

Development Assessment Panel

Business Paper

location: Via Skype

time: 2:00pm

Note: Council is distributing this agenda on the strict understanding that the publication and/or announcement of any material from the Paper before the meeting not be such as to presume the outcome of consideration of the matters thereon.

CHARTER

1.0 OBJECTIVES

To assist in managing Council's development assessment function by providing independent and expert determinations of development applications that fall outside of staff delegations.

2.0 KEY FUNCTIONS

- To review development application reports and conditions;
- To determine development applications outside of staff delegations;
- To refer development applications to Council for determination where necessary;
- To provide a forum for objectors and applicants to make submissions on applications before the Development Assessment Panel (DAP);
- To maintain transparency in the determination of development applications.

Delegated Authority of Panel

Pursuant to Section 377 of the Local Government Act, 1993 delegation to:

- Determine development applications under Part 4 of the Environmental Planning and Assessment Act 1979 having regard to the relevant environmental planning instruments, development control plans and Council policies.
- Vary, modify or release restrictions as to use and/or covenants created by Section 88B instruments under the Conveyancing Act 1919 in relation to development applications for subdivisions being considered by the panel.
- Determine Koala Plans of Management under State Environmental Planning Policy 44 - Koala Habitat Protection associated with development applications being considered by the Panel.

Noting the trigger to escalate decision making to Council as highlighted in section 5.2.

3.0 MEMBERSHIP

3.1 Voting Members

• Two independent external members. One of the independent external members to



be the Chairperson.

 Group Manager Development Assessment (alternate - Director Development & Environment or Development Assessment Planner)

The independent external members shall have expertise in one or more of the following areas: planning, architecture, heritage, the environment, urban design, economics, traffic and transport, law, engineering, government and public administration.

3.2 Non-Voting Members

Not applicable

3.3 Obligations of members

- Members must act faithfully and diligently and in accordance with this Charter.
- Members must comply with Council's Code of Conduct.
- Except as required to properly perform their duties, DAP members must not disclose any confidential information (as advised by Council) obtained in connection with the DAP functions.
- Members will have read and be familiar with the documents and information provided by Council prior to attending a DAP meeting.
- Members must act in accordance with Council's Workplace Health and Safety Policies and Procedures
- External members of the Panel are not authorised to speak to the media on behalf of Council. Council officers that are members of the Committee are bound by the existing operational delegations in relation to speaking to themedia.
- Staff members shall not vote on matters before the Panel if they have been the principle author of the development assessment report.

3.4 Member Tenure

• The independent external members will be appointed for the term of four (4) years maximum in which the end of the tenure of these members would occur in a cascading arrangement.

3.5 Appointment of members

- The independent external members (including the Chair) shall be appointed by the General Manager following an external Expression of Interest process.
- Staff members of the Panel are in accordance with this Charter.

4.0 TIMETABLE OF MEETINGS

- The Development Assessment Panel will generally meet on the 1st and 3rd Wednesday each month at 2.00pm at the Port Macquarie offices of Council.
- Special Meetings of the Panel may be convened by the Director Development & Environment Services with three (3) days notice.



5.0 MEETING PRACTICES

5.1 Meeting Format

- At all Meetings of the Panel the Chairperson shall occupy the Chair and preside. The Chair will be responsible for keeping of order at meetings.
- Meetings shall be open to the public.
- The Panel will hear from applicants and objectors or their r e p r e s e n t a t i v e s.
- Where considered necessary, the Panel will conduct site inspections which will be open to the public.

5.2 Decision Making

- Decisions are to be made by consensus. Where consensus is not possible on any item, that item is to be referred to Council for a decision.
- All development applications involving a proposed variation to a development standard greater than 10% under Clause 4.6 of the Local Environmental Plan will be considered by the Panel and recommendation made to the Council for a decision.

5.3 Quorum

• All members (2 independent external members and 1 staff member) must be present at a meeting to form a quorum.

5.4 Chairperson and Deputy Chairperson

• Independent Chair (alternate, second independent member)

5.5 Secretariat

- The Director Development &n Environment is to be responsible for ensuring that the Panel has adequate secretariat support. The secretariat will ensure that the business paper and supporting papers are circulated at least three (3) days prior to each meeting. Minutes shall be appropriately approved and circulated to each member within three (3) weeks of a meeting being held.
- The format of and the preparation and publishing of the Business Paper and Minutes shall be similar to the format for Ordinary Council Meetings.

5.6 Recording of decisions

 Minutes will record decisions and how each member votes for each item before the Panel.



6.0 CONVENING OF "OUTCOME SPECIFIC" WORKING GROUPS

Not applicable.

7.0 CONFIDENTIALITY AND CONFLICT OF INTEREST

- Members of the Panel must comply with the applicable provisions of Council's Code of Conduct. It is the personal responsibility of members to comply with the standards in the Code of Conduct and regularly review their personal circumstances with this in mind.
- Panel members must declare any conflict of interests at the start of each meeting or before discussion of a relevant item or topic. Details of any conflicts of interest should be appropriately minuted. Where members are deemed to have a real or perceived conflict of interest, it may be appropriate they be excused from deliberations on the issue where the conflict of interest may exist. A Panel meeting may be postponed where there is no quorum.

8.0 LOBBYING

All members and applicants are to adhere to Council's Lobbying policy. Outside of scheduled Development Assessment Panel meetings, applicants, their representatives, Councillors, Council staff and the general public are not to lobby Panel members via meetings, telephone conversations, correspondence and the like. Adequate opportunity will be provided at Panel inspections or meetings for applicants, their representatives and the general public to make verbal submissions in relation to Business Paper items.



Development Assessment Panel

ATTENDANCE REGISTER

	22/01/20	12/02/20	26/02/20	11/03/20	25/03/20	08/04/20
Member						
Paul Drake	✓	√	√	√	√	✓
Robert Hussey		1	1	~		√
David Crofts	✓				√	
(alternate member)						
Dan Croft		√	√	√	√	✓
(Group Manager Development Assessment)						
(alternates)	✓					
- Development Assessment Planner						

Key: ✓ = Present
A = Absent With Apology
X = Absent Without Apology

Meeting Dates for 2020

22/01/2020	Function Room	2:00pm
12/02/2020	Function Room	2:00pm
26/02/2020	Function Room	2:00pm
11/03/2020	Function Room	2:00pm
25/03/2020	Function Room	2:00pm
8/04/2020	Function Room	2:00pm
6/05/2020	Function Room	2:00pm
27/05/2020	Function Room	2:00pm
10/06/2020	Function Room	2:00pm
24/06/2020	Function Room	2:00pm
8/07/2020	Function Room	2:00pm
22/07/2020	Function Room	2:00pm
12/08/2020	Function Room	2:00pm
26/08/2020	Function Room	2:00pm
9/09/2020	Function Room	2:00pm
30/09/2020	Function Room	2:00pm
14/10/2020	Function Room	2:00pm
28/10/2020	Function Room	2:00pm
11/11/2020	Function Room	2:00pm
25/11/2020	Function Room	2:00pm
16/12/2020	Function Room	2:00pm



Development Assessment Panel Meeting Wednesday 6 May 2020

Items of Business

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DEVELOPMENT ASSESSMENT PANEL 06/05/2020

Item: 01

Subject: ACKNOWLEDGEMENT OF COUNTRY

"I acknowledge that we are gathered on Birpai Land. I pay respect to the Birpai Elders both past and present. I also extend that respect to all other Aboriginal and Torres Strait Islander people present."

Item: 02

Subject: APOLOGIES

RECOMMENDATION

That the apologies received be accepted.

Item: 03

Subject: CONFIRMATION OF PREVIOUS MINUTES

RECOMMENDATION

That the Minutes of the Development Assessment Panel Meeting held on 8 April 2020 be confirmed.





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PRESENT

Members:

Paul Drake Robert Hussey Dan Croft

Other Attendees:

Grant Burge Pat Galbraith-Robertson Ben Roberts Cheryl Lowe

The meeting opened at 2:00pm.

01 ACKNOWLEDGEMENT OF COUNTRY

The Acknowledgement of Country was delivered.

02 APOLOGIES

Nil.

03 CONFIRMATION OF MINUTES

CONSENSUS:

That the Minutes of the Development Assessment Panel Meeting held on 25 March 2020 be confirmed.

04 DISCLOSURES OF INTEREST

There were no disclosures of interest presented.



05 DA2019 - 676.1 RESIDENTIAL FLAT BUILDING INCLUDING CLAUSE 4.6 OBJECTION TO CLAUSE 4.3 (HEIGHT OF BUILDINGS) OF THE PORT MACQUARIE-HASTINGS LOCAL ENVIRONMENTAL PLAN 2011 AT LOT 1 DP 1211682, 5 DREW CLOSE, PORT MACQUARIE

Speakers: Wayne Ellis (applicant) David Pensini (applicant) Chris Lloyd (applicant)

The Panel was unable to reach consensus.

MOTION: Paul Drake:

That it be recommended to Council that DA 2019 - 676.1 for a residential flat building including clause 4.6 objection to clause 4.3 (height of buildings) of the Port Macquarie-Hastings Local Environmental Plan 2011 at Lot 1, DP 1211682, No. 5 Drew Close, Port Macquarie, be determined by granting consent subject to the recommended conditions with the following amendment:

• Condition B2 be amended to include point 11 stating: 'If warranted by Council, a give way sign is to be installed at the intersection drew Close and Warlters St.'

FOR: Paul Drake and Dan Croft AGAINST: Robert Hussey

DISSENTING MOTION: Robert Hussey:

That it be recommended to Council that DA 2019 - 676.1 for a residential flat building including clause 4.6 objection to clause 4.3 (height of buildings) of the Port Macquarie-Hastings Local Environmental Plan 2011 at Lot 1, DP 1211682, No. 5 Drew Close, Port Macquarie, be determined by refusing consent for the following reasons:

- 1. That the application does not adequately satisfy the design guidelines in SEPP 65 and the ADG, where the provisions of Section 3H Vehicle access, requires such access to achieve safety and minimise conflicts between pedestrians and vehicles ...
- The designated main pedestrian access on the 1st floor passes very close to the entry to Unit 101,then past the garage openings for garages 22 and 23, turning a blind corner to the lift lobby area, where a number of residents/ visitors could be waiting.
- 3. This waiting area is also on the entry/exit path for garages 24 and 24A, which are in tandem configuration that generally involves more manoeuvring space. And it will pass over part of the lift lobby area and conflicts with garages 22 and 23 manoeuvring.
- 4. Consequently, the lift waiting area is not safe with the anticipated level of conflicting car movements in close proximity to pedestrians waiting and exiting the lift. Those exiting pedestrians, both residents and visitors then have to traverse the path via a blind corner walking past the garage openings for Spaces 23 and 22 to safely exit the building.
- 5. Also, the proposal does not adequately satisfy the 3 D Communal Open Space and



associated Principle 6 guidelines for amenity for residents. In particular, the side wall of Unit 203 is adjacent to the swimming pool and it has screened window opening along the common wall. The acoustic and privacy amenity will not achieve a satisfactory outcome for this unit.

06 DA2019 - 867.1- MULTI DWELLING HOUSING AND STRATA TITLE SUBDIVISION AT LOT 110 DP788310, NO.18 MONTAGUE STREET, PORT MACQUARIE

Speakers: James Collins (applicant) Stephen Johnson (applicant)

CONSENSUS:

That DA2019 - 867 for a multi dwelling housing and strata title subdivision at Lot 110, DP 788310, No. 18 Montague Street, Port Macquarie, be determined by granting consent subject to the recommended conditions and as amended below:

- Additional condition in Section B of the consent to read: 'Prior to release of the construction certificate amended plans are to be submitted providing for opaque balustrades for the first floor western facing balconies of units 1 and 2.'
- Additional condition in Section B of the consent to read: 'Prior to release of the construction certificate amended plans are to be submitted providing for the raising of the window sill height of the kitchen and dining room western facing window of unit 3 by one third (i.e removal of the bottom window pane for the full length of the window)'.
- Additional condition in Section B of the consent to read: 'Prior to release of the construction certificate amended plans are to be submitted for Council approval providing for the front courtyard fences of Units 1 and 2 to be constructed with alternative treatments (i.e not solely timber paling). Landscaping is to be provided in the recessed and 900mm setback areas of the fence and include the provision of mature trees.'

07 GENERAL BUSINESS

Nil.

The meeting closed at 3:50pm.

DEVELOPMENT ASSESSMENT PANEL 06/05/2020

Item: 04

Subject: DISCLOSURES OF INTEREST

RECOMMENDATION

That Disclosures of Interest be presented

DISCLOSURE OF INTEREST DECLARATION

Name of Meeting:				
Meeting	g Date:			
Item Nu	umber:			
Subjec	t:			
l, the u	ndersigned, hereby declare the following interest:			
_	Pecuniary:			
	Take no part in the consideration and voting and be out of sight of the meeting.			
	Non-Pecuniary – Significant Interest:			
	Take no part in the consideration and voting and be out of sight of the meeting.			
_	Non-Pecuniary – Less than Significant Interest:			
	May participate in consideration and voting.			
For the	reason that:			
Name:	Name: Date:			
Signed:				
Please submit to the Governance Support Officer at the Council Meeting.				

(Refer to next page and the Code of Conduct)

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DEVELOPMENT ASSESSMENT PANEL 06/05/2020

Pecuniary Interest

- 4.1 A pecuniary interest is an interest that you have in a matter because of a reasonable likelihood or expectation of appreciable financial gain or loss to you or a person referred to in clause 4.3.
- 4.2 You will not have a pecuniary interest in a matter if the interest is so remote or insignificant that it could not reasonably be regarded as likely to influence any decision you might make in relation to the matter, or if the interest is of a kind specified in clause 4.6.
- 4.3 For the purposes of this Part, you will have a pecuniary interest in a matter if the pecuniary interest is: your interest, or (a)
 - (b) the interest of your spouse or de facto partner, your relative, or your partner or employer, or
 - (c) a company or other body of which you, or your nominee, partner or employer, is a shareholder or member. For the purposes of clause 4.3:
- 4.4
 - Your "relative" is any of the following: (a)
 - your parent, grandparent, brother, sister, uncle, aunt, nephew, niece, lineal descendant or adopted child i)
 - your spouse's or de facto partner's parent, grandparent, brother, sister, uncle, aunt, nephew, niece, lineal descendant or ii) adopted child
 - iii) the spouse or de facto partner of a person referred to in paragraphs (i) and (i) "de facto partner" has the same meaning as defined in section 21C of the *Interpretation Act* 1987.
 - (b)
 - You will not have a pecuniary interest in relation to a person referred to in subclauses 4.3(b) or (c) (a) if you are unaware of the relevant pecuniary interest of your spouse, de facto partner, relative, partner, employer or company or other body, or
 - just because the person is a member of, or is employed by, a council or a statutory body, or is employed by the Crown, or just because the person is a member of, or a delegate of a council to, a company or other body that has a pecuniary interest in the matter, so long as the person has no beneficial interest in any shares of the company or body.

Non-Pecuniary

4.5

- 5.1 Non-pecuniary interests are private or personal interests a council official has that do not amount to a pecuniary interest as defined in clause 4.1 of this code. These commonly arise out of family or personal relationships, or out of involvement in sporting, social, religious or other cultural groups and associations, and may include an interest of a financial nature. A non-pecuniary conflict of interest exists where a reasonable and informed person would perceive that you could be
- 5.2 influenced by a private interest when carrying out your official functions in relation to a matter.
- 5.3 The personal or political views of a council official do not constitute a private interest for the purposes of clause 5.2.
- Non-pecuniary conflicts of interest must be identified and appropriately managed to uphold community confidence in the probity of council decision-making. The onus is on you to identify any non-pecuniary conflict of interest you may have in 5.4 matters that you deal with, to disclose the interest fully and in writing, and to take appropriate action to manage the conflict in accordance with this code.
- When considering whether or not you have a non-pecuniary conflict of interest in a matter you are dealing with, it is always important to think about how others would view your situation. 5.5

Managing non-pecuniary conflicts of interest

- 5.6 Where you have a non-pecuniary conflict of interest in a matter for the purposes of clause 5.2, you must disclose the relevant private interest you have in relation to the matter fully and in writing as soon as practicable after becoming aware of the non-pecuniary conflict of interest and on each occasion on which the non-pecuniary conflict of interest arises in relation to the matter. In the case of members of council staff other than the general manager, such a disclosure is to be made to the staff member's manager. In the case of the general manager, such a disclosure is to be made to the mayor. If a disclosure is made at a council or committee meeting, both the disclosure and the nature of the interest must be
- 5.7 recorded in the minutes on each occasion on which the non-pecuniary conflict of interest arises. This disclosure constitutes disclosure in writing for the purposes of clause 5.6.
- How you manage a non-pecuniary conflict of interest will depend on whether or not it is significant. 5.8
- 5.9 As a general rule, a non-pecuniary conflict of interest will be significant where it does not involve a pecuniary interest for the purposes of clause 4.1, but it involves:
 - a relationship between a council official and another person who is affected by a decision or a matter under consideration that is particularly close, such as a current or former spouse or de facto partner, a relative for the a) purposes of clause 4.4 or another person from the council official's extended family that the council official has a close personal relationship with, or another person living in the same household
 - other relationships with persons who are affected by a decision or a matter under consideration that are particularly close, such b) as friendships and business relationships. Closeness is defined by the nature of the friendship or business relationship, the frequency of contact and the duration of the friendship or relationship. an affiliation between the council official and an organisation (such as a sporting body, club, religious, cultural or charitable
 - c) organisation, corporation or association) that is affected by a decision or a matter under consideration that is particularly strong. The strength of a council official's affiliation with an organisation is to be determined by the extent to which they actively participate in the management, administration or other activities of the organisation.
 - membership, as the council's representative, of the board or management committee of an organisation that is affected by a d) decision or a matter under consideration, in circumstances where the interests of the council and the organisation are potentially in conflict in relation to the particular matter
 - a financial interest (other than an interest of a type referred to in clause 4.6) that is not a pecuniary interest for the purposes of e) clause 4.1
 - f) the conferral or loss of a personal benefit other than one conferred or lost as a member of the community or a broader class of people affected by a decision.
- 5 10 Significant non-pecuniary conflicts of interest must be managed in one of two ways:
 - by not participating in consideration of, or decision making in relation to, the matter in which you have the significant non-pecuniary conflict of interest and the matter being allocated to another person for consideration or determination, or a)
 - b) if the significant non-pecuniary conflict of interest arises in relation to a matter under consideration at a council or committee meeting, by managing the conflict of interest as if you had a pecuniary interest in the matter by complying with clauses 4.28 and
- 5.11 If you determine that you have a non-pecuniary conflict of interest in a matter that is not significant and does not require further action, when disclosing the interest you must also explain in writing why you consider that the non-pecuniary conflict of interest is not significant and does not require further action in the circumstances.
- 5.12 If you are a member of staff of council other than the general manager, the decision on which option should be taken to manage a non-pecuniary conflict of interest must be made in consultation with and at the direction of your manager. In the case of the general manager, the decision on which option should be taken to manage a non-pecuniary conflict of interest must be made in consultation with and at the direction of the mayor.
- Despite clause 5.10(b), a councillor who has a significant non-pecuniary conflict of interest in a matter, may participate in a decision to delegate consideration of the matter in question to another body or person. 5.13
- Council committee members are not required to declare and manage a non-pecuniary conflict of interest in accordance with 5.14 the requirements of this Part where it arises from an interest they have as a person chosen to represent the community, or as a member of a non-profit organisation or other community or special interest group, if they have been appointed to represent the organisation or group on the council committee.





DEVELOPMENT ASSESSMENT PANEL 06/05/2020

SPECIAL DISCLOSURE OF PECUNIARY INTEREST DECLARATION

This form must be completed using block letters or typed. If there is insufficient space for all the information you are required to disclose, you must attach an appendix which is to be properly identified and signed by you.

By [insert full name of councillor]	
In the matter of	
[insert name of environmental	
planning instrument]	
Which is to be considered	
at a meeting of the	
[insert name of meeting]	
Held on	
[insert date of meeting]	
PECUNIARY INTEREST	
Address of the affected principal place of	
residence of the councillor or an	
associated person, company or body	
(the identified land)	
Relationship of identified land to	□ The councillor has interest in the land
councillor	(e.g. is owner or has other interest arising
[Tick or cross one box.]	out of a mortgage, lease, trust, option or contract, or otherwise).
	□ An associated person of the councillor
	has an interest in the land.
	□ An associated company or body of the
	councillor has interest in the land.
MATTER GIVING RISE TO PECUNIAR	
Nature of land that is subject to a	☐ The identified land.
change	Land that adjoins or is adjacent to or is
in zone/planning control by proposed	in proximity to the identified land.
LEP (the subject land ²	
LEP (the subject land ² [Tick or cross one box]	
LEP (the subject land ² [Tick or cross one box] Current zone/planning control	
LEP (the subject land ² [Tick or cross one box] Current zone/planning control [Insert name of current planning instrument	
LEP (the subject land ² [Tick or cross one box] Current zone/planning control [Insert name of current planning instrument and identify relevant zone/planning control	
LEP (the subject land ² [Tick or cross one box] Current zone/planning control [Insert name of current planning instrument and identify relevant zone/planning control applying to the subject land]	
LEP (the subject land ² [Tick or cross one box] Current zone/planning control [Insert name of current planning instrument and identify relevant zone/planning control applying to the subject land] Proposed change of zone/planning	
LEP (the subject land ² [Tick or cross one box] Current zone/planning control [Insert name of current planning instrument and identify relevant zone/planning control applying to the subject land] Proposed change of zone/planning control	
LEP (the subject land ² [Tick or cross one box] Current zone/planning control [Insert name of current planning instrument and identify relevant zone/planning control applying to the subject land] Proposed change of zone/planning control [Insert name of proposed LEP and identify	
LEP (the subject land ² [Tick or cross one box] Current zone/planning control [Insert name of current planning instrument and identify relevant zone/planning control applying to the subject land] Proposed change of zone/planning control [Insert name of proposed LEP and identify proposed change of zone/planning control	
LEP (the subject land ² [Tick or cross one box] Current zone/planning control [Insert name of current planning instrument and identify relevant zone/planning control applying to the subject land] Proposed change of zone/planning control [Insert name of proposed LEP and identify	in proximity to the identified land.
LEP (the subject land ² [Tick or cross one box] Current zone/planning control [Insert name of current planning instrument and identify relevant zone/planning control applying to the subject land] Proposed change of zone/planning control [Insert name of proposed LEP and identify proposed change of zone/planning control applying to the subject land]	
LEP (the subject land ² [Tick or cross one box] Current zone/planning control [Insert name of current planning instrument and identify relevant zone/planning control applying to the subject land] Proposed change of zone/planning control [Insert name of proposed LEP and identify proposed change of zone/planning control applying to the subject land] Effect of proposed change of zone/planning control on councillor or associated person	in proximity to the identified land.
LEP (the subject land ² [Tick or cross one box] Current zone/planning control [Insert name of current planning instrument and identify relevant zone/planning control applying to the subject land] Proposed change of zone/planning control [Insert name of proposed LEP and identify proposed change of zone/planning control applying to the subject land] Effect of proposed change of zone/planning control on councillor or associated person [Tick or cross one box]	in proximity to the identified land.

additional interest]

Councillor's Signature: Date:

This form is to be retained by the council's general manager and included in full in the minutes of the meeting
Last Updated: 3 June 2019



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Important Information

This information is being collected for the purpose of making a special disclosure of pecuniary interests under clause 4.36(c) of the Model Code of Conduct for Local Councils in NSW (the Model Code of Conduct).

The special disclosure must relate only to a pecuniary interest that a councillor has in the councillor's principal place of residence, or an interest another person (whose interests are relevant under clause 4.3 of the Model Code of Conduct) has in that person's principal place of residence.

Clause 4.3 of the Model Code of Conduct states that you will have a pecuniary interest in a matter because of the pecuniary interest of your spouse or your de facto partner or your relative or because your business partner or employer has a pecuniary interest. You will also have a pecuniary interest in a matter because you, your nominee, your business partner or your employer is a member of a company or other body that has a pecuniary interest in the matter.

"Relative" is defined by clause 4.4 of the Model Code of Conduct as meaning your, your spouse's or your de facto partner's parent, grandparent, brother, sister, uncle, aunt, nephew, niece, lineal descendant or adopted child and the spouse or de facto partner of any of those persons.

You must not make a special disclosure that you know or ought reasonably to know is false or misleading in a material particular. Complaints about breaches of these requirements are to be referred to the Office of Local Government and may result in disciplinary action by the Chief Executive of the Office of Local Government or the NSW Civil and Administrative Tribunal.

This form must be completed by you before the commencement of the council or council committee meeting at which the special disclosure is being made. The completed form must be tabled at the meeting. Everyone is entitled to inspect it. The special disclosure must be recorded in the minutes of the meeting.

² A pecuniary interest may arise by way of a change of permissible use of land adjoining, adjacent to or in proximity to land in which a councillor or a person, company or body referred to in clause 4.3 of the Model Code of Conduct has a proprietary interest



¹ Clause 4.1 of the Model Code of Conduct provides that a pecuniary interest is an interest that a person has in a matter because of a reasonable likelihood or expectation of appreciable financial gain or loss to the person. A person does not have a pecuniary interest in a matter if the interest is so remote or insignificant that it could not reasonably be regarded as likely to influence any decision the person might make in relation to the matter, or if the interest is of a kind specified in clause 4.6 of the Model Code of Conduct.

Item: 05

Subject: DA2019 - 309.1 RESIDENTIAL SUBDIVISION AT LOT 302 DP 754434 EMILY AVENUE, PORT MACQUARIE

Report Author: Development Assessment Planner, Benjamin Roberts

Applicant:	King and Campbell Pty Ltd
Owner:	Port Macquarie-Hastings Council
Estimated Cost:	\$212,000
Parcel no:	29160

Alignment with Delivery Program

4.3.1 Undertake transparent and efficient development assessment in accordance with relevant legislation.

RECOMMENDATION

That it be recommended to Council that DA2019 - 307 for a residential subdivision at Lot 302, DP 754434, Emily Avenue, Port Macquarie, be determined by granting consent subject to the recommended conditions.

Executive Summary

This report considers a development application for a five (5) lot residential subdivision 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, three (3) submissions were received.

The site is located on Council owned land. Council's Conflict of Interest -Development Applications Policy applies. The conflict of interest policy requires that all development applications on Council land where objections have been received be referred to Council for determination. In accordance with this policy the General Manager also determined that an external consultant be engaged to report on the application. Kempsey Council were engaged to undertake an independent assessment of the application and provide a recommendation. The assessment and recommendation is provided as **Attachment 1**.

This report recommends that the development application be recommended to Council for approval subject to the conditions included as **Attachment 2.**

1. BACKGROUND

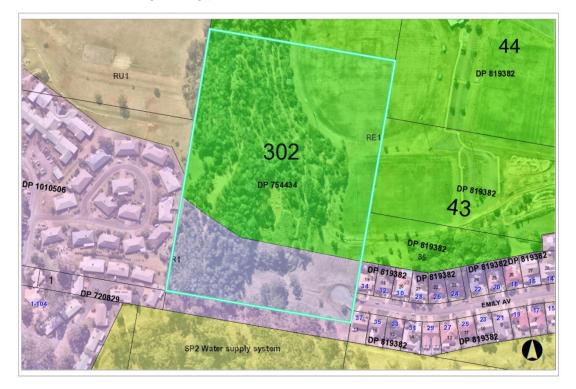
Existing Sites Features and Surrounding Development

The site has an area of 5.61 hectares.



DEVELOPMENT ASSESSMENT PANEL 06/05/2020

The site is zoned R1 General Residential and partly RE1 Public Recreation in accordance with the Port Macquarie-Hastings Local Environmental Plan 2011, as shown in the following zoning plan:



The existing subdivision pattern and location of existing development within the locality is shown in the following aerial photograph:



DEVELOPMENT ASSESSMENT PANEL 06/05/2020

2. DESCRIPTION OF DEVELOPMENT

Key aspects of the proposal include the following:

• Five (5) lot residential subdivision and associated infrastructure.

Refer to Attachment 4 for plans of the proposed development.

3. STATUTORY ASSESSMENT

Refer to Attachment 1.

4. DEVELOPMENT CONTRIBUTIONS

Section 7.11 Contributions

- Development contributions will be required in accordance with Section 7.11 of the Environmental Planning and Assessment Act 1979 towards roads, open space, community cultural services, emergency services and administration buildings.
- A copy of the contributions estimate is included as Attachment 3.

Section 7.12 Contributions

No - The development does not contain any commercial/industrial component.

Section 64 Water and Sewer Contributions

- 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.
- A copy of the contributions estimate is included as **Attachment 3**.

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.

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.





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Attachments

- 1<u>U</u>. DA2019 309.1 4.15 Assessment Report by Kempsey Council
- 2. DA2019 309.1 Recommended Conditions by Kempsey Council
- 34. DA2019 309.1 Development Contributions Estimate
- 4<u>.</u> DA2019 309.1 Plans
- 5<u>1</u>. DA2019 309.1 SOEE
- 64. DA2019 309.1 Phase 1 Contamination Assessment
- 7. DA2019 309.1 Bushfire Hazard Assessment
- 8. DA2019 309.1 Bushfire Safety Authority conditions NSW RFS
- 9. DA2019 309.1 Ecological Impact Assessment.
- 10. DA2019 309.1 Traffic Impact Assessment

STATUTORY REQUIREMENTS

DA No: 2019/309.1	PN: 29160		
Proposal Description: Proposed five (5) lot residential subdivision. Property: Part Lot 302 DP754434. Emily Avenue, Port Macquarie.			
			Section 4.15 Considerations: Having regard for the heads of consideration details in Section 4.15 of the Environmental Planning and Assessment Act 1979 the following assessment is provided.

The provisions (where applicable) of:

(a)(i) Any environmental planning instrument

State Environmental Planning Policy No. 44 - Koala Habitat Protection

The subject land has an area greater than 1 hectare and therefore the provisions of SEPP 44 must be considered.

The Department of Planning and Infrastructure's Circular No. B35, Section 1.5 states that "In relation to affected development applications it is the intention of the policy that investigations for 'potential' and 'core' koala habitats be limited to those areas in which it is proposed to disturb habitat".

An Ecological Assessment in accordance with SEPP 44 was undertaken by Biodiversity Australia with regard to the proposed development and lodged with the DA. The assessment concluded that the trees on the overall site comprise greater than 20% Koala feed trees, and therefore the site is considered Potential Koala Habitat (PKH). The assessment concluded that the site is not likely to comprise Core Koala habitat given:

- the majority of the Koala feed trees are immature,
- no Koalas were observed on site,
- no Koala scratches were observed on any trees within the site; and
- no records reviewed in the literature search identified records of Koalas observed on the site or adjoining properties.

Koala scats were recorded on the site however not within the developable portion of the lot.

The site is identified in the Link Road Koala Plan of Management (Link Road KPoM) as an offset planting site. It is noted that some of the immature Koala feed trees within the lot were provided as offset plantings associated with the Link Road KPoM. These trees have been planted over the last five years and may provide higher quality habitat as they mature.

It is also noted that noted that no Koala feed trees are to be removed as part of the proposed development. As a result, the assessment concluded a Koala Plan of Management (KPoM) is not necessary.

The application has demonstrated that the site does not qualify as critical habitat and no habitat will be removed or modified, therefore no further investigations are required.

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State Environmental Planning Policy No. 55 - Remediation of Land

A Stage 1 Site Contamination Assessment was prepared by Regional Geotechnical Solutions with regard to the proposed residential subdivision and submitted to Council with the DA.

The Stage 1 concluded that the site is likely to be suitable for residential land use despite the presence of soil contamination at the site provided the recommendations and advice within the report are adopted, and site preparation works are undertaken in accordance with appropriate site management protocols and legislative requirements.

The contamination assessment report recommended a Stage 2 Contamination Assessment be undertaken for parts of the site where contamination was identified and that a Remediation Action Plan be developed for the site for remediation works.

An appropriate draft condition has been included with the development consent with regard to site contamination, reflecting the recommendations of the Stage 1 Site Contamination Assessment (Regional Geotechnical Solutions, 2019).

State Environmental Planning Policy (Coastal Management) 2018

The site is located within a coastal use area / 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 and 14 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 impact on marine vegetation, native vegetation and fauna and their habitats, undeveloped headlands and rock platforms;
- d) any adverse impact on Aboriginal cultural heritage, practices and places;
- e) any adverse impacts on the cultural and built environment heritage;
- f) any adverse impacts the use of the surf zone;
- any adverse impact on the visual amenity and scenic qualities of the coast, including coastal headlands;
- overshadowing, wind funnelling and the loss of views from public places to foreshores;
- any adverse impacts on existing public open space and safe access to and along the foreshore, beach, headland or rock platform for members of the public, including persons with a disability;

In accordance with clause 15, the proposal will not cause increased risk of coastal hazards on that land or other land.

The scale and size of the proposed subdivision is compatible with the surrounding coastal and built environment. The site is located within an area zoned for residential purposes.

State Environmental Planning Policy (Infrastructure) 2007

Not relevant. It is noted that Rosendahl Reservoir (Zone SP2) is located in close proximity to the proposed development (to the south).

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Port Macquarie-Hastings Local Environmental Plan 2011

The proposal is consistent with the LEP having regard to the following:

Clause 2.2 – the northern section of the subject site is zoned RE1 – Public Recreation and the southern section is zoned R1 – General Residential. The proposed residential subdivision relates only to that part of the lot that is zoned R1 – General Residential.

In accordance with clause 2.3(1) and the R1 – General Residential zone land use table, the proposed five (5) lot subdivision for residential development is a permissible land use with consent.

The objectives of the R1 - General Residential zone are as follows:

- To provide for the housing needs of the community.
- To provide for a variety of housing types and densities.
- To enable other land uses that provide facilities or services to meet the day to day needs of residents.

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 land use;
- it will assist in providing for the housing needs of the community.
- Clause 2.6 Subdivision of the land is permissible with consent.
- Clause 4.1 The lot sizes within the proposed subdivision range from 744m² to 2,995m². The minimum lot size control applicable to the site is 450m². All proposed lots comply with the minimum lot sizes identified in the Lot Size Map relating to the site.
- Clause 4.3 The site is identified with a maximum building height of 8.5m. No buildings are proposed as a part of the application.
- Clause 4.4 The site is identified with a maximum FSR of 0.65:1. No buildings are
 proposed as a part of the application.
- •
- Clause 5.10 The site does not contain or adjoin any known heritage items or sites of significance.
- Clause 7.1 the site is not mapped as containing acid sulfate soils.
- Clause 7.5 The above SEPP 44 assessment concludes the proposed development is consistent with the relevant provisions of the Link Road Koala Plan of Management (Link Road KPoM).

In accordance with this clause the *Subdivision Layout Plan* prepared by *King and Campbell (Rev D dated 27.11.2019)* nominates building envelopes of a sufficient size to enable future development on the proposed lots.

 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. Provision of

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electricity will be subject to obtaining satisfactory arrangements certification prior to the issue of a Subdivision Certificate as recommended by a condition of consent.

(a)(ii) Any proposed instrument that is or has been placed on exhibition

No draft instruments apply to the site.

(a)(iii) Any DCP in force

Port Macquarie-Hastings Development Control Plan 2013:

DCP 2013	: General Provisions		
DCP Objective	Development Provision	Proposed	Complies
2.3.3.1	Cut and fill 1.0m max. 1m outside the perimeter of the external building walls	The maximum cut and fill proposed is less than 1 metre.	Yes
2.3.3.2	1m max. height retaining walls along road frontage Any retaining wall >1.0 in height to be certified by structure engineer	The application seeks a 1m high retaining wall within the north-western corner of proposed lot 4 and 5. A 1.5m high retaining wall is proposed along the south-western edge of the realigned Emily Avenue turning head. The wall will remain within the Emily Avenue road reserve. A consent condition requiring detailed design of the 1.5m retaining wall and certification by a structural engineer is imposed.	Yes
	Combination of retaining wall and front fence height max 1.8m, max length 6.0m or 30% of frontage, fence component 25% transparent, and splay at corners and adjacent to driveway	No front fencing and retaining wall combination proposed.	N/A
	Significant land reforming proposals where >10% gross site area or >1.0ha is to have surface levels	Approx. 5,000m ³ of earthworks are proposed to reshape and reform the proposed building envelopes.	Yes

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	changed by more than 5m or where earthworks exceed an average of 10,000m3 per ha. Subdivision should be designed to fit the topography	Two retaining walls are proposed, one to the north of lot 4 and 5 to retain the newly created batters (concept design 1 metre contours) and one to the south of the newly formed Emily Ave cul-de-sac (approx. 1.5 metres high).	
2.3.3.8	Removal of hollow bearing trees	The ecological assessment submitted with the application concludes the site does not contain any hollow bearing trees.	Yes
2.4.3	Bushfire risk, Acid sulphate soils, Flooding, Contamination, Airspace protection, Noise and Stormwater	Refer to main body of report.	Yes
2.5.3.2	New accesses not permitted from arterial or distributor roads	No new access to arterial or distributor road proposed. Emily Avenue is an access place.	Yes
2.5.3.14	Sealed driveway surfaces unless justified	The shared driveway is proposed to be sealed.	Yes
2.5.3.15 and 2.5.3.16	Driveway grades first 6m or 'parking area' shall be 5% grade with transitions of 2m length	Driveway grade capable of compliance. Details to be illustrated on section 138 Roads Act application.	Yes
2.5.3.17	Parking areas to be designed to avoid concentrations of water runoff on the surface.	Refer to main body of the report.	
2.6.3.1	Tree removal (3m or higher with 100mm diameter trunk at 1m above ground level and 3m from external wall of existing dwelling)	The development proposes the removal of 4 trees. These trees are listed as Koala browse species, as such the DCP requires replacement planting at a ratio of 2:1. A condition of consent provides for the replacement planting of eight(8) Koala feed trees.	Yes.

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Proposed	Five (5) Lot Residential Su	bdivision	
2.7.2.2	Design addresses generic principles of Crime Prevention Through Environmental Design guideline	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.	Yes
DCP 2013	: Chapter 3.6 - Subdivisio	n	
DCP Objective	Development Provision	Proposed	Complies
3.6.3.1	A site analysis is required for all development and shall illustrate: • microclimate; • lot dimensions; • north point; • existing contours and levels to AHD; • flood affected areas; • overland flow patterns, drainage and services; • any contaminated soils or filled areas, or areas of unstable land; • easements and/or connections for drainage and utility services; • identification of any existing trees and other significant vegetation; • any existing buildings and other structures, including their setback distances; • heritage and archaeological features; • fences; • existing and proposed road network, including connectivity and access for all adjoining land parcels; pedestrian and vehicle access; • views to and from the site;	Site plan and details provided adequate.	Yes

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3.6.3.2	overshadowing by neighbouring structures; and any other notable features or characteristics of the site. Torrens title lots minimum width of 15m when measured at a	The proposed subdivision includes access via a cul- de-sac head and private	Numerical variation proposed
	distance of 5.5m from front property boundary. Minimum width of 7m when boundaries are extended to kerb line	shared driveway to 3 battle- axe lots. The battle-axe handles accessing lots 3, 4 and 5 and the street frontage of Lot 2 do not numerically comply with the minimum lot width, however it is considered the proposed lots achieve the relevant objectives of the clause being:	Complies with the intent of the clause.
		 To provide a range of lot sizes to suit a variety of dwelling and household types To ensure the lot layout plan reflects the site's opportunities and constraints. 	
		All proposed lots are of a suitable size, illustrate a suitable building envelope and account for the unique site features.	
		The proposed lots have a minimum width of 18.01 metres (width presenting to the shared driveway) and it is considered they achieve the intent of this clause.	
	Minimum depth of 25m.	The following depths are proposed: Lot 1: 33.65m Lot 2: 37.8m Lot 3: 44.17m Lot 4: 49.92m	Yes

DA 2019 Propose	d Five (5) Lot Residential Su	bdivision	
		Lot 5: 55.68m	
20.22	For lots where average slope of the site is equal to, or exceeds 16%, indicative road and driveway grades are required demonstrating satisfactory access.	The average slope of each proposed lot does not exceed 16%. Access and driveway grades are capable of complying.	Yes
3.6.3.3	Battleaxe lots discouraged in greenfield development. Council may consider permitting Torrens Title battleaxe allotments for "infill" development where it is demonstrated that: • A Torrens Title lot, that is not a battleaxe lot, cannot be achieved; and • the number of crossovers do not reduce the amenity of the street or on street parking; and • the impact of noise, dust and headlights on the land owners adjoining the driveway is addressed by the construction of an acoustic fence for the full length of the driveway; and • addresses privacy between the rear lot and the rear open space of the front lot by the provision of adequate screening, larger lot size and setbacks; and	Two (2) of the proposed lots have direct access to local road Emily Avenue. Three (3) of the proposed lots are battleaxe lots, with frontage to and access via the proposed shared driveway. The proposal is consistent with the considerations for battle-axe lots for the following reasons: • The proposal is for infill development, • The proposed crossovers do not reduce the amenity of the street of one street parking, • Privacy between lots can be achieved, • There is sufficient space for garbage collection. An acoustic fence along the full length of the driveway is not considered necessary, in this case, as the lots present to the shared driveway, as if it were a street frontage and future dwellings can be sufficiently set back to ensure there will be no noise, dust or headlight impacts.	Yes

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	l Five (5) Lot Residential Su		
	 extends utilities to the end of the axe handle; and There is sufficient space for garbage collection on the frontage. 		
3.6.3.4	Lots are to be designed to allow the construction of a dwelling, which does not involve more than 1m cut, or fill, measured from natural ground level, outside the dwellings external walls	Minimal cut and fill, less than 1m. Lots are designed with a concept design 1 metre contours.	Yes
	Lot sizes increased for sloping sites in accordance with Table 3.6.1.	The proposed building envelopes have a slope less than 0-10% and 11- 15%. All lots comply with the minimum 600m ² lot area and 18 metre lot width.	Yes
	Additional information provided for slope categories in accordance with Table 3.6.2	 Category A (0-10%) details required: Details of any retaining walls (including height, location and extent of cut and/or fill) required to permit construction of a dwelling. 	Yes
		Category B (11-15%) details required: • Matters required under Category A • Identification of a building footprint. • Vehicular access details and accommodation for 2 cars. • Retaining wall heights.	Condition: For lots with a slope of 11%-15% details of vehicular access and accommodation for 2 cars to be provided.
3.6.3.5	Wherever possible orientate streets to maximise the number of east, west and south facing lots and to	The street layout is already established and each of the lots has a north-south orientation.	Yes

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Proposed	Proposed Five (5) Lot Residential Subdivision		
	minimise the number of narrow north facing lots. Residential street blocks should preferably be orientated north-south with dimensions generally limited to 60- 80m by 120- 150m as illustrated in Figure 3.6- 2.		
	Lot size and shape are to reflect orientation to ensure future dwelling construction has optimal opportunity for passive solar design	Sufficient solar access is achievable for future dwellings on the proposed lot.	Yes
3.6.3.6	Kerb and guttering, associated street drainage, pavement construction and foot paving across the street frontages should be constructed as part of the subdivision works where these do not exist (may be varied subject to criteria in this clause)	Refer to main body of the report.	Yes
3.6.3.7	Subdivisions close to urban centres or along arterial roads serviced by public transport achieve yield of >35 dwellings per hectare.	The subdivision will achieve a higher residential yield within the existing residential estate.	Yes
3.6.3.8	All new roads are to be dedicated to Council designed in accordance the Council's adopted AUSPEC design specification documents. All applications to subdivide land should include a road layout plan that meets the Council's design requirements including providing connectivity and access for all land parcels consistent with Council's road hierarchy.	The extension to Emily Avenue, including the new 9.0m radius cul-de-sac to be dedicated to Council.	Yes

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3.6.3.16	An application for subdivision should be accompanied by an Integrated Water Cycle Management Strategy prepared by a certified practicing engineer and in accordance with Council's adopted design specification documents.	Refer to main body of the report.	Yes
3.6.3.17 - 3.6.3.19	An application for subdivision should be accompanied by a Stormwater Management Strategy prepared by a certified practicing engineer and in accordance with Council's adopted Aus- Spec design specification documents. The finished floor level of buildings should be above the 100 year ARI flood level (plus freeboard) and in accordance with the council's current flood policy.	Refer to main body of the report.	Yes
3.6.3.20	Water supply to meet Council's design specifications.	Refer to main body of the report.	Yes
3.6.3.21 - 3.6.3.22	All lots connected to reclaimed water if available.	Reclaimed water supply is not available.	N/A
3.6.3.24	Separate sewer junction provided for each lot.	Separate sewer can be provided to each lot.	Yes
3.6.3.25	Extension of sewer infrastructure at cost of developer.	Noted.	Yes
3.6.3.26 - 3.6.3.27	Erosion and sediment control plan to be provided.	Standard condition applied.	Yes
3.6.3.34	All service infrastructure should be underground unless otherwise approved by Council.	Services are existing and capable of extension to provide underground services to each lot.	Yes
	All service infrastructure should	Services are existing and underground and capable	Yes

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be installed in a	of extension to each lot in a	
common trench.	common trench.	
Conduits for the main	Services are existing and	Yes
technology network	capable of extension to	
system should be	provide underground services to each lot.	
provided in all streets. Conduits are to be		Yes
installed in accordance	Services are existing and capable of extension to	165
with the National	provide underground	
Broadband Network	services to each lot.	
Company Limited's		
'Guidelines for Fibre to		
the Premises		
Underground		
Deployment'.		
Access pits are to be	Services are existing and	Yes
installed at appropriate	capable of extension to	
intervals along all	provide underground	
streets.	services to each lot.	

Based on the above assessment, the development is consistent with provisions of the DCP. Variations proposed are considered acceptable and the relevant objectives have been satisfied. Cumulatively, the variations do not amount to an adverse impact or a significance that would justify refusal of the application.

(a)(iii)(a) Any planning agreement or draft planning agreement

No planning agreement has been offered or entered into relating to the site.

(a)(iv) The regulations

No matters prescribed by the regulations apply.

(b) The likely impacts of that development, including environmental impacts on both the natural and built environments and the social and economic impacts in the locality

Context and Setting

- The south eastern corner of the site contains the cul-de-sac head of Emily Avenue.
- Adjoining the site to the north is Wayne Richards Park sporting fields and a Council Depot.
- Adjoining the site to the north east is Wayne Richards Park with residential areas to the south east.
- Adjoining the site to the south is Rosendahl Reserve and associated Rosendahl Reservoir.
- Adjoining the site to the south west is residential land while land to the north west is outdoor areas and sporting fields of Mackillop College.
- The proposal will not have any significant adverse impacts to existing adjoining properties and satisfactorily addresses the public domain.
- The proposal is considered to be consistent with other residential development 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.

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- There are no significant adverse privacy impacts. Adequate building separation is likely to be achieved for any future residential dwellings.
- There are no significant adverse overshadowing impacts. The proposal does not
 prevent adjoining properties from receiving 3 hours of sunlight to private open
 space and primary living areas on 21 June between the hours of 9am and 3pm.

Roads

The site has road frontage to Emily Avenue. Adjacent to the site, Emily Avenue is a sealed public road under the care and control of Council. Emily Avenue is an Access Place with a carriageway width of 6m within a 19m wide road reserve. The street has SE kerb and gutter and some traffic calming in the form of road narrowing. The road narrowing occurs approximately 125m from the site, with the carriageway width reduced to 4.5m.

Traffic and Transport

The site is currently vacant land, approved for residential zoning. With the inclusion of 5 new dwellings, this development proposes to generate approximately 45 daily trips. The addition in traffic associated with the development is unlikely to have any adverse impacts to the existing road network within the immediate locality.

Site Frontage & Access

Vehicle access to the site is proposed through individual driveways for lots 1 & 2, which have direct road frontage. A shared 5.5m wide concrete driveway is proposed for lots 3, 4 & 5 with a 10.5m wide right of carriageway across its length. Access shall comply with Council AUSPEC and Australian Standards, and conditions have been imposed to reflect these requirements.

Due to the type and size of development, additional works are required to include:

- An extension to Emily Avenue, with the construction of a new 9.0m radius cul-desac to be dedicated to Council
- kerb and gutter along the full road frontage
- construction of a concrete access path (minimum 4.0m wide) from Emily Avenue to Wayne Richards Park
- provision for a retaining wall (approximately 1.5m high) at no cost to Council

Water Supply Connection

Council records indicate existing 100mm PVC water main on the northern side of Emily avenue will need to be extended to provide main frontage to each proposed lot at no cost to Council. Each proposed lot is to be provided with a sealed water service, 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.

Detailed engineering plans are required to be submitted to Water and Sewer Section.

Refer to relevant conditions of consent.

Sewer Connection

Council records indicate that the development site is not currently connected to Sewer. Existing sewer infrastructure must be extended to provide each proposed lot with an individual connection to sewer. Detailed engineering plans are required to be submitted to Water and Sewer Section.

Refer to relevant conditions of consent.

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Stormwater

The site naturally grades towards the rear and into the adjoining Wayne Richards Park reserve. There is some existing under capacity stormwater drainage infrastructure at this location, consisting of an inlet, downstream pit/pipe network and an informal vegetated stormwater basin, which Council's Parks and Reserves staff have reported to be a source of ongoing stormwater related issues as a result of the basin and inlet overtopping, becoming blocked and / or holding water for lengths of time and impacting the ability of the Council to maintain the adjacent playing fields.

This existing adjoining basin is defined as the legal point of discharge for the development, as it is the location where the site naturally drains. A direct connection to Council's downstream basin will be required via extension of the drainage system servicing the site to this basin.

This is consistent with the concept presented on the stormwater management plan submitted in support of the development application, however, the location of the pipeline discharging to the existing 'basin' as shown should be relocated to the north so that it is located beneath the invert of the existing swale drain to assist in draining that area. The change of direction/inlet pit can also then function to capture runoff from the upstream swale to the west.

Furthermore, in reference to the existing issues with the function of the basin highlighted above, the following additional works are required to be undertaken as a means of improving downstream amenity, lessening the maintenance burden, and mitigating any impacts resulting from increased stormwater discharge:

- The condition of the basin is to be restored to maximise its capacity and effectiveness. Weeds, debris and excess silt shall be removed to the satisfaction of Council.
- A low earthen berm is to be constructed along the northern side of the existing basin to ensure all stormwater from the development and surrounds can be confined to the basin (basin currently overtops) and prevented from inundating the adjacent sports fields. A cut/fill plan is to be submitted prior to approval of the Construction Certificate.

Refer to relevant conditions of consent.

Other Utilities

Telecommunication and electricity services are available to the site.

Refer to relevant conditions of consent.

Heritage

Following a site inspection and a search of Council/AHIMS records, no known items of Aboriginal or European heritage significance exist on the property.

The site is considered to be disturbed land, however as a precaution, a condition of consent is included that works are to cease in the unexpected event heritage items are found. Works can only recommence when appropriate approvals are obtained for management and/or removal of the heritage item.

Other land resources

The site is within an established urban context and will not sterilise any significant mineral or agricultural resource.

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Water cycle

The proposed development will not have any significant adverse impacts on water resources and the water cycle.

Soils

The proposed development will not have any significant 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 not result in any significant adverse impacts on the existing air quality or result in any pollution. Standard precautionary site management conditions are imposed.

Flora and fauna

The Ecological Assessment prepared by Biodiversity Australia concludes that the proposed development would not result in a significant impact on threatened species or ecological communities and therefore a BDAR is not required.

As described above the proposed development will require the removal of 4 Blackbutt trees. These trees are listed as Koala browse species, as such replacement planting of eight (8) Koala feed trees is conditioned to the consent.

Refer to relevant conditions of consent.

Waste

Satisfactory arrangements are in place for proposed storage and collection of waste and recyclables. No adverse impacts anticipated. Standard precautionary site management conditions are imposed.

Energy

Not relevant - the proposed development is for subdivision only.

Noise and vibration

No adverse impacts. Standard construction hours condition imposed.

Bushfire

The site is identified as being bushfire prone. The applicant has submitted a bushfire assessment report prepared by a Certified Consultant. The assessment of bushfire risk having regard for section 4.3.5 of Planning for Bushfire Protection 2006 concludes that a Bushfire Attack Level 29 applies to the site.

In accordance with Section 100B - *Rural Fires Act* 1997 - the application proposes subdivision of bush fire prone land that could lawfully be used for residential purposes. The application and bushfire assessment was forwarded to the NSW Rural Fire Service who have since issued a Bushfire Safety Authority, which is incorporated into the consent conditions.

Refer to relevant conditions of consent.

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

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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.

Social impacts in the locality

Given the nature of the proposed development and its location the proposal is not considered to have any significant adverse social impacts.

Economic impact in the locality

The proposal is not considered to have any significant adverse economic impacts on the locality. A likely positive impact is that the development will create 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.

Construction

Construction impacts are considered capable of being managed, standard construction and site management conditions have been imposed.

Cumulative impacts

The proposed development is not considered to have any significant 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 of bushfire hazard, stormwater management and access to the proposed lots have been adequately addressed and appropriate conditions of consent recommended.

(d) Any submissions made in accordance with this Act or the regulations

Following exhibition of the application in accordance with DCP 2013. Three (3) submissions were received. The following matters were raised in the submissions.

Issue Raised	Comment
Incorrect APZ measurements for proposed	Review of APZ in the Bushfire Assessment
Lot 2.	are appropriate. No issues raised by the
	RFS with the proposed APZ for any lot.
Crime and security concerns with regard	The proposed walkway between Lot 1 and
to the proposed sealed access track	the existing lot to the east will provide a
between proposed Lot 1 and the existing	pedestrian link between Emily Avenue and
lot to the east.	Wayne Richards Park. The dwellings on
	the adjacent lots will provide passive
	surveillance of this walkway and it is not
	considered to result in any concerns with
	regard to crime or security.

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Overshadowing/ solar access impacts of Any future dwellings on the proposed lots	
neighbouring dwelling and private open space.	will be required to comply with relevant planning controls with regard to height limits, setbacks, floor space ratio's as well as overshadowing. Therefore, it is not considered likely that the proposal will result in unacceptable overshadowing of existing dwellings.
Dust generation during construction.	A standard condition with regard to dust suppression is included in the draft conditions.
Inaccurate traffic movements predicted in Traffic Impact Assessment.	The Traffic Impact Assessment has been reviewed by PMHC Development Engineers and no issues with the predicted traffic movements were identified. The predicted traffic movements in the TIA are considered reasonable.
Concern over multi-dwelling housing development on the proposed lots and associated traffic impacts.	All future DA's for development on the proposed lots will be subject to assessment by Council. The potential traffic impacts of any multi-dwelling housing proposal would be assessed at the DA stage.
Traffic study required for Emily Avenue as currently exiting the street in the mornings is difficult.	A TIA was provided with the DA which was reviewed by PMHC Development Engineers did not raise concerns regarding the potential additional traffic resulting from the proposed subdivision.
No alternative access road if an accident occurs at the Emily Avenue/ Koala Street intersection.	This is accurate as the street is a cul-de- sac however, it is considered acceptable given the limited number of dwellings the street services and is the same for all other cul-de-sac streets.
Potential impacts to the wildlife corridor across the site used by Koalas.	An Ecological Assessment was submitted with the DA that concluded the proposed subdivision will not result in impacts to any Koala's that may use the site.
Impacts to of increased traffic to children's safety when playing on the street.	Not relevant. The proposal is for only 5 additional lots and is not considered to have significant adverse impacts on the safety of Emily Avenue.

(e) The public interest

The proposed development will be in the wider public interest in that it will provide additional residential lots, on land zoned for residential use. The proposed development

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satisfies relevant planning controls and will not have any significant adverse impacts on the wider public interest.

Ecologically Sustainable Development and Precautionary Principle

Ecologically sustainable development requires the effective integration of economic and environmental considerations in decision-making processes.

The four principles of ecologically sustainable development are:

- the precautionary principle,
- intergenerational equity,
- conservation of biological diversity and ecological integrity,
- improved valuation, pricing and incentive mechanisms.

The principles of ESD requires the effective integration of economic, environmental, social and equity considerations in decision-making processes. ESD aims to provide for the needs of present generations without compromising the ability of future generations to meet their own needs.

Based on the assessment provided in the report and with recommended conditions of consent, it is considered the proposal is in accordance with the principles of ESD.

Climate change

The proposal is not considered to be vulnerable to any risks associated with climate change.

Section 7.11 Contributions

- Development contributions will be required in accordance with Section 7.11 of the Environmental Planning and Assessment Act 1979 towards roads, open space, community cultural services, emergency services and administration buildings.
- A copy of the contributions estimate is included as Attachment 3

Section 7.12 Contributions

No - The development does not contain any commercial/industrial component.

Section 64 Water and Sewer Contributions

- 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.
- A copy of the contributions estimate is included as Attachment 3

Additional Comments

Site inspection date: 16 August 2019

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.

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Proposed Five (5) Lot Residential Subdivision	

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. DA2019 309.1 Recommended Conditions
- 2. DA2019 309.1 Plans
- 3. DA2019 309.1 Contributions Quote
- 4. DA2019 309.1 Statement of Environmental Effects
- 5. DA2019 309.1 NSW RFS Bushfire Safety Authority

CONDITIONS - Refer to attachment 1

RECOMMENDATION – That consent be granted pursuant to delegated authority of Development Assessment Planner / Group Manager Development Assessment.

Signed:

Assessing Officer: Naomi Lyons Town Planner

Date: 11/03/2020

NOTE: THESE ARE DRAFT ONLY

DA NO: 2019/309

DATE: 11/03/2020

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
Statement of Environmental Effects as amended	Job: 5328	King + Campbell Pty Ltd	April 2019
Subdivision Layout	Project: 5328 Exhibit 03A Sheet 3 Revision D	King + Campbell Pty Ltd	27 November 2019
Tree Removal and Offset Planting Plan	Project: 5328 Exhibit 03B Sheet 4 Revision A	King + Campbell Pty Ltd	27 November 2019
Preliminary Water and Sewer Plan	Project: 5328 Exhibit 04 Sheet 5 Revision C	King + Campbell Pty Ltd	27 November 2019
Preliminary Stormwater Management Plan	Project: 5328 Exhibit 05 Sheet 6 Revision C	King + Campbell Pty Ltd	27 November 2019
Stage 1 Contamination Assessment	RGS20789.1-AB	Regional Geotechnical Solutions	16 April 2019
Ecological Assessment	Project Number: EC3309	Biodiversity Australia	April 2019
	Document Reference: EC3309-BEC- REP- EmilyAve_EA- rev1.0		
Bushfire Hazard Assessment	Version 2.0	David Pensini Building	17 April 2019

		Certification and Environmental Services	
Traffic Impact Assessment	0:\5328_EmilyA venue\01_Coun cil\5328_106_Tr affic.dox.	King + Campbell Pty Ltd	March 2019

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 subdivision work shall commence until a Subdivision Works Certificate has been issued and the applicant has notified Council of:
 - a. the appointment of a Principal Certifying Authority; and
 - b. 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 Subdivision Works 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;
 - Building waste is to be managed via appropriate receptacles into separate waste steams;
 - 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) (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 Rural Fire Service** The General Terms of Approval, Reference DA-2019-01630-CL55-1 and dated 7 January 2020, are attached and form part of this consent.
- (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) A Stage 2 Contamination Assessment is to be carried out and Remedial Action Plan prepared in accordance with the Stage 1 Contamination Assessment, RGS20789.1-AB 2 prepared by Regional Geotechnical Solutions, dated 16 April 2019, pages 9-11.

Should any fill material require removal off-site, it will require assessment for a *Resource Recovery Exemption under Part 9, Clauses 91 and 92 of the Protection of the Environment Operations (Waste) Regulation 2014* in accordance with the *Resource Recovery Order under Part 9, Clause 93 of the Protection of the Environment Operations (Waste) Regulation 2014 – the Excavated Natural Material (ENM) Order 2014.*

(11) The recommendations detailed in Section 11, pages 55-56 of the Ecological Assessment prepared by Biodiversity Australia dated April 2019, form part of this

consent and shall be implemented at the respective stages throughout the development.

B - PRIOR TO ISSUE OF SUBDIVISION WORKS CERTIFICATE

- (1) (B001) Prior to release of the Subdivision Works 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 Subdivision Works 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. Road works along the frontage of the development including extension of Emily Avenue to 'Access Place' standard (AUSPEC D1.5) joining smoothly with the existing section of road with a minimum carriage way width of six (6) metres ending in a temporary sealed nine (9) metre radii cul-de-sac with reflectorised posts.

2. Earthworks, including filling of the land for flood protection.

3. Sewerage reticulation. Existing sewer infrastructure must be extended to provide each proposed lot with an individual connection to Council's sewer main. Any abandoned sewer junctions are to be capped off at Council's sewer main and Council notified to carry out an inspection prior to backfilling of this work.

4. Water supply reticulation. The existing 100mm PVC water main on the northern side of Emily avenue will need to be extended to provide main frontage to each proposed lot. Each proposed lot is to be provided with a sealed water service, 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.

- 5. Retaining walls.
- 6. Stormwater systems.
- 7. Erosion & Sedimentation controls.
- Location of all existing and proposed utility services including:

 Conduits for electricity supply and communication services (including fibre optic cable).
 - b. Water supply
 - c. Sewerage
 - d. Stormwater
- 9. Detailed driveway profile in accordance with Australian Standard 2890, AUSPEC
- D1, and ASD 201, Port Macquarie-Hastings Council current version.

10. Detailed design of pedestrian access way a minimum of 4m wide, from Emily Avenue to Wayne Richards Park; such access ways to include a concrete pathway 4m wide, including kerb ramps where necessary and gates or bollards to prevent the unauthorised vehicular access to Wayne Richards Park.

11. Detailed design of landscaping and batters in the cul-de-sac road reserve in accordance with NSW Rural Fire Service - The General Terms of Approval, Reference DA-2019-01630-CL55-1 and dated 7 January 2020, are attached and form part of this consent.

12. Detailed design of vehicular access and accommodation for 2 cars for any lots with a slope of 11%-15%.

(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 Subdivision Works Certificate.

Such works include, but not be limited to:

- Civil works
- Traffic management
- Work zone areas
- Hoardings
- Concrete foot paving (width)
- Footway and gutter crossing
- Functional vehicular access
- (4) (B030) Prior to issue of Subdivision Works Certificate, a pavement design report shall be prepared by a suitably qualified geotechnical or civil engineer and submitted to Council, including soil test results and in-situ CBR values (NATA certified). Council's minimum pavement compaction testing criteria are as follows:
 - a. 98% (modified) base layers Maximum Modified Dry Density test in accordance with AS1289.5.2.1
 - b. 95% (modified) sub-base layers Maximum Modified Dry Density test in accordance with AS1289.5.2.1
 - c. 100% (standard) subgrade/select layers Maximum Standard Dry Density test in accordance with AS1289.5.1.1 (or for in-situ subgrade soils only, wet density testing may be used)
- (5) (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 Subdivision Works Certificate.
- (6) (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 the Subdivision Works Certificate.

- (7) (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.
- (8) (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 Subdivision Works Certificate.
- (9) (B085) The location of electricity substations are to be clearly illustrated on the Subdivision Works Certificate plans. All substations are to remain on private property unless otherwise agreed to by Port Macquarie-Hastings Council.
- (10) (B197) A stormwater drainage design is to be submitted and approved by Council prior to the issue of a Subdivision Works Certificate. The design must be prepared in accordance with Council's AUSPEC Specifications, Australian Rainfall and Runoff 2019, the requirements of Relevant Australian Standards and shall make provision for the following:

a) The legal point of discharge for the proposed development is defined as the existing downstream informal vegetated stormwater basin. In this regard, a suitably sized piped drainage system (minimum 375mm diameter) shall be extended from the basin to the site. The pipeline must be designed to have capacity to convey flows that would be collected within the development as generated by a 5% AEP storm event.

Furthermore, in difference to the concept pipeline alignment illustrated on the Stormwater Management Plan prepared by King and Campbell, Drawing No, 5328P_Exhibits Sheet 6 Revision C and dated 27-11-19, the location of the pipeline discharging to the existing 'basin' should be relocated to the north so that is located beneath the invert of the existing swale drain to assist in draining that area. The change of direction/inlet pit can also then function to capture runoff from the upstream swale to the west.

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 requires the provision of interallotment drainage in accordance with AUSPEC D5.

d) Where works are staged, a plan is to be provided which demonstrates which treatment measure/s is/are 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.

e) 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.

f) In addition to the works to drain the development site to the existing downstream vegetated informal stormwater basin, the following additional works shall be undertaken as a means of improving downstream amenity, lessening the maintenance burden, and mitigating any impacts resulting from increased stormwater discharge:

- a. The condition of the basin is to be restored to maximise its capacity and effectiveness. Weeds, debris and excess silt shall be removed to the satisfaction of Council.
- b. A low earthen berm is to be constructed along the northern side of the existing basin to ensure all stormwater from the development and surrounds can be confined to the basin (basin currently overtops) and prevented from inundating the adjacent sports fields. A cut/fill plan is to be submitted prior to approval of the Subdivision Works Certificate.
- (11) (B198) The access shaft to proposed lots 3, 4 and 5 shall be constructed to AUSPEC standard (with a 5.5 metre wide concrete or approved surface) over the full length of the shaft commencing from the edge of the public road pavement. Provision for water supply, sewerage, telephone and electricity shall be provided as necessary, in conduits laid for the full length of the shaft, prior to concrete construction. Details shall be provided with the application for Subdivision Works Certificate and constructed prior to release of Subdivision Certificate.
- (12) Prior to the issue of the Subdivision Works Certificate an offset tree planting plan shall be approved by Council's Natural Resource staff. The plan shall provide for eight (8) compensatory tree plantings on land determined to be suitable by Council's Natural Resource staff and clearly illustrate the specific location, species and size of trees. The plan shall have regard to location of existing services, access arrangements, maintenance and asset protection zone obligations.

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) (C004) Prior to works commencing an application being made to the electricity and telecommunications service providers. Services are required to be underground.
- (3) (C008) No access through the adjoining Wayne Richards Park reserve shall be allowed without first obtaining written approval from Council's Parks and Gardens Manager. No clearing or damage to any vegetation on the reserve is permitted. No spoil, fill, waste liquids or solid materials shall be stockpiled on or allowed to move beyond the fence line for any period on the adjoining reserve during or after the development. In the event of accidental damage, the site must be revegetated to the satisfaction of Council. Such approval would need to be undertaken in accordance with Council Policy.
- (4) (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.

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 Subdivision Works Certificate number and property description to ensure your inspection is confirmed:

a. prior to commencement of site clearing and installation of erosion control facilities;

b. at the commencement of earthworks;

c. before commencement of any filling works;

d. when the sub-grade is exposed and prior to placing of pavement materials;

e. when trenches are open, stormwater/water/sewer pipes and conduits jointed and prior to backfilling;

f. at the completion of each pavement (sub base/base) layer;

g. before pouring of kerb and gutter;

h. prior to the pouring of concrete for sewerage works and/or works on public property;

i. on completion of road gravelling or pavement;

j. during construction of sewer infrastructure;

k. during construction of water infrastructure;

I. prior to sealing and laying of pavement surface course. 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) (D033) Should any Aboriginal objects be discovered in any areas of the site then all excavation or disturbance to the area is to stop immediately and the National Parks and Wildlife Service, Department of Environment and Conservation is to be informed in accordance with Section 91 of the National Parks and Wildlife Act 1974. Subject to an assessment of the extent, integrity and significance of any exposed objects, applications under either Section 87 or Section 90 of the National Parks and Wildlife Act 1974 may be required before work resumes.
- (3) (4)

(D051) Prior to commencement of any pavement works a material quality report from the proposed supplier shall be submitted to Council. The pavement materials shall meet Council's current specifications at the time of construction.

- (5) (D052) Prior to laying of Asphaltic Concrete (AC) or wearing surface course, submission to Council of pavement and soil test results prepared by a NATA registered person for all road pavement construction, including:
 - a. CBR test results, and
 - b. Subgrade / select fill, sub-base and base pavement compaction reports in accordance with AS1289.5.1.1 & AS1289.5.2.1 as applicable.

E – PRIOR TO THE ISSUE OF A SUBDIVISION CERTIFICATE

(1) (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.

- (2) (E006) Completion of engineering and environmental works for any land (other than proposed public roads) to be transferred to Council, in accordance with the approved Subdivision Works Certificate.
- (3) (E008) Payment to Council, prior to occupation or the issue of the Subdivision 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.

- (4) (E009) 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 occupation or the issue of a Subdivision 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
- (5) (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).
- (6) (E011) Submission prior to the issue of a Subdivision Certificate of a plan prepared by a Registered Surveyor showing location of existing road formation relative to reserved and dedicated roads to enable determination of any road widening necessary. Any road widening is to be at no cost to Council.
- (7) (E012) Dedication as public road to Council, the area required for road widening along the frontage of the development at no cost to Council. Details are to be incorporated in the plan of subdivision.
- (8) (E015) Prior to release of the Subdivision Certificate details from a suitably qualified bushfire professional (recognised by the RFS) shall be provided to the satisfaction of the certifying authority confirming compliance with the issued bushfire safety authority conditions and Planning for Bushfire Protection Guidelines, 2006.

- (9) (E034) Prior to the issuing of the 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.
- (10) (E038) Interallotment drainage shall be piped and centrally located within an interallotment 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 Local Government Act (s68) application with evidence of registration of the easement with the Land Titles Office provided to Council prior to issue of the s68 Certificate of Completion; or
 - As part of a Subdivision Works Certificate application for subdivision works with dedication of the easement as part of any Subdivision Certificate associated with interallotment drainage.
- (11) (E039) An appropriately qualified and practising consultant is required to certify the following:
 - a. all drainage lines have been located within the respective easements, and
 - b. any other drainage structures are located in accordance with the Construction Certificate.
 - c. all stormwater has been directed to a Council approved drainage system
 - d. all conditions of consent/ construction certificate approval have been complied with.
 - e. Any on site detention system (if applicable) will function hydraulically in accordance with the approved Construction Certificate.
- (12) (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'.

- (13) (E051) Prior to the issuing of the Subdivision Certificate a section 68 Certificate of Completion shall be obtained from Port Macquarie-Hastings Council.
- (14) (E053) All works relating to public infrastructure shall be certified by a practicing Civil Engineer or Registered Surveyor as compliant with the requirements of AUSPEC prior to issue of Occupation/Subdivision Certificate or release of the security bond, whichever is to occur first.
- (15) (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.
- (16) (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
- (17) (E068) Prior to the issue of a Subdivision Certificate, evidence to the satisfaction of the Certifying Authority from the electricity and telecommunications providers that satisfactory services arrangements have been made to the lots (including street lighting and fibre optic cabling where required).
- (18) (E072) Lodgement of a security deposit with Council upon practical completion of the subdivision works.
- (19) (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.
- (20) (E080) The applicant is required to make provision in the application for a Subdivision Certificate:
 - a. dedication as public road of the area required for road widening,
 - b. registration of a reciprocal right of carriageway and easement for services and maintenance over those parts of the lots common to both.
- (21) (E081) The applicant will be required to submit prior to the issue of the Subdivision Certificate, a geotechnical report certifying construction of all earthworks as controlled fill in accordance with Council AUS-SPEC Standard and AS 3798. Such report to provide details of:
 - a. The surface levels of the allotments created, filled or reshaped as part of the development.
 - b. Compaction testing carried out to Controlled Fill Standard as per AS 3798.
 - c. Standard penetration tests and calculated N values.
 - d. Bore logs
 - e. Site classification of all allotments in accordance with AS2870.2011 Residential Slabs and Footings.
 - (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 in to account its assets under the provisions of AAS27. This information is to be approved by Council prior to issue of the Subdivision Certificate. The copyright for all information supplied, shall be assigned to Council.
- (23) Prior to release of the Subdivision Certificate endorsement from Port Macquarie-Hasting Council's Natural Resource staff confirming the successful establishment of the offset tree plantings shall be provided to the certifying authority.

F – OCCUPATION OF THE SITE

Nil

(22)

Developer Charges - Estimate

		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	5.2	\$10,296.00	Per ET	\$53,539.20		
2 Sewerage Scheme Port Macquarie	5	\$3,906.00	Per ET	\$19,530.00		
3 Since 1.7.04 - Major Roads - Port Macquarie - Per ET	5	\$7,718.00	Per ET	\$38,590.00		
4 Since 31.7.18 - Open Space - Port Macquarie - Per ET	5	\$5,686.00	Per ET	\$28,430.00		
Commenced 3 April 2006 - Com, Cul 5 and Em Services CP - Port Macquarie	5	\$4,669.00	Per ET	\$23,345.00		
6 Com 1.3.07 - Administration Building - All areas	5	\$919.00	Per ET	\$4,595.00		
7 N/A						
8 N/A						
9 N/A						
10 N/A						
11 N/A						
12 N/A 13 N/A 14 N/A Not for Payme	ent	Pı	ırp	oses		
14 N/A NOT TOF DUJ D						
Admin General Levy - Applicable to Consents approved after 11/2/03	2.2%	S94 Contribu	tion	\$2,089.10		
16						
17						
18						
Total Amount of Estimate (Not for Payment Purposes)				\$170,118.30		

DATE OF ESTIMATE:

5-Mar-2020

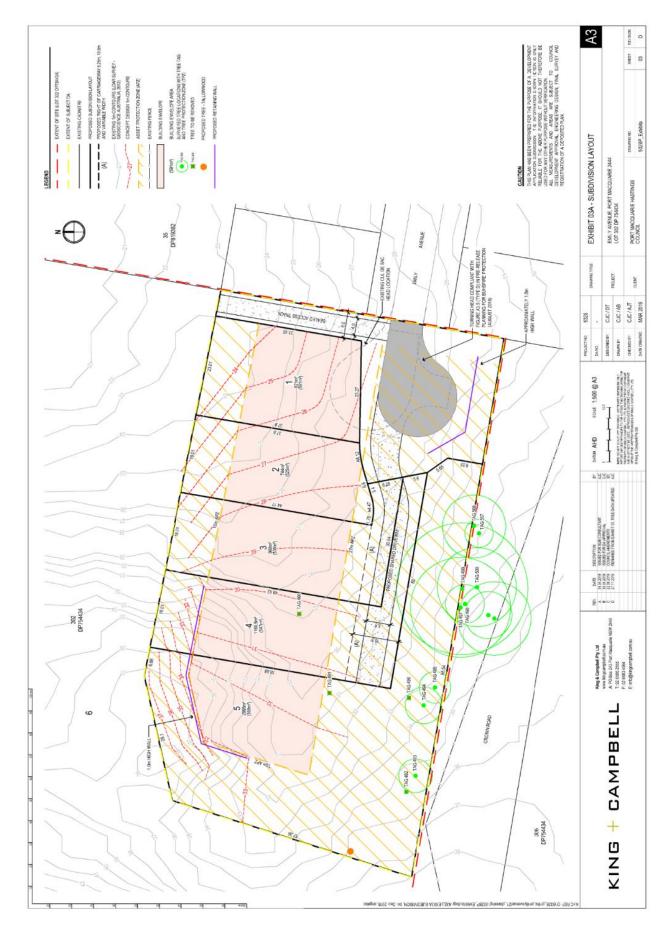
Estimate Prepared By Ben Roberts

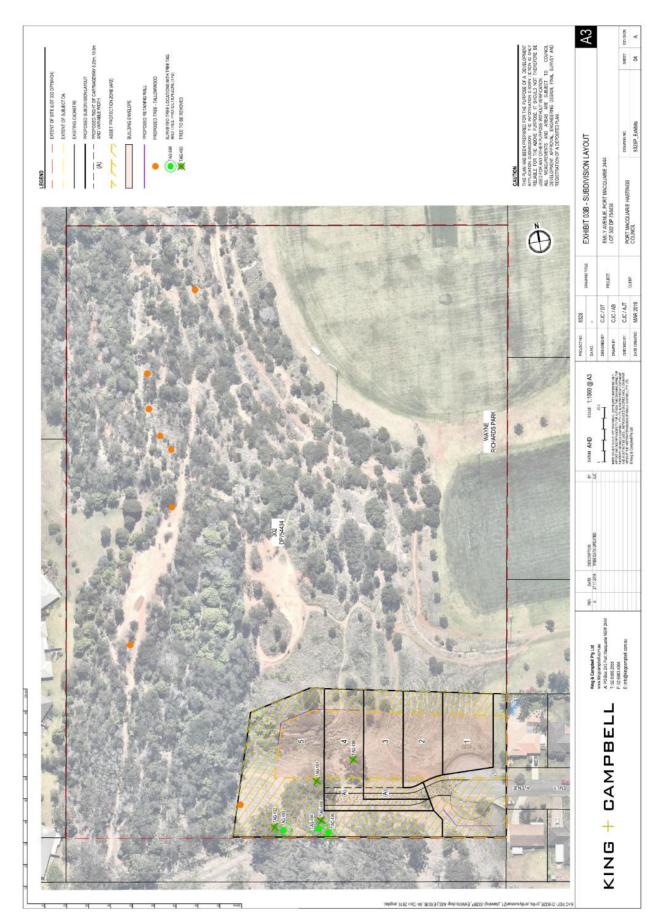
This is an ESTIMATE ONLY - NOT for Payment Purposes

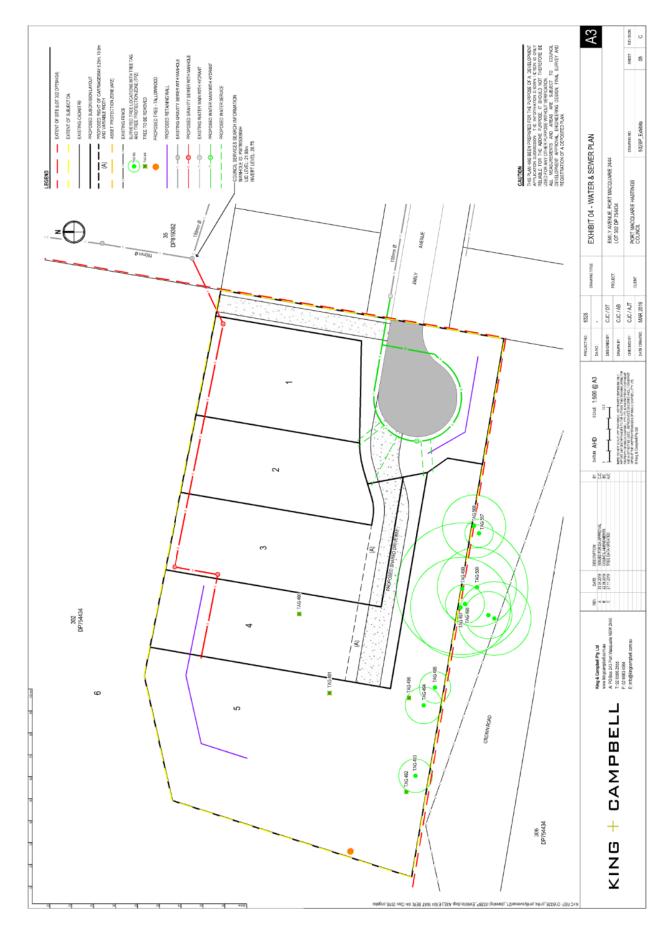
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PORT MACQUARIE-HASTINGS COUNCIL

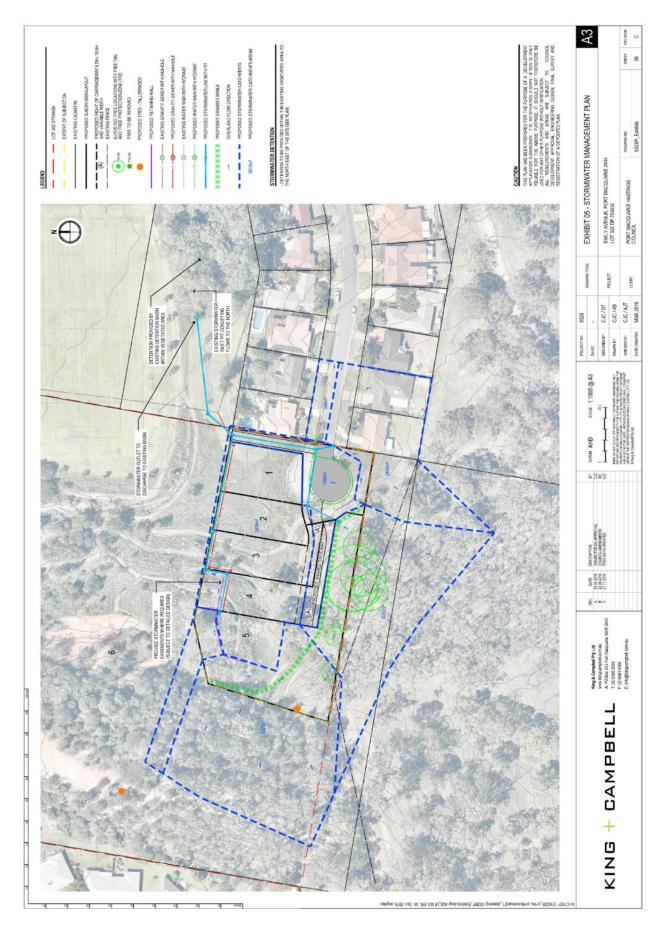
DEVELOPMENT ASSESSMENT PANEL 06/05/2020







DEVELOPMENT ASSESSMENT PANEL 06/05/2020



KING + CAMPBELL

Torrens Title Residential Subdivision (1 Lot into 6) Lot 302 DP 754434, Emily Avenue, Port Macquarie

draft

Prepared for:

Port Macquarie Hastings Council

Prepared by:

King & Campbell Pty Ltd

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Job: 5328 Date: April, 2019 K&C: KM/TS/AJT

SURVEYING DI ARCHITECTURE DI PLANNING DI CIVIL ENGINEERING DI URBAN DESIGN

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SURVEYING ARCHITECTURE PLANNING CIVIL ENGINEERING URBAN DESIGN

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Appendix B – PMHC Pre-lodgement Minutes (ref: 210.2018.161)
Appendix C – Ecological Assessment, Biodiversity Australia
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Appendix E– Traffic Impact Assessment, King and Campbell
Appendix F – Link Road Koala Plan of Management 2014
Appendix G – Phase 1 Contamination Assessment, RGS

SURVEYING CARCHITECTURE PLANNING CIVILENGINEERING URBAN DESIGN

Statement of Environmental Effects Torrens title Residential Subdivision (1 Lot into 6) Emily Avenue, Port Macquarie

Section 1 Introduction

1.1 Introduction

This Statement of Environmental Effects has been prepared in support of a Development Application for the Torrens Title residential subdivision of the south-eastern, residentially zoned portion of Lot 302 DP 754434 to create a total of five (5) residential lots. The residentially zoned portion of Lot 302 has a development footprint of approximately 0.78 ha and is accessed from Emily Avenue.

Lot 302 is a rectangular shaped allotment with a total site area of 5.61ha. Lot 302 is partly zoned R1 General Residential and partly RE1 Public Recreation. The R1 portion of the land includes the cul-de-sac head of Emily Avenue with the RE1 zoned portion having the sporting fields, parking, amenities and mountain bike trails associated with Wayne Richards Park.

Lot 302 also includes the Koala offset area required by the Link Road Koala Plan of Management 2014. All of the offset area will remain within the residue Lot 6 which will include the remaining 4.83ha of land area.

For the purposes of this submission the site, being the developable portion of Lot 302, has an area of 0.78 ha, is zoned R1 General Residential and excludes the Koala offset area.

This Statement provides all relevant information necessary for Council to assess and determine the proposal. The legislation and policy reviewed in the preparation of this submission includes:

- Section 4.15 of the Environmental Planning and Assessment Act, 1979;
- Biodiversity Conservation Act 2017
- SEPP (Infrastructure) 2007;
- SEPP No. 44 Koala Habitat Protection;
- SEPP No.55 Remediation of Land; and
- Port Macquarie-Hastings Local Environmental Plan 2011;
- Port Macquarie-Hastings Development Control Plan 2011; and
- The Link Road Koala Plan of Management 2014.

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Statement of Environmental Effects Torrens title Residential Subdivision (1 Lot into 6) Emily Avenue, Port Macquarie

1.2 The Site, Zoning and Permissibility

Lot 302 DP 754434, Emily Avenue, Port Macquarie is rectangular in shape, has a total site area of 5.61ha and contains no built structures.

A copy of DP 754434 is attached at **Appendix A** and the site context is shown below in **Figure 1** as well as **Exhibit 1**.

Existing development within Lot 302 includes the cul-de-sac head of Emily Avenue and sporting fields, parking, amenities and mountain bike trails associated with Wayne Richards Park. Lot 302 also includes the Koala offset area required by the Link Road Koala Plan of Management 2014.

Lot 302 is partly zoned R1 General Residential and partly RE1 Public Recreation. Refer to **Figure 2** and **Exhibit 1**. Subdivision is permissible with consent in the R1 General Residential zone.

The R1 General Residential area of the site is identified as containing a minimum allotment size of 450m² as set out on Lot Size Map LSZ_013G. All proposed residential allotments comply with this standard. The RE1 zoned portion of the site is not mapped as having a minimum lot size.



Figure 1: Aerial image of the subject site, bound red and highlighted yellow, and surrounding lands (Near Map image of Lot 302 DP 754434)

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Statement of Environmental Effects Torrens title Residential Subdivision (1 Lot into 6) Emily Avenue, Port Macquarie

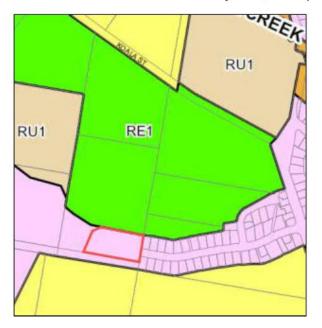


Figure 2: Zoning of the subject site, centre, and developable portion , bound red, (Extract from PMH LEP Land Zoning Map – sheet LZN_013G).

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Statement of Environmental Effects Torrens title Residential Subdivision (1 Lot into 6) Emily Avenue, Port Macquarie

1.3 Development Application Pre Lodgement Meeting

A preliminary proposal comprising two options for the residential subdivision of the site was presented to Council's Development Application Pre-Lodgement Panel Meeting on 4 December 2018 (reference 210.2018.161).

A copy of the minutes are included at $\ensuremath{\textbf{Appendix}}\ensuremath{\,\textbf{B}}$ and addressed below in the following table:

	Council minutes	Outcome
Pla	nning	
1)	0	No disturbance to any offset plantings undertaken under the Link Road Koala Plan of Management is proposed. Biodiversity Australia have carried out an assessment pursuant to the provisions of SEPP 44. Refer to Section 3.3 and Appendix C. This assessment included consideration of the Link Road KPOM.
2)		Regional Geotechnical Solutions carried out a Stage 1 Contamination Assessment of the developable portion of the site. The assessment was undertaken in accordance with the NSW EPA Guidelines for Consultants Reporting on Contaminated Sites. The assessment determined that the site is likely to be suitable for the proposed residential land use'. However, based on the soil contamination found RGS recommends the preparation of a Stage 2 Contamination Assessment and Remedial Action Plan prior to development works being carried out.
3)	State Environmental Planning Policy (State and Regional Development) 2011. The trigger for regionally significant development for Council related development is a capital investment value of more than \$5 million.	The estimated cost of works is \$212,000. The economic trigger of \$5m will therefore not be triggered by the proposed subdivision.
4)	The site is zoned R1 General Residential and RE1 Public Recreation under Port Macquarie-Hastings Local Environmental Plan (LEP) 2011. Subdivision and multi dwelling housing is permissible with consent. The development footprint, including any ancillary components like bushfire protection measures (i.e. APZs and fire trails), stormwater basins and access tracks would need to be contained to the R1 zone. It is noted that flexible zone provisions do not apply to RE1 zoned land.	The proposed subdivision, including fire trails and asset protection zones, are wholly contained within the R1 General Residential zoned portion of the site. The residue lot will remain partly zoned R1 General Residential and partly RE1 Public Recreation.
5)	In accordance with clause 4.1 of the LEP, the proposed lots are to meet the minimum lot size provision of 450m ² applicable to the site.	Each of the proposed allotments exceeds the minimum lot size provision of 450m ² . Refer to Section 2.2 and Exhibit 3 for the proposed lot areas.
6)	Application to address general provisions and relevant specific provisions of Development Control Plan (DCP) 2013.	Refer Section 3.1.4.

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Statement of Environmental Effects Torrens title Residential Subdivision (1 Lot into 6) Emily Avenue, Port Macquarie

Council minutes	Outcome
Any variations to be adequately justified	
against the relevant objectives.	
7) Site is mapped as bushfire prone land triggering integrated development provisions. Bushfire assessment report required and referral to NSW Rural Fire Service will be undertaken as part of the assessment process. \$320 cheque made payable to NSW Rural Fire Service and \$140 referral fee payable to Council.	A bushfire hazard assessment has been prepared by Building Cettification & Environmental Services. The assessment is included in full at Appendix D and summarised in Section 3.4 .
 B) Details of the type and extent of vegetation to be removed and retained (inclusive of any required bushfire Asset protection Zones and infrastructure) clearly illustrated on plans. Given the likely extent and nature of vegetation to be removed an ecological 	The proposal has been designed to minimise vegetation removal by siting the development envelopes and road within the cleared portions of the site. The proposal seeks to remove a total of 7 trees being: - Six Blackbutt; and
assessment addressing Part 5 of the Act and the relevant provisions of DCP 2013	- One Sydney Golden Wattle.
shall support the application.	Biodiversity Australia considered the proposed vegetation removal in detail as a part of their Ecological Assessment. A copy of their assessment is included in full at Appendix C and summarised in Section 3.3 .
 Details of any staging to be clearly outlined. 	The development is proposed to be carried out in one single stage.
10) Crown land owners consent would be required for any application that involved the crown road.	The proposal does not seek to undertake any works within the Crown Road Reserve. Crown owner's consent is therefore not required.
 Consideration be given to the proximity to sporting facilities and the associated acoustic impacts. 	The proposed residential lots are located to the south-west of Field 3 and are similarly separated from the fields as those residential lots currently located within Emily Avenue (approximately 40m).
	The sporting fields, particularly Field 3, are typically utilised most week days through winter, to typically 8pm. No Public Announcement system is utilised during training.
	Football (soccer) matches are typically played on a Friday night between 6pm and 9:30pm with some representative matches being played on weekends between 9am and 4pm.
	Wayne Richards Park includes a PA system located upon the existing club house. This club house is located approximately 275m from the developable portion of the site and is not utilised for game calling, rather only for emergency and public service announcements.
	This PA system, the field locations and their use were assessed as a part of the original design of Wayne Richards Park. Emily Avenue existed at the time of the sporting fields construction and it is understood that the potential acoustic impacts of the sporting fields were considered acceptable at this time.

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Statement of Environmental Effects Torrens title Residential Subdivision (1 Lot into 6) Emily Avenue, Port Macquarie

Council minutes	Outcome
	In light of the above, it is considered that the
	proposed residential lots are suitably separated from
	the sporting fields. To minimise any potential acoustic
	impacts, future dwellings should be suitably designed
12) Development contributions will apply. An	Noted.
estimate may be obtained from Council's	
Development Contribution team, contact Steve Ford.	
13) The application would be processed in	Noted.
accordance with the Development	
Applications – Conflict of Interest Policy.	
Water	
 A storage dam is located to the south of 	Noted. No stormwater is proposed to enter the
the proposed development, no stormwater	existing storage dam.
runoff is to flow into this location.	The existing former is beneficially decomposed
2) Any costs associated with relocation of the	The existing fence is located within the unformed
fence segregating the storage dam, are not to be borne by Council's Sewer and Water	Crown Road reserve. No works are proposed within the Crown road reserve and the fence is not
Section.	considered to require relocation as a part of the
	development works.
3) Each proposed lot is to be provided with a	Noted. Each of the proposed lots is sought to be
sealed water service, final water service	provided with a sealed 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.	
Sewer	•
1) Provision to each lot of a separate sewer	The application seeks to extend Council's existing
line to Council's main.	sewer line along the northern boundary of the
	proposed residential lots. Refer to Exhibit 4 and
Engineering	Section 2.2.3.
Engineering 1) Consolidation of the allotments, or	The proposed design has been modified from that
provision of a legal right of carriageway or	submitted with the pre-lodgement package. The
easement for services, may be required if	revised design now provides road frontage to each
the proposed development will rely on	individual lot and easements and rights of
adjacent lots for access, facilities or	carriageways are not considered necessary.
services (Crown road reserve).	
2) New roads to be dedicated to Council will	The proposal seeks to reconstruct the existing Emily
need to meet the provisions of AUS-SPEC	Avenue cul-de-sac head and provide a new
Table D1.5 based on the potential lot yield	shareway (extension of Emily Avenue) to service the
(Including fulfure subdivision notential) Ac	nronosed 5 residential allotments. These works have
(including future subdivision potential). As such, it may be beneficial to increase the	proposed 5 residential allotments. These works have been designed to comply with AUS-PEC D1.5 and
such, it may be beneficial to increase the	proposed 5 residential allotments. These works have been designed to comply with AUS-PEC D1.5 and are detailed within Exhibit 3 .
such, it may be beneficial to increase the proposed lot yield to minimise future infill subdivision proposals.	been designed to comply with AUS-PEC D1.5 and
 such, it may be beneficial to increase the proposed lot yield to minimise future infill subdivision proposals. 3) A Traffic Impact Assessment (TIA) will be 	been designed to comply with AUS-PEC D1.5 and are detailed within Exhibit 3 . A traffic impact assessment accompanies this
 such, it may be beneficial to increase the proposed lot yield to minimise future infill subdivision proposals. 3) A Traffic Impact Assessment (TIA) will be required. The traffic study shall evaluate 	been designed to comply with AUS-PEC D1.5 and are detailed within Exhibit 3 .
 such, it may be beneficial to increase the proposed lot yield to minimise future infill subdivision proposals. 3) A Traffic Impact Assessment (TIA) will be required. The traffic study shall evaluate the capacity, safety and operational 	been designed to comply with AUS-PEC D1.5 and are detailed within Exhibit 3 . A traffic impact assessment accompanies this submission and is included in full at Appendix E .
 such, it may be beneficial to increase the proposed lot yield to minimise future infill subdivision proposals. 3) A Traffic Impact Assessment (TIA) will be required. The traffic study shall evaluate the capacity, safety and operational development impacts to the road network. 	been designed to comply with AUS-PEC D1.5 and are detailed within Exhibit 3 . A traffic impact assessment accompanies this submission and is included in full at Appendix E . Intersection performance was assessed using the
 such, it may be beneficial to increase the proposed lot yield to minimise future infill subdivision proposals. 3) A Traffic Impact Assessment (TIA) will be required. The traffic study shall evaluate the capacity, safety and operational development impacts to the road network. At a minimum the TIA shall: 	been designed to comply with AUS-PEC D1.5 and are detailed within Exhibit 3 . A traffic impact assessment accompanies this submission and is included in full at Appendix E . Intersection performance was assessed using the software package SIDRA 8.0 to obtain the capacity of
 such, it may be beneficial to increase the proposed lot yield to minimise future infill subdivision proposals. 3) A Traffic Impact Assessment (TIA) will be required. The traffic study shall evaluate the capacity, safety and operational development impacts to the road network. At a minimum the TIA shall: a) Be prepared by a qualified 	been designed to comply with AUS-PEC D1.5 and are detailed within Exhibit 3 . A traffic impact assessment accompanies this submission and is included in full at Appendix E . Intersection performance was assessed using the software package SIDRA 8.0 to obtain the capacity of the traffic movements for the proposed development
 such, it may be beneficial to increase the proposed lot yield to minimise future infill subdivision proposals. 3) A Traffic Impact Assessment (TIA) will be required. The traffic study shall evaluate the capacity, safety and operational development impacts to the road network. At a minimum the TIA shall: 	been designed to comply with AUS-PEC D1.5 and are detailed within Exhibit 3 . A traffic impact assessment accompanies this submission and is included in full at Appendix E . Intersection performance was assessed using the software package SIDRA 8.0 to obtain the capacity of the traffic movements for the proposed development and in accordance with the assumptions made by
 such, it may be beneficial to increase the proposed lot yield to minimise future infill subdivision proposals. 3) A Traffic Impact Assessment (TIA) will be required. The traffic study shall evaluate the capacity, safety and operational development impacts to the road network. At a minimum the TIA shall: a) Be prepared by a qualified and/or experienced traffic consultant. b) Be prepared in accordance with 	been designed to comply with AUS-PEC D1.5 and are detailed within Exhibit 3 . A traffic impact assessment accompanies this submission and is included in full at Appendix E . Intersection performance was assessed using the software package SIDRA 8.0 to obtain the capacity of the traffic movements for the proposed development and in accordance with the assumptions made by GHD (GHD PMH LGA Traffic Study 2018).
 such, it may be beneficial to increase the proposed lot yield to minimise future infill subdivision proposals. A Traffic Impact Assessment (TIA) will be required. The traffic study shall evaluate the capacity, safety and operational development impacts to the road network. At a minimum the TIA shall: Be prepared by a qualified and/or experienced traffic consultant. 	been designed to comply with AUS-PEC D1.5 and are detailed within Exhibit 3 . A traffic impact assessment accompanies this submission and is included in full at Appendix E . Intersection performance was assessed using the software package SIDRA 8.0 to obtain the capacity of the traffic movements for the proposed development and in accordance with the assumptions made by

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Statement of Environmental Effects Torrens title Residential Subdivision (1 Lot into 6) Emily Avenue, Port Macquarie

Council minutes	5	Outcome
Guide to Traffic C Developments (2 AUSTROADS Gu Management, Pa Impacts of Develo c) Quantify daily and traffic generation	Senerating 002), and ide to Traffic rt 12: Traffic opment. d peak hour impacts. When	the existing intersection configuration of Emily Avenue with Koala Street. This Assessment also confirms that the retention of the existing intersection will not adversely affect the wider road network within Port Macquarie, with queueing lengths being of acceptable length.
possible, the TIA data from an exis facilities to accura impacts with a bru types of vehicle u residents' cars, si service trucks). W available, genera defined using ind practices.	ting similar ately define eakdown of isers (e.g. taff cars, /hen data is not tion should be	
 d) Determine time o distribution using peak hour travel the area using ind practices. 	modelling and patterns within	
e) Determine the ex study area using practices (e.g. de area of significan	industry velopment's	
f) Obtain recent trai critical intersectio study area. Wher is not available, c collected.	fic counts at ns within the e existing data	
g) Study existing an conditions for criti and intersections capacity (level of operational (queu impacts. At a min study shall evalue i) Any proposed of intersecting with to network ii) Emity Avenue	ical driveways evaluating service) and ing and safety) imum, the ate: friveway the public road	
ii) Emily Avenue a h) Consider connect transport facilities transport modes s walking and cyclii minimum, pathwa provided on both Collector Roads, side of all smaller Details shall mato standard drawing series.	tivity for public s and active such as ng. At a ays to be sides of and on one clocal roads. ch Council's	
 A concrete footpath will be r the public road for the full fre development site. Details sh Council's standard drawing. 	ontage of the nall match	AUS-PEC D1.5 does not require footpaths for Shareways. In addition, the augmentation of the Emily Avenue turning head is not considered necessary to warrant the provision of a footpath,

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Statement of Environmental Effects Torrens title Residential Subdivision (1 Lot into 6) Emily Avenue, Port Macquarie

Council minutes	Outcome
series.	noting that no footpath currently exists within Emily Avenue.
	A 4-metre-wide sealed fire trail (pathway/emergency access) is proposed along the eastern boundary of proposed Lot 1 connecting Emily Avenue to the Wayne Richards Sporting Park. This work is considered suitable in lieu of a pedestrian footpath within the cul-de-sac of Emily Avenue.
Stormwater	
 A stormwater management plan must be prepared in accordance with the requirements of AUSPEC D5 and D7 and the requirements of relevant Australian Standards, demonstrating how all stormwater and surface water discharging from the proposed development site, buildings and works will be conveyed to the legal point of discharge by underground pipe drains to the satisfaction of Council. 	A stormwater management plan has been prepared in support of the proposed subdivision. Refer Exhibit 5 and Section 2.2.4 .
2) The legal point of discharge for the	Noted.
Proposed development is defined as Councils piped drainage system which currently terminates in Council owned land to the north east in Lot 35 DP0819382 (note planning comments above with respect to potential permissibility issues with this infrastructure).	
In this regard, Council's piped drainage system shall be extended by an appropriately sized pipeline for the proposed development stormwater (i.e. inter-allotment systems, access way/road drainage), 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 from the proposed development as generated by a 5% AEP storm event.	
Overflow path locations for major storm discharge shall be determined in consultation with Councils Parks and Recreation section, which shall be compliant with requirements of AUSPEC D5.	
Appropriate easements must be created, with written consent from the land owner, for drainage extension from proposed development to the existing legal point of connection.	
 In addition, the stormwater management plan submitted with the development application must address the following specific issues at a minimum: 	Noted. The proposed stormwater management measures are detailed in Section 2.2.4 and Exhibit 5 .

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Statement of Environmental Effects Torrens title Residential Subdivision (1 Lot into 6) Emily Avenue, Port Macquarie

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Council minutes	Outcome
 a. On-site stormwater detention facilities (or similar) must be incorporated into the design to ensure that the post development site stormwater discharge rate does not exceed the pre development discharge rate for all storm events up to 1% AEP. b. The plan must include any existing components of the drainage system that are to be retained and show how runoff from the proposed/new components of the development will be integrated into the existing system. c. The stormwater management plan must be prepared and certified by a 	
qualified practicing Civil Engineer or	
 Registered Surveyor. 4) An easement plan must be submitted showing the proposed easement locations, proximity to adjacent buildings and structures and a longitudinal section of the proposed stormwater pipeline. The plan must also demonstrate that the interallotment drainage system has been sized in accordance with the requirements of USPEC D5 to accept all runoff from each allotment for flow rates having a 5% AEP storm design. A maximum of six (6) allotments shall be served by the inter-allotment drainage system. Written agreement to the creation of any proposed drainage easement(s) must be obtained from the affected property owner(s) and submitted with the development application. The easement must be registered with the Land and Property Information NSW prior to the issue of an Occupation Certificate. 	The inter-allotment stormwater drainage line shown on the stormwater management plan (Exhibit 5) will require an easement for stormwater drainage.
Other	
 Please make reference to these pre- lodgement comments within the DA submission/planning report. 	Noted
2) Any comments in this Pre-Lodgement advice are based on the information provided. The comments do not predicate the outcome of a full assessment of any forthcoming development application regarding this proposal. Any subsequent change to legislation may also affect the accuracy of this advice.	Noted

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Statement of Environmental Effects Torrens title Residential Subdivision (1 Lot into 6) Emily Avenue, Port Macquarie

Section 2 Staged Residential Subdivision

2.1 Site Analysis

The attached **Exhibit 02 - Site Analysis Plan** identifies the following constraints and opportunities for the proposed residential subdivision of the site:

- Lot 302 DP 754434 is zoned part R1 General Residential and part RE1 Public Recreation pursuant to the PMH LEP 2011;
- Lot 302 DP 754434 has a total land area of 5.61 ha;
- Existing development within Lot 302 DP 754434 includes the culde-sac head of Emily Avenue and sporting fields, parking, amenities and mountain bike trails associated with Wayne Richards Park;
- Lot 302 also includes part of the Koala offset area required by the Link Road Koala Plan of Management 2014 (see Appendix F). The majority of the offset area within Lot 302 occurs on the lands that are also used for mountain bike trails;
- The site for the purposes of this submission is the developable portion of Lot 302, which is zoned R1 General Residential and excludes the Koala offset area;
- The site has a total area of 0.78 ha;
- The site is bound by existing residential development in Emily Avenue to the east, a Crown Road (undeveloped) to the south, with the Port Macquarie Water reservoir to the south of the Crown Road and facilities associated with Wayne Richards Park to the west and north (noting that the mountain bike area is also identified as part of the Koala offset area for the KPoM 2014);
- Emily Avenue has an existing length of approximately 400m, from the cul-de-sac centre to its intersection with Koala Street;
- The site is mapped as part Category 1, part Category 2 and part vegetation buffer on the Bushfire Prone Land Mapping;
- Future development of the site must ensure that the westernmost hydrant on any water main extension is no higher than RL 36m AHD; and
- The site is partially cleared with evidence of previous disturbances as a result of re-shaping works associated with Wayne Richards Park.

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Statement of Environmental Effects Torrens title Residential Subdivision (1 Lot into 6) Emily Avenue, Port Macquarie

2.2 Proposed Residential Subdivision

It is proposed to subdivide the site, being the developable residentially zoned portion of Lot 302 with an area of 0.78 ha, to provide a total of five (5) residential allotments and one residue lot. All proposed lots will be provided with a north-south orientation, with views across Wayne Richards Park to the north. This submission seeks the removal of all existing vegetation (7 trees) within the site.

The proposed lots area described below:

- Proposed Lot 1: will have direct vehicular access from the repositioned cul-de-sac head of Emily Avenue and a total site area of 821m². A 10m wide bushfire APZ is required to be provided to the northern boundary, resulting in a building envelope of approximately 591m².
- **Proposed Lot 2:** will also have direct vehicular access from the proposed Shareway and a total site area of 744m². A 10m wide bushfire APZ is required to be provided to the southern boundary with a 4.5m APZ to the northern boundary, resulting in a building envelope of approximately 525m².
- Proposed Lot 3: will also have direct vehicular access from the proposed Shareway and a total site area of 799m². A 10m and 4.5m wide bushfire APZ is required to be provided to the northern and southern boundaries respectively, resulting in a building envelope of approximately 538m².
- Proposed Lot 4: will also have direct vehicular access from the proposed Shareway and a total site area of 808m². A 10m and 4.5m wide bushfire APZ is required to be provided to the northern and southern boundaries respectively, resulting in a building envelope of approximately 547m².
- **Proposed Lot 5:** will have direct vehicular access from the western end of the 5.5m wide Shareway and a total site area of 2,995m². A 10m, 15m and 27m wide bushfire APZ is required to be provided to the northern, western and southern boundaries respectively, resulting in a building envelope of approximately 589m². Proposed Lot 5 contains the bushfire APZ on the southern side of the Shareway. A positive covenant will be placed on the title of proposed Lot 5 to ensure maintenance of the APZ in accordance with the requirements of Planning for Bushfire Protection 2006.
- Proposed Lot 6 (Residue): will continue to have access from Wayne Richards Park as well as the proposed sealed fire trail to the east of Proposed Lot 1. This residue Lot will contain the vegetated residentially zoned land, sporting fields, as well as all land zoned RE1 Public Recreation and a total site area of 4.83ha.

The proposed subdivision layout is detailed in the plan at Exhibit 03.

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Statement of Environmental Effects Torrens title Residential Subdivision (1 Lot into 6) Emily Avenue, Port Macquarie

2.2.1 Staging

The subdivision is proposed to be constructed in a single stage.

2.2.2 Vehicular Access and Traffic

It is proposed to re-position the existing cul-de-sac head of Emily Avenue to improve the proposed alignment of Emily Avenue as well as improve the developable portion of Proposed Lot 1.

The cul-de-sac head will retain the existing size and turning area design parameters of that existing. The positioning of the cul-de-sac and the new shareway will also enable a 'T' turning area that is consistent with the provisions of Planning for Bushfire Protection 2006.

A new water hydrant is proposed at the western end of the turning head as well as the western end of the proposed shareway. This is considered to improve the fire service coverage within the area as well as the proposed allotments. The water hydrant to be provided at the western end of the realigned turning head is considered to provide fire service coverage for all proposed building envelopes.

The proposed works will also retain the existing 400m length of Emily Avenue whilst providing for a 4m wide (within a 6m wide reserve) sealed (all weather) emergency access track from the cul-de-sac head to the existing playing fields of Wayne Richards Park.

Access to Proposed Lots 2-5 inclusive is to be provided via a Shareway extension of Emily Avenue. The design of the Shareway is consistent with the requirements of AUS-PEC D1.5.

2.2.3 Sewer and Water Supply Services

Each lot is provided with a separate gravity sewer line connection. The gravity sewer reticulation connects to Council's main at manhole ID PMTWS009MH.

The existing 100mm diameter water main on the northern side of Emily Avenue is proposed to be extended to the west to service the proposed 5 residential lots. Final water service sizing will 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.

The proposed servicing strategy is shown on the plan at **Exhibit 04** (2 sheets).

2.2.4 Stormwater Management Plan

The development is proposed to discharge into Council's pipe drainage system to the north-east of the site (with lot 35 DP819382).

Stormwater easements are proposed to be provided along the northern side of the proposed residential lots, subject to detailed design positioning and sizing of the pipe network. A detailed long section is expected to be

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required at the detailed design stage once the network location is confirmed.

Two options have been investigated to provide the required on site stormwater detention.

Option 1

Detention to be provided within the existing vegetated area to the north east of the site (see **Exhibit 05**). Site inspections have confirmed the suitability of this option, in which the existing northern lots of Emily Avenue currently discharge into. The existing stormwater pit in this area could not be located due to excessive vegetation growth. It is proposed to remediate this pit and ensure it is constructed at the correct level to provide sufficient detention for the area. Detailed survey and design would be required to determine the detention required.

Option 2

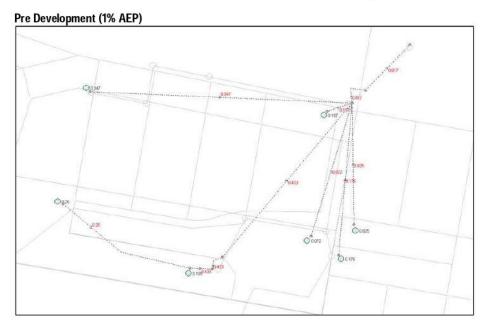
Detention facility not required, but installation of a long grassed swale to the south of the site is required to delay the peak flow during design storms (if Option 1 were to be adopted, a smaller swale would still be required to direct the overland flows around proposed lot 5).

Modelling of Option 2 was conducted using DRAINS to ensure that the post development site stormwater discharge rate does not exceed the pre development discharge rate for all storm events up to 1% AEP. The 1% AEP results are illustrated below. For modelling purposes the layout shown in the pre development DRAINS is the same as the post development, but the correct varying times of concentration and percentage impervious have been applied.

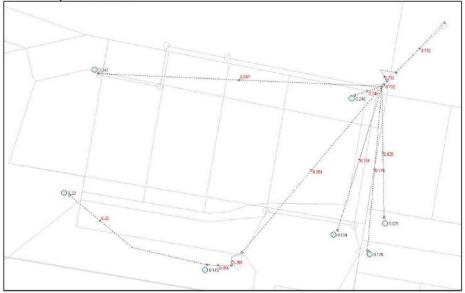
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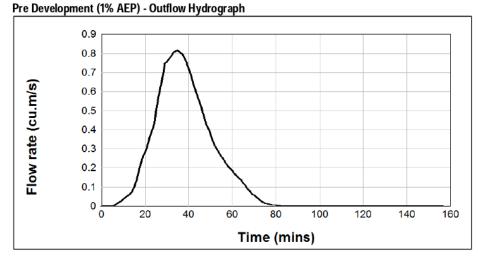
Post Development (1% AEP)



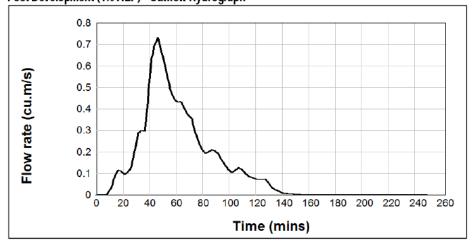
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Post Development (1% AEP) - Outflow Hydrograph



The proposed stormwater strategy is shown on the plan at Exhibit 05.

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Section 3 Key Issues

3.1 Relevant Legislation and Policy

3.1.1 Biodiversity Conservation Act 2016

Biodiversity Australia (BA) undertook a review of the proposal with respect to the Biodiversity Conservation Act 2016 as a part of their Ecological Assessment. Refer to **Appendix C**.

The assessment confirmed that a Biodiversity Development Assessment Report (BDAR) is not required as the development will not affect an area mapped in the NSW Biodiversity Values Map and will only remove 0.2ha of native vegetation.

In addition, the site does not contain any Endangered Ecological Communities (EEC's) and the removed vegetation comprises a handful of trees from a modified open forest community not containing hollow bearing trees or habitat features such as habitat logs or aquatic habitats.

Ultimately, BA's assessment (test of significance) concluded that the proposal would not result in a significant impact on threatened species or ecological communities.

3.1.2 SEPP No. 44 – Koala Habitat Protection

The site has an area greater than 1ha and therefore the provisions of this Policy apply.

Biodiversity Australia (BA) undertook an assessment in accordance with the provisions of this Policy as a part of their Ecological Assessment. Refer to **Appendix C**.

BA's assessment noted that the site contains a number of Koala food trees, comprising mostly of Swamp Mahogany with Tallowwood, Forest Red Gum and Scribbly Gum being present. These trees are Koala food trees and constitute greater than 20% of the tree component. Lot 302 therefore qualifies as Potential Koala Habitat (PKH).

None of the existing Koala food trees are proposed to be removed as part of the works associated with the residential subdivision.

Most of the trees within Lot 302 are however, immature and have likely been planted over the past 5 years as a part of the Link Road KPoM.

As a part of their assessment BA undertook four SAT surveys. Despite the PKH, BA did not observe any koalas. Scats were recorded within Lot 302 but, not within the developable portion. No Koala scratches were observed on any trees within Lot 302.

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BA also undertook a literature review, which failed to determine any historical records of Koalas on Lot 302 or adjoining properties.

As a result of the above, BA stated that the property is unlikely to comprise any significant foraging area for Koalas at present. Over time, as the planted KFT's mature, it may provide higher quality habitat and foraging values for Koalas. Lot 302 does not qualify as Core koala habitat and hence no KPoM is considered necessary to support the proposed development.

3.1.2 SEPP No. 55 - Remediation of Land

A Phase 1 Contamination Assessment has been prepared by Regional Geotechnical Solutions and is included in full at **Appendix G**.

Comments with respect to the assessment are included within **Section 3.5.**

3.1.3 PM-H Local Environmental Plan 2011

Relevant Clauses	Comment	Complies
2.3 Zone Objectives and Land Use Table	 The following objectives are relevant: R1 General Residential To provide for the housing needs of the community. To provide for a variety of housing types and densities. To enable other land uses that provide facilities or services to meet the day to day needs of residents. The proposed subdivision is consistent with the above zone objectives, as set out below: The proposed subdivision will create 5 Torrens title allotments that will be suitable for a variety of housing styles; The subdivision will enable the development of residentially zoned lands that are in close proximity to existing services and 	Yes
2.6 Subdivision	 facilities; and The works will retain and improve existing vegetated areas outside of the development footprint. This application seeks consent for the Torrens title subdivision of the 	Yes
4.1 Minimum subdivision lot size	site. The residential area of the site is identified as containing a minimum allotment size of 450 m ² as set out on Lot Size Map LSZ_013G. All proposed residential allotments comply with this standard.	Yes
5.3 Development near zone boundaries	This clause does not apply to land zoned RE1 Public Recreation. This clause is therefore not considered relevant to the proposed subdivision.	N/A
5.10 Heritage Conservation	The site is not mapped as containing items of heritage significance. An AHIMS search was carried out over Lot 302 and revealed that no Aboriginal items or places are identified as occurring within the site or 50 metres surrounding.	Yes
7.5 Koala Habitat	The site is not mapped as containing Koala habitat. No existing SEPP 44 Koala browse species are proposed to be removed as a part of the works associated with the proposed subdivision.	Yes
7.13 Essential Services	All required public utility services and infrastructure is available, or can be readily augmented. See servicing plan at Exhibits 4 & 5 .	Yes

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3.1.4 PM-H DCP 2013 – Part 2 General Provisions

Development Guidelines (only where applicable)	Comment
Cut and fill regrading – Objectives 2.3.3.1 to 2.3.3.3	
 a) Development shall not exceed a maximum cut of 1.0m and fill of 1.0m measured vertically above the ground level (existing) at a distance of 1.0m outside the perimeter of the external walls of the building (This does not apply to buildings where such cut and fill is fully retained within or by the external walls of the building). 	Removal of existing 6m high stockpile located in the north-western comer of Proposed Lot 5. The material is proposed be used on-site to fill the building envelopes, pending the outcomes of the Stage 2 Contamination Assessment.
 a) The maximum height of a retaining wall along all road frontages is 1.0m. b) Any retaining wall greater than 1.0m must be certified by a certified practising structural engineer. c) Where a combination of a fence and a wall is proposed to be greater than 1.2m high: be a maximum combined height of 1.8m above existing property boundary level; be constructed up to the front boundary for a maximum length of 6.0m or 30% of the street frontage, whichever is less; the fence component have openings which make it not less than 25% transparent; and 	The application seeks consent for a maximum 1m high retaining wall within the north-western corner of Proposed Lot's 4 and 5. A retaining wall of approximately 1.5m is proposed along the south-western edge of the realigned Emily Avenue turning head. This wall will remain within the Emily Avenue road reserve and will be designed by a structural engineer.
provide a 3m x 3m splay for corner sites, and provide a 900mm x 900mm splay for vehicle driveway entrances.	
 a) Significant land reforming proposals where >10% gross site area or >1.0ha is to have surface levels changed by more than 5m or where earthworks exceed an average of 10,000m3 per ha shall: identify the impact of the proposed land reforming on the environment, landscape, visual character and 	An existing 6m high stockpile is currently located in the north-western corner of the Proposed Lot 5. The depth of this stockpile and the quality of the material of which it consists is not currently known.
 amenity, natural watercourses, riparian vegetation, topographical features of the environment and public infrastructure; demonstrate compliance with the provisions of Council's Aus-Spec design specification; assess the impacts and benefits of the proposal to all 	If this existing stockpile consists of suitable material it is proposed to be utilised for the filling of the proposed building envelopes. The existing stockpile is not considered to form part of the natural surface levels.
 provide measures to compensate for and minimise any net adverse impacts. 	It is estimated that the proposed subdivision will result in approximately 5,000m ³ of earthworks.
 b) The use of high earthworks batters should be avoided. c) Preliminary plans indicating the final landform are required to be submitted with any master plan or 	The application also seeks to provide retaining walls to minimise batter slopes. Refer to the comments above.
subdivision application	The proposed landform contours are detailed in the subdivision plan included in Exhibit 3 .
d) The subdivision should be designed to fit the topography rather than altering the topography to fit the subdivision.	The proposed subdivision has been designed to accommodate the existing topography. This includes the provision of Lots larger than the minimum allotment size and building envelopes which are considered to provide areas sufficient for the design of a typical residential dwelling.

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Development Guidelines (only where applicable)	Comment
Koala Habitat – Objective 2.3.3.7	
 a) For koala habitat refer to clause 7.5 of the Port Macquarie-Hastings LEP 2011. 	The site is not mapped as containing Koala habitat.
Hollow Bearing Trees – Objectives 2.3.3.8 to 2.3.3.9	THORE
a) All hollow bearing trees within the development area are to be accurately located by survey and assessed by an appropriately qualified ecologist in accordance with Council's Hollow-bearing tree assessment (HBT) protocol.	The developable area does not contain any hollow bearing trees and no hollow bearing trees are proposed to be removed as a part of this application.
b) Any tree that scores less than 8 using the HBT assessment protocol may be considered for removal subject to compensatory measures specified below.	
c) Any tree that scores 8-12 using the HBT assessment protocol may be considered for removal if management measures are 'impractical to allow retention'	
d) Any tree that scores more than 12 using the HBT assessment protocol the assessment must be retained and afforded a development exclusion buffer or located within environmental lands.	
e) Where a development exclusion buffer is proposed it shall have a radius of 1.25 times the height of the tree measured from its base.	
 a) A strategy for tree removal (timing and methodology) that minimises impacts on native wildlife shall accompany any development that proposes the removal of HBTs. 	The application seeks consent to remove a total of 7 trees including six Blackbutts and one Sydney Golden Wattle. The application does not seek to remove any hollow bearing trees.
b) The removal of HBTs is to be offset by the retention of recruitment trees.	1003.
Compensatory recruitment trees shall be provided at the	
rate of two for one for trees that scored 8-12, and at the	
rate of one for one for trees that scored less than 8.	
A tree can be considered to be a compensatory recruitment tree under the following criteria:	
1. Does not have any major structural defects or is	
suffering from disease that would lead to premature	
death; and 2. Is from the same vegetation community and same	
genus; and	
3. Are to be located within environmental lands and	
managed in accordance with a VMP; and 4. Have a DBH of 50cm or greater and do not possess	
hollows. For Blackbutt Eucalyptus pilularis a DBH of 100cm or greater applies.	
c) The removal of HBTs are to be offset by the installation of nesting boxes of similar number and size is those to be removed.	
d) Nesting boxes are to be installed like for like (both type and number, and host tree to genus level) and must be located within proposed open space or environmental lands.	

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King & Campbell Pty Ltd Statement of Environmental Effects Torrens title Residential Subdivision (1 Lot into 6) Emily Avenue, Port Macquarie **Development Guidelines (only where applicable)** Comment Nesting Boxes are to be installed and maintained within environmental lands in accordance with a VMP Nesting Boxes to be inspected and maintained by a qualified ecologist. e) Any HBT that will not afford protection via an exclusion buffer or within environmental lands will attract the same offsetting requirements as if it was to be removed. Bushfire Hazard management - Objective 2.4.3.4 a) Asset Protection Zones are to be located outside of All proposed asset protection zones are wholly located within the R1 General environmental protection zones and wholly provided within private land. Note perimeter roads provided as part Residential zoned portion of the site and of a residential subdivision are classified as being part of within the proposed allotments. A positive the subdivision and not a separate permissible land use covenant is proposed to be created on the within environment protection zones. APZ located within Proposed Lot 5 on the south side of the proposed Shareway. b) Perimeter roads are to be provided to all urban areas adjoining environmental management areas and their buffers. Stormwater – Objective 2.4.3.6 a) All stormwater infrastructure is designed in All stormwater has been designed to comply accordance with the Council's Auspec Design with AUS-PEC. Specification Documents Road Hierarchy – Objectives 2.5.3.1 and 2.5.3.2 a) In new areas (as distinct from established areas with a The proposal seeks to re-locate the existing Emily Avenue turning head and provide a pre-existing road pattern) each class of route should reflect its role in the road hierarchy by its visual new Shareway to service the proposed allotments. The proposed road design has appearance and related physical design standards, including varying levels of vehicle and pedestrian access. been based on the existing alignment of Emily Avenue, the slope of the land as well b) Routes should differ in alignment and design standard as the bushfire setback provisions required. according to the volume and type of traffic they are intended to carry, the desirable traffic speed, and other The new Shareway has been designed to factors. comply with AUS-PEC D1.5. c) All new roads are designed in accordance with Council's Aus-Spec design specification documents. a) New direct accesses from a development to arterial Emily Avenue is a local road. and distributor roads is not permitted. Routes should differ in alignment and design standard according to the volume and type of traffic they are intended to carry, the desirable traffic speed, and other factors. b) Existing direct accesses from a development to arterial and distributor roads are rationalised or removed where practical. c) Vehicle driveway crossings are minimal in number and width (while being adequate for the nature of the development), and positioned:

• to maximise on-street parking.

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and

garage doors, and

· to avoid driveways near intersections and road bends,

to minimise streetscapes dominated by driveways and

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Statement of Environmental Effects Torrens title Residential Subdivision (1 Lot into 6) Emily Avenue, Port Macquarie

3.1.5 PMH DCP 2013 - Part 3.6 - Subdivision

Development Provisions (where applicable)	Comment
Site Analysis– Objective 3.6.3.1	
 A site analysis is required for all development and should illustrate: 	A site analysis plan is included as Exhibit 2.
microclimate including the movement of the sun and prevailing	Exhibit 2.
winds;	
Iot dimensions;	
north point;	
 existing contours and levels to AHD; 	
flood affected areas;	
 overland flow patterns, drainage and services; any contaminated soils or filled gross, or gross of upstable lands 	
 any contaminated soils or filled areas, or areas of unstable land; easements and/or connections for drainage and utility services; 	
• identification of any existing trees and other significant vegetation;	
• any existing buildings and other structures, including their setback	
distances:	
 heritage and archaeological features; 	
 fences, boundaries and easements; 	
 existing and proposed road network, including connectivity and 	
access for all adjoining land parcels;	
 pedestrian and vehicle access; 	
 views to and from the site; 	
 overshadowing by neighbouring structures; and 	
any other notable features or characteristics of the site.	
Lot Layout – Objectives 3.6.3.2 to 3.6.3.7 a) Any residential allotments created by Torrens title subdivision	Each of the proposed late even
should satisfy the following standards:	Each of the proposed lots exceed the listed standards.
• A minimum width of 15 metres when measured at a distance of 5.5	
metres from the front property	
boundary;	
A minimum width of 7 metres measured when side boundaries are	
extended to the kerb line;	
 A minimum depth of 25 metres; 	
 For lots where the average slope of the development site is equal 	
to, or exceeds 16%, indicative road	
and driveway grades are required demonstrating satisfactory access.	The application does not a st
a) Battleaxe allotments are discouraged in greenfield development.	The application does not seek
	consent for any battle-axe allotments.
a) Lots are to be designed to allow the construction of a dwelling,	Each of the proposed allotments
which does not involve more than 1m cut, or fill, measured from	are provided with a building
natural ground level, outside the dwellings external walls.	envelope exceeding 520m ² .
	Earthworks is proposed as a par
	of the subdivision to minimise the
	amount of cut and fill required as
	a part of the construction of futur
	dwellings. The proposed landform
	is illustrated in the subdivision
	plan included as Exhibit 3.
a) Wherever possible orientate streets to maximise the number of	Each of the proposed lots is
east, west and south facing lots and to minimise the number of	provided with a north-south
narrow north facing lots. Residential street blocks should preferably	orientation with north to the rear
be orientated north-south with dimensions generally limited to 60- 80m by 120-150m as illustrated in Figure 3.6-2.	yard. This is considered to
	provide suitable opportunity for

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Statement of Environmental Effects

Torrens title Residential Subdivision (1 Lot into 6) Emily Avenue, Port Macquarie Development Provisions (where applicable) Comment b) Lot size and shape are to reflect orientation to ensure future the required energy efficiency and dwelling construction has optimal opportunity for passive solar passive solar design requirements. desian. a) The site analysis, including the lot orientation, layout, and natural The existing alignment of Emily Avenue, landform topography and topography should inform and aid the design of the street pattern. bushfire setback provisions have b) The street plan should provide: aided in the proposed subdivision · Street network, including those existing (adjacent or opposite); layout and road design. It is noted · Cycleways and pathway network; that a number of options were presented to Council as a part of · Indicative gradients and cross-sections of roads, cycle ways and pathways, particularly those with steep slopes that may present the initial pre-lodgement meeting and based on the feedback access and mobility constraints. Provide notional road batters for provided from Council and the steep areas: · General intersection traffic dampening, related landscape features specialist sub-consultants the submitted design is considered to and constriction points; · Notional drainage pattern and works where affected by road works; be the most appropriate for the site consideration the existing Car parking; Consideration of existing and proposed street trees; constraints Existing and proposed fire trails. · Street and Service Plans should need to show how the proposal should integrate with the existing system. c) Kerb and guttering, associated street drainage, pavement construction and foot paving across the street frontages should be constructed as part of the subdivision works where these do not exist unless: · It is technically impractical to construct kerb and guttering due to uncertainty as to the appropriate levels to be adopted or an isolated section should present a hazard to road traffic safety, or · The street drainage necessary to provide kerb and guttering is an unreasonable imposition on the development; or · An alternative treatment is preferred by Council having regard to Water Sensitive Urban Design (WSUD) principles; or · Kerb and guttering is not the most suitable streetscape treatment for the area on the basis of existing and anticipated development. In these cases, an alternative treatment to kerb and gutter such as mountable kerb, concrete dish drain, cemented paving stones or other treatment should be required with the exact type based upon the characteristics of the site. Road Design and Construction – Objectives 3.6.3.8 to 3.6.3.12 a) All new roads are to be dedicated to Council designed in The realigned Emily Avenue accordance the Council's adopted AUSPEC design specification turning head and new Shareway documents. are intended to be dedicated to All applications to subdivide land should include a road layout plan Council. Both of these roads have that meets the Council's design requirements including providing been designed to comply with connectivity and access for all land parcels consistent with Council's AUS-PEC. road hierarchy. a) The design of roads identified for bus routes should comply with Emily Avenue is a dead-end the AUSTROADS standards, including the design of bus bays and street and is not currently utilised as a bus route. The proposed stops. subdivision is not considered b) Development should provide the bus stops, including bus bays likely to alter this and no bus and shelters not more than 600m apart. stops are therefore considered relevant. a) The design of roads should aspire to achieve standards illustrated The proposed roads are in Figure 3.6-3 to Figure 3.6-11. considered compliant with the

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Development Provisions (where applicable)	Comment
b) At a minimum all new roads should include:	listed provisions.
street trees at a rate of 1 per 20m along the street frontage and in	
accordance with Council's Indigenous Street and Open Space	No street trees are proposed
Planting List;	within the new Shareway due to
 underground utilities; 	the width of the road reserve.
 formed kerb and guttering; 	
1.2metres pedestrian path.	
 Perimeter roads adjoining bushland should be designed in 	The application does not seek
accordance with Figure 3.6-8 and may be considered part of the APZ	consent for a perimeter road.
requirements for the adjoining land.	
a) Perimeter roads should be designed in accordance with Figure	The application does not seek
3.6-8	consent for a perimeter road.
Pedestrians and Cycleways – Objectives 3.6.3.13 to 3.6.3.15	
a) Development for the subdivision for land or major residential	The proposed subdivision seeks
development should provide footpaths on both sides of all collector	to provide a Shareway and in
and arterial roads.	accordance with Table D1.5 a
b) Easter the about the annual data and a filler about for	footpath is not required.
b) Footpaths should be provided on one side of the street for access	It is noted that the property as the
places and local streets in accordance with Council's adopted	It is noted that the proposal seeks
AUSPEC design specification documents.	to provide a sealed fire trail along
c) Off streat share ways and on road cycle ways should be provided	the eastern edge of Proposed Lot 1 which is considered suitable to
c) Off street share-ways and on road cycle ways should be provided.	provide pedestrian connectivity
d) Footpaths and cycleway are to have regard for Crime Prevention	between the residential lots and
Through Environmental Design (CPTED) principles.	Emily Avenue and the adjoining
Through Environmental Design (of TED) principles.	Wayne Richards sporting fields
e) The choice of direction and possible routes should be maximised,	and associated facilities.
with streets and footpaths substantially capable of surveillance by	
residents.	
a) Local roads are to be designed for a maximum vehicle speed of	The proposed Shareway has
50kph.	been designed to comply with
	AUS-PEC.
b) Traffic management schemes may be appropriate to discourage	
speeding in long stretches of local roads or to discourage 'rat-	
running'.	
a) On streat parking should be discouraged along local reads	
c) On street parking should be discouraged along local roads.	
d) Signage should be provided illustrating links from local roads to	
the regional networks.	
a) Cycling infrastructure should be provided in accordance with the	The application does not seek to
Council's Cycling Plan.	provide any cycling infrastructure.
b) Where physical infrastructure or land dedication cannot be	
provided or is not identified, a contribution in accordance with the	
Councils' contribution plan/s.	
Water Cycle Management – Objective 3.6.3.16	
 a) An application for subdivision should be accompanied by an Integrated Water Cycle Management Strategy propaged by a partified 	
Integrated Water Cycle Management Strategy prepared by a certified practicing engineer and in accordance with Council's adopted design	
specification documents.	
Stormwater Management – Objectives 3.6.3.17 to 3.6.3.19	
a) An application for subdivision should be accompanied by a	A stormwater management
Stormwater Management Strategy prepared by a certified practicing	strategy has been prepared in
engineer and in accordance with Council's adopted Aus-Spec design	support of the proposed
specification documents.	subdivision, refer to Exhibit 5 and
· ·	Section 2.2.4.
The Designer should adopt the 'major/minor' approach to urban	

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Statement of Environmental Effects

Torrens title Residential Subdivision (1 Lot into 6)

Emily Avenue, Port Macquarie **Development Provisions (where applicable)** Comment drainage systems as outlined in Australian Rainfall and Runoff. The 'Minor' system generally refers to the underground system but also applies to surface structures. The minor system is designed to an Average Recurrence Interval (ARI) as shown in Council's Aus-Spec design specification documents. The 'Major' system refers to overland flow paths that are to be designed to convey the major storm flows when the capacity of the minor system is exceeded. The major drainage system is designed to handle flows resulting from rare storm events up to and including a 100-year ARI. These flows should follow a designated overland flow path, which should be: · A road if the catchment area is small; and/or · A drainage reserve if it is impractical for unsafe for a road to carry the excess flows. The finished floor level of buildings should be above the 100 year ARI flood level (plus freeboard) and in accordance with the council's current flood policy. a) An application for subdivision should be accompanied by a Refer comments above. Stormwater Management Strategy prepared by a certified practicing engineer and in accordance with Council's adopted Aus-Spec design specification documents. The Designer should adopt the 'major/minor' approach to urban drainage systems as outlined in Australian Rainfall and Runoff. The 'Minor' system generally refers to the underground system but also applies to surface structures. The minor system is designed to an Average Recurrence Interval (ARI) as shown in Council's Aus-Spec design specification documents. The 'Major' system refers to overland flow paths that are to be designed to convey the major storm flows when the capacity of the minor system is exceeded. The major drainage system is designed to handle flows resulting from rare storm events up to and including a 100-year ARI. These flows should follow a designated overland flow path, which should be: · A road if the catchment area is small: and/or · A drainage reserve if it is impractical for unsafe for a road to carry the excess flows. The finished floor level of buildings should be above the 100 year ARI flood level (plus freeboard) and in accordance with the council's current flood policy. a) An application for subdivision should be accompanied by a Refer comments above. Stormwater Management Strategy prepared by a certified practicing engineer and in accordance with Council's adopted Aus-Spec design specification documents. The Designer should adopt the 'major/minor' approach to urban drainage systems as outlined in Australian Rainfall and Runoff. The 'Minor' system generally refers to the underground system but also

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Statement of Environmental Effects

Torrens title Residential Subdivision (1 Lot into 6) Emily Avenue, Port Macquarie Comment Development Provisions (where applicable) applies to surface structures. The minor system is designed to an Average Recurrence Interval (ARI) as shown in Council's Aus-Spec design specification documents. The 'Major' system refers to overland flow paths that are to be designed to convey the major storm flows when the capacity of the minor system is exceeded. The major drainage system is designed to handle flows resulting from rare storm events up to and including a 100-year ARI. These flows should follow a designated overland flow path, which should be: · A road if the catchment area is small; and/or · A drainage reserve if it is impractical for unsafe for a road to carry the excess flows. The finished floor level of buildings should be above the 100 year ARI flood level (plus freeboard) and in accordance with the council's current flood policy. Water Supply – Objectives 3.6.3.20 to 3.6.3.23 a) A reticulated water supply should be required for all subdivisions A reticulated water supply is except rural zoned areas greater than 40 hectares or where deemed proposed to be provided to each financial unviable by the Manager Water Supply Services or of the proposed lots. Refer to equivalent. Section 2.2.3 and Exhibit 4. b) A water supply strategy should be required where there are more than 20 lots and may be required for sub-divisions of less than 20 lots as directed by the Manager Water Supply Services or equivalent. c) All water supply systems should be designed to meet Council's design specification documents for infrastructure external to the property. d) All water supply systems should be designed to meet the NSW Code of Practice Plumbing & Drainage 2006 and Australian Standard AS3500 and related standards for infrastructure within property boundaries. a) A reclaimed water supply should be constructed in accordance with Council's strategy for the provision of reclaimed water supply. b) Where a reclaimed water reticulation system is available to the site, connection to that system should be provided and a reclaimed reticulation system within the site should be provided. c) Where a reclaimed water reticulation system is planned to be available to the site a reclaimed reticulation system should be provided within the site. d) Where a reclaimed water reticulation system is not currently planned for the site consideration of providing a reclaimed reticulation system within the site is not required. e) Public areas such as parks created by the subdivision, are to be connected to a reclaimed water reticulation system. f) Any amenities provided in public areas, such as toilets, should

maximise the utilisation of reclaimed water where appropriate.

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Statement of Environmental Effects Torrens title Residential Subdivision (1 Lot into 6) Emily Avenue, Port Macquarie

Development Provisions (where applicable)	Comment
a) Where a reclaimed water reticulation system is available or	The application does not seek to
 planned to be available to the site, reclaimed water should be used for: Garden watering/irrigation; 	provide a reclaimed water reticulation system given there is no reticulated reclaimed water in
 Toilet flushing; Hot water systems; Washing machine cold water tap; 	Emily Avenue.
 Other non-potable uses as permitted. Where a reclaimed water reticulation system is available or planned to be available to the site, potable water should be used for: Kitchen, bathroom and laundry tub cold water taps; Pool filling; Fire-fighting. 	
 b) Ensure infrastructure is designed to minimise the risk of cross- connection of potable and non-potable systems, for both public and private infrastructure. 	
 a) Proponents should be required to extend and meet full cost of water reticulation. 	Noted. All costs associated with the extension of the reticulated water supply will be borne by the
b) Any water supply assets required prior to the timing in Council's Corporate Plan are to be funded by the developer.	applicant.
Sewerage – Objectives 3.6.3.24 to 3.6.3.25	Definited and 1
a) Sewerage systems should be designed in accordance with Councils adopted design specification documents and the Sewerage Code of Australia (WSA02-1999).	Reticulated sewer is proposed to be provided to each of the proposed lots. Refer to Section 2.2.3 and Exhibit 4 .
b) A sewerage strategy should be provided for an application for subdivision of 20 or more lots.	2.2.5 and Exhibit 4.
c) The strategy should include the proposed method of servicing and any staging proposed.	
d) Sewerage systems should be planned to provide for anticipated future requirements over a period of at least twenty (20) years.	
e) Each lot is to have a separate sewer junction and connection to Council's main.	
a) Proponents should be required to extend and meet full cost of sewerage systems.	Noted. All costs associated with the extension of the reticulated sewer will be borne by the
b) Any sewerage system required prior to the timing in Council's Corporate Plan is to be funded by the developer.	applicant.
Soil Management – Objectives 3.6.3.26 to 3.6.3.28 a) An erosion and sediment control plan should be provided for a	A sediment and erosion control
development application to subdivide land in accordance with Council's adopted Aus-Spec design specification documents.	plan will be provided as a part of the detailed design phase.
	It is anticipated that a sediment and erosion control fence will be provided along the northern boundary of the development footprint.
 a) An erosion and sediment control plan should be provided for a development application to subdivide land in accordance with Council's adopted design specification documents. b) Land identified on the acid sulfate soils map are subject to the provisions under clause 7.1 the LEP. 	Refer comment above.

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King & Campbell Pty Ltd	Statement of Environmental Effects Torrens title Residential Subdivision (1 Lot into 6) Emily Avenue, Port Macquarie
Development Provisions (where appli	cable) Comment
 a) Saving and re-using top soil and the incorporation improve existing soils is preferred to the importation landscaping. 	
Service Infrastructure and Information Technology -	- Objective 3.6.3.34
 a) All service infrastructure should be underground approved by Council. 	unless otherwise All service infrastructure is proposed to be provided underground.
b) All service infrastructure should be installed in a c	
c) Conduits for the main technology network system provided in all streets.	n should be
 d) Conduits are to be installed in accordance with the Broadband Network Company Limited's 'Guidelines Premises Underground Deployment'. 	
 e) Access pits are to be installed at appropriate interstreets. 	rvals along all
Waste Management – Objective 3.6.3.35	
 a) All new roads are to be designed in accordance to Spec design specification documents. All applications to subdivide land should include a ro that meets the Council's design requirements. 	vehicles from utilising the

3.2 Traffic impact Assessment

A Traffic Impact Assessment is included at Appendix E.

Intersection performance has been assessed using the software package SIDRA 8.0 to obtain the capacity of the traffic movements for the proposed development and in accordance with the assumptions made by GHD (GHD PMH LGA Traffic Study 2018).

The TIA confirms that the proposed residential development (5 Lots) can be adequately served by the existing intersection configuration of Emily Avenue with Koala Street. This Assessment also confirms that the retention of the existing intersection will not adversely affect the wider road network within Port Macquarie, with queueing lengths being of acceptable length.

3.3 Ecology

An Ecological Assessment has been prepared by Biodiversity Australia (BA) in support of the proposed development. The assessment is included in full at **Appendix C**.

The assessment was prepared in accordance with the requirements of the NSW Biodiversity Conservation act 2016, Biodiversity Regulation 2017 and the Commonwealth Environment & Protection and Biodiversity Conservation Act (EPBCA) Act 1999 – Matters of National Environmental Significance. An assessment of the relevant provisions

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Item 05 Attachment 5

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Statement of Environmental Effects Torrens title Residential Subdivision (1 Lot into 6) Emily Avenue, Port Macquarie

for Koala food trees under the Port Macquarie-Hastings Council Development Control Plan 2013 was also undertaken.

BA carried out site surveys in March and April 2019 and noted the following key points:

- No threatened flora were recorded and the site vegetation does not qualify as an Endangered Ecological Community (EEC);
- Five threatened fauna species were recorded within the property at the time of the survey and a total of 13 threated fauna species were found to have at least a low potential to occur within the study area;
- Seven trees within the developable portion of the site will require removal to establish the subdivision, these trees do not contain hollows and are not preferred Koala food trees (six Blackbutt and one Sydney Golden Wattle);
- Indirect impacts associated with the proposal will be minor due to the scale of the development, context of the site and the existing level of disturbance in the area;
- No littoral rainforest or coastal wetlands are mapped within the study area;
- The property contains Potential Koala Habitat however, due to the absence of Koala's during surveys and the lack of historical records on the property, is not considered to contain Core Koala habitat; and
- The proposed development will not trigger the requirement for a Biodiversity Development Assessment Report (BDAR) as the amount of vegetation removal required will not exceed the prescribed threshold and the site is not mapped on the Biodiversity Value Map.

In summary, BA provide the following recommendations:

- General Clearing Measures including:
 - The extent of the development footprint to be clearly marked (e.g. via pegging/fencing/flagging) before clearing in order to prevent and inadvertent clearance beyond what is required and has been assessed and to avoid encroachment into the root zone of retained trees;
 - Site induction is to specify that no clearing is to occur beyond the marked area. All vehicles are only to be parked in designated areas;
 - Clearing and earthworks is to avoid damage to root zones of the retained trees on adjoining land;
 - Weeds are not to be mulched with native vegetation and

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Statement of Environmental Effects Torrens title Residential Subdivision (1 Lot into 6) Emily Avenue, Port Macquarie

should be taken to a licenced land fill facility;

- Animal Welfare Considerations including:
 - The area of the clearing work is to be inspected for Koalas and other fauna by an ecologist immediately prior to commencement of any vegetation removal involving machinery and/or tree felling. Pre-clearing checks will include searches of habitat e.g. lifting and destruction of logs, searches for bird nests, and raking of leaf litter. Other than Koalas, any detected fauna is to be relocated off-site. Any bird nest considered active is to be removed in a manner that allows retrieval off eggs/young, and these are to be taken into care by FAWNA;
 - If a Koala is present in the proposed clearing area, works are to be suspended until the Koala moves along on its own volition. If the Koala is located in a position that a 50m buffer may be established, works may proceed outside this buffer.
- Tree Replacement including:
 - Offset plantings at a ratio of 2:1 within existing canopy gaps (total of 12 koala food trees comprising Tallowwood and/or Swamp Mahogany);
 - Trees should be regularly maintained (e.g. watering, weeding, mulching) until they are at least 2m tall and any losses are to be replaced.
- Koala Ladders:
 - A Koala ladder is recommended to be installed to the south-west of the development area.

3.4 Bushfire

A Bushfire Hazard Assessment Report has been prepared by David Pensini of Building Certification and Environmental Services to accompany this submission. A copy of this assessment is included at **Appendix D**.

The assessment considers that, subject to the implementation of the following bushfire threat reduction measures that the proposed development is manageable:

 Asset Protection Zones (APZ's) provided in accordance with the below Table:

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Statement of Environmental Effects Torrens title Residential Subdivision (1 Lot into 6) Emily Avenue, Port Macquarie

ASPECT VEGETATION		SLOPE	TOTAL REQUIRED APZ			MINIMUM POTENTIALLY	COMPLIANCE WITH MINIMUM
			IPA	OPA	APZ	AVAILABLE COMPLIANT APZ	APZ REQUIREMENTS
North	Grasslands	5°- 6° Down slope	10m	-	10m	>10m	~
Northeast	Similar in specification to Rainforest	5°- 6° Down slope	15m	-	15m	>25m	~
South	Wet Sclerophyll Forest	3°- 4° Down slope	15m	12m	27m	>27m	~
West	Tall Coastal Heath	7°- 15° (0°) Upslope	15m	2-0	15m	>15m	~

Table 4 – APZ Requirements for Residential Subdivision Developments (29kW/m²)

- Water and other services are to be provided to the proposed Torrens title lots in accordance with the requirements detailed in Section 3.1.4;
- Future dwellings constructed to comply with bushfire attack level (BAL) 29 (to be confirmed prior to construction);
- Adoption of the landscaping principles outlined within Section 3.2.1 of this report.

3.5 Contamination

A Stage 1 Contamination Assessment has been prepared by Regional Geotechnical Solutions (RGS) to accompany this submission. A copy of this assessment is included at **Appendix G**.

The assessment included identification of areas of environmental concern based on site observations and past land use, and a limited amount of sampling in the identified areas. A large area of uncontrolled fill was identified in the north of the site, however, the extent and depth of fill was not defined. In addition, a shallow area of hydrocarbon and lead impacted soil contamination was identified in the north east corner of the site in the vicinity of a former shed that appears to have been previously part of the Council depot.

A Stage 2 Contamination Assessment is therefore recommended to define the extent of uncontrolled fill and the extent of the identified contamination followed by the preparation of a Remedial Action Plan (RAP). However, the findings of this assessment indicate that it is likely that the site can be remediated to a standard appropriate for residential development from a site contamination perspective provided the recommendations and advice of this report are adopted.

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Statement of Environmental Effects Torrens title Residential Subdivision (1 Lot into 6) Emily Avenue, Port Macquarie

Section 4 Conclusion

This development proposal has been prepared having regard to the provisions of Port Macquarie-Hastings Local Environmental Plan 2011 and s.4.15 of the Environmental Planning and Assessment Act 1979. The granting of consent to the proposal is consistent with the aims and objectives of these documents for the following reasons:

- The proposed subdivision satisfies the development standards as set out by Port Macquarie-Hastings LEP 2011;
- The proposed subdivision is consistent with the zone objectives;
- The proposed subdivision will provide a logical extension of Emily Avenue and make best use of the existing residentially zoned land;
- The proposed subdivision can be adequately served by the existing intersection configuration of Emily Avenue and Koala Street;
- Appropriate land and water management devices and techniques will be employed thereby minimizing any likely environmental impacts;
- The proposal will not impact any EEC's or threatened species;
- The proposal will not remove any Hollow Bearing Trees or any Primary Koala food trees and no works are proposed within the Link Road KPoM offset area;
- The proposal will mitigate potential impacts on water quality through a comprehensive stormwater management system; and
- The proposed subdivision will enable the orderly and efficient development of the subject site in a manner consistent with the objectives and provisions of the relevant environmental planning instruments.

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Port Macquarie Hastings Council

Stage 1 Contamination Assessment

Proposed Residential Subdivision

Lot 302 DP754434, Emily Avenue, Port Macquarie

Report No. RGS20789.1-AB 16 April 2019



Item 05 Attachment 6



Manning-Great Lakes Port Macquarie Coffs Harbour

RGS20789.1-AB

16 April 2019

Port Macquarie Hastings Council c-/ King & Campbell Pty Ltd PO Box 243 PORT MACQUARIE NSW 2444

Attention: Jason Doyle

Dear Jason,

RE: Proposed Residential Subdivision – Lot 302 DP754434, Emily Avenue, Port Macquarie Stage 1 Contamination Assessment

As requested, Regional Geotechnical Solutions Pty Ltd (RGS) has undertaken a Stage 1 Contamination Assessment for the proposed five lot residential subdivision in the southern portion of Lot 302, DP754434, Emily Avenue, Port Macquarie.

