from workshop to assess the status of the Grey-headed Flying-fox in New South Wales*, pp. 66–77.



Eby, P 2006, 'Site Management Plan for the Grey-headed Flying-fox camp at the Sydney Desalination Plant Site', report to Sydney Water Corporation, Sydney.

Eby, P and Lunney, D 2002, *Managing the Grey-headed Flying-fox as a threatened species in NSW*, Royal Society of New South Wales, Darlington, NSW.

Ecosure 2011, 'Hendra Virus Risk Assessment for the Gold Coast Equine Precinct: Residual Risk Report', unpublished report to City of Gold Coast.

Edson, D, Field, H, McMichael, L, Jordan, D, Kung, N, Mayer, D and Smith, C 2015, 'Flying-fox Roost Disturbance and Hendra Virus Spillover Risk', *PLoS ONE*, vol. 10, no. 5, viewed 12 January 2016, www.ncbi.nlm.nih.gov/pmc/articles/PMC4446312/pdf/pone.0125881.pdf.

EHP 2012, *Living with Wildlife – Flying-foxes*, Department of Environment and Heritage Protection, Queensland, updated 14 May 2012, viewed 12 January 2016, www.ehp.qld.gov.au/wildlife/livingwith/flyingfoxes/importance.html.

EHP 2013a, *Code of Practice – Ecologically sustainable management of flying-fox roosts*, Department of Environment and Heritage Protection, Queensland, viewed 12 January 2016, www.ehp.qld.gov.au/wildlife/livingwith/flyingfoxes/roost-management.html.

EHP 2013b, *Code of Practice – Low impact activities affecting flying-fox roosts*, Department of Environment and Heritage Protection, Queensland, viewed 12 January 2016, www.ehp.qld.gov.au/wildlife/livingwith/flyingfoxes/roost-management.html.

EHP 2013c, *Flying-fox roost management guideline*, Department of Environment and Heritage Protection, Queensland, viewed 12 January 2016, www.ehp.qld.gov.au/wildlife/livingwith/flyingfoxes/roost-management.html.

ELW&P 2015, *Flying-foxes*, Department of Environment, Land, Water and Planning, State of Victoria.

EPA 2013, *Noise Guide for Local Government*, Environment Protection Authority, Sydney.

Fujita, MS 1991, 'Flying-fox (*Chiroptera: Pteropodidae*) pollination, seed dispersal, and economic importance: a tabular summary of current knowledge', *Resource Publication No. 2*, Bat Conservation International.

GeoLINK 2010, *Maclean Flying-fox Management Strategy*, report prepared for Clarence Valley Council on behalf of the Maclean Flying-Fox Working Group.

GeoLINK 2012, *Lorn Flying-fox management strategy*, report prepared for Maitland City Council.

Hall, L and Richards, G 2000, *Flying foxes: fruit and blossom bats of Australia*, UNSW Press, Sydney.

Henry, JP and Stephens-Larson, P 1985, 'Specific effects of stress on disease processes' in Moberg, GP (ed.), *Animal Stress*, American Physiological Society, pp.161–175.



IUCN 2015, *Little red flying-fox*, International Union for the Conservation of Nature, www.iucnredlist.org.

Ku-ring-gai Council 2013, *Ku-ring-gai Flying-fox Reserve Management Plan*, Ku-ring-gai Council, Gordon, NSW.

Markus, N 2002, 'Behaviour of the Black Flying-fox *Pteropus alecto*: 2. Territoriality and courtship', *Acta Chiropterologica*, vol. 4, no. 2, pp.153–166.

Markus, N and Blackshaw, JK 2002, 'Behaviour of the Black Flying-fox *Pteropus alecto*: 1. An ethogram of behaviour, and preliminary characterisation of mother-infant interactions', *Acta Chiropterologica*, vol. 4, no. 2, pp. 137–152.

Markus, N and Hall, L 2004, 'Foraging behaviour of the black flying-fox (*Pteropus alecto*) in the urban landscape of Brisbane, Queensland', *Wildlife Research*, vol. 31, no. 3, pp. 345–355.

McCall, BJ, Field, H, Smith, GA, Storie, GJ and Harrower, BJ 2005, 'Defining the risk of human exposure to Australian bat lyssavirus through potential non-bat animal infection', *CDI*, vol. 29, no. 2, pp. 200–203, [www.health.gov.au/internet/main/publishing.nsf/content/cda-cdi2902-pdf-cnt.htm/\\$FILE/cdi2902k.pdf](http://www.health.gov.au/internet/main/publishing.nsf/content/cda-cdi2902-pdf-cnt.htm/$FILE/cdi2902k.pdf).

McConkey, KR, Prasad, S, Corlett, RT, Campos-Arceiz, A, Brodie, JF, Rogers, H and Santamaria, L 2012, 'Seed dispersal in changing landscapes', *Biological Conservation*, vol. 146, pp. 1–13, doi:10.1016/j.biocon.2011.09.018.

McGuckin, MA and Blackshaw, AW 1991, 'Seasonal changes in testicular size, plasma testosterone concentration and body weight in captive flying-foxes (*Pteropus poliocephalus* and *P. scapulatus*)', *Journal of Reproduction and Fertility*, vol. 92, pp. 339–346.

McIlwee, AP and Martin, IL 2002, 'On the intrinsic capacity for increase of Australian flying-foxes', *Australian Zoologist*, vol. 32, no. 1.

Milne, DJ and Pavey, CR 2011, 'The status and conservation of bats in the Northern Territory', in Law, B, Eby, P, Lunney, D and Lumsden, L (eds), *The Biology and Conservation of Australasian Bats*, Royal Zoological Society of NSW, Mosman, NSW, pp. 208–225.

NFFMP 2018, National Flying-fox Monitoring Program, Department of Environment and Energy, Australian Government, available: <http://www.environment.gov.au/biodiversity/threatened/species/flying-fox-monitoring> viewed 12 February 2018.

NSW Health 2012, *Flying foxes and health*, NSW Health, North Sydney, viewed 12 January 2016, www.health.nsw.gov.au/environment/factsheets/Pages/flying-foxes.aspx.

NSW Health 2013, *Rabies and Australian Bat Lyssavirus Infection*, NSW Health, North Sydney, viewed 12 January 2016, www.health.nsw.gov.au/Infectious/factsheets/Pages/Rabies-Australian-Bat-Lyssavirus-Infection.aspx.

OEH 2011a, *Grey-headed Flying-fox vulnerable species listing: NSW Scientific Committee*



final determination, Office of Environment and Heritage, Sydney, viewed 12 January 2016, www.environment.nsw.gov.au/determinations/GreyheadedFlyingFoxVulSpListing.htm.

OEH 2011b, *NSW Code of Practice for Injured, Sick and Orphaned Protected Fauna*, Office of Environment and Heritage, Sydney, viewed 12 January 2016, www.environment.nsw.gov.au/resources/wildlifelicences/110004FaunaRehab.pdf.

OEH 2012, *NSW Code of Practice for Injured, Sick and Orphaned Flying-foxes*, Office of Environment and Heritage, Sydney, viewed 12 January 2016, www.environment.nsw.gov.au/resources/wildlifelicences/120026flyingfoxcode.pdf.

OEH 2014, *BioBanking Assessment Methodology 2014*, Office of Environment and Heritage, Sydney, viewed 12 January 2016, www.environment.nsw.gov.au/resources/biobanking/140661BBAM.pdf.

OEH 2015a, *Flying-foxes* (including fact sheets), Office of Environment and Heritage, Sydney, viewed 12 January 2016, www.environment.nsw.gov.au/animals/flyingfoxes.htm.

OEH 2015b, *Flying-fox Camp Management Policy 2015*, Office of Environment and Heritage, Sydney, viewed 12 January 2016, www.environment.nsw.gov.au/resources/threatenedspecies/150070-flyingfoxcamp-policy.pdf.

OEH 2015c, *Flying-fox Camp Management Plan Template 2015*, Office of Environment & Heritage, Sydney, viewed 12 January 2016, www.environment.nsw.gov.au/resources/threatenedspecies/150102-flyingfoxcamp-template.pdf.

OEH 2015d, *GHFF threatened species profile*, Office of Environment and Heritage, Sydney, viewed 12 January 2016, www.environment.nsw.gov.au/threatenedSpeciesApp/profile.aspx?id=10697

OEH 2015e, *Policy and procedural guidelines for the mitigation of commercial crop damage by flying-foxes*, Office of Environment and Heritage, Sydney, viewed 12 January 2016, www.environment.nsw.gov.au/resources/wildlifelicences/140480FlyfoxPol.pdf

OEH 2018, Master Data – NSW NFFMP to Nov 2017 unpublished data.

Parry-Jones, KA and Augee, ML 1992, 'Movements of the Grey-headed Flying Foxes (*Pteropus poliocephalus*) to and from a colony site on the central coast of New South Wales', *Wildlife Research*, vol. 19, pp. 331–40.

Parry-Jones, K and Augee, M 2001 'Factors affecting the occupation of a colony site in Sydney, New South Wales by the Grey-headed Flying-fox *Pteropus poliocephalus* (Pteropodidae)', *Austral Ecology*, vol. 26, pp. 47–55.

Pierson, ED and Rainey, WE 1992, 'The biology of flying foxes of the genus *Pteropus*: A Review', in: Wilson, DE and GL Graham (eds), *Pacific Island Flying Foxes: Proceedings of an International Conservation Conference*, US Department of the Interior – Biological Report no. 90, pp. 1–17.



PMHC 2012, Kooloonbung Creek Nature Park Plan of Management, Port Macquarie Hastings Council

Qld Health 2016, *Bats and Human Health*, Queensland Health, viewed 12 January 2016, www.health.qld.gov.au/communicablediseases/hendra.asp

Ratcliffe, F 1932, 'Notes on the Fruit Bats (*Pteropus* spp.) of Australia', *Journal of Animal Ecology*, vol. 1, no. 1, pp. 32–57.

Roberts, B 2005, 'Habitat characteristics of flying-fox camps in south-east Queensland', BSc. Honours Thesis, Griffith University, Brisbane.

Roberts, BJ 2006, *Management of Urban Flying-fox Roosts: Issues of Relevance to Roosts in the Lower Clarence, NSW*, Valley Watch Inc, Maclean.

Roberts, B and Eby, P 2013, Review of past flying-fox dispersal actions between 1990–2013, publisher unknown, viewed 12 January 2016, www.environment.nsw.gov.au/resources/animals/flying-fox-2014-sub/flyingfoxsub-jenny-beatson-part2.pdf.

Roberts, BJ, Catterall, CP, Eby, P and Kanowski, J 2012, 'Long-Distance and Frequent Movements of the Flying-Fox *Pteropus poliocephalus*: Implications for Management', *PLoS ONE*, vol. 7, no. 8, e42532.

Roberts, BJ, Eby, P, Catterall, CP, Kanowski, J and Bennett, G 2011, 'The outcomes and costs of relocating flying-fox camps: insights from the case of Maclean, Australia', in Law, B, Eby, P, Lunney, D and Lumsden, L (eds), *The Biology and Conservation of Australasian Bats*, Royal Zoological Society of NSW, Mosman, NSW, viewed 12 January 2016, www.griffith.edu.au/__data/assets/pdf_file/0006/358440/Roberts-et-al.pdf.

Roberts, B, Kanowski, J and Catterall, C 2006, *Ecology and Management of Flying-fox Camps in an Urbanising Region*, Rainforest CRC Tropical Forest Landscapes, Issue 5, viewed 12 January 2016, www.rainforest-crc.jcu.edu.au/issues/ITFL_flyingfox.pdf.

SEQ Catchments 2012, *Management and Restoration of flying-fox Roosts: Guidelines and Recommendations*, SEQ Catchments Ltd funded by the Australian Government's Caring for Our Country, viewed 12 January 2016, www.environment.nsw.gov.au/resources/animals/flying-fox-2014-sub/flyingfoxsub-jenny-beatson-part3.pdf.

Shinwari, MW, Annand, EJ, Driver, L, Warrilow, D, Harrower, B, Allcock, RJN, Pukallus, D, Harper J, Bingham, J, Kung, N and Diallo, IS 2014, 'Australian bat lyssavirus infection in two horses', *Veterinary Microbiology*, vol. 173, pp. 224–231.

Snoyman S, Jasmina M & Brown C 2012, 'Nursing females are more prone to heat stress: Demography matters when managing flying-foxes for climate change', *Applied Animal Behaviour Science*, vol 142, pp. 90-97.

Southerton, SG, Birt, P, Porter, J and Ford, HA 2004, 'Review of gene movement by bats and birds and its potential significance for eucalypt plantation forestry', *Australian Forestry*, vol. 67,



no. 1, pp. 45–54.

Stanvic, S, McDonald, V and Collins, L 2013, *Managing heat stress in flying-foxes colonies*, viewed 12 January 2016, www.fourthcrossingwildlife.com/HeatStress-StanvicMcDonaldCollins.pdf.

Tait, J, Perotto-Baldivieso, HL, McKeown, A and Westcott, DA 2014, 'Are Flying-Foxes Coming to Town? Urbanisation of the Spectacled Flying-Fox (*Pteropus conspicillatus*) in Australia', *PLoS ONE*, vol. 9, no. 10, e109810, doi:10.1371/journal.pone.0109810.

Tidemann, C, Eby, P, Parry-Jones, K and Vardon, M 1999, *The Action Plan for Australian Bats: Grey-headed Flying-fox*, Environment Australia, www.environment.gov.au/node/14622.

Tolga Bat Hospital, *Wildlife Friendly Fencing Project*, Tolga Bat Hospital partly funded by grants from WWF and Australian Government Caring for Our Country, viewed 12 January, 2016, www.wildlifefriendlyfencing.com/WFF/Home.html.

Vardon, MJ and Tidemann, CR 1999, 'Flying-foxes (*Pteropus alecto* and *P. scapulatus*) in the Darwin region, north Australia: patterns in camp size and structure', *Australian Journal of Zoology*, vol. 47, pp. 411–423.

Vardon, MJ, Brocklehurst, PS, Woinarski, JCZ, Cunningham, RB, Donnelly, CF and Tidemann, CR 2001, 'Seasonal habitat use by flying-foxes, *Pteropus alecto* and *P. Scapulatus* (Megachiroptera), in monsoonal Australia', *Journal of Zoology London*, vol. 253, pp. 523–535.

Webb, N and Tidemann, C 1995, 'Hybridisation between black (*Pteropus alecto*) and grey-headed (*P. poliocephalus*) flying-foxes (Megachiroptera: Pteropodidae)', *Australian Mammalogy*, vol. 18, pp. 19–26.

Webb, NJ and Tidemann, CR 1996, 'Mobility of Australian flying-foxes, *Pteropus* spp. (Megachiroptera): evidence from genetic variation', *Proceedings of the Royal Society London Series B*, vol. 263, pp. 497–502.

Welbergen, JA 2014, 'Canaries in the coalmine: flying-foxes and extreme heat events in a warming climate', presentation at the Griffith Climate Change Seminar, July 2014, www.griffith.edu.au/research/research-excellence/griffith-climate-change-response-program/program/?a=628188.

Welbergen, JA, Klose, SM, Markus, N and Eby, P 2008, 'Climate change and the effects of temperature extremes on Australian flying-foxes', *Proceedings of the Royal Society of London B: Biological Sciences*, vol. 275, no. 1633, pp.419–425, viewed 12 January 2016, rspb.royalsocietypublishing.org/content/275/1633/419.short.

Westcott, DA, Dennis, AJ, Bradford, MG, McKeown, A and Harrington, GN 2008, 'Seed dispersal processes in Australia's Wet Tropics rainforests', in Stork, N and Turton, S, *Living in a dynamic tropical forest landscape*, Blackwells Publishing, Malden, pp. 210–223.

Westcott, DA, McKeown, A, Murphy, HT and Fletcher, CS 2011, *A monitoring method for the Grey-headed Flying-fox*, *Pteropus poliocephalus*, CSIRO, Queensland, viewed 12 January 2016, www.environment.gov.au/biodiversity/threatened/species/pubs/310112-monitoring-methodology.pdf.

Zurbuchen, A, Landert, L, Klaiber, J, Muller, A, Hein, S and Dorn, S 2010, 'Maximum foraging ranges in solitary bees: only few individuals have the capability to cover long-foraging distances', *Biological Conservation*, vol. 142, no. 3, pp. 669–676.