The assessment included identification of areas of environmental concern based on site observations and past landuse, and a limited amount of sampling in the identified areas. A large area of uncontrolled fill was identified in the north of the site, however, the extent and depth of fill was not defined. In addition, a shallow area of hydrocarbon and lead impacted soil contamination was identified in the north east corner of the site in the vicinity of a former shed that appears to have been previously part of the Council depot.

A Stage 2 Contamination Assessment is therefore recommended to define the extent of uncontrolled fill and the extent of the identified contamination followed by the preparation of a Remedial Action Plan (RAP). However, the findings of this assessment indicate that it is likely that the site can be remediated to a standard appropriate for residential development from a site contamination perspective provided the recommendations and advice of this report are adopted.

For and on behalf of

Regional Geotechnical Solutions Pty Ltd

Tim Morris Associate Engineering Geologist

Regional Geotechnical Solutions Pty Ltd ABN 51141848820 5D/23 Clarence Street Port Macquarie NSW 2444 Ph. (02) 6553 5641 Email <u>tim.morris@regionalgeotech.com.au</u> Web: <u>www.regionalgeotech.com.au</u>

ATTACHMENT



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Regional Geotechnical Solutions RGS20789.1-AB 16 April 2019



1 INTRODUCTION

As requested, Regional Geotechnical Solutions Pty Ltd (RGS) has undertaken a Stage 1 Contamination Assessment for the proposed five lot residential subdivision in the southern portion of Lot 302, DP754434, Emily Avenue, Port Macquarie.

The proposed residential development site is partially cleared and located in an area of gently to moderately undulating topography that has been modified by historical earthworks including placement of a large spoil mound. The site is now used as part of a mountain bike track course.

The purpose of the work described herein was to assess the suitability of the site for residential development with respect to the presence of potential site contamination resulting from past land use and activities.

The work was commissioned by Jason Doyle on behalf of Port Macquarie Hastings Council and was undertaken in accordance with proposal number RGS20789.1-AA dated 19 December 2018.

2 GUIDELINES AND ASSESSMENT CRITERIA

The assessment was aimed at fulfilling the requirements of a Phase 1 Contaminated Site Assessment in accordance with NSW EPA Guidelines for Consultants Reporting on Contaminated Sites (2011).

To evaluate results and for guidance on assessment requirements, the assessment adopted the guidelines provided in the National Environment Protection (Assessment of Site Contamination) Measure (NEPM 2013). The NEPM document provides a range of guidelines for assessment of contaminants for various land use scenarios. The proposed landuse is residential and as such comparison with the NEPM guideline values for Residential A landuse was considered appropriate. In accordance with the NEPM guideline the following criteria were adopted for this assessment:

- Health Investigation Levels (HILs) for Residential land use were used to assess the potential human health impact of heavy metals and PAH;
- Health Screening Levels (HSLs) for coarse textured (sand) or fine textured (silt and clay) soils on a Residential site were adopted as appropriate for the soils encountered to assess the potential human health impact of petroleum hydrocarbons and BTEX compounds;
- Ecological Investigation Levels (EILs) for Residential land use were used for evaluation of the
 potential ecological / environmental impact of heavy metals and PAH;
- Ecological Screening Levels (ESLs) for coarse textured (sand) soils or fine textured (silt and clay) soils on a Residential land use site were adopted as appropriate for the soils encountered, to assess the potential ecological / environmental impact of petroleum hydrocarbons and BTEX compounds.

In accordance with NEPM 2013, exceedance of the criteria does not necessarily deem that remediation is required, but is a trigger for further assessment of the extent of contamination and associated risks. The adopted criteria are presented in the results summary table in Appendix C.

3 METHODOLOGY

In accordance with the relevant sections of the National Environmental Protection (Assessment of Site Contamination) Measure 1999 (Amended 2013), the assessment involved the following process:

A brief study of site history, with the aim of identifying past activities on or near the site that
might have the potential to cause contamination;

Regional Geotechnical Solutions RGS20789.1-AB 16 April 2019



- Review of available recent and historical aerial photography for the last 50 years;
- A search of NSW EPA records, or contaminated land notifications on the site;
- Government records of groundwater bores in the area;
- Land title search of the respective lots available from the Land Titles Office; and
- Using the above information, characterise the site into Areas of Environmental Concern, in which the potential for contamination has been identified, and nominate Chemicals of Concern that might be associated with those activities.

4 SITE SETTING AND HISTORY

4.1 Site Description

The site is located to the west of Emily Avenue in an area of gently to moderately undulating topography where it is situated on the east facing middle to lower slopes of a low hill as shown in Figure 1.

A satellite image that shows the location of the site and the site setting is reproduced below.



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4.2 Historical Aerial Photography

Aerial photographs of the site were purchased from the NSW Land and Property Management Authority and reviewed to assist in identifying past land uses that may contribute to site contamination. The results of the review are summarised in Table 1.

Table 1- Aerial Photograph Summary

Year	Site (Lot 302 DP754434)	Surrounding Land
1956	The lot is mostly cleared and is probably used for grazing purposes.	Surrounding land mostly cleared with patches of thick vegetation present to the north east and south of the site.
1979	No significant change	Council depot present to the north near Koala Street. To the west of the site there is a large quarry present that appears to be centred on the crest of a hill, where St Peters Oval and St Agnes Village are now located.
1983	Minor excavation appears to have taken place in west of subject area.	No significant change
1997	The site appears to have been incorporated into the rear of the Council depot site and is disturbed by earthworks with various tracks and stockpiles present. A structure (shed?) is located in the east of the site. The downslope side of the Emily Avenue cul- de-sac is constructed on a raised fill embankment	Emily Avenue is visible with residential dwellings either side of the street. Residential dwellings are present to the west in the St Agnes Village site. Rosendahl Reservoir has been constructed to the south and contains water.
2009 (Google Earth)	The site has been partially regraded and is thickly vegetated with grass and some tree regrowth.	Sporting fields have been constructed to the north.
2019 (Google Earth)	No significant change. A mountain bike track traverses across the site.	No significant change

4.3 Site Observations

Fieldwork was undertaken on 11 March 2019. Observations made during the site visit are summarised below:

• A large stockpile of fill material is located in the north west of the site and is approximately 60m x 30m in length and 5m in height; and

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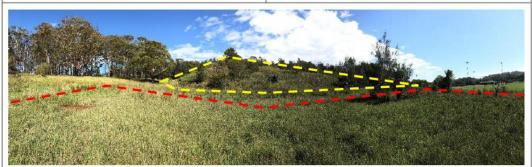
The north eastern corner of the site has been modified by filling works including construction
of a fill embankment around the Emily Avenue cul-de-sac.

A selection of images of the site is presented below.



material in north west of site.

ooking east towards Emily Avenue where the site has been modified by earthworks.



Looking west across site. An uneven fill profile is located in the foreground and is outlined in red. A stockpile of fill material is located in the background, outlined in yellow. Natural slopes to the south (left of image) are vegetated with large trees.

4.4 NSW EPA Records

A check with the NSW EPA website (<u>www.epa.nsw.gov.au</u>) revealed that no notices have been issued on the site under the Contaminated Land Management Act (1997).

4.5 Land Title Search

A list of past registered proprietors and lessors of the site was obtained from the Land Titles Office. A summary of the title details is included in Appendix A.

The title history search revealed the following:

Prior – 1950: Crown Land;

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- 1950 1950: Joseph Edward Campbell, grantee;
- 1950 1951: Alma Beryl McKenna, widow;
- 1951 1954: Charles Max Buchanan, farmer;
- 1954 1957: Sidney George Johnson, farmer;
- 1957 1958: Olive May Johnson, widow Clyde George Johnson, farmer;
- 1958 1964: Vernie William Flanagan, farmer;
- 1964 1969: Charles Francis James, station hand Marjory Evelyn James, his wife;
- 1969 1973: Miriam Sarah James, spinster; and
- 1973 to date: The Council of the Municipality of Port Macquarie.

4.6 Geology

The site is situated in an area of red krasnozem clay soils overlying deeply weathered geological units of the Port Macquarie Block which includes slate, basalt, serpentinite and dolerite.

4.7 Groundwater

A groundwater bore search on the Water NSW website indicates that there are no licensed groundwater bores within 200m of the site boundary. Regional groundwater flow direction typically follows topographic slopes, which for this site would be towards the north.

4.8 Site History Summary

Based on available data the chronological development of the subject site within Lot 302 DP754434 was undertaken as summarised below:

- Prior to 1950 the site was Crown Land;
- The site was owned by various people between 1950 and 1973 when it is likely that the site was cleared and used for farming activities;
- Lot 302 DP754434 was purchased by The Council of the Municipality of Port Macquarie in 1973;
- Aerial photographs indicate that a Council Depot facility was present near Koala Street in 1979 and that by 1997 it had expanded to the south and incorporated the subject site;
- The subject site appears to have been disturbed by earthworks and quarrying operations (?) in 1997 and there was a shed located in the north east corner of the site. The purpose of the shed is not known;
- Aerial photographs indicate that there was a large quarry located to the west of the site from before 1979 and it ceased operations prior to 1997;
- The Emily Avenue residential subdivision on the eastern boundary of the site was constructed between 1983 and 1997; and

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• In 2009 the site had been partially regraded and the shed structure was no longer visible. A mountain bike track was constructed across the undulating site slopes in 2011.

5 SITE CONTAMINATION ASSESSMENT

5.1 Conceptual Site Model

Based on the site observations and knowledge obtained about site activities as outlined above, potential Areas of Concern and Chemicals of Concern were identified for the assessment as outlined in Table 2.

Area of Concern	Mode of Potential Contamination	Chemicals of Concern	Targeted Sampling Location	
AEC1: Soils in vicinity of previous shed	Leakage of fuels/oils from parked vehicles. Demolition of shed.	Heavy Metals, TPH, BTEX, PAH, asbestos	TP1	
AEC2: Fill material /Stockpile	Imported fill of unknown origin	Heavy Metals, TPH, BTEX, PAH, OC/OPP, asbestos	TP1, TP2, TP5, TP6, TP7, TP8, TP10	
Heavy Metals - Arsenic, Cadmium, Chromium, Copper, Lead, Mercury, Nickel and Zinc BTEX - Benzene, Toluene, Ethylbenzene and Xylene TPH - Total Petroleum Hydrocarbons PAH – Polycyclic Aromatic Hydrocarbons OC/OPP – Organochlorine and Organophosphorus Pesticides				

Table 2: Conceptual Site Model

5.2 Field Work

Field work for the assessment was undertaken on 12 March 2019 and included:

- Site walkover to assess visible surface conditions and identify any evidence of contamination, or past activities that may cause contamination; and
- Ten test pits undertaken by a 3.5T mini excavator, logged and sampled by an Engineering Geologist.

Engineering logs of the test pits are presented in Appendix B. The locations of the test pits are shown on Figure 1. They were obtained on site by measurement relative to existing site features

Soil samples were taken from selected depths using disposable gloves and hand tools which were decontaminated between sampling points using Decon90 detergent and deionised water. The samples were collected in acid-rinsed 250mL glass jars and placed in an ice-chilled cooler box.

5.3 Subsurface Profile

The test pits encountered a variable profile including mixed fill materials as summarised in Table 3.

Regional Geotechnical Solutions RGS20789.1-AB 16 April 2019



Test Pit	Depth to Base of Material Layer (m)			
	Topsoil/Fill	Mixed Clay Fill	Topsoil	Residual Soi
TP1	0.25	0.7	-	≥2.0
TP2	0.25	0.6	-	≥2.0
TP3	350		0.25	≥2.0
TP4	-	-	0.25	≥2.0
TP5	0.3	3.0	-	≥3.5
TP6	0.2	≥2.0	274	170
TP7	0.2	≥2.0	127	12
TP8	0.2	0.9	-	≥1.2
TP9			0.1	≥0.5
TP10	0.2	0.4	123	≥2.0

Table 1: Summary of Subsurface Profiles

Images of some excavated profiles are presented below.



5.4 Laboratory Testing

Samples were transported under chain-of-custody conditions to a NATA accredited specialist chemical testing laboratory, to be tested for the following suite of contaminants:

• Polycyclic Aromatic Hydrocarbons (PAH)

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- Total Petroleum Hydrocarbons (TPH)
- Benzene, Toluene, Ethyl-benzene, Xylenes (BTEX)
- Organochlorine Pesticides (OC/OPs)
- Heavy metals (arsenic, cadmium, chromium, cobalt, copper, lead, mercury, and zinc)
- Chromium speciation
- Presence of asbestos in accordance with AS4964

The results are presented in Appendix C.

5.5 Quality Control

Samples were obtained using industry accepted protocols for sample treatment, preservation, and equipment decontamination. A duplicate of TP3(0 - 0.2m) was submitted to the laboratory for analysis as TP3A (0 – 0.2m). Results of the duplicate analysis indicated heavy metal concentrations correlated well between the samples.

In addition to the field QC procedures, the laboratory conducted internal quality control testing including surrogates, blanks, and laboratory duplicate samples. The results are presented with the laboratory test results in Appendix B.

On the basis of the results of the field and laboratory quality control procedures and testing the data is considered to reasonably represent the concentrations of contaminants in the soils at the sample locations at the time of sampling and the results can be adopted for this assessment.

6 SITE CONTAMINATION ASSESSMENT - RESULTS

An appraisal of the laboratory test results presented in Appendix C is provided below with reference to the adopted soil investigation and screening levels discussed in Section 4.1.

- Concentrations of lead in samples TP1 (0 0.2m) and TP1 (0.35 0.45m) exceeded the health investigation criteria for a residential site;
- Elevated concentrations of Total Chromium were present in most samples. Speciation
 analysis of the sample with the highest total chromium concentration revealed Chromium III
 only and Chromium VI concentrations were below laboratory detection limit. There is no
 Health Investigation Level for Chromium III;
- The Port Macquarie area is underlain by the Port Macquarie Serpentinite which is an intrusive ultramafic rock that contains elevated concentrations of heavy metals. Subsequent soil development over the metal-rich bedrock has further concentrated the heavy metals present. Studies (Lottermoser, 1997) have shown that elevated background concentrations of chromium occur in Port Macquarie over an area of 10km². The elevated concentrations of Chromium III are therefore considered to be due to natural processes rather than anthropogenic sources;
- Concentrations of the remaining heavy metals were above laboratory detection limit, but were below adopted health investigation criteria for a residential site;
- Asbestos fibres were not detected in the soil samples submitted for analysis;

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- Concentrations of Total Recoverable Hydrocarbon (TRH) and Polycyclic Aromatic Hydrocarbons (PAH) were detected in one sample (TP1, 0.35-0.45m) with PAH (b-a-p) exceeding the adopted residential Health Screening Levels; and
- Concentrations of herbicide/pesticide contaminants were below the laboratory detection limit.

7 ASSESSMENT AND CONCLUSIONS REGARDING SITE CONTAMINATION

A Stage 1 Site Contamination Assessment was required to assess all past and present potentially contaminating activities and contamination types and assess whether the site is suitable for residential development.

7.1 Summary

Based on the results outlined in this report the following points and recommendations are made:

- The property was purchased by the Port Macquarie Hastings Council in 1973 and the site appears to have formed part of the Council depot in 1997 when a shed structure was visible in the north east corner of the site;
- The site is currently being used as a mountain bike course;
- A large stockpile of uncontrolled clay fill is located in the west of the site as shown in Figure
 1. It contains mixed clay fill with trace foreign materials including brick and plastic fragments
 and was >3m deep. The extent of the fill has not been clearly defined;
- Mixed clay fill is present in the north east of the site near Emily Avenue;
- A thin layer of black bituminous material, possibly comprising surplus material from an old tar
 patching truck operating from the former Council depot was present at 0.3m in TP1 in the
 mixed clay fill. Hydrocarbon and metal impacted soils at TP1exceeded the adopted health
 investigation criteria for a Residential Type A site and will require remediation if residential
 development is proposed. The extent of the bituminous material has not been defined;
- It is noted that the elevated concentrations of PAH (b-a-p) also exceed health investigation guidelines for a Recreational C land use as per NEPM 2013 (Recreational C includes public open space such as parks, playgrounds, playing fields (e.g. ovals), secondary schools and unpaved footpaths) and that remediation would therefore be recommended of the PAH impacted soils even if the site is not developed for recreational purposes;
- A Stage 2 Contamination Assessment is recommended as detailed in Section 7.2;
- A Remedial Action Plan will be required for remediation works as detailed in Section 7.3;
- Should any fill material require removal off-site, it will require assessment for a Resource Recovery Exemption under Part 9, Clauses 91 and 92 of the Protection of the Environment Operations (Waste) Regulation 2014 in accordance with the Resource Recovery Order under Part 9, Clause 93 of the Protection of the Environment Operations (Waste) Regulation 2014 – the Excavated Natural Material (ENM) Order 2014.

Regional Geotechnical Solutions RGS20789.1-AB 16 April 2019



7.2 Stage 2 Contamination Assessment

The site contained a number of Areas of Concern and Chemicals of Concern and there are some areas that will require a Stage 2 Contamination assessment and localised remediation. A Stage 2 Contamination assessment is therefore recommended for the following Areas of Concern identified within the site:

- AEC 1 Layer of bituminous material encountered in TP1 in the vicinity of a former shed requires further assessment to determine the extent of the contamination, and likely waste classification of the material that should be removed and disposed of offsite to an appropriately licensed landfill;
- AEC 2 The extent of the filled areas in the north site have not been clearly defined. A detail site survey is recommended to assist delineate areas that have been modified by earthworks. Further investigation of the fill areas is then recommended using a medium size excavator to assess extent, depth and properties of the existing fill. It is noted that this may also be of benefit to future geotechnical assessments of the site.

7.3 Remedial Action Plan (RAP)

A Remedial Action Plan (RAP) will need to be developed for the site for remediation works. The RAP will outline the methodology required for necessary remedial works including the localised removal of soils effected by heavy metal and hydrocarbon contaminants. The NSW OEH (2011) Guidelines for Consultants Reporting on Contaminated Sites provides requirements that are to be considered in the preparation of RAPs which should address the following:

- Remediation goals;
- Discussion of the extent of remediation required;
- Discussion of possible remediation options;
- Rationale for selecting the preferred remedial option;
- Proposed validation testing;
- Contingency plans for unexpected findings; and
- Health, Safety, Security and Environmental (HSSE) requirements

A Validation Report will be required following the remedial works, summarising the results of the soil remediation and validation of the site. The report should be prepared in accordance with relevant sections of the NSW OEH (2011) Guidelines for Consultants Reporting on Contaminated Sites.

Remediation is likely to comprise the identification of the heavy metal and hydrocarbon impacted fill located at TP1. The fill is then likely to require excavation to a depth of approximately 0.5m below surface to remove the impacted material.

The excavated material will require temporary stockpiling on site and waste classification prior to disposal at a licensed landfill facility in accordance with NSW EPA requirements. Results of testing to date indicate the soils present are likely to meet the requirements for General Solid Waste.

The excavations should then be validated by a suitably qualified person to assess the efficacy of the remediation work in removing the contaminated material from the area. The results of the validation sampling should be presented in a Validation Report with a statement regarding the site's suitability for the proposed development from a contamination viewpoint.

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7.4 Conclusion

Based on the results obtained in this investigation the site is likely to be suitable for the proposed residential land use with regard to the presence of soil contamination provided the recommendations and advice of this report are adopted, and site preparation works are conducted in accordance with appropriate site management protocols and legislative requirements.

8 LIMITATIONS

The findings presented in the report and used as the basis for recommendations presented herein were obtained using normal, industry accepted environmental design practises and standards. To our knowledge, they represent a reasonable interpretation of the general condition of the site. Under no circumstances, however, can it be considered that these findings represent the actual state of the site at all points.

If site conditions encountered during construction vary from those discussed in this report, or, if potentially contaminated soils that contain foreign materials, or, soils with strong odours are encountered during future works then Regional Geotechnical Solutions Pty Ltd should be contacted for further advice.

This report alone should not be used by contractors as the basis for preparation of tender documents or project estimates. Contractors using this report as a basis for preparation of tender documents should avail themselves of all relevant background information regarding the site before deciding on selection of construction materials and equipment.

If you have any questions regarding this project, or require any additional consultations, please contact the undersigned.

For and on behalf of Regional Geotechnical Solutions Pty Ltd

Prepared by

Tim Morris Associate Engineering Geologist

Reviewed by

Andre Ading

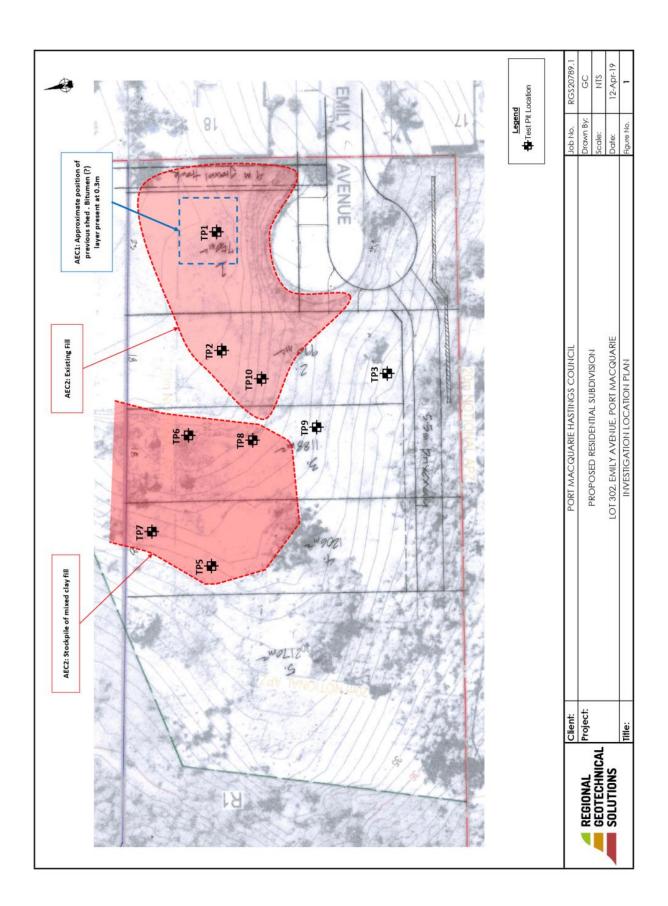
Andrew Hills Senior Environmental Engineer

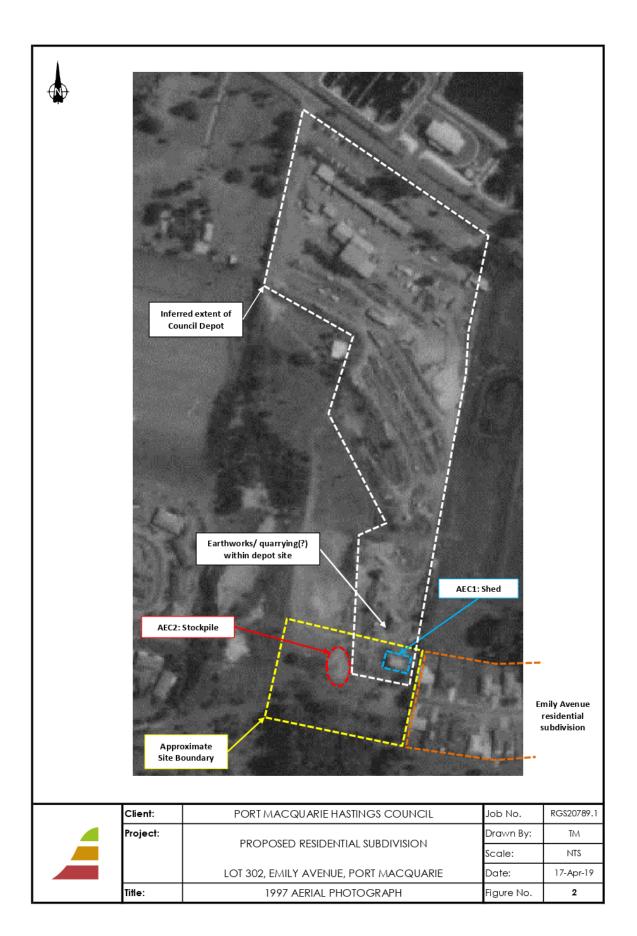
Regional Geotechnical Solutions RGS20789.1-AB 16 April 2019



Figures

Regional Geotechnical Solutions RGS20789.1-AB 16 April 2019







Appendix A

Site History Documentation

Regional Geotechnical Solutions RGS20789.1-AB 16 April 2019

> Item 05 Attachment 6

ADVANCE LEGAL SEARCHERS PTY LTD

(ACN 147 943 842) ABN 82 147 943 842

18/36 Osborne Road, Manly NSW 2095
 Telephone:
 +612
 9977
 6713

 Mobile:
 0412
 169
 809

 Email:
 search@alsearchers.com.au

01st March 2019

REGIONAL GEOTECHNICAL SOLUTIONS PTY LTD 5D / 23 Clarence Street, PORT MACQUARIE, NSW, 2444

Attention: Tim Morris

RE:

Emily Avenue, Port Macquarie RGS20789.1

Current Search

Auto Consol 12271-82 (title attached) Lots 227 & 302 DP 754434 Crown Plan 2254-666 (plan attached) Dated 01st March 2019 Registered Proprietor: **THE COUNCIL OF THE MUNICIPALITY OF PORT MACQUARIE**

-2-

Title Tree Lots 227 & 302 DP 754434

Auto Consol 12271-82

Certificate of Title Volume 12271 Folio 82

Certificate of Title Volume 6297 Folio 156

Certificate of Title Volume 6162 Folio 149

Crown Land

Item 05 Attachment 6

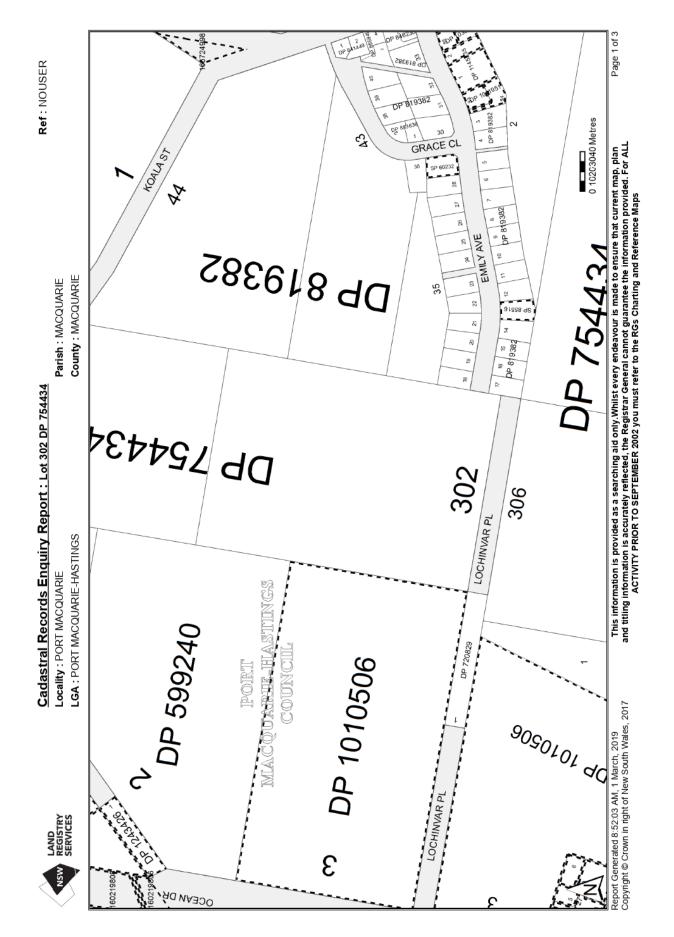
-3-

Summary of proprietor(s) Lots 227 & 302 DP 754434

Year

Proprietor(s)

	(Lots 227 & 302 DP 754434 – A/C12271-82)
1988 - todate	The Council of the Municipality of Port Macquarie
	(Portions 227 & 302 Parish Macquarie – CTVol 12271 Fol 82)
1973 - 1988	The Council of the Municipality of Port Macquarie
1973 - 1973	Miriam Sarah James, spinster
	(Portions 227 & 302 Parish Macquarie – Area 23 Acres 3 Roods 37
	Perches – CTVol 6297 Fol 156)
1969 - 1973	Miriam Sarah James, spinster
1964 - 1969	Charles Francis James, station hand
	Marjory Evelyn James, his wife
1958 - 1964	Vernie William Flanagan, farmer
1957 – 1958	Olive May Johnson, widow
	Clyde George Johnson, farmer
1954 - 1957	Sidney George Johnson, farmer
1951 – 1954	Charles Max Buchanan, farmer
	(Portions 302 & 303 Parish Macquarie – Area 13 Acres 3 Roods 17
	Perches & 14 Acres 1 Rood 24 Perches – CTVol 6162 Fol 149)
1950 - 1951	Alma Beryl McKenna, widow
1950 - 1950	Joseph Edward Campbell, grantee
	(Portion 302 Parish Macquarie – Area 13 Acres 3 Roods 17 Perches)
Prior – 1950	Crown Land
(1906 – 1950)	(Conditional Purchase 1906-6 Grafton to Joseph Edward Campbell)



DEVELOPMENT ASSESSMENT PANEL 06/05/2020

	Cadastral Records		ot 302 DP 754434 Ref : NOUSI Parish : MACQUARIE
SERVICES	LGA : PORT MACQUARIE		County : MACQUARIE
	Status	Surv/Comp	Purpose
P271189			
ot(s): 1, 4, 5, 6, 7			
🖳 DP609064	HISTORICAL	SURVEY	SUBDIVISION
P825844			
ot(s): 16	DEGISTERED		
Q DP271189	REGISTERED	SURVEY	COMMUNITY PLAN
P1010506			
ot(s): 3 Image: 3 DP609064	HISTORICAL	SURVEY	SUBDIVISION
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ot(s): 53, 54			
🖳 DP819382	HISTORICAL	SURVEY	SUBDIVISION
P1035627			
ot(s): 55, 56			
🖳 DP819382	HISTORICAL	SURVEY	SUBDIVISION
🧕 DP1011951	HISTORICAL	SURVEY	SUBDIVISION
DP1029982	HISTORICAL	SURVEY	SUBDIVISION
P1095319			
ot(s): 1			
🦳 DP865939	HISTORICAL	SURVEY	SUBDIVISION
🦳 DP1129710	REGISTERED	SURVEY	EASEMENT
🖳 DP1134465	REGISTERED	SURVEY	EASEMENT
P1119462			
ot(s): 4			
🦳 DP1129710	REGISTERED	SURVEY	EASEMENT
🧕 DP1134465	REGISTERED	SURVEY	EASEMENT
🖳 DP1186143	REGISTERED	COMPILATION	CONSOLIDATION
ot(s): 4, 5			
🦳 DP865939	HISTORICAL	SURVEY	SUBDIVISION
🖳 DP1095319	HISTORICAL	COMPILATION	RESUMPTION OR ACQUISITION
ot(s): 5			
🧟 DP47389	HISTORICAL	SURVEY	ROADS ACT, 1993
P1145235			
ot(s): 1, 2			
DP819382	HISTORICAL	SURVEY	SUBDIVISION
Q DP1011951	HISTORICAL	SURVEY	SUBDIVISION
Q DP1029982	HISTORICAL	SURVEY	SUBDIVISION
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P85516			
DP819382	HISTORICAL	SURVEY	SUBDIVISION
bad			
olygon Id(s): 1602198	16		
DP1243426	REGISTERED	SURVEY	ROADS ACT, 1993

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Page 2 of 3

DEVELOPMENT ASSESSMENT PANEL 06/05/2020

	Cadastral Records Enquiry Repo	rt: Lot 302 DP 754434 Ref : NOUSER
NSW LAND REGISTRY	Locality : PORT MACQUARIE	Parish : MACQUARIE
SERVICES	LGA : PORT MACQUARIE-HASTINGS	County : MACQUARIE
Plan	Surv/Comp	Purpose
DP271189 DP571740 DP599240 DP622546 DP720829 DP734497 DP754434 DP819382 DP825844 DP828014 DP841449 DP846238 DP855949 DP883636 DP1010506 DP1011951 DP1035627 DP1095319 DP1119462 DP1145235 DP1243426 SP60232 SP85516	SURVEY COMPILATION SURVEY SURVEY COMPILATION SURVEY COMPILATION SURVEY SURVEY SURVEY SURVEY SURVEY SURVEY SURVEY SURVEY SURVEY SURVEY SURVEY SURVEY SURVEY SURVEY SURVEY SURVEY SURVEY SURVEY SURVEY SURVEY SURVEY SURVEY SURVEY SURVEY SURVEY SURVEY SURVEY SURVEY SURVEY SURVEY SURVEY SURVEY SURVEY SURVEY SURVEY SURVEY SURVEY SURVEY SURVEY SURVEY SURVEY SURVEY SURVEY SURVEY	COMMUNITY PLAN DEPARTMENTAL SUBDIVISION CROWN FOLIO CREATION SUBDIVISION CROWN ADMIN NO. SUBDIVISION SUBDIVISION SUBDIVISION SUBDIVISION SUBDIVISION SUBDIVISION SUBDIVISION SUBDIVISION SUBDIVISION SUBDIVISION SUBDIVISION RESUMPTION OR ACQUISITION RESUMPTION OR ACQUISITION RESUMPTION OR ACQUISITION SUBDIVISION SUBDIVISION SUBDIVISION RESUMPTION OR ACQUISITION SUBDIVISION SUBDIVISION SUBDIVISION SUBDIVISION SUBDIVISION SUBDIVISION SUBDIVISION SUBDIVISION SUBDIVISION SUBDIVISION SUBDIVISION SUBDIVISION SUBDIVISION SUBDIVISION SUBDIVISION SUBDIVISION SUBDIVISION SUBDIVISION SUBDIVISION SUBDIVISION SUBDIVISION SUBDIVISION SUBDIVISION SUBDIVISION SUBDIVISION SUBDIVISION SUBDIVISION SUBDIVISION SUBDIVISION SUBDIVISION SUBDIVISION SUBDIVISION SUBDIVISION SUBDIVISION SUBDIVISION SUBDIVISION SUBDIVISION SUBDIVISION SUBDIVISION SUBDIVISION SUBDIVISION SUBDIVISION SUBDIVISION SUBDIVISION SUBDIVISION SUBDIVISION SUBDIVISION SUBDIVISION SUBDIVISION SUBDIVISION SUBDIVISION SUBDIVISION SUBDIVISION SUBDIVISION SUBDIVISION SUBDIVISION SUBDIVISION SUBDIVISION SUBDIVISION SUBDIVISION SUBDIVISION SUBDIVISION SUBDIVISION SUBDIVISION SUBDIVISION SUBDIVISION SUBDIVISION SUBDIVISION SUBDIVISION SUBDIVISION SUBDIVISION SUBDIVISION SUBDIVISION SUBDIVISION SUBDIVISION SUBDIVISION SUBDIVISION SUBDIVISION SUBDIVISION SUBDIVISION SUBDIVISION SUBDIVISION SUBDIVISION SUBDIVISION SUBDIVISION SUBDIVISION SUBDIVISION SUBDIVISION SUBDIVISION SUBDIVISION SUBDIVISION SUBDIVISION SUBDIVISION

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 ACTIVITY PRIOR TO SEPTEMBER 2002 you must refer to the RGs Charting and Reference Maps.

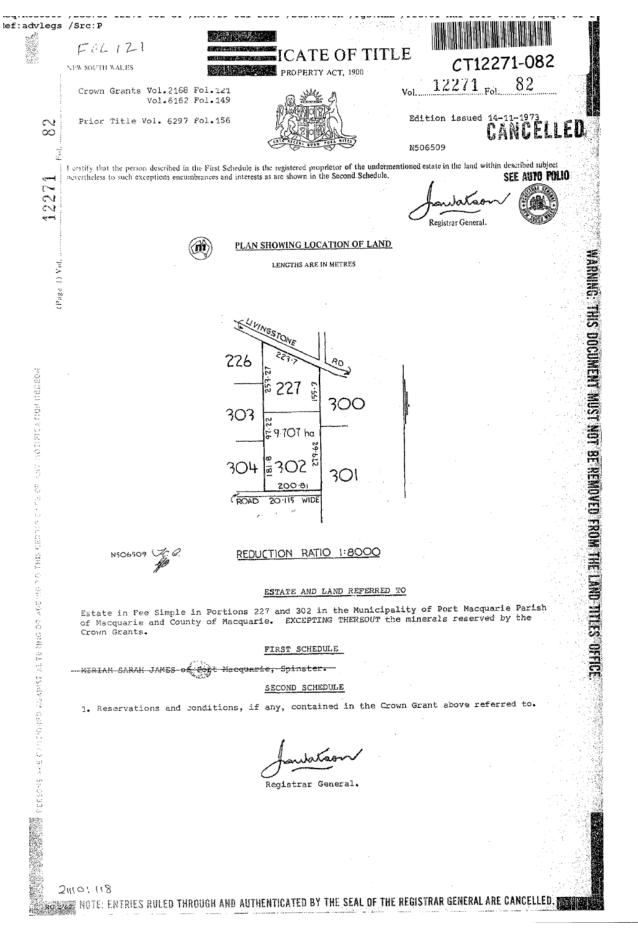
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Page 3 of 3

DEVELOPMENT ASSESSMENT PANEL 06/05/2020



DEVELOPMENT ASSESSMENT PANEL 06/05/2020



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NEW SOUTH WALES LAND REGISTRY SERVICES - TITLE SEARCH

FOLIO: AUTO CONSOL 12271-82

SEARCH DATE	TIME	EDITION NO	DATE
1/3/2019	8:22 AM	_	-

VOL 12271 FOL 82 IS THE CURRENT CERTIFICATE OF TITLE

LAND

LAND DESCRIBED IN SCHEDULE OF PARCELS LOCAL GOVERNMENT AREA PORT MACQUARIE-HASTINGS PARISH OF MACQUARIE COUNTY OF MACQUARIE TITLE DIAGRAM SEE SCHEDULE OF PARCELS

FIRST SCHEDULE

THE COUNCIL OF THE MUNICIPALITY OF PORT MACQUARIE (T N479989)

SECOND SCHEDULE (1 NOTIFICATION)

*** END OF SEARCH ***

1 LAND EXCLUDES MINERALS AND IS SUBJECT TO RESERVATIONS AND CONDITIONS IN FAVOUR OF THE CROWN - SEE CROWN GRANT(S)

NOTATIONS

UNREGISTERED DEALINGS: NIL

SCHEDULE OF PARCELS LOT 227 IN DP754434 LOT 302 IN DP754434 TITLE DIAGRAM CROWN PLAN 1852.666 CROWN PLAN 2254.666.

advlegs

PRINTED ON 1/3/2019

Obtained from NSW LRS on 01 March 2019 07:22 AM AEST

* Any entries preceded by an asterisk do not appear on the current edition of the Certificate of Title. Warning: the information appearing under notations has not been formally recorded in the Register.

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Appendix **B**

Results of Field Investigations

Regional Geotechnical Solutions RGS20789.1-AB 16 April 2019

	REGIONAL ENGINEERING LOG - TEST PIT TEST PIT NO: GEOTECHNICAL CLIENT: Port Macquarie Hastings Council PAGE:													ю:	TP1				
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METHOD	WATER	SAMPLES	RL (m)	DEPTH (m)	GRAPHIC LOG	CLASSIFICATION SYMBOL	МА			Soil type, plast minor compor,			MOISTURE	CONDITION	CONSISTENCY DENSITY	Test Type	Result		ture and additional observations
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METHOD	WATER	SAMPLES	RL (m)	DEPTH (m)	GRAPHIC LOG	CLASSIFICATION SYMBOL			Soil type, plasticit r,minor component		MOISTURE CONDITION	CONSISTENCY DENSITY	Test Type	Result	Structure and additional observations
BUCKET	Not Encountered	E 0.20m		-		СН	fine to	coarse grained, tra	ium plasticity, brov aces of grass roots ne to coarse, suba	supto	M < W	Fb			FILL/TOPSOIL
300mm TOOTHED	Not End			0.5		СН	FILL: Sand fi	Sandy CLAY, med ne to coarse grain n, subangular	ium plasticity, brov ied, traces of Grav	wn/grey, el fine to		Fb / VSt	не	350	FILL
E E							0.60m						нР	600	
300m				- - 1.0_ -		СН		ne to coarse grain	b high plasticity, or led, traces of Graw			Fb / H			RESIDUAL SOIL
Situ I col				1. <u>5</u> - - 2.0			2.00m								
	\square							erminated at 2.00	m						
	GEND:			- 2.5 - - - - - - - - - - - - - - - - - - -	npples ar	nd Tests				Consist			_	CS (IP)	
Wa				ц,	50mm	n Diame	ter tube sample	e		VS S	Very Soft Soft	:		25 5 - 50	D Dry M Moist
		ter Level te and time sl	hown	CBR	Bulk s	amplet	or CBR testing			F	Firm		50	0 - 100	W Wet
	– Wa	ter Inflow		E ASS			l sample Soil Sample			St VSt	Stiff Very Stiff			00 - 200 00 - 400	
~		ter Outflow		В	Bulk S	Sample				H Fb	Hard Friable		×	400	
	ata Ch	anges radational or		Field Test						Density	. V		ery Lo	oose	Density Index <15%
	tr C	ansitional stra efinitive or dis rata change		PID DCP(x-y) HP	Dynan	nic pen	on detector rea etrometer test (meter test (UC	test depth interval s	hown)		L MC D VD	D M D	bose lediur ense ery D		Density Index 15 - 35% e Density Index 35 - 65% Density Index 65 - 85% Density Index 85 - 100%

					E١	NGIN	IEE	RING LO	DG - TEST	ΓΡΙΤ				т	EST	PITN	10:	TP3
			IONAL	L NICAL	CL	IENT:		Port	Macquarie H	astings Counc	il			Р	AGE	2		1 of 1
	ź		UTION		PR	OJEC	T NA	ME: Prop	oosed Resider	ntial Subdivisio	n			J	ові	NO:		RGS20789.1
					SIT	E LO	CATI	ON: Emi	ly Avenue, Po	rt Macquarie				L	OG	GED E	BY:	GC
					TE	ST LO	CAT		er to figure 1						ATE			
	~	PMENT T		Min		avato				EASTIN	<u>~</u> .	49070	4	SURF				
		PITLEN		2.0			DTH:	0.4 m		NORTH				DATU		. RL.	AHD)
		Drilling and	Samplin	a				Materia	al description ar	d profile informat	ion				Fiel	d Test		
	Т		1		+		z							>				
METHOD		SAMPL		tL DEF n) (m	тн 1)	GRAPHIC LOG	CLASSIFICATION SYMBOL			DN: Soil type, pla Nour,minor comp			MOISTURE CONDITION	CONSISTENCY DENSITY	Test Type	Result		ture and additional observations
RICKET		E 0.20m			-		CL			AY, low plasticity rained, some tree			M < Wp	Fb			TOPSOII	L
300mm TOOTHED RUCKET									y CLAY: Mediu fine to coarse g gular	m to high plastici rained, traces of	ty, ora Grave	ange, I, fine,		Fb / H			RESIDU. HP = >50	
00								Sand		/ledium plasticity,			;				EXTREM	TELY WEATHERED
In Situ	_	_		:	2.0			2.00m	Toominated at 2	00			_					
8.	EGEN	ND:		:	2.5 - - - - - - - - - - - - - - - - - - -	oles ani	d Tests		Terminated at 2			<u>Consist</u> VS	ency Very Soft			CS (kP2) Moistr	u <u>re Condition</u> Dry
<u>n</u>	later ∠∖	Water Level		u,				ter tube samp				s	Soft	L	2	5 - 50	м	Moist
	_	Date and tir	ne showr	CBR 1) E				or CBR testin Isample	g			F St	Firm Stiff			0 - 100 00 - 200	w w	Wet Plastic Limit
		Water Inflow		ASS		Acid S	ulfate S	Soil Sample				VSt	Very Stiff	f	20	00 - 400		Liquid Limit
s -		Water Outflo Changes	w	В		Bulk S	ample					H Fb	Hard Friable		>	400		
		Gradation transitiona Definitive strata cha	l strata or distict	Field I PID DCP(x HP	:-y)	Dynam	nic pene	on detector re etrometer test meter test (U	(test depth interv	al shown)		<u>Density</u>		La D M D	ery Lo bose lediur ense ery D	n Dens	Densit e Densit Densit	ty Index <15% ty Index 15 - 35% ty Index 35 - 65% ty Index 65 - 85% ty Index 85 - 100%

				I	ENGI	NEE	RING	LOG -	TEST F	чт				I	EST	r PIT I	NO:	TP4
		REGIO			LIENT	:	I	Port Maco	quarie Hast	ings Council				F	AG	E:		1 of 1
		SOLUT			ROJE		ME:	Proposed	Residentia	l Subdivision	I			J	ов	NO:		RGS20789.1
				\$	SITE LO	CATI	ON:	Emily Ave	nue, Port N	/lacquarie				L	.OG	GED I	BY:	GC
				٦	IEST L	OCAT		Refer to fi		-					DAT			
E				Mini E	Excavat	or			-	EASTING	•.	49063	20 m	SURF	A .CE	- DI ·		
		IT LENGT		2.0 m		IDTH:	0.4	1 m		NORTHIN				DATU		I KL.	AHI	D
H		lling and Sam							ription and p	rofile informatio					_	ld Test		
			-iping		+	z									1.10	1000		
METHOD	WATER	SAMPLES	RL (m)	DEPTH (m)	GRAPHIC LOG	CLASSIFICATION SYMBOL	МАТ			Soil type, plas r,minor compo			MOISTURE CONDITION	CONSISTENCY DENSITY	Test Type	Result		ture and additional observations
BUCKET	Not Encountered					CL	р	OPSOIL: S bale grey, S and grass ro	and fine to m	low plasticity, edium grained	dark , son	t brown, ne trace	M < W _P	Fb			TOPSO	L
300mm TOOTHED BUCKET	Not Enc	0.30m E (0.40m)		0.5 1.0		СН	S S S	Sandy CLA Sand fine to ubangular	Y: Medium to	o high plasticity ed, traces of C	y, ora Grave	ange/red, I fine,		Fb / H	4		RESIDL HP = >6	JAL SOIL 00kPa
				1. <u>5</u> 2.0		СН				ium plasticity, nottling, traces							EXTRE/ CHERT HP = >6	VELY WEATHERED
					-		н	lole Termin	ated at 2.00	m								
	GEND:			2.5 3.0 3.5		d Tests						Consist	tency				a) Moist	ture Condition
Wa	iter						-					VS	Very So	ft	<	25	- <u>-</u>	Dry
	-	ter Level		U, CBR			ter tube s for CBR to					S F	Soft Firm			5 - 50 0 - 100	M W	Moist Wet
		te and time sł ter Inflow	hown)	E	Enviro	nmenta	al sample	-				St	Stiff	ff	1	00 - 20	o w,	Plastic Limit
		ter Outflow		ASS B		Sulfate S Sample	Soil Samp	pie				VSt H	Very Sti Hard			:00 - 40(400) w	Liquid Limit
<u>Str</u>	ata Ch			Field Tes								Fb Density	Friable		en/ l	0000	Denci	ity Index <15%
_	tr D	Gradational or ansitional stra lefinitive or dis trata change		PID PID DCP(x-y) HP	Photo Dynar	nic pen	etrometer	or reading (p r test (test de st (UCS kPa	epth interval s	hown)		Density	2 V L N D V		/ery L/ oose /lediur)ense /ery D	m Dens	Dens e Dens Dens	ty Index <15% ity Index 15 - 35% ity Index 35 - 65% ity Index 65 - 85% ity Index 85 - 100%

				E	ENGI	NEE	RING LOG - TEST PIT			т	EST		10: TP 5
		REGIO			LIENT		Port Macquarie Hastings Council			F	AGE	E:	1 of 1
		SOLUT			ROJE		ME: Proposed Residential Subdivision			J	ові	NO:	RGS20789.1
				5	SITE LO	CAT	ON: Emily Avenue, Port Macquarie			L	.OG(GED E	BY: GC
				٦	EST L	OCAT	ION: Refer to figure 1			C	ATE	:	
EQ	UIPM	ENT TYP	E:	Mini E	xcavato	or	EASTING:	4906	52 m 🕴	SURF	ACE	RL:	
TE	ST PI	TLENGT	H:	2.0 m	w	IDTH:	0.4 m NORTHING:	65196	10 m I	DATU	M:		AHD
	Drill	ing and San	npling		ļ		Material description and profile information				Fiel	ld Test	
METHOD	WATER	SAMPLES	RL (m)	DEPTH (m)	GRAPHIC LOG	CLASSIFICATION SYMBOL	MATERIAL DESCRIPTION: Soil type, plasticity characteristics,colour,minor components		MOISTURE CONDITION	CONSISTENCY DENSITY	Test Type	Result	Structure and additional observations
300mm TOOTHED BUCKET	Not Encountered	E 0.20m 1.00m E 1.20m		0.5 0.5 1.0 1.5 2.0 2.5		СН	FILL: Sandy CLAY, medium plasticity, orange/brown/grey, Sand fine to coarse, tra some Gravel fine to coarse, subangular, trac Cobbles up to 200mm FILL: Sandy CLAY, medium plasticity, brow traces of white/orange/yellow motiling, Sand coarse grained, traces of Gravel, fine to coa subangular, traces of Cobbles up to 200mm	rn, I fine to	M < W,	Fb / VSt			FILL
				3.0 		СН	3.00m Sandy CLAY: Medium to high plasticity, ora Sand fine to medium grained, traces of Grav subangular 3.50m	ange/red /el, fine,	,	Fb / H			RESIDUAL SOIL HP = >600kPa
					-		Hole Terminated at 3.50 m						
				.	-								
					1								
					1								
LEG Wate	END: er			Notes, Sa	mples an	d Tests	<u>k</u>	Consis VS	tency Very Soft		<	CS (kPa 25	Moisture Condition D Dry
		er Level		U, CBR			ter tube sample for CBR testing	S F	Soft Firm			5 - 50 0 - 100	M Moist W Wet
		e and time si		E	Enviro	nmenta	al sample	St	Stiff		10	00 - 200	W, Plastic Limit
		er Inflow er Outflow		ASS B		Sulfate Sample	Soil Sample	VSt H	Very Stiff Hard			00 - 400 400	W _L Liquid Limit
Strat	ta Cha	nges						Fb	Friable	14			Density Index ~15%
	 tra De	radational or Insitional stra Initive or dis rata change	ata	Field Tes PID DCP(x-y) HP	Photo Dynan	nic pen	on detector reading (ppm) etrometer test (test depth interval shown) ymeter test (UCS kPa)	<u>Densit</u>	2 V L ME D VD	L N D	ery Lo oose lediur ense ery D	m Dense	Density Index <15% Density Index 15 - 35% e Density Index 35 - 65% Density Index 65 - 85% Density Index 85 - 100%

ST P	REGIONAL GEOTECHI SOLUTION	Mini E 2.0 m		TH:	Emily Avenue, Port Macquarie Emily Avenue, Port Macquarie EASTIN 0.4 m NORTH Material description and profile informa IATERIAL DESCRIPTION: Soil type, pl characteristics,colour,minor comp FILL: Sandy CLAY, brown/dark brow medium to coarse grained, traces of g	IG: 4907 ING: 65196 tion asticity/particle onents n, Sand rass roots up r, brown, ting, Sand fin	to t	J L D SURF/ DATU	ATE ACE M:	NO: Ged e	1 of 1 RGS20789.1 BY: GC AHD Structure and additional observations FILL/TOPSOIL FILL
Dril MATER	SOLUTION	S F S T Mini E 2.0 m		CL 0.20m	Emily Avenue, Port Macquarie Refer to figure 1 EASTIN 0.4 m NORTH Material description and profile informa IATERIAL DESCRIPTION: Soil type, pl characteristics,colour,minor comp FILL: Sandy CLAY, brown/dark brow medium to coarse grained, traces of g Smm FILL: Sandy CLAY, medium plasticity traces of whitelyellow/pale brown moli to coarse grained, traces of Gravel, fi	IG: 4907 ING: 65196 tion asticity/particle onents n, Sand rrass roots up r, brown, ting, Sand fin	to t		OGC ATE ACE M: Field	GED E	BY: GC AHD Structure and additional observations FILL/TOPSOIL
Dril Dril	PT LENGTH: Illing and Samplin, SAMPLES R (n 0.20m	T Mini E 2.0 m DEPTH (m) 		CATION: DTH: NOIRDHISSED CL 0.20m	Refer to figure 1 EASTIN 0.4 m NORTH Material description and profile information IATERIAL DESCRIPTION: Soil type, pi characteristics, colour, minor comp FILL: Sandy CLAY, brown/dark brown medium to coarse grained, traces of g Smm FILL: Sandy CLAY, medium plasticity traces of white/yellow/pale brown molito to coarse grained, traces of Gravel, fi	ING: 65196 ition asticity/particle onents n, Sand rass roots up r, brown, tling, Sand fin-	to t		ATE ACE M: Fiek	RL:	AHD Structure and additional observations FILL/TOPSOIL
Dril Dril	PT LENGTH: Illing and Samplin, SAMPLES R (n 0.20m	Mini E 2.0 m	Cavator BUN COG COG COG COG COG COG COG COG COG COG	NOTH: NOTICALINAL MARKEN MARKE	EASTIN 0.4 m NORTH Material description and profile informa IATERIAL DESCRIPTION: Soil type, pi characteristics,colour,minor comp FILL: Sandy CLAY, brown/dark brow medium to coarse grained, traces of 5mm FILL: Sandy CLAY, medium plasticity traces of white/yellow/pale brown mol to coarse grained, traces of Gravel, fi	ING: 65196 ition asticity/particle onents n, Sand rass roots up r, brown, tling, Sand fin-	to t		ACE M: Fiek	RL:	Structure and additional observations FILL/TOPSOIL
Dril Dril	PT LENGTH: Illing and Samplin, SAMPLES R (n 0.20m	2.0 m	GRAPHIC LOG LOG	CL 0.20m	0.4 m NORTH Material description and profile informa IATERIAL DESCRIPTION: Soil type, plu characteristics,colour,minor comp FILL: Sandy CLAY, brown/dark brow medium to coarse grained, traces of g 5mm FILL: Sandy CLAY, medium plasticity traces of whitelyellow/pale brown mol to coarse grained, traces of Gravel, fi	ING: 65196 ition asticity/particle onents n, Sand rass roots up r, brown, tling, Sand fin-	to t	CONSISTENCY DENSITY	M: Fiek	d Test	Structure and additional observations FILL/TOPSOIL
WATER	SAMPLES R (rr	DEPTH (m)	GRAPHIC	NOILOSSINGCAN CL 0.20m	Material description and profile informa IATERIAL DESCRIPTION: Soil type, plu characteristics,colour,minor comp FILL: Sandy CLAY, brown/dark brow medium to coarse grained, traces of g 5mm FILL: Sandy CLAY, medium plasticity traces of whitelyellow/pale brown mol to coarse grained, traces of Gravel, fl	tion asticity/particle onents n, Sand rass roots up r, brown, tling, Sand fin-	M < W, MOISTURE	CONSISTENCY DENSITY	Fiek		Structure and additional observations FILL/TOPSOIL
WATER	SAMPLES R (n	DEPTH (m)		CL 0.20m	IATERIAL DESCRIPTION: Soil type, pl characteristics,colour,minor comp FILL: Sandy CLAY, brown/dark brow medium to coarse grained, traces of g 5mm FILL: Sandy CLAY, medium plasticity traces of white/yellow/pale brown mol to coarse grained, traces of Grave, fl	asticity/partick onents n, Sand rass roots up r, brown, tling, Sand fin-	to v ₩				observations FILL/TOPSOIL
	E 0.20m) (m) 		CL 0.20m	FILL: Sandy CLAY, brown/dark brow medium to coarse grained, traces of g 5mm FILL: Sandy CLAY, medium plasticit traces of white/yellow/pale brown mot to coarse grained, traces of Gravel, fi	n, Sand rass roots up r, brown, tling, Sand fine	to v ₩		Test Type	Result	observations FILL/TOPSOIL
Not Encountered	0.20m	-		0.20m	medium to coarse grained, traces of g 5mm FILL: Sandy CLAY, medium plasticity traces of white/yellow/pale brown mol to coarse grained, traces of Gravel, fi	, brown, tling, Sand fin	_ ≥	Fb			
Not Encoun		-			FILL: Sandy CLAY, medium plasticity traces of white/yellow/pale brown mot to coarse grained, traces of Gravel, fi	tling, Sand fin	_ ≥				FILL
Not En		-			traces of white/yellow/pale brown mot to coarse grained, traces of Gravel, fi	tling, Sand fin	•				
	1.50m E 1.60m	1. <u>5</u>									
		2.0	***	2.00m	Hole Terminated at 2.00 m		_	<u> </u>			
er Wa	ater Level ate and time shown ater Inflow ater Outflow <u>anges</u> Gradational or	U CBR E ASS B Field Test PID DCP(x-y)	50mm E Bulk sar Environr Acid Sul Bulk Sar Photoior Dynamia	Diameter tul nple for CB nental sam ifate Soil Si mple nisation det c penetrom	IR testing ple ample ector reading (ppm) eter test (test depth interval shown)	VS F St VSt Fb	Very Soft Soft Firm Stiff Very Stif Hard Friable L V L M	f Ve Le D M	25 25 50 10 20 20 20 20 20 20 20 20 20 20 20 20 20	25 5 - 50 0 - 100 00 - 200 00 - 400 400 xose	D Dry M Moist W Wet O W_p Plastic Limit W_L Liquid Limit Density Index <15%
	ear (Da ∙ Wa I Wa ta Ch	Water Level	er Uater Level Ua (Date and time shown) E Water Outflow ASS I Water Outflow B ta Changes Gradational or PID transitional strata PID	END: Water Level (Date and time shown) Water functional or transitional strata Definitive or distict Mater Solutional strata Definitive or distict Mater Solutional strata Definitive or distict Mater Solutional strata Definitive or distict Mater Solutional strata Mater Solutional Str	END: Motes, Samples and Tests a. 5 Bit Mater Level (Date and time shown) Water flow Water Outflow Water Outflow Mater Outflow B Bulk Sample E Environmental sam Acid Sulfate Soil St B Bulk Sample B B	image: second system Notes, Samples and Tests image: second system 3.5 image: second system Somm Diameter tube sample image: second system CBR image: second system Somm Diameter tube sample image: second system CBR image: second system SS image: second system Since second system image: second system PID image: seco	END: Notes, Samples and Tests Consider the sample a - - a - b - c - c - c - c - c - c - c - c - c - c - c - c - c - c - c - c - c - c - c - c - c - c - c - c - c - c - c - c - c - c - c - c - c - c - c - c - c - c - c - c - <td>image: set of the set of</td> <td>image: set of the set of</td> <td>image: second state of the state of the</td> <td>image: set of the shown) Notes. Samples and Tests Consistency UCS. (MP) image: set of the shown) Notes. Samples and Tests VS Very Soft <25</td> image: set of the shown) Us Somm Diameter tube sample S S soft <25.50	image: set of the set of	image: set of the set of	image: second state of the	image: set of the shown) Notes. Samples and Tests Consistency UCS. (MP) image: set of the shown) Notes. Samples and Tests VS Very Soft <25

				E	NGI	NEE	RING	LOG -	TEST P	IT			т	EST		10:	TP7
	4	REGIO								ngs Council			Р	AGE	•		1 of 1
		GEOTE SOLUT			ROJE		ME: F	Proposed I	Residential	Subdivision			J	ові	NO:		RGS20789.1
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			_						<u></u>								
		ENT TYPE T LENGTH		2.0 m	xcavato W	or IDTH:	0.4	m		EASTING: NORTHING:	49066		SURF. DATU		RL:	AHD)
H		ing and Sam		2.0 11					iption and pro	ofile information	001000			_	d Test	1	-
						z							<u>۲</u>				
METHOD	WATER	SAMPLES	RL (m)	DEPTH (m)	GRAPHIC LOG	CLASSIFICATION SYMBOL	MAT	ERIAL DES character	CRIPTION: { ristics,colour,	Soil type, plasticit minor componen	:y/particle ts	MOISTURE CONDITION	CONSISTENCY DENSITY	Test Type	Result		ture and additional observations
CKET	ntered					CL	m			prown, Sand fine ass roots up to 5r		< W _p	Fb			FILL/TO	PSOIL
300mm TOOTHED BUCKET	Not Encountered			0.5		СН	0.20m FI W	ILL: Sandy hite/yellow r	CLAY, orang	e/red, traces of d fine to coarse,		×	Fb / H	-		FILL	
2				2.0		 	2.00m	ala Tarmina	ted at 2.00 n								
				2.5 3.0 3.5													
~ ~	: Wat (Dat - Wat ∎ Wat ∎ Cha ata Cha tra G tra De	er Level e and time sh er Inflow er Outflow nges radational or unsitional stra sfinitive or dis rata change	hown) Ita	Notes, Sa Ug CBR E ASS B Field Test PID DCP(x-y) HP	50mm Bulk s Enviro Acid S Bulk S Bulk S S Photo Dynan	n Diame sample f onmenta Sulfate S Sample ionis ation	ter tube s for CBR te al sample Soil Samp on detecto etrometer	esting ble br reading (p	pth interval sh	own)	Consis VS F St VSt H Fb Densit	Very Soft Soft Firm Stiff Very Stiff Hard Friable	f Vi La D M D	2: 5(2(2(2(2(2(2(2(2(2(2(2(2(2(n Dens	D M W W W D D Ensi D Ensi D Ensi D Ensi	ure Condition Dry Moist Wet Plastic Limit Liquid Limit ty Index <15% ty Index 15 - 35% ty Index 35 - 65% ty Index 85 - 100%

				E	NGI	NEE	RING LOG - TEST PIT			т	EST	PIT N	io: TP8
		REGIOI				:	Port Macquarie Hastings Council			Р	AGE	2	1 of 1
		SOLUT			ROJE		AME: Proposed Residential Subdivision			J	ови	10:	RGS20789.1
				s		CATI	ION: Emily Avenue, Port Macquarie			L	OGO	GED B	Y: GC
							TION: Refer to figure 1				ATE		
								40070					
		IENT TYPE IT LENGTI		Mini E 2.0 m		JIDTH:	EASTING: : 0.4 m NORTHING:	49070 65196		SURF/ DATU		RL.	AHD
	Dril	ling and San	npling				Material description and profile information				Fiel	d Test	
						NO				5			
무	Ľ۳	SAMPLES	RL	DEPTH	문의	ICAT BOL	MATERIAL DESCRIPTION: Soil type, plasticit	y/particle	I UR	NEN I	Type	Result	Structure and additional observations
METHOD	WAT	SAMPLES	(m)	(m)	GRAPHIC LOG	CLASSIFICATION SYMBOL	characteristics,colour,minor component	S	MOISTURE	CONSISTENCY DENSITY	Test Type	Re	
					0	CLA			~0	8	Ľ		
KET	Not Encountered			_		CL	FILL: Sandy CLAY, low plasticity, dark bro fine to medium, some grass roots up to 5m		< W _P	Fb			FILL/TOPSOIL
BUC	Dund			-		СН	0.20m FILL: Sandy CLAY, medium plasticity,		_ ž	Fb / H			FILL
딮	Ē			-			orange/brown, traces of grey mottling, trace	es of					HP = >600kPa
Ę	2			0.5	***		Gravel, fine to coarse, subangular						
μ													
300mm TOOTHED BUCKET													
	~												
				10		СН	0.90m Sandy CLAY: Medium plasticity, orange/re		-				RESIDUAL SOIL
	1.0						medium to coarse grained, traces of Gravel subangular						
	120m												
				-			Hole Terminated at 1.20 m						
				-									
				1.5									
8				-									
u n Sd				2.0									
ab an				-									
Jangel													
2003/2019 16:12 8.30.004 Dangel Lab and In Sriu 1 co													
7 8.30				2.5									
1.01 R				-									
200				-									
N7 <6													
INGFI 6>>				3.0									
<pre>CLIMI</pre>				-									
CL2				-									
300				-									
1.88.1				3.5									
170014													
2				-									
Ē				-									
BOREHOLE - IESI PII ROSZW89.1 LOGS.GPJ <				-									
	SEND:			Notes, Sar	nples an	d Tests	<u>8</u>	Consis VS	tency Very Soft			CS (kPa 25	Moisture Condition D Dry
						eter tube sample	s	Soft		25	5 - 50	M Moist	
	(Date and time shown) CBR Bulk sample for CB E Environmental sam			nmenta	al sample	F St	Firm Stiff		10) - 100)0 - 200			
	─ Water Inflow ASS Acid Sulfate Soil San ◄ Water Outflow B Bulk Sample							VSt H	Very Stiff Hard			00 - 400 100	W Liquid Limit
Stra	ata Cha	anges		Field Test				Fb	Friable	14			Density Index <15%
UB 1:04:4:GE	transitional strata				Photo		ion detector reading (ppm)	Density	- - L	Lo	ery Lo pose		Density Index <15% Density Index 15 - 35%
		efinitive or dis rata change	DCP(x-y) HP			netrometer test (test depth interval shown) ometer test (UCS kPa)		ME D		lediun ense	n Dense	 Density Index 35 - 65% Density Index 65 - 85% 	
2	31	shango							VD) Ve	ery D	ense	Density Index 85 - 100%

				E	NGI	NEE	RING	G LOG - TE	ST PIT				т	EST		ю: ТР9	
	4	REGION GEOTE	CA1 C	LIENT	:		Port Macquari	e Hastings Counc	il			Р	AGE	E:	1 of 1		
		SOLUT			ROJE		ME:	Proposed Res	idential Subdivisio	n			J	ові	NO:	RGS20789.1	
				S		CATI	ON:	Emily Avenue	Port Macquarie			LOGGED BY: GC					
								Refer to figure 1					DATE:				
				Mini Ex					EASTIN	<u>~</u> .	49070	7	SURF				
		IENT TYPE IT LENGTH		2.0 m		IDTH:	0	.4 m	NORTH				DATU		. RL.	AHD	
H		ling and Sam							n and profile informat					_	ld Test		
			ping			z			in and prome mornia								
METHOD	WATER	SAMPLES	RL (m)	DEPTH (m)	GRAPHIC LOG	CLASSIFICATION SYMBOL	MA	ATERIAL DESCRI characteristic	PTION: Soil type, pla s,colour,minor comp	sticity	∥particle s	MOISTURE CONDITION	CONSISTENCY DENSITY	Test Type	Result	Structure and additional observations	
KET	Not Encountered				BB	CL			/ CLAY, low plasticity ome grass roots up t			N,	Fb			TOPSOIL	
SUC!	ount					СН	`	Sandy CLAY: M	edium plasticity, oran			1 ≚	Fb / H			RESIDUAL SOIL	
ED	Ш Ш							of Gravel fine to r	nedium, subangular								
OTH	l g			-													
зоот поотнер вискет	-			0.5	[[]]]]]	1	0.50m	Hole Terminated	at 0.50 m			-	-	\vdash	-		
0mr																	
30				1													
				1.0													
				-													
				-													
				-													
				1.5													
				-													
				2.0													
				-													
				-													
				-													
				2.5													
				3.0													
				1													
				1													
				3.5													
	END:			Notes, San	nples ar	nd Tests	3				Consist				L CS (kPa 25		
Wat		er Level		U,				esample			VS S	Very Soft Soft		2	25 5 - 50	D Dry M Moist	
*		er Level e and time sh	hown)	CBR E			for CBR al sam pi	testing le			F St	Firm Stiff			0 - 100 00 - 200	W Wet W Plastic Limit	
►	- Water Inflow ASS Acid Sulfate			Sulfate S					VSt	Very Stiff		20	00 - 400	1 0			
Stra	→ Water Outflow B Bulk San trata Changes				Sample					H Fb	Hard Friable		×	400			
<u></u>	Gradational or Field Tes					ionie -t'	on dete	ntor reading (new)			Density	. V		ery Lo	oose	Density Index <15%	
	transitional strata PID Definitive or distict DCP(Dynar	nic pen	etromet	ctor reading (ppm) ter test (test depth i	nterval shown)			L	D M		n Dens		
	Definitive or distict Strata change HF				Hand	Penetro	ometer t	test (UCS kPa)				D VD		ense ery D		Density Index 65 - 85% Density Index 85 - 100%	
												VL	, v	JYD	01100	Donald mack 00 - 100%	

				E	NGI	NEE	RIN	G LOO	- TEST P	IT			т	EST	PITN	io: TP10	
		REGION GEOTE		CAI C		:		Port M	acquarie Hasti	ngs Council			Р	AGE	2	1 of 1	
		SOLUT			ROJEC	CT NA	ME:	Propos	ed Residential	Subdivision			J	ови	NO:	RGS20789	.1
				s		CATI	ON:	Emily A	venue, Port N	lacquarie			LOGGED BY: GC				
				т	EST L	OCAT	ION:	Refer to figure 1					DATE:				
FO			•	Mini E:	vcavato	or .				EASTING:	49071	6 m 9	SURF	ACE	RI ·		
		TLENGT		2.0 m		DTH:	0).4 m		NORTHING:			DATU			AHD	
	Dril	ling and Sam	npling				I	Material d	escription and pr	ofile information				Fiel	d Test		
						z							2				
8	К		RL	DEPTH	₽ ₀	OL				Soil type, plasticit	v/particlo	MOISTURE	1 ENC	ype	<u>4</u>	Structure and addition	onal
METHOD	WATER	SAMPLES	(m)	(m)	GRAPHIC LOG	SIFIC				minor componen		OIST ONDI	4SIS1	Test Type	Result	ODSELVALIDITS	
2	2				U	CLASSIFICATION SYMBOL						1₹8	CONSISTENCY DENSITY	ΓĒ			
Ъ	red				****	CL				lasticity, dark bro		۳ ۲	Fb			FILL/TOPSOIL	
300mm TOOTHED BUCKET	Not Encountered						0.20m	medium t 5mm	o coarse grained	, trace of grass ro	oots up to	Ň					
DB	L					СН		FILL: Sa	ndy CLAY, medi	um plasticity, brow	wn,	1-				FILL	
E	Not E						0.40m		grey/white mottli	-		_					
ê				0.5		СН	0.50m	fine to me	edium grained, tr	asticity, orange/re aces of Gravel fin	ed, Sand e,	<u> </u>	<u> </u>	-	<u> </u>	RESIDUAL SOIL	
m				-			'	subangul	ar minated at 0.50 m	n		/					
300								HOIE TÊN	rimateo at 0.50 h	11							
				1.0	1												
				-													
				1.5													
				-													
				2.0													
				-													
				-													
				2.5													
				2.5													
				3.0													
				-													
				-													
				3.5	1												
				-													
LEG	END:			Notes, Sar	nples an	d Tests	L				Consist	ency		L U	CS (kPa	a) Moisture Condition	
<u>Wat</u>	ter				tortat	eesmele			VS	Very Soft Soft		<	25 5 - 50	D Dry M Moist			
₹		er Level		CBR	Bulk s	amplet	for CBF	R testing			F	Firm		50	0 - 100	W Wet	
►	(Date and time shown) E Environmental san - Water Inflow ASS Acid Sulfate Soil S							1	Stiff Very Stiff			00 - 200 00 - 400					
-	Water Outflow B Bulk Sample								н	Hard			400				
<u>Stra</u>	rata Changes Gradational or <u>Field Tests</u>									Fb Density	Friable V	V	ery Lo	ose	Density Index <15%		
	transitional strata				Photoi			ctor readir	g (ppm.) ≋t depth interval sh	NOWD)		L	L	oose	n Dens	Density Index 15 - 35%	
	Definitive or distict DCF strata change H							test (UCS				D	D	ense		Density Index 65 - 85	%
		-										VE) V	ery D	ense	Density Index 85 - 100)%



Appendix C

Laboratory Test Result Sheets

Regional Geotechnical Solutions RGS20789.1-AB 16 April 2019

> Item 05 Attachment 6

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🔅 eurofins

Certificate of Analysis

mgt

Regional Geotechnical Solutions 44 Bent Street Wingham NSW 2429



NATA Accredited Accreditation Number 1261 Site Number 18217

Accredited for compliance with ISO/IEC 17025 – Testing The results of the tests, calibrations and/or measurements included in this document are traceable to Australian/national standards.

Attention:

Tim Morris

Report Project name Project ID Received Date

645047-S PROPOSED RESIDENTIAL SUBDIVISION RGS20789.1 Mar 13, 2019

Client Sample ID			TP1_0-0.2	TP1_0.35-0.45	TP2_0-0.2	TP3_0-0.2
Sample Matrix			Soil	Soil	Soil	Soil
Eurofins mgt Sample No.			N19-Ma15100	N19-Ma15101	N19-Ma15102	N19-Ma15103
Date Sampled			Mar 12, 2019	Mar 12, 2019	Mar 12, 2019	Mar 12, 2019
Test/Reference	LOR	Unit				
Total Recoverable Hydrocarbons - 1999 NEPM Fi	ractions					
TRH C6-C9	20	mg/kg	-	< 20	-	-
TRH C10-C14	20	mg/kg	-	< 20	-	-
TRH C15-C28	50	mg/kg	-	200	-	-
TRH C29-C36	50	mg/kg	-	140	-	-
TRH C10-36 (Total)	50	mg/kg	-	340	-	-
BTEX						
Benzene	0.1	mg/kg	-	< 0.1	-	-
Toluene	0.1	mg/kg	-	< 0.1	-	-
Ethylbenzene	0.1	mg/kg	-	< 0.1	-	-
m&p-Xylenes	0.2	mg/kg	-	< 0.2	-	-
o-Xylene	0.1	mg/kg	-	< 0.1	-	-
Xylenes - Total	0.3	mg/kg	-	< 0.3	-	-
4-Bromofluorobenzene (surr.)	1	%	-	92	-	-
Total Recoverable Hydrocarbons - 2013 NEPM Fi	ractions					
Naphthalene ^{N02}	0.5	mg/kg	-	< 0.5	-	-
TRH >C10-C16 less Naphthalene (F2) ^{№1}	50	mg/kg	-	< 50	-	-
TRH C6-C10	20	mg/kg	-	< 20	-	-
TRH C6-C10 less BTEX (F1) ^{N04}	20	mg/kg	-	< 20	-	-
Polycyclic Aromatic Hydrocarbons						
Benzo(a)pyrene TEQ (lower bound) *	0.5	mg/kg	-	5.7	_	-
Benzo(a)pyrene TEQ (medium bound) *	0.5	mg/kg	-	6.0	-	-
Benzo(a)pyrene TEQ (upper bound) *	0.5	mg/kg	-	6.2	-	-
Acenaphthene	0.5	mg/kg	-	3.4	-	-
Acenaphthylene	0.5	mg/kg	-	0.6	-	-
Anthracene	0.5	mg/kg	-	1.6	-	-
Benz(a)anthracene	0.5	mg/kg	-	3.2	-	-
Benzo(a)pyrene	0.5	mg/kg	-	4.2	-	-
Benzo(b&j)fluoranthene ^{N07}	0.5	mg/kg	-	5.4	-	-
Benzo(g.h.i)perylene	0.5	mg/kg	-	5.0	-	-
Benzo(k)fluoranthene	0.5	mg/kg	-	1.5	-	-
Chrysene	0.5	mg/kg	-	3.2	-	-
Dibenz(a.h)anthracene	0.5	mg/kg	-	< 0.5	-	-
Fluoranthene	0.5	mg/kg	-	9.7	-	-
Fluorene	0.5	mg/kg	-	1.7	-	-
Indeno(1.2.3-cd)pyrene	0.5	mg/kg	-	4.5	-	-

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Client Sample ID Sample Matrix			TP1_0-0.2 Soil	TP1_0.35-0.45 Soil	TP2_0-0.2 Soil	TP3_0-0.2 Soil
Eurofins mgt Sample No.			N19-Ma15100	N19-Ma15101	N19-Ma15102	N19-Ma15103
Date Sampled			Mar 12, 2019	Mar 12, 2019	Mar 12, 2019	Mar 12, 2019
Test/Reference	LOR	Linit	War 12, 2013	12, 2010	112, 2013	141112, 2013
	LOR	Unit				
Polycyclic Aromatic Hydrocarbons				.0.5		
Naphthalene	0.5	mg/kg	-	< 0.5	-	-
Phenanthrene	0.5	mg/kg	-	5.4	-	-
Pyrene	0.5	mg/kg	-	9.0	-	-
Total PAH*	0.5	mg/kg	-	58.4 94	-	-
2-Fluorobiphenyl (surr.)	1	%	-		-	-
p-Terphenyl-d14 (surr.)	1	%	-	88	-	-
Organochlorine Pesticides						
Chlordanes - Total	0.1	mg/kg	-	< 0.1	-	-
4.4'-DDD	0.05	mg/kg	-	< 0.05	-	-
4.4'-DDE	0.05	mg/kg	-	< 0.05	-	-
4.4'-DDT	0.05	mg/kg	-	< 0.05	-	-
a-BHC	0.05	mg/kg	-	< 0.05	-	-
Aldrin	0.05	mg/kg	-	< 0.05	-	-
b-BHC	0.05	mg/kg	-	< 0.05	-	-
d-BHC	0.05	mg/kg	-	< 0.05	-	-
Dieldrin	0.05	mg/kg	-	< 0.05	-	-
Endosulfan I	0.05	mg/kg	-	< 0.05	-	-
Endosulfan II	0.05	mg/kg	-	< 0.05	-	-
Endosulfan sulphate	0.05	mg/kg	-	< 0.05	-	-
Endrin	0.05	mg/kg	-	< 0.05	-	-
Endrin aldehyde	0.05	mg/kg	-	< 0.05	-	-
Endrin ketone	0.05	mg/kg	-	< 0.05	-	-
g-BHC (Lindane)	0.05	mg/kg	-	< 0.05	-	-
Heptachlor	0.05	mg/kg	-	< 0.05	-	-
Heptachlor epoxide	0.05	mg/kg	-	< 0.05	-	-
Hexachlorobenzene	0.05	mg/kg	-	< 0.05	-	-
Methoxychlor	0.2	mg/kg	-	< 0.2	-	-
Toxaphene	1	mg/kg	-	< 1	-	-
Aldrin and Dieldrin (Total)*	0.05	mg/kg	-	< 0.05	-	-
DDT + DDE + DDD (Total)*	0.05	mg/kg	-	< 0.05	-	-
Vic EPA IWRG 621 OCP (Total)*	0.1	mg/kg	-	< 0.2	-	-
Vic EPA IWRG 621 Other OCP (Total)*	0.1	mg/kg	-	< 0.2	-	-
DibutyIchlorendate (surr.)	1	%	-	102	-	-
Tetrachloro-m-xylene (surr.)	1	%	-	99	-	-
Organophosphorus Pesticides						
Azinphos-methyl	0.2	mg/kg	-	< 0.2	-	-
Bolstar	0.2	mg/kg	-	< 0.2	-	-
Chlorfenvinphos	0.2	mg/kg	-	< 0.2	-	-
Chlorpyrifos	0.2	mg/kg	-	< 0.2	-	-
Chlorpyrifos-methyl	0.2	mg/kg	-	< 0.2	-	-
Coumaphos	2	mg/kg	-	< 2	-	-
Demeton-S	0.2	mg/kg	-	< 0.2	-	-
Demeton-O	0.2	mg/kg	-	< 0.2	-	-
Diazinon	0.2	mg/kg	-	< 0.2	-	-
Dichlorvos	0.2	mg/kg	-	< 0.2	-	-
Dimethoate	0.2	mg/kg	-	< 0.2	-	-
Disulfoton	0.2	mg/kg	-	< 0.2	-	-
EPN	0.2	mg/kg	-	< 0.2	-	-
Ethion	0.2	mg/kg	-	< 0.2	-	-

Date Reported: Mar 20, 2019

Eurofins | mgt Unit F3, Building F, 16 Mars Road, Lane Cove West, NSW, Australia, 2066 ABN : 50 005 085 521 Telephone: +61 2 9900 8400 Page 2 of 22 Report Number: 645047-S



Client Sample ID			TP1 0-0.2	TP1 0.35-0.45	TP2 0-0.2	TP3 0-0.2
Sample Matrix			Soil	Soil	Soil	Soil
Eurofins mgt Sample No.			N19-Ma15100	N19-Ma15101	N19-Ma15102	N19-Ma15103
Date Sampled			Mar 12, 2019	Mar 12, 2019	Mar 12, 2019	Mar 12, 2019
Test/Reference	LOR	Unit				
Organophosphorus Pesticides						
Ethoprop	0.2	mg/kg	-	< 0.2	-	-
Ethyl parathion	0.2	mg/kg	-	< 0.2	-	-
Fenitrothion	0.2	mg/kg	-	< 0.2	-	-
Fensulfothion	0.2	mg/kg	-	< 0.2	-	-
Fenthion	0.2	mg/kg	-	< 0.2	-	-
Malathion	0.2	mg/kg	-	< 0.2	-	-
Merphos	0.2	mg/kg	-	< 2	-	-
Methyl parathion	0.2	mg/kg	-	< 0.2	-	-
Mevinphos	0.2	mg/kg	-	< 0.2	-	-
Monocrotophos	2	mg/kg	-	< 2	-	-
Naled	0.2	mg/kg	-	< 0.2	-	-
Omethoate	2	mg/kg	-	< 2	-	-
Phorate	0.2	mg/kg	-	< 0.2	-	-
Pirimiphos-methyl	0.2	mg/kg	-	< 0.2	-	-
Pyrazophos	0.2	mg/kg	-	< 0.2	-	-
Ronnel	0.2	mg/kg	-	< 0.2	-	-
Terbufos	0.2	mg/kg	-	< 0.2	-	-
Tetrachlorvinphos	0.2	mg/kg	-	< 0.2	-	-
Tokuthion	0.2	mg/kg	-	< 0.2	-	-
Trichloronate	0.2	mg/kg	-	< 0.2	-	-
Triphenylphosphate (surr.)	1	%	-	83	-	-
Total Recoverable Hydrocarbons - 2013 NEPM Frac	tions					
TRH >C10-C16	50	mg/kg	-	< 50	-	-
TRH >C16-C34	100	mg/kg	-	290	-	-
TRH >C34-C40	100	mg/kg	-	110	-	-
TRH >C10-C40 (total)*	100	mg/kg	-	400	-	-
Heavy Metals						
Arsenic	2	mg/kg	70	28	14	13
Cadmium	0.4	mg/kg	< 0.4	< 0.4	< 0.4	< 0.4
Chromium	5	mg/kg	210	220	240	69
Copper	5	mg/kg	190	160	36	21
Lead	5	mg/kg	440	310	19	20
Mercury	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Nickel	5	mg/kg	27	30	28	8.7
Zinc	5	mg/kg	2700	2300	53	57
% Moisture	1	%	22	15	19	14

Date Reported: Mar 20, 2019

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Client Sample ID			TP3A_0-0.2	TP4_0.3-0.4	TP5_0-0.2	TP5_1-1.2
Sample Matrix			Soil	Soil	Soil	Soil
Eurofins mgt Sample No.			N19-Ma15104	N19-Ma15105	N19-Ma15106	N19-Ma15107
Date Sampled			Mar 12, 2019	Mar 12, 2019	Mar 12, 2019	Mar 12, 2019
Test/Reference	LOR	Unit				
Total Recoverable Hydrocarbons - 1999 NEPM Fr		Onic				
TRH C6-C9	20	mg/kg	-	-	< 20	
TRH C10-C14	20	mg/kg	-	-	< 20	-
TRH C15-C28	50	mg/kg	-	-	< 50	-
TRH C29-C36	50	mg/kg		-	< 50	-
TRH C10-36 (Total)	50	mg/kg	-	_	< 50	-
BTEX		ing/kg				
Benzene	0.1	mg/kg		-	< 0.1	
Toluene	0.1	mg/kg	-	-	< 0.1	-
Ethylbenzene	0.1	mg/kg			< 0.1	
m&p-Xylenes	0.2	mg/kg			< 0.2	
o-Xylene	0.2	mg/kg	-	-	< 0.1	-
Xylenes - Total	0.3	mg/kg	-	-	< 0.3	-
4-Bromofluorobenzene (surr.)	1	111g/kg %	-	-	54	-
Total Recoverable Hydrocarbons - 2013 NEPM Fr		70	_		04	
Naphthalene ^{N02}	0.5	mg/kg	_	_	< 0.5	
TRH >C10-C16 less Naphthalene (F2) ^{N01}	50	mg/kg	-	-	< 50	-
TRH C6-C10	20	mg/kg	-	-	< 20	-
TRH C6-C10 less BTEX (F1) ^{N04}	20	mg/kg	-	-	< 20	-
Polycyclic Aromatic Hydrocarbons	20	ing/kg	-	-	~ 20	-
	0.5	malka			< 0.5	
Benzo(a)pyrene TEQ (lower bound) * Benzo(a)pyrene TEQ (medium bound) *	0.5	mg/kg	-	-	0.6	-
	0.5	mg/kg	-	-	1.2	-
Benzo(a)pyrene TEQ (upper bound) *	0.5	mg/kg			< 0.5	
Acenaphthene Acenaphthylene	0.5	mg/kg	-	-	< 0.5	-
Anthracene	0.5	mg/kg	-	-	< 0.5	-
Benz(a)anthracene	0.5	mg/kg mg/kg	-	-	< 0.5	-
Benzo(a)pyrene	0.5	mg/kg	-	-	< 0.5	-
Benzo(b&j)fluoranthene ^{N07}	0.5	mg/kg	-	-	< 0.5	-
Benzo(g.h.i)perylene	0.5	mg/kg	-	-	< 0.5	-
Benzo(k)fluoranthene	0.5	mg/kg	-	-	< 0.5	
Chrysene	0.5	mg/kg		-	< 0.5	-
Dibenz(a.h)anthracene	0.5	mg/kg	-	-	< 0.5	-
Fluoranthene	0.5	mg/kg	-	-	< 0.5	-
Fluorene	0.5	mg/kg	-	-	< 0.5	-
Indeno(1.2.3-cd)pyrene	0.5	mg/kg	-	-	< 0.5	-
Naphthalene	0.5	mg/kg	-		< 0.5	
Phenanthrene	0.5	mg/kg	-	_	< 0.5	-
Pyrene	0.5	mg/kg	-	-	< 0.5	-
Total PAH*	0.5	mg/kg	-	-	< 0.5	-
2-Fluorobiphenyl (surr.)	1	%	_	-	87	-
p-Terphenyl-d14 (surr.)	1	%	-	-	86	-
Organochlorine Pesticides						1
Chlordanes - Total	0.1	mg/kg	-	-	< 0.1	-
4.4'-DDD	0.05	mg/kg	-	-	< 0.05	-
4.4-DDE	0.05	mg/kg	-	-	< 0.05	-
4.4-DDT	0.05	mg/kg	-	-	< 0.05	-
a-BHC	0.05	mg/kg	-	-	< 0.05	-
Aldrin	0.05	mg/kg	-	-	< 0.05	-
b-BHC	0.05	mg/kg	-	-	< 0.05	-

Date Reported: Mar 20, 2019

Eurofins | mgt Unit F3, Building F, 16 Mars Road, Lane Cove West, NSW, Australia, 2066 ABN : 50 005 085 521 Telephone: +61 2 9900 8400 Page 4 of 22 Report Number: 645047-S



Client Sample ID			TP3A_0-0.2	TP4_0.3-0.4	TP5_0-0.2	TP5_1-1.2
Sample Matrix			Soil	Soil	Soil	Soil
Eurofins mgt Sample No.			N19-Ma15104	N19-Ma15105	N19-Ma15106	N19-Ma15107
Date Sampled			Mar 12, 2019	Mar 12, 2019	Mar 12, 2019	Mar 12, 2019
· ·	LOD	Unit	Mar 12, 2013	Mar 12, 2015	War 12, 2013	Mai 12, 2015
Test/Reference	LOR	Unit				
Organochlorine Pesticides	0.05	mailer			- 0.05	
d-BHC	0.05	mg/kg	-	-	< 0.05	-
Dieldrin	0.05	mg/kg	-	-	< 0.05	-
Endosulfan I	0.05	mg/kg	-	-	< 0.05	-
Endosulfan II	0.05	mg/kg	-	-	< 0.05	-
Endosulfan sulphate	0.05	mg/kg	-	-	< 0.05	-
Endrin	0.05	mg/kg	-	-	< 0.05	-
Endrin aldehyde	0.05	mg/kg	-	-	< 0.05	-
Endrin ketone	0.05	mg/kg	-	-	< 0.05	-
g-BHC (Lindane) Heptachlor	0.05	mg/kg mg/kg	-	-	< 0.05	-
					< 0.05	-
Heptachlor epoxide Hexachlorobenzene	0.05	mg/kg	-	-	< 0.05	
Methoxychlor	0.05	mg/kg mg/kg	-	-	< 0.05	-
	1				< 1	-
Toxaphene Aldrin and Dieldrin (Total)*	0.05	mg/kg mg/kg	-	-	< 0.05	-
DDT + DDE + DDD (Total)*	0.05	mg/kg	-	-	< 0.05	-
Vic EPA IWRG 621 OCP (Total)*	0.03	mg/kg	-	-	< 0.03	-
Vic EPA IWRG 621 Other OCP (Total)*	0.1	mg/kg	-	-	< 0.2	-
Dibutylchlorendate (surr.)	1	111g/kg %	-	-	87	-
Tetrachloro-m-xylene (surr.)	1	%	-	-	99	-
Organophosphorus Pesticides	1	70	-	-	33	-
	0.2	ma/ka	_	-	< 0.2	-
Azinphos-methyl Bolstar		mg/kg		-	< 0.2	
	0.2	mg/kg mg/kg	-	-		-
Chlorfenvinphos	0.2		-	-	< 0.2	-
Chlorpyrifos	0.2	mg/kg	-	-	< 0.2	-
Chlorpyrifos-methyl	2	mg/kg	-	-	< 0.2	-
Coumaphos Demeton-S	0.2	mg/kg	-	-	< 0.2	-
Demeton-O	0.2	mg/kg	-	-	< 0.2	-
	0.2	mg/kg mg/kg	-	-	< 0.2	-
Diazinon Dichlorvos	0.2		-	-	< 0.2	-
Dimethoate	0.2	mg/kg	-	-	< 0.2	-
Disulfoton	0.2	mg/kg mg/kg	-	-	< 0.2	-
EPN	0.2	mg/kg	-	-	< 0.2	-
Ethion	0.2	mg/kg	-	-	< 0.2	-
Ethoprop	0.2	mg/kg	-	-	< 0.2	-
Ethyl parathion	0.2	mg/kg	-	-	< 0.2	-
Fenitrothion	0.2	mg/kg	-	-	< 0.2	-
Fensulfothion	0.2	mg/kg	-	-	< 0.2	-
Fenthion	0.2	mg/kg	-	-	< 0.2	-
Malathion	0.2	mg/kg	-	-	< 0.2	-
Merphos	0.2	mg/kg	-	-	< 2	-
Methyl parathion	0.2	mg/kg	-	-	< 0.2	-
Mevinphos	0.2	mg/kg	-	-	< 0.2	-
Monocrotophos	2	mg/kg	-	-	< 2	-
Naled	0.2	mg/kg	-	-	< 0.2	-
Omethoate	2	mg/kg	-	-	< 2	-
ometroate						
Phorate	0.2	mg/kg	-	-	< 0.2	-

Date Reported: Mar 20, 2019

Eurofins | mgt Unit F3, Building F, 16 Mars Road, Lane Cove West, NSW, Australia, 2066 ABN : 50 005 085 521 Telephone: +61 2 9900 8400 Page 5 of 22 Report Number: 645047-S



Client Sample ID			TP3A_0-0.2	TP4_0.3-0.4	TP5_0-0.2	TP5_1-1.2
Sample Matrix			Soil	Soil	Soil	Soil
Eurofins mgt Sample No.			N19-Ma15104	N19-Ma15105	N19-Ma15106	N19-Ma15107
Date Sampled			Mar 12, 2019	Mar 12, 2019	Mar 12, 2019	Mar 12, 2019
Test/Reference	LOR	Unit				
Organophosphorus Pesticides						
Pyrazophos	0.2	mg/kg	-	-	< 0.2	-
Ronnel	0.2	mg/kg	-	-	< 0.2	-
Terbufos	0.2	mg/kg	-	-	< 0.2	-
Tetrachlorvinphos	0.2	mg/kg	-	-	< 0.2	-
Tokuthion	0.2	mg/kg	-	-	< 0.2	-
Trichloronate	0.2	mg/kg	-	-	< 0.2	-
Triphenylphosphate (surr.)	1	%	-	-	74	-
Total Recoverable Hydrocarbons - 2013 NEPM Fract	ions					
TRH >C10-C16	50	mg/kg	-	-	< 50	-
TRH >C16-C34	100	mg/kg	-	-	< 100	-
TRH >C34-C40	100	mg/kg	-	-	< 100	-
TRH >C10-C40 (total)*	100	mg/kg	-	-	< 100	-
Heavy Metals						
Arsenic	2	mg/kg	15	19	17	16
Cadmium	0.4	mg/kg	< 0.4	< 0.4	< 0.4	< 0.4
Chromium	5	mg/kg	71	250	330	310
Copper	5	mg/kg	20	68	57	63
Lead	5	mg/kg	22	7.5	13	21
Mercury	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Nickel	5	mg/kg	8.3	27	36	29
Zinc	5	mg/kg	72	14	44	55
% Moisture	1	%	14	20	18	20

Client Sample ID Sample Matrix			TP6_0-0.2 Soil	TP6_1.5-1.6 Soil
Eurofins mgt Sample No.			N19-Ma15108	N19-Ma15109
Date Sampled			Mar 12, 2019	Mar 12, 2019
Test/Reference	LOR	Unit		
Total Recoverable Hydrocarbons - 1999 NEPM	Fractions			
TRH C6-C9	20	mg/kg	-	< 20
TRH C10-C14	20	mg/kg	-	< 20
TRH C15-C28	50	mg/kg	-	< 50
TRH C29-C36	50	mg/kg	-	< 50
TRH C10-36 (Total)	50	mg/kg	-	< 50
BTEX				
Benzene	0.1	mg/kg	-	< 0.1
Toluene	0.1	mg/kg	-	< 0.1
Ethylbenzene	0.1	mg/kg	-	< 0.1
m&p-Xylenes	0.2	mg/kg	-	< 0.2
o-Xylene	0.1	mg/kg	-	< 0.1
Xylenes - Total	0.3	mg/kg	-	< 0.3
4-Bromofluorobenzene (surr.)	1	%	-	67
Total Recoverable Hydrocarbons - 2013 NEPM	Fractions			
Naphthalene ^{N02}	0.5	mg/kg	-	< 0.5
TRH >C10-C16 less Naphthalene (F2) ^{N01}	50	mg/kg	-	< 50
TRH C6-C10	20	mg/kg	-	< 20
TRH C6-C10 less BTEX (F1) ^{N04}	20	mg/kg	-	< 20

Date Reported: Mar 20, 2019

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Client Comple ID				
Client Sample ID Sample Matrix			TP6_0-0.2 Soil	TP6_1.5-1.6 Soil
•				
Eurofins mgt Sample No.			N19-Ma15108	N19-Ma15109
Date Sampled			Mar 12, 2019	Mar 12, 2019
Test/Reference	LOR	Unit		
Polycyclic Aromatic Hydrocarbons	I			
Benzo(a)pyrene TEQ (lower bound) *	0.5	mg/kg	-	< 0.5
Benzo(a)pyrene TEQ (medium bound) *	0.5	mg/kg	-	0.6
Benzo(a)pyrene TEQ (upper bound) *	0.5	mg/kg	-	1.2
Acenaphthene	0.5	mg/kg	-	< 0.5
Acenaphthylene	0.5	mg/kg	-	< 0.5
Anthracene	0.5	mg/kg	-	< 0.5
Benz(a)anthracene	0.5	mg/kg	-	< 0.5
Benzo(a)pyrene	0.5	mg/kg	-	< 0.5
Benzo(b&j)fluoranthene ^{N07}	0.5	mg/kg	-	< 0.5
Benzo(g.h.i)perylene	0.5	mg/kg	-	< 0.5
Benzo(k)fluoranthene	0.5	mg/kg	-	< 0.5
Chrysene	0.5	mg/kg	-	< 0.5
Dibenz(a.h)anthracene	0.5	mg/kg	-	< 0.5
Fluoranthene	0.5	mg/kg	-	< 0.5
Fluorene	0.5	mg/kg	-	< 0.5
Indeno(1.2.3-cd)pyrene	0.5	mg/kg		< 0.5
Naphthalene Phenanthrene	0.5	mg/kg	-	< 0.5
	0.5	mg/kg	-	< 0.5
Pyrene Total PAH*	0.5	mg/kg mg/kg	-	< 0.5
2-Fluorobiphenyl (surr.)	1	111g/kg %	-	93
p-Terphenyl-d14 (surr.)	1	%	-	93
Organochlorine Pesticides	·	70		50
Chlordanes - Total	0.1	mg/kg	-	< 0.1
4.4'-DDD	0.05	mg/kg	_	< 0.05
4.4'-DDE	0.05	mg/kg		< 0.05
4.4'-DDT	0.05	mg/kg	-	< 0.05
a-BHC	0.05	mg/kg	-	< 0.05
Aldrin	0.05	mg/kg	-	< 0.05
b-BHC	0.05	mg/kg	-	< 0.05
d-BHC	0.05	mg/kg	-	< 0.05
Dieldrin	0.05	mg/kg	-	< 0.05
Endosulfan I	0.05	mg/kg	-	< 0.05
Endosulfan II	0.05	mg/kg	-	< 0.05
Endosulfan sulphate	0.05	mg/kg	-	< 0.05
Endrin	0.05	mg/kg	-	< 0.05
Endrin aldehyde	0.05	mg/kg	-	< 0.05
Endrin ketone	0.05	mg/kg	-	< 0.05
g-BHC (Lindane)	0.05	mg/kg	-	< 0.05
Heptachlor	0.05	mg/kg	-	< 0.05
Heptachlor epoxide	0.05	mg/kg	-	< 0.05
Hexachlorobenzene	0.05	mg/kg	-	< 0.05
Methoxychlor	0.2	mg/kg	-	< 0.2
Toxaphene	1	mg/kg	-	< 1
Aldrin and Dieldrin (Total)*	0.05	mg/kg	-	< 0.05
DDT + DDE + DDD (Total)*	0.05	mg/kg	-	< 0.05
Vic EPA IWRG 621 OCP (Total)*	0.1	mg/kg	-	< 0.2
Vic EPA IWRG 621 Other OCP (Total)*	0.1	mg/kg	-	< 0.2
Dibutylchlorendate (surr.)	1	%	-	96
Tetrachloro-m-xylene (surr.)	1	%	-	103

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Client Sample ID			TP6_0-0.2	TP6_1.5-1.6
Sample Matrix			Soil	Soil
Eurofins mgt Sample No.			N19-Ma15108	N19-Ma15109
Date Sampled			Mar 12, 2019	Mar 12, 2019
Test/Reference	LOR	Unit		
Organophosphorus Pesticides				
Azinphos-methyl	0.2	mg/kg	-	< 0.2
Bolstar	0.2	mg/kg	-	< 0.2
Chlorfenvinphos	0.2	mg/kg	-	< 0.2
Chlorpyrifos	0.2	mg/kg	-	< 0.2
Chlorpyrifos-methyl	0.2	mg/kg	-	< 0.2
Coumaphos	2	mg/kg	-	< 2
Demeton-S	0.2	mg/kg	-	< 0.2
Demeton-O	0.2	mg/kg	-	< 0.2
Diazinon	0.2	mg/kg	-	< 0.2
Dichlorvos	0.2	mg/kg	-	< 0.2
Dimethoate	0.2	mg/kg	-	< 0.2
Disulfoton	0.2	mg/kg	-	< 0.2
EPN	0.2	mg/kg	-	< 0.2
Ethion	0.2	mg/kg	-	< 0.2
Ethoprop	0.2	mg/kg	-	< 0.2
Ethyl parathion	0.2	mg/kg	-	< 0.2
Fenitrothion	0.2	mg/kg	-	< 0.2
Fensulfothion	0.2	mg/kg	-	< 0.2
Fenthion	0.2	mg/kg	-	< 0.2
Malathion	0.2	mg/kg	-	< 0.2
Merphos	0.2	mg/kg	-	< 2
Methyl parathion	0.2	mg/kg	-	< 0.2
Mevinphos	0.2	mg/kg	-	< 0.2
Monocrotophos	2	mg/kg	-	< 2
Naled	0.2	mg/kg	-	< 0.2
Omethoate	2	mg/kg	-	< 2
Phorate	0.2	mg/kg	-	< 0.2
Pirimiphos-methyl	0.2	mg/kg	-	< 0.2
Pyrazophos	0.2	mg/kg	-	< 0.2
Ronnel	0.2	mg/kg	-	< 0.2
Terbufos	0.2	mg/kg	-	< 0.2
Tetrachlorvinphos	0.2	mg/kg	-	< 0.2
Tokuthion	0.2	mg/kg	-	< 0.2
Trichloronate	0.2	mg/kg	-	< 0.2
Triphenylphosphate (surr.)	1	%	-	79
Total Recoverable Hydrocarbons - 2013 NEPM Fract	ions			
TRH >C10-C16	50	mg/kg	-	< 50
TRH >C16-C34	100	mg/kg	-	< 100
TRH >C34-C40	100	mg/kg	-	< 100
TRH >C10-C40 (total)*	100	mg/kg	-	< 100
Heavy Metals				
Arsenic	2	mg/kg	17	15
Cadmium	0.4	mg/kg	< 0.4	< 0.4
Chromium	5	mg/kg	280	280
Copper	5	mg/kg	42	33
Lead	5	mg/kg	20	15
Mercury	0.1	mg/kg	< 0.1	< 0.1
Nickel	5	mg/kg	27	30
Zinc	5	mg/kg	45	35

Date Reported: Mar 20, 2019

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Client Sample ID Sample Matrix			TP6_0-0.2 Soil	TP6_1.5-1.6 Soil
Eurofins mgt Sample No.			N19-Ma15108	N19-Ma15109
Date Sampled			Mar 12, 2019	Mar 12, 2019
Test/Reference	LOR	Unit		
% Moisture	1	%	18	19

Date Reported: Mar 20, 2019

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Sample History

Where samples are submitted/analysed over several days, the last date of extraction and analysis is reported. A recent review of our LIMS has resulted in the correction or clarification of some method identifications. Due to this, some of the method reference information on reports has changed. However, no substantive change has been made to our laboratory methods, and as such there is no change in the validity of current or previous results (regarding both quality and NATA accreditation).

If the date and time of sampling are not provided, the Laboratory will not be responsible for compromised results should testing be performed outside the recommended holding time.

	Description	Testing Site	Extracted	Holding Time
	Eurofins mgt Suite B10			
	Total Recoverable Hydrocarbons - 1999 NEPM Fractions	Sydney	Mar 15, 2019	14 Day
	- Method: LTM-ORG-2010 TRH C6-C40			
	BTEX	Sydney	Mar 15, 2019	14 Day
	- Method: LTM-ORG-2150 VOCs in Soils Liquid and other Aqueous Matrices			
	Total Recoverable Hydrocarbons - 2013 NEPM Fractions	Sydney	Mar 15, 2019	14 Day
	- Method: LTM-ORG-2010 TRH C6-C40			
	Polycyclic Aromatic Hydrocarbons	Sydney	Mar 15, 2019	14 Days
	- Method: LTM-ORG-2130 PAH and Phenols in Soil and Water			
	Organochlorine Pesticides	Sydney	Mar 15, 2019	14 Day
	- Method: LTM-ORG-2220 OCP & PCB in Soil and Water			
	Organophosphorus Pesticides	Sydney	Mar 15, 2019	14 Day
	- Method: LTM-ORG-2200 Organophosphorus Pesticides by GC-MS			
	Total Recoverable Hydrocarbons - 2013 NEPM Fractions	Sydney	Mar 15, 2019	14 Day
	- Method: LTM-ORG-2010 TRH C6-C40			
	Metals M8	Sydney	Mar 15, 2019	28 Day
	- Method: LTM-MET-3040 Metals in Waters, Soils & Sediments by ICP-MS			
	% Moisture	Sydney	Mar 13, 2019	14 Day
-	Method: LTM-GEN-7080 Moisture			

Date Reported: Mar 20, 2019

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	Order No.: Report #: Phone: Fax:	Eurofins mgt Suite B10 Moisture Set		×				×	×	×	×	×	+	< < >	××	
521 s@eurofii s.com.au	ΟΚΕΓ	Metals M8 Asbestos - AS4964		××	_	+	_		: ×	×	×	×	×	< >	< ×	
ABN- 50 005 085 521 ABN- 50 005 085 521 e.mail: EnviroSales@eurofins.com web : www.eurofins.com.au		Asbestos - AS4964		^			LABID	N19-Ma15100	+	N19-Ma15102	N19-Ma15103	N19-Ma15104	+	N19-Ma15106	N19-Ma15108	
	Regional Geotechnical Solutions 44 Bent Street Wingham NSW 2429 PROPOSED RESIDENTIAL SUBDIVISION RGS20789.1		71				Matrix				Soil N			Soil N		
mgt	technical Sol	Sample Detail	1254 & 142	217	0794	9	Sampling	Time								
🎲 eurofins	Regional Geotechnical Solutions 44 Bent Street Wingham NSW 2429 PROPOSED RESIDENTIAL SUE RGS20789.1	Sam	Melbourne Laboratory - NATA Site # 1254 & 14271	Sydney Laboratory - NATA Site # 18217	Brisbane Laboratory - NATA Site # 20794	Perth Laboratory - NATA Site # 23736	Sample Date	_	TP1 0.35-0.45 Mar 12, 2019							
uro	Company Name: Address: Project Name: Project ID:		aboratory	oratory - N	aboratory -	atory - NA	External Laboratory No Sample ID S		.35-0.45 M	TP2 0-0.2 M	TP3_0-0.2 M	TP3A_0-0.2 M	4	M 2-0-0 CH M	Γ	

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	Order No.: Report #: 62 Phone: (0 Fax:	Eurofins mgt Suite B10 Moisture Set Metals M8		× × ×		× ×		
Call ABN- 50 005 085 521 mgt RAN- 50 005 085 521 email: Environments.com	Company Name:Regional Geotechnical SolutionsAddress:44 Bent StreetMinghamWinghamNSW 2429NSW 2429Project Name:PROPOSED RESIDENTIAL SUBDIVISIONProject ID:RGS20789.1	Asbestos - AS4964	Melbourne Laboratory - NATA Site # 1254 & 14271	Sydney Laboratory - NATA Site # 18217 X	Brisbane Laboratory - NATA Site # 20/34	10 TP6 1.5-1.6 Mar 12. 2019 Soil N19-Ma15109 X	•	

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Date Reported:Mar 20, 2019

Date Reported:Mar 20, 2019



Internal Quality Control Review and Glossary

General

- 1. Laboratory QC results for Method Blanks, Duplicates, Matrix Spikes, and Laboratory Control Samples follows guidelines delineated in the National Environment Protection (Assessment of Site Contamination) Measure, April 2011 and are included in this QC report where applicable. Additional QC data may be available on request.
- 2. All soil/sediment/solid results are reported on a dry basis, unless otherwise stated.
- 3. All biota/food results are reported on a wet weight basis on the edible portion, unless otherwise stated.
- 4. Actual LORs are matrix dependant. Quoted LORs may be raised where sample extracts are diluted due to interferences.
- 5. Results are uncorrected for matrix spikes or surrogate recoveries except for PFAS compounds.
- 6. SVOC analysis on waters are performed on homogenised, unfiltered samples, unless noted otherwise.
- 7. Samples were analysed on an 'as received' basis.
- 8. This report replaces any interim results previously issued.

Holding Times

Please refer to 'Sample Preservation and Container Guide' for holding times (QS3001).

For samples received on the last day of holding time, notification of testing requirements should have been received at least 8 hours prior to sample receipt deadlines as stated on the SRA. If the Laboratory did not receive the information in the required timeframe, and regardless of any other integrity issues, suitably qualified results may still be reported.

If the Laboratory did not receive the information in the required timetrame, and regardless of any other integrity issues, suitably qualified results may still be reported

Holding times apply from the date of sampling, therefore compliance to these may be outside the laboratory's control.

For VOCs containing vinyl chloride, styrene and 2-chloroethyl vinyl ether the holding time is 7 days however for all other VOCs such as BTEX or C6-10 TRH then the holding time is 14 days. **NOTE: pH duplicates are reported as a range NOT as RPD

Units

mg/kg: milligrams per kilogram	mg/L: milligrams per litre	ug/L: micrograms per litre
ppm: Parts per million	ppb: Parts per billion	%: Percentage
org/100mL: Organisms per 100 millilitres	NTU: Nephelometric Turbidity Units	MPN/100mL: Most Probable Number of organisms per 100 millilitres
Terms		

Dry	Where a moisture has been determined on a solid sample the result is expressed on a dry basis.
LOR	Limit of Reporting.
SPIKE	Addition of the analyte to the sample and reported as percentage recovery.
RPD	Relative Percent Difference between two Duplicate pieces of analysis.
LCS	Laboratory Control Sample - reported as percent recovery.
CRM	Certified Reference Material - reported as percent recovery.
Method Blank	In the case of solid samples these are performed on laboratory certified clean sands and in the case of water samples these are performed on de-ionised water.
Surr - Surrogate	The addition of a like compound to the analyte target and reported as percentage recovery.
Duplicate	A second piece of analysis from the same sample and reported in the same units as the result to show comparison.
USEPA	United States Environmental Protection Agency
APHA	American Public Health Association
TCLP	Toxicity Characteristic Leaching Procedure
coc	Chain of Custody
SRA	Sample ReceiptAdvice
QSM	US Department of Defense Quality Systems Manual Version 5.2 2018
CP	Client Parent - QC was performed on samples pertaining to this report
NCP	Non-Client Parent - QC performed on samples not pertaining to this report, QC is representative of the sequence or batch that client samples were analysed within.
TEQ	Toxic Equivalency Quotient

QC - Acceptance Criteria

RPD Duplicates: Global RPD Duplicates Acceptance Criteria is 30% however the following acceptance guidelines are equally applicable:

Results <10 times the LOR : No Limit

Results between 10-20 times the LOR : RPD must lie between 0-50%

Results >20 times the LOR : RPD must lie between 0-30%

Surrogate Recoveries: Recoveries must lie between 50-150%-Phenols & PFASs

PFAS field samples that contain surrogate recoveries in excess of the QC limit designated in QSM 5.2 where no positive PFAS results have been reported have been reviewed and no data was affected.

WA DWER (n=10): PFBA, PFPeA, PFHxA, PFHpA, PFOA, PFBS, PFHxS, PFOS, 6:2 FTSA, 8:2 FTSA

QC Data General Comments

- Where a result is reported as a less than (<), higher than the nominated LOR, this is due to either matrix interference, extract dilution required due to interferences or contaminant levels within the sample, high moisture content or insufficient sample provided.
- 2. Duplicate data shown within this report that states the word "BATCH" is a Batch Duplicate from outside of your sample batch, but within the laboratory sample batch at a 1:10 ratio. The Parent and Duplicate data shown is not data from your samples.
- 3. Organochlorine Pesticide analysis where reporting LCS data, Toxaphene & Chlordane are not added to the LCS.
- 4. Organochlorine Pesticide analysis where reporting Spike data, Toxaphene is not added to the Spike.
- 5. Total Recoverable Hydrocarbons where reporting Spike & LCS data, a single spike of commercial Hydrocarbon products in the range of C12-C30 is added and it's Total Recovery is reported in the C10-C14 cell of the Report.
- pH and Free Chlorine analysed in the laboratory Analysis on this test must begin within 30 minutes of sampling. Therefore laboratory analysis is unlikely to be completed within holding time. Analysis will begin as soon as possible after sample receipt.
- 7. Recovery Data (Spikes & Surrogates) where chromatographic interference does not allow the determination of Recovery the term "INT" appears against that analyte.
- 8. Polychlorinated Biphenyls are spiked only using Aroclor 1260 in Matrix Spikes and LCS.
- For Matrix Spikes and LCS results a dash "-" in the report means that the specific analyte was not added to the QC sample.
- 10. Duplicate RPDs are calculated from raw analytical data thus it is possible to have two sets of data.

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Quality Control Results

Test	Units	Result 1	Acceptance Limits	Pass Limits	Qualifying Code
Method Blank	•				
Total Recoverable Hydrocarbons - 1999 NEPM Fraction	ons				
TRH C6-C9	mg/kg	< 20	20	Pass	
TRH C10-C14	mg/kg	< 20	20	Pass	
TRH C15-C28	mg/kg	< 50	50	Pass	
TRH C29-C36	mg/kg	< 50	50	Pass	
Method Blank					
BTEX					
Benzene	mg/kg	< 0.1	0.1	Pass	
Toluene	mg/kg	< 0.1	0.1	Pass	
Ethylbenzene	mg/kg	< 0.1	0.1	Pass	
m&p-Xylenes	mg/kg	< 0.2	0.2	Pass	
o-Xylene	mg/kg	< 0.1	0.1	Pass	
Xylenes - Total	mg/kg	< 0.3	0.3	Pass	
Method Blank	1			1 400	
Total Recoverable Hydrocarbons - 2013 NEPM Fraction	ons				
Naphthalene	mg/kg	< 0.5	0.5	Pass	
TRH C6-C10	mg/kg	< 20	20	Pass	
Method Blank		120		1 400	
Polycyclic Aromatic Hydrocarbons					
Acenaphthene	mg/kg	< 0.5	0.5	Pass	
Acenaphthylene	mg/kg	< 0.5	0.5	Pass	
Anthracene	mg/kg	< 0.5	0.5	Pass	
Benz(a)anthracene	mg/kg	< 0.5	0.5	Pass	
Benzo(a)pyrene		< 0.5	0.5	Pass	
3 41 2	mg/kg				
Benzo(b&j)fluoranthene	mg/kg	< 0.5	0.5	Pass Pass	
Benzo(g.h.i)perylene	mg/kg			-	
Benzo(k)fluoranthene	mg/kg	< 0.5	0.5	Pass	
Chrysene	mg/kg	< 0.5	0.5	Pass	
Dibenz(a.h)anthracene	mg/kg	< 0.5	0.5	Pass	
Fluoranthene	mg/kg	< 0.5	0.5	Pass	
Fluorene	mg/kg	< 0.5	0.5	Pass	
Indeno(1.2.3-cd)pyrene	mg/kg	< 0.5	0.5	Pass	
Naphthalene	mg/kg	< 0.5	0.5	Pass	
Phenanthrene	mg/kg	< 0.5	0.5	Pass	
Pyrene	mg/kg	< 0.5	0.5	Pass	
Method Blank		1 1			
Organochlorine Pesticides				-	
Chlordanes - Total	mg/kg	< 0.1	0.1	Pass	
4.4-DDD	mg/kg	< 0.05	0.05	Pass	
4.4'-DDE	mg/kg	< 0.05	0.05	Pass	
4.4'-DDT	mg/kg	< 0.05	0.05	Pass	
a-BHC	mg/kg	< 0.05	0.05	Pass	
Aldrin	mg/kg	< 0.05	0.05	Pass	
b-BHC	mg/kg	< 0.05	0.05	Pass	
d-BHC	mg/kg	< 0.05	0.05	Pass	
Dieldrin	mg/kg	< 0.05	0.05	Pass	
Endosulfan I	mg/kg	< 0.05	0.05	Pass	
Endosulfan II	mg/kg	< 0.05	0.05	Pass	
Endosulfan sulphate	mg/kg	< 0.05	0.05	Pass	
Endrin	mg/kg	< 0.05	0.05	Pass	
Endrin aldehyde	mg/kg	< 0.05	0.05	Pass	

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Test	Units	Result 1	Acceptance Limits	Pass Limits	Qualifying Code
Endrin ketone	mg/kg	< 0.05	0.05	Pass	
g-BHC (Lindane)	mg/kg	< 0.05	0.05	Pass	
Heptachlor	mg/kg	< 0.05	0.05	Pass	
Heptachlor epoxide	mg/kg	< 0.05	0.05	Pass	
Hexachlorobenzene	mg/kg	< 0.05	0.05	Pass	
Methoxychlor	mg/kg	< 0.2	0.2	Pass	
Toxaphene	mg/kg	< 1	1	Pass	
Method Blank					
Organophosphorus Pesticides					
Azinphos-methyl	mg/kg	< 0.2	0.2	Pass	
Bolstar	mg/kg	< 0.2	0.2	Pass	
Chlorfenvinphos	mg/kg	< 0.2	0.2	Pass	
Chlorpyrifos	mg/kg	< 0.2	0.2	Pass	
Chlorpyrifos-methyl	mg/kg	< 0.2	0.2	Pass	
Coumaphos	mg/kg	< 2	2	Pass	
Demeton-S	mg/kg	< 0.2	0.2	Pass	
Demeton-O	mg/kg	< 0.2	0.2	Pass	
Diazinon	mg/kg	< 0.2	0.2	Pass	
Dichlorvos	mg/kg	< 0.2	0.2	Pass	
Dimethoate	mg/kg	< 0.2	0.2	Pass	
Disulfoton	mg/kg	< 0.2	0.2	Pass	
EPN	mg/kg	< 0.2	0.2	Pass	
Ethion	mg/kg	< 0.2	0.2	Pass	
Ethoprop	mg/kg	< 0.2	0.2	Pass	
Ethyl parathion	mg/kg	< 0.2	0.2	Pass	
Fenitrothion	mg/kg	< 0.2	0.2	Pass	
Fensulfothion	mg/kg	< 0.2	0.2	Pass	
Fenthion	mg/kg	< 0.2	0.2	Pass	
Malathion	mg/kg	< 0.2	0.2	Pass	
Merphos	mg/kg	< 0.2	0.2	Pass	
Methyl parathion	mg/kg	< 0.2	0.2	Pass	
Mevinphos	mg/kg	< 0.2	0.2	Pass	
Monocrotophos	mg/kg	< 2	2	Pass	
Naled	mg/kg	< 0.2	0.2	Pass	
Omethoate	mg/kg	< 2	2	Pass	
Phorate	mg/kg	< 0.2	0.2	Pass	
Pirimiphos-methyl	mg/kg	< 0.2	0.2	Pass	
Pyrazophos	mg/kg	< 0.2	0.2	Pass	
Ronnel	mg/kg	< 0.2	0.2	Pass	
Terbufos	mg/kg	< 0.2	0.2	Pass	
Tetrachlorvinphos	mg/kg	< 0.2	0.2	Pass	
Tokuthion	mg/kg	< 0.2	0.2	Pass	
Trichloronate	mg/kg	< 0.2	0.2	Pass	
Method Blank					
Total Recoverable Hydrocarbons - 2013 NEPM Fract	ions				
TRH >C10-C16	mg/kg	< 50	50	Pass	
TRH >C16-C34	mg/kg	< 100	100	Pass	
TRH >C34-C40	mg/kg	< 100	100	Pass	
Method Blank			1		
Heavy Metals					
Arsenic	mg/kg	< 2	2	Pass	
Cadmium	mg/kg	< 0.4	0.4	Pass	
Chromium	mg/kg	< 5	5	Pass	
Copper	mg/kg	< 5	5	Pass	

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Test	Units	Result 1		Acceptance Limits	Pass Limits	Qualifying Code
Lead	mg/kg	< 5		5	Pass	
Mercury	mg/kg	< 0.1		0.1	Pass	
Nickel	mg/kg	< 5		5	Pass	
Zinc	mg/kg	< 5		5	Pass	
LCS - % Recovery						
Total Recoverable Hydrocarbons - 1999 NEPM Fract	ions					
TRH C6-C9	%	88		70-130	Pass	
TRH C10-C14	%	108		70-130	Pass	
LCS - % Recovery				•		
BTEX						
Benzene	%	80		70-130	Pass	
Toluene	%	92		70-130	Pass	
Ethylbenzene	%	86		70-130	Pass	
m&p-Xylenes	%	89		70-130	Pass	
o-Xylene	%	89		70-130	Pass	
Xylenes - Total	%	89		70-130	Pass	
LCS - % Recovery				10100	1 400	
Total Recoverable Hydrocarbons - 2013 NEPM Fract	ions					
Naphthalene	%	125		70-130	Pass	
TRH C6-C10	%	87		70-130	Pass	
LCS - % Recovery	7.0			10100	1 455	
Polycyclic Aromatic Hydrocarbons		L		T		
Acenaphthene	%	92		70-130	Pass	
Acenaphthylene	%	96		70-130	Pass	
Anthracene	%	93		70-130	Pass	
Benz(a)anthracene	%	100		70-130	Pass	
Benzo(a)pyrene	%	97		70-130	Pass	
Benzo(b&j)fluoranthene	%	105		70-130	Pass	
Benzo(g.h.i)perylene	%	110		70-130	Pass	
Benzo(k)fluoranthene	%	93		70-130	Pass	
	%	92		70-130	Pass	
Chrysene						
Dibenz(a.h)anthracene	%	122		70-130	Pass	
Fluoranthene Fluorene	%	99 96		70-130	Pass	
				70-130	Pass	
Indeno(1.2.3-cd)pyrene	%	116		70-130	Pass	
Naphthalene	%	93		70-130	Pass	
Phenanthrene	%	95		70-130	Pass	
Pyrene	%	96		70-130	Pass	
LCS - % Recovery		I		1		
Organochlorine Pesticides	0/	05		70.400	Daga	
4.4'-DDD	%	95	├ ── ├ ──	70-130	Pass	
4.4'-DDE	%	88	<u> </u>	70-130	Pass	
4.4'-DDT	%	87	<u>├</u> ──	70-130	Pass	
a-BHC	%	87		70-130	Pass	
Aldrin	%	86		70-130	Pass	
b-BHC	%	82		70-130	Pass	
d-BHC	%	92		70-130	Pass	
Dieldrin	%	88		70-130	Pass	
Endosulfan I	%	89		70-130	Pass	
Endosulfan II	%	84		70-130	Pass	
Endosulfan sulphate	%	92		70-130	Pass	
Endrin	%	94		70-130	Pass	
Endrin aldehyde	%	87		70-130	Pass	
Endrin ketone	%	84		70-130	Pass	

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	est		Units	Result 1	Acceptance Limits	Pass Limits	Qualifying Code
g-BHC (Lindane)			%	87	70-130	Pass	
Heptachlor			%	87	70-130	Pass	
Heptachlor epoxide			%	88	70-130	Pass	
Hexachlorobenzene			%	81	70-130	Pass	
Methoxychlor			%	88	70-130	Pass	
LCS - % Recovery							
Organophosphorus Pesticide	s						
Diazinon			%	102	70-130	Pass	
Dimethoate			%	102	70-130	Pass	
Ethion			%	123	70-130	Pass	
Methyl parathion			%	121	70-130	Pass	
Mevinphos			%	123	70-130	Pass	
LCS - % Recovery							
Total Recoverable Hydrocarb	ons - 2013 NEPM Fract	ions					
TRH >C10-C16			%	114	70-130	Pass	
LCS - % Recovery			70	1 114	10 100	1 400	
Heavy Metals							
Arsenic			%	109	70-130	Pass	
Cadmium			%	115	70-130	Pass	
Chromium			%	128	70-130	Pass	
Copper			%	90	70-130	Pass	
Lead			%	126	70-130	Pass	
Mercury			%	120	70-130	Pass	
Nickel			%	108	70-130	Pass	
			%	106			
Zinc			70	106	70-130	Pass	Ovelifiine
Test	Lab Sample ID	QA Source	Units	Result 1	Acceptance Limits	Pass Limits	Qualifying Code
Spike - % Recovery					 		
Spike - % Recovery Heavy Metals				Result 1			
	S19-Ma18928	NCP	%	Result 1 87	70-130	Pass	
Heavy Metals	S19-Ma18928 S19-Ma18928	NCP NCP	%		70-130 70-130	Pass Pass	
Heavy Metals Arsenic				87			
Heavy Metals Arsenic Cadmium	S19-Ma18928	NCP	%	87 97	70-130	Pass	
Heavy Metals Arsenic Cadmium Chromium	S19-Ma18928 S19-Ma18928	NCP NCP	%	87 97 111	70-130 70-130	Pass Pass	
Heavy Metals Arsenic Cadmium Chromium Copper	S19-Ma18928 S19-Ma18928 S19-Ma18928	NCP NCP NCP	% %	87 97 111 95	70-130 70-130 70-130	Pass Pass Pass	
Heavy Metals Arsenic Cadmium Chromium Copper Lead	S19-Ma18928 S19-Ma18928 S19-Ma18928 S19-Ma18928 S19-Ma18928	NCP NCP NCP NCP	% % %	87 97 111 95 110	70-130 70-130 70-130 70-130	Pass Pass Pass Pass	
Heavy Metals Arsenic Cadmium Chromium Copper Lead Mercury	S19-Ma18928 S19-Ma18928 S19-Ma18928 S19-Ma18928 S19-Ma18928 S19-Ma18928 S19-Ma18928 S19-Ma18928	NCP NCP NCP NCP NCP	% % % %	87 97 111 95 110 105	70-130 70-130 70-130 70-130 70-130	Pass Pass Pass Pass Pass	
Heavy Metals Arsenic Cadmium Chromium Copper Lead Mercury Nickel	S19-Ma18928	NCP NCP NCP NCP NCP NCP	% % % %	87 97 111 95 110 105 91	70-130 70-130 70-130 70-130 70-130 70-130	Pass Pass Pass Pass Pass Pass	
Heavy Metals Arsenic Cadmium Chromium Copper Lead Mercury Nickel Zinc	S19-Ma18928	NCP NCP NCP NCP NCP NCP NCP	% % % %	87 97 111 95 110 105 91	70-130 70-130 70-130 70-130 70-130 70-130	Pass Pass Pass Pass Pass Pass	
Heavy Metals Arsenic Cadmium Chromium Copper Lead Mercury Nickel Zinc Spike - % Recovery	S19-Ma18928	NCP NCP NCP NCP NCP NCP NCP	% % % %	87 97 111 95 110 105 91 123	70-130 70-130 70-130 70-130 70-130 70-130	Pass Pass Pass Pass Pass Pass	
Heavy Metals Arsenic Cadmium Chromium Copper Lead Mercury Nickel Zinc Spike - % Recovery Total Recoverable Hydrocarbo	S19-Ma18928 S19-Ma18928 S19-Ma18928 S19-Ma18928 S19-Ma18928 S19-Ma18928 S19-Ma18928 S19-Ma18928 S19-Ma18928	NCP NCP NCP NCP NCP NCP NCP	% % % % %	87 97 111 95 110 105 91 123 Result 1	70-130 70-130 70-130 70-130 70-130 70-130 70-130	Pass Pass Pass Pass Pass Pass Pass	
Heavy Metals Arsenic Cadmium Chromium Copper Lead Mercury Nickel Zinc Spike - % Recovery Total Recoverable Hydrocarbo TRH C6-C9	S19-Ma18928 S19-Ma18928 S19-Ma18928 S19-Ma18928 S19-Ma18928 S19-Ma18928 S19-Ma18928 S19-Ma18928 S19-Ma28 S19-Ma20699	NCP NCP NCP NCP NCP NCP NCP	% % % % %	87 97 111 95 110 105 91 123 Result 1 88	70-130 70-130 70-130 70-130 70-130 70-130 70-130 70-130	Pass Pass Pass Pass Pass Pass Pass	
Heavy Metals Arsenic Cadmium Chromium Copper Lead Mercury Nickel Zinc Spike - % Recovery Total Recoverable Hydrocarbo TRH C6-C9 TRH C10-C14	S19-Ma18928 S19-Ma18928 S19-Ma18928 S19-Ma18928 S19-Ma18928 S19-Ma18928 S19-Ma18928 S19-Ma18928 S19-Ma28 S19-Ma20699	NCP NCP NCP NCP NCP NCP NCP	% % % % %	87 97 111 95 110 105 91 123 Result 1 88	70-130 70-130 70-130 70-130 70-130 70-130 70-130 70-130	Pass Pass Pass Pass Pass Pass Pass	
Heavy Metals Arsenic Cadmium Chromium Copper Lead Mercury Nickel Zinc Spike - % Recovery Total Recoverable Hydrocarbo TRH C6-C9 TRH C10-C14 Spike - % Recovery	S19-Ma18928 S19-Ma18928 S19-Ma18928 S19-Ma18928 S19-Ma18928 S19-Ma18928 S19-Ma18928 S19-Ma18928 S19-Ma28 S19-Ma20699	NCP NCP NCP NCP NCP NCP NCP	% % % % %	87 97 111 95 110 105 91 123 Result 1 88 122	70-130 70-130 70-130 70-130 70-130 70-130 70-130 70-130	Pass Pass Pass Pass Pass Pass Pass	
Heavy Metals Arsenic Cadmium Chromium Copper Lead Mercury Nickel Zinc Spike - % Recovery Total Recoverable Hydrocarbo TRH C6-C9 TRH C10-C14 Spike - % Recovery BTEX	S19-Ma18928 S19-Ma18928 S19-Ma18928 S19-Ma18928 S19-Ma18928 S19-Ma18928 S19-Ma18928 S19-Ma18928 S19-Ma20699 S19-Ma15007	NCP NCP NCP NCP NCP NCP NCP	% % % % % %	87 97 111 95 110 105 91 123 Result 1 88 122 Result 1	70-130 70-130 70-130 70-130 70-130 70-130 70-130 70-130 70-130	Pass Pass Pass Pass Pass Pass Pass Pass	
Heavy Metals Arsenic Cadmium Chromium Copper Lead Mercury Nickel Zinc Spike - % Recovery Total Recoverable Hydrocarbo TRH C6-C9 TRH C10-C14 Spike - % Recovery BTEX Benzene	S19-Ma18928 S19-Ma18928 S19-Ma18928 S19-Ma18928 S19-Ma18928 S19-Ma18928 S19-Ma18928 S19-Ma18928 S19-Ma20699 S19-Ma20699 S19-Ma20699	NCP NCP NCP NCP NCP NCP NCP	% % % % % % % % %	87 97 111 95 110 105 91 123 Result 1 88 122 Result 1 83	70-130 70-130 70-130 70-130 70-130 70-130 70-130 70-130 70-130 70-130	Pass Pass Pass Pass Pass Pass Pass Pass	
Heavy Metals Arsenic Cadmium Chromium Copper Lead Mercury Nickel Zinc Spike - % Recovery Total Recoverable Hydrocarbo TRH C6-C9 TRH C10-C14 Spike - % Recovery BTEX Benzene Toluene Ethylbenzene	S19-Ma18928 S19-Ma18928 S19-Ma18928 S19-Ma18928 S19-Ma18928 S19-Ma18928 S19-Ma18928 S19-Ma18928 S19-Ma20699 S19-Ma20699 S19-Ma20699 S19-Ma20699 S19-Ma20699 S19-Ma20699	NCP NCP NCP NCP NCP NCP NCP NCP NCP NCP	% % % % % % % % % % %	87 97 111 95 110 105 91 123 Result 1 88 122 Result 1 83 101 90	70-130 70-130 70-130 70-130 70-130 70-130 70-130 70-130 70-130 70-130 70-130	Pass Pass Pass Pass Pass Pass Pass Pass	
Heavy Metals Arsenic Cadmium Chromium Copper Lead Mercury Nickel Zinc Spike - % Recovery Total Recoverable Hydrocarbo TRH C6-C9 TRH C10-C14 Spike - % Recovery BTEX Benzene Toluene Ethylbenzene m&p-Xylenes	S19-Ma18928 S19-Ma18928 S19-Ma18928 S19-Ma18928 S19-Ma18928 S19-Ma18928 S19-Ma18928 S19-Ma18928 S19-Ma18928 S19-Ma20699 S19-Ma20699 S19-Ma20699 S19-Ma20699 S19-Ma20699 S19-Ma20699 S19-Ma20699	NCP NCP NCP NCP NCP NCP NCP NCP NCP NCP	% % % % % % % % % % % % % %	87 97 111 95 110 105 91 123 Result 1 88 122 Result 1 83 101 90 91	70-130 70-130 70-130 70-130 70-130 70-130 70-130 70-130 70-130 70-130 70-130 70-130 70-130	Pass Pass Pass Pass Pass Pass Pass Pass	
Heavy Metals Arsenic Cadmium Chromium Copper Lead Mercury Nickel Zinc Spike -% Recovery Total Recoverable Hydrocarbo TRH C6-C9 TRH C10-C14 Spike -% Recovery BTEX Benzene Toluene Ethylbenzene m&p-Xylenes o-Xylene	S19-Ma18928 S19-Ma18928 S19-Ma18928 S19-Ma18928 S19-Ma18928 S19-Ma18928 S19-Ma18928 S19-Ma18928 S19-Ma20699 S19-Ma20699 S19-Ma20699 S19-Ma20699 S19-Ma20699 S19-Ma20699 S19-Ma20699 S19-Ma20699 S19-Ma20699	NCP NCP NCP NCP NCP NCP NCP NCP NCP NCP	% % % % % % % % % % % % % % % % % % % % % % % % %	87 97 111 95 110 105 91 123 Result 1 88 122 Result 1 83 101 90	70-130 70-130 70-130 70-130 70-130 70-130 70-130 70-130 70-130 70-130 70-130 70-130 70-130 70-130	Pass Pass Pass Pass Pass Pass Pass Pass	
Heavy Metals Arsenic Cadmium Chromium Copper Lead Mercury Nickel Zinc Spike -% Recovery Total Recoverable Hydrocarbo TRH C6-C9 TRH C10-C14 Spike -% Recovery BTEX Benzene Toluene Ethylbenzene m&p-Xylenes o-Xylene Xylenes - Total	S19-Ma18928 S19-Ma18928 S19-Ma18928 S19-Ma18928 S19-Ma18928 S19-Ma18928 S19-Ma18928 S19-Ma18928 S19-Ma18928 S19-Ma20699 S19-Ma20699 S19-Ma20699 S19-Ma20699 S19-Ma20699 S19-Ma20699 S19-Ma20699	NCP NCP NCP NCP NCP NCP NCP NCP NCP NCP	% % % % % % % % % % % % % %	87 97 111 95 110 105 91 123 Result 1 88 122 Result 1 83 101 90 91 93	70-130 70-130 70-130 70-130 70-130 70-130 70-130 70-130 70-130 70-130 70-130 70-130 70-130	Pass Pass Pass Pass Pass Pass Pass Pass	
Heavy Metals Arsenic Cadmium Chromium Copper Lead Mercury Nickel Zinc Spike -% Recovery Total Recoverable Hydrocarbo TRH C6-C9 TRH C10-C14 Spike -% Recovery BTEX Benzene Toluene Ethylbenzene m&p-Xylenes o-Xylene Xylenes - Total Spike -% Recovery	S19-Ma18928 S19-Ma18928 S19-Ma18928 S19-Ma18928 S19-Ma18928 S19-Ma18928 S19-Ma18928 S19-Ma18928 S19-Ma18928 S19-Ma20699 S19-Ma20699 S19-Ma20699 S19-Ma20699 S19-Ma20699 S19-Ma20699 S19-Ma20699 S19-Ma20699 S19-Ma20699	NCP NCP NCP NCP NCP NCP NCP NCP NCP NCP	% % % % % % % % % % % % % % % % % % % % % % % % %	87 97 1111 95 110 105 91 123 Result 1 88 122 Result 1 83 101 90 91 93 92	70-130 70-130 70-130 70-130 70-130 70-130 70-130 70-130 70-130 70-130 70-130 70-130 70-130 70-130	Pass Pass Pass Pass Pass Pass Pass Pass	
Heavy Metals Arsenic Cadmium Chromium Copper Lead Mercury Nickel Zinc Spike -% Recovery Total Recoverable Hydrocarbo TRH C6-C9 TRH C10-C14 Spike -% Recovery BTEX Benzene Toluene Ethylbenzene m&p-Xylenes o-Xylene Xylenes - Total Spike -% Recovery Total Recoverable Hydrocarbo	S19-Ma18928 S19-Ma18928 S19-Ma18928 S19-Ma18928 S19-Ma18928 S19-Ma18928 S19-Ma18928 S19-Ma18928 S19-Ma18928 S19-Ma20699 S19-Ma20699 S19-Ma20699 S19-Ma20699 S19-Ma20699 S19-Ma20699 S19-Ma20699 S19-Ma20699 S19-Ma20699 S19-Ma20699	NCP NCP NCP NCP NCP NCP NCP NCP NCP NCP	% % % % % % % % % % % % % % % % % % % % % % % % % % %	87 97 111 95 110 105 91 123 Result 1 88 122 Result 1 83 101 90 91 93 92 Result 1	70-130 70-130 70-130 70-130 70-130 70-130 70-130 70-130 70-130 70-130 70-130 70-130 70-130 70-130 70-130	Pass Pass Pass Pass Pass Pass Pass Pass	
Heavy Metals Arsenic Cadmium Chromium Copper Lead Mercury Nickel Zinc Spike -% Recovery Total Recoverable Hydrocarbo TRH C6-C9 TRH C10-C14 Spike -% Recovery BTEX Benzene Toluene Ethylbenzene m&p-Xylenes o-Xylene Xylenes - Total Spike -% Recovery Total Recoverable Hydrocarbo Naphthalene	S19-Ma18928 S19-Ma18928 S19-Ma18928 S19-Ma18928 S19-Ma18928 S19-Ma18928 S19-Ma18928 S19-Ma18928 S19-Ma18928 S19-Ma20699 S19-Ma20699 S19-Ma20699 S19-Ma20699 S19-Ma20699 S19-Ma20699 S19-Ma20699 S19-Ma20699 S19-Ma20699	NCP NCP NCP NCP NCP NCP NCP NCP NCP NCP	% % % % % % % % % % % % % % % % % %	87 97 111 95 110 105 91 123 Result 1 88 101 90 91 93 92 Result 1 86	70-130 70-130 70-130 70-130 70-130 70-130 70-130 70-130 70-130 70-130 70-130 70-130 70-130 70-130 70-130	Pass Pass Pass Pass Pass Pass Pass Pass	
Heavy Metals Arsenic Cadmium Chromium Copper Lead Mercury Nickel Zinc Spike -% Recovery Total Recoverable Hydrocarbo TRH C6-C9 TRH C10-C14 Spike -% Recovery BTEX Benzene Toluene Ethylbenzene m&p-Xylenes o-Xylene Xylenes - Total Spike -% Recovery Total Recoverable Hydrocarbo	S19-Ma18928 S19-Ma18928 S19-Ma18928 S19-Ma18928 S19-Ma18928 S19-Ma18928 S19-Ma18928 S19-Ma18928 S19-Ma18928 S19-Ma20699 S19-Ma20699 S19-Ma20699 S19-Ma20699 S19-Ma20699 S19-Ma20699 S19-Ma20699 S19-Ma20699 S19-Ma20699 S19-Ma20699	NCP NCP NCP NCP NCP NCP NCP NCP NCP NCP	% % % % % % % % % % % % % % % % % % % % % % % % % % %	87 97 111 95 110 105 91 123 Result 1 88 122 Result 1 83 101 90 91 93 92 Result 1	70-130 70-130 70-130 70-130 70-130 70-130 70-130 70-130 70-130 70-130 70-130 70-130 70-130 70-130 70-130	Pass Pass Pass Pass Pass Pass Pass Pass	

Date Reported: Mar 20, 2019

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Test	Lab Sample ID	QA Source	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Acenaphthene	S19-Ma15448	NCP	%	84			70-130	Pass	
Acenaphthylene	S19-Ma15448	NCP	%	90			70-130	Pass	
Anthracene	S19-Ma15448	NCP	%	87			70-130	Pass	
Benz(a)anthracene	S19-Ma15448	NCP	%	97			70-130	Pass	
Benzo(a)pyrene	S19-Ma15448	NCP	%	91			70-130	Pass	
Benzo(b&j)fluoranthene	S19-Ma15448	NCP	%	75			70-130	Pass	
Benzo(g.h.i)perylene	S19-Ma15448	NCP	%	107			70-130	Pass	
Benzo(k)fluoranthene	S19-Ma15448	NCP	%	78			70-130	Pass	
Chrysene	S19-Ma15448	NCP	%	89			70-130	Pass	
Dibenz(a.h)anthracene	S19-Ma15448	NCP	%	114			70-130	Pass	
Fluoranthene	S19-Ma15448	NCP	%	100			70-130	Pass	
Fluorene	S19-Ma15448	NCP	%	87			70-130	Pass	
Indeno(1.2.3-cd)pyrene	S19-Ma15448	NCP	%	111			70-130	Pass	
Naphthalene	S19-Ma15448	NCP	%	87			70-130	Pass	
Phenanthrene	S19-Ma15448	NCP	%	90			70-130	Pass	
Pyrene	S19-Ma15448	NCP	%	99			70-130	Pass	
Spike - % Recovery									
Organochlorine Pesticides				Result 1					
Chlordanes - Total	S19-Ma16831	NCP	%	82			70-130	Pass	
4.4'-DDD	S19-Ma24932	NCP	%	118			70-130	Pass	
4.4'-DDE	S19-Ma24932	NCP	%	104			70-130	Pass	
4.4'-DDT	S19-Ma24932	NCP	%	85			70-130	Pass	
a-BHC	S19-Ma24932	NCP	%	100			70-130	Pass	
Aldrin	S19-Ma24932	NCP	%	110			70-130	Pass	
b-BHC	S19-Ma24932	NCP	%	92			70-130	Pass	
d-BHC	S19-Ma24932	NCP	%	74			70-130	Pass	
Dieldrin	S19-Ma24932	NCP	%	104			70-130	Pass	
Endosulfan I	S19-Ma24932	NCP	%	95			70-130	Pass	
Endosulfan II	S19-Ma24932	NCP	%	101			70-130	Pass	
Endosulfan sulphate	S19-Ma24932	NCP	%	90			70-130	Pass	
Endrin	S19-Ma24932	NCP	%	112			70-130	Pass	
Endrin aldehyde	S19-Ma24932	NCP	%	76			70-130	Pass	
Endrin ketone	S19-Ma24932	NCP	%	92			70-130	Pass	
g-BHC (Lindane)	S19-Ma24932	NCP	%	96			70-130	Pass	
Heptachlor	S19-Ma24932	NCP	%	101			70-130	Pass	
Heptachlor epoxide	S19-Ma24932	NCP	%	105			70-130	Pass	
Hexachlorobenzene	S19-Ma24932	NCP	%	99			70-130	Pass	
Methoxychlor	S19-Ma24932	NCP	%	93			70-130	Pass	+
Toxaphene	S19-Ma16831	NCP	%	78			70-100	Pass	
Spike - % Recovery	010-101010001	Noi	70	1 10			10-100	1 4 3 3	
Organophosphorus Pesticides				Result 1			T		
Diazinon	S19-Ma14873	NCP	%	77			70-130	Pass	<u> </u>
Dimethoate	S19-Ma14873	NCP	%	81			70-130	Pass	<u> </u>
Ethion	S19-Ma15448	NCP	%	123			70-130	Pass	
Mevinphos	S19-Ma14873	NCP	%	123			70-130	Pass	
Spike - % Recovery	313-Wid 14073	NOF	/0	102			1 10-130	F d 5 5	
Total Recoverable Hydrocarbons	- 2013 NEPM Eract	tions		Result 1			T		
TRH >C10-C16	S19-Ma16831	NCP	%	72	├		70-130	Pass	
Test	Lab Sample ID	QA	Units	Result 1			Acceptance	Pass	Qualifying
Duplicate		Source					Limits	Limits	Code
Heavy Metals				Result 1	Result 2	RPD			
Arsenic	S19-Ma14882	NCP	mg/kg	8.0	7.6	5.0	30%	Pass	
Cadmium	S19-Ma14882	NCP	mg/kg	0.6	0.5	15	30%	Pass	

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Test	Lab Sample ID	QA Source	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Duplicate									
Heavy Metals	_			Result 1	Result 2	RPD			
Copper	S19-Ma14882	NCP	mg/kg	11	10	7.0	30%	Pass	
Lead	S19-Ma14882	NCP	mg/kg	30	28	7.0	30%	Pass	
Mercury	S19-Ma16859	NCP	mg/kg	< 0.1	< 0.1	<1	30%	Pass	
Nickel	S19-Ma14882	NCP	mg/kg	< 5	< 5	<1	30%	Pass	
Zinc	S19-Ma14882	NCP	mg/kg	48	43	12	30%	Pass	
Duplicate									
Total Recoverable Hydrocarbons	s - 1999 NEPM Fract	ions		Result 1	Result 2	RPD			
TRH C6-C9	S19-Ma15622	NCP	mg/kg	< 20	< 20	<1	30%	Pass	
TRH C10-C14	S19-Ma16830	NCP	mg/kg	< 20	21	15	30%	Pass	
TRH C15-C28	S19-Ma16830	NCP	mg/kg	52	60	14	30%	Pass	
TRH C29-C36	S19-Ma16830	NCP	mg/kg	< 50	66	34	30%	Fail	Q15
Duplicate									
BTEX				Result 1	Result 2	RPD			
Benzene	S19-Ma15622	NCP	mg/kg	< 0.1	< 0.1	<1	30%	Pass	
Toluene	S19-Ma15622	NCP	mg/kg	< 0.1	< 0.1	<1	30%	Pass	
Ethylbenzene	S19-Ma15622	NCP	mg/kg	< 0.1	< 0.1	<1	30%	Pass	
m&p-Xylenes	S19-Ma15622	NCP	mg/kg	< 0.2	< 0.2	<1	30%	Pass	
o-Xylene	S19-Ma15622	NCP	mg/kg	< 0.1	< 0.1	<1	30%	Pass	
Xylenes - Total	S19-Ma15622	NCP	mg/kg	< 0.3	< 0.3	<1	30%	Pass	
Duplicate									
Total Recoverable Hydrocarbons	s - 2013 NEPM Fract	ions		Result 1	Result 2	RPD			
Naphthalene	S19-Ma15622	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
TRH C6-C10	S19-Ma15622	NCP	mg/kg	< 20	< 20	<1	30%	Pass	
Duplicate									
Polycyclic Aromatic Hydrocarbo	ns			Result 1	Result 2	RPD			
Acenaphthene	S19-Ma11961	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Acenaphthylene	S19-Ma11961	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Anthracene	S19-Ma11961	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Benz(a)anthracene	S19-Ma11961	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Benzo(a)pyrene	S19-Ma11961	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Benzo(b&j)fluoranthene	S19-Ma11961	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Benzo(g.h.i)perylene	S19-Ma11961	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Benzo(k)fluoranthene	S19-Ma11961	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Chrysene	S19-Ma11961	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Dibenz(a.h)anthracene	S19-Ma11961	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Fluoranthene	S19-Ma11961	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Fluorene	S19-Ma11961	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Indeno(1.2.3-cd)pyrene	S19-Ma11961	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Naphthalene	S19-Ma11961	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Phenanthrene	S19-Ma11961	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Pyrene	S19-Ma11961	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Duplicate									
Organochlorine Pesticides	_			Result 1	Result 2	RPD			
Chlordanes - Total	S19-Ma23352	NCP	mg/kg	0.2	0.2	4.0	30%	Pass	
4.4'-DDD	S19-Ma23352	NCP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
4.4'-DDE	S19-Ma23352	NCP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
4.4'-DDT	S19-Ma23352	NCP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
a-BHC	S19-Ma23352	NCP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
Aldrin	S19-Ma23352	NCP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
b-BHC	S19-Ma23352	NCP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
d-BHC	S19-Ma23352	NCP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
Dieldrin	S19-Ma23352	NCP	mg/kg	0.07	0.07	4.0	30%	Pass	

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Duplicate				_	_				
Organochlorine Pesticides				Result 1	Result 2	RPD			
Endosulfan I	S19-Ma23352	NCP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
Endosulfan II	S19-Ma23352	NCP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
Endosulfan sulphate	S19-Ma23352	NCP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
Endrin	S19-Ma23352	NCP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
Endrin aldehyde	S19-Ma23352	NCP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
Endrin ketone	S19-Ma23352	NCP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
g-BHC (Lindane)	S19-Ma23352	NCP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
Heptachlor	S19-Ma23352	NCP	mg/kg	0.08	0.07	9.0	30%	Pass	
Heptachlor epoxide	S19-Ma23352	NCP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
Hexachlorobenzene	S19-Ma23352	NCP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
Methoxychlor	S19-Ma23352	NCP	mg/kg	< 0.2	< 0.2	<1	30%	Pass	
Toxaphene	S19-Ma23352	NCP	mg/kg	< 1	< 1	<1	30%	Pass	
Duplicate							_		
Organophosphorus Pesticides				Result 1	Result 2	RPD			
Azinphos-methyl	S19-Ma14872	NCP	mg/kg	< 0.2	< 0.2	<1	30%	Pass	
Bolstar	S19-Ma14872	NCP	mg/kg	< 0.2	< 0.2	<1	30%	Pass	
Chlorfenvinphos	S19-Ma14872	NCP	mg/kg	< 0.2	< 0.2	<1	30%	Pass	
Chlorpyrifos	S19-Ma14872	NCP	mg/kg	< 0.2	< 0.2	<1	30%	Pass	
Chlorpyrifos-methyl	S19-Ma14872	NCP	mg/kg	< 0.2	< 0.2	<1	30%	Pass	
Coumaphos	S19-Ma14872	NCP	mg/kg	< 2	< 2	<1	30%	Pass	
Demeton-S	S19-Ma14872	NCP	mg/kg	< 0.2	< 0.2	<1	30%	Pass	
Demeton-O	S19-Ma14872	NCP	mg/kg	< 0.2	< 0.2	<1	30%	Pass	
Diazinon	S19-Ma14872	NCP	mg/kg	< 0.2	< 0.2	<1	30%	Pass	
Dichlorvos	S19-Ma14872	NCP	mg/kg	< 0.2	< 0.2	<1	30%	Pass	
Dimethoate	S19-Ma14872	NCP	mg/kg	< 0.2	< 0.2	<1	30%	Pass	
Disulfoton	S19-Ma14872	NCP	mg/kg	< 0.2	< 0.2	<1	30%	Pass	
EPN	S19-Ma14872	NCP	mg/kg	< 0.2	< 0.2	<1	30%	Pass	
Ethion	S19-Ma14872	NCP	mg/kg	< 0.2	< 0.2	<1	30%	Pass	
Ethoprop	S19-Ma14872	NCP	mg/kg	< 0.2	< 0.2	<1	30%	Pass	
Ethyl parathion	S19-Ma14872	NCP	mg/kg	< 0.2	< 0.2	<1	30%	Pass	
Fenitrothion	S19-Ma14872	NCP	mg/kg	< 0.2	< 0.2	<1	30%	Pass	
Fensulfothion	S19-Ma14872	NCP	mg/kg	< 0.2	< 0.2	<1	30%	Pass	
Fenthion	S19-Ma14872	NCP	mg/kg	< 0.2	< 0.2	<1	30%	Pass	
Malathion	S19-Ma14872	NCP	mg/kg	< 0.2	< 0.2	<1	30%	Pass	
Merphos	S19-Ma14872	NCP	mg/kg	< 2	< 2	<1	30%	Pass	
Methyl parathion	S19-Ma14872	NCP	mg/kg	< 0.2	< 0.2	<1	30%	Pass	
Mevinphos	S19-Ma14872	NCP	mg/kg	< 0.2	< 0.2	<1	30%	Pass	
Monocrotophos	S19-Ma14872	NCP	mg/kg	< 2	< 2	<1	30%	Pass	
Naled	S19-Ma14872	NCP	mg/kg	< 0.2	< 0.2	<1	30%	Pass	
Omethoate	S19-Ma14872	NCP	mg/kg	< 2	< 2	<1	30%	Pass	
Phorate	S19-Ma14872	NCP	mg/kg	< 0.2	< 0.2	<1	30%	Pass	
Pirimiphos-methyl	S19-Ma14872	NCP	mg/kg	< 0.2	< 0.2	<1	30%	Pass	
Pyrazophos	S19-Ma14872	NCP	mg/kg	< 0.2	< 0.2	<1	30%	Pass	
Ronnel	S19-Ma14872	NCP	mg/kg	< 0.2	< 0.2	<1	30%	Pass	
Terbufos	S19-Ma14872	NCP	mg/kg	< 0.2	< 0.2	<1	30%	Pass	
Tetrachlorvinphos	S19-Ma14872	NCP	mg/kg	< 0.2	< 0.2	<1	30%	Pass	
Tokuthion	S19-Ma14872	NCP	mg/kg	< 0.2	< 0.2	<1	30%	Pass	
Trichloronate	S19-Ma14872	NCP	mg/kg	< 0.2	< 0.2	<1	30%	Pass	
Duplicate									
Total Recoverable Hydrocarbons	- 2013 NEPM Fract	ions		Result 1	Result 2	RPD			
TRH >C10-C16	S19-Ma16830	NCP	mg/kg	< 50	< 50	<1	30%	Pass	
TRH >C16-C34	S19-Ma16830	NCP	mg/kg	< 100	110	22	30%	Pass	
TRH >C34-C40	S19-Ma16830	NCP	mg/kg	< 100	< 100	<1	30%	Pass	

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Duplicate									
				Result 1	Result 2	RPD			
% Moisture	N19-Ma15101	CP	%	15	15	3.0	30%	Pass	

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Comments

Sample Integrity	
Custody Seals Intact (if used)	N/A
Attempt to Chill was evident	Yes
Sample correctly preserved	Yes
Appropriate sample containers have been used	Yes
Sample containers for volatile analysis received with minimal headspace	Yes
Samples received within HoldingTime	Yes
Some samples have been subcontracted	No

Qualifier Codes/Comments

Code Description

0000	Beedington
N01	F2 is determined by arithmetically subtracting the "naphthalene" value from the ">C10-C16" value. The naphthalene value used in this calculation is obtained from volatiles (Purge & Trap analysis).
N02	Where we have reported both volatile (P&T GCMS) and semivolatile (GCMS) naphthalene data, results may not be identical. Provided correct sample handling protocols have been followed, any observed differences in results are likely to be due to procedural differences within each methodology. Results determined by both techniques have passed all DAQC acceptance orderina, and are entirely technically valid.
N04	F1 is determined by arithmetically subtracting the "Total BTEX" value from the "C8-C10" value. The "Total BTEX" value is obtained by summing the concentrations of BTEX analytes. The "C8-C10" value is obtained by quantitating against a standard of mixed aromatic/aliphatic analytes.
N07	Please note:- These two PAH isomers closely co-elute using the most contemporary analytical methods and both the reported concentration (and the TEQ) apply specifically to the total of the two co-eluting PAHs
Q15	The RPD reported passes Eurofins mgt's QC - Acceptance Criteria as defined in the Internal Quality Control Review and Glossary page of this report.