Appendix 1 Legislation

Local

Port Macquarie-Hastings Council Local Environmental Plan 2011

The Park is zoned E2 (Environmental Conservation). The objectives of this zone are to:

- *To protect, manage and restore areas of high ecological, scientific, cultural or aesthetic values.*
- *To prevent development that could destroy, damage or otherwise have an adverse effect on those values.*
- *To protect coastal wetlands and littoral rainforests.*
- *To protect land affected by coastal processes and environmentally sensitive land.*
- *To prevent development that adversely affects, or would be adversely affected by, coastal processes.*
- *To enable development of public works and environmental facilities where such development would not have an overall detrimental impact on ecological, scientific, cultural or aesthetic values.*

Port Macquarie-Hastings Development Control Plan 2013

For actions relating to trees and vegetations, the Tree Management Provisions in Port Macquarie-Hastings Council Development Control Plan 2013 apply to the reserve and any development in the Park by regulating the removal of trees requiring consent where exemptions do not apply.

Environmental Management Areas and Buffers must be considered in relation to potential vegetation works around the camp.

Development Provisions

- a) *For coastal floodplain endangered ecological communities a minimum, fully vegetated buffer of 35m must be provided.*
- b) *For Freshwater Wetland on Coastal Floodplain endangered ecological community a fully vegetated buffer of 100m is to be provided.*
- c) *For all other endangered ecological communities, a fully vegetated buffer of 50m must be provided.*
- e) *Fully vegetated buffers cannot contain road infrastructure or an asset protection zone.*



State

Flying-fox Camp Management Policy 2015

The Flying-fox Camp Management Policy 2015 (the Policy) has been developed to empower land managers, primarily local councils, to work with their communities to manage flying-fox camps effectively. It provides the framework within which OEH will make regulatory decisions. In particular, the Policy strongly encourages local councils and other land managers to prepare Camp Management Plans for sites where the local community is affected.

Flying-fox Camp Management 2018

OEH has prepared a Code of Practice under the *Biodiversity Conservation Regulation 2017* authorising camp management actions on public land. The code defines standards for effective and humane management of flying-fox camps.

Camp management actions can only be implemented under the Code in accordance with a camp management plan endorsed by the Environment Agency Head (i.e. OEH).

The objective of the code is to enable camp managers to act quickly if flying-fox camps are causing a concern on public land. If camp management actions are consistent with the code, a Biodiversity Conservation licence will not be required.

Biodiversity Conservation Act 2016

The purpose of the *Biodiversity Conservation Act 2016* (BC Act) is to maintain a healthy, productive and resilient environment for the greatest well-being of the community, now and into the future, consistent with the principles of ecologically sustainable development including conserving biodiversity, maintaining the diversity and quality of ecosystems, regulating human interactions with wildlife, and supporting conservation and threat abatement action to slow the rate of biodiversity loss and conserve threatened species and ecological communities in nature.

The Grey-headed Flying-fox is listed as a threatened species under the BC Act.

Part 2 Division 3 of the BC Act provides for the issuing of Biodiversity Conservation Licences to authorise the doing of an act likely to result in one or more of the following:

- a. harm or attempted harm to any animal that is of a threatened species or is part of threatened ecological community
- b. harm or attempted harm, dealing in, or liberating a protected animal
- c. the picking of any plant that is of a threatened species or is part of threatened ecological community
- d. picking or dealing in protected plants
- e. damage to declared areas of outstanding biodiversity value
- f. damage to any habitat of a threatened species or threatened ecological community.

Part 7 of the BC Act provides for the biodiversity assessment and approvals required under the *Environmental Planning and Assessment Act 1979* for development other than complying



development, activities and state significant development and infrastructure.

An assessment of impacts is required for any threatened species or threatened ecological community, or their habitats, that are likely to be harmed by the doing of an act proposed in the Plan.

Note: that the definition of 'harm' includes kill, injure or capture the animal, but does not include harm by changing the habitat of the animal, and attempt to harm an animal includes hunting or pursuing, or using anything, for the purpose of harming the animal. The definition of 'pick' includes to gather, take, cut, remove from the ground, destroy, poison, crush or injure the plant or any part of the plant. The definition of habitat includes an area periodically or occasionally occupied by a species or ecological community and the biotic and abiotic components of an area.

Local Government Act 1993

The primary purpose of this Act is to provide the legal framework for an effective, efficient and environmentally responsible, open system of local government. Most relevant to flying-fox management is that it also provides encouragement for the effective participation of local communities in the affairs of local government and sets out guidance on the use and management of community land which may be applicable to land which requires management of flying-foxes.

National Parks and Wildlife Act 1974

The *National Parks and Wildlife Act 1974* (NPW Act) provides for the conservation of nature, objects, places or features of cultural value and the management of land reserved under this Act. The Act protects Aboriginal objects and declared Aboriginal Places. An Aboriginal Heritage Impact Permit may be required under this Act to authorise camp management actions that may harm Aboriginal objects a declared Aboriginal Places.

Prevention of Cruelty to Animals Act 1979

It may be an offence under this Act if there is evidence of unreasonable/unnecessary torment associated with management activities. Adhering to welfare and conservation measures provided in Section 10.3 will ensure compliance with this Act.

Environmental Planning and Assessment Act 1979

The objects of the *Environmental Planning and Assessment Act 1979* (EP&A Act) are to encourage proper management, development and conservation of resources, for the purposes of the social and economic welfare of the community and a better environment. It also aims to share responsibility for environmental planning between different levels of government and promote public participation in environmental planning and assessment.

The EP&A Act is administered by the NSW Department of Planning and Environment.

Development control plans under the EP&A Act should consider flying-fox camps so that planning, design and construction of future developments is appropriate to avoid future conflict.



Development given consent under Part 4 or activities assessed under Part 5 of the EP&A Act do not require licensing under the BC Act. Consent and determining authorities are required to consider the impacts of such proposals on threatened species, threatened ecological communities, and their habitats in accordance with Part 7 of the BC Act.

Where development consent under Part 4 or assessment under Part 5 of the EP&A Act is not required, a licence under the BC Act may be required to authorise the doing of an act that harms protected animals, threatened species, or threatened ecological community, or which damages the habitat of a threatened species or ecological community. This includes the doing of an act likely to harm any flying-fox or damaging the habitat of grey-headed flying-foxes.

Where a proposal to manage a flying-fox camp involves the cutting down, destruction, lopping or removal of a substantial part of a tree or other vegetation that is not covered by a development consent or assessment under Part 5 it may still require authorisation. Depending on the land on which the vegetation occurs and the character of the vegetation, it may require an approval or a permit under the *State Environmental Planning Policy (Vegetation in Non-Rural Areas) 2017* (SEPP) or an approval under the *Local Land Services Act 2013*.

Where flying-fox camps occur or impact on private land, private land owners are advised to contact their local council to explore management options and the appropriate approval processes for addressing arising issues.

State Environmental Planning Policy (Vegetation in Non-Rural Areas) 2017

This policy aims to protect the biodiversity, and amenity values of trees, and other vegetation in non-rural areas of the State. A person must not cut down, fell, up root, kill, poison, ringbark, burn or otherwise destroy the vegetation, or lop or otherwise remove a substantial part of the vegetation to which this Policy applies without a permit granted by council, or in the case of vegetation clearing exceeding the biodiversity offset thresholds (as stated in Part 7 of the *Biodiversity Conservation Regulation 2017*), approval by the Native Vegetation Panel.

Proponents will need to consider whether the SEPP (Vegetation in Non-Rural Areas) applies to their proposal, and if any approvals under the BC Act.

Commonwealth

Environment Protection and Biodiversity Conservation Act 1999

The Commonwealth's EPBC Act provides protection for the environment, specifically matters of national environmental significance (MNES). A referral to the Commonwealth DoE is required under the EPBC Act for any action that is likely to significantly impact on an MNES.

MNES under the EPBC Act that relate to flying-foxes include:

- world heritage sites (where those sites contain flying-fox camps or foraging habitat)
- wetlands of international importance (where those wetlands contain flying-fox camps or foraging habitat)
- nationally threatened species and ecological communities.



The GHFF is listed as a vulnerable species under the EPBC Act, meaning it is an MNES. It is also considered to have a single national population. DoE has developed the Referral guideline for management actions in GHFF and SFF camps (DoE 2015) (the Guideline) to guide whether referral is required for actions pertaining to the GHFF.

The Guideline defines a nationally important GHFF camp as one that has either:

- contained $\geq 10,000$ GHFF in more than one year in the last 10 years, or
- been occupied by more than 2500 GHFF permanently or seasonally every year for the last 10 years.

Provided that management at nationally important camps follows the mitigation standards below, DoE has determined that a significant impact to the population is unlikely, and referral is not likely to be required.

Referral will be required if a significant impact to any other MNES is considered likely as a result of management actions outlined in the Plan. Self-assessable criteria are available in the Significant Impact Guidelines 1.1 (DoE 2013) to assist in determining whether a significant impact is likely; otherwise consultation with DoEE will be required.

Mitigation standards

The action must not occur if the camp contains females that are in the late stages of pregnancy or have dependent young that cannot fly on their own.

The action must not occur during or immediately after climatic extremes (heat stress event, cyclone event), or during a period of significant food stress.

Disturbance must be carried out using non-lethal means, such as acoustic, visual and/or physical disturbance or use of smoke.

Disturbance activities must be limited to a maximum of 2.5 hours in any 12-hour period, preferably at or before sunrise or at sunset.

Trees are not felled, lopped or have large branches removed when flying-foxes are in or near to a tree and likely to be harmed.

The action must be supervised by a person with knowledge and experience relevant to the management of flying-foxes and their habitat, who can identify dependent young and is aware of climatic extremes and food stress events. This person must make an assessment of the relevant conditions and advise the proponent whether the activity can go ahead consistent with these standards.

The action must not involve the clearing of all vegetation supporting a nationally-important flying-fox camp. Sufficient vegetation must be retained to support the maximum number of flying-foxes ever recorded in the camp of interest.

These standards have been incorporated into mitigation measures detailed in Section 10.3. If actions cannot comply with these mitigation measures, referral for activities at nationally important camps is likely to be required.



Appendix 2 Flying-fox ecology & behaviour

Ecological role

Flying-foxes, along with some birds, make a unique contribution to ecosystem health through their ability to move seeds and pollen over long distances (Southerton et al. 2004). This contributes directly to the reproduction, regeneration and viability of forest ecosystems (DoE 2016a). It is estimated that a single flying-fox can disperse up to 60,000 seeds in one night (ELW&P 2015). Some plants, particularly *Corymbia* spp., have adaptations suggesting they rely more heavily on nocturnal visitors such as bats for pollination than daytime pollinators (Southerton et al. 2004).

GHFF may travel 100 km in a single night with a foraging radius of up to 50 km from their camp (McConkey et al. 2012) and have been recorded travelling over 500 km in two days between camps (Roberts et al. 2012). In comparison bees, another important pollinator, move much shorter foraging distances of generally less than one kilometre (Zurbuchen et al. 2010).

Long-distance seed dispersal and pollination makes flying-foxes critical to the long-term persistence of many plant communities (Westcott et al. 2008; McConkey et al. 2012), including eucalypt forests, rainforests, woodlands and wetlands (Roberts et al. 2006). Seeds that are able to germinate away from their parent plant have a greater chance of growing into a mature plant (EHP 2012). Long-distance dispersal also allows genetic material to be spread between forest patches that would normally be geographically isolated (Parry-Jones & Augee 1992; Eby 1991; Roberts 2006). This genetic diversity allows species to adapt to environmental change and respond to disease pathogens. Transfer of genetic material between forest patches is particularly important in the context of contemporary fragmented landscapes.

Flying-foxes are considered 'keystone' species given their contribution to the health, longevity and diversity among and between vegetation communities. These ecological services ultimately protect the long-term health and biodiversity of Australia's bushland and wetlands. In turn, native forests act as carbon sinks, provide habitat for other fauna and flora, stabilise river systems and catchments, add value to production of hardwood timber, honey and fruit (e.g. bananas and mangoes; Fujita 1991), and provide recreational and tourism opportunities worth millions of dollars each year (EHP 2012; ELW&P 2015).

Black flying-fox (*Pteropus alecto*)

Figure 23 Black flying-fox indicative species distribution, adapted from OEH 2015a

The black flying-fox (BFF) (Figure 23) has traditionally occurred throughout coastal areas from Shark Bay in Western Australia, across Northern Australia, down through Queensland and into NSW (Churchill 2008; OEH 2015a). Since it was first described there has been a substantial southerly shift by the BFF (Webb & Tidemann 1995). This shift has consequently led to an increase in indirect competition with the threatened GHFF, which appears to be favouring the BFF (DoE 2016a).

They forage on the fruit and blossoms of native and introduced plants (Churchill 2008; OEH 2015a), including orchard species at times.

BFFs are largely nomadic animals with movement and local distribution influenced by climatic variability and the flowering and fruiting patterns of their preferred food plants. Feeding commonly occurs within 20 km of the camp site (Markus & Hall 2004).

BFFs usually roost beside a creek or river in a wide range of warm and moist habitats, including lowland rainforest gullies, coastal stringybark forests and mangroves. During the breeding season camp sizes can change significantly in response to the availability of food and the arrival of animals from other areas.

Grey-headed flying-fox (*Pteropus poliocephalus*)



Figure 24 Grey-headed flying-fox indicative species distribution, adapted from OEH 2015a

The GHFF (Figure 24) is found throughout eastern Australia, generally within 200 kilometres of the coast, from Finch Hatton in Queensland to Melbourne, Victoria (OEH 2015d). This species now ranges into South Australia and has been observed in Tasmania (DoE 2016a). It requires foraging resources and camp sites within rainforests, open forests, closed and open woodlands (including melaleuca swamps and banksia woodlands). This species is also found throughout urban and agricultural areas where food trees exist and will raid orchards at times, especially when other food is scarce (OEH 2015a).

All the GHFF in Australia are regarded as one population that moves around freely within its entire national range (Webb & Tidemann 1996; DoE 2015). GHFF may travel up to 100 kilometres in a single night with a foraging radius of up to 50 kilometres from their camp (McConkey et al. 2012). They have been recorded travelling over 500 kilometres over 48 hours when moving from one camp to another (Roberts et al. 2012). GHFF generally show a high level of fidelity to camp sites, returning year after year to the same site, and have been recorded returning to the same branch of a particular tree (SEQ Catchments 2012). This may be one of the reasons flying-foxes continue to return to small urban bushland blocks that may be remnants of historically-used larger tracts of vegetation.

The GHFF population has a generally annual southerly movement in spring and summer, with their return to the coastal forests of north-east NSW and south-east Queensland in winter (Ratcliffe 1932; Eby 1991; Parry-Jones & Augee 1992; Roberts et al. 2012). This results in large fluctuations in the number of GHFF in NSW, ranging from as few as 20% of the total population in winter up to around 75% of the total population in summer (Eby 2000). They are widespread throughout their range during summer, but in spring and winter are uncommon in the south. In autumn they occupy primarily coastal lowland camps and are uncommon inland and on the south coast of NSW (DECCW 2009).

There is evidence the GHFF population declined by up to 30% between 1989 and 2000 (Birt 2000; Richards 2000 cited in OEH 2011a). There is a wide range of ongoing threats to the survival of the GHFF, including habitat loss and degradation, deliberate destruction associated

with the commercial horticulture industry, conflict with humans, infrastructure-related mortality (e.g. entanglement in barbed wire fencing and fruit netting, power line electrocution, etc.) and competition and hybridisation with the BFF (DECCW 2009). For these reasons it is listed as vulnerable to extinction under NSW and federal legislation (see Section 3).

Little red flying-fox (*Pteropus scapulatus*)

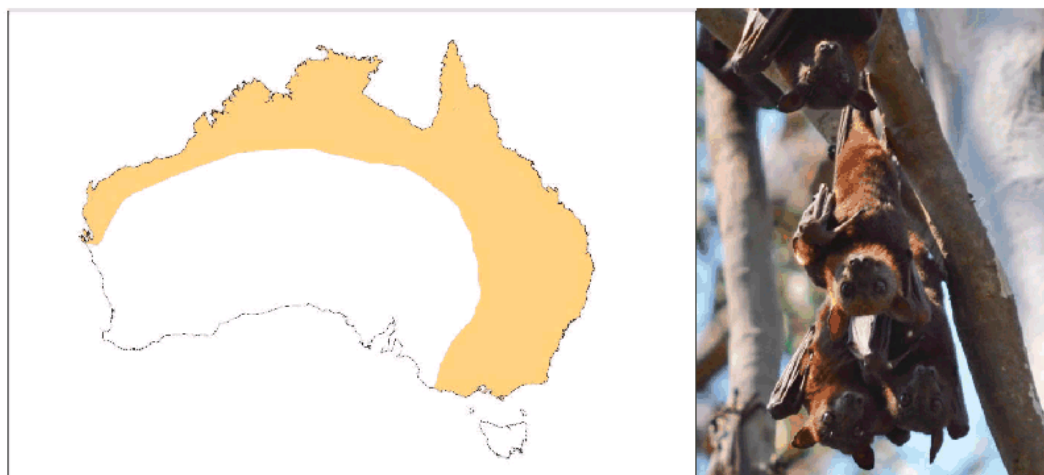


Figure 25 Little red flying-fox indicative species distribution, adapted from OEH 2015a

The little red flying-fox (LRFF) (Figure 25) is widely distributed throughout northern and eastern Australia, with populations occurring across northern Australia and down the east coast into Victoria.

The LRFF forages almost exclusively on nectar and pollen, although will eat fruit at times and occasionally raids orchards (Australian Museum 2010). LRFF often move sub-continental distances in search of sporadic food supplies. The LRFF has the most nomadic distribution, strongly influenced by availability of food resources (predominantly the flowering of eucalypt species) (Churchill 2008), which means the duration of their stay in any one place is generally very short.

Habitat preferences of this species are quite diverse and range from semi-arid areas to tropical and temperate areas, and can include sclerophyll woodland, melaleuca swamplands, bamboo, mangroves and occasionally orchards (IUCN 2015). LRFF are frequently associated with other *Pteropus* species. In some colonies, LRFF individuals can number many hundreds of thousands and they are unique among *Pteropus* species in their habit of clustering in dense bunches on a single branch. As a result, the weight of roosting individuals can break large branches and cause significant structural damage to roost trees, in addition to elevating soil nutrient levels through faecal material (SEQ Catchments 2012).

Throughout its range, populations within an area or occupying a camp can fluctuate widely. There is a general migration pattern in LRFF, whereby large congregations of over one million individuals can be found in northern camp sites (e.g. Northern Territory, North Queensland) during key breeding periods (Vardon & Tidemann 1999). LRFF travel south to visit the coastal areas of south-east Queensland and NSW during the summer months. Outside these periods



LRFF undertake regular movements from north to south during winter–spring (July–October) (Milne & Pavey 2011).

Reproduction

Black and grey-headed flying-foxes

Males initiate contact with females in January with peak conception occurring around March to April/May; this mating season represents the period of peak camp occupancy (Markus 2002). Young (usually a single pup) are born six months later from September to November (Churchill 2008). The birth season becomes progressively earlier, albeit by a few weeks, in more northerly populations (McGuckin & Blackshaw 1991), however out of season breeding is common with births occurring later in the year.

Young are highly dependent on their mother for food and thermoregulation. Young are suckled and carried by the mother until approximately four weeks of age (Markus & Blackshaw 2002). At this time, they are left at the camp during the night in a crèche until they begin foraging with their mother in January and February (Churchill 2008) and are usually weaned by six months of age around March. Sexual maturity is reached at two years of age with a life expectancy up to 20 years in the wild (Pierson & Rainey 1992).

As such, the critical reproductive period for GHFF is generally from August (when females are in final trimester) to the end of peak conception around April. Dependent pups are usually present from September to March (Figure 26).

Little red flying-fox

The LRFF breeds approximately six months out of phase with the other flying-foxes. Peak conception occurs around October to November, with young born between March and June (McGuckin & Blackshaw 1991; Churchill 2008) (Figure 26). Young are carried by their mother for approximately one month then left at the camp while she forages (Churchill 2008). Suckling occurs for several months while young are learning how to forage. LRFF generally birth and rear young in temperate areas (rarely in NSW).

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
GHFF												
BFF												
LRFF												

	Peak conception
	Final trimester
	Peak birthing
	Crèching (young left at roost)
	Lactation

Figure 26 Indicative flying-fox reproductive cycle.

Note that LRFF rarely birth and rear young in NSW. The breeding season of all species is variable between years and location, and expert assessment is required to accurately determine phases in the breeding cycle and inform appropriate management timing.



Heat stress events

Flying-foxes suffer from heat stress when the ambient temperature exceeds the physiological limits flying-foxes can endure for maintaining a comfortable body temperature (Bishop 2014). Flying-foxes are susceptible to heat stress due to their inability to sweat (Snayman et al 2012), therefore they need to expend energy on cooling mechanisms such as fanning. BFF are considered to be more susceptible to HSE than GHFF due to the southern expansion of their range with temperature extremes increasing in severity with latitude in eastern Australia (Welbergen et al 2008).



Appendix 3 Protected Matters



Australian Government
Department of the Environment and Energy

EPBC Act Protected Matters Report

This report provides general guidance on matters of national environmental significance and other matters protected by the EPBC Act in the area you have selected.

Information on the coverage of this report and qualifications on data supporting this report are contained in the caveat at the end of the report.

Information is available about [Environment Assessments](#) and the EPBC Act including significance guidelines, forms and application process details.

Report created: 16/11/18 16:27:53

[Summary](#)

[Details](#)

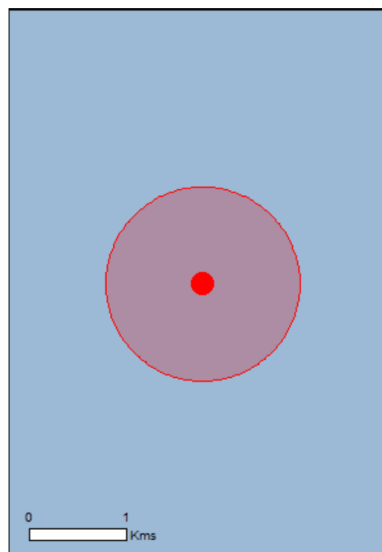
[Matters of NES](#)

[Other Matters Protected by the EPBC Act](#)

[Extra Information](#)

[Caveat](#)

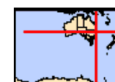
[Acknowledgements](#)



This map may contain data which are
©Commonwealth of Australia
(Geoscience Australia), ©PSMA 2010

[Coordinates](#)

Buffer: 1.0Km



Summary

Matters of National Environmental Significance

This part of the report summarises the matters of national environmental significance that may occur in, or may relate to, the area you nominated. Further information is available in the detail part of the report, which can be accessed by scrolling or following the links below. If you are proposing to undertake an activity that may have a significant impact on one or more matters of national environmental significance then you should consider the [Administrative Guidelines on Significance](#).

World Heritage Properties:	None
National Heritage Places:	None
Wetlands of International Importance:	None
Great Barrier Reef Marine Park:	None
Commonwealth Marine Area:	None
Listed Threatened Ecological Communities:	2
Listed Threatened Species:	52
Listed Migratory Species:	57

Other Matters Protected by the EPBC Act

This part of the report summarises other matters protected under the Act that may relate to the area you nominated. Approval may be required for a proposed activity that significantly affects the environment on Commonwealth land, when the action is outside the Commonwealth land, or the environment anywhere when the action is taken on Commonwealth land. Approval may also be required for the Commonwealth or Commonwealth agencies proposing to take an action that is likely to have a significant impact on the environment anywhere.

The EPBC Act protects the environment on Commonwealth land, the environment from the actions taken on Commonwealth land, and the environment from actions taken by Commonwealth agencies. As heritage values of a place are part of the 'environment', these aspects of the EPBC Act protect the Commonwealth Heritage values of a Commonwealth Heritage place. Information on the new heritage laws can be found at <http://www.environment.gov.au/heritage>

A [permit](#) may be required for activities in or on a Commonwealth area that may affect a member of a listed threatened species or ecological community, a member of a listed migratory species, whales and other cetaceans, or a member of a listed marine species.

Commonwealth Land:	2
Commonwealth Heritage Places:	None
Listed Marine Species:	61
Whales and Other Cetaceans:	1
Critical Habitats:	None
Commonwealth Reserves Terrestrial:	None
Australian Marine Parks:	None

Extra Information

This part of the report provides information that may also be relevant to the area you have nominated.

State and Territory Reserves:	None
Regional Forest Agreements:	1
Invasive Species:	35
Nationally Important Wetlands:	None
Key Ecological Features (Marine)	None

Details

Matters of National Environmental Significance

Listed Threatened Ecological Communities		[Resource Information
For threatened ecological communities where the distribution is well known, maps are derived from recovery plans, State vegetation maps, remote sensing imagery and other sources. Where threatened ecological community distributions are less well known, existing vegetation maps and point location data are used to produce Indicative distribution maps.		
Name	Status	Type of Presence
Coastal Swamp Oak (Casuarina glauca) Forest of New South Wales and South East Queensland ecological community	Endangered	Community likely to occur within area
Lowland Rainforest of Subtropical Australia	Critically Endangered	Community may occur within area
Listed Threatened Species		[Resource Information
Name	Status	Type of Presence
Birds		
Anthochaera phrygia Regent Honeyeater [82338]	Critically Endangered	Species or species habitat known to occur within area
Botaurus poiciloptilus Australasian Bittern [1001]	Endangered	Species or species habitat known to occur within area
Calidris canutus Red Knot, Knot [855]	Endangered	Species or species habitat known to occur within area
Calidris ferruginea Curlew Sandpiper [856]	Critically Endangered	Species or species habitat known to occur within area
Charadrius mongolus Lesser Sand Plover, Mongolian Plover [879]	Endangered	Foraging, feeding or related behaviour known to occur within area
Dasyornis brachypterus Eastern Bristlebird [533]	Endangered	Species or species habitat likely to occur within area
Diomedea antipodensis Antipodean Albatross [64458]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area
Diomedea antipodensis gibsoni Gibson's Albatross [82270]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area
Diomedea epomophora Southern Royal Albatross [89221]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area
Diomedea exulans Wandering Albatross [89223]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area

<u>Diomedea sanfordi</u>		
Northern Royal Albatross [64456]	Endangered	Foraging, feeding or related behaviour likely to occur within area
<u>Erythrotriorchis radiatus</u>		
Red Goshawk [942]	Vulnerable	Species or species habitat likely to occur within area
<u>Grantiella picta</u>		
Painted Honeyeater [470]	Vulnerable	Species or species habitat may occur within area
<u>Limosa lapponica baueri</u>		
Bar-tailed Godwit (baueri), Western Alaskan Bar-tailed Godwit [86380]	Vulnerable	Species or species habitat likely to occur within area
<u>Limosa lapponica menzbieri</u>		
Northern Siberian Bar-tailed Godwit, Bar-tailed Godwit (menzbieri) [86432]	Critically Endangered	Species or species habitat may occur within area
<u>Macronectes giganteus</u>		
Southern Giant-Petrel, Southern Giant Petrel [1060]	Endangered	Species or species habitat may occur within area
<u>Macronectes halli</u>		
Northern Giant Petrel [1061]	Vulnerable	Species or species habitat may occur within area
<u>Numenius madagascariensis</u>		
Eastern Curlew, Far Eastern Curlew [847]	Critically Endangered	Species or species habitat known to occur within area
<u>Pachyptila turtur subantarctica</u>		
Fairy Prion (southern) [64445]	Vulnerable	Species or species habitat known to occur within area
<u>Rostratula australis</u>		
Australian Painted-snipe, Australian Painted Snipe [77037]	Endangered	Species or species habitat may occur within area
<u>Thalassarche bulleri</u>		
Buller's Albatross, Pacific Albatross [64460]	Vulnerable	Species or species habitat may occur within area
<u>Thalassarche bulleri platei</u>		
Northern Buller's Albatross, Pacific Albatross [82273]	Vulnerable	Species or species habitat may occur within area
<u>Thalassarche cauta cauta</u>		
Shy Albatross, Tasmanian Shy Albatross [82345]	Vulnerable	Species or species habitat may occur within area
<u>Thalassarche cauta steadi</u>		
White-capped Albatross [82344]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area
<u>Thalassarche eremita</u>		
Chatham Albatross [64457]	Endangered	Species or species habitat may occur within area
<u>Thalassarche impavida</u>		
Campbell Albatross, Campbell Black-browed Albatross [64459]	Vulnerable	Species or species habitat may occur within area
<u>Thalassarche melanophris</u>		
Black-browed Albatross [66472]	Vulnerable	Species or species habitat may occur within area
<u>Thalassarche salvini</u>		
Salvin's Albatross [64463]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area
Fish		

Epinephelus daemeli		
Black Rockcod, Black Cod, Saddled Rockcod [68449]	Vulnerable	Species or species habitat likely to occur within area
Frogs		
Litoria aurea		
Green and Golden Bell Frog [1870]	Vulnerable	Species or species habitat likely to occur within area
Insects		
Argynnis hyperbius inconstans		
Australian Fritillary [88056]	Critically Endangered	Species or species habitat likely to occur within area
Mammals		
Chalinolobus dwyeri		
Large-eared Pied Bat, Large Pied Bat [183]	Vulnerable	Species or species habitat likely to occur within area
Dasyurus maculatus maculatus (SE mainland population)		
Spot-tailed Quoll, Spotted-tail Quoll, Tiger Quoll (southeastern mainland population) [75184]	Endangered	Species or species habitat known to occur within area
Petauroides volans		
Greater Glider [254]	Vulnerable	Species or species habitat likely to occur within area
Phascogale carolinensis (combined populations of Qld, NSW and the ACT)		
Koala (combined populations of Queensland, New South Wales and the Australian Capital Territory) [85104]	Vulnerable	Species or species habitat known to occur within area
Potorous tridactylus tridactylus		
Long-nosed Potoroo (SE mainland) [66645]	Vulnerable	Species or species habitat likely to occur within area
Pseudomys novaehollandiae		
New Holland Mouse, Pookila [96]	Vulnerable	Species or species habitat likely to occur within area
Pteropus poliocephalus		
Grey-headed Flying-fox [186]	Vulnerable	Roosting known to occur within area
Plants		
Acronychia littoralis		
Scented Acronychia [8582]	Endangered	Species or species habitat likely to occur within area
Allocasuarina thalassoscopia		
[21927]	Endangered	Species or species habitat known to occur within area
Cryptostylis hunteriana		
Leafless Tongue-orchid [19533]	Vulnerable	Species or species habitat likely to occur within area
Euphrasia arguta		
[4325]	Critically Endangered	Species or species habitat may occur within area
Macadamia integrifolia		
Macadamia Nut, Queensland Nut Tree, Smooth-shelled Macadamia, Bush Nut, Nut Oak [7326]	Vulnerable	Species or species habitat may occur within area
Melaleuca biconvexa		
Biconvex Paperbark [5583]	Vulnerable	Species or species habitat may occur within area
Phaius australis		
Lesser Swamp-orchid [5872]	Endangered	Species or species habitat may occur within area

Syzygium paniculatum		
Magenta Lilly Pilly, Magenta Cherry, Daguba, Scrub Cherry, Creek Lilly Pilly, Brush Cherry [20307]	Vulnerable	Species or species habitat may occur within area
Thesium australe		
Austral Toadflax, Toadflax [15202]	Vulnerable	Species or species habitat likely to occur within area
Reptiles		
Caretta caretta		
Loggerhead Turtle [1763]	Endangered	Species or species habitat known to occur within area
Chelonia mydas		
Green Turtle [1765]	Vulnerable	Species or species habitat known to occur within area
Dermochelys coriacea		
Leatherback Turtle, Leathery Turtle, Luth [1768]	Endangered	Species or species habitat known to occur within area
Eretmochelys imbricata		
Hawksbill Turtle [1766]	Vulnerable	Species or species habitat known to occur within area
Natator depressus		
Flatback Turtle [59257]	Vulnerable	Breeding likely to occur within area
Listed Migratory Species		[Resource Information
* Species is listed under a different scientific name on the EPBC Act - Threatened Species list.		
Name	Threatened	Type of Presence
Migratory Marine Birds		
Anous stolidus		
Common Noddy [825]		Species or species habitat likely to occur within area
Apus pacificus		
Fork-tailed Swift [678]		Species or species habitat likely to occur within area
Calonectris leucomelas		
Streaked Shearwater [1077]		Species or species habitat may occur within area
Diomedea antipodensis		
Antipodean Albatross [64458]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area
Diomedea epomophora		
Southern Royal Albatross [89221]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area
Diomedea exulans		
Wandering Albatross [89223]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area
Diomedea sanfordi		
Northern Royal Albatross [64456]	Endangered	Foraging, feeding or related behaviour likely to occur within area
Fregata ariel		
Lesser Frigatebird, Least Frigatebird [1012]		Species or species habitat known to occur within area
Fregata minor		
Great Frigatebird, Greater Frigatebird [1013]		Species or species habitat likely to occur within area
Macronectes giganteus		
Southern Giant-Petrel, Southern Giant Petrel [1060]	Endangered	Species or species habitat may occur within area