Authorised By

Andrew Black Andrew Sullivan Gabriele Cordero Nibha Vaidya Analytical Services Manager Senior Analyst-Organic (NSW) Senior Analyst-Metal (NSW) Senior Analyst-Asbestos (NSW)

Glenn Jackson General Manager

Final report - this Report replaces any previously issued Report

- Indicates Not Requested

* Indicates NATA accreditation does not cover the performance of this service

Measurement uncertainty of test data is available on request or please click here.

Eards ingli dal nobe lable for loss, cost, samples a expression non ello y le clerk o any other person o company, senting han la uso a aplumormation os integretados abenin lhis report, la no casabla Biordos ingli be lable for consequentid damages induitos, bot not limite lo los grandes damages or alterno integretados analiga from this report. Ila los damages analismente los teres induitos damages analismente la teres induitos damages analismente los teres analismentes analismentes damages analismentes analismentes analismentes analismentes analismentes damages analismentes analismentes analisment

Date Reported: Mar 20, 2019

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Certificate of Analysis

mgt

Regional Geotechnical Solutions 44 Bent Street Wingham NSW 2429

 NATA Accredited Accreditation Number 1261 Site Number 18217

Accredited for compliance with ISO/IEC 17025 – Testing The results of the tests, calibrations and/or measurements included in this document are traceable to Australian/national standards.

Attention:

Grant Colliar

Report Project name Project ID Received Date 646340-S-V2 ADDITIONAL - PROPOSED RESIDENTIAL SUBDIVISION RGS20789.1 Mar 20, 2019

Client Sample ID Sample Matrix			TP5_0-0.2 Soil
Eurofins mgt Sample No.			S19-Ma26743
Date Sampled			Mar 12, 2019
Test/Reference	LOR	Unit	
Chromium (hexavalent)	1	mg/kg	< 1
Chromium (trivalent)	5	mg/kg	240
% Moisture	1	%	19
Heavy Metals			
Chromium	5	mg/kg	240

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Sample History

Where samples are submitted/analysed over several days, the last date of extraction and analysis is reported. A recent review of our LIMS has resulted in the correction or clarification of some method identifications. Due to this, some of the method reference information on reports has changed. However, no substantive change has been made to our laboratory methods, and as such there is no change in the validity of current or previous results (regarding both quality and NATA accreditation).

If the date and time of sampling are not provided, the Laboratory will not be responsible for compromised results should testing be performed outside the recommended holding time.

Description	Testing Site	Extracted	Holding Time
Chromium (speciated)			
Chromium (hexavalent)	Sydney	Mar 21, 2019	28 Day
- Method: E057 Total Speciated Chromium			
Chromium (trivalent)	Sydney	Mar 20, 2019	28 Day
- Method: E043 /E057 Total Speciated Chromium			
Heavy Metals	Sydney	Mar 28, 2019	180 Day
- Method: LTM-MET-3040 Metals in Waters, Soils & Sediments by ICP-MS			
% Moisture	Sydney	Mar 20, 2019	14 Day
- Method: LTM-GEN-7080 Moisture			

First Reported: Mar 27, 2019 Date Reported: Mar 28, 2019 Eurofins | mgt Unit F3, Building F, 16 Mars Road, Lane Cove West, NSW, Australia, 2066 ABN : 50 005 085 521 Telephone: +61 2 9900 8400 Page 2 of 6 Report Number: 646340-S-V2

Regional Geotechnical Solutions 44 Bent Street Wingham NSW 2429 ADDITIONAL - PROPOSED RESIDENTIAL SU RGS20789.1					
<u>ن</u> و					
Project Name: Additional - Proposed Residential Subdivision Project ID: RGS20789.1	Order No.: Report #: Phone: Fax:	: 646340 (02) 65535641		Received: M Due: M Priority: 5 Contact Name: 0	Mar 20, 2019 2:13 PM Mar 27, 2019 5 Day Grant Colliar
			Eurofin	s mgt Analytical Servi	Eurofins mgt Analytical Services Manager : Andrew Black
Sample Detail	Moisture Set Chromium (speciated)				
Melbourne Laboratorv - NATA Site #1254 & 14271					
Svdnev Laboratory - NATA Site # 18217	××				
Brisbane Laboratory - NATA Site # 20794	⊢				
Perth Laboratory - NATA Site # 23736					
External Laboratory					
Sample ID Sample Date Sampling Matrix LAB ID Time					
TP5_0-0.2 Mar 12, 2019 Soil S19-Ma26743	××				
Test Counts	1 1				



Internal Quality Control Review and Glossary

General

- Laboratory QC results for Method Blanks, Duplicates, Matrix Spikes, and Laboratory Control Samples follows guidelines delineated in the National Environment Protection (Assessment of Site Contamination) Measure, April 2011 and are included in this QC report where applicable. Additional QC data may be available on request.
- 2. All soil/sediment/solid results are reported on a dry basis, unless otherwise stated.
- 3. All biota/food results are reported on a wet weight basis on the edible portion, unless otherwise stated.
- 4. Actual LORs are matrix dependant. Quoted LORs may be raised where sample extracts are diluted due to interferences.
- 5. Results are uncorrected for matrix spikes or surrogate recoveries except for PFAS compounds.
- 6. SVOC analysis on waters are performed on homogenised, unfiltered samples, unless noted otherwise
- 7. Samples were analysed on an 'as received' basis
- 8. This report replaces any interim results previously issued.

Holding Times

Please refer to 'Sample Preservation and Container Guide' for holding times (QS3001).

For samples received on the last day of holding time, notification of testing requirements should have been received at least 6 hours prior to sample receipt deadlines as stated on the SRA. If the Laboratory did not receive the information in the required timeframe, and regardless of any other integrity issues, suitably qualified results may still be reported.

Holding times apply from the date of sampling, therefore compliance to these may be outside the laboratory's control.

For VOCs containing vinyl chloride, styrene and 2-chloroethyl vinyl ether the holding time is 7 days however for all other VOCs such as BTEX or C6-10 TRH then the holding time is 14 days. **NOTE: pH duplicates are reported as a range NOT as RPD

Units

mg/kg: milligrams per kilogram	mg/L: milligrams per litre	ug/L: micrograms per litre
ppm: Parts per million	ppb: Parts per billion	%: Percentage
org/100mL: Organisms per 100 millilitres	NTU: Nephelometric Turbidity Units	MPN/100mL: Most Probable Number of organisms per 100 millilitres
Terms		

-				

Dry	Where a moisture has been determined on a solid sample the result is expressed on a dry basis.
LOR	Limit of Reporting.
SPIKE	Addition of the analyte to the sample and reported as percentage recovery.
RPD	Relative Percent Difference between two Duplicate pieces of analysis.
LCS	Laboratory Control Sample - reported as percent recovery.
CRM	Certified Reference Material - reported as percent recovery.
Method Blank	In the case of solid samples these are performed on laboratory certified clean sands and in the case of water samples these are performed on de-ionised water.
Surr - Surrogate	The addition of a like compound to the analyte target and reported as percentage recovery.
Duplicate	A second piece of analysis from the same sample and reported in the same units as the result to show comparison.
USEPA	United States Environmental Protection Agency
APHA	American Public Health Association
TCLP	Toxicity Characteristic Leaching Procedure
COC	Chain of Custody
SRA	Sample ReceiptAdvice
QSM	US Department of Defense Quality Systems Manual Version 5.2 2018
CP	Client Parent - Q.C was performed on samples pertaining to this report
NCP	Non-Client Parent - QC performed on samples not pertaining to this report, QC is representative of the sequence or batch that client samples were analysed within.
TEQ	Toxic Equivalency Quotient

QC - Acceptance Criteria

RPD Duplicates: Global RPD Duplicates Acceptance Criteria is 30% however the following acceptance guidelines are equally applicable:

Results <10 times the LOR : No Limit

Results between 10-20 times the LOR : RPD must lie between 0-50%

Results >20 times the LOR : RPD must lie between 0-30%

Surrogate Recoveries: Recoveries must lie between 50-150%-Phenols & PFASs

PFAS field samples that contain surrogate recoveries in excess of the QC limit designated in QSM 5.2 where no positive PFAS results have been reported have been reviewed and no data was affected.

WA DWER (n=10): PFBA, PFPeA, PFHxA, PFHpA, PFOA, PFBS, PFHxS, PFOS, 6:2 FTSA, 8:2 FTSA

QC Data General Comments

1. Where a result is reported as a less than (<), higher than the nominated LOR, this is due to either matrix interference, extract dilution required due to interferences or contaminant levels within the sample, high moisture content or insufficient sample provided.

- 2. Duplicate data shown within this report that states the word "BATCH" is a Batch Duplicate from outside of your sample batch, but within the laboratory sample batch at a 1:10 ratio. The Parent and Duplicate data shown is not data from your samples.
- 3. Organochlorine Pesticide analysis where reporting LCS data, Toxaphene & Chlordane are not added to the LCS.
- 4. Organochlorine Pesticide analysis where reporting Spike data, Toxaphene is not added to the Spike
- 5. Total Recoverable Hydrocarbons where reporting Spike & LCS data, a single spike of commercial Hydrocarbon products in the range of C12-C30 is added and it's Total Recovery is reported in the C10-C14 cell of the Report.
- 6. pH and Free Chlorine analysed in the laboratory Analysis on this test must begin within 30 minutes of sampling. Therefore laboratory analysis is unlikely to be completed within holding time. Analysis will begin as soon as possible after sample receipt.
- 7. Recovery Data (Spikes & Surrogates) where chromatographic interference does not allow the determination of Recovery the term "INT" appears against that analyte
- 8. Polychlorinated Biphenyls are spiked only using Aroclor 1260 in Matrix Spikes and LCS.
- 9. For Matrix Spikes and LCS results a dash " -" in the report means that the specific analyte was not added to the QC sample.
- 10. Duplicate RPDs are calculated from raw analytical data thus it is possible to have two sets of data.

First Reported: Mar 27, 2019 Date Reported: Mar 28, 2019 Eurofins | mgt Unit F3, Building F, 16 Mars Road, Lane Cove West, NSW, Australia, 2066 ABN : 50 005 085 521 Telephone: +61 2 9900 8400

Page 4 of 6 Report Number: 646340-S-V2



Quality Control Results

Test			Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Method Blank									
Chromium (hexavalent)			mg/kg	< 1			1	Pass	
Method Blank							_		
Heavy Metals									
Chromium			mg/kg	< 5			5	Pass	
LCS - % Recovery							_		
Chromium (hexavalent)			%	101			70-130	Pass	
LCS - % Recovery				-	-		_		
Heavy Metals									
Chromium			%	101			70-130	Pass	
Test	Lab Sample ID	QA Source	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Spike - % Recovery									
				Result 1					
Chromium (hexavalent)	S19-Ma26743	CP	%	105			70-130	Pass	
Spike - % Recovery									
Heavy Metals				Result 1					
Chromium	N19-Ma26342	NCP	%	102			70-130	Pass	
Test	Lab Sample ID	QA Source	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Duplicate									
				Result 1	Result 2	RPD			
Chromium (hexavalent)	S19-Ma26743	CP	mg/kg	< 1	< 1	<1	30%	Pass	
% Moisture	S19-Ma23362	NCP	%	13	12	8.0	30%	Pass	
Duplicate					_				
Heavy Metals				Result 1	Result 2	RPD			
Chromium	N19-Ma26341	NCP	mg/kg	10	11	8.0	30%	Pass	

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Comments

New version with repeated Cr.

Sample Integrity	
Custody Seals Intact (if used)	N/A
Attempt to Chill was evident	Yes
Sample correctly preserved	Yes
Appropriate sample containers have been used	Yes
Sample containers for volatile analysis received with minimal headspace	Yes
Samples received within HoldingTime	Yes
Some samples have been subcontracted	No

Authorised By

Andrew Black Gabriele Cordero Gabriele Cordero Analytical Services Manager Senior Analyst-Inorganic (NSW) Senior Analyst-Metal (NSW)

Gienn Jackson General Manager

Final report - this Report replaces any previously issued Report

- Indicates Not Requested

* Indicates NATA accreditation does not cover the performance of this service Measurement uncertainty of test data is available on request or please click here.

Measurement uncertainty of test data is available on request or please click here. Euronis mat and hotbe lick for loss, cod, damages or expenses incorrectly the clerk or any other person or company, resulting from the use of any information or interpretation given in this report is no case shall Euronis (mgt be liable for consequential damages induding, but not limited to kapt provide some for dadingeand in out provide and not be reproduced except in not accessible and to the test exception of test exception of the test exception of test exception of the test exception of the test exception of the test exception of tes

First Reported: Mar 27, 2019 Date Reported: Mar 28, 2019 Eurofins | mgt Unit F3, Building F, 16 Mars Road, Lane Cove West, NSW, Australia, 2066 ABN : 50 005 085 521 Telephone: +61 2 9900 8400 Page 6 of 6 Report Number: 646340-S-V2

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Certificate of Analysis

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NATA Accredited Accreditation Number 1261

Site Number 18217

NATA

Regional Geotech	inical Solutions
44 Bent Street	Accredited for compliance with ISO/IEC 17025-Testing The results of the tests, calibrations and/or
Wingham	world Precodensed ACCREDITATION ACCREDITATION
•	
NSW 2429	
Attention:	Tim Morris
Report	645047-AID
Project Name	PROPOSED RESIDENTIAL SUBDIVISION
Project ID	RGS20789.1
Received Date	Mar 13, 2019
Date Reported	Mar 20, 2019
Dute Reported	Mar 20, 2010
Mathadala	
Methodology:	
Asbestos Fibre Identification	Conducted in accordance with the Australian Standard AS 4964 – 2004: Method for the Qualitative Identification of Asbestos in Bulk Samples and in-house Method LTM-ASB-8020 by polarised light microscopy (PLM) and dispersion
	staining (DS) techniques.
	NOTE. Positive Trace Analysis results indicate the sample contains detectable respirable fibres.
Linknown Minoral	Minoral fibros of upleasure time, as determined by DLM with DC, may require another applytical technique, such as
Unknown Mineral Fibres	Mineral fibres of unknown type, as determined by PLM with DS, may require another analytical technique, such as Electron Microscopy, to confirm unequivocal identity.
	NOTE: While Actinólite, Anthophyllite and Tremolité asbestos may be detected by PLM with DS, due to variability in the optical properties of these materials, AS4964 requires that these are reported as UMF unless confirmed by an
	independent technique.
Subsampling Soil	The whole sample submitted is first dried and then passed through a 10mm sieve followed by a 2mm sieve. All fibrous
Samples	matter greater than 10mm, greater than 2mm as well as the material passing through the 2mm sieve are retained and analysed for the presence of asbestos. If the sub 2mm fraction is greater than approximately 30 to 60g then a sub-
	sampling routine based on ISO 3082:2009(E) is employed.
	NOTE: Depending on the nature and size of the soil sample, the sub-2 mm residue material may need to be sub- sampled for trace analysis, in accordance with AS 4964-2004.
Bonded asbestos- containing material	The material is first examined and any fibres isolated for identification by PLM and DS. Where required, interfering matrices may be removed by disintegration using a range of heat, chemical or physical treatments, possibly in
(ACM)	combination. The resultant material is then further examined in accordance with AS 4964 - 2004.
	NOTE: Even after disintegration it may be difficult to detect the presence of asbestos in some asbestos-containing bulk materials using PLM and DS. This is due to the low grade or small length or diameter of the asbestos fibres present in
	the material, or to the fact that very fine fibres have been distributed intimately throughout the materials. Vinyl/asbestos floor tiles, some asbestos-containing sealants and mastics, asbestos-containing epoxy resins and some ore samples are
	examples of these types of material, which are difficult to analyse.
Limit of Reporting	The performance limitation of the AS 4964 (2004) method for non-homogeneous samples is around 0.1 g/kg (equivalent
	to 0.01% (w/w)). Where no asbestos is found by PLM and DS, including Trace Analysis, this is considered to be at the nominal reporting limit of 0.01% (w/w).
	The NEPM screening level of 0.001% (w/w) is intended as an on-site determination, not a laboratory Limit of Reporting
	(LOR), per se. Examination of a large sample size (e.g. 500 mL) may improve the likelihood of detecting asbestos, particularly AF, to aid assessment against the NEPM criteria. Gravimetric determinations to this level of accuracy are
	outside of AS 4964 and hence NATĂ Accreditation does not cover the performance of this service (non-NATA résults shown with an asterisk).
	NOTE: NATA News March 2014, p.7, states in relation to AS 4964: "This is a qualitative method with a nominal
	reporting limit of 0.01 % " and that currently in Australia "there is no validated method available for the quantification of asbestos". This report is consistent with the analytical procedures and reporting recommendations in the NEPM and the
	WA DoH.

1999

Date Reported: Mar 20, 2019

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Page 1 of 7 Report Number: 645047-AID

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ATTACHMENT

Accredited for compliance with ISO/IEC 17025-Testi The results of the tests, calibrations and/or measurements included in this document are traceab to Australian/national standards.

NATA

RLD RECOGNISED

Report 6450	645047-AID
Date Sampled Mar	Mar 12, 2019
Project ID RGS	RGS20789.1
Project Name PRO	PROPOSED RESIDENTIAL SUBDIVISION

ł			
Date Sa	Date Sampled	Sample Description	Result
Mar 12, 2019		Approximate Sample 64g Sample consisted of: Brown coarse-grained soil and rocks	No asbestos detected at the reporting limit of 0.01% w/w. Organic fibre detected. No respirable fibres detected.
Mar 12, 2019	019 ^A S	Approximate Sample 61g Sample consisted of: Brown coarse-grained soil and rocks	No asbestos detected at the reporting limit of 0.01% w/w. Organic fibre detected. No respirable fibres detected.
Mar 12, 2019		Approximate Sample 56g Sample consisted of: Brown coarse-grained soil and rocks	No asbestos detected at the reporting limit of 0.01% w/w. Organic fibre detected. No respirable fibres detected.

DEVELOPMENT ASSESSMENT PANEL 06/05/2020

> Page 2 of 7 Report Number: 645047-AID

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Date Reported: Mar 20, 2019

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Sample History

Where samples are submitted/analysed over several days, the last date of extraction and analysis is reported. A recent review of our LIMS has resulted in the correction or clarification of some method identifications. Due to this, some of the method reference information on reports has changed. However, no substantive change has been made to our laboratory methods, and as such there is no change in the validity of current or previous results (regarding both quality and NATA accreditation).

If the date and time of sampling are not provided, the Laboratory will not be responsible for compromised results should testing be performed outside the recommended holding time.

Description

Asbestos - LTM-ASB-8020

Testing SiteExtractedHolding TimeSydneyMar 13, 2019Indefinite

Date Reported: Mar 20, 2019

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DEVELOPMENT ASSESSMENT PANEL 06/05/2020

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Company Name: Address:	Regional Geote 44 Bent Street Wingham NSW 2429	Regional Geotechnical Solutions Wingham NSW 2429	lutions			Phor Fax:	Order No. Report #: Phone: Fax:		645047 (02) 65535641	Received: Due: Priority: Contority		Mar 13, 2019 11:15 AM Mar 20, 2019 5 Day Tim Morris
Project Name: Project ID:	PROPOSED RGS20789.1	RESIDENTI	PROPOSED RESIDENTIAL SUBDIVISION RGS20789.1	NO						Eurofins mgt Ar	alytical Services Mar	Eurofins mgt Analytical Services Manager : Andrew Black
	S S	Sample Detail			Asbestos - AS4964	Metals M8	Moisture Set	Eurofins mgt Suite B10			,	
Melbourne Laboratory - NATA Site #1254 & 14271	orv - NATA Site	# 1254 & 143	171									
Sydney Laboratory - NATA Site # 18217	- NATA Site # 1	8217			×	×	×	×				
Brisbane Laboratory - NATA Site # 20794	y - NATA Site #	20794										
Perth Laboratory - NATA Site # 23736	VATA Site # 237	36					1					
External Laboratory	- L			-								
No Sample ID	Sample Date	Sampling Time	Matrix	LABID								
1 TP1 0-0.2	Mar 12, 2019		Soil	N19-Ma15100		×	×					
	Mar 12, 2019		Soil	N19-Ma15101	×		×	×				
╈	Mar 12, 2019		Soil	N19-Ma15102		×	×	Τ				
4 TP3 0-0.2	Mar 12, 2019 Mar 12, 2019		Soil	N19-Ma15103		× >	× >					
	Mar 12, 2019		Soil	N10 Ma15105		< >	< >	Τ				
	Mar 12, 2019 Mar 12, 2019		Soil	N19-Ma15105	×	<	<	×				
8 TP5 1-1.2	Mar 12, 2019		Soil	N19-Ma15107		×	×					
	Mar 12, 2019		Soil	N19-Ma15108	Ц	×	×	\square				
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Date Reported: Mar 20, 2019	a				All	N : 50 00	5 085 5	21 Telepho	9. v monterity rough, canterion g Joun, vivours, roughes, and ABN : 50 005 085 521 Telephone: +01 3 8564 5000			Report Number: 645047-AID

DEVELOPMENT ASSESSMENT PANEL 06/05/2020

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Company Name: Address:	Regional Geotechnical Solutions 44 Bent Street Virigham NSM 24 20			Order N Report Phone:	Order No.: Report #: Phone:		645047 (02) 65535641	Received: Due: Priority: Contract Maxee		Mar 13, 2019 11:15 AM Mar 20, 2019 5 Day Tim Morrie
Project Name: Project ID:	PROPOSED RESIDENTIAL SUBDIVISION RGS20789.1			40				Eurofins mgt Ar	ialytical Services Man	Contact varine. This months Eurofins mgt Analytical Services Manager : Andrew Black
	Sample Detail		Asbestos - AS4964	Metals M8	Moisture Set	Eurofins mgt Suite B10				
Melbourne Laborator	Melbourne Laboratory - NATA Site # 1254 & 14271									
Svdnev Laboratory - NATA Site # 18217	NATA Site # 18217		×	×	×	×				
Brisbane Laboratory - NATA Site # 20794	- NATA Site # 20794									
Perth Laboratory - NATA Site # 23736	ATA Site # 23736									
10 TP6 1.5-1.6	Soil	N19-Ma15109	×	\vdash	×	×				
			m	2	5					
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Date Reported: Mar 20, 2019		Eurofins	mgt 6 ABN	Montere : 50 00	y Road 5 085 5	Dandenong S	Eurofins mgt 6 Monterey Road, Dandenong South, Victoria, Australia 3175 ABN : 50 005 065 551 Telephone: +61 3 8564 5000			Page 5 of 7 Report Number: 645047-AID
Date Reported: Mar 20, 2019		Euronins	ABN	Montere : 50 00!	y Hoad 5 085 5	Dandenong 5 11 Telephone:	South, Victoria, Australia 31/0 :+61 3 8564 5000			

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mgt

Internal Quality Control Review and Glossary

General

- 1. QC data may be available on request.
- 2. All soil results are reported on a dry basis, unless otherwise stated.
- 3. Samples were analysed on an 'as received' basis.
- 4. This report replaces any interim results previously issued.

Holding Times

Please refer to 'Sample Preservation and Container Guide' for holding times (QS3001).

For samples received on the last day of holding time, notification of testing requirements should have been received at least 8 hours prior to sample receipt deadlines as stated on the Sample Receipt Advice.

If the Laboratory did not receive the information in the required timeframe, and regardless of any other integrity issues, suitably qualified results may still be reported. Holding times apply from the date of sampling, therefore compliance to these may be outside the laboratory's control.

asis	grams per kilogram			
	fibres/100 graticule areas			
	fibres/mL			
	L/min			
Sample is dried by heating prior to analysis				
Limit of Reporting				
Chain of Custody				
Sample Receipt Advice				
International Standards Organisation				
Australian Standards				
	alia, Guidelines for the Assessment, Remediation and Management of Asbestos-Contaminated tecommended Procedures for Laboratory Analysis of Asbestos in Soil (2011)			
National Environment Protection (Assessment of Site Contaminatio	n) Measure, 2013 (as amended)			
Asbestos Containing Materials. Asbestos contained within a non-as NEPM, ACM is generally restricted to those materials that do not pa	ibestos matrix, typically presented in bonded and/or sound condition. For the purposes of the ass a 7mm x 7mm sieve.			
Asbestos Fines. Asbestos containing materials, including friable, we equivalent to "non-bonded / friable".	eathered and bonded materials, able to pass a 7mm x 7mm sieve. Considered under the NEPM as			
Fibrous Asbestos. Asbestos containing materials in a friable and/or materials that do not pass a 7mm x 7mm sieve.	severely weathered condition. For the purposes of the NEPM, FA is generally restricted to those			
Asbestos-containing materials of any size that may be broken or on outside of the laboratory's remit to assess degree of friability.	umbled by hand pressure. For the purposes of the NEPM, this includes both AF and FA. It is			
Analytical procedure used to detect the presence of respirable fibre	s in the matrix.			
	Sample is dried by heating prior to analysis Limit of Reporting Chain of Custody Sample Receipt Advice International Standards Organisation Australian Standards Reference document for the NEPM. Government of Western Austra Sites in Western Australia (2009), including supporting document R National Environment Protection (Assessment of Site Contaminatio Asbestos Containing Materials. Asbestos contained within a non-as NEPM, ACM is generally restricted to those materials including friable, w equivalent to "non-bonded / friable". Fibrous Asbestos. Asbestos containing materials in a friable and/or materials that do not pass a 7mm x 7mm sieve. Asbestos-containing materials of any size that may be broken or or outside of the laboratory's remit to assess degree of friability.			

Date Reported: Mar 20, 2019

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Page 6 of 7 Report Number: 645047-AID



Comments

The samples received were not collected in an approved asbestos bag and was therefore sub-sampled from the 250mL glass jar. Valid subsampling procedures were applied so as to ensure that the sub-samples to be analysed accurately represented the samples received.

Sample Integrity	
Custody Seals Intact (if used)	N/A
Attempt to Chill was evident	Yes
Sample correctly preserved	Yes
Appropriate sample containers have been used	Yes
Sample containers for volatile analysis received with minimal headspace	Yes
Samples received within HoldingTime	Yes
Some samples have been subcontracted	No

Qualifier Codes/Comments

Code Description

Asbestos Counter/Identifier:

Chamath JHM Annakkage

Senior Analyst-Asbestos (NSW)

Authorised by:

Laxman Dias

Senior Analyst-Asbestos (NSW)

Glenn Jackson General Manager

Final Report - this report replaces any previously issued Report

- Indicates Not Requested

* Indicates NATA accreditation does not cover the performance of this service

Measurement uncertainty of test data is available on request or please click here.

Eards in strain note lake for loss, cost, sumpter o expressionnel to the cleft, or any other person or company, resulting how here use of any intermedion or interpreting when in this proof is in to case that Brothing into the lake for conservating damages including, but not limited to keep produced except in limit on late damages or difference in the state for constraint on the import.

Date Reported: Mar 20, 2019

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DEVELOPMENT ASSESSMENT PANEL 06/05/2020

DAVID PENSINI Building Certification and Environmental Services

BUSHFIRE HAZARD ASSESSMENT

PROPOSED RESIDENTIAL SUBDIVISION

PORTION OF LOT 302 DP 754434, EMILY AVENUE, PORT MACQUARIE

> CLIENT: PORT MACQUARIE HASTINGS COUNCIL

> > **APRIL 2019**

3 Blair Street, Port Macquarie NSW 2444 – PO Box 5581, Port Macquarie NSW 2444 – Phone 0434 166 150 – Email <u>kdpensini@bigpond.com</u> ABN 55 183 050 741

APRIL 2019

This report has been prepared by David Pensini – Building Certification and Environmental Services with all reasonable skill, care and diligence for Port Macquarie Hastings Council.

The information contained in this report has been	1
gathered from discussions with representatives of fo	r
Port Macquarie Hastings Council, a review of the plans	3
provided on behalf of for Port Macquarie Hastings	s
Council 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 for Port Macquarie Hastings Council 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:

17th April 2019

DAVID PENSINI - BUILDING CERTIFICATION AND ENVIRONMENTAL SERVICES

APRIL 2019

Version	Date	Information relating to report			
		Reason for issue			
1.0	8 th April 2019		Draft		
2.0	17 th April 2019		Issued to Client		
			Prepared by	Verified by	Approved by
		Name	David Pensini		David Pensini
		Signature	Deerecherin		Deerecharin

DAVID PENSINI - BUILDING CERTIFICATION AND ENVIRONMENTAL SERVICES

BUSHFIRE HAZARD ASSESSMENT SUBDIVISION – PORTION OF LOT 302 EMILY AVE, PORT MACQUARIE	APRIL 2019
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DAVID PENSINI - BUILDING CERTIFICATION AND ENVIRONMENTAL SERVICES

APRIL 2019

1.0 INTRODUCTION

The land which comprises the subject site is currently known as Lot 302 DP 754434 Emily Avenue, Port Macquarie.

It is proposed to subdivide the southern portion of the subject site so as to provide for five (5) separate residential lots. The reminder of the subject site will continue to form part of the Wayne Richards Sports Complex which is used for various active recreational activities.

This report is based on site assessments carried out on 4th March 2019.

As the proposed development of the subject land involves the creation of residential lots the subject development is an Integrated Development and has a requirement for a Bush Fire Safety Authority under Section 100B of the *Rural Fires Act 1997*.

The purpose of this report is to demonstrate that the bushfire risk is manageable for the proposed residential subdivision and to determine the bushfire protection management measures which are applicable to the future development of the subject site.

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 residential 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.

DAVID PENSINI - BUILDING CERTIFICATION AND ENVIRONMENTAL SERVICES

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 development assessment processes associated with the proposed residential subdivision of the subject site.

1.2.1 Objectives for Residential Subdivision Developments

The specific objectives for residential subdivision developments as provided for by NSW Rural Fire Service, *Planning for Bushfire Protection*, 2006 are to;

- Minimise perimeters of the subdivision exposed to the bush fire hazard. Hourglass shapes, which maximise perimeters and create bottlenecks, should be avoided.
- Minimise bushland corridors that permit the passage of bush fire.
- Provide for the siting of future dwellings away from ridge-tops and steep slopes particularly up-slopes, within saddles and narrow ridge crests.
- Ensure that separation distances (APZ) between a bush fire hazard and future dwellings enable conformity with the Deemed-to-Satisfy requirements of the BCA. In a staged development, the APZ may be absorbed by future stages.
- Provide and locate, where the scale of development permits, open space and public recreation areas as accessible public refuge areas or buffers (APZs).
- · Ensure the ongoing maintenance of asset protection zones.
- Provide clear and ready access from all properties to the public road system for residents and emergency services.
- Ensure the provision of and adequate supply of water and other services to facilitate effective firefighting.

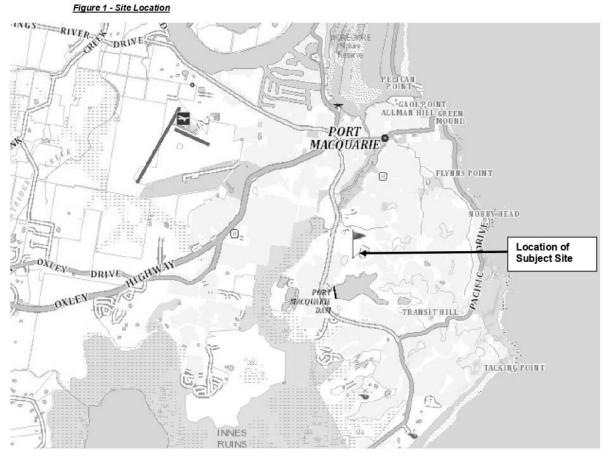
It is noted that the proposed development is considered to be consistent with the above objectives together with the relevant acceptable solutions/standards which are applicable to the residential subdivision and development of the subject site.

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1.3 Location and Site Description

The subject site currently comprises one (1) allotment of land which are known as Lot 302 DP 754434 Emily Avenue, Port Macquarie. The subject site is situated approximately 2.5km to the south of the Port Macquarie CBD, refer to **Figure 1** below;



Being located to the north of the Rosendahl Water Supply Reservoir which services the Port Macquarie township and forming part of the Wayne Richard Sports Complex, the land within this area has and will continue to be dominated by significant areas of open space with Emily Avenue to the east of the subject site supporting residential development and the St Agnes Aged Care Facility adjoining to the west, refer to **Figure 2** below.

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<image>

BUSHFIRE HAZARD ASSESSMENT SUBDIVISION – PORTION OF LOT 302 EMILY AVE, PORT MACQUARIE

The subject site is rectangular in shape with a site area of approximately six (6) hectares, refer to **Appendix 1**.

Access to the subject site is via Koala Street which provides access to the Wayne Richards Sports Complex which the subject site forms part of. Koala Street is present to the north of the subject site. It is also noted that access to the subject site is also available via Emily Avenue which adjoins the subject site in the south-eastern corner.

The majority of the subject site is zoned for recreational purposes (RE1) pursuant to Port Macquarie – Hastings Local Environmental Plan (2011) however a small area along the southern portion of the subject site is zoned for Residential (R1) purposes. Adjoining and adjacent land to the north and east is zoned Recreation (RE1) whilst land with a residential land use zoning extends to the southeast and southwest. A small area of Rural (RU1) land use zoning is present to the northwest whilst land to the south is zoned to reflect the presence of the Rosendahl Water Supply Reservoir with a special purpose (SP2) zoning applicable to this area, refer to **Figure 3**.

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Figure 3 – Land Use Zoning CATTLE BROOK CREEK SP2 -Sewerage system Subject Site R 1 E? RU E2 RU1 E2 RU1 RE1 DCEAN DR R RE1 RE SP2 -Water supply system

BUSHFIRE HAZARD ASSESSMENT SUBDIVISION – PORTION OF LOT 302 EMILY AVE, PORT MACQUARIE

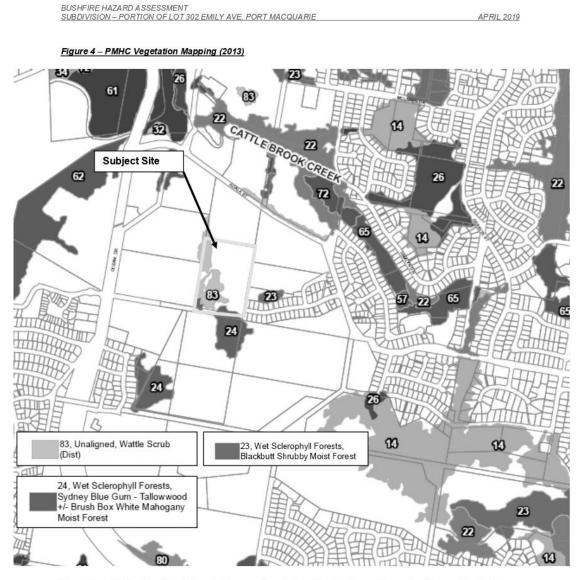
The topography of the subject site and the immediate surrounding area is dominated by two separate topographical features with a small hill present to the west of the subject site and a ridgeline feature present to the south. Being located partly on the side slopes of each feature provides for moderate south to north downslopes over the southern portion of the subject site with moderate to steep west to east downslopes present along the western portion of the subject site. The central and eastern areas of the subject site are generally flat and reflects the modification of topography associated with the construction of playing fields within the Wayne Richards Sports Complex.

Most of native vegetation has been removed from the subject site with managed grasslands dominating the playing fields within the Wayne Richards Sports Complex. It is however noted that grasslands with scattered and clusters of trees dominate the southem portion of the subject site with scrub and grasslands present along the western portion of the subject site. An area of highly modified Wet Sclerophyll Forest is present within the Rosendahl Water Supply Reservoir to the south of the subject site with managed vegetation associated with developed residential lots extending to the east of the subject site although some small forest remnants have been retained within the sports complex which extends to the east of the subject site. Vegetation to the north of the subject site is dominated by the managed grass surfaces within the sports complex whilst the vegetation to the west of the subject site consists of managed vegetation within the St Agnes Aged Care and McKillop School complexes.

The dominant vegetation communities located on and adjoining/adjacent to the subject site can be seen in **Figure 4** below;

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The closest Fire Service is located approximately 1.6km to the northwest of the subject site, (Port Macquarie Fire Brigade), with the closest Fire Control Centre being at Wauchope which is 20 kilometres west or 20 minutes by car from Port Macquarie.

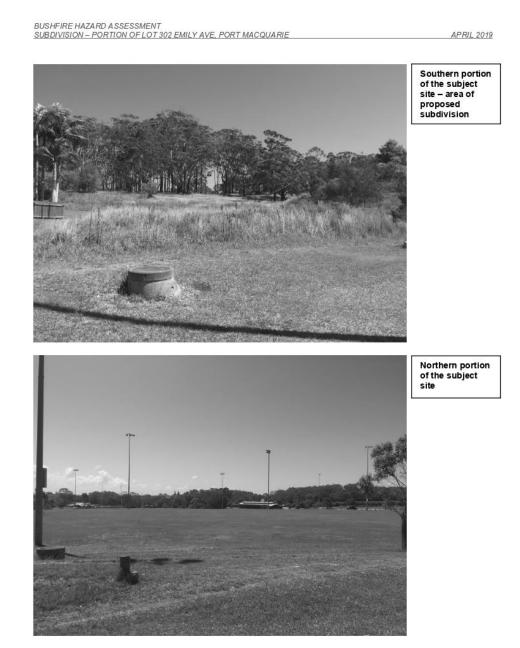
1.4 Site History

The subject land is owned by Port Macquarie Hastings Council and forms part of the Wayne Richards Sports Complex.

The subject site historically formed part of the Port Macquarie Hastings Council works depot which is present to the northwest of the subject site.

Forming part of the Wayne Richards Sports Complex improvements to the subject site reflect the active recreation use of the land with sports fields, amenity, carparking and access roads present in the central and eastern portions of the subject site whilst the western and southern portions of the subject site support the presence of mountain biking tracks.

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Fire has not recently occurred on the site or on adjoining and adjacent land.

The environmental and heritage features of those areas of the subject site which form the basis of this report are summarized as follows;

Table 1 – Environmental and Heritage Features

ENVIRONMENTAL/HERITAGE FEATURE	COMMENT		
Riparian Corridors	There are no riparian corridors on the subject site.		
SEPP (Coastal Management) 2018	The subject site is not identified as being subject to the SEPP.		
SEPP 44 – Koala Habitat	The cleared nature of the subject site is such that the land would not be subject to the requirements of SEPP 44.		

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	1
Areas of geological interest	The subject site is not identified as potentially containing acid sulphate soils in accordance with Port Macquarie – Hastings Local Environmental Plan (2011). Based upon previous land use it is expected that no land contamination issues will be relevant to the subject site.
Environmental Protection Zones	The subject site currently contains no Environmental Protection Zones.
	The majority of the subject site is zoned for recreational purposes (RE1) pursuant to Port Macquarie – Hastings Local Environmental Plan (2011) however a small area along the southern portion of the subject site is zoned for Residential (R1) purposes. Adjoining and adjacent land to the north and east is zoned Recreation (RE1) whilst land with a residential land use zoning extends to the southeast and southwest. A small area of Rural (RU1) land use zoning is present to the northwest whilst land to the south is zoned to reflect the presence of the Rosendahl Water Supply Reservoir with a special purpose (SP2) zoning, refer to Figure 3 .
Land slip	Given the flat to moderate 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 is not subject to compliance with the flood planning area provisions of Port Macquarie-Hastings Councils LEP, 2011.
National Park Estate or other Reserves	The subject sites do not form part of the National Park Estate or other Reserves.
Threatened species, populations, endangered ecological communities and critical habitat	Threatened species, populations, endangered ecological communities and critical habitat are unlikely to be present as the subject site has been the subject of significant modification over time however this issue is to be the subject of separate assessment.
Ecologically Endangered Communities (EEC's)	Given the level of historic disturbance of the subject site in the areas of the proposed development it is unlikely to contain or support EEC's however this issue is to be the subject of separate assessment.
OEH Key Habitats and Corridors	The proposed development area does not fall within a regional or sub-regional corridor.
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 subdivide the southern portion of the subject site so as to provide for five (5) separate residential lots. The reminder of the subject site will continue to form part of the Wayne Richards Sports Complex, which is used for various active recreational activities, refer to **Appendix 2**.

Access to the proposed lots will be either direct connection to the existing Emily Avenue public road or via a proposed 'Right of Carriage Way' access driveway which connects with Emily Avenue. In this regard proposed Lots 1 and 2 will connect directly with the cul de sac turning DAVID PENSINI - BUILDING CERTIFICATION AND ENVIRONMENTAL SERVICES 12

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head of Emily Avenue whilst proposed Lots 3, 4 and 5 will connect with Emily Avenue by a single driveway which functions as a 'Right of Carriageway' arrangement.

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 Assessment Methodology

In order to meet the scope of activities that are the subject of this report the following method was utilized.

(i) Stage 1 - Desktop Survey.

The identification and assessment of existing and historic information pertaining to the subject site in relation to;

- Road infrastructure.
- Land use.
- Ecological characteristics.
- Topographic features.

(ii) Stage 2 - Field Survey.

A detailed inspection of the subject site was undertaken by David Pensini - Building Certification and Environmental Services on 4th March 2019 in order to identify relevant bushfire hazard factors and characteristics such as;

- Slope conditions.
- Vegetation characteristics.
- Fire Danger Index

Each of the above factors need to be considered in determining the bushfire hazard for the subject site and proposed development. These factors must be reviewed in determining the bushfire protection measures which are applicable to the subject site and the proposed residential subdivision of the area of land which is the subject of this report.

The assessment of slope and vegetation characteristics has been carried out in accordance with Appendix 2 and Appendix 3 of NSW Rural Fire Service, *Planning for Bushfire Protection*, 2006 and Section 2 of AS 3959 - 2009.

(iii) Stage 3 - Data Compilation and Project Reporting.

Based upon an assessment of the information obtained from Stages 1 and 2 above the following bushfire hazard management information was determined and documented as being appropriate for the proposed residential subdivision of the subject land;

- The required minimum Asset Protection Zones, (APZ's), which would be applicable to residential subdivision developments and for Special Fire Protection Purpose forms of development.
- Indicative Bushfire Attack Levels (BAL's) and associated construction standards which would be applicable to building infrastructure associated with any future development.
- · Considerations for the provision of services, (water, electricity and gas).

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- Road network considerations in providing for access and egress from future development.
- Emergency management including access for evacuation.

2.2 Hazard Vegetation

Bushfire Prone Land Risk Mapping provides that the central and north eastern portions of the subject site do not contain areas of hazard vegetation whilst the western and southern portions of the subject site are shown to contain areas of Category 1 and Category 2 vegetation albeit that these areas of vegetation are intermingled.

Fragmented areas of Category 2 vegetation are shown to be present to the east of the southern portion of the subject site whilst an area of Category 1 vegetation is shown to be present to the south of the subject site, refer to **Figure 5** below.



Figure 5 – Bushfire Risk Mapping

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*

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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 topography of the subject site and the immediate surrounding area is dominated by two separate topographical features with a small hill present to the west of the subject site and a ridgeline feature present to the south. Being located partly on the side slopes of each feature provides for moderate south to north downslopes over the southern portion of the subject site with moderate to steep west to east downslopes present along the western portion of the subject site. The central and eastern areas of the subject site are generally flat and reflects the modification of topography associated with the construction of playing fields within the Wayne Richards Sports Complex.

The topographical conditions on the subject site and on adjoining and adjacent land can be seen in **Figure 6** below;

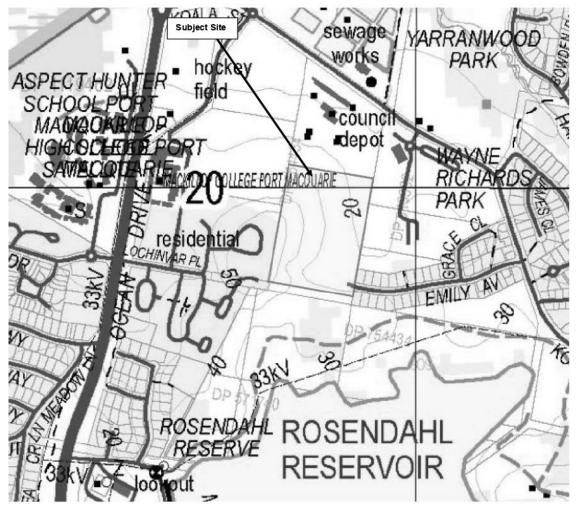


Figure 6 – Topographic Conditions

The hazard vegetation on the subject site and on adjoining and adjacent land that was relevant to the proposed residential subdivision were identified in relation to the subject site and the slopes within the vegetation measured.

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The following table shows the results. It is noted that the identification of hazard vegetation was based upon the development concepts which were provided, refer to **Appendix 2**.

Table 2 - Slope Assessment Results

DIRECTION OF HAZARD	SLOPE degrees)	UPSLOPE/DOWN SLOPE
North	5°-6°	Down slope
Northeast	5°-6°	Down slope
South	3°-4°	Down slope
East	5°-6°	Down slope
West	7°- 15° (0°)	Upslope

The above slopes were considered when assessing the required defendable spaces and indicative Bushfire Attack Levels, (BAL's), for any future development/s.

2.4 Vegetation Assessment

The vegetation on and surrounding the subject site was assessed over a distance of 140m from the proposed development.

The vegetation formations were classified using the system adopted as per Keith (2004) and in accordance with Appendix 3 of NSW Rural Fire Service, *Planning for Bushfire Protection*, 2006 and Table 2.3 of AS 3959 - 2009.

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.

The following vegetation characteristics were identified as being relevant to this bushfire hazard assessment.

2.4.1 Vegetation within Subject Site

Most of native vegetation has been removed from the subject site with managed grasslands dominating the playing fields within the Wayne Richards Sports Complex. It is however noted that grasslands with scattered and clusters of trees dominate the southern portion of the subject site in the area of the proposed development.

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The western portion of the subject site contains a mixture of remnant and highly disturbed areas of scrub and grasslands. In adopting a conservative approach to bushfire hazard assessment, a classification similar to Tall Heath (Scrub) has been adopted for the western aspect as this classification reflects;

- · the ecotone of vegetation which is present;
- the highly disturbed and fragmented characteristics of the vegetation present in this aspect;
- the presence of upslope conditions in this aspect with fire runs away from the subject site;
- the continued presence of active use recreational infrastructure within the western portion of the subject site.
- The presence of managed land to the west of the hazard vegetation which provides for fragmentation and disconnection in hazard vegetation.



Grasslands along western portion of the subject site

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BUSHFIRE HAZARD ASSESSMENT SUBDIVISION – PORTION OF LOT 302 EMILY AVE, PORT MACQUARIE

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2.4.2 Vegetation on Adjoining and Adjacent Land to Subject Site

The following vegetation characteristics were identified as being relevant to the proposed development.

Developed residential lots are present for in excess of 140m to the east of the subject site, (in the area of the proposed development), and accordingly no areas of hazard vegetation were identified in this aspect.



Developed residential lots to the east of the area of the proposed subdivision

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Managed grasslands within the playing fields of the Wayne Richards Sports Complex extend for >140m to the north of the area of the subject site which is proposed to be subdivided. It is however noted that the relationship of the proposed development to areas of vegetation is such that a narrow area of grasslands will separate the proposed residential lots from the managed vegetation within the sports complex. Therefore, in adopting a conservative approach to bushfire hazard assessment a classification similar to grasslands has been adopted for the northern aspect.





Unmanaged Grasslands separating the proposed subdivision from the adjacent sports complex

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To the northeast of the area of land which is proposed to be subdivided are a number of small fragmented and highly disturbed areas of Wet Sclerophyll Forest which fringe to south-eastern portion of the Wayne Richards Sports Complex. Given their remnant size and context and there highly disturbed floristic characteristics a specification similar to Rainforest has been adopted for these areas of vegetation.



Remnant Forest vegetation within the adjacent sports complex

An area of highly modified Wet Sclerophyll Forest is present within the Rosendahl Water Supply Reservoir to the south of the subject site. Whilst a Wet Sclerophyll Forest classification has been adopted for the southern aspect this classification is considered to be conservative as understorey fuel loads are being managed as grasslands with shrub layer absent. The resultant floristic characteristics are more in keeping with a Grassy Woodland except that the percentage of canopy cover exceeds the 30% criteria which is typical for Woodlands.



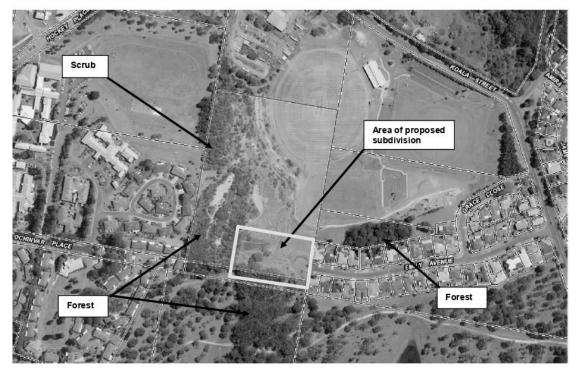
Modified Forest vegetation within area of the water supply reservoir

Vegetation to the west of the subject site consists of managed vegetation within the St Agnes Aged Care and McKillop School complexes. DAVID PENSINI - BUILDING CERTIFICATION AND ENVIRONMENTAL SERVICES

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The vegetation characteristics of the subject site and adjoining and adjacent land are shown in **Figure 7** below;

Figure 7 – Vegetation Characteristics



The following table summarizes the various vegetation structures which are of bushfire significance to the proposed allotments.

Table 3 – Summary of Vegetation Characteristics

ASPECT	VEGETATION DESCRIPTION	VEGETATION CLASSIFICATION – (Keith, 2004)
North	Narrow band of unmanaged Grasslands within the Wayne Richards Sports Complex	Grasslands
Northeast	Remnant areas of Wet Sclerophyll Forest vegetation within the Wayne Richards Sports Complex	Similar in specification to Rainforest
South	Area of highly modified Wet Sclerophyll Forest present within the Rosendahl Water Supply Reservoir	Wet Sclerophyll Forest
West	Remnant and highly disturbed areas of forest vegetation with scrub and grasslands	Similar in specification to Tall Heath (Scrub)

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.

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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 future residential development of the area which is the subject of this report.

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 subdivision, a Defendable Space/Asset Protection Zone (APZ) between the asset and the hazard should be provided.

The APZ provides for, minimal separation for safe firefighting, reduced radiant heat, reduced influence of convection driven winds, reduced ember viability and dispersal of smoke. The APZ consists of an Inner Protection Area (IPA) and Outer Protection Area (OPA). The IPA is an area closest to the buildings that incorporates defendable space and is used for managing heat intensities at the building surface. The OPA is positioned adjacent to the hazard and the purpose of the OPA is to reduce the potential length of flame by slowing the rate of spread, filtering embers and suppressing the crown fire.

The following assessment of APZ/defendable space requirements which are relevant to the proposed subdivision is provided as follows.

(i) Residential Subdivision Development

Any future residential developments require APZ's in accordance with the residential subdivision requirements of NSW Rural Fire Service, *Planning for Bushfire Protection*, 2006. APZ's in residential subdivision situations must be such that radiant heat levels of greater than 29kW/m² will not be experienced by residential buildings.

The following table indicates the minimum Asset Protection Zones required from the hazard vegetation to the areas which are the subject of this report. The table is based upon the vegetation type, slopes and fire weather (FDI) which is applicable to this assessment.

ASPECT	VEGETATION	SLOPE		TOTAL UIRED	-	MINIMUM POTENTIALLY	COMPLIANCE WITH MINIMUM
			IPA	OPA	APZ	AVAILABLE COMPLIANT APZ	APZ REQUIREMENTS
North	Grasslands	5°-6° Down slope	10m	-	10m	>10m	6
Northeast	Similar in specification to Rainforest	5°- 6° Down slope	15m	-	15m	>25m	6
South	Wet Sclerophyll Forest	3°- 4° Down slope	15m	12m	27m	>27m	6
West	Tall Coastal Heath	7°- 15° (0°) Upslope	15m	-	15m	>15m	~

Table 4 – APZ Requirements for Residential Subdivision Developments (29kW/m²)

Having regard to the above it is noted that the minimum required APZs which would be applicable to any future residential developments on the subject site <u>can</u> be achieved either

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within the boundaries of the individual lots or by using a combination of onsite and offsite areas, (i.e. existing and proposed roads).

The APZ acceptable solution provisions which would apply to the residential subdivision development are detailed in the following table.

Table 5 – APZ Performance Requirements

	ovide sufficient space and maintain i dings are below critical limits and to	-
Performance Criteria	Acceptable Solutions	Compliance Comment
The intent may be achie	wed where:	
Radiant heat levels at any point on a proposed building will not exceed 29 kW/m ²	An APZ is provided in accordance with the relevant tables/ figures in Appendix 2 of NSWRFS Planning for Bushfire Protection 2006	The minimum required asset protection zones can be provided to any future development – refer to Table 4 .
	APZ's are wholly within the boundaries of the development site. Exceptional circumstances may apply (see section 3.3 of NSW RFS Planning for Bushfire Protection 2006)	The required asset protection zones can be provided to any future development in compliance.
APZs are managed and maintained to prevent the spread of a fire towards the building.	APZ's managed in accordance with the requirements of Standards for Asset Protection Zones (RFS, 2005) Note: A Monitoring and Fuel Management Program should be required as a condition of development consent.	APZ's will need to be created and maintained to the standards which are applicable to Inner and Outer Protection Areas.
APZ maintenance is practical, soil stability is not compromised and the potential for crown fires is negated	APZ's are located on lands with a slope less than 18 degrees.	No land with steep slopes present in areas which are the subject of this report.

Having regard to the above the acceptable solution, (Deemed-to-Satisfy), provisions for APZ's as detailed in Appendix 2 of NSW Rural Fire Services, *Planning for Bushfire Protection*, 2006 can be achieved for the future development of the proposed residential lots.

Having regard to the information provided in above an APZ compliance concept has been prepared for the proposed development, refer to **Appendix 3**.

3.1.2 Defendable Space/Asset Protection Zone Management

Areas identified as forming part of the minimum APZ requirements for the proposed residential subdivision development must be managed so as to comply with the standards which are applicable to Asset Protection Zones as follows;

Inner Protection Area

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.

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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

Outer Protection Area

An OPA should provide a tree canopy cover of less than 30% and should have the understorey managed (mowed) to treat all shrubs and grasses on an annual basis in advance of the fire season (usually September).

In this regard it will be necessary to provide and maintain for the life of any future development the minimum Asset Protection Zones as required by **Table 4** of this report.

Compliance with the minimum APZ requirements is achievable for the proposed development of the subject site having regard to the size of the areas of land which are the subject of this report and the characteristics of the hazard vegetation which are relevant to the proposed subdivision.

3.1.3 Operational Access and Egress

Access to and egress from the proposed residential subdivision development is via Emily Avenue which is an existing two wheel drive all weather public road which adjoins the development site to the east. Emily Avenue services the already residentially developed areas of the Emily Avenue residential area.

Being located to the west of the furthest most extent of Emily Avenue, access and egress from the proposed residential lots will be from the east from areas which are protected from the impacts of bushfire. Travel along Emily Avenue to the east provides for connection to Koala Street which is a main connecting road within the locality. Koala Street provides for multiple access and egress options and opportunities via connecting public road infrastructure.

Given the relationship of the proposed development with existing residential development in the locality it is considered that access and egress to and from the proposed lots can be provided in compliance with the relevant requirements of NSW Rural Fire Services, *Planning for Bushfire Protection*, 2006.

Proposed Lots 1 and 2 will connect directly with the cul de sac turning head of Emily Avenue whilst proposed Lots 3, 4 and 5 will connect with Emily Avenue by a single driveway which functions as a 'Right of Carriageway' arrangement.

It is noted that Section 4.1.3 of NSW Rural Fire Service, *Planning for Bushfire Protection*, 2006 provides that no specific access requirements apply to dwellings in an urban area where a 70 metre unobstructed path can be demonstrated between the most distant external part of a proposed dwelling and the nearest part of the public access road, (where the road speed limit is not greater than 70kph), that supports the operational use of emergency fire fighting vehicles (i.e. a hydrant or water supply). In this regard the speed limit along Emily Avenue is a maximum of 50kph and the maximum unobstructed path between Emily Avenue and the most distant external part of the proposed dwellings is less than 70m.

Notwithstanding the above a two-wheel drive all weather access driveways from Emily Avenue and the proposed "Right of Carriageway' access road to proposed Lots 3, 4 and 5 is required to be provided.

Based upon the separation of the proposed residential dwellings from the bushfire hazard vegetation it is considered that the requirements of NSW Rural Fire Services, *Planning for Bushfire Protection*, 2006 for the provision of access and egress can be satisfied by the proposed development.

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It is considered that the proposed access arrangements are acceptable for the proposed development having regard to the nature, construction and extent of the existing public road infrastructure which is present in the locality and the proposed access road infrastructure.

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, residential subdivision developments in bushfire prone areas must maintain a water supply reserve dedicated to fire-fighting purposes.

Given that the existing residential development in the area is serviced by the reticulated water supply which services the residential development within Emily Avenue it is considered that opportunities exist to extend the reticulated water supply to service the proposed residential lots so as to comply with the relevant requirements of NSW Rural Fire Services, *Planning for Bushfire Protection*, 2006.

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 residential development 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 proposed residential subdivision of the following relevant provisions of the following acceptable solutions as provided for by NSW Rural Fire Services, *Planning for Bushfire Protection*, 2006 will ensure compliance with the intent for the provision of services to the proposed residential lots.

Table 6 – 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 ach	hieved where:	
Reticulated water supplies • water supplies are easily accessible and located at regular intervals	 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. 	Hydrant coverage is provided by way of system with in the Emily Avenue road reserve.
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Electricity Services · where practicable, electrical Future development location of electricity transmission lines are underground. proposals to comply services limits the · where overhead electrical possibility of ignition transmission lines are proposed: of surrounding bush lines are installed with short pole land or the fabric of spacing (30 metres), unless crossing gullies, gorges or riparian areas; and buildings regular inspection of - no part of a tree is closer to a power lines is undertaken to line than the distance set out in ensure they are not accordance with the specifications in fouled by branches. 'Vegetation Safety Clearances' issued by Energy Australia (NS179, April 2002) Gas services reticulated or bottled gas is installed Future development · location of gas and maintained in accordance with AS proposals to comply services will not lead 1596 and the requirements of relevant to ignition of authorities. Metal piping is to be used. all fixed gas cylinders are kept clear surrounding bush land or the fabric of of all flammable materials to a distance of 10 metres and shielded on the buildings 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

3.1.6 Construction Requirements

BUSHFIRE HAZARD ASSESSMENT

SUBDIVISION - PORTION OF LOT 302 EMILY AVE, PORT MACQUARIE

It is noted that Appendix 3 of NSW Rural Fire Service, *Planning for Bushfire Protection*, 2006 now contains specific construction requirements which the NSW Rural Fire Service will seek to impose, through the development control process, in addition to the construction requirements contained within AS3959 – 2009.

Accordingly, the determination of the construction requirements which will be applicable to any specific future development proposal will need to have regard to the construction requirements nominated in Appendix 3 of NSW Rural Fire Service, *Planning for Bushfire Protection*, 2006 in addition to the requirements of AS3959 – 2009.

Based upon the size of the proposed Torrens Title lots and the nature of the proposed residential dwelling development it is considered that the requirements of NSW Rural Fire Services, *Planning for Bushfire Protection*, 2006 for the siting, design and construction of residential buildings can be satisfied.

The relevant requirements of NSW Rural Fire Services, *Planning for Bushfire Protection*, 2006, are summarized as follows;

PERFORMANCE CRITERIA	ACCEPTABLE SOLUTIONS
in relation to siting and	 buildings are designed and sited in accordance with the
design:	siting and design principles

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 buildings are sited and designed to minimize the risk of bush fire attack. 	
 in relation to construction standards: it is demonstrated that the proposed building can withstand bush fire attack in the form of wind, smoke, embers, radiant heat and flame contact 	construction determined in accordance with Appendix 3 and the Requirements for attached garages and other structures

3.2 Construction of Buildings in Bushfire Prone Areas

3.2.1 General

In NSW, the bushfire protection provisions of the Building Code of Australia, (BCA), are applied to Class 1, 2, 3, Class 4 parts of buildings, some Class 10 buildings and Class 9 buildings that are Special Fire Protection Purposes (SFPP's).

The BCA references AS3959 – 2009 as the Deemed-to-Satisfy (DTS) solution for construction requirements in bushfire prone areas for NSW.

It is however noted that there are a number of NSW variations to the application of AS3959 – 2009 including a restriction on the utilization of the Bushfire Attack Level – Flame Zone requirements of the Australian Standard as a 'deemed to satisfy solution' for these situations. Consequently, in NSW all situations which are determined as being subject to the Bushfire Attack Level – Flame Zone requirements of AS3959 – 2009 must be treated on merit with construction requirements being determined on a specific site assessment basis.

As the development concept involves the construction of residential dwellings the requirements of AS3959 – 2009 will be applicable to the future development of each of the proposed Torrens Title lots.

Whilst the proposed Torrens Title subdivision of the subject site does not involve the construction of buildings the determination of specific construction requirements which would be applicable to buildings is not specifically relevant at this stage of the land use planning process.

Notwithstanding the above the following preliminary assessment of Bushfire Attack Levels in accordance with AS 3959 – 2009 is provided as it applies to the residential subdivision development of the subject site. This assessment is based upon the provision of the minimum required APZ as provided for by **Table 4** of this report. **3.2.2 Vegetation**

To complete the assessment under AS 3959 (2009) the vegetation, as originally assessed in accordance with Keith, has to be converted to Specht. The following table shows the conversion:

Table 8 – Summary of	Vegetation Chara	cteristics
----------------------	------------------	------------

ASPECT	VEGETATION DESCRIPTION	VEGETATION CLASSIFICATION – (Keith, 2004)	VEGETATION CLASSIFICATION – (AS3959 - 2009) **
North	Narrow band of unmanaged Grasslands within the Wayne Richards Sports	Grasslands	Grasslands

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	Complex		
Northeast	Remnant areas of Wet	Similar in specification	Rainforest
	Sclerophyll Forest	to Rainforest	
	vegetation within the Wayne		
	Richards Sports Complex		
South	of highly modified Wet	Wet Sclerophyll Forest	Wet Sclerophyll
	Sclerophyll Forest is present		Forest
	within the Rosendahl Water		
	Supply Reservoir		
West	Remnant and highly	Similar in specification	Scrub
	disturbed areas of forest	to Tall Heath	
	vegetation with scrub and		
	grasslands		

3.2.3 AS3959 – 2009 Construction of Buildings in Bushfire Prone Areas

The following construction requirements in accordance with AS 3959 – 2009 *Construction of Buildings in Bushfire Prone Areas* is required for the bushfire attack level categories.

<u> Table 9 – Bushfire Attack Levels</u>

BUSHFIRE ATTACK LEVEL (BAL)
No construction requirements under AS 3959-2009
BAL - 12.5
BAL - 19
BAL - 40
BAL - FZ

Based upon the information presented in Section 2 of this report the worst-case Bushfire Attack Levels pursuant to AS3959 – 2009 have been determined as being applicable to the future residential development of each of the proposed lots.

It is noted that the following BAL assessment has been based upon the provision of the required Asset Protection Zones to residential subdivision developments as provided for by **Table 4** of this report.

Table 10 – Worst Case	Bushfire Attack Levels for Nominated Vegetation Classifications and Slopes
-----------------------	----------------------------------------------------------------------------

ASPECT	VEGETATION CLLASSIFICATION	DISTANCE (of proposed Lot/Building from Hazard Vegetation)	SLOPE	BUSHFIRE ATTACK LEVEL (BAL)
Proposed Lot 1				
North	Grasslands	Minimum 10m	5°- 6° Down slope	BAL 29
Northeast	Rainforest	>50m	5°- 6° Down slope	BAL 12.5
South	Wet Sclerophyll Forest	Minimum 27m	3°- 4° Down slope	BAL 29
West	Scrub	>85m	7°- 15° (0°) Upslope	BAL 12.5
Proposed Lot 2	·			
North	Grasslands	Minimum 10m	5°- 6°	BAL 29

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				1
			Down	
			slope	
Northeast	Rainforest	>70m	5°- 6°	BAL 12.5
			Down	
			slope	
South	Wet Sclerophyll	Minimum 27m	3°- 4°	BAL 29
	Forest		Down	
			slope	
West	Scrub	>70m	7°- 15° (0°)	BAL 12.5
			Upslope	
Proposed Lot 3				
North	Grasslands	Minimum 10m	5°- 6°	BAL 29
			Down	
			slope	
Northeast	Rainforest	>85m	5°- 6°	BAL 12.5
			Down	
			slope	
South	Wet Sclerophyll	Minimum 27m	3°- 4°	BAL 29
oouni	Forest		Down	2.12.20
			slope	
West	Scrub	>50m	7°- 15° (0°)	BAL 12.5
West	Cordb		Upslope	D/12.0
Proposed Lot 4				
North	Grasslands	Minimum 10m	5°- 6°	BAL 29
NOTUT	Glassialius		Down	DAL 29
			slope	
Northeast	Rainforest	>100m	5°- 6°	BAL Low
Northeast	Rainiorest	>100m	5-6 Down	Threat
				Threat
Couth	Wet Sclerophyll	Minimum 27m	slope 3°- 4°	BAL 29
South	Forest	Minimum 27 m	3 - 4 Down	BAL 29
	Forest			
West	Scrub	>35m	slope 7°- 15° (0°)	BAL 12.5
West	Scrub	~55111	Upslope	DAL 12.5
Proposed Lot 5			Opsiope	
			51.01	
North	Grasslands	Minimum 10m	5°- 6°	BAL 29
			Down	
			slope	
Northeast	Rainforest	>120m	5°- 6°	BAL Low
			Down	Threat
			slope	
South	Wet Sclerophyll	Minimum 27m	3°- 4°	BAL 29
	Forest		Down	
			slope	
West	Scrub	Minimum 15m	7°- 15° (0°)	BAL 29
			Upslope	

The information presented in the above table indicates that under the worst case spatial separation scenario between future residential dwellings on the proposed Torrens Title Lots and areas of bushfire hazard vegetation, future residential dwellings would be subjected to a worst case Bushfire Attack Level of BAL-29 by virtue of the bushfire hazard vegetation which is present in the northern, north-eastern, southern and western aspects to the subject site.

The preliminary BAL construction requirements which are applicable to future residential dwellings on the proposed Torrens Title lots are summarized as follows;

• Dwelling on proposed Lot 1 – BAL 29

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BUSHFIRE HAZARD ASSESSMENT SUBDIVISION – PORTION OF LOT 302 EMILY AVE, PORT MACQUARIE

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- Dwelling on proposed Lot 2 BAL 29
- Dwelling on proposed Lot 3 BAL 29
- Dwelling on proposed Lot 4 BAL 29
- Dwelling on proposed Lot 5 BAL 29

4.0 SUMMARY OF FINDINGS

The following requirements are provided in response to the proposed Torrens Title subdivision and associated residential dwelling development provided for in **Appendix 2**.

- Asset Protection Zones are to be provided in accordance with Section 3.1.1 of this Report, (in particular Table 4).
- (ii) Water and other services are to be provided to the proposed Torrens Title lots in accordance with the requirements detailed in Section 3.1.3 of this report.
- (iii) Two-wheel drive all weather access driveway from Emily Avenue and proposed Torrens Title lots 3, 4 and 5 is required to be provided.
- (iv) Future residential dwellings on each of the proposed Torrens Title lots shall be constructed so as to comply with the following Bushfire Attack level (BAL) Construction Requirements of AS3959 – 2009 (as amended by NSW Rural Fire Services, *Planning for Bushfire Protection*, 2006);
 - Dwelling on proposed Lot 1 BAL 29
 - Dwelling on proposed Lot 2 BAL 29
 - Dwelling on proposed Lot 3 BAL 29
 - Dwelling on proposed Lot 4 BAL 29
 - Dwelling on proposed Lot 5 BAL 29

Bushfire Attack Levels for future residential dwellings on each of the proposed Torrens Title lots are to be confirmed prior to construction.

(v) Adopt Landscaping principals in accordance with Section 3.1.4 of this report.

5.0 CONCLUSION

It is considered that the proposed Torrens Title subdivision development of portion of land known as Lot 302 DP 754434 Emily Avenue, Port Macquarie 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 Torrens Title subdivision.

With the implementation of the recommendations it is considered that it will be possible for the proposed subdivision to meet the applicable acceptable solutions as provided for in NSW Rural Fire Service, *Planning for Bushfire Protection*, 2006 having regard to the existing subdivision layout, the size of the existing and proposed lots and the extent of the existing and proposed development on each proposed lot.

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.

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- 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 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.
- (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.

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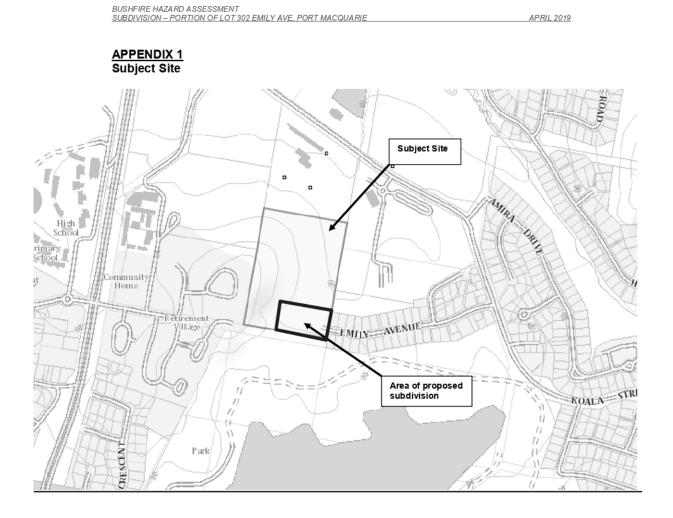
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BUSHFIRE HAZARD ASSESSMENT SUBDIVISION – PORTION OF LOT 302 EMILY AVE, PORT MACQUARIE

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 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.

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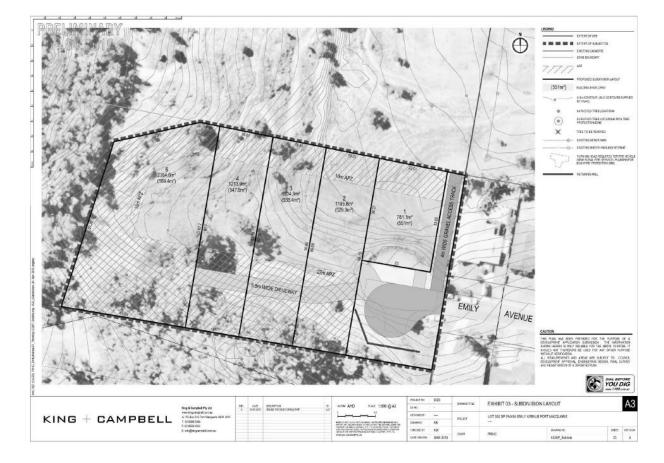


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APPENDIX 2 Proposed Development

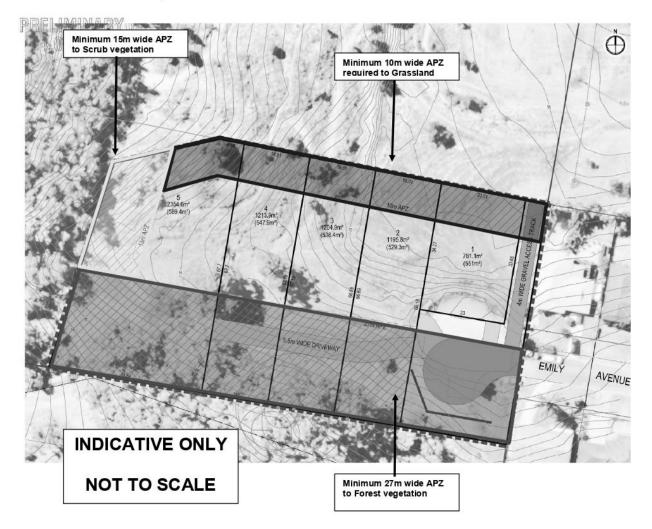


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APPENDIX 3 APZ Concept



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NSW RURAL FIRE SERVICE

Port Macquarie-Hastings Council PO Box 84 PORT MACQUARIE NSW 2444

Your reference: DA 2019/309 Our reference: DA-2019-01630-CL55-1

ATTENTION: Ben Roberts

Date: Tuesday 7 January 2020

Dear Sir/Madam,

Integrated Development Application s100B – Subdivision – Torrens Title Subdivision Koala Street, Port Macquarie Port Macquarie New South Wales AUS, 302//DP754434

I refer to your correspondence dated 14/10/2019 seeking general terms of approval for the above Integrated Development Application.

The New South Wales Rural Fire Service (NSW RFS) has considered the information submitted. General Terms of Approval, under Division 4.8 of the *Environmental Planning and Assessment Act* 1979, and a Bush Fire Safety Authority, under section 100B of the *Rural Fires Act* 1997, are now issued subject to the following conditions:

General Conditions

1. The development proposal is to comply with the layout identified on the drawing titled 'Exhibit 03A - Subdivision Layout' prepared by King & Campbell (Ref: Project No. 5328, Sheet 03, Revision D), dated 27 November 2019.

Asset Protection Zones

The intent of measures is to provide sufficient space and maintain reduced fuel loads so as to ensure radiant heat levels of buildings are below critical limits and to prevent direct flame contact with a building. To achieve this, the following conditions shall apply:

1. At the issue of a subdivision certificate and in perpetuity, the entire area of Lots 1 to 5 must be managed as an inner protection area (IPA). The IPA must comprise:

- Minimal fine fuel at ground level;
- Grass mowed or grazed;
- Trees and shrubs retained as clumps or islands and do not take up more than 20% of the area;
- Trees and shrubs located far enough from buildings so that they will not ignite the building;
- Garden beds with flammable shrubs not located under trees or within 10 metres of any windows or doors;
- Minimal plant species that keep dead material or drop large quantities of ground fuel;
- Tree canopy cover not more than 15%;

Postal address NSW Rural Fire Service Locked Bag 17 GRANVILLE NSW 2142 Street address NSW Rural Fire Service 4 Murray Rose Ave SYDNEY OLYMPIC PARK NSW 2127

T (02) 8741 5555 F (02) 8741 5550 www.rfs.nsw.gov.au

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- Tree canopies not located within 2 metres of the building;
- Trees separated by 2-5 metres and do not provide a continuous canopy from the hazard to the building; and,
- Lower limbs of trees removed up to a height of 2 metres above the ground.

2. A restriction to the land use pursuant to section 88B of the Conveyancing Act 1919 shall be included over Lots 1 to 5 to prohibit the construction of a dwelling or Class 10 building within 10 metres of a dwelling, within the area identified as an 'asset protection zone' on the diagram titled 'Exhibit 03A - Subdivision Layout' prepared by King & Campbell (Ref: 5328, Rev. D) dated 27 November 2019, except that the asset protection zone along the northern boundary of Lots 3, 4 and 5 shall be increased to 12 metres wide.

Access – Public Roads

The intent of measures is to provide safe operational access to structures and water supply for emergency services, while residents are seeking to evacuate from an area. To achieve this, the following conditions shall apply:

3. Public road access shall comply with the following requirements of section 4.1.3 (1) of 'Planning for Bush Fire Protection 2006':

- Road(s) shall be two wheel drive, all weather roads.
- Traffic management devices are constructed to facilitate unobstructed access by emergency services vehicles.
- Public roads have a cross fall not exceeding 3 degrees.
- Dead end roads incorporate a turning area in accordance with Figure A3.5 of 'Planning for Bush Fire Protection (pre-release, August 2018), are clearly signposted as a dead end and direct traffic away from the hazard.
- Non perimeter road widths comply with Table 4.1 in 'Planning for Bush Fire Protection 2006'.
- Curves of roads (other than perimeter roads) are a minimum inner radius of 6 metres
- The minimum distance between inner and outer curves is 6 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 4 metres above the road at all times.
- The capacity of road surfaces and bridges is sufficient to carry fully loaded fire fighting 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.
- Public roads greater than 6.5 metres wide locate hydrants outside of parking reserves to ensure accessibility to reticulated water supply for fire suppression.
- Public roads between 6.5 metres and 8 metres wide are 'No Parking' on one side with services (hydrants) located on this side to ensure accessibility to reticulated water for fire suppression.
- Public roads 5.5 to 6.5 metres wide (kerb to kerb) provide parking within parking bays located outside the kerb to kerb space and located services outside of the parking bays to ensure accessibility to reticulated water for fire suppression.
- Parking bays are a minimum of 2.6 metres wide from kerb to edge of road pavement. No services are located within the parking bays.
- Public roads directly interfacing the bush fire hazard provide roll top kerbing to the hazard side of the road.

Water and Utility Services

The intent of measures is 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. To achieve this, the following conditions shall apply:

4. Water, electricity and gas are to comply with section 4.1.3 of 'Planning for Bush Fire Protection 2006'.

Landscaping Assessment

The intent of measures is for landscaping. To achieve this, the following conditions shall apply:



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5. Landscaping of the site should comply with following principles of Appendix 5 of 'Planning for Bush Fire Protection 2006':

- Suitable impervious areas are provided immediately surrounding the building such as courtyards, paths and driveways.
- Grassed areas, mowed lawns or ground cover plantings are provided in close proximity to the building.
- Planting is limited in the immediate vicinity of the building.
- Planting does not provide a continuous canopy to the building (i.e. trees or shrubs should be isolated or located in small clusters).
- Landscape species are chosen in consideration needs of the estimated size of the plant at maturity.
- Species are avoided that have rough fibrous bark, or which keep/shed bark in long strips or retain dead material in their canopies.
- Smooth bark species of tree are chosen which generally do not carry a fire up the bark into the crown.
- Planting of deciduous species is avoided which may increase fuel at surface/ ground level (i.e. leaf litter).
- Climbing species are avoided to walls and pergolas.
- Combustible materials such as woodchips/mulch and flammable fuel are stored away from the building.
- Combustible structures such as garden sheds, pergolas and materials such timber garden furniture are located way from the building.
- Low flammability vegetation species are used.

For any queries regarding this correspondence, please contact Paul Creenaune on 1300 NSW RFS.

Yours sincerely,

Kalpana Varghese Manager Planning & Environment Services Planning and Environment Services





BUSH FIRE SAFETY AUTHORITY

Subdivision – Torrens Title Subdivision Koala Street, Port Macquarie Port Macquarie New South Wales AUS, 302//DP754434 RFS Reference: DA-2019-01630-CL55-1 Your Reference: DA 2019/309

This Bush Fire Safety Authority is issued on behalf of the Commissioner of the NSW Rural Fire Service under s100b of the Rural Fires Act (1997) subject to the attached General Terms of Approval.

This authority confirms that, subject to the General Terms of Approval being met, the proposed development will meet the NSW Rural Fire Service requirements for Bush Fire Safety under *s100b of the Rural Fires Act 1997.*



Manager Planning & Environment Services Planning and Environment Services

Tuesday 7 January 2020

Item 05 Attachment 8



SUSTAINABLE PARTNERSHIPS DEDICATED TO ACHIEVING ECOLOGICAL AND ECONOMICAL BALANCE

LEADING THE WAY IN ENVIRONMENTAL MANAGEMENT

ECOLOGICAL ASSESSMENT FOR PROPOSED 5 LOT SUBDIVISION, EMILY AVENUE PORT MACQUARIE

KING AND CAMPBELL

April 2019

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Item 05 Attachment 9

1. Executive Summary

The site was assessed in accordance with the requirements of the NSW *Biodiversity Conservation Act 2016*, Biodiversity Conservation Regulation 2017 and the *Commonwealth Environment Protection and Biodiversity Conservation (EPBCA) Act 1999* - Matters of National Environmental Significance (MNES). Assessment of the relevant provisions for Koala food trees under the Port Macquarie-Hastings Council Development Control Plan 2013 is also provided.

Development Proposal

The proposal is to subdivide the southwestern corner of Lot 302 DP 754434 into five residential lots to allow for residential dwellings on Emily Avenue. The proposed development site covers an area of approximately 0.8 ha and is located in a historically cleared portion of the larger land parcel. The property is currently vacant and encompasses part of a mountain bike trail and includes a portion the sporting ovals of Wayne Richards Park. Earthworks and tree removal will be required to establish the proposed subdivision.

Key Survey Results

Site surveys were carried out in March and April 2019. The subject site comprises a vacant Lot which contains a small number of canopy trees with no understorey or shrub layer present. No threatened flora were recorded and the site vegetation does not qualify as an Endangered Ecological Community (EEC). Five threatened fauna species were recording within the property at the time of survey and a total of 13 threatened fauna species were found to have at least a low potential to occur within the study area.

Impact of the Proposal

The proposed development will have a limited impact on native flora and fauna. Seven trees within the development site will require removal to establish the subdivision. These trees do not contain hollows and are not preferred Koala food trees. Despite this, the loss of vegetation has potential to have at least a minor impact on the recorded and potentially occurring threatened species via loss of habitat.

Indirect impacts associated with the proposal will be minor due to the scale of the development, context of the site and the existing level of disturbance in the area.

Legislative Compliance

Local

PMHC Development Control Plan: The proposal has been assessed against Section 2.6 of the DCP for Koala food trees, hollow-bearing trees, Endangered Ecological Communities (EECs) and riparian vegetation. None of these features occur on the subject site.

State

<u>SEPP 44 – Koala Habitat Protection</u>: The subject site is part of a larger property greater than 1 ha, hence SEPP 44 applies. An assessment under this legislation determined that the subject property contains Potential Koala Habitat however, due to the absence of Koalas during surveys and the lack of historical records on the property, is not considered to contain Core Koala Habitat.

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<u>Coastal Management SEPP</u> – No Littoral Rainforest or Coastal Wetlands are mapped within the study area.

<u>Fisheries Management Act 1994:</u> The proposal does not contain any aquatic habitat and will not affect any matters listed under the FM Act.

<u>Biodiversity Conservation Act and Regulation</u>: The proposed development will not trigger the requirement for a Biodiversity Development Assessment Report (BDAR) as the amount of vegetation removal required will not exceed the prescribed threshold and the site is not mapped on the Biodiversity Value Map.

The recorded and potentially occurring species have been assessed as per the Test of Significance. This has determined that the proposal will not result in a significant effect on listed species or ecological communities, or their habitats. A BDAR or Species Impact Statement is not required to accompany the Development Application.

Federal

Assessment under the EPBC Act – MNES determined that the impact of the proposal on MNES was unlikely to be significant. Hence referral to Department of Environment and Energy (DEE) for approval is not required.



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2. Abbreviations

Table 1: List of abbreviations used within	the	report
--------------------------------------------	-----	--------

Biodiversity Assessment Method			
Biodiversity Conservation Act			
Biodiversity Development Assessment Report			
Biodiversity Australia			
Central Business District			
Development Application			
Development Control Plan			
Department of Environment and Conservation			
Department of Environment and Energy			
Endangered Ecological Community			
Environment Protection and Biodiversity Conservation Act			
Hollow-bearing Tree			
Koala Food Tree			
Koala Plan of Management			
Key Threatening Process			
Local Environment Plan			
Local Government Area			
Matter of National Environmental Significance			
New South Wales			
Office of Environment and Heritage			
Plant Community Type			
Passive Infrared Camera			
Port Macquarie-Hastings Council			
Spot Assessment Technique			
State Environmental Protection Policy No. 44			
Threatened Ecological Community			



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3. Background Information

3.1 Location of the Study Site and Key Definitions

The subject property (Lot 302 DP 754434) is a 5.5 ha lot which is located across the southwestern portion of Wayne Richards Park and extends south to Emily Avenue and the Rosendahl Reservoir reserve. The development/subject site forms the south-eastern corner of this property and encompasses the cul-de-sac of Emily Avenue. The development site is approximately 2.6 km south of Port Macquarie CBD and approximately 0.8 ha in size. The location of the site and property is shown in Figure 1.

The site is currently a vacant lot containing a portion of the Wayne Richards Park mountain bike trail. Vegetation on site consists of patchily distributed canopy trees and slashed native/exotic grassland.

Residential properties adjoin the site to the east and forested vegetation is located to the south and west. This vegetation to the south forms a buffer between the site and a large reservoir 200 m south. Vegetation to the west extends out to the remainder of the property where the mountain bike trail continues. To the north of the subject site are the sporting ovals of Wayne Richards Park.

The subject site is defined as the area of land directly affected by the proposed development (the development/impact footprint) and covers 0.8 ha. The subject property is defined as the extent of Lot 302 DP 754434. The study area is land within 50 m of the subject site. The locality is land within 10 km radius of the site.

3.2 Development Proposal

The proposal is to subdivide the site into five residential lots with an access driveway off Emily Avenue. Building envelopes cover an area of 2754 m² with the remainder of the subject site comprising an Asset protection Zone (APZ). A 4 m wide gravel access track is also proposed in the east of the site which would link Wayne Richards Park to Emily Avenue. The development layout plan is shown in Figure 2.

The development has been designed to minimise vegetation removal by siting the development envelopes in currently cleared areas. Only a handful of Eucalypts and shrubs will require removal, with the remainder of vegetation affected comprising managed grassland.

3.3 Soils, Topography and Geology

The western end of the subject site is located at 40 m elevation and slopes gently to the east and northeast. There are no drainage lines or distinctive topographical features on the site. Soils on the site comprise free draining red clay loams.

As shown in Figure 3, the development site does not occur on a mapped alluvial formation or floodplain (Troedson and Hishimoto 2008).

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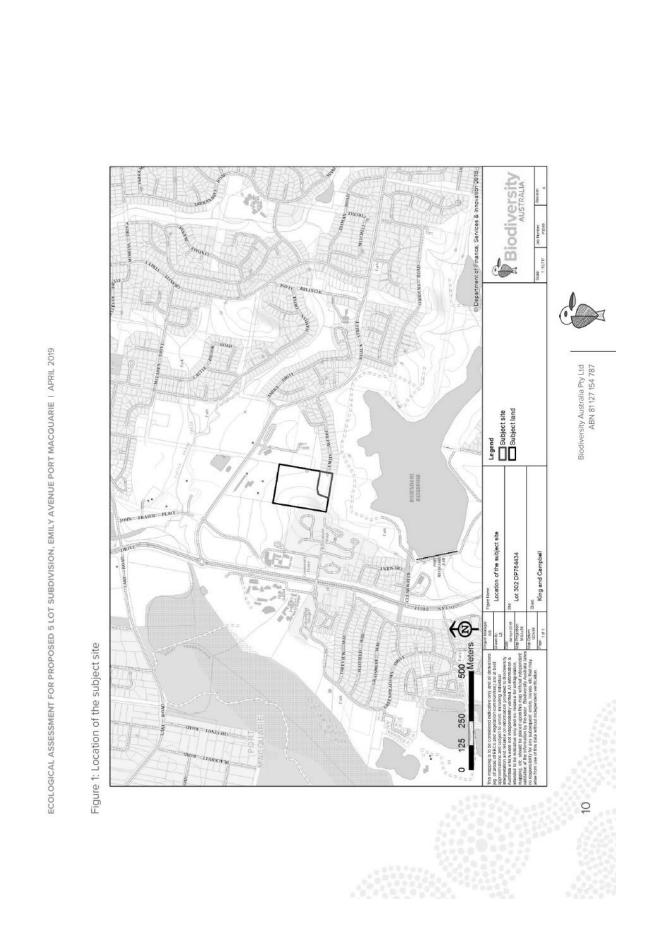




Figure 2: Development layout plan



4. Methods

4.1 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 2019).
- Office of Environment and Heritage NSW BioNet/Atlas of Wildlife (OEH 2019a).
- Office of Environment and Heritage Threatened Biodiversity Data Collection (OEH 2019b).
- Port Macquarie LGA Vegetation Communities and EECs digital data layer (Biolink 2013a).
- Port Macquarie LGA Koala Habitat digital data layer (Biolink 2013a).
- Coastal Quaternary Geology North and South Coast of NSW digital data layer (Troedson & Hashimoto 2008).
- NSW Biodiversity Value Map.

4.2 Flora Survey

The flora survey consisted of four main components:

- Identification, description and mapping of the vegetation communities on the site.
- Searches for threatened species listed under the Biodiversity Conservation Act 2016 (BC Act) and Environment Protection and Biodiversity Conservation Act 1999 (EPBC Act) undertaken in accordance with the NSW Guide to Surveying Threatened Plants (OEH 2016).
- Identification, mapping and condition assessment of any Endangered Ecological Communities listed under the BC Act, and EPBC Act.

4.2.1 Vegetation Classification and Mapping

Vegetation communities were sampled via random meander transects and vegetation integrity survey plots as per the Biodiversity Assessment Method (BAM) methodology. This consists of a 20x20 m plot in which floristic composition and structural attributes are collected, and a 20x50 m plot which collects ecosystem function attributes. The random meander transects allowed for a more comprehensive flora inventory within the development site.

Two vegetation plots were sampled within the development site on the 12^{th} March 2019. The location of these is mapped in Figure 4 below.

The following information was collected at each vegetation plot:

Observer, location and date;

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Plot dimensions and orientation:

Photographic record of vegetation;

- Vegetation Class and Plant Community Type (PCT);
 - Physical features and disturbance history;
 - Full flora list ;

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- Growth form, cover and abundance of each species;
- Exotic and High Threat Exotic (HTE) plant cover;
- Presence of hollow-bearing trees;
 Length of logs; and
- Litter enve
- Number of large trees;

Litter cover.

Recruitment;

Vegetation classifications were based on the NSW Plant Community Type (PCT) Classification and Local Government Area (LGA) wide vegetation community classification (Biolink 2013a). Identification of possible Threatened Ecological Communities (TECs) was based on the data collected in the survey and review of the relevant listings on the OEH website (www.environment.nsw.gov.au) and Department of Environment and Energy– MNES SPRAT website (DEE 2019).

Plant species were identified to species or subspecies level and nomenclature conforms to that currently recognised by the Royal Botanic Gardens and follows Harden (1990, 2007) and PlantNET (Royal Botanic Gardens 2019) for changes since Harden.

4.2.2 Threatened Flora Species

4.2.2.1 Searches

Searches for threatened flora were carried out in the study area on the 12th March 2019.

Threatened plant searches for locally and regionally recorded threatened species consisted of undertaking random meanders throughout the site and parallel field traverses as per the NSW Guide to Surveying Threatened Plants (OEH 2016).

Parallel field traverses involve searches along a grid of parallel traverses within the subject site. The traverses are a set distance apart depending on the life form and type of vegetation and cover the entire extent of potential habitat for each target plant species. A total of three dedicated transects were conducted within the site. These traverses focused on areas of potentially suitable habitat within the development site.

Opportunistic searches for threatened flora species were also undertaken during the vegetation plot surveys as well as during other activities on the development site. Given the small site area, the combination of these methods allowed a thorough search of its entire extent.

Figure 4 maps the location of targeted flora transects and Table 2 provides details of each transect.

Table 2: Parallel field traverse details

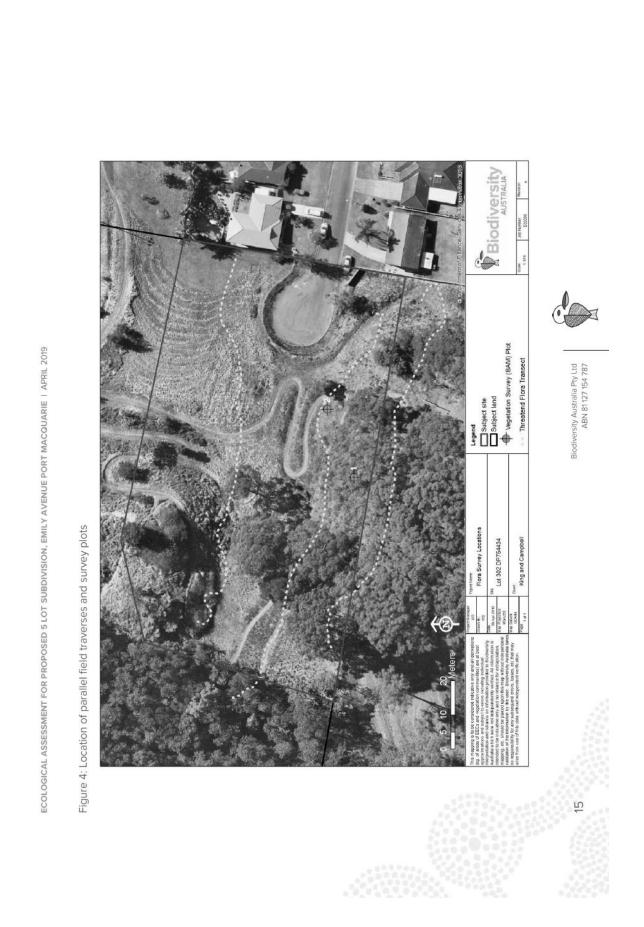
Transect 1	East	130	-	Following fence line along southern boundary
Transect 2	West	137	20	Through the centre of site
Transect 3	East	125	25	Northern section of site

4.2.2.2 Potential Occurrence Assessment

Potential occurrence assessment of threatened flora species is provided in Appendix 2. This section assesses threatened species for their potential to occur on site.

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4.3 Fauna Survey

The fauna survey was undertaken by a Principal Ecologist and Ecologist under Biodiversity Australia's scientific license and animal research authority between the 7th March and 16th April 2019. The methods per survey measure are detailed below.

4.3.1 Habitat Evaluation

This was the main survey method employed to assess the suitability of site habitats for threatened species recorded in the locality.

Habitats on and adjacent to the subject site were defined and assessed according to parameters such as:

- Structural and floristic characteristics of the vegetation
- Degree and extent of disturbance
- Presence of water in any form
- Size and abundance of hollows and fallen timber.
- Availability of shelter e.g. rocks, logs, hollows, undergrowth.
- Wildlife corridors, refuges and proximate habitat types.
- Presence of mistletoe, nectar, gum, seed and sap sources.

This information is considered for evaluation of the potential occurrence of threatened species on or adjacent to the site based on cited ecology and personal experience/knowledge of the species.

4.3.2 Secondary Evidence/Reptile Searches

Physical habitat searches involved lifting up of any timber, rocks and debris, and inspection of dense vegetation and leaf litter for frogs and reptiles; inspection of trees for Koalas and claw markings; binocular inspection of trees; searches for nests; and searches for scats, owl regurgitation pellets, tracks and scratches.

Searches for evidence of cones chewed by Glossy Black Cockatoos were also carried out under any Allocasuarina species within the development site.

4.3.3 Diurnal Bird Survey

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This involved passive surveys (e.g. listening for bird calls) and active observation/binocular searches while walking around the entire development site; and opportunistically during other activities.

A total of four person hours was spent on bird surveys over four days.

4.3.4 Koala Spot Assessment Technique (SAT) surveys

One dedicated Koala survey using the Spot Assessment Technique (SAT) was conducted within the subject site. An additional three SAT surveys were conducted outside of the development site on the subject property as shown in Figure 5.

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Each SAT surveys consisted of identifying a centre tree which is known to be frequented by the Koala, known to contain faecal pellets of the Koala or is likely to be considered as a potentially important tree for the Koala. In the event that a tree of this criteria was not located, a centre tree was randomly selected in an area of habitat most likely to support this species.

Once a centre tree was selected, active searches for Koala scats were undertaken under this tree and under the twenty-nine nearest trees. Searches involved checking the ground and leaf litter within a 1 m radius of each tree, for a period of two minutes per tree or until a scat was found. This technique is recognised as a very efficient method of detecting Koala presence, and in some instances, is a method used to identify areas of major Koala activity/significance e.g. Core Koala Habitat (Phillips and Callahan 1995; Jurskis and Potter 1997).

4.3.5 Passive Infra-red (PIR) Cameras

Six Stealthcam STC-G34 infra-red cameras were deployed on site for a period of 15 days.

Three were mounted on trees at a height of approximately four metres facing a hair tube on a platform to target arboreal species. The remaining three were placed on trees at approximately 0.5 m facing a hair tube placed on the ground. The hair tubes were baited with a mixture of oats, peanut butter, honey and vanilla essence.

The location of the PIR cameras is shown in Figure 5.

4.3.6 Spotlighting and Torch Searches

Spotlighting was conducted by two ecologists for two hours per night over four nights. This was undertaken via walking transects through forested areas of the subject site and property. A hand held 1100 lumen LED spotlight was used and the ecologists targeted the trunks and branches of canopy trees and understorey, whilst also periodically scanning the ground.

4.3.7 Call Playback and Detection

The Koala and Squirrel Glider were the main target species for the call playback survey, and calls of these species were broadcast prior to and after spotlighting surveys. Recorded calls of the Barking Owl, Powerful Owl, Masked Owl and Yellow-bellied Glider were also broadcast during the call playback survey.

Calls were played through a portable MP3 player via a 55W PA system from multiple separate locations at a sound level approximating natural intensities for the target species. The general methodology involved an initial period of listening and spotlighting; followed by playback of the calls simulating a natural pattern.

Playback was utilised over four nights. The location of call playback surveys is shown in Figure 5.

4.3.8 Microbat Call Recording and Analysis

Microchiropteran bat call detection was undertaken using an Anabat Express unit (Titley Scientific) set along the edge of a potential microbat corridor within the subject site for four nights. The recordings were forwarded to Dr Anna McConville of Echo Ecology, a bat call identification consultant, for identification of the bat species.

The survey location of the Anabat unit is shown in Figure 5.

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4.3.9 Hollow-bearing Tree and Koala Food Tree Survey

All hollow-bearing trees (HBTs) and preferred Koala Food Trees (KFTs) within and adjoining the subject were located and recorded via a GPS enabled tablet. These were marked with orange tape and given an identifier number. Any potential hollows found were inspected for signs of usage e.g. chewed or worn edges and assessed for potential habitat value.

4.4 Survey Timing and Limitations

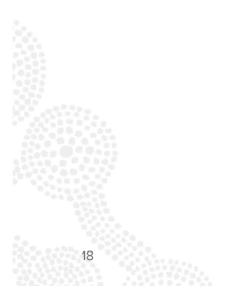
The fauna survey period fell in autumn which is a period of declining activity for arboreal mammals, Microchiropteran bats, frogs and birds (DEC 2004). Longitudinal and latitudinal migrants such as the Swift Parrot would not be present at this time of year.

The warm temperatures and rainfall events over the surrey period are likely to have triggered flowering by potentially occurring threatened plants, and the survey timing is not considered a limitation on their detection.

To counter any limitations, qualitative and quantitative habitat evaluation was used as well as a standard ecological field survey to assess the site's significance to threatened species. Habitat evaluation conservatively assesses the potential occurrence of threatened species based on potentially suitable habitat and local records, providing a prediction of the likelihood of a particular threatened species occurring in the study area (DEC 2004, DECC 2007). This approach is considered best practice to address the Principle of Uncertainty.

4.5 Weather Conditions

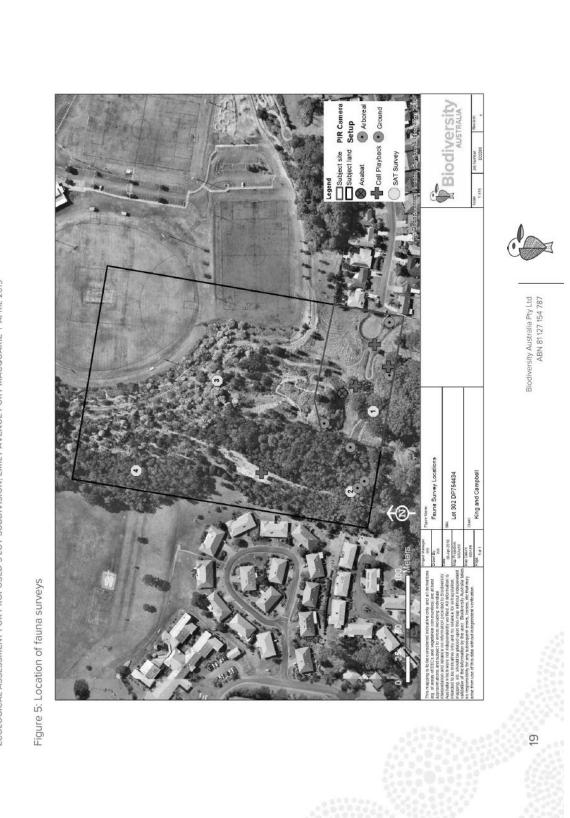
The weather over the survey period was fine and sunny with occasional light-moderate rainfall events. Maximum temperatures ranged from 21-34°C across the survey period. Minimum temperatures ranged from 7-22°C (BOM 2019).



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5. Results

5.1 Desktop Search Results

5.1.1 Locally Recorded Threatened Species

The following table lists the threatened flora and fauna species identified in database and literature searches of the locality.

Table 3: Locally recorded threatened species

	Scientific Name			Source
	Flora			
Scented Acronychia	Acronychia littoralis	E	E	OEH Bionet
Dwarf Heath Casuarina	Allocasuarina defungens	E	E	OEH Bionet
Trailing Woodruff	Asperula asthenes	v	v	OEH Bionet
Bailey's Cypress Pine	Callitris baileyi	E	-	OEH Bionet
Sand Spurge	Chamaesyce psammogeton	E	-	OEH Bionet
White-flowered Wax Plant	Cynanchum elegans	E	E	OEH Bionet
Spider orchid	Dendrobium melaleucaphilum	E	-	OEH Bionet
Byron Bay Diuris	Diuris sp. aff. chrysantha	E	-	OEH Bionet
Narrow-leaved Black Peppermint	Eucalyptus nicholii	V	v	OEH Bionet
Wallangarra White Gum	Eucalyptus scoparia	E	v	OEH Bionet
Slender Screw Fern	Lindsaea incisa	E	-	OEH Bionet
Macadamia Nut	Macadamia integrifolia	-	v	OEH Bionet
Slender Marsdenia	Marsdenia longiloba	E	v	OEH Bionet
-	Maundia triglochinoides	ν	-	OEH Bionet
Biconvex Paperbark	Melaleuca biconvexa	V	v	OEH Bionet
Grove's Paperbark	Melaleuca groveana	v	-	OEH Bionet
Red-flowered King of the Fairies	Oberonia titania	v	-	OEH Bionet
Brown Fairy-chain Orchid	Peristeranthus hillii	V	-	OEH Bionet
Scrub Turpentine	Rhodamnia rubescens	CE	-	OEH Bionet
Native Guava	Rhodomyrtus psidioides	CE	-	OEH Bionet
Rainforest Cassia	Senna acclinis	E	-	OEH Bionet
Silverbush	Sophora tomentosa	E	-	OEH Bionet
	Amphibia			
Wallum Froglet	Crinia tinnula	V	-	OEH Bionet
Green & Golden Bell Frog	Litoria aurea	E	v	OEH Bionet
Green Thighed Frog	Litoria brevipalmata	V	-	OEH Bionet
Giant Barred Frog	Mixophyes iteratus	-	E	OEH Bionet
	Aves			
Magpie Goose	Anseranas semipalmata	V	-	OEH Bionet
Regent Honeyeater	Anthochaera phrygia	CE	CE	OEH Bionet

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Dusky Woodswallow	Artamus cyanopterus cyanopterus	V		OEH Bionet	
Australasian Bittern	Botaurus poiciloptilus	E	E	OEH Bionet	
Bush Stone-curlew	Burhinus grallarius	E	E -		
Glossy Black Cockatoo	Calyptorhynchus lathami	V	V E		
Spotted Harrier	Circus assimilis	V	-	OEH Bionet	
Brown Treecreeper (eastern subspecies)	Climacteris picumnus victoriae	V	-	OEH Bionet	
Barred Cuckoo-shrike	Coracina lineata	V	-	OEH Bionet	
Varied Sittella	Daphoenositta chrysoptera	V	-	OEH Bionet	
Emu (population in the NSW North Coast Bioregion and Port Stephens LGA)	Dromaius novaehollandiae	E	-	OEH Bionet	
Black-necked Stork	Ephippiorhynchus asiaticus	E	-	OEH Bionet	
Little Lorikeet	Glossopsitta pusilla	V	-	OEH Bionet	
Brolga	Grus rubicunda	V	-	OEH Bionet	
Little Eagle	Hieraaetus morphnoides	V		OEH Bionet	
Comb-crested Jacana	Irediparra gallinacea	V		OEH Bionet	
Black Bittern	Ixobrychus flavicollis	V		OEH Bionet	
Swift Parrot	Lathamus discolor	E	CE	OEH Bionet	
Square-tailed Kite	Lophoictinia isura	V		OEH Bionet	
Barking Owl	Ninox connivens	V		OEH Bionet	
Powerful Owl	Ninox strenua	V	-	OEH Bionet	
Eastern Curlew	Numenius madagascariensis	-	CE	OEH Bionet	
Blue-billed Duck	Oxyura australis	V		OEH Bionet	
Eastern Osprey	Pandion cristatus	V	м	OEH Bionet	
Scarlet Robin	Petroica boodang	V		OEH Bionet	
Flame Robin	Petroica phoenicea	V		OEH Bionet	
Eastern Ground Parrot	Pezoporus wallicus wallicus	V	-	OEH Bionet	
Marbled Frogmouth	Podargus ocellatus	V	-	OEH Bionet	
Grey-crowed Babbler (eastern subspecies)	Pomatostomus temporalis	V	-	OEH Bionet	
Wompoo Fruit-Dove	Ptilinopus magnificus	V	-	OEH Bionet	
Rose-crowned Fruit-Dove	Ptilinopus regina	V	-	OEH Bionet	
Freckled Duck	Stictonetta naevosa	V	-	OEH Bionet	
Eastern Grass Owl	Tyto longimembris	V	-	OEH Bionet	
Masked Owl	Tyto novaehollandiae	v	-	OEH Bionet Bio Aus 2018	
	Insecta				
Laced Fritillary	Argynnis hyperbius	E	-	OEH Bionet	
Giant Dragonfly	Petalura gigantea	E	-	OEH Bionet	
	Mammalia				
Rufous Bettong	Aepyprymnus rufescens	v	-	OEH Bionet	
Eastern Pygmy-possum	Cercartetus nanus	V	-	OEH Bionet	

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	Scientific Name			
Large-eared Pied Bat	Chalinolobus dwyeri	V	V	OEH Bionet
Hoary Wattled Bat	Chalinolobus nigrogriseus	V	-	OEH Bionet
Spotted-Tailed Quoll	Dasyurus maculatus	V	E	OEH Bionet
Eastern Quoll	Dasyurus viverrinus	E	E	OEH Bionet
Eastern False Pipistrelle	Falsistrellus tasmaniensis	v	-	OEH Bionet Bio Aus 2019
Little Bent-wing Bat	Miniopterus australis	V	-	OEH Bionet Bio Aus 2018
Eastern Bent-wing Bat	Miniopterus schreibersii oceanensis	V	-	OEH Bionet
Eastern Free-tail Bat	Mormopterus norfolkensis	V	-	OEH Bionet Bio Aus 2019
Southern Myotis	Myotis macropus	V	-	OEH Bionet Bio Aus 2018
Greater Glider	Petauroides volans	E	V	OEH Bionet
Yellow-bellied Glider	Petaurus austraiis	V	-	OEH Bionet
Squirrel Glider	Petaurus norfolcensis	V	-	OEH Bionet
Brush-tailed Phascogale	Phascogale tapoatafa	V	-	OEH Bionet
Koala	Phascolarctos cinereus	V	v	OEH Bionet Bio Aus 2018
Common Planigale	Planigale maculata	V	-	OEH Bionet
Eastern Chestnut Mouse	Pseudomys gracilicaudatus	V	-	OEH Bionet Bio Aus 2015
Grey-headed Flying Fox	Pteropus poliocephalus	V	v	OEH Bionet Bio Aus 2018
Yellow-bellied Sheath-tail Bat	Saccolaimus flaviventris	V	-	OEH Bionet
Greater Broad-nosed Bat	Scoteanax rueppellii	V	-	OEH Bionet
Common Blossom Bat	Syconycteris australis	V	-	OEH Bionet
Eastern Cave Bat	Vespadelus troughtoni	V	-	OEH Bionet
	Reptilia			
Woma	Aspidites ramsayi	V	-	OEH Bionet
Key: Critically Endangered (CE), Endar	ngered (E), Vulnerable (V), Migratory (M).			

5.1.2 Matters of National Environmental Significance

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The results of the MNES search are provided in Section 10. The search was undertaken using a 10 km search radius from the subject site. See Appendix 5 for the full report.

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5.2 Flora Survey Results

5.2.1 Vegetation Communities

Previous clearing and under scrubbing was evident through most of the subject site with the majority of vegetation comprising slashed grass. Port Macquarie-Hastings Council mapping identifies only two vegetation communities within the development site. These consist of *Sydney Blue Gum - Tallowwood +/- Brush Box White Mahogany Moist Forest* and *Wattle Scrub* (Figure 6). This existing mapping was ground-truthed during the vegetation surveys.

Two native vegetation communities were identified within the subject site with neither of these listed as a Threatened Ecological Community (TEC) or Endangered Ecological Community (EEC) under the *BC Act* or *EPBC Act*. These are further described in the following tables. Refer to the site photos following.

Exotic vegetation comprising exotic grassland/scattered regrowth and weed thickets comprise the remaining vegetation on the site. A detailed assessment of these communities was not conducted. Figure 7 maps the location of each vegetation community identified.

A flora list is provided in Appendix 1.

Table 4: Vegetation community 1 description

Modified Open Forest
No 686: Blackbutt - Pink Bloodwood shrubby open forest of the coastal lowlands of the NSW North Coast Bioregion
Sydney Blue Gum - Tallowwood +/- Brush Box White Mahogany Moist Forest
Not an EEC
Occurs along the southern boundary, extending towards the centre of the site. Area on site is 0.2 ha which includes overhanging trees located on adjacent land to the south.
a) Canopy:
Structure and Species: Comprises a mid-dense canopy consisting of Blackbutt (Eucalyptus pilularis). Height ranges from 23-28 m.
b) Understory:
Absent
c) Shrub layer:
Structure and Species: A very sparse shrub layer including a mix of native trees and exotic shrubs. Dominant species include Sydney Golden Wattle (<i>Acacia longifolia</i>), Bitou Bush (<i>Chrysanthemoides monilifera</i>), Native Rasberry (<i>Rubus parvifolius</i>) and Tie Bush (<i>Wikstroemia indica</i>). Height ranges from 0.3-1.5 m.

d) Ground layer:

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Structure and Species: Groundcover consisted of mostly exotic grasses and forbs including Cobbler's Pegs (Bidens pilosa), Paddy's Lucerne (Sida rhombifolia) and Rhodes Grass (Chloris gayana). Native species present in this layer included Blady Grass (Imperata cylindrica), Blue Flax Lily (Dianella caerulea) and Ground Lily (Tripladenia cunninghami). Height ranges from 0.05-0.5 m.

This community comprises a small patch of vegetation in good-moderate condition on the edge of a larger community extending south and west. Disturbance history is evident with the lack of understory trees and the high abundance of exotic species in the ground layer.

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Photo 1: Modified open forest community on the site

Table 5: Vegetation community 2 description

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Derived native grassland
NA
Not mapped
Not an EEC
Occurs in two small patches in the southwest of the site and immediately east of the forest community. Covers an area of approximately 0.09 ha within the site.
 e) Canopy: Absent f) Understory: Absent g) Shrub layer: Structure and Species: A shrub layer is present in isolated clumps comprising a mix of native an exotic species. Exotics in this layer include Wild Tobacco Bush (Solanum mauritianum), Lantana (Lantana camara) and Large-leaved Privet (Ligustrum lucidum). Natives present in this layer include Sydney Golden Wattle, Cofiee Bush (Breynia oblongifolia) and Persoonia stradbrokensis. Height ranges from 0.2-0.8 m. h) Ground layer:

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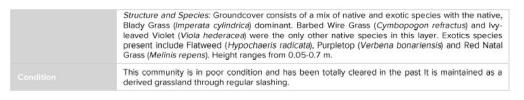


Photo 2: Derived native grassland community on the site

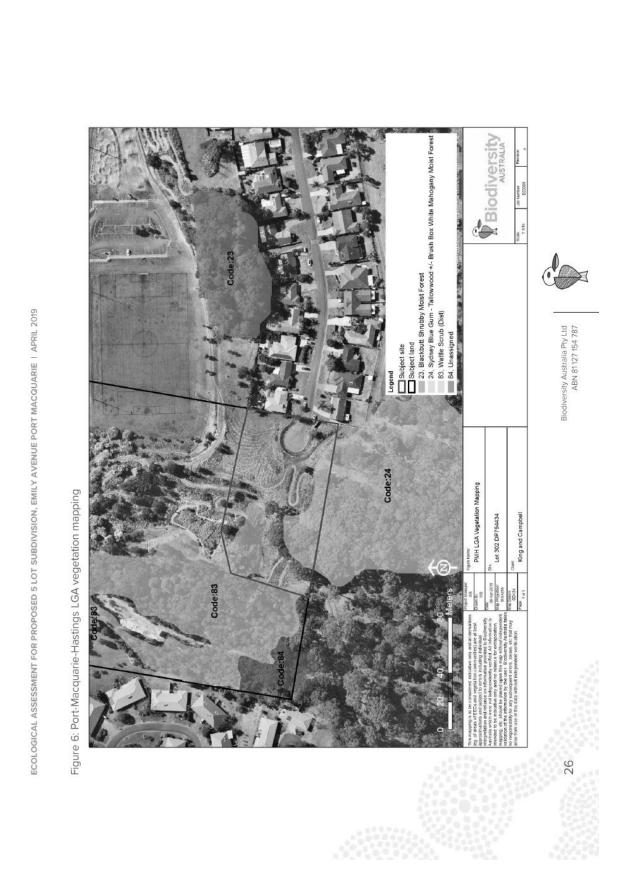


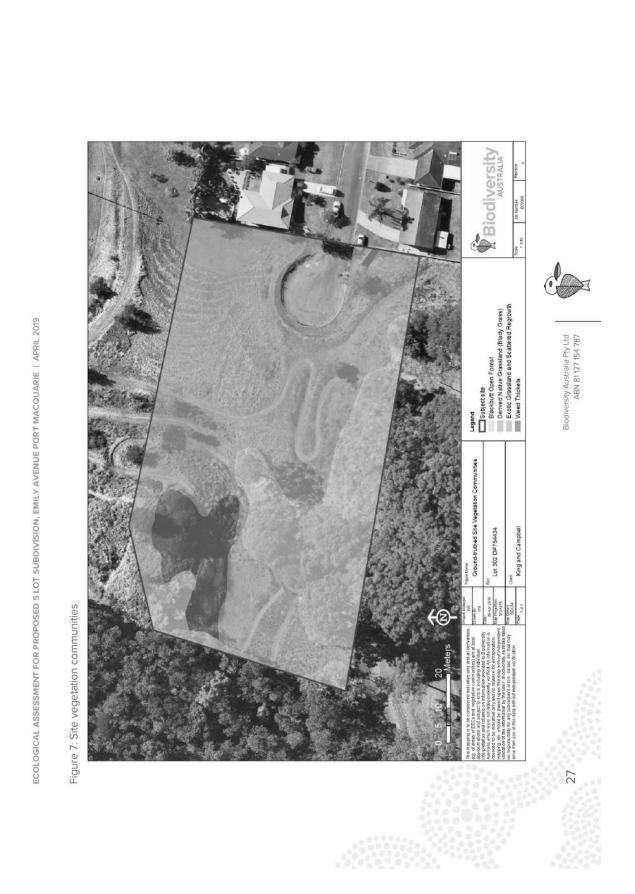


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5.2.2 Threatened Flora

5.2.2.1 Results of Threatened Flora Survey

No threatened plants were recorded on the subject site.

5.2.2.2 Potential Occurrence Assessment

As tabulated in Section 5.1.1 of this report, searches of relevant literature and databases (OEH 2019) found records of 22 threatened flora species including two Critically Endangered Populations in the locality. The Protected Matters Search Tool also produced a list of additional potential occurrences in the locality. These are assessed for their potential to occur on site in Appendix 3.

Given the current and historical disturbances on site and thorough searches of vegetation, it is considered highly unlikely that any threatened flora species would occur on the subject site. Thus no further threatened flora species are considered in the subsequent statutory assessments.

5.2.3 Endangered Ecological Communities

The vegetation on site does not qualify as an Endangered Ecological Community due to the topographic and landscape position and floristic/structural composition of the vegetation.

5.3 Fauna Survey Results

5.3.1 Habitat Evaluation, Corridors and Linkages

The following table summarises the habitat evaluation results and comments on regional/local corridors and habitat linkages.

Table 6: Summary of site habitat values

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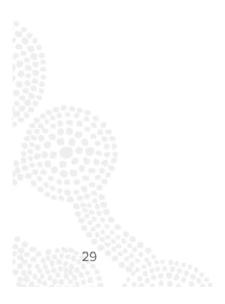
Groundcover	Groundcover comprises mostly of a mix of native and exotic grasses.	No significance for any threatened species.				
Logs and debris	No fallen logs occur in the subject site. Site is managed for debris.	No significance for any threatened species.				
Hollows	No hollow-bearing trees were recorded in the development site. One Blackbutt containing two small tree hollows was recorded on the boundary of the site, in adjoining land. No direct impacts on this tree will result from this proposal.	No hollows were present on the development site. Lack of nesting/denning habitat for hollow-obligate species.				
Nectar Sources	Canopy trees within the development site only likely to provide a Spring to Autumn nectar source.	when flowering by Grey-headed Elving Fox and Liffle				
Primary preferred Koala browse trees	No locally preferred Koala food tree species occur within the subject site. One SEPP 44 listed primary browse species occurs near the boundary of the site in joining land.	Site contains a low quality foraging resource for the Koala. Higher quality foraging habitat occurs in the extent of the subject property and in adjoining landholdings. No Koala scats or Koalas were recorded within the subject site during the survey.				
Allocasuarinas	Absent on site	Absence of foraging resources for the Glossy-black Cockatoo.				

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Habitat/Attribute Type	Site/Study Area	Potential Values to Threatened Species Occurrence
Aquatic/wetland habitats	Absent on site. Rosendahl Reservoir is located approximately 200 m south of the site.	No significance for any threatened species.
Fruiting species	Very few fruiting species occur on the subject site and most are immature.	No fruiting resource for threatened frugivores such as Wompoo Fruit-dove, Rose-crowned Fruit-dove, Barred Cuckoo Shrike and the Grey Headed Flying Fox.
Caves, cliffs, overhangs, culverts, bridges	Absent on site	Absence of roosts for obligate Microchiropteran bats.
Small terrestrial prey	No shrub layer present on site and limited groundcover. Poor habitat for small terrestrial species.	Despite limitations, site may form a small part of the foraging range of the Powerful Owl, Masked Owl and Square-tailed Kite.
Corridors	Site does not fall within an OEH mapped regional or sub-regional corridor.	Site vegetation does not provide a significant contribution to mapped regional and sub-regional corridors.
Habitat Linkages	The forest community extends offsite to the northwest, west and south. Connectivity to the north and east is broken by roads, residential areas and sporting fields. A large wire fence separates the habitat on site with that contained within Rosendahl Reserve. This would be a barrier for terrestrial species. Two Koala ladders are situated along this fence line.	Poorly developed groundcover over the site would pose a barrier for small terrestrials' dependant on continuous cover (e.g. Common Planigale). Arboreal species such as the Koala and Gliders would be able to access the site vegetation. Highly mobile species (e.g. birds and bats) would be able to move freely through the site.
Key Habitat	The site is not mapped as Key Habitat by OEH.	N/A



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5.3.2 Observed/Detected Fauna

The surveys detected a range of fauna species over the site. Species recorded consisted of common birds such as the Australian Magpie, Grey Butcherbird, Laughing Kookaburra and Whitebellied Cuckoo-shrike. Some were observed within the subject site while others were seen flying overhead or heard calling from adjacent habitats.

Eleven mammal species were detected throughout the survey period and a single reptile (Photo 8) was recorded. No amphibians were identified during the site surveys.

Photos 3-7 display some of the fauna detected within the subject property via PIR cameras. Appendix 2 provides the total fauna list for the site and details the method of detection for each species.

Five threatened fauna species was detected during the survey. These comprised:

- Eastern Osprey (Pandion cristatus);
- Eastern Coastal Free-tail Bat (Mormopterus norfolkensis);
- Little Bent-wing Bat (Miniopterus australis); and
- Grey-headed Flying Fox (Pteropus poliocephalus).
- Koala (Phascolarctus cinereus)

These species are further discussed in Section 5.3.3 below.

Photo 3: Red Fox

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Photo 4: Eastern Grey Kangaroo

Photo 5: Grey Butcherbird

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Photo 6: Bush Rat



Photo 7: Satin Bowerbird

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Photo 8: Blue-tongue Lizard observed on site

5.3.3 Threatened Fauna

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5.3.3.1 Detected Threatened Fauna

Five threatened fauna species, the Eastern Osprey, Eastern Coastal Free-tail Bat, Little Bent-wing Bat, Koala and Grey-headed Flying Fox were detected during the survey period. Each of these species are listed as Vulnerable under the *BC Act* with the Grey-headed Flying Fox and Koala also listed as Vulnerable under the *EPBC Act*.

The Little Bent-wing Bat and Eastern Coastal Free-tail Bat were detected on site via Anabat deployment. Multiple passes of the Little Bent-wing Bat were recorded on each night of Anabat deployment whilst passes for the Eastern Coastal Free-tail Bat were recorded on two nights only.

The Grey-headed Flying Fox was detected on site during spotlighting surveys. This species was both heard calling from within the development site and visually observed flying over the site and foraging amongst trees within the subject property. No Grey-headed Flying Fox camps were detected within the subject property.

The Koala was recorded via scats at three SAT survey points on the subject property. It was not recorded on the development site. The site does not contain any preferred food trees, however the Koala could potentially use the site whilst moving between preferred habitats in the area. Results of Koala surveys and a Core Koala Habitat assessment is provided in Section 8.2.

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The Eastern Osprey was detected flying over the site during a diurnal bird survey. This species feeds over large waterbodies and nests in dead branches of tall trees or other artificial structures. As neither feeding nor breeding habitat for this species occurs within the development site, it is unlikely that this species utilises the site and would occur as a fly-over only.

No secondary evidence of any threatened species was found on the site.

5.3.3.2 Potential Occurrence Assessment

A number of threatened fauna species have been recorded in the locality in the Bionet Atlas of Wildlife (OEH 2019), and a number of others are considered potential occurrences by the EPBC Protected Matters Search Tool (DEE 2019). In Appendix 4, these species are evaluated for their potential to occur on the site and their eligibility/requirement for further assessment.

Locally recorded marine species have not been addressed as there is no habitat for these species on the subject site or property.



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6. Impact Assessment

6.1 Direct Impacts

The proposal is to subdivide the subject site into five new lots to allow the development of residential dwellings. An APZ will be established around the building envelopes and will extend to the subject site boundaries. Ecological impacts will be limited as the development site has been historically cleared and will not directly impact any hollow-bearing trees or Koala food trees.

It is estimated that seven mature trees will require removal comprising six Blackbutt and one Sydney Golden Wattle. Trees on adjoining land to the south which overhang the site boundary will not require removal. The extent of native vegetation removal/modification (including derived native grassland) is approximately 0.2ha.

Shrubs and groundcover within the building envelopes is likely to be completely removed, while vegetation in the APZ will be maintained as low groundcover to keep fuel loads low and prevent regrowth.

6.2 Indirect Impacts

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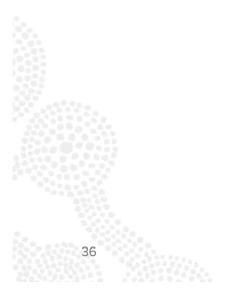
The following potential indirect impacts may be associated with the proposal:

- a) Fragmentation and landscape change: The proposal will contribute local fragmentation as some trees will require removal. No impacts are expected on connectivity due to the limited extent of trees to be removed and the extent of vegetation to remain of the subject property. The development design will need to consider movement corridors for Koalas between Rosendahl reserve to the south and the subject property.
- b) Injury/mortality during clearing: No hollow-bearing trees are proposed to be removed hence the potential for fauna injury/mortality during clearing however this is low. The understorey and groundcover is open, also suggesting a low chance for fauna injury/mortality during clearing. Pre-clearing surveys by an ecologist are recommended.
- *c) Edge effects:* The vegetation on site and in the study area is currently exposed to edge effects due to current land use practices and historic clearing. The limited vegetation removal is unlikely to increase edge effects.
- *d) Fencing:* Fences have potential to obstruct the movement of fauna across the site. Any additional or new fencing should be Koala friendly and not pose any barrier or block Koala movement from the adjoining reservoir land to the south.
- e) Weed invasion: Weeds currently occur throughout the site. The proposal is unlikely to introduce any new weed species, however may increase the potential for spread of weeds within the site through vegetation modification.
- f) Erosion and sedimentation: Standard mechanisms and controls will be required to ensure that erosion and sedimentation impacts do not extend beyond the development footprint where they could potentially impact other vegetation on site. Stormwater and runoff will need to be managed adequately to ensure that potential impacts on adjoining vegetation are minimised.

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- g) Noise and vibration: The construction phase will temporarily increase noise levels however will be diurnal only. This is not expected to pose any impacts to potentially occurring threatened species.
- h) Introduction of feral species: The residents of the new dwellings may wish to keep domestic pets. This has the potential to increase the number feral species in the area if animals are not contained.
- *i)* **Artificial Lighting:** Any new dwellings resulting from the subdivision may feature external lighting. If directed into adjacent vegetation, it may impact nocturnal fauna by changing their behaviour or making them more vulnerable to predation.



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7. PMHC DCP Compliance Assessment

Under the Port Macquarie-Hastings Council Local Environmental Plan (PMHC LEP) 2011, Council has prepared and implemented the PMHC Development Control Plan (DCP) 2013.

The DCP has a specific provisions for hollow-bearing trees (HBTs) and Koala Food Trees (KFTs) which require offset measures should they be removed along with provisions for EECs and riparian zones which require buffers on land >1 ha. The relevant provisions for these are discussed below.

7.1 HBT Provisions

The DCP 2013 requires each hollow-bearing tree (HBT) to be assessed by an ecologist using the PMHC HBT assessment protocol. Based on the scores, the following provisions apply:

- Yellow: Low constraint (score <8): Tree may be considered for removal subject to compensatory measures.
- Orange: Medium constraint (score 8-12): Tree may be considered for removal if management measures are 'impractical to allow retention' (determined by an arborist) subject to compensatory measures.
- Red: High constraint (score >12): Tree must be retained within an exclusion zone/buffer (minimum 1.25 x tree height, measured horizontally), or located with an area protected as environmental land.

No trees containing hollows were recording within the development site however one hollowbearing tree was recorded immediately outside the development footprint, on adjoining land (Photo 9). Although this tree is not within the development site, branches from this tree overhang the site, hence as a precautionary measure, this hollow-bearing tree has been assessed as per the PMHC DCP.

The following table summarises the results of this HBT assessment and the location of this tree is shown in Figure 8.

Table 7: DCP HBT assessment results

1	Blackbutt	Alive	3	>80	3	2-4	1.5	<50	1	In situ	3	High	3	14.5

Assessment under the DCP HBT protocol determined that the hollow-bearing tree overhanging the development site scored a high constraint. Recommendations have been made to ensure that the root system of this tree is not damaged as a result of the proposed subdivision.

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Photo 9: Hollow-bearing tree

7.2 **Koala Food Trees**

Koala food trees listed under the Port Macquarie Hastings Council, Development Control Plan 2013 have been identified by Biodiversity Australia. No KFTs we identified within the development footprint however one primary browse species, Swamp Mahogany (*Eucalyptus robusta*), was noted immediately outside the boundary of the site, on adjoining land. Details of this KFT are provided in Table 8 below and the location is mapped in Figure 8.

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Table 8: DCP Koala Food Tree Assessment Results

KFT 1	Swamp Mahogany	Eucalyptus robusta	8	20	-31.456827	152.90247
* values a	re approximate					

* values are approximate

The Port Macquarie Hastings Council, Development Control Plan 2013 states that the removal of Koala browse tree species is to be replaced at a ratio of 2:1 on the development site or at a secure offsite location agreed to by Council.

The KFT recorded does not fall within the development footprint, hence does not require removal.

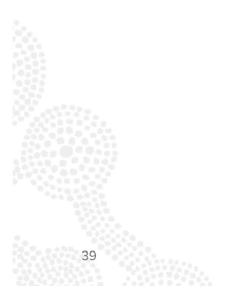
Blackbutt is listed as 'other browse species' in the DCP, and six Blackbutt will require removal. It is recommended that replacement plantings at a 2:1 ratio are undertaken within the property to the north of the site. Replacement species should comprise Tallowwood and Swamp Mahogany.

7.3 EEC Provisions

No EECs were recorded on or in close proximity to the development site, hence the PMHC DCP provisions for EECs do not apply.

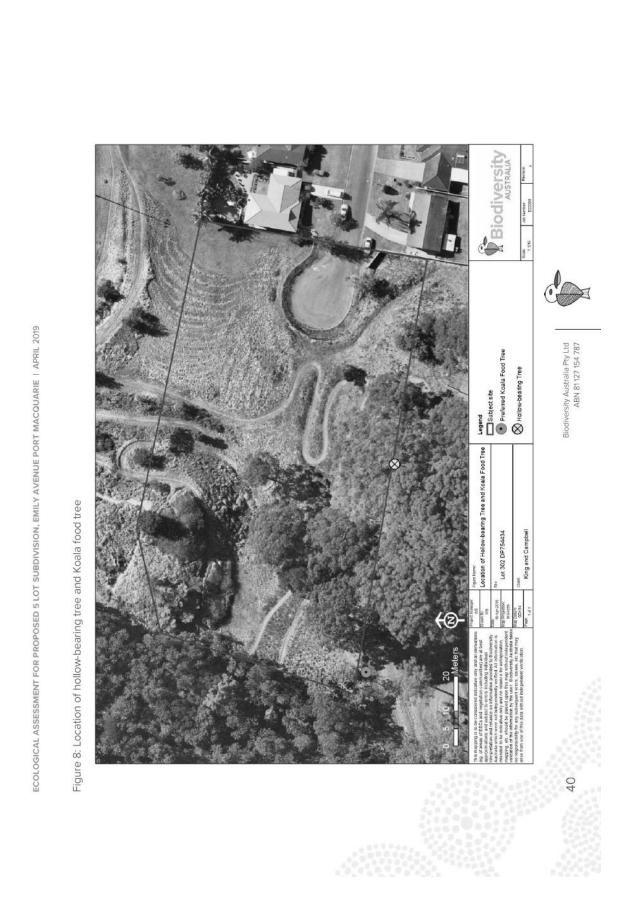
7.4 Riparian Zone Provisions

The development site does not contain any waterways or areas of riparian vegetation, hence the PMHC DCP provisions for riparian zones do not apply.



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8. State Environmental Planning Policy No. 44

The identification of an area of land as Potential Koala habitat is determined by the presence of Primary Preferred Koala Browse tree species. These species are listed under Schedule 2 of SEPP 44: *Koala Habitat Protection* (NSW Government 1995).

Potential Koala Habitat is defined as areas where the tree species listed under Schedule 2 constitute at least 15% of the total number of trees in the upper or lower strata of the tree component. Primary preferred food species occurring in the LGA are: Scribbly Gum (*E. signata*), Tallowwood (*E. microcorys*), Swamp Mahogany (*E. robusta*) and Forest Red Gum (*E. tereticornis*).

An area of land to which the policy applies to must be at least 1 ha (and may include adjoining land in the same ownership).

8.1 Potential Koala Habitat Assessment

The property (Lot 302 DP 754434) is greater than 1 ha, hence SEPP 44 applies and a Potential Koala Habitat Assessment was carried out during the survey. This involved inspection of the vegetation to determine if primary browse species listed under Schedule 2 of SEPP 44 comprised >15% of the canopy or understorey species on the site.

The subject property contains a number of Koala food trees, comprising mostly of Swamp Mahogany. Tallowwood, Forest Red Gum and Scribbly Gum are also present within the property, each which are Primary Food Trees listed in Schedule 2 of SEPP 44. These trees comprise approximately 20% of the tree component present within the southwest portion of the property, and hence it would qualify as Potential Koala Habitat (PKH).

It is noted that most of the Koala food trees on the property are immature and many have been planted over the past 5 years as part of offsets for the Link Road KPoM.

Given that the property contains PKH, a Core Koala Habitat Assessment is required.

8.2 Core Koala Habitat Assessment

8.2.1 Definition of Core Koala Habitat

Under SEPP 44, Core Koala Habitat is defined as "an area of land with a resident population of Koalas, as evidenced by attributes such as breeding females (that is, females with young) and recent sightings of and historical records of a Koala population" (Source: State Environment Planning Policy No. 44 - Koala Habitat Protection).

The definition "an area of land" is interpreted as the land to which the development application applies (if it exceeds 1 ha in area, together with any land in the same ownership).

Information to determine if a resident population of Koalas exists on the site was obtained by direct survey of the site using standard survey techniques (direct survey of Koalas, scat searches) and review of relevant published information and records.

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8.2.2 Methods and Results

8.2.2.1 Literature Review

The Bionet Atlas shows 1619 records of Koalas within 10km of the site. Of these, 1430 records occur within 5km, 377 within 2km and 61 within 1km of the site. Records within 1km of the site range from historic records to recent.

There no historical Koala records on the subject property however several occur in adjoining properties. The nearest Koala records are located 78m to the east of the development site on Emily Avenue (2013), 82m and 220m north of the subject property in adjoining vegetation (2017) and 112m northeast of the subject property at the entrance to Wayne Richards Park (2008). This record also forms the closest vehicle strike records to the site.

8.2.2.2 Field Survey

A field survey was undertaken over the entire site in March and April 2019. This involved direct searches for Koalas in the crowns of trees, four nights of spotlighting and call playback, opportunistic scat searches and four dedicated SAT searches within the subject property.

8.2.2.3 Results

No Koalas were observed within the property however scats were recorded at three of the four SAT surveys. No scats were recorded within the development footprint. No indicative Koala scratches were observed on any trees on the site.

Based on findings from dedicated SAT searches, Phillips and Callaghan (2011) categorise Koala activity levels into either Low, Medium or High use categories. The East Coast (Medium-high) density is appropriate for this site. These categories provide a general classification of the intensity of use by local Koala populations. When a low activity level is applied, care must be taken in the interpretation of this, as results may be indicative of transitory use rather than sedentary ranging patterns.

The following table details the findings of each SAT survey.

SAT 1	-31.456728	152.902784	0	0%	Nil activity
SAT 2	-31.456539	152.901999	2	6.6%	Low use
SAT 3	-31.455419	152.903087	1	3.3%	Low use
SAT 4	-31.454740	152.902205	1	3.3%	Low use

Table 9: SAT survey results

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8.2.2.4 Site Context and Linkage

The site and property form a body of fragmented forest surrounded by residential and recreation areas. Vegetation to the north, west and east of the subject property consist of managed sporting fields, the council works depot and scattered trees within developed areas.

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Vegetation to the south of the property directly adjoins forest vegetation which extends to Rosendahl Reservoir. A large wire mesh fence separates the site from this habitat, however two Koala ladders have been constructed to assist Koala crossing. Ocean Drive forms a significant barrier to the west of the site. Koala Street to the east would be easily crossable however it represents a high risk of road strike.

The habitat on the property is likely to form part of a north-south movement corridor for Koalas which extends from Rosendahl Reservoir to retained vegetation to the north of Koala Street. Tree removal on the development site is unlikely to impact local Koala movements as most of the existing vegetation on the property will remain. Any new fencing around the site as part of the development proposal will need to consider Koala connectivity and recommendations have been provided.

8.2.3 Discussion and Conclusion

SEPP 44 defines Core Koala Habitat as "an area of land with a resident population of Koalas, as evidenced by attributes such as breeding females (that is, females with young) and recent sightings of and historical records of a Koala population".

In regards to the two identified attributes, the following is provided:

1) "Breeding females (that is, females with young)". This assessment did not record any evidence of breeding i.e. a female with a joey. No Koalas were observed and only scats were found which resulted in low activity levels.

2) *"Recent sightings and historical records of a Koala population"*. Review of the available literature failed to determine any historical records of Koalas on the site or property, however several records occur nearby. This survey detected scats in three locations within the subject property indicating Koala usage despite none being observed or heard calling during intensive surveys. It is likely that these findings indicate usage by transient Koalas.

Given that most of the vegetation on the property comprises young regrowth and planted Koala food trees, it is unlikely to comprise any significant foraging area for Koalas at present. Over time as the trees mature, it may provide higher quality habitat and foraging values for Koalas.

Due to the lack of Koalas recorded during intensive surveys and the absence of historical records of a Koala population, the property does not appear to support a sedentary population of Koalas and hence does not qualify as Core Koala Habitat

8.3 Conclusion

Assessment has determined that the property is unlikely to qualify as Core Koala Habitat, hence a Koala Plan of Management (KPoM) for the development is not required. Notwithstanding, specific recommendations to maintain connectivity for Koalas and planting of Koala food trees are provided in Section 11.

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9. Biodiversity Conservation Act 2016 Assessment

9.1 Assessment Pathway

Under the NSW Biodiversity Conservation Act 2016 and Biodiversity Conservation Regulation 2017, Part 4 developments under the Environmental Planning & Assessment Act 1979 (other than State Significant Development) are assessed through the following process:

- For developments in which the impact exceeds the clearing threshold, will impact any area mapped on the Biodiversity Value Map or impact on an area of Outstanding Biodiversity Value, a Biodiversity Development Assessment Report (BDAR) will be required. This assesses the impact using the Biodiversity Assessment Method (BAM) and determines the offset obligations required. Offsets can be met through several options including:
 - Purchase and retirement of biodiversity credits from the open market.
 - Establish a biodiversity stewardship site and create credits via managing the land for conservation in perpetuity.
 - Pay an amount of money into the newly established Biodiversity Conservation Trust who will source credits on behalf of the proponent.
- Developments which fall below the clearing threshold and do not impact on sensitive biodiversity values must be assessed under the new five part test of significance (replacing the former seven part test). If the test determines that a significant impact is likely, a BDAR will be required. There is no offset obligation for Part 4 developments which fall below the threshold and/or are unlikely to have a significant impact on threatened species and/or ecological communities.

The table below provides an assessment to determine if a BDAR is required.

Table 10: Assessment of BDAR requirement

Will the development require clearing of native vegetation?	Yes
Has the development been granted Biodiversity Certification?	No
Is the development considered State Significant Infrastructure?	No
Does the development affect an area mapped in the NSW Biodiversity Values Map?	No – refer t o Figure 9
Minimum lot size on which the development is located.	450 m²
Will the development require the removal of >0.25 ha of vegetation?	No. Only 0.2 ha of native vegetation removal required.
Result	BDAR not required

The above assessment has determined that a BDAR is not required for the proposal. The next stage of the assessment which determines whether the development is likely to have a significant effect threatened species or ecological communities is provided below.

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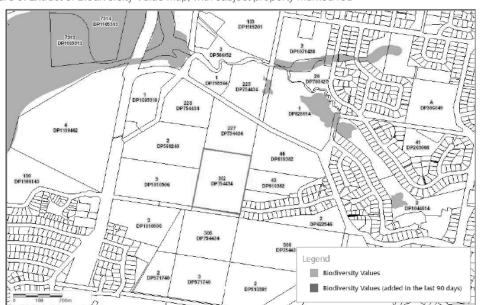


Figure 9: Extract of Biodiversity Value Map, with subject property marked red

9.2 Test of Significance

The Test of Significance is prescribed in Part 7, Division 1, Section 7.2 of the *Biodiversity Conservation Act 2016*. The purpose of the Test of Significance is to determine whether a proposed development or activity is likely to significantly affect threatened species or ecological communities, or their habitats.

If it is determined that a development or activity will have a significant effect, a Biodiversity Development Assessment Report will be required.

The Test of Significance has been prepared in consideration of the *Threatened Species Test of Significance Guidelines* (OEH 2018).

9.2.1 Entities to be Assessed

The Eastern Osprey, Eastern Coastal Free-tail Bat, Little Bent-wing Bat, Koala and Grey-headed Flying Fox were recorded during the survey and are subject to the Test of Significance. The potential occurrence assessment in Appendix 3 and 4 have determined that the following species are considered to be potentially occurring in the study area and are also subject to the Test of Significance:

- Little Eagle
- Square-tailed Kite
- Barking Owl
- Masked Owl

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- Powerful Owl
- Dusky Woodswallow
- Little Lorikeet
- Eastern False Pipistrelle

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- Eastern Bent-wing Bat
- Squirrel Glider
- Brush-tailed Phascogale

- Yellow-bellied Sheath-tail Bat
- Greater Broad-nosed Bat

- 9.2.2 Responses
 - a) In the case of a threatened species, whether the proposed development or activity is likely to have an adverse effect on the life cycle of the species such that a viable local population of the species is likely to be placed at risk of extinction,

The proposed development is for the establishment of five residential lots within the development site. This will involve the removal of six Blackbutt trees and one Sydney Golden Wattle from a modified open forest community. Areas of derived native grassland will also be removed. No preferred Koala food tree species or hollow-bearing trees will require removal. There is some potential for minor indirect impacts such as noise, artificial lighting and predation on native fauna from domestic pets.