<u>Macronectes halli</u>		
Northern Giant Petrel [1061]	Vulnerable	Species or species habitat may occur within area
<u>Sternula albifrons</u>		
Little Tern [82849]		Species or species habitat may occur within area
<u>Thalassarche bulleri</u>		
Buller's Albatross, Pacific Albatross [64460]	Vulnerable	Species or species habitat may occur within area
<u>Thalassarche cauta</u>		
Tasmanian Shy Albatross [89224]	Vulnerable*	Species or species habitat may occur within area
<u>Thalassarche eremita</u>		
Chatham Albatross [64457]	Endangered	Species or species habitat may occur within area
<u>Thalassarche impavida</u>		
Campbell Albatross, Campbell Black-browed Albatross [64459]	Vulnerable	Species or species habitat may occur within area
<u>Thalassarche melanophris</u>		
Black-browed Albatross [66472]	Vulnerable	Species or species habitat may occur within area
<u>Thalassarche salvini</u>		
Salvin's Albatross [64463]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area
<u>Thalassarche steadi</u>		
White-capped Albatross [64462]	Vulnerable*	Foraging, feeding or related behaviour likely to occur within area
Migratory Marine Species		
<u>Caretta caretta</u>		
Loggerhead Turtle [1763]	Endangered	Species or species habitat known to occur within area
<u>Chelonia mydas</u>		
Green Turtle [1765]	Vulnerable	Species or species habitat known to occur within area
<u>Dermochelys coriacea</u>		
Leatherback Turtle, Leathery Turtle, Luth [1768]	Endangered	Species or species habitat known to occur within area
<u>Dugong dugon</u>		
Dugong [28]		Species or species habitat may occur within area
<u>Eretmochelys imbricata</u>		
Hawksbill Turtle [1766]	Vulnerable	Species or species habitat known to occur within area
<u>Lamna nasus</u>		
Porbeagle, Mackerel Shark [83288]		Species or species habitat may occur within area
<u>Manta alfredi</u>		
Reef Manta Ray, Coastal Manta Ray, Inshore Manta Ray, Prince Alfred's Ray, Resident Manta Ray [84994]		Species or species habitat may occur within area
<u>Manta birostris</u>		
Giant Manta Ray, Chevron Manta Ray, Pacific Manta Ray, Pelagic Manta Ray, Oceanic Manta Ray [84995]		Species or species habitat may occur within area
<u>Natator depressus</u>		
Flatback Turtle [59257]	Vulnerable	Breeding likely to occur within area

Sousa chinensis		
Indo-Pacific Humpback Dolphin [50]		Species or species habitat likely to occur within area
Migratory Terrestrial Species		
Cuculus optatus		
Oriental Cuckoo, Horsfield's Cuckoo [86651]		Species or species habitat may occur within area
Hirundapus caudacutus		
White-throated Needletail [682]		Species or species habitat known to occur within area
Monarcha melanopsis		
Black-faced Monarch [609]		Species or species habitat known to occur within area
Monarcha trivirgatus		
Spectacled Monarch [610]		Species or species habitat known to occur within area
Myiagra cyanoleuca		
Satin Flycatcher [612]		Species or species habitat known to occur within area
Rhipidura rufifrons		
Rufous Fantail [592]		Species or species habitat known to occur within area
Migratory Wetlands Species		
Actitis hypoleucos		
Common Sandpiper [59309]		Species or species habitat known to occur within area
Arenaria interpres		
Ruddy Turnstone [872]		Foraging, feeding or related behaviour known to occur within area
Calidris acuminata		
Sharp-tailed Sandpiper [874]		Species or species habitat known to occur within area
Calidris canutus		
Red Knot, Knot [855]	Endangered	Species or species habitat known to occur within area
Calidris ferruginea		
Curlew Sandpiper [856]	Critically Endangered	Species or species habitat known to occur within area
Calidris melanotos		
Pectoral Sandpiper [858]		Species or species habitat may occur within area
Calidris ruficollis		
Red-necked Stint [860]		Foraging, feeding or related behaviour known to occur within area
Charadrius bicinctus		
Double-banded Plover [895]		Foraging, feeding or related behaviour known to occur within area
Charadrius mongolus		
Lesser Sand Plover, Mongolian Plover [879]	Endangered	Foraging, feeding or related behaviour known to occur within area
Gallinago hardwickii		
Latham's Snipe, Japanese Snipe [863]		Foraging, feeding or related behaviour may occur within area
Gallinago megala		
Swinhoe's Snipe [864]		Foraging, feeding or related behaviour likely

		to occur within area
Gallinago stenura Pin-tailed Snipe [841]		Foraging, feeding or related behaviour likely to occur within area
Limosa lapponica Bar-tailed Godwit [844]		Species or species habitat known to occur within area
Numenius madagascariensis Eastern Curlew, Far Eastern Curlew [847]	Critically Endangered	Species or species habitat known to occur within area
Numenius minutus Little Curlew, Little Whimbrel [848]		Foraging, feeding or related behaviour likely to occur within area
Numenius phaeopus Whimbrel [849]		Foraging, feeding or related behaviour known to occur within area
Pandion haliaetus Osprey [952]		Breeding known to occur within area
Pluvialis fulva Pacific Golden Plover [25545]		Foraging, feeding or related behaviour known to occur within area
Pluvialis squatarola Grey Plover [865]		Foraging, feeding or related behaviour known to occur within area
Tringa brevipes Grey-tailed Tattler [851]		Foraging, feeding or related behaviour known to occur within area
Tringa nebularia Common Greenshank, Greenshank [832]		Species or species habitat known to occur within area
Xenus cinereus Terek Sandpiper [59300]		Foraging, feeding or related behaviour known to occur within area

Other Matters Protected by the EPBC Act

Commonwealth Land [\[Resource Information \]](#)

The Commonwealth area listed below may indicate the presence of Commonwealth land in this vicinity. Due to the unreliability of the data source, all proposals should be checked as to whether it impacts on a Commonwealth area, before making a definitive decision. Contact the State or Territory government land department for further information.

Name
Commonwealth Land - Australian Postal Commission
Commonwealth Land - Australian Telecommunications Commission

Listed Marine Species	[Resource Information]	
* Species is listed under a different scientific name on the EPBC Act - Threatened Species list.		
Name	Threatened	Type of Presence
Birds		

Actitis hypoleucos Common Sandpiper [59309]		Species or species habitat known to occur within area
Anous stolidus Common Noddy [825]		Species or species habitat likely to occur within area

Apus pacificus Fork-tailed Swift [678]		Species or species habitat likely to occur within area
Ardea alba Great Egret, White Egret [59541]		Species or species habitat known to occur within area
Ardea ibis Cattle Egret [59542]		Species or species habitat may occur within area
Arenaria interpres Ruddy Turnstone [872]		Foraging, feeding or related behaviour known to occur within area
Calidris acuminata Sharp-tailed Sandpiper [874]		Species or species habitat known to occur within area
Calidris canutus Red Knot, Knot [855]	Endangered	Species or species habitat known to occur within area
Calidris ferruginea Curlew Sandpiper [856]	Critically Endangered	Species or species habitat known to occur within area
Calidris melanotos Pectoral Sandpiper [858]		Species or species habitat may occur within area
Calidris ruficollis Red-necked Stint [860]		Foraging, feeding or related behaviour known to occur within area
Calonectris leucomelas Streaked Shearwater [1077]		Species or species habitat may occur within area
Charadrius bicinctus Double-banded Plover [895]		Foraging, feeding or related behaviour known to occur within area
Charadrius mongolus Lesser Sand Plover, Mongolian Plover [879]	Endangered	Foraging, feeding or related behaviour known to occur within area
Charadrius ruficapillus Red-capped Plover [881]		Foraging, feeding or related behaviour known to occur within area
Diomedea antipodensis Antipodean Albatross [64458]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area
Diomedea epomophora Southern Royal Albatross [89221]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area
Diomedea exulans Wandering Albatross [89223]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area
Diomedea gibsoni Gibson's Albatross [64466]	Vulnerable*	Foraging, feeding or related behaviour likely to occur within area
Diomedea sanfordi Northern Royal Albatross [64456]	Endangered	Foraging, feeding or related behaviour likely to occur within area

<u>Fregata ariel</u>			
Lesser Frigatebird, Least Frigatebird [1012]			Species or species habitat known to occur within area
<u>Fregata minor</u>			
Great Frigatebird, Greater Frigatebird [1013]			Species or species habitat likely to occur within area
<u>Gallinago hardwickii</u>			
Latham's Snipe, Japanese Snipe [863]			Foraging, feeding or related behaviour may occur within area
<u>Gallinago megala</u>			
Swinhoe's Snipe [864]			Foraging, feeding or related behaviour likely to occur within area
<u>Gallinago stenura</u>			
Pin-tailed Snipe [841]			Foraging, feeding or related behaviour likely to occur within area
<u>Haliaeetus leucogaster</u>			
White-bellied Sea-Eagle [943]			Species or species habitat known to occur within area
<u>Heteroscelus brevipes</u>			
Grey-tailed Tattler [59311]			Foraging, feeding or related behaviour known to occur within area
<u>Hirundapus caudacutus</u>			
White-throated Needletail [682]			Species or species habitat known to occur within area
<u>Limosa lapponica</u>			
Bar-tailed Godwit [844]			Species or species habitat known to occur within area
<u>Macronectes giganteus</u>			
Southern Giant-Petrel, Southern Giant Petrel [1060]	Endangered		Species or species habitat may occur within area
<u>Macronectes halli</u>			
Northern Giant Petrel [1061]	Vulnerable		Species or species habitat may occur within area
<u>Merops ornatus</u>			
Rainbow Bee-eater [670]			Species or species habitat may occur within area
<u>Monarcha melanopsis</u>			
Black-faced Monarch [609]			Species or species habitat known to occur within area
<u>Monarcha trivirgatus</u>			
Spectacled Monarch [610]			Species or species habitat known to occur within area
<u>Myiagra cyanoleuca</u>			
Satin Flycatcher [612]			Species or species habitat known to occur within area
<u>Numenius madagascariensis</u>			
Eastern Curlew, Far Eastern Curlew [847]	Critically Endangered		Species or species habitat known to occur within area
<u>Numenius minutus</u>			
Little Curlew, Little Whimbrel [848]			Foraging, feeding or related behaviour likely to occur within area
<u>Numenius phaeopus</u>			
Whimbrel [849]			Foraging, feeding or related behaviour known to occur within area

Birds		
Pachyptila turtur Fairy Prion [1066]		Species or species habitat known to occur within area
Pandion haliaetus Osprey [952]		Breeding known to occur within area
Pluvialis fulva Pacific Golden Plover [25545]		Foraging, feeding or related behaviour known to occur within area
Pluvialis squatarola Grey Plover [865]		Foraging, feeding or related behaviour known to occur within area
Rhipidura rufifrons Rufous Fantail [592]		Species or species habitat known to occur within area
Rostratula benghalensis (sensu lato) Painted Snipe [889]	Endangered*	Species or species habitat may occur within area
Sterna albifrons Little Tern [813]		Species or species habitat may occur within area
Thalassarche bulleri Buller's Albatross, Pacific Albatross [64460]	Vulnerable	Species or species habitat may occur within area
Thalassarche cauta Tasmanian Shy Albatross [89224]	Vulnerable*	Species or species habitat may occur within area
Thalassarche eremita Chatham Albatross [64457]	Endangered	Species or species habitat may occur within area
Thalassarche impavida Campbell Albatross, Campbell Black-browed Albatross [64459]	Vulnerable	Species or species habitat may occur within area
Thalassarche melanophris Black-browed Albatross [66472]	Vulnerable	Species or species habitat may occur within area
Thalassarche salvini Salvin's Albatross [64463]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area
Thalassarche sp. nov. Pacific Albatross [66511]	Vulnerable*	Species or species habitat may occur within area
Thalassarche steadi White-capped Albatross [64462]	Vulnerable*	Foraging, feeding or related behaviour likely to occur within area
Tringa nebularia Common Greenshank, Greenshank [832]		Species or species habitat known to occur within area
Xenus cinereus Terek Sandpiper [59300]		Foraging, feeding or related behaviour known to occur within area
Mammals		
Dugong dugon Dugong [28]		Species or species habitat may occur within area
Reptiles		

Caretta caretta		
Loggerhead Turtle [1763]	Endangered	Species or species habitat known to occur within area
Chelonia mydas		
Green Turtle [1765]	Vulnerable	Species or species habitat known to occur within area
Dermochelys coriacea		
Leatherback Turtle, Leathery Turtle, Luth [1768]	Endangered	Species or species habitat known to occur within area
Eretmochelys imbricata		
Hawksbill Turtle [1766]	Vulnerable	Species or species habitat known to occur within area
Natator depressus		
Flatback Turtle [59257]	Vulnerable	Breeding likely to occur within area
Whales and other Cetaceans		[Resource Information
Name	Status	Type of Presence
Mammals		
Sousa chinensis		
Indo-Pacific Humpback Dolphin [50]		Species or species habitat likely to occur within area

Extra Information

Regional Forest Agreements		[Resource Information
Note that all areas with completed RFAs have been included.		
Name	State	
North East NSW RFA	New South Wales	
Invasive Species		[Resource Information
Weeds reported here are the 20 species of national significance (WoNS), along with other introduced plants that are considered by the States and Territories to pose a particularly significant threat to biodiversity. The following feral animals are reported: Goat, Red Fox, Cat, Rabbit, Pig, Water Buffalo and Cane Toad. Maps from Landscape Health Project, National Land and Water Resources Audit, 2001.		
Name	Status	Type of Presence
Birds		
Acridotheres tristis		
Common Myna, Indian Myna [387]		Species or species habitat likely to occur within area
Anas platyrhynchos		
Mallard [974]		Species or species habitat likely to occur within area
Carduelis carduelis		
European Goldfinch [403]		Species or species habitat likely to occur within area
Columba livia		
Rock Pigeon, Rock Dove, Domestic Pigeon [803]		Species or species habitat likely to occur within area
Lonchura punctulata		
Nutmeg Mannikin [399]		Species or species habitat likely to occur

	within area
Passer domesticus House Sparrow [405]	Species or species habitat likely to occur within area
Pycnonotus jocosus Red-whiskered Bulbul [631]	Species or species habitat likely to occur within area
Streptopelia chinensis Spotted Turtle-Dove [780]	Species or species habitat likely to occur within area
Sturnus vulgaris Common Starling [389]	Species or species habitat likely to occur within area
Turdus merula Common Blackbird, Eurasian Blackbird [596]	Species or species habitat likely to occur within area
Frogs	
Rhinella marina Cane Toad [83218]	Species or species habitat known to occur within area
Mammals	
Bos taurus Domestic Cattle [16]	Species or species habitat likely to occur within area
Canis lupus familiaris Domestic Dog [82654]	Species or species habitat likely to occur within area
Felis catus Cat, House Cat, Domestic Cat [19]	Species or species habitat likely to occur within area
Feral deer Feral deer species in Australia [85733]	Species or species habitat likely to occur within area
Lepus capensis Brown Hare [127]	Species or species habitat likely to occur within area
Mus musculus House Mouse [120]	Species or species habitat likely to occur within area
Rattus norvegicus Brown Rat, Norway Rat [83]	Species or species habitat likely to occur within area
Rattus rattus Black Rat, Ship Rat [84]	Species or species habitat likely to occur within area
Vulpes vulpes Red Fox, Fox [18]	Species or species habitat likely to occur within area
Plants	
Alternanthera philoxeroides Alligator Weed [11620]	Species or species habitat likely to occur within area
Anredera cordifolia Madeira Vine, Jalap, Lamb's-tail, Mignonette Vine, Anredera, Gulf Madeiravine, Heartleaf Madeiravine, Potato Vine [2643]	Species or species habitat likely to occur within area

Asparagus aethiopicus Asparagus Fern, Ground Asparagus, Basket Fern, Sprengi's Fern, Bushy Asparagus, Emerald Asparagus [62425] Asparagus plumosus Climbing Asparagus-fern [48993]	Species or species habitat likely to occur within area Species or species habitat likely to occur within area
Cabomba caroliniana Cabomba, Fanwort, Carolina Watershield, Fish Grass, Washington Grass, Watershield, Carolina Fanwort, Common Cabomba [5171] Chrysanthemoides monilifera Bitou Bush, Boneseed [18983]	Species or species habitat likely to occur within area Species or species habitat likely to occur within area
Chrysanthemoides monilifera subsp. rotundata Bitou Bush [16332]	Species or species habitat likely to occur within area
Eichhornia crassipes Water Hyacinth, Water Orchid, Nile Lily [13466]	Species or species habitat likely to occur within area
Genista sp. X Genista monspessulana Broom [67538]	Species or species habitat may occur within area
Lantana camara Lantana, Common Lantana, Kamara Lantana, Large- leaf Lantana, Pink Flowered Lantana, Red Flowered Lantana, Red-Flowered Sage, White Sage, Wild Sage [10892] Pinus radiata Radiata Pine Monterey Pine, Insignis Pine, Wilding Pine [20780]	Species or species habitat likely to occur within area Species or species habitat may occur within area
Rubus fruticosus aggregate Blackberry, European Blackberry [68406]	Species or species habitat likely to occur within area
Sagittaria platyphylla Delta Arrowhead, Arrowhead, Slender Arrowhead [68483]	Species or species habitat likely to occur within area
Salvinia molesta Salvinia, Giant Salvinia, Aquarium Watermoss, Kariba Weed [13665]	Species or species habitat likely to occur within area
Senecio madagascariensis Fireweed, Madagascar Ragwort, Madagascar Groundsel [2624]	Species or species habitat likely to occur within area

Caveat

The information presented in this report has been provided by a range of data sources as acknowledged at the end of the report.

This report is designed to assist in identifying the locations of places which may be relevant in determining obligations under the Environment Protection and Biodiversity Conservation Act 1999. It holds mapped locations of World and National Heritage properties, Wetlands of International and National Importance, Commonwealth and State/Territory reserves, listed threatened, migratory and marine species and listed threatened ecological communities. Mapping of Commonwealth land is not complete at this stage. Maps have been collated from a range of sources at various resolutions.

Not all species listed under the EPBC Act have been mapped (see below) and therefore a report is a general guide only. Where available data supports mapping, the type of presence that can be determined from the data is indicated in general terms. People using this information in making a referral may need to consider the qualifications below and may need to seek and consider other information sources.

For threatened ecological communities where the distribution is well known, maps are derived from recovery plans, State vegetation maps, remote sensing imagery and other sources. Where threatened ecological community distributions are less well known, existing vegetation maps and point location data are used to produce indicative distribution maps.

Threatened, migratory and marine species distributions have been derived through a variety of methods. Where distributions are well known and if time permits, maps are derived using either thematic spatial data (i.e. vegetation, soils, geology, elevation, aspect, terrain, etc) together with point locations and described habitat; or environmental modelling (MAXENT or BIOCLIM habitat modelling) using point locations and environmental data layers.

Where very little information is available for species or large number of maps are required in a short time-frame, maps are derived either from 0.04 or 0.02 decimal degree cells; by an automated process using polygon capture techniques (static two kilometre grid cells, alpha-hull and convex hull) or captured manually or by using topographic features (national park boundaries, islands, etc). In the early stages of the distribution mapping process (1999-early 2000s) distributions were defined by degree blocks, 100K or 250K map sheets to rapidly create distribution maps. More reliable distribution mapping methods are used to update these distributions as time permits.

Only selected species covered by the following provisions of the EPBC Act have been mapped:

- migratory and
- marine

The following species and ecological communities have not been mapped and do not appear in reports produced from this database:

- threatened species listed as extinct or considered as vagrants
- some species and ecological communities that have only recently been listed
- some terrestrial species that overfly the Commonwealth marine area
- migratory species that are very widespread, vagrant, or only occur in small numbers

The following groups have been mapped, but may not cover the complete distribution of the species:

- non-threatened seabirds which have only been mapped for recorded breeding sites
- seals which have only been mapped for breeding sites near the Australian continent

Such breeding sites may be important for the protection of the Commonwealth Marine environment.

Coordinates

-31.436161 152.908569

Acknowledgements

This database has been compiled from a range of data sources. The department acknowledges the following custodians who have contributed valuable data and advice:

- [Office of Environment and Heritage, New South Wales](#)
- [Department of Environment and Primary Industries, Victoria](#)
- [Department of Primary Industries, Parks, Water and Environment, Tasmania](#)
- [Department of Environment, Water and Natural Resources, South Australia](#)
- [Department of Land and Resource Management, Northern Territory](#)
- [Department of Environmental and Heritage Protection, Queensland](#)
- [Department of Parks and Wildlife, Western Australia](#)
- [Environment and Planning Directorate, ACT](#)
- [Birdlife Australia](#)
- [Australian Bird and Bat Banding Scheme](#)
- [Australian National Wildlife Collection](#)
- Natural history museums of Australia
- [Museum Victoria](#)
- [Australian Museum](#)
- [South Australian Museum](#)
- [Queensland Museum](#)
- [Online Zoological Collections of Australian Museums](#)
- [Queensland Herbarium](#)
- [National Herbarium of NSW](#)
- [Royal Botanic Gardens and National Herbarium of Victoria](#)
- [Tasmanian Herbarium](#)
- [State Herbarium of South Australia](#)
- [Northern Territory Herbarium](#)
- [Western Australian Herbarium](#)
- [Australian National Herbarium, Canberra](#)
- [University of New England](#)
- [Ocean Biogeographic Information System](#)
- [Australian Government, Department of Defence](#)
- [Forestry Corporation, NSW](#)
- [Geoscience Australia](#)
- [CSIRO](#)
- [Australian Tropical Herbarium, Cairns](#)
- [eBird Australia](#)
- [Australian Government – Australian Antarctic Data Centre](#)
- [Museum and Art Gallery of the Northern Territory](#)
- [Australian Government National Environmental Science Program](#)
- [Australian Institute of Marine Science](#)
- [Reef Life Survey Australia](#)
- [American Museum of Natural History](#)
- [Queen Victoria Museum and Art Gallery, Inveresk, Tasmania](#)
- [Tasmanian Museum and Art Gallery, Hobart, Tasmania](#)
- Other groups and individuals

The Department is extremely grateful to the many organisations and individuals who provided expert advice and information on numerous draft distributions.

Please feel free to provide feedback via the [Contact Us](#) page.

© Commonwealth of Australia
Department of the Environment
GPO Box 787
Canberra ACT 2601 Australia
+61 2 6274 1111



Appendix 4 Human and animal health

Human and animal health

Flying-foxes, like many animals, carry pathogens that may pose human health risks. Many of these are viruses which cause only asymptomatic infections in flying-foxes themselves but may cause significant disease in humans or other animals that are exposed. In Australia, the most well-defined of these include Australian bat lyssavirus (ABLV), Hendra virus (HeV) and Menangle virus. Specific information on these viruses is provided below.

Excluding those people whose occupations require contact with bats, such as wildlife carers and vets, human exposure to ABLV, HeV and Menangle virus, their transmission and frequency of infection is extremely rare. HeV infection in humans requires transfer from an infected intermediate equine host (i.e. close contact with an infected horse) and spread of the virus directly from bats to humans has not been reported.

These diseases are also easily prevented through vaccination, personal protective equipment, safe flying-fox handling (by trained and vaccinated personnel only) and appropriate horse husbandry. Therefore, despite the fact that human infection with these agents can be fatal, the probability of infection is extremely low, and the overall public health risk is also judged to be low (Qld Health 2016).

Disease and flying-fox management

A recent study at several camps before, during and after disturbance (Edson et al. 2015) showed no statistical association between HeV prevalence and flying-fox disturbance. However, the consequences of chronic or ongoing disturbance and harassment and its effect on HeV infection were not within the scope of the study and are therefore unknown.

The effects of stress are linked to increased susceptibility and expression of disease in both humans (AIHW 2012) and animals (Henry & Stephens-Larson 1985; Aich et. al. 2009), including reduced immunity to disease.

Therefore, it can be assumed that management actions which may cause stress (e.g. dispersal), particularly over a prolonged period or at times where other stressors are increased (e.g. food shortages, habitat fragmentation, etc.), are likely to increase the susceptibility and prevalence of disease within the flying-fox population, and consequently the risk of transfer to humans.

Furthermore, management actions or natural environmental changes may increase disease risk by:

- forcing flying-foxes into closer proximity to one another, increasing the probability of disease transfer between individuals and within the population.
- resulting in abortions and/or dropped young if inappropriate management methods are used during critical periods of the breeding cycle. This will increase the



likelihood of direct interaction between flying-foxes and the public, and potential for disease exposure.

- adoption of inhumane methods with potential to cause injury which would increase the likelihood of the community coming into contact with injured/dying or deceased flying-foxes.

The potential to increase disease risk should be carefully considered as part of a full risk assessment when determining the appropriate level of management and the associated mitigation measures required.

Australian bat lyssavirus

ABLV is a rabies-like virus that may be found in all flying-fox species on mainland Australia. It has also been found in an insectivorous microbat and it is assumed it may be carried by any bat species. The probability of human infection with ABLV is very low with less than 1% of the flying-fox population being affected (DPI 2013) and transmission requiring direct contact with an infected animal that is secreting the virus. In Australia three people have died from ABLV infection since the virus was identified in 1996 (NSW Health 2013).

Domestic animals are also at risk if exposed to ABLV. In 2013, ABLV infections were identified in two horses (Shinwari et al. 2014). There have been no confirmed cases of ABLV in dogs in Australia; however, transmission is possible (McCall et al. 2005) and consultation with a veterinarian should be sought if exposure is suspected.

Transmission of the virus from bats to humans is through a bite or scratch but may have potential to be transferred if bat saliva directly contacts the eyes, nose, mouth or broken skin. ABLV is unlikely to survive in the environment for more than a few hours, especially in dry environments that are exposed to sunlight (NSW Health 2013).

Transmission of closely related viruses suggests that contact or exposure to bat faeces, urine or blood does not pose a risk of exposure to ABLV, nor does living, playing or walking near bat roosting areas (NSW Health 2013).

The incubation period in humans is assumed similar to rabies and variable between two weeks and several years. Similarly, the disease in humans presents essentially the same clinical picture as classical rabies. Once clinical signs have developed the infection is invariably fatal. However, infection can easily be prevented by avoiding direct contact with bats (i.e. handling). Pre-exposure vaccination provides reliable protection from the disease for people who are likely to have direct contact with bats, and it is generally a mandatory workplace health and safety requirement that all persons working with bats receive pre-vaccination and have their level of protection regularly assessed. Like classical rabies, ABLV infection in humans also appears to be effectively treated using post-exposure vaccination and so any person who suspects they have been exposed should seek immediate medical treatment. Post-exposure vaccination is usually ineffective once clinical manifestations of the disease have commenced.

If a person is bitten or scratched by a bat they should:

- wash the wound with soap and water for at least five minutes (**do not scrub**)



- contact their doctor immediately to arrange for post-exposure vaccinations.

If bat saliva contacts the eyes, nose, mouth or an open wound, flush thoroughly with water and seek immediate medical advice.

Hendra virus

Flying-foxes are the natural host for Hendra virus (HeV), which can be transmitted from flying-foxes to horses. Infected horses sometimes amplify the virus and can then transmit it to other horses, humans and on two occasions, dogs (DPI 2014). There is no evidence that the virus can be passed directly from flying-foxes to humans or to dogs (AVA 2015). Clinical studies have shown cats, pigs, ferrets and guinea pigs can carry the infection (DPI 2015a).

Although the virus is periodically present in flying-fox populations across Australia, the likelihood of horses becoming infected is low and consequently human infection is extremely rare. Horses are thought to contract the disease after ingesting forage or water contaminated primarily with flying-fox urine (CDC 2014).

Humans may contract the disease after close contact with an infected horse. HeV infection in humans presents as a serious and often fatal respiratory and/or neurological disease and there is currently no effective post-exposure treatment or vaccine available for people. The mortality rate in horses is greater than 70% (DPI 2014). Since 1994, 81 horses have died, and four of the seven people infected with HeV have lost their lives (DPI 2014).

Previous studies have shown that HeV spillover events have been associated with foraging flying-foxes rather than camp locations. Therefore, risk is considered similar at any location within the range of flying-fox species and all horse owners should be vigilant. Vaccination of horses can protect horses and subsequently humans from infection (DPI 2014), as can appropriate horse husbandry (e.g. covering food and water troughs, fencing flying-fox foraging trees in paddocks, etc.).

Although all human cases of HeV to date have been contracted from infected horses and direct transmission from bats to humans has not yet been reported, particular care should be taken by select occupational groups that could be uniquely exposed. For example, persons who may be exposed to high levels of HeV via aerosol of heavily contaminated substrate should consider additional PPE (e.g. respiratory filters), and potentially dampening down dry dusty substrate.

Appendix 5 Survey results

The highest proportion of respondents were not aware of the community engagement for the development of the 'Kooloonbung Creek Nature Park Plan of Management' in 2012 (17) while the remaining had participated (11) or did know about it but had not participated (15) (Figure 1).

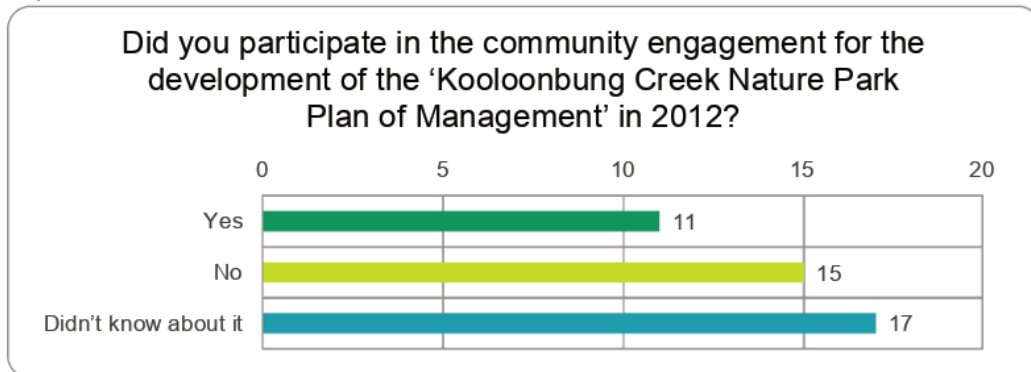


Figure 27 Responses regarding participation in the development of 'Kooloonbung Creek Nature Park Plan of Management' in 2012

Survey responses indicated that the majority were aware that the camp constitutes a Nationally Important Camp providing critical habitat (69.7% answered yes, 11.6% responded no and 18.6% did not care) (Figure 2).

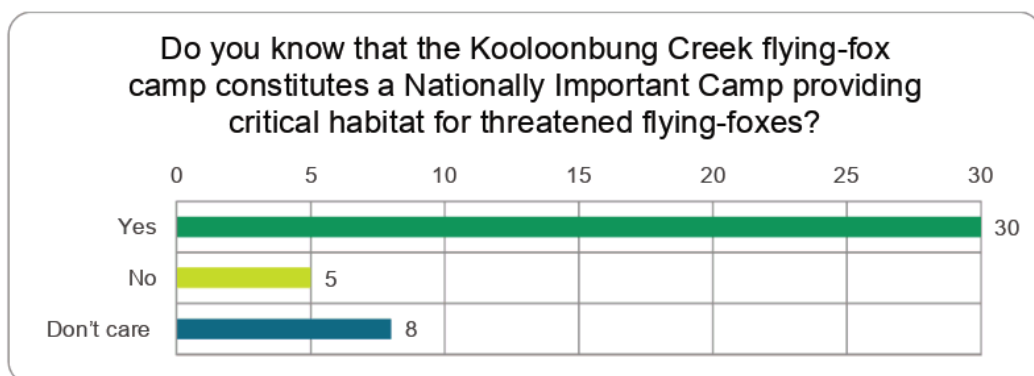


Figure 28 Knowledge of the classification of the camp as a Nationally Important Camp

The majority of respondents were aware that flying-foxes are a protected native species (39, 92.8%) while the remaining didn't care (Figure 3).