While the habitats present on the subject site may provide foraging resources for a number of the subject species, it would not comprise any significant extent of habitat or be capable of supporting breeding. Sufficient habitat to support the local populations of these species will remain in adjoining and nearby lands. Connectivity across the site will be reduced, however the remaining trees within and on the boundary of the site would still maintain connectivity through adjoining vegetation for arboreal species including the Koala.

As such, removal of this habitat would be highly unlikely to place a viable population of the subject species at risk of extinction.

- b) In the case of an endangered ecological community or critically endangered ecological community, whether the proposed development or activity:
 - (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, or
 - (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,

No EECs are present on the subject site.

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- c) In relation to the habitat of a threatened species or ecological community:
 - (i) The extent to which habitat is likely to be removed or modified as a result of the proposed development or activity, and
 - (ii) Whether an area of habitat is likely to become fragmented or isolated from other areas of habitat as a result of the proposed development or activity, and
 - (iii) The importance of the habitat to be removed, modified, fragmented or isolated to the long-term survival of the species or ecological community in the locality.

Habitat to be removed comprises a handful of trees from a modified open forest community.

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The habitat to be removed only represents a small portion of the habitat available to the subject species in the study area and subject property, and is unlikely to be of any key importance to threatened species.

No hollow-bearing trees or Koala food trees are present on the site and no other habitat features such as habitat logs or aquatic habitats will be removed.

The vegetation on site may provide local connectivity for species such as the Koala and removal of these trees will lead to a minor reduction in connectivity for arboreal species. The remaining trees within the community will however allow connectivity to be maintained and no areas of habitat will become isolated as a result of the proposal.

The site offers potential habitat for several threatened fauna species. However given the extent of modification and limitations of the site habitats, these species would be reliant on adjacent and nearby habitats to fulfil their lifecycle requirements and the site would not be of any key importance.

 d) Whether the proposed development or activity is likely to have an adverse effect on any declared area of outstanding biodiversity value (either directly or indirectly),

The proposed development will not directly or indirectly affect an area of outstanding biodiversity value.

e) Whether the proposed development or activity is or is part of a key threatening process or is likely to increase the impact of a key threatening process.

A Key Threatening Process (KTP) is defined as a process that threatens, or may have the capability to threaten, the survival or evolutionary development of species, populations or ecological communities.

The following table lists all of the current KTP's listed under the BC Act and whether the proposed activity is recognised a threatening process.

Aggressive exclusion of birds from woodland and forest habitat by abundant Noisy Miners <i>Manorina melanocephala</i>	No		
Alteration of habitat following subsidence due to longwall mining	No		
Alteration to the natural flow regimes of rivers and streams and their floodplains and wetlands	No		
Anthropogenic Climate Change	Yes – vegetation removal and greenhouse gasses generated by machinery used during construction		
Bushrock removal	No		
Clearing of native vegetation	Yes – minor extent of native vegetation to be removed.		
Competition and grazing by the feral European Rabbit, Oryctolagus cuniculus	No		

Table 11: Contribution to Key Threatening Processes

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Competition and habitat degradation by Feral Goats, Capra hircus	No	
Competition from feral honey bees, Apis mellifera	No	
Death or injury to marine species following capture in shark control programs on ocean beaches	No	
Entanglement in or ingestion of anthropogenic debris in marine and estuarine environments	No	
Forest eucalypt dieback associated with over-abundant psyllids and Bell Miners	No	
Herbivory and environmental degradation caused by feral deer	No – feral deer already occur within the subject property.	
High frequency fire resulting in the disruption of life cycle processes in plants and animals and loss of vegetation structure and composition	No	
Importation of Red Imported Fire Ants Solenopsis invicta	No	
Infection by <i>Psittacine Circoviral</i> (beak and feather) Disease affecting endangered psittacine species and populations	No	
Infection of frogs by amphibian <i>chytrid</i> causing the disease chytridiomycosis	No	
Infection of native plants by Phytophthora cinnamomi	No	
Introduction and establishment of Exotic Rust Fungi of the order Pucciniales pathogenic on plants of the family Myrtaceae	No	
Introduction of the Large Earth Bumblebee Bombus terrestris	No	
Invasion and establishment of exotic vines and scramblers	No	
Invasion and establishment of Scotch Broom (Cytisus scoparius)	No	
Invasion and establishment of the Cane Toad (Bufo marinus)	No	
Invasion of native plant communities by African Olive Olea europaea subsp. cuspidata.	No	
Invasion of native plant communities by Chrysanthemoides monilifera	No	
Invasion of native plant communities by exotic perennial grasses	No – exotic plant species already occur on site. Residents may plant exotic ornamental species within the new lots.	
Invasion of the Yellow Crazy Ant, $\ensuremath{\textit{Anoplolepis gracilipes}}$ into NSW	No	
Invasion, establishment and spread of Lantana (Lantana camara)	No	
Loss and degradation of native plant and animal habitat by invasion of escaped garden plants, including aquatic plants	No	
Loss of Hollow-bearing Trees	No – no hollow-bearing trees occur within the development site.	

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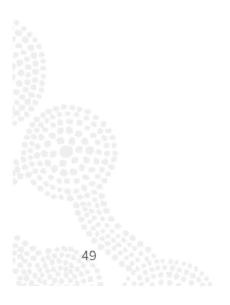
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Loss or degradation (or both) of sites used for hill-topping by butterflies	No	
Predation and hybridisation by Feral Dogs, <i>Canis lupus familiaris</i>	No	
Predation by <i>Gambusia holbrooki</i> (Plague Minnow or Mosquito Fish)	No	
Predation by the European Red Fox Vulpes vulpes	No – the European Fox already occurs on site.	
Predation by the Feral Cat Felis catus	No	
Predation by the Ship Rat <i>Rattus rattus</i> on Lord Howe Island	No	
Predation, habitat degradation, competition and disease transmission by Feral Pigs, <i>Sus scrofa</i>	No	

9.3 Conclusion

The Test of Significance has determined that the proposed development would not result in a significant impact on threatened species or ecological communities. A BDAR is not required for the development proposal.



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10. EPBC Act 1999 - MNES Significance Assessment

10.1 General Assessment Overview

The provisions of the EPBC Act (1999) require determination of whether the proposal has, will or is likely to have a significant impact on a "matter of national environmental significance". These matters are listed and addressed in summary as follows:

- World Heritage Properties: The site is not listed as a World Heritage area nor does the proposal affect any such area.
- 2) National Heritage Places: The site is not listed as a National Heritage Place nor does the proposal affect any such area.
- 3) **Ramsar Wetlands of International Significance:** A Ramsar wetland does not occur on the site, nor does the proposal affect a Ramsar Wetland.
- 4) EPBCA listed Threatened Species and Communities: One threatened species listed under the EPBC Act was recorded on site, the Grey-headed Flying Fox. The Koala was recorded on the subject property. As assessed below, the proposal is not considered likely to have a significant impact on these species.
- 5) **Migratory Species Protected under International Agreements:** No Migratory species is likely to be significantly affected by the proposal as assessed below.
- 6) **The Commonwealth Marine Environment (CME):** The site is not within the CME nor does it affect such.
- 7) The Great Barrier Reef Marine Park: The proposal does not affect the Great Barrier Reef Marine Park.
- 8) Nuclear Actions: The proposal is not a nuclear action.
- 9) A water resource, in relation to coal seam gas development and large coal mining development: The proposal is not a mining development.

It is considered that, the proposal is not required to be referred to Department of Environment and Energy (DEE) for approval under the EPBC Act (1999).

10.2 Koala Referral Assessment

The habitat on site has been assessed using the Koala habitat assessment tool from the EPBC Act Referral Guidelines (Department of the Environment 2014). To qualify as critical habitat, it must score 5 or more. This is shown in the following table:

Table 12: Koala habitat assessment

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	Desktop	Multiple records occur within 2 km of the site on Bionet Atlas, however these are more than 5 years old.	
Koala Occurrence	2	On-ground	No Koala or Koala scats found on the development site. Koala scats were detected within the subject property.
	1	Desktop	N/A

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Vegetation structure and composition		On-ground	The development site comprises open fcrest with no SEPP 44 listed feed tree species. One KFT is however located on the boundary of the development site, in adjoining land holdings.
Habitat connectivity	0		ontiguous landscape which is >300 ha. Large residential areas ithout Koala crossing measures surround the subject property.
	<u>^</u>	Desktop	OEH Bionet has multiple records of Koala road kill in the study area.
Key existing threats	0	On-ground	Domestic dogs and roads in surrounding rural-residential areas would be a likely threat to local Koalas.
Recovery value	0	The minor amount for the recovery o	of vegetation affected by the proposal is unlikely to be important f the Koala.
Total	3	Site does not qua	ify as critical habitat.

As per the Koala habitat assessment tool, the subject site does not qualify as critical habitat and no further assessment is required.

10.3 Protected Species Assessments

An assessment of significance of the proposal on the Grey-headed Flying Fox is as follows.

10.3.1 Factors To Be Considered for Vulnerable Species

The guidelines to assessment of significance to this Matter, define an action is as likely to have a significant impact on a Vulnerable species, if it will:

- a) Lead to a long-term decrease in the size of an important population of a species, or:
- b) Reduce the area of occupancy of an important population, or:
- c) Fragment an existing important population into two or more populations, or:
- d) Adversely affect habitat critical to the survival of a species, or:
- e) Disrupt the breeding cycle of an important population, or:
- f) Modify, destroy, remove or isolate or decrease the availability or quality of habitat to the extent that the species is likely to decline, or:
- g) Result in invasive species, that are harmful (by competition, modification of habitat, or predation) to a Vulnerable species, becoming established in the Vulnerable species' habitat, or:
- h) Introduce a disease that may cause a species to decline, or:
- i) Interferes substantially with the recovery of the species.

An *important population* is one that is necessary for a species' long-term recovery. This includes such populations as:

Key populations either for breeding or dispersal;

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- Populations that are necessary for maintaining genetic diversity; and/or
- Populations that are near the limit of the species range.

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10.3.1.1 Assessment of Significance

This section addresses each of the previous points listed.

Lead to a long-term decrease in the size of an important population of a species, or:

The proposal will require the removal of a handful of trees from an area of potential foraging habitat. This may provide an extremely small nectar resource for the population relative to its ecological requirements and local extent of potential habitat. While in very strict terms a negative effect, this loss will have a very low impact on the local Grey-headed Flying Fox population as the site in total would only form a very minute fraction of this species wider opportunistic/seasonally variable foraging range.

The study area is also not a known roost (Eby 2000) and better quality alternative foraging habitat in the locality is evidently extensive. The proposal will thus not lead to a long-term decrease in the size of an important population.

b) Reduce the area of occupancy of an important population, or:

For the Grey-headed Flying Fox, the minor loss of foraging habitat on the subject site is insignificant relative to the area of occupancy which is measured in terms of hundreds of thousands of hectares. Consequently, the proposal would not reduce the area of occupancy of the important population.

c) Fragment an existing important population into two or more populations, or:

The Grey-headed Flying Fox is highly mobile and known to be capable of crossing human-modified habitat. The proposal will offer no barrier to movement. Thus it will not fragment an existing important population.

d) Adversely affect habitat critical to the survival of a species, or:

"Critical habitat" refers to areas critical to the survival of a species or ecological community may include areas that are necessary for/to:

- activities such as foraging, breeding, roosting or dispersal;
- succession;

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- maintain genetic diversity and long term evolutionary development; or
- reintroduction of populations or recovery of the species/community.

The vegetation on site is not considered critical habitat for the Grey-headed Flying Fox due to its limited extent and the ecology of the species.

e) Disrupt the breeding cycle of an important population, or:

The proposal will not disrupt the breeding cycle of an important population given that:

- The site habitat does not represent breeding habitat for the subject species.
- The potential for this species to occur in the study area will be retained post development.
- The site does not comprise any significant area of foraging habitat for the subject species.
- f) Modify, destroy, remove or isolate or decrease the availability or quality of habitat to the extent that the species is likely to decline, or:

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As detailed previously, the degree of possible vegetation loss imposed by the proposed development is not significant enough to affect a local population of the subject species to the point that it could cause a decline of the species.

g) Result in invasive species, that are harmful (by competition, modification of habitat, or predation) to a Vulnerable species, becoming established in the Vulnerable species' habitat, or:

No new species that affects the subject species is likely to be introduced as a direct result of the proposal.

h) Introduce a disease that may cause a species to decline, or:

No disease that poses a potential risk to these species is likely to be introduced to the site.

i) Interferes substantially with the recovery of the species.

Ideally, the goal in threatened species recovery is to increase the abundance and range of the threatened species, so that it is not in risk of becoming extinct.

As detailed previously, the proposal is unlikely to significantly impact on the Grey-headed Flying, thus it will have minimal effect on the recovery of these species.

10.3.1.1.1 Conclusion

The proposal is not considered likely to have a significant impact on the Grey-headed Flying Fox and thus a referral to DEE is not required.

10.4 Migratory Species

The migratory species, Eastern Osprey was recorded flying over the site during the field survey. This species is unlikely to utilise the site as food sources and breeding habitat do not occur within the site.

The habitats present across the site and study area provide potential habitat for a few listed migratory species such as the Horsefield's Cuckoo, White-throated Needletail, and Rufous Fantail.

These species are collectively assessed below.

10.4.1 Factors To Be Considered

The guidelines to assessment of significance to this Matter, define an action as likely to have a significant impact on a migratory species, if it will:

- a) Substantially modify (including fragmenting, altering fire regimes, altering nutrient cycles or altering hydrological cycles), destroy or isolate an area of important habitat of the migratory species, or;
- b) Result in an invasive species that is harmful to the migratory species becoming established in an area of important habitat of the migratory species, or;
- c) Seriously disrupt the lifecycle (breeding, feeding, migration or resting behaviour) of an ecologically significant proportion of the population of the species.

An important area of habitat is:

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- Habitat used by a migratory species occasionally or periodically within a region that supports an ecologically significant proportion of the population of the species, or:
- 2) Habitat utilised by a migratory species which is at the limit of the species range, or;
- 3) Habitat within an area where the species is declining.

10.4.1.1 Assessment of Significance

This section addresses each of the previous points listed.

 Substantially modify (including fragmenting, altering fire regimes, altering nutrient cycles or altering hydrological cycles), destroy or isolate an area of important habitat of the migratory species, or;

The site is not considered likely to constitute an important area of habitat given that it is not of sufficient extent to support an ecologically significant proportion of any of the above listed species.

B) Result in an invasive species that is harmful to the migratory species becoming established in an area of important habitat of the migratory species, or;

An invasive species is one that may become established in the habitat, and harm the migratory species by direct competition, modification of habitat, or predation. The proposal will not introduce any such invasive species.

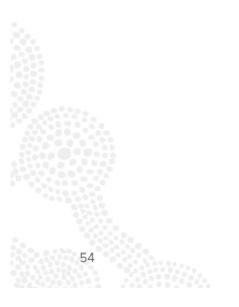
c) Seriously disrupt the lifecycle (breeding, feeding, migration or resting behaviour) of an ecologically significant proportion of the population of the species.

No disruption of the lifecycle of any migratory bird is likely as:

- Habitat affected is either only marginally suitable, and/or locally abundant.
- No significant extent of potential or known nesting/breeding habitat is affected.
- No significant extent of potential or known foraging habitat will be affected.

10.4.1.1.1 Conclusion

In view of the above, no migratory bird is considered likely to be significantly affected by the proposal.



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11. **Recommendations**

The following are recommended to be included as conditions of consent if the proposal is approved. The conclusions of this assessment assume the measures are implemented and effective in mitigating impacts.

11.1 General Clearing Measures

The following measures are recommended to manage clearing:

- The extent of the development footprint to be clearly marked (e.g. via pegging/fencing/flagging) before clearing in order to prevent any inadvertent clearance beyond what is required and has been assessed and to avoid damage or encroachment into the root zone of retained trees. This fencing/marking is to remain until all clearing and construction is completed.
- Site induction is to specify that no clearing is to occur beyond the marked area. All vehicles are only to be parked in designated areas.
- Clearing and earthworks is to avoid damage to root zones of the retained trees on adjoining land.
- Weeds are not to be mulched with native vegetation and should be taken to a licenced landfill facility.

11.2 Animal Welfare Considerations

The following is recommended to be implemented to minimise risk of direct mortality of fauna during clearing works:

- The area of clearing work is to be inspected for Koalas and other fauna by an ecologist immediately prior to commencement of any vegetation removal involving machinery and/or tree-felling. Pre-clearing checks will include searches of habitat e.g. lifting and destruction of logs, searches for bird nests, and raking of leaf litter. Other than Koalas, any detected fauna is to be relocated off-site. Any bird nest considered active is to be removed in a manner that allows retrieval of eggs/young, and these are to be taken into care by FAWNA.
- If a Koala is present in the proposed clearing area, works are to be suspended until the Koala
 moves along on its own volition. If the Koala is located in a position that a 50 m buffer may be
 established, works may proceed outside this buffer.

11.3 Tree Replacement

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The development will require the removal of six Blackbutt trees which may provide foraging habitat for threatened fauna. It is recommended that these are offset with replacement plantings at a 2:1 ratio in existing canopy gaps in the subject property. Species for planting should be sourced as advanced trees from a local nursery and comprise Tallowwood and/or Swamp Mahogany. Trees should be regularly maintained (eg watering, weeding, mulching) until they are at least 2m tall and any losses are to be replaced.

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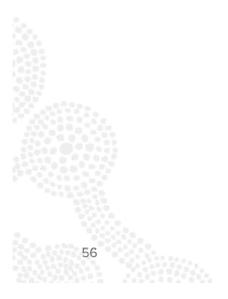


11.4 Koala Ladders

There are two existing Koala ladders on the fenceline between Rosendahl Reservoir reserve and the strip of land which adjoins the southern site boundary (see Figure 10 below). To increase the number of potential crossing points and connectivity for Koalas, a third Koala ladder is recommended to be installed to the southwest of the site as shown in Figure 10.

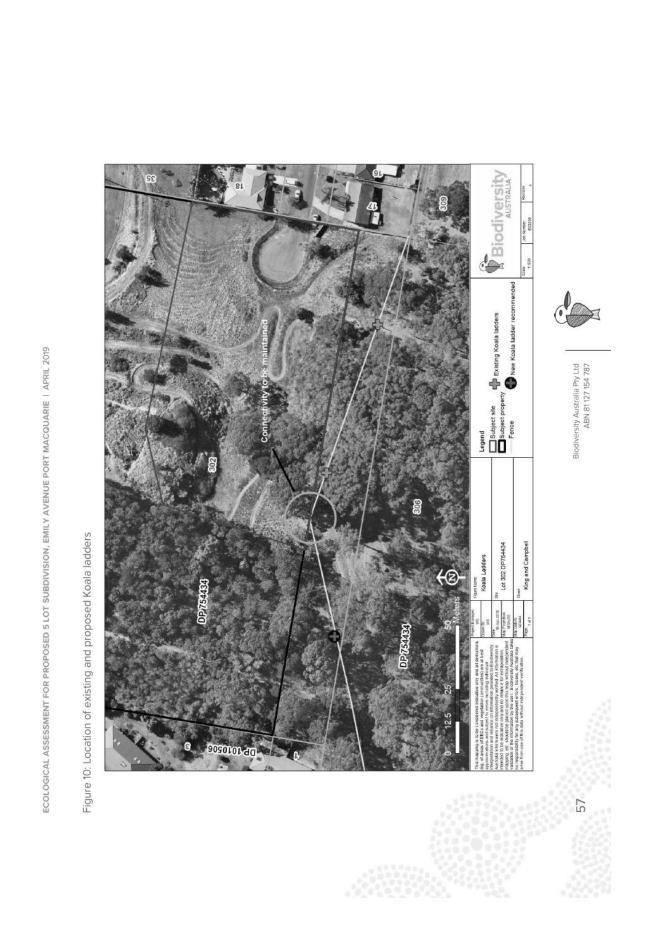
The existing wire fence adjoins the southwest of the site boundary as shown in Figure 10. If the site boundary is fenced as part of the development it has the potential to limit Koala access around the subject site and may direct Koalas into the proposed new development area or onto Emily Avenue to the northeast.

Ideally, a gap should be maintained here for Koalas to pass through from the reserve to habitat within the east of the property (Lot 302). Another option is to re-align the existing wire fence so it aligns with the boundary of Lot 306.



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11.5 Domestic Pets

New residents may wish to keep cats and dogs. These should be restrained to the vicinity of the residences and yards as far as practicable to avoid potential injury to native fauna. Pets should not be allowed to roam nearby bushland areas and signage is recommended to be installed notifying residents. Ideally, dogs should be restricted within a fence which prevents fauna access, but permits their escape (eg by a wooden post).

11.6 Sedimentation and Erosion Control

Standard soil and sedimentation control measures will be required throughout the clearing works to ensure that habitats on the site and in the study area, as well as any subsequent aquatic habitats to the south are not substantially affected by erosion and sedimentation.

11.7 Weed Control

Disturbance of the development site's soils and vegetation removal has potential to encourage weed invasion. Hence, it is recommended that:

- Disturbance of vegetation and soils on the site should be limited to the areas of the proposed work and should not extend into adjacent vegetation.
- All plant used for clearing and construction works is certified as weed free.
- Appropriate collection and disposal of all weed material removed via clearing.
- Removal of any new weed infestations that have developed throughout the construction phase.

11.8 Fencing

Temporary fencing may be required upon construction of the residential dwellings. Fences have potential to obstruct the movement of fauna across the site. Any fencing required should be Koala friendly, permeable and not pose a barrier or risk of entanglement to fauna (e.g. post and plain wire).



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12. Conclusion

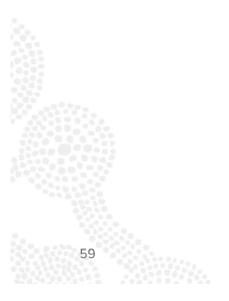
This report has assessed the impact of establishing a residential subdivision over the site. This comprises 5 Lots with a defined development envelope. An APZ and access driveway will also be established. The development will require the removal of a small amount of vegetation from on the site which comprises scattered trees and glassland. No hollow-bearing trees or Koala food trees occur on the site.

No threatened flora species were recorded during the survey and the vegetation on site does not qualify as an EEC. Five threatened fauna species were detected on the site and property. An additional 13 threatened species were identified as having potential to use the site as a small part of a larger range.

Assessment under SEPP 44 determined that the property comprises Potential Koala habitat, however many of the Koala feed trees are young regrowth or have been planted. As such, it offers limited foraging opportunities for Koalas at present and is unlikely to comprise Core Koala Habitat.

The significance assessments carried out for the proposed development determined that the proposal is not expected to significantly impact upon the known/potentially occurring threatened species on site due to the limited scale of the development; the fact that local populations of the subject species would extend beyond the study area; and the proposed ameliorative measures detailed in this report.

Consequently, the proposal is not considered to require a Biodiversity Development Assessment Report, or referral to the DEE for approval under the EPBC Act 1999.



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14. Appendices

A-1 Site Vegetation List

	Canopy Trees			
Blackbutt	Eucalyptus pilularis	×		Х
	Trees and Shrubs			
Two-veined Hickory	Acacia binervata			Х
Fringed Wattle	Acacia fimbriata			Х
Sydney Golden Wattle	Acacia longifolia	×	Х	
Lilly Pilly	Acmena smithii			Х
Coast Banksia	Banksia integrifolia			Х
Coffee Bush	Breynia oblongifolia	х	Х	
Bitou Bush**	Chrysanthemoides monilifera**	×		
Oliver's Sassafras	Cinnamomum oliveri			×
Lolly Bush	Clerodendrum floribundum			х
Narrow-leaved Palm Lily	Cordyline stricta	×		
Tuckeroo	Cupaniopsis anacardioides	×		
Bolwarra	Eupomatia laurina	×		
Sandpaper Fig	Ficus coronata			х
Cheese Tree	Glochidion ferdinandi	×		
Narrow-leaved Cotton Bush*	Gomphocarpus fruticosus	×		
Guioa	Guioa semiglauca			Х
Lantana**	Lantana camara**	×	×	
Prickly Beard-heath	Leucopogon juniperinus			х
Large-leaved Privet**	Ligustrum lucidum**		х	
Unknown	Myrsine variabilis			Х
Large Mock-olive	Notelaea longifolia			х
Mickey Mouse Plant**	Ochna serrulata**			х
-	Persoonia stradbrokensis		х	
Wild Yellow Jasmine	Pittosporum revolutum			Х
Native Daphne	Pittosporum undulatum			×
Elderberry Panax	Polyscias sambucifolia	×		
Molucca Bramble	Rubus moluccanus			Х
Native Rasberry	Rubus parvifolius	×		
Rose-leaf Bramble	Rubus rosifolius			×
Senna**	Senna pendula**			×
Wild Tobacco Bush*	Solanum mauritianum*		х	
Scentless Rosewood	Synoum glandulosum			Х
Native Peach	Trema tomentosa			Х

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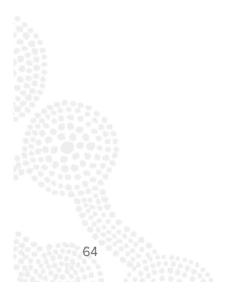
Tie Bush	Wikstroemia indica	×		
	Vines and Scramblers			
Wombat Berry	Eustrephus latifolius	×		
Scrambling Lily	Geitonoplesium cymosum			х
	Glycine clandestina	×		
	Glycine tabacina	×		
Climbing Guinea Flower	Hibbertia scandens			х
Coastal Morning Glory**	lpomoea cairica**		×	
Dusky Coral Pea	Kennedia rubicunda			х
Cork Passionflower*	Passiflora suberosa*	×	х	
Pearl Vine	Sarcopetalum harveyanum	×		
Lawyer Vine	Smilax australis	×		
Snake Vine	Stephania japonica		×	
	Ferns			
Asparagus Fern**	Asparagus aethiopicus**			×
Gristle Fern	Blechnum cartilagineum	×		
Binung	Christella dentata			х
Tree Fern	Cyathea cooperi			Х
Rasp Fern	Doodia aspera	×		
Common Bracken	Pteridium esculentum	×		
	Grasses			
Narrow-leafed Carpet Grass**	Axonopus fissifolius**		х	
Rhodes Grass**	Chloris gayana**	×	х	
Barbed Wire Grass	Cymbopogon refractus	×	×	
Blady Grass	Imperata cylindrica	×	×	
Red Natal Grass*	Melinis repens*	×	х	
Australian Basket Grass	Oplismenus aemulus	×		
Paspalum**	Paspalum dilatatum**		×	
Broadleaf Paspalum*	Paspalum mandiocanum*		×	
South African Pigeon Grass*	Setaria sphacelata*		х	
Paramatta Grass*	Sporobolus africanus*		х	
Kangaroo Grass	Themeda triandra	×		
	Groundcovers			
Billygoat weed*	Ageratum houstonianum*		X	
Cobbler's Pegs**	Bidens pilosa**	×	X	
Flaxleaf Fleabane*	Conyza bonariensis*		x	
Blue Flax Lily	Dianella caerulea	×		
Kidney Weed	Dichondra repens			Х
Flatweed*	Hypochaeris radicata*	×	x	

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Scotch Thistle*	Onopordum acanthium*			х
Vasey Grass*	Paspalum urvillei*		×	
Castor Oil Plant**	Ricinus communis**			х
Paddy's Lucerne*	Sida rhombifolia*	×	х	
Ground Lily	Tripladenia cunninghamii	×		
Purpletop**	Verbena bonariensis**		х	
lvy-leaved Violet	Viola hederacea		х	
	Sedges, Rushes and Aquatics			
Spiny-headed Mat-rush	Lomandra longifolia	×	×	
Key: Random meander (RM), Exo	tic species (*), High threat exotic species (*	*).		



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A-2

Site Fauna List

	Aves	
Australian King-Parrot	Alisterus scapularis	Vis
Australian Magpie	Cracticus tibicen	HC, Vis
Brown Thornbill	Acanthiza pusilla	HC
Crested Pigeon	Ocyphaps lophotes	Vis
Eastern Osprey	Pandion cristatus	Vis
Eastern Rosella	Platycercus eximius	HC, Vis
Galah	Eolophus roseicapilla	HC
Grey Butcherbird	Cracticus torquatus	Vis, Cam
Laughing Kookaburra	Dacelo novaeguineae	Vis
Lewin's Honeyeater	Meliphaga lewinii	HC, Vis
Little Black Cormorant	Phalacrocrax sulcirostris	Vis
Little Corella	Cacatua sanguinea	Vis
Little Wattlebird	Anthochaera chrysoptera	HC, Vis
Magpie Lark	Grallina cyanoleuca	Vis
Masked Lapwing	Vanellus miles	Vis
Noisy Miner	Manorina melanocephala	HC
Pied Butcherbird	Cracticus nigrogularis	HC
Rainbow Lorikeet	Trichoglossus moluccanus	HC, Vis
Red Wattlebird	Anthochaera carunculata	HC
Satin Bowerbird	Ptilonorhynchus violaceus	Cam
Spotted Dove	Spilopelia chinensis	HC
Superb Fairywren	Malurus cyaneus	HC
Torresian Crow	Corvus orru	HC
Welcome Swallow	Hirundo neoxena	Vis
White-bellied Cuckoo-shrike	Coracina papuesis	Vis
White-headed Pigeon	Columba leucomela	HC
Willie Wagtail	Rhipidura leucophrys	HC
	Mammalia	
Black Rat	Rattus rattus	Cam
Bush Rat	Rattus fuscipes	Cam
Chital Deer	Axis axis	Vis
Common Ringtail Possum	Pseudocheirus peregrinus	Vis
Eastern Coastal Free-tail Bat	Mormopterus norfolkensis	Anabat
Eastern Grey Kangaroo	Macropus giganteus	Cam
Gould's Wattled Bat	Chalinolobus gouldii	Anabat
Grey-headed Flying Fox	Pteropus poliocephalus	HC, Vis

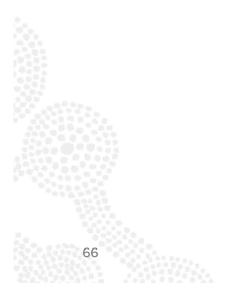


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Common Name		
Little Bent-wing Bat	Miniopterus australis	Anabat
Red Fox*	Vulpes vulpes*	Cam
Ride's Free-tailed Bat	Ozimops ridei	Anabat
	Reptilia	
Eastern Blue-tongue Lizard	Tiliqua scincoides	Vis
Key: Vulnerable under BC Act and/or EP Observation Key: PIR Camera (Cam), Hea		ervation (Vis).



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A-3 Flora Species Eligibility for Test of Significance and MNES Assessment

Table 13: Potential occurrence assessment - flora

Scented Acronychia Acronychia littoralis	ш	ш	7	http://www.environment.nsw.gov.au/threatenedspeci esapp/profile.aspx?id=10030	No suitable habitat on site. Unlikely to occur.	No
Dwarf Heath Casuarina Allocasuarina defungens	ш	ш	7	http://www.environment.nsw.gov.au/threatenedspeci esapp/profile.aspx?td=10037	No suitable habitat on site. Unlikely to occur.	Ň
- Allocasuarina thalassoscopica		ш	0	http://www.environment.gov.au/cgi- bin/sprat/public/publicspecies.pl?taxon_id=21927	No suitable habitat on site. Unlikely to occur.	Ñ
Hairy-joint Grass Arthraxon hispidus	>	>	0	https://www.environment.nsw.gov.au/threatenedSpe ciesApp/profile.aspx?id=10066	No suitable habitat on site. Unlikely to occur.	Ñ
Trailing Woodruff Asperula asthenes	>	>	2	http://www.environment.nsw.gov.au/threatenedSpeci esApp/profile.aspx?id=10068	This species is known to occur in damp areas, often along river banks. Suitable habitat does not occur on site and the plant was not found. Unlikely to occur.	N
Bailey's Cypress Pine Callitris baileyi	ш		÷	https://www.environment.nsw.gov.au/threatenedSpe ciesApp/profile.aspx?id=10131	Site is located beyond known distribution. Unlikely to occur.	No
Sand Spurge Chamaesyce psammogeton	ш		4	https://www.environment.nsw.gov.au/threatenedSpe ciesApp/profile.aspx?id=10160	No suitable habitat on site. Unlikely to occur.	No
Leafless Tongue-orchid Cryptostylis hunteriana	>	>	0	https://www.environment.nsw.gov.au/threatenedSpe ciesApp/profile.aspx?id=10187	Site habitat unlikely to be suitable due to disturbance history and extent of dense exotic groundcover. No local records. Unlikely to occur.	N
White-flowered Wax Plant Cynanchum elegans	ш	ш	-	http://www.environment.nsw.gov.au/threatenedspeci esapp/profile.aspx?id=10196	This species predominately occurs in dry rainforest and littoral rainforest communities. Habitat of this type does not occur on the subject site and this species was not found. Unlikely to occur.	Ň
Spider orchid Dendrobium melaleucaphilum	ш		4	http://www.environment.nsw.gov.au/threatenedspeci esapp/profile.aspx?id=10213	No suitable habitat on site. Unlikely to occur	No
Byron Bay Diuris Diuris sp. aff. chrysantha	ш		۲	https://www.environment.nsw.gov.au/threatenedSpe ciesApp/profile.aspx?id=10241	No suitable habitat on site. Unlikely to occur	No
Narrow-leaved Black Peppermint	>	>	9	https://www.environment.nsw.gov.au/threatenedSpe ciesApp/profile.aspx?id=10302	Site is located beyond known distribution and local records are planted trees. Unlikely to occur.	No
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Eucalyptus nicholii						
Wallangarra White Gum Eucalyptus scoparia	ш	>	-	https://www.environment.nsw.gov.au/threatenedSpe ciesApp/profile.aspx?id=10315	Site is located beyond known distribution and local records are planted trees. Unlikely to occur.	No
- Euphrasia arguta	IJ	IJ	0	https://www.environment.nsw.gov.au/threatenedSpe ciesApp/profile.aspx?id=20165	No suitable habitat on site. Unlikely to occur	Ñ
Slender Screw Fern Lindsaea incisa	ш		2	https://www.environment.nsw.gov.au/threatenedSpe ciesApp/profile.aspx?id=10482	No suitable habitat on site. Unlikely to occur	No
Macadamia Nut Macadamia integrifolia	,	>	2	http://www.environment.nsw.gov.au/threatenedspeci esapp/profile.aspx?id=20244	Site is located beyond known distribution and local records are planted trees. Unlikely to occur.	N
Slender Marsdenia Marsdenia longiloba	ш	>	-	http://www.environment.nsw.gov.au/threatenedspeci esapp/profile.aspx?id=10507	Typically recorded in wet sclerophyll forest and rainforest. Site habitat unlikely to be suitable and there are ro proximate records. Unlikely to occur.	N
- Maundia triglochinoides	>		10	http://www.environment.nsw.gov.au/threatenedSpeci esApp/profile.aspx?id=10511	No suitable habitat on site. Unlikely to occur	Ñ
Biconvex Paperbark Melaleuca biconvexa	>	>	47	http://www.environment.nsw.gov.au/threatenedSpeci esApp/profile.aspx?id=10514	This species occurs in swamp margins or creek edges. Habitiat of this type does not occur within the development site and species not found. Unlikely to occur.	°Z
Grove's Paperbark Melaleuca groveana	>		7	http://www.environment.nsw.gov.au/threatenedspeci esapp/profile.aspx?id=10516	Site habitat is unlikely to be suitable and there are no proximate records. Likely to be readily detected if present. Unlikely to occur.	°Z
Red-flowered King of the Fairies Oberonia titania	>		-	http://www.environment.nsw.gov.au/threatenedspeci esapp/profile.aspx?id=10571	No suitable habitat on site. Unlikely to occur	N
Brown Fairy-chain Orchid Peristeranthus hillii	>	•	-	https://www.environment.nsw.gov.au/threatenedSpe ciesApp/profile.aspx?id=10868	No suitable habitat on site. Unlikely to occur	N
Lesser Swamp-orchid Phaius australis	ш	ш	0	https://www.environment.nsw.gov.au/threatenedSpe ciesApp/profile.aspx?id=10610	No suitable habitat on site. Unlikely to occur	N
Scrub Turpentine Rhodamnia rubescens	CE	1	34	https://www.environment.nsw.gov.au/threatenedSpe ciesApp/profile.aspx?id=20341	A rainforest species which is also occasionally found in wet sclerophyll forest. Neither of these habitat communities occur on the subject site and this species was not found. Unlikely to occur.	S
Native Guava Rhodomyrtus psidioides	CE		28	https://www.environment.nsw.gov.au/threatenedSpe ciesApp/profile.aspx?id=20342	This species is often found near creeks and drainage lines within rainforest communities. Habitat of this type	Ñ
				Biodiversity Australia Pty Ltd		

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ECOLOGICAL ASSESSMENT FOR PROPOSED 5 LOT SUBDIVISION, EMILY AVENUE PORT MACQUARIE 1 APRIL 2019 ECOLOGICAL ASSESSMENT FOR PROPOSED 5 LOT SUBDIVISION, EMILY AVENUE PORT MACQUARIE 1 APRIL 2019 Itivelihood of Occurrence Species BC PRo. of Act Records Init to Profile Reinforest Cassia E I Itip//www.environment.nsw.gov.au/threatenedspeci No suitable habitat on site. Unlikely to occur.			Ñ
ROPOSED 5 LOT SUBDIVISION, BC EPBC No. of Act Act Records		does not occur within the subject site and this species was not found. Unlikely to occur.	No suitable habitat on site. Unlikely to occur
ECOLOGICAL ASSESSMENT FOR PROPOSED 5 LOT SUBDIVISION Species BC EPBC No. of Act Records Rainforest Cassia E	, EMILY AVENUE PORT MACQUARIE APRIL 2019		http://www.environment.nsw.gov.au/threatenedspeci
ECOLOGICAL ASSESSMENT FOR PROPOSED 5 LOT SU Species BC EPBC Act Act Act Act	IBDIVISION,		÷
ECOLOGICAL ASSESSMENT FOR PROPOSEE Species BC Act Rainforest Cassia E	DE LOT SU		
ECOLOGICAL ASSESSMENT FOR P Species Rainforest Cassia	ROPOSED		ш
	ECOLOGICAL ASSESSMENT FOR F		Rainforest Cassia

					does not occur within the subject site and this species was not found. Unlikely to occur.	
Rainforest Cassia Senna acclinis	ш		-	http://www.environment.nsw.gov.au/threatenedspeci esapp/profile.aspx?id=10753	No suitable habitat on site. Unlikely to occur	No
Silverbush Sophora tomentosa	ш		7	https://www.environment.nsw.gov.au/threatenedSpe ciesApp/profile.aspx?id=10765	No suitable habitat on site. Unlikely to occur	No
Magenta Lilly Pilly Syzygium paniculatum	ш	>	0	https://www.environment.nsw.gov.au/threatenedSpe ciesApp/profile.aspx?id=10794	No suitable habitat on site. Unlikely to occur	No
Austral Toadflax Thesium australe	>	>	0	https://www.environment.nsw.gov.au/threatenedSpe ciesApp/profile.aspx?td=10802	Site contains some areas of native groundcover, however the habitat in general is unlikely to be suitable for this species which is more often associated with grassland on coastal seacliffs. No local records. Unlikely to occur.	°Z
Key: Critically Endangered (CE), Endangered (E), Vulnerable (V).	dangered (E), Vulnerë	able (V).			



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A-4 Fauna Species Eligibility for Test of Significance and MNES Assessment

Table 14: Potential occurrence assessment - fauna

				Amphibia		
Wallum Froglet Crinia tinnula	>	1	64	https://www.environment.nsw.gov.au/thre atenedSpeciesApp/profile.aspx?id=10183	This species is mostly found in paperbark swamps and wet sedgelands. Habitat of this type does not occur within the development site. Unlikely to occur.	N
Green & Golden Bell Frog Litoria aurea	ш	>	ß	http://www.environment.nsw.gov.au/threa tenedspeciesapp/profile.aspx?id=10483	Recorded north of Lake Innes Nature Reserve to the west of the site. No potential habitat occurs on the site, hence it is unlikely to occur.	N
Green Thighed Frog Litoria brevipalmata	>	1	4	https://www.environment.nsw.gov.au/thre atenedSpeciesApp/profile.aspx?id=10485	This species occurs in moist eucalypt forests and rainforests containing pooled water or flooded areas. Although some areas of suitable habitat may occur nearby to the south of the site, the subject site itself does not contain habitat suitable for this species and has a significance disturbance history. Unlikely to occur.	°z
Giant Barred Frog Mixophyes iteratus	I	ш	2	https://www.environment.nsw.gov.au/thre atenedSpeciesApp/profile.aspx?id=10538	This species is found in moist forests and rainforests. The vegetation communities on site are not suitable and this species has not been recorded in the locality within the last ten years. Unlikely to occur.	õ
				Aves		
Magpie Goose Anseranas semipalmata	>	,	7	https://www.environment.nsw.gov.au/thre atenedSpeciesApp/profile.aspx?id=10056	This species is generally found in shallow wetlands surrounded by dense sedges or rushes however may graze in grassland communities. The site does not contain potential habitat, unlikely to occur.	õ
Regent Honeyeater Anthochaera phrygia	CE	CE	7	http://www.environment.nsw.gov.au/threa tenedSpeciesApp/profile.aspx?id=10841	Favoured winter flowering nectar sources for this species do not occur within the development site. Unlikely to occur.	N
Dusky Woodswallow Artamus cyanopterus cyanopterus	>	,	00	http://www.environment.nsw.gov.au/threa tenedspeciesapp/profile.aspx?id=20303	Site may contain generic potential habitat for this species, however it was not recorded during the survey. Low chance of occurrence.	Yes
Australasian Bittern Botaurus poiciloptilus	ш	Ш	2	http://www.environment.nsw.gov.au/threa tenedspeciesapp/profile.aspx?id=10105	An estuarine or freshwater species found in areas of dense sedges, reeds and rushes. Suitable habitat for this species does not occur on site. Unlikely to occur.	No
70				Biodiversity Australia Pry Ltd ABN 81127154787	ity Australia Pty Ltd ABN 81 127 154 787	

	Site at best contains broadly suitable potential habitat	httne://www.amiconment.new.cov.au/thre				own Treecreeper (eastern
z	This species is mostly found in native grassland or foraging over open habitats. The prey resources for this species require groundcover and are sensitive to habitat degradation. Modification of grassland on site and lack of groundcover for prey species is considered a limitation for this species. Unlikely to occur.	https://www.environment.nsw.gov.au/thre atenedSpeciesApp/profile.aspx?id=20134	12	1	>	Spotted Harrier Circus assimilis
z	This species requires Allocasuarina and/or casuarina species to forage and large tree hollows to breed. Neither of these requirements occur within the development site, hence it is unlikely to occur.	http://www.environment.nsw.gov.au/threa tenedSpeciesApp/profile.aspx?id=10140	46	ш	>	Glossy Black Cockatoo Calyptorhynchus lathami
z	This species requires an abundance of leaf litter and fallen debris for breeding. Site has been extensively disturbed in the past by logging which would be a deterrent for this species. Not recorded by survey and not recorded within the locality within the past ten years. Unlikely to occur.	https://www.environment.nsw.gov.au/thre atenedSpeciesApp/profile.aspx?id=10113	7	1	ш	Bush Stone-curlew Burhinus grallarius

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ECOLOGICAL ASSESSMENT FOR PROPOSED 5 LOT SUBDIVISION, EMILY AVENUE PORT MACQUARIE | APRIL 2019

Bush score-curew Burhinus grallarius	ш		2	https://www.environment.nsw.gov.au/thre atenedSpeciesApp/profile.aspx?id=10113	disturbed in the past by logging which would be a deterrent for this species. Not recorded by survey and not recorded within the locality within the past ten years. Unlikely to occur.
Glossy Black Cockatoo Calyptorhynchus lathami	>	ш	46	http://www.environment.nsw.gov.au/threa tenedSpeciesApp/profile.aspx?id=10140	This species requires Allocasuarina and/or casuarina species to forage and large tree hollows to breed. Neither of these requirements occur within the development site, hence it is unlikely to occur.
Spotted Harrier Circus assimilis	>	ı	12	https://www.environment.nsw.gov.au/thre atenedSpeciesApp/profile.aspx?id=20134	This species is mostly found in native grassland or foraging over open habitats. The prey resources for this species require groundcover and are sensitive to habitat degradation. Modification of grassland on site and lack of groundcover for prey species is considered a limitation for this species. Unlikely to occur.
Brown Treecreeper (eastern subspecies) Climacteris picumnus victoriae	>	I	-	https://www.environment.nsw.gov.au/thre atenedSpeciesApp/profile.aspx?id=10171	Site at best contains broadly suitable potential habitat but constrained by the lack of hollows and long history of disturbance. Not recorded in locality within the past ten years. Unlikely to occur.
Barred Cuckoo-shrike Coracina lineata	>	1	31	http://www.environment.nsw.gov.au/threa tenedSpeciesApp/profile.aspx?id=10176	This species is found in rainforest and moist forests. Habitat of this type does not occur within the development site hence, unlikely to occur.
Varied Sittella Daphoenositta chrysoptera	>	I	34	http://www.environment.nsw.gov.au/threa tenedspeciesapp/profile.aspx?id=20135	This species forages in trees with rough bark or on dead trees. It is known to occur in a range of vegetation types excluding deserts and grassland. Habitat within the subject site is likely to be too exposed and fragmented. Unlikely to occur.
Eastern Bristlebird Dasyornis brachypterus	ш	ш	0	http://www.environment.nsw.gov.au/threa tenedSpeciesApp/profile.aspx?td=10206	Site habitat is unsuitable for this species and there are no local records. Unlikely to occur.
 Emu (population in the NSW North Coast Bioregion and Port Stephens LGA) Dromaius novaehollandiae	ш	I	-	https://www.environment.nsw.gov.au/thre atenedSpeciesApp/profile.aspx?id=10250	Single local record is from a former wildlife park. No Emu population is known to occur in the area.
Black-necked Stork Ephippiorhynchus asiaticus	ш	1	74	https://www.environment.nsw.gov.au/thre atenedSpeciesApp/profile.aspx?id=10275	This species is found in close proximity to a water source. Generally inhabits lakes, swamps, mudflats and mangroves. A reservoir occurs south of the site however habitat of this type does not occur on the development site. Unlikely to occur.

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Little Lorikeet Glossopsitta pusilla	>	1	27	http://www.environment.nsw.gov.au/threa tenedspeciesapp/profile.aspx?id=20111	This species is mostly found in areas of profuse- flowering eucalypts where it feeds on nectar and pollen from the tree canopy. Has been recorded occurring in isolated roadside and paddock trees. A potential foraging resource for this species occurs on site and in adjoining properties. Fair chance of occurrence.	
Painted Honeyeater Grantiella picta	>	>	0	http://www.environment.nsw.gov.au/threa tenedSpeciesApp/profile.aspx?id=10357	This species inhabits mistletoe-infested forest and woodland communities. This habitat does not occur on site and this species has not been recorded in the locality. Unlikely to occur.	
Broiga Grus rubicunda	>	1	ß	https://www.environment.nsw.gov.au/thre atenedSpeciesApp/profile.aspx?id=10382	A coastal and inland wetland species. No wetlands occur within the development site, hence considered unlikely to occur.	
Little Eagle Hieraaetus morphnoides	>	1	4	http://www.environment.nsw.gov.au/threa tenedspeciesapp/profile.aspx?id=20131	This species forages in forest and woodland communities that contain an abundance of prey resources. The development site is unlikely to support a sufficient prey source for this species however there is a very marginal potential for it to forage over the site as part of a larger range.	
Comb-crested Jacana Irediparra gallinacea	>	,	4	https://www.environment.nsw.gov.au/thre atenedSpeciesApp/profile.aspx?id=10435	This species is found in areas with a permanent water source and a good cover of surface vegetation. It is most commonly recorded in freshwater swamps, billabongs and ponds. Habitat for this species does not	

Yes

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Yes

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This species is found in freshwater and estuarine wetlands with dense vegetation. Habitat of this type does not occur on site. Unlikely to occur.

occur on site. Unlikely to occur.

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Local records occur approximately 2 km west of the site. This species is known to prefer winter-flowering eucalypts which do not occur within the development

http://www.environment.gov.au/cgi-bin/sprat/public/publicspecies.pl?taxon_id

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Lathamus discolor

Swift Parrot

https://www.environment.nsw.gov.au/thre atenedSpeciesApp/profile.aspx?id=10441

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Ixobrychus flavicollis

Black Bittern

site. Unlikely to occur.

Yes

of living trees. No nests found on or adjacent to the site and it was not detected by the survey. Recorded in locality, hence at least fair chance of occurrence as part

http://www.environment.nsw.gov.au/threa tenedspeciesapp/profile.aspx?id=10495

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Square-tailed Kite Lophoictinia isura https://www.environment.nsw.gov.au/thre atenedSpeciesApp/profile.aspx?id=10561

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Ninox connivens

Barking Owl

of a larger foraging range.

This species is commonly found in open forests and woodlands. Large stick nests are constructed in forks

Yes



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					however the subject site may provide foraging habitat as a small part of a large hunting range. Low-moderate chance of occurrence.	
Powerful Owl Ninox strenua	>	,	21	http://www.environment.nsw.gov.au/threa tenedspeciesapp/profile.aspx?id=10562	This species occurs in sclerophyll forests and requires an abundance and diversity of prey species. Tree hollows are also required for nesting. Prey species are likely to be scarce however the site may form part of a larger foraging territory. Fair chance of occurrence.	Yes
Blue-billed Duck Oxyura australis	>		7	https://www.environment.nsw.gov.au/thre atenedSpeciesApp/profile.aspx?id=10580	Site does not contain any aquatic habitat. Unlikely to occur.	N
Scarlet Robin Petroica boodang	>		m	https://www.environment.nsw.gov.au/thre atenedSpeciesApp/profile.aspx?id=20133	Site is likely to be too exposed and does not contain understorey vegetation or any coarse woody debris. Not recorded in the locality within the last 10 years. Unlikely to occur.	Š
Flame Robin Petroica phoenicea	>	ı	~	https://www.environment.nsw.gov.au/thre atenedSpeciesApp/profile.aspx?id=20129	Site is likely to be too exposed and does not contain understorey vegetation or any coarse woody debris. Not recorded in the locality within the last 10 years. Unlikely to occur.	õ
Eastern Ground Parrot Pezoporus wallicus wallicus	>	'	4	https://www.environment.nsw.gov.au/thre atenedSpeciesApp/profile.aspx?id=10608	No suitable heathland habitat occurs in the study area. Unlikely to occur.	N
Grey-crowed Babbler (eastern subspecies) Pomatostomus temporalis	>	,	~	https://www.environment.nsw.gov.au/thre atenedSpeciesApp/profile.aspx?id=10660	Site does not contain typical habitat for this species and there are no nearby records. Unlikely to occur.	oZ
Wompoo Fruit-Dove Ptilinopus magnificus	>	ı	Ħ	http://www.environment.nsw.gov.au/threa tenedSpeciesApp/profile.aspx?id=10707	A rainforest species which also inhabits wet sclerophyll forests with a rainforest understory. No rainforest or wet sclerophyll forest habitat occurs within the subject site. Unlikely to occur.	Š
Rose-crowned Fruit-Dove Ptilinopus regina	>	I	19	http://www.environment.nsw.gov.au/threa tenedSpeciesApp/profile.aspx?id=10708	Fruiting plants on the site were very rare and site is unlikely to provide foraging habitat for this species. Unlikely to occur.	N
Freckled Duck Stictonetta naevosa	>	'	13	https://www.environment.nsw.gov.au/thre atenedSpeciesApp/profile.aspx?id=10771	Site does not contain any aquatic habitat. Unlikely to occur.	No
Eastern Grass Owl Tyto longimembris	>	'	31	http://www.environment.nsw.gov.au/threa tenedspeciesapp/profile.aspx?id=10819	No suitable habitat for this species occurs on the site. Unlikely to occur.	oZ

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ate ned Species App/ profile. aspx?id=10155 http://www.environment.nsw.gov.au/threa tened Species App/profile.aspx?id=10157 https://www.environment.nsw.gov.au/threa atened Species App/ profile.aspx?id=10158 thtp://www.environment.nsw.gov.au/threa tened Species App/profile.aspx?id=10207	1 http://www.environment.nsw.gov.au/threatenedSpeciesApp/profile.aspx?id=10157 1 tenedSpeciesApp/profile.aspx?id=10157 1 https://www.environment.nsw.gov.au/threatenedSpeciesApp/profile.aspx?id=10158 26 http://www.environment.nsw.gov.au/threatenedSpeciesApp/profile.aspx?id=10207		This species occurs in open woodland/forest areas with a dense grass layer. Site is likely to be to exposed to support this species and there are no nearby records. Unlikely to occur.	0000	No suitable habitat occurs on the site. Unlikely to occur,	u/threaster No suitable habitat occurs on the site. Unlikely to occur. No	This species occurs in forests and woodlands with a sparse understory. It requires tree hollows for nesting and an abundance and diversity of prey species. Prey species are likely scarce across the study area, however there is some potential to forage over the site as part of a larger range. Low chance of occurrence.	Likelihood of Occurrence Assessment Required?
		с 1 - 1 Е 26	This species occurs in open http://www.environment.nsw.gov.au/threa This species occurs in open with a dense grass layer. Sitle is the isotocles and the occurs of the species and records. Unlikely to occur.		nups./www.enviorment.nsw.gov.durme No suitable habitat occurs on the site. Unlikely to occur. atenedSpeciesApp/profile.aspx?id=10600 No suitable habitat occurs on the site. Unlikely to occur. Mammalia			

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RIE I APRIL 2019	This species is known to occur in wel and often found roosting in caves, ol http://www.environment.nsw.gov.au/threa buildings. Suitable roosting habitat f
SESSMENT FOR PROPOSED 5 LOT SUBDIVISION, EMILY AVENUE PORT MACQUARIE APRIL 2019	http://www.environment.nsw.gov.au/three
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Eastern Bent-wing Bat Miniopterus schreibersii oceanensis	>	ı	29	http://www.environment.nsw.gov.au/threa tenedspeciesapp/profile.aspx?id=10534	This species is known to occur in well-forested areas and often found roosting in caves, old mines and old buildings. Suitable roosting habitat for this species does not occur on development site however site may form a small part of larger foraging range. Low chance of occurring on site.	Yes
Southern Myotis Myotis macropus	>	,	12	http://www.environment.nsw.gov.au/threa tenedSpeciesApp/profile.aspx?id=10549	This species requires tree hollows, caves, tunnels or dense foliage for roosting. Forages along creek lines and other water bodies and has a preference for riparian habitat. The site does not contain any waterbodies which may be used for foraging and potential roosting habitat was not found. Unlikely to occur.	° Z
Greater Glider Petauroides volans	ш	>	m	http://www.environment.nsw.gov.au/threa tenedspeciesapp/profile.aspx?id=20306	Site and property is unlikely to contain enough habitat to support this species, and tree hollows in the area are rare. Not recorded during field surveys. Unlikely to occur.	N
Yellow-bellied Glider Petaurus australis	>	,	15	http://www.environment.nsw.gov.au/threa tenedspeciesapp/profile.aspx?id=10601	Site and property is unlikely to contain enough habitat to support this species, and tree hollows in the area are rare. Not recorded during field surveys. Unlikely to occur.	N
Squirrel Glider Petaurus norfolcensis	>		36	http://www.environment.nsw.gov.au/threa tenedspeciesapp/profile.aspx?id=10604	This species is commonly found in dry, open forests with an abundance of winter-flowering trees. The site has some low quality potential foraging habitat but does not contain flowering shrubs in the understorey. Low chance of occurring.	Yes
Brush-tailed Phascogale Phascogale tapoatafa	>	,	5	http://www.environment.nsw.gov.au/threa tenedspeciesapp/profile.aspx?id=10613	This species prefers dry sclerophyll forests with sparse groundcover however is commonly found in paddock trees and roadside vegetation in rural areas. It is known to nest in tree hollows which do not occur within the development site. Low chance of utilising the subject site for foraging.	Yes
Common Planigale Planigale maculata	>	,	4	http://www.environment.nsw.gov.au/threa tenedspeciesapp/profile.aspx?id=10635	This species is found in areas where there is dense groundcover and in close proximity to water. Hollow logs, rocks and crevices are required for shetter diurnally. Limited shetter occurs on the development site for this species due to a disturbance history and removal of coarse woody debnis. As such, the site is not considered to contain suitable habitat.	° Z
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: I APRIL 2019	http://www.environment.gov.au/cgi- This species requires a dense understory and bin/sprat/public/publicspecies.pl?taxon_id This species requires a dense understory and groundcover for refuge whilst feeding. This habitat does not occur on site. Unlikely to occur.	This species requires intact habitats with a dense understory. Suitable habitat for this species does not occur on site. Unlikely to occur.	Inttp://www.environment.gov.au/cgi- This species requires heathlands with a dense bin/sprat/public/publicspecies.pl?taxon_id understory. Suitable habitat for this species does not occur on site. Unlikely to occur.
ECOLOGICAL ASSESSMENT FOR PROPOSED 5 LOT SUBDIVISION, EMILY AVENUE PORT MACQUARIE APRIL 2019	http://www.environment.gov.au/cgl- bin/sprat/public/publicspecies.pl?taxon_id =66645	http://www.environment.nsw.gov.au/threa tenedSpeciesApp/profile.aspx?td=10687	http://www.environment.gov.au/cgi- bin/sprat/public/publicspecies.pl?taxon_id =96
LOT SUBD	0	15	0
POSED 5	>	'	>
FOR PRO	>	>	ı
ECOLOGICAL ASSESSMENT	Long-nosed Potoroo (SE mainland) Potorous tridactylus	Eastern Chestnut Mouse Pseudomys gracilicaudatus	New Holland Mouse Pseudomys novaehollandiae

ECOLOGICAL ASSESS

Greater Broad-nosed Bat v 21 http://www.environment.nsw.gov.au/threa Scoteanax rueppellii v 21 tenedSpeciesApp/profile.aspx?id=10748 Common Blossom Bat v 2 http://www.environment.nsw.gov.au/threa Syconycteris australis v 2 http://www.environment.nsw.gov.au/threa Eastern Cave Bat v 2 http://www.environment.nsw.gov.au/threa Key: Critically Endangered (CE). Endangered (E). Vulnerable (V). Migratory (M). Store	Greater Broad-nosed Bat v 21 http://www.environment.nsw.gov.au/threa Scoteanax rueppeliii v 21 http://www.environment.nsw.gov.au/threa Scoteanax rueppeliii v 2 http://www.environment.nsw.gov.au/threa Common Blossom Bat v 2 http://www.environment.nsw.gov.au/threa Syconycteris australis v 2 http://www.environment.nsw.gov.au/threa Eastern Cave Bat v 9 http://www.environment.nsw.gov.au/threa Vespadelus troughtoni v 9 http://www.environment.nsw.gov.au/threa Key: Critically Endangered (CE). Endangered (E). Vulnerable (V). Migratory (M). Story (M).					
Common Blossom Bat Syconycteris australis v 2 http://www.environment.nsw.gov.au/threa Eastern Cave Bat Vespadelus troughtoni v 3 http://www.environment.nsw.gov.au/threa Key: Critically Endangered (CE). Endangered (E). Vulnerable (V). Migratory (M).	Common Blossom Bat Syconycteris australis v 2 http://www.environment.nsw.gov.au/threa Syconycteris australis v - 2 http://www.environment.nsw.gov.au/threa Eastern Cave Bat Vespade/us troughtoni v - 9 http://www.environment.nsw.gov.au/threa Key: Critically Endangered (CE). Endangered (E). Vulnerable (V). Migratory (M).	Greater Broad-nosed Bat Scoteanax rueppellii	>		21	http://www.environment.nsw.gov.au/threa tenedSpeciesApp/profile.aspx?id=10748
Eastern Cave Bat v - 9 http://www.environment.nsw.gov.au/threa Vespade/us troughtoni v - 9 tenedspeciesapp/profile.aspx?id=10829 Keyr Critically Endangered (CE). Endangered (E), Vulnerable (V), Migratory (M).	Eastern Cave Bat Vespade/us troughtoni v 9 http://www.environment.nsw.gov.au/threa Key: Critically Endangered (CE). Endangered (E). Vulnerable (V). Migratory (M).	Common Blossom Bat Syconycteris australis	>		2	http://www.environment.nsw.gov.au/threa tenedspeciesapp/profile.aspx?id=10785
Key: Critically Endangered (CE), Endangered (E), Vulnerable (V), Migratory (M).	Key: Critically Endangered (CE), Endangered (E), Vulnerable (V), Migratory (M).	Eastern Cave Bat Vespadelus troughtoni	>	,	σ	http://www.environment.nsw.gov.au/threa tenedspeciesapp/profile.aspx?id=10829
		Key: Critically Endangered (CE), I	Endangere	id (E), Vulr	nerable (V), h	Aigratory (M).

Yes

Site contains some potential habitat which may be used for foraging as part of a larger area. No potential roosting habitat occurs on site. Fair potential to occur.

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Site does not contain preferred foraging habitat and is not located near any potential roosting areas.

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A cave-dwelling bat that inhabits wet sclerophyll forest and tropical mixed woodland. Suitable habitat for this species does not exist of site and this species has not been recorded in the locality in the past ten years.

Unlikely to occur.

Yes

Site contains some potential habitat which may be used for foraging as part of a larger area. No potential roosting habitat occurs on site. Low potential to occur.

http://www.environment.nsw.gov.au/threa tenedspeciesapp/profile.aspx?id=10741

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Yellow-bellied Sheath-tail Bat

Saccolaimus flaviventris



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A-5 EPBC MNES Search Results



Biodiversity Australia Pty Ltd ABN 81127154787



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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 <u>Environment Assessments</u> and the EPBC Act including significance guidelines, forms and application process details.

Report created: 17/04/19 09:15:42

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: 10.0Km



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:	1
Listed Threatened Ecological Communities:	4
Listed Threatened Species:	69
Listed Migratory Species:	68

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 <u>permit</u> 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:	6
Commonwealth Heritage Places:	None
Listed Marine Species:	88
Whales and Other Cetaceans:	14
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:	6
Regional Forest Agreements:	1
Invasive Species:	37
Nationally Important Wetlands:	1
Key Ecological Features (Marine)	None

Details

Matters of National Environmental Significance

Commonwealth Marine Area

[Resource Information]

Approval is required for a proposed activity that is located within the Commonwealth Marine Area which has, will have, or is likely to have a significant impact on the environment. Approval may be required for a proposed action taken outside the Commonwealth Marine Area but which has, may have or is likely to have a significant impact on the environment in the Commonwealth Marine Area. Generally the Commonwealth Marine Area stretches from three nautical miles to two hundred nautical miles from the coast.

Name

EEZ and Territorial Sea

Marine Regions

[Resource Information]

If you are planning to undertake action in an area in or close to the Commonwealth Marine Area, and a marine bioregional plan has been prepared for the Commonwealth Marine Area in that area, the marine bioregional plan may inform your decision as to whether to refer your proposed action under the EPBC Act.

Name

Temperate East

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
Littoral Rainforest and Coastal Vine Thickets of Eastern Australia	Critically Endangered	Community likely to occur within area
Lowland Rainforest of Subtropical Australia	Critically Endangered	Community likely to occur within area
Subtropical and Temperate Coastal Saltmarsh	Vulnerable	Community likely to 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
<u>Calidris canutus</u>		
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	Roosting known to occur within area
Dasyornis brachypterus		
Eastern Bristlebird [533]	Endangered	Species or species

DEVELOPMENT ASSESSMENT PANEL 06/05/2020

News	Otatua	Turne of Dressen
Name	Status	Type of Presence habitat likely to occur within area
<u>Diomedea antipodensis</u> Antipodean Albatross [64458]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area
<u>Diomedea antipodensis gibsoni</u> 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
<u>Diomedea exulans</u> 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>Fregetta grallaria_grallaria</u> White-bellied Storm-Petrel (Tasman Sea), White- bellied Storm-Petrel (Australasian) [64438]	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
Lathamus discolor Swift Parrot [744]	Critically Endangered	Species or species habitat known to 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
Limosa lapponica menzbieri 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
Macronectes halli 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>Phoebetria fusca</u> Sooty Albatross [1075]	Vulnerable	Species or species habitat may occur within area
<u>Pterodroma leucoptera_leucoptera</u> Gould's Petrel, Australian Gould's Petrel [26033]	Endangered	Species or species habitat may occur within area
<u>Pterodroma neglecta_neglecta</u> Kermadec Petrel (western) [64450]	Vulnerable	Foraging, feeding or related behaviour may

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Name	Status	Type of Presence
		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 daemelii 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 known to occur within area
Insects		
<u>Argynnis hyperbius_inconstans</u> Australian Fritillary [88056]	Critically Endangered	Species or species habitat likely to occur within area
Mammals		
<u>Balaenoptera borealis</u> Sei Whale [34]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area
<u>Balaenoptera musculus</u> Blue Whale [36]	Endangered	Species or species habitat may occur within area
Balaenoptera physalus Fin Whale [37]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area
<u>Chalinolobus dwyeri</u> 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]	<u>on)</u> Endangered	Species or species habitat known to occur within area

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Name	Status	Type of Presence
Eubalaena australis		
Southern Right Whale [40]	Endangered	Species or species habitat likely to occur within area
<u>Megaptera novaeangliae</u> Humpback Whale [38]	Vulnerable	Species or species habitat known to occur within area
<u>Petauroides volans</u> Greater Glider [254]	Vulnerable	Species or species habitat known to occur within area
Phascolarctos cinereus (combined populations of Qld, Koala (combined populations of Queensland, New South Wales and the Australian Capital Territory) [85104]	NSW and the ACT) 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
<u>Pseudomys novaehollandiae</u> 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		
<u>Acronychia littoralis</u> Scented Acronychia [8582]	Endangered	Species or species habitat likely to occur within area
<u>Allocasuarina defungens</u> Dwarf Heath Casuarina [21924]	Endangered	Species or species habitat known to occur within area
<u>Allocasuarina thalassoscopica</u> [21927]	Endangered	Species or species habitat known to occur within area
<u>Arthraxon hispidus</u> Hairy-joint Grass [9338]	Vulnerable	Species or species habitat may occur within area
<u>Asperula asthenes</u> Trailing Woodruff [14004]	Vulnerable	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
<u>Cynanchum elegans</u> White-flowered Wax Plant [12533]	Endangered	Species or species habitat known to occur within area
<u>Euphrasia arguta</u> [4325]	Critically Endangered	Species or species habitat may occur within area
<u>Macadamia integrifolia</u> Macadamia Nut, Queensland Nut Tree, Smooth- shelled Macadamia, Bush Nut, Nut Oak [7326]	Vulnerable	Species or species habitat may occur within area
<u>Melaleuca biconvexa</u> Biconvex Paperbark [5583]	Vulnerable	Species or species habitat known to occur within area
<u>Phaius australis</u> Lesser Swamp-orchid [5872]	Endangered	Species or species habitat may occur within area

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Name	Status	Type of Presence
Syzygium paniculatum		
Magenta Lilly Pilly, Magenta Cherry, Daguba, Scrub	Vulnerable	Species or species habitat
Cherry, Creek Lilly Pilly, Brush Cherry [20307]		may occur within area
The activity accentrate		
Thesium australe		
Austral Toadflax, Toadflax [15202]	Vulnerable	Species or species habitat
		likely to occur within area
Reptiles		
Caretta caretta		
Loggerhead Turtle [1763]	Endangered	Foraging, feeding or related
	U U	behaviour known to occur
		within area
<u>Chelonia mydas</u>		
Green Turtle [1765]	Vulnerable	Foraging, feeding or related
		behaviour known to occur within area
Dermochelys coriacea		within area
Leatherback Turtle, Leathery Turtle, Luth [1768]	Endangered	Foraging, feeding or related
Leaderback funde, Leadery funde, Ludi [1700]	Lindangered	behaviour 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
Sharks		within area
Carcharias taurus (east coast population)		
Grey Nurse Shark (east coast population) [68751]	Critically Endangered	Species or species habitat
		likely to occur within area
Carcharodon carcharias		
White Shark, Great White Shark [64470]	Vulnerable	Species or species habitat
		known to occur within area
Phincodon typus		
Rhincodon typus	Vulnerable	Species or species habitat
<u>Rhincodon typus</u> Whale Shark [66680]	Vulnerable	Species or species habitat
	Vulnerable	Species or species habitat may occur within area
Whale Shark [66680]	Vulnerable	may occur within area
Whale Shark [66680] Listed Migratory Species		may occur within area
Whale Shark [66680] Listed Migratory Species * Species is listed under a different scientific name on	the EPBC Act - Threatened	may occur within area [Resource Information] Species list.
Whale Shark [66680] Listed Migratory Species * Species is listed under a different scientific name on Name		may occur within area
Whale Shark [66680] Listed Migratory Species * Species is listed under a different scientific name on Name Migratory Marine Birds	the EPBC Act - Threatened	may occur within area [Resource Information] Species list.
Whale Shark [66680] Listed Migratory Species * Species is listed under a different scientific name on Name Migratory Marine Birds Anous stolidus	the EPBC Act - Threatened	may occur within area [Resource Information] Species list. Type of Presence
Whale Shark [66680] Listed Migratory Species * Species is listed under a different scientific name on Name Migratory Marine Birds	the EPBC Act - Threatened	may occur within area [Resource Information] Species list. Type of Presence Species or species habitat
Whale Shark [66680] Listed Migratory Species * Species is listed under a different scientific name on Name Migratory Marine Birds Anous stolidus	the EPBC Act - Threatened	may occur within area [Resource Information] Species list. Type of Presence
Whale Shark [66680] Listed Migratory Species * Species is listed under a different scientific name on Name Migratory Marine Birds Anous stolidus Common Noddy [825]	the EPBC Act - Threatened	may occur within area [Resource Information] Species list. Type of Presence Species or species habitat
Whale Shark [66680] Listed Migratory Species * Species is listed under a different scientific name on Name Migratory Marine Birds Anous stolidus Common Noddy [825] Apus pacificus	the EPBC Act - Threatened	may occur within area [Resource Information] Species list. Type of Presence Species or species habitat likely to occur within area
Whale Shark [66680] Listed Migratory Species * Species is listed under a different scientific name on Name Migratory Marine Birds Anous stolidus Common Noddy [825]	the EPBC Act - Threatened	may occur within area [Resource Information] Species list. Type of Presence Species or species habitat
Whale Shark [66680] Listed Migratory Species * Species is listed under a different scientific name on Name Migratory Marine Birds Anous stolidus Common Noddy [825] Apus pacificus	the EPBC Act - Threatened	may occur within area <a>[Resource Information] Species list. Type of Presence Species or species habitat likely to occur within area Species or species habitat
Whale Shark [66680] Listed Migratory Species * Species is listed under a different scientific name on Name Migratory Marine Birds Anous stolidus Common Noddy [825] Apus pacificus Fork-tailed Swift [678] Ardenna carneipes	the EPBC Act - Threatened	may occur within area <a>[Resource Information] Species list. Type of Presence Species or species habitat likely to occur within area Species or species habitat
Whale Shark [66680] Listed Migratory Species * Species is listed under a different scientific name on Name Migratory Marine Birds Anous stolidus Common Noddy [825] Apus pacificus Fork-tailed Swift [678] Ardenna carneipes Flesh-footed Shearwater, Fleshy-footed Shearwater	the EPBC Act - Threatened	may occur within area [Resource Information] Species list. Type of Presence Species or species habitat likely to occur within area Species or species habitat likely to occur within area Foraging, feeding or related
Whale Shark [66680] Listed Migratory Species * Species is listed under a different scientific name on Name Migratory Marine Birds Anous stolidus Common Noddy [825] Apus pacificus Fork-tailed Swift [678] Ardenna carneipes	the EPBC Act - Threatened	may occur within area [Resource Information] Species list. Type of Presence Species or species habitat likely to occur within area Species or species habitat likely to occur within area Foraging, feeding or related behaviour likely to occur
Whale Shark [66680] Listed Migratory Species * Species is listed under a different scientific name on Name Migratory Marine Birds Anous stolidus Common Noddy [825] Apus pacificus Fork-tailed Swift [678] Ardenna carneipes Flesh-footed Shearwater, Fleshy-footed Shearwater [82404]	the EPBC Act - Threatened	may occur within area [Resource Information] Species list. Type of Presence Species or species habitat likely to occur within area Species or species habitat likely to occur within area Foraging, feeding or related
Whale Shark [66680] Listed Migratory Species * Species is listed under a different scientific name on Name Migratory Marine Birds Anous stolidus Common Noddy [825] Apus pacificus Fork-tailed Swift [678] Ardenna carneipes Flesh-footed Shearwater, Fleshy-footed Shearwater [82404] Calonectris leucomelas	the EPBC Act - Threatened	Image occur within area [Resource Information] Species list. Type of Presence Species or species habitat likely to occur within area Species or species habitat likely to occur within area Foraging, feeding or related behaviour likely to occur within area
Whale Shark [66680] Listed Migratory Species * Species is listed under a different scientific name on Name Migratory Marine Birds Anous stolidus Common Noddy [825] Apus pacificus Fork-tailed Swift [678] Ardenna carneipes Flesh-footed Shearwater, Fleshy-footed Shearwater [82404]	the EPBC Act - Threatened	may occur within area [Resource Information] Species list. Type of Presence Species or species habitat likely to occur within area Species or species habitat likely to occur within area Foraging, feeding or related behaviour likely to occur within area Species or species habitat likely to occur within area
Whale Shark [66680] Listed Migratory Species * Species is listed under a different scientific name on Name Migratory Marine Birds Anous stolidus Common Noddy [825] Apus pacificus Fork-tailed Swift [678] Ardenna carneipes Flesh-footed Shearwater, Fleshy-footed Shearwater [82404] Calonectris leucomelas	the EPBC Act - Threatened	Image occur within area [Resource Information] Species list. Type of Presence Species or species habitat likely to occur within area Species or species habitat likely to occur within area Foraging, feeding or related behaviour likely to occur within area
Whale Shark [66680] Listed Migratory Species * Species is listed under a different scientific name on Name Migratory Marine Birds Anous stolidus Common Noddy [825] Apus pacificus Fork-tailed Swift [678] Ardenna carneipes Flesh-footed Shearwater, Fleshy-footed Shearwater [82404] Calonectris leucomelas	the EPBC Act - Threatened	may occur within area [Resource Information] Species list. Type of Presence Species or species habitat likely to occur within area Species or species habitat likely to occur within area Foraging, feeding or related behaviour likely to occur within area Species or species habitat likely to occur within area
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Whale Shark [66680] Listed Migratory Species * Species is listed under a different scientific name on Name Migratory Marine Birds Anous stolidus Common Noddy [825] Apus pacificus Fork-tailed Swift [678] Ardenna carneipes Flesh-footed Shearwater, Fleshy-footed Shearwater [82404] Calonectris leucomelas Streaked Shearwater [1077] Diomedea antipodensis	the EPBC Act - Threatened Threatened	may occur within area [Resource Information] Species list. Type of Presence Species or species habitat likely to occur within area Species or species habitat likely to occur within area Foraging, feeding or related behaviour likely to occur within area Species or species habitat may occur within area
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Whale Shark [66680] Listed Migratory Species * Species is listed under a different scientific name on Name Migratory Marine Birds Anous stolidus Common Noddy [825] Apus pacificus Fork-tailed Swift [678] Ardenna carneipes Flesh-footed Shearwater, Fleshy-footed Shearwater [82404] Calonectris leucomelas Streaked Shearwater [1077] Diomedea antipodensis Antipodean Albatross [64458] Diomedea epomophora	the EPBC Act - Threatened Threatened	may occur within area [Resource Information] Species list. Type of Presence Species or species habitat likely to occur within area Species or species habitat likely to occur within area Foraging, feeding or related behaviour likely to occur within area Species or species habitat may occur within area Foraging, feeding or related behaviour likely to occur Foraging, feeding or related behaviour likely to occur
Whale Shark [66680] Listed Migratory Species * Species is listed under a different scientific name on Name Migratory Marine Birds Anous stolidus Common Noddy [825] Apus pacificus Fork-tailed Swift [678] Ardenna carneipes Flesh-footed Shearwater, Fleshy-footed Shearwater [82404] Calonectris leucomelas Streaked Shearwater [1077] Diomedea antipodensis Antipodean Albatross [64458]	the EPBC Act - Threatened Threatened	may occur within area [Resource Information] Species list. Type of Presence Species or species habitat likely to occur within area Species or species habitat likely to occur within area Foraging, feeding or related behaviour likely to occur within area Foraging, feeding or related behaviour likely to occur within area Foraging, feeding or related behaviour likely to occur within area Foraging, feeding or related behaviour likely to occur within area Foraging, feeding or related behaviour likely to occur within area Foraging, feeding or related behaviour likely to occur within area
Whale Shark [66680] Listed Migratory Species * Species is listed under a different scientific name on Name Migratory Marine Birds Anous stolidus Common Noddy [825] Apus pacificus Fork-tailed Swift [678] Ardenna carneipes Flesh-footed Shearwater, Fleshy-footed Shearwater [82404] Calonectris leucomelas Streaked Shearwater [1077] Diomedea antipodensis Antipodean Albatross [64458] Diomedea epomophora	the EPBC Act - Threatened Threatened	may occur within area [Resource Information] Species list. Type of Presence Species or species habitat likely to occur within area Species or species habitat likely to occur within area Foraging, feeding or related behaviour likely to occur within area Foraging, feeding or related behaviour likely to occur within area Foraging, feeding or related behaviour likely to occur within area Foraging, feeding or related behaviour likely to occur within area Foraging, feeding or related behaviour likely to occur
Whale Shark [66680] Listed Migratory Species * Species is listed under a different scientific name on Name Migratory Marine Birds Anous stolidus Common Noddy [825] Apus pacificus Fork-tailed Swift [678] Ardenna carneipes Flesh-footed Shearwater, Fleshy-footed Shearwater [82404] Calonectris leucomelas Streaked Shearwater [1077] Diomedea antipodensis Antipodean Albatross [64458] Diomedea epomophora Southern Royal Albatross [89221]	the EPBC Act - Threatened Threatened	may occur within area [Resource Information] Species list. Type of Presence Species or species habitat likely to occur within area Species or species habitat likely to occur within area Foraging, feeding or related behaviour likely to occur within area Foraging, feeding or related behaviour likely to occur within area Foraging, feeding or related behaviour likely to occur within area Foraging, feeding or related behaviour likely to occur within area Foraging, feeding or related behaviour likely to occur within area Foraging, feeding or related behaviour likely to occur within area
Whale Shark [66680] Listed Migratory Species * Species is listed under a different scientific name on Name Migratory Marine Birds Anous stolidus Common Noddy [825] Apus pacificus Fork-tailed Swift [678] Ardenna carneipes Flesh-footed Shearwater, Fleshy-footed Shearwater [82404] Calonectris leucomelas Streaked Shearwater [1077] Diomedea antipodensis Antipodean Albatross [64458] Diomedea epomophora Southern Royal Albatross [89221] Diomedea exulans	the EPBC Act - Threatened Threatened Vulnerable Vulnerable	may occur within area [Resource Information] Species list. Type of Presence Species or species habitat likely to occur within area Species or species habitat likely to occur within area Foraging, feeding or related behaviour likely to occur within area Foraging, feeding or related behaviour likely to occur within area Foraging, feeding or related behaviour likely to occur within area Foraging, feeding or related behaviour likely to occur within area
Whale Shark [66680] Listed Migratory Species * Species is listed under a different scientific name on Name Migratory Marine Birds Anous stolidus Common Noddy [825] Apus pacificus Fork-tailed Swift [678] Ardenna carneipes Flesh-footed Shearwater, Fleshy-footed Shearwater [82404] Calonectris leucomelas Streaked Shearwater [1077] Diomedea antipodensis Antipodean Albatross [64458] Diomedea epomophora Southern Royal Albatross [89221]	the EPBC Act - Threatened Threatened	may occur within area [Resource Information] Species list. Type of Presence Species or species habitat likely to occur within area Species or species habitat likely to occur within area Foraging, feeding or related behaviour likely to occur within area Foraging, feeding or related behaviour likely to occur within area Foraging, feeding or related behaviour likely to occur within area Foraging, feeding or related behaviour likely to occur within area Foraging, feeding or related behaviour likely to occur

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Name Diomedea sanfordi	Threatened	Type of Presence related behaviour likely to occur within area
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>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>Phoebetria fusca</u> Sooty Albatross [1075]	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
Migratory Marine Species		within area
Balaena glacialis australis		
Southern Right Whale [75529]	Endangered*	Species or species habitat likely to occur within area
Balaenoptera borealis Sei Whale [34]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area
<u>Balaenoptera edeni</u> Bryde's Whale [35]		Species or species habitat may occur within area
<u>Balaenoptera musculus</u> Blue Whale [36]	Endangered	Species or species

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Nama	Threatened	Type of Processo
Name	Threatened	Type of Presence habitat may occur within
Balaenoptera physalus		area
Fin Whale [37]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area
Carcharodon carcharias		
White Shark, Great White Shark [64470]	Vulnerable	Species or species habitat known to occur within area
Caretta caretta		
Loggerhead Turtle [1763]	Endangered	Foraging, feeding or related behaviour known to occur within area
Chelonia mydas		
Green Turtle [1765]	Vulnerable	Foraging, feeding or related behaviour known to occur within area
<u>Dermochelys coriacea</u> Leatherback Turtle, Leathery Turtle, Luth [1768]	Endangered	Foraging, feeding or related
	Lindangered	behaviour known to occur within area
Dugong dugon Dugong [28]		Species or species habitat
		may occur within area
Eretmochelys imbricata	Vulporable	Spacing or spacing bability
Hawksbill Turtle [1766]	Vulnerable	Species or species habitat known to occur within area
Lamna nasus		
Porbeagle, Mackerel Shark [83288]		Species or species habitat may occur within area
Manta alfredi		may occar within area
Reef Manta Ray, Coastal Manta Ray, Inshore Manta		Species or species habitat
Ray, Prince Alfred's Ray, Resident Manta Ray [84994]		may occur within area
<u>Manta birostris</u> Giant Manta Ray, Chevron Manta Ray, Pacific Manta		Species or species habitat
Ray, Pelagic Manta Ray, Oceanic Manta Ray [84995]		may occur within area
Megaptera novaeangliae		Opening on opening hebitat
Humpback Whale [38]	Vulnerable	Species or species habitat known to occur within area
Natator depressus		
Flatback Turtle [59257]	Vulnerable	Breeding likely to occur within area
<u>Orcinus orca</u> Killer Whale, Orca [46]		Species or species habitat
		may occur within area
Rhincodon typus		
Whale Shark [66680]	Vulnerable	Species or species habitat may occur within area
Sousa chinensis		
Indo-Pacific Humpback Dolphin [50]		Species or species habitat
		likely to occur within area
Migratory Terrestrial Species <u>Cuculus optatus</u>		
Oriental Cuckoo, Horsfield's Cuckoo [86651]		Species or species habitat may occur within area
		may occur within alta
<u>Hirundapus caudacutus</u> White-throated Needletail [682]		Species or species habitat
		known to occur within area
Monarcha melanopsis		Chooled or opening hebitet
Black-faced Monarch [609]		Species or species habitat known to occur

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Name	Threatened	Type of Presence
Name	meatened	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>Rhipidura rufifrons</u> 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]		Roosting known to occur within area
<u>Calidris acuminata</u> Sharp-tailed Sandpiper [874]		Species or species habitat known to occur within area
<u>Calidris canutus</u>		
Red Knot, Knot [855]	Endangered	Species or species habitat known to occur within area
<u>Calidris ferruginea</u>		
Curlew Sandpiper [856]	Critically Endangered	Species or species habitat known to occur within area
<u>Calidris melanotos</u>		
Pectoral Sandpiper [858]		Species or species habitat may occur within area
Calidris ruficollis		
Red-necked Stint [860]		Roosting known to occur within area
<u>Charadrius bicinctus</u> Double-banded Plover [895]		Roosting known to occur within area
Charadrius mongolus		initia aroa
Lesser Sand Plover, Mongolian Plover [879]	Endangered	Roosting known to occur within area
<u>Gallinago hardwickii</u> Latham's Snipe, Japanese Snipe [863]		Roosting may occur within area
<u>Gallinago megala</u> Swinhoe's Snipe [864]		Roosting likely to occur
<u>Gallinago stenura</u> Pin-tailed Snipe [841]		within area Roosting likely to occur
Limosa lapponica		within area
Bar-tailed Godwit [844]		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]		Roosting likely to occur within area
<u>Numenius phaeopus</u> Whimbrel [849]		Roosting known to occur
Pandion haliaetus Osprey [952]		within area Breeding known to occur
		within area

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Name	Threatened	Type of Presence
Pluvialis fulva		
Pacific Golden Plover [25545]		Roosting known to occur within area
<u>Pluvialis squatarola</u>		
Grey Plover [865]		Roosting known to occur within area
Tringa brevipes		
Grey-tailed Tattler [851]		Roosting known to occur within area
<u>Tringa nebularia</u>		
Common Greenshank, Greenshank [832]		Species or species habitat known to occur within area

<u>Xenus cinereus</u> Terek Sandpiper [59300]

Roosting 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 Postal Corporation Commonwealth Land - Australian Telecommunications Commission Commonwealth Land - Commonwealth Bank of Australia Commonwealth Land - Defence Service Homes Corporation Commonwealth Land - Telstra Corporation Limited

Listed Marine Species		[Resource Information]
* Species is listed under a different scientific name on the		•
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
		known to occur within area
<u>Ardea ibis</u>		
Cattle Egret [59542]		Species or species habitat
		may occur within area
Arenaria interpres		
Ruddy Turnstone [872]		Roosting 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
	Endangered	

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Name	Threatened	Type of Presence
Humo	meateneu	habitat known to occur
<u>Calidris ferruginea</u> Curlew Sandpiper [856]	Critically Endangered	within area Species or species habitat known to occur within area
		known to occur within area
<u>Calidris melanotos</u> Pectoral Sandpiper [858]		Species or species habitat may occur within area
<u>Calidris ruficollis</u> Red-necked Stint [860]		Roosting known to occur within area
<u>Calonectris leucomelas</u> Streaked Shearwater [1077]		Species or species habitat may occur within area
<u>Catharacta skua</u> Great Skua [59472]		Species or species habitat may occur within area
<u>Charadrius bicinctus</u> Double-banded Plover [895]		Roosting known to occur within area
<u>Charadrius mongolus</u> Lesser Sand Plover, Mongolian Plover [879]	Endangered	Roosting known to occur within area
<u>Charadrius ruficapillus</u> Red-capped Plover [881]		Roosting known to occur
<u>Diomedea antipodensis</u> Antipodean Albatross [64458]	Vulnerable	within area Foraging, feeding or related behaviour likely to occur
<u>Diomedea epomophora</u> Southern Royal Albatross [89221]	Vulnerable	within area Foraging, feeding or related behaviour likely to occur within area
<u>Diomedea exulans</u> Wandering Albatross [89223]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area
<u>Diomedea gibsoni</u> Gibson's Albatross [64466]	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>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]		Roosting may occur within area
<u>Gallinago megala</u> Swinhoe's Snipe [864]		Roosting likely to occur within area
<u>Gallinago stenura</u> Pin-tailed Snipe [841]		Roosting 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]		Roosting known to occur

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Namo	Thus stars of	
Name	Threatened	Type of Presence
		within area
Hirundapus caudacutus White-throated Needletail [682]		Species or species habitat known to occur within area
<u>Lathamus discolor</u> Swift Parrot [744]	Critically Endangered	Species or species habitat known to occur within area
<u>Limosa lapponica</u> Bar-tailed Godwit [844]		Species or species habitat
<u>Macronectes giganteus</u> Southern Giant-Petrel, Southern Giant Petrel [1060]	Endangered	known to occur within area Species or species habitat
Macronectes halli		may occur within area
Northern Giant Petrel [1061] Merops ornatus	Vulnerable	Species or species habitat may occur within area
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]		Roosting likely to occur within area
Numenius phaeopus Whimbrel [849]		Roosting known to occur within area
Pachyptila turtur Fairy Prion [1066]		Species or species habitat known to occur within area
Pandion haliaetus Osprey [952]		Breeding known to occur within area
Phoebetria fusca Sooty Albatross [1075]	Vulnerable	Species or species habitat may occur within area
<u>Pluvialis fulva</u> Pacific Golden Plover [25545]		Roosting known to occur within area
<u>Pluvialis squatarola</u> Grey Plover [865]		Roosting known to occur within area
Puffinus carneipes Flesh-footed Shearwater, Fleshy-footed Shearwater [1043]		Foraging, feeding or related behaviour likely to occur within area
<u>Rhipidura rufifrons</u> Rufous Fantail [592]		Species or species habitat known to occur within area

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Name	Threatened	Type of Presence
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
	. aniorable	may occur within area
Thalassarche cauta		
Tasmanian Shy Albatross [89224]	Vulnerable*	Species or species habitat
		may occur within area
Thelessarche cromite		
Thalassarche eremita	Endengered	Propios or organize hel-
Chatham Albatross [64457]	Endangered	Species or species habitat
		may occur within area
Thalassarche impavida		
Campbell Albatross, Campbell Black-browed Albatross	Vulnerable	Species or species habitat
[64459]		may occur within area
		,
Thalassarche melanophris		
Black-browed Albatross [66472]	Vulnerable	Species or species habitat
-		may occur within area
Thelesserehe estrini		
Thalassarche salvini	Mula a nala t-	Ferendary for the
Salvin's Albatross [64463]	Vulnerable	Foraging, feeding or related
		behaviour likely to occur within area
<u>Thalassarche sp. nov.</u>		wiulinalea
Pacific Albatross [66511]	Vulnerable*	Species or species habitat
		may occur within area
		.,
<u>Thalassarche steadi</u>		
White-capped Albatross [64462]	Vulnerable*	Foraging, feeding or related
		behaviour likely to occur
Telesco e de de de		within area
Tringa nebularia		Opening of energies hat the
Common Greenshank, Greenshank [832]		Species or species habitat known to occur within area
		KHOWH to occur within area
Xenus cinereus		
Terek Sandpiper [59300]		Roosting known to occur
· · · · · · · · · · · · · · · · · · ·		
		within area
Fish		within area
		within area
Acentronura tentaculata		within area Species or species habitat
Acentronura tentaculata		
<u>Acentronura tentaculata</u> Shortpouch Pygmy Pipehorse [66187]		Species or species habitat
<u>Acentronura tentaculata</u> Shortpouch Pygmy Pipehorse [66187] <u>Festucalex cinctus</u>		Species or species habitat may occur within area
<u>Acentronura tentaculata</u> Shortpouch Pygmy Pipehorse [66187] <u>Festucalex cinctus</u>		Species or species habitat may occur within area Species or species habitat
<u>Acentronura tentaculata</u> Shortpouch Pygmy Pipehorse [66187] <u>Festucalex cinctus</u>		Species or species habitat may occur within area
<u>Acentronura tentaculata</u> Shortpouch Pygmy Pipehorse [66187] <u>Festucalex cinctus</u> Girdled Pipefish [66214]		Species or species habitat may occur within area Species or species habitat
Acentronura tentaculata Shortpouch Pygmy Pipehorse [66187] <u>Festucalex cinctus</u> Girdled Pipefish [66214] <u>Filicampus tigris</u>		Species or species habitat may occur within area Species or species habitat may occur within area
Acentronura tentaculata Shortpouch Pygmy Pipehorse [66187] <u>Festucalex cinctus</u> Girdled Pipefish [66214] <u>Filicampus tigris</u>		Species or species habitat may occur within area Species or species habitat may occur within area Species or species habitat
Acentronura tentaculata Shortpouch Pygmy Pipehorse [66187] Festucalex cinctus Girdled Pipefish [66214] Filicampus tigris		Species or species habitat may occur within area Species or species habitat may occur within area
Acentronura tentaculata Shortpouch Pygmy Pipehorse [66187] Eestucalex cinctus Girdled Pipefish [66214] <u>Eilicampus tigris</u> Tiger Pipefish [66217]		Species or species habitat may occur within area Species or species habitat may occur within area Species or species habitat
Acentronura tentaculata Shortpouch Pygmy Pipehorse [66187] Eestucalex cinctus Girdled Pipefish [66214] <u>Filicampus tigris</u> Tiger Pipefish [66217] <u>Heraldia nocturna</u>		Species or species habitat may occur within area Species or species habitat may occur within area Species or species habitat may occur within area
Acentronura tentaculata Shortpouch Pygmy Pipehorse [66187] Eestucalex cinctus Girdled Pipefish [66214] <u>Filicampus tigris</u> Tiger Pipefish [66217] <u>Heraldia nocturna</u> Upside-down Pipefish, Eastern Upside-down Pipefish,		Species or species habitat may occur within area Species or species habitat may occur within area Species or species habitat
Acentronura tentaculata Shortpouch Pygmy Pipehorse [66187] <u>Festucalex cinctus</u> Girdled Pipefish [66214] <u>Filicampus tigris</u> Tiger Pipefish [66217] <u>Heraldia nocturna</u> Upside-down Pipefish, Eastern Upside-down Pipefish,		Species or species habitat may occur within area Species or species habitat may occur within area Species or species habitat may occur within area Species or species habitat
Acentronura tentaculata Shortpouch Pygmy Pipehorse [66187] <u>Festucalex cinctus</u> Girdled Pipefish [66214] <u>Filicampus tigris</u> Tiger Pipefish [66217] <u>Heraldia nocturna</u> Upside-down Pipefish, Eastern Upside-down Pipefish, Eastern Upside-down Pipefish [66227] <u>Hippichthys heptagonus</u>		Species or species habitat may occur within area Species or species habitat may occur within area Species or species habitat may occur within area Species or species habitat
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Acentronura tentaculata Shortpouch Pygmy Pipehorse [66187] <u>Festucalex cinctus</u> Girdled Pipefish [66214] <u>Filicampus tigris</u> Tiger Pipefish [66217] <u>Heraldia nocturna</u> Upside-down Pipefish, Eastern Upside-down Pipefish, Eastern Upside-down Pipefish [66227] <u>Hippichthys heptagonus</u> Madura Pipefish, Reticulated Freshwater Pipefish		Species or species habitat may occur within area Species or species habitat may occur within area Species or species habitat may occur within area Species or species habitat may occur within area
Acentronura tentaculata Shortpouch Pygmy Pipehorse [66187] <u>Festucalex cinctus</u> Girdled Pipefish [66214] <u>Filicampus tigris</u> Tiger Pipefish [66217] <u>Heraldia nocturna</u> Upside-down Pipefish, Eastern Upside-down Pipefish, Eastern Upside-down Pipefish [66227] <u>Hippichthys heptagonus</u> Madura Pipefish, Reticulated Freshwater Pipefish [66229]		Species or species habitat may occur within area Species or species habitat
Acentronura tentaculata Shortpouch Pygmy Pipehorse [66187] Festucalex cinctus Girdled Pipefish [66214] Filicampus tigris Tiger Pipefish [66217] Heraldia nocturna Upside-down Pipefish, Eastern Upside-down Pipefish, Eastern Upside-down Pipefish [66227] Hippichthys heptagonus Madura Pipefish, Reticulated Freshwater Pipefish [66229] Hippichthys penicillus		Species or species habitat may occur within area Species or species habitat may occur within area
Acentronura tentaculata Shortpouch Pygmy Pipehorse [66187] Festucalex cinctus Girdled Pipefish [66214] Filicampus tigris Tiger Pipefish [66217] Heraldia nocturna Upside-down Pipefish, Eastern Upside-down Pipefish, Eastern Upside-down Pipefish [66227] Hippichthys heptagonus Madura Pipefish, Reticulated Freshwater Pipefish [66229] Hippichthys penicillus		Species or species habitat may occur within area Species or species habitat may occur within area
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		T (D
Name	Threatened	Type of Presence
Hippocampus whitei		
White's Seahorse, Crowned Seahorse, Sydney Seahorse [66240]		Species or species habitat likely to occur within area
Seandise [00240]		likely to occur within area
<u>Histiogamphelus briggsii</u>		
Crested Pipefish, Briggs' Crested Pipefish, Briggs'		Species or species habitat
Pipefish [66242]		may occur within area
Lissocampus runa		
Javelin Pipefish [66251]		Species or species habitat
		may occur within area
Maraulara naraarrata		
Maroubra perserrata		Charles or anapies habitat
Sawtooth Pipefish [66252]		Species or species habitat may occur within area
		may coour within area
<u>Solegnathus dunckeri</u>		
Duncker's Pipehorse [66271]		Species or species habitat
		may occur within area
<u>Solegnathus spinosissimus</u>		
Spiny Pipehorse, Australian Spiny Pipehorse [66275]		Species or species habitat
		may occur within area
Salanastamus avanantarus		
Solenostomus cyanopterus		Proving or angeles habitat
Robust Ghostpipefish, Blue-finned Ghost Pipefish, 66183]		Species or species habitat may occur within area
00100]		may occur within area
<u>Solenostomus paradoxus</u>		
Ornate Ghostpipefish, Harleguin Ghost Pipefish,		Species or species habitat
Drnate Ghost Pipefish [66184]		may occur within area
<u>Stigmatopora nigra</u>		
Nidebody Pipefish, Wide-bodied Pipefish, Black		Species or species habitat
Pipefish [66277]		may occur within area
Syngnathoides biaculeatus		0
Double-end Pipehorse, Double-ended Pipehorse,		Species or species habitat
Alligator Pipefish [66279]		may occur within area
<u>Trachyrhamphus bicoarctatus</u>		
Bentstick Pipefish, Bend Stick Pipefish, Short-tailed		Species or species habitat
Pipefish [66280]		may occur within area
······································		and a second second second
<u>Jrocampus carinirostris</u>		
Hairy Pipefish [66282]		Species or species habitat
		may occur within area
Vanacampus margaritifer		
Nother-of-pearl Pipefish [66283]		Species or species habitat
		may occur within area
<i>N</i> ammals		
•		Species of species habitat
•		Species or species habitat
		Species or species habitat may occur within area
ong-nosed Fur-seal, New Zealand Fur-seal [20]		
ong-nosed Fur-seal, New Zealand Fur-seal [20]		may occur within area
ong-nosed Fur-seal, New Zealand Fur-seal [20]		
ong-nosed Fur-seal, New Zealand Fur-seal [20]		may occur within area Species or species habitat
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ong-nosed Fur-seal, New Zealand Fur-seal [20] Arctocephalus pusillus Australian Fur-seal, Australo-African Fur-seal [21] Dugong dugon		may occur within area Species or species habitat
ong-nosed Fur-seal, New Zealand Fur-seal [20] Arctocephalus pusillus Australian Fur-seal, Australo-African Fur-seal [21] Dugong dugon		may occur within area Species or species habitat may occur within area
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Long-nosed Fur-seal, New Zealand Fur-seal [20] Arctocephalus pusillus Australian Fur-seal, Australo-African Fur-seal [21] Dugong dugon Dugong [28] Reptiles		may occur within area Species or species habitat may occur within area Species or species habitat
Long-nosed Fur-seal, New Zealand Fur-seal [20] Arctocephalus pusillus Australian Fur-seal, Australo-African Fur-seal [21] Dugong dugon Dugong [28] Reptiles Caretta caretta		may occur within area Species or species habitat may occur within area Species or species habitat may occur within area
Long-nosed Fur-seal, New Zealand Fur-seal [20] Arctocephalus pusillus Australian Fur-seal, Australo-African Fur-seal [21] Dugong dugon Dugong [28] Reptiles Caretta caretta	Endangered	may occur within area Species or species habitat may occur within area Species or species habitat may occur within area Foraging, feeding or related
Long-nosed Fur-seal, New Zealand Fur-seal [20] Arctocephalus pusillus Australian Fur-seal, Australo-African Fur-seal [21] Dugong dugon Dugong [28] Reptiles Caretta caretta	Endangered	may occur within area Species or species habitat may occur within area Species or species habitat may occur within area Foraging, feeding or related behaviour known to occur
Long-nosed Fur-seal, New Zealand Fur-seal [20] Arctocephalus pusillus Australian Fur-seal, Australo-African Fur-seal [21] Dugong dugon Dugong [28] Reptiles Caretta caretta Loggerhead Turtle [1763]	Endangered	may occur within area Species or species habitat may occur within area Species or species habitat may occur within area Foraging, feeding or related
Long-nosed Fur-seal, New Zealand Fur-seal [20] Arctocephalus pusillus Australian Fur-seal, Australo-African Fur-seal [21] Dugong dugon Dugong [28] Reptiles Caretta caretta Loggerhead Turtle [1763] Chelonia mydas	-	may occur within area Species or species habitat may occur within area Species or species habitat may occur within area Foraging, feeding or related behaviour known to occur within area
Long-nosed Fur-seal, New Zealand Fur-seal [20] Arctocephalus pusillus Australian Fur-seal, Australo-African Fur-seal [21] Dugong dugon Dugong [28] Reptiles Caretta caretta Loggerhead Turtle [1763] Chelonia mydas	Endangered Vulnerable	may occur within area Species or species habitat may occur within area Species or species habitat may occur within area Foraging, feeding or related behaviour known to occur within area Foraging, feeding or related
Arctocephalus forsteri Long-nosed Fur-seal, New Zealand Fur-seal [20] Arctocephalus pusillus Australian Fur-seal, Australo-African Fur-seal [21] Dugong dugon Dugong [28] Reptiles Caretta caretta Loggerhead Turtle [1763] Chelonia mydas Green Turtle [1765]	-	may occur within area Species or species habitat may occur within area Species or species habitat may occur within area Foraging, feeding or related behaviour known to occur

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Name	Threatened	Type of Presence
		to occur within area
Dermochelys coriacea		
Leatherback Turtle, Leathery Turtle, Luth [1768]	Endangered	Foraging, feeding or related
	•	behaviour known to occur
		within area
Eretmochelys imbricata		
Hawksbill Turtle [1766]	Vulnerable	Species or species habitat
		known to occur within area
Hydrophic clogopo		
<u>Hydrophis elegans</u> Elegant Seasnake [1104]		Species or species habitat
Liegant Seasnake [1104]		may occur within area
Natator depressus		
Flatback Turtle [59257]	Vulnerable	Breeding likely to occur
		within area
<u>Pelamis platurus</u>		
Yellow-bellied Seasnake [1091]		Species or species habitat
		may occur within area
Whales and other Cetaceans		[Resource Information]
Name	Status	Type of Presence
Mammals		
Balaenoptera acutorostrata		
Minke Whale [33]		Species or species habitat
		may occur within area
		-
Balaenoptera borealis		
Sei Whale [34]	Vulnerable	Foraging, feeding or related
		behaviour likely to occur
Palaanantara adani		within area
Balaenoptera edeni Bryde's Whale [35]		Species or species babitat
bryde's Whale [55]		Species or species habitat may occur within area
		may bood within area
Balaenoptera musculus		
Blue Whale [36]	Endangered	Species or species habitat
		may occur within area
Balaenoptera physalus	V ula saskis	
Fin Whale [37]	Vulnerable	Foraging, feeding or related
		behaviour likely to occur within area
Delphinus delphis		within area
Common Dophin, Short-beaked Common Dolphin [60]		Species or species habitat
		may occur within area
<u>Eubalaena australis</u>		
Southern Right Whale [40]	Endangered	Species or species habitat
		likely to occur within area
Grampus griseus		
Risso's Dolphin, Grampus [64]		Species or species habitat
Ricco a Dolphin, Oranipua [04]		may occur within area
<u>Megaptera novaeangliae</u>		
Humpback Whale [38]	Vulnerable	Species or species habitat
		known to occur within area
Orcinus orca		Choose or organize hekitet
Killer Whale, Orca [46]		Species or species habitat may occur within area
		may ooon within area
Sousa chinensis		
Indo-Pacific Humpback Dolphin [50]		Species or species habitat
		likely to occur within area
o		
Stenella attenuata		.
Spotted Dolphin, Pantropical Spotted Dolphin [51]		Species or species habitat
		may occur within area

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Name	Status	Type of Presence
Tursiops aduncus		
Indian Ocean Bottlenose Dolphin, Spotted Bottlenose Dolphin [68418]		Species or species habitat likely to occur within area
Tursiops truncatus s. str.		

Tursiops truncatus s. str. Bottlenose Dolphin [68417]

Species or species habitat may occur within area

Extra Information

State and Territory Reserves	[Resource Information]
Name	State
Lake Innes	NSW
Lake Innes	NSW
Limeburners Creek	NSW
Macquarie	NSW
Sea Acres	NSW
Woregore	NSW
Regional Forest Agreements	[Resource Information]
Note that all areas with completed RFAs have been incl	uded.
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 Resouces 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

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Name	Status Type of Presence	
	habitat likely to occur wit area	nin
Sturnus vulgaris		
Common Starling [389]	Species or species habit likely to occur within area	
Turdus merula		
Common Blackbird, Eurasian Blackbird [596]	Species or species habit likely to occur within area	
Frogs		
Rhinella marina Cane Toad [83218]	Species or species habit known to occur within are	
Mammals		
Bos taurus		
Domestic Cattle [16]	Species or species habit likely to occur within area	
Canis lupus familiaris		
Domestic Dog [82654]	Species or species habit likely to occur within area	
Felis catus		_ t
Cat, House Cat, Domestic Cat [19]	Species or species habit likely to occur within area	
Feral deer		_ +
Feral deer species in Australia [85733]	Species or species habit likely to occur within area	
Lepus capensis		
Brown Hare [127]	Species or species habit likely to occur within area	
Mus musculus		
House Mouse [120]	Species or species habit likely to occur within area	
Oryctolagus cuniculus		
Rabbit, European Rabbit [128]	Species or species habit likely to occur within area	
Rattus norvegicus		
Brown Rat, Norway Rat [83]	Species or species habit likely to occur within area	
Rattus rattus	0	. 1
Black Rat, Ship Rat [84]	Species or species habit likely to occur within area	
Vulpes vulpes		
Red Fox, Fox [18]	Species or species habit likely to occur within area	
Plants		
Alternanthera philoxeroides		
Alligator Weed [11620]	Species or species habit likely to occur within area	
Anredera cordifolia	0	_ 1
Madeira Vine, Jalap, Lamb's-tail, Mignonette Vine, Anredera, Gulf Madeiravine, Heartleaf Madeiravine, Potato Vine [2643] Asparagus aethiopicus	Species or species habit likely to occur within area	
Asparagus Fern, Ground Asparagus, Basket Fern, Sprengi's Fern, Bushy Asparagus, Emerald Asparag	Species or species habit likely to occur within area	
[62425] Asparagus plumosus		
Climbing Asparagus-fern [48993]	Species or species habit likely to occur within area	

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Name	Status	Type of Presence
Cabomba caroliniana		
Cabomba, Fanwort, Carolina Watershield, Fish Grass, Washington Grass, Watershield, Carolina Fanwort, Common Cabomba [5171] Chrysanthemoides monilifera		Species or species habitat likely to occur within area
Bitou Bush, Boneseed [18983]		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		On a sing on an a sing habitat
Lantana, Common Lantana, Kamara Lantana, Large- leaf Lantana, Pink Flowered Lantana, Red Flowered Lantana, Red-Flowered Sage, White Sage, Wild Sage [10892] Opuntia spp.		Species or species habitat likely to occur within area
Prickly Pears [82753]		Species or species habitat likely to occur within area
Pinus radiata		
Radiata Pine Monterey Pine, Insignis Pine, Wilding Pine [20780]		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
Nationally Important Wetlands		[Resource Information]
Name		State
Limeburners Creek Nature Reserve		NSW

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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-huil 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

-31.45664 152.90329

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

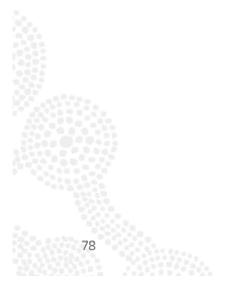
The Department is extremely grateful to the many organisations and individuals who provided expert advice and information on numerous draft distributions.

Please feel free to provide feedback via the Contact Us page.

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ECOLOGICAL ASSESSMENT FOR PROPOSED 5 LOT SUBDIVISION, EMILY AVENUE PORT MACQUARIE | APRIL 2019

A-6 Anabat Analysis Results



Biodiversity Australia Pty Ltd ABN 81127 154 787



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Bat Call Identification

Port Macquarie, NSW

Prepared for Biodiversity Australia Level 1, Suite 3, 64 Clarence St Port Macquarie, NSW, 2444

Job Reference BC_NAT24 – February 2019

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Echo Ecology and Surveying • PO Box 4132 Crescent Head

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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

flller.

Dr Anna McConville PhD, B.Env.Sc.

Job Reference: BC_NAT24 25 March 2019



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Job Reference: BC_NAT24 March 2019



1.0 INTRODUCTION

This report has been commissioned by Biodiversity Australia to analyse bat echolocation call data (Anabat, Titley Electronics) collected from Port Macquarie, 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 (Chris Corben, Version 4.4a) software. The calls were recorded using Data Division Ratio 8. Files were first run through a noise filter in Anabat Insight (Titley Electronics, Version 1.8.4) and any files that passed the filter marked as 'Noise'. The identification of calls was undertaken with reference to Pennay et al. (2004) and through the comparison of recorded reference calls from the north coast region. 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

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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.

It should be noted that the activity levels recorded at different sites may not be readily able to be compared. Activity levels should not be compared among species as different species have different detectability due to factors such as call loudness, foraging strategy and call identifying features. Activity comparisons among sites 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.

Nomenclature follows the Australian Chiroptera taxonomic list described by Reardon et al. (2015).

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.

Calls from *Mormopterus* spp. were differentiated by the presence of mainly flat pulses. *Mormopterus ridei* was differentiated from *Mormopterus norfolkensis* in long call sequences with little pulse alternation.

Chalinolobus gouldii was differentiated from other species by the presence of curved, alternating call pulses.

Myotis macropus was differentiated from *Nyctophilus* spp. by calls with pulse intervals < 75 ms, initial slope > 400 OPS and often with a central kink and varying slopes among pulses.

3.0 RESULTS

A total of 1,508 call sequences were recorded, of which 347 call sequences were able to be analysed (ie were not 'noise' files or bat calls of short length). Of the bat calls, 165 call sequences (48 %) 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:

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•

Bat Call Analysis Port Macquarie, NSW

- Chalinolobus gouldii
- Miniopterus australis
- Mormopterus norfolkensis
- Mormopterus ridei

(Gould's Wattled Bat) (Little Bent-winged Bat) (Eastern coastal Free-tailed Bat) (Ride's Free-tailed 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):

Falsistrellus tasmaniensis (Eastern Falsistrelle) Miniopterus orianae oceanensis (Eastern Bent-winged Bat) Myotis macropus (Large-footed Myotis) Nyctophilus geoffroyi (Lesser long-eared bat) Nyctophilus gouldi (Gould's long-eared bat) Scoteanax rueppellii (Greater Broad-nosed Bat) Scotorepens orion (Eastern Broad-nosed Bat) Vespadelus darlingtoni (Large Forest Bat) Vespadelus pumilus (Eastern Forest Bat) Vespadelus regulus (Southern Forest Bat)

It should be noted that additional bat species may be present within the site but were not recorded by the detectors (or are difficult to identify by bat call) and habitat assessment should be used in conjunction with these results to determine the likelihood of occurrence of other bat species.

Table 3-1 below summarises the results of the bat call analysis.

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Table 3-1: Results of bat call analysis (number of passes per site per night)

IDENTIFICATION	Anabat 7/03/2019	Anabat 8/03/2019	Anabat 9/03/2019	Anabat 10/03/2019
DEFINITE				
Chalinolobus gouldii	2	1	4	1
Miniopterus australis	47	3	8	15
Mormopterus ridei	-	-	3	-
PROBABLE				
Chalinolobus gouldii	5	-	14	4
Miniopterus australis	35	5	4	4
Mormopterus norfolkensis	2	-	-	1
Mormopterus ridei	-	-	2	5
POSSIBLE				
Chalinolobus gouldii	17	5	4	8
Miniopterus australis	4	1	-	1
Myotis macropus	-	-	-	1
SPECIES GROUPS				
Chalinolobus gouldii / Mormopterus norfolkensis / Mormopterus ridei	13	5	6	13
Chalinolobus gouldii / Mormopterus ridei	21	-	11	17
Chalinolobus gouldii / Scoteanax rueppellii	3	-	1	-
Falsistrellus tasmaniensis / Scotorepens orion	1	1	-	-
Falsistrellus tasmaniensis / Scotorepens orion / Scoteanax rueppellii	1	-	-	-
Miniopterus australis / Vespadelus pumilus	17	-	2	3
Miniopterus orianae oceanensis / Vespadelus darlingtoni / Vespadelus regulus	2	-	-	-
Mormopterus norfolkensis / Mormopterus ridei	8	4	1	3

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IDENTIFICATION	Anabat 7/03/2019	Anabat 8/03/2019	Anabat 9/03/2019	Anabat 10/03/2019
Myotis macropus / Nyctophilus geoffroyi / Nyctophilus gouldi	7	-	-	1
UNKNOWN				
'Noise' files	25	650	5	422
Unknown	22	6	10	21
TOTAL	232	681	75	520

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Item 05 Attachment 9



4.0 SAMPLE CALLS

A sample of the calls actually identified from the site for each species is given below.

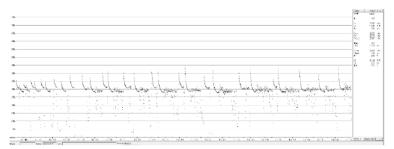


Figure 4-1: Chalinolobus gouldii definite call

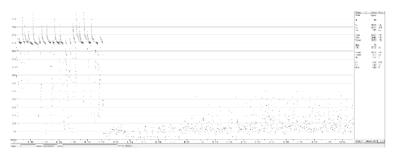


Figure 4-2: Miniopterus australis definite call

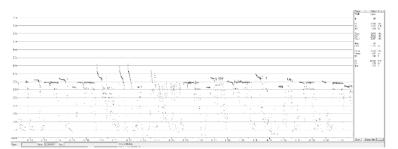


Figure 4-3: Mormopterus norfolkensis probable call

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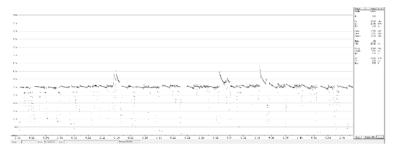


Figure 4-4: Mormopterus ridei definite call

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KING + CAMPBELL

Traffic Impact Assessment Staged Residential Subdivision Part Lot 302 DP 754434, Emily Avenue, Port Macquarie

Prepared for:

Port Macquarie Hastings Council

Prepared by:

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Date: March 2019

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Section	1
Introducti	on

1.1 Introduction

This report has been prepared on behalf of Port Macquarie-Hastings (PMH) Council as the landowner to assess the impact of the proposed residential development on current and future traffic conditions at Emily Drive & Koala Street.				
(5) lots with Emily Avenu	ed residential subdivision will provide for an additional five frontage to the existing cul-de-sac head of Emily Avenue. Je services 50 existing residential lots, 13 of which are fed to Je from the tributary Grace Close.			
will be via th Koala Stree	ar access point for the existing and proposed residential lots te existing intersection configuration of Emily Avenue with t. Works within Emily Avenue & Koala Street are not or are they required.			
presented to	y proposal for the residential subdivision of the site was o Council's Development Application Pre-Lodgement Panel 4 December 2018 (reference 210.2018.161).			
The minutes Assessment	s set out the following requirements for a Traffic Impact t:			
evaluate the o	act Assessment (TIA) will be required. The traffic study shall capacity, safety and operational development impacts to the road minimum the TIA shall:			
a)	Be prepared by a qualified and/or experienced traffic consultant.			
b)	Be prepared in accordance with guidelines contained in the Roads and Maritime Services Guide to Traffic Generating Developments (2002), and AUSTROADS Guide to Traffic Management, Part 12: Traffic Impacts of Development.			
c)	Quantify daily and peak hour traffic generation impacts. When possible, the TIA should obtain data from an existing similar facilities to accurately define impacts with a breakdown of types of vehicle users (e.g. residents' cars, staff cars, service trucks). When data is not available, generation should be defined using industry standard practices.			
d)	Determine time of day traffic distribution using modelling and peak hour travel patterns within the area using industry practices.			
e)	Determine the extent of the study area using industry practices (e.g. development's area of significance).			
f)	Obtain recent traffic counts at critical intersections within the study area. Where existing data is not available, counts shall be collected.			

- g) Study existing and future conditions for critical driveways and intersections evaluating capacity (level of service) and operational (queuing and safety) impacts. At a minimum, the study shall evaluate:

 i) Any proposed driveway intersecting with the public road network
 ii) Emily Avenue & Koala Street

 h) Consider connectivity for public transport facilities and active transport modes such as walking and cycling. At a minimum,
 - transport modes such as walking and cycling. At a minimum, pathways to be provided on both sides of Collector Roads, and on one side of all smaller local roads. Details shall match Council's standard drawing ASD 100 series.

This assessment will demonstrate that the existing Emily Road access from Koala Street has sufficient capacity to cater for the proposed development for the existing intersection configuration.

Intersection performance has been assessed using the software package SIDRA 8.0 to obtain the capacity of the traffic movements for the proposed development and in accordance with the assumptions made by GHD (GHD PMH LGA Traffic Study 2018).

1.2 Review of GHD PMH LGA Traffic Study, June 2018

GHD Pty Ltd were engaged by PMH Council & Roads and Maritime Services (RMS) to prepare a Traffic Study for the PMH LGA (GHD PMH LGA Traffic Study 2018). The purpose of the study was to evaluate current & future road network performance (from 2016 up to the year 2036) within the PMH LGA and identify a road & improvement hierarchy for future planning. The report considered the main urban areas & key linkage roads within the PMH LGA, as well as major rural roads linking regional towns and centres.

The report utilised the Aimsun modelling software package with model development informed by traffic volume, travel time & origin-destination surveys, existing PMH Council population & land-use data, and in situ traffic observations. The report identified peak AM traffic volumes as occurring between 8am – 9am, and peak PM traffic volumes as occurring between 3pm – 4pm.

The report made several recommendations on the road network improvements required to effectively manage the impact of future growth. The report notes that Koala Street is a collector road located within the Port Macquarie area that provides linkage between Ocean Drive & Kennedy Drive. The report identifies the Kennedy Drive/Koala Street intersection upgrade (roundabout) as being High priority level by the year 2026, and Koala Street/Granite Street intersection upgrade (roundabout) as being Moderate priority level by the year 2026. The Kennedy Drive/Koala Street intersection upgrade was recommended as a Medium term (approximately 2026) upgrade.

1.3 Background Traffic Volume Estimation

Traffic volume data was initially obtained by GHD via the undertaking of peak-period turn movement counts at 59 intersections within the model area, classified tube count data at 6 locations, origin-destination surveys at 9 locations, and travel time surveys for 3 routes within the model area. Data surveys were collected for the seven-day period between the 8th February 2016 – 14th February 2016 (inclusive) and within the AM & PM peak-traffic periods (7am-10am & 2pm-6pm respectively).

The report presented hourly traffic volume ranges for the Koala Street/Emily Drive intersection for the survey year (2016) and 20-year projected (2036). These values are presented in **Table 1**, from which zero or negative increase in the hourly traffic volume ranges over the 20-year projected period is observed for Koala Street.

Table 1 - Hourly Traffic Volume Ranges on Koala Street (GHD Pty Ltd, 2018)

Koala Street Traffic Range (veh/hr)					
		PM			
		Southbound	Northbound	Southbound	Northbound
2016 Range	Min	100	500	100	500
	Max	250	1000	250	1000
2036 Range	Min	100	250	100	250
	Max	250	500	250	500

1.4 2019 - 2039 Traffic Volume Estimation

A 20 year lifespan from 2019 – 2039 has been selected as the modelling horizon for analysis within SIDRA. To maintain consistency with the GHD (2018) report, upper-range values of hourly traffic volume for 2016 & 2036 have been interpolated/extrapolated. These values are presented in **Table 2**.

Table 2 – Interpolated & Extrapolated Hourly Traffic Volume Ranges on Koala Street (GHD Pty Ltd, 2018)

Koala Street Traffic Range (veh/hr)						
		AM Southbound Northbound		PM		
	-			Southbound	Northbound	
2016 Range	Min	100	500	100	500	
2010 Kange	Max	250	1000	250	1000	
2036 Range	Min	100	250	100	250	
2050 Kange	Max	250	500	250	500	
2019 Range	Min	100	462.5	100	462.5	
(Interpolated)	Max	250	925	250	925	
2039 Range	Min	100	212.5	100	212.5	
(Extrapolated)	Max	250	425	250	425	

This study adopted the highest value between the 2016, 2019 (interpolated), 2036 and 2039 (extrapolated) maximum hourly traffic volume ranges as the design hourly traffic volume for both the 2019 and 2039 traffic models for Koala Street. This was done to ensure that model results provided a conservative estimate of Koala Street traffic volumes entering the Koala Street/Emily Avenue intersection within the SIDRA model. Adopted values are presented in **Table 3**.

Table 3 – Adopted Hourly Traffic Volume Ranges on Koala Street (GHD Pty Ltd, 2018)

Koala Street Traffic Range (veh/hr)						
		A	M	PM		
		Southbound	Northbound	Southbound	Northbound	
2016 Range	Min	100	500	100	500	
2010 Nalige	Max	250	1000	250	1000	
2036 Range	Min	100	250	100	250	
2036 Range	Max	250	500	250	500	
2019 Range	Min	100	462.5	100	462.5	
(Interpolated)	Max	250	925	250	925	
2039 Range	Min	100	212.5	100	212.5	
(Extrapolated) Max		250	425	250	425	
2019 Ad opted Value		250	1000	250	1000	
2039 Ad opted Value		250	1000	250	1000	

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Section 2 Traffic Impact Assessment

2.1 Traffic Generation

2.1.1 Intersection Catchment

The catchment for the Koala Street/Emily Avenue intersection was determined as being all lots serviced by Emily Avenue (and Grace Close). This consists of 40 lots serviced directly by Emily Avenue, 10 lots serviced indirectly by Emily Avenue (via Grace Close), and a proposed 5 lots to be serviced directly by Emily Avenue in the post-development case, as shown within the indicative lot analysis shown in Figure **1**.



Figure 1 - Intersection Catchment Plan

2.1.2 Pre-Development & Post-Development Traffic Generation

The RMS guide to traffic generating developments recommends a traffic generation rate of 0.85 weekday peak hour vehicle trips per dwelling to be adopted for residential subdivisions. This rate was adopted for both the pre-development & post-development model.

Traffic volume inputs for the pre-development and post-development models are presented in **Table 4**. To provide a contra-flow within the model, it has been assumed that traffic generation within Emily Avenue in the non-dominant direction is equal to 10% of the traffic generation amount for the dominant direction.

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Table 4 – Adopted Hourly Traffic Volume Ranges on Koala Street (GHD Pty Ltd,	
2018)	

Traffic Generation Pre-Development					
Number of Lots (Pre-Development)	50				
Vehicles/Hour/Lot in Peak times	0.85				
Total Vehicles Departing (AM) / Entering (PM)	42.5				
Total Vehicles Entering (AM) / Departing (PM)					
Traffic Generation Post-Development					
Number of Lots (Pre-Development)	50				
Number of Proposed Lots	5				
Number of Lots (Post-Development)					
Vehicles/Hour/Lot in Peak times					
Total Vehicles Departing (AM) / Entering (PM)					
Total Vehicles Entering (AM) / Departing (PM) 5.1					

2.1.3 Destination and Route Modelling

A gravity model was constructed to determine the likely destinations for trips generated within the current & proposed development at Emily Avenue (incl. tributary Grace Close), based on the relative populations of the surrounding area and estimated peak-hour travel times (based on those reported from Google Maps (Google Inc., 2018)) to each of those areas. Derivation & application of a gravity model methodology to traffic flow modelling is well documented in the literature (Jong, Wang, & Stanley, 2008).

Table 5 sets out the likely destination for each trip generated from the proposed development.

Destination	Population	Fastest Travel Time (mins)	Population/ Travel Time^2	Destination Percentage
Port Macquarie	46000	6	1277.8	96%
Wauchope	7500	22	15.5	1%
Camden Haven	6000	40	3.8	0%
Kew/Kendall	3500	28	4.5	0%
Kempsey	8000	40	5.0	0%
Taree	18000	60	5.0	0%
Bonny Hills	3900	22	8.1	1%
Lake Cathie	2500	18	1.1	1%
			Sum =	100%

Table 5 - Destination Gravity Model

The above probabilities were then applied to the two available alternate routes (Koala Street northbound & Koala Street southbound) to determine the probability of each trip taking a particular route to their respective destination.

The route probabilities were calculated and are presented in Table **6** for both AM & PM peak times, and have been adopted for the 2019 model & the 2039 model in the associated SIDRAS model. The sensitivity of the gravity model to temporal population variation was assessed with negligible variation observed.

Table 6 - Route Probability Table for Peak AM hour

	Koala Street Northbound			Koala Street Southbound		
Destination	T-Time (mins)	Percentage Traffic Northbound	Population-Distance Weighted Percentage	T-Time (mins)	Percentage Traffic Southbound	Population-Distance Weighted Percentage
PortMacquarie	6	73.5%	70.8%	10	26.5%	25.5%
Wauchope	22	65.0%	0.8%	30	35.0%	0.4%
Camden Haven	40	50.0%	0.1%	40	50.0%	0.1%
Kew/Kendall	28	61.0%	0.2%	35	39.0%	0.1%
Kempsey	40	55.9%	0.2%	45	44.1%	0.2%
Taree	60	56.9%	0.2%	69	43.1%	0.2%
Bonny Hills	22	50.0%	0.3%	22	50.0%	0.3%
Lake Cathie	18	50.0%	0.3%	18	50.0%	0.3%
All Destinations			73%			27%

Table 7 - Route Probability Table for Peak PM hour

	Koala Street Northbound			Koala Street Southbound			
Destination	T-Time (mins)	Per centage Traffic Northbound	Population-Distance Weighted Percentage	T-Time (mins)	Percentage Traffic Southbound	Population-Distance Weighted Percentage	
PortMacquarie	7	74.6%	70.8%	12	25.4%	24.1%	
Wauchope	22	71.7%	1.1%	35	28.3%	0.4%	
Camden Haven	40	50.0%	0.2%	40	50.0%	0.2%	
Kew/Kendall	35	42.4%	0.2%	30	57.6%	0.3%	
Kempsey	45	55.2%	0.3%	50	44.8%	0.2%	
Taree	69	50.0%	0.3%	69	50.0%	0.3%	
Bonny Hills	22	40.1%	0.3%	18	59.9%	0.5%	
Lake Cathie	18	64.0%	0.5%	24	36.0%	0.3%	
All Destinations			74%			26%	

The key directional traffic distribution results calculated from the gravity model are summarised in Table **8** below.

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Table 8 - Route Probability Table for Peak AM & PM times

Directional Traffic Distribution from Gravity Model				
Koala Street North (AM)	73%			
Koala Street South (AM)	27%			
Koala Street North (PM)	74%			
Koala Street South (PM)	26%			

2.1.4 Intersection Traffic Generation

Intersection traffic for the Koala Street/Emily Avenue intersection is presented in Figure **2** for both peak time periods (AM/PM). The model considers four alternate traffic volume combinations resulting from variation in the development state of Emily Avenue (pre- and post-developed) and the analysis year for Koala Street (2019 and 2039 aerial population growth).



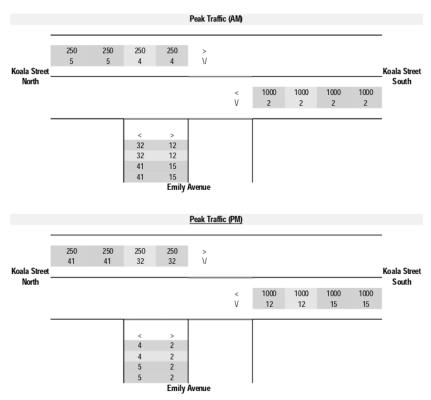


Figure 2 - AM and PM Peak Hour Traffic Flow - Koala Street/Emily Avenue Intersection

2.2 Intersection Analysis & Results

The intersection between Koala Street and Emily Avenue was modelled using the existing intersection configuration. Aerial Imagery of the existing intersection configuration is shown within Figure **3**.



Figure 3 - Aerial Photograph of existing Intersection of Koala Street and Emily Avenue

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2.2.1 SIDRA Intersection Analysis

The configuration of the existing intersection as modelled within SIDRA is shown within **Figure 4**.

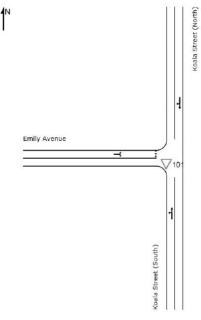


Figure 4 – Koala Street/Emily Avenue Intersection - Existing Configuration – SIDRA representation

The existing intersection configuration has been modelled within SIDRA 8.0 for each combination of 2019 & 2039 background traffic volumes (as outlined in Section 3), and the AM & PM peak hour traffic volumes travelling to/from Emily Avenue for both the pre- and post- developed scenarios (as outlined in Section 4). This is summarised in **Table 9**.

Table 9 - Summary	of Model Scenarios	for analysis
-------------------	--------------------	--------------

Peak Hour	Analysis Year	Level of Development	Model Scenario
AM	2019	Pre-Developed	AM 2019 Pre-Developed
		Post-Developed	AM 2019 Post-Developed
	2039	Pre-Developed	AM 2039 Pre-Developed
		Post-Developed	AM 2039 Post-Developed
PM	2019	Pre-Developed	PM 2019 Pre-Developed
		Post-Developed	PM 2019 Post-Developed
	2039	Pre-Developed	PM 2039 Pre-Developed
		Post-Developed	PM 2039 Post-Developed

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2.2.2 SIDRA Intersection Results

SIDRA intersection analysis results for Level of Service (LOS) & queue distance are presented in Table **10** for each of the modelled scenarios.

Table 10 - Summary of Model Scenarios for analysis

	Max. Level of	Max. Queue
Model Scenario	Service	Distance
AM 2019 Pre-Developed	В	1
AM 2019 Post-Developed	В	2
AM 2039 Pre-Developed	В	1
AM 2039 Post-Developed	В	2
PM 2019 Pre-Developed	В	3
PM 2019 Post-Developed	В	4
PM 2039 Pre-Developed	В	3
PM 2039 Post-Developed	В	4

Output of key results from SIDRA for each model scenario are presented in Appendix A, including level of service (LOS) and intersection performance results.

Detailed output from SIDRA for each model scenario is presented in Appendix B, which provides information on model parameters and analysis results.

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Section 6 Conclusion

This Traffic Impact Assessment confirms that the anticipated traffic generated by the proposed additional five (5) lots of the residential subdivision fronting Emily Avenue will not exceed the capacity of the existing Koala Street & Emily Avenue intersection. The detailed modelling, which has been based on the expected peak hour trip generation for the existing and proposed development, demonstrates the suitability of the intersection.

The SIDRA intersection analysis results demonstrate that the proposed additional five (5) lots will generate a consistent increase in queue distance of 1 vehicle is as the result of the proposed development for AM & PM peak traffic volume periods in both 2019 & 2039. The results demonstrate that Level of Service is not affected by the proposed development and LOS Class B will be maintained for the existing intersection configuration, for the pre- and post- development scenarios in both AM & PM peak traffic volume periods and at analysis year 2019 & 2039.

These results demonstrate that the existing intersection configuration provides excess LOS for both the AM & PM peak hour traffic volumes until at least 2039, with negligible change in intersection performance as a result of the proposed development.

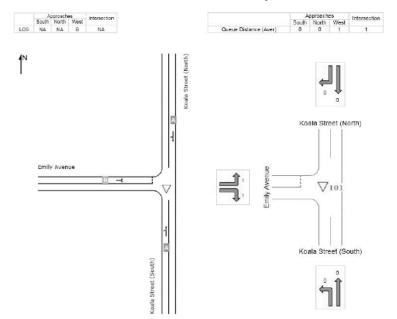
This Assessment confirms that the proposed residential development (5 Lots) can be adequately served by the existing intersection configuration of Emily Avenue with Koala Street. This Assessment also confirms that the retention of the existing intersection will not adversely affect the wider road network within Port Macquarie, with queueing lengths being of acceptable length. Accordingly, additional mitigation strategies or road upgrades are not required beyond those expected to cater for background traffic volumes on Koala Street.

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APPENDIX A – SIDRA Key Results & Output

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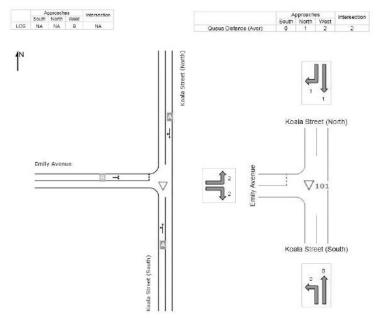
Model Scenario: AM Peak Hour, Year 2019, Pre-Developed

Figure 5- LOS Summary & Queue Distance Summary for Model Scenario: AM Peak Hour, Year 2019, Pre-Developed

Table 11 - SIDRA Intersection Performance Summary for Model Scenario: AM Peak Hour, Year 2019, Pre-Developed

		~
erformance Measure	Vehicles	Persons
Travel Speed (Average)	59.1 km/h	59.1 km/h
Travel Distance (Total)	1366.5 veh-km/h	1639.8 pers-km/h
ravel Time (Total)	23.1 veh-h/h	27.7 pers-h/h
Demand Flows (Total)	1368 veh/h	1642 pers/h
Percent Heavy Vehicles (Demand)	0.0 %	
Degree of Saturation	0.541	
Practical Spare Capacity	81.2 %	
Effective Intersection Capacity	2530 veh/h	
Control Delay (Total)	0.29 vch-h/h	0.35 pers-h/h
Control Delay (Average)	0.8 sec	0.8 sec
Control Delay (Worst Lane)	15.8 sec	0.0 000
Control Delay (Worst Movement)	21.0 sec	21.0 sec
Geometric Delay (Average)	0.2 sec	21.0 000
Stop-Line Delay (Average)	0.5 sec	
dling Time (Average)	0.3 sec	
ntersection Level of Service (LOS)	NA NA	
neisean everal service (cosy	nee -	
5% Back of Queue - Vehicles (Worst Lane)	0.4 veh	
95% Back of Queue - Distance (Worst Lane)	3.1 m	
Queue Storage Ratio (Worst Lane)	0.01	
otal Effective Stops	47 veh/h	56 pers/h
Effective Stop Rate	0.03	0.03
Proportion Queued	0.04	0.04
Performance Index	23.8	23.8
Cost (Total)	498.86 3/h	498.66 Sth
Fuel Consumption (Total)	79.2 L/h	400.00 gill
Carbon Dioxide (Total)	186.1 kg/h	
Hydrocarbone (Total)	0.014 kg/h	
Carbon Monoxide (Total)	0.241 kg/h	
VOx (Total)	0.037 kg/h	

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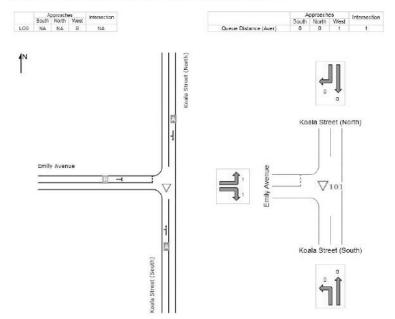


Model Scenario: AM Peak Hour, Year 2019, Post-Developed

Figure 6- LOS Summary & Queue Distance Summary for Model Scenario: AM Peak Hour, Year 2019, Post-Developed

Table 12 - SIDRA Intersection Performance Summary for Model Scenario: AM Peak Hour, Year 2019, Post-Developed

Performance Measure	Vehicles	Persons
Travel Speed (Average)	58.9 km/h	58.9 km/h
Travel Distance (Total)	1376.3 veh-km/h	1651.6 pers-km/h
Travel Time (Total)	23.4 veh-h/h	28.0 pers-h/h
		217
Demand Flows (Total)	1382 veh/h	1659 pers/h
Percent Heavy Vehicles (Demand)	0.0 %	
Degree of Saturation	0.541	
Practical Spare Capacity	81.2 %	
Effective Intersection Capacity	2555 veh/h	
Control Delay (Total)	0.36 veh-h/h	0.43 pers-h/h
Control Delay (Average)	0.9 sec	0.9 sec
Control Delay (Worst Lane)	16.1 sec	
Control Delay (Worst Movement)	21.5 sec	21.5 sec
Geometric Delay (Average)	0.3 sec	
Stop-Line Delay (Average)	0.7 sec	
Idling Time (Average)	0.4 sec	
Intersection Level of Service (LOS)	NA	
intersection cever of Service (COS)	NA	
95% Back of Queue - Vehicles (Worst Lane)	0.6 veh	
95% Back of Queue - Distance (Worst Lane)	4.1 m	
Queue Storage Ratio (Worst Lane)	0.01	
Total Effective Stops	59 veh/h	71 pers/h
Effective Stop Rate	0.04	0.04
Proportion Queued	0.05	0.05
Performance Index	24.3	24.3
	E.T.U	24.5
Cost (Total)	506.13 \$/h	506.13 S/h
Fuel Consumption (Total)	80.3 L/h	
Carbon Dioxide (Total)	188.6 kg/h	
Hydrocarbons (Total)	0.014 kg/h	
Carbon Monoxide (Total)	0.244 kg/h	
NOx (Total)	0.038 kg/h	



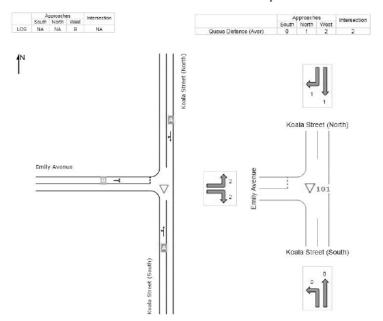
Model Scenario: AM Peak Hour, Year 2039, Pre-Developed

Figure 7- LOS Summary & Queue Distance Summary for Model Scenario: AM Peak Hour, Year 2039, Pre-Developed

Table 13 - SIDRA Intersection Performance Summary for Model Scenario: AM Peak Hour, Year 2039, Pre-Developed

Performance Measure	Vehicles	Persons
Travel Speed (Average)	59.1 km/h	59.1 km/h
Travel Distance (Total)	1366.5 veh-km/h	1639.8 pers-km/h
Travel Time (Total)	23.1 veh-h/h	27.7 pers-h/h
Demand Flows (Total)	1368 veh/h	1642 pers/h
Percent Heavy Vehicles (Demand)	D.O %	
Degree of Saturation	0.541	
Practical Spare Capacity	81.2 %	
Effective Intersection Capacity	2530 veh/h	
Control Delay (Total)	0.29 veh-h/h	0.35 pers-h/h
Control Delay (Votal) Control Delay (Average)	0.29 ven-n/n 0.8 sec	0.35 pers-n/n 0.8 sec
Control Delay (Worst Lane)	15.8 sec	U.o sec
Control Delay (Worst Lane) Control Delay (Worst Movement)	21.0 sec	21.0 sec
Geometric Delay (Average)	0.2 sec	21.0 560
Stop-Line Delay (Average)	0.5 sec	
Idling Time (Average)	0.3 sec	
Intersection Level of Service (LOS)	NA	
95% Back of Queue - Vehicles (Worst Lane)	0.4 veh	
95% Back of Queue - Distance (Worst Lane)	3.1 m	
Queue Storage Ratio (Worst Lane)	0.01	
Total Effective Stops	47 veh/h	56 pers/h
Effective Stop Rate	0.03	0.03
Proportion Queued	0.04	0.04
Performance Index	23.8	23.8
Cost (Total)	498.86 \$/h	498.86 \$/h
Fuel Consumption (Total)	79.2 L/h	
Carbon Dioxide (Total)	186.1 kg/h	
Hydrocarbons (Total)	0.014 kg/h	
Carbon Monoxide (Total)	0.241 kg/h	
NOx (Total)	0.037 kg/h	

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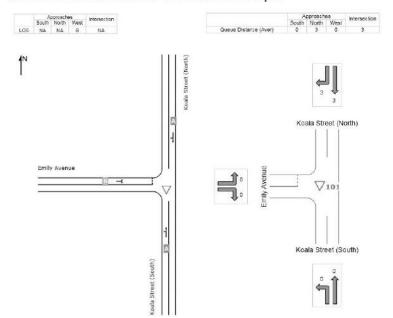


Model Scenario: AM Peak Hour, Year 2039, Post-Developed

Figure 8- LOS Summary & Queue Distance Summary for Model Scenario: AM Peak Hour, Year 2039, Post-Developed

Table 14 - SIDRA Intersection Performance Summary for Model Scenario: AM Peak Hour, Year 2039, Post-Developed

Performance Measure	Vehicles	Persons
ravel Speed (Average)	58.9 km/h	58.9 km/h
ravel Distance (Total)	1376.3 veh-km/h	1651.6 pers-km/h
ravel Time (Total)	23.4 veh-h/h	28.0 pers-h/h
Demand Flows (Total)	1382 veh/h	1659 pers/h
Percent Heavy Vehicles (Demand)	0.0 %	1000 perant
Degree of Saturation	0.541	
Practical Spare Capacity	81.2 %	
Effective Intersection Capacity	2555 veh/h	
inective intersection Capacity	2555 Ven/m	
Control Delay (Total)	0.36 veh-h/h	0.43 pers-h/h
Control Delay (Average)	0.9 sec	0.9 sec
Control Delay (Worst Lane)	16.1 sec	
Control Delay (Worst Movement)	21.5 sec	21.5 sec
Geometric Delay (Average)	0.3 sec	
Stop-Line Delay (Average)	0.7 sec	
dling Time (Average)	0.4 sec	
ntersection Level of Service (LOS)	NA	
Iteraection Level of Service (LOS)	ne .	
5% Back of Queue - Vehicles (Worst Lane)	0.6 veh	
5% Back of Queue - Distance (Worst Lane)	4.1 m	
Queue Storage Ratio (Worst Lane)	0.01	
otal Effective Stops	59 veh/h	71 pers/h
Effective Stop Rate	0.04	0.04
Proportion Queued	0.05	0.05
Performance Index	24.3	24.3
Cost (Total)	506.13 \$/h	506.13 \$/h
Fuel Consumption (Total)	80.3 L/h	
Carbon Dioxide (Total)	188.6 kg/h	
lydrocarbons (Total)	0.014 kg/h	
Carbon Monoxide (Total)	0.244 kg/h	
VOx (Total)	0.038 kg/h	



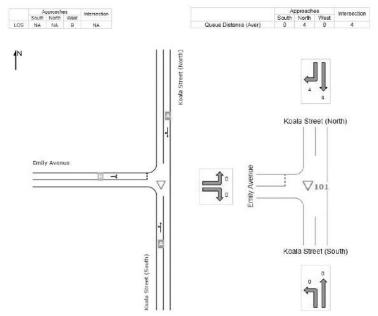
Model Scenario: PM Peak Hour, Year 2019, Pre-Developed

Figure 9- LOS Summary & Queue Distance Summary for Model Scenario: PM Peak Hour, Year 2019, Pre-Developed

Table 15 - SIDRA Intersection Performance Summary for Model Scenario: PM Peak Hour, Year 2019, Pre-Developed

Performance Measure	Vehicles	Persons
Travel Speed (Average)	58.6 km/h	58.6 km/h
Travel Distance (Total)	1366.4 veh-km/h	1639.7 pers-km/h
Travel Time (Total)	23.3 veh-h/h	28.0 pers-h/h
Demand Flows (Total)	1368 veh/h	1642 pers/h
Percent Heavy Vehicles (Demand)	0.0 %	
Degree of Saturation	0.547	
Practical Spare Capacity	79.3 %	
Effective Intersection Capacity	2503 veh/h	
Control Delay (Total)	0.48 veh-h/h	0.58 pers-h/h
Control Delay (Average)	1.3 sec	1.3 sec
Control Delay (Worst Lane)	15.9 sec	
Control Delay (Worst Movement)	21.0 sec	21.0 sec
Geometric Delay (Average)	0.2 sec	
Stop-Line Delay (Average)	1.1 sec	
Idling Time (Average)	0.6 sec	
Intersection Level of Service (LOS)	NA	
95% Back of Queue - Vehicles (Worst Lane)	1.2 veh	
95% Back of Queue - Distance (Worst Lane)	8.5 m	
Queue Storage Ratio (Worst Lane)	0.01	
Total Effective Stops	39 veh/h	47 pers/h
Effective Stop Rate	0.03	0.03
Proportion Queued	0.08	0.08
Performance Index	24.5	24.5
Cost (Total)	524.26 \$/h	524.26 \$/h
Fuel Consumption (Total)	81.4 L/h	
Carbon Dioxide (Total)	191.4 kg/h	
Hydrocarbons (Total)	0.014 kg/h	
Carbon Monoxide (Total)	0.246 kg/h	
NOx (Total)	0.040 kg/h	

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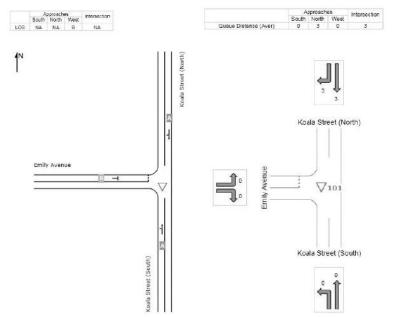


Model Scenario: PM Peak Hour, Year 2019, Post-Developed

Figure 10- LOS Summary & Queue Distance Summary for Model Scenario: PM Peak Hour, Year 2019, Post-Developed

Table 16 - SIDRA Intersection Performance Summary for Model Scenario: PM Peak Hour, Year 2019, Post-Developed

Performance Measure	Vehicles	Persons
Travel Speed (Average)	58.3 km/h	58.3 km/h
Travel Distance (Total)	1373.9 veh-km/h	1648.7 pers-km/h
Travel Time (Total)	23.6 veh-h/h	28.3 pers-h/h
naver finite (rotal)	20.0 (011111)	20.0 pero-ini
Demand Flows (Total)	1379 veh/h	1655 pers/h
Percent Heavy Vehicles (Demand)	0.0 %	10 Not 01 10 10 10 10 10 10 10 10 10 10 10 10
Degree of Saturation	0.547	
Practical Spare Capacity	79.3 %	
Effective Intersection Capacity	2523 veh/h	
Encenve interaction capacity	2020 101011	
Control Delay (Total)	0.59 veh-h/h	0.71 pers-h/h
Control Delay (Average)	1.6 sec	1.6 sec
Control Delay (Worst Lane)	15.6 sec	
Control Delay (Worst Movement)	21.3 sec	21.3 sec
Geometric Delay (Average)	0.3 sec	2.1.0 000
Stop-Line Delay (Average)	1.3 sec	
dling Time (Average)	0.8 sec	
ntersection Level of Service (LOS)	NA	
95% Back of Queue - Vehicles (Worst Lane)	1.5 veh	
95% Back of Queue - Distance (Worst Lane)	10.8 m	
Queue Storage Ratio (Worst Lane)	0.01	
Total Effective Stops	49 veh/h	59 pers/h
Effective Stops	0.04	0.04
	0.01	
Proportion Queued Performance Index	0.10	0.10
Performance index	25.1	25.1
Cost (Total)	535.57 \$/h	535.57 \$/h
Fuel Consumption (Total)	82.7 L/h	555.57 gm
Carbon Dioxide (Total)	194.4 kg/h	
Hydrocarbons (Total)	0.015 kg/h	
Carbon Monoxide (Total)	0.249 kg/h	
NOx (Total)	0.042 kg/h	



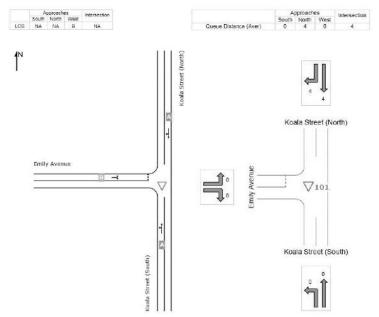
Model Scenario: PM Peak Hour, Year 2039, Pre-Developed

Figure 11- LOS Summary & Queue Distance Summary for Model Scenario: PM Peak Hour, Year 2039, Pre-Developed

Table 17 - SIDRA Intersection Performance Summary for Model Scenario: PM Peak Hour, Year 2039, Pre-Developed

Performance Measure	Vehicles	Persons
Travel Speed (Average)	58.6 km/h	58.6 km/h
Travel Distance (Total)	1366.4 veh-km/h	1639.7 pers-km/
Travel Time (Total)	23.3 veh-h/h	28.0 pers-h/h
Demand Flows (Total)	1368 veh/h	1642 pers/h
Percent Heavy Vehicles (Demand)	0.0 %	11 P. 10 P.
Degree of Saturation	0.547	
Practical Spare Capacity	79.3 %	
Effective Intersection Capacity	2503 veh/h	
Control Delay (Total)	0.48 veh-h/h	0.58 pers-h/h
Control Delay (Average)	1.3 sec	1.3 sec
Control Delay (Worst Lane)	15.9 sec	
Control Delay (Worst Movement)	21.0 sec	21.0 sec
Geometric Delay (Average)	0.2 sec	
Stop-Line Delay (Average)	1.1 sec	
Idling Time (Average)	0.6 sec	
Intersection Level of Service (LOS)	NA	
Intersection Level of Service (LOS)	NA	
95% Back of Queue - Vehicles (Worst Lane)	1.2 veh	
95% Back of Queue - Distance (Worst Lane)	8.5 m	
Queue Storage Ratio (Worst Lane)	0.01	
Total Effective Stops	39 veh/h	47 pers/h
Effective Stop Rate	0.03	0.03
Proportion Queued	0.08	0.08
Performance Index	24.5	24.5
	27.0	24.0
Cost (Total)	524.26 \$/h	524.26 S/h
Fuel Consumption (Total)	81.4 L/h	524.20 BAT
Carbon Dioxide (Total)	191.4 kg/h	
Hydrocarbons (Total)	0.014 kg/h	
Carbon Monoxide (Total)	0.246 kg/h	
NOx (Total)	0.040 kg/h	

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Model Scenario: PM Peak Hour, Year 2039, Post-Developed

Figure 12- LOS Summary & Queue Distance Summary for Model Scenario: PM Peak Hour, Year 2039, Post-Developed

Table 18 - SIDRA Intersection Performance Summary for Model Scenario: PM Peak Hour, Year 2039, Post-Developed

Performance Measure	Vehicles	Persons
Travel Speed (Average)	58.3 km/h	58.3 km/h
Travel Distance (Total)	1376.2 veh-km/h	1651.4 pers-km/h
Travel Time (Total)	23.6 veh-h/h	28.3 pers-h/h
naver nine (rotal)	20.0 101-101	20.0 pero-ini
Demand Flows (Total)	1382 veh/h	1659 pers/h
Percent Heavy Vehicles (Demand)	0.0 %	
Degree of Saturation	0.548	
Practical Spare Capacity	78.7 %	
Effective Intersection Capacity	2521 veh/h	
Enective intersection objectly	2021 401011	
Control Delay (Total)	0.60 veh-h/h	0.73 pers-h/h
Control Delay (Average)	1.6 sec	1.6 sec
Control Delay (Worst Lane)	15.6 sec	
Control Delay (Worst Movement)	21.4 sec	21.4 sec
Geometric Delay (Average)	0.3 sec	21.4 866
Stop-Line Delay (Average)	1.3 sec	
Idling Time (Average)	0.8 sec	
Intersection Level of Service (LOS)	NA	
95% Back of Queue - Vehicles (Worst Lane)	1.6 veh	
95% Back of Queue - Distance (Worst Lane)	10.9 m	
Queue Storage Ratio (Worst Lane)	0.01	
Total Effective Stops	51 veh/h	61 pers/h
Effective Stop Rate	0.04	0.04
Proportion Queued	0.10	0.10
Performance Index	25.1	25.1
Cost (Total)	537.45 \$/h	537.45 \$/h
Fuel Consumption (Total)	83.0 L/h	
Carbon Dioxide (Total)	195.0 kg/h	
Hydrocarbons (Total)	0.015 kg/h	
Carbon Monoxide (Total)	0.250 kg/h	
NOx (Total)	0.042 kg/h	

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APPENDIX B – SIDRA Detailed Output

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Model Scenario: AM Peak Hour, Year 2019, Pre-Developed2	2
Model Scenario: AM Peak Hour, Year 2019, Post-Developed19	19
Model Scenario: AM Peak Hour, Year 2039, Pre-Developed	36
Model Scenario: AM Peak Hour, Year 2039, Post-Developed54	54
Model Scenario: PM Peak Hour, Year 2019, Pre-Developed	71
Model Scenario: PM Peak Hour, Year 2019, Post-Developed	68
Model Scenario: PM Peak Hour, Year 2039, Pre-Developed106	106
Model Scenario: PM Peak Hour, Year 2039, Post-Developed	124

New Site Site Category: (None) Giveway / Yield (Two-Way)	OUTPUT TABLE LINKS	Sign Control Sign Control Basic Parameters Gap Acceptance Parameters	Intersection Negotiation and Travel Data Movement Capacity and Performance Parameters Fuel Consumption, Emissions and Cost	Lane Performance and Capacity Information Lane, Approach and Intersection Performance Driver Characteristics	Lane Delays Lane Queues	Lane Queue Percentiles Lane Stops	If Flow Rates Origin-Destination Flow Rates (Total)	Origin-Destination Flow Rates by Movement Class Lane Flow Rates	Cother	Parameter Settings Summary Diagnostics

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Model Scenario: AM Peak Hour, Year 2019, Pre-Developed

Leg App PropQueued Extra Geometry Dist Upstr Signal Bunching m		North: Koala Street (North) Major Road Two Way 500 NA 0.0N	West: Emily Avenue Giveway Two Way 200 NA 0.0N	NA Not Applicable (single Site analysis or unconnected Site in Network analysis). N Program option resulted in zero value (single Site analysis or unconnected Site in Network analysis).	ks (Top)	Gap Acceptance Parameters Site: Emily Road AM 2019 Not Developed GHDVals	Site ID: 101 Give-Way Sign Controlled Intersection	Intra Critical Gap Opng Bunch Propn Entry Foll-up Dest Flow Hdwy Bnchd HV Hdwy Dist Headway pcu/h sec m sec	South: Koala Street (South)	No opposed movements on this approach.	North: Koala Street (North) 1 W 1055 1.80 0.182 1.00 4.00 66.6 2.00
Approach Control	South: Koala Major Road	North: Koala Major Road	est: Emil Giveway	 NA Not A N Progr in Ne	Go to Table Links (Top)	p Accep e: Emily	Site ID: 101 Give-Way Sign	opd Lane	outh: Ko	soddo ov	North: Koala S 1 Worth

Sign Control Basic Parameters Site: Emily Road AM 2019 Not Developed GHDVals

Site ID: 101 Give-Way Sion Controlled Interee

> Item 05 Attachment 10 Page 342

Values in this table are adjusted for movement classes in the entry stream. Use the Pedestrians and Priorities input dialogs to specify opposing pedestrian movements. + Percentage of exiting flow included in opposing vehicle flow

Go to Table Links (Top)

Movements

Intersection Negotiation and Travel Data Site: Emily Road AM 2019 Not Developed GHDVals

Site ID: 101 Give-Way Sign Controlled Intersection

TRAVEL TIME TRAVEL SPEED, TRAVEL DISTANCE AND

From To Approach Ewit	Turn	Running Speed km/h	Travel Speed km/h	l Travel Distance m	Travel Time s	Total Trave Dem Flows veh-km/h	Total Travel Distance Dem Flows Arv Flows veh-hm/h veh-hm/h	Tot.Trav. Time veh-h/h
South: Koala Street West North	eet (South) t L2 h Tl	57.5 59.8	57.5 59.8	710.0# 1010.0#	44.4# 60.8#	1.5 1063.2	1.5 1063.2	0.0 17.8
North: Koala Street (North) South Tl West R2	eet (North) h Tl t R2	59.7 56.4	59.3 55.9	1010.0# 710.0#	61.3# 45.7#	265.8 3.0	265.8 3.0	4.5 0.1
West: Emily Avenue North South	ue h L2 h R2	48.3 47.7	42.6 42.1	714.3# 714.3#	60.3# 61.0#	24.1 9.0	24.1 9.0	0.6
ALL VEHICLES:		59.4	59.1	998.6#	60.8#	1366.5	1366.5	23.1

"Running Speed" is the average speed excluding stopped periods.