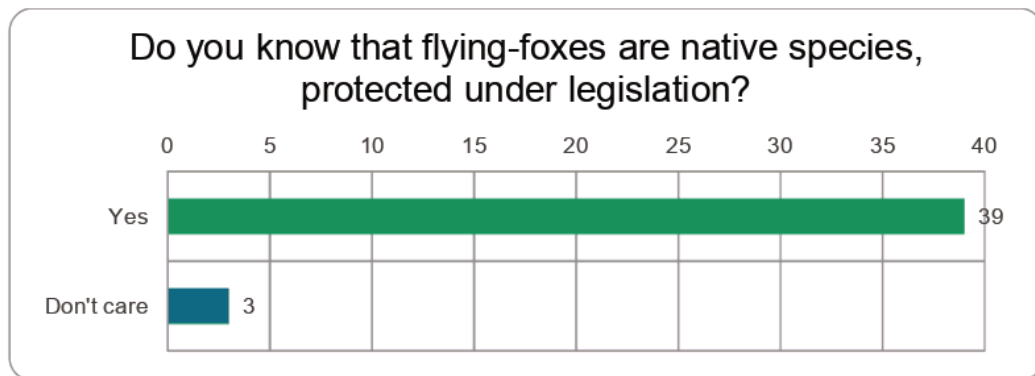


Figure 29 Knowledge of the status of flying-foxes

Similar results were provided regarding the species' role in long distance seed dispersal and pollination (86% answered yes, 6.9% responded no, 6.9% didn't care or understand the question). The majority of respondents are aware that disease can be prevented by not handling flying-foxes and through appropriate horse husbandry (83.3%), with the remaining answering no (Figure 4). When asked if the respondents knew that the GHFF is the main species of flying-fox that uses the Koolonbung creek camp site, 60.9% responded positively, while 21.9% did not know, and 17.1% didn't care.

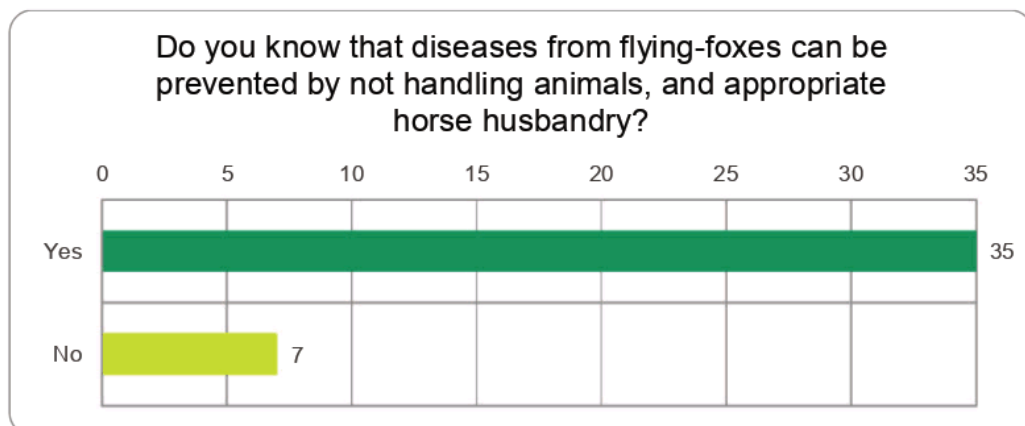


Figure 30 Disease from flying-foxes

Survey results indicated a majority of respondents held positive feelings towards the protection of flying-foxes (62.8%), with 37.2% indicating that it is not important to them (Figure 5).

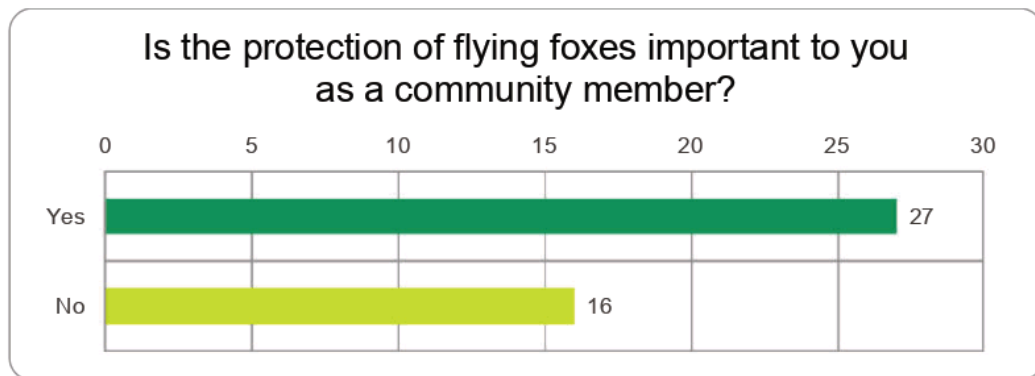


Figure 31 Protection of flying-foxes

54.7% of respondents indicated that their experience or interaction with flying-foxes in the Port Macquarie area has been negative, 35.7% responded positively and 1% were neither positive nor negative (Figure 6).

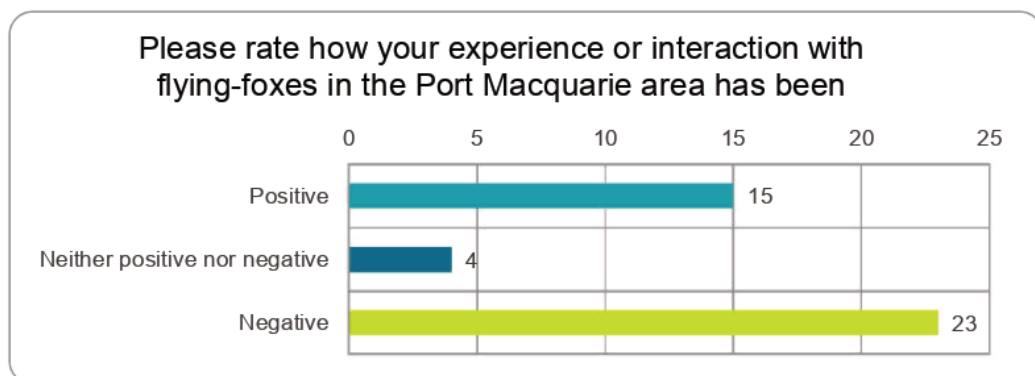


Figure 32 Experience with flying-foxes

Respondents who indicated that they are negatively impacted (23), were being most impacted around the home. These respondents identified the majority of impacts related to smell, excrement and noise (Figure 7). Twelve respondents (who selected 'other' in the survey) added 'quality of life', 'constant health issues', 'isolation due to family and friends not wanting to visit' and 'destruction of habitat for other species i.e. small birds' being of concern.

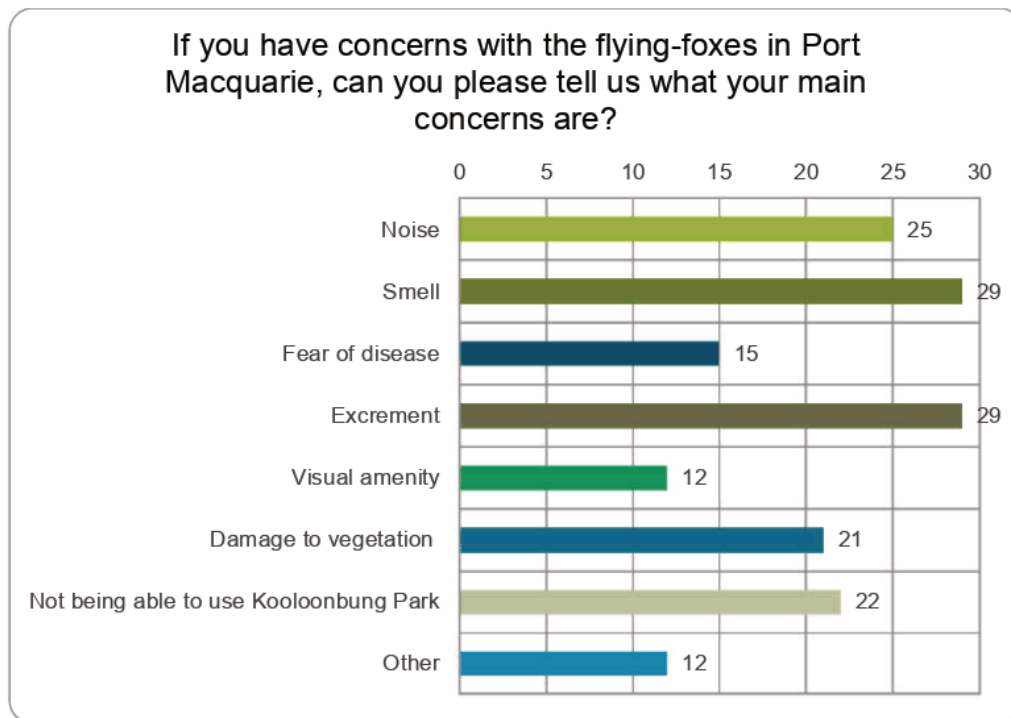


Figure 33 Main concerns about flying-foxes

In relation to costs associated with any management actions, the majority of respondents answered that it was moderately important that it was of low cost to ratepayers (48%), while 33% considered this not at all important, and 19% responded as very important (Figure 8).

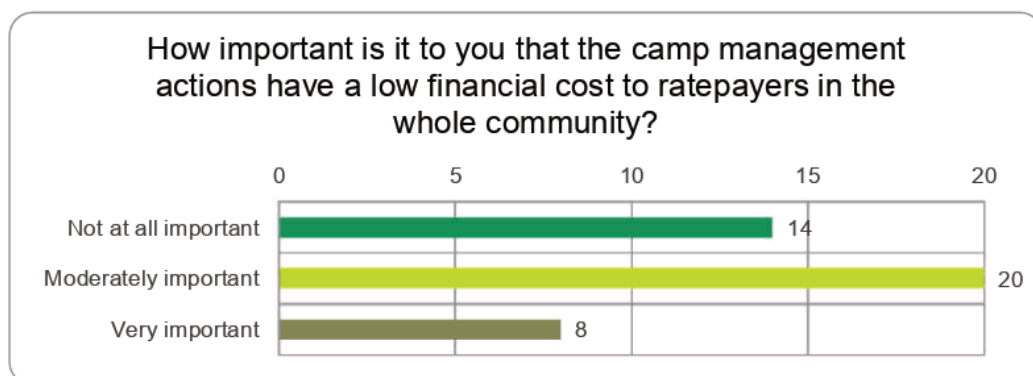


Figure 34 Financial impacts to ratepayers

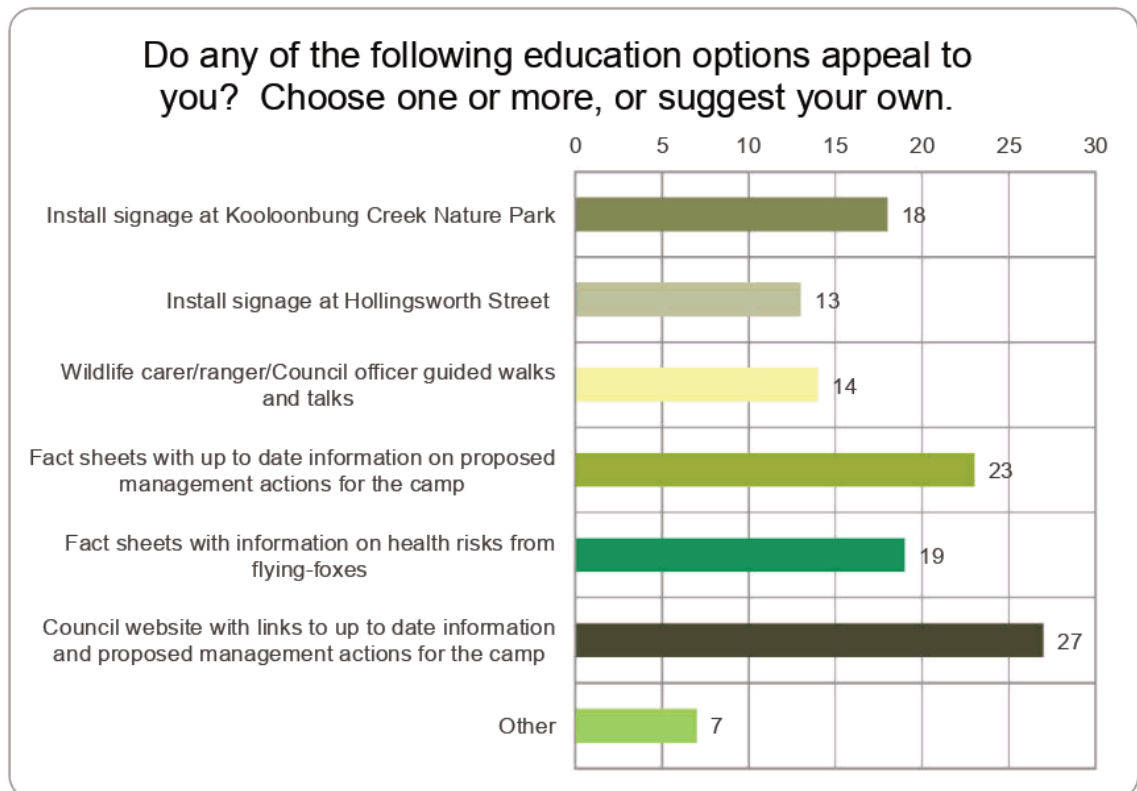


Figure 35 Educational options

Respondents were asked to choose one or more education options, or suggest their own. 'Council websites with links to up to date information and proposed management actions for the camp' received the highest number of votes (64%). The second-most highly rated option was 'fact sheets with up to date information on proposed management actions for the camp' (54%). All other options received similar ranking priority (Figure 9). Other suggested options were, 'action to reduce noise/removing the bats', 'cull a proportion of the flying-fox population' and for 'Friends of Kooloonbung Creek Nature Park' (FKCNP) to take guided walks through the park.

The majority of the respondents identified as 'not living within 100 metres of the camp' (67.4%). All (14) respondents answered 'no' when asked if more information was required concerning plants that may be attracting flying-foxes to their backyard. Of those 14 respondents, when asked 'Would receiving service subsidies help in reducing flying-fox impacts on your property if funding assistance was provided in some way?'; 9 answered 'yes' and 5 responded 'no'.

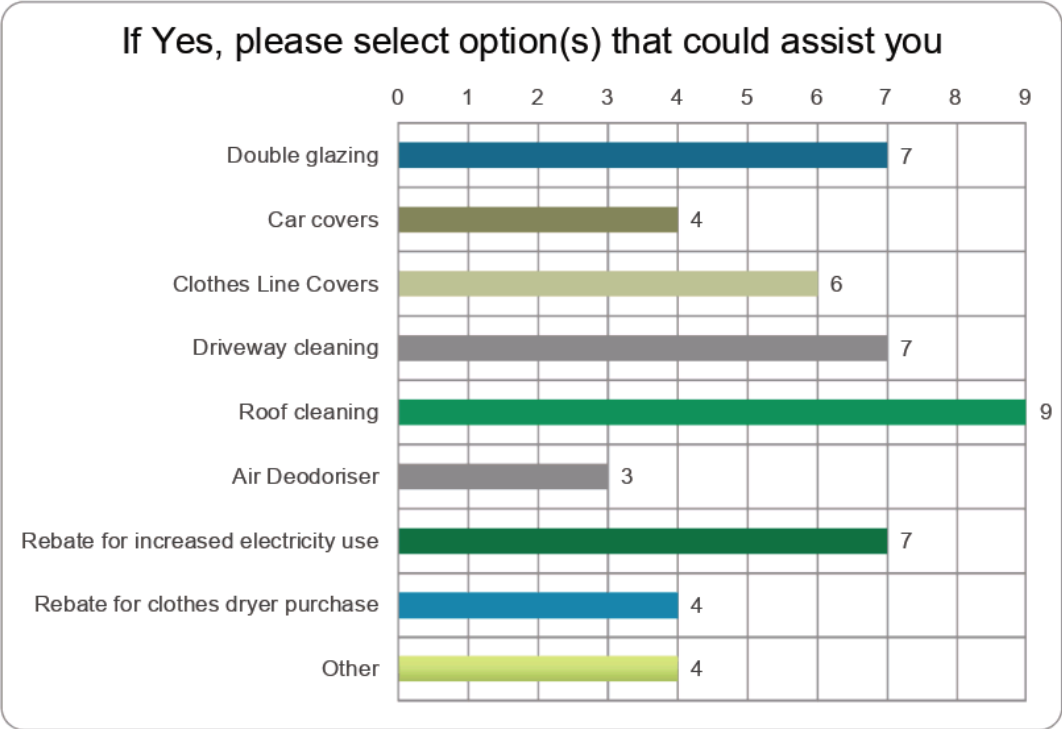


Figure 36 Management options to assist

In regards to which options could assist residents if funding assistance was provided in some way; roof cleaning had the most selections (9 selections from each of the 9 respondents) (Figure 10). The next rated options after roof cleaning were 'double glazing', 'driveway cleaning' and 'rebate for increased electricity use' with 7 votes each. Four respondents (who selected 'other' in the survey) added water rebate for hosing off outdoor areas, rebate for air-conditioner installation or solar panels to reduce electricity costs when residences must be closed due to odour/noise and rebate for regular cleaning of solar panels.