Travel Time values include cruise times and intersection delays including acceleration, deceleration and idling delays. Travel Distance and Travel Time values include travel on the External Exit section based on the Exit Distance or user-specified Downstream Distance value as applicable. #

INTERSECTION NEGOTIATION DATA

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Go to Table Links (Top)

From Approach	To ich Exit		Turn	Negn Radius m	Negn Speed km/h	Negn Dist m	App Dist m	Exit Dist m	Downstr Dist m
South:	South: Koala Street (South) West L2 North T1	Street West Jorth	(South) L2 T1	10.0 s	20.2 60.0	15.7 10.0	500	200	AN AN NA
North:	North: Koala Street South West	Street South West	(North) T1 R2	6.9 6.6	60.0 17.2	10.0 10.4	500	500	AN AN
West: E	Emily Avenue North South	t h t h t	ц2 82	10.0 6.6	20.2 17.2	15.7 10.4	2 0 0 2 0 0	500 500	N.A. N.A.

- Exportant option was specified - "Program" option was specified - Distance specified was less than the Exit Negotiation Distance - Distance specified was greater than the exit leg length

Some Negotiation Radius, Speed or Distance values are user specified.

MOVEMENT SPEEDS AND GEOMETRIC DELAY

		App. Speeds	eds	Exit	Exit Speeds	Queue	į
Mov ID	Turn	Cruise km/h	Negn km/h	Negn km/h	Negn Cruise km/h km/h	Speed km/h	delay sec
South: Koala 1 L2 2 T1	Koala L2 T1	Street 60.0 60.0	(South) 20.2 60.0	20.2 60.0	60.0 60.0		0.0 0.0
North: Koala 8 Tl 9 R2	Koala Tl R2	Street 60.0 60.0	(North) 60.0 17.2	60.0 17.2	60.0 60.0	0.2	0.0
West: Emily 10 L2 12 R2	Emily L2 R2	7 Avenue 60.0 60.0	20.2 17.2	20.2 17.2	60.0 60.0	11.8 11.8	5.5 7.5

ATTACHMENT

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Site ID: 101 Give-Way Sign Controlled Intersection

MOVEMENT CAPACITY PARAMETERS

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Deg. Satn x	0.541* 0.541*	0.145 0.145	0.145 0.145
Prac. Spare Cap. &	81 81	576 576	452 452
Prac. Deg. Satn xp	0.98 0.98	0.98 0.98	0.80
Total Cap. veh/h	4 1946	1814 29	233 87
Opng Movement Adjust. Flow Flow veh/h pcu/h	00	0 1055	1053 1321
	South) 0 0	(North) 0 1055	1053 1321
Arv Flow veh/h	Street (South) 2 0 1053 0	Street (Þ 263 4	Avenue 34 13
Mov Cl.		nd === ====	
Turn Mov Cl.	Koala L2 # T1 #	Koal Tl R2	Emily L2 # R2 #
Mov ID	South: 1 2	North: 8 9	West: 10 12

Maximum degree of saturation
 Combined Movement Capacity parameters are shown for all Movement Classes.

MOVEMENT PERFORMANCE

Mov ID	Turn (v	Turn Total Delay (veh-h/h) (j	Total Aver. Delay Delay (pers-h/h) (sec)	Aver. Delay (sec)	Eff. Stop Rate	Total Stops	Perf. Index	Tot.Trav. Tot.Trav. Distance Time (veh-km/h) (veh-h/h)	Tot.Trav. Time (veh-h/h)	Aver. Speed (km/h)
South: 1 2	Koal L2 T1	South: Koala Street (South) 1 L2 0.00 0.00 2 T1 0.03 0.03	(South) 0.00 0.03	5.6 0.1	0.00	0.0 1.3	0.0 0.03 1.3 17.75	1.5 1063.2	0.0 17.8	57.5 59.8
North: 8 9	Koal Tl R2	North: Koala Street 8 Tl 0.04 (9 R2 0.02 ((North) 0.04 0.02	0.5 15.3	0.01	2.6 0.0	2.6 4.54 0.0 0.13	265.8 3.0	4.5 0.1	59.3 55.9
West: 10 12	Emily L2 R2	West: Emily Avenue 10 L2 0.13 12 R2 0.07	0.16 0.09	13.8 21.0	0.92 0.92	31.0 11.6	0.88 0.47	24.1 9.0	0.6 0.2	42.6 42.1

(Ton)	22.
links	2
Table	2020
Go to	2

Fuel Consumption, Emissions and Cost Site: Emily Road AM 2019 Not Developed GHDVals

Site ID: 101 Give-Way Sign Controlled Intersection FUEL CONSUMPTION, EMISSIONS AND COST (TOTAL)

ID	Cost Total \$/h	Fuel Total L/h	CO2 Total kg/h	CO Total kg/h	HC Total kg/h	NOX Total kg/h
South: Koala S 1 L2 2 T1	Street (South) 0.71 377.55	h) 0.1 60.1	0.2	0.00	0.000	0.000
	378.26	60.2	141.5	0.18	0.010	0.027
North: Koala S 8 Tl 9 R2	Street (North) 98.47 1.49	h) 15.5 0.2	36.5	0.05	0.003	0.007
	99.97	15.7	37.0	0.05	0.003	0.008
West: Emily Avenue 10 L2 12 R2	enue 5.62	2.4	5.5	0.01	0.001	0.002
	20.62	3.2	7.6	0.01	0.001	0.003
INTERSECTION:	498.86	79.2	186.1	0.24	0.014	0.037

FUEL CONSUMPTION, EMISSIONS AND COST (RATE)

c	o.		Fuel Rate L/100km	CO2 Rate g/km	m \	Rat /km	NOX Rate g/km
South: Koala 1 L2 2 T1	Street	t (South) 0.48 0.36	h) 5.7 5.7	133.0 132.9	0.17	0.010	0.026

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	0.36	5.7	5.7 132.9	0.17	0.17 0.010	0.026
North: Koala Street 8 Tl 9 R2	(North) 0.37 0.50	5.9 9.9	137.5 139.4	0.18 0.18	0.010	0.028 0.029
	0.37	0.0	137.5	0.18	0.18 0.010	0.028
West: Emily Avenue 10 L2 12 R2	0.62 0.62	0.0 8.0	230.2 230.2	0.26 0.26	0.021	0.078 0.078
	0.62	9.8	230.2	0.26	0.021	0.078
INTERSECTION:	0.37	5.8	136.2	0.18	0.010	0.027

Go to Table Links (Top)

Lanes

Lane Performance and Capacity Information Site: Emily Road AM 2019 Not Developed GHDVals

Site ID: 101 Give-Way Sign Controlled Intersection

LANE PERFORMANCE

	Flow	Cap	Deg.		Eff.	Queue 95% Back	a e ck	Lane
Lane No.	veh/h	veh/h veh/h	Satn x	ве Тау sec	Stop Rate	veh	E	Length m
South: 1	Mo Mo	ala Street 1055 1950	(South) 0.541	0.1	0.1 0.00			500.0
North: 1	North: Koala Street (North) 1 267 1843 0.145	la Street 267 1843	(North) 0.145	0.7	0.7 0.01	0.2	0.2 1.1	500.0
West:] l	Emily Avenue 46 32	y Avenue 46 320	0.145	15.8	15.8 0.92	0.4	3.1	200.0

LANE FLOW AND CAPACITY INFORMATION

Lane Util %	100	100	100
Deg. Satn x	0.541	0.145	0.145
Tot Cap veh/h	(South) 5 1950	(North) 1843	320
Min V Cap Veh/h	Street (; 1055	Street (North) 267 1843	enue 6
Total Arv Flow veh/h	Koala St 1055		Emily Avenue 46
Lane No.	South: 1	North: Koala 1 267	West: 1

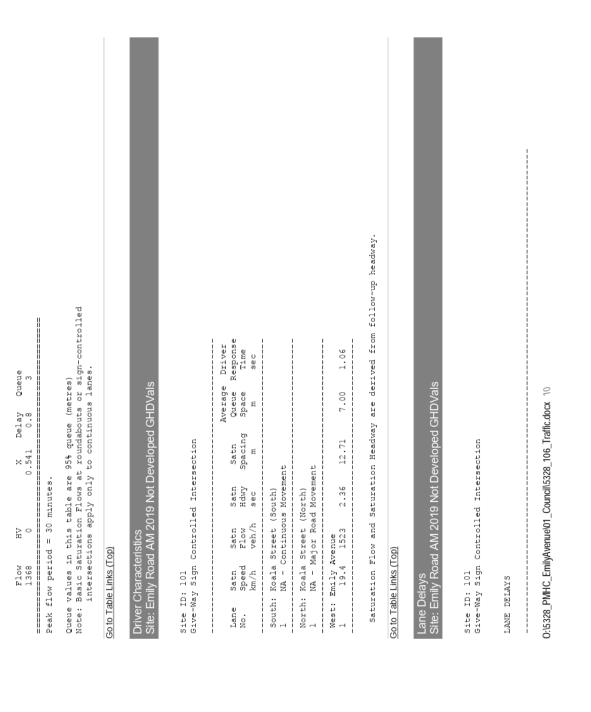
The capacity values of Continuous Lanes are obtained by adjusting the basic saturation flow for lane width, grade, movement class and turning vehicle effects. Saturation flow scale applies if specified.

Go to Table Links (Top)

Lane, Approach and Intersection Performance Site: Emily Road AM 2019 Not Developed GHDVals

Site ID: 101 Give-Way Sign Controlled Intersection

No.	Arrival Flow (veh/h)	ΛН&	Adj. Basic Satf.	Deg Sat X	Aver. Delay sec	Longest Queue m	Lane Length m
South: K l	Koala St 1055	reet 0	Street (South) 0 1950	0.541	0.1		500
I	1055	0		0.541	0.1		
North: K l	Koala St 267	Street 0	(North)	0.145	0.7	1	500
1	267	0		0.145	0.7	-	
West: Em l	Emily Avenue 46	nue 0		0.145	15.8	m	200
	46	0		0.145	15.8	т	
ALL VEHICLES Tota	CLES Total	ae I		Max	Aver.	Max	
\5328_PMH	C_EmilyAv	/enue/0	0:\5328_PMHC_EmilyAvenue\01_Council\5328_106_Traffic.docx	328_106_	Traffic.docx	6	



ATTACHMENT

								Delav (seconds/veh)	conds/	(veh)			
Lane No.	Deg. Satn x	% Arv During Green	Prog. g Factor	. Min or Del dm		-line 2nd d2	Dela Tota dSI	Acc. Dec.	Queuing Total MvUp dq dqm		Stopd (Idle) di	Geom (Geom Control dig dic
South: 1	Koala 0.541		Street (South)	-		0.1					0.0	0.1	
North: 1	North: Koala Street 1 0.145 NA	Street NA	(North) NA	0.5	0.6	0.0	0.6	б. О О. З	0.4	0.0	0.4	0.1	0.7
West: 1	West: Emily Avenue 1 0.145 NA	Avenue NA	AN	8.7	10.3	0.0	0.0 10.3	3.2	7.1	0.0	7.1	ب ب	15.8
SIDRA	SIDRA Standard Delay	ard Del	ay Model	SIDRA Standard Delay Model is used.		trol I	Control Delay is the sum of Stop-line Delay	s the s	sum of	Stop-1	ine De	elay	
	linimum storili	delay delay	for gap	and deconectic betay. dm: Minimum delay for gap acceptance cases der ersoningender den en den en den der den	nce cast	0 <u>2</u>							
il cp 4 : up 4 : pp	verage verage ueuing	stop-s delay	dou: Stop-line delay (Fulfue) dn: Average stop-start delay dq: Queuing delay (the part o	appl: sucprime delay (untar) dd: Average stop-start delay for all vehicles queued and unqueued dq: Queuing delay (the part of the stop-line delay that includes	all veh: = stop-1	icles line d	queued Welay th	and ur hat inc	nqueuec	71			
s dqm: dig: dig: dic:	stopped delay and gu dgm: Queue move-up delay dis: Stopped delay (stoppe dig: Geometric delay dic: Control delay	delay nove-up delay ric del delay	and que delay (stopped ay	stopped delay and queue move-up delay) dqm: Queue move-up delay dd: Stopped delay (stopped (idling) time at near-zero speed) dig: Geometric delay dic: Control delay	up dela: g) time	y) at ne	ar-zero	o speed	i)				
Go to Table Links (Top)	e Links (T	(do)											
Lane Queues Site: Emily Ro	ueues nily Roa	MA be	2019 No	Lane Queues Site: Emily Road AM 2019 Not Developed GHDVals	ped GHI	DVals							
Site ID: 101 Give-Way Sig	0: 101 IY Sign	Contro	lled Int	Site ID: 101 Give-Way Sign Controlled Intersection	ų								
BACK OF	BACK OF QUEUE (VEHICLES)	(VEHIC	LES)										
Lane No.	Deg. Satn 2 X G	å Arv å Arv During Green	Prog. Factor	Ovrfl. Queue No	Bac}	Back of C	Queue (veh) Nb 9	veh) 		Queue Stor. Ratio Av. 958	Prob. Block		Prob. SL Ov.

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ΝA

0.0

0.00 0.02

0.00

0.2

0.1

0.0

0.1

0.0

North: Koala Street (North) 1 0.145 NA NA

South: Koala Street (South)

NA

0.0

0.01

0.4

0.2

0.0

0.2

0.0

NA

West: Emily Avenue 1 0.145 NA

BACK OF QUEUE (DISTANCE)

		!	1	
Prob	n N N		NA	NA
Prob.	Ratio Block SLOV. 95% Av. 95% % %		0.0 0.4 0.0 0.4 1.1 0.00 0.00 0.0	0.0 1.3 0.0 1.3 3.1 0.01 0.02 0.0 NA
Stor.	сто 95 %		0.00	0.02
Queue	Ra Av.		0.00	0.01
(1	958		1.1	3.1
Back of Queue (m)	dn 2dn Idn		0.4	1.3
ck of C	Nb2		0.0	0.0
	IdN		0.4	1.3
ovrfl.	Queue No			0.0
Prog.	Factor	(South)	(North) NA	NA
Deg. & Arv Prog.	During Green	South: Koala Street (South)	North: Koala Street (North) 1 0.145 NA NA	Avenue NA
Deg.	Lane Satn No. x	: Koala	North: Koala Stree 1 0.145 NA	West: Emily Avenue 1 0.145 NA
,	Lane No.	South	North 1	West: 1

OTHER QUEUE RESULTS (VEHICLES)

	Deg.	8 Arv	Prog.	ovrfl.	Ovrfl. Cyc-Av.	Queue
No.	200C	Green	r accor	No	Nc	958
South: Koala	Koal		Street (South)			
North: Koala 1 0.145	: Koal 0.145	a Street NA	Street (North) NA NA	0.0	0.0	0.1
West: 1 C	Emily 0.145	West: Emily Avenue 1 0.145 NA	MA	0.0	0.1	0.2
		(Erikkmard) amitiadd dineiro ddumo	UNK HOLD	6		
C I DE N	SUPU:	REDUCT N	JANK CTO			

(TONETCEN) r) OTHER QUEL

The Freg. Contr. Cyc During Factor Queue	No. x Green No No 	0.0 0
	eet (South)	eet (South) eet (North) NA
	la Stre	la Stre =
Satn Satn x	1: Koal	uth: Koal
Lane No.	2011	North

M O HO		Give-Way Sign Controlled Intersection LANE QUEUE PERCENTILES (VEHICLES) Lane Satn	Give-Way Sign Control LANE QUEUE PERCENTILL Lane Sath No. 50% South: Koala Street North: Koala Street North: Koala Street 1 0.145 0.1 West: Emily Avenue 1 0.145 0.1 Mest: Emily Avenue 1 0.145 0.1 Lane PERCENTILL Lane Sath No. 50%	Controlled Inte (CENTILES (VEHIC 50% 70% 50% 70% Street (South) Street (North) 0.1 0.1 Venue Venue 0.2 0.2 CO12 0.2 CENTILES (DISTA CENTILES (DISTA CENTILES (DISTA	rtile B 1125) 1125) 1255) 1656 166 10.3 0.3 0.3 0.3 10.3 10.3 10.3 10.3 10	d Intersection (VEHICLES) Percentile Back of Queue (veh) 703 853 903 953 983 outh) 0.1 0.1 0.1 0.2 0.2 0.1 0.1 0.1 0.2 0.2 0.2 0.3 0.4 0.4 0.5 0.2 0.3 0.4 0.4 0.5 0.2 0.3 0.4 0.4 0.5 0.2 0.3 0.4 0.4 0.5 0.1 0.1 0.1 0.1 0.1 0.1 0.2 0.1 0.1 0.1 0.1 0.2 0.2 0.1 0.1 0.1 0.2 0.2 0.2 0.3 0.4 0.4 0.5 0.2 0.3 0.4 0.4 0.5 0.5 0.5 0.5 0.6 0.6 0.6 0.6 0.6 0.6 0.6 0.6 0.5 0.5 0.5 0.5 0.5 0.5 0.5 0.5 0.5 0.5	Dueue (.	veh) veh) 988 0.5 988 988	0.2
Emily Avenue 0.145 1.3 1.6 2.3 2.7 3.1 3.5	: Koala Street (North) 0.145 0.4 0.6 0.8 0.9 1.1 1.2	North: Koala 1 0.145	a Street 0.4		0.8	0.9	1.1	1.2	1.3
	Emily Avenue 0.145 1.3 1.6 2.3 2.7 3.1 3.5	West: Emily	Avenue 1.3	1.6	2.3	2.7	3.1	ю. Г	3.7

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Lane Stops Site: Emily Road AM 2019 Not Developed GHDVals

Site ID: 101 Give-Way Sign Controlled Intersection

hel Decem. Overall Stops Rate Noverups Quered hel he2 hig hgm Hgm pq 0.00 0.00 0.00 1.3 0.00 0.00 0.06 0.00 0.01 0.13 0.00 0.00 0.06 0.06 0.00 0.01 0.01 2.7 0.00 0.06 0.06 0.11 0.92 42.6 0.00 0.0 0.81 0.81		Deg.	8 Arv		王 王 一	fective	e Stop	Effective Stop Rate		-	Total Queue	Aver. Num. of
0.00 0.00 0.00 1.3 0.00 0.00 0.01 0.01 2.7 0.00 0.0 0.06 0.81 0.00 0.11 0.92 42.6 0.00 0.0 0.81	Lane No.	satn X	During Green		hel	he2	Geom. hig	overall h			Move-ups Hqm	Cycles to Depart
t (North) NA 0.00 0.00 0.01 0.01 2.7 0.00 0.0 0.06 NA 0.81 0.00 0.11 0.92 42.6 0.00 0.0 0.81	South: l	Koala 0.541	Street NA	(South) NA			0.00		1.3			
NA 0.81 0.00 0.11 0.92 42.6 0.00 0.0 0.81	North: 1	Koala 0.145	Street NA	(North) NA		00.0	0.01	0.01	2.7	00.0		0.06
	West: 1	Emily 0.145	Avenue NA	NA	0.81	00.0	0.11	0.92		0.00	0.0	0.81

Go to Table Links (Top)

Flow Rates

Origin-Destination Flow Rates (Total) Site: Emily Road AM 2019 Not Developed GHDVals

Site ID: 101 Give-Way Sign Controlled Intersection TOTAL FLOW RATES for All Movement Classes (veh/h)

From SOUTH To:	М	N	
Turn:	12	ΤT	TOT
Flow Rate	2.1	1052.6	1054.7
%HV (all designations)	0.0	0.0	0.0
From NORTH To:	S	М	
Turn:	ΤT	R2	TOT
Flow Rate	263.2	4.2	267.4

%HV (all designations)	0.0	0.0	0.0
From WEST To:	N	ν	
Turn: Flow Rate	33.7	R2 12.6	10T 46.3
HV (all designations)	0.0	0.0	0.0

Flow rates shown above are Arrival Flow Rates (veh/h) based on the following input specifications: Unit Time for Volumes = 60 minutes Feak Flow Period = 30 minutes Effects of Volume Factors (Peak Flow Factor, Flow Scale, Growth Rate) are included. Arrival Flow Rates may be less than Demand Flow Rates if capacity constraint applies in network analysis.

Go to Table Links (Top)

Origin-Destination Flow Rates by Movement Class Site: Emily Road AM 2019 Not Developed GHDVals

Site ID: 101 Give-Way Sign Controlled Intersection

FLOW RATES for Light Vehicles (veh/h)

					>
TOT	1054.7 100.0 - 0.0	TOT	267.4 100.0 - 0.0	TOT	46.3 100.0 Traffic docv
NIT	1052.6 100.0 1.00 0.95 0.0	W R2	4.2 100.0 1.00 0.95 0.0	s R2	3.7 12.6 0.0 100.0 Council\5328 106
N L2	2.1 100.0 1.00 0.95 0.95	а Ц	263.2 100.0 1.00 0.95 0.95	L2 L2	60
From SOUTH To: Turn:	Flow Rate Mov Class % Flow Scale Peak Flow Factor Residual Demand	From NORTH To: Turn:	Flow Rate Mov Class & Flow Scale Peak Flow Factor Residual Demand	From WEST To: Turn:	Flow Rate Mov Class & 1 O.45328 DMHC FmilvAvenue001

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I	ľ	0.0	
1.00	0.95	0.0	
Ō.	0.95	0.0	
Flow Scale	Peak Flow Factor	Residual Demand	

Flow rates shown above are Arrival Flow Rates (veh/h) based on the following input specifications: Unit Time for Volumes = 60 minutes Peak Flow Period = 30 minutes Arrival Flow Factors (Peak Flow Factor, Flow Scale, Growth Rate) are included. Arrival Flow Rates may be less than Demand Flow Rates if capacity constraint applies in network analysis.

Go to Table Links (Top)

Lane Flow Rates Site: Emily Road AM 2019 Not Developed GHDVals

:

Site ID: 101 Give-Way Sign Controlled Intersection

LANE FLOW RATES AT STOP LINE (veh/h)

i.

i.

1 1

TOT	1054.7 1054.7	1054.7	TOT	267.4 267.4	267.4	TOT	46.3 46.3	46.3
NLI	1052.6 1052.6	1052.6	м R.2	4.2	4.2	s В2	12.6 12.6	12.6 InciN6220
W L2	2.1 2.1	2.1	s T1	263.2 263.2	263.2	N L2	33.7 33.7	33.7 Monitol01 Coi
From SOUTH To: Turn:	Lane l LV Total	Approach	From NORTH To: Turn:	Lane l LV Total	Approach	From WEST To: Turn:	Lane l LV Total	Approach 0.16220 DMHC EmilvAvo

i.

. .

.

EXIT LANE FLOW RATES

Movement C	Class:	LV	НΛ	TOT
Exit: SOUTH Lane: l Total	HL	275.8 275.8	* *	275.8 275.8
Exit: NORTH Lane: l Total		1086.3 1086.3	* *	1086.3 1086.3
Exit: WEST Lane: l Total	Et.	6.3 6.3	* *	6.3 6.3

* Movement not allocated to the lane

DOWNSTREAM LANE FLOW RATES FOR EXIT ROADS

Movement	nt Class:	ΓΛ	НΛ	TOT
Exit: Lane: Total	SOUTH 1	275.8 275.8	* *	275.8 275.8
Exit: Lane: Total	NORTH 1	1086.3 1086.3	* *	1086.3 1086.3
Exit: Lane: Total	WEST l	6.3 6.3	* *	6.3 6.3

* Movement not allocated to the lane

Flow rates shown above are Arrival Flow Rates (veh/h) based on the following input specifications: Unit Time for Volumes = 60 minutes Peak Flow Period = 30 minutes Effects 0 Volume Factors (Peak Flow Factor, Flow Scale, Growth Rate) are included. Arrival Flow Rates may be less than Demand Flow Rates if capacity constraint applies in network analysis.

Go to Table Links (Top)

r arameter Seturity Summary Site: Emily Road AM 2019 Not Developed CHDVals	
Site ID: 101 Give-Way Sign Controlled Intersection	
Basic Parameters: Intersection Type: Unsignalised - Give Way Driving on the left-hand side of the road Input data specified in Metric units Model Defaults: New South Wales	
Peak Flow Period (for performance): 30 minutes Unit time (for volumes): 60 minutes. SIDRA Standard Delay model used SIDRA Standard Queue model used Level of Service based on: Delay (RTA NSW) Queue percentile: 93%	
Go to Table Links (Top) Diagnostics Site: Emily Road AM 2019 Not Developed GHDVals	
Site ID: 101 Give-Way Sign Controlled Intersection	
Lane Flow-Capacity Iterations:	
Site Model Variability Index (Iterations 3 to N): 0.0% Number of Iterations: 3 (Maximum: 10)	
Other Diagnostic Messages (if any):	
Go to Table Links (Top)	

Organisation: KING & CAMPBELL PTY LTD | Processed: Monday, 11 March 2019 1:48:03 PM Project: 0:5328_PMHC_EmilyAvenue/22_Engineering/Emily Ave 50existing 2019-2039 GHDMaxValuesNoRate.sip8

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Model Scenario: AM Peak Hour, Year 2019, Post-Developed

DETAILED OUTPUT

V Site: 101 [Emily Road AM 2019 Developed GHDVals]

Giveway / Yield (Two-Way) Site Category: (None) New Site

OUTPUT TABLE LINKS

Sign Control

Sign Control Basic Parameters Gap Acceptance Parameters

រាំវិរិកMovements

Movement Capacity and Performance Parameters Intersection Negotiation and Travel Data Fuel Consumption, Emissions and Cost

MLanes

Lane, Approach and Intersection Performance Driver Characteristics Lane Performance and Capacity Information Lane Delays

Lane Queues

Lane Queue Percentiles

Lane Stops

Origin-Destination Flow Rates (Total) Origin-Destination Flow Rates by Movement Class Lane Flow Rates 🕼 Flow Rates

Cother

Parameter Settings Summary Diagnostics

Sign Control

Sign Control Basic Parameters Site: Emily Road AM 2019 Developed GHDVals

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West: Emily A	Values in th Use the Pede O:15328_PMHC_Emit
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Give-Way Sign Controlled Intersection Site ID: 101

NA Not Applicable (single Site analysis or unconnected Site in Network analysis). N Program option resulted in zero value (single Site analysis or unconnected Site in Network analysis). Extra Bunching 0.0N N0.0 0.0N Prop Queued Upstr Signal NA NA NA App Dist South: Koala Street (South) Major Road Two Way 500 500 200 E North: Koala Street (North) Major Road Two Way 500 Leg Geometry Тио Way West: Emily Avenue Approach Control Giveway

Go to Table Links (Top)

Gap Acceptance Parameters Site: Emily Road AM 2019 Developed GHDVals

Site ID: 101 Give-Way Sign Controlled Intersection

Critical Gap Entry HV Pr opn Bn chd Intra Bunch Hdwy Dest

Foll-up Headway 20 20 20 Dist E Hdwy sec Equiv 200 200 South: Koala Street (South) Opng Flow pcu/h Opd Lane

No opposed movements on this approach.

2.00 2.80 71.5 66.7 66.6 4.30 4.00 1.00 1.00 0.151 0.182 0.182 1.80 1.28 Street (North) Avenue S 1322+ N 1053+ 1055 Μ

his table are adjusted for movement classes in the entry stream. estrians and Priorities input dialogs to specify opposing pedestrian movements.

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flow
vehicle
opposing
ų,
included
flow
exiting
ę
Percentage
+

Go to Table Links (Top)

Movements

Intersection Negotiation and Travel Data Site: Emily Road AM 2019 Developed GHDVals

Site ID: 101 Give-Way Sign Controlled Intersection

TRAVEL SPEED, TRAVEL DISTANCE AND TRAVEL TIME

From Approach	To Exit	Turn	Running Speed km/h	Travel Speed km/h	Travel Distance m	Travel Time s	Total Travel Distance Dem Flows Arv Flows veh-km/h veh-km/h	l Distance Arv Flows veh-km/h	Tot.Trav. Time veh-h/h
South: Koala Street West North	la Street West North	(South) L2 T1	57.5 59.8	57.5 59.8	710.0# 1010.0#	44.4# 60.8#	1.5 1063.2	1.5 1063.2	0.0 17.8
North: Koala Street South West	a Street South West	(North) T1 R2 R2	59.6 56.3	59.1 55.7	1010.0# 710.0#	61.5# 45.9#	265.8 3.7	265.8	4.5
West: Emily Avenue North South	/ Avenue North South	L2 R2	48.1 47.5	42.4 41.9	714.3# 714.3#	60.7# 61.4#	30.8 11.3	30.8 11.3	0.7
ALL VEHICLES	ES:		59.2	58.9	995.8#	60.9#	1376.3	1376.3	23.4

"Running Speed" is the average speed excluding stopped periods.

Travel Time values include cruise times and intersection delays including acceleration, deceleration and idling delays.

Travel Distance and Travel Time values include travel on the External Exit section based on the Exit Distance or user-specified Downstream Distance value as applicable. #

INTERSECTION NEGOTIATION DATA

Downstr Dist Exit Dist App Dist Negn Dist 0:\5328_PMHC_EmilyAvenue\01_Council\5328_106_Traffic.docx 21 Negn Negn Radius Speed 0 H From

South:	Koala Street West North	(South) L2 T1	10.0 S	20.2 60.0	15.7 10.0	500	200	NA NA
North:	Koala Street South West	(North) T1 R2	5.6 6.6	60.0 17.2	10.0 10.4	500	500 200	NA NA
West: N	Emily Avenue North South	L2 R2	10.0 6.6	20.2 17.2	15.7 10.4	200	500	NA NA
NA Do A	vwnstream Exit is "Program Distance Distance	<pre>I Distance does not an internal leg of i" option was specif specified was less specified was grea</pre>			f: ck be Exit the exit	t Negotiat exit leg .	pply if: u network than the Exit Negotiation Distance than the exit leg length	cance
Some	Negotiation Radius, Speed or Distance values	ladius, S	peed oi	r Distar	nce valu	are	user spe(specified.

MOVEMENT SPEEDS AND GEOMETRIC DELAY

App. Speeds E App. Speeds E Cruise Negn b Cruise Negn b M/h Mm/h M/h b 12 60.0 20.2 2 T1 60.0 60.0 6 T1 60.0 60.0 6 T1 60.0 60.0 6 T1 60.0 60.0 6 T1 2 10.0 17.2 1 Emily Avenue

Go to Table Links (Top)

Movement Capacity and Performance Parameters Site: Emily Road AM 2019 Developed GHDVals

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E

E

E

km/h

E

Turn

Approach Exit

Site ID: 101 Give-Way Sign Controlled Intersection

MOVEMENT CAPACITY PARAMETERS

NoV	Turn	Mov Cl.	Arv Flow	-	ω W		Prac. Deg. Satn	Prac. Spare Cap.	Sa
South: 2	Koala L2 # T1 #		ven/n Street (3 1053	n ven/n (South) 0 0	0 0	ven/n 4 1946	42 0.98 0.98	81 81	x 0.541* 0.541*
North: 8 9	Коаlа т1 # R2 #	1	Street (1 263 5	(North) 0 1055		1783 36	0.98 0.98	564 564	0.148 0.148
West: 1 10 12	Emily L2 R2	Emily Avenue L2 # R2 #	enue 43 16	1053 1322	1053 1322	235 86	0.80	335 335 337	0.184

Maximum degree of saturation
 Combined Movement Capacity parameters are shown for all Movement Classes.

MOVEMENT PERFORMANCE

Mov ID	Turn Total Delay (veh-h/)	Total Delay /eh-h/h) (j	Total Total Aver. Delay Delay Delay veh-h/h)(pers-h/h)(sec)	Aver. Delay (sec)	Eff. Stop Rate	Total Stops	Perf. Index	Tot.Trav. Tot.Trav. Aver. Distance Time Speed (veh-km/h) (veh-h/h) (km/h)	Tot.Trav. Time (veh-h/h)	Aver. Speed (km/h)
South: 1 2	Koala L2 T1	Koala Street (South) L2 0.00 0.00 T1 0.03 0.03	(South) 0.00 0.03	5.6 0.1	0.00	0.0 1.3	0.0 0.03 1.3 17.75	1.5 1063.2	0.0 17.8	57.5 59.8
North: 8 9	Koalé Tl R2	North: Koala Street (North) 8 Tl 0.04 0.05 9 R2 0.02 0.03		0.6 15.3	0.01	3.3 0.1	3.3 4.57 0.1 0.16	265.8 3.7	4.5 0.1	59.1 55.7
West: 10 12	Emily L2 R2	West: Emily Avenue 10 L2 0.17 12 R2 0.09	0.20	14.2 21.5	0.93 0.93	40.1 14.7	1.14 0.60	30.8 11.3	0.7	42.4 41.9

Go to Table Links (Top)

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Site ID: 101 Give-Way Sign Controlled Intersection

FUEL CONSUMPTION, EMISSIONS AND COST (TOTAL)

Turn

MoV ID

Mov Turn ID	Cost Total \$/h	Fuel Total L/h	CO2 Total kg/h	CO Total kg/h	HC Total kg/h	NOX Total kg/h
South: Koala S 1 L2 2 Tl	Street (South) 0.71 377.55	h) 0.1 60.1	0.2 141.3	0.00	0.000	0.000
	378.26	60.2	141.5	0.18	0.010	0.027
North: Koala S 8 Tl 9 R2	Street (North 99.53 1.89	h) 15.7 0.2	36.8 0.5	0.05	0.003	0.008
	101.42	15.9	37.4	0.05	0.003	0.008
West: Emily Avenue 10 L2 12 R2	venue 19.36 7.08	3.0 1.1	7.1 2.6	0.01	0.001	0.002
	26.45	4.1	9.7	0.01	0.001	0.003
INTERSECTION:	: 506.13	80.3	188.6	0.24	0.014	0.038

FUEL CONSUMPTION, EMISSIONS AND COST (RATE)

1	CC 7.1 5/1	Cost F Rate F \$/km L/l	Fuel Rate L/100km	CO2 Rate g/km	CO Rate g/km	HC Rate g/km	NOX Rate g/km
			5.7	133.0 132.9	0.17 0.17	0.010	0.026
		0.36	5.7	132.9	0.17	0.17 0.010	0.026
	la Street	(North) 0.37	6.0	138.6	(North) 0.37 5.9 138.6 0.18	0.010	0.029

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9 R2	0.51	6.0	<pre>6.0 141.0 0.18 0.011 0.030</pre>	0.18	0.011	0.030
	0.38	5.9	138.6	0.18	138.6 0.18 0.010 0.029	0.029
West: Emily Avenue						
10 L2	0.63	9.8		0.26	0.021	0.078
12 R2	0.63	9.8	230.7	0.26	0.021	0.078
	0.63	8.6	230.7	0.26	230.7 0.26 0.021 0.078	0.078
INTERSECTION:	0.37		5.8 137.0 0.18 0.010 0.028	0.18	0.010	0.028

Go to Table Links (Top)

Lanes

Lane Performance and Capacity Information Site: Emily Road AM 2019 Developed GHDVals

Site ID: 101 Give-Way Sign Controlled Intersection

LANE PERFORMANCE

	Flow	Cap	Deg.	Aver.	Eff.	Queue 95% Back	e K	Lane
Lane No.	veh/h	veh/h veh/h	сасл Х	ьтау sec	stop Rate	veh	B	nengtn m
South: 1	Koala Street 1055 1950	ala Street 1055 1950	-	0.1	0.1 0.00			500.0
North: I	North: Koala Street (North) 1 268 1819 0.148	стеет 1819	(North) 0.148	6.0	0.9 0.01	0.2	1.4	500.0
Vest: 1		enue 321	0.184	16.1	16.1 0.93	0.6	4.1	200.0

LANE FLOW AND CAPACITY INFORMATION

 Lane Util	
 Deg. Satn	
 Tot Cap	
 Min Cap	
 Total Arv Flow	
Lane No.	

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٩Þ	100	100	100
×	0.541	0.148	0.184
veh/h veh/h	(South) 1950	(North) 5 1819	321
	Street (1055	Street (265	venue 6
veh/h	South: Koala 1 1055	Koala 268	Emily Avenue 59
	South: 1	North: 1	West: l

The capacity values of Continuous Lanes are obtained by adjusting the basic saturation flow for lane width, grade, movement class and turning vehicle effects. Saturation flow scale applies if specified.

Go to Table Links (Top)

Lane, Approach and Intersection Performance Site: Emily Road AM 2019 Developed GHDVals

Site ID: 101 Give-Way Sign Controlled Intersection

Lane No.	Arrival Flow (veh/h)	VH8	Adj. Basic Satf.	Deg Sat	Aver. Delay sec	Longest Queue m	Lane Length m
South: 1	Koala St 1055	creet 0	Street (South) 0 1950	0.541	0.1		500
	1055	0		0.541	0.1		
North: 1	Koala St 268	reet 0	Street (North) 0	0.148	6.0	1	500
	268	0		0.148	6.0	1	
West:] l	Emily Avenue 59	enue 0		0.184	16.1	4	200
	59	0		0.184	16.1	4	
ALL VEHICLES Tota Flow 1382	HICLES Total Flow 1382	* > 0 8		Max X 0.541	Aver. Delay 0.9	Max Queue 4	
Peak fl	Peak flow period	п	30 minutes				

Go to Table Links (Top) Driver Characteristics Site: Emily Road AM 2019 Developed GHDVals Site ID: 101 Give-Way Sign Controlled Intersection Average Driver Average Driver Average Driver No. Speed Flow Hdwy Space Time No. Speed Flow Hdwy Space Time South: Koala Street (South)	North: Koala Street (North) 1 NA - Major Road Movement West: Emily Avenue 1 19.4 1525 2:36 12.71 7.00 1.06 Saturation Flow and Saturation Headway are derived from follow-up headway.	Go to Table Links (Top) Lane Delays Site: Emily Road AM 2019 Developed GHDVals site ID: 101 site ID: 101 Give-Way Sign Controlled Intersection	Deg. & Arv Prog. Min Stop-line Delay (seconds/ven)
-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------	---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------	---------------------------------------------------------------------------------------------------------------------------------------------------------------	----------------------------------------------------

	North: Koala Street (North)									*	
	AN	0.6	0.8	0.0	0.8	0.3	0.5	0.0	0.5	0.1	0.9
	MA	8.6	10.4	0.2	10.6	3.2	7.4	0.1	7.3	5.5	16.1
: M	SIDRA Standard Delay Model	is used.		trol De	Control Delay is	thes	the sum of 3	Stop-line Delay	ine Del	аy	
	and Geometric Delay. dm: Minimum delay for gap acc ddsL: Stop-line delay (=dl+d2) dn: Average stop-start delay dq: Queuing delay (the part o	and Geometric Delay. dm: Minimum delay for gap acceptance cases dSL: Stop-line delay (=dl+d2) dSL: stop-start delay for all vehicles queued and unqueued dq: Queuing delay (the part of the stop-line delay that includes	ice cast [] veh: stop-]	es icles c line de	queued Lay th	and un at inc	que ued ludes				
stopped delay a dqm: Queue move-up di: Stopped delay dig: Geometric dela dic: Control delay	stopped delay and queu dqm: Queue move-up delay dd: Stopped delay (stopped dig: Geometric delay dig: Control delay	stopped delay and queue move-up delay) dqm: Queue move-up delay dd: Stopped delay (stopped (idling) time at near-zero speed) ddg: Geometric delay dic: Control delay	ip dela 1) time	y) at nea	r-zero	speed	~				
	019 Dev	Lane Queues Site: Emily Road AM 2019 Developed GHDVals	GHDVa	s							
	led Int	Controlled Intersection	ç								
- F1	QUEUE (VEHICLES)										
	Prog.	ovrfl.	Bacl	Back of Qu	Queue (v	(veh)	Queue	Queue Stor.	Prob.	1	
	r'actor	Queue No	IdN	Nb2	qN	958	ka Av.	катіо . 95%	BLOCK	л х	*
	Street (South)										
Street NA	(North) NA	0.0	0.1	0.0	0.1	0.2	0.00	00.0	0.0) NA	R
	NA	0.0	0.2	0.0	0.2	0.6	0.01	0.02	0.0	NA (A

BACK OF QUEUE (DISTANCE) 0:15328_PMHC_EmilyAvenue/01_Council/5328_106_Traffic.docx 28

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Go to Table Links (Top)

Queue Stor. Prob. Prob. Ratio Block SL Ov. Av. 95% % % NA 0.0 00.0 0.00 1.4 958 Back of Queue (m) 0.5 ß Nb2 0.0 0.5 IdN Ovrfl. Queue No 0.0 Prog. Factor North: Koala Street (North) 1 0.148 NA NA South: Koala Street (South) Deg. % Arv 1 Satn During 1 x Green Lane No.

West: Emily Avenue 1 0.184 NA NA 0.1

NA

0.0

0.02

0.01

4.1

1.6

0.0

1.6

OTHER QUEUE RESULTS (VEHICLES)

Queue 95%		0.1	0.3
Ovrfl. Cyc-Av. Queue Queue 95%		0.1	0.2
Ovrfl. Queue No		0.0	0.0
Frog. Factor	(South)	(North) NA	MA
% Arv buring Green	Street	North: Koala Street 1 0.148 NA	Avenue NA
Deg. Satn x	South: Koala	1: Koala 0.148	West: Emily Avenue 1 0.184 NA
Lane No.	South	North 1 (West: 1 (

OTHER QUEUE RESULTS (DISTANCE)

Queue 95%		0.7	2.2
Ovrfl. Cyc-Av. Queue Queue 95%		0.4	1.2
Ovrfl. Queue No		0.0	0.1
Prog. Factor	(South)	(North) NA	NA
% Arv buring Green	ŝ	North: Koala Street 1 0.148 NA	Avenue NA
Deg. Satn x	Koala	h: Koala 0.148	West: Emily Avenue 1 0.184 NA
Lane No.	South:	North: 1 0	West: 1 0

Lane Deg. Percentile Lane Satn 50% 70% 81% No.th: Koala Street (South) 81% South: Koala Street (South) 0.1 0.1 0.1 North: Koala Street (South) 0.1 0.1 0.1 North: Koala Street (North) 0.1 0.1 0.1 0.1 Mest: Emily Avenue 0.1 0.1 0.1 0.1 0.4 Mest: Emily Avenue 0.2 0.3 0.4 0.4 LANE OLEUE PERCENTILES 0.3 0.4 0.4 Lane Deg. Peg. 0.3 0.4 0.4 No. Satn	NTILE: Soa 50a 1112 Sreet t 0.1 50a 11112 Soa 11112	LANE QUEUE PERCENTILES (VEHICLES) Lane Deg. Percentile Lane Satn Percentile North: Koala Street (South) North: Koala Street (North) North: Koala Street (North) North: Koala Street (North) North: Koala Street (North) North: Koala Street (South) North: Koala Street (South) Lane Satn	(VEHICLES) Percentile Back of Queue (veh) 70% 85% 90% 95% 98% outh) 001 0.2 0.2 011 0.1 0.2 0.2 0.3 0.4 0.5 0.6 0.6 0.3 0.4 0.5 0.6 0.6 Percentile Back of Queue (metres) 70% 85% 90% 95% 96% 95% 98%	ack of (90% 0.5 0.5 90%	2014 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	veh) veh) 98% 0.2 0.6 0.6 98%	0.2
South: Koala Street (South) 	creet creet 0.5	(South) 	1.0	1.2	1.4	1.5	1.6
West: Emily Avenue	nue	2.1	3.0	3.5	4.1	4.5	8.8

Lane Queue Percentiles

	Intersection
	Controlled
101	Sign
Site ID:	Give-Way

	Deg.	8 Arv			fective	Stop	Effective Stop Rate		Queue Move-up	Total Queue	Prop.	Aver. Num. of
Lane No.	Satn X	During Green	Factor	hel	he2	Geom. hig	Geom. Overall hig h	Stops H	Rate hqm	Move-ups Hqm	Queued	Cycles to Depart
South:	Koala 0.541	South: Koala Street (South) 1 0.541 NA NA	(South) NA			00.0	0.00	1.3				
rth: (Koala 0.148	Street NA	North: Koala Street (North) 1 0.148 NA NA	00.0	00.0	10.0	0.00 0.00 0.01 0.01	3.4	0.00	0.0	0.07	0.07
8 t: 1	Emily 2 0.184	West: Emily Avenue 1 0.184 NA	NA	0.82	0.82 0.01 0.11	0.11	0.93	54.8	0.03	1.5	0.82	0.84

Go to Table Links (Top)

Flow Rates

Origin-Destination Flow Rates (Total) Site: Emily Road AM 2019 Developed GHDVals

Site ID: 101 Give-Way Sign Controlled Intersection TOTAL FLOW RATES for All Movement Classes $(\ensuremath{\,veh}\xspace)/h$

58.9	0.0	
15.8	0.0	
	0.0	
Flow Rate	8HV (all designations)	

Flow rates shown above are Arrival Flow Rates (veh/h) based on the following input specifications: Unit Time for Volumes = 60 minutes Peak Flow Period = 30 minutes Ffects of Volume Factors (Peak Flow Factor, Flow Scale, Growth Rate) are included. Arrival Flow Rates may be less than Demand Flow Rates if capacity constraint applies in network analysis.

Go to Table Links (Top)

Origin-Destination Flow Rates by Movement Class Site: Emily Road AM 2019 Developed GHDVals

Site ID: 101 Give-Way Sign Controlled Intersection

FLOW RATES for Light Vehicles (veh/h)

TOT	1054.7 100.0 -	TOT	268.4 100.0 - 0.0	TOT	58.9 100.0
NLT	1052.6 100.0 1.00 0.95 0.0	W R2	5.3 100.0 1.00 0.95 0.0	s R2	15.8 100.0 1.00 0.95 0.0
M L2	100.0 1.00 0.95 0.0	αH	263.2 100.0 1.00 0.95 0.0	LO LO	43.2 100.0 1.00 0.95 0.0
From SOUTH To: Turn:	Flow Rate Mov Class % Flow Scale Peak Flow Factor Residual Demand	From NORTH To: Turn:	Flow Rate Mov Class % Flow Scale Peak Flow Factor Residual Demand	From WEST To: Turn:	Flow Rate Mov Class % Flow Scale Peak Flow Factor Residual Demand

ications:					
specif:				s in	
Flow rates shown above are Arrival Flow Rates (veh/h) based on the following input specifications:	Unit Time for Volumes = 60 minutes	inutes	Effects of Volume Factors (Peak Flow Factor, Flow Scale, Growth Rate) are included.	Arrival Flow Rates may be less than Demand Flow Rates if capacity constraint applies in	
above ai	Lumes =	= 30 mj	e Factors	es may be	
es shown	he for Vol	Peak Flow Period = 30 minutes	of Volume	Flow Rate	network analysis.
Flow rat	Unit Tin	Peak Flo	Effects	Arrival	network

Go to Table Links (Top)

Lane Flow Rates Site: Emily Road AM 2019 Developed GHDVals

Site ID: 101 Give-Way Sign Controlled Intersection

FLOW RATES AT STOP LINE (veh/h) LANE

N Tl TOT	1052.6 1054.7 1052.6 1054.7	1052.6 1054.7	W R2 TOT	5.3 268.4 5.3 268.4	5.3 268.4	s R2 TOT	15.8 58.9 15.8 58.9	15.8 58.9	
W L2	2.1	2.1	а Ц	263.2 263.2	263.2	N L2	43.2 43.2	43.2	
From SOUTH To: Turn:	Lane l LV Total	Approach	From NORTH To: Turn:	Lane l LV Total	Approach	From WEST To: Turn:	Lane l LV Total	Approach	

EXIT LANE FLOW RATES O:5328_PMHC_EmilyAvenue/01_Council/5328_106_Traffic.docx 33

Movement Class:	ΓΛ	НΥ	TOT
Exit: SOUTH Lane: l Total	278.9 278.9	* *	278.9 278.9
Exit: NORTH Lane: l Total	1095.8 1095.8	* *	1095.8 1095.8
Exit: WEST Lane: l Total	7.4 7.4	* *	7.4 7.4
* Movement not	allocated	to the	e lane

DOWNSTREAM LANE FLOW RATES FOR EXIT ROADS

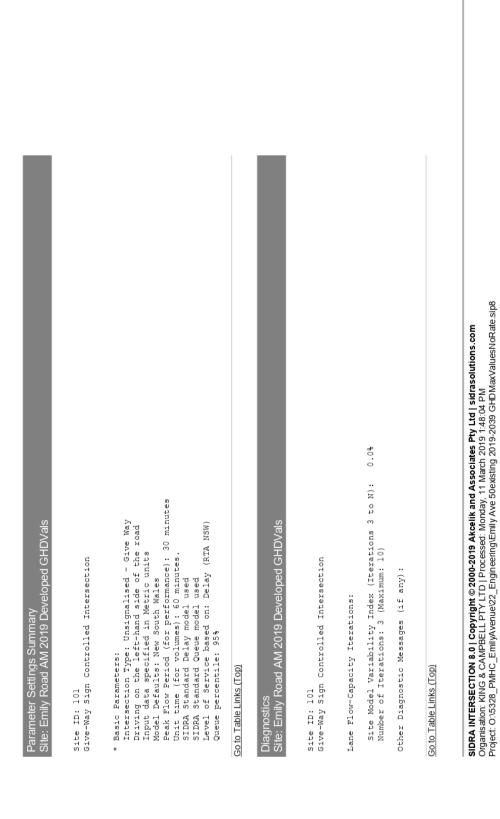
TOT	278.9 278.9	1095.8 1095.8	7.4 4.7
	0.0	10	
НΛ	* *	* *	* *
ΓΛ	<u>م م</u>	00 00	ক ক
	278 278	1095 1095	~~
Class:	LNO	NORTH 1	WEST 1
lent			
Movement	Exit: Lane: Total		

* Movement not allocated to the lane

Flow rates shown above are Arrival Flow Rates (veh/h) based on the following input specifications: Unit Time for Volumes = 60 minutes Peak Flow Period = 30 minutes Effects of Volume Factors (Peak Flow Factor, Flow Scale, Growth Rate) are included. Arrival Flow Rates may be less than Demand Flow Rates if capacity constraint applies in network analysis.

Go to Table Links (Top)

Other



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ATTACHMENT

		SI						ISS		
New Site Site Category: (None) Giveway / Yield (Two-Way)	OUTPUT TABLE LINKS	Sign Control Sign Control Basic Parameters Gap Acceptance Parameters Intersection Negotiation and Travel Data Intersection Negotiation and Performance Parameters	Tate consumption, Emissions and cost	Lane Performance and Capacity Information Lane, Approach and Intersection Performance Driver Characteristics	Lane Delays Lane Queues	Lane Queue Percentiles Lane Stops	Ir Flow Rates	Origin-Destination Flow Rates (Total) Origin-Destination Flow Rates by Movement Class Lane Flow Rates	Continent	Parameter Settings Summary Diagnostics

Model Scenario: AM Peak Hour, Year 2039, Pre-Developed

				NA Not Applicable (single Site analysis or unconnected Site in Network analysis). N Program option resulted in zero value (single Site analysis or unconnected Site in Network analysis).				Foll-up Headway sec			6	2.80
				ed Site in e analysid				Critical Gap 			0 66.6	0 71.5
a hing	N0.0	0.0N	0.0N	onnect le Sit				-			4.00	4.30
Extra Bunching %	0.0	0.0	0.0	or unc (sing.		DVals		Entry HV Equiv			1.00	1.00
Prop Queued Upstr Signal	NA	NA		analysis zero value		Gap Acceptance Parameters Site: Emily Road AM 2039 Not Developed GHDVals	ction	Propn Bnchd		No opposed movements on this approach.	0.182	0.150
App Pr Dist Up m	500 500	.h) 500	200	e Site ed in		s lot Dev	nterse	Intra Bunch Hdwy sec	(h)	this a	h) 1.80	1.28
i	(South	(North		(singl result Ysis).		ameten 2039 N	lled I	Opng Flow pcu/h	(Sout	its on	(Nort	l 321+
Leg Geometry	Street (Two Way	Street Two Way	.venue Two Way	Not Applicable (single Program option results in Network analysis).	Top)	ce Para ad AM :	Contro		South: Koala Street (South)	novemer	North: Koala Street (North) 1 w 1055 1	
	Koala : Road	Koala Road	mily Avenu y Two	t Appl: ogram (Netwol	e Links (ceptand nily Roa	: 101 Y Sign	Dest	Koala	posed r	Koala	Emily 2
Approach Control	South: Koala Street (South) Major Road Two Way 50	North: Koala Street (North) Major Road Two Way 50	West: Emily Avenue Giveway Two Wa	NA No N Pr in	Go to Table Links (Top)	Gap Acceptance Parameters Site: Emily Road AM 2039 No	Site ID: 101 Give-Way Sign Controlled Intersection	Opd Lane	South:	No op]	North: 1	West: 1

Sign Control Basic Parameters Site: Emily Road AM 2039 Not Developed GHDVals

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Values in this table are adjusted for movement classes in the entry stream. Use the Pedestrians and Priorities input dialogs to specify opposing pedestrian movements. + Percentage of exiting flow included in opposing vehicle flow

Go to Table Links (Top)

Movements

Intersection Negotiation and Travel Data Site: Emily Road AM 2039 Not Developed GHDVals

Site ID: 101 Give-Way Sign Controlled Intersection

TRAVEL TIME TRAVEL SPEED, TRAVEL DISTANCE AND

From Approach E	To Exit	Turn	Running Speed km/h	Travel Speed km/h	l Travel Distance m	Travel Time s	Total Trave Dem Flows veh-km/h	Total Travel Distance Dem Flows Arv Flows veh-km/h veh-km/h	Tot.Trav. Time veh-h/h
South: Koala	Koala Street West North	(South) L2 T1	57.5 59.8	57.5 59.8	710.0# 1010.0#	44.4# 60.8#	1.5 1063.2	1.5 1063.2	0.0 17.8
North: Koala	Koala Street (North) South Tl West R2	(North) T1 R2	59.7 56.4	59.3 55.9	1010.0# 710.0#	61.3# 45.7#	265.8 3.0	265.8 3.0	4.5 0.1
West: Emily Avenue North South	Avenue North South	L2 R2	48.3 47.7	42.6 42.1	714.3# 714.3#	60.3# 61.0#	24.1 9.0	24.1 9.0	0.6 0.2
ALL VEHICLES	53 : 5		59.4	59.1	998.6#	60.8#	1366.5	1366.5	23.1

"Running Speed" is the average speed excluding stopped periods.

Travel Time values include cruise times and intersection delays including acceleration, deceleration and idling delays. Travel Distance and Travel Time values include travel on the External Exit section based on the Exit Distance or user-specified Downstream Distance value as applicable. #

INTERSECTION NEGOTIATION DATA

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Go to Table Links (Top)

From Approach	To Exit	Turn	Negn Radius m	Negn Speed km/h	Negn Dist m	App Dist m	Exit Dist m	Downstr Dist m
South: Koala Street (South) West L2 North T1	a Street West North	(South) L2 T1	10.0 s	20.2 60.0	15.7 10.0	500	200	AN AN
North: Koala Street (North) South Tl West R2	a Street South West	(North) T1 R2	6.6	60.0 17.2	10.0 10.4	500	500 200	AN AN
West: Emily	Emily Avenue North South	L2 R2	10.0 6.6	20.2 17.2	15.7 10.4	200 200	500 500	NA NA
NA Downst - Exit - "Pro	Downstream Distance does not apply if: - Exit is an internal leg of a network - "Program" option was specified	<pre>I Distance does not an internal leg of " option was specif</pre>	es not app eg of a n specified	apply if: a network ied	×			

Distance specified was less than the Exit Negotiation Distance
 Distance specified was greater than the exit leg length

Some Negotiation Radius, Speed or Distance values are user specified.

MOVEMENT SPEEDS AND GEOMETRIC DELAY

	dedm Belay sec	5.5	5.4	5.5
i C	มัย ชื่อ ชื่อ	юõ	ο'n	ທີ່ທີ່
Queue	Speed km/h		0.2	11.8 11.8
Exit Speeds	Negn Cruise km/h km/h	60.0 60.0	60.0 60.0	60.0 60.0
Exit	Negn km/h	20.2	60.0 17.2	20.2 17.2
eds	legn m∕h	(South) 20.2 60.0	(North) 60.0 17.2	20.2 17.2
App. Speeds	Cruise N km/h k	Street 60.0 60.0	Street 60.0 60.0	Avenue 60.0 60.0
	Turn	Koala L2 T1	Koala Tl R2	Emily L2 R2
	MoV	South: Koala S 1 L2 6 2 T1 6	North: Koala S 8 Tl 6 9 R2	West: Emily Avenue 10 L2 60.0 12 R2 60.0

ATTACHMENT

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Site ID: 101 Give-Way Sign Controlled Intersection

MOVEMENT CAPACITY PARAMETERS

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Deg. Satn x	0.541* 0.541*	0.145 0.145	0.145 0.145
Prac. Spare Cap. &	81 81	576 576	452 452
Prac. Deg. Satn xp	0.98 0.98	0.98 0.98	0.80
Total Cap. veh/h	4 1946	1814 29	233 87
Opng Movement Adjust. Flow Flow veh/h pcu/h	00	0 1055	1053 1321
	South) 0 0	(North) 0 1055	1053 1321
Arv Flow veh/h	Street (South) 2 0 1053 0	Street (Þ 263 4	Avenue 34 13
Mov Cl.		nd === ====	
Turn Mov Cl.	Koala L2 # T1 #	Koal Tl R2	Emily L2 # R2 #
Mov ID	South: 1 2	North: 8 9	West: 10 12

Maximum degree of saturation
 Combined Movement Capacity parameters are shown for all Movement Classes.

MOVEMENT PERFORMANCE

Mov ID	Turn (v	Turn Total Delay (veh-h/h) (j	Total Aver. Delay Delay (pers-h/h) (sec)	Aver. Delay (sec)	Eff. Stop Rate	Total Stops	Perf. Index	Tot.Trav. Tot.Trav. Distance Time (veh-km/h) (veh-h/h)	Tot.Trav. Time (veh-h/h)	Aver. Speed (km/h)
South: 1 2	Koal L2 T1	South: Koala Street (South) 1 L2 0.00 0.00 2 T1 0.03 0.03	(South) 0.00 0.03	5.6 0.1	0.00	0.0 1.3	0.0 0.03 1.3 17.75	1.5 1063.2	0.0 17.8	57.5 59.8
North: 8 9	Koal Tl R2	North: Koala Street 8 Tl 0.04 (9 R2 0.02 ((North) 0.04 0.02	0.5 15.3	0.01	2.6 0.0	2.6 4.54 0.0 0.13	265.8 3.0	4.5 0.1	59.3 55.9
West: 10 12	Emily L2 R2	West: Emily Avenue 10 L2 0.13 12 R2 0.07	0.16 0.09	13.8 21.0	0.92 0.92	31.0 11.6	0.88 0.47	24.1 9.0	0.6 0.2	42.6 42.1

(Ton)	22.
links	2
Table	2020
Go to	2

Fuel Consumption, Emissions and Cost Site: Emily Road AM 2039 Not Developed GHDVals

Site ID: 101 Give-Way Sign Controlled Intersection FUEL CONSUMPTION, EMISSIONS AND COST (TOTAL)

<pre>Xoala Street (south) L2 1</pre>	T VOM ID	Turn	6.6	Cost Total \$/h	Fuel Total L/h	co2 Total kg/h	CO Total kg/h	HC Total kg/h	NOX Total kg/h
378.26 60.2 141.5 0.18 0.010 Xoala Street (North) T1 98.47 15.5 36.5 0.05 0.003 R2 1.49 0.2 0.4 0.00 0.000 99.97 15.7 37.0 0.05 0.003 Emily Avenue L2 5.62 0.9 2.1 0.00 0.000 R2 5.62 0.9 2.1 0.00 0.000 R2 20.62 3.2 7.6 0.01 0.001 SECTION: 498.86 79.2 186.1 0.24 0.014	1	Koala L2 T1	Street			0.2	0.00	0.000	0.000
<pre>Kaala Street (North) T1 98.47 15.5 36.5 0.05 0.003 R2 11.49 0.2 0.4 0.00 0.000 B2 149.97 15.7 37.0 0.05 0.003 Emily Avenue L2 15.00 2.4 5.5 0.01 0.001 R2 15.02 0.9 2.1 0.00 0.000 R2 20.62 3.2 7.6 0.01 0.001 SECTION: 498.86 79.2 186.1 0.24 0.014</pre>				378.26	60.2		0.18	0.010	0.027
Emily Avenue 99.97 15.7 37.0 0.05 0.003 L2 15.00 2.4 5.5 0.01 0.001 R2 5.62 0.9 2.1 0.00 0.001 R2 20.62 3.2 7.6 0.01 0.001 R3ECTION: 498.86 79.2 186.1 0.24 0.014	North: 8 9	Koala T1 R2	Street	0		36.5 0.4	0.05	0.003	0.007
<pre>Emily Avenue 12 15.00 2.4 5.5 0.01 0.001 R2 5.62 0.9 2.1 0.00 0.000 R2 20.62 3.2 7.6 0.01 0.001 RSECTION: 498.86 79.2 186.1 0.24 0.014</pre>				99.97	15.7	37.0	0.05	0.003	0.008
20.62 3.2 7.6 0.01 0.001 : 498.86 79.2 186.1 0.24 0.014	0 01	mily A L2 R2	venue	15.00 5.62	2.4	2.5	0.01	0.001	0.002
: 498.86 79.2 186.1 0.24 0.014				20.62	3.2	7.6	0.01	0.001	0.003
	INTERS	ECTION		98.	79.2	186.1	0.24	0.014	0.037

FUEL CONSUMPTION, EMISSIONS AND COST (RATE)

c	o.		Fuel Rate L/100km	CO2 Rate g/km	m \	Rat /km	NOX Rate g/km
South: Koala 1 L2 2 T1	Street	t (South) 0.48 0.36	h) 5.7 5.7	133.0 132.9	0.17	0.010	0.026

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	0.36	5.7	5.7 132.9	0.17	0.17 0.010	0.026
North: Koala Street 8 Tl 9 R2	(North) 0.37 0.50	5.9 9.9	137.5 139.4	0.18 0.18	0.010	0.028 0.029
	0.37	0.0	137.5	0.18	0.18 0.010	0.028
West: Emily Avenue 10 L2 12 R2	0.62 0.62	0.0 8.0	230.2 230.2	0.26 0.26	0.021	0.078 0.078
	0.62	9.8	230.2	0.26	0.021	0.078
INTERSECTION:	0.37	5.8	136.2	0.18	0.010	0.027

Go to Table Links (Top)

Lanes

Lane Performance and Capacity Information Site: Emily Road AM 2039 Not Developed GHDVals

Site ID: 101 Give-Way Sign Controlled Intersection

LANE PERFORMANCE

						4	
d G	Flow Cap	p Deg. satn	Aver. Delev	Eff.	958 Back		Lane Tencth
No.	veh/h veh/h		360	Rate	veh	E	un de la compositione
South: 1	Koala Street (South) 1055 1950 0.541	t (South) 0 0.541	0.1	0.1 0.00			500.0
North: 1	 la str 267 l	t (North) 3 0.145	0.7	0.7 0.01	0.2 1.1	1.1	500.0
West: 1 1	Emily Avenue 46 32	nue 320 0.145	15.8	15.8 0.92	0.4	з.1	200.0

LANE FLOW AND CAPACITY INFORMATION

Lane Util %	100	100	100
Deg. Satn x	0.541	0.145	0.145
Tot Cap veh/h	(South) 5 1950	(North) 1843	320
Min V Cap Veh/h	Street (; 1055	Street (North) 267 1843	enue 6
Total Arv Flow veh/h	Koala St 1055		Emily Avenue 46
Lane No.	South: 1	North: Koala 1 267	West: 1

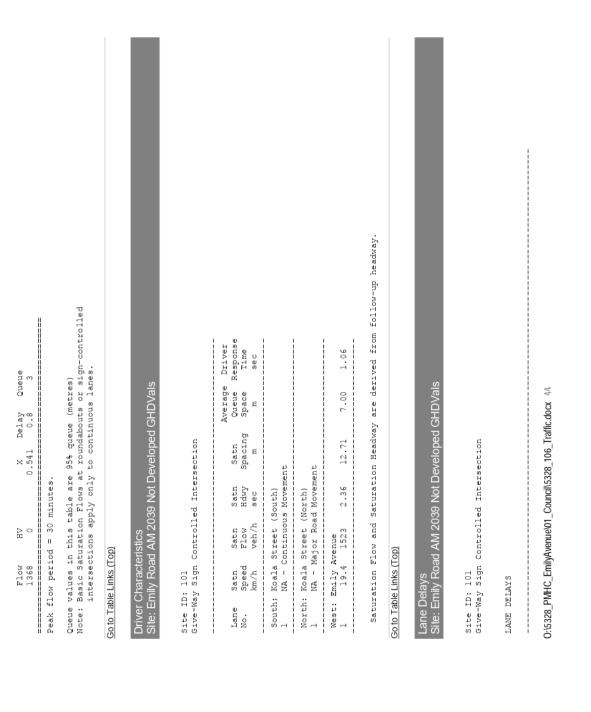
The capacity values of Continuous Lanes are obtained by adjusting the basic saturation flow for lane width, grade, movement class and turning vehicle effects. Saturation flow scale applies if specified.

Go to Table Links (Top)

Lane, Approach and Intersection Performance Site: Emily Road AM 2039 Not Developed GHDVals

Site ID: 101 Give-Way Sign Controlled Intersection

South: Koala Street (South) 1 1055 0 1950 0.541 0.1 500 1055 0 0.541 0.1 500 North: Koala Street (North) 267 0 0.145 0.7 1 500 West: Emily Avenue West: Emily Avenue Max Aver. Max Total & Max Aver. Max	1 1 1 Мах Мах 43	Lane No.	Arrival Flow (veh/h)	L &HV	Adj. Basic Satf.	Deg Sat x	Aver. Delay sec	Longest Queue m	Lane Length m
1055 0 0.541 0.1 In 267 0 0.145 0.7 1 267 0 0.145 0.7 1 West: Emily Avenue 0.145 15.8 3 1 46 0 0.145 15.8 3 ALL VEHICLES 8 0.145 15.8 3	1 1 3 3 43 43	South: 1	1	Street	(20	0.541	0.1		500
North: Koala Street (North) 1 267 0 0.145 0.7 1 267 0 0.145 0.7 1 West: Emily Avenue 1 46 0 0.145 15.8 3 46 0 0.145 15.8 3 ALL VEHICLES ALL VEHICLES Max Aver. Max	1 1 3 Max 43		1055	0		0.541	0.1		
267 0 0.145 0.7 1 West: Emily Avenue 1 46 0 0.145 15.8 3 46 0 0.145 15.8 3 ALL VEHICLES ALL VEHICLES & Max Aver. Max	1 3 Max 43	North: 1		Street 0		0.145	0.7	г	500
Mest: Emily Avenue 1 46 0 0.145 15.8 3 46 0 0.145 15.8 3 ALL VEHICLES ALL VEHICLES ALL VEHICLES Max Aver. Max	3 3 Max 43		267	0		0.145	0.7	 	
0 0.145 15.8 1 & Max Aver.	46 0 0.145 15.8 ALL VEHICLES ALL VEHICLES ALL VEHICLES S328_PMHC_EmilyAvenue001_Councill5328_106_Traffic.docx 4	1	Emily A	venue		0.145	15.8	ო 	200
ALL VEHICLES ALL VEHICLES Total & Max Aver.	4		46	0		0.145	15.8	m	
		ALL VE.	HICLES Total	аю 		Маж	Aver.	Max	



ATTACHMENT

Geom Control dig dic 0.1 0.7 5.5 15.8 lay	Geom (dig 0.1	Stopd (Idle) 0.0.0 111711 111611 De De	f Stop-1	Queuing Total Mvdp dq dqm 10.4 0.0 7.1 0.0 ium of Stop- iudes iudes	Acc. Dec. 3.2 and ur at inc	Stop-line Delay Acc. Queuing Stopd 1st 2nd Total Dec. Total WWUp (Idle) Geo 1 d2 d5L dn dq dqm di dig 0.1 0.0 0.6 0.3 0.4 0.0 0.4 0. 0.3 0.0 10.3 3.2 7.1 0.0 7.1 5. 0.3 0.0 10.3 3.2 7.1 0.0 7.1 5. control Delay is the sum of Stop-line Delay control Delay is the sum of Stop-line Delay time at near-zero speed) time at near-zero speed) time at near-zero speed)	DVals	n contraction of the stop- stop- of delay of the stop- of delay of delay of the stop- of the stop- stop- of the stop- stop- stop- stop- stop- stop- stop- stop- stop- stop- stop- stop- stop- stop- stop- stop- stop- stop- stop- stop- stop- stop- stop- stop- stop- stop- stop- stop- stop- stop- stop- stop- stop- stop- stop- stop- stop- stop- stop- stop- stop- stop- stop- stop- stop- stop- stop- stop- stop- stop- stop- stop- stop- stop- stop- stop- stop- stop- stop- stop- stop- stop- stop- stop- stop- stop- stop- stop- stop- stop- stop- stop- stop- stop- stop- stop- stop- stop- stop- stop- stop- stop- stop- stop- stop- stop- stop- stop- stop- stop- stop- stop- stop- stop- stop- stop- stop- stop- stop- stop- stop- stop- stop- stop- stop- stop- stop- stop- stop- stop- stop- stop- stop- stop- stop- stop- stop- stop- stop- stop- stop- stop- stop- stop- stop- stop- stop- stop- stop- stop- stop- stop- stop- stop- stop- stop- stop- stop- stop- stop- stop- stop- stop- stop- stop- stop- stop- stop- stop- stop- stop- stop- stop- stop- stop- stop- stop- stop- stop- stop- stop- stop- stop- stop- stop- stop- stop- stop- stop- stop- stop- stop- stop- stop- stop- stop- stop- stop- stop- stop- stop- stop- stop- stop- stop- stop- stop- stop- stop- stop- stop- stop- stop- stop- stop- stop- stop- stop- stop- stop- stop- stop- stop- stop- stop- stop- stop- stop- stop- stop- stop- stop- stop- stop- stop-	Min Del dm 	<pre>Late Deg. % Arv Prog. Min Stop-line Delay Acc. Queui No. x Green dn dl d2 dSL dn dq d South: Koala Street (South) 0.1 0.1 Dec. Total Dec. South: Koala Street (South) 0.1 0.3 0.4 North: Koala Street (North) 0.5 0.6 0.0 0.6 0.3 0.4 North: Koala Street (North) 0.5 0.6 0.0 0.6 0.3 0.4 Nest: Emily Avene West: Emily Avene Mest: Emily Avene Minim delay for galaceptance cases dSL: Stop-line delay for all vehicles queued and unqueued dr: Queuing delay (filing) time at near-zero speed) dig: Geneting delay (stopped (idling) time at near-zero speed) dig: Goutorol delay dig: Goutorol delay fic: Control delay fic: Control delay dig: Geneting delay (stopped (idling) time at near-zero speed) dig: Goutorol delay dig: Goutorol delay dig: Geneting delay (stopped (idling) time at near-zero speed) dig: Goutorol delay dig: Goutorol delay di dig: Goutorol de</pre>	<pre>Deg. % Arv Prog Lane Satn During Fact North: Koala Street (Souti) 0.541 North: Koala Street (North North: Koala Street (North North: Koala Street (North North: Koala Street (North No North: Koala Street (North No No North: Koala Street (Souti No No North: Koala Street (Souti No No No No No No No No No No No No No</pre>	Lane Deg. % Arv No. Iane Satn Durin South: Koala Street South: Koala Street North: Koala Street North: Koala Street Na. North: Koala Street Na. North: Koala Street Na. North: Koala Street Na. Na. SIPRA Standard Dell and Geometric Dela dm: Minimum delay dg: Stopped delay dg: Stopped delay dg: Stopped delay dg: Stopped delay di: Stopped	No. No. th. South: North: North: Net: North: Net: North: SIDRA and G dd: A dd: A dd: A dd: S dd: S dd: S dd:
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											[ob]	le Links (90
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			_	ique ued	and ur lat inc	queued elay th	es Icles ()	ce case ll veh: stop-l p delay	cceptan 2) / for a. of the move-uj	For gap a ay (=dl+d art dela (the part ind queue	delay f ine dela stop-st delay (delay a	Minimum Stop-li Vverage Nueuing topped	2 400
	lay	ine De	Stop-1	um of	s the s	elay is	crol D	. Cont	is used	ay Model : /·	ard Dela ic Delay	A Standa Seometri	d G
	5. 2	7.1	0.0	7.1	3.2	10.3	0.0	10.3	8.7	NA.	Avenue NA	Emily 7 0.145	4
	0.1	0.4	0.0	0.4	с. 0	0.6	0.0	0.6	0.5	(Nor	Street NA	Koala 0.145	ср:
1	。	0.0					0.1			(South)		Koala 0.541	ч гр
Control dic	Geom dig	topd Idle) di		Queui Total dq d	Acc. Dec. dn	Delay Total dSL	-line 2nd d2	Stop- lst dl	dm l dm l l			Deg. Satn x	

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0.0 0.0

0.00 0.02

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North: Koala Street (North) 1 0.145 NA NA

South: Koala Street (South)

NA

0.01

0.4

0.2

0.0

0.2

0.0

NA

West: Emily Avenue 1 0.145 NA

BACK OF QUEUE (DISTANCE)

		!	1	
Prob	n N N		NA	NA
Prob.	Ratio Block SLOV. 95% Av. 95% % %		0.0 0.4 0.0 0.4 1.1 0.00 0.00 0.0	0.0 1.3 0.0 1.3 3.1 0.01 0.02 0.0 NA
Stor.	сто 95 %		0.00	0.02
Queue	Ra Av.		0.00	0.01
(1	958		1.1	3.1
Back of Queue (m)	dn 2dn Idn		0.4	1.3
ck of C	Nb2		0.0	0.0
	IdN		0.4	1.3
ovrfl.	Queue No			0.0
Prog.	Factor	(South)	(North) NA	NA
Deg. & Arv Prog.	During Green	South: Koala Street (South)	North: Koala Street (North) 1 0.145 NA NA	Avenue NA
Deg.	Lane Satn No. x	: Koala	North: Koala Stree 1 0.145 NA	West: Emily Avenue 1 0.145 NA
,	Lane No.	South	North 1	West: 1

OTHER QUEUE RESULTS (VEHICLES)

	Deg.	8 Arv	Prog.	ovrfl.	Ovrfl. Cyc-Av.	Queue
No.	и Х	Green	ractor	No	Nc	958
South	South: Koala		Street (South)	- 		
North 1	: Koald 0.145	North: Koala Street (North) 1 0.145 NA NA	(North) NA	0.0	0.0	0.1
West: 1	Emily 0.145	West: Emily Avenue 1 0.145 NA	MA	0.0	0.1	0.2
- сан		(TONKTATC) SETTIONED ETTETIO	UNG TREE			

OTHER QUEUE RESULTS (DISTANCE)

Queue 95%		0.6	1.7
Ovrfl. Cyc-Av. Queue Queue		0.3	6.0
Ovrfl. Queue No		0.0	0.0
Prog. Factor	(South)	(North) NA	AA
% Arv During Green	Street		Avenue NA
Deg. Satn x	: Koal	: Koal 0.145	West: Emily Avenue 1 0.145 NA
Lane No.	Sout	North 1	West 1

0.2 CENTILE CENTILE 50% Street
North: Koala Steet (North) 1 0.145 0.4 0.6 0.8 0.9 1.1 1.2 1.3
West: Emily Avenue 1 0.145 1.3 1.6 2.3 2.7 3.1 3.5 3.7

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Lane Stops Site: Emily Road AM 2039 Not Developed GHDVals

Site ID: 101 Give-Way Sign Controlled Intersection

During Factor Geom. Overall Stops Rate Move-ups Green Green hel he2 hig h h h h h h h h h h h h h h h h h h h h h h h h h h h h h h h h h h h h h h h h h h h h h h h h h h h h h h h h h h h h h h h h h h h h h h h h h h h h h h h h h h h h h h h h h h h h h h h h h h h h h h h h h h h h h h h h h h h h h h h h h h h h h h<				Prog.	97 12 1	fective	e Stop	Effective Stop Rate		-		Prop.	Aver. Num. of
t (south) NA t (North) 0.00 0.00 0.01 0.01 2.7 0.00 0.0 NA 0.81 0.00 0.11 0.92 42.6 0.00 0.0	Lane S No.	atn x	During Green	Factor	hel	he2	Geom. hig	Overall h	Stop <i>s</i> H		Move-ups Hqm	Queued	Cycles to Depart
Street (North) Na Na 0.00 0.00 0.01 0.01 2.7 0.00 0.0 Avenue Na 0.81 0.00 0.11 0.92 42.6 0.00 0.0	south: K	Coala 541	Street NA	(South) NA			0.00		1.3				
NA 0.81 0.00 0.11 0.92 42.6 0.00 0.0	lorth: K	Coala 145	Street NA	(North) NA		00.0	10.0	0.01	2.7	00.0		0.06	0.06
	lest: Em	145 2	Avenue NA	NA	0.81	00.0	0.11			0.00	0.0	0.81	0.81

Go to Table Links (Top)

Flow Rates

Origin-Destination Flow Rates (Total) Site: Emily Road AM 2039 Not Developed GHDVals

Site ID: 101 Give-Way Sign Controlled Intersection TOTAL FLOW RATES for All Movement Classes (veh/h)

ł

From SOUTH To:	М	N	
Turn:	L2	ΓL	TOT
Flow Rate	2.1	1052.6	1054.7
8HV (all designations)	0.0	0.0	0.0
From NORTH To:	S	M	
Turn:	ΤI	R2	TOT
Flow Rate	263.2	4.2	267.4
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0.0	тот 46.3 0.0
0.0	S 7 12.6 0.0
0.0	N 122 33.7 0.0
%HV (all designations)	From WEST To: Turn: Flow Rate &HV (all designations)

Flow rates shown above are Arrival Flow Rates (veh/h) based on the following input specifications: Unit Time for Volumes = 60 minutes Feak Flow Period = 30 minutes Effects of Volume Factors (Peak Flow Factor, Flow Scale, Growth Rate) are included. Arrival Flow Rates may be less than Demand Flow Rates if capacity constraint applies in network analysis.

Go to Table Links (Top)

Origin-Destination Flow Rates by Movement Class Site: Emily Road AM 2039 Not Developed GHDVals

Site ID: 101 Give-Way Sign Controlled Intersection

FLOW RATES for Light Vehicles (veh/h)

						>
ì	TOT	1054.7 100.0 - 0.0	TOT	267.4 100.0 - 0.0	TOT	46.3 100.0 Traffic docv
	ИЦ	1052.6 100.0 1.00 0.95 0.0	W R2	4.2 100.0 1.00 0.95 0.0	s R2	33.7 12.6 00.0 100.0 Council\5328 106
	N L2	2.1 100.0 1.00 0.95 0.05	с н Ц	263.2 100.0 1.00 0.95 0.95	L2 L2	60
	From SOUTH To: Turn:	Flow Rate Mov Class % Flow Scale Peak Flow Factor Residual Demand	From NORTH To: Turn:	Flow Rate Mov Class % Flow Scale Peak Flow Factor Residual Demand	From WEST To: Turn:	Flow Rate Mov Class & 1 O.45328 DMHC FmilvAvenue001

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I	ľ	0.0	
1.00	0.95	0.0	
Ō.	0.95	0.0	
Flow Scale	Peak Flow Factor	Residual Demand	

Flow rates shown above are Arrival Flow Rates (veh/h) based on the following input specifications: Unit Time for Volumes = 60 minutes Peak Flow Period = 30 minutes Arrival Flow Factors (Peak Flow Factor, Flow Scale, Growth Rate) are included. Arrival Flow Rates may be less than Demand Flow Rates if capacity constraint applies in network analysis.

Go to Table Links (Top)

Lane Flow Rates Site: Emily Road AM 2039 Not Developed GHDVals

Site ID: 101 Give-Way Sign Controlled Intersection

LANE FLOW RATES AT STOP LINE (veh/h)

i.

i.

1 1

LOL	1054.7 1054.7	1054.7	TOT	267.4 267.4	267.4	TOT	46.3 46.3	46.3
N L L	1052.6 1052.6	1052.6	W R2	4 1.4	4.2	8 8 2 2 2	12.6 12.6	12.6
W L2	2.1 2.1	2.1	νH	263.2 263.2	263.2	N L2	33.7 33.7	33.7
From SOUTH To: Turn:	Lane l LV Total	Approach	From NORTH To: Turn:	Lane l LV Total	Approach	From WEST To: Turn:	Lane l LV Total	Approach Arean DMHC Emited

i.

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EXIT LANE FLOW RATES

Movement	it Class:	ΓΛ	ЛΗ	TOT
Exit: Lane: Total	SOUTH	275.8 275.8	* *	275.8 275.8
Exit: Lane: Total	NORTH 1	1086.3 1086.3	* *	1086.3 1086.3
Exit: Lane: Total	WEST 1	6.3 6.3	* *	6.3 6.3

* Movement not allocated to the lane

DOWNSTREAM LANE FLOW RATES FOR EXIT ROADS

TOT	275.8	1086.3 1086.3	6.3 9.3
ΝН	* *	* *	* *
ΓΛ	275.8 275.8	1086.3 1086.3	6.3 0.3
Movement Class:	:: SOUTH	t: NORTH : 1 1	: WEST I
Moven	Exit: Lane: Total	t a t	Exi ane ota

* Movement not allocated to the lane

Flow rates shown above are Arrival Flow Rates (veh/h) based on the following input specifications: Unit Time for Volumes = 60 minutes Peak Flow Period = 30 minutes Effects 0 Volume Factors (Peak Flow Factor, Flow Scale, Growth Rate) are included. Arrival Flow Rates may be less than Demand Flow Rates if capacity constraint applies in network analysis.

Go to Table Links (Top)

Site: Emily Road AM 2039 Not Developed GHDVals	
site ID: 101 Give-Way Sign Controlled Intersection	
* Basic Parameters: Intersection Type: Unsignalised - Give Way Driving on the left-band side of the road Input data specified in Metric units Model Defaults: New South Wales	
Peak Flow Period (for performance): 30 minutes Unit time (for volumes): 60 minutes. SIDRA Standard Delay model used SIDRA Standard Queue model used Level of Service based on: Delay (RTA NSW) Queue percentile: 95%	
Go to Table Links (Top) Diagnostics Site: Emily Road AM 2039 Not Developed GHDVals	
Site ID: 101 Give-Way Sign Controlled Intersection	
Lane Flow-Capacity Iterations:	
<pre>Site Model Variability Index (Iterations 3 to N): 0.0% Number of Iterations: 3 (Maximum: 10)</pre>	
Other Diagnostic Messages (if any):	
Go to Table Links (Top)	

Organisation: KING & CAMPBELL PTY LTD | Processed: Monday, 11 March 2019 1:48:05 PM Project: 0:5328_PMHC_EmilyAvenue\22_Engineering\Emily Ave 50existing 2019-2039 GHDMaxValuesNoRate.sip8

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Model Scenario: AM Peak Hour, Year 2039, Post-Developed

ATTACHMENT

DETAILED OUTPUT

V Site: 101 [Emily Road AM 2039 Developed GHDVals]

New Site Site Category: (None) Giveway / Yield (Two-Way)

OUTPUT TABLE LINKS

Sign Control Sign Control Basic Par

Sign Control Basic Parameters Gap Acceptance Parameters

Intersection Negotiation and Travel Data Intersection Negotiation and Travel Data Movement Capacity and Performance Pa

Movement Capacity and Performance Parameters Fuel Consumption, Emissions and Cost Lanes

Lane Performance and Capacity Information Lane, Approach and Intersection Performance Driver Characteristics

Lane Delays Lane Queues

Lane Queue Percentiles

Lane Stops Ir Flow Rates

ow rates Origin-Destination Flow Rates (Total) Origin-Destination Flow Rates by Movement Class Lane Flow Rates

Cther

Parameter Settings Summary Diagnostics

Sign Control

Sign Control Basic Parameters Site: Emily Road AM 2039 Developed GHDVals

No opposed mov 	S 1 6 01	L N Values in this	Use the Pedest: O:15328_PMHC_EmilyAv
			Attach
			E

) table are adjusted for movement classes in the entry stream. Stians and Priorities input dialogs to specify opposing pedestrian movements.

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Item 05

Site ID: 101 Give-Way Sign Controlled Intersection

NA Not Applicable (single Site analysis or unconnected Site in Network analysis). N Program option resulted in zero value (single Site analysis or unconnected Site in Network analysis). Extra Bunching 0.0N 0.0N N0.0 ø Prop Queued Upstr Signal ΝA NA NA App Dist South: Koala Street (South) Major Road Two Way 500 North: Koala Street (North) Major Road Two Way 500 200 E Leg Geometry West: Emily Avenue Giveway Two Way Approach Control

Go to Table Links (Top)

Gap Acceptance Parameters Site: Emily Road AM 2039 Developed GHDVals

Site ID: 101 Give-Way Sign Controlled Intersection

			Intra			Critical Gap	al Gap	
		Opud	Bunch	Propn	Entry			Foll-up
opd	Dest	Flow	Нძиу	Bnchd	ΗΛ	Нdwy	Dist	Headway
Lane		pcu/h	sec		Equiv	5 B C	E	5 0 0
South:	South: Koala Street (South)	reet (Sout	(h)					
:				,				

rements on this approach.

	Koala Street (North) W 1055 1.80 0.182 1.00 4.00 66.6 2.00	58 00	 00 00	1	0.182 0.151 0.151		105 105 105	V AV I N
17 VIAD ON'E ON'T 70T'N OD'T 1000T	,	2.80	 4.30	1.00	0.151 0.182	~1 ~~	e 1322 1053	

flow
vehicle
opposing
ų,
included
flow
exiting
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Percentage
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Go to Table Links (Top)

Movements

Intersection Negotiation and Travel Data Site: Emily Road AM 2039 Developed GHDVals

Site ID: 101 Give-Way Sign Controlled Intersection

TRAVEL SPEED, TRAVEL DISTANCE AND TRAVEL TIME

From Approach	To Exit	Turn	Running Speed km/h	Travel Speed km/h	Travel Distance m	Travel Time s	Total Travel Distance Dem Flows Arv Flows veh-km/h veh-km/h	l Distance Arv Flows veh-km/h	Tot.Trav. Time veh-h/h
South: Koala Street West North	la Street West North	(South) L2 T1	57.5 59.8	57.5 59.8	710.0# 1010.0#	44.4# 60.8#	1.5 1063.2	1.5 1063.2	0.0 17.8
North: Koala Street South West	a Street South West	(North) T1 R2 R2	59.6 56.3	59.1 55.7	1010.0# 710.0#	61.5# 45.9#	265.8 3.7	265.8	4.5
West: Emily Avenue North South	/ Avenue North South	L2 R2	48.1 47.5	42.4 41.9	714.3# 714.3#	60.7# 61.4#	30.8 11.3	30.8 11.3	0.7 0.3
ALL VEHICLES	ES:		59.2	58.9	995.8#	60.9#	1376.3	1376.3	23.4

"Running Speed" is the average speed excluding stopped periods.

Travel Time values include cruise times and intersection delays including acceleration, deceleration and idling delays.

Travel Distance and Travel Time values include travel on the External Exit section based on the Exit Distance or user-specified Downstream Distance value as applicable. #

INTERSECTION NEGOTIATION DATA

Downstr Dist Exit Dist App Dist Negn Dist Negn Negn Radius Speed 0 H From

Approach Exit	Turn	E	km/h	E	Ħ	н	E
South: Koala Street West North	(South) L2 T1	10.0 s	20.2 60.0	15.7 10.0	500	200 500	NA NA
North: Koala Street South West	(North) T1 R2	6.9 6	60.0 17.2	10.0 10.4	5 0 0 5 0 0	500 200	NA NA
West: Emily Avenue North South	L2 R2	10.0 6.6	20.2 17.2	15.7 10.4	200 200	500 500	na Na
NA Downstream Distance does not - Exit is an internal leg of - "Program" option was speci - Distance specified was less - Distance specified was gree	I Distance does not an internal leg of " option was speci : specified was les: : specified was gree		not apply if: I of a network ecified less than the greater than	E: ck ne Exit n the ex	t Negotiat	pply if: . network ed than the Exit Negotiation Distance er than the exit leg length	tance
Some Negotiation Radius,		peed oi	r Distar	Speed or Distance values	are	user spe	specified.

NA NA NA NA NA

MOVEMENT SPEEDS AND GEOMETRIC DELAY

1		I		
c.	Gelay Delay sec	5.5	0.0 5.4	55 10 14
Queue	Nove-up Speed km/h		0.2	11.8 11.8
Speeds	Cruise km/h	60.0 60.0	60.0 60.0	60.0 60.0
Exit	Negn km/h) 20.2 60.0) 60.0 17.2	20.2 17.2
Speeds	Negn km/h	(South) 20.2 60.0	(North) 60.0 17.2	20.2 17.2
App. Spe	Cruise km/h	Street 60.0 60.0	Street 60.0 60.0	Avenue 60.0 60.0
	Turn	Koala L2 T1	Koala Tl R2	Emily L2 R2
	MoV ID	South: 1 2	North: Koa 8 Tl 9 R2	West: 10

Movement Capacity and Performance Parameters Site: Emily Road AM 2039 Developed GHDVals

Go to Table Links (Top)

Site ID: 101 Give-Way Sign Controlled Intersection

MOVEMENT CAPACITY PARAMETERS

Mov ID	Turn	Mov Cl.	Arv Flow veh/h		Opng Movement Adjust. Flow Flow veh/h pcu/h	Total Cap. Veh/h	Prac. Deg. Satn Xp	Prac. Spare Cap. &	Deg. Satn X
South: 1 2	Коаlа L2 # T1 #	1	Street (South) 2 (1053 (South) 0 0	00		0.98	81 81	0.541*
North: 8 9	Koala Tl # R2 #		Street (1 263 55	(North) 0 1055	0 1055	1783 36	0.98 0.98	564 564	0.148 0.148
West: 10 12	Emil R2 R2	Emily Avenue L2 # R2 #	nue 43 16	1053 1322	1053 1322	235 86	0.80	335 335	0.184 0.184

Maximum degree of saturation
 Combined Movement Capacity parameters are shown for all Movement Classes.

MOVEMENT PERFORMANCE

Mov ID	Turn Total Delay (veh-h/h	rotal Delay eh-h/h)(F	<pre>I Total Total Aver. Delay Delay Delay Delay (veh-h/h) (pers-h/h) (sec)</pre>	Aver. Delay (sec)	Eff. Stop Rate	Total Stops	Perf. Index	Tot.Trav. Distance (veh-km/h)	Tot.Trav. Time (veh-h/h)	Aver. Speed (km/h)
South: 1 2	Koala L2 T1	South: Koala Street (South) 1 L2 0.00 0.00 2 T1 0.03 0.03	(South) 0.00 0.03	5.6 0.1	0.00	0.0 1.3	0.0 0.03 1.3 17.75	1.5 1063.2	0.0 17.8	57.5 59.8
North: 8 9	Koala Tl R2	North: Koala Street (North) 8 Tl 0.04 0.05 9 R2 0.02 0.03		0.6 15.3	0.01	3.3 0.1	3.3 4.57 0.1 0.16	265.8 3.7	4.5 0.1	59.1 55.7
West: 10 12	Emily L2 R2	West: Emily Avenue 10 L2 0.17 12 R2 0.09	0.20	14.2 21.5	0.93 0.93	40.1 14.7	1.14 0.60	30.8 11.3	0.7	42.4 41.9

Go to Table Links (Top)

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Site ID: 101 Give-Way Sign Controlled Intersection

FUEL CONSUMPTION, EMISSIONS AND COST (TOTAL)

Turn

Mov ID

Mov Turn ID	Cost Total \$/h	Fuel Total L/h	CO2 Total kg/h	CO Total kg/h	HC Total kg/h	NOX Total kg/h
South: Koala S ¹ 1 L2 2 T1	Street (South) 0.71 377.55	h) 0.1 60.1	0.2 141.3	0.00	0.000	0.000
	378.26	60.2	141.5	0.18	0.010	0.027
North: Koala S ¹ 8 Tl 9 R2	Street (North 99.53 1.89	h) 15.7 0.2	36.8 0.5	0.05	0.003	0.008
	101.42	15.9	37.4	0.05	0.003	0.008
West: Emily Av 10 L2 12 R2	Avenue 19.36 7.08	3.0 1.1	7.1 2.6	0.01	0.001	0.002
	26.45	4.1	9.7	0.01	0.001	0.003
INTERSECTION:	506.13	80.3	188.6	0.24	0.014	0.038

FUEL CONSUMPTION, EMISSIONS AND COST (RATE)

South: Koala Street (South) 1 12 0.48 5.7 133.0 0.17 0.010 0.0 2 T1 0.36 5.7 132.9 0.17 0.010 0.0 0.36 5.7 132.9 0.17 0.010 0.0 North: Koala Street (North) 8 T1 0.37 5.9 138.6 0.18 0.010 0.0	MoV	Turn	С 5/Ъ	Cost F Rate F \$/km L/]	Fuel Rate L/100km	co2 Rate g/km	CO Rate g/km	HC Rate g/km	NOX Rate g/km
5.7 132.9 0.17 0.010 5.9 138.6 0.18 0.010	outh: 1 2	Koala L2 T1		(South) 0.48 0.36		133.0 132.9	0.17 0.17	0.010	0.026 0.026
5.9 138.6 0.18 0.010				0.36	5.7			0.010	0.026
	orth: 8	Koala Tl	Street	(North) 0.37	5.9	138.6	0.18	!	0.029

9 R2	0.51	6.0		0.18	0.18 0.011 0.030	0.030
	0.38	5.9	138.6		0.18 0.010 0.029	0.029
West: Emily Avenue						
10 L2	0.63	9.8		0.26	0.021	0.078
12 R2	0.63	9.8	230.7	0.26	0.021	0.078
	0.63	9.8	230.7	0.26	0.26 0.021 0.078	0.078
INTERSECTION:	0.37	5.8	137.0	0.18	137.0 0.18 0.010 0.028	0.028

Go to Table Links (Top)

Lanes

Lane Performance and Capacity Information Site: Emily Road AM 2039 Developed GHDVals

Site ID: 101 Give-Way Sign Controlled Intersection

LANE PERFORMANCE

	Flow	Cap	Deg.	Aver.	Eff.	Queue 95% Back	a Sk	Lane
Lane No.	veh/h	veh/h veh/h	N N N	иетау sec	stop Rate	veh	8	m m
South:	South: Koala Street 1 1055 1950	creet 1950	(South) 0.541	0.1	0.1 0.00			500.0
North: 1	North: Koala Street 1 268 1819	1	(North) 0.148	6.0	10.0 0.0	0.2	1.4	500.0
West: 1 1	West: Emily Avenue 1 59 32	enue 321	0.184	16.1	16.1 0.93	0.6	4.1	200.0

LANE FLOW AND CAPACITY INFORMATION

Lane Total Min Tot Deg. Lane No. Arv Flow Cap Cap Satn Util

٩Þ	100	100	100
×	0.541	0.148	0.184
veh/h veh/h	(South) 1950	(North) 5 1819	321
veh/h	Street (1055	Street (265	renue 6
veh/h	South: Koala S 1 1055	Koala 268	Emily Avenue 59
	South: 1	North: 1	West: 1

The capacity values of Continuous Lanes are obtained by adjusting the basic saturation flow for lane width, grade, movement class and turning vehicle effects. Saturation flow scale applies if specified.

Go to Table Links (Top)

Lane, Approach and Intersection Performance Site: Emily Road AM 2039 Developed GHDVals

Site ID: 101 Give-Way Sign Controlled Intersection

Lane No.	Arrival Flow (veh/h)	VH&	Adj. Basic Satf.	Deg Sat	Aver. Delay sec	Longest Queue m	Lane Length m
South: 1	Koala S 1055	Street 0	(South) 1950	0.541	0.1		500
	1055	0		0.541	0.1		
North: 1	Koala S 268	Street 0	(North)	0.148	6.0	г	500
	268	0		0.148	6.0	1	
West: 1	Emily Avenue 59	enue 0		0.184	16.1	4	200
	59	0		0.184	16.1	4	
ALL VE	VEHICLES Total Flow 1382	* > 0 # 4		Max X 0.541	Aver. Delay 0.9	Max Queue 4	
Peak fl	ow perio	d = 30	Peak flow period = 30 minutes				

Delay (seconds/veh) Deg. & Arv Prog. Min Stop-line Delay Acc. Queuing Stopd Lane Satn During Factor Del 1st 2nd Total Dec. Total MvUp (Idle) Geom Control	LANE DELAYS	Site ID: 101 Give-Way Sign Controlled Intersection	Lane Delays Site: Emily Road AM 2039 Developed GHDVals	Go to Table Links (Top)	Saturation Flow and Saturation Headway are derived from follow-up headway.	West: Emily Avenue 1 19.4 1525 2.36 12.71 7.00 1.06	North: Koala Street (North) 1 NA - Major Road Movement	South: Koala Street (South) 1 NA - Continuous Movement	Lane Satn Satn Satn Average Driver Lane Satn Satn Satn Queue Response No. Speed Flow Hdwy Spacing Space Time km/h veh/h sec m sec	Site ID: 101 Give-Way Sign Controlled Intersection	Driver Characteristics Site: Emily Road AM 2039 Developed GHDVals	Go to Table Links (Top)	MM 2039 Developed GHDVals htrolled Intersection trolled Intersection htrolled Intersection atm Sath Sath Queue Response Flow Hdwy Spacing Space Time eth/h sec mm asc reet (South) innous Movement reet (North) or Road Movement reet (North) reet
-----------------------------------------------------------------------------------------------------------------------------------------------------------------	-------------	-------------------------------------------------------	-----------------------------------------------------------	-------------------------	----------------------------------------------------------------------------	--------------------------------------------------------	-----------------------------------------------------------	-----------------------------------------------------------	--------------------------------------------------------------------------------------------------------------------------------------------	-------------------------------------------------------	----------------------------------------------------------------------	-------------------------	--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------

0.541					0.1					0.0	0.1	
North: Koala Street (North) 1 0.148 NA NA	reet NA	(North) NA	0.6	0.8	0.0	0.8	0.3	0.5	0.0	0.5	0.1	6.0
West: Emily Avenue 1 0.184 NA	ue NA	NA	8.6	10.4	0.2	10.6	3.2	7.4	0.1	7.3	ъ. 5	16.1
SIDRA Standard Delay Model	Dela	y Model	is used.		Control Delay is	elay is	the	sum of	Stop-1	Stop-line Delay	аy	
and Geometric Delay. dm: Minimum delay for gap acceptance cases dSL: Stop-line delay (=dl+d2))elay Lay f dela	or gap y (=dl+	acceptan d2)	ce cas	02 01							
dn: Average stop-start delay for all vehicles queued and unqueued dq: Queuing delay (the jart of the stop-line delay that includes stopped delay and gueue move-up delay)	pp-st lay (av a	art del the par nd queu	ay for a. t of the e move-um	ll veh stop- b dela	icles (line de v)	gueued elay th	and un lat inc	Ique ued Udes				
dqm: Qreue move-up delay di: Stopped delay (stopped (idling) time at near-zero speed) dig: Geometric delay dic: Control delay	e-up Lay (dela	delay stopped Y	guilbi)) time	at nei	ar-zerc	speed	G				
Go to Table Links (Top)												
Lane Queues Site: Emily Road AM 2039 Developed GHDVals	VM 20	039 Dev	eloped G	BHDVa	s							
Site ID: 101 Give-Way Sign Con	ltrol	led Int	Controlled Intersection	c								
QUEUE (VE	(VEHICLES)	ES)										
		Prog.	ovrfl.	Bac	Back of Qu	Queue (v	(veh)	Queue	Queue Stor.	Prob.		
Satn During x Green	ng 1	Factor	Queue No	IdN	Nb2	dN	958	Av.	Ratio . 95%	B LOCK	SL	۰. مو
South: Koala Str	Street	(South)										
North: Koala Stre 1 0.148 NA	t t	(North) NA	0.0	0.1	0.0	0.1	0.2	0.00	00.0	0.0	NA	
	lue		0.0	0.2	0.0	0.2	0.6	0.01	0.02	0.0	NA	

Queue Stor. Prob. Prob. Ratio Block SL Ov. Av. 95% % % 958 Back of Queue (m) ЧN Nb2 IdN Ovrfl. Queue No Prog. Factor Deg. % Arv E Lane Satn During F No. x Green

NA South: Koala Street (South) North: Koala Street (North) 1 0.148 NA NA

0.0 00.00 00.00 1.4 0.5 0.0 0.5 0.0

NA 0.0 0.02 0.01 4.1 1.6 0.0 1.6 0.1 NA West: Emily Avenue 1 0.184 NA

OTHER QUEUE RESULTS (VEHICLES)

Ovrfl. Cyc-Av. Queue	Nc 95%		0.1 0.1	0.2 0.3
l. Cyc	ň			
		-	0.0	0.0
Prog.	TO DO L	(South)	(North) NA	NA
8 Arv	Green	a Street	North: Koala Street 1 0.148 NA	Avenue NA
Deg.	X	South: Koala	h: Koala 0.148	West: Emily Avenue 1 0.184 NA
	No.	South	North 1	West: 1

OTHER QUEUE RESULTS (DISTANCE)

Ovrfl. Cyc-Av. Queue Queue		0.4 0.7	1.2 2.2
OVFIL. CYC Queue No		0.0	1.0
Prog. Factor	(South)	(North) NA	NA
% Arv During Green	L Street	North: Koala Street 1 0.148 NA	West: Emily Avenue 1 0.184 NA
Deg. Satn x	South: Koala	: Koala 0.148	Emily 0.184
Lane No.	South:	North: 1 0	West: 1 0

Go to Table Links (Top)

			100%		0.2	0.7		100%		1.6	4.8		
		eh)	98% 1		0.2	0.6	etres)	98% 1		1.5	4.5		
		Percentile Back of Queue (veh)	95%		0.2	0.6	Percentile Back of Queue (metres)	958		1.4	4.1		
ио		ack of (908		0.2	0.5	ack of 0	806		1.2	3.5		
ersecti	CLES)	ntile B	85%		0.1	0.4	ntile B	858		1.0	з . 0		
led Int	S (VEHI	Perce	70%	(South)	(North) 0.1	0.3	Perce	70%	(South)	(North) 0.7	2.1		
Control	CENTI LE		50%	Street	Street 0.1	venue 0.2		50%	Street	Street 0.5	venue 1.6	(do	
Site ID: 101 Give-Way Sign Controlled Intersection	LANE QUEUE PERCENTILES (VEHICLES)	Deg.	satn X	South: Koala Street (South)	North: Koala Street (North) 1 0.148 0.1 0.1	West: Emily Avenue 1 0.184 0.2	Deg.	Satn X	South: Koala Street (South)	North: Koala Street (North) 1 0.148 0.5 0.7	West: Emily Avenue 1 0.184 1.6	Go to Table Links (Top)	
e ID e-Wa	ANE QU		Lane No.	south:	North: 1	West: 1		Lane No.	South:	North: l	West: l	to Tabl	Lane Stops

ATTACHMENT

DEVELOPMENT ASSESSMENT PANEL 06/05/2020

	Intersection
	Controlled
101	Sign
Site ID:	Give-Way

	Deg.	8 Arv			fective	Stop	Effective Stop Rate		Queue Move-up	Total Queue	Prop.	Aver. Num. of
Lane No.	Satn x	During Green	Factor	hel	he2	Geom. hig	Geom. Overall hig h	Stops H	Rate hqm	Move-ups Hqm	Queued	Cycles to Depart
South:	Koala 0.541	South: Koala Street (South) 1 0.541 NA NA	(South) NA			00.0	0.00	1.3				
rth: (Koala 0.148	Street NA	North: Koala Street (North) 1 0.148 NA NA	00.0	00.0	10.0	0.00 0.00 0.01 0.01	3.4	0.00	0.0	0.07	0.07
8 t: 1	Emily 2 0.184	West: Emily Avenue 1 0.184 NA	NA	0.82	0.82 0.01 0.11	0.11	0.93	54.8	0.03	1.5	0.82	0.84

Go to Table Links (Top)

Flow Rates

Origin-Destination Flow Rates (Total) Site: Emily Road AM 2039 Developed GHDVals

Site ID: 101 Give-Way Sign Controlled Intersection TOTAL FLOW RATES for All Movement Classes (veh/h)

0	W L2 2.1 0.0	N T1 1052.6 0.0	TOT 1054.7 0.0
From NORTH To: Turn: Flow Rate &HV (all designations)	S T1 263.2 0.0	W R2 5.3 0.0	TOT 268.4 0.0
From WEST To: Turn:	N L2	s В2	TOT

58.9	0.0	
15.8	0.0	
43.2	0.0	
Flow Rate	%HV (all designations)	

Flow rates shown above are Arrival Flow Rates (veh/h) based on the following input specifications: Unit Time for Volumes = 60 minutes Peak Flow Period = 30 minutes Effects of Volume Factors (Peak Flow Factor, Flow Scale, Growth Rate) are included. Arrival Flow Rates may be less than Demand Flow Rates if capacity constraint applies in network analysis.

Go to Table Links (Top)

Origin-Destination Flow Rates by Movement Class Site: Emily Road AM 2039 Developed GHDVals

Site ID: 101 Give-Way Sign Controlled Intersection

FLOW RATES for Light Vehicles (veh/h)

N TOT IT	.6 1054.7 .0 100.0 .0 200.0 .0 .0	W R2 TOT	.3 268.4 .0 100.0 .0 55	s R2 TOT	.8 58.9 .0 100.0 00 95 .0 0.0
	100.100.00		100.5 1.00.0	07 µ4	
M L2	2.1 100.0 1.000 0.95	νE	263.2 100.0 1.00 0.95 0.95	L2 L2	43.2 100.0 1.00 0.95 0.05
From SOUTH To: Turn:	Flow Rate Mov Class % Flow Scale Peak Flow Factor Residual Demand	From NORTH To: Turn:	Flow Rate Mov Class % Flow Scale Peak Flow Factor Residual Demand	From WEST To: Turn:	Flow Rate Mov Class % Flow Scale Peak Flow Factor Residual Demand

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specif:	ai ni
h/h) based on the following input spe	Scale, Growth Rate) are included. ates if capacity constraint applies i
Flow rates shown above are Arrival Flow Rates (veh/h) based on the following input specifications: Unit Time for Volumes = 60 minutes	<pre>Peak Flow Period = 30 minutes Effects of Volume Factors (Peak Flow Factor, Flow Scale, Growth Rate) are included. Arrival Flow Rates may be less than Demand Flow Rates if capacity constraint applies in network analysis.</pre>
Flow r Unit T	Peak F Effect Arriva networ

Go to Table Links (Top)

Lane Flow Rates Site: Emily Road AM 2039 Developed GHDVals

Site ID: 101 Give-Way Sign Controlled Intersection

LANE FLOW RATES AT STOP LINE (veh/h)

ī.

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1 1

From SOUTH To: Turn:	W L2	NL	TOT
Lane l LV Total	2.1 2.1	1052.6 1052.6	1054.7 1054.7
Approach	2.1	1052.6	1054.7
From NORTH To: Turn:	s T1	W R2	TOT
Lane l LV Total	263.2 263.2	5.3 5.3	268.4 268.4
Approach	263.2	5.3	268.4
From WEST To: Turn:	N L2	ы В 2	TOT
Lane l LV Total	43.2 43.2	15.8 15.8	58.9 58.9
Approach	43.2	15.8	58.9

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EXIT LANE FLOW RATES O:5328_PMHC_EmilyAvenue/01_Council/5328_106_Traffic.docx 68

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Movement Cl	Class:	ΓΛ	Н	TOT
Exit: SOUTH Lane: l Total	픤	278.9 278.9	* *	278.9 278.9
Exit: NORTH Lane: l Total	Е	1095.8 1095.8	* *	1095.8 1095.8
Exit: WEST Lane: l Total		7.4 7.4	* *	7.4 7.4
* Movement	ent not	allocated	to the	lane

DOWNSTREAM LANE FLOW RATES FOR EXIT ROADS

HV TOT	* 278.9	* 1095.8	* 7.4
	* 278.9	* 1095.8	* 7.4
ΓΛ	278.9	1095.8	7.4
	278.9	1095.8	7.4
Movement Class:	xit: SOUT ne: l tal	C a E	

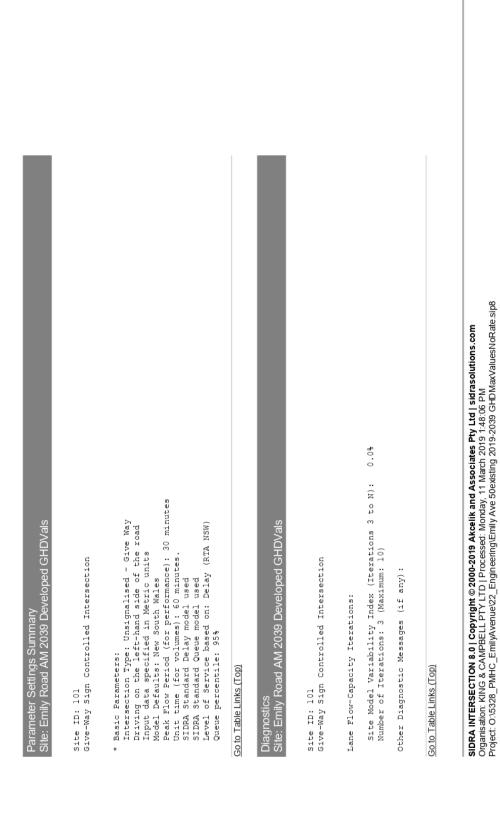
* Movement not allocated to the lane

Flow rates shown above are Arrival Flow Rates (veh/h) based on the following input specifications: Unit Time for Volumes = 60 minutes Peak Flow Period = 30 minutes Effects of Volume Factors (Peak Flow Factor, Flow Scale, Growth Rate) are included. Arrival Flow Rates may be less than Demand Flow Rates if capacity constraint applies in network analysis.

Go to Table Links (Top)

Other

DEVELOPMENT ASSESSMENT PANEL 06/05/2020



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ATTACHMENT

DEVELOPMENT ASSESSMENT PANEL 06/05/2020

New Site Site Category: (None) Giveway / Yield (Two-Way)	OUTPUT TABLE LINKS	Sign Control Sign Control Basic Parameters Gap Acceptance Parameters	Intersection Negotiation and Travel Data Movement Capacity and Performance Parameters Fuel Consumption, Emissions and Cost	Lattes Lane Performance and Capacity Information Lane, Approach and Intersection Performance Driver Characteristics	Lane Delays Lane Queues Lane Queue Percentiles Lane Stops	If Flow Rates Origin-Destination Flow Rates (Total) Origin-Destination Flow Rates by Movement Class Lane Flow Rates	E-Other Parameter Settings Summary Diagnostics

Model Scenario: PM Peak Hour, Year 2019, Pre-Developed

				NA Not Applicable (single site analysis or unconnected site in Network analysis). N Program option resulted in zero value (single Site analysis or unconnected Site in Network analysis).				l Gap Foll-up Dist Headway m sec			0	70.4 2.80
ŋ			!	ected Site Site analy:				Critical Gap 			4.00 66.1	4.30 70
Extra Bunching &	0.0N	0.0N	0.0N	r unconn (single		JVals		Entry HV Equiv			1.00	1.00
Prop Queued Upstr Signal	AN	NA	NA	analysis c zero value		eloped GHI	ction	Propn Bnchd		pproach.	0.186	0.153
App Pr Dist Up m	500 500	.h) 500	200	rle Site ted in		irs Not Dev	Interse	Intra Bunch Hdwy sec	tth)	u this a	tth) 1.80	1.26
Leg Geometry I	Street (Sout Two Way	Street (Nort Two Way	rvenue Two Way	Not Applicable (single Program option results in Network analysis).	(do	e Paramete d PM 2019	Controlled	Opng Flow pcu/h	Street (Sou	ovements or	Street (Nor 1065	venue 1356+
Approach L Control G	South: Koala Street (South) Major Road Two Way 50	h: Koala or Road	West: Emily Avenue Giveway Two W	NA Not Appli N Program o in Networ	Go to Table Links (Top)	Gap Acceptance Parameters Site: Emily Road PM 2019 Not Developed GHDVals	site ID: 101 Give-Way Sign Controlled Intersection	Opd Dest Lane	South: Koala Street (South)	No opposed movements on this approach.	North: Koala Street (North) 1 W 1065 1	West: Emily Avenue 1 S 1

Sign Control Basic Parameters Site: Emily Road PM 2019 Not Developed GHDVals

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Values in this table are adjusted for movement classes in the entry stream. Use the Pedestrians and Priorities input dialogs to specify opposing pedestrian movements. + Percentage of exiting flow included in opposing vehicle flow

Go to Table Links (Top)

Movements

Intersection Negotiation and Travel Data Site: Emily Road PM 2019 Not Developed GHDVals

Site ID: 101 Give-Way Sign Controlled Intersection

TRAVEL TIME TRAVEL SPEED, TRAVEL DISTANCE AND

From To Approach Exit	_	Turn	Running Speed km/h	Travel Speed km/h	Travel Ti Distance 7 m	Travel Time s	Total Trave Dem Flows veh-km/h	Total Travel Distance Dem Flows Arv Flows veh-hm/h veh-hm/h	Tot.Trav. Time veh-h/h
South: Koala S No	Koala Street (S West L North T	(South) L2 T1	57.5 59.7	57.5 59.7	710.1# 1010.1#	44.5# 60.9#	9.0 1063.2	9.0 1063.2	0.2 17.8
North: Koala So So	Koala Street (North) South Tl West R2	lorth) 11 22	57.8 54.1	55.5 51.2	1010.0# 710.0#	65.6# 49.9#	265.8 23.9	265.8 23.9	4.8 0.5
West: Emily Avenue North South		L2 R2	48.3 47.7	42.6 42.1	713.9# 713.9#	60.4# 61.1#	3.0 1.5	3.0 1.5	0.1
ALL VEHICLES			59.2	58.6	998.5#	61.3#	1366.4	1366.4	23.3

"Running Speed" is the average speed excluding stopped periods.

Travel Time values include cruise times and intersection delays including acceleration, deceleration and idling delays. Travel Distance and Travel Time values include travel on the External Exit section based on the Exit Distance or user-specified Downstream Distance value as applicable. #

INTERSECTION NEGOTIATION DATA

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From To Approach Exit	Turn	Negn Radius m	Negn Speed km/h	Negn Dist m	App Dist m	Exit Dist m	Downstr Dist m
South: Koala Street West North	(South) L2 T1	10.0 s	20.2 60.0	15.7 10.0	500 500	200 500	AN AN
North: Koala Street South West	(North) Tl R2	6. 6	60.0 17.2	10.0 10.4	500	500 200	AN AN
West: Emily Avenue North South	L2 В2	10.0 6.6	20.2 17.2	15.7 10.4	200	500	AN NA
NA Downstream Distance does not - Exit is an internal leg of	l Distance does not an internal leg of		apply if: a network	.: 4			

1 1 1

Exit is an internal leg of a network "Program" option was specified Distance specified was less than the Exit Negotiation Distance Distance specified was greater than the exit leg length

Some Negotiation Radius, Speed or Distance values are user specified.

MOVEMENT SPEEDS AND GEOMETRIC DELAY

		App. Speeds	eds	Exit	Exit Speeds	Queue	
T DI	Turn	Cruise km/h	Negn km/h	Negn km/h	Negn Cruise km/h km/h	Move-up Speed km/h	delay sec
ith: 2 l	South: Koala 1 L2 2 T1	Street 60.0 60.0	: (South) 20.2 2 60.0 6	20.2 60.0	60.0 60.0		5.5 0.0
با د ۵ م	North: Koala S 8 Tl 6 9 R2 6	Street (North) 60.0 60.0 6 60.0 17.2 1	(North) 60.0 17.2	60.0 17.2	60.0	1.4 1.4	0.0 5.4
10:E	mily L2 R2	West: Emily Avenue 10 L2 60.0 12 R2 60.0	20.2 17.2	20.2 17.2	60.0 60.0	11.7 11.7	ი. . 4. თ

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Site ID: 101 Give-Way Sign Controlled Intersection

MOVEMENT CAPACITY PARAMETERS

Mov ID	Turn	Mov Cl.	Arv Flow veh/h	Opng l Flow veh/h	Opng Movement Adjust. Flow Flow veh/h pcu/h	Total Cap. veh/h	Prac. Deg. Satn xp	Prac. Spare Cap. %	Deg. Satn x
South: 1 2	: Koala L2 # T1 #		Street (South) 13 0 1053 0	outh) 0 0	00	23 1926	0.98 0.98	67 67	0.547*
North: 8 9	: Коаla т1 # R2 #	1	Street (N 263 34	(North) 0 1065	0 1065	1208 155	0.98	350 350	0.218
West: 10 12		Emily Avenue L2 # R2 #	nue 2	1053 1356	1053 1356	198 198	0.80	3662 3662	0.021

Maximum degree of saturation
 Combined Movement Capacity parameters are shown for all Movement Classes.

MOVEMENT PERFORMANCE

DI	.) Turn	Turn Total Total Aver. Delay Delay Delay Delay (veh-h/h) (pers-h/h) (sec)	Total Delay pers-h/h)	Aver. Delay (sec)	Eff. Stop Rate	Total Stops	Perf. Index	Tot.Trav. Tot.Trav. Distance Time (veh-km/h) (veh-h/h)	Tot.Trav. Time (veh-h/h)	Aver. Speed (km/h)
South: 2	: Koa. L2 T1	Koala Street (L2 0.02 0 T1 0.03 0	(South) 0.02 0.03	5.6 0.1	0.01	0.1	0.1 0.17 7.5 17.79	9.0 1063.2	0.2 17.8	57.5 59.7
North: 9	: Koa. Tl	Koala Street (1 T1 0.26 0 R2 0.15 0	(North) 0.31 0.18	3.5 15.9	0.0 0.0	23.0 2.9	5.31 1.05	265.8 23.9	4.8 0.5	55.5 51.2
Vest: 10 12	Emil L2 R2	West: Emily Avenue 10 L2 0.02 12 R2 0.01	0.02 0.01	13.3 21.0	0.91 0.91	3.8 1.9	0.07	3.0 1.5	0.0	42.6 42.1

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Links	
Table	
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Fuel Consumption, Emissions and Cost Site: Emily Road PM 2019 Not Developed GHDVals

Site ID: 101 Give-Way Sign Controlled Intersection FUEL CONSUMPTION, EMISSIONS AND COST (TOTAL)

South: Koala Street (South) 2 Tl 12 379.31 60.4 2 Tl 383.62 60.9 North: Koala Street (North) 8 Tl 122.76 18.3 9 R2 15.07 1.8 137.83 20.1 West: Emily Avenue 12 R2 0.94 0.1	5 1.2 4 141.9 9 143.1	0.00	•	kg/h
383.62 6 383.62 6 T1 122.76 1 R2 152.76 1 137.83 2 137.83 2 137.83 2 Emily Avenue 1.88 R2 0.94			0.000	0.000
Koala Street (North) T1 122.76 1 R2 15.07 1 137.83 2 137.83 2 Emily Avenue L2 1.88 R2 0.94		0.19	0.010	0.028
137.83 2 Emily Avenue L2 1.88 R2 0.94	3 43.1 8 4.2	0.05	0.003	0.001
Emily Avenue L2 1.88 R2 0.94	1 47.3	0.06	0.004	0.012
	3 0.7 1 0.3	0.00	0.000	0.000
2.81 0.4	4 1.0	0.00	0.000	0.000
INTERSECTION: 524.26 81.4	4 191.4	0.25	0.014	0.040

FUEL CONSUMPTION, EMISSIONS AND COST (RATE)

G	es-		Fuel Rate L/100km	CO2 Rate g/km	CO Rate g/km	Rat /km	NOX Rate g/km
South: Koala 1 L2 2 T1	Street	t (South) 0.48 0.36	5.7	133.7 133.5	0.17 0.17	0.010	0.026 0.026

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	0.36	5.7	5.7 133.5	0.17	0.17 0.010 0.026	0.026
North: Koala Street 8 Tl 9 R2	(North) 0.46 0.63	6.9 7.4	162.1 174.4	0.20	0.013 0.014	0.042 0.048
	0.48	6.9	163.1	0.20	0.013	0.042
West: Emily Avenue 10 L2 12 R2	0.62 0.62	00 88	230.2 230.2	0.26 0.26	0.021 0.021	0.078
	0.62	9.8	230.2	0.26	0.021	0.078
INTERSECTION:	0.38	6.0	140.1	0.18	0.010	0.030

Go to Table Links (Top)

Lanes

Lane Performance and Capacity Information Site: Emily Road PM 2019 Not Developed GHDVals

Site ID: 101 Give-Way Sign Controlled Intersection

LANE PERFORMANCE

	Flow	Cap	Deg.	Aver.	Eff.	u e u e 95% Back	ck e	Lane
No.	veh/l	veh/h veh/h		Sec	Rate	veh	Е	n a
South: 1			(South) 0.547	0.2	0.2 0.01	- 		500.0
North: 1	Коа	la Street 297 1363	(North) 0.218	4.9	4.9 0.09	1.2	8 .5	500.0
West:] l	Emily Avenue 6 29	venue 297	:nue 297 0.021		15.9 0.91	0.1	0.4	200.0

LANE FLOW AND CAPACITY INFORMATION

Lane Util %	100	100	100
Deg. Satn x	0.547 100	0.218	0.021
Tot Cap veh/h	South) 1949	t (North) 52 1363	297
Min w Cap veh/h	Street (South) 1065 1949	Street (North) 52 1363	enue e
Total Arv Flow veh/h	Koala S 1065		Emily Avenue 6
Lane No.	South: 1	North: Koala 1 297	West: 1

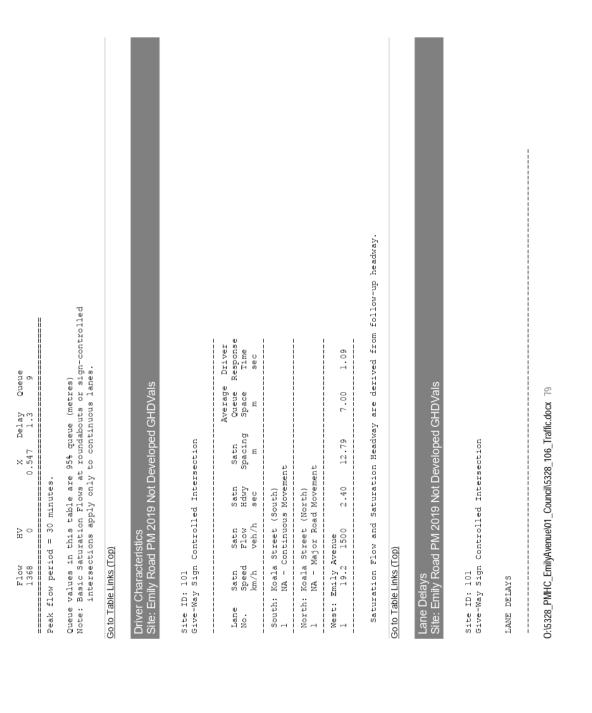
The capacity values of Continuous Lanes are obtained by adjusting the basic saturation flow for lane width, grade, movement class and turning vehicle effects. Saturation flow scale applies if specified.

Go to Table Links (Top)

Lane, Approach and Intersection Performance Site: Emily Road PM 2019 Not Developed GHDVals

Site ID: 101 Give-Way Sign Controlled Intersection

South: Koala	(veh/h)	ΛH%	Auj. Basic Satf.	Sat Sat	Delay Sec	Queue	Length m
1 1065		o t	Street (South) 0 1950	0.547	0.2		500
1065	65	0		0.547	0.2		
North: Koala 1 297	ala Street 297 0	ot	(North)	0.218	4.9	σι	500
10	297	0		0.218	4.9	5	
West: Emily l	Emily Avenue 6	ų O		0.021	15.9	0	200
	9	0		0.021	15.9	0	
ALL VEHICLES Tota	CLES Total	alo		Max	Aver.	Max	
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Stopd (Idle) Geom Control	di dig dic	0.1 0.2	2.7 0.6 4.9	7.2 5.5 15.9	belay											Prob. Prob. Block SLOW	PTOCK
seconds/veh) Queuing Total MvUp	dq dqm		1.6 2.7 0.0	3.1 7.2 0.0	he sum of Stop-1		d ungueued includes		peed)) Queue Stor.	KACIO 052 7 052
	d2 dSL dn	0.1	0.1 4.3	0.0 10.3	Control Delay is the sum of Stop-line Delay	ases	ass: scop-time detay (-duraz) dd: Average stop-start detay for all vehicles queued and unqueued dd: Queuing detay (the part of the scop-line delay that includes	lay)	di: Stopped delay (topped (idling) time at near-zero speed) dig: Geometric delay dio: Control delay			HDVals				Back of Queue (veh)	
Min r Del		(1	1) 3.0 4.2	. 9.4 10.3	is used.) acceptance c	rus) Play for all v rt of the sto	ue move-up de	id (idling) ti			ot Developed C		tersection		Ovrfl.	
% Arv Prog. 1 During Factor		I Street (South)	l Street (North) NA NA NA	Avenue . NA NA	SIDRA Standard Delay Model	and Geometric Delay. dm: Minimum delay for gap acceptance cases der etterited active delay for gap acceptance cases	the delay (-du stop-start de r delay (the pa	<pre>stopped delay and queue move-up delay) dom: Oueue move-up delay</pre>	stopped delay (stoppe Geometric delay Control delay	ד מבדמל	(Top)	Lane Queues Site: Emily Road PM 2019 Not Developed GHDVals		Give-Way Sign Controlled Intersection	(VEHICLES)	% Arv Prog. During Factor	
Deg. Lane Satn	No. x	South: Koala 1 0.547	North: Koala 1 0.218	West: Emily Avenue 1 0.021 NA	SIDRA Stand	and Geometric Delay. dm: Minimum delay fo	dn: Average dn: Average dq: Queuing	stopped dam: Queue	di: Stopped delay dig: Geometric dela dic: Control delay		<u>Go to Table Links (Top)</u>	Lane Queues Site: Emily Ro	5145 TD. 101	Give-Way Sign	BACK OF QUEUE	Deg. Tane Satn	JACD

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North: Koala Street (North) 1 0.218 NA NA

South: Koala Street (South)

Lane No.

NA

0.00

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0.0

0.0

0.0

NA

West: Emily Avenue 1 0.021 NA

BACK OF QUEUE (DISTANCE)

. d			A	Ā
Prob.	- 00 - 10 - 10		z	Z
Prob.	PLOCK J		0.2 3.2 0.2 3.4 8.5 0.01 0.02 0.0 NA	0.0 0.2 0.0 0.2 0.4 0.00 0.00 0.0
Queue Stor.	AV. 95%		0.02	0.00
Queue	95% AV. 95%		0.01	0.00
			8 .5	0.4
Back of Queue (m)	dn 2dn Idn		3.4	0.2
ck of Q	Nb2		0.2	0.0
			3.2	0.2
ovrfl.	No			0.0
		(South)	(North) NA	NA
Deg. & Arv Prog.	Green	South: Koala Street (South)	North: Koala Street (North) 1 0.218 NA NA	Avenue NA
Deg.	No. x 1	. Koala	: Koala 0.218	West: Emily Avenue 1 0.021 NA
	No.	South	North: 1 (West: l (

OTHER QUEUE RESULTS (VEHICLES)

		8 Arv	Prog.	ovrfl.	Ovrfl. Cyc-Av. Queue	Queue
Lane No.	X X	Green	ractor	Queue	Nc	958
South	South: Koala	Street	(South)			
Vorth	1: Koala 0.218	North: Koala Street (North) 1 0.218 NA NA	(North) NA	0.0	0.4	0.6
Vest:	West: Emily Avenue 1 0.021 NA	Avenue NA	NA	0.0	0.0	0.0

OTHER QUEUE RESULTS (DISTANCE)

Queue 95 %		4.5	0.2
Ovrfl. Cyc-Av. Queue Queue		2.5	0.1
Ovrfl. Queue No		0.2	0.0
Prog. Factor	(South)	(North) NA	NA
Deg. % Arv Pro e Satn During Fac x Green	South: Koala Street (South)	Street NA	Avenue NA
Deg. Satn x	Koala	North: Koala 1 0.218	West: Emily Avenue 1 0.021 NA
Lane No.	South	North: 1 0	West: 1 (

Way Sign QUEUE PEF Beg Sath h: Koala h: Koala h: Koala h: Koala h: Koala 0.218 . Emily Z 0.021 . CueUE PEF Sath Sath	Control RCENTILE: Street Street 0.55 Avenue 0.0 Scot	led Intersect s (VEHICLES) Percentile 70% 85% (South) (North) 0.6 0.9 0.0 0.0 0.0 0.0 Percentile Percentile	rrsecti. TES) (1125) 858 858 858 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 858 858	d Intersection (VEHICLES) Percentile Back of Queue (veh) 70% 85% 90% 95% 98% outh) outh) 0.6 0.9 1.0 1.2 1.3 0.6 0.9 1.0 1.2 1.3 0.0 0.0 0.1 0.1 0.1 (DISTANCE) Percentile Back of Queue (metres) Percentile Back of Queue (metres)	ueue (. 958 1.2 0.1	Veh) Veh) 988 0.1 0.1 0.1 0.1 988	100 8 1.5 0.1
South: Koala	Street	(South)					
1: Koala 0.218	Street 3.4	(North) 4.4	6.2	7.2	8.5	9.4	10.2
West: Emily Avenue 1 0.021 0.2	Avenue 0.2	0.2	0.3	0.4	0.4	0.5	0.5

Lane Stops Site: Emily Road PM 2019 Not Developed GHDVals

Site ID: 101 Give-Way Sign Controlled Intersection

	Deg.	8 Arv	Prog.		fective	e Stop	Effective Stop Rate		-	Total Queue		Aver. Num. of
Lane No.	satn X	During Green	Factor	hel	he2	Geom. hig	Geom. Overall hel he2 hig h	stops H	hqm	Move-ups Hqm	Queued	Cycles to Depart
South: Koala 1 0.547	Koala 0.547	South: Koala Street (South) 1 0.547 NA NA	(South) NA			0.01	0.01	7.5				
North: 1	North: Koala Stree 1 0.218 NA	North: Koala Street (North) 1 0.218 NA NA	(North) NA		00.0	0.04	0.04 0.00 0.04 0.09	25.9	25.9 0.04	11.4	0.37	0.41
West: 1	Emily 0.021	West: Emily Avenue 1 0.021 NA	N.A.		0.79 0.00 0.12	0.12	0.91	5.7	0.00	0.0	0.80	0.80
hig i ham i	s the	average are onen	value fo	or all : un rate	moveme: for a	nts in 1 vehi	hig is the average value for all movements in a shared lane hum is averance musue more-up rate for all vehicles musued as	i lane	hig is the average value for all movements in a shared lane how is average value for all movements in a shared lane			

Go to Table Links (Top)

Flow Rates

Origin-Destination Flow Rates (Total) Site: Emily Road PM 2019 Not Developed GHDVals

Site ID: 101 Give-Way Sign Controlled Intersection

TOTAL FLOW RATES for All Movement Classes (veh/h)

ł

From SOUTH To:	М	N	
Turn:	L2	11	TOT
Flow Rate	12.6	1052.6	1065.3
%HV (all designations)	0.0	0.0	0.0
From NORTH To:	ŝ	м	
Turn:	ΤI	R2	TOT
Flow Rate	263.2	33.7	296.8
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<pre>%HV (all designations)</pre>	0.0	0.0	0.0
From WEST To:	Ν	Ś	
Turn:	1.2	R2	TOT
Flow Rate	4.2	2.1	6.3
%HV (all designations)	0.0	0.0	0.0

Flow rates shown above are Arrival Flow Rates (veh/h) based on the following input specifications: Unit Time for Volumes = 60 minutes Feak Flow Period = 30 minutes Effects of Volume Factors (Peak Flow Factor, Flow Scale, Growth Rate) are included. Arrival Flow Rates may be less than Demand Flow Rates if capacity constraint applies in network analysis.

Go to Table Links (Top)

Origin-Destination Flow Rates by Movement Class Site: Emily Road PM 2019 Not Developed GHDVals

Site ID: 101 Give-Way Sign Controlled Intersection

FLOW RATES for Light Vehicles (veh/h)

From SOUTH To: Turn:	E M	ъĘ	TOT
Flow Rate Mov Class % Flow Scale Peak Flow Factor Residual Demand	12.6 100.0 1.00 0.95 0.0	1052.6 100.0 1.00 0.95 0.0	1065.3 100.0 - 0.0
From NORTH To: Turn:	νĒ	W R2	TOT
Flow Rate Mov Class % Flow Scale Peak Flow Factor Residual Demand	263.2 100.0 1.00 0.95 0.0	33.7 100.0 1.00 0.95 0.0	296.8 100.0 -
From WEST To: Turn:	г2 Г	s R2	TOT
Flow Rate 4.2 2.1 6.3 Mov class % 100.0 100.0 100.0 O:\5328_PMHC_EmilyAvenue\01_Council\5328_106_Traffic.docx	4.2 100.0 01_Counci	2.1 100.0 N5328_106	6.3 100.0 _Traffic.docx 84

ATTACHMENT

ľ	I	0.0	
1.00	0.95	0.0	
1.00	0.95	0.0	
Flow Scale	Peak Flow Factor	Residual Demand	

Flow rates shown above are Arrival Flow Rates (veh/h) based on the following input specifications: Unit Time for Volumes = 60 minutes Peak Flow Period = 30 minutes Arrival Flow Factors (Peak Flow Factor, Flow Scale, Growth Rate) are included. Arrival Flow Rates may be less than Demand Flow Rates if capacity constraint applies in network analysis.

Go to Table Links (Top)

Lane Flow Rates Site: Emily Road PM 2019 Not Developed GHDVals

Site ID: 101 Give-Way Sign Controlled Intersection

LANE FLOW RATES AT STOP LINE (veh/h)

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1 1

TOT	1065.3 1065.3	1065.3	TOT	296.8 296.8	296.8	TOT	6.3 6.3	6.3 106 Traffic
NT	1052.6 1052.6	1052.6	М В.2	33.7 33.7	33.7	ъ 82	2.1	2.1 2.1
W L2	12.6 12.6	12.6	s H	263.2 263.2	263.2	N L2	4.2 2.4	4.2
From SOUTH To: Turn:	Lane l LV Total	Approach	From NORTH To: Turn:	Lane l LV Total	Approach	From WEST To: Turn:	Lane l LV Total	Approach Approach Approach

i.

1 1

i.

EXIT LANE FLOW RATES

Movement Class:	ΓΛ	ЛΗ	TOT
Exit: SOUTH Lane: l Total	265.3 265.3	* *	265.3 265.3
	1056.8 1056.8	* *	1056.8 1056.8
	46.3 46.3	* *	46.3 46.3

Movement not allocated to the lane *

DOWNSTREAM LANE FLOW RATES FOR EXIT ROADS

Movement Class:	ΓΛ	ЧΛ	TOT
Exit: SOUTH Lane: l Total	265.3 265.3	* *	265.3 265.3
1 A B P I	1056.8 1056.8	* *	1056.8 1056.8
A B N	46.3 46.3	* *	46.3 46.3

Movement not allocated to the lane *

Flow rates shown above are Arrival Flow Rates (veh/h) based on the following input specifications: Unit Time for Volumes = 60 minutes Peak Flow Period = 30 minutes Effects 0 Volume Factors (Peak Flow Factor, Flow Scale, Growth Rate) are included. Arrival Flow Rates may be less than Demand Flow Rates if capacity constraint applies in network analysis.

Go to Table Links (Top)

Site: Emily Road PM 2019 Not Developed GHDVals	
Site ID: 101 Give-Way Sign Controlled Intersection	
Basic Parameters: Intersection Type: Unsignalised - Give Way Druing on the left-hand side of the road Input data specified in Metric units Model Defaults: New South Wales Peak Flow Period (for performance): 30 minutes Unit time (for volumes): 60 minutes	
SIDRA Standard Delay model used SIDRA Standard Queue model used Level of Service based on: Delay (RTA NSW) Queue percentile: 95%	
Go to Table Links (Top) Diagnostics Site: Emily Road PM 2019 Not Developed GHDVals	
Site ID: 101 Give-Way Sign Controlled Intersection	
Lane Flow-Capacity Iterations:	
Site Model Variability Index (Iterations 3 to N): 0.0% Number of Iterations: 3 (Maximum: 10)	
Other Diagnostic Messages (if any):	
Go to Table Links (Top)	

Organisation: KING & CAMPBELL PTY LTD | Processed: Monday, 11 March 2019 1:48:08 PM Project: 0:05328_PMHC_EmilyAvenue/22_Engineering/Emily Ave 50existing 2019-2039 GHDMaxValuesNoRate.sip8

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Model Scenario: PM Peak Hour, Year 2019, Post-Developed

DETAILED OUTPUT

V Site: 101 [Emily Road PM 2019 Developed GHDVals]

New Site Site Category: (None) Giveway / Yield (Two-Way)

OUTPUT TABLE LINKS

Sign Control Sign Control Basic Pa

- Sign Control Basic Parameters Gap Acceptance Parameters
 - Gap Acceptance Parameter
- Intersection Negotiation and Travel Data Movement Capacity and Performance Parameters Fuel Consumption, Emissions and Cost
- Lane Performance and Capacity Information Lane, Approach and Intersection Performance Driver Characteristics Lane Delays Lane Queues
 - Lane Queues Lane Queue Percentiles
 - Lane Queue Perce Lane Stops
 - In Flow Rates
- Origin-Destination Flow Rates (Total) Origin-Destination Flow Rates by Movement Class Lane Flow Rates
 - **C**ther
- Parameter Settings Summary Diagnostics

Sign Control

Sign Control Basic Parameters Site: Emily Road PM 2019 Developed GHDVals

Values in this table ar Use the Pedestrians and O:6328_PMHC_EmilyAvenue001_C00	N 1053+	Emily Avenue 1 s 1365+	°.3	No opposed movements on
Values in Use the Pr O:\5328_PMHC_F		West: Emil l	North: Ko l	No oppose
Attach				

is table are adjusted for movement classes in the entry stream. strians and Priorities input dialogs to specify opposing pedestrian movements.

2.80

70.0 66.7

4.30

1.00

0.153 0.182

1.25

2.00

66.1

4.00

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Item 05 nment 10 Page 429

Extra Bunching

Prop Queued Upstr Signal

App Dist

Leg Geometry

Approach Control

E

Site ID: 101 Give-Way Sign Controlled Intersection

ø

0.0N 0.0N NA NA South: Koala Street (South) Major Road Two Way 500 North: Koala Street (North) Major Road Two Way 500

N0.0 NA 200 Тио Way West: Emily Avenue Giveway

NA Not Applicable (single Site analysis or unconnected Site in Network analysis). N Program option resulted in zero value (single Site analysis or unconnected Site in Network analysis).

Go to Table Links (Top)

Gap Acceptance Parameters Site: Emily Road PM 2019 Developed GHDVals

Site ID: 101 Give-Way Sign Controlled Intersection

Foll-up Headway sec	
Critical Gap 	
Critic Hdwy sec	
Entry HV Equiv	
Propn Bnchd	
Intra Bunch Hdwy sec	h)
Opng Flow pcu/h	reet (Sout
Dest	Koala St
Opd Lane	South: 1

ovements on this approach.

1.00 0.186 1.80 Street (North) 1065 1

flow
vehicle
opposing
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included
flow
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Percentage
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Go to Table Links (Top)

Movements

Intersection Negotiation and Travel Data Site: Emily Road PM 2019 Developed GHDVals

Site ID: 101 Give-Way Sign Controlled Intersection TRAVEL SPEED, TRAVEL DISTANCE AND TRAVEL TIME

From Approach	To Exit	Turn	Running Speed km/h	Travel Speed km/h	Travel Distance m	Travel Time s	Total Travel Distance Dem Flows Arv Flows veh-km/h veh-km/h	el Distance Arv Flows veh-km/h	Tot.Trav. Time veh-h/h
South: Koala Street West North	la Street West North	(South) L2 T1	57.5 59.7	57.5 59.7	710.1# 1010.1#	44.5# 60.9#	9.0 1063.2	9.0 1063.2	0.2 17.8
North: Koal	Koala Street South West	(North) T1 R2	57.4 53.5	54.6 50.1	1010.1# 710.1#	66.6# 51.0#	265.8 30.6	265.8 30.6	4.9
West: Emily Avenue North South	/ Avenue North South	L2 R2	48.3 47.7	42.7 42.3	714.2# 714.2#	60.1# 60.8#	3.8 1.5	а. 1.5 8	0.0
ALL VEHICLES	.ES :		59.0	58.3	996.3#	61.5#	1373.9	1373.9	23.6

"Running Speed" is the average speed excluding stopped periods.

Travel Time values include cruise times and intersection delays including acceleration, deceleration and idling delays.

Travel Distance and Travel Time values include travel on the External Exit section based on the Exit Distance or user-specified Downstream Distance value as applicable.

INTERSECTION NEGOTIATION DATA

Negn Negn Negn App Exit Downstr From To Radius Speed Dist Dist Dist Dist

	Journ: Noala Jureet (Journ) West L2 North T1	12 12 11	10.0 s	20.2	15.7 10.0	500	200 500	NA NA
North: Koala Street South West	. Street South West	(North) T1 R2	6.9 6	60.0 17.2	10.0 10.4	500	500	NA NA
West: Emily Avenue North South	Avenue North South	г2 R2	10.0 6.6	20.2 17.2	15.7 10.4	200	500 500	NA NA
NA Downstream - Exit is - "Program" - Distance - Distance	eam Dist is an in ram" opt nce spec nce spec	Downstream Distance does not apply if: - Exit is an internal leg of a network - "Program" option was specified - Distance specified was less than the - Distance specified was greater than	s not appl eg of a ne specified s less tha s greater	apply if: a network ied than the ter than	E: rk ne Exit n the ex	t Negotiation D exit leg length	loes not apply if: L leg of a network us specified was less than the Exit Negotiation Distance was greater than the exit leg length	tance
Some Negotiation Radius, Speed or Distance values are	iation R	ladius, S _l	peed oi	r Distar	nce valu	les are	user spe(specified.

MOVEMENT SPEEDS AND GEOMETRIC DELAY

!.	A.			
	Geom Delay sec	5.5	5.4	55.5 4.5
Queue	Rove up Speed km/h		1.8 1.8	11.7 11.7
Speeds	Negn Cruise km/h km/h	60.0 60.0	60.0 60.0	60.0 60.0
Exit	Negn km/h	.) 20.2 60.0) 60.0 17.2	20.2 17.2
eds	Ne gn km/h	(South) 20.2 60.0	(North) 60.0 17.2	20.2 17.2
App. Speeds	Cruise km/h	Street 60.0 60.0	Street 60.0 60.0	Avenue 60.0 60.0
	Turn	Koala L2 T1	Koala Tl R2	Emily L2 R2
 	Mov ID	South: 1 2	North: 9	West: 10 12

Movement Capacity and Performance Parameters Site: Emily Road PM 2019 Developed GHDVals

Go to Table Links (Top)

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E

km/h

E

Turn

Approach Exit

Site ID: 101 Give-Way Sign Controlled Intersection

MOVEMENT CAPACITY PARAMETERS

Mov	Turn	Turn Mov Cl.	Arv		Opng Movement Adjust.	Total Cap.	Prac. Deg.	Prac. Spare	Deg. Satn
			Flow veh/h	Flow veh/h			Satn xp	Cap. %	×
South: 1	1		Street (South) 13 0	South)	0	23	.08	62	0.547*
61	H	#	1053	0	0	1926	0.98	79	0.547*
North:	1	la St	Street (North)	Vorth)					
œ	Н	#	263	0	0	1091	0.98	306	0.241
თ	R2	#	43	1065	1065	179	0.98	306	0.241
West: 1	Emily	Emily Avenue	nue						
10	E	#	ŝ	1053	1053	218	0.80	3221	0.024
12	R2	#	61	1365	1365	87	0.80	3221	0.024

Maximum degree of saturation
 Combined Movement Capacity parameters are shown for all Movement Classes.

MOVEMENT PERFORMANCE

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1		!	!
Aver. Speed (km/h)	57.5 59.7	54.6 50.1	42.7 42.3
<pre>Perf. Tot.Trav. Tot.Trav. 1 Index Distance Time (veh-h/h) (veh-h/h)</pre>	0.2 17.8	4.9 0.6	0.0
Tot.Trav. Distance (veh-km/h)	9.0 1063.2	265.8 30.6	3.8 1.5
Perf. Index	0.1 0.17 7.5 17.79	29.9 5.54 4.9 1.35	4.8 0.14 1.9 0.08
Total Stops	0.1 7.5	29.9 4.9	4.8 1.9
Eff. Stop Rate	10.0 10.0	0.11 0.11	0.91 0.91
Aver. Delay (sec)	5.6 0.1	4.4 16.1	13.3 21.3
Total Delay pers-h/h)	(South) 0.02 0.03		0.02 0.01
Turn Total Total Aver. Delay Delay Delay (veh-h/h) (pers-h/h) (sec)	Koala Street (South) L2 0.02 0.02 T1 0.03 0.03	North: Koala Street (North) 8 Tl 0.32 0.39 9 R2 0.19 0.23	West: Emily Avenue 10 L2 0.02 12 R2 0.01
Turn (v	Koal L2 T1	Koal Tl R2	Emily L2 R2
Mov ID	South: 1 1 2	North: 8 9	West: 10 12

Go to Table Links (Top)

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Site ID: 101 Give-Way Sign Controlled Intersection

FUEL CONSUMPTION, EMISSIONS AND COST (TOTAL)

Turn

DI DI	Cost Total \$/h	ruei Total L/h	Total kg/h	Total kg/h	Total kg/h	Total kg/h
South: Koala S 1 L2 2 T1	Street (South) 4.31 379.31	h) 0.5 60.4	1.2 141.9	0.00	0.000	0.000
	383.62	60.9	143.1	0.19	0.010	0.028
North: Koala 9 9 R2	Street (North) 128.45 20.24	h) 19.0 2.4	44.5 5.6	0.05	0.004	0.012
	148.69	21.3	50.1	0.06	0.004	0.013
West: Emily Av 10 L2 12 R2	Avenue 2.33 0.93	0.4	6.0 8.0	0.00	0.000	0.000
	3.27	0.5	1.2	0.00	0.000	0.000
INTERSECTION:	: 535.57	82.7	194.4	0.25	0.015	0.042

FUEL CONSUMPTION, EMISSIONS AND COST (RATE)

T DI	Turn	Cost Rate \$/km		Fuel Rate L/100km	CO2 Rate g/km	CO Rate g/km	HC Rate g/km	NOX Rate g/km
South: Koala 1 L2 2 T1	Koala L2 T1	Street (South) 0.48 0.36	(South) 0.48 0.36	5.7	133.7 133.5	0.17 0.17	0.010	0.026 0.026
			0.36	5.7	0.36 5.7 133.5	0.17	0.17 0.010 0.026	0.026
North: Ko 8 Tl	Koala Tl	North: Koala Street (North) 8 Tl 0.48	(North) 0.48	7.1	(North) 0.48 7.1 167.6 0.21	0.21	0.014	0.045

9 R2	0.66	7.8	182.3		0.22 0.015 0.053	0.053
	i		169.1	0.21	0.21 0.014 0.045	0.045
West: Emily Avenue						
10 L2	0.62	9.8	229.9	0.26	0.26 0.021	0.078
12 R2	0.62	°.6	229.9	0.26	0.021	0.078
	0.62	9.8	0	0.26	0.26 0.021 0.078	0.078
INTERSECTION:	0.39		6.0 141.5		0.18 0.011 0.030	0.030

Go to Table Links (Top)

Lanes

Lane Performance and Capacity Information Site: Emily Road PM 2019 Developed GHDVals

Site ID: 101 Give-Way Sign Controlled Intersection

LANE PERFORMANCE

	Flow	Cap	Deg.	Aver.	Eff.	Queue 95% Back	e u e Back	Lane
No.	veh/h veh/h	veh/h	N X	LC L C L	stop Rate	veh	E	nengcn L
South:	South: Koala Street (South) 1 1065 1949 0.547	reet 1949	(South) 0.547	0.2	10.0			500.0
North: 1	North: Koala Street (North) 1 306 1270 0.241	reet 1270	(North) 0.241	6.0	6.0 0.11	1.5	10.8	500.0
West: 1 1	West: Emily Avenue 1 7 30	6	0.024	15.6	15.6 0.91	0.1	0.5	200.0

LANE FLOW AND CAPACITY INFORMATION

 Lane Util	
 Deg. Satn	
Tot Cap	
Min Cap	
 Total Arv Flow	
Lane No.	

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٩Þ	100	100	100
×	0.547 100	0.241	0.024
veh/h veh/h	(South) 1949	(North) 2 1270	306
	Street (1065	Street (42	venue 6
veh/h	Koala 1065	Koala 306	Emily Avenue 7
	South: 1	North: 1	West: l

The capacity values of Continuous Lanes are obtained by adjusting the basic saturation flow for lane width, grade, movement class and turning vehicle effects. Saturation flow scale applies if specified.

Go to Table Links (Top)

Lane, Approach and Intersection Performance Site: Emily Road PM 2019 Developed GHDVals

Site ID: 101 Give-Way Sign Controlled Intersection

Lane No.	Arrival Flow (veh/h)	VH&	Adj. Basic Satf.	Deg Sat x	Aver. Delay sec	Longest Queue m	Lane Length m
South: 1	Koala St 1065	Street 0	(South) 1950	0.547	0.2		500
	1065	0		0.547	0.2		
North: 1	Koala St 306	Street 0	(North)	0.241	6.0	11	500
	306	0		0.241	6.0	11	
West:] l	Emily Avenue 7	nue 0		0.024	15.6	1	200
	7	0		0.024	15.6	1	
ALL VEHICLES Tota Flow 1379	HICLES Total Flow 1379	% NO		Max X 0.547	Aver. Delay 1.6	Max Queue 11	
Peak fl	Peak flow period	= 30	minutes				

Driver Characteristics Site: Emily Road PM 2019 Developed GHDVals site ID: 101 Give-Way Sign Controlled Intersection Inter Satn Satn Average Driver No. Speed Flow Hdwy Spacing Space Time No. Speed Flow Hdwy Spacing Space Time South: Koala Street (South)	North: Koala Street (North) Nat - Major Road Movement West: Emily Avenue 1 19.3 1518 2.37 12.73 7.00 1.07 Saturation Flow and Saturation Headway are derived from follow-up headway.	Go to Table Links (Top) Lane Delays Site: Emily Road PM 2019 Developed GHDVals site ID: 101 site ID: 101 Give-Way Sign Controlled Intersection	LANE DELAYS
------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------	--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------	---------------------------------------------------------------------------------------------------------------------------------------------------------------	-----------------

				1.0					1.0	7.0	
Koala Street 0.241 NA	(North) NA	3.5	5.1	0.2	5.3	1.9	3.3	0.0	3.3	0.8	6.0
Emily Avenue 0.024 NA	NA	9.1	10.1	0.0	10.1	3.2	6.9	0.0	6.9	5.5	15.6
SIDRA Standard Delay Model	ay Model	is used.	1	Control Delay is	lay is		the sum of	Stop-1	Stop-line Delay	ay	
and Geometric Delay. dm: Minimum delay for gap acceptance cases dm: Minimum delay for gap.	Y. for gap acc	acceptan	ce cas	ຫຼ ປ							
dd: Joep inc wergy ("dd: "dd: "dd: "dd: "dd: "dd: "dd: "dd	ay (-ui) tart del (the par	ine using relations all vehicles queued and unqueue stop-start delay for all vehicles queued and unqueue delav (the part of the stop-line delav that includes	ll veh. stop-	icles c line de	fueued lav th	and un at inc	que ued ludes				
stopped delay and queue move-up delay)	and queu	e move-u	ip dela	(Ā	7						
agm: Uteue move-up delay ddi Stopped delay (stopped (idling) time at near-zero speed) dig: Geometric delay dic: Control delay	aeiay (stopped ay	puilbi)	r) time	at nea	1r-zero	speed	~				
Go to Table Links (Top)											
Lane Queues Site: Emily Road PM 2019 Developed GHDVals	2019 Dev	/eloped (GHDVa	s							
Site ID: 101 Give-Way Sign Control	lled Int	Controlled Intersection	ç								
OUEUE (VEHICLES)	LES)										
1	Prog.	Ovrfl.	Bac	Back of Qu	Queue (veh)	eh)	Queue	Queue Stor.	Prob.		
Satn During x Green	Factor	Queue No	IdN	Nb2	dN	958	Av.	Ratio . 95%	Block *	SL	۰. مو
South: Koala Street	(South)										
North: Koala Street 1 0.241 NA	(North) NA	0.0	0.6	0.0	0.6	1.5	0.01	0.02	0.0	NA (4
West: Emily Avenue 1 0.024 NA	NA.	0.0	0.0	0.0	0.0	0.1	0.00	0.00	0.0	AN NA	- 4

BACK OF QUEUE (DISTANCE) 0:15328_PMHC_EmilyAvenue/01_Council/5328_106_Traffic.docx 98

		8 Arv				k of	Back of Queue ((m)	Queue	Queue Stor.	Prob.	Prob.
No.	сасп ж	Green	ractor	Vo	IdN	Nb2	Nb1 Nb2 Nb 958	958	AV.	katio Av. 95%	8 BLOCK	Марана По
South	: Koala	South: Koala Street (South)	South: Koala Street (South)									
North 1		North: Koala Street (North) 1 0.241 NA NA	North: Koala Street (North) 1 0.241 NA NA 0.3 4.0 0.3 4.3 10.8 0.01 0.02 0.0 NA		4.0	е.0	4.3	4.0 0.3 4.3 10.8 0.01 0.02	0.01	0.02	0.0	NA

0.0 0.02 0.01 10.8 4.3 0.3 4.0 0.3 i

NA 0.0 00.00 00.00 0.5 0.2 0.0 0.2 0.0 NA West: Emily Avenue 1 0.024 NA

OTHER QUEUE RESULTS (VEHICLES)

Deg. %	8 Arv During	Prog. Factor	Ovrfl.	Ovrfl. Cyc-Av. Queue	Queue
3 8	Green	100001	No	Nc	958
South: Koala S	Street	(South)			
ŝ	North: Koala Street 1 0.241 NA	(North) NA	0.0	0.4	0.8
Av	West: Emily Avenue 1 0.024 NA	NA	0.0	0.0	0.0

OTHER QUEUE RESULTS (DISTANCE)

Oueue 958		5.7	0.3
Cyc-Av. Queue 		3.1	0.1
Ovrfl. Queue No		0.3	0.0
Prog. Factor	(South)	(North) NA	NA
& Arv & Arv During Green	Street	Street NA	Avenue NA
Deg. Satn x	Koala	North: Koala 1 0.241	West: Emily Avenue 1 0.024 NA
Lane No.	South:	North 1 (West: 1 (

Go to Table Links (Top)

No. x 50% 70% 85% 90% 95% 98%	
South: Koala Street (South)	100%
North: Koala Street (North) 1 0.241 0.6 0.8 1.1 1.3 1.5 1.7	1.8
Emily A 0.024	1.0
Deg. Percentile Back of Queue (metres) Tane Sath	
	100%
South: Koala Street (South)	
North: Koala Street (North) 1 0.241 4.3 5.6 7.9 9.1 10.8 11.9	12.8
West: Emily Avenue 1 0.024 0.2 0.3 0.4 0.4 0.5 0.6	0.6

Lane Queue Percentiles

ATTACHMENT

DEVELOPMENT ASSESSMENT PANEL 06/05/2020

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	Intersection
	Controlled
101	Sign
Site ID:	Give-Way

Lane No	Deg. Satn	% Arv During Green	Prog. Factor	Effe hal	ifective ha?	: Stop Geom. big	Effective Stop Rate Geom. Overall hel he? him	Total Stops H	Move-up Rate hom	Queue Move-ups Hom	Prop. Queued	Aver. Num. of Cycles to Denart
uth:	.547	Street	South: Koala Street (South) 1 0.547 NA NA			10.0	0.01		urb tr		<u>р</u>	
rth: C	Koala .241	Street NA	North: Koala Street (North) 1 0.241 NA NA		0.06 0.00 0.05	0.05	0.11	34.7	0.07	20.2	0.45	0.51
st: 0	cmily .024	West: Emily Avenue 1 0.024 NA	AN		0.00	0.12	10.021.000.0		6.7 0.00	0.0	0.80	0.80

Go to Table Links (Top)

Flow Rates

Origin-Destination Flow Rates (Total) Site: Emily Road PM 2019 Developed GHDVals

Site ID: 101 Give-Way Sign Controlled Intersection

TOTAL FLOW RATES for All Movement Classes $(\,veh/h)$

From SOUTH To: Turn: Flow Rate %HV (all designations)	W L2 12.6 0.0	N T1 1052.6 0.0	TOT 1065.3 0.0
From NORTH To: Turn: Flow Rate &HV (all designations)	s T1 263.2 0.0	W R2 43.2 0.0	доғ. 3 0.0
From WEST To: Turn:	N L2	s R2	TOT

7.4	0.0	
2.1	0.0	
5.3	0.0	
Flow Rate	%HV (all designations)	

Flow rates shown above are Arrival Flow Rates (veh/h) based on the following input specifications: Unit Time for Volumes = 60 minutes Peak Flow Period = 30 minutes Effects of Volume Factors (Peak Flow Factor, Flow Scale, Growth Rate) are included. Arrival Flow Rates may be less than Demand Flow Rates if capacity constraint applies in network analysis.

Go to Table Links (Top)

Origin-Destination Flow Rates by Movement Class Site: Emily Road PM 2019 Developed GHDVals

Site ID: 101 Give-Way Sign Controlled Intersection

FLOW RATES for Light Vehicles (veh/h)

TOT	1065.3 100.0 - 0.0	TOT	306.3 100.0 - 0.0	TOT	7.4 100.0 -
ИĻ	1052.6 100.0 1.00 0.95 0.0	W R2	43.2 100.0 1.00 0.95 0.0	ъ В2	2.1 100.0 1.00 0.95 0.0
М 112	12.6 100.0 1.00 0.95 0.0	νE	263.2 100.0 1.00 0.95 0.0	L2 L2	5.3 100.0 1.00 0.95 0.05
From SOUTH To: Turn:	Flow Rate Mov Class & Flow Scale Peak Flow Factor Residual Demand	From NORTH To: Turn:	Flow Rate Mov Class % Flow Scale Peak Flow Factor Residual Demand	From WEST To: Turn:	Flow Rate Mov Class & Flow Scale Peak Flow Factor Residual Demand

ications:					
specif:				s in	
Flow rates shown above are Arrival Flow Rates (veh/h) based on the following input specifications:	Unit Time for Volumes = 60 minutes	inutes	Effects of Volume Factors (Peak Flow Factor, Flow Scale, Growth Rate) are included.	Arrival Flow Rates may be less than Demand Flow Rates if capacity constraint applies in	
above ai	Lumes =	= 30 mj	e Factors	es may be	
tes shown	he for Vol	Peak Flow Period = 30 minutes	of Volume	Flow Rate	network analysis.
Flow rat	Unit Tin	Peak Flo	Effects	Arrival	network

Go to Table Links (Top)

Lane Flow Rates Site: Emily Road PM 2019 Developed GHDVals

Site ID: 101 Give-Way Sign Controlled Intersection

FLOW RATES AT STOP LINE (veh/h) LANE

TOT	1065.3 1065.3	1065.3	TOT	306.3 306.3	306.3	TOT	7.4 7.4	7.4
N LT	1052.6 1052.6	1052.6	М В 2	43.2 43.2	43.2	s R2	2.1	2.1
м 112	12.6 12.6	12.6	s T	263.2 263.2	263.2	L2 L2	0.0 0.0	5.3
From SOUTH To: Turn:	Lane l LV Total	Approach	From NORTH To: Turn:	Lane l LV Total	Approach	From WEST To: Turn:	Lane l LV Total	Approach

EXIT LANE FLOW RATES O.(5328_PMHC_EmilyAvenue)01_Council\5328_106_Traffic.docx 103

ltem	05
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1 -		იი		
TOT	265.3 265.3	1057.9	50 50 8 8 8 8 8 8 8	lane
лн	* *	* *	* *	to the
				۲ t
ΓΛ	265.3 265.3	1057.9 1057.9	55.8 55.8	allocated
				not
ent Class	: SOUTH 1	: NORTH 1	. WEST 1	Movement
Movement	Exit: Lane: Total	xit ne: tal	Exit: Lane: Total	*

DOWNSTREAM LANE FLOW RATES FOR EXIT ROADS

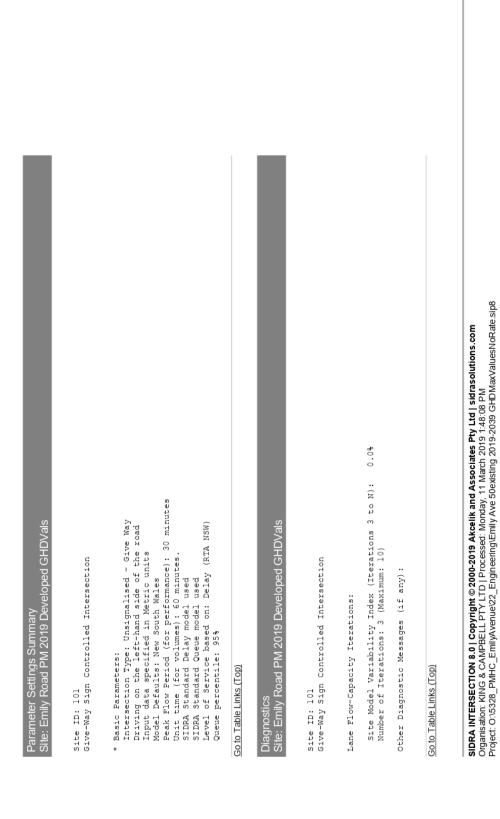
TOT	265.3	1057.9	55.8
	265.3	1057.9	55.8
Н	* *	* *	* *
ΓΛ	265.3	1057.9	55.8
	265.3	1057.9	55.8
Movement Class:	Exit: SOUTH Lane: l Total	I Y G P I	

* Movement not allocated to the lane

Flow rates shown above are Arrival Flow Rates (veh/h) based on the following input specifications: Unit Time for Volumes = 60 minutes Peak Flow Period = 30 minutes Effects of Volume Factors (Peak Flow Factor, Flow Scale, Growth Rate) are included. Arrival Flow Rates may be less than Demand Flow Rates if capacity constraint applies in network analysis.

Go to Table Links (Top)

Other



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V Site: 101 [Emily Road PM 2039 Not Developed GHDVals] New Site Site Category: (None) Giveway / Yield (Two-Way)	OUTPUT TABLE LINKS Sign Control Sign Control Basic Parameters Gap Acceptance Parameters Gap Acceptance Parameters Gap Acceptance Parameters Intersection Negotiation and Travel Data Movement Capacity and Performance Parameters Fuel Consumption, Emissions and Cost Movement Capacity Information Lanes Lane Approach and Intersection Performance Lane, Approach and Intersection Performance Lane Approach and Intersection Performance Lane Queues Lane Queues Lane Queues Lane Queues Lane Stops	<pre>If Flow Rates Origin-Destination Flow Rates (Total) Origin-Destination Flow Rates by Movement Class Lane Flow Rates Lane Flow Rates Parameter Settings Summary Diagnostics</pre>

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Extra Bunching Å	0.0N	0.0N	0.0N	NA Not Applicable (single Site analysis or unconnected Site in Network analysis). N Program option resulted in zero value (single Site analysis or unconnected Site in Network analysis).)Vals		Critical Gap Entry Foll-up HV Hdwy Dist Headway Equiv sec m sec			1.00 4.00 66.1 2.00	1.00 4.30 70.4 2.80
Prop Queued Upstr Signal	AN	AN	A. N. A.	.te analysis o n zero value		Gap Acceptance Parameters Site: Emily Road PM 2039 Not Developed GHDVals	Site ID: 101 Give-Way Sign Controlled Intersection	Propn Bnchd		No opposed movements on this approach.	0.186	6 0.153
App Dist m	uth) 500	rth) 500	200	ngle Si ulted i s).		tters 89 Not D	d Inter		iouth)	on this	lorth) 1.80	1.26
Geometry	South: Koala Street (South) Major Road Two Way 50	North: Koala Street (North) Major Road Two Way 50	.venue Two Way	Not Applicable (single Program option result in Network analysis).	ଘ	Gap Acceptance Parameters Site: Emily Road PM 2039 No	ontrolle	Opng Flow pcu/h	South: Koala Street (South)	vements	North: Koala Street (North) 1 W 1065 1	enue 1356+
	oala St: oad Tw	oala St: oad Tw	ly A	Applica gram opt Wetwork	Go to Table Links (Top)	eptance y Road	101 Sign Co	Des 1	Koala St	osed mo	Koala St W	West: Emily Avenue 1 5 13
Approacn Control	outh: Koala Major Road	orth: Koala Major Road	lest: Emi Giveway	NA Not N Prog	to Table I	ap Acce te: Emil	Site ID: 101 Give-Way Sig	0pd Lane	outh: 1	No oppo	North: P	West: En

Sign Control Basic Parameters Site: Emily Road PM 2039 Not Developed GHDVals

Site ID: 101 Give-Way Sign Controlled Intersection

Values in this table are adjusted for movement classes in the entry stream. Use the Pedestrians and Priorities input dialogs to specify opposing pedestrian movements. + Percentage of exiting flow included in opposing vehicle flow

Go to Table Links (Top)

Movements

Intersection Negotiation and Travel Data Site: Emily Road PM 2039 Not Developed GHDVals

Site ID: 101 Give-Way Sign Controlled Intersection

TRAVEL TIME TRAVEL SPEED, TRAVEL DISTANCE AND

From To Approach Exit	Turn	Running Speed km/h	Travel Speed km/h	Travel Ti Distance 1 m	Travel Time s	Total Trave Dem Flows veh-km/h	Total Travel Distance Dem Flows Arv Flows veh-hm/h veh-hm/h	Tot.Trav. Time veh-h/h
South: Koala Street West North	eet (South) c L2 n Tl	57.5 59.7	57.5 59.7	710.1# 1010.1#	44.5# 60.9#	9.0 1063.2	9.0 1063.2	0.2 17.8
North: Koala Stre South West	Koala Street (North) South Tl West R2	57.8 54.1	55.5 51.2	1010.0# 710.0#	65.6# 49.9#	265.8 23.9	265.8 23.9	4.8 0.5
West: Emily Avenue North South	ae D L2 P R2	48.3 47.7	42.6 42.1	713.9# 713.9#	60.4# 61.1#	3.0 1.5	3.0 1.5	0.1
ALL VEHICLES:		59.2	58.6	998.5#	61.3#	1366.4	1366.4	23.3

"Running Speed" is the average speed excluding stopped periods.

Travel Time values include cruise times and intersection delays including acceleration, deceleration and idling delays. Travel Distance and Travel Time values include travel on the External Exit section based on the Exit Distance or user-specified Downstream Distance value as applicable. #

INTERSECTION NEGOTIATION DATA

Go to Table Links (Top)

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e la	Negot	iation 1	Radius,	Speed	l or Dist	me Negotiation Radius, Speed or Distance values	are	user S	spe
핕	MENT SPE	SPEEDS AND	AND GEOMETRIC DELAY	VIC DE	ILAY				
1		App. Speeds	eeds	Exit	Exit Speeds	Queue			
	Turn	Cruise km/h	Negn km/h	Negn km/h	Negn Cruise km/h km/h	Move-up Speed km/h	ueom Delay sec		
	Koala L2 T1	h: Koala Street (1 L2 60.0 2 2 Tl 60.0 6	5outh) 0.2 0.0	20.2 60.0	60.0 60.0		5.5 0.0		
	Koala Tl R2	Street 60.0 60.0	North) 0.0 7.2	60.0 17.2	60.0 60.0	1.4 1.4	0.0		
1	Emily 12	Emily Avenue 12 60.0	20.2 20.2 60.0	2.0.2	60.0	7.11	5.5		

ATTACHMENT

From T Approach E	To Exit	Тиги	Negn Radius m	Negn Speed km/h	Negn Dist m	App Dist m	Exit Dist m	Downstr Dist m
South: Koala	a Street West North	(South) L2 T1	10.0 S	20.2 60.0	15.7 10.0	500 500	200	AN AN
North: Koala	a Street South West	(North) T1 R2	6. 6	60.0 17.2	10.0 10.4	500	500 200	AN AN
West: Emily	Avenue North South	L2 R2	10.0 6.6	20.2 17.2	15.7 10.4	200 200	500 500	NA NA
NA Downstream - Exit is (- "Program" - Distance - Distance	i n n n n n n n n n n n n n n n n n n n	Distance do n internal option was specified w	es not leg of specif as less as grea	apply if: a network ied than the ter than	4	gotia leg		Distance
Some Negot	Negotiation H	Radius,	Speed or	r Distance	ce values	are	user spe	specified.
MOVEMENT SPE	SPEEDS AND	GE OME TRI C	IC DELAY	Я				
	App. Spe	eeds	Exit Spe	Speeds	Queue			
Mov ID Turn	Cruise km/h	Ne gn km/h	Negn Crı km/h kr	Cruise km/h	Nove-up Speed km/h	Geom Delay sec		
South: Koala 1 L2 2 T1	1 Street 60.0 60.0	(South) 20.2 60.0	20.2 6(60.0 6(60.0 60.0		5.5		
North: Koala 8 Tl 9 R2	A Street 60.0 60.0	(North) 60.0 17.2	60.0 6(17.2 6(60.0 60.0	1.4 1.4	0.0 5.4		
West: Emily 10 L2 12 R2	Avenue 60.0 60.0	20.2 17.2	20.2 6(17.2 6(60.0 60.0	11.7 7.11	с с . с 4		

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Site ID: 101 Give-Way Sign Controlled Intersection

MOVEMENT CAPACITY PARAMETERS

	. * *		
Deg. Satn x	0.547* 0.547*	0.218 0.218	0.021
Prac. Spare Cap. %	67 67	350 350	3662 3662
Prac. Deg. Satn Xp	0.98 0.98	0.98 0.98	0.80
Total Cap. Veh/h	23 1926	1208 155	198 99
Opng Movement Adjust. Flow Flow veh/h pcu/h	00	0 1065	1053 1356
Opng M Flow veh/h	outh) 0 0	(North) 0 1065	1053 1356
Arv Flow veh/h	Street (South) 13 0 1053 0	Street (N 263 34	aue 4-0
Turn Mov Cl.	Koala L2 # T1 #	Koala Tl # R2 #	Emily Avenue L2 # R2 #
Mov ID	South: 1 2	North: 8 9	West: 10

Maximum degree of saturation
 Combined Movement Capacity parameters are shown for all Movement Classes.

MOVEMENT PERFORMANCE

MoV ID	Turn (v	. Total Total Aver. Delay Delay Delay veh-h/h)(pers-h/h)(sec)	Total Delay pers-h/h)	Aver. Delay (sec)	Eff. Stop Rate	Total Stops	Perf. Index	<pre>Perf. Tot.Trav. Tot.Trav. Index Distance Time (veh-km/h) (veh-h/h)</pre>	Tot.Trav. Time (veh-h/h)	Aver. Speed (km/h)
South: 2	: Koa L2 T1	Koala Street (L2 0.02 0 T1 0.03 0	(South) 0.02 0.03	5.6	0.01	0.1	0.1 0.17 7.5 17.79	9.0 1063.2	0.2 17.8	57.5 59.7
North: 9	r Tl R2	Koala Street (Tl 0.26 0 R2 0.15 0	(North) 0.31 0.18	3.5 15.9	0.09 0.09	23.0 2.9	5.31 1.05	265.8 23.9	4.8 0.5	55.5 51.2
West: 10 12	Emil L2 R2	West: Emily Avenue 10 L2 0.02 12 R2 0.01	0.02 0.01	13.3 21.0	0.91 0.91	3.8 1.9	0.07	3.0 1.5	0.0	42.6 42.1

(Top)	
Links	
Table	
Go to	

Fuel Consumption, Emissions and Cost Site: Emily Road PM 2039 Not Developed GHDVals

Site ID: 101 Give-Way Sign Controlled Intersection FUEL CONSUMPTION, EMISSIONS AND COST (TOTAL)

Mov Turn ID	Cost Total \$/h	Fuel Total L/h	CO2 Total kg/h	CO Total kg/h	HC Total kg/h	NOX Total kg/h
South: Koala S 1 L2 2 Tl	Street (South 4.31 379.31	h) 0.5 60.4	1.2 141.9	0.00	0.000	0.000
	383.62	60.9	143.1	0.19	0.010	0.028
North: Koala S 8 Tl 9 R2	Street (North 122.76 15.07	h) 18.3 1.8	43.1 4.2	0.05	0.003	0.011
	137.83	20.1	47.3	0.06	0.004	0.012
West: Emily Av 10 L2 12 R2	Avenue 1.88 0.94	0.3 0.1	0.7	0.00	0.000	0.000
	2.81	0.4	1.0	00.0	0.000	0.000
INTERSECTION:	524.26	81.4	191.4	0.25	0.014	0.040

FUEL CONSUMPTION, EMISSIONS AND COST (RATE)

G	es-		Fuel Rate L/100km	CO2 Rate g/km	CO Rate g/km	Rat /km	NOX Rate g/km
South: Koala 1 L2 2 T1	Street	t (South) 0.48 0.36	5.7	133.7 133.5	0.17 0.17	0.010	0.026 0.026

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	0.36	5.7	5.7 133.5	0.17	0.17 0.010 0.026	0.026
North: Koala Street 8 Tl 9 R2	(North) 0.46 0.63	6.9 7.4	162.1 174.4	0.20	0.013 0.014	0.042 0.048
	0.48	6.9	163.1	0.20	0.013	0.042
West: Emily Avenue 10 L2 12 R2	0.62 0.62	00 88	230.2 230.2	0.26 0.26	0.021 0.021	0.078
	0.62	9.8	230.2	0.26	0.021	0.078
INTERSECTION:	0.38	6.0	140.1	0.18	0.010	0.030

Go to Table Links (Top)

Lanes

Lane Performance and Capacity Information Site: Emily Road PM 2039 Not Developed GHDVals

Site ID: 101 Give-Way Sign Controlled Intersection

LANE PERFORMANCE

	Flow	Cap	Deg.	Aver.	Eff.	Queue 95% Back	e ko	Lane
Lane No.	veh/h	veh/h veh/h		Delay sec	Stop Rate	veh	E	Length m
South: 1	Koala Street (South) 1065 1949 0.547	ala Street 1065 1949	(South) 0.547	0.2	0.2 0.01	 	 	500.0
North: 1	North: Koala Street (North) 1 297 1363 0.218	la Street 297 1363	(North) 0.218	4.9	4.9 0.09	1.2	8.5	500.0
West: 1 1	West: Emily Avenue 1 6 29	enue 297	ue 297 0.021		15.9 0.91	0.1		0.4 200.0

LANE FLOW AND CAPACITY INFORMATION

Lane Util %	100	100	100
Deg. Satn x	0.547 100	0.218	0.021
Tot Cap veh/h	(South) 5 1949	North) 1363	297
Min W Cap veh/h	Street () 1065	Street (North) 52 1363	renue 6
Total Arv Flow veh/h	Koala S 1065	North: Koala S 1 297	Emily Avenue 6
Lane No.	South: 1	North: l	West: 1

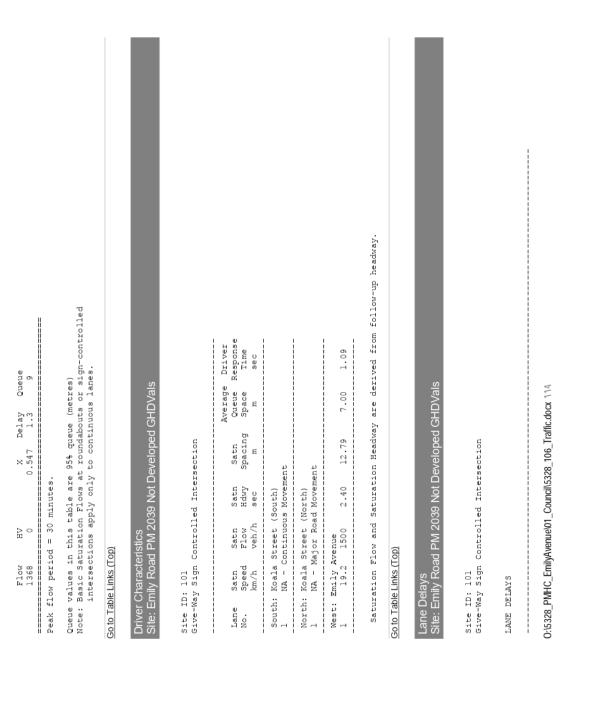
The capacity values of Continuous Lanes are obtained by adjusting the basic saturation flow for lane width, grade, movement class and turning vehicle effects. Saturation flow scale applies if specified.

Go to Table Links (Top)

Lane, Approach and Intersection Performance Site: Emily Road PM 2039 Not Developed GHDVals

Site ID: 101 Give-Way Sign Controlled Intersection

Lane No.	Arrival Flow (veh/h)	лн 8 ()	Adj. Basic Satf.	Deg Sat x	Aver. Delay sec	Longest Queue m	Lane Length m
South: 1	Koala 1065	Street 0	(South) 1950	0.547	0.2		500
	1065	0		0.547	0.2		
North: 1	Koala 297	Street 0	(North)	0.218	4.9	o.	500
	297	0		0.218	4.9	9	
West: E l	Emily Avenue 6	venue 0		0.021	15.9	0	200
	9	0		0.021	15.9	0	
ALL VEHICLES Tota	HICLES Total	ар -		Max	Aver.	Max	
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	Deg. % Arv Prog. Min Stop-line Delay (seconds/ven)	Koala Street (South) 0.1 0.2 0.1 0.2	Koala Street (North) 0.218 NA NA 3.0 4.2 0.1 4.3 1.6 2.7 0.0 2.7 0.6 4.9	West: Emily Avenue 1 0.021 NA NA 9.4 10.3 0.0 10.3 3.1 7.2 0.0 7.2 5.5 15.9	SIDRA Standard Delay Model is used. Control Delay is the sum of Stop-line Delay	aud decumentic Detay. dm: Minimum delay for gap acceptance cases 	due 1 Journet entry (1 de 1 d	stopped delay and queue move-up delay) dqm: Queue move-up delay di: Stopped delay (stopped (idling) time at near-zero speed) dd: Conetrio delay	OUCIOL RELAY	Links (Top)	Lane Queues Site: Emily Road PM 2039 Not Developed GHDVals	Site ID: 101 Give-Way Sign Controlled Interestion	QUEUE (VEHICLES)	
HADRAN CHARTER CALLER C				enily Avenue 0.021 Nz	Standard De	inimum delay	rerage stop- rerage stop- seuing delay	copped delay Dueue move-1 copped delay Seometric de		<u>Go to Table Links (Top)</u>	Lane Queues Site: Emily Road PN	Site ID: 101 Give-Wav Sign Contr	QUEUE	

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North: Koala Street (North) 1 0.218 NA NA

South: Koala Street (South)

Lane No.

NA

0.00

0.1

0.0

0.0

0.0

0.0

NA

West: Emily Avenue 1 0.021 NA

BACK OF QUEUE (DISTANCE)

. d			A	Ā
Prob.	- 00 - 10 - 10		z	Z
Prob.	PLOCK J		0.2 3.2 0.2 3.4 8.5 0.01 0.02 0.0 NA	0.0 0.2 0.0 0.2 0.4 0.00 0.00 0.0
Queue Stor.	AV. 95%		0.02	0.00
Queue	95% AV. 95%		0.01	0.00
			8.5 5	0.4
Back of Queue (m)	dn 2dn Idn		3.4	0.2
ck of Q	Nb2		0.2	0.0
			3.2	0.2
ovrfl.	No			0.0
		(South)	(North) NA	NA
Deg. & Arv Prog.	Green	South: Koala Street (South)	North: Koala Street (North) 1 0.218 NA NA	Avenue NA
Deg.	No. x 1	. Koala	: Koala 0.218	West: Emily Avenue 1 0.021 NA
	No.	South	North: 1 (West: l (

OTHER QUEUE RESULTS (VEHICLES)

		8 Arv	Prog.	ovrfl.	Ovrfl. Cyc-Av. Queue	Queue
Lane No.	X X	Green	ractor	Queue	Nc	958
South	South: Koala	Street	(South)			
Vorth	1: Koala 0.218	North: Koala Street (North) 1 0.218 NA NA	(North) NA	0.0	0.4	0.6
Vest:	West: Emily Avenue 1 0.021 NA	Avenue NA	NA	0.0	0.0	0.0

OTHER QUEUE RESULTS (DISTANCE)

Queue 95%		4.5	0.2
Ovrfl. Cyc-Av. Queue Queue		2.5	0.1
Ovrfl. Queue No		0.2	0.0
Prog. Factor	(South)	(North) NA	AA
% Arv During Green	South: Koala Street (South)	Street NA	West: Emily Avenue 1 0.021 NA
Deg. Satn x	Koala	North: Koala 1 0.218	Emily 0.021
Lane No.	South:	North: 1 0	West: l 0

Site ID Give-Wa LANE QU LANE QU North: North: Mest: 1 LANE QU	ive-Way Sign Contr ANE QUEUE PERCENTI Lane Beg. Deg. No. x 50% South: Koala Stree North: Koala Stree North: Koala Stree 1 0.021 0.0	Give-Way Sign Controlled Intersec LANE QUEUE PERCENTILES (VEHICLES) Lane Deg. Percentile Lane Satn	Site ID: 101 Give-Way Sign Controlled Intersection LANE QUEUE PERCENTILES (VEHICLES) LANE QUEUE PERCENTILES (VEHICLES) Lane Sath 503 No. 503 South: Koala Street (South) South: Koala Street (South) I 0.218 0.5 0.6 0.9 North: Koala Street (North) I 0.218 0.5 0.6 0.9 I 0.218 0.5 0.6 0.9 LANE QUEUE PERCENTILES (DISTANCE) LANE QUEUE PERCENTILES (DISTANCE)	rsecti TES) (tile B 858 8558 0.9 0.9 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0	d Intersection (VEHICLES) Percentile Back of Queue (veh) 70% 85% 90% 95% 98% 70% 85% 90% 95% 98% 70% 0.0% 0.0% 95% 98% 70% 0.0% 0.0% 1.0% 1.2% 0.6% 0.9% 1.0% 1.2% 1.3% 0.6% 0.0% 0.1% 0.1% 0.1% 0.1% 0.1% 0.1% 0.1% 0.1% 0.1% 0.1% 0.1% 0.1% 0.1% 0.1% 0.1% 0.1% 0.1% 0.1% 0.1% 0.2% 0.0% 0.1% 0.1% 0.1% 0.1% 0.1% 0.1% 0.1	95% 95% 1.2 0.1	veh) 988 988 1.3 0.1	1.5
Lane No.	Satn x	50%	70%	85 8	806	958		100%
South:		Street (South)	(South)					
North: 1	North: Koala 1 0.218	Street (3.4	(North) 4.4	6.2	7.2	8.5	9.4	10.2
West: I	West: Emily Avenue 1 0.021 0.2	venue 0.2	0.2	0.3	0.4	0.4	0.5	0.5

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ATTACHMENT

DEVELOPMENT ASSESSMENT PANEL 06/05/2020

Lane Stops Site: Emily Road PM 2039 Not Developed GHDVals

Site ID: 101 Give-Way Sign Controlled Intersection

	Deg.			म म - -	fectiv	e Stop	Effective Stop Rate	Total	-	Total Queue		Aver. Num. of
Lane No.	satn X	During Green	Factor	hel	he2	Geom. hig	Geom. Overall hel he2 hig h	stops H	hqm	Move-ups Hqm	Queued pq	Cycles to Depart
South: 1	South: Koala 1 0.547	South: Koala Street (South) 1 0.547 NA NA	(South) NA			0.01	0.01	7.5				
North: 1	North: Koala Stree 1 0.218 NA	North: Koala Street (North) 1 0.218 NA NA	(North) NA		00.00	0.04	0.04 0.00 0.04 0.09	25.9	25.9 0.04	11.4	0.37	0.41
West: 1	Emily 0.021	West: Emily Avenue 1 0.021 NA	NA	0.79	00.00	0.79 0.00 0.12	0.91		5.7 0.00	0.0	0.80	0.80
i pid i pand	hig is the average	average are men	hig is the average value for all movements in a shared lane how is average value for all vehicles onswed and unonswed	or all movements in a sh or rate for all vehicles	moveme! for a	nts in 11 vehi	hig is the average value for all movements in a shared lane hum is avevate musue move-up rate for all vehicles musued as	lane ued and				

Go to Table Links (Top)

Flow Rates

Origin-Destination Flow Rates (Total) Site: Emily Road PM 2039 Not Developed GHDVals

Site ID: 101 Give-Way Sign Controlled Intersection

TOTAL FLOW RATES for All Movement Classes (veh/h)

ł

From SOUTH To:	М	N	
Turn:	L2	ΤT	TOT
Flow Rate	12.6	1052.6	1065.3
%HV (all designations)	0.0	0.0	0.0
From NORTH To:	S	M	
	Ţ	R2	TOT
Flow Rate	263.2	33.7	296.8

%HV (all designations)	0.0	0.0	0.0
From WEST To:	Ν	ŝ	
Turn:	L2	R2	TOT
Flow Rate	4.2	2.1	6.3
%HV (all designations)	0.0	0.0	0.0

Flow rates shown above are Arrival Flow Rates (veh/h) based on the following input specifications: Unit Time for Volumes = 60 minutes Feak Flow Period = 30 minutes Effects of Volume Factors (Peak Flow Factor, Flow Scale, Growth Rate) are included. Arrival Flow Rates may be less than Demand Flow Rates if capacity constraint applies in network analysis.

Go to Table Links (Top)

Origin-Destination Flow Rates by Movement Class Site: Emily Road PM 2039 Not Developed GHDVals

Site ID: 101 Give-Way Sign Controlled Intersection

FLOW RATES for Light Vehicles (veh/h)

						>
ì	TOT	1065.3 100.0 - 0.0	TOT	296.8 100.0 - 0.0	TOT	6.3 100.0 Traffic docv
	ИЦ	1052.6 100.0 1.00 0.95 0.0	W R2	33.7 100.0 1.00 0.95 0.0	s R2	4.2 2.1 0.0 100.0 Council\5328 106
	N L2	12.6 100.0 1.00 0.95 0.0	с Ц	263.2 100.0 1.00 0.95 0.95	L2 L2	
	From SOUTH To: Turn:	Flow Rate Mov Class & Flow Scale Peak Flow Factor Residual Demand	From NORTH To: Turn:	Flow Rate Mov Class & Flow Scale Peak Flow Factor Residual Demand	From WEST To: Turn:	Flow Rate Mov Class &] 0.45328 DMHC FmilvAvenue001

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I	ľ	0.0	
1.00	0.95	0.0	
Ō.	0.95	0.0	
Flow Scale	Peak Flow Factor	Residual Demand	

Flow rates shown above are Arrival Flow Rates (veh/h) based on the following input specifications: Unit Time for Volumes = 60 minutes Peak Flow Period = 30 minutes Arrival Flow Factors (Peak Flow Factor, Flow Scale, Growth Rate) are included. Arrival Flow Rates may be less than Demand Flow Rates if capacity constraint applies in network analysis.

Go to Table Links (Top)

Lane Flow Rates Site: Emily Road PM 2039 Not Developed GHDVals

Site ID: 101 Give-Way Sign Controlled Intersection

LANE FLOW RATES AT STOP LINE (veh/h)

ī

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1 1

LOL	1065.3 1065.3	1065.3	TOT	296.8 296.8	296.8	TOT	6.3 6.3	6.3 106 Traffic
U L L	1052.6 1052.6	1052.6	M R2	33.7 33.7	33.7	ъ 82	2.1	2 2.1 Council\5328
W L2	12.6 12.6	12.6	s H	263.2 263.2	263.2	N L2	4.2 2.4	4. 101
SOUTH To:	al 1	roach	NORTH TO:	al 1	ach	WEST TO:	1 al	oach PMHC FmilvAven
From: Turn:	Lane l LV Total	Appro	From Turn:	Lane LV Tot	Approach	From Тигп	Lane LV Tota	Approach N-15328 PMH

i.

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i.

EXIT LANE FLOW RATES

Movement Class:	ΓN	НΥ	TOT
a n H H	265.3 265.3	* *	265.3 265.3
	1056.8 1056.8	* *	1056.8 1056.8
Exit: WEST Lane: l Total	46.3 46.3	* *	46.3 46.3

Movement not allocated to the lane

*

DOWNSTREAM LANE FLOW RATES FOR EXIT ROADS

Movement	tt Class:	ΓΛ	ЧΛ	TOT
Exit: Lane: Total	SOUTH	265.3 265.3	* *	265.3 265.3
Exit: Lane: Total	NORTH 1	1056.8 1056.8	* *	1056.8 1056.8
I X Z Ð I	WEST 1	46.3 46.3	* *	46.3 46.3

Movement not allocated to the lane *

Flow rates shown above are Arrival Flow Rates (veh/h) based on the following input specifications: Unit Time for Volumes = 60 minutes Peak Flow Period = 30 minutes Effects of Volume Factors (Peak Flow Factor, Flow Scale, Growth Rate) are included. Arrival Flow Rates may be less than Demand Flow Rates if capacity constraint applies in network analysis.

Go to Table Links (Top)

Site ID: 101 Site ID: 101 Give-Way Sign Controlled Intersection * Basic Parameters: Intersection Type Unsignalised - Give Way	
Driving on the lett-mand side of the road Input data specified in Metric units Model Defaults: New South Males The Flow Period (for performance): 30 minutes Unit time (for volumes): 60 minutes. SIDRA Standard Delay model used SIDRA Standard Queue model used Level of Service based on: Delay (RTA NSW) Queue percentile: 95%	
<u>Go to Tape Links (Lop)</u> Diagnostics Site: Emily Road PM 2039 Not Developed GHDVals	
Site ID: 101 Give-Way Sign Controlled Intersection	
Lane Flow-Capacity Iterations: Site Model Variability Index (Iterations 3 to N): 0.0% Number of Iterations: 3 (Maximum: 10) Other Diagnostic Messages (if any):	
Go to Table Links (Top)	

Organisation: KING & CAMPBELL PTY LTD | Processed: Monday, 11 March 2019 1.48.09 PM Project: 0.55328_PMHC_EmilyAvenue/22_Engineering/Emily Ave 50existing 2019-2039 GHDMaxValuesNoRate.sip8

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Model Scenario: PM Peak Hour, Year 2039, Post-Developed

DETAILED OUTPUT

V Site: 101 [Emily Road PM 2039 Developed GHDVals]

New Site Site Category: (None) Giveway / Yield (Two-Way)

OUTPUT TABLE LINKS

Sign Control Sign Control Basic Pa

Sign Control Basic Parameters Gap Acceptance Parameters

MMovements Intersection Negotiation and Travel Data Movement Capacity and Performance Parameters

Fuel Consumption, Emissions and Cost

Lane Performance and Capacity Information Lane, Approach and Intersection Performance Driver Characteristics Lane Dueues Lane Queues

Lane Queues Lane Queue Percentiles

Lane Queue Perce Lane Stops

In Flow Rates

ow rates Origin-Destination Flow Rates (Total) Origin-Destination Flow Rates by Movement Class Lane Flow Rates

Cther

Parameter Settings Summary Diagnostics

Sign Control

Sign Control Basic Parameters Site: Emily Road PM 2039 Developed GHDVals 0:\5328_PMHC_EmilyAvenue\01_Council\5328_106_Traffic.docx 124

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No opposed movements on 	venu	Values in this table ar Use the Pedestrians and O:16328_PMHC_EmNyAvenue(01_Cou
		Attach

) table are adjusted for movement classes in the entry stream. Stians and Priorities input dialogs to specify opposing pedestrian movements.

2.80

70.0 66.7

4.30

1.00

0.153 0.182

1.25

2.00

66.0

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App Prop Queued Dist Upstr Signal Site ID: 101 Give-Way Sign Controlled Intersection Leg Geometry Approach Control

NA Not Applicable (single Site analysis or unconnected Site in Network analysis). N Program option resulted in zero value (single Site analysis or unconnected Site in Network analysis). Extra Bunching 0.0N 0.0N N0.0 ø NA NA NA South: Koala Street (South) Major Road Two Way 500 North: Koala Street (North) Major Road Two Way 500 200 E West: Emily Avenue Giveway Two Way

Go to Table Links (Top)

Gap Acceptance Parameters Site: Emily Road PM 2039 Developed GHDVals

Site ID: 101 Give-Way Sign Controlled Intersection

Foll-up Headway sec	
Critical Gap 	
Critic Hdwy sec	
Entry HV Equiv	
ra ch Propn Y Bnchd c	
Intra Bunch Hdwy sec	
Opng Flow pcu/h	_
Dest	South: Koala Street
Opd Lane	South:

rements on this approach.

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DEVELOPMENT ASSESSMENT PANEL
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Go to Table Links (Top)

Movements

Intersection Negotiation and Travel Data Site: Emily Road PM 2039 Developed GHDVals

Site ID: 101 Give-Way Sign Controlled Intersection TRAVEL SPEED, TRAVEL DISTANCE AND TRAVEL TIME

From To Approach Exit	Turn	Running Speed km/h	Travel Speed km/h	l Travel Distance m	Travel Time s	Total Trave Dem Flows veh-km/h	Total Travel Distance Dem Flows Arv Flows veh-km/h veh-km/h	Tot.Trav. Time veh-h/h
South: Koala Street West North	et (South) L2 T1	57.4 59.7	57.4 59.7	710.1# 1010.1#	44.5# 60.9#	11.2 1063.2	11.2 1063.2	0.2 17.8
North: Koala Street South West	et (North) T1 R2	57.4 53.5	54.5			265.8 30.6	265.8 30.6	4.9
West: Emily Avenue North South	г 12 82	48.3 47.7	42.7 42.3	714.2# 714.2#	60.2# 60.8#	3.8 1.5	а. 1.5 8	0.0
ALL VEHICLES:		59.0	58.3	995.7#		1376.2	1376.2	23.6

"Running Speed" is the average speed excluding stopped periods.

Travel Time values include cruise times and intersection delays including acceleration, deceleration and idling delays.

Travel Distance and Travel Time values include travel on the External Exit section based on the Exit Distance or user-specified Downstream Distance value as applicable.

INTERSECTION NEGOTIATION DATA

Negn Negn Negn App Exit Downstr From To Radius Speed Dist Dist Dist Dist

		(North)	Koala Street	Koala	North:
60.0	60.0	60.0		Ę	2
60.0			South: Koala Street l L2 60.0	Koala L2	South: 1
Cruise km/h	Negn (km/h	Negn km/h	Cruise km/h	Turn	Mov ID
Speeds	Exit	Speeds	App. Sp(14	
CLAY	RIC DE	GEOMETRIC DELAY	MOVEMENT SPEEDS AND	NT SPER	MOVEME
l or Dist	Speed	Some Negotiation Radius, Speed	ation]	Negoti	Some
	'n		•		

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Approach Exit	Turn	E	km/h	Ħ	E	E	E
South: Koala Street West North	(South) L2 T1	10.0 s	20.2 60.0	15.7 10.0	500 500	200 500	NA NA
North: Koala Street South West	(North) Tl R2	6 9	60.0 17.2	10.0 10.4	500	500 200	NA NA
West: Emily Avenue North South	L2 R2	10.0 6.6	20.2 17.2	15.7 10.4	200	500	na NA
NA Downstream Distance does not apply if: - Exit is an internal leg of a network - "Program" option was specified - Distance specified was greater than - Distance specified was greater than	Distance does not apply if: n internal leg of a network option was specified specified was greater than the Exit Negotiation Distance	s not eg of specifies great	not apply if: I of a network ecified Jess than the greater than	r: rk be Exit the ex	: k e Exit Negotiation D the exit leg length	cion Dist Length	cance

"Program" option was specified Distance specified was less than the Exit Negotiation Distance Distance specified was greater than the exit leg length

or Distance values are user specified.

moeg	Delay sec	0.0	0.0 5.4	5.5 7.5
Queue Move-up	Speed km/h		1.8 1.8	11.7 11.7
Exit Speeds	Cruis∈ km/h	60.0 60.0	60.0 60.0	60.0
Exit	Negn (km/h) 20.2 60.0) 60.0 17.2	20.2 17.2
eds	Negn km/h	(South) 20.2 60.0	(North) 60.0 17.2	20.2
App. Speeds	Cruise km/h	Street 60.0 60.0	Street 60.0 60.0	Emily Avenue L2 60.0 R2 60.0
	Turn	Koala L2 T1	Koala Tl R2	Emily 1 L2 R2
	Mov ID	South: Koala 1 L2 2 T1	North: 8 9	West: 1 10 12

Movement Capacity and Performance Parameters Site: Emily Road PM 2039 Developed GHDVals

Go to Table Links (Top)

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Site ID: 101 Give-Way Sign Controlled Intersection

MOVEMENT CAPACITY PARAMETERS

Mov ID	Turn	Mov Cl.	Arv Flow veh/h		Opng Movement Adjust. Flow Flow veh/h pcu/h	Total Cap. Veh/h	Prac. Deg. Satn Xp	Prac. Spare Cap. &	Deg. Satn x
South: 2	Коаlа L2 # T1 #	1	Street (South 16 (1053 (South) 0 0	00	29 1920	0.98	6 6 6	0.548*
North: 8 9	Koala Tl # R2 #		Street (1 263 43	(North) 0 1068	0 1068	1088 178	0.98	305 305	0.242
West: 10 12	Emil R2 R2 R2	Emily Avenue L2 # R2 #	nue 25	1053 1367	1053 1367	218 87	0.80	3215 3215	0.024 0.024

0.80 87 1367 1367 61 # В2

* Maximum degree of saturation # Combined Movement Capacity parameters are shown for all Movement Classes.

MOVEMENT PERFORMANCE

Mov ID	Turn (v	Turn Total Delay (veh-h/h) (F	Total Aver. Delay Delay)(pers-h/h)(sec)	Aver. Delay (sec)	Eff. Stop Rate	Total Stops	Perf. Index	Tot.Trav. Distance (veh-km/h)	Tot.Trav. Tot.Trav. Distance Time (veh-km/h) (veh-h/h)	Aver. Speed (km/h)
South: 1 2	Koal L2 T1	South: Koala Street (South) 1 L2 0.02 0.03 2 T1 0.03 0.04	(South) 0.03 0.04	5.6 0.1	0.01	0.1 9.3	0.1 0.21 9.3 17.80	11.2 1063.2	0.2 17.8	57.4 59.7
North: 8 9	Tl Tl R2	North: Koala Street 8 Tl 0.33 9 R2 0.19	(North) 0.39 0.23	4.4 16.2	0.11 0.11	29.9 4.9	29.9 5.55 4.9 1.36	265.8 30.6	4.9 0.6	54.5 50.0
West: 10 12	Emily L2 R2	West: Emily Avenue 10 L2 0.02 12 R2 0.01	0.02	13.3 21.4	0.91 0.91	4.8 1.9	0.14 0.08	3.8 1.5	0.0	42.7 42.3

Go to Table Links (Top)

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Ъ	Site
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Site ID: 101 Give-Way Sign Controlled Intersection

FUEL CONSUMPTION, EMISSIONS AND COST (TOTAL)

Turn

Mov Turn ID	Cost Total \$/h	Fuel Total L/h	CO2 Total kg/h	CO Total kg/h	HC Total kg/h	NOX Total kg/h
South: Koala S 1 L2 2 Tl	Street (South) 5.39 379.84	h) 0.6 60.5	1.5 142.1	0.00	0.000	0.000
	385.23	61.1	143.6	0.19	0.010	0.028
North: Koala S 8 Tl 9 R2	Street (North) 128.68 20.28	h) 19.0 2.4	44.6 5.6	0.05 0.01	0.004	0.012 0.002
	148.95	21.4	50.2	0.06	0.004	0.013
West: Emily Av 10 L2 12 R2	Avenue 2.33 0.93	0.4	6.0 8.0	0.00	0.000	0.000
	3.27	0.5	1.2	0.00	0.000	0.000
INTERSECTION:	537.45	83.0	195.0	0.25	0.015	0.042
BUTEL CONSTITUENTIAN BMISSIONS AND COST (BARE)	CTSSTMB NO					

FUEL CONSUMPTION, EMISSIONS AND COST (RATE)

Mov Turn ID	ιγ.	Cost Rate E Rate E \$/km L/]	Fuel Rate L/100km	CO2 Rate g/km	CO Rate g/km	HC Rate g/km	NOX Rate g/km
South: Ko	South: Koala Street (South) 1 L2 0.48 2 T1 0.36	(South) 0.48 0.36	5.7	134.0 133.6	0.17 0.17	0.010	0.026
		0.36	5.7	133.6	0.36 5.7 133.6 0.17 0.010 0.026	0.010	0.026
North: Ko	North: Koala Street (North) 8 Tl 0.48	(North) 0.48) 7.1	(North) 0.48 7.1 167.8 0.21	0.21	0.014	0.045

9 R2	0.66	7.8		0.22	0.22 0.015	0.053
	0.50 7.2	7.2	7.2 169.3	0.21	0.21 0.014 0.045	0.045
West: Emily Avenue						
10 L2 -	0.62	9.8	229.9	0.26	0.021	0.078
12 R2	0.62	9.8	229.9	0.26	0.26 0.021	0.078
	0.62	9.8	229.9	0.26	0.26 0.021 0.078	0.078
INTERSECTION:	0.39	6.0	6.0 141.7	0.18	0.18 0.011 0.030	0.030

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Lanes

Lane Performance and Capacity Information Site: Emily Road PM 2039 Developed GHDVals

Site ID: 101 Give-Way Sign Controlled Intersection

LANE PERFORMANCE

	Flow	Cap	Deg.	Aver.	Eff.	0 u 95%	e u e Back	Lane
No.	veh/ł	veh/h veh/h	N X	LC L C L	stop Rate	veh	E	nengcn L
South: 1	South: Koala Street (South) 1 1068 1949 0.548	Street 1949	(South) 0.548	0.2	0.01			500.0
North: 1	North: Koala Street (North) 1 306 1266 0.242	la Street 306 1266	(North) 0.242	6.1	6.1 0.11	1.6	10.9	500.0
West:] l	West: Emily Avenue 1 7 30	venue 305	0.024	15.6	15.6 0.91	0.1	0.5	200.0

LANE FLOW AND CAPACITY INFORMATION

 Lane	Util
 Deg.	Satn
Tot	Cap
	Cap
 Total	Arv Flow
Lane	No.

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٩Þ	100	100	100
×	0.548	0.242	0.024
veh/h veh/h	Street (South) 1068 1949	(North) 1266	305
eh/h	eet 1068		ی ا
	Stre	Street	Avenu
veh/h	Koala 1068	Koala 306	Emily Avenue
	South: 1	North: 1	West: 1

The capacity values of Continuous Lanes are obtained by adjusting the basic saturation flow for lane width, grade, movement class and turning vehicle effects. Saturation flow scale applies if specified.

Go to Table Links (Top)

Lane, Approach and Intersection Performance Site: Emily Road PM 2039 Developed GHDVals

Site ID: 101 Give-Way Sign Controlled Intersection

Lane No.	Arrival Flow (veh/h)	VH\$	Adj. Basic Satf.	Deg Sat	Aver. Delay sec	Longest Queue m	Lane Length m
South: 1	Koala S 1068	treet 0	Street (South) 0 1950	0.548	0.2		500
	1068	0		0.548	0.2		
North: 1	Koala S 306	treet 0	Street (North) 0	0.242	6.1	11	500
	306	0		0.242	6.1	11	
West: l	Emily Avenue 7	enue 0		0.024	15.6	1	200
	2	0		0.024	15.6	1	
ALL VEHICLES Tota Flow 1382	HICLES Total Flow 1382	* > 0 H		Maxx X 0.548	Aver. Delay 1.6	Max Queue 11	
Peak fl	ow perio	d = 30	Peak flow period = 30 minutes.				

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Deg. % Arv Prog. Min Stop-line Delay (seconds/veh)	LANE DELAYS	Site ID: 101 Give-Way Sign Controlled Intersection	Lane Delays Site: Emily Road PM 2039 Developed GHDVals	Go to Table Links (Top)	Saturation Flow and Saturation Headway are derived from follow-up headway.	West: Emily Avenue 1 19.3 1518 2.37 12.73 7.00 1.07	North: Koala Street (North) 1 NA - Major Road Movement	South: Koala Street (South) 1 NA - Continuous Movement	Lane Satn Satn Satn Average Driver No. Speed Flow Hdwy Spacing Space Time km/h veh/h sec m m sec	Site ID: 101 Give-Way Sign Controlled Intersection	Driver Characteristics Site: Emily Road PM 2039 Developed GHDVals	Go to Table Links (Top)	lanes. Mge Driver kge Driver te Response te Response
----------------------------------------------------	-------------	-------------------------------------------------------	-----------------------------------------------------------	-------------------------	----------------------------------------------------------------------------	--------------------------------------------------------	-----------------------------------------------------------	-----------------------------------------------------------	--------------------------------------------------------------------------------------------------------	-------------------------------------------------------	----------------------------------------------------------------------	-------------------------	---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------

North: Koala Street 1 0.242 NA West: Emily Avenue 1 0.024 NA SIDRA Standard Dela and Geometric Delaw				T.0					0.1	0.2	
Emily Avenue 0.024 NA 1 Standard Dela	c (North) NA	3.6	5.1	0.2	5.3	2.0	3.4	0.0	3.3	0.8	6.1
SIDRA Standard Delay Model and Geometric Delay.	NA	9.1	10.1	0.0	10.1	ю. 2	6.9	0.0	6.9	ۍ ۲۰	15.6
Geometric Dela	lay Model	is used.	1	Control Delay is	lay is	the sum	Ę.	Stop-line Delay	ine De]	٩y	
dm: Minimum delay for gap acceptance cases	for gap	acceptan	Ce cast	υς Φ							
asu: scop-line delay (-alfaz/) di: Average stop-start delay for all vehicles queued and unqueued	Lay (=dl+d∠) start delay	av for a	ll veh	icles c	rueued	and un	queued				
topped	(the par and queu	delay (the part of the stop-line delay that includes delay and queue move-up delay)	p dela	Jine de Y)	elay th	at inc	Iudes				
dqm: Queue move-up delay di: Stopped delay (stopped (idling) time at near-zero speed) dig: Geometric delay dic: Control delay	o delay (stopped Lay	(idling	r) time	at nea	IT-Zero	speed	~				
Go to Table Links (Top)											
Lane Queues Site: Emily Road PM 2039 Developed GHDVals	2039 Dev	/eloped (SHDVa	s							
		4									
GIVE-WAY SIGN CONTRO	olled Int	controlled Intersection	ç								
BACK OF QUEUE (VEHICLES)	(SILS)										
1	Prog.	ovrfl.	Bac	Back of Qu	Queue (veh)	eh)	Queue	Queue Stor.	Prob.	1	
satn During x Green	r'actor	Queue No	Nbl	Nb2	dN	958	Av.	катіо . 95%	* PLOCK	П ²	*
South: Koala Street	(South)										
North: Koala Street 1 0.242 NA	: (North) NA	0.1	0.6	0.0	0.6	1.6	0.01	0.02	0.0	NA (
West: Emily Avenue 1 0.024 NA		0.0	0.0	0.0	0.0	0.1	0.00	0.00	0.0	AN (- 4

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BACK OF QUEUE (DISTANCE) O.6328_PMHC_EmilyAvenue01_Council 6328_106_Traffic.docx 133 Queue Stor. Prob. Prob. Ratio Block SL Ov. Av. 95% % % 958 Back of Queue (m) ЧN Nb2 IdN Ovrfl. Queue No Prog. Factor % Arv During Green Deg. Satn X Lane No.

South: Koala Street (South)

NA North: Koala Street (North) 1 0.242 NA NA

0.0 0.02 0.01 10.9 4.4 0.3 4.1 0.4

NA 0.0 00.00 0.00 0.5 0.2 0.0 0.2 0.0 NA West: Emily Avenue 1 0.024 NA

OTHER QUEUE RESULTS (VEHICLES)

No. x Green No Nc South: Koala Street (South)
t (North) NA 0.1 NA 0.0
NA 0.0

OTHER QUEUE RESULTS (DISTANCE)

Queue 95%		5.8	0.3
Dvrfl. Cyc-Av. Queue Queue		3.2	0.1
Ovrfl. Queue No		0.4	0.0
Prog. Factor	(South)	(North) NA	NA
% Arv During Green	Street	North: Koala Street 1 0.242 NA	Avenue NA
Deg. Satn x	South: Koala	: Koala 0.242	West: Emily Avenue 1 0.024 NA
Lane No.	South:	North: 1 C	West: 1 C

Go to Table Links (Top)

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DEVELOPMENT ASSESSMENT PANEL 06/05/2020

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	Intersection
	Controlled
101	Sign
Site ID:	Give-Way

	Deg.	8 Arv			fective	Stop	Effective Stop Rate	Total	Queue Move-up	Total Queue	Prop.	Aver. Num. of
Lane No.	Satn X	During Green	Factor	hel	he2	Geom. hig	Geom. Overall hig h	Stops H	hqm	Move-ups Hqm	Queued pq	Cycles to Depart
outh:	Koala 0.548	South: Koala Street (South) 1 0.548 NA NA	(South) NA			10.0	0.01	9.4				
vrth:	Koala 0.242	Street NA	North: Koala Street (North) 1 0.242 NA NA		0.06 0.00 0.05	0.05	11.0	34.8	0.07	20.6	0.45	0.52
st:	West: Emily Avenue 1 0.024 NA	Àvenue NA	AN	0.79	0.79 0.00 0.12	0.12	0.91	6.7	0.00	0.0	0.80	0.80

Go to Table Links (Top)

Flow Rates

Origin-Destination Flow Rates (Total) Site: Emily Road PM 2039 Developed GHDVals

Site ID: 101 Give-Way Sign Controlled Intersection TOTAL FLOW RATES for All Movement Classes $(\ensuremath{\operatorname{veh}}\xspace/h)$

From SOUTH To: Turn: Flow Rate &HV (all designations)	W L2 15.8 0.0	N Tl 1052.6 0.0	тот 1068.4 0.0
From NORTH To: Turn: Flow Rate &HV (all designations)	s T1 263.2 0.0	W R2 43.2 0.0	доғ. 3 0.0
From WEST To: Turn:	N L2	s R2	TOT

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7.4	0.0	
2.1	0.0	
5.3	0.0	
Flow Rate	%HV (all designations)	

Flow rates shown above are Arrival Flow Rates (veh/h) based on the following input specifications: Unit Time for Volumes = 60 minutes Peak Flow Period = 30 minutes Ffects of Volume Factors (Peak Flow Factor, Flow Scale, Growth Rate) are included. Arrival Flow Rates may be less than Demand Flow Rates if capacity constraint applies in

network analysis.

Go to Table Links (Top)

Origin-Destination Flow Rates by Movement Class Site: Emily Road PM 2039 Developed GHDVals

Site ID: 101 Give-Way Sign Controlled Intersection

FLOW RATES for Light Vehicles (veh/h)

LOT	1068.4 100.0 - 0.0	TOT	306.3 100.0 - 0.0	TOT	7.4 100.0 -
N	1052.6 100.0 1.00 0.95 0.0	W R2	43.2 100.0 1.00 0.95 0.0	s R2	2.1 100.0 1.00 0.95 0.0
M L2	15.8 100.0 1.00 0.95 0.0	νF	263.2 100.0 1.00 0.95 0.0	N L2	5.3 100.0 1.00 0.95 0.95
From SOUTH To: Turn:	Flow Rate Mov Class % Flow Scale Peak Flow Factor Residual Demand	From NORTH To: Turn:	Flow Rate Mov Class % Flow Scale Peak Flow Factor Residual Demand	From WEST To: Turn:	Flow Rate Mov Class % Flow Scale Peak Flow Factor Residual Demand

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Flow rates shown above are Arrival Flow Rates (veh/h) based on the following input specifications: Unit Time for Volumes = 60 minutes	Peak Flow Period = 30 minutes Effects of Volume Factors (Peak Flow Factor, Flow Scale, Growth Rate) are included.	Arrival Flow Rates may be less than Demand Flow Rates if capacity constraint applies in network analysis.
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tes shown me for Vo	Peak Flow Period = 30 minutes Effects of Volume Factors (Peal	Arrival Flow Rates network analysis.
Flow ra Unit Ti	Peak Fl Effects	Arrival network

Go to Table Links (Top)

Lane Flow Rates Site: Emily Road PM 2039 Developed GHDVals

Site ID: 101 Give-Way Sign Controlled Intersection

FLOW RATES AT STOP LINE (veh/h) LANE

TOL	1068.4 1068.4	1068.4	TOT	306.3 306.3	306.3	TOT	7.4 7.4	7.4
N LT	1052.6 1052.6	1052.6	м 22	43.2 43.2	43.2	ы 1 2 2 2	2.1	2.1
W L2	15.8 15.8	15.8	s T	263.2 263.2	263.2	L2 N	0 0 0 0	5.3
From SOUTH To: Turn:	Lane l LV Total	Approach	From NORTH To: Turn:	Lane l LV Total	Approach	From WEST To: Turn:	Lane l LV Total	Approach

EXIT LANE FLOW RATES O:6328_PMHC_EmilyAvenue/01_Council\5328_106_Traffic.docx 138

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TOT	265.3 265.3	1057.9 1057.9	58 9.8 9.9	lane
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ΓΛ	265.3 265.3	1057.9 1057.9	58.9 58.9	allocated
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Movement	Exit Lane: Total	Exi Lane Tota	Exi Lane Tota	*

DOWNSTREAM LANE FLOW RATES FOR EXIT ROADS

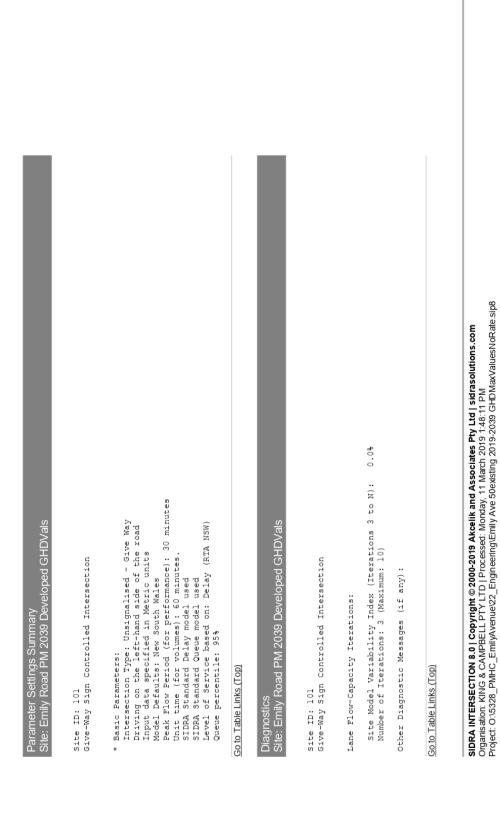
LOL	265.3	1057.9	58.9
	265.3	1057.9	58.9
Н	* *	* *	* *
ΓΛ	265.3	1057.9	58.9
	265.3	1057.9	58.9
Movement Class:	Exit: SOUTH	Exit: NORTH	it: WEST
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Mov	Exit	Exi	Exi
	Lane:	Lane	Lane
	Total	Tota	Tota

* Movement not allocated to the lane

Go to Table Links (Top)

Other

Flow rates shown above are Arrival Flow Rates (veh/h) based on the following input specifications: Unit Time for Volumes = 60 minutes Peak Flow Period = 30 minutes Effects of Volume Factors (Peak Flow Factor, Flow Scale, Growth Rate) are included. Arrival Flow Rates may be less than Demand Flow Rates if capacity constraint applies in network analysis.



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ATTACHMENT

DEVELOPMENT ASSESSMENT PANEL 06/05/2020

Item: 06

Subject: DA2019 - 883.1 DWELLING AT LOT 14 DP 28743, NO. 24 CORAL STREET, NORTH HAVEN

Report Author: Building Surveyor, Ross Frazier

Applicant:	JM&MARose
Owner:	JM&MARose
Estimated Cost:	\$559,000
Parcel no:	5143

Alignment with Delivery Program

4.3.1 Undertake transparent and efficient development assessment in accordance with relevant legislation.

RECOMMENDATION

That DA2019 - 883.1 for a dwelling at Lot 14, DP 28743, No. 24 Coral Street, North Haven be determined by granting consent subject to the recommended conditions.

Executive Summary

This report considers a development application for the construction of a new 2 storey dwelling with attached garage 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 (1) submission was received.

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.

This report recommends that the development application be approved subject to the attached included in **Attachment 1.**

1. BACKGROUND

Existing Sites Features and Surrounding Development

The site has an area of 682.9m².

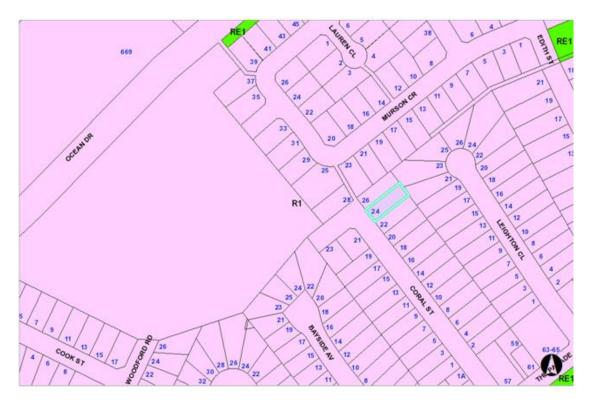




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The site is zoned R1 General Residential in accordance with the Port Macquarie-Hastings Local Environmental Plan 2011, as shown in the following zoning plan:



The existing subdivision pattern and location of existing development within the locality is shown in the following aerial photograph:



PORT MACQUARIE HASTINGS C O U N C I L

2. DESCRIPTION OF DEVELOPMENT

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DEVELOPMENT ASSESSMENT PANEL 06/05/2020

Key aspects of the proposal include the following:

• Construction of new 2 storey dwelling and attached garage

Refer to **Attachment 2** at the end of this report for plans of the proposed development

Application Chronology

- 2 December 2019 Application lodged.
- 13 December 2019 Application placed on notification.
- 5 January 2020 Additional information required (ecological report; Shadow diagrams)
- 31 January 2020 Site inspection 31/1/2020
- 9 March 2020 Amended plans received to address concerns in submissions.
- 17 March 2020 Amended plans re-notified.

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

There is no Koala Plan of Management on the site. There are a number of trees indicated on the plans to be removed. An ecological report and impact statement has been completed to address the effect of removal of these trees. The report was reviewed by council's Natural resource team and found to be satisfactory in its content. It was recommended that the trees be approved for removal with no provision for compensatory planting required due to the inability to provide suitable areas.

State Environmental Planning Policy No. 55 - Remediation of Land

Following an inspection of the site and a search of Council records, the subject land is not identified as being potentially contaminated and is suitable for the intended use.

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 and 14 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 impact on marine vegetation, native vegetation and fauna and their habitats, undeveloped headlands and rock platforms;
- d) any adverse impact on Aboriginal cultural heritage, practices and places;
- e) any adverse impacts on the cultural and built environment heritage;
- f) any adverse impacts the use of the surf zone;
- g) any adverse impact on the visual amenity and scenic qualities of the coast, including coastal headlands;
- h) overshadowing, wind funneling and the loss of views from public places to foreshores;
- any adverse impacts on existing public open space and safe access to and along the foreshore, beach, headland or rock platform for members of the public, including persons with a disability;

In accordance with Clause 15, the proposal is not likely to cause increased risk of coastal hazards on that land or other land.

The site is located within an area zoned for residential purposes.

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 (Infrastructure) 2007

Clause 45 – Development in proximity to electricity infrastructure – the development appears clear of infrastructure. Overhead power lines are located on the opposite street frontage.

Clause 101 refers to development with frontage to a classified road. In this case, the clause does not apply

The development does not trigger any of the traffic generating development thresholds. Referral to the RTA is not required.

Based on the above, the proposed development addresses relevant clauses in the SEPP and will not to create any significant adverse conflict in terms of traffic or noise.

Port Macquarie-Hastings Local Environmental Plan 2011

Except as indicated in CI 4.3, the proposal is consistent with the LEP. A variation application under CI 4.6 has been sought.

- Clause 2.2 The subject site is zoned R1 General Residential.
- Clause 2.3(1) and the R1 zone landuse table The proposed new dwelling is a permissible landuse with consent.

The objectives of the R1 zone are as follows:



- To provide for the housing needs of the community.
- To provide for a variety of housing types and densities.
- To enable other land uses that provide facilities or services to meet the day to day needs of residents.
- Clause 2.3(2) The proposal is consistent with the zone objectives as it is a permissible landuse and consistent with the established residential locality. The proposal contributes to the range of housing options in the locality.
- Clause 2.7 No demolition proposed.
- Clause 4.3 The maximum overall height of the building above ground level is 8.5m and complies with the 8.5m height limit applying to the site.
- Clause 4.4 The floor space ratio of the proposal is 57.8 %, which complies with the maximum 65 % floor space ratio applying to the site.
- Clause 4.6 Exceptions to development standards. Nil proposed.
- Clause 5.10 Heritage. The site does not contain or adjoin any known heritage items or sites of significance.
- Clause 7.1 The site is mapped as potentially containing class 3 acid sulphate soils. The proposed development includes the construction of a new dwelling which may require excavation extending more than 1m below the natural surface level is proposed. Works to be undertaken in accordance with Councils policy for minor works.
- Clause 7.3 The site is land within a mapped "flood planning area" (Land subject to flood discharge of 1:100 annual recurrence interval flood event (plus the applicable climate change allowance and relevant freeboard). The flood planning level for the site is 3.83m AHD. The proposed first floor level of 5.7m AHD therefore provides sufficient flood immunity, noting that the ground floor is limited to a laundry, which is permitted under the Flood Policy. The following comments are provided which incorporate consideration of the objectives of Clause 7.3, Council's Flood Policy 2015, the NSW Government's *Flood Prone Lands Policy* and the NSW Government's *Floodplain Development Manual* (2005):
 - The proposal is compatible with the flood hazard of the land taking into account projected changes as a result of climate change;
 - The proposal will not result in a significant adverse effect on flood behaviour that would result in detrimental increases in the potential flood affectation of other development or properties;
 - The proposal incorporates measures to minimise & manage the flood risk to life and property associated with the use of land;
 - The proposal is not likely to significantly adversely affect the environment or cause avoidable erosion, siltation, destruction of riparian vegetation or a reduction in the stability of river banks or watercourses;
 - The proposal is not likely to result in unsustainable social and economic costs to the community as a consequence of flooding;
- 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

DCP 2013: Dwellings, Dual occupancies, Dwelling houses, Multi dwelling houses & Ancillary development				
	Requirements	Proposed	Complies	
3.2.2.1	Ancillary development: • 4.8m max. height • Single storey • 60m2 max. area • 100m2 for lots >900m2 • 24 degree max. roof pitch • Not located in front setback	Water tank is appropriately located.	Yes	
3.2.2.2	 Articulation zone: Min. 3m front setback An entry feature or portico A balcony, deck, patio, pergola, terrace or verandah A window box treatment A bay window or similar feature An awning or other feature over a window A sun shading feature 	No elements within the articulation zone. The dwelling is setback 4.5m from the front boundary to the stairs servicing the dwelling	N/A	
	Front setback (Residential not R5 zone): • Min. 4.5m local road	4.5m setback proposed	Yes	
3.2.2.3	Garage 5.5m min. and 1m behind front façade. Garage door recessed behind building line or eaves/overhangs provided	8m setback proposed Garage door recessed.	Yes	
	6m max. width of garage door/s and 50% max. width of building	Width of garage door/s are compliant with the maximum width requirements	Yes	
	Driveway crossover 1/3 max. of site frontage and max. 5.0m width	Driveway crossing/s width are compliant with the maximum width requirements	Yes	
3.2.2.4	4m min. rear setback. Variation subject to site analysis and provision of	12.24m setback proposed	Yes	

	DCP 2013: Dwellings, Dual occupancies, Dwelling houses, Multi dwelling houses & Ancillary development				
	Requirements	Proposed	Complies		
	private open space				
3.2.2.5	 Side setbacks: Ground floor = min. 0.9m First floors & above = min. 3m setback or where it can be demonstrated that overshadowing not adverse = 0.9m min. Building wall set in and out every 12m by 0.5m 	The minimum side setback requirements are not complied with. Proposed setback 1.2m each side. Includes upper level setback at same distance. Shadow diagrams provided to demonstrate overshadowing is not adverse.	DCP Variation		
		Wall length - 17.83m. No articulation. Use of materials / textures in upper and lower levels creates variation and separation and is seen to meet the objectives of the clause.			
3.2.2.6	35m2 min. private open space area including a useable 4x4m min. area which has 5% max. grade	The dwelling contains 35m ² open space in one area including a useable 4m x 4m space.	Yes		
3.2.2.7	 Front fences: If solid 1.2m max height and front setback 1.0m with landscaping 3x3m min. splay for corner sites Fences >1.2m to be 1.8m max. height for 50% or 6.0m max. length of street frontage with 25% openings 0.9x0.9m splays adjoining driveway entrances 	No fences proposed	N/A		
3.2.2.8	Front fences and walls to have complimentary materials to context No chain wire, solid timber, masonry or solid steel front fences	N/A			
3.2.2.10	 Privacy: Direct views between living areas of adjacent dwellings screened when within 9m radius of any 	No privacy screens are recommended.	Yes		

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Requirements	Proposed	Complies
 part of window of adjacent dwelling and within 12m of private open space areas of adjacent dwellings. ie. 1.8m fence or privacy screening which has 25% max. openings and is permanently fixed Privacy screen required if floor level > 1m height, window side/rear setback (other than bedroom) is less than 3m and sill height less than 1.5m Privacy screens provided to balconies/verandahs etc which have <3m side/rear setback and floor level height >1m 	The development will not compromise privacy in the area due to windows on side boundaries being high sill windows that face side boundaries. Main living areas that face front and rear areas and open space. Rear deck provided with 1m high wall with 700mm louvres above. This provides screening to 1.7m on side elevations of rear deck. Setback of deck to rear boundary indicated at 13.44m.	

DCP 20	13: General Provisions		
	Requirements	Proposed	Complies
2.7.2.2	Design addresses generic principles of Crime Prevention Through Environmental Design guideline	No concealment or entrapment areas proposed. Adequate casual surveillance available.	Yes
2.3.3.1	Cut and fill 1.0m max. 1m outside the perimeter of the external building walls	Cut and fill <1.0m change 1m outside the perimeter of the external building walls	Yes
2.3.3.2	1m max. height retaining walls along road frontage	None proposed	N/A
	Any retaining wall >1.0 in height to be certified by structure engineer	No retaining wall likely >1m	Yes
	Combination of retaining wall and front fence height max 1.8m, max length 6.0m or 30% of frontage, fence component 25% transparent, and splay at corners and adjacent to driveway	No retaining wall front fence combination proposed.	N/A
2.3.3.8	Removal of hollow bearing trees	No hollow bearing tree proposed to be removed	Yes

DCP 201	3: General Provisions		
	Requirements	Proposed	Complies
2.6.3.1	Tree removal (3m or higher with 100m diameter trunk at 1m above ground level and 3m from external wall of existing dwelling)	Trees are proposed to be removed. Ecological report prepared and submitted. Natural resource team have assessed and provided approval for removal.	
2.4.3	Bushfire risk, Acid sulphate soils, Flooding, Contamination, Airspace protection, Noise and Stormwater	Acid sulphate soil class 3 indicated on site. No engineer designs provided. Unsure of need for deep excavation. Condition to be placed on DA to comply council ASS policy for minor works	Yes
2.5.3.2	New accesses not permitted from arterial or distributor roads	No new access proposed to arterial or distribution road.	N/A
	Driveway crossing/s minimal in number and width including maximising street parking	Driveway crossing minimal in width including maximising street parking	Yes
2.5.3.3	Parking in accordance with Table 2.5.1. 1 space per single dwelling (behind building line)	1 or capacity for more than 1 parking space behind the building line has been provided for.	Yes
2.5.3.11	Section 94 contributions	Refer to main body of report.	
2.5.3.12 and 2.5.3.13	Landscaping of parking areas	Single dwelling only with 1 domestic driveway. No specific landscaping requirements recommended.	N/A
2.5.3.14	Sealed driveway surfaces unless justified	Sealed driveway proposed	Yes
2.5.3.15 and 2.5.3.16	Driveway grades first 6m or 'parking area' shall be 5% grade with transitions of 2m length	Driveway grades capable of satisfying Council standard driveway crossover requirements. Condition recommended for section 138 Roads Act permit	Yes
2.5.3.17	Parking areas to be designed to avoid concentrations of water runoff on the surface.	Single dwelling only with 1 domestic driveway. Stormwater drainage is capable of being managed as part of plumbing construction.	Yes

PORT MACQUARIE HASTINGS

The proposal seeks to vary Development Provisions relating to:

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- Clause 3.2.2.5 (b) Setback of first floors from side boundaries to be a minimum of 3m unless it can be demonstrated that adjoining properties are not adversely affected by overshadowing.
- Clause 3.2.2.5 (c) Walls are to step in and out at least every 12m by a minimum of 500mm

The relevant objectives are:

- To reduce overbearing and perceptions of building bulk on adjoining properties and to maintain privacy.
- To provide for visual and acoustic privacy between dwellings.

Having regard for the development provisions and relevant objectives, the variation is considered acceptable for the following reasons:

- Proposed construction and located 1200mm from side boundaries. Shadow diagrams provided indicate that the shadow effect is not dissimilar to the shadow provided by existing trees.
- No windows are located in affected wall of the adjacent property. Privacy will be maintained.
- Use of materials / textures in upper and lower levels creates variation and separation and is seen to meet the objectives of the clause.
- Insulation is required within the external wall to meet BASIX requirements. This insulation will assist with noise attenuation.

Based on the above assessment, the variations proposed to the provisions of the DCP are considered acceptable and the relevant objectives have been satisfied. Cumulatively, the variations do not amount to an adverse impact or a significance that would justify refusal of the application.

(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

New South Wales Coastal Policy

The proposed development is consistent with the objectives and strategic actions of this policy

Demolition of buildings AS 2601 - Clause 92

No demolition proposed.

(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 proposal will not have any significant adverse impacts on existing adjoining properties and satisfactorily addresses the public domain.



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The proposal is considered to be compatible with other residential development 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.

There are no significant adverse privacy impacts.

Due to the height and extent of existing trees within the immediate locality the provision of natural sunlight to the affected properties is limited. The proposal is not considered to significantly worsen the ability for the adjoining property to receive 3 hours of sunlight to private open space areas between 9am and midday on 21 June. It is acknowledged that overshadowing will be increased between midday and 3pm. It is additionally noted that the adjoining property does not have any primary living room windows on the northern elevation of the building.

Access, Traffic and Transport

The proposal will not have any significant adverse impacts in terms access, transport and traffic. The existing road network will satisfactorily cater for any increase in traffic generation as a result of the development.

Water Supply Connection

Service available – details required with S.68 application.

Sewer Connection

Service available – details required with S.68 application.

Stormwater

Service available – details required with S.68 application.

Other Utilities

Telecommunication and electricity services are available to the site.

Heritage

This site does not contain or adjoin any known heritage item or site of significance. The site is considered to be disturbed land.

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 not have any significant adverse impacts on water resources and the water cycle.

Soils

The proposed development will not 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.

Management of acid sulphate soils will need to be implemented as Class 3 soils are indicated as being present. A condition of consent is recommended to ensure the excavation complies with Council Acid Sulphate Soil Minor Works Policy



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Air and microclimate

The construction and/or operations of the proposed development will not result in any significant adverse impacts on the existing air quality or result in any pollution. Standard precautionary site management condition recommended.

Flora and fauna

The proposed development will require removal of 2 small groves of broad leaf paperbark melaleuca. Additionally, a tree located on the road reserve may be impacted by the proposed driveway. An ecological report has been prepared and submitted with the application. Council natural resource team have evaluated the report and confirmed that the requirements of the Biodiversity Conservation Act have been satisfied and the impacts are acceptable.

Waste

Satisfactory arrangements are in place for proposed storage and collection of waste and recyclables. No adverse impacts anticipated. Standard precautionary site management condition recommended.

Energy

The proposal includes measures to address energy efficiency and will be required to comply with the requirements of BASIX.

Noise and vibration

The construction of the proposed development will not result in any significant adverse impacts on the existing air quality or result in any pollution. Standard precautionary site management condition recommended.

Bushfire

The site is identified as being bushfire prone.

The Applicant has submitted a bushfire report prepared as a self-assessment.

An assessment of bushfire risk having regard to section 4.3.5 of Planning for Bushfire Protection 2006 including vegetation classification and slope concludes that a Bushfire Attack Level 12.5 shall be required. Any external timber used in decks, stairs, landings and the like will be required to comply with Appendix 3 of Planning for Bushfire Protection.

Management of bushfire risk is acceptable subject to BAL construction levels being implemented and APZ being maintained. An appropriate condition is recommended.

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.

Social impacts in the locality

Given the nature of the proposed development and its location, the proposal is not considered to have any significant adverse social impacts.

Economic impact in the locality

The proposal is not considered to have any significant adverse economic impacts on the locality. A likely positive impact is that the development will maintain employment



DEVELOPMENT ASSESSMENT PANEL 06/05/2020

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.

Construction

Construction impacts are considered capable of being managed, standard construction and site management conditions have been recommended.

Cumulative Impacts

The proposed development is not considered to have any significant 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 of bushfire/flooding have been adequately addressed and appropriate conditions of consent recommended.

(d) Any submissions made in accordance with this Act or the Regulations

One (1) written submissions was received following public exhibition of the application. Copies of the written submissions have been provided separately to members of the DAP.

Key issues raised in the submissions received and comments are provided as follows:

Submission Issue/Summary	Planning Comment/Response
The bulk, scale and size of the dwelling, which is considerably larger and not in keeping with existing residential development	Excepting for CI 3.2.2.5 - Side setbacks, the proposed development meets the criteria of PMHC DCP 2013. Shadow diagrams have been prepared to assess overshadowing and have satisfactorily demonstrated that impacts are not significantly worsened. Side setbacks to ground floor has been increased to 1200mm.
The removal of all 40 trees on the site and the impact it will have on the local environment;	The lot is an existing infill lot. An ecological assessment has been prepared and reviewed by council natural resource team. Although unfortunate, the removal is acceptable.
The impact of the proposed development and associated tree removal on the large paperbark trees within our backyard;	The construction zone will be approx.13m from the rear boundary. The ecological report did consider the trees on adjoining lots and found no concerns.

Submission Issue/Summary	Planning Comment/Response
Privacy concerns relating to the design of the dwelling overlooking private open space within our backyard.	The proposed dwelling will be located approx. 13m from the rear boundary. This distance exceeds Council DCP requirement of 4m for rear building setback and 12m radius between primary living areas. It is considered that there will be no adverse privacy impacts.

(e) The Public Interest

The proposed development satisfies relevant planning controls and will not adversely impact on the wider public interest.

4. DEVELOPMENT CONTRIBUTIONS APPLICABLE

Development contributions will not be required under S64/S7.11 for the following reason: Single dwelling located on existing approved lot.

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.

The site is considered to be 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. **Attachment 1**

Attachments

- 1. DA2019 883.1 Recommended Conditions
- 2. DA2019 883.1 Plans





FOR USE BY PLANNERS/SURVEYORS TO PREPARE LIST OF PROPOSED CONDITIONS - 2011

NOTE: THESE ARE DRAFT ONLY

DA NO: 2019/883 DATE: 14/04/2020

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 Site Plan and Elevations	Ref: 19 - 1421	Robert Smallwood Building Plans	6/3/2020
BASIX Certificate	1053916S	Robert Smallwood Building Plans	2/12/2019

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:
 - a) the appointment of a Principal Certifying Authority and
 - b) 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) (A009) The development site is to be managed for the entirety of work in the following manner:
 - 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;
 - 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;
 - Building waste is to be managed via appropriate receptacles into separate waste streams;
 - 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.

(4) (A091) All parts of the structure below the applicable Flood Planning Level (1 in 100 flood level including climate change plus the relevant freeboard) shall be constructed from flood compatible materials compliant with the ABCB Standard for Construction of Buildings in Flood Hazard Areas. Consideration should also be given to the relevant provisions contained with the Hawkesbury-Nepean Floodplain Management Steering Committee document *Reducing Vulnerability of Buildings to Flood Damage (2007)*. For the purpose of this requirement, the 1 in 100 year flood level including climate change may be assumed to be RL3.33m AHD.

B - PRIOR TO ISSUE OF 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) (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:

- i. Footway and gutter crossing
- ii. Functional vehicular access
- (3) (B046) The building 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.

(4) (B067) The floor level of all habitable areas is to be a minimum of 500mm above the 1 in 100 year flood level including the applicable climate change allowance. For the purpose of this requirement, the 1 in 100 year flood level including climate change may be assumed to be RL3.33m AHD. The floor level of all habitable areas must therefore be at or above 3.83m AHD. Prior to release of the Construction Certificate floor levels satisfying this requirement shall be clearly illustrated on the plans.

- (5) (B068) The floor level of all non-habitable areas is to be at or above the 1 in 20 year flood level. For the purpose of this requirement, the 1 in 20 year flood level may be assumed to be RL2.08m AHD. Prior to release of the Construction Certificate floor levels satisfying this requirement shall be clearly illustrated on the plans.
- (6) (B071) Prior to release of the Construction Certificate a practising chartered professional structural engineer is to provide certification to the PCA that the building is designed so that all structural members are capable of withstanding flood forces and the impact of any debris (carried by floodwaters) likely to occur for a range of floods up to and including the 1 in 100 year flood including climate change and the relevant freeboard level of 500mm. For the purpose of this requirement, the 1 in 100 year flood level including climate change may be assumed to be RL3.33m AHD. Velocities to be adopted for the calculation of forces created by flood waters and debris loading shall be at least three (3) times the velocities for a 1 in 100 year flood including climate change plus freeboard. For the purpose of this requirement, the 2 in 100 year flood including climate change plus freeboard. For the purpose of this requirement, the 2 in 100 year flood including climate change plus freeboard. For the purpose of this requirement, the 2 in 100 year flood including climate change plus freeboard. For the purpose of this requirement, the 2 in 100 year flood including climate change plus freeboard. For the purpose of this requirement, the 2 in 100 flood including climate change may be assumed to be 0.08m/s
- (7) (B198) The rainwater tank(s) are to be securely fastened so that they do not become floating debris in a flood event up to and including the 1 in 100 year flood including the applicable climate change allowance. Fastening details are to be provided by a suitably qualified engineer and shall be submitted with the application for the Construction Certificate.

C - PRIOR TO ANY WORK COMMENCING ON SITE

Nil

D – DURING CONSTRUCTION

- (1) (D003) The Port Macquarie-Hastings area is 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.
- (2) Reduced levels prepared by a registered Surveyor must be submitted to the Principal Certifying Authority at the completion of the roof framework and include certification that building heights comply with the plans approved with the development consent.
- (3) Disturbance or excavation of soils below a depth of 1.0 metre shall be undertaken in strict accordance with councils policy - Acid Sulfate Soil Management Plan for Minor Works to ensure that acid sulphate soils are not exposed and oxidised.

E - PRIOR TO OCCUPATION OR THE ISSUE OF OCCUPATION CERTIFICATE

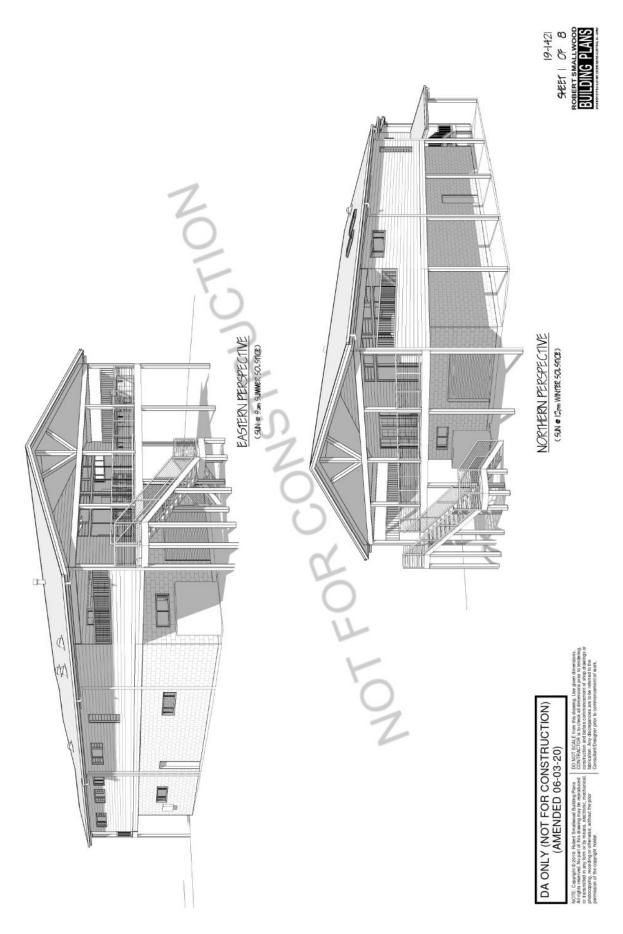
- (1) (E001) The premises shall not be occupied or used in whole or in part until an Occupation Certificate has been issued by the Principal Certifying Authority.
- (2) (E058) Written confirmation being provided to the Principal Certifying Authority (PCA) from any properly qualified person (eg the builder), stating that all commitments made as part of the BASIX Certificate have been completed in accordance with the certificate.
- (3) (E034) Prior to occupation or the issuing of the 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.

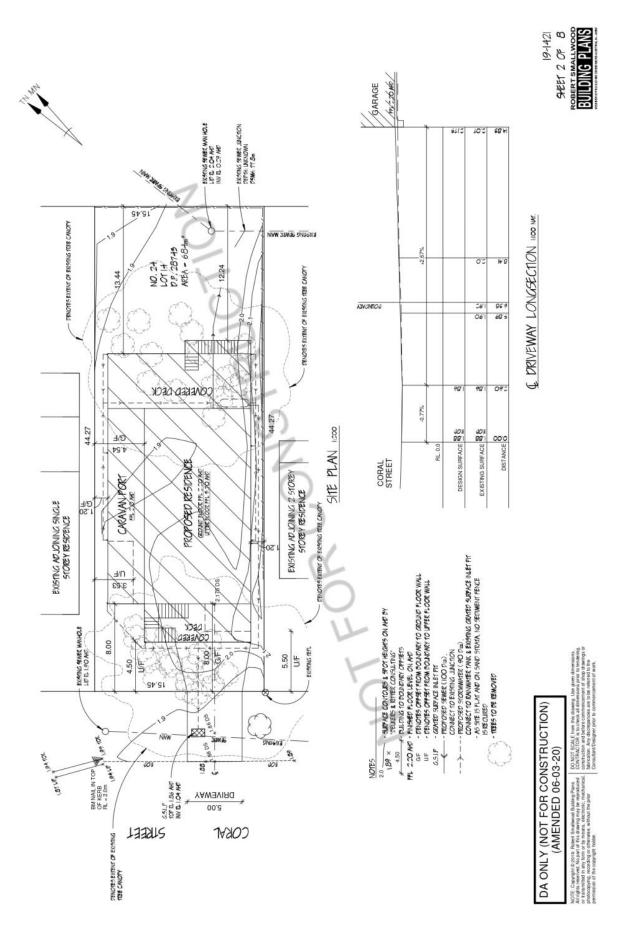
- (4) (E051) Prior to occupation or the issuing of any Occupation Certificate a section 68 Certificate of Completion shall be obtained from Port Macquarie-Hastings Council.
- (5) (E044) The applicant will be required to submit prior to occupation or the issue of the Occupation Certificate, certification by a Registered Surveyor that the development has met the necessary flood planning levels specified in this consent.
- (6) (E045) All electrical meter boxes shall be placed at a level which is above the 1 in 100 year flood level including the applicable climate change allowance. The positioning of meter boxes shall comply with the requirements of the relevant electricity authority. For the purpose of this requirement, the 1 in 100 year flood level including climate change may be assumed to be RL 3.33m AHD.

F - OCCUPATION OF THE SITE

- (1) (F004) The dwelling is approved for permanent residential use and not for short term tourist and visitor accommodation.
- (2) (F035) The consent only permits the use of the building as a single dwelling and does not permit the adaption or use of the building so as to create a second occupancy.
- (3) This consent does not permit the store room or any part of the garage to be used as habitable room/s.
- (4) The ground floor store room is not permitted to be altered in any way so as to render it capable of containing additional rooms which may be used as a separate room.







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DOOR SCHEDULE - PROPOSED RESIDENCE

	HEIGHT WIDTH	011LC	CLALING			
W1 600	18000	SLIDING	SINGLE GLAZED (TINT)*	6.60	0.49	STD. ALUMINIUM
W2 500	2900	LOUVRE+FIXED+LOUVRE	SINGLE GLAZED (TINT)	5.40	0.49	TIMBER
W3 500	2900	LOUVRE+FIXED+LOUVRE	SINGLE GLAZED (TINT)	5.40	0.49	TIMBER
W4 2100	800	DOUBLE HUNG	SINGLE GLAZED (TINT)	5.40	0.49	TIMBER
W5 2100	800	DOUBLE HUNG	SNGLE GLAZED (TINT)	5,40	0.49	TIMBER
W6 1500	800	LOUVRE	SNGLE GLAZED (TINT)*	6.60	0.49	STD. ALUMINIUM
W7 600	2400	LOUVRE+FIXED+LOUVRE	SNGLE GLAZED (CLEAR)	6.70	0.70	STD. ALUMINIUM
W8 600	1000	SLIDING	SNGLE GLAZED (CLEAR)	6.70	0.70	STD. ALUMINIUM
W9 600	1800	LOUVRE +FIXED+LOUVRE	SNGLE GLAZED (CLEAR)	6.70	0.70	STD. ALUMINIUM
W10 600	2100	LOUVRE +FIXED+LOUVRE	SNGLE GLAZED (CLEAR)	6.70	0.70	STD. ALUMINIUM
W11 1800	2700	DOUBLE HUNG+FIXED+DOUBLE HUNG	SNGLE GLAZED (CLEAR)	5.40	0.63	TIMBER
W12 600	1800	SLIDING	SNGLE GLAZED (CLEAR)	6.70	0.70	STD. ALUMINIUM
W13 600	1800	SLIDING	SNGLE GLAZED (CLEAR)	6.70	0.70	STD. ALUMINIUM
W14 1800	600	LOUVRE	SNGLE GLAZED (CLEAR)	6.70	0.70	STD. ALUMINIUM
W15 600	2100	SLIDING	SNGLE GLAZED (CLEAR)	6.70	0.70	STD. ALUMINIUM
D1 2100	2900	SLIDING GLASS DOOR	SNGLE GLAZED (CLEAR)	5.40	0.49	TIMBER
D2 2100	2900	SLIDING GLASS DOOR	SNGLE GLAZED (CLEAR)	5.40	0.41	TIMBER
D3 2100	1640	GLASS PANEL DOOR (FRENCH DOORS)	SNGLE GLAZED (CLEAR)	5.40	0.41	TIMBER
D4 2100	1440	GLASS PANEL DOOR (FRENCH DOORS)	SNGLE GLAZED (CLEAR)	5.40	0.56	TIMBER
GW1 600	2100	SLIDING	SNGLE GLAZED (CLEAR)	6.70	0.70	STD. ALUMINIUM
GW2 600	2100	SLIDING	SNGLE GLAZED (CLEAR)	6.70	0.70	STD. ALUMINIUM

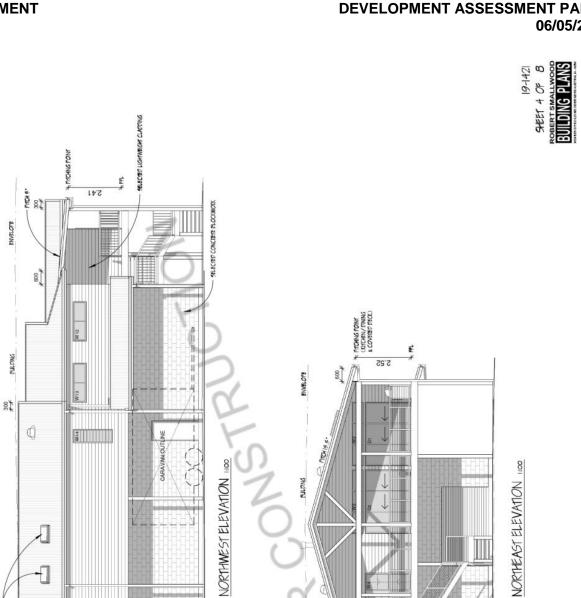
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> Item 06 Attachment 2

DEVELOPMENT ASSESSMENT PANEL 06/05/2020



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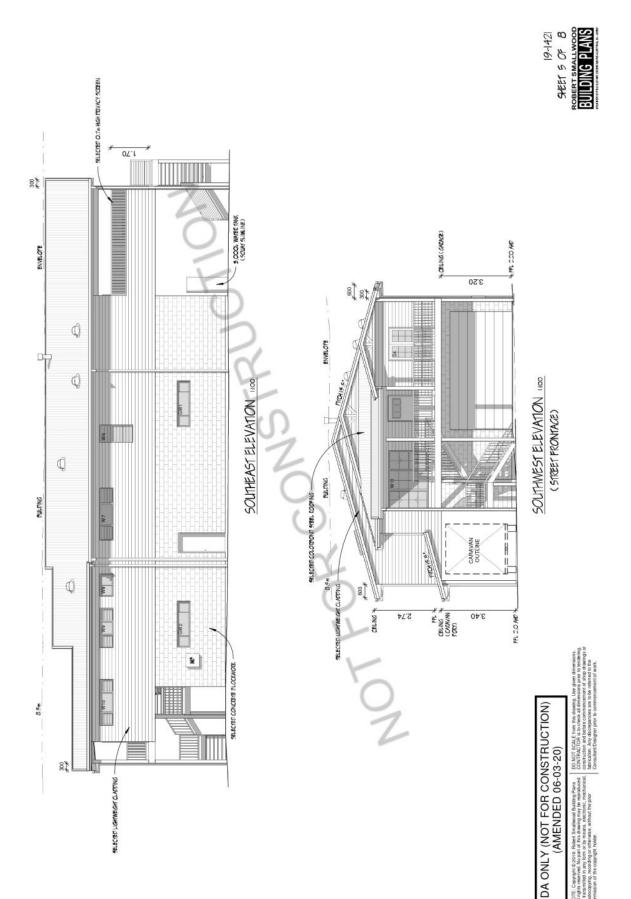
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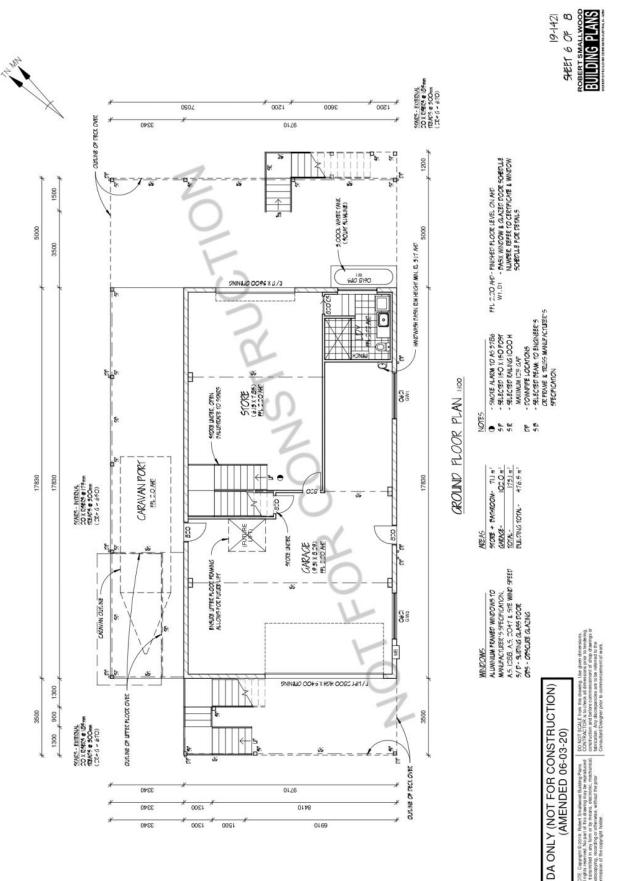
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Item 06 Attachment 2 Page 502

DA ONLY (NOT FOR CONSTRUCTION) (AMENDED 06-03-20)

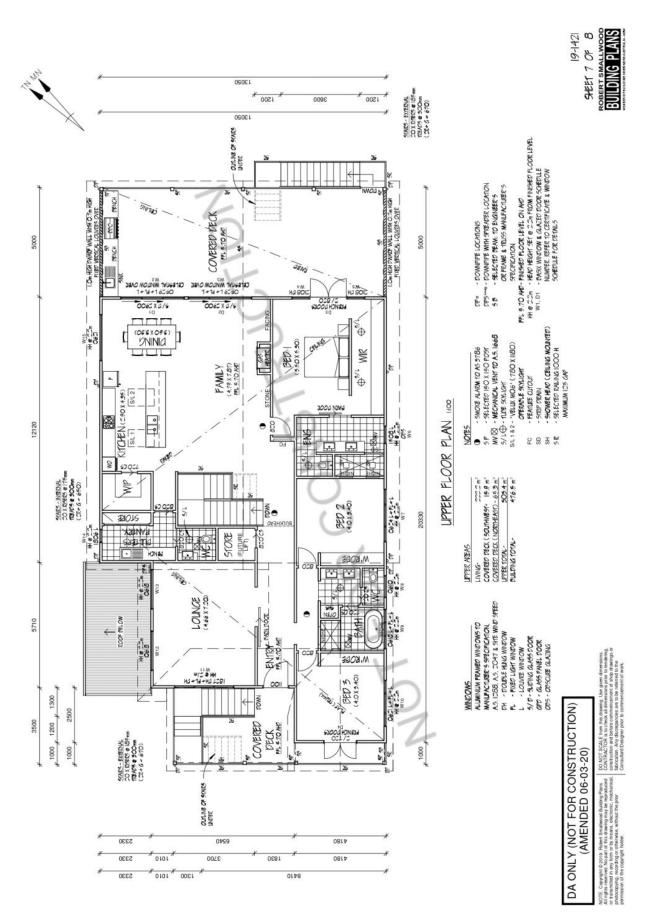
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Item 06 Attachment 2

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ATTACHMENT

DEVELOPMENT ASSESSMENT PANEL 06/05/2020

BUSHFIRE PROTECTION ASSESSMENT

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Item 06 Attachment 2

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Item: 07

Subject: DA2020 - 122.1 ALTERATIONS AND ADDITIONS TO DWELLING AT LOT 20 DP 262273, NO 11 TIMBER RIDGE PORT MACQUARIE

Report Author: Development Assessment Planner, Robert Slater

Applicant:	A Wilcox
Owner:	A Wilcox
Estimated Cost:	\$950K
Parcel no:	24056

Alignment with Delivery Program

4.3.1 Undertake transparent and efficient development assessment in accordance with relevant legislation.

RECOMMENDATION

That DA2020 - 122 for dwelling additions and alterations at Lot 20, DP 262273, No. 11 Timber Ridge, Port Macquarie, be determined by granting consent subject to the recommended conditions.

Executive Summary

This report considers a development application for a dwelling additions and alterations 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, 2 submissions were received.

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.

This report recommends that the development application be approved subject to the conditions included in **Attachment 1.**

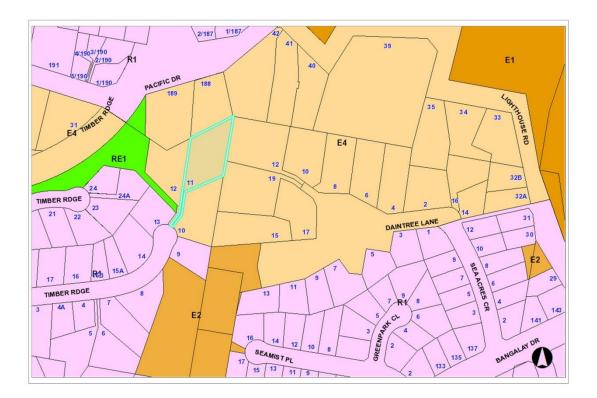
1. BACKGROUND

Existing Sites Features and Surrounding Development

The site has an area of 2633m².

The site is zoned E4 Environmental Living in accordance with the Port Macquarie-Hastings Local Environmental Plan 2011, as shown in the following zoning plan:





The existing subdivision pattern and location of existing development within the locality is shown in the following aerial photograph:



2. DESCRIPTION OF DEVELOPMENT

Key aspects of the proposal include the following:



DEVELOPMENT ASSESSMENT PANEL 06/05/2020

Alterations and additions to existing dwelling

Refer to **Attachment 2** at the end of this report for plans of the proposed development.

Application Chronology

- 24 February 2020 Application lodged
- 4 March 20202 Application notified
- 25 March 2020 Window boundary offset plan details provided

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

There is no Koala Plan of Management on the site. Additionally, the site is less than 1ha in area therefore no further investigations are required.

State Environmental Planning Policy No. 55 – Remediation of Land

Following an inspection of the site and a search of Council records, the subject land is not identified as being potentially contaminated and is suitable for the intended use.

State Environmental Planning Policy (Coastal Management) 2018

The site is not located within a coastal use area / coastal environment area.

The site has part mapped littoral rainforest and proximity mapping applying to the property.

Having regard to clause 11 of the SEPP and clause 5.5 of the Port Macquarie-Hastings LEP 2011 the proposed development is on land identified as "proximity area" for littoral rainforest. The proposed residential development is not considered likely to result in any of the following:

- (a) any adverse impact on the biophysical, hydrological or ecological integrity of the adjacent coastal wetland or littoral rainforest, or
- (b) any adverse impact on the quantity and quality of surface and ground water flows to and from the adjacent coastal wetland or littoral rainforest.





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The existing and proposed on-site stormwater management measures are considered to be adequate to direct roof and surface waters from the site to the existing street stormwater infrastructure.

The bulk, scale and size of the proposed development is compatible with the surrounding coastal and built environment. The site is developed and located within an established residential setting.

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.

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 E4 Environmental Living.
- Clause 2.3(1) and the E4-zone landuse table The alterations and additions to the dwelling is a permissible landuse with consent, being development ancillary to a dwelling.
- The objectives of the E4 zone are as follows:
 - To provide for low-impact residential development in areas with special ecological, scientific or aesthetic values.
 - To ensure that residential development does not have an adverse effect on those values.
- Clause 2.3(2) The proposal is consistent with the zone objectives as it is a permissible landuse and consistent with the established residential locality. The proposal will not result in any identifiable adverse ecological, scientific or aesthetic impacts.
- Clause 2.7 The demolition requires consent as it does not fit within the provisions of SEPP (Exempt and Complying Development Codes) 2008.
- Clause 4.3 The maximum overall height of the building above ground level (existing) is 7.7m which complies with the standard height limit of 8.5m applying to the site.
- Clause 4.4 The maximum floor space ratio of 0.65:1 does not apply to the site.
- Clause 5.10 Heritage. The site does not contain or adjoin any known heritage items or sites of significance.
- 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
3.2.2.1	Ancillary development: • 4.8m max. height • Single storey • 60m2 max. area • 100m2 for lots >900m2 • 24 degree max. roof pitch • Not located in front setback	The proposed water tanks and swimming pool are appropriately located	Yes
3.2.2.2	 Articulation zone: Min. 3m front setback An entry feature or portico A balcony, deck, patio, pergola, terrace or verandah A window box treatment A bay window or similar feature An awning or other feature over a window A sun shading feature 	No elements within the articulation zone.	N/A
	Front setback (Residential not R5 zone): • Min. 4.5m local road	Front building line setback is compliant with the minimum 4.5m front setback requirements. Battle-axe block with long access handle.	Yes
3.2.2.3	Garage 5.5m min. and 1m behind front façade. Garage door recessed behind building line or eaves/overhangs provided	Being on a battle-axe allotment, garage door setback is compliant with the minimum front setback requirements. Garage door recessed.	Yes
	6m max. width of garage door/s and 50% max. width of building	Width of garage door/s are compliant with the maximum width requirements	Yes
	Driveway crossover 1/3 max. of site frontage and max. 5.0m width	No change to existing driveway.	Yes
3.2.2.4	4m min. rear setback. Variation subject to site analysis and provision of private open space	The rear setback requirements are complied with.	Yes

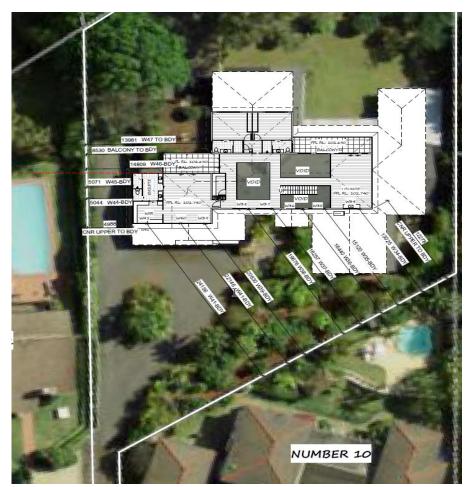
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3.2.2.5	Side setbacks: • Ground floor = min. 0.9m	The minimum side setback requirements are complied with.	Yes
	• First floors & above = min. 3m setback or where it can be demonstrated that overshadowing not adverse = 0.9m min.	Western Elevation:4.988m Eastern Elevation: Approx. 9.5m	Yes
	 Building wall set in and out every 12m by 0.5m 	The building wall articulation is satisfactory to address the objective intent of the development provision.	Yes
3.2.2.6	35m2 min. private open space area including a useable 4x4m min. area which has 5% max. grade	The dwelling contains 35m ² open space in one area including a useable 4m x 4m space.	Yes
3.2.2.10	 Privacy: Direct views between living areas of adjacent dwellings screened when within 9m radius of any part of window of adjacent dwelling and within 12m of private open space areas of adjacent dwellings. i.e. 1.8m fence or privacy screening which has 25% max. openings and is permanently fixed Privacy screen required if floor level > 1m height, window side/rear setback (other than bedroom) is less than 3m and sill height less than 1.5m Privacy screens provided to balconies/verandahs etc. which have <3m side/rear setback and floor level height >1m 	The development will not compromise privacy in the area due to a combination of living spaces having high sill windows that face side/rear boundaries, limiting living areas that face adjoining living areas/open space, compliant separation and use of boundary fencing and vegetative screens. See window schedule and window to boundary offset plan below this table*. No privacy screens are recommended.	Yes
DCP 201	3: General Provisions Requirements	Proposed	Complies
2.7.2.2	Design addresses generic principles of Crime Prevention Through Environmental Design guideline	No concealment or entrapment areas proposed. Adequate casual surveillance available.	Yes

2.3.3.1	Cut and fill 1.0m max. 1m outside the perimeter of the external building walls	Cut and fill <1.0m change 1m outside the perimeter of the external building walls	N/A
2.3.3.2	1m max. height retaining walls along road frontage	None proposed	N/A
	Any retaining wall >1.0 in height to be certified by structure engineer	No retaining wall likely >1m	Yes
	Combination of retaining wall and front fence height max 1.8m, max length 6.0m or 30% of frontage, fence component 25% transparent, and splay at corners and adjacent to driveway	No retaining wall front fence combination proposed.	N/A
2.5.3.3	Parking in accordance with Table 2.5.1. 1 space per single dwelling (behind building line)	1 or capacity for more than 1 parking space behind the building line has been provided for.	Yes
2.5.3.11	Section 94 contributions	Refer to main body of report.	
2.5.3.14	Sealed driveway surfaces unless justified	No change to existing driveway.	Yes
2.5.3.15 and 2.5.3.16	Driveway grades first 6m or 'parking area' shall be 5% grade with transitions of 2m length	No change to existing driveway.	Yes
2.5.3.17	Parking areas to be designed to avoid concentrations of water runoff on the surface.	Single dwelling only with 1 domestic driveway. Stormwater drainage is capable of being managed as part of plumbing construction.	Yes

*Window boundary offset plan detail:





(iv) Any matters prescribed by the Regulations

New South Wales Coastal Policy

The proposed development is consistent with the objectives and strategic actions of this policy

Demolition of buildings AS 2601 - Clause 92

None prescribed.

(b) The likely impacts of that development, including environmental impacts on both the natural and built environments, social and economic impacts in the locality:

Context and Setting

The proposal will not have any significant adverse impacts on existing adjoining properties and satisfactorily addresses the public domain.

The proposal is considered to be compatible with other residential development 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.



DEVELOPMENT ASSESSMENT PANEL 06/05/2020

There are no significant adverse privacy impacts.

There are no significant adverse overshadowing impacts. The proposal does not prevent adjoining properties from receiving 3 hours of sunlight to private open space and primary living areas on 21 June.

Access, Traffic and Transport

The proposal will not have any significant adverse impacts in terms access, transport and traffic. The existing road network will satisfactorily cater for any increase in traffic generation as a result of the development.

Water Supply Connection

Service available – details required with S.68 application.

Sewer Connection

Service available – details required with S.68 application.

Stormwater

Service available – details required with S.68 application.

Other Utilities

Telecommunication and electricity services are available to the site.

Heritage

This site does not contain or adjoin any known heritage item or site of significance. The site is considered to be disturbed land.

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 not have any significant adverse impacts on water resources and the water cycle.

Soils

The proposed development will not 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 not result in any significant 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 native vegetation and therefore does not trigger the biodiversity offsets scheme. Part 7 of the Biodiversity Conservation Act 2016 is considered to be satisfied.

Waste

Satisfactory arrangements are in place for proposed storage and collection of waste and recyclables. No adverse impacts anticipated. Standard precautionary site management condition recommended.





DEVELOPMENT ASSESSMENT PANEL 06/05/2020

Energy

The proposal includes measures to address energy efficiency and will be required to comply with the requirements of BASIX.

Noise and vibration

The construction of the proposed development will not result in any significant adverse impacts on the existing air quality or result in any pollution. Standard precautionary site management condition recommended.

Bushfire

The site is identified as being bushfire prone.

The Applicant has submitted a BAL Certificate prepared by a Certified Consultant.

An assessment of bushfire risk having regard to section 4.3.5 of Planning for Bushfire Protection 2006 including vegetation classification and slope concludes that a Bushfire Attack Level 12.5 shall be required.

Management of bushfire risk is acceptable subject to BAL construction levels being implemented and APZ being maintained. An appropriate condition is recommended.

Site design and internal design

The proposed development design satisfactorily responds to the site attributes and will fit into the locality.

Construction

Construction impacts are considered capable of being managed, standard construction and site management conditions have been recommended.

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.

Social impacts in the locality

Given the nature of the proposed development and its location the proposal is not considered to have any significant adverse social impacts.

Economic impact in the locality

The proposal is not considered to have any significant adverse economic impacts on the locality. 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.

Cumulative Impacts

The proposed development is not considered to have any significant 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 bulk, scale and size of the proposed development is compatible with the surrounding coastal and built environment. The site is developed and located within an area zoned for residential purposes.



Item 07 Page 516 Site constraints of bushfire have been adequately addressed and appropriate conditions of consent recommended.

(d) Any submissions made in accordance with this Act or the Regulations

Two (2) written submissions were received following public exhibition of the application. Copies of the written submissions have been provided separately to members of the DAP.

Key issues raised in the submissions received and comments are provided as follows:

Submission Issue/Summary	Planning Comment/Response
No. 10 Timber Ridge	Window schedule provided below for information.
Upper south facing windows W34, W35, W36, W37, and W38, will directly overlook the rear of our property. The identified windows will look	W34 (1418) is situated in a first floor wall which is setback 13.025m from the side boundary and is situated above a living room sink.
directly on to the swimming pool area and into our private courtyard, rear garden, bedrooms and main living and dining area	To address the potential for overlooking into the adjoining property's private open space and living areas the applicant has submitted amended plans which show W34 being replaced with a (0918) highlight window having a minimum sill height above the floor level of 1500mm.
	W35 (1418) and W36 (1418) are situated in a first floor wall having a setback 15.12m and 16.4m respectively from the side boundary. The windows are so positioned as to provide natural light via a non-trafficable void to the ground floor living areas
	W37 (1418) and W38 (1418) are situated in a first floor wall which is setback 18.257m and 19.676m respectively from the side boundary. The windows provide natural light to the corridor which provides a path of travel to a bedroom
	W39 (1209) and W40 (1418) are situated in a first floor wall which is setback 20.630m and 22.146m respectively from the side boundary and situated in a bedroom.



PORT MACQUARIE HASTINGS

	W41 (1409) is situated in a first floor wall which is setback 24.156m from the side boundary and located in the wake-in-robe.
	Based on the above assessment of the window to boundary offset the DCP objective to protect the visual privacy of on-site and nearby residents the applicant has adequately addressed the objective.
The proposed development will negatively impact our privacy and is an invasion of it.	It is conceded that the protection of complete privacy in this situation is made the more difficult as the development site being a battle axe block with a long access handle sharing a common boundary with seven (7) other adjoining properties.
	Therefore, greater emphasis is placed on maintaining privacy between and in living areas and private open space than for bedrooms. The hours of occupancy and the ability of the occupant to exercise some control of the extent of overlooking when indoors, through their choice of such window screening as curtains or blinds offset the priority for privacy.
	In combination with the proposed treatment to W34(0918) and compliant separation distances to the adjoining southern boundary, it is considered that the applicant has successfully addressed the issue/s of direct overlooking of main internal living areas and private open spaces of property adjoining the southern boundary
Timber Ridge is a prestigious road with large individual homes built on large lots to maximise privacy.	This issue is not a matter for consideration under section 4.15. The issue of privacy has been addressed previously.
	The proposal is permissible with consent in the zone and has satisfactorily responded to relevant planning controls.
The proposed development will negatively affect the value of our property due to a lack of privacy.	Property values are not a matter for consideration under section 4.15. The proposal is permissible with consent in the zone and has satisfactorily responded to relevant planning controls.
The proposed development will negatively impact the quiet peace privacy and enjoyment we currently have by overlooking and removing the privacy.	The proposal is permissible with consent and complies with Council's planning controls. There are considered to be insufficient grounds to refuse the application.
No. 12 Timber Ridge Whilst the designer has limited the	The first floor balcony has a compliant boundary setback of 8.530m and is off the main bedroom.
size of the windows overlooking our pool area there does not seem to be	In accordance with the EP&A Act 1979 No 203



of the balcon	een of the wes y on the northe		- 4.15 Evaluation Control Plans	Clause (3A) Development
the bedroom.			to an aspect of development a standards—is	ons set standards with respect f the development and the application complies with those not to require more onerous n respect to that aspect of the
			• •	to the western end of the first ot recommended.
The bedroom	n area adjacen	t to the	No privacy scree	ns are recommended as the
	t consideration			ce from the bedroom window
to creating ad	dditional sound	d proofing t	to the boundary i	s compliant with the DCP.
in this area.	The privacy sc	reen may		
need to have	acoustic qual	ities.		
	WINDO	OW SCHEDU	JLE& 1 st floor B	alcony
No:	Room	Orientation	Dimensions	Distance Off Boundary
W41	WIR	South	1409	24.156m
W40	Bed 1	South	1418	22.146m
W39	Bed 1	South	1209	20.630m
W38	Void	South	1418	19.676m
W37	Void	South	1418	18.257m
W36	Void	South	1418	16.440m
W35	Void	South	1418	15.120m
W34	Lounge	South	0918	13.025m
W47	Ensuite	West	0915	13.981m
W46	Void	West	1818	14.809m
W45	Shower	West	0918	5.071m
W44	WC	West	0912	5.044m
W43	Living	West	0621	14.743m - Ground Floor
	Living	West	0621	14.699m - Ground Floor
W42	Living	11000		
W42 Balcony	bedroom	West	16.1m ²	8.530m

(e) The Public Interest

The proposed development satisfies relevant planning controls and will not adversely impact on the wider public interest.

4. DEVELOPMENT CONTRIBUTIONS APPLICABLE

Development contributions are not applicable for this development under S64Policy /S7.11 Plans.

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.



HASII

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 (**Attachment 1**).

Attachments

- 1<u>U</u>. DA2020 122.1 Recommended Conditions.
- 2<u>↓</u>. DA2020 122.1 Plans.

FOR USE BY PLANNERS/SURVEYORS TO PREPARE LIST OF PROPOSED CONDITIONS - 2011

NOTE: THESE ARE DRAFT ONLY

DA NO: 2020/122 DATE: 27/04/2020

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
Development plans	Page 1 to 9	Draftworks designs	30 March 2020
BASIX certificate	A368322_02	Craig Maltman	4 February 2020
BAL certificate		S & J Constructions Pty Ltd	22 January 2020

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:
 - a) the appointment of a Principal Certifying Authority and
 - b) 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) (A009) The development site is to be managed for the entirety of work in the following manner:
 - 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 appropriate receptacles into separate waste streams;
- 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.

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) (B046) The building shall be designed and constructed so as to comply with the Bushfire Attack Level (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 the current Planning for Bush Fire Protection Guidelines to prevail in the extent of any inconsistency with the Building Code of Australia.

C - PRIOR TO ANY WORK COMMENCING ON SITE

nil

D – DURING WORK

- (1) (D003) The Port Macquarie-Hastings area is 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.
- (2) (D015) The swimming pool shall not to be filled with water until a safety fence/barrier complying with the current Swimming Pools Act and Regulations has been installed and an inspection has been carried out and approval given by the Principal Certifying Authority.
- (3) (D016) Where depth of water in the pool exceeds 300mm during construction a temporary barrier or fence in accordance with the current Swimming Pools Act and Regulations is to be erected or other precaution taken so as to prevent entry of children into the pool.

- (4) (D017) In accordance with the Swimming Pool Regulation a sign is to be erected and maintained that:
 - (a) Bears a notice containing the words "This swimming pool is not to be occupied or used", and
 - (b) Is located in a prominent position in the immediate vicinity of that swimming pool, and
 - (c) Continues to be erected and maintained until an Occupation Certificate has been issued for the pool.
 - (5) (D000) Any excess fill is to be disposed of at an approved location or taken to an approved waste management facility.

E - PRIOR TO OCCUPATION OR THE ISSUE OF 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) (E058) Written confirmation being provided to the Principal Certifying Authority (PCA) from any properly qualified person (e.g. the builder), stating that all commitments made as part of the BASIX Certificate have been completed in accordance with the certificate.
- (3) (E034) Prior to occupation or the issuing of the 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.
- (4) (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.
- (5) (E020) The provision of a suitable sign containing the details required by the current Swimming Pools Act and Regulations.
- (6) (E021) Pool(s) to be fenced in accordance with the Swimming Pools Act, 1992.

F - OCCUPATION OF THE SITE

- (1) (F004) The dwelling is approved for permanent residential use and not for short term tourist and visitor accommodation.
- (2) (F035) The consent only permits the use of the building as a single dwelling and does not permit the adaption or use of the building so as to create a second occupancy.
- (3) (F027) The swimming pool filtration motor shall be operated between the following hours only:

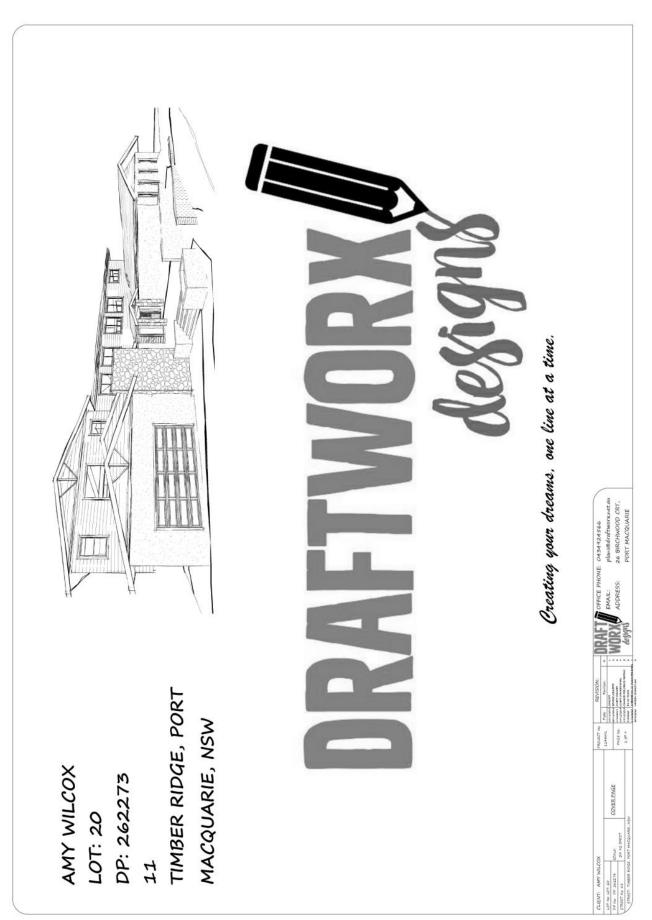
Monday to Friday (other than a public holiday)

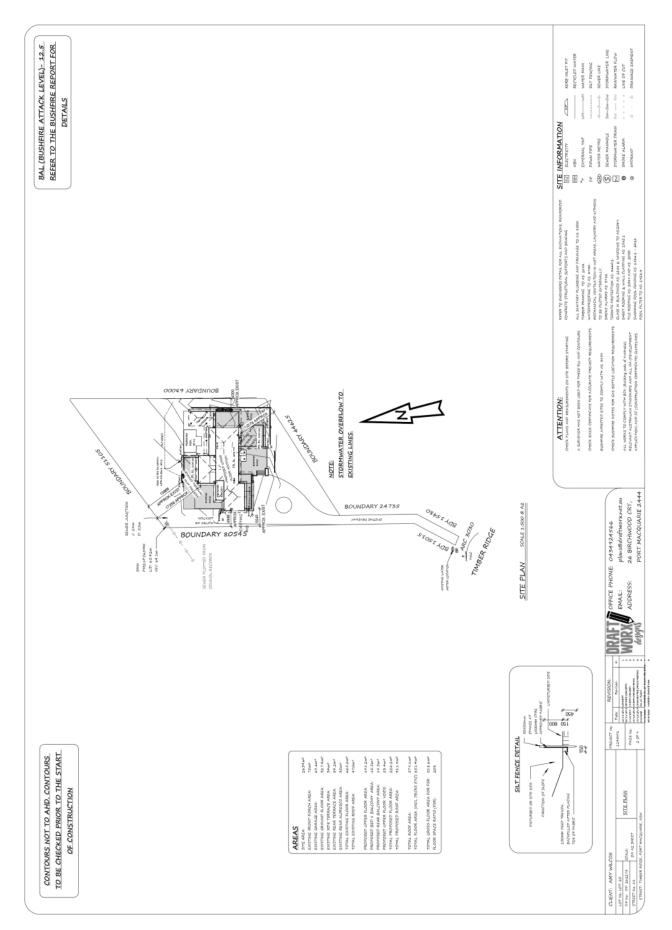
7.00 am - 8.00 pm

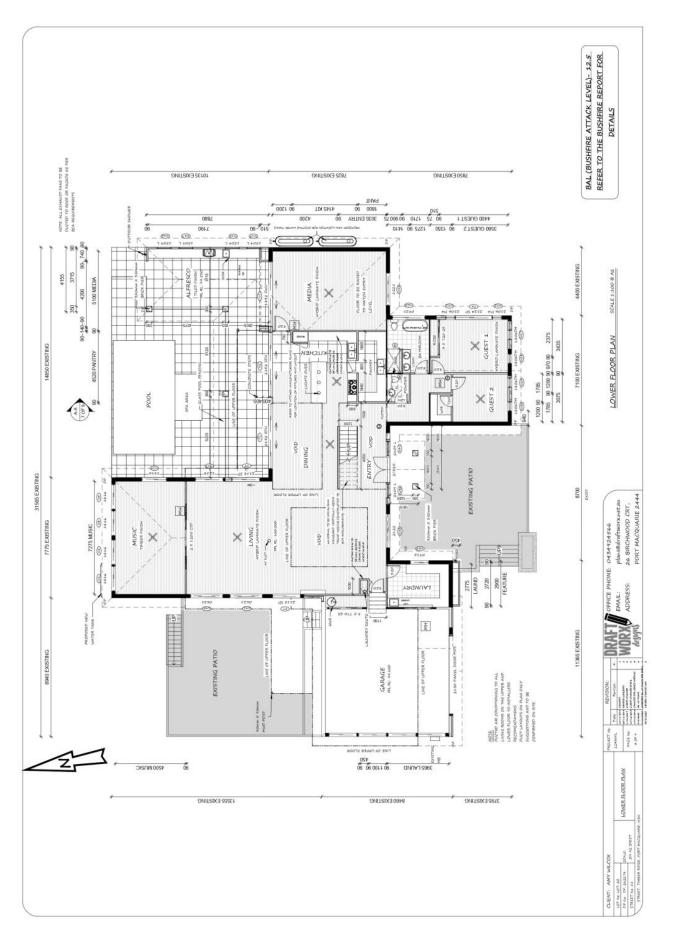
Saturday to Sunday and Public Holidays

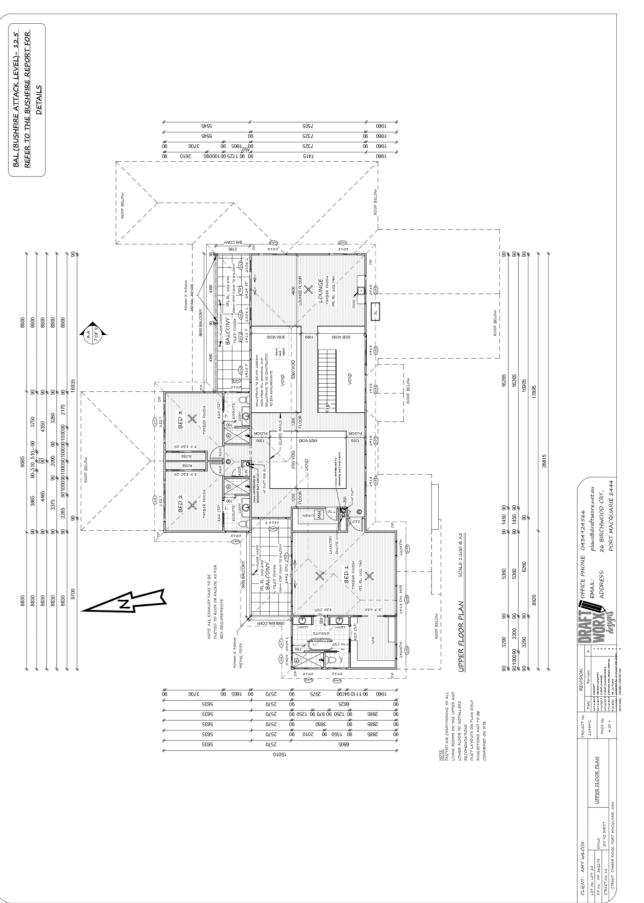
8.00 am - 8.00 pm

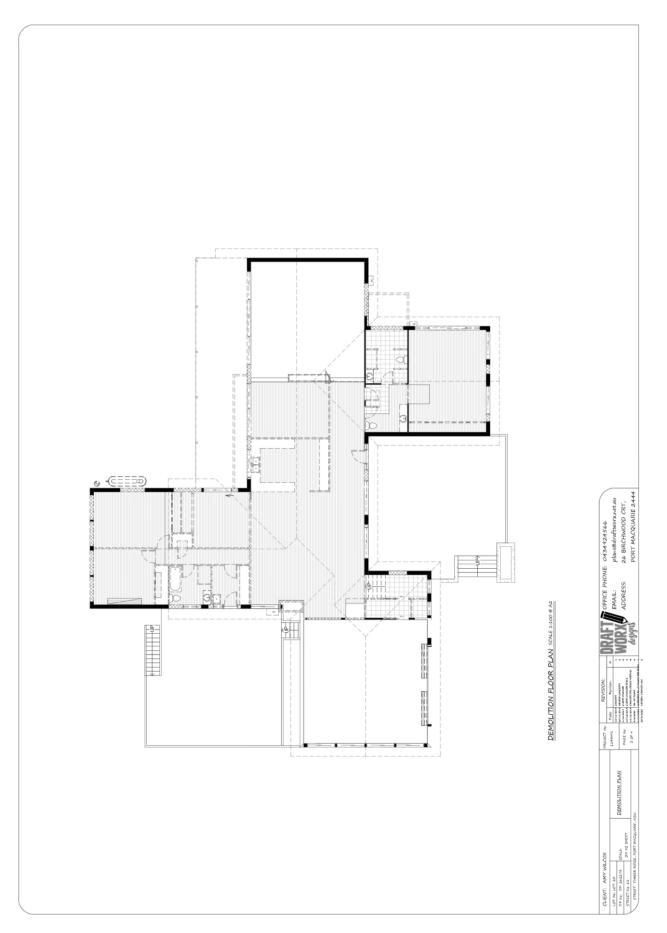
Should noise levels exceed 5dBA above the ambient noise level measured at the boundary, the pool filtration motor shall be enclosed with an effective soundproof unit.