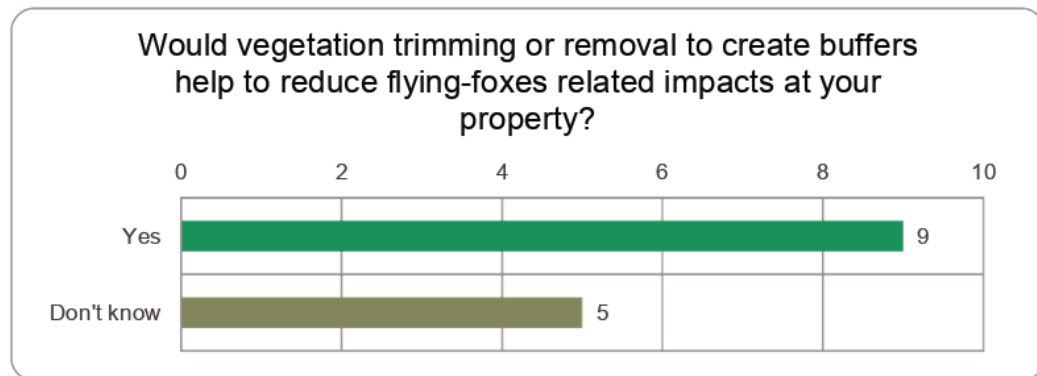


Figure 37 Buffer creation to reduce flying-fox related impacts

The majority of respondents (64.3%) answered 'yes' to would vegetation trimming or removal to create buffers would help to reduce flying-fox related impacts at their property (Figure 11). Nine respondents (who selected 'yes') added what street they live on to the survey. Addresses included; Lake Road, Glebe Close, Fischer Street and Anita Crescent.

Respondents who indicated that they are interested in learning more about management options (39), were most interested in managing impacts to amenities. Respondents selected 'improving the boardwalk to prevent slipping' as the most preferred management option (Figure 12). Nineteen respondents were interested to learn about canopy-mounted sprinklers.

Fourteen respondents (who selected 'other' in the survey) added "relocate the colony", "change conditions to move flying-fox elsewhere", "clear roosting trees along the cutting path through Kooloonbung so that the walkway and bridge can be used without the fear of slipping in excrement", "replant flying-fox roosts trees to replace those lost during the nudging process", "cull numbers of flying-fox", "minimise the camp size", "relocate the camp to state forests and national parks", "clear the area of trees due to bushfire concerns", "smoke bombs, low humming motors" and "develop an eradication program".

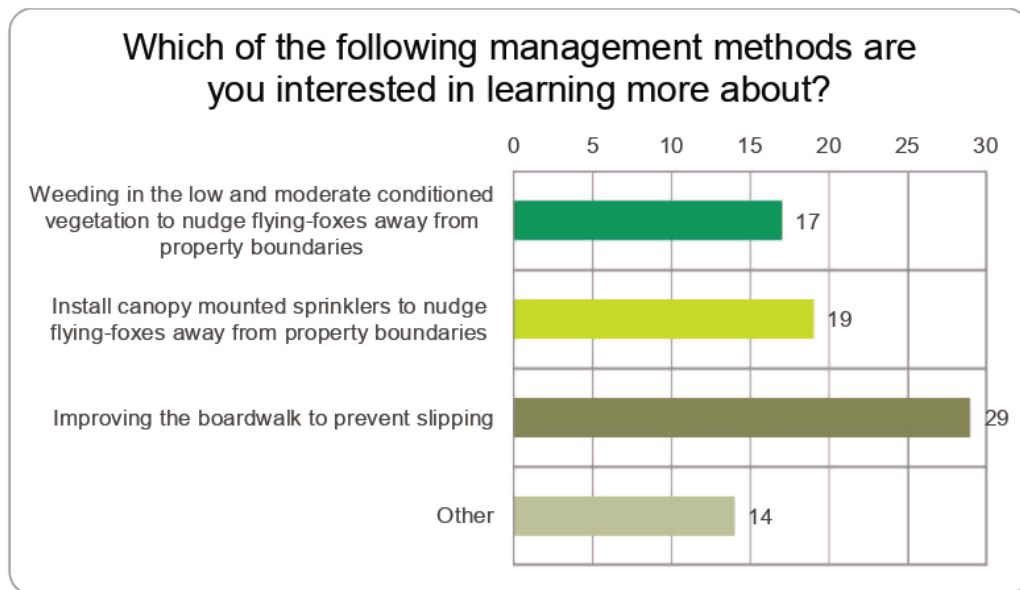


Figure 39 Management options that participants are interested in learning

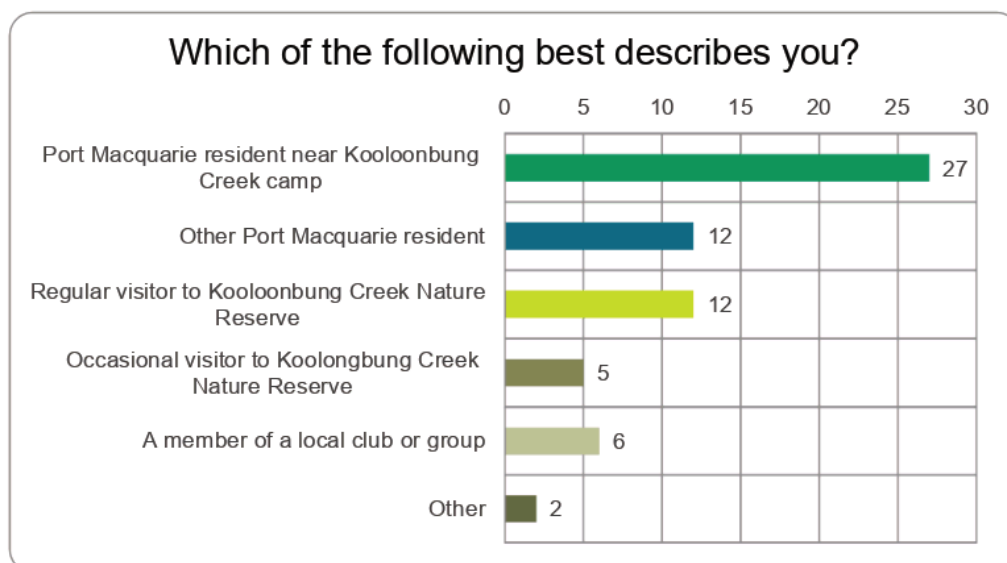


Figure 38 Survey distribution.

'Port Macquarie resident near Kooloonbung Creek camp' was the highest response group in the survey (62.8%) (Figure 13). 62.8% of participants were aged 50-75, 18.6% were 36-50, 13.9% were 76+ and 18-35 and >18 were both 2.3% of the participants.



Table 9 Responses to question; Do any of the proposed management options not appeal to you? And if so which ones and for what reason?

Response type	Respondents comments
Remove flying-fox	<i>"Just get rid of the problem".</i>
Remove flying-fox	<i>"NONE - get rid of them. All of these management options cost money and don't solve the problem".</i>
Remove flying-fox	<i>"Rebates for water, double glazing, etc. I want population reduced and none of the options listed will achieve that".</i>
Remove flying-fox	<i>"Weeding - can't see how this helps unless it involves removal of future roosting & paper bark tree seedlings".</i>
Remove flying-fox	<i>"I would to have them removed as the smell is repulsive".</i>
Remove flying-fox	<i>"In Kooloonbung there are 2 endangered things. The bat camp & the rainforest, & only one of those species can be moved & or minimised. One of your options mystifies me, what do you mean by weeding ?? To my mind bats are not what you would classify as ground foragers".</i>
Remove flying-fox	<i>"None of the service subsidies required if bat colony persuaded to live elsewhere. Financial grants, if I understand correctly, were made to combat the problems we have. Why was no action taken? Personally, I think incompetency at a higher level should not be left unuttered. Trimming, pruning to create a buffer would only hasten the demise of our beautiful arboreal world...We don't need to axe the rain forest the bats execute the demise effortlessly".</i>
Remove flying-fox	<i>"I lived in Albury before moving to Port Macquarie. We had a colony of bats move into the Botanic Gardens. The council was given permission to move the bats to another location. This was done by making a lot of noise each morning with power tools, banging tin lids etc. The bats moved to another location that was not near any homes. I feel that the people who live near the bats must find the smell unbearable".</i>
Remove flying-fox	<i>"Sydney moved their population along, we can do the same, within the guidelines set out by N.S.W Gov. We do not propose to killing the bats, just moving them on to a less populated area".</i>
Remove flying-fox / cull	<i>"as above remove them completely or cull them. The national parks condone culling of brumbies and we are allowed to cull Kangaroos why is the fox different? they have a far worse impact".</i>
Remove flying-fox / cull	<i>"Don't see how it will work as the smell and flying foxes will still be there with the above options".</i>
Remove flying-fox / cull	<i>"Remove them completely. Thats it - get them out of there".</i>
Remove flying-fox / cull	<i>"No.... none of these address the real issue. Management is not on my agenda! Eradication is.... is is feasible and achievable!".</i>
Management method	<i>"This community problem has been well known for many years and the time has come for proactive responses. Council already has the views of 10,000 residents who have Petitioned for action. This survey must recognise those voices. Options limited to information about PROPOSED management actions are insufficient. Citizens now also need to know what has actually been done and how effective (or not) that has been". "Education alone does not solve the issue"</i>
Management method	<i>"Sprinklers - water costs money".</i>
Management method	<i>"Canopy-mounted sprinklers sounds like it would require a lot of infrastructure to be</i>



Response type	Respondents comments
	<i>installed, this may be expensive and require vegetation to be removed or disturbed".</i>
Management method	<i>"Sprinklers or any other method that negatively impacts the bats' bodies, habitat or flight paths should not be used as this is a threatened species that needs as much protection as we can give it. While the bats like to roost above water, being wet could reduce their ability to keep warm and perhaps to fly and to forage. Peggy Eby told us that they are extremely loyal to their roost and are unlikely to desert it in spite of interference by humans. They occupy only a tiny part of the town and they "pay rent" in the form of the ecosystem services they deliver"</i>
Management method	<i>"FKCNP are already involved with the other management methods listed above".</i>

Table 10 Further comments to survey from participants

Theme	Respondents comment
Relocate flying-fox	<i>"Relocate them to a nonresidential or recreational area if possible".</i>
Relocate flying-fox	<i>"It is my understanding that the colony was moved from the Sea Acres NP in the eighties, because the NPWS did not like having them around. Back then, Kooloonbung Creek Nature Reserve was beautiful, with no fruit bat colony established until the Sea Acres 'eviction'. Additionally, back in those days, the water in Kooloonbung Creek was more brackish than it is now. The ever-increasing discharge of treated effluent into Kooloonbung Creek has diluted the naturally-occurring brackish water in the inter-tidal zone. This has provided the colony with a ready supply of drinking water that has provided the foundation for the fruit bat colony to grow more than it otherwise might have been. The fruit bat colony has ruined the amenity of a beautiful area, and it is my opinion that they should be moved from that location. Council should at least salinate the water they discharge into the creek so that it does not alter the natural state of the inter-tidal zone".</i>
Relocate flying-fox	<i>"I want Council \$ spent on reducing population of FFs in KCR, not on education or writing management reports with no tangible outcomes".</i>
Relocate flying-fox	<i>"Don't hold much hope of a council solution to relocating bats, there are avenues for this, but think the problem has become too complicated for this council. Another tourist venue destroyed in PM, only ones these days are the khaki hat brigade. No longer a tranquil spot for wedding photos etc. used to be a wonderful walk through boardwalk with visitors, no longer!"</i>
Relocate flying-fox	<i>"I am sure the bats will move on to another site when it suits them, when is another question".</i>
Relocate flying-fox	<i>"Please do something urgently, they have moved and settled into our area in the last 12 months"!!</i>
Relocate flying-fox	<i>"GET RID OF THEM!!!!!! WE WANT OUR ENVIRONMENT BACK SO WE CAN USE IT AND BE SAFE".</i>
Relocate flying-fox	<i>"I have excrement drop on my house and driveway. There are palm trees, next door, which attract the bats. The removal of these non-native plants would help, in my case. The decline of smaller native birds is very noticeable, since the bats took over the reserve. I will not use the boardwalk, since the bats took over. It used to be a special place for me. My visitors cannot enjoy the renovated picnic area, because of the noise, smell and the excrement. There have been cases where other N.S.W Councils have moved the bats on, we should be able to do the same".</i>
Engagement process	<i>"How is the community to comment if they do not happen to log into the website. I have not seen any notification in the local paper.</i>



Theme	Respondents comment
	<i>As a resident who has already expressed concern on these issues it is important to know that community engagement has been openly sought before the deadline closes".</i>
Engagement process	<i>"Proof read your surveys before sending them out! Too repetitive".</i>
Engagement process / relocate flying-fox	<i>"Your survey is false and deliberately based on lies at worst, misinformation at best. There are plenty of colonies that can be studied in this area, Wingham to Kempsey, and NSW Govt will assist with funding to relocate inappropriately located colonies. The time frame for this survey seems very short, deliberately structured to sabotage the effectiveness of this exercise. You should be ashamed. Don't you understand your responsibility as a council servant".</i>
Park closure	<i>"e.g Singleton area - They had to close their Park & some Businesses due to flying foxes? is this going to happen in Port Macquarie and who pays for this? Our main street and area will be abandon".</i>
Health problems	<i>"This year has caused health problems which I have discussed with my G.P. I am a non-smoker. I have a permanent cough and have been under great stress through lack of/disturbed sleep, sore ears from the use of ear plugs and general depression at not being able to enjoy the lifestyle in our own backyard. Our interstate visitors are not keen to return to Port because of the strong bat smell in this area; commenting on why a beautiful holiday destination is so spoilt by the stench of the flying foxes..... Word gets around".</i>
Flying-fox advocate	<i>"I would like to see the retention of this naturally occurring FF population within KCNP. As a rate-payer with a 17 year affiliation with the Park, I know that the FF population numbers and species are variable, and truly hope that no drastic action is taken to remove the colony to appease relatively short-term residents who chose to live next to a bushland area and wildlife corridor".</i>
Flying-fox advocate	<i>"if people had the opportunity to interact like the koala hospital they would realise there is more to them then the smell".</i>
Flying-fox advocate	<i>"To have a colony of wild animals within the township is an asset and already a tourist attraction which could be better managed and promoted. How about a Flying Fox Cafe nearby with fruit specialties on the menu, souvenirs and photos? Let's promote these gentle, intelligent and intriguing animals the way we promote our koalas. We need more signage to educate people about the bats' role in making our forests. Encourage people to wash their hands and clean their shoes after walking through, while explaining the facts about possible disease risks to address fear and disinformation. Replacing the timber boardwalk with the same black fibreglass mesh used at Sea Acres and parts of Kooloonbung would greatly improve safety and allow droppings to wash off because they can make the boardwalk slippery. If walkers are still concerned about droppings, suggest they use an umbrella or choose an alternative walking route, e.g. beside Lake Road. The proximity of homes to the bat roost is due to development being permitted too close to the creek: this is the fault of humans, not the bats, which are suffering from habitat loss throughout their range, exacerbated by climate change".</i>
Flying-fox advocate	<i>"FKCNP strongly support the protection of the Flying Fox camp in Kooloonbung Creek NP. Although some trees may be adversely affected by the FF's, there is also much evidence of regenerating native plants in the Reserve as a result of the FF foraging through and beyond the Reserve. FKCNP recognises the critical role that FF's play in maintaining healthy ecological processes in native forests. Having said this our group acknowledges the significant issues affecting immediate neighbours to the Reserve and is keen to work with Council and these residents to develop management actions which may alleviate some of the problems faced by the residents while at the same time minimising major disturbance to the FF camp".</i>
Flying-fox advocate	<i>"I think the Bats are wonderful creatures who have a vital role to play in the Eco System & I hope we have a win win situation for both bats & man in this survey".</i>
Support for reserve	<i>"Please save the Reserve....it is unique to Port Macquarie and should be available for all to enjoy".</i>