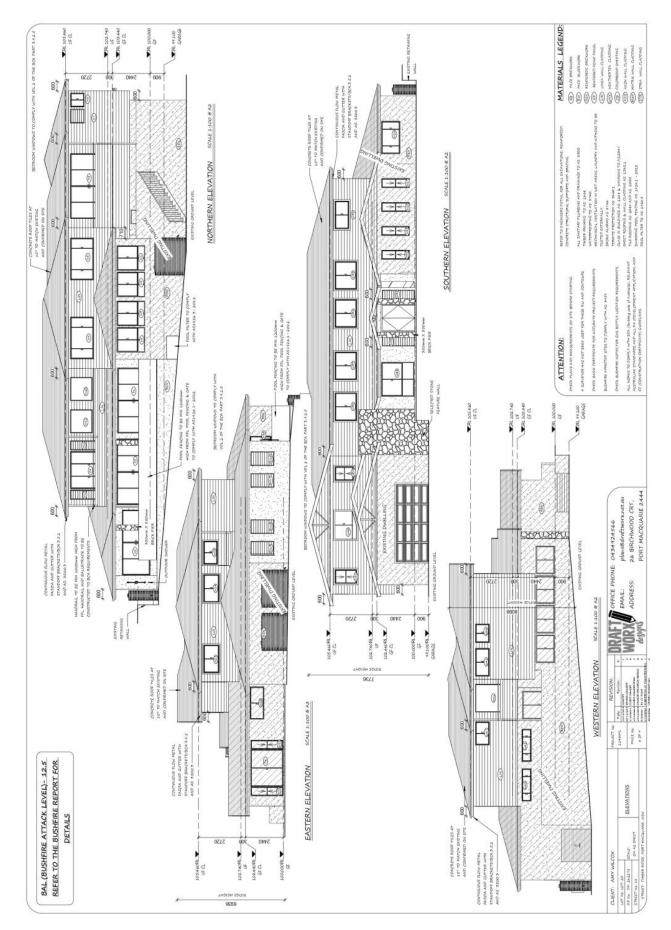


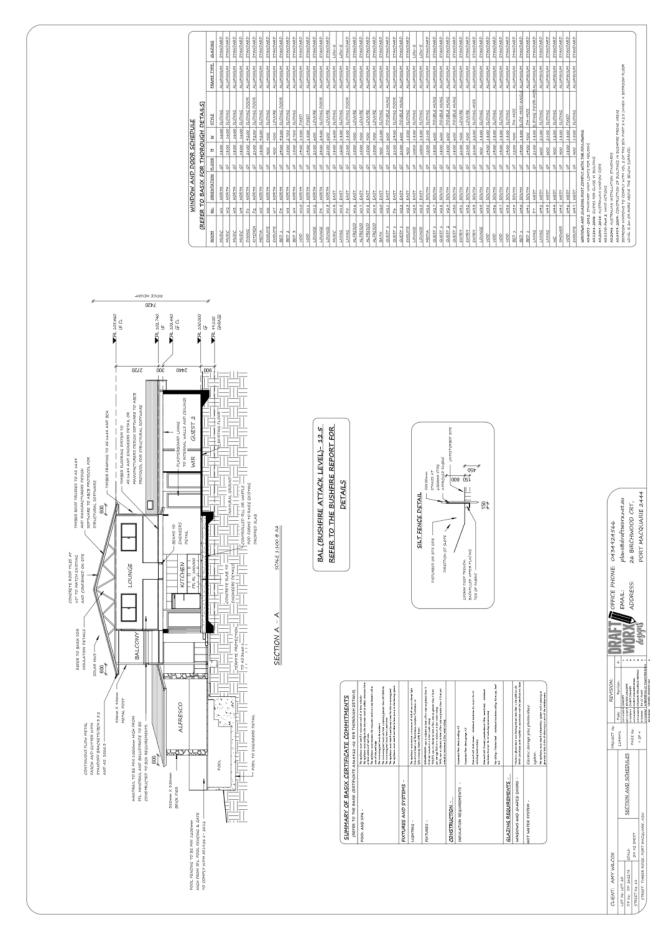












ATTACHMENT

OWNER, BUILDER, SUB-CONTRACTORS, CONSULTANTS, RENOVATORS, MAINTENANCE WORKERS AND DEMOLISHERS THESE NOTES MUST BE READ AND UNDERSTOOD BY ALL INVOLVED IN THE PROJECT, THIS INCLUDES (but not excluded to).

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BY ALL INVOLVED IN THE PROJECT, THIS THESE NOTES MUST BE READ AND UNDERSTOOD

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> Item 07 Attachment 2

GENERAL SPECS & WHS

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Subject: DA2020 - 63.1 DWELLING AT LOT 2 DP 1143498, NO. 4A HIBISCUS CRESENT, PORT MACQUARIE

Report Author: Development Assessment Planner, Steven Ford

Applicant:	A N Webb & R Topschij C/- Collins W Collins
Owner:	A N Webb & R Topschij
Estimated Cost:	\$537,425.00
Parcel no:	59044

Alignment with Delivery Program

4.3.1 Undertake transparent and efficient development assessment in accordance with relevant legislation.

RECOMMENDATION

That DA2020 - 63.1 for a dwelling at Lot 2, DP 1143498, No. 4A Hibiscus Crescent, Port Macquarie, be determined by granting consent subject to the recommended conditions.

Executive Summary

This report considers a development application for a single dwelling 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, two (2) submissions were received.

Following the notification period, amended plans were received in consideration of the submissions.

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.

This report recommends that the development application be approved subject to the attached conditions (**Attachment 1**).

1. BACKGROUND

Existing Sites Features and Surrounding Development

The site has an area of 451m²

The site is zoned R1 General Residential in accordance with the Port Macquarie-Hastings Local Environmental Plan 2011, as shown in the following zoning plan:



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The existing subdivision pattern and location of existing development within the locality is shown in the following aerial photograph:



2. DESCRIPTION OF DEVELOPMENT

Key aspects of the proposal include the following:



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• Single dwelling

Refer to **Attachment 2** at the end of this report for plans of the proposed development.

Application Chronology

- 04 February 2020 Application lodged
- 17 February to 02 March 2020 Public notification period. 2 submissions received
- 03 March 2020 Additional information requested
- 20 March 2020 Revised plans submitted

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 (Koala Habitat Protection) 2019

Clause 15 - A Development Application made, but not finally determined, before the commencement of this Policy in relation to land to which this Policy applies must be determined as if this Policy had not commenced. The application was made and not finally determined prior to the commencement of this policy, and the application is therefore required to be assessed under the relevant provisions of State Environmental Policy No 44 - Koala Habitat Protection. See assessment comments below.

State Environmental Planning Policy No. 44 - Koala Habitat Protection

There is no Koala Plan of Management on the site. Additionally, the site is less than 1ha in area therefore no further investigations are required.

State Environmental Planning Policy No. 55 - Remediation of Land

Following an inspection of the site and a search of Council records, the subject land is not identified as being potentially contaminated and is suitable for the intended use.

State Environmental Planning Policy (Coastal Management) 2018

The site is not located within a coastal use area/coastal environment area.

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



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ensure that the commitments are incorporated into the development and certified at Occupation Certificate stage.

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 R1 General Residential.
- Clause 2.3(1) and the R1 zone landuse table The dwelling and ancillary structures to a dwelling are permissible with consent.

The objectives of the R1 zone are as follows:

- To provide for the housing needs of the community.
- To provide for a variety of housing types and densities.
- To enable other land uses that provide facilities or services to meet the day to day needs of residents.
- Clause 2.3(2) The proposal is consistent with the zone objectives as it is a permissible landuse and consistent with the established residential character of the locality. The proposal contributes to the range of housing options in the locality.
- Clause 4.3 The maximum overall height of the building above ground level (existing) is 7.65m, which complies with the standard height limit of 8.5 m applying to the site.
- Clause 4.4 The floor space ratio of the proposal is 0.55:1 which complies with the maximum 0.65:1 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.
- 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

DCP 2013: Dwellings, Dual occupancies, Dwelling houses, Multi dwelling houses & Ancillary development				
	Requirements	Proposed	Complies	
3.2.2.1	Ancillary development: • 4.8m max. height • Single storey • 60m2 max. area • 100m2 for lots >900m2 • 24 degree max. roof pitch • Not located in front setback	Water tank is appropriately located	Yes	

	Requirements	Proposed	Complies
3.2.2.2	 Articulation zone: Min. 3m front setback An entry feature or portico A balcony, deck, patio, pergola, terrace or verandah A window box treatment A bay window or similar feature An awning or other feature over a window A sun shading feature 	The dwelling contains a deck within the articulation zone. The deck does not exceed 25% of the articulation zone and is still setback over 3m.	Yes
	Front setback (Residential not R5 zone): • Min. 4.5m local road	Front building setback is 4.526m	Yes
3.2.2.3	Garage 5.5m min. and 1m behind front façade. Garage door recessed behind building line or eaves/overhangs provided	Garage door setback is setback 4.526m, which encroaches the minimum front setback requirements and is not recessed. See justification below*.	No*
	6m max. width of garage door/s and 50% max. width of building	Width of garage door, 5m wide, is compliant with the maximum width requirements However, it is 60% of the width of the building. Due to site constraints of the block being only 11.5m wide, garage opening being no greater than a standard double garage, and consist with the neighbouring property to the north, this variation is acceptable in this instance. There are no identifiable adverse impacts	Acceptable
	Driveway crossover 1/3 max. of site frontage and max. 5.0m width	Driveway crossover is 43%, but no larger than a standard double garage driveway crossover, provides stacked offstreet car parking in front of the garage doors, this variation is considered acceptable and consistent with the objectives of this clause.	Acceptable

DCP 2013: Dwellings, Dual occupancies, Dwelling houses, Multi dwelling

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<i>DCP 2013: Dwellings, Dual occupancies, Dwelling houses, Multi dwelling houses & Ancillary development</i>			
	Requirements	Proposed	Complies
3.2.2.4	4m min. rear setback. Variation subject to site analysis and provision of private open space	Rear setback 8.517m.	Yes
3.2.2.5 3.2.2.6	 Side setbacks: Ground floor = min. 0.9m First floors & above = min. 3m setback or where it can be demonstrated that overshadowing not adverse = 0.9m min. Building wall set in and out every 12m by 0.5m 	Ground Floor: N: 3.15m S: 1.8m First Floor N: 2.34m S: 1.7m 12m max. unarticulated wall length N:12.2 S:23.79 Adequate justification, demonstrating that consideration has been provided to meet the objectives of this clause. See justification below. The dwelling contains 35m ² open space to the main	No, but acceptable- no adverse impacts identifiable
	space area including a useable 4x4m min. area which has 5% max. grade	balcony, with dimensions of 3m x 8.2m space. There will be access to the rear yard which contains an additional area greater than $35m^2$ with a 4m x 4m area, however, due to the slope it is impracticable to achieve a level area within the yard. The area on the balcony achieves the objectives of this clause.	
3.2.2.10	 Privacy: Direct views between living areas of adjacent dwellings screened when within 9m radius of any part of window of adjacent dwelling and within 12m of private open space areas of adjacent dwellings. ie. 1.8m fence or privacy 	The proposed dwelling has no primary living area directly adjoining or overlooking neighbouring primary living areas. The proposed Bed 3/Study south facing windows is will be approximately 7.2m from an adjoining secondary living area, being the first level bedroom and balcony.	Yes

DCP 2013: Dwellings, Dual occupancies, Dwelling houses, Multi dwelling
houses & Ancillary development

Requirements	Proposed	Complies
screening which has 25% max. openings and is permanently fixed • Privacy screen required if floor level > 1m height, window side/rear setback (other than bedroom) is less than 3m and sill height less than 1.5m Privacy screens provided to balconies/verandahs etc which have <3m side/rear setback and floor level height >1m	The amended plans have provided privacy screening between the proposed study and the adjoining first level balconies. The development will not compromise privacy in the area and adjoining private open space or living areas due to a combination of positioning of windows not overlooking side boundaries, having high sill windows or highlight windows that face side boundaries, limiting living areas that face adjoining living areas/open space and use of privacy screening over adjoining windows.	

DCP 201	DCP 2013: General Provisions				
	Requirements	Proposed	Complies		
2.7.2.2	Design addresses generic principles of Crime Prevention Through Environmental Design guideline	No concealment or entrapment areas proposed. Adequate casual surveillance available.	Yes		
2.3.3.1	Cut and fill 1.0m max. 1m outside the perimeter of the external building walls	Cut and fill <1.0m change 1m outside the perimeter of the external building walls	Yes		
2.3.3.2	1m max. height retaining walls along road frontage	Maximum of 1m	Yes		
	Any retaining wall >1.0 in height to be certified by structure engineer	Condition recommended to require engineering certification	Yes		
	Combination of retaining wall and front fence height max 1.8m, max length 6.0m or 30% of frontage, fence component 25% transparent, and splay at corners and adjacent to driveway	No retaining wall front fence combination proposed.	N/A		
2.3.3.8	Removal of hollow bearing trees	Cleared building envelope. No trees proposed to be removed	N/A		
2.6.3.1	Tree removal (3m or higher with 100m diameter	No trees proposed to be removed	N/A		

DCP 201	DCP 2013: General Provisions							
	Requirements	Proposed	Complies					
	trunk at 1m above ground level and 3m from external wall of existing dwelling)							
2.4.3	Bushfire risk, Acid sulphate soils, Flooding, Contamination, Airspace protection, Noise and Stormwater	Refer to main body of report.						
2.5.3.2	New accesses not permitted from arterial or distributor roads	No new access proposed to arterial or distribution road.	N/A					
	Driveway crossing/s minimal in number and width including maximising street parking	Driveway crossing minimal in width including maximising street parking	Yes					
2.5.3.3	Parking in accordance with Table 2.5.1. 1 space per single dwelling (behind building line)	1 or capacity for more than 1 parking space behind the building line has been provided for.	Yes					
2.5.3.11	Section 94 contributions	Refer to main body of report.						
2.5.3.12 and 2.5.3.13	Landscaping of parking areas	Single dwelling only with 1 domestic driveway. No specific landscaping requirements recommended.	N/A					
2.5.3.14	Sealed driveway surfaces unless justified	Sealed driveway proposed	Yes					
2.5.3.15 and 2.5.3.16	Driveway grades first 6m or 'parking area' shall be 5% grade with transitions of 2m length	Driveway grades capable of satisfying Council standard driveway crossover requirements. Condition recommended for section 138 Roads Act permit	Yes					
2.5.3.17	Parking areas to be designed to avoid concentrations of water runoff on the surface.	Single dwelling only with 1 domestic driveway. Stormwater drainage is capable of being managed.	Yes					

The proposal seeks to vary Development Provision relating to 3.2.2.3 Garage door setback.

The relevant objectives are:

- To minimise the impact of garages and driveways on the streetscape, on street parking and amenity.
- To minimise the visual dominance of garages in the streetscape.

Having regard for the development provisions and relevant objectives, the variation is considered acceptable for the following reasons:



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- Due to the narrow width and the slope of the site the location of the garage is considered to be acceptable.
- The proposed garage is positioned in line with the front building line. The positioning and width of the garage and driveway are standard dimensions for a double garage and driveway.
- Whilst the proposed garage and driveway are inconsistent with the DCP provisions, the proposal is consistent with the neighbouring property to the north.
- The proposed design minimises the visual dominance of the garage to the street frontage through the integration of materials and finishes on the façade, along with feature window treatment.

The proposal seeks to vary Development Provision relating to 3.2.2.5 Side setback variations.

The relevant objectives are:

- To reduce overbearing and perceptions of building bulk on adjoining properties and to maintain privacy.
- To provide for visual and acoustic privacy between dwellings.

Having regard for the development provisions and relevant objectives, the variation is considered acceptable for the following reasons:

- The proposal provides a minimum setback of 2.34m from the proposed upper floor to the northern boundary, increasing to 3.154m.
- The proposed setback to the southern boundary is 1.7m minimum, increasing to 1.8m.
- The subject area of dwelling encroaching the northern side setback is adjacent the neighbouring property's garage and will have minimal visual impacts to the neighbouring property. The subject wall contains no windows and as such, will have no impacts on residential privacy.
- The neighbouring property to the south has their driveway positioned adjacent the common boundary line with the dwelling positioned towards the rear south-eastern corner.
- The proposed setback to the southern boundary will have minimal impact on the neighbouring property as the subject wall, for the majority, will be along the battle-axe driveway.
- There is a multi-dwelling development on the southern side of the development. It is noted these dwellings have a second storey balcony and floor to ceiling windows directly overlooking the battle-axe driveway and the subject development site.
- Shadow diagrams demonstrate that no adverse overshadow will occur of any private open space or main living areas of any adjoining dwelling.
- The proposed southern wall has an unarticulated length of 23.79m. Visually, the southern elevation has varying heights, integrates varying materials which will soften the bulk and scale.
- The existing boundary fence will provide an element of screening and no proposed living areas will open to or overlook the southern boundary.

Based on the above assessment, the variations proposed to the provisions of the DCP are considered acceptable and the relevant objectives have been satisfied. Cumulatively, the variations do not amount to an adverse impact or a significance that would justify refusal of the application.



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(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 - Clause 92

N/A

(b) The likely impacts of that development, including environmental impacts on both the natural and built environments, social and economic impacts in the locality

Context and Setting

The proposal will not have any significant adverse impacts on existing adjoining properties and satisfactorily addresses the public domain.

The proposal is considered to be compatible with other residential development 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.

There are no significant adverse privacy impacts.

There are no significant adverse overshadowing impacts. The proposal does not prevent adjoining properties from receiving 3 hours of sunlight to private open space and primary living areas on 21 June.

Access, Traffic and Transport

The proposal will not have any significant adverse impacts in terms access, transport and traffic. The existing road network will satisfactorily cater for any increase in traffic generation as a result of the development.

Water Supply Connection

Service available – details required with S.68 application.

Sewer Connection

Service available – details required with S.68 application.

Condition included regards proximity to exist sewer line, engineering details noted on plans.

Stormwater

Service available at the rear of the property – details required with S.68 application.

Other Utilities

Telecommunication and electricity services are available to the site.

Heritage



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This site does not contain or adjoin any known heritage item or site of significance. The site is considered to be disturbed land.

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 not have any significant adverse impacts on water resources and the water cycle.

Soils

The proposed development will not 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 not result in any significant 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 native vegetation and therefore does not trigger the biodiversity offsets scheme. Part 7 of the Biodiversity Conservation Act 2016 is considered to be satisfied.

Waste

Satisfactory arrangements are in place for proposed storage and collection of waste and recyclables. No adverse impacts anticipated. Standard precautionary site management condition recommended.

Energy

The proposal includes measures to address energy efficiency and will be required to comply with the requirements of BASIX.

Noise and vibration

The construction of the proposed development will not result in any significant adverse impacts on the existing air quality or result in any pollution. Standard precautionary site management condition recommended.

Bushfire

The site is identified as being bushfire prone.

The Applicant has submitted a BAL certificate prepared by a Certified Consultant.

An assessment of bushfire risk having regard to section 4.3.5 of Planning for Bushfire Protection 2006 including vegetation classification and slope concludes that a Bushfire Attack Level 29 shall be required.

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.





Item 08 Page 544

Social impacts in the locality

Given the nature of the proposed development and its location the proposal is not considered to have any significant adverse social impacts.

Economic impact in the locality

The proposal is not considered to have any significant adverse economic impacts on the locality. 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.

Construction

Construction impacts are considered capable of being managed, standard construction and site management conditions have been recommended.

Cumulative impacts

The proposed development is not considered to have any significant 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 of bushfire have been adequately addressed and appropriate conditions of consent recommended.

(d) Any submissions made in accordance with this Act or the Regulations

Two (2) written submissions were received following public exhibition of the application. Copies of the written submissions have been provided separately to members of the DAP.

Key issues raised in the submissions received and comments are provided as follows:

Submission Issue/Summary	Planning Comment/Response
The size and bulk of the proposed study above the garage, given its location and height.	The maximum overall height of the building above ground level (existing) is 7.65 m which complies with the standard height limit of 8.5 m applying to the site. Sheet 5 of the plan set demonstrates the height compliance.
Providing the southern adjoining property is a narrow battle-axe, no consideration has been provided to the adjoining Multi Dwelling Units on the other side of the battle-axe handle with	Sheet 13 and 14 of the revised plans demonstrates the proposed overshadowing indicating the building outline of the adjoining multi dwelling housing. The shadow diagrams do not indicate the existing 1.8m high fence line, which appears would have an



Outration is a large /Outration	
Submission Issue/Summary	Planning Comment/Response
regards to overshadowing.	overshadowing impact. From review of the
	overshadowing diagrams, there are no
	identifiable adverse impacts caused by the
	proposed development shadow path.
There are a number of windows	The Applicant has provided revised plans
on the Southern Elevation	reducing the amount of windows on the upper
directly overlooking into bedrooms. Which will be	floor above garage and provided directional
intrusive and significantly raise	privacy screening panels to avoid viewing towards the townhouses and the overlooking
lifestyle and amenity issues.	balconies and floor to ceiling windows.
mestyle and amenity issues.	
	It is also noted that the adjoining neighbouring
	balcony and windows are secondary living
	areas and the rooms that face towards the
	proposal are bedrooms not main living areas.
	The revised plans also indicate the existing
	fence line elevation which demonstrates the
	current fence line will provide some privacy
	screening. This eliminates the need for
	screening of the bed 2 as requested.
	A reduction in size and providing fixed
	directional screening will provide adequate
	privacy.
The bulk and scale of the	Adequate justification has been discussed
development.	earlier in this report. In regards to the
	articulation of the southern side for the house,
	consideration should be given to the restrictive
	nature of this block being only 11.5m wide and
	having significant fall from front to back. The
	revised plans indicate that the majority of the
	subject wall will be screened by the existing
	fence and varying heights will soften the
	impact. No adverse impacts are identifiable.

(e) The Public Interest

The proposed development satisfies relevant planning controls and will not adversely impact on the wider public interest.

4. DEVELOPMENT CONTRIBUTIONS APPLICABLE

• Development contributions will not be required under S64/S7.11 for the following reasons: The subject lot was a Council approved lot. The proposal will not create more than one single dwelling.

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.



HASII

DEVELOPMENT ASSESSMENT PANEL 06/05/2020

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.

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 (**Attachment 1**).

Attachments

- 1. DA2020 63.1 Recommended Conditions
- 24. DA2020 63.1 Plans

FOR USE BY PLANNERS/SURVEYORS TO PREPARE LIST OF PROPOSED CONDITIONS - 2011

NOTE: THESE ARE DRAFT ONLY

DA NO: 2020/63 DATE: 24/04/2020

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	J3998 (Issue W)	Collins W Collins	13 March 2020
Statement of Environmental Effects	J3998	Collins W Collins	August 2019
BASIX	999947S	Collins W Collins	4 September 2019

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:
 - a) the appointment of a Principal Certifying Authority and
 - b) 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) (A009) The development site is to be managed for the entirety of work in the following manner:
 - 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;
 - 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;

- Building waste is to be managed via appropriate receptacles into separate waste streams;
- 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.

B - PRIOR TO ISSUE OF 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) (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:

- i. Footway and gutter crossing
- ii. Functional vehicular access
- (3) (B046) The building shall be designed and constructed so as to comply with the Bushfire Attack Level (BAL) 29 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 the current Planning for Bush Fire Protection Guidelines to prevail in the extent of any inconsistency with the Building Code of Australia.

(4) (B195) Detailed drawings and specifications prepared by a professional engineer for the piering identified on S68 & S138 Plans, sheet 2 of drawing number J3998, shall be submitted with the application for a Construction Certificate. The provision of a structural design for the supporting column footing to demonstrate that both no load is placed on the pipeline and that the structure is not destabilised by any future maintenance works within the easement.

C - PRIOR TO ANY WORK COMMENCING ON SITE

Nil

D – DURING CONSTRUCTION

(1) (D003) The Port Macquarie-Hastings area is 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.

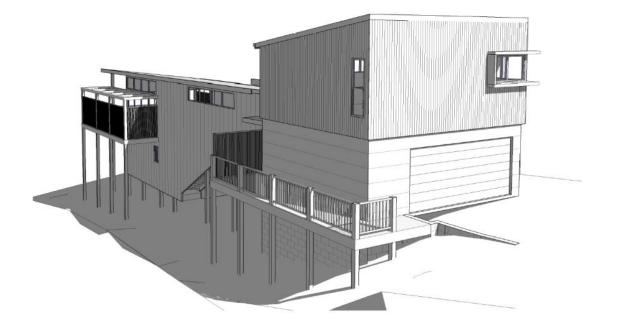
E - PRIOR TO OCCUPATION OR THE ISSUE OF OCCUPATION CERTIFICATE

- (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) (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.
- (3) (E034) Prior to occupation or the issuing of the 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.
- (4) (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.
- (5) (E015) Prior to occupation or issue of the Occupation Certificate, details of compliance with the bushfire risk assessment is to be provided to the Principal Certifying Authority.
- (6) Prior to the issue of the Occupation Certificate, directional fixed privacy panels are to be installed on the southern elevation windows of Bed3/study, as shown on sheet six of the stamped plans J3998, 13.3.2020.

F - OCCUPATION OF THE SITE

- (1) (F004) The dwelling is approved for permanent residential use and not for short term tourist and visitor accommodation.
- (2) (F035) The consent only permits the use of the building as a single dwelling and does not permit the adaption or use of the building so as to create a second occupancy.



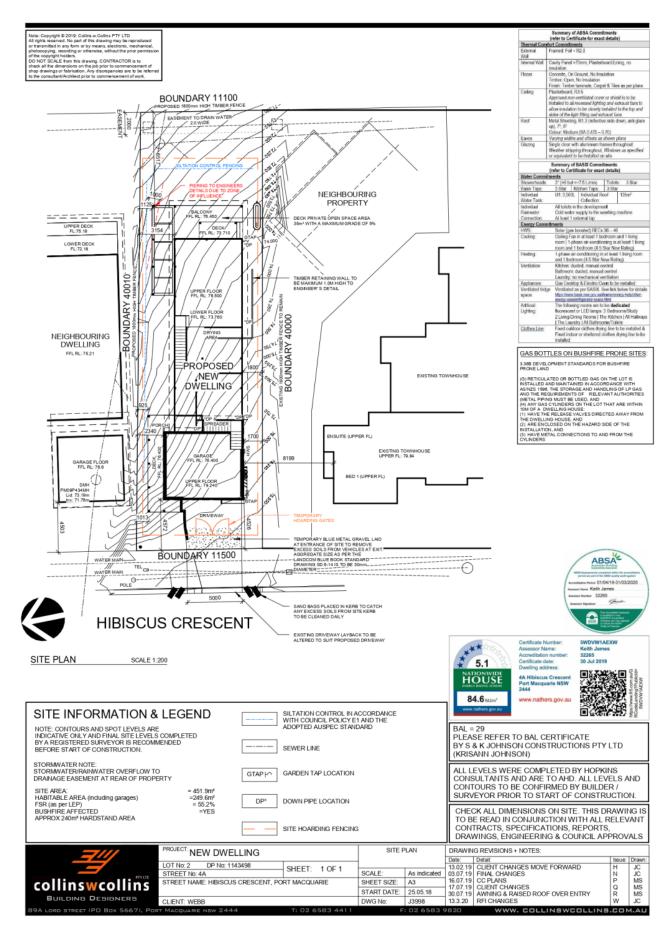


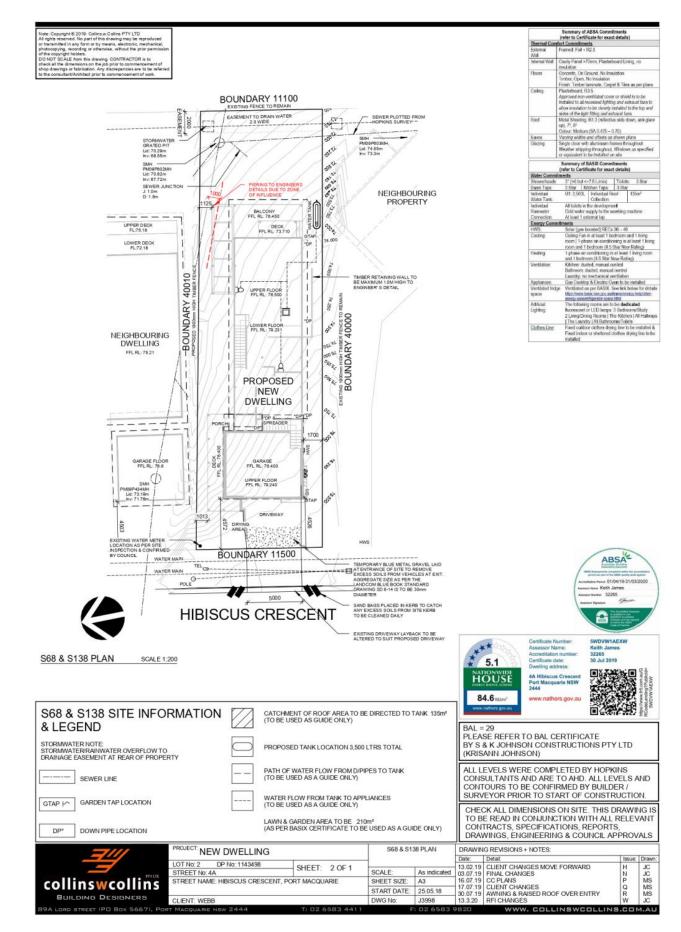
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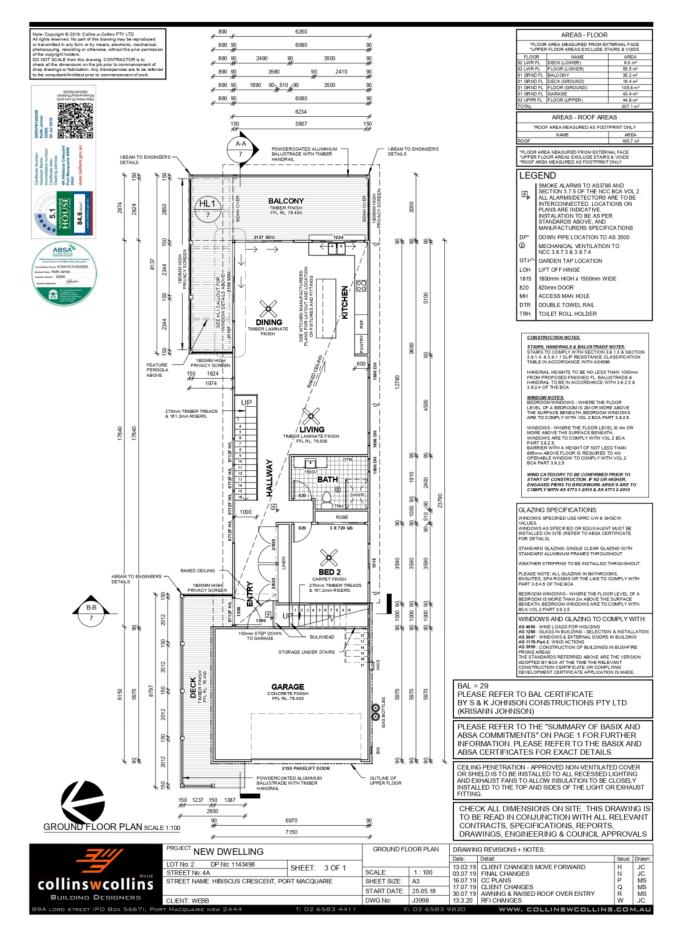
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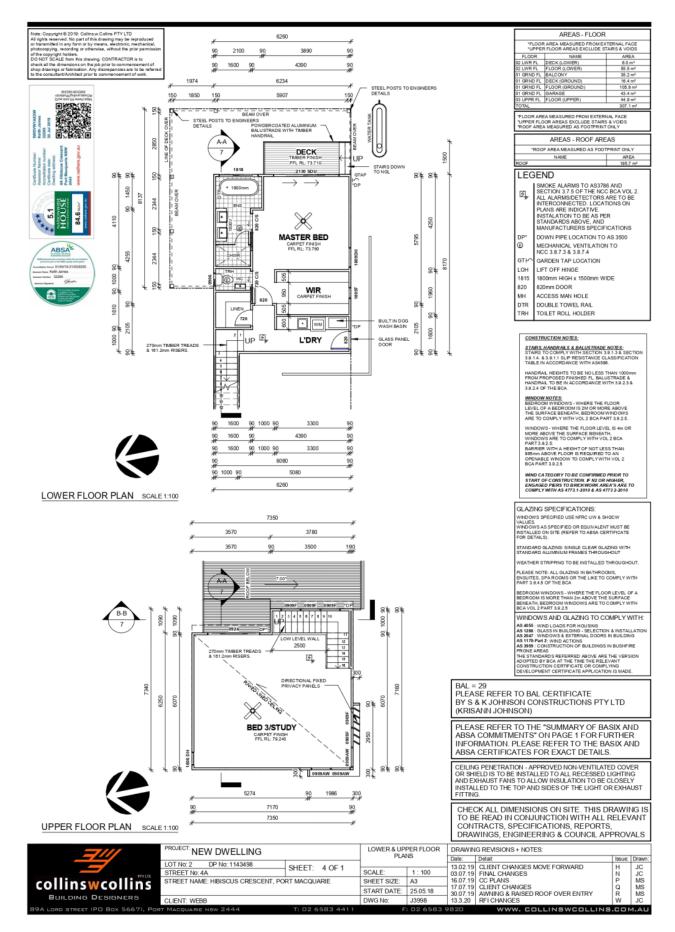
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Item 08 Attachment 2 Page 551



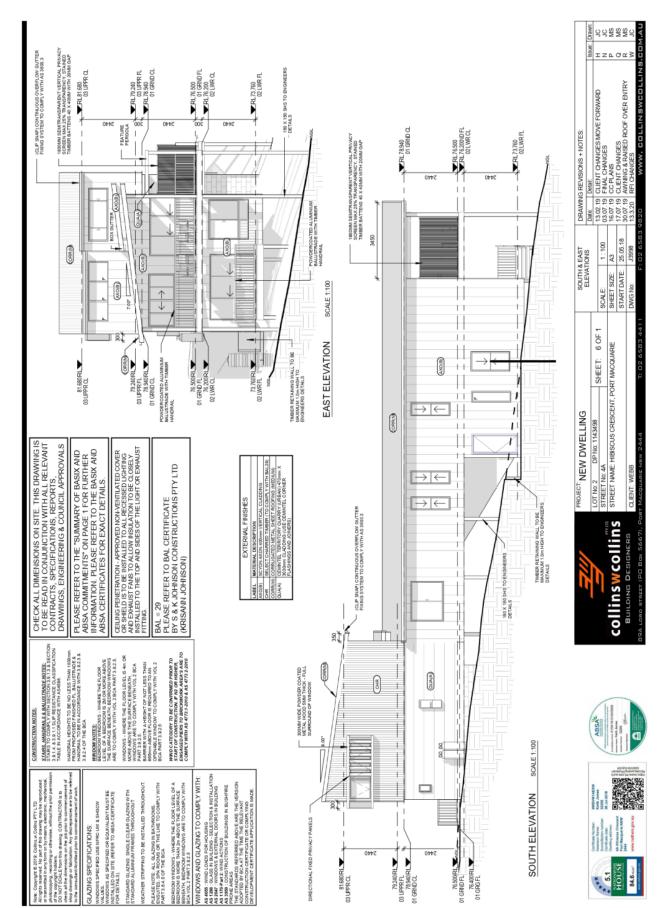




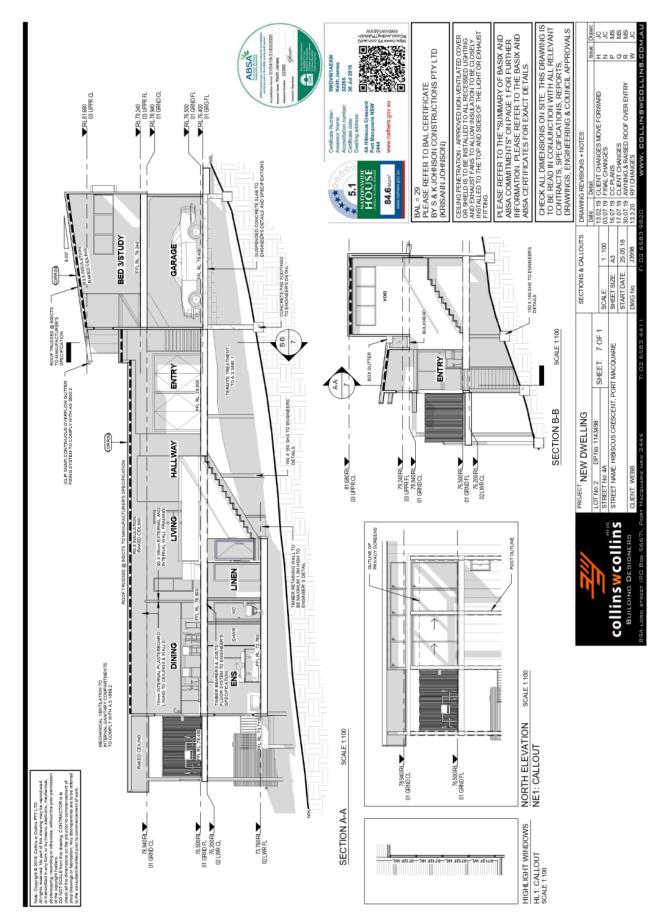


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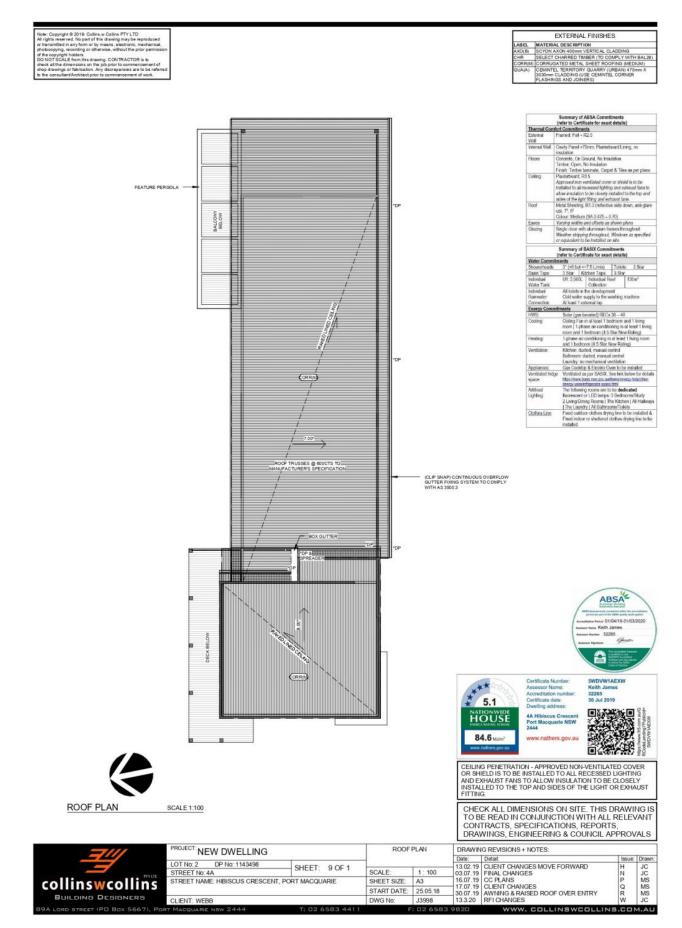
Item 08 Attachment 2 Page 557



ATTACHMENT

DEVELOPMENT ASSESSMENT PANEL 06/05/2020

Note: Copyright @ 2019: Collins w Collins All rights reserved. No part of this drawing or transmitted in any form or by means, etc.	a may be reproduce lectronic, mechanic	al				** h	Certificate Number: Assessor Name:	5WDVW1AEXW Keith James	Summary of ABSA Commitments (refer to Certificate for exact details) Thermal Comfort Commitments
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check all the dimensions on the job prior to shop drawings or fabrication. Any discrepa to the consultant/Architect prior to commer	ancies are to be ref	of erred				HOUS	4A Hibiscus Great		Internal Wall Cavity Panel >70mm, Plasterboard Lining, no insulation Floore Concrete, On Ground, No Insulation
to the consultant/Architect prior to commen	ncement of work.					ENERGY RATING SCI	Port Macquarie NS 2444	* * * * * *	Timber, Open, No Insulation Finish: Timber laminate, Carpel & Tilesi as per plans
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						www.namers.go	20	O (100 C) O (Installed to all necessed lighting and exhaust fans to allow insulation to be closely installed to the top and sides of the light titing and exhaust fans
								ABSA	Roof Metal Sheeting, R1.3 (reflective side down, anli-glare up), 7 ⁵ , 8 ⁶
								And the second s	Colour: Medium (SA 0.475 – 0.70) Eaves Varying worths and offsets as shown phans Glazing Single clear with aluminium frames throughout
								According to Access 01/04/19-31/03/2020	Weather stripping throughout, Windows as specified or equivalent to be installed on site
								Annual Norther 32265	Summary of BASIX Commitments (refer to Certificate for exact details)
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								And the set of the set	Basin Taps: 3 Star Kitzhen Taps: 3 Star Individual U1:3.500, Individual Roof 136m ² Water Tank Collection
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									Cooling: Cooling Fan in at least 1 bodroom and 1 living room) 1-phase air-conditioning in at least 1 living
									room and 1 bedroom (4.5 Star New Rating) Heating. 1-phase air-conditioning in at least 1 twing room
									and 1 bedroom (4 5 Star New Rating) Ventilation: Kitchen: ducted, manual control Betroom ducted manual control
									Laundry, no mechanical ventilation Appliances. Gas Cooktop & Electric Oven to be installed
									Ventilated hidge Ventilated as per BASIX. See link below for details space https://www.basix.rsw.cov.as/hometmong_hitplt/hig- pretay-usea/thigenator.page.html
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									ENSUITES, SPA ROOMS OR THE LIKE TO COMPLY WITH PART 3.6.4.5 OF THE BCA
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									BCA VOL 2 PART 3.9.25 WINDOWS AND GLAZING TO COMPLY WITH:
									AS 4055 : WIND LOADS FOR HOUSING AS 1288 : GLASS IN BUILDING - SELECTION & INSTALLATION
									AS 2047 : WINDOWS & EXTERNAL DOORS IN BUILDING AS 1170-Part 2: WIND ACTIONS AS 3959 : CONSTRUCTION OF BUILDINGS IN BUSHFIRE
									PRONE AREAS THE STANDARDS REFERRED ABOVE ARE THE VERSION ADOPTED BY BCA AT THE THE THE RELEVANT
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7.7 VERANDAS, DECKS, STEPS, RAMPS AND LANDINGS 7.7.1 General

7.7 VERNIDAS, DECKS, STEPS, RAMPS AND LANDINGS 7.7.1 General Decking may be spaced. There is no requirement is enclose the subfloor spaces of verandas, there is no requirement is enclosed and the subfloor spaces of verandas, corr, 7.1 Spaced decking is some with standard industry practice), however, due to the nature of timber decking with seasonal changes in motisture content, that spacing may range finon 5-m moting everyer. The preferred dimension for gaps is 3 mm (which is in line with other permissible gaps) in other how shown that gaps at 3 mm space. The preferred first for embers to become lodged in between timbers, which may contribute to a file Larger gap spacings of 10 mm may preclude this from happening but sufficien spaces of verandas, decks, steps, ramps and landings

and amongs 7.7.2.1 Materials to enclose a subfloor space The subfloor spaces of verandas, decis, steps, names and material used to enclose the subfloor space complex with Clause 7.4, and (a) the material used to enclose the subfloor space complex with Clause 7.4, and (b) all openings greater than 3 mm are screened with a mesh or perfortand sheat with a maximum aperture of 2 mm, made of corrosion-resistant steel, 7.2.2 Support. 7.2.2 Support. This Standard does not provide construction requirements for the Standard does not provide construction requirements for all of on-combustitie material; or (b) of bustifies-reasisting timber (see Appendix F); or

PAGE 68 (c) a combination of Items (a) and (b) above. 7.3 Unenclosed subfloorspaces of verandas, decks, steps, ramps and landings 7.7.3.1 Supports Support posts, columns, stumps, stringers, piers and poles shall

Tartis and anti-mays 17313 Support 1731 Support 1831 Support

7.8 WATER AND GAS SUPPLY PIPES Above-ground, exposed water and gas supply pipes shall be metal.

NSW RURAL FIRE SERVICE ADDENDUM: APPENDIX 3

PAGE 68

AS 3959-2009 - CONSTRUCTION OF BUILDINGS IN **BUSHFIRE PRONE AREAS (BAL - 29)**

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.

PAGE 60 SECTION 7 CON STRUCTION FOR BUSH FIRE A TTA CKLEVEL 29 (BAL — 29) 7.1 GENERAL

7.1 GENERAL A building assessed in Section 2 as being BAL—29 shall comply with Secton 3 and Clauses 7.2 to 7.8. NOTE: There are a number of Standards that specify requirements for construction requirements for a particular element, the other construction requirements for a particular element, the other

for construction; however, where the Journal of Construction experiments for a particular element, the other construction experiments for a particular element, the other Any element of construction or system that satisfies the test criteria of AS 1530.8 L may be used in live of the applicable requirements contained in Causes 7.2 h 7.8 (see Cause 3.8). INDE: DAL _ 29 primary concentration with protection from ember DATE: DAL _ 29 primary concentration with protection from ember and the state of the set of the state of the satisfies of the 28 Window SupPORTS This Standard does not provide construction requirements for the standard does not provide construction requirements for anale of conscionations state (table the table ta

7.3 FLOORS 7.3.1 Concrete slabs on ground This Standard does not provide construction requirements for 7.3.2 Enviated floors 7.3.2 Enviated floors 7.3.2 Enviated subfloor space This Standard does not provide construction requirements for elevated floors, including barers, joints and flooring, where the subfloor space is enclosed with— (a) a wall that complex with Cause 7.4 or (a) a wall that complex with Cause 7.4 or made of corrosionesisticant steel, bronze or aluminium; or (c) a combination of items (a) and (b) above.

PAGE 61 7.3.2.2 Unendosed subfloor space Where the subfloor space is unenclosed, the bearers, joists and fooring, less than 400 mm above finished ground level, shall be on of the following: (i) Bearers and joists shall be— (A) non-combustler; or (A) non-combustler; or non-combustible; or bushfire-resisting timber (see Appendix F); or a combination of Items (A) and (B) above. (C) a combination of Items (A) and (B) above. (A) non-combustBie; or (B) bushfor-earling timbo of (sep Appendix P) of (B) bushfor-earling timbo of (sep Appendix P) of (C) and (C) and (C) and (C) and (C) and (C) and (C) (C) and (C) and (C) and (C) and (C) and (C) and (C) (C) a combination of any of Items (A), (B) or (C) above. or

or (b) A system complying with AS 1530.8.1 This Standard does not provide construction requirements for elements of elevated floors, including bearers, joists and fooring, if the underside of the element is 400 mm or more above finished ground level.

7.4 EXTERNAL WALLS 7.4.1 Walls Walls shall be one of the following: (a) Made of non-combustible material (e.g., full masonry, brick veneer, mud brick, concrete, aerated concrete).

or (b) Made of timber-framed or steel-framed walls that are sarked on the outside of the frame and clad with— (i) fbre-cement external cladding, a minimum of 6 mm in thickness;

steel sheet; or) bushfire-resisting timber (see Appendix F); or) a combination of any of items (i), (ii) or (iii) ab

A combination of Items (a) and (b) above. (c) A combination of Items (a) at the (u) y term (u) y term A2 Joints in the external sufface material of walls shall be covered, asside, overlapped, backed or bull/inded to prevent gaps greater than 3 mm. Alternatively, saking-type material can be applied over the frame prior to fixing any external cladding.

PAGE 62 7.4.3 Vents and weepholes Vents and weepholes in external walls shall be screened with a mesh with a maximum aperture of 2 mm, made of corrosion-resistant sked, bronze or aluminium, except where they are less than 3 mm (see Clause 3.6).

7.5 EXTERNAL GLAZED ELEMENTS AND ASSEMBLIES AND EXTERNAL DOORS 7.5 I Budrife shutters Where fitted, bushfire shutters shall comply with Clause 3.7 and be made from—

made from— (a) non-combustitie material; or (b) bushfirs-resisting timber (see Appendix F); or (c) a combination of thems (a) and (b) above. Where fitted, screens for windows and doors shall have a mesh or perforated inset with a maximum performant of arm, made of corrosion-resistant steel, bronze or aluminium. Gaps between the perimeter of the screen assembly and the building element to which II is fitted shall not exceed 3 mm. More many and the standard or perforated sheet shall be made more means the standard or perforated sheet shall be made more more more standard or perforated sheet shall be made

(a) metal; or (b) bushfire-resisting timber (see Appendix F).

BUILDING DESIG D STREET (PO B

Vindows shall comply with one of the following: (a) They shall be completely protected by a bushfire shutter that complies with Clause 7.5.1.

They shall comply with the following: Vindow frames and window joinery and shall be made from one of (b) Iney shall comply with the following: (i) Window frames and window joinery and shall the following: (A) Bushfire-resisting timber (see Appendix F). or

(B) Metal.

or (C) Metal-reinforced PVC-U. The reinforcing members shall be made from allminum, stairfess stell, or consiston-residant steel, and the timera and the saish shal shaft yith design load, performance and structural steength of the member. (I) Externally firther landvare that supports the sash in its functions of opening and closing shall be metail. (II) Glazing shall be torgletend glass minihum 5 mm.

(ii) GARCING shall be torughened galax minimum b mm. PAGE 63 (iii) Where glacing is less than 400 mm from the ground or less than 400 mm above deck, anoport ords, a suming and similar elements or fittings having an angle less than 16 degrees to the hortpottel and fittings having an angle less than 15 degrees to the hortpottel and your D3, Agenetic D3, bits portion shall be accreened externally with a screen that complex with Clause 7.5 1.4. (c) The operated portions of windbox shall be accreened externally and the standard ords, including French doors, panel fold and bits do doors). Side-hung external doors, including French doors, panel fold and bi-fold doors, shall comply with or eff the following: (c) allow 7.5 the protected by a bushter shutler that complex with error.

or (b) They shall be completely protected externally by screens that comply with Clause 7.5.1A.

(c) They shall comply with the following: (i) Doors shall be-(ii) Anon-combustible; or (ii) a shall be-(iii) a shall be be the shall b

concombuilties materials or from bushfile-resisting timber (see Appendix F). (ii) Externally filted hardware that supports the panel in its functions of opening and closing shall be metal. (iii) Where doors incorporate glazing, the glazing shall be toughened glazing in time the glazing is less than 400 mm from the ground or less than 400 mm from the glazing is less than 400 mm from the door less Flaue Appendix D), may profine shall be scienced externally with screens that comply with Clause 7.5 1.4. (v) Door frames shall be made from one of the following: (A) Bushfirs-resisting timber (see Appendix F).

(B) Metal.

or (C) Metal-reinforced PVC-U, The reinforcing me aluminium, stainless steel, or corrosion-resistant steel and the assembly shall satisfy the design load, performance and tural strength of the member.

PAGE 64 (vi) Doors shall be tight-fitting to the door frame and to an abutting door, if applicable. (vii) Weather strips, draught excluders or draught seals shall be installed at the base of side-hung external doors. 7.54. Doors—Sking doors

7.5.4 Doors—Siding doors. Siding doors shall comply with one of the following: (a) They shall be pretected by a bushfire shutter that complies with Clause 7.5.1.

or (b) They shall be completely protected externally by screens that comply with Clause 7.5.1A.

or (c) They shall comply with the following: (i) Both the door frame supporting the sliding door and the fra surrounding any glazing shall be one of the following: (A) Bushfire-resisting trinber (see Appendix F);

or (B) Metal;

(B) Metal; cr (C) Metal; einforced PVC-U. The reinforcing members shall be made from aluminum, stairfess steel, or corrosion-resistant steel and the door assembly shall stable the design load, performance and structural steeping of the member. Cento the panel in its functions of opening and closing shall be metal. (ii) Where stable goors incorporate glazing, the glazing shall be popenale portions of doors are scened externally with screens that comply with Clause 7.5 J.R. (ii) String doors sind be tight-testing in the frames. (i) String doors shall be tight-testing in the frames. (ii) String doors shall be tight-testing in the frames. (iii) String doors shall be tight-testing in the frames. (iii) String doors doors shall be tight-testing in the frames. (iii) String doors doors shall be tight-testing in the frames. (iii) subific-resisting timber (see Appendix F); or (iii) String doors door shall be tight-testing in the schemes; or (ii) a continue of any of lines (i) (i) or (iii) above. (ii) a continue to drav of lines (i) (i) or (iii) above. (iii) A continue of the schemer, draught testing or uside tracks, as appropriate to the door type, with a maximum gap no greater than 3 nrm.

(b) Panel Int, it doors or sole-hung doon share te titted with suit, weather strips, draught excluders, draught eadie or quide tacks, appropriate to the door type, with a maximum gap no greater than mm. (c) Roller doors shall have guide tracks with a maximum gap no greater than 3 mm and shall be titted with a sylon brush that is in contact with the door (see Figure D4, Appendix D). (d) Vehicle access doors shall not include ventilation stots.

PAGE 66
PAGE 66
PAGE 66
PAGE 67
PAGE 6 (a) Roof tikes, mod sheets and roof-ovvering accessories shall be ron-combination. Exciton shall be saved, to prevent openings greater than 3 mm, either by the use of fascia and eaves linngs or by sealing between the top of the wall and the underside of the roof and between the roof the wall and the underside of of Roof vertilisation openings, such as galde and roof verts, shall or a mesh or perforated sheet with a maximum aperture of 2 mm, made of corrison-nesistant such ell, bronce or alumnium. (d) A ppe or conduit that penetrates the roof overing shall be non-combustite.

7.6.2 Tiled roofs Tiled roofs shall be fully sarked. The sarking shall— (a) have a famalibily index of not more than 5, when tested to (b) be located directly below the roof battens; (c) cover the entire roof area including the ridge; and (d) extend into gutters and valleys. 7.6.3 Sheet roofs shal— Sheet roofs shal= Sheet roofs ro

(a) be fully sarked in accordance with Clause 7.6.2, except that foil-backed insulation blankets may be installed over the battens;

Toil-backed insulation blankets may be installed over the battens; or (b) have any gaps greater than 3 mm under consugations or ribs of helet rolfing and batween roof components is said at the fination or wall line and at vallers; hips and ribge by— made of consolution-resistant steel, broze or aluminium; of arm, made of consolutions of any of thems (i), (i) or (ii) above. The formation, export and anning roofs (iii) other non-combustile material; or fisse (in the line of the main roof, as specified to Clauses 7.6.1, (b) A veranda, caport or awning roof texaming and the main (b) A veranda, caport or awning roof searated from the main (b) areanda, caport or awning roof searated from the main (b) areanda, caport or awning roof searated from the main (b) areanda, caport or awning roof searated from a line, (b) and combustile in materia; or (ii) oton-combustile materia; or (ii) oton-combustile materia; or

glass minimum 4 mm, shall be used in the outer pane of the IGU end out in the sen installed in the outer pane of the (e) Wite depretes to the horizontal, the glassing shall be protected with mere guarder made from a mesh or perforated sheet with a maximum aperture of 2 mm, made of corrosion-resistant sleet, bronze or aluminium. (f) Evaporative cooling units shall be fitted with hori-combustble covers with a mesh or perforated sheet with a maximum aperture of 2 mm, made of corrosion-resistant sleet, bronze or aluminium. (g) External single-pane glazed elements of ford spits and skylpitb, where the pitto of the glazed element is 16 degrees or less to the horizontal, shall be protected with member guards from a mesh or perforated sheet with a maximum agenture of 2 mm, made of corrosion-resistant side, bronze or aluminium.

aluminum. 7.6.6 Eaves linings, fascias and gables The following apply to eaves linings, fascias and gables: (a) Joints in eaves linings, fascias and gables may be sealed with plastic joining strips or timber storm moulds. (b) Gables shall comply with Clause 7.4.

Fascias and bargeboards shall— where timber is used, be made from bushfire-resisting timbe e Appendix F);

(ii) where made from metal, be fixed at 450 mm centres; or (iii) be a combination of items (i) and (ii) above. (d) Eaves trings shall be-(i) fixer-center sheet, a minimum 4.5 mm in thickness; or (ii) bushfire-resulting imper (see Appendix F); or (iii) a combination of items (i) and (i) above.

and - are enclosed on the hazard side of the installation, and - have metal connections to and from the cylinders. There are no powhere sheathed flexible gas supply lines to gas meters adjacent to the dwelling.

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/	PROJECT: NEW DWELLING					NG REVISIONS + NOTES:			
			CONSTRUCTION NOTES Date		Date:	Detait	Issue:	Drawn:	
	LOT No: 2 DP No: 1143498	SHEET: 10 OF 1			13 02 19	CLIENT CHANGES MOVE FORWARD	н	JC	
PTY LTD	STREET No: 4A	SHEET. TO OP T	SCALE:	1:100		FINAL CHANGES	N	JC	
ollins	STREET NAME: HIBISCUS CRESCENT, PO	RT MACQUARIE	SHEET SIZE:	A3		CC PLANS	Р	MS	
			START DATE:	25.05.18	17.07.19	CLIENT CHANGES	Q	MS	
			START DATE:	25.05.18	30.07.19	AWNING & RAISED ROOF OVER ENTRY	R	MS	
INERS	CLIENT: WEBB		DWG No:	J3998	13.3.20	RFICHANGES	W	JC	
x 5667). Pop	MACOUARE NEW 2444	T: 02 6583 4411	F	02 6583 9	9820		CON	4.411	

NSW RURAL FIRE SERVICE ADDENDUM: APPENDX 3 SARNING Any saining used shall be: by the service of the frame, or c. An insulation material conforming to the appropriate Australian Standard for the material

GAS NOTES FOR COMPLYING DEVELOPMENT Reliculated or bottled gas on the lot in installed and maintained in accontance with ARVI2S 1596 2000; "The storage and handling of LP Gas" and the requirements of relevant authorities (metal piping must be used). Ary gas cylinders on the lot that are within 10m of a dwelling house, Jave the reliase valves directed away from the dwelling house.

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(i) bushfre-resisting timber (see Appendix F); or PAGE 60 how the sheed on the underside with fbrie-connent (how the sheed on the underside with fbrie-connent (how the sheed on the underside with both the sheet on the sheet on the underside with the sheet (h) a combination of any of thems (h), (i) or (ii) allow. 7.6.5 Roof penetrations The following apply to mode prevailable the tobulk of the sheet of the penetrations that be no-combushile. This the penetration shall be no-combushile in the penetration shall be no-combushile the filled with ember guards made from a mesh or corrosion-resistant steel, bronze or aluminium. (c) All overhead a Glade A safety glass (the comply discond ements in norb lights and skipths may be of polymer provide all Glade A safety glass (the initial discond the low of lights and skipths may be of polymer provide all Glade A safety glass (the initial discond the low of lights and skipths may be of polymer provide glads glass the low of a low of panet safety (glass) initial be used in the outer panet of the glass.

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 be completed in accordance with the current version of the National Construction Code Series, including Building Code of Apartala (BCA). Volume 2 and the Plumbing Code of Australa All Australa TSA Journes 2 and the Plumbing Code of Australa All Australam 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. of the BCA. Drahage - Stormwater drahage is to be undertaken in accordance with ASNZS 3500.3, or, Section 5 of 3500.5, or, the Accoptable Construction Practice as detailed in Part 3.1.2 of the

white Risk Management – Where a primary building element is sidered susceptible to termite attack the building shall be eded in accordance with the following:

Termite Risk Mareup-considered susceptible to termite automotive and S3000.1 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 of the BCA, or c) The Acceptible Construction Practice as detailed in accordance with Part 3.1.3 of the BCA.

The footing or stab is to be constructed in accordance with AS 2870, except that for the purposes of Clause 5.3.1 of AS 2870, a damp-procifing 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;

accommon g) AS 3700; parts 1 and 2 Visatherproofing of Masony 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 any class 10 building except where its according to the wall provide proofing of the Class 1 according to the wall of the class 1 according to the wall of the class 1 according to the class 1 ac 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 Part2 1 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. Used stored lacks) indices for simulatil somerare are rain Used stored lacks) indices for simulatil somerare are rain Sub-Froir Verifiation – Is to comply with the Acceptable Construction Practice of Part 3.4.1 of the BCA. Bell Praving – a to be designed and constructed in accordance or, one of the following manual Practice of Part 3.4.2 of the BCA, a) Steel structures: AS 4100. b) Cold-formed steel structures: ASNZ54600. b) Cold-formed steel structures: ASNZ54600. c) Celebility and tox-ine steef framming NASR Standard. c) Residential and the structure is a structure of the following as appropriate: a) AS 1964.2. with the follow a) AS 1684.2. b) AS 1684.4.

b) A5 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: A5 4100. b) Cold-Tomes Steel structures: A5/NZS 4600.

ROOF AND WALL CLADDING

AGO Classifier - is to comply with the Acceptable Construction Practice of Part 3.5.1 of the BCA or, one of the following: a) Rodring tiles: A5 2049 and A5 2050. b) Metal roofing: A5 1952.1 U Static their confing: A5 1952.4 U Static their confing: A5 1952.4 Static their confine: A5 1952.4 Static thein confine: A5 1952.4 Static their confine: A5 195

1562.2. e) Asphati https/ss: ASTM D3018-90. 1) Pikaie membrane and undersity: AS/N255 4200 Parts 1 and 2. Guttes and Downges — are to be designed and constructed in 5.2 of the BCA, or, AS/N255 3500.3. – Stormwatter damage, or AS/N25 3500.5. – Domesti instalations, Section 5. – Stormwatter dramage. Wall Cladding – to be designed and constructed in accordance with Acceptable Construction Practice of Part 35.3.1 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 1288.

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 Aiarma - to be designed, connected and located in accordance with the Acceptable Construction Practice of Part 3.7.2 of the BCA. Heatman Appliances - are to be installed in accordance with the Acceptable Construction Practice of part 3.7.3 of the BCA, or, one of a 10 consets coil-due burning appliances are installed in accordance with ASINZS 2918. b) Boilers and pressure vessels are installed in accordance with AS/NZS 1200.

EUSHFIRE AREAS Sundres Areas – This section relates to: a) A Class 1 to building or b) A Class 1 to building or deck associated with a Class 1 building, if it is construction of accordance with the following: c) AS 3969, except for Section 9 Construction for Bushfire Attack Level 72 (BAL-12), Building subject 10 BAL-27 much comply with Level co c) The requirements of (c) above as modified by the development consert following consultation with the ISSW Ruuf Fire Service undersector 798A of the Environment Planning and Assessment et al. The requirements of (c) above as modified by the development consert (b) a building of the Balance and Balance and Balance and Balance and et al. The requirements of (c) above as modified by the development consert (b) a building of the Balance and Balance and Balance and Balance and et al. The requirements of (c) above as modified by the development consert (b) a building of the Balance and Ba

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 Accept 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 Wateproofing – building elements in wet areas within a building must: a) Be wateproport or water resistant in accordance with Table 3.8.1.1 of the BCA; and b) Comply with AS 3740. 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 Acceptab Practice of Part 3.8.3 of the BCA.

Practice of Part 3.8.3 of the BCA. Upth - to to be provided in accordance with the Acceptable Construction Practice of Part 3.8.4 of the BCA. Ventilation - is to be provided in accordance with the Acceptable Construction Practice of Part 3.8.5 of the BCA. Sourd Insulation - (orly applies to a separating wall between two or more class 1 buildings) is to be provided in accordance with the BCA. Acceptable Construction Practice OF Part 3.8.5 of the BCA.

SAFE MOVEMENT AND ACCESS

ADDITIONAL CONSTRUCTION REQUIREMENTS

REQUIREMENTS High Wind Amea – Applies to a region that is subject to design wind speech more than 160 or C1 (see table 1.1.1 of the BCA). To manuals of Part 3.10.1 of the BCA Entropase A near-insteato a trans subject to sensitive a diverse Entropase A near-insteato a trans subject to sensitive a diverse Amauals listed the Part 3.1 of the BCA. Flood Hazard Areas – apples to areas on a site (weather or not mapped) encompassing the land wore than the flood hazard level (as defined by the BCA) which has been determined by the appropriate autory (statutory advective, are not be donut ucdo in accordance with the AROE Standard bir Construction of Buildings in Flood Hazard Areas.

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.

Item 08 Attachment 2

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	PRO IECT:								
PROJECT: NEW DWELLING				BUILDING SPECIFICATIONS		DRAWING REVISIONS + NOTES:			
		SPECIFICATIONS		Date:	Detait	Issue:	Drawn:		
	LOT No: 2 DP No: 1143498	SHEET: 11 OF 1			13.02.19	CLIENT CHANGES MOVE FORWARD	H	JC	
PTYLIC	STREET No: 4A	SHEET. IT OF T	SCALE:	1:100	03.07.19	FINAL CHANGES	N	JC	
collinswcollins	STREET NAME: HIBISCUS CRESCENT, PO	RT MACQUARIE	SHEET SIZE:	A3		CC PLANS	P	MS	
			START DATE:	25.05.18		CLIENT CHANGES	9	MS	
BUILDING DESIGNERS	OUTUENT WEDD					AWNING & RAISED ROOF OVER ENTRY	R	MS	
	CLIENT: WEBB		DWG No:	J3998	13.3.20	RFI CHANGES	W	JC	
89A LODD STREET (PO Box 5667), Pop	T MACOUARE NEW 2444	T: 02 6583 4411	F	02 6583 9	9820	WWW.COLLINGWCOLLING		M ALL	

CLADDING AND LININGS

CLADDING AND LININGS 1. External Clading Sheet materials or other external clading shall be fixed in accordance with the manufacturer's recommendations and any applicable special data. Commended and the open versandas, porches and exve soffis, materials indicated on the glass shall be installed. 2.htemat Wall and Ceilings, Diasterboards or other selected materials to walls and ceilings, Plasterboards or other selected materials to mails and ceilings, Plasterboard sheets are to have recessed edges and will be a minimum of flom thick. Linemal angles in staffs from floor to right and walls shall be constructed in accordance with the BCA. Wet area iming is to be fixed in accordance with the manufacturer's recommendation. The ceiling access hole shall be of similar material to the adjacent ceiling.

be waterproof in accordance with the BCA. JOINERY J. Orneral Al jance yook (inteal and timber) shall be manufactured and installed according to acceled building practices. External door fammes shall be a minismum of 32mm thick sold rebated 12mm deep to receive doors. Internal jamb linings shall be a minimum of team mick fit with 12mm thick door stops. Mell doorframes shall be installed where included on drawings in accordance with the 2. Doors and Doorston. Al internal and external limber door stops. Mell doorframes shall be installed internal stopped building practices. Unless listed otherwise in the Schedule of Works, doos and door sets shall be installed in accordance with accordendow Wilds 2045. Stoffing and other timber windows and the doors shall be installed in accordance with AS 2047. Stoffing and other timber windows and door shall be installed in accordance with AS 2047. Stoffing and other timber windows and the doors shall be installed in accordance with AS 2047. Stalling and other auminitum windows and the doors shall be installed the relevant BASIX Certification. Charles and an accordance with AS 2047. The Builder will provide stalling or any commentens outlined in balaxitable or built provide stalling or any commentens outlined in balaxitable or built provide stalling or any commentens outlined in balaxitable or built provide stalling or any commentens outlined in balaxitable or builters to at least or ramps to any change in levels, and balaxitable or builters balax beneficien.

1.Plumbing All plumbing shall comply with the requirements of the relevant supply authority and AS 3500. The work is to be carried out by a licensed

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. MASONRY In ASJONEY' 1. Damp Frod Courses Al damp proof courses shall comply with the BCA and Clause 1.0.10. The damp proof courses shall comply with the BCA and Clause 1.0.10. The damp proof nembrane shall be visible in the extend face of the masonry member in which it is placed and shall not be bridged by any 2. Cavely Wentstein Open vertical joints (weepholes) must be created in the course and must be in accordance with the BCA. 3. Mortis and Joints 3. Mortis and Joints 4. Lintells Lintels used to support brickwent, opening in walls must be shall be in accordance with AS 3700. 4. Lintells Lintels used to support brickwent, opening in walls must be shall be for the purpose as mound by BCA. The Builder will provide one hild accordance with the BCA. Part 3.4 as appropriate for the site environment and location of the line is in the structure. 5. Cleaning The Builder will clean all exposed brickwork with an approved cleaning system. Caused to support 5. (Joints Millers and location of the lines in the structure. 6. Opening 1. Builder will clean all exposed brickwork with an approved deaning system. Caused based to all the lines. 5. Opening 1. Clean Diversed to all the location of the lines in the structure. 6. Cleaning 1. Clean Diversed to all the location of the lines in the structure. 6. Clean Diversed to all the location of the lines in the structure. 6. Clean Diversed to all the location of the lines in the structure. 6. Clean Diversed to all the location of the lines in the structure. 6. Clean Diversed to all the location of the lines in the structure. 6. Clean Diversed to all the location of the lines in the structure. 6. Clean Diversed to all the location of the lines in the structure. 6. Clean Diversed to all the location of the lines in the structure.

1. FALLS, SLIPS, TRIPS

A) WORKING AT HEIGHTS

A) WORKING AT HEIGHTS DURING CONSTRUCTION Wherever possible, components for this building should be prefativated of raide or at ground level to minimise the risk of workers falling more than two metres. However, construction of this duding will require vorkers to be working at heights where a fail in excess of two metres is possible and injury is likely to result from such a fail. The builder should provide autiAde barrier wherever a periors in required to work in a situation where failing more than two metres is a possibility.

There is a plasticity: DURING COFEATION OR MAINTENANCE For houses or other low-rise buildings where scatfloding is appropriate. Cleaned of this building will require persons to be stuated where a fail from a height in excess of two netres is possible. Where we have a low of the height in excess of two netres is possible. Where the plastice of this building will require persons to be stuated to accordance with relevant codes of practice, regulations or there components of this building will require persons to be stuated where a fail from a height in excess of two the size is possible. Where there components of this building will require persons to be stuated where a fail from a height in excess of two the size is possible. Where therefore (FPE) should be used in accordance with relevant codes of practice, regulation.

B) SLIPPERY OR UNEVEN SURFACES FLOOR FINISHES Specified

FLOOR FINISHES Specified If finishes have been specified by designer, these have been selected to minimise the risk of floors and paved areas becoming supper when we to when waked on with wet showsfeet. Any changes to the specified finish should be made in consultation with the designer or, if this is not practical, surfaces with an equivalent or before sign resistones should be chosen.

FLOOR FINISHES by Owner If designer has not been involved in the selection of surface finishes, the owner is responsible for the selection of surface finishes in the pedestrian trafficable areas of this building. Surfaces should be selected in accordance with AS HB 197:1999 and ASNZ 4586:2004

selected in accordance with AS HB 197-1999 and ASNZ 4588-2004 STEPS, LOOSE OUBLECTS AND UNEVEN SURFACES Due to design retilitions to this building, steps and/or ramps are induided in the building within may be a hazard to workers carrying obtained and the selection arring bring root conductors, major and demotion and at all times when the building operates as a workplace. Building workers and occupiers should monitor the pedestrian access ways and in particular access to areas when maintenance is operated as a two polects on any other maintenance that and the pedestrian access and the pedestrian access ways and maintenance is operated as the two pedestrian access to areas to areas the moved or cancided so that they become uneven and present a trip access ways. Contractors should be required to maintain a kity work at building the two orbigate. Materials for construction or maintenance to build be stored in designated areas away from access ways and work areas.

2. FALLING OBJECTS

2. FALLING OBJECTS LOSSE MITERIALS OR SMULL OBJECTS Construction, maintenance or demolition work on or atourch their or above foor levels in whice preserve oneoling above ground brief or above foor levels. Where this occurs one or more of the following measures should be taken to avoid opticats failing from the area wit the work is being carried out onto persons below.

- 1. Prevent or restrict access to areas below where the work is
- Prevent or restrict access to areas below where the work is being carried out. Provide toeboards to scaffolding or work platforms. Provide protective structure below the work area. Ensure that all persons below the work area have Personal Protective Equipment (PPE). 23

Protective Equipament property of the property

Mechanical lifting of materials and components during construction, maintenance or demoilion presents a risk of Baling objects. Contractors should ensure that appropriate lifting devices are used, full loads are properly secured and that access to areas below the load is prevented or restricted.

3. TRAFFIC MANAGEMENT

3. TRAFFIC MANAGEMENT For building on anigor road, namow road or steepily sibpling road: Parking of vehicles or bading/unioading of vehicles on their scataway up cause a traffic hazard. Duling contrubution, maintenance of bading areas should be provided. Trained traffic management personnel should be responsible for the supervision of these areas For building whene on-ste loading/unioating is restricted. Construction of this building will require loading out avoid congestion of loading areas and tained traffic management personnel should be used to supervision is loading areas. Fai avoid congestion of loading areas and tained traffic management de collision where deliveries and divertise loading/unioading areas. Fai al buildings: Busy construction and demolition sites prevent a mix di collision where deliveries and divert staffic are moving within management personnel should be adopted for the work site.

4. SERVICES GENERAL

GENERAL GENERAL Barshy of rake including excession or other activity creates a services are located on or acound this site. Where shows, these are identified on the plans but the exact location and extent of services any located on or acound this site. Where shows, these are identified on the plans but the exact location and extent of services any vary shows that the site and the services and vary more start of the plans but the exact location and extent of services any vary shows the site and the services and vary more start of the services and vary of the services and vary more start of the services and vary of the services and vary more start of the services and the service shows the services more start of the services of denotition commencing. Locations with approached by fitting devices or other plant and persons working above times a how the practical, disconmented or relocated of more tartectical and exact and warming in the form of bright coloured tape or signage should be used or a protective barrier provided.

5. MANUAL TASKS Components within this design with a meas in excess of 25kg abadid Where this is no practical support and the practical titing device. Where this is not practical support of the titing abadic regulated to limit the component meas. All material packaging, building and matteriance components should clearly how the total mass of packages and where practical all times should be stored on set in a way which minimises benefits, device should be provided on safk lifting methods in all areas where itting may indigrate the use of potable totals and use where itting may indigrate the use of potable totals and use of the total device though a current electrical safety tag. All safety guards of devices should be used in accordance with manufacture's specification. 5. MANUAL TASKS

6 HAZARDOUS SUBSTANCES

ARSESTO For alterations a building contracted prior to 1980. If this existing the analysis of the second state of the second state of the second state contrain advector 1984 - it therefore is likely to contain whether in clading material or in the relaxant insulation material. In either as, the builder should check and, if necessary, take appropriate action before demolishing, cutting, sanding, drilling or otherwise datuming the waiting structure.

POWDERED INTERNALS Many materials used in the construction of this building can cau building during construction, operational mantenance or denoid about ensure good ventilation and ware Personal Protective Equipment including protection against inhalation while using powdered material or when avarding, ditling, cutting or otherwise disulting or creating powdered material.

TREATED TIMBER The design of this building may include provision for the inclusion of treated timber within the structure. Dust or furness from this material can be harmful. Prenoms working on or in the building during opod versitation and wear Prescote Protective Equipment including good versitation and wear Prescote Protective Equipment including diffig, cutting or using treated timber in any way that may cause harmful material to be released. Do not burn treated timber.

VOLTILE_CREAKE COMPOUNDS Many types of glue, solvents, spray packs, pains, verifieles and more cleaning materials and districture have dangerous more cleaning materials and districture have dangerous verifiated while the material is being used and for a period after installation. Personal Profestive Explorent may also be required the manufacturer's recommendations for use must be carefully considered all all limite.

SWINETC: MNREAL FIBRE Fibreglass, nocknool, ceramic and other material used for thermal swond insulation may contain synthetic mineral fibre which may be swond insulation may contain synthetic mineral fibre which may be swong the parts or the body. Personal Protective Equipment lockdom protection against insulation of harmful material abundu be used when installing, removing or working rear bulk insulation material.

INDEXT 1LOORS This building may contain timber floors which have an applied for Areas where finishes are applied should be kept well vertilated during suppling and application and for a period after installation maintafturier's accombinediations for use must be carefully considered at all times. TIMBER FLOORS This building may of

7. CONFINED SPACES

7. CONFINED SPACES EXCAVATON Construction of this building and some maintenance on the building will require excavation and installation of them within excavations, which do not require workers to entire the encavation which do not require workers to entire the encavation which the this is not practical, adequate support for the encavated area should be provided to prevent collapse. Warming signs and barriers to prevent accidental or unarthorised access to all excavations should be provided.

provee. ENCLOSED SPACES For buildings with enclosed spaces where maintenance or other access may be required. Enclosed spaces within this building may persent a risk to persone entering for construction, maintenance or any and barriers. The sample to construct the maintenance or any construction and the sources of the sources are required to enter enclosed spaces, at testing equipment and Personal Protective Equipment should be provided.

Pressume Foxecure Explaints in statute be provided. SMLL SPACE For buildings with small spaces where maintenance or other access may be required: a block of the statute of the Some small spaces within the workers. The design documentation calls for warming signs and barrier to unaukfortise daccess. The should be maintained throughout the life of the building. Where workers are required to enter small spaces they should be acheduled so that access is for short periods. Manual Iting and ther manual activity should be excited us and appoce.

8. PUBLIC ACCESS

Public access to construction and demolition sites and to areas under maintenance causes risk to workers and public. Warning signs and secure barriers to unauthorised access should be provided. Where electrical institutions, escavations, plant or lose materials are present they should be secured when not fully supervised.

9. OPERATIONAL USE OF BUILDING RESIDENTIAL BUILDINGS

RESIDENTIAL BUILDINGS
This builting has been designed as residential building IF, la built and the subset of unreshed to be used as a verklaker, the subset of unreshed to be used as a verklaker, the subset of unreshed to be used as a verklaker, the subset of unreshed to be used as a verklaker, the subset of unreshed to be used as a verklaker, the subset of unreshed to be used as a verklaker, the subset of unreshed to be used as a verklaker, the subset of unreshed to be used as a verklaker, the subset of unreshed to be used as a verklaker, the subset of unreshed to be used as a verklaker, the verklaker, the subset of unreshed to be used as a verklaker, the subset of unreshed to be used as a verklaker, the verklaker, the verklaker of the subset of unreshed to be used as a verklaker, the verklaker of the subset of the verklaker. Subset of the verklaker of the verk

EXCAVATIONS

EAUAYATIONS Libcavations The pair of the site to be covered by the proposed building or The pair of the site to boundaries of the site when the site to to boundaries of the site when the beard the site of th

FOUNDATIONS AND FOOTINGS

Underfloor Fill
Underfloor fill be in accordance with the BCA.
 Zormite Risk Management
Termite treatment shall be carried out in accordance with the

our Barrier

Vapour Barrier The vapour barrier installed under slab-on-ground construction shall be 0 zmm nominal thickness, high impact resistance and the state of the second with the BCA.
 A benforcement Reinforcement shall conform and be placed in accordance with the Engineer's Recommendation and the BCA.
 Support to all einforcement shall be used to correctly position and a nod any undue displacement of inforcement during the

Concrete
 Structural shall not be less than Grade N20 except otherwise approved by the engineer and in accordance with the BCA.

Structural initial role reaso when we have the supported by the engineer and in accordance with the buca, **8.** Curring **8.** Curring **9.** Curring and the shall be curred in accordance with AS 3600, **1.** Correspondence of the support of the

EFFLUENT DISPOSAL/DRAINAGE

Storm Water Drainage Stormwater drainage shall be carried out in accordance with the BCA. The Builder will allow for the supplying and laying of stormwater drains where shown on the site plan.

TIMBER FRAMING

TIMBER FRAMING 1. Generally All striber framework sizes, spacing, notching, checking and tring to all dron, wall and not structure shall comply with the BCA or AS 1884. Alternative structural framing shall be to unclunal engineers deals and controllation. Is an anner and shall be in accordance with recognised and accepted building pradices. 2. Roof Trusses Where not russ construction is used, trusses shall be designed in accordance with AS 1723 and Bahcatade in a coordance with the bahcrabirs awitten instructions. 3. Bearing.

accordance with the fabricabr's written instructions. 3. Bracing Bracing units shall be determined and installed in accordance with AS 1884 as appropriate for the design wind velocity for the site. Bracing shall be evenely distributed throughout the building. 4. Flooring Floor joils will be covered with stip or sheet flooring as shown on plan with particular regard to ground clearance and installation in wet areas as required by the BCA. Thickness of installation in wet areas are sequed by the BCA. Thickness of the flooring is to be apporprise for the floor plan taparing. Stip and sheet flooring shall be installed in accordance with AS 1684.

Stip and sheet floring shall be installed in accordance with A 1684. When lited in Schedule of Works, Toors shall be anded to provide an even surface and shall be left clean throughout. Posts supporting the carports, verandas and porches shall be intheir suitable for extendial user, on otherwise specified, supported on glavanised or treated metal post shoes, unless netwise specified. Posts shall be bottlet all adjoiring beam as required by AS 1684 for the wind speed classification assessed for the site. 6. Corrosion Protection 4. metal brackets, dance plates and other associated fixings used in structural infrer joints and bracing must have appropriate corrows protection.

STEEL FRAMING

 Generally Steel floor, wall or roof framing shall be installed in accordance with the manufacturer's recommendations and the BCA. ROOFING

aductory and as 3000°. The work is becamed out by determine advectory of the work is becamed out by determine out by the sense out the sense with the sense and requirements of the relevant back out and the sense out by the sense out the sense out by the sense out by the sense out the sense out by the sense out by the sense out the sense out by ROOFING All roof clad

BOORNO: HIT of classling is to comply with the relevant structural performance and weathering requirements of the BCA and be installed as per the manufacture's recommendations. In Titled Rooting The Subder with class are to be fixed (a required for appoint) design and wind speed) to buttens of alxee appropriate to the subder with class are to be fixed (a required for appoint) design and wind speed) to buttens of alxee appropriate to the commendations. The Bulder will cover hips and röges with ecommendations. The Bulder will cover hips and röges with ecommendations. The Bulder will cover hips and röges with ecommendations. The Bulder will cover hips and röges with ecommendations. The Bulder will cover hips and röges with ecommendations and the structure of the structure of the ecommendation of the structure of the structure of the ecommendation of the structure of the structure of the ecommendation of the structure of the structure of the ecommendation of the structure of the structure of the ecommendation of the structure of the structure of the ecommendation of the structure of the structure of the ecommendation of the structure of the structure of the ecommendation of the structure of the structure of the ecommendation of the structure of the structure of the ecommendation of the structure of the structure of the ecommendation of the structure of the structure of the ecommendation of the structure of the structure of the ecommendation of the structure of the structure of the ecommendation of the structure of the structure of the ecommendation of the structure of the structure of the ecommendation of the structure of the structure of the ecommendation of the structure of the structure of the ecommendation of the structure of the structure of the ecommendation of the structure of the structure of the ecommendation of the structure of the structure of the structure of the ecommendation of the structure of the structure of the structure of the ecommendation of the structure of the structure of the structure of th

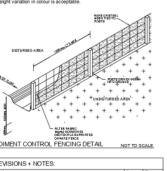
collinswcolli BUILDING DESIGNER ORD STREET (PO Box 56

	PROJECT: NEW DWELLING		WORK SAFETY NOTES			DRAWING REVISIONS + NOTES:			
					Date:	Detait	Issue:	Drawn:	
	LOT No: 2 DP No: 1143498	SHEET: 12 OF 1			13.02.19	CLIENT CHANGES MOVE FORWARD	н	JC	
FY LTD	STREET No: 4A	SHELL IZ OF I	SCALE:	As indicated		FINAL CHANGES	N	JC	
	STREET NAME: HIBISCUS CRESCENT, PO	RT MACQUARIE	SHEET SIZE:	A3		CC PLANS	P	MS	
1 S			START DATE:	25.05.18		CLIENT CHANGES	Q	MS	
						AWNING & RAISED ROOF OVER ENTRY	R	MS	
	CLIENT: WEBB		DWG No:	J3998	13.3.20	RFI CHANGES	W	JC	
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SERVICES

TILING

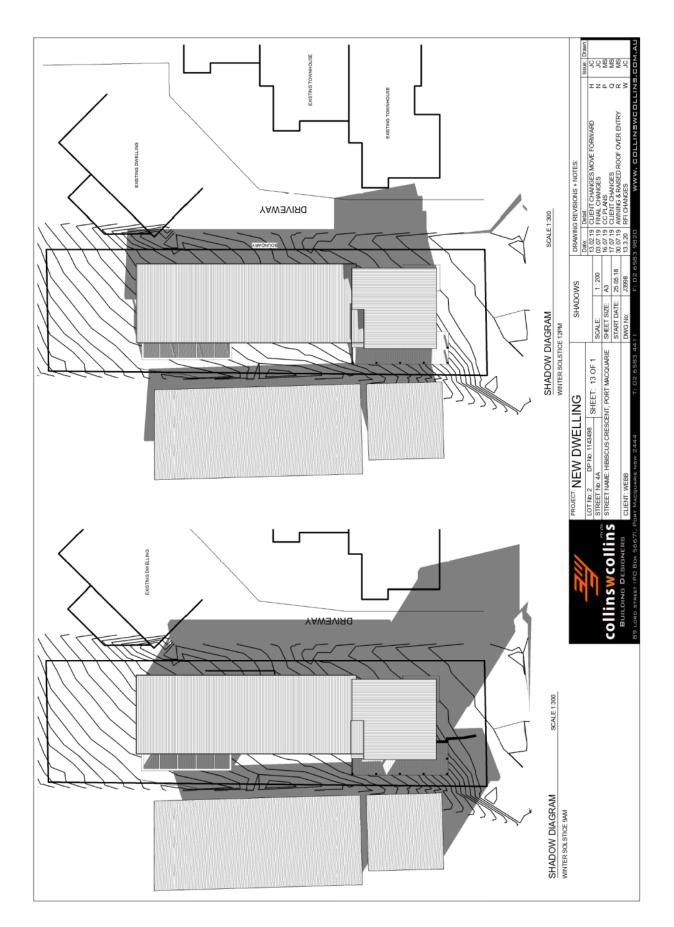
TLING Altertails Cement motar and other adhesives shall comply with AS 3958.1 or tile manufacture's recommendation. **Zhstallator** Instandature's net shall be in accordance with AS 3058.1. manufacture's net commendations or accepted buildor practices. Where practicable, spacing between tiles should be even and regular and house provide expansion joints where necessary. All vertica and noticental joints between walls and failures e.g. bend top, build the and wallford practices to be filled with heads mouth resistant appropriate grout material as specified by the tile manufacturer or accepted building practice. As bits are made of natural products a slight variation in colour is acceptable.

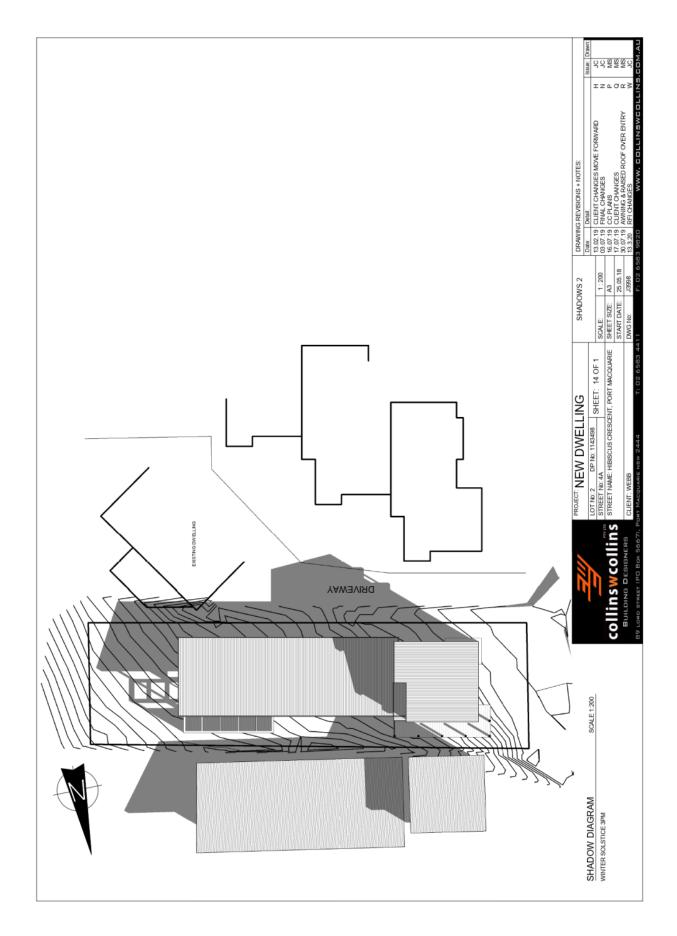


SEDIMENT CONTROL FENCING DETAIL

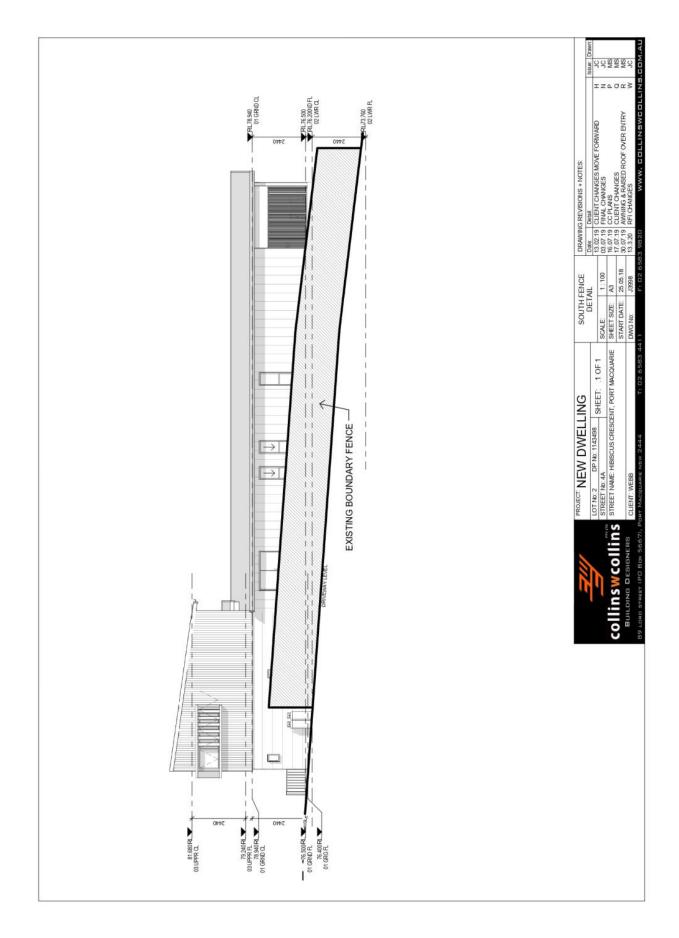
Item 08 Attachment 2

acceptable. 2. Metal Roofing The *Builder* will provide and install a metal roof together with accessories all in accordance with the manufacturer's





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Item: 09

Subject: DA2019 - 277.1 CAFE AND ASSOCIATED CAR PARKING AT LOT 5 DP 524972, PARKLANDS CLOSE, PORT MACQUARIE

Report Author: Development Assessment Planner, Chris Gardiner

Applicant:	Land Dynamics Australia
Owner:	J W Crowe
Estimated Cost:	\$120,000
Parcel no:	20183

Alignment with Delivery Program

4.3.1 Undertake transparent and efficient development assessment in accordance with relevant legislation.

RECOMMENDATION

- 1. That the Koala Plan of Management prepared by Biodiversity Australia (Rev 1.2, dated January 2020) be approved.
- 2. That DA2019 277.1 for a Café and Associated Car Parking at Lot 5, DP 524972, Parklands Close, Port Macquarie, be determined by granting consent subject to the recommended conditions.

Executive Summary

This report considers a development application for a café and associated car parking 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 on two separate occasions, 40 submissions were received.

The site is core koala habitat and the application includes a Koala Plan of Management (KPoM). The report recommends that the KPoM be approved and that appropriate conditions be imposed to ensure consistency with the Plan.

The proposal has been amended during the assessment of the application in response to assessment and submission issues.

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.

This report recommends that the development application be approved subject to the conditions in **Attachment 1**.

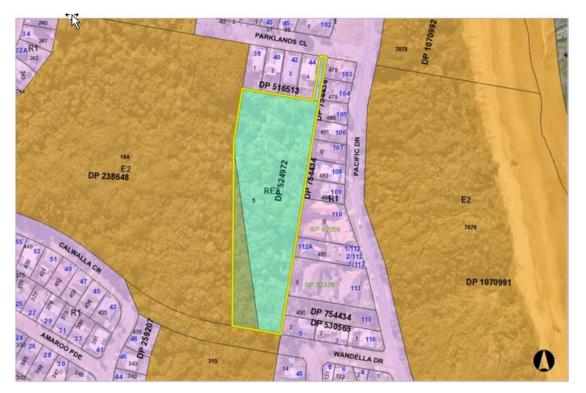


1. BACKGROUND

Existing Sites Features and Surrounding Development

The site has an area of 1.683 hectares.

The site is zoned RE2 Private Recreation, R1 General Residential, and E2 Environmental Conservation in accordance with the Port Macquarie-Hastings Local Environmental Plan 2011, as shown in the following zoning plan:



The existing subdivision pattern and location of existing development within the locality is shown in the following aerial photograph:





PORT MACQUARIE HASTINGS



2. DESCRIPTION OF DEVELOPMENT

Key aspects of the proposal include the following:

- Convert existing castle building from former Fantasy Glades amusement park into a café, including outdoor dining; and
- Construction of a new access road connecting to the end of Wandella Drive and off-street car parking.

Refer to **Attachment 2** at the end of this report for plans of the proposed development.

Application Chronology

- 16 April 2019 Application lodged.
- 30 April 2019 to 13 May 2019 Neighbour notification.
- 13 June 2019 Response to submissions received from Applicant.
- 1 July 2019 Additional information requested from Applicant.
- 9 October 2019 Additional information and amended plans submitted by Applicant.
- 31 October 2019 to 13 November 2019 Amended proposal re-notified.
- 3 December 2019 Amendments to ecological assessment and Draft Koala Plan of Management (KPoM) requested.
- 10 December 2019 Amended Koala Plan of Management and ecological assessment submitted.
- 17 December 2019 Koala Plan of Management forwarded to NSW Department of Planning, Industry & Environment for approval in accordance with SEPP 44.
- 30 January 2020 Amended Koala Plan of Management submitted in response to queries from NSW Department of Planning, Industry & Environment.



STINC

• 1 April 2020 - Correspondence received from NSW Department of Planning, Industry & Environment confirming approval of Koala Plan of Management.

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 (Koala Habitat Protection) 2019

Clause 15 - A development application made, but not finally determined, before the commencement of this Policy in relation to land to which this Policy applies must be determined as if this Policy had not commenced. The application was made and not finally determined prior to the commencement of this policy, and the application is therefore required to be assessed under the relevant provisions of State Environmental Policy No 44 - Koala Habitat Protection. See assessment comments below.

State Environmental Planning Policy No. 44 - Koala Habitat Protection

With reference to clauses 6 and 7, the subject land is greater than 1 hectare and therefore the provisions of SEPP must be considered.

The Applicant has submitted an Ecological Impact Assessment prepared by Biodiversity Australia and dated March 2019. The assessment includes consideration of SEPP 44.

The vegetation on the site consists of greater than 15% Schedule 2 Koala food trees and therefore meets the definition of 'potential koala habitat'.

The ecologist carried out further investigations to determine whether the site is 'core koala habitat', including:

- Koala Spot Assessment Technique (SAT) surveys;
- Passive Infrared Camera sampling;
- Spotlighting and torch surveys;
- · Call Playback and detection; and
- Active Searches.

The investigations identified scats under two of the Tallowwood trees and a passive infrared camera recorded a Koala passing through the site. The caretaker at the site has also observed Koala activity on the site. The report concludes that due to the extent of recent Koala sightings and the availability of KFTs within the property, it is considered that the site forms part of a larger area of Core Koala Habitat. The figure below shows the extent of the Core Koala Habitat within the subject site:



DEVELOPMENT ASSESSMENT PANEL 06/05/2020



Figure 6: Extent of Core Koala Habitat on the subject site

In accordance with Clause 9 of the SEPP, a Koala Plan of Management (KPoM) prepared by Biodiversity Australia has been submitted with the Application. The KPoM is included at **Attachment 4** and includes the following recommended ameliorative measures:

- General clearing measures including tree identification and tree protection fencing;
- Pre-clearing survey and clearing supervision;





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DEVELOPMENT ASSESSMENT PANEL 06/05/2020

- Retention of all primary/preferred Koala food trees, with only 'other browse species' (Flooded Gum and Broad-leaf Paperbark) proposed to be removed for the development;
- Habitat replacement at a ratio of 1:1 primary/preferred Koala food tree for each 'other browse species' proposed to be removed;
- Prohibition of domestic pets, with signage to inform café patrons not to bring pets onto the property;
- Management of food waste disposal to discourage feral animals from entering the site;
- Road signage and speed controls for the proposed new internal road and parking area;
- Control of artificial lighting;
- Processes for reporting sick or injured Koalas; and
- Removal of barbed wire fencing.

In accordance with Clause 13(2) of the SEPP, the Secretary of the NSW Department of Planning, Industry & Environment has approved the KPoM in a letter dated 1 April 2020. The KPoM has also been reviewed by Council's Natural Resources staff and is considered satisfactory. Accordingly, it is recommended that the KPoM be approved by Council's Development Assessment Panel.

Conditions of consent have been recommended to ensure that the proposed development is consistent with the approved KPoM.

State Environmental Planning Policy No. 55 – Remediation of Land

Following an inspection of the site and a search of Council records, the subject land is not identified as being potentially contaminated and is suitable for the intended use.

State Environmental Planning Policy No. 64 – Advertising and Signage

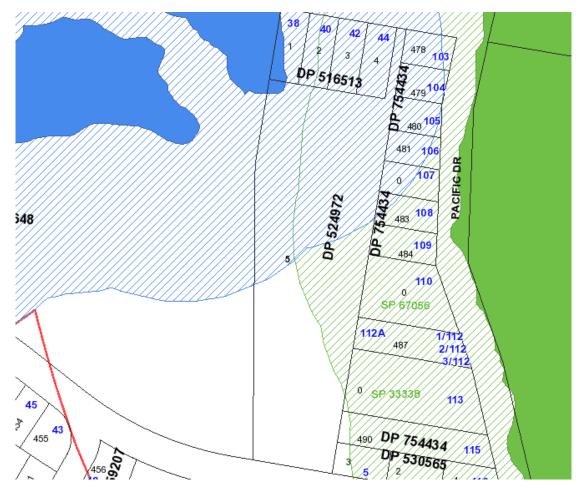
The proposed development does not include any advertising or signage. Standard condition recommended requiring separate consent for any future signage that is not Exempt Development.

State Environmental Planning Policy (Coastal Management) 2018

The site is located within a coastal use area, and partly within a coastal environment area. The part of the site within the coastal environment area is limited to the access handle from Parklands Close, and the proposed development does not include any works in this location.

Parts of the site are also mapped as coastal wetland, and proximity area to both coastal wetland and littoral rainforest (as shown below). The works associated with the development are clear of the coastal wetland and its proximity area, but the proposed café car park will be partly within the proximity area for littoral rainforest.





In accordance with clause 7, this SEPP prevails over the Port Macquarie-Hastings LEP 2011 in the event of any inconsistency.

Having regard to clause 11 of the SEPP, the proposed development is not likely to significantly impact the biophysical, hydrological or ecological integrity of the adjacent coastal wetland or littoral rainforest, or affect the quantity and quality of surface and ground water flows to and from the adjacent coastal wetland or littoral rainforest. The mapped littoral rainforest is located on the eastern side of Pacific Drive and separated from the site by the road corridor and a row of residential uses fronting Pacific Drive. Stormwater from the site drains generally to the west (away from the littoral rainforest) and adequate measures are proposed to manage stormwater quality and quantity from the development.

Having regard to clause 14 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 Aboriginal cultural heritage, practices and places;
- e) any adverse impacts on the cultural and built environment heritage;
- f) any adverse impacts the use of the surf zone;
- g) any adverse impact on the visual amenity and scenic qualities of the coast, including coastal headlands;

PORT MACQUARIE HASTINGS

DEVELOPMENT ASSESSMENT PANEL 06/05/2020

- h) overshadowing, wind funnelling and the loss of views from public places to foreshores; and
- i) any adverse impacts on existing public open space and safe access to and along the foreshore, beach, headland or rock platform for members of the public, including persons with a disability.

The bulk, scale and size of the proposed development is compatible with the surrounding coastal and built environment.

In accordance with Clause 15, the proposal is not likely to cause increased risk of coastal hazards on the land or other land.

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 RE2 Private Recreation, R1 General Residential, and E2 Environmental Conservation. The main aspects of the development including buildings, parking areas and internal access roads are located within the RE2 zone. However, the proposal relies on an access road through the E2 zone in the Wandella Drive road reserve.
- Clause 2.3(1) and the RE2 zone landuse table The proposed development for a cafe is permitted with consent.

Development for the purpose of roads is permissible in the E2 zone land use table. Relevant case law in *Site Plus Pty Ltd v Wollongong City Council* [2014] *NSWLEC 125* confirms that public roads are able to be characterised as roads, while private access roads should be characterised as being part of the associated land use. The proposed road works in Wandella Drive are therefore considered to be permissible in the E2 zone.

The objectives of the R1 zone are as follows:

- To provide for the housing needs of the community.
- To provide for a variety of housing types and densities.
- To enable other land uses that provide facilities or services to meet the day to day needs of residents.

The objectives of the RE2 zone are as follows:

- To enable land to be used for private open space or recreational purposes.
- To provide a range of recreational settings and activities and compatible land uses.
- To protect and enhance the natural environment for recreational purposes.

The objectives of the E2 zone are as follows:

- 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.

Clause 2.3(2) - The proposal is consistent with the zone objectives having regard to the following:

- The development does not include any works in the R1 General Residential zone and is therefore not inconsistent with the zone objectives for this part of the site.
- The proposed café and carpark have a small footprint in the context of the overall site area and would not significantly affect the potential for the land to be used for a range of recreational uses in the future.
- The ecological assessment has demonstrated that the impact of the development on the natural environment is satisfactory.
- The proposed public works at the western end of Wandella Drive have been designed to minimise impact on existing vegetation and the Wrights Creek riparian zone.
- The proposal does not impact areas of mapped coastal wetland.
- Clause 4.3 The proposal would not result in any increase in the overall height of the building above ground level (existing).
- Clause 5.10 Heritage. The site does not contain or adjoin any known heritage items or sites of significance.
- Clause 7.3 The site is land within a mapped "flood planning area" (land subject to flood discharge of 1:100 annual recurrence interval flood event, plus the applicable climate change allowance and relevant freeboard). In this regard the following comments are provided which incorporate consideration of the objectives of Clause 7.3, Council's Flood Policy 2015, the NSW Government's *Flood Prone Lands Policy* and the NSW Government's *Floodplain Development Manual* (2005):
 - The proposal is compatible with the flood hazard of the land taking into account projected changes as a result of climate change;
 - The proposal will not result in a significant adverse effect on flood behaviour that would result in detrimental increases in the potential flood affectation of other development or properties;
 - The proposal incorporates measures to minimise & manage the flood risk to life and property associated with the use of land;
 - The proposal is not likely to significantly adversely affect the environment or cause avoidable erosion, siltation, destruction of riparian vegetation or a reduction in the stability of river banks or watercourses; and
 - The proposal is not likely to result in unsustainable social and economic costs to the community as a consequence of flooding.
- 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





DCP 2013: Business & Commercial Development								
DCP Objective	Development Provisions	Proposed	Complies					
3.4.3.18	At grade car parking incorporate water sensitive urban design principles to drain pavement areas.	Concept design provided in stormwater management plan.	Yes					
3.4.3.22	Any ramps are to be integrated into the overall building and landscape design.	No ramps proposed.	N/A					
	The development complies with AS1428—Design for Access and Mobility.	The application includes a BCA assessment, which indicates that the current building does not comply with the Australian Standard. The report provides a number of recommendations for works required to bring the building into compliance. Details will be required to be submitted with the Construction Certificate application.	Yes					
3.4.3.25	Separate storage bins for collection for organic waste and recyclable waste are provided in the development.	Statement of Environmental Effects indicates that waste will be stored in the storage area at the rear of the building and collected from the loading area by a private waste contractor. A condition is recommended requiring the waste to be collected in the three different waste streams. The Koala Plan of Management requires bins containing food waste to be sealed and locked to prevent access by feral animals.	Yes					
3.4.3.26	Where waste facilities cannot be collected at the street, evidence that the site can be serviced by a waste collection service must be provided.	Condition recommended confirming requirement for private waste collection service.	Yes					
3.4.3.27	The number of vehicular crossovers shall be kept to a minimum and appropriate sight lines provided to ensure safe	One crossover to Wandella Drive.	Yes					



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	integration of pedestrian and vehicular movement.		
	At-grade / surface car parking areas adjacent to streets shall be generally avoided or at least adequately softened by appropriate landscaping.	Majority of off-street parking located behind the building, with the exception of 2 spaces. These 2 spaces are setback 25m from the front boundary and adequately screened by existing landscaping.	Yes
3.4.3.30	Pedestrian Entries & Access: The development complies with AS1428—Design for Access and Mobility.	Capable of complying. The application includes a BCA assessment, which indicates that the current building does not comply with the Australian Standard. The report provides a number of recommendations for works required to bring the building into compliance. Details will be required to be submitted with the Construction Certificate application.	Yes
3.4.3.32	Parking areas are adequately illuminated (naturally and/or artificially) during the time period the centre is open.	The proposed hours of operation are 6.00am to 6.00pm, which will generally be in daylight hours. Some minor lighting of the parking area is expected during the winter months, but is unlikely to affect the amenity of adjoining residents given the short period.	Yes
3.4.3.35	Commercial Development Adjoining Residential Land uses: The development is designed so that all vehicle movement areas and servicing areas are located away from adjoining residential areas.	Loading dock proposed on eastern side of the building closest to residential properties.	No (see below)
	Where this cannot be achieved visual and acoustic treatment of the interface is required.	Submitted plans show 'mass planted landscape beds' between loading area and the eastern boundary. A condition is recommended requiring the plantings in this location to be of sufficient height to visually screen the loading	Yes

	area. An acoustic assessment has been submitted with the application, which concluded that the development can comply with relevant noise criteria without any additional mitigation measures.	
Waste areas are located and managed to minimise pests, noise and odour.	Screened waste storage area located adjacent to loading bay.	Yes

DCP 2013:	DCP 2013: General Provisions			
DCP Objective	Development Provisions	Proposed	Complies	
2.7.2.2	 Design addresses generic principles of Crime Prevention Through Environmental Design guideline: Casual surveillance and sightlines Land use mix and activity generators Definition of use and ownership Lighting Way finding Predictable routes and entrapment locations 	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 increased activity and supervision of the area is likely to improve safety and reduce the potential for anti- social behaviour. Lighting will be required for internal access roads and parking areas for short periods during winter. The Statement of Environmental Effects indicates that the Applicant intends to install CCTV for the cafe building and car parking area.	Yes	
2.3.3.1	Cut and fill 1.0m max. 1m outside the perimeter of the external building walls	Maximum 0.9m cut along eastern side of parking area.	Yes	
2.3.3.2	1m max. height retaining walls along road frontages	No significant retaining proposed along the road frontage.	Yes	
	Any retaining wall >1.0 in height to be certified by structural engineer	N/A	N/A	
	Combination of retaining wall and front fence height	No front fence and retaining wall combination exceeding the maximum height proposed.	Yes	
2.3.3.4	a) For coastal floodplain	The proposal would not	No, but	

	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. d) Stormwater management facilities may be considered within buffer areas only where the applicant can demonstrate the proposal is justified on the basis of practical engineering related site constraints and where it is adequately demonstrated that the applicable objectives are achieved. e) Fully vegetated buffers cannot contain road infrastructure or an asset protection zone. f) Where different buffers (including riparian buffers) apply to an area, the greater of the buffer widths applies.	satisfy the minimum EEC buffer. However, the development relates to an existing building and managed land that are already located within the buffer area. The proposal includes appropriate access control to the EEC and a regeneration area to improve the existing buffer.	acceptable
2.3.3.5	 a) Any habitat/vegetation which will be lost as a consequence of development is to be offset through the dedication of suitable land utilising expert ecological knowledge to determine the impact and offset based on the principle of 'improve and maintain'. b) Improvement and maintenance of existing habitat and corridors and the consolidation of fragmented bushland are to be considered as the first preference for any development offset. 	Conceptual details of the offset planting have been provided in the application. A condition is recommended requiring approval of a detailed Vegetation Management Plan prior to the issue of a Construction Certificate and prior to the removal of any of the existing vegetation on the site.	Yes

2.3.3.6	 c) A Vegetation Management Plan (VMP) is to be prepared for any environmental land that is to be retained or used to offset development impacts. d) VMPs are required to address Council's VMP "Heads of Consideration" a) A minimum, fully vegetated buffer from the top of bank to both sides of a watercourse is to be provided in accordance with the following: 10m for 1st order streams that flow intermittently. 30m for 1st order streams that flow permanently. 40m for 2nd order streams. 50m for 3rd order streams. 65m for 4th order streams. b) Stormwater management facilities may be considered within buffer areas only where the applicant can demonstrate the proposal is justified on the basis of practical engineering related site constraints and where it is adequately demonstrated that the applicable 	The proposal is located adjacent to a 2 nd order stream and would maintain a vegetated buffer of approximately 45m.	Yes
	that the applicable objectives are achieved. c) Fully vegetated buffers cannot contain road infrastructure or an asset protection zone.		
2.3.3.7	For koala habitat refer to clause 7.5 of the Port Macquarie-Hastings LEP 2011.	See comments under SEPP 44. Clause 7.5 of the LEP does not apply to the land.	N/A
2.3.3.8 onwards	Removal of hollow bearing trees	A hollow bearing tree (HBT) assessment has been included in the submitted ecology report.	Yes
		HBT #16 will be impacted	

		by the proposed bio- retention basin and has been recommended for removal. The tree scores 8.5 in accordance with Council's HBT protocol and removal is permitted where retention is impractical. Offsets with recruitment trees and nest boxes are required, and appropriate conditions have been recommended.	
2.6.3.1	Tree removal (3m or higher with 100mm diameter trunk and 3m outside dwelling footprint	The proposal includes clearing of 0.22 hectares of native vegetation, including six Flooded Gum and two Broad-leaf Paperbark, which are listed as other browse species in Table 2.6-1. The Applicant is proposing to offset the removal of these trees at a ratio of 1:1, as recommended in the Koala Plan of Management for the site. The offset plantings will be required to be primary koala food trees, and a Vegetation Management Plan will be required for the establishment and maintenance of these plantings.	Yes
2.4.3	Bushfire risk, Acid sulphate soils, Flooding, Contamination, Airspace protection, Noise and Stormwater	Refer to main body of report.	
2.5.3.2	New accesses not permitted from arterial or distributor roads. Existing accesses rationalised or removed where practical	Access from local road.	Yes
	Driveway crossing/s minimal in number and width including maximising street parking	Single driveway from Wandella Drive. No significant loss of street parking.	Yes
2.5.3.3	Off-street parking in accordance with Table 2.5.1. (Provision to consider reduced parking where	The proposed cafe/restaurant will require a minimum of 1 space per 6m ² of serviced floor area as the site is located	Yes

	supported by parking demand study)	outside a commercial zone.	
		The building has an internal serviced floor area of 34.7m ² , and an additional outdoor dining area of approximately 66m ² (total serviced floor area of 100.7m ²). The total parking requirement for the development is therefore 16.8 (rounded to 17) spaces.	
		The submitted plans include 24 off-street parking spaces, which exceeds the minimum requirement.	
		One of the spaces is likely to be lost to create the shared zone for the accessible parking space in accordance with AS2890. However, a total of 23 parking spaces would still exceed the minimum parking requirements.	
2.5.3.4	Parking credits to be calculated for redevelopment or change of use	n/a	n/a
2.5.3.7	Visitor parking to be easily accessible	n/a	n/a
	Parking layout in accordance with AS/NZS 2890.1 and AS/NZS 2890.2	See comments later in this report under Parking and Manoeuvring.	
	Parking spaces generally located behind building line	Two parking spaces for proposed cafe located forward of the building line. See comments under 3.4.3.27 and 2.5.3.12 regarding landscaping of the parking area.	Yes
		The majority of the parking is located behind the building line.	
2.5.3.8	Accessible parking provided in accordance with AS/NZS 2890.1, AS/NZS 2890.2 and AS 1428	One accessible parking space proposed that is capable of complying with these standards. One of the spaces is likely to be lost to	Yes

		create the shared zone for the accessible parking space.	
	Additional accessible spaces where development would have high volume of aged or disabled traffic	n/a	n/a
2.5.3.11	Section 94 contributions	Refer to main body of report.	
2.5.3.12 and 2.5.3.13	Landscaping of parking areas	Landscaping proposed between Wandella Drive and the 2 parking spaces located forward of the building line.	Yes
2.5.3.14	Sealed driveway surfaces unless justified	Condition recommended requiring sealed surfaces for car park and internal access road.	Yes
2.5.3.15	Driveway grades for first 6m of 'parking area' shall be 5% grade (Note AS/NZS 2890.1 allows for steeper grades)	Capable of complying.	Yes
2.5.3.16	Transitional grades min. 2m length	Capable of complying.	Yes
2.5.3.17	Parking areas to be designed to avoid concentrations of water runoff on the surface. No direct discharge to K&G or swale drain	Detailed to be provided as part of stormwater management plan prior to the issue of a Section 68 approval.	Yes
2.5.3.18	Car parking areas drained to swales, bio retention, rain gardens and infiltration areas		
2.5.3.19	Off street commercial vehicles facilities are provided in accordance with AS/NZS 2890.2	Loading bay proposed.	Yes
2.5.3.20	The location and design of loading bays should integrate into the overall design of the building and car parking areas.	Location considered satisfactory.	Yes
	Where visible from the public domain, loading bays are located behind the building.	Loading bay not prominent from the public domain.	
	Where loading bays are located close to a sensitive land use, adequate visual and acoustic screening is provided.	See comments earlier under 3.4.3.35.	

Based on the above assessment, the variations proposed to the provisions of the DCP are considered acceptable and the relevant objectives have been satisfied. Cumulatively, the variations do not amount to an adverse impact or a significance that would justify refusal of the application.

(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

Consent authority may require buildings to be upgraded – Clause 94 The application includes a NCC/BCA Compliance and Fire Safety Upgrading Report prepared by David Pensini - Building Certification and Environmental Services and dated March 2019. The report has been reviewed by Council's Building Surveyors and the recommendation for upgrades to the building are considered generally acceptable.

In addition to the recommendations in the report, the following additional upgrades are recommended:

- The upper floor level to be used for storage should be inspected and assessed by a structural engineer to determine a safe loading capacity and signage is to be placed within the area to that effect.
- Lighting within the stairwell is to be upgraded as required to ensure adequate illumination of the area.

Condition have been recommended requiring the relevant building and fire safety upgrades to be completed prior to the issue of an Occupation Certificate.

(b) The likely impacts of that development, including environmental impacts on both the natural and built environments, social and economic impacts in the locality:

Context and Setting

The site has a general southerly street frontage orientation to an unformed section of Wandella Drive and a northerly frontage to Parklands Close via an access handle approximately 6m wide.

Adjoining the site to the north is four residential dwellings, which share their rear boundary with the site.

Adjoining the site to the east is a mix of residential uses of varying height and density, generally sharing their rear boundary with the site.

Adjoining the site to the south and west is a public reserve along the Wrights Creek corridor. A public boardwalk runs along the southern boundary of the site and connects to Calwalla Crescent.

The proposal is considered to be compatible with other development 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 is not expected to have significant adverse lighting impacts given the proposed hours of operation. A condition is recommended requiring all exterior lighting to comply with *AS4282* - *Control of the obtrusive effects of outdoor lighting*.

There is no adverse overshadowing impacts. The proposal does not prevent adjoining properties from receiving 3 hours of sunlight to private open space and primary living areas on 21 June.

Privacy

The closest part of the proposed outdoor dining area is located approximately 4.5m from the rear boundary of No. 113 Pacific Drive. The dining area is located at a substantially lower level than the neighbouring property and the current boundary treatment is a retaining wall approximately 2m high with a solid fence on top. From a standing position in the outdoor dining area part of the upper floor windows and balcony of the rear units are visible above the top of the fence. The closest part of the outdoor dining area is separated by approximately 18m from the balcony of the nearest unit, and the Applicant has proposed additional landscaping between the dining area and the property boundary. Most customers are likely to be seated in the outdoor dining area, which would further improve the privacy screening provided by the boundary fence.

The combination of separation distance, boundary fencing and landscaping is considered to maintain adequate visual privacy.

Roads

The site has road frontage to Wandella Drive, which is a Council public road with a road formation width of approximately 11.5m in a 20m road reserve. Adjacent to the site the pavement is incomplete, and there is no kerb and gutter.

Traffic and Transport

The application includes a Traffic Impact Assessment from Alan Taylor & Associates on 12 April 2019. Findings of the study determined that the additional traffic generated by the development would have minimal impact on the intersections of Pacific Drive, with Parklands Close and Wandella Drive.

Site Frontage and Access

Vehicle access to the site is proposed though one access driveway to Wandella Drive. The access shall comply with Council AUSPEC and Australian Standards, and conditions have been recommended to reflect these requirements.

Due to the type and size of development, additional works are required to include:

- Kerb and gutter works on Wandella Drive, (including some pavement works);
- Concrete footpath paving (minimum 1.2m wide) connecting the existing footpath/boardwalk to Wandella Drive;
- Roundabout to the intersection of Wandella Drive and Karalee Parade;
- Threshold treatments.



Parking and Manoeuvring

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A total of 24 parking spaces (including 1 disabled space) have been proposed onsite. Parking and driveway widths on site can comply with relevant Australian Standards (AS 2890) and conditions have been recommended to reflect these requirements. One of the spaces is likely to be lost for the shared zone of the accessible space in order to comply with AS 2890, but the number of spaces will still satisfy the minimum requirements of the DCP.

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 recommended to reflect these requirements.

Water Supply Connection

Council records indicate that the development site has an existing metered water service from the 100mm AC water main on the opposite side of the Parklands Close. A hydraulic strategy and plans are required from a hydraulic consultant for the whole of the development on the site stage by stage. Water service sizing is then to be determined by the hydraulic consultant to suit the proposed commercial components of the development, as well as addressing fire service requirements to AS 2419 and backflow protection requirements.

Detailed plans will be required to be submitted for assessment with the Section 68 application.

Sewer Connection

Council records indicate that the development site discharges to sewer via an existing junction connection to the 225mm AC sewer main traversing the site. The site may discharge all sewage to this existing point of connection.

Detailed plans will be required to be submitted for assessment with the Section 68 application.

Stormwater

The site naturally grades towards the creek and is currently not serviced by stormwater infrastructure.

Stormwater from the proposed development is planned to be discharged to Wrights Creek via a bio-retention basin. The submitted Stormwater Management Plan has been reviewed by Council's Senior Stormwater Engineer and is considered acceptable in principle.

Adjoining properties to the east have no formal drainage system and currently drain towards the subject site. To protect the development from stormwater impacts from upstream properties, it is recommended that a piped inter-allotment drainage system be constructed with a junction for each property adjoining the eastern boundary between Wandella Drive and the northern extent of the proposed parking area.

A detailed site stormwater management plan will be required to be submitted for assessment with the Section 68 application and prior to the issue of a Construction Certificate. In accordance with Council's AUSPEC requirements, the following must be incorporated into the stormwater drainage plan:

- On site stormwater detention facilities;
- Water quality controls;
- Provision of interallotment drainage to provide a junction for the SW drainage of existing lots located on the eastern side of the site.



Other Utilities

Telecommunication and electricity services are available to the site.

Heritage

No known items of Aboriginal or European heritage significance exist on the property. The site has previously been used as an amusement park and is considered to be disturbed land.

As a precaution, a condition of consent has been recommended that works are to cease in the unexpected event heritage items are found. Works can only recommence when appropriate approvals are obtained for management and/or removal of the heritage item.

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

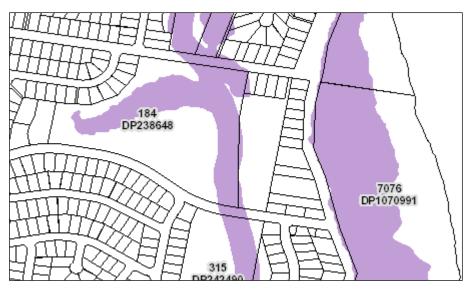
The construction and/or operations of the proposed development will be unlikely to result in any adverse impacts on the existing air quality or result in any pollution. Standard precautionary site management condition recommended.

Flora and fauna

The proposed development includes clearing of 0.22 hectares of native vegetation. The Biodiversity Offset Scheme doesn't apply for the following reasons:

- The land proposed to be cleared isn't identified on the Biodiversity Values Map (see extract below);
- The extent of clearing is below the thresholds in Clause 7.2 of the Biodiversity Conservation Regulation 2017;
- The application of a test of significance (5 part test) demonstrates that the development will not have a significant impact on biodiversity values.

Minimum lot size of land (LEP Lot	Area of Clearing
Size Map)	
Less than 1 hectare	0.25 hectare or more
Less than 40 hectares but not less than	0.5 hectare or more
1 hectare	
Less than 1,000 hectares but not less	1 hectare or more
than 40 hectares	
1,000 hectares or more	2 hectares or more



The Applicant has submitted an Ecological Impact Assessment prepared by Biodiversity Australia. The report has been reviewed and it is considered that adequate measures have been taken to avoid or minimise impacts, and the development would not result in serious and irreversible impacts on biodiversity.

The ecological assessment makes the following recommendations to mitigate the biodiversity impacts of the development:

- Survey and identification of trees prior to removal.
- Retention of habitat features (hollow bearing trees and koala food trees) within asset protection zones.
- Pre-clearing surveys and supervision of clearing by an ecologist.
- Hollow bearing tree removal protocol.
- Replacement nest boxes (1 small glider/phascogale nest box, and 1 parrot nest box).
- Restrictions on domestic pets.
- Food waste disposal protocols to discourage wild dogs, foxes, and feral cats and reduce predation.
- Approval and implementation of a Vegetation Management Plan for offset plantings and the identified regeneration area.
- Restrictions on patron access to the retained residual habitat area through edge plantings and appropriate signage.
- Implementation of sedimentation and erosion control measures.
- Weed control.
- Road signage and speed controls.
- Exterior lighting to be designed not to direct light towards the retained vegetation.
- New landscaping to use native plant species.

Appropriate conditions have been recommended incorporating these requirements.

Waste

The Statement of Environmental Effects indicates that waste will be stored in a secure and screened area adjacent to the loading area and collected by a private waste contractor. A condition is recommended confirming the requirement for a private waste service and requiring the waste to be collected in the three different waste streams.





The Koala Plan of Management requires bins containing food waste to be sealed and locked to prevent access by feral animals, and a condition is also recommended confirming this requirement.

Standard precautionary site management condition also recommended for construction phase.

Energy

No adverse impacts anticipated.

Noise and vibration

The submitted Statement of Environmental Effects indicates that the café is proposed to operate between the hours of 6.00am and 6.00pm, 7 days per week.

The application includes a Noise Impact Assessment prepared by Matrix Thornton and dated 10 July 2019. The assessment considers likely noise impacts of the development associated with patrons and music, vehicle access and parking (including deliveries and waste collection), and mechanical plant. The report notes that the proposed café would operate between 7.00am and 6.00pm, but acknowledges that staff would arrive in the hour prior to 7.00am and has considered the potential for sleep disturbance during this period.

The report concludes that:

"Noise is predicted to be below the noise trigger levels at all receivers during the daytime at the NPfl assessment point at ground level.

Considering the upper floor level of the nearest receiver, noise is predicted to be below the trigger level for the majority of the time. During the occasional delivery or waste collection events, a marginal 3 dBA exceedances of the trigger level is predicted. Given the infrequency of these events, and that the level is significantly below the amenity level for a daytime, no noise mitigation is considered necessary.

Noise from traffic generated by the development will comply with the traffic noise criteria."

The noise report has been assessed as being acceptable and appropriate conditions are recommended.

Bushfire

The site is identified as being bushfire prone.

The Applicant has submitted a bushfire report prepared by David Pensini Building Certification and Environmental Services and dated March 2019.

The proposal relates to a Class 6 building and the provisions under the Building Code of Australia for fire safety will be accepted for bushfire purposes where the aims and objectives of Planning for Bushfire Protection 2006. The relevant aims and objectives 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;



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- (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 development would substantially improve protection of the existing building and includes the following measures to meet the above objectives:

- A defendable space of minimum 10m around the building, which is to be managed as an Inner Protection Area (IPA);
- A new access road and parking area will be constructed between the building and the hazard;
- The new internal access road will be constructed to comply with Section 4.1.3 of Planning for Bush Fire Protection 2006;
- Water supply and utility services will be constructed to comply with Section 4.1.3 of Planning for Bush Fire Protection 2006;
- Site landscaping shall comply with Appendix 5 of Planning for Bush Fire Protection 2006;
- The site has alternative access/egress to Parklands Close for emergency services personnel.

A condition is recommended requiring retaining walls within the IPA to be constructed of non-combustible materials, and the timber decking noted on the internal driveway to also be replaced with a non-combustible material.

The proposal also includes offset plantings on the eastern side of the proposed car park, which have the potential to increase bushfire risk to adjoining properties in Pacific Drive. A condition is recommended requiring certification from a bushfire consultant that the new plantings meet the specifications for an Inner Protection Area and will not increase bushfire risk to adjoining properties. Details of the offset plantings will be confirmed in the Vegetation Management Plan.

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 increased activity and supervision of the area is likely to improve safety and reduce the potential for anti-social behaviour. Lighting will be required for internal access roads and parking areas for short periods during winter. The Statement of Environmental Effects indicates that the Applicant intends to install CCTV for the cafe building and car parking area.

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.

Economic impact in the locality

No adverse impacts anticipated. 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. Additionally, the business would create employment opportunities in the area.



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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

Construction impacts are considered capable of being managed. Standard construction and site management conditions have been recommended.

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 of bushfire risk, ecology, stormwater and access have been adequately addressed and appropriate conditions of consent recommended.

(d) Any submissions made in accordance with this Act or the Regulations

Forty (40) written submissions were received following public exhibition of the application on two occasions. Copies of the written submissions have been provided separately to members of the DAP.

Key issues raised in the submissions received and comments are provided as follows:

Submission Issue/Summary	Planning Comment/Response
Access is not permitted to Parklands Close via the Council reserve and the owner has been unlawfully using this access. Frequency of garbage truck access and associated noise impacts have not been	The development does not propose access in this location. Formalising access from Wandella Drive should discourage future use of other access points. An amended noise assessment has been submitted, which appropriately considers the impacts of private garbage collection.
addressed in the application. Building equipment access is not fully described.	It is not necessary for details of construction management to be submitted at the DA stage. Standard site management conditions have been recommended and the contractors will be responsible for implementing the conditions during the construction phase.
Past behaviour of the owner suggests that they would not comply with any conditions of consent.	This cannot be considered in the assessment of the application.
Adverse noise impacts from outdoor dining and vehicles using the parking area.	The Applicant's acoustic consultant has demonstrated that noise generated by the car parking area and the outdoor dining area will be below the acceptable criteria determined in accordance with the EPA's Noise Policy for



Submission Issue/Summary	Planning Comment/Response
	Industry without any additional noise mitigation
	measures.
Operating hours are too long for the residential context. Nearby residents will be woken up at 6.00am, 7 days per week.	The amended noise assessment has confirmed that the proposed café will operate between 7.00am and 6.00pm, but acknowledges that staff will likely arrive between 6.00am and 7.00am to prepare for opening. The noise assessment has considered the sleep disturbance criteria for this period and determined that the predicted maximum noise level of 53dBA is below the level likely to cause awakening reactions (typically 60dBA).
	Conditions have been recommended confirming the opening hours of the business and also preventing any deliveries to the site or garbage collection prior to 7.00am.
Impacts of headlight glare from proposed car park.	The proposed café will largely operate during daylight hours and headlight are only expected to be used at some times of year for morning staff access, or customers leaving the site in the evening during winter.
A number of moting Keelee	The proposed car park is excavated into the site and is at a substantially lower level than the windows of the adjoining residential buildings to the east. It is not expected that headlights would shine directly into windows, even during the infrequent periods that they are likely to be used. The site has been confirmed to be core koala
A number of mating Koalas regularly use the site.	habitat and a Koala Plan of Management has been submitted.
Safety impacts on the public using the boardwalk between Calwalla Crescent and Wandella Drive from the proposed access to the development.	The proposal has been amended to include realignment of the boardwalk/footpath to the southern side of Wandella Drive and clear of the driveway access to the development.
The first floor of the castle building is being occupied by the owner. Residential use is not permitted under the zoning.	The application does not include any residential use of the first floor of the building, and the Statement of Environmental Effect indicates that the space would be used for storage associated with the café.
	A condition has been recommended prohibiting the building from being used for habitable purposes.
Why does the café need a shower?	It is reasonable for a business to provide a shower for staff use, particularly where the business involves food preparation. The provision of shower facilities encourages employees to walk or cycle to work.
	As noted above, a condition has been

PORT MACQUARIE HASTINGS c o u n c t l

Submission Issue/Summary	Planning Comment/Response
_	recommended prohibiting the building from
	being used for habitable purposes.
A high Colorbond fence would	The car park is located at the rear of 112A
be required along the rear	Pacific Drive, and the current boundary
boundary adjoining No. 112A	treatment is a wire mesh security fence. The
Pacific Drive.	proposed carpark is setback between 7.5m and
	10.5m from the rear boundary of the property
	and the finished level of the car park will be
	approximately 2m below ground level at the
	property boundary. The Applicant has proposed
	landscaping between the parking area and the
	property boundary including 2 of the
	replacement Tallowwood plantings.
	Having regard to the use of the area constration
	Having regard to the use of the area, separation distance, landscaping, and difference in levels, a
	solid boundary fence is not considered
	necessary to achieve satisfactory privacy.
The proposal paves the way for	Any future proposal for the land will need to be
future development of the site.	considered on its merits, and the determination
	of this application would not prejudice any future
	decisions.
The traffic impact assessment is	The traffic impact assessment has been
outdated and doesn't address	reviewed by Council's Development Engineer
the impacts of traffic on a quiet	and considered to be adequate for assessment
street of a café operating 12	of the application.
hours per day, 7 days per week.	
Adverse impacts on traffic safety	The traffic impact assessment adequately
in Pacific Drive and the intersection with Wandella Drive	addresses the impacts of the anticipated increase in traffic associated with the
from additional traffic associated	development on the intersection of Pacific Drive
with the proposed café.	and Wandella Drive. The volume of traffic will
	not meet or exceed the warrants for intersection
	upgrades.
The reports submitted with the	The ecological assessment and Koala Plan of
application are outdated in	Management identify core koala habitat across
relation to the 'Koala corridor'. It	both the RE2 and E2 zones. The Koala Plan of
should include the RE2 zoned	Management includes appropriate measures for
land as well as the E2 land.	the protection of koalas and their habitat in both
	zones.
Shipping container stored on the	A condition has been recommended requiring
premises is set up as a	the shipping container to be removed prior to the
makeshift residence with	issue of an Occupation Certificate.
dangerous electricity supply via	
a number of koala food trees.	
The shipping container has been witnessed to be occupied	
on occasions and creates a	
privacy issue for No. 108 Pacific	
Drive.	
The size of the car park is	The proposal requires 17 off-street parking
excessive for the development.	spaces to satisfy the Development Control Plan
Only 6 spaces are required	requirements. The additional parking spaces

Submission Issue/Summary	Planning Comment/Response	
instead of the 24 proposed. The	proposed are considered sensible given that the	
car park appears to have been	site has limited street frontage and cannot rel	
primarily proposed to meet APZ	upon a proportion of vehicles utilising street	
requirements.	parking.	
Adverse ecological impacts of	See comments under Flora and Fauna section	
proposed development.	in this report.	
The application does not identify	A condition has been recommended requiring	
the existing fireplace that has	the existing fireplace to be removed prior to the	
been installed in the castle	issue of an Occupation Certificate.	
building, and whether it is		
proposed to remain. Wood		
smoke is causing health and		
amenity impacts on nearby		
residents.		
The application doesn't include	Details of staff numbers are not required to	
details of the staff numbers.	assess the impacts of the development. The	
	DCP parking rates for cafes/restaurants are	
	calculated as a proportion of the floor area of the	
	business and account for both staff and	
	customers.	
The ecological report suggests	One hollow bearing tree is proposed to be	
that the hollow bearing tree should be retained and there	removed, and consistent with the DCP	
needs to be assurance that this	requirements, appropriate nest boxes will need to be installed in retained trees to offset the loss	
will happen.	of habitat. All other hollow bearing trees would	
	be protected through the recommended	
	conditions of consent and Vegetation	
	Management Plan.	
Disagree with the Applicant's	Noted.	
assertion that the site has been		
regularly slashed. The land has		
been maintained by a lawn		
mower.		
The owner has a cattle dog on	The Koala Plan of Management includes a	
the site, which is a danger to the	restriction prohibiting café patrons from entering	
Koala population.	the subject site with domestic pets. It is	
	considered reasonable that this restriction	
	should apply to the owner of the land, or any	
	other person. A condition has been	
Drivoov imposto for regidente	recommended confirming this restriction.	
Privacy impacts for residents adjacent to the outdoor dining	The outdoor dining area is set at a significantly lower level than the adjoining residential	
area.	property at 113 Pacific Drive. The current	
	boundary treatment is a retaining wall	
	approximately 2m high with Colorbond fence	
	above. From the outdoor dining area, only the	
	upper floor balcony on the western elevation of	
	the neighbouring building is visible. The	
	separation distance between the balconies and	
	the outdoor dining area is approximately 18m at	
	the closest point. In an urban context, 12m	
	separation is generally considered adequate to	
	maintain privacy.	

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Submission Issue/Summary	Planning Comment/Response
The owner has installed an aviary at the rear of the castle building. The birds kept in the aviary have caused noise impacts in the past and will be a public health problem for the café.	The Applicant has also established landscaping between the outdoor dining area and the neighbouring property that would further protect privacy of residents and café patrons. If the development is granted consent, the keeping of birds would not be permitted in proximity to the food premises. The recommended conditions include a requirement for a final inspection by Council's Environmental Health Officer prior to the issue of an Occupation Certificate. This would provide the opportunity to confirm that the aviary is no longer present.
The land is subject to flooding.	Flooding impacts have been considered in accordance with Clause 7.3 of the LEP.
Access to the site should not be permitted through E2 zoned land.	Access to the development is proposed via a dedicated (but unformed) section of Wandella Drive, which is located within the E2 zone. Roads are permitted with consent in the E2 zone and the proposal has been demonstrated to be consistent with the zone objectives. The site has alternative access via a battleaxe handle to Parklands Close. However, this is not considered to be feasible as there is insufficient width to safely accommodate two-way traffic flow. The access handle is also zoned R1 General Residential and access for the purpose of many of the forms of development permitted in the RE2 part of the site would be prohibited. On this basis, it is considered reasonable to permit access via the E2 zoned land in Wandella Drive.
Proposal will devalue nearby properties.	NSW Land and Environment Court case law has established that this is not a relevant planning consideration.
The proposed carpark is located too close to the rear boundary of adjoining residential property. Will result in adverse impacts in relation to lighting, noise, and exhaust fumes.	A detailed acoustic assessment has been submitted, which demonstrates that the proposal will operate with acceptable noise levels determined in accordance with the Noise Policy for Industry. Conditions have been recommended to ensure that all external lighting is installed in accordance with Australian Standards, and that no light is directed towards the vegetation to the west.
	Having regard to the size and location of the car park relative to the adjoining residential uses, it is not considered that exhaust fumes from

Submission Issue/Summary Planning Comment/Response			
,	vehicles would result in any unacceptable air		
	quality impacts.		
Oppose the tree removal	It is not possible to provide access and car		
proposed for road access and	parking in a manner that would retain all existing		
the parking area.	vegetation on the site.		
	The tree removed has been eccessed in		
	The tree removal has been assessed in accordance with the provisions of the		
	Biodiversity Conservation Act 2016, SEPP 44,		
	and Council's Development Control Plan 2013.		
	Impacts on the most significant vegetation on		
	the site have been avoided or minimised and the		
	residuals impacts are proposed to be		
	appropriately offset. Replacement plantings are		
	required for koala food trees impacted by the		
	development, and nest boxes are required to		
	replace the habitat lost from the single hollow		
The employed an element elemina	bearing tree proposed to be removed.		
The application does not clarify what the proposed use of the	A condition has been recommended restricting the use of the first floor of the building to storage		
first floor of the building will be.	for the purpose of the café, and prohibiting its		
Concern that the owner will use	use for habitable purposes.		
the first floor as a residence.			
How will café visitors be	The access to Parklands Close is currently		
prevented from walking through	gated.		
the property and exiting via			
Parklands Close?			
How will neighbours be	Neighbours have the ability to negotiate an		
protected from people jumping over back fences?	appropriate boundary treatment with the property owner in accordance with the Dividing		
over back rences :	Fences Act 1991.		
How will the café reduce their	The development includes facilities for the		
environmental footprint and	storage and collection of waste consistent with		
manage waste?	Council's Draft Waste Minimisation and		
	Management Policy.		
Does the area need another	The viability of a proposed business is not a		
café, and will the business be viable?	relevant consideration in the assessment of a		
The required 10m APZ should	development application. The submitted ecological assessment make		
not remove any important trees	provision for retention of important habitat		
or habitat.	features within the APZ.		
Oppose the removal of a Koala	The amended proposal provides for retention of		
food tree for the car park.	the primary koala food tree (Tallowwood)		
Parking should be relocated to	located adjacent to the car park. It is noted that		
retain the tree.	8 'other browse species' would be impacted by		
	the development, which are proposed to be		
Concerned about future	appropriately offset. This is not part of the proposal and will be		
development for caravan park or	subject to a separate development application.		
mobile homes.			
Request for residents to have a	This request has been provided to the Applicant		
tour of the property to view the	for consideration.		
extent of tree removal.			

Submission Issue/Summary	Planning Comment/Response			
Request for ecologist to meet	This request has been provided to the Applican			
with local residents and hear	for consideration.			
reports of wildlife at the site.				
Some trees have already been	A separate tree removal permit was issued by			
removed without Council	Council in 2017. There is no other record of			
approval. What was the	investigations into unauthorised clearing that			
consequence?	have resulted in penalties or prosecution.			
What guarantee will nearby	Trees authorised for removal have been clearly			
residents have that further tree	identified on the application plans and in the			
removal is not carried out during	ecological assessment. The recommended			
construction work?	conditions of consent require survey and			
	identification of trees to be removed, supervision			
	of clearing by an ecologist, and certification that			
	the clearing has been carried out in accordance			
	with the conditions of consent.			
Has the State government been	The draft Koala Plan of Management (KPoM)			
consulted in relation to	has been referred to the NSW Department of			
protecting Koala habitat on the	Planning, Industry & Environment in accordance			
site?	with SEPP 44. The Department have approved			
	the KPoM.			
How does Council work with	Council does not currently have a policy for			
State government in acquiring	purchasing/acquiring koala habitat directly.			
koala habitat and protecting	However, as part of the planning for new urban			
littoral rainforest?	areas environmentally sensitive land is typically			
	required to be dedicated to Council as public			
	reserves.			
	Council has a good relationship with relevant			
	State agencies including the Biodiversity			
	Conservation Trust and provides advice in			
	relation to State Government land acquisitions.			
	Littoral rainforest is protected through the			
	provisions of State Environmental Planning			
	Policy (Coastal Management) 2018.			
How will Wrights Creek be	The proposal includes a bio-retention basin,			
protected from pollution and run	which will manage water quality in accordance			
off?	with Aus-Spec requirements. All stormwater			
	from the development will be piped to the basin			
	prior to discharge to Wrights Creek.			
What is the management plan	A summary of the Koala Plan of Management is			
for Koalas?	provided earlier in this report under State			
	Environmental Policy No 44 - Koala Habitat			
	Protection.			
How will the public be prevented	The application proposes a boom gate at the			
from using the site as a through	northern end of the car park to prevent vehicles			
road between Wandella Avenue	accessing Parklands Close. Unauthorised			
and Parklands Close or	access to the site by persons not visiting the			
accessing the site if they are not	café would need to be managed by the café			
visiting the cafe?	operator and/or property owner.			
How is overflow parking	Overflow parking would be accommodated in			
proposed to be catered for?	nearby public roads. It is noted that the			
	application proposes parking in excess of the			

Submission Issue/Summary	Planning Comment/Response		
	minimum requirements of the DCP and a degree		
	of overflow parking is able to be accommodate		
	within the property.		
Object to use of Parklands	The application has been amended to include a		
Close driveway as an exit.	boom gate at the northern end of the car park to		
	prevent vehicles accessing Parklands Close.		
The noise assessment relies on	The noise assessment has used EPA approved		
unqualified predictions and does	methods for noise modelling.		
not include any actual noise			
readings at the affected			
properties.			
The proposed development is	The relevant aims of the strategy that can be		
inconsistent with 3 of the 5 aims	influenced through the development assessment		
of the Port Macquarie-Hastings	process are:		
Koala Recovery Strategy 2018.	 Reduce road strike; 		
	 Reduce domestic dog strikes; 		
	Assist in managing developments in aspects		
	including design, habitat fragmentation and		
	fire management.		
	These aims are considered to be adequately		
	addressed in the submitted Koala Plan of		
	Management. Restrictions have been		
	recommended to reduce vehicle speeds, prohibit		
	domestic pets, and provide for protection and		
	offsetting of habitat.		
Many café customers are likely	Other than for local residents, it is not expected		
to use Karalee Parade as an	that Karalee Parade would be viewed as a		
alternative access and not just	convenient means of assess to the site. It is not		
Wandella Drive as noted in the	considered that there would be a significant		
traffic assessment. Karalee	increase in traffic on Karalee Parade or impacts		
Parade is not designed to	on the intersection with Shelly Beach Road.		
handle the extra traffic volumes.	The proposal has been amended to include a		
The proposal will make it more	painted roundabout treatment at the intersection		
dangerous to perform a U-turn at the intersection of Karalee	of Karalee Parade and Wandella Drive. This will		
Parade and Wandella Drive.	improve the safety of U-turns, as well as other		
	turning movements.		
Council should be looking to buy	This is a matter for broader consideration by		
the site.	Council and cannot be determined in the role as		
	consent authority for development.		
Limited street parking is	Noted. The proposal includes off street parking		
available in the area for overflow	in excess of the minimum requirements of the		
parking from the business.	DCP. This will provide for 6 overflow spaces		
	within the site, which is a greater extent than the		
	parking that would be available on the street for		
	a site with regular frontage to a public road.		
Access should be provided from	Access is not permissible from Parklands Close		
Parklands Close as it was for	due the R1 General Residential zoning of the		
the former Fantasy Glades.	access handle.		
If the hours proposed are	The proposed hours of operation have been		
6.00am to 6.00pm, staff and	amended to 7.00am to 6.00pm, 7 days.		
deliveries are likely to arrive	However, the acoustic assessment		

Submission Issue/Summary	Planning Comment/Response
outside these hours.	acknowledges that staff are likely to arrive in the hour prior to 7.00am to prepare for business. The acoustic assessment has considered the sleep disturbance criteria for the morning shoulder period (6.00am to 7.00am).
	A condition is recommended requiring all deliveries to the site, and any waste collection to be carried out during the operational hours of the business.
	A condition is also recommended restricting staff access to one hour prior to opening and one hour after closing.
Will residents be consulted in relation to any future requests to extend trading hours or change the use?	Any future applications will be notified in accordance with Port Macquarie-Hastings Council Community Participation Plan 2019.
Request for independent traffic assessment including use of pressure counters on Pacific Drive and at the Karalee Parade/Wandella Drive intersection over a more substantial period.	The traffic assessment has been reviewed by Council's Development Engineer, including a review of traffic data and previous traffic counts for the relevant streets. The assumptions and data used in the traffic assessment were considered to be satisfactory.
Even with the proposed Koala Plan of Management being implemented, the development would still increase the risk to the Koala population compared with the current situation.	This is true in the sense that the proposal includes clearing of vegetation in an area known to be used by Koalas. However, implementation of the Koala Plan of Management would result in significant improvements to the current risk to the existing Koala population in the following areas:
	 Decrease in risk of koalas being attacked by domestic pets. There are currently no controls on the keeping of domestic pets on the property. Removal of barbed wire fencing that currently poses a risk of injury/entanglement. Long term increase in food resources for koalas on the site. Other browse species proposed to be offset with primary food
Wandella Drive is very slippery when wet and vehicles often skid or spin their wheels using the road.	trees. The proposed access is located on the lower section of Wandella Drive where the grades can meet relevant engineering standards.
Limited sight distance for vehicles exiting the site and pedestrians using the boardwalk due to existing vegetation and topography.	The proposal has been amended to include diversion of the existing boardwalk/pedestrian path to the southern side of Wandella Drive and clear of the access road. This will appropriately manage conflict between vehicles associated with the development and pedestrians/cyclists using the connection to nearby residential areas.

Submission Issue/Summary	Planning Comment/Response	
Adverse impacts on water	The proposal includes a bio-retention basin and	
quality in Wrights Creek.	conditions have been recommended to ensure	
4	that discharge will meet the water quality targets	
	in Aus-Spec.	
The noise assessment has not	The access to Parklands Close has been	
accounted for traffic noise from	deleted from the proposal.	
the proposed		
emergency/maintenance access		
connecting to Parklands Close.		
The café is likely to be a family	The number of people employed is likely to be	
business and is unlikely to	the same, whether it is a family or otherwise.	
create substantial additional		
employment opportunities.		
The café should be prevented	Given the location and nature of the proposed	
from operating on public	café, it is expected that the peak periods for use	
holidays, or the hours further	will be weekends, holidays, and public holidays.	
restricted.	This is similar to the historical use of the land for	
	an amusement park.	
	While the site is at the interface to the R1	
	General Residential zone and adjoins residential	
	uses, the acoustic assessment has	
	demonstrated that the business can operate	
	within acceptable noise levels for the hours of	
	operation proposed. It is therefore considered	
	that there is not sufficient nexus to further	
	restrict the hours/days of operation.	
Noise impacts from patrons with	The Koala Plan of Management prohibits	
dogs.	patrons from having dogs on the premises.	
No controls to prevent children	Parents/carers will be responsible for	
from straying.	supervision of children in their care.	
Social impact study was carried	This survey related to the Social Impact	
out via Survey Monkey and the	Assessment for a separate development	
results have not been submitted.	application (DA2019 - 934.1) recently lodged for	
	the site. It is not applicable to the subject application.	
Concern that	A condition has been recommended restricting	
emergency/maintenance access	vehicular access (including service vehicles to	
will still be used by service	Wandella Drive only).	
vehicles, even with the boom		
gate in place.		
Impacts of bio-retention basin	The minor encroachment of the basin into the	
on flood fringe area, and	flood fringe area has been considered	
potential failure of the basin in	acceptable in term of flood impacts. The bank of	
major flood events.	the basin will be above the relevant flood level	
	and the submitted plans show the headwall	
	discharging at a location above the flood waters	
	in a 1:100 event. Detailed design will be required	
	to be submitted prior to the issue of a	
	Construction Certificate.	
Loss of hollow bearing tree for	The loss of the hollow bearing tree is required to	
detention basin is unacceptable	be offset with nest boxes in accordance with the	
and will result in loss of shelter,	DCP requirements.	