Theme	Respondents comment
Support for education	<i>"I applaud the educational approach adopted by the council, education is the best option to work with people who live in the area".</i>
Support for education	<i>"We have neighbors that purposely disturbed the bats regularly making banging sounds with pots and pans and whistles they wake the bats in the day it's really annoying as the bats are usually fine sleeping in the day, when they are right at our back fence I have to use the dryer or hang clothes inside but I'm happy having the bats there in fact I believe we are lucky to be able to live near them and have a duty to protect them as we are the ones who have destroyed a lot of their natural habitat anyway. Just wish there was more education for those who live on the creek and penalties for those who disturb the bats".</i>
Support for education	<i>"I understand the difficult nature of flying fox camps in close proximity to houses but very strongly support community education regarding the importance of these species on long term forest health as well as the least invasive methods to gently nudge them away from roosting close to homes".</i>
Council responsiveness	<p><i>"1 - This community problem has been well known for many years and the time has come for proactive responses. Spending more years on education without action to control the adverse impacts is not sufficient. Council already has the views of 10,000 residents who have Petitioned for action. This survey/report to Council must also recognise those very patient voices.</i></p> <p><i>2 - The cost of attending to the problem has to be considered in the same way that all worthwhile Council initiatives are considered in the Budget - cost effective activity that addresses a recognised need. Looking for a 'low financial cost' as this survey suggests should not be the approach for any project - identifying best value outcomes is important.</i></p> <p><i>3 - Intending to seek funding from the State Government, without mentioning in this survey, the relevance of the State Government's Code seems odd.</i></p> <p><i>4 - To engage, in the future, only with the community 'around a camp' is limiting. Flying-foxes have impacted the broader community including tourism operators, community groups and walkers. Broader engagement is required.</i></p> <p><i>5 - Engaging and educating community members is inadequate where it relates only to some input and little after that.</i></p> <p><i>Council should commit to:</i></p> <ul style="list-style-type: none"> <i>informing the community of decisions taken;</i> <i>planned actions and timeframes;</i> <i>performance measures</i> <i>and the results of the actions. A considered management plan could do this.</i> <p><i>6 - All the options identified in the NSW Government's Draft Code of Practice Authorising Flying-Fox Camp Management Actions 2018 including the many practical options not identified in this survey, must be considered".</i></p>
Council responsiveness	<i>"I encourage Council to effectively deal with this problem in the near future as residents, particularly those close to Kooloonbung Creek, have suffered the effects for far too long".</i>
Council responsiveness	<i>"We hold council totally responsible for the terrible situation we are now in. If council had acted many years ago we would not be in this position. council now needs to act with URGENCY".</i>
Council responsiveness	<p><i>"Yes, please get on with it, please don't just have this survey for some people in Council to justify their job or position, & seem to say, look what we are doing to help. You can if you wish, contact me if you need any clarification on my thoughts.</i></p> <p><i>Thank you for the opportunity</i></p>



Appendix 6 Standard measures to avoid impacts to flying-foxes

The following mitigation measures will be complied with at all times during implementation of any activities within or immediately adjacent the camp.

- All personnel will be appropriately experienced, trained and inducted. Induction will include each person's responsibilities under this Plan.
- All personnel will be briefed prior to the action commencing each day and debriefed at the end of the day.
- Works will cease and OEH consulted in accordance with the 'stop work triggers' section of the Plan.
- Large crews will be avoided where possible.
- The use of loud machinery and equipment that produces sudden impacts/noise will be limited. Where loud equipment (e.g. chainsaws) is required they will be started away from the camp and allowed to run for a short time to allow flying-foxes to adjust.
- Activities that may disturb flying-foxes at any time during the year will begin as far from the camp as possible, working towards the camp gradually to allow flying-foxes to habituate.
- Any activity likely to disturb flying-foxes so that they take flight will be avoided during the day during the sensitive GHFF/BFF birthing period (i.e. when females are in final trimester or the majority are carrying pups, generally August – December) and avoided altogether during crècheing (generally November/December to February). Where works cannot be done at night after fly-out during these periods, it is preferable they are undertaken in the late afternoon close to or at fly-out. If this is also not possible, a person experienced in flying-fox behaviour will monitor the camp for at least the first two scheduled actions (or as otherwise deemed to be required by that person) to ensure impacts are not excessive and advise on the most appropriate methods (e.g. required buffer distances, approach, etc.).
- OEH will be immediately contacted if LRFF are present between March and October or are identified as being in final trimester / with dependent young.
- Non-critical maintenance activities will ideally be scheduled when the camp is naturally empty. Where this is not possible (e.g. at permanently occupied camps) they will be scheduled for the best period for that camp (e.g. when the camp is seasonally lower in numbers and breeding will not be interrupted, or during the non-breeding season, generally May to July).
- Works will not take place in periods of adverse weather including strong winds, sustained heavy rains, in very cold temperatures or during periods of likely population stress (e.g. food bottlenecks). Wildlife carers will be consulted to determine whether the population appears to be under stress.



- Works will be postponed on days predicted to exceed 35°C (or ideally 30°C), and for one day following a day that reached ≥35°C. If an actual heat stress event has been recorded at the camp or at nearby camps, a rest period of several weeks will be scheduled to allow affected flying-foxes to fully recover. See the OEH fact sheet on [Responding to heat stress in flying-fox camps](#).
- Any proposed variations to works detailed in the Plan will be approved, in writing, by OEH before any new works occur.
- OEH may require changes to methods or cessation of management activities at any time.
- Ensure Level 2 management actions and results are recorded to inform future planning. See the OEH fact sheet on [Monitoring, evaluating and reporting](#).

Vegetation trimming/removal (if required)

- Dead wood and hollows will be retained on site where possible as habitat.
- Vegetation chipping/mulching is to be undertaken as far away from roosting flying-foxes as possible (at least 100 m).

Canopy vegetation trimming/removal (if required)

Prior to works

- Trees to be removed or lopped will be clearly marked (e.g. with flagging tape) prior to works commencing, to avoid unintentionally impacting trees to be retained.

During works

- Any tree lopping, trimming or removal is undertaken under the supervision of a suitably qualified arborist (minimum qualification of Certificate III in Horticulture (Arboriculture) who is a member of an appropriate professional body such as the National Arborists Association) (e.g. Highland Arbor; Chris Watchirs).
- Trimming will be in accordance with relevant Australian Standards (e.g. AS4373 Pruning of Amenity Trees), and best practice techniques used to remove vegetation in a way that avoids impacting other fauna and remaining habitat.
- No tree in which a flying-fox is roosting will be trimmed or removed. Works may continue in trees adjacent to roost trees only where a person experienced in flying-fox behaviour assesses that no flying-foxes are at risk of being harmed. A person experienced in flying-fox behaviour is to remain on site to monitor, when canopy trimming/removal is required within 50 metres of roosting flying-foxes.
- While most females are likely to be carrying young (generally September – January) vegetation removal within 50 metres of the camp will only be done in the evening after fly-out, unless otherwise advised by a flying-fox expert.
- Tree removal as part of management will be offset at a ratio of at least 2:1. Where threatened vegetation removal is required, the land manager will prepare an Offset



Strategy to outline a program of restoration works in other locations (in addition to existing programs). The strategy will be submitted to OEH for approval at least two months prior to commencing works.

Bush regeneration

- All works will be carried out by suitably qualified and experienced bush regenerators (i.e. Landcare groups), with at least one supervisor knowledgeable about flying-fox habitat requirements (and how to retain them for Level 1 and 2 actions) with knowledge regarding working under a camp.
- Vegetation modification, including weed removal, will not alter the conditions of the site such that it becomes unsuitable flying-fox habitat for Level 1 and 2 actions.
- Weed removal should follow a mosaic pattern, maintaining refuges in the mid- and lower storeys at all times.
- Weed control in the core habitat area will be undertaken using hand tools only (or in the evening after fly-out while crèching young are not present).
- Species selected for revegetation will be consistent with the habitat on site, and in buffer areas or conflict areas should be restricted to small shrubs/understorey species to reduce the need for further roost tree management in the future.

Stop work triggers

Management activities in or near Kooloonbung Creek camp will cease and will not recommence without consulting OEH if:

- any of the animal welfare triggers occur on more than two days during the program, such as unacceptable levels of stress (Table 10)
- there is a flying-fox injury or death
- a new camp/camps appear to be establishing
- impacts are created or exacerbated at other locations
- there appears to be potential for conservation impacts (e.g. reduction in breeding success identified through independent monitoring)
- standard measures to avoid impacts cannot be met.
- Management may also be terminated at any time if:
 - unintended impacts are created for the community around the camp
 - allocated resources are exhausted.



Table 11 Planned action for potential impacts during any works under or near the camp. A person with experience in flying-fox behaviour (as per Appendix 6) will monitor for welfare triggers and direct works in accordance with the criteria below.

Welfare trigger	Signs	Action
Unacceptable levels of stress	If any individual is observed: <ul style="list-style-type: none"> - panting - saliva spreading - located on or within 2 m of the ground 	Works to cease for the day.
Fatigue	In-situ management <ul style="list-style-type: none"> - more than 30% of the camp takes flight - individuals are in flight for more than 5 minutes - flying-foxes appear to be leaving the camp 	In-situ management Works to cease and recommence only when flying-foxes have settled* / move to alternative locations at least 50 m from roosting animals.
Injury/death	<ul style="list-style-type: none"> - A flying-fox appears to have been injured/killed on site (including aborted fetuses) - dependent/crèche young present and adults likely to take flight or abandoned camp 	Works to cease immediately and OEH notified AND rescheduled OR adapted sufficiently so that significant impacts (e.g. death/injury) are highly unlikely to occur, as confirmed by an independent expert OR stopped indefinitely and alternative management options investigated.



Appendix 7 Community feedback

Table 12 Community feedback from consultative meeting 2

Level	Theme	Actions to prioritise	Actions to disregard	How or where to implement
1	Education and awareness	Information on removal of non-natives		Friends of Kooloonbung do this in Park however, need to educate residents of home removal of weeds including tobacco and Cocos palm
		<i>Kooloonbung Friends educate at schools</i>		
		Update information sheets on flying-fox disease		
		Tourism		
		Information on removal of non-native		Particularly those that are sources of bat food
		Signage at Kooloonbung Park		
		Ban barbed wire in residential areas and black monofilament netting		Promote wildlife friendly netting
		Priority – facts sheets on flying-fox disease risk <ul style="list-style-type: none"> - Information on council website - Advice on tree trimming Medium – signage at Kooloonbung Creek <ul style="list-style-type: none"> - Wildlife educator - Information on removal of non-natives 		
		Information on removal of non-native Advice on tree trimming or removal		Removal of blossoming trees close to housing Removal of roosting trees close to housing
		Information on removal of non-native Advice on tree trimming or removal	Signage in Kooloonbung Fact sheets on flying-fox disease risk information on council website wildlife educator at schools or clubs	
			Signage already there	



Level	Theme	Actions to prioritise	Actions to disregard	How or where to implement
			Signage not required	
			Wildlife educator	
	Property acquisition	priority		
		✓✓		Must be at top of market value so as not disadvantage residents
	Level 1		Level 1 management actions mostly completed refer 2012 KCPoM	
	Create alternative habitat	✓		Alternative camp corner of Lake Road and Ocean Drive – mostly paperbark vegetations
	Create alternative roost sites	Priority		Look at expanding planting at the Hatch as Alternative Roost Site
	Subsidies	Air-conditioning – who pays power bill?		
		High pressure hosing		but more to do with sound and important to have shock value
		Car / clothes line / pool covers priority		
		Air deodorisers, high pressure hosing, air -conditioning, double glazed windows all priorities		rate and electricity subsidies
		Car / clothes line / pool covers, Air deodorisers, high pressure hosing, air -conditioning, double glazed windows		
		High pressure hosing – consider for cleaning back patio		
		Subsidies for all air-conditioning		
		Water subsidy for daily washdown		
		Water subsidy should be in place		
		High pressure hosing, air-conditioning, double-glazed windows		Would consider this a good option to try. Would allow us to breath at



Level	Theme	Actions to prioritise	Actions to disregard	How or where to implement
				night. Think this would assist with noise control to help us get some sleep and could actually have visitors at our home
		Double-glazed windows would help with noise		
			Air deodorisers – impossible as the smell covers a huge area outside making living on back areas impossible	
			Car / clothes line / pool covers	
2	Buffers	Canopy-mounted sprinklers useful to shift bats near around homes		Near affected homes
		Canopy-mounted sprinkler; idle diesel generator motor; air compressor noise		
		Canopy-mounted sprinkler high priority seems to have worked in other areas		
		Canopy-mounted sprinkler		
		Canopy-mounted sprinkler, vegetation trimming and removal		Need to address tree choice. Less roosting trees and food sources in the park. There are huge areas of blossom down the road in the industrial area.
		Will consider canopy-mounted sprinkler, vegetation trimming, vegetation removal and acoustic barrier		
		Canopy-mounted sprinkler and vegetation removal		Bats within 5 metres of back fence in tall paperbark trees
		Vegetation trimming - maybe		
			Vegetation removal not feasible otherwise compromise reserve values	
			Removal of a narrow band of trees would affect other wildlife	



Level	Theme	Actions to prioritise	Actions to disregard	How or where to implement
			Barriers could affect movement of koalas	
		Acoustic barrier but shock value as with Royal Melbourne Botanical Gardens		
				Concerned that shadiest roost area left is along the rear of houses – other areas have lost canopy cover and therefore heat stress concern



Revision History

Revision No.	Revision date	Details	Prepared by	Reviewed by	Approved by
00	4/12/2018	PR3995 Kooloonbung Creek Camp Management Plan	Emily Hatfield, Senior Wildlife Biologist	Jess Bracks, Principal Wildlife Biologist	
01	04/01/2018	PR3995 Kooloonbung Creek Camp Management Plan.DR2	Emily Hatfield, Senior Wildlife Biologist	Julie Whelan, Senior Environmental Scientist	
02	06/03/2019	PR3995 Kooloonbung Creek Camp Management Plan.DR3	Emily Hatfield, Senior Wildlife Biologist	Jess Bracks, Principal Wildlife Biologist	
03	22/03/2019	PR3995 Kooloonbung Creek Camp Management Plan.DR4	Emily Hatfield, Senior Wildlife Biologist	Jess Bracks, Principal Wildlife Biologist	

Distribution List

Copy #	Date	Type	Issued to	Name
1	22/03/2019	Electronic	Port Macquarie-Hastings Council	Blayne West
2	22/03/2019	Electronic	Ecosure	Administration

Citation: Ecosure (2019), Kooloonbung Creek Camp Management Plan, DRAFT Report to Port Macquarie-Hastings Council, Burleigh Heads

Report compiled by Ecosure Pty Ltd

ABN: 63 106 067 976

admin@ecosure.com.au

www.ecosure.com.au

PR3995-DE.Kooloonbung Creek CMP.DR4

Adelaide

PO Box 145
Pooraka SA 5095
P 1300 112 021
M 0407 295 766

Brisbane

PO Box 675
Fortitude Valley QLD 4006
P 07 3606 1030

Coffs Harbour

PO Box 4370
Coffs Harbour Jetty NSW 2450
P 02 5621 8103

Gladstone

PO Box 5420
Gladstone QLD 4720
P 07 4994 1000

Gold Coast

PO Box 404
West Burleigh QLD 4219
P 07 5508 2046
F 07 5508 2544

Rockhampton

PO Box 235
Rockhampton QLD 4700
P 07 4994 1000

Sunshine Coast

PO Box 1457
Noosaville QLD 4566
P 07 5357 6019

Sydney

PO Box 880
Surry Hills NSW 2010
P 1300 112 021

Townsville

PO Box 2335
Townsville QLD 4810
P 1300 112 021



© Ecosure Proprietary Limited 2019

Commercial in confidence. The information contained in this document produced by Ecosure Pty Ltd is solely for the use of the Client identified on the cover sheet for the purpose for which it has been prepared and Ecosure Pty Ltd undertakes no duty to or accepts any responsibility to any third party who may rely upon this document. All rights reserved. No section or element of this document may be removed from this document, reproduced, electronically stored or transmitted in any form without the written permission of Ecosure Pty Ltd.