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Submission Issue/Summary	Planning Comment/Response
roosting, and nesting for	
threatened species.	
Appears to remain an intention clear the E2 land in the northern part of the site. Object to clearing of any trees in this area as it is a key koala corridor.	No clearing is proposed in the E2 zoned part of the site. The only works in the E2 zone are within the Wandella Drive road reserve for the proposed new access.
Potential impacts of inter- allotment drainage along eastern boundary have not been considered in the application. Drainage is not shown in the Stormwater Management Plan.	The recommended conditions include a requirement for provision of inter-allotment drainage for the properties east of the café and associated car park. The required 1.5m wide easement could be accommodated adjacent to the boundary without any additional tree removal.
The access arrangement prioritises vehicle traffic to the development at the expense of pedestrians and cyclists currently using the boardwalk.	The recommended access arrangements are considered to achieve a satisfactory balance between vehicular and pedestrian/cyclist safety.
The proposed alterations to the boardwalk/footpath will push pedestrians onto the wrong side of the Wandella Drive. Most pedestrians using this path head towards Harry's Lookout and cross Pacific Drive at the northern side of the Wandella Drive intersection. Moving the boardwalk/footpath to the southern side of Wandella Drive will create additional unsafe road crossings.	Given the traffic volumes in Wandella Drive, it is considered that there are a number of safe locations to cross the street. The proposed painted medians on the approach to the Wandella Drive/Karalee Parade would also act as informal pedestrian refuges.
The proposed roundabout treatment at the intersection of Karalee Parade and Wandella Drive will create a burn-out spot.	There is no evidence that roundabouts exacerbate this type of behaviour.
The proposed 10km/h speed limit is unlikely to be adhered to due to the steep slope.	The part of Wandella Drive west of Karalee Parade is not significantly steep. The proposed 10km/h speed limit is consistent with the recommendations of the Koala Plan of Management.
The proposed roundabout treatment at the intersection of Karalee Parade and Wandella Drive will increase vehicle noise.	The proposed roundabout is not expected to alter the extent of acceleration and deceleration compared with the existing T-intersection. Having regard to the volume of traffic in the street, it is not expected that the changes to the intersection configuration would result in unacceptable traffic noise in the locality. For context, State Environmental Planning Policy (Infrastructure) 2007 only requires consideration of road traffic noise impacts for classified roads and roads having traffic volumes

Submission Issue/Summary	/ Planning Comment/Response		
	of 40,000 vehicles per day or greater.		
The development will increase bushfire risk to residents near the Calwalla reserve due to smoking, cars, and machinery.	The development is not considered to create any greater risk than existing uses adjoining th reserve. Residential uses adjoining a reserve can include all these activities and smoking is possible on the public boardwalk through the reserve.		
	The development proposes paved surfaces to the outdoor dining area and a sealed road is proposed to be constructed between the castle building and the reserve, which would create a buffer to the spread of fire.		
Council has a duty of care regarding business competition.	The NSW Land and Environment Court has established that competition impacts are not able to be considered in the assessment of a development application.		
Who will be responsible for maintenance of the new access from Wandella Drive - the owner or ratepayers?	The proposal includes some modifications to the public road at the end of Wandella Drive, including realignment of the boardwalk/footpath, kerb and gutter construction, and roundabout treatment. Following the defects liability period, these will become Council assets and Council will be responsible for future maintenance.		
	The proposed driveway off the end of Wandella Drive will be private infrastructure maintained by the property owner. Conditions have been recommended to ensure that the driveway is constructed in a manner that clearly defines the public and private assets.		
Lighting of the car park will affect amenity of neighbours.	A condition is recommended requiring external lighting to be switched off between 7.00pm and 6.00am.		
	All external lighting will also be required to comply with AS 4282 - control of the obtrusive effects of external lighting. With the hours of operation proposed, lighting of the car park would only be required for short periods (mostly during winter) and is not expected to significantly affect the amenity of residential neighbours.		
The repositioning of the bio- retention basin will result in swamp-like smells and will become a mosquito breeding area.	The bio-retention basin operates as a sand filter and allows for the infiltration of water. The basin will not hold water outside periods of heavy rainfall, and is not expected to result in the type of impacts suggested.		
Illuminated signage will further impact neighbouring properties.	The application does not include any details of signage, and any future proposal for illuminated signage will be subject to a separate application. The signage would need to be assessed in accordance with the provisions of State Environmental Planning Policy No. 64 -		

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Submission Issue/Summary	Planning Comment/Response		
	Advertising and Signage and Council's		
	Development Control Plan. As the proposed		
	hours of operation are predominantly during		
	daylight hours, it would be difficult to justify that		
	illuminated signage is necessary.		
The development should be	The proposal has been assessed as a		
required to meet the bushfire	commercial use. A condition has been		
requirements applicable to	recommended prohibiting the use of the building		
residential use as the owner is	for residential/habitable purposes.		
occupying the first floor of the			
castle building.			
The proposal is inconsistent with	See comment earlier under LEP regarding		
zone objectives for the RE2	consistency with the relevant zone objectives.		
zone.			
(e) The Public Interest			

(e) The Public Interest

The proposed development satisfies relevant planning controls and will not adversely 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 in accordance with Section 7.12 of the Environmental Planning and Assessment Act 1979 towards the provision, extension or augmentation of public amenities or public services (or towards recouping the cost of their provision, extension or augmentation).
- A copy of the contributions estimate is included as **Attachment 3**.

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.

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

AGENDA

- 1. DA2019 277.1 Recommended Conditions
- 24. DA2019 277.1 Plans
- 3. DA2019 277.1 Contributions Estimate
- 4. DA2019 277.1 Koala Plan of Management Rev 1.2



FOR USE BY PLANNERS/SURVEYORS TO PREPARE LIST OF PROPOSED CONDITIONS - 2011

NOTE: THESE ARE DRAFT ONLY

DA NO: 2019/277 DATE: 7/04/2020

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
Site Plans	5252 0002 & 0004 Rev B	Land Dynamics Australia	25 October 2019
Landscape Plan	5252 0005 Rev B	Land Dynamics Australia	9 December 2019
Tree Removal Plan	5252 0003 Rev C	Land Dynamics Australia	9 December 2019
Floor Plans and Elevations	D4041 Sheet 4, 5 & 6 Issue D	Collins W Collins Pty Ltd	17 August 2019
Ecological Impact Assessment	Rev 2.0	Biodiversity Australia	9 December 2019
Koala Plan of Management	Rev 1.2	Biodiversity Australia	30 January 2020
Noise Report	M19972.02 Rev A	Matrix Thornton	10 July 2019
BCA Assessment & Fire Safety Upgrading Report	-	David Pensini Building Certification and Environmental Services	March 2019
Bushfire Assessment	-	David Pensini Building Certification and Environmental Services	March 2019

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 building or subdivision work shall commence until a Construction Certificate or Subdivision Works Certificate has been issued and the applicant has notified Council of:
 - a. the appointment of a Principal Certifying Authority; and
 - b. 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:
 - 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;
 - Building waste is to be managed via appropriate receptacles into separate waste streams;
 - 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.

- (5) (A011) The design and construction of all public infrastructure works shall be in accordance with Council's adopted AUSPEC Specifications.
- (6) (A012) This consent does not provide for staging of the development. Any staging will require a separate consent or an amendment to this consent.
- (7) (A014) This approval does not provide any indemnity to the owner or applicant under the Disability Discrimination Act 1992 with respect to the provision of access and facilities for people with disabilities.
- (8) (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.
- (9) (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.
- (10) (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,
- 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.

- (11) (A059) Commercial food preparation activities which generate greasy/oily types of liquid trade waste are required to install an approved grease arrestor pit with a minimum 1000 litre capacity. Installation is to be performed by a licenced plumber and drainer, at Council's direction and to Council's satisfaction. Further advice or assistance can be given by Council's Trade Waste Officer.
- (12) (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.
- (13) (A069) Trees on the subject land shown red on the approved Tree Removal Plan are permitted to be removed. All other trees shall be retained.
- (14) (A195) The provision, at no cost to Council, of a 1.5m wide concrete foot paving connecting the existing footpath to Wandella Drive clear of the proposed driveway to the development. Design details shall be provided as part of the Roads Act Application in accordance with AUSPEC and Council Standard drawing ASD100 Series. The design plans must be approved by Council pursuant to Section 138 of the Roads Act.
- (15) (A196) Roadworks on Wandella Drive, at the full cost of the proponent, shall include the following in accordance with Aus-Spec:
 - A painted roundabout at the intersection of Karalee Parade and Wandella Drive, including painted medians and signage
 - A concrete threshold to the west of the painted roundabout delineating the entry to the development

• Kerb and gutter to the west of the proposed roundabout, and associated pavement and stormwater works.

Details of the construction are to be provided with the application for approval pursuant to Section 138 of the Roads Act.

- (16) (A197) Interallotment stormwater drainage shall be provided to service all of the existing lots located on the eastern side of the site between Wandella Drive and the northern extent of the carpark as a minimum. Each existing lot shall be provided with a junction to drain stormwater via this system. Details of the construction are to be provided with the application for a Construction Certificate or Section 68 approval.
- (17) (A198) The development shall be carried out in accordance with the approved Koala Plan of Management.
- (18) (A199) The development shall implement the recommendations in Section 12 of the approved Ecological Assessment.
- (19) (A200) Upgrade works are to be undertaken in accordance with the NCC/ BCA Compliance & Fire Safety Upgrading Report by David Pensini dated March 2019.

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. Road works along the frontage of the development.
 - 2. Public parking areas including;
 - a. Driveways and access aisles;
 - b. Parking bays
 - Delivery vehicle service bays & turning areas in accordance with AS 2890.
 - 3. Sewerage reticulation.
 - 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.
 - 5. Stormwater systems.
 - 6. Erosion & Sedimentation controls.
 - 7. Traffic management control plan.

- Detailed driveway profile in accordance with Australian Standard 2890, AUSPEC D1, and ASD202, Port Macquarie-Hastings Council current version.
- 9. Provision of a 1.5m (unless varied in writing by Council) concrete footpath along the southern side of Wandella Drive connecting to the existing footpath/boardwalk.
- 10. Detailed roundabout layout at the junction of Wandella Drive and Karalee Parade in accordance with the current version of the AUSTROADS guidelines for Intersection design, giving particular attention to sight distance.
- (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
- Footway and gutter crossing
- Functional vehicular access
- (4) (B010) Payment to Council, prior to the issue of the Construction Certificate of the Section 7.12 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 Council Section 94A Levy Contributions Plan 2007

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) (B012) To ensure that adequate provision is made for the cleanliness and maintenance of all food preparation areas, all work involving construction or fitting out of the premises shall comply with the requirements of Australian Standard 4674-2004 – "Design, Construction and Fit-Out of Food Premises", Food Act 2003, the provisions of the Food Safety Standards Code (Australia) and the conditions of development consent. Details demonstrating compliance are to be submitted to the Principal Certifying Authority prior to release of the Construction Certificate.
- (7) (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, Australian Rainfall and Runoff 2019, the requirements of Relevant Australian Standards and shall make provision for the following:
 - a) The design requires the provision of interallotment drainage in accordance with AUSPEC D5
 - b) 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 1% AEP event. Summary calculations demonstrating compliance with the above requirements for the median storm in the critical duration for the design AEP shall be submitted (20%, 5% & 1% AEP at minimum) Alternative is to submit an electronic model in DRAINS format for electronic review. Note that pre development discharge shall be calculated assuming that the site is a 'greenfield' development site as per AUSPEC requirements.
 - c) The design shall include water quality controls designed to achieve the targets specified within AUSPEC D7.
 - d) 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.
- (8) (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.
- (9) (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.
- (10) (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.
- (11) (B085) The location of any electricity substations are to be clearly illustrated on the Construction Certificate plans. All substations are to remain on private property unless otherwise agreed to by Port Macquarie-Hastings Council.
- (12) (B195) Council records indicate that the development site has an existing metered water service from the 100mm AC water main on the opposite side of the Parklands Close.

A hydraulic strategy and plans are required from a hydraulic consultant for the whole of the development on the site stage by stage. Water service sizing is then to be determined by the hydraulic consultant to suit the proposed domestic and commercial components of the development, as well as

addressing fire service requirements to AS 2419 and backflow protection requirements. Details are to be shown on the engineering plans.

- (13) (B196) Prior to the issue of a Construction Certificate a Vegetation Management Plan (VMP) shall be submitted to and approved by Council. The VMP shall include certification from a bushfire consultant that any offset plantings will not increase bushfire risk to neighbouring properties.
- (14) (B197) Prior to the issue of a Construction Certificate or removal of any vegetation, a suitably qualified ecological consultant shall be engaged to install one (1) small glider/phascogale nest box, and one (1) parrot nest box.
- (15) (B198) Retaining walls within the Inner Protection Area and the timber decking noted on the internal access road shall be amended to be constructed of noncombustible materials. Details shall be submitted for the approval of the Principal Certifying Authority prior to the issue of a Construction 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) (C008) No access through the reserve shall be allowed without first obtaining written approval from Council's Parks and Gardens Manager. No clearing or damage to any vegetation on the reserve is permitted. No spoil, fill, waste liquids or solid materials shall be stockpiled on or allowed to move beyond the fence line for any period on the adjoining reserve during or after the development. In the event of accidental damage, the site must be revegetated to the satisfaction of Council. Such approval would need to be undertaken in accordance with Council Policy.
- (3) (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.
- (4) (C015) Tree protection fencing, compliant with AS 4970/2009 Protection of trees on development sites must be provided for all retained trees in proximity works associated with the development. 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 traffic management works
 - b. when trenches are open, stormwater/water/sewer pipes and conduits jointed and prior to backfilling;
 - c. before pouring of kerb and gutter;

- d. during construction of sewer infrastructure;
- e. prior to sealing and laying of pavement surface course.

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) (D033) Should any Aboriginal objects be discovered in any areas of the site then all excavation or disturbance to the area is to stop immediately and the National Parks and Wildlife Service is to be informed in accordance with Section 91 of the National Parks and Wildlife Act 1974. Subject to an assessment of the extent, integrity and significance of any exposed objects, applications under either Section 87 or Section 90 of the National Parks and Wildlife Act 1974 may be required before work resumes.
- (5) (D040) Wastes including vegetation and construction waste shall not be disposed of by burning.
- (6) (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.
- (7) (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.
- (8) (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.
- (9) (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

- (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 public infrastructure works associated with developments, a formal written application is to be submitted to Council specifying detail of works and bond amount.

- (3) (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).
- (4) (E015) Prior to occupation or issue of the Occupation Certificate, details of compliance with the bushfire risk assessment is to be provided to the Principal Certifying Authority.
- (5) (E016) Prior to occupation or the issue of the Occupation Certificate (or Part Occupation Certificate) the owner of the building must cause the Principal Certifying Authority to be given a fire safety certificate (or interim fire safety certificate in the case of a building or part of a building occupied before completion) in accordance with Clause 153 of the Environmental Planning and Assessment Regulation 2000 for each measure listed in the schedule. The certificate must only be in the form specified by Clause 174 of the Regulation. A copy of the certificate 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.
- (6) (E024) Occupation of the premises shall not occur until a registration application has been submitted to Council's Environmental Health Unit for the food premises.
- (7) (E025) Prior to occupation or the issue of an Occupation Certificate, provide a certificate from the installer certifying that the mechanical ventilation system meets the requirements of AS 1668 Parts 1 & 2. The certificate must include:
 - a. Inspection, testing and commissioning details
 - b. Date of inspection, testing and commissioning
 - c. The name and address of the individual/company, who carried out the test
 - d. Statement that the service has been designed, installed and is capable of operating to AS 1668.
- (8) (E027) A final site inspection relating to the works carried out on the premises shall be arranged by the applicant and shall be undertaken by Council's Environmental Health Officer.
- (9) (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.
- (10) (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 customer parking is available on-site.
- (11) (E034) Prior to occupation or the issuing of the 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.
- (12) (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.
- (13) (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 Local

Government Act (s68) application with evidence of registration of the easement with the Land Titles Office provided to Council prior to issue of the s68 Certificate of Completion.

- (14) (E039) An appropriately qualified and practising consultant is required to certify the following:
 - a. all drainage lines have been located within the respective easements, and
 - b. any other drainage structures are located in accordance with the Construction Certificate.
 - c. all stormwater has been directed to a Council approved drainage system
 - d. all conditions of consent/ construction certificate approval have been complied with.
 - e. Any on site detention system (if applicable) will function hydraulically in accordance with the approved Construction Certificate.
- (15) (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.

(16) (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.

(17) (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.

(18) (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.

- (19) (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.
- (20) (E053) All works relating to public infrastructure shall be certified by a practicing Civil Engineer or Registered Surveyor as compliant with the

requirements of AUSPEC prior to issue of Occupation Certificate or release of the security bond, whichever is to occur first.

- (21) (E056) A Certificate of Compliance under the provisions of Section 307 of the Water Management Act must be obtained prior to the issue of an Occupation Certificate.
- (22) (E061) Landscaped areas being completed prior to occupation or issue of the Occupation Certificate. The 'mass planted landscape beds' between the loading area and the eastern boundary shall include plantings with minimum height of 3m and dense foliage to visually screen the loading and garbage storage areas.
- (23) (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.
- (24) (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
- (25) (E072) Lodgement of a security deposit with Council upon practical completion of the public infrastructure works.
- (26) (E195) Prior to the issue of an Occupation Certificate, certification shall be provided to the Principal Certifying Authority from a suitably qualitied lighting consultant that all exterior lighting on the site has been designed and installed in accordance with AS 4282 control of the obtrusive effects of outdoor lighting.
- (27) (E196) Prior to the issue of an Occupation Certificate, all shipping containers shall be removed from the premises (unless separate development consent has been obtained for these items).
- (28) (E197) Prior to the issue of an Occupation Certificate, the existing wood heater shall be removed from the building.
- (29) (E198) Prior to the issue of an Occupation Certificate, certification shall be provided to the Principal Certifying Authority from a suitably qualified ecological consultant that the relevant provisions of the approved Koala Plan of Management have been implemented.
- (30) (E199) Prior to the issue of an Occupation Certificate, certification shall be provided from a bushfire consultant that any offset plantings adjacent to the eastern boundary meet the specifications for an inner protection area and will not increase bushfire risk to adjoining properties.
- (31) (E200) Prior to the issue of an Occupation Certificate, all fire safety upgrades shall be completed in accordance with the approved BCA Assessment & Fire Safety Upgrading Report.

- (32) (E201) Prior to the issue of an Occupation Certificate, lighting within the stairwell shall be upgraded as required to ensure adequate illumination of the area.
- (33) (E202) Prior to the issue of an Occupation Certificate, the upper floor level to be used for storage shall be inspected and assessed by a structural engineer to determine a safe loading capacity and signage is to be placed within the area to that effect.

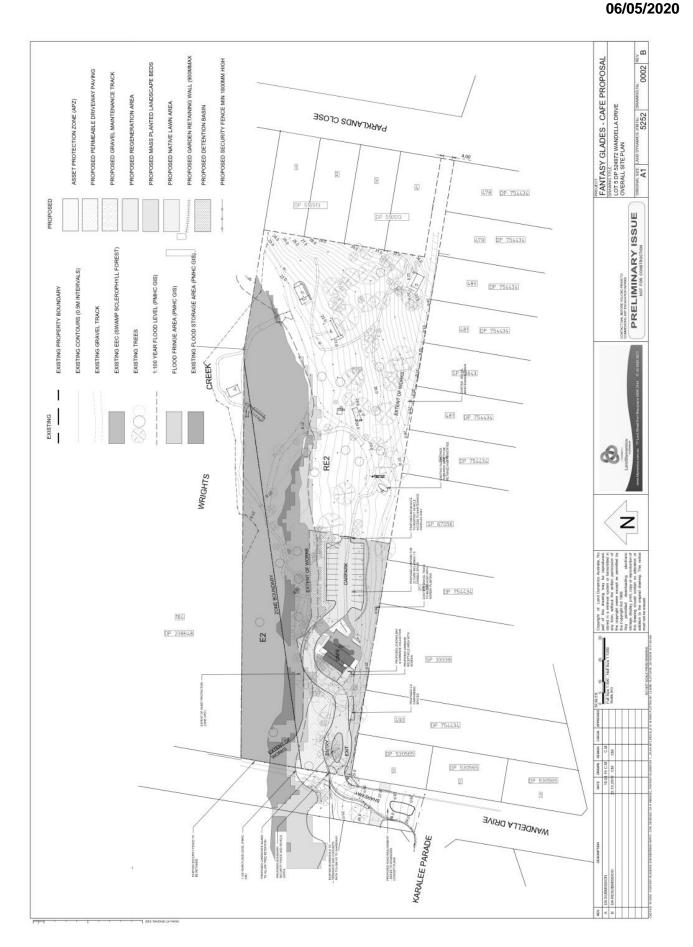
F - OCCUPATION OF THE SITE

- (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 minimum of 23 spaces are to be provided onsite.
- (2) (F002) The first floor of the castle building is to be used for storage associated with the café only, and shall not to be used for habitable purposes.
- (3) (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.
- (4) (F006) The basin of the outflow control pit and the debris screen must be cleaned of debris and sediment on a regular basis by the owner.
- (5) (F009) All new and existing essential fire safety measures shall be maintained in working condition at all times.
- (6) (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.
- (7) (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.
- (8) (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.
- (9) (F025) Hours of operation of the development are restricted to the following hours:
 - 7.00am to 6.00pm Mondays to Sundays.

All garbage collection and deliveries shall be carried out within the approved operational hours. Staff are permitted to arrive/leave up to one (1) hour before/after the approved business hours.

- (10) (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 control of the obtrusive effects of outdoor lighting. No flashing, moving or intermittent lighting is permitted on the site.
- (11) (F195) External lighting is to be switched off between 7.00pm and 6.00am.

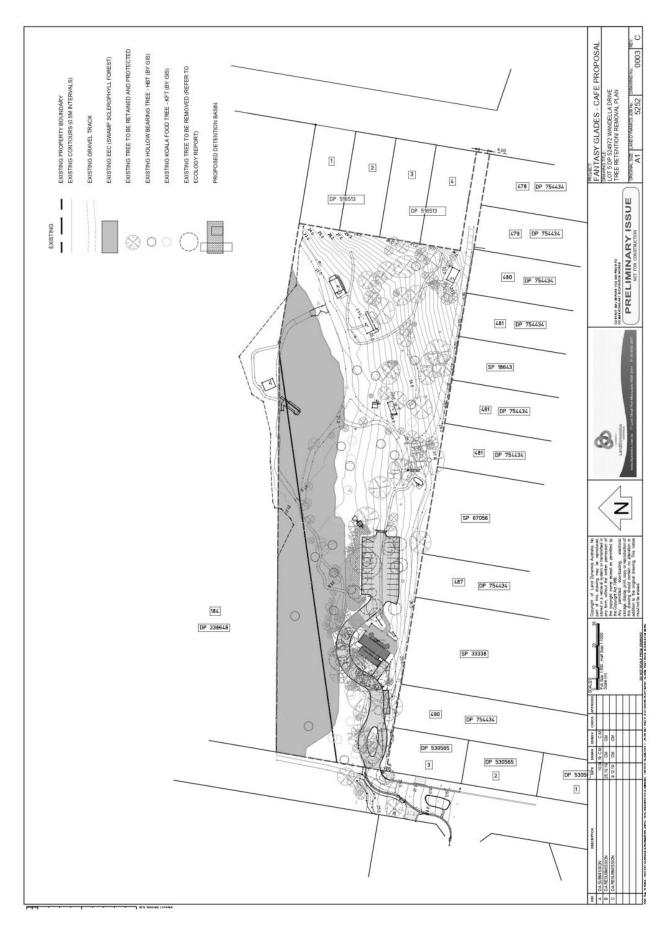
- (12) (F196) All vehicles are to enter and exit the premises via Wandella Drive. No access via Parklands Close is permitted and no construction/improvements to access tracks between the car park and Parklands Close shall be carried out.
- (13) (F197) No domestic pets shall be kept or brought onto the site. Signage shall be displayed in a prominent location advising café patrons that pets are not permitted.
- (14) (F198) Food waste shall be stored in a sealed and locked container in accordance with the approved Koala Plan of Management.

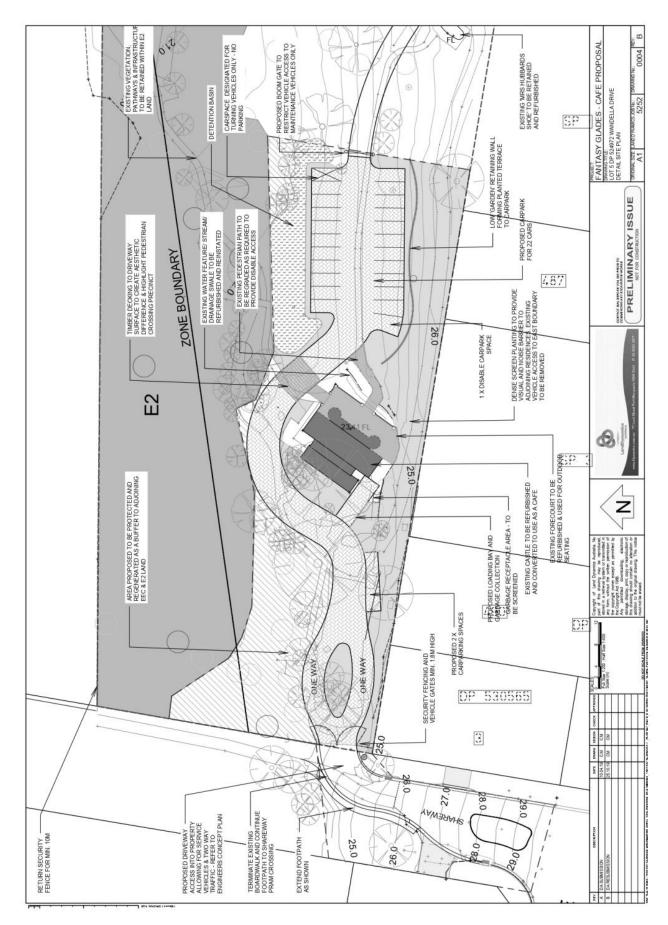


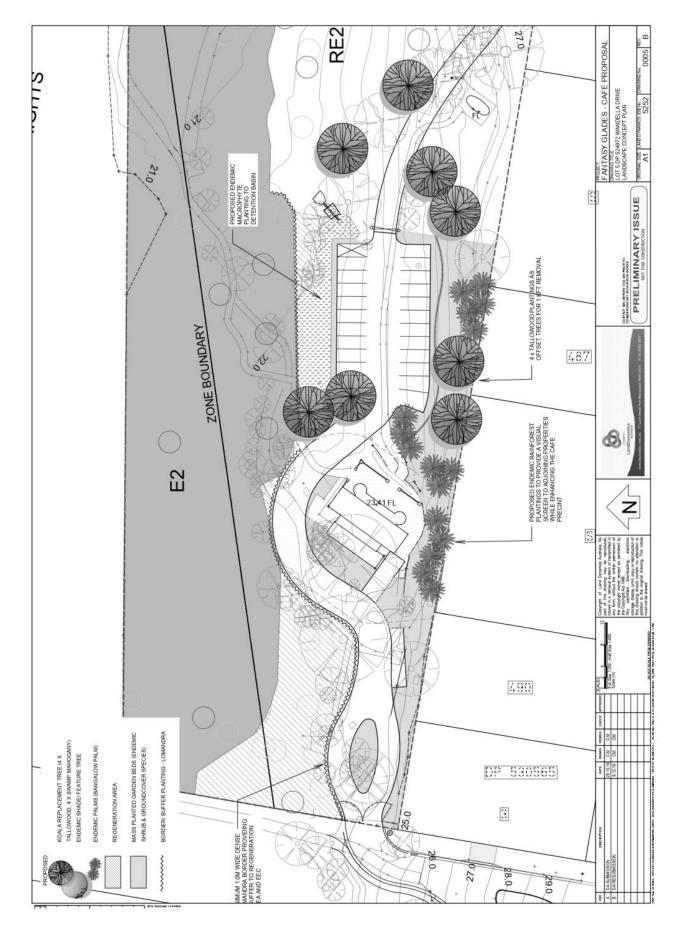
Item 09 Attachment 2

DEVELOPMENT ASSESSMENT PANEL

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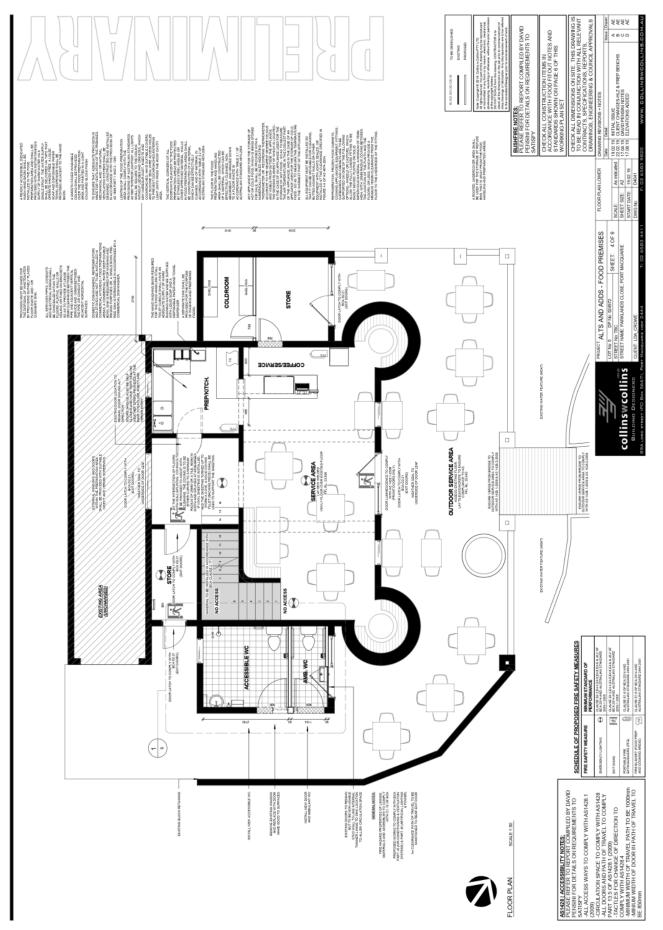


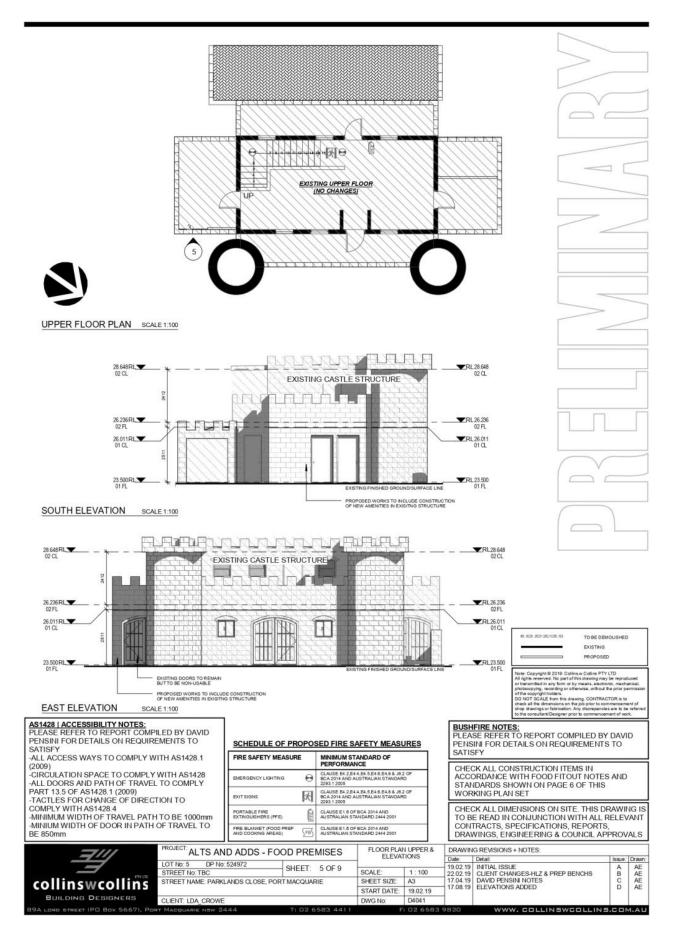




ATTACHMENT

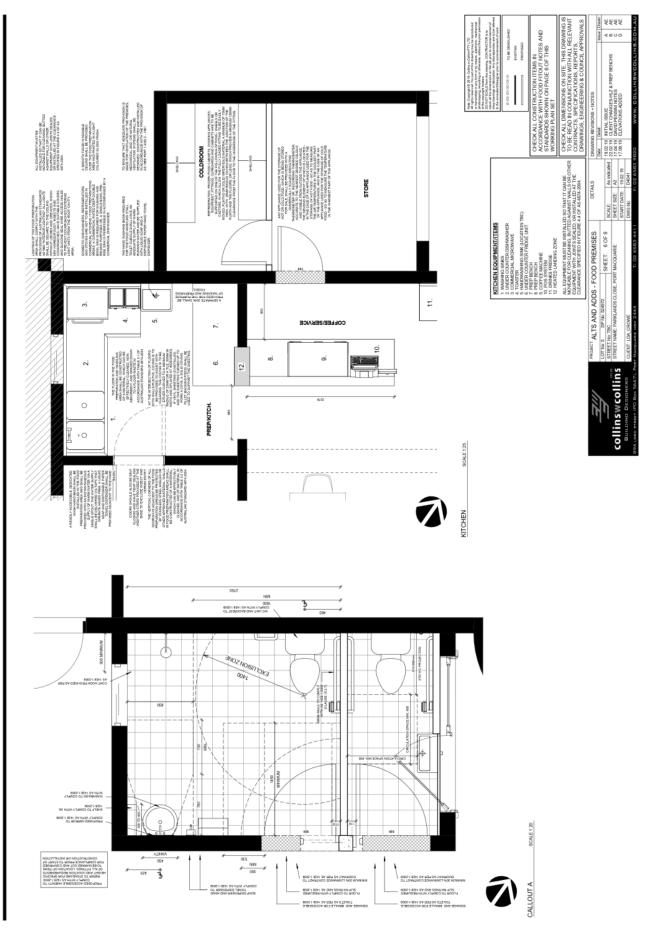
DEVELOPMENT ASSESSMENT PANEL 06/05/2020



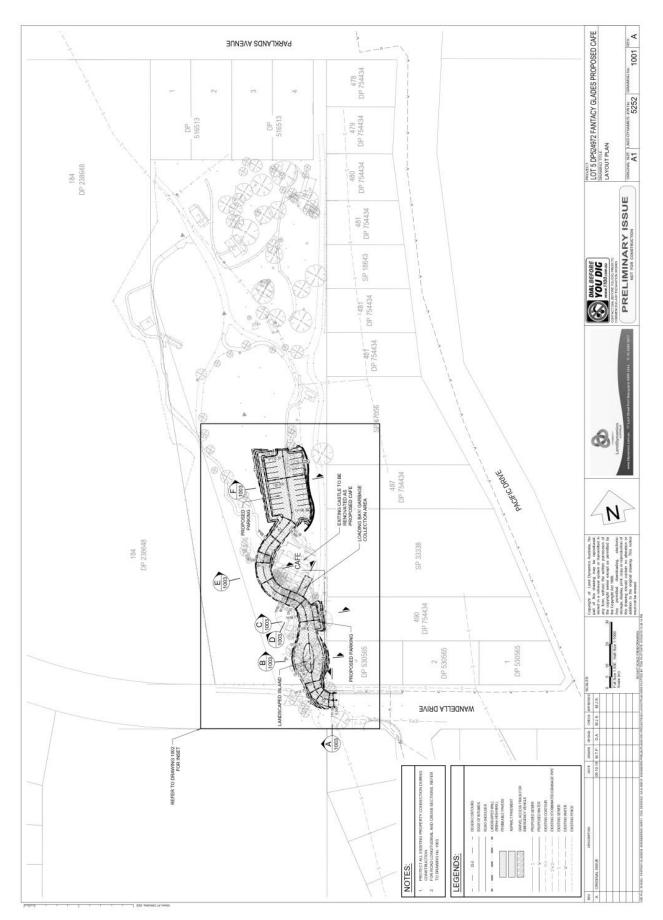


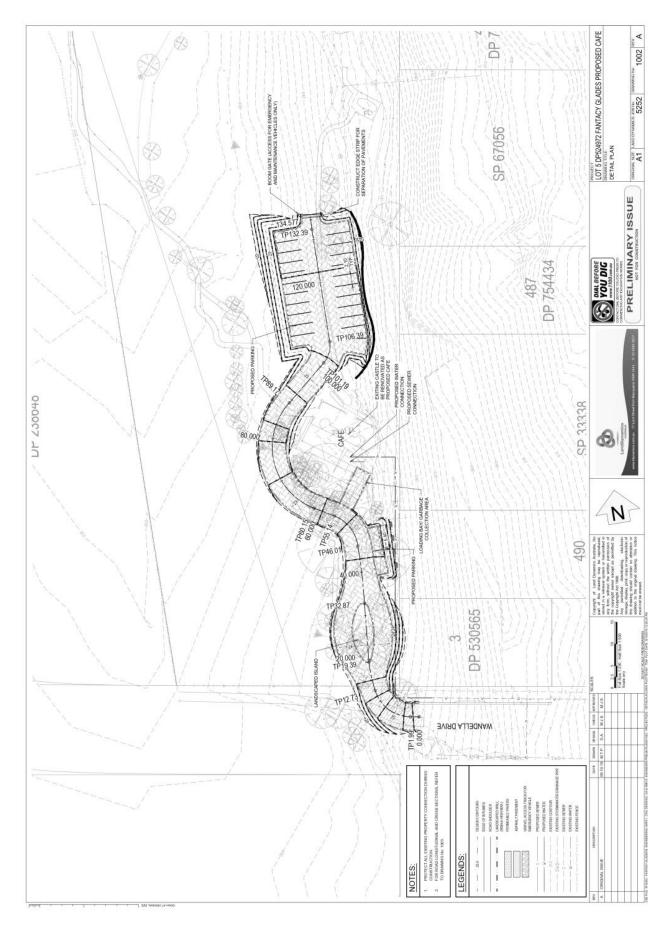
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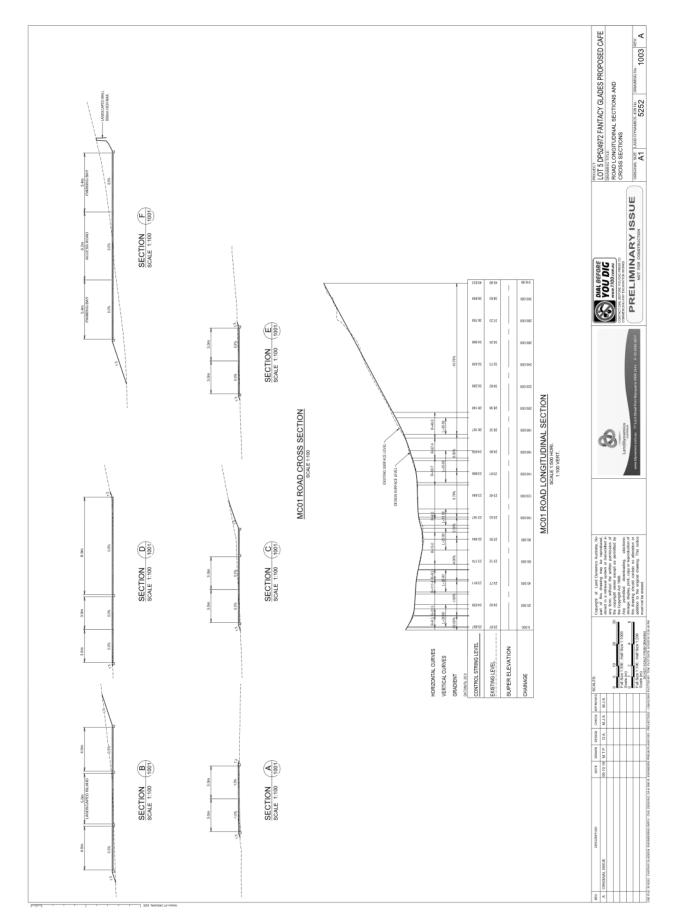
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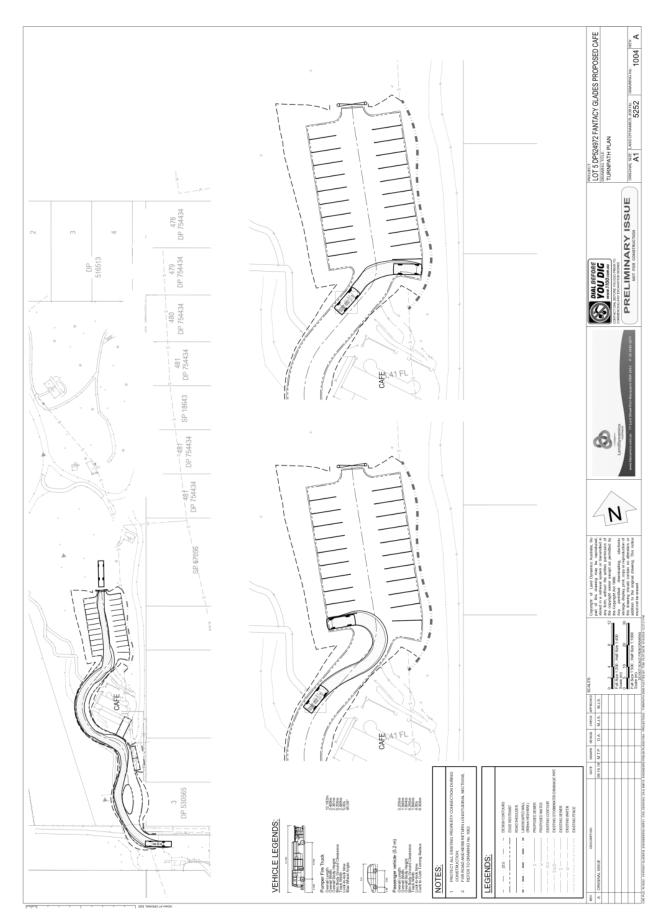


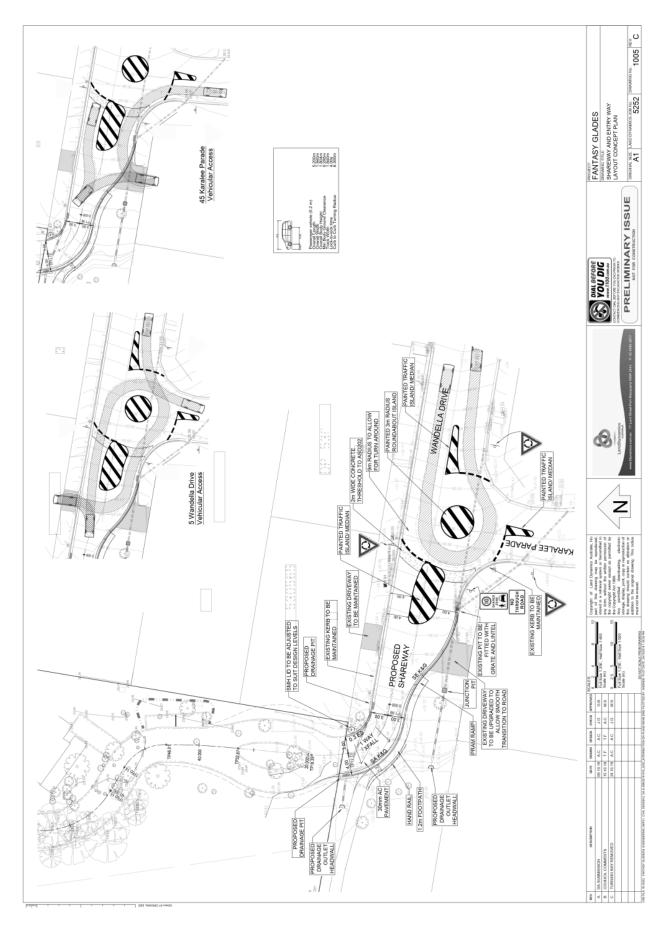
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Developer Charges - Estimate

	Land Dynamics Australia Parklands Close, Port Macquarie
Lot & Dp:	Lot(s):5,DP(s):524972
Development:	Café



	Levy Area	Units		Cost		Estimate
1	Water Supply	0.612	ş	\$10,296.00	Per ET	\$6,301.10
2	Sewerage Scheme Port Macquarie	0.612		\$3,906.00	Per ET	\$2,390.40
3	N/A					
4	N/A					
5	N/A					
6	N/A					
7	N/A	1				
8	N/A					
9	N/A	1				
10) N/A					
11	N/A	1				
12	? N/A		4	Pı	ITC	oses
13	N/A N/A Not for Paym S94A Lev Applicable to Consents	em	F			
14	S94A Lev – Application to Consents approved after 2/12/07	0.50%	\$	121,979		\$609.00
15	Admin General Levy - Applicable to Consents approved after 11/2/03	Cont	tributi	ion Not Appli	cable	
16		1				
17						
18	·					
	Total Amount of Estimate (Not for Payment Purposes)					\$9,300.50

DATE OF ESTIMATE:

14-Apr-2020

Estimate Prepared By Chris Gardiner

This is an ESTIMATE ONLY - NOT for Payment Purposes

namics Australia, Parklands Close, Port Macquarie, 14-Apr-2020.xls

PORT MACQUARIE-HASTINGS COUNCIL



Koala Plan of Management:

Project:

Proposed Development on Lot 5 DP 524972, Port Macquarie

Client:

Jeff Crowe C/- Land Dynamics

January 2020

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List of Abbreviations

ANZECC	Australian and New Zealand Environment and Conservation Council
APZ	Asset Protection Zone
BC Act	Biodiversity Conservation Act
CBD	Central Business District
СКРоМ	Comprehensive Koala Plan of Management
DCP	Development Control Plan
DECC	Department of Environment and Climate Change
DoE	Department of Environment
EPBC Act	Environment Protection and Biodiversity Conservation Act
Govt	Government
KFT	Koala Food Tree
kmph	Kilometres per hour
КРоМ	Koala Plan of Management
LGA	Local Government Area
MNES	Matter of National Environmental Significance
NSW	New South Wales
OEH	Office of Environment and Heritage
PIR	Passive Infrared Camera
РМНС	Port Macquarie-Hastings Council
RFS	Royal Fire Service
SAT	Spot Assessment Technique
SEPP 44	State Environmental Protection Policy No. 44

1



1.0 Introduction

Biodiversity Australia Pty Ltd was engaged by Land Dynamics to prepare a Koala Plan of Management for proposed Café development at 40 Parklands Close, Port Macquarie.

Ecological assessment undertaken by FloraFauna Consulting (2017), JB Enviro (2018) and Biodiversity Australia (2019) found that the site is part of a wider area of Core Koala Habitat. Consequently, a Koala Plan of Management (KPoM) is required to accompany the Development Application (DA).

2.0 Background Information

2.1. Key Definitions

The subject site and property is located at 40 Parklands Close, Port Macquarie and is formally described as Lot 5 DP 524972. The study area is land within 100 m of the site, and the locality is land within a 10 km radius of the site.

2.2. Site Location and Adjoining Landuses

The site is comprised of a 1.6 ha lot that was formerly in use as Fantasy Glades Theme Park. Since its closure in 2002 it has been maintained as private land. Although the theme park is longer in operation, much of the infrastructure from this remains on the site. Several buildings including the former Cinderella's Castle and Snow White's Cottage remain in place, along with vehicle access roads, footpaths and timbered bridges.

The site is located on Parklands Close about 2.7 km southeast of the Port Macquarie CBD (Figure 1). Calwalla Reserve forms the western boundary of the site where. Wandella Drive occurs along the southern boundary and Parklands Close along a section of the northern boundary. The remaining northern and eastern boundaries are bordered by residential properties.

2.3. Proposed Development

The proposed development is for the conversation of an existing castle in to a café (Photo 1-2). This is proposed to include an access road, car park, bio-retention basin and an Asset Protection Zone (APZ). The development plan for the site is shown in Figure 2.

The proposed development footprint covers an area of 0.32 ha inclusive of the existing castle and cleared area in the southeast of the subject site. Approximately 0.28 ha of vegetation will require removal, which comprises areas of modified wet sclerophyll and swamp forest. No primary preferred Koala food trees will require removal under this proposal, however other less preferred species which may be used by the Koala will be removed.

2



Photo 1: Castle to be converted to Café



Photo 2: Location of proposed carpark and bio-retention basin



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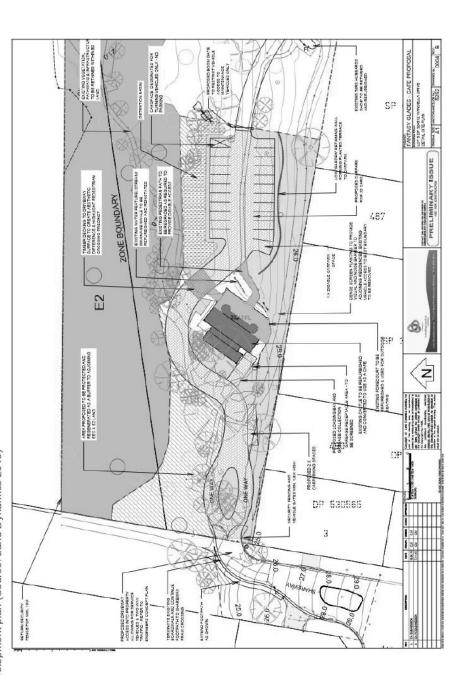
Sustainable Partners Biodiversity ion 201 Legend Subject Site of the state San AGE San Age Administra © Dep of subject site Lot 5 DP 524972 Mr Jeff Crow (2-300 Meters Figure 1: Location of the subject site Biodiversit 150 75 0

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Sustainable Partners



Figure 2: Development plan (Source: Land Dynamics 2019)





3.0 KPoM Objectives and Performance Criteria

3.1. Objectives

The principle objective of this Koala Plan of Management is to ensure the study area retains its ability to support a Koala population and to maintain the carrying capacity and linkages within the broader Core Koala Habitat.

The objectives of this Koala Plan of Management (KPoM) are:

- To maintain the viability of the current Koala population which occurs in the local area via:
 - Retaining the majority of existing mature Koala food trees (KFTs), and current activity areas;
 - Upholding no net loss of Koala habitat; and
 - Maintaining linkages with other habitat known to be required by the local Koala population; and,
- To effectively minimise the proposal's contributions to threats facing the Koala.

3.2. Performance Criteria

The criteria against which achievement of the objectives are to be measured are:

- Retention of the site's local linkage and landscape linkage values.
- Replacement of Koala food trees removed for the proposal.
- Nil Koala deaths or injury as a result of the development.
- No increase in disease incidence.
- No unmitigated increase in threats to Koalas within the study area.

3.3. Guidelines for Individual KPoMs

The SEPP 44 B35 Circular (Department of Urban Affairs and Planning 1995) provides guidelines for the preparation of individual Koala Plans of Management. These are shown in Table 1 below along with the section in which they are addressed in the KPoM.

Table 1: SEPP 44 KPoM guidelines

Number	Criteria	Section Addressed
1	An estimate of population size	Section 5.4.1
2	Identification of preferred tree species for the locality and extent of resource available	Section 5.4.2



Number	Criteria	Section Addressed
3	An assessment of the regional distribution of Koalas and the extent of alternative habitat available to compensate for that to be affected by the actions	Section 5.4.3
4	Identification of linkages of Core Koala Habitat to other adjacent areas of habitat and movement of Kolas between areas of habitat. Provision of strategies to enhance and manage these corridors	Section 5.4.3 Section 7.1
5	Identification of major threatening processes such as disease, clearance of habitat, road kill and dog attack which impact on the population. Provision of methods for reducing these impacts	Section 6 & 7
6	Provision of detailed proposals for amelioration of impacts on Koala populations from any anticipated development within zones of Core Koala Habitat	Section 7
7	Identification of any opportunities to increase size or improve condition of existing core habitat, this should include lands adjacent to areas of identified Core Koala Habitat	Section 7
8	The plan should state clearly what it aims to achieve (for example, maintaining or expanding the current population size or habitat area)	Section 3
9	The plan should state criteria against which achievement of these objectives is to be measured (for example, a specified population size or specific time frame or the abatement of threats to the population)	Section 3
10	The plan should also have provisions for continuing monitoring, review and reporting. This should include an identification or who will undertake further work and how it will be funded.	Section 8



4.0 State and Federal Koala Policies

4.1. SEPP No. 44 - Koala Habitat Protection

State Environmental Planning Policy no. 44 – Koala Habitat Protection (SEPP 44) is a planning policy that "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".

SEPP 44 requires the identification of Potential and Core Koala Habitat on development sites and planning areas, and the preparation of a Koala Plan of Management (KPoM) if Core Koala Habitat is found.

SEPP 44 also allows local governments to prepare LGA wide Koala management plans referred to as Comprehensive Koala Plans of Management (CKPoM). Coastal LGA's that have implemented CKPoMs include Kempsey, Coffs Harbour, Port Stephens and Lismore. A CKPoM has been prepared for the Port Macquarie-Hastings LGA, however this has yet to be an approved CKPoM as it is still in draft stages (PMHC 2018).

4.2. National Koala Conservation Strategy 1998

This was prepared in 1998 by the Australian and New Zealand Environment and Conservation Council (ANZECC) and subsequently signed by the Commonwealth, States and Territories. The primary aim of the strategy was "to conserve Koalas by retaining viable populations in the wild throughout their natural range".

The strategy sets out the following six objectives to achieve this primary aim:

- To conserve Koalas in their existing habitat.
- To rehabilitate and restore Koala habitat and populations.
- To develop a better understanding of the conservation biology of Koalas.
- To ensure that the community has access to factual information about the distribution, conservation and management of Koalas at a national, state and local scale.
- To manage captive, sick or injured Koalas and orphaned wild Koalas to ensure consistent and high standards of care.
- To manage over-browsing to effectively prevent both Koala starvation and ecosystem damage in discrete patches of habitat.

A ten year review of the strategy was undertaken by Parsons Brinckerhoff in 2008 (Predavec 2008). This found that the strategy had been poorly implemented and coordinated overall and had achieved few positive outcomes. The review also stated that significant declines in Koala populations and habitat in Queensland, New South Wales and Victoria had occurred since the strategy was implemented and the main threatening processes continued to operate.



4.3. National Koala Conservation and Management Strategy 2009-2014

This was prepared by the Natural Resource Management Ministerial Council to supersede the 1998 National Koala Strategy, and was effective from December 2009 with a review scheduled in 2014. It addressed shortcomings of the 1998 strategy by including a detailed implementation plan and setting up an implementation team to coordinate the identified actions which were linked to outputs, prioritised, and a time-frame.

The plan also aimed to strengthen partnerships between government, stakeholders and the community and effectively engage the community in Koala conservation.

4.4. NSW Koala Recovery Plan 2008

A NSW Recovery Plan for the Koala was prepared by the then Department of Environment and Climate Change (DECC) in 2008. The overall objective of the plan is "to reverse the decline of the Koala in New South Wales, to ensure adequate protection, management and restoration of Koala habitat, and to maintain healthy breeding populations of Koalas throughout their current range."

The plan adopted the specific objectives of the National Koala Conservation Strategy (ANZECC 1998) to achieve broader conservation outcomes. A number of specific recovery actions and performance criteria were formulated to implement the objectives.

4.5. Biodiversity Conservation Act 2016

The *Biodiversity Conservation Act 2016* (BC Act) is a key piece of NSW State legislation that relates to the conservation of threatened species, populations and ecological communities and promotion of ecologically sustainable development. Provision is made under the Act for the preparation of recovery plans, threat abatement plans and mapping of critical habitat.

An assessment under the provisions of Act is required if a development or activity is likely to impact identified threatened species, populations or ecological communities. Assessment is also required if a development requires clearing of native vegetation over a certain threshold or affects an area mapped on the Biodiversity Values Map.

The Koala is listed as Vulnerable under the BC Act.

4.6. Environmental Protection and Biodiversity Conservation Act 1999

The *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act) is the Federal Government's primary environmental legislative instrument. This act necessitates approval for any action that will have a Significant Impact on Matters of National Environmental Significance (MNES). MNES recognised under the EPBC Act, that act as a trigger for the Commonwealth assessment and approval process include;



- World Heritage properties;
- National Heritage Places;
- RAMSAR wetlands of international significance;
- Threatened species and ecological communities;
- Migratory species;
- · Nuclear actions, including uranium mining;
- · Commonwealth marine environments; and
- · Water resources, in relation to coal seam gas development and large coal mining development.

The Koala was listed as Vulnerable under the EPBC Act in April 2012. This listing covered the most at-risk Koala populations in Queensland, NSW and the ACT. As a result, any actions that are likely to have a significant impact on the Koala in these states must be referred to the Minister who will decide whether an assessment is required under the EPBC Act (DotE 2014).



5.0 Survey Methods

5.1. Desktop Study and Literature Review

A desktop study was carried out prior to the field survey to gather relevant information and data. All current state and federal Koala policies listed in Section 4.0 of this report, were reviewed in relation to the subject site. In addition, the following databases and Geographic Information System (GIS) layers were searched/obtained:

- Department of Environment and Energy Protected Matters Search Tool (DEE 2019).
- Office of Environment and Heritage NSW Atlas of Wildlife (OEH 2019a).
- NSW Biodiversity Value Map (OEH 2019b).
- Port Macquarie LGA Vegetation Communities and EECs digital data layer (Biolink 2013b).

A review of previous ecological studies conducted within the subject site was also conducted. Relevant literature/reports reviewed were:

- FloraFauna Consulting Ecological Assessment EA-2016-2006 (FloraFauna Consulting 2017).
- JB Enviro Preliminary Constraints Report (JB Enviro 2018).

5.2. Vegetation Community Review/Surveys

A review of the vegetation communities described by FloraFauna Consulting (2017) and JB Enviro (2018) was conducted. The results of these were ground-truthed by walking random meander transects over the subject site and study area. The vegetation classification is based on the NSW Plant Community Type (PCT) Classification (OEH 2019d).

Additional species on the subject site were recorded via the sampling of two 20x20 m vegetation plots in which floristic composition and structural attributes were collected. Plant species were identified to species or subspecies level and nomenclature conforms to that currently recognised by the Royal Botanic Gardens and follows Harden (Harden 1990 & Harden *et al* 2007) and PlantNET (Royal Botanical Gardens 2018) for changes since Harden.

5.3. Core Koala Habitat Assessment

An assessment of Core Koala Habitat on the site was conducted by Biodiversity Australia in 2019. Surveys were conducted by a Principal Ecologist and Ecologist under Biodiversity Australia's scientific license and animal research authority. The following survey methods were undertaken as part of the Core Koala Habitat assessment in 2019:

- Koala Spot Assessment Technique (SAT) surveys;
- Passive Infrared Camera sampling;
- Spotlighting and torch surveys:
- Call Playback and detection; and



Active Searches.

5.3.1. Koala Spot Assessment Technique (SAT) Surveys

Two dedicated Koala surveys using the Spot Assessment Technique (SAT) were conducted across the subject site. The location of these is shown in Figure 3.

Each SAT survey consists of actively searching for Koala scats under thirty trees. This involved checking the ground and leaf litter within a 1 m radius of each tree, for a period of two minutes per tree or until a scat was found. This technique is recognised as a very efficient method of detecting Koala presence, and in some instances, is a method used to identify areas of major Koala activity/significance e.g. Core Koala Habitat (Phillips and Callahan 1995; Jurskis and Potter 1997).

5.3.2. Passive Infrared Camera Sampling

Biodiversity Australia deployed five Stealth Cam STC-G45NG infra-red cameras on site trees at approximately 0.5 m height, during surveys for the subject site's Ecological Assessment (Biodiversity Australia, 2019). These were set for a period of ten days. The location of the PIR cameras is shown in Figure 3.

Although these were deployed to target a multitude of species, incidental occurrences of the Koala moving across the site could be captured.

5.3.3. Spotlighting

Spotlighting was conducted for at least 1 hours per night over two nights. This was more than sufficient to cover the entire site. The procedure involved walking with a hand held 1100 lumen LED spotlight over the site, targeting the trunks and branches of canopy trees and understorey, and periodically scanning the ground.

5.3.4. Call Playback

Calls of the Koala were broadcast prior to and after spotlighting surveys. Calls were played through a portable MP3 player via a 55W PA system from multiple separate locations at a sound level approximating natural intensities for the Koala. The general methodology involved an initial period of listening and spotlighting; followed by playback of the calls simulating a natural pattern.

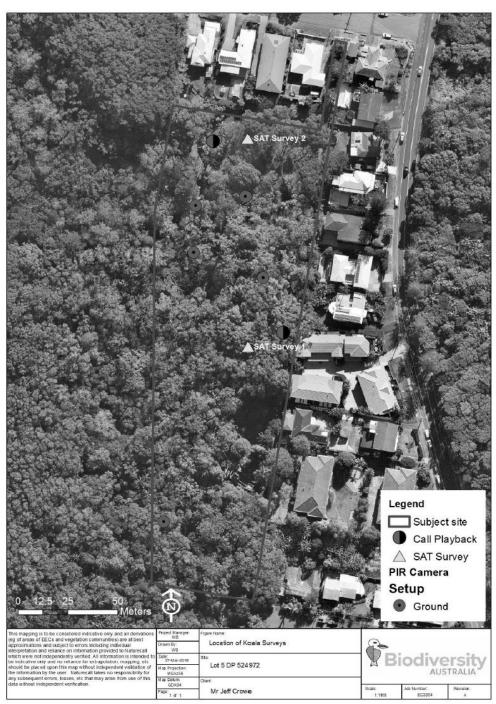
The location of call playback surveys is shown in Figure 3.

5.3.5. Active Searches

As previously described, Biodiversity Australia conducted an ecological assessment of the proposed café development in 2019 (Biodiversity Australia 2019). Active searches for the Koala and Koala scats were conducted in conjunction with all flora and fauna surveys under this Ecological Assessment.



Figure 3: Location of Koala surveys



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Item 09 Attachment 4



6.0 Koala Habitat and Population Characteristics

6.1. Site Vegetation Communities

During previous studies of the site by FloraFauna (2017), two vegetation communities were identified and mapped within the subject site which proved inconsistent with Port Macquarie-Hastings Council (PMHC) vegetation community mapping.

The vegetation communities comprise Swamp Sclerophyll forest which occupies the low lying western parts of the site and Wet Sclerophyll Forest which occupies the remaining eastern portion of the site. This vegetation classification and mapping has been adopted and refined by Biodiversity Australia. A ground-truthed vegetation map is provided in Figure 4.

6.2. Koala Habitat

As shown in Figure 5, the majority of the vegetation on site is mapped as Secondary (A) Koala habitat (Biolink 2013a). This is habitat where primary food species are present but not dominant and the habitat usually also contains secondary species. This classification was confirmed during the field surveys over the site. Swamp Mahogany (Primary species) was found to be a co-dominant canopy species in the swamp forest community while Tallowwood (Primary species) was occasionally recorded in the wet sclerophyll forest community.



Figure 4. Vegetation communities within the KPoM area

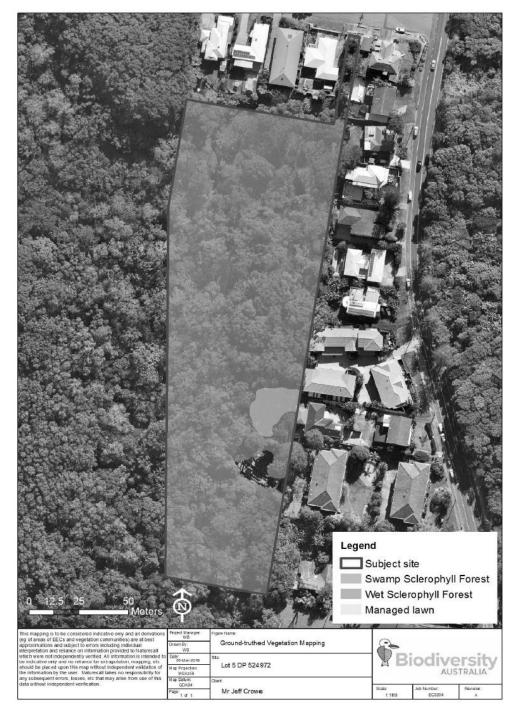
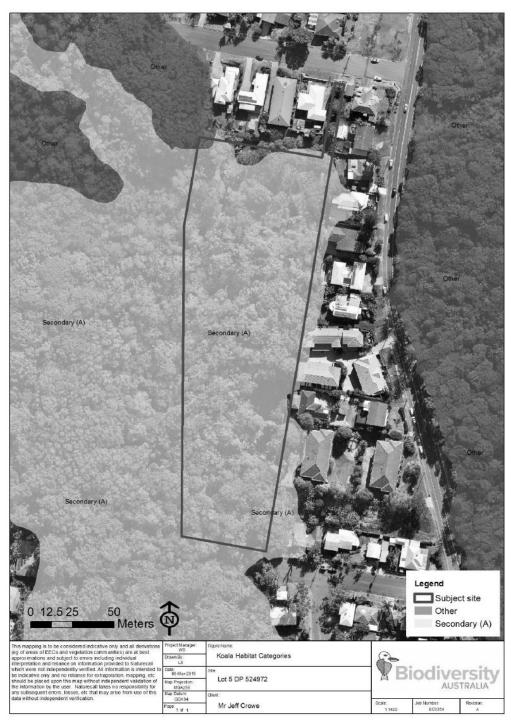




Figure 5: Koala habitat mapping



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6.3. SEPP 44 Koala Habitat Assessment

6.3.1. Potential Koala Habitat Assessment

The identification of an area of land as Potential Koala habitat is determined by the presence of Primary Preferred Koala Browse tree species. These species are listed under Schedule 2 of SEPP 44: *Koala Habitat Protection*.

Potential Koala Habitat is defined as areas where the tree species listed under Schedule 2 constitute at least 15% of the total number of trees in the upper or lower strata of the tree component. Primary preferred food species occurring in the Local Government Area (LGA) are: Tallowwood (*E. microcorys*), Scribbly Gum (*E. signata*), Grey Gum (*E. punctata*), Swamp Mahogany (*E. robusta*) and Forest Red Gum (*E. tereticornis*).

An area of land to which the policy applies, must be at least 1 ha (and may include adjoining land in the same ownership). According to a Land and Environment Court ruling (*St Ives Bus Services v. Ku-Ring-Gai Council 1995 NSW LEC 189*), it may also refer to a minimum of 1 ha of habitat within a larger property containing sufficient Schedule 2 species to qualify as Potential Koala Habitat.

There are two Schedule 2 browse species present on site which comprise Swamp Mahogany and Tallowwood. Two previous assessments undertaken over the site determined that these Schedule 2 species constituted >15% canopy cover and thus, the site was considered to contain Potential Koala Habitat (FloraFauna Consulting 2017; JB Enviro 2018).

Additionally Biolink (2013b) also classified the site in terms of Koala habitat, being classed as Secondary (A) Koala habitat.

6.3.2. Core Koala Habitat Assessment Results

Core Koala Habitat is defined as "an area of land with a resident population of Koalas, as evidenced by attributes such as breeding females (that is, females with young) and recent sightings of and historical records of a Koala population" (SEPP 44). An assessment of Core Koala Habitat within the site was conducted in 2017 (FloraFauna Consulting 2017) and is further evaluated within this report.

6.3.2.1. 2017 Survey

No Koalas were observed directly on site during field inspections, however Koala scats were located under two Tallowwood tree in the site. There was also evident disturbance of the bark and scratch marks on both of these trees. Communication with landholder indicated that the site is used regularly by Koalas.

6.3.2.2. 2019 Survey

The application of survey techniques successfully identified the Koala within the site.

One SAT (SAT1) survey recorded Koala scats under two of the sampled trees. The resulting Koala activity level for this survey is 6.6% which would classify the site as a low use area (Phillips and Callaghan 2011). This result is likely not representative of the site as a whole and it is anticipated



that actual activity levels are greater than determined in this survey. The remaining SAT (2) survey did not record any Koala scats.

In addition to identified scats, one of the ground-set PIR cameras successfully recorded images of a Koala walking through the site (Photo 3-4) and the caretaker of the property, reported regular sightings of the Koala within the site boundaries.

Photo 3: PIR camera image (1) of Koala walking through site



Photo 4: PIR camera image (2) of Koala walking through site



Whilst the Koala was not directly observed within the site, an individual was observed 120 m outside the site boundary on the corner of Wandella Drive and Pacific Drive. The Koala was observed foraging in a small Grey Gum which is regularly frequented by a Koala (pers. obs).



6.3.3. Conclusion

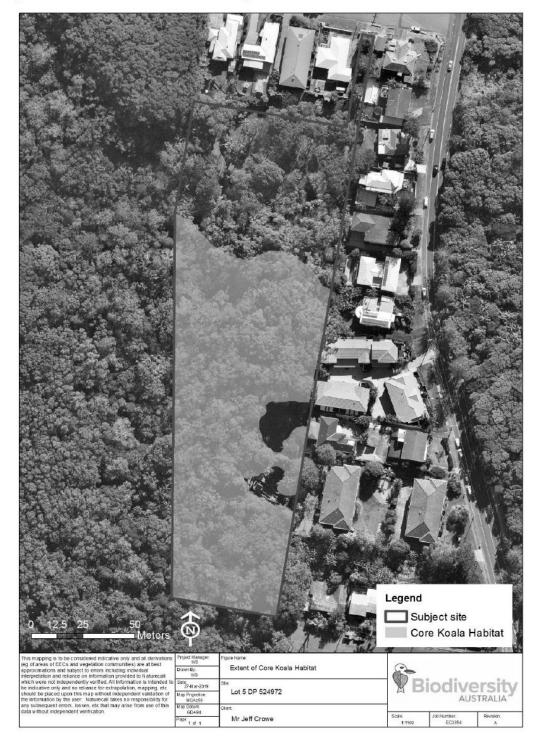
Both 2017 and 2019 assessments recorded Koala activity, confirming the use of site habitat by the Koala. Due to the extent of recent Koala sightings and the availability of KFTs within the property, it is therefore considered that the site forms part of a larger area of Core Koala Habitat and a Koala Plan of Management is required to accompany the development application.

The extent of Core Koala Habitat on the site has been mapped in Figure 6. The Core Koala Habitat covers the southern and central portion of the site where Koala activity has been recorded and preferred food trees are present.

The northern portion of the site does not contain preferred food trees and no Koala activity was recorded in this area, and it not considered to form part of the Core Koala habitat on the site.



Figure 6: Extent of Core Koala Habitat on the subject site





6.4. Characteristics of the Core Koala Habitat

6.4.1. Estimate of Population Size

Given recent survey results and the abundance of nearby records in Bionet, a generational persistence of Koalas in the area is evident. It is expected that the local population that would use habitat on the site is likely to consist of at least two Koalas constituting a dominant male and at least one mature female (and potentially their offspring), which would utilise the site as part of a larger area of habitat.

6.4.2. Preferred Tree Species

From a collation of previous landscape-based Koala food tree research and data collected the coastal LGA study, Biolink (2013a) determined that the following are the primary preferred Koala browse species in the PMHC LGA, depending on soil landscape:

Transferral, Alluvial, Swamp and Thrumster	Erosional, other Residuals, Colluvial, Beach and
Residual (TASTr) Soil Landscapes:	Aeolian (ERCBA) Soil Landscapes:
Medium to High Fertility	Low to Medium Fertility
Tallowwood	*Tallowwood
(<i>E. microcorys</i>)	(<i>E. microcory</i> s)
Swamp Mahogany	Swamp Mahogany
(<i>E. robusta</i>)	(<i>E. robusta</i>)
Grey Gum (<i>E. propinqua</i>)	
Forest Red Gum (<i>Eucalyptus tereticornis</i>)	

Table 2: PMHC LGA primary preferred Koala food trees per soil landscape

* Tallowwood use appears to be size dependent on low to medium soil landscapes (Biolink 2013b).

Tallowwood and Swamp Mahogany are the preferred food tree species on the subject site.

6.4.3. Koala Populations, Site Context and Linkages

Regional and Local Government Area Distribution of Koalas

(i) <u>Regional Distribution of Koalas</u>

Koala numbers have declined throughout most of their previous range in NSW, with the main occurrences being in the northeast of the state (DECC 2008). Most coastal populations now persist in fragmented and isolated areas of habitat (predominantly secondary class A with some localised primary areas supporting high density populations), with extensive areas of potential habitat appearing to be devoid of Koalas (DECC 2008). In contrast, some well-known western populations appear to be increasing. The difference is considered to primarily be due to increasing development pressure e.g. from agriculture and urban expansion in the coastal region (DECC 2008, AKF 2019).

In the north coast and mid-north coast regions, areas with large numbers of records are restricted to localities such as Ballina, Port Stephens, Port Macquarie, Coffs Harbour, Tweed and Lismore



(Connell Wagner 2000b, Lunney *et al* 1999, Port Stephens Council 2001, DECC 2008, AKF 2019). The Koala Recovery Plan (DECC 2008) notes that in addition to these major population centres are numerous small populations many of which are disjunctive to urban and rural development, as well as natural barriers (DECC 2008).

(ii) Distribution and Abundance of Koalas in the PMHC LGA:

The coastal sector of the Hastings Local Government Area (LGA) is well known to contain a viable Koala population in varying densities, generally within the following major areas (Biolink 2013a, Connell Wagner 2000a, 2000b, Biolink 2013a, OEH 2019a):

- Port Macquarie urban area;
- Lake Cathie Plains to Lakes Innes/Thrumster area (approaching Sancrox);
- Lake Innes Nature Reserve/Kooloonbung Creek Nature Reserve and adjoining private lands;
- Lake Cathie area;
- Dunbogan Peninsula; and
- Point Plomer area.

A number of other well-known smaller population centres also occur in scattered occurrences e.g. Broken Bago State Forest, Telegraph Point, North Brother, Bonny Hills, North Shore and Huntington area (OEH 2019a, Biolink 2013a).

Biolink (2013b) in their major study estimated a population of approximately 2000 Koalas in the coastal LGA, occupying an Area of Occupancy of only 24% of available habitat.

(iii) Local Populations:

There is a large number of Bionet records and Koala sightings within 1km of the site. A viable Koala population is known to occur in the Wrights Creek corridor, encompassing Calwalla Reserve and the subject site, and adjoining areas of urban woodland and small vegetated remnants (Biolink 2017, Naturecall 2015). Other populations and aggregates in the area are known to occur around Lighthouse Beach, Yarranabee Creek corridor and Macquarie Nature Reserve.

Linkages

Refer to Figure 7 for the following:

(i) <u>Regional</u>:

An OEH modelled regional corridor is mapped over part of the property (Figure 7). This corridor extends northwest and south of the site along Calwalla Reserve with a section of this corridor extending further east of the site to run north along Pacific Drive.

(ii) <u>Local</u>:

The forested areas of the site have direct connectivity to adjoining forest to the west and south. This forms a local corridor which runs north-south along Calwalla Reserve and Wrights Creek corridor. Another local habitat linkage runs parallel to this corridor along Pacific Drive to the east (Figure 7).



To the south of the site, a small local corridor links these two, providing a larger local habitat linkage. The two larger local corridors to the east and west of the site contain largely intact habitat, however habitat between the two is fragmented by residential housing and Pacific Drive.

The lack of impassable physical barriers across the site mean the site's vegetation would provide good connectivity for the Koala.

6.4.4. Database Searches

Database Records

The Bionet Atlas (OEH 2019a) shows 1549 records of Koalas within 10 km of the site (Figure 8). Of these, 259 were recorded within the last five years. Also within the last five years, 227 records occur within 5 km of the site and 123 occur within 2 km. The nearest record lies 5 m to the east of the site entrance on Parklands Close. This record dates back to 2006 however with more recent records in close proximity to the site being on Pacific Drive (2014), Wandella Drive (2014) and Karalee Parade (2016).

The volume of Koala records reported on the Bionet Atlas indicate a significant Koala population occurs within the area and the continued use of vegetation surrounding the site by this population.

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Figure 7. Local and regional corridors

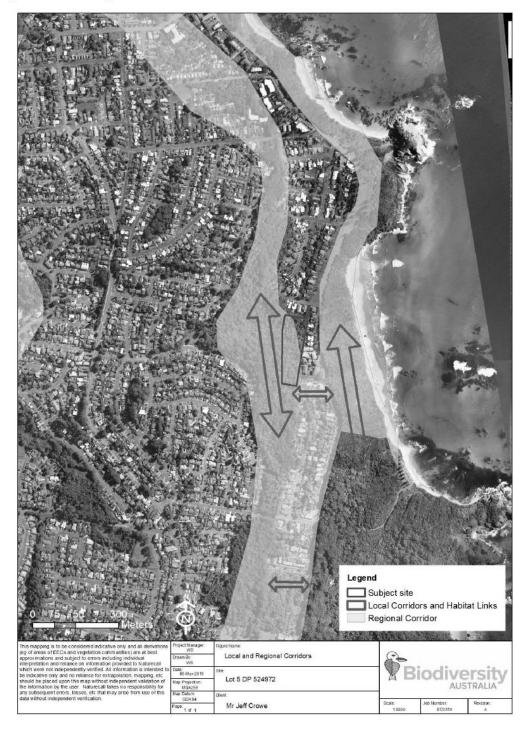




Figure 8. Koala Records (Source: OEH 2017a)





7.0 Threat Assessment

7.1. Current Threats

Development of Koala habitat is generally associated with the following impacts/threats (Connell Wagner 2000a, 2000b, Wilkes and Snowden 1998, Biolink 2013b, 2003, 2005a, 2005b, 2005c, 2008, Lunney *et al* 1999, Port Stephens Council 2001, AKF 2019, DECC 2008). In context of the anticipated development, these are first identified, and then the ameliorative measures/recommendations to address this threat/impact are described in this section.

Identified threatening processes are:

- Loss of forage trees/habitat;
- Injury during vegetation clearing;
- Traffic collision;
- Attack by pets and feral predators;
- Physical barriers;
- Bushfire; and
- Disease.

These are described in detail below.

7.1.1. Loss of Forage Trees/Habitat

Habitat loss and/or fragmentation is the most serious threat to Koalas both historically and at present (DECC 2008, AKF 2019, Connell Wagner 2000b, Port Stephens Council 2001, Lunney *et al* 1999, Wilkes and Snowden 1998).

The proposed development will not require the removal of any primary preferred Koala food trees. Six Flooded Gum and two Broadleaf Paperbarks will require removal, and these are listed as "other browse species" in the PMHC DCP, meaning they are likely to be of less importance to the Koala than species such as Tallowwood and Swamp Mahogany. Other vegetation to be removed largely comprises non-eucalypts including Palm trees and rainforest shrubs.

The removal of the PMHC DCP listed Koala Food Trees under this proposal are to be offset by replacement plantings of primary/preferred food trees. These replacement plantings are recommended at a 1:1 ratio given that they are not SEPP 44 listed Koala food trees and the limited space for replanting within the site.

7.1.2. Injury During Clearing

There is potential for Koalas to be injured during the clearing phase if no mitigation actions are undertaken. The ecological report prepared for the project and this KPoM has recommend that an ecologist be present prior to and during the clearing phase to ensure that no Koalas are present in



the clearing area and none enter the site during works. This should effectively reduce the potential for Koala injury.

7.1.3. Traffic Collision

Wilkes and Snowden (1998) and Connell Wagner (2000b) note that traffic collision (usually resulting in death) is a major threatening process to the Port Macquarie Koala population, particularly to males, who account for most of the injured animals (most likely due to more frequent and longer movements during their life cycle e.g. during breeding seasons).

Under this proposal, a new access road and car park is proposed to be constructed through the site. This road is to run along the east of the site, connecting Parklands Close and Wandella Drive with a car park accommodating 23 vehicles to be constructed directly north of the proposed café.

Koala movement through this area is known, hence the construction of these has potential to increase the threat of traffic collision on the local Koala population. Appropriate signage and speed restrictions have been recommended to ameliorate the potential for Koala injury. With the implementation of these, it is predicted that the impacts from the construction of a new road would be minor and would not pose a significant threat to the local Koala population.

The construction of a new road and car park in the area will see a slight increase in the amount of traffic on Parklands Close and Wandella Drive. Traffic entering the subject site will be restricted to low speeds and hence be slow moving. No increased risk of road strike is expected as a result of the proposal.

7.1.4. Pets and Feral Predators

Domestic Dogs

Dog attack is a major cause of Koala mortality. Domestic dogs are probably the main source of dog attack mortality near residential areas (Wilkes and Snowden 1998, Lunney *et al* 1999, Port Stephens Council 2001, Connell Wagner 2000a).

Following extensive fire, dog attack (and predation by wild dogs) is a key threat to low density Koala populations (Lunney *et al* 2007, McAlpine *et al* 2006). This is due to the fact that the populations are small, hence any increase in mortality which exceeds recruitment rates can lead to the decline of the local population.

Dogs currently occur on and adjacent to the site, hence this is an existing threat. There is potential for the proposed café to increase the occurrence of domestic dogs on the property if patrons are allowed access with pets. This KPoM, and the ecological report prepared for the project have proposed ameliorative measures restricting pet access to ensure that there is no increase in the likelihood of dog attack results from this proposal.

Feral Cats, Wild Dogs and Foxes

Feral cats and foxes have been observed on site (Biodiversity Australia 2019). Although they are not considered a significant threat to Koalas, though there is the potential for attack on sick, injured or



juvenile Koalas (DECC 2008). These vermin are also a serious threat to native species i.e. recognised as Key Threatening Processes (NSWSC 2000a, 2000b, Dickman 1996). These are subject to current controls under the PMHC Feral Species Management Strategy.

Wild dogs have the potential to occur on the property and thus currently pose a threat to Koalas. This threat may be increased on site with the introduction of food waste from the proposed café. Food waste not disposed of correctly has the potential to attract vermin and feral animals who utilise this easily accessible food source (Glen and Dickman 2014). If ameliorative measures described in Section 8.6 are enforced correctly, the proposed development is not likely to increase the threat of feral animals.

7.1.5. Physical Barriers

Developments may result in physical and behavioural barriers that impair Koala usage of the site or access to adjacent areas.

Fences offer the main physical barrier. Koalas can climb sturdy chain mesh, wooden paling or solidtype fences with wooden fences on both sides (Port Stephens Council 2001, Wilkes and Snowden 1998). Busy roads, barking or aggressive dogs, and adverse human contact may pose behavioural barriers (DECC 2008).

The site is currently fenced and some of this fencing contains barbed wire. The barbed wire strands are recommended to be removed. Some new fencing may be required for site security, and recommendations on fauna friendly fencing design are provided in Section 8.

7.1.6. Bushfire

Bushfires, particularly intense, crown-burning fires, are a major threat to wildlife and threatened fauna such as Koalas (DECC 2008). Extensive fires that burn out a large extent of habitat – particularly habitat that is isolated or fragmented, and thus limited in escape, refuge or re-colonisation potential, are particularly damaging if not catastrophic via direct mortality or indirectly (e.g. insufficient resources left to support the population).

Less intense fires may also cause secondary problems such as smoke-inhalation/breathing disorders, loss of food supply, stress and displacement (e.g. via complete burning of an individual's home range).

Altered fire frequency can also ultimately simplify or alter the character of vegetation communities by removing fire sensitive species (e.g. convert wet sclerophyll to dry), and even develop fire-prone communities e.g. promote development of a grassy groundcover (NSWSC 2000c).

The risk of fire on the site will be decreased from current levels as a result of the proposed café with the development of an APZ. An APZ around the existing structure is required by the NSW Rural Fire Service (RFS) legislation as it is designed to create a buffer and reduce fuel loads around a structure.



7.1.7. Disease

Most Koalas are naturally infected with Chlamydia pathogens (Sharp and Phillips 1999, Phillips 1997). Chlamydia and other diseases may develop when Koalas are under stress, of which one cause is habitat loss/disturbance (DECC 2008, AKF 2019, Port Stephens Council 2001). Chlamydia infections may lead to urinary tract and reproductive tract infections which can cause female infertility.

This disease occurs throughout the Port Macquarie Koala population (Connell Wagner 2000b). This is a concern for low density populations given the risk of transmission of this disease through the population via breeding activity, and potential sterilisation of dominant adults limiting recruitment and fecundity.

The proposal is not expected to result in any significant increase stresses on the local aggregate given the minor loss or modification of habitat, no significant barriers and only a localised increased human presence.



8.0 Ameliorative Measures

8.1. General Clearing Measures

Any trees to be retained on site must be surveyed and shown on a plan. These trees are to be marked or fenced prior to construction to avoid damage or encroachment into the root zone. All such protective fencing is to be Koala permeable and pose no risk of injury e.g. no exposed wire ends or risk of entanglement.

Site induction is to specify that no clearing is to occur beyond the marked area, and vehicles/machinery are only to be parked in designated areas. Similarly, any materials are to be stored outside the retained vegetation.

No further clearing is to be undertaken outside of that allowable for the establishment of the access road and APZ. Any future proposal to remove trees on site will require approval under the Port Macquarie Hastings Council DCP 2013.

8.2. Pre-clearing Survey and Clearing Supervision

The following ameliorative measures should be carried out during clearing works on the site.

- The clearing extent is to be inspected for fauna by a qualified ecologist immediately prior to commencement of any vegetation removal involving machinery and/or tree-felling. This is to occur each morning if clearing spans over multiple days/weeks. The ecologist is to flag any habitat features which may contain fauna and trees which contain nests or dreys.
- 2. If a Koala is present in an area subject to vegetation removal/modification, works must be suspended until the Koala moves along on its own volition. If the Koala is located in a position that a 50 m buffer may be established, works may proceed outside this buffer. In this event, the ecologist is to remain on site to monitor the Koala for signs of distress.
- 3. The ecologist is to remain on site to supervise removal of any flagged habitat features and manage any fauna interactions. Other than Koalas, any detected fauna is to be relocated offsite. Any bird nest considered active is to be removed in a manner that allows retrieval of eggs/young, and these are to be taken into care by FAWNA.

The ecologist should also ensure the Koala food trees proposed to be retained are marked appropriately and protected via temporary fencing.

8.3. Habitat Retention

Aside from the trees described in Section 7.1.1 that require removal (Koala food trees listed as "other browse species" in the PMHC DCP), all other Koala food trees occurring within the property are to be retained.



8.4. Habitat Replacement

No primary Koala food trees as listed in SEPP 44 will require removal for development of the café and associated access road and car park. Eight Koala food trees listed as "other browse species' in the PMHC Development Control Plan will however require removal. These comprise six Flooded Gum and two Broad-leaf Paperbark. It is proposed that these are offset with replacement plantings of primary/preferred food tree species at a 1:1 ratio.

Trees are preferred to be advanced size trees in 20 litre pots, and are to be planted in available canopy gaps on the site.

The specifications for offset plantings are provided in Section 9 and Appendix 1. A Vegetation Management Plan (VMP) for the site will also be prepared to manage offset plantings.

8.5. Domestic Animals

In order to reduce potential predation or attack to native fauna, especially the Koala, it is recommended that café patrons are prohibited from entering the subject site with domestic pets. Signage informing patrons is to be installed at the entrance to the property. By enforcing this rule, faunal injury by domestic animals will effectively be prevented.

8.6. Food Waste Disposal

Feral cats, foxes and wild dogs are potential predators for the Koala population (cats only pose threat to sick or juvenile Koalas) both on and adjacent to the site. The Feral Cat and Red Fox were both identified on site during the ecological assessment prepared for this project. The introduction of a café to the site may further attract these animals if food waste is accessible. To minimise any potential attraction of these species, the following measures will need to be implemented:

- All food waste (outside of the kitchen) are to be disposed of in a lockable bin with the lid firmly sealed. No food waste is to be dumped outside of these bins.
- Bins are not to be overfilled so that the lid does not firmly seal.
- Outdoor tables are to be cleaned promptly after use so as to avoid fauna attraction.
- At the end of each trading day, no food scraps are to remain on site unless firmly locked within a bin.

Any wild dog, fox or feral cat sightings within the site are to be reported to Council.

8.7. Road Signage and Speed Controls

To reduce the risk of Koala road strike, the following measures will need to be implemented:

- Reduced speeds (10 kmph) are to be implemented on the new road with signage clearly displaying this at each entry point.
- Koala warning signage should be erected at all entrances to the site. The Port Macquarie Koala



Hospital number is to be displayed on the sign.

8.8. Barbed Wire Removal

The site's boundary fences have strands of barbed wire which pose an entanglement hazard to Koalas and other fauna. As part of the development, all barbed wire is to be removed from this fencing.

Any new fencing constructed within or around the site is to be designed to allow Koala movement and is not to provide a barrier or obstruction to fauna. Design options include providing a minimum 30cm gap at the bottom of the fence or Koala ladders over the fence.

8.9. Artificial Lighting

Any exterior lighting required for the café is recommend to be strategically positioned so as to not direct light towards adjoining vegetation to the west. Such lighting is recommended to be sensor-based.

8.10. Disease

Disease is a current threat to the local Koala aggregate. To help reduce this, the following measures are to be implemented:

- · Contact details for Koala Hospital at site during clearing/construction works.
- Koala Hospital details to be provided in a common space in the café grounds and patrons should be encouraged to report any sick or injured Koalas.



9.0 Implementation, Monitoring and Compliance

9.1. KPoM Implementation Schedule

To ensure key measures of this KPoM are implemented, the DA must demonstrate compliance with the provisions of the KPoM at various stages from the DA to post-construction. Table 3 shows a provisional timeline for implementation of the KPoM measures which indicates what will need to be reported at given stages.

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Table 3: Implementation schedule for ameliorative measures

Operation Phase	 No further clearing 	N/A	 All retained habitat managed and protected permanently No further clearing Compliance enforcement by Council as required 	 Maintenance of weeds and plantings for minimum of 5 years Compliance enforcement by Council
Construction Phase	 All clearing personnel are to be aware of clearing limits No clearing beyond limits marked Clearing and earthworks to avoid damage to root zones of retained trees No materials to be placed under retained trees or within retained vegetation 	 Pre-clear survey by ecologist Clearing supervision by ecologist Report to PMHC confirming compliance 	 Clear identification and fencing off of trees/vegetation to be removed/retained Construction undertaken in accordance with KPoM and consent conditions Compliance enforcement by Council 	 Maintain plantings as applicable – 100% replacement within 3 months of any failed plantings for the first 5 years
DA Approval	 Visible marking of clearing limits 	 Consent condition specifying ecologist to supervise clearing and manage Koala welfare 	 Approval of plan detailing trees/habitat to be removed 	 Plans for offset plantings regeneration approved and become binding Commence and complete planting works as per KPoM
Pre-DA	 Survey and plan of trees to be removed 	 Survey and mapping of all habitat to be retained/removed 	 Habitat to be removed or retained identified Planning mechanisms to protect retained habitat implemented DA to demonstrate compliance with KPoM 	 Identify and map proposed location of all planting areas in relation to development, and
Issue	Clearing limits	Mortality/injury during clearing of habitat	Retention and Protection of Key Habitat	Habitat replacement

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lssue	Pre-DA	DA Approval	Construction Phase	Operation Phase
	estimate number of replacements.	specifications within 3 months of approval.		 Implementation of any recommendations for improvements until plantings are self-sufficient. All planted trees managed and protected permanently.
Predator Control	N/A	 Proponent to erect signs and enforce no dogs within the site. 	N/A	 Property owner to enforce no domestic pets within the site. Proponent to ensure that food waste is disposed of in locked bins with the lids firmly sealed. Property owner to report all sightings of feral cats, foxes and wild dogs to Council.
Vehicle Collision	N/A	N/A	 Road signage erected as per KPoM 	Records kept of Koala incidents involving vehicles included in monitoring reports
Artificial lighting	N/A	N/A	 Artificial lighting to be installed in accordance with this KPoM 	Artificial lighting to be kept to a minimum outside of café trading hours
Disease	 Provisions for signage to include Koala Hospital number 	 Signage required as condition of consent 	 Construction undertaken in accordance with plans Contact details for Koala Hospital provided on site during construction 	 Koala records kept and included in monitoring reports Permanent public Koala signage on site with Koala Hospital phone number Implementation of any recommendations for improvements. Compliance enforcement by Council.

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9.2. Monitoring

The implementation and effectiveness of the KPoM will be monitored via a monitoring report submitted annually for five years after development approval. The monitoring report is to provide the following details:

- Koala survey (include usage assessment standard survey, plus collation of other records) to determine if the property has retained its Koala functionality, and if usage has increased.
- Map/plan showing sightings and/or scat deposits, with comparative assessment with previous reports.
- Details (including location, etc.) of any Koala mortality or sickness incidents (road kills, dog attack and disease), emergency actions and census of population health.
- Details on status of offset plantings and if maintenance is required further or trees are fully established and self-sufficient.
- Details on compliance/implementation of other measures detailed in this KPoM.
- Recommendations for improvements to the KPoM that will have to be implemented (with appropriate time lines to allow compliance). Implementation of these measures is to be detailed in the subsequent reports.

This will be undertaken by a qualified ecologist (funded by the proponent of the proposed development), with a report provided to PMHC. The results of the monitoring and checklist will be used by PMHC to initiate compliance if required, or amendments of the KPoM to achieve its objectives.



10.0 Conclusion

The principle objective of this Koala Plan of Management is to ensure the property retains its ability to support a Koala population in the long term and maintain linkages within the broader landscape of identified Core Koala Habitat.

To achieve this, the KPoM aims to achieve the following:

- Retention of the majority of Koala habitat present on site.
- · Compensatory plantings to result in a net increase of Koala Habitat
- Mitigation of potential and existing threats via effective measures with compliance mechanisms to ensure mortality rates are not elevated to the point of resulting in population collapse or creation of a sink.

It is submitted that while the proposed development involves some loss and modification of part of the local extent of Core Koala Habitat, if this KPoM is effectively implemented, this will only pose a low threat to the site's Core Koala Habitat values given the minimal habitat loss required.

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Appendix 1: Offset Planting Specifications

A 3.1 Offset Requirements

The proposal will require the removal of eight Koala food trees listed in the PMHC DCP 2013. These trees are to be offset with eight replacement plantings. These are to be planted in available canopy gaps in the east of the site.

A 3.2 Objectives and Performance Criteria

A 3.2.1 Objective

The primary objective is to ensure the required offset plantings for the proposed development are effectively implemented to achieve positive environmental outcomes for the site and address statutory compliance.

A 3.2.2 Performance Criteria

The performance criteria against which achievement of this primary objective is to be measured are:

- Establishment of offset plantings within one year.
- Establishment of canopy trees with 100% success rate at the end of five years.

A 3.3 Proposed Environmental Works

A 3.3.1 Tree Planting

The details of proposed works are provided in the Table below.



Table 4: Details of offset plantings

OBJECTIVES	ESTABLISHMENT PHASE:	MONITORING PHASE:
	Year 1	Year 2-3
1. Plant eight Koala food trees within planting area	Timeframe: To be conducted within 3 months of development approval. Responsible party: Landowner or bush regenerator Planting:	Timeframe: 3 years Responsible party: Landowner or bush regenerator Maintenance requirements to include but not be limited to:-
	 Planting: Source eight advanced Koala food trees from a local supplier comprising Tallowwood and/or Swamp Mahogany Remove any and all weed species including exotic grasses using environmentally acceptable methods (i.e. hand pulling and selective herbicide spraying) from nominated planting areas Dig hole as per supplier's specifications. Plant trees no closer than 10 m apart from other plantings or nearest tree to minimise competition. Provide dense organic mulch layer around all plantings (preferably using mulch from native vegetation removed from site). Protect each planting with shade cloth wrapped around three star pickets to reduce grazing pressure from macropods, deer and wind damage. Water at planting and regularly (at least once per month or if insufficient rain every 2 weeks) for first 3 months. Any tree planting failures are to be immediately replaced. On-going weed management to ensure plantings not subject to competition. Milestones: No planting failure at 12 months. Monitoring and Reporting: Plantings to be inspected and report sent 	 Maintenance requirements to include but not be limited to:- Monitor plantings for loss and replacement of all plantings that fail for five years. Continued weed removal and control until trees are >2 m tall. Replacement and topping up of mulch layer for 3 years. Monitor and act upon any disease or insect infestations. Removal of tree guards after 2 years and trees >2 m tall. Milestones: Trees established and no further maintenance required. Monitoring and Reporting: Annual monitoring report to be submitted to Council within 3 months of the anniversary of the consent.
	Plantings to be inspected and report sent to PMHC after planting to demonstrate successful establishment.	

Item: 10

Subject: SECTION 4.55 DA2004 - 526.3 MODIFICATION TO HOURS OF OPERATION AND CONDITIONS OF CONSENT ASSOCIATED WITH PREVIOUS APPROVED INDUSTRIAL BUILDING/WORKSHOP AT 10 GLEN EWAN ROAD, SANCROX

Report Author: Development Assessment Planning Coordinator, Patrick Galbraith-Robertson

Applicant:	Birdon Marine CARE King & Campbell
Owner:	Birdon Holdings Pty Ltd
Estimated Cost:	N/A
Parcel no:	64192

Alignment with Delivery Program

4.3.1 Undertake transparent and efficient development assessment in accordance with relevant legislation.

RECOMMENDATION

That DA2004 - 526.3 for a modification to hours of operation and conditions of consent associated with previous approved industrial building/workshop at Lot 17, DP 1191370, No. 10 Glen Ewan Road, Sancrox, be determined by granting consent subject to the recommended modified conditions.

Executive Summary

This report considers an application for modification to a previous approved industrial building workshop 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, eleven (11) submissions were received.

Amendments have been made to the proposal during assessment, which primarily include the following:

- Proposed installation of approximately 500m2 of 100mm thick R1.5 polyester acoustic absorption/thermal blanket hung vertically on the internal face of the shed walls around the fabrication area; and
- A proposed additional carparking area for relocation of parking for worker's vehicles during the evening and night-time periods.

Subject to the recommended modified conditions, the site is considered suitable for the proposed modified development and the proposal adequately addresses relevant planning controls. The development is not considered to be contrary to the public's





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interest and will not result a significant adverse social, environmental or economic impact.

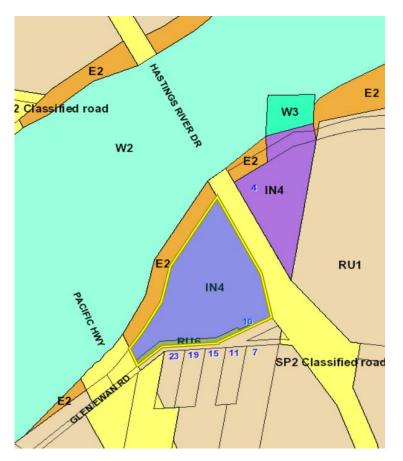
This report recommends that the modification application be approved subject to the attached conditions (**Attachment 1**).

1. BACKGROUND

Existing Sites Features and Surrounding Development

The site has an area of 3.93 hectares.

The site is zoned IN4 working waterfront and RU6 transition in accordance with the Port Macquarie-Hastings Local Environmental Plan 2011, as shown in the following zoning plan:



The site is located on the corner of Hastings River Drive (formerly the Pacific Highway) and Glen Ewan Road. The re-aligned Pacific Highway is located Immediately to the west of the site.

Birdon Pty Ltd operate a marine industry on the subject site as well as the adjoining Lot 1 DP 225413, which is located on the eastern side of Hastings River Drive. A dwelling also occupies the site close to the workshop.

Hastings River Drive is located immediately east of the subject site. Glen Ewan Road is located immediately south of the subject site.



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Five (5) small RU1 Primary Production lots - four (4) of which contain a dwelling are located on the southern side of Glen Ewan Road.

The Pacific Highway is located to the west of the subject site. The Hastings River crown reserve is located to the north of the subject site and the Hastings River is located immediately north of the Crown reserve.

The location of existing development within the locality is shown in the following aerial photograph:



2. DESCRIPTION OF DEVELOPMENT

Key aspects of the proposal (as amended) include the following:

- Extend the approved hours of operation of the existing western shed (industrial building) to 24 hours a day;
- Sealing the existing gap around the western door with a 6mm loaded vinyl fabric or a 10mm thick rubber strip. It is proposed that the western door will remain sealed and closed during the extended hours of operation;
- Proposed installation of approximately 500m² of 100mm thick R1.5 polyester acoustic absorption/thermal blanket hung vertically on the internal face of the shed walls around the fabrication area;
- At the completion of the acoustic sealing work, a certificate of acoustic compliance is to be provided to Council to confirm that the noise trigger levels in the Matrix Thornton Noise Report dated 30 August 2019 are not exceeded and comply with the relevant standards specified by NSW Noise Policy for Industry; and



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• A proposed additional carparking area, which will provide a relocation of parking arrangements for workers during the evening and night-time periods to be on the northern side of the building.

The Applicant has proposed to modify conditions E(7) and F(8).

Refer to **Attachment 2** at the end of this report for plans of the current approved development and noise assessment details.

Development Approval and Rezoning History

The existing industrial shed/workshop was granted development consent under DA2004 - 526 on 2 September 2004. The originally approved shed had dimensions of 29m by 50m (1,000m2) and a height of 12m.

In March 2016, a modification application was lodged by Birdon to modify the size of the approved industrial shed/workshop to be 21.8m by 42m (915m²) and increase the height to 15m. The modified consent was granted on 27 April 2016.

Since this time the industrial shed/workshop has been utilised as a part of Birdon's marine industrial undertakings including the maintenance, refurbishment and construction of boats and associated marine facilities.

In 2015, the subject site, Lot 17 DP1191370, was rezoned from RU1 Primary Production to IN4 Working Waterfront.

Application Chronology

- 19 November 2019 Modification application lodged with Council.
- 13 December 2019 to 10 January 2020 (extended 1 month to permit late submissions) Neighbour notification of proposal.
- 15 January 2020 Assessment update provided to Applicant.
- 21 January 2020 Redacted copies of submissions (at the time) provided to Applicant for consideration and advised extension to neighbour notification period.
- 30 January 2020 Site visit by assessing officer and Council Environmental Health Officer.
- 19 February 2020 Redacted copies of submissions provided to Applicant for consideration.
- 24 March 2020 Follow up to Applicant on status of responding to assessment issues.
- 30 March 2020 Additional information received from Applicant in response to assessment and submission issues.
- 23 and 24 April 2020 Discussion with Applicant on draft conditions.

3. STATUTORY ASSESSMENT

Section 4.55 Matters for Consideration

In determining the application, Council is required to take into consideration the matters as are relevant to the development that apply to the land to which the development application relates.



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Section 4.55 of the Environmental Planning and Assessment Act 1979 enables the modification of consents and categorises modification into three categories - 4.55(1) for modifications involving minor error, mis-description or miscalculation; 4.55(1A) for modifications involving minimal environmental impact; and 4.55(2) for other modifications.

Each type of modification must be considered as being substantially the same to that which was originally consented to.

The proposal is proposed to be assessed as a Section 4.55(1A) application.

Is the proposal substantially the same?

The subject application is being considered under the provisions of Section 4.55(1A). The proposal is considered to be substantially the same development to that which was originally consented to and the changes will have minimal environmental impact as justified and subject to recommended conditions.

Specifically, the proposed extension of hours will not modify the nature or type of industrial activity currently undertaken on-site and the development will therefore be substantially the same as the development for which the consent was originally granted. The changes to additional car parking arrangements is considered to be minor and will not fundamentally change the essence of the development.

Does the application require notification/advertising in accordance with the regulations and/or any Development Control Plan?

Neighbour notification has been completed in accordance with Development Control Plan 2013 and Council's Community Participation Plan.

Any submissions made concerning the modification?

11 submissions have been received following completion of the neighbour notification period. The issues raised in the submissions received are considered later in this report.

Any matters referred to in section 4.15(1) relevant to the modification?

- (a) The provisions (where applicable) of:
- (i) Any Environmental Planning Instrument

State Environmental Planning Policy (Coastal Management) 2018

The subject land and the properties within Glen Ewan Road are within the "proximity area for coastal wetlands" under the SEPP (Coastal Management) 2018. The modification application seeks approval for the extension of hours of operation of current industrial activities within an existing industrial shed. The extended hours carpark will make use of an existing gravel area. The proposed application to modify the hours of operation will not result in any identifiable adverse impacts to:

- The biophysical, hydrological or ecological integrity of the mapped coastal wetland within proximity of the land; and
- The quantity and quality of surface and ground water flows to and from the mapped coastal wetland within proximity of the land.

Port Macquarie-Hastings Local Environmental Plan 2011

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The subject site is partly zoned IN4 Working Waterfront and RU6 Transition under the provisions of the *Port Macquarie-Hastings Local Environmental Plan 2011*.

The existing industrial shed/workshop is wholly located within that part of the site zoned IN4 Working Waterfront.

The industrial shed/workshop was granted consent under DA2004 - 526 (as currently modified) and is utilised by Birdon as a part of the existing marine industry.

(iii) Any Development Control Plan in force

Development Control Plan No. 18 - Off Street Parking Code

The proposal (as amended) includes a proposed additional carparking area with relocation of current parking arrangements for workers during the evening and nighttime periods. The new location of the carpark is to be on the northern side of the building and to a gravel standard. This carparking area can satisfy the requirements of this DCP and is surplus to the original requirements as approved.

The requirements of this DCP (as in force at the time) remain satisfied.

(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.

(iv) Any matters prescribed by the Regulations

No matters prescribed by the regulations apply.

(b) The likely impacts of that development, including environmental impacts on both the natural and built environments, social and economic impacts in the locality:

Context and Setting

The proposal as modified will be consistent with the locality and adequately addresses planning controls (as in force at the time) for the area.

The modified proposal is appropriate and will be unlikely to have any adverse impacts to existing adjoining properties or the public domain.

Traffic

The modified proposal with extended operating hours will not have any identifiable significant adverse impact on the surrounding road infrastructure or traffic volumes.

Noise

The modification proposal primarily proposes to extend the approved hours of operation of the existing western shed (industrial building) to 24 hours a day - 7 days a week. The current approved hours are limited to the following.

(8) (DDOCC00630) Hours of operation of the development are restricted the following times:

- 7.00 am to 6.00 pm – Mondays to Saturdays



No work is to be carried out on Sundays and Public Holidays.

With the proposed extended hours, the Applicant has originally submitted a specialist Noise Impact Assessment prepared by Matrix Thornton. During the assessment of the application, assessment and submission issues were raised with the Applicant. In response, additional specialist acoustic advice has been submitted from Matrix Thornton and the Applicant. All information submitted has been carefully considered in consultation with a Council's Environment Health Officer.

The following assessment points are made in relation to noise/acoustic impacts:

- The Noise Impact Assessment Report centres on the proposed extended trading hours past 6pm till 7am and concludes that noise from the shed will not adversely impact on the residents across the Glen Ewan Road, provided an acoustic seal is installed around the Western door and the door is kept shut and sealed after 6pm until after 7am. Small personnel access doors in the shed were also assumed to be kept closed.
- The noise from the carpark was assessed on there being 3 noise sources in the carpark, ie cars arriving and leaving at the same time, people talking and door slams. The Report indicates that there'll be a 75dB(A) equivalent noise level, which will comply with the Trigger levels at the residential receivers.
- A worst case scenario of a car accelerating from/into the carpark at 95dB(A) was used for the sleep disturbance assessment and the Report concludes that the maximum level of 52LAMax won't be exceeded at the windows of the residences and no further noise mitigation is required.
- Matrix Thornton have revised the initial acoustic assessment and have identified two further noise attenuation measures that can be implemented to address some of the concerns raised in the submissions, which are:
 - Install sheets of insulation material to the southern wall of the shed near the fabrication area which will reduce noise from the shed by two decibels, 2dB(A); and
 - Provide an extended operating hours carpark for staff at the rear of the shed on the Hastings River side, which will increase the separation distance to the residences on Glen Ewan Road.
- Matrix Thornton conclude that overall noise will be further reduced by an additional two (2) decibels with the addition of the insulation to the southern wall and will comply with all relevant noise criteria at the residences on Glen Ewan Road.

The primary mitigation measures (conditions) are recommended to be as follows:

- (1) Prior to any commencement/occupation for operations of extended hours (between 6pm and 7am), the following shall be completed:
 - a) Installation of 100mm thick R1.5 polyester acoustic absorption/thermal blanket or equivalent on the internal face of the southern wall of the existing shed;
 - b) Installation of the door seal as detailed in Section 6.2.2 of the Matrix Thornton "Impact Noise Assessment Report', dated August 30, 2019; Report reference M19054.02; and
 - c) At the completion of the acoustic sealing works, as detailed in the modification approved 7 May 2020, a certificate of acoustic compliance prepared by a suitably qualified and practising acoustic consultant shall be submitted to Council to certify that all of the Project





Noise Trigger Levels are being complied with during full operating capacity. Refer to the Matrix Thornton Noise Reports dated 30 August 2019 and 27 March 2020. The acoustic certification shall comply with all relevant Australian Standards and NSW EPA requirements, including the NSW Noise Policy for Industry.²

- (2) (F196) Provision is to be made during extended operational hours (6pm to 7am) of an additional car park on the existing hard stand area located on the northern side of the existing western shed as shown on the plan Birdon Marine Extended Hours Carpark (King & Campbell plan 6300P_Site Revision A dated 25 March 2020). The carparking area shall have capacity for 12 cars and is to be provided for employees working in the existing shed on Lot 17 during the extended hours of operation from 6pm to 7am.
- (3) The western sliding door of the western shed (as indicated in Figure 3-2 of the Matrix Thornton Noise Report for DA, dated 30 August 2019) shall be kept shut at all time when the processes of manufacturing and fabrication are being carried out within the western shed.

The western sliding door is permitted to be opened and closed for reasons of deliveries and boat/hull flipping only when no manufacturing and/or fabrication works/processes are being carried out or are occurring within the western shed.

The door may remain open during times of a flood risk emergency.

- (4) No deliveries of goods or operation of transport vehicles including forklifts or the like, external to the western shed shall be permitted to occur on the lot during the extended hours from 6pm and 7am.
- (5) (F199) Two months following the commencement of the extended hours of operation (from 6pm to 7am), a certificate of acoustic compliance, prepared by a suitably qualified and practising acoustic consultant, shall be submitted to Council to certify that all of the Project Noise Trigger Levels are being complied with during full operating capacity. Refer to the Matrix Thornton Noise Reports dated 30 August 2019 and 27 March 2020. The acoustic certification shall comply with all relevant Australian Standards and NSW EPA requirements, including the NSW Noise Policy for Industry.

Based upon compliance with the above, it is considered unlikely that the proposed development will have any significant adverse environmental health or noise/acoustic impacts. It should be noted that the above conditions are above what is proposed by the Applicant to ensure landuse compatibility in the existing context.

The modified consent conditions are considered to be practical mitigation measures to ensure a balance of operation needs of an approved industrial business and ensuring compatibility with nearby residences/residential landuses.

(c) The suitability of the site for the development

Subject to compliance with the consent conditions proposed to be modified, the modified proposal will fit into the locality.



(d) Any submissions made in accordance with this Act or the Regulations

Eleven (11) written submissions were been received following public exhibition of the application. Copies of the written submissions have been provided separately to members of the DAP.

Key issues raised in the submissions received (by property location) and comments are provided as follows:

Submission Issue/Summary	Planning Comment/Response	
63, 79, 69 & 47 Glen Ewan Road		
Noise Levels will be 80-90+ decibels.	The predicted noise levels detailed by the specialist Noise Consultant comply with the night-time, evening and daytime trigger levels all residential receivers, which are the closest receivers to the existing shed.	
Noise will funnel under the Hastings Bridge and travel up river and across the floodplain.	The acoustic report from Matrix Thornton details that noise levels provided in the report include any reflections from topography. In the case of 7 Glen Ewan Road there could be a small component of noise reflected from the bridge abutment. However, because the abutment is low, not vertical, shielded by vegetation, and 40m from the noise source, any increase at houses on Glen Ewan Road due to reflections would be less than 0.3dBA and would not make any audible difference at the dwellings.	
This development will devalue property.	Any perceived impacts on land value are unable to be considered as part of the assessment of a Development Application under the Environmental Planning and Assessment Act 1979. An assessment of the likely impacts is the focus of this assessment.	
This Colourbond shed where Birdon Marine wants to carry out metal fabrication and boatbuilding does not have any sound installation.	The existing Colourbond shed is proposed to be insulated through the installation of 100mm thick R1.5 polyester acoustic absorption/thermal blanket or equivalent on the internal face of the southern wall of the existing shed.	
Sandblasting, fibre glassing, toxic air pollution will travel in an easterly wind to our house.	There is no sandblasting or fibre glassing undertaken or proposed to be undertaken in the existing shed.	
15 Glen Ewan Road		
Objection to acoustic impacts, installation of the door only, sound rating of Colourbond sheds and that the sound produced will be 80-90 dBA. No sound insulation proposed.	The Updated Acoustic Report confirms that the predicted noise levels comply with the night- time, evening and daytime trigger levels at all residential receivers which are the closest receivers to the existing shed the subject of the modification application. Table 6-1 confirms that the Total Noise Levels are 2-5 dBA below the night-time Trigger Levels.	

Submission Issue/Summary	Planning Comment/Response	
Submission issue/Summidly	Planning Comment/Response As outlined above, the existing Colourbond	
	shed is proposed (as amended) to be insulated	
	through the installation of 100mm thick R1.5	
	polyester acoustic absorption/thermal blanket	
	or equivalent on the internal face of the	
	southern wall of the existing shed.	
The distance from house to	The existing shed is in excess of 140m	
shed 2 is approximately 110m	from the existing residences at 7-15 Glen Ewan	
or less.	Road.	
The car park approximately	The Applicant has been requested to address	
less than 65m from boundary	this issue and provided satisfactory additional	
will create noise levels of	information to confirm that the typical source	
95dBA with 10 cars arriving	noise level of car park events such as car doors	
and leaving in any 15-minute	slamming and cars accelerating is LAmax	
period. The report does not	95dBA.	
mention the effects of truck		
and machinery noise/forklifts	The Applicant's consultant Matrix Thornton has	
and crane noise that will affect	then provided satisfactory confirmation that the	
property.	modelling shows that the predicted level of	
	Maximum Noise Levels at the four receivers	
	included in the original report (9-15 Glen Ewan	
	Road) are below the screening level at all the	
	receivers.	
	Table 6.2 (p.10) shows that the Predicted Level	
	at 15 Glen Ewan Road is LAmax 38dBA being	
	14dBA below the Screening Level, Night	
	Shoulder.	
	The proposed extended hours car park within	
	the existing gravel area on the northern side of	
	the existing shed and approximately 195m from	
	the residences on Glen Ewan Road.	
11 Glen Ewan Road	The distance between the OM	
The distance from house to	The distance between the SW corner of the	
shed 2 is approximately 90m	existing shed and the existing residences on 7-	
or less.	15 Glen Ewan Road is in excess of 140m. The	
	extended hours car park is approximately 195m	
The development will develue	from the existing residences.	
The development will devalue	Any perceived impacts on land value are	
my property.	unable to be considered as part of the	
	assessment of a Development Application	
	under the Environmental Planning and Assessment Act 1979. An assessment of the	
	likely impacts is the focus of this assessment.	
The eastern door of this shed		
will be left open with the noise	The prediction of noise is assumed that the	
levels which will be 80-90 +	door in the eastern end would remain open and	
decibels.	the door on the western end would remain fully	
	closed. The predicted total noise levels comply with the night-time, evening and daytime trigger	
	with the night-time, evening and daytime trigger levels at all residential receivers. Table 6-1in	
	particular of the report confirms that the Total	
	Noise Levels are 2-5 dBA below the night-time	

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Submission Issue/Summary	Planning Comment/Response
	Trigger Levels.
The car park approximately 65 m from my boundary will generate noise levels of 95 dBA with 10 cars arriving and leaving in any 15-minute period. The report does not mention the effects of truck and machinery noise/forklifts and crane noise that will affect property.	There is no work proposed outside of the existing shed including the operation of trucks, forklifts and cranes during the proposed extended hours of operation.
The headlights at night from trucks and cars will light up house and the bedroom windows where children and family are living.	The amended plans show the location of the internal driveway from the extended hours car park in relation to the residences on 7-11 Glen Ewan Road. The plan shows that the headlights of cars exiting the driveway will not be directed towards the existing residences.
The sound bounces off the Dennis Bridge abutment and is directed straight at house.	The specialist report from Matrix Thornton details that noise levels provided in the report include any reflections from topography. In the case of 7 Glen Ewan Road there could be a small component of noise reflected from the bridge abutment. However, because the abutment is low, not vertical, shielded by vegetation, and 40m from the noise source, any increase at houses on Glen Ewan Road due to reflections would be less than 0.3dBA and would not make any audible difference at the houses.
This large colour bond shed where Birdon Marine wants to carry out metal fabrication and boatbuilding does not have any sound insulation.	The proposal has been amended to include a proposed installation of 100mm thick R1.5 polyester acoustic absorption/thermal blanket or equivalent on the internal face of the southern wall of the existing shed.
19 Glen Ewan Road	
The monitoring for the baseline sound in the area was contaminated by Birdon producing large amount of noise from shed two and sandblasting, grinding and hammering steel with both doors open. The sound monitoring that was undertaken is inaccurate and should be redone.	There is no sandblasting undertaken or proposed to be undertaken in the existing shed. The Matrix Thornton Report was a noise assessment of the proposed extended operating hours of the Birdon Marine facility at Sancrox. It has been confirmed that all noise modelling and monitoring performed for that report was done in accordance with the NSW Noise Policy for Industry (2017), the current policy in NSW.
Concern raised with respect to the acoustic rating of Colourbond.	The results of the acoustic modelling contained in the Noise Impact report prepared by Matrix Thornton are based on the existing shed constructed of Colourbond.
The existing house on 19 Glen Ewan Road is approximately 110 m from the	The existing shed is in excess of 140 m from all existing houses.



Submission Issue/Summary	Planning Comment/Response	
existing shed and less than 50m from the western car park.	The amended plans also show that the proposed extended hours car park on the gravel hard stand area north of the existing shed is approximately 195 m from the existing houses in Glen Ewan Road.	
Noise associated with metal fabrication, hammering steel plating grinding can be heard and will be far greater if sandblasting is also done.	There is no sandblasting proposed to be undertaken in the existing shed.	
Noise levels for the car park is reported at 95dBA with 10 cars arriving and leaving in any 15 minute period. The report does not mention the distances to the closest residence from the car parking areas or the effects of truck and machinery noise/forklifts and crane noise.	The specialist noise reports from Matrix Thornton confirm that the predicted total noise levels (which includes noise associated with the proposed extended hours carpark) comply with the night-time, evening and daytime trigger levels at all residential receivers. Table 6-1 confirms that the Total Noise Levels are 2-5 dBA below the night-time Trigger Levels.	
Concerns raised with respect to the noise impacts associated with carpark, truck loading and unloading, dragging chains, slamming doors.	There is no work proposed outside of the existing shed including the operation of trucks, forklifts and cranes during the proposed extended hours of operation. A new consent condition is recommended to ensure this is complied with.	
Cars and trucks coming and going with their headlights on at night will light up house and bedrooms.	The amended plans show the location of the internal driveway from the extended hours car park in relation to the residences on 7-11 Glen Ewan Road. The plan shows that the headlights of cars exiting the driveway will not be directed towards the existing residences.	
King & Campbell and Matrix reports indicate the industrial noise policy was from 1997. The current policy relating to industrial noise policy is 2017.	Matrix Thornton Report was a noise assessment of the proposed extended operating hours of the Birdon Marine facility at Sancrox. It was confirmed that all noise modelling and monitoring performed for that report was done in accordance with the NSW Noise Policy for Industry (2017), the current policy in NSW.	
The sealing of the western doors will mean there is no cross ventilation and be in breach of Work Safety Australia guidelines if the shed is used for activities such as welding, grinding Marine/metal fabrication.	Birdon has undertaken a review of the current working environment within the existing shed and confirm that the existing ventilation arrangements meet their WHS statutory obligations with the western door shut.	
The construction of the shed and distance to the river according to BlueScope Steel	The subject modification application seeks to extend the hours of operation of existing industrial activities within the existing industrial	

Submission Issue/Summary	Planning Comment/Response
guidelines indicates that the	shed is approved and development consent
distance to the river is non-	DA2004 -526. The BlueScope Steel guidelines
compliant and the material	are not a relevant matter to the subject
used is insufficient.	modification application.
	The proposal has been amended during the
	assessment of the application to now include
	proposed installation of 100mm thick R1.5
	polyester acoustic absorption/thermal blanket
	or equivalent on the internal face of the
	southern wall of the existing shed.
The residential receiver	Matrix Thorton have advised that as they
category used in the acoustic	understand the issue in the submissions there
assessment should be rural.	is a question as to whether the surrounding
	residences should be considered "Rural
	residential" or "Suburban residential" as
	described in Table 2.3 of the Noise Policy for
	Industry. From the point of view of noise
	assessment, we note that it makes no
	difference to the outcome. This is because the
	noise trigger levels were based on the night-
	time and evening amenity levels are the same
	for suburban and rural receivers (40dBA) and
	were only considering activity during evening
	and night-time. Hence the choice of "Suburban residential" or "Rural residential" makes no
	difference to the outcome.
Concerned how sound levels	The predicted total noise levels comply with the
will be capped at the expected	night-time, evening and daytime trigger levels
level being 50 dBA during the	at all residential receivers. Table 6-1 confirms
day, 45dBA in the evening	that the Total Noise Levels are 2-5 dBA below
and 40dBA in the night. The	the night-time Trigger Levels.
noise policy contains certain	
measures such as a contact	The submitted modification application includes
line for affected receivers or	measures to reduce potential noise impacts as
measures for the monitoring	detailed earlier in report. The mitigation
and reduction of noise levels.	measures are to be achieved and maintained
None of this has been	via compliance with consent conditions as
supplied in the proposal.	recommended.
7 Glen Ewan Road	
The distance from my house	The distance between the SW corner of the
to shed 2 is approximately 85	existing shed and the existing residences on 7-
m.	15 Glen Ewan Road is in excess of 140m. The
	extended hours car park is approximately 195m
	from the existing residences.
Five registered home-	The proposal relates to extended hours of
schooled children, this noise	operation and the current approved day time
will affect children's	business hours will also be maintained.
education.	
	The noise assessment submitted confirms no
	adverse impacts to neighbouring properties
	based upon the Industrial Noise Policy
	guidelines. The predicted total noise levels

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Submission Issue/Summary	Planning Comment/Response	
	comply with the night-time, evening and	
	daytime trigger levels at all residential receivers.	
	The proposal has however been conditioned to	
	require the western door now to be closed at all times with the exception of delivery times and	
	boat flipping which will assist with mitigation of	
	any potential noise impacts particularly in	
The eastern door of this shed	regards to children and general amenity. The prediction of noise is assumed that the	
will be left open, the noise	door in the eastern end would remain open and	
levels will be 80 to 90+	the door on the western end would remain fully	
decibels. The car park approximately	closed. The amended plans show the location of the	
65 m from boundary will result	internal driveway from the extended hours car	
in noise levels in of 95 dBA	park in relation to the residences on Glen Ewan	
with 10 cars arriving and leaving in any 15 minute	Road. The proposed extended hours car park within the existing gravel area on the northern	
period. The report does not	side of the existing shed and approximately	
mention the effects of truck	195m from the residences on Glen Ewan Road.	
and machinery noise/forklifts and crane noise that will affect	The plan shows that the headlights of cars exiting the driveway will not be directed towards	
property.	the existing residences.	
	There is no work proposed outside of the existing shed including the operation of trucks,	
	forklifts and cranes during the proposed extended hours of operation.	
	The Applicant was requested to address this issue and has provided satisfactory additional information to confirm that the typical source noise level of car park events such as car doors slamming and cars accelerating is LAmax 95dBA.	
	The Applicant' consultant Matrix Thornton has then provided satisfactory confirmation that the modelling shows that the predicted level of Maximum Noise Levels at the four receivers included in the original report (9-15 Glen Ewan Road) are below the screening level at all the receivers.	
	Table 6.2 (p.10) shows that the Predicted Level at 15 Glen Ewan Road is LAmax 38dBA being 14dBA below the Screening Level, Night Shoulder.	
The headlights at night from trucks and cars will light up house and the bedroom windows where my children	The amended plans show the location of the internal driveway from the extended hours car park in relation to the residences on 7-11 Glen Ewan Road. The plan shows that the	

Submission Issue/Summary	Planning Commont/Posponso	
and family are living.	Planning Comment/Response headlights of cars exiting the driveway will not	
and farming are living.	be directed towards the existing residences.	
The sound bounces of the	The specialist report from Matrix Thornton	
Dennis Bridge abutment and	details that noise levels provided in the report	
is directed straight at house.	include any reflections from topography. In the	
is directed straight at house.	case of 7 Glen Ewan Road there could be a	
	small component of noise reflected from the	
	bridge abutment. However, because the	
	abutment is low, not vertical, shielded by	
	vegetation, and 40m from the noise source, any	
	increase at houses on Glen Ewan Road due to	
	reflections would be less than 0.3dBA and	
	would not make any audible difference at the	
	houses.	
This large colour bond shed	The existing Colourbond shed is proposed (as	
where Birdon Marine wants to	amended) to be insulated through the	
carry out metal fabrication and	installation of 100mm thick R1.5 polyester	
boatbuilding does not have	acoustic absorption/thermal blanket or	
any sound installation.	equivalent on the internal face of the southern	
Z Clan Ewon Dead property	wall of the existing shed.	
7 Glen Ewan Road property	No dwelling/structure was present at 7 Glen	
including the house is not	Ewan Drive at the time of lodgement. Table 6-1 of Attachment 2 shows that 7 Glen Ewan Road	
mentioned in this proposal.	has now been included in the acoustic	
	assessment. The predicted total noise levels	
	comply with the night-time, evening and	
	daytime trigger levels at all residential	
	receivers. Table 6-1 confirms that the Total	
	Noise Levels are 2-5 dBA below the night-time	
	Trigger Levels.	
4 Glen Ewan Road		
No description of the	The subject modification is seeking approval to	
activities, plant, equipment,	modify the hours of operation of existing boat	
machinery or numbers of staff	building and maintenance activities in the	
working in the shed on any	existing shed. The statement of environmental	
given shift.	effects lodged with the application confirmed	
	the purpose of the proposed workshop and	
	storage building at that time as a new workshop	
	and storage building for the purposes of	
	consolidating existing uses occurring on the site, namely boat building and dredge	
	construction and maintenance in addition to	
	storage for dredge components and equipment.	
	In the short term the current army construction	
	project underway in the storage shed on lot 1	
	could also be relocated to the new shed that is	
	the subject of this application.	
	The existing activities within the existing shed	
	are as per the originally submitted DA2004-526.	
	No change to the nature of those activities is	
	proposed as part of the subject modification	
	application.	

PORT MACQUARIE HASTINGS C O U N C I L

Cubmission Issue/Cummony	Planning Commont/Peanance	
Submission Issue/Summary	Planning Comment/Response	
A single noise mitigation	Refer to comments above regarding the Total	
measures are being the	Noise Levels being 2-5 dBA below the night-	
sealing of the existing gap	time Trigger Levels and the proposed	
around the western door. The	installation of 100mm thick R1.5 polyester	
proposal does not address	acoustic absorption/thermal blanket or	
how the shed will be	equivalent on the internal face of the southern	
ventilated nor how work	wall of the existing shed.	
health and safety		
requirements would be met	The Applicant has confirmed that Birdon has	
with the end door closed and	undertaken a review of the current working	
significantly reduce crossflow	environment within the existing shed and	
ventilation for workers in an	confirm that the existing ventilation	
uninsulated tin shed.	arrangements meet their WHS statutory	
	obligations with the western door shut.	
The information does not	The works proposed to be undertaken within the	
articulate what the nature of	existing shed during the evening and night-time	
existing work is to enable	periods are identical to those activities	
Council to clearly determine	undertaken within the existing shed during the	
the impacts of the extended	daytime period. There will be no works	
hours operation. There is	undertaken external of the existing shed during	
insufficient explanation of	the evening and night-time periods.	
•	the evening and hight-time periods.	
evening and night-time activity		
proposed to be undertaken.	The bistorical compliance issues rejection this	
This submission raises	The historical compliance issues raised in this	
historical compliance issues	submission are not relevant to the subject	
with respect to the operation	modification application of DA2004- 526 to	
of the side on the eastern side	change the proposed hours of operation.	
of the Pacific Highway which		
the suggests gives Council		
genuine grounds for not		
accepting as reasonable or		
feasible the Applicant's		
compliance based approach		
to the proposed unrestricted		
hours of operation.		
Fishburn Watson O'Brien on		
behalf of Ms Fleming		
The application is not an	On the basis of compliance with the relevant	
application involving minor	acoustic criteria, the proposed modification of	
environmental impact capable	DA2004 - 526 to extend the hours of operation	
of approval under s. 4.55 (1A)	of the existing use of the existing shed is	
of the Environmental Planning	consistent with Section 4.55(1A) of the EP & A	
& Assessment Act 1979 (EP	Act as the modification will be of minimal	
& A Act).	environmental impact.	
Significant intensification of	The total noise from the ongoing operation of	
use associated with the	the existing shed for boat building and dredge	
proposed extension of hours.	construction and maintenance in addition to	
Council requires sufficient	storage for dredge components within the	
detail to be satisfied that any	proposed extended hours complies with the	
impacts are minimal.	trigger level at all receivers during the daytime,	
	evening and night periods.	
The present application to	Development Application 2004 - 526 was	
modify DA 2004/526 to seal	originally lodged with PMHC in July 2004	
110011 DI 2007/020 10 3001	originally loaged with thin to in oury 2004	



Submission Issue/Summary	Planning Commont/Posnanca
Submission Issue/Summary the shed and to extend	Planning Comment/Response
	seeking consent for a Proposed Workshop &
operating hours to 24 hours a	Storage Building. The statement of
day. The application does not	environmental effects lodged in support of the application outlined the stated purpose of the
seek any change to the approve use of the building	
	proposed workshop and storage building as: 'construction of a new workshop and storage
from sand processing and maintenance workshop.	, v
maintenance workshop.	building for the purposes of consolidating existing uses occurring on the site, namely boat
Birdon does not have	building and dredge construction and
development consent for the	maintenance in addition to storage for dredge
use of Lot 17 in shipbuilding	components and equipment. In the short term
and maintenance. We are	the current army construction project underway
instructed, based on Birdon's	in the
well publicised expansion and	storage shed on lot 1 could also be relocated to
new	the new shed that is the subject of this
contracts, the shed will be	application.'
used for more than sand	A modification of DA2004 - 526 was lodged
processing and dredge	with Council in 2016 to change the dimensions
maintenance. Any grinding	and height of the workshop and storage
and other shipbuilding	building. This modification was considered and
activities are new uses for the	subsequently approved by Council's
shed that must carefully	Development Assessment Panel (DAP)
assessed.	meeting on 27 April 2016. The Council staff
	report to the DAP meeting re-confirmed the
	originally stated purpose of the shed as follows:
	The shed included use as an industrial
	workshop/storage area associated with the
	existing dredging/boat building business. The
	development was permissible as an addition to
	an existing use'.
	The workshop and storage building
	construction commenced shortly after the
	granting of modification consent and was
	finalised in late 2016. The workshop and
	storage building have been in continuous
	operation since.
	This modification application seeks to change
	the hours of operation approved pursuant
	DA2004 - 526. No changes are proposed to the
	originally stated purpose of the existing shed,
	being boat building and dredge construction
	and maintenance in addition to storage for
	dredge components and equipment.
Noise monitoring and	Matrix Thornton Report have confirmed that the
modelling of noise impact	noise assessment of the proposed extended
occurred against a	operating hours of the Birdon Marine facility at
superseded noise	Sancrox. I confirm that all noise modelling and
policy (Noise Policy for	monitoring performed for that report was done
Industry, EPA 1997). The	in accordance with the NSW Noise Policy for
current policy is dated 2017.	Industry (2017), the current policy in NSW."
There is no detail of the air	The modification application confirms that the



Submission Issue/Summary	Planning Commont/Posnansa	
Submission Issue/Summary management within the	Planning Comment/Response western door of the existing shed is proposed	
sealed shed and the	to be sealed. Birdon has undertaken a review of	
emissions from any	the current working environment within the	
ventilation.	existing shed and confirm that the existing	
	ventilation arrangements meet their WHS	
	statutory obligations with the western door shut.	
	The Matrix Thornton noise assessment	
	confirms it has been undertaken based on the	
	western door being closed and sealed and the	
	other doors remaining open.	
The application of the SEPP	The subject land and the properties within Glen	
(Coastal Management) 2018	Ewan Road are within the "proximity area for	
has not been considered.	coastal wetlands" under the SEPP (Coastal	
Again we would expect this	Management) 2018. The modification	
would weigh against the	application seeks approval for the extension of	
application being considered	hours of operation of current industrial activities	
under	within an existing industrial shed. The extended	
s.4.55 (1A).	hours carpark will make use of an existing	
	gravel area. The proposed application to modify	
	the hours of operation will not result in any	
	impact on:	
	the biophysical, hydrological or ecological	
	integrity of the mapped coastal wetland within	
	proximity of the land.	
	 the quantity and quality of surface and ground 	
	water flows to and from the mapped coastal	
	wetland within proximity of the land.	
The application may be for	The subject application is for the modification of	
designated development or	DA2004 - 526 to extend the hours of operation	
integrated development	of existing industrial activities within the	
	approved industrial shed. DA2004 - 526	
	was neither integrated nor designated	
	development.	
The application is not	The submission compares the subject	
substantially the same	application to modify DA 2004/526 with another	
development	development consent being DA208/98.	
	The subject application to modify development	
	consent DA2004 - 526 is agreed to be	
	substantially the same development as that	
	approved by PMHC. The proposed modification	
	seeks to extend the hours of operation	
	(approved under DA2004 - 526) of the existing	
	industrial activities within the existing industrial	
	shed. Potential environmental impacts associated with the proposed modification of	
	the operating hours have been identified,	
	assessed and adequately mitigated.	
	The total noise from the ongoing operation of	
	the existing shed for boat building and dredge	
	construction and maintenance in addition to	
	storage for dredge components within the	
	proposed extended hours complies with the	



Submission Issue/Summary	Planning Comment/Response	
	trigger level at all receivers during the daytime,	
	evening and night periods.	

(e) The Public Interest

The proposed development satisfies relevant planning controls and will not adversely impact on the wider public interest.

4. DEVELOPMENT CONTRIBUTIONS APPLICABLE

No development contributions are applicable to the modified proposal.

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.

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 (**Attachment 1**) section of this report.

Attachments

- 14. DA2004 526.3 Recommend Modified Consent
- 2. DA2004 526.3 Birdon Marine Proposed Extended Hours Carpark revA
- 3. DA2004 526.3 Matrix Thornton Letter 200130
- 4. DA2004 526.3 Acoustic Impact Assessment Aug 2019
- 5<u>1</u>. DA2004 526.3 Email from Matrix Thornton 20200124
- 6<u>1</u>. DA2004 526.3 Email from Matrix Thornton 20200318



Parcel Number: 64192, 18143

Birdon Marine Pty Ltd CARE King & Campbell Pty Ltd PO Box 243 PORT MACQUARIE NSW 2444

Dear Sir/Madam

DA 2004/526.3 - Modification of Consent Pursuant to Section 4.55 (1A) of the Environmental Planning & Assessment Act 1979

I refer to your application dated 19 November 2019 to modify operating hours and conditions relating to previous approved industrial/building workshop under DA 2004/526 at LOT: 17 DP: 1191370, LOT: 2 DP: 225413 10 Glen Ewan Road SANCROX.

Please be advised that pursuant to Section 4.55 (1A) of the Act, your application to modify the consent has been granted, subject to:

- A. Amend the following conditions as outlined in modified consent:
 - A(1) and F(8)
- B. Add the following conditions as outlined in modified consent:
 - E(7), F(11), F(12), F(13) and F(14)
- C. Reimposition of all other previously approved conditions of consent as originally determined 2 September 2004 and as modified 27 April 2016 with this approval dated 7 May 2020.

The applicant is advised that Section 8.9 of the Act confers on an applicant who is dissatisfied with the determination, right of appeal to the Land and Environment Court.

A revised schedule of development consent conditions is attached.

Yours sincerely

Apply electronic signoff

Item 10 Attachment 1

SCHEDULE OF CONDITIONS ATTACHED TO THIS CONSENT

The conditions of consent referred to in the Notice of Determination for DA No $\,2004/526\,are$ as follows:

No.1	Modification No.1	27 April 2016
No.2	Modification No.2	7 May 2020

A - GENERAL MATTERS

- (1) (DDA0000101) Except as provided by these conditions, the development shall be carried out in accordance with the approved plans and details submitted to Council, stamped and returned with this consent and as modified on 27 April 2016 and 7 May 2020.²
- (2) (DDA0000102) No work shall commence until a Construction Certificate has been issued and the applicant has notified Council of:
 - a) the appointment of a Principal Certifying Authority and
 - b) 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) (DDA0000103) All building work must comply with the provisions of the Building Code of Australia (BCA).
- (4) (DDA0000118) For the purpose of this approval, the 1 in 100 year flood level may be assumed to be RL 3.6m AHD.
- (5) (DDA0000121) All electrical meter boxes shall be placed at a level which is above the 1:100 year flood level. The positioning of meter boxes shall comply with the requirements of Country Energy.
- (6) (DDA0000123) The proponent shall provide electricity and telecommunication services in accordance with the requirements of the relevant authority.
- (7) (DDA0000127) Dust nuisance shall not be generated as a result of the undertaking of the development.
- (8) (DDA0000138) The building shall be a minimum Type C construction in accordance with the Building Code of Australia, as applicable to a Class 8 building.
- (9) (DDA0000145) Roof and surface waters are to be disposed of to the existing stormwater drainage system by means of sealed pipes complying with AS 3500.3.
- (10) (DDA0000151) All sanitary plumbing and drainage work is to be carried out by a licenced plumber in accordance with the requirements of the Local Government Approvals Regulation 1999 and AS3500 The National Plumbing and Drainage Code. Persons carrying out stormwater and sewerage works must be the holder of a permit issued in accordance with the Plumbing and Drainage Code of Practice. No alterations or additions are permitted without the express approval of Council.
- (11) (DDA0000175) Deleted 1
- (12) (DDA0000197) Any fill used onsite is to be obtained from an approved site.

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B - PRIOR TO ISSUE OF A CONSTRUCTION CERTIFICATE

(1) (DDPCC00212) A certificate from an approved Professional Engineer certifying the structural adequacy of the proposed shed to withstand the flood and debris loading in accordance with Council's Hastings River Floodplain Interim Policy is to be submitted with the application for the construction certificate.

Velocities to be adopted for the calculation of forces created by flood waters and debris loading shall be at least three (3) times the velocities determined in the Lower Hastings River Flood Management Study for a 1:100 year flood shown in Figure 3. For the purpose of this approval the 1 in 100 year flood level may be assumed to be RL 3.60m AHD.

- (2) (DDPCC00218) Detailed landscaping plans shall be submitted to Council for approval prior to release of the construction certificate. Landscaping plans shall be in accordance with Councils adopted AUS-SPEC Development and Construction Guidelines, relevant DCP and Policies. Landscaping plans shall indicate:
 - a) Location of proposed planted shrubs and trees.
 - b) Botanical name of shrubs and trees to be planted.
 - c) Mature height of trees to be planted.
 - d) Location of trees identified for retention in the development application plans.
- (3) (DDPCC00226) Full design plans of the proposed engineering works shall be submitted to the Principal Certifying Authority for approval prior to the issue of a Construction Certificate. Where required to be lodged with Council a checking fee in accordance with Council's Management Plan shall be payable upon submission of engineering design plans.
 - a. Draining, stormwater management, water quality control and associated works.
 - b. Sediment and erosion control measures.
- (4) (DDPCC00230) Submission and approval of engineering plans for the stormwater drainage design prepared by a professional engineer or surveyor, including details of the hydraulic and hydrological calculations for the discharge of any roof, surface or other stormwater to an approved point of discharge; such to conform with the requirements of Code No. CO7/4 and Councils adopted AUS-SPEC Design and Construction Guidelines.
- (5) (DDPCC00233) The following engineering details prepared by an approved professional engineer are to be submitted to the consent authority prior to the issue of the construction certificate:
 - a) reinforced concrete floor slab on ground
 - b) reinforced concrete footing
 - c) steel beams
 - d) structural steelwork

Where slabs are intended for use as part of the termite barrier, the drawings must identify the slab has been designed for this purpose.

- (6) (DDPCC00237) The following information shall be submitted in relation to prefabricated trusses with the application for the construction certificate:
 - a) design wind velocity
 - b) roof pitch
 - c) material of roof

- d) material of ceiling
- e) a statement by the applicant/builder on the plans that the trusses are to be designed and manufactured by a nominated truss manufacturing company and nomination of the computer design truss programme
- (7) (DDPCC00238) The stormwater drainage system at the development site shall be provided with gross pollutant traps to prevent stormwater pollutants discharging from the site into the sediment pond. Details of the facility shall be submitted with the construction certificate application.
- (8) (DDPCC00245) A schedule of existing and proposed fire safety measures is to be submitted with the application for the construction certificate.
- (9) (DDPCC00246) An Erosion and Sediment Control Management Plan prepared in accordance with the relevant sections of the Department of Housing manual "Soil and Water Management for Urban Development", Hastings Council sediment control policies and Councils adopted AUS-SPEC Design and Construction Guidelines shall be submitted to and approved by the Principle Certifying Authority.

The plan shall include measures to:

- a) Prevent site vehicles tracking sediment and other pollutants from the development site.
- b) Dust control measures.
- c) Safety measures for temporary and permanent water bodies including fencing and maximum batter slopes.
- d) Contingencies in the event of flooding.
- (10) (DDPCC00248) A detailed engineering plan showing driveways, parking areas, and the means of access from the road to the proposed development in accordance with Councils adopted AUS-SPEC Design and Construction Guidelines are to be submitted to the Principle Certifying Authority for approval. Plans are to include site conditions affecting the access, pavement levels in relation to floor levels, and should nominate levels in relation to the kerb (or nominated fixed datum) and grades.
- (11) (DDPCC00255) Submission of detailed engineering plans for any filling works proposed; such plans to be based on Australian Height Datum. It is to be demonstrated that there will be no adverse effect on the drainage of adjoining properties.
- (12) (DDPCC00297) Prior to the release of the construction certificate, a parking plan is to be submitted and approved by Council. The plan is to comply with Development Control Plan No. 18 and show a total of fifteen (15) new spaces on site. The plan must also indicate existing parking areas.
- (13) Prior to the release of the construction certificate, a s68 approval will be required to alter and/or connect in with an existing onsite waste management system.¹

C - PRIOR TO ANY WORK COMMENCING ON SITE

 (DDPW000302) 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.

Each toilet provided must:

 Be a standard flushing toilet, connected to a public sewer, or if connection to a public sewer is not available, to an on-site effluent disposal system approved by the Council, or

> Item 10 Attachment 1

- b. An approved temporary chemical closet serviced by an approved Council Contractor.
- The provision of toilet facilities in accordance with this condition must be completed before any other work is commenced.
- (2) (DDPW000313) A sign must be erected in a prominent position on any work site on which work involved in the erection or demolition of a building is being carried out:
 - Stating that unauthorised entry to the work site is prohibited, and
 - Showing the name of the person in charge of the work site and a telephone number at which that person may be contacted outside working hours.
 - Any such sign is to be removed when the work has been completed.

This does not apply to:

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- Building work carried out inside an existing building, or
- Building work carried out on premises that are to be occupied continuously (both during and outside working hours)
- While the work is being carried out.
- (3) (DDPW000314) Erosion and sediment controls in accordance with the approved management plan shall be in place prior to the commencement of any works or soil disturbance on the site.
- (4) (DDPW000324) No work shall commence on site until a construction certificate has been issued by Council or an accredited private certifier.

D – DURING WORK

- (1) (DDDW000400) Work on the project 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.

- (2) (DDDW000401) An inspection must be undertaken by the Consent Authority or an Accredited Certifier prior to the covering of any of the works specified below:
 - a) Footing trenches, pier holes and footing reinforcement
 - b) All reinforcement of floors, beams, columns and the like
 - c) All framework, with wetroom flashing & shower trays in place, first floor joists.
 - d) Stormwater drainage lines
 - e) Completion of building before final occupation.

Please note that where Council is nominated as the Principal Certifying Authority or has been requested to undertake an inspection a minimum of 24 hours notice is required to perform the inspection. You will need to quote your Development Application number and property description to ensure your inspection is confirmed.

- (3) (DDDW000403) An inspection must be undertaken by Council prior to the covering of the works specified below:
 - a) sanitary plumbing and drainage
 - b) water supply plumbing

Item 10 Attachment 1 Page 702 c) completion of all plumbing and drainage works

Please note that Council requires a minimum of 24 hours notice to undertake the inspection. You will need to quote your Development Application number and property description to ensure your inspection is confirmed.

- (4) (DDDW000404) Building equipment and/or materials shall be contained wholly within the site and shall not be stored or operated on the footpath or roadway, unless specific written approval has been obtained from Council beforehand.
- (5) (DDDW000405) A garbage receptacle for the reception of all waste materials from the site shall be provided prior to building work commencing and shall be maintained and serviced for the duration of the work.
- (6) (DDDW000455) Stockpiles of topsoil, sand, aggregates, spoil or other material shall be stored clear of any natural drainage path, constructed drainage systems, easement, water bodies, or road surface and located wholly within the site with measures in place to prevent erosion or movement of sediments in accordance with the approved management plan. All spillage of materials, as a result of delivery or handling, must be removed as soon as practicable and placed into suitable receptacles for reclamation or disposal in a manner that does not cause pollution of the environment.
- (7) (DDDW000456) Open and piped drains, gutters, roadways and access ways shall be maintained free of sediment for the duration of the work. When necessary, roadways shall be swept and drains and gutters cleaned of sediment build up.
- (8) (DDDW000460) The capacity and effectiveness of erosion and sediment control measures shall be maintained at all times in accordance with the approved management plan until such time as the site is made stable by permanent vegetation cover or hard surface.
- (9) (DDDW000480) Uncontaminated surface water shall be diverted from the site
- (10) (DDDW000482) Disturbance or excavation of soils below a depth of 1.0m shall not occur to ensure that acid sulphate soils are not exposed and oxidised.
- (11) (DDDW000447) Hard surface areas shall direct all water to the existing onsite sediment ponds to prevent discharge runoff onto adjoining land. This system shall be constructed in accordance with Council's adopted AUS-SPEC Design and Construction Guidelines. All costs shall be the responsibility of the proponent.

E - PRIOR TO THE ISSUE OF OCCUPATION OR SUBDIVISION CERTIFICATE

- (1) (DDP0000500) A Compliance Certificate shall be issued at the completion of the inspections referred to previously, certifying that the works have been completed and comply with the relevant conditions of consent. Where an inspection has been carried out by an Accredited Certifier other than the Principal Certifying Authority, a compliance certificate shall be issued by the Accredited Certifier for each inspection undertaken.
- (2) (DDP0000501) The building shall not be occupied or used in whole or in part until an Occupation Certificate has been issued by the Principal Certifying Authority.
- (3) (DDP0000505) Landscaped areas being completed, prior to occupation of the building or commencement of the approved land use.
- (4) (DDP0000537) 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) (DDP0000562) Each required fire-isolated exit shall have displayed, in a conspicuous position adjacent to each access doorway, a notice in accordance with the Environmental Planning and Assessment Regulation 2000.

- (6) (DDP0000597) Prior to the release of the occupation certificate, the proposed car parking spaces shown on the approved parking plan must be provided onsite.
- (7) (E195) Prior to any commencement/occupation for operations of extended hours (between 6pm and 7am), the following shall be completed:
 - a) Installation of 100mm thick R1.5 polyester acoustic absorption/thermal blanket or equivalent on the internal face of the southern wall of the existing shed;
 - b) Installation of the door seal as detailed in Section 6.2.2 of the Matrix Thornton "Impact Noise Assessment Report', dated August 30, 2019; Report reference M19054.02; and
 - c) At the completion of the acoustic sealing works, as detailed in the modification approved 7 May 2020, a certificate of acoustic compliance prepared by a suitably qualified and practising acoustic consultant shall be submitted to Council to certify that all of the Project Noise Trigger Levels are being complied with during full operating capacity. Refer to the Matrix Thornton Noise Reports dated 30 August 2019 and 27 March 2020. The acoustic certification shall comply with all relevant Australian Standards and NSW EPA requirements, including the NSW Noise Policy for Industry.²

F - OCCUPATION OF THE SITE

- (1) (DDOCC00605) 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.
- (2) (DDOCC00608) An emergency spill response kit must be maintained on-site at all times to prevent spills of liquid chemicals, oils or hydrocarbons from entering the trade waste system or stormwater system.
- (3) (DDOCC00610) All driveways, visitor parking spaces and turning areas shall be kept clear of obstructions at all times.
- (4) (DDOCC00618) Materials stockpiles and handling areas shall be maintained in a condition which prevents wind blown or traffic generated dust.
- (5) (DDOCC00624) Liquid materials, including oils are to be stored in roofed and imperviously bunded area. The minimum volume of the bund should be equal to the total volume of the largest storage container, or 25% of the total storage volume, whichever is greatest.
- (6) (DDOCC00626) Wastes awaiting collection and disposal shall be stored in a manner that prevents pollution. All liquid wastes, including waste oils, shall be stored in a roofed and bunded area. The minimum volume of the bund should be equal to the total volume of the largest storage container, or 25% of the total storage volume, whichever is greatest.
- (7) (DDOCC00628) Spills and contaminated runoff from the workshop area should be prevented from entering the stormwater system. In this regard, adequate spill containment equipment should be maintained on site at all times.
- (8) (F195) Subject to ongoing compliance with conditions E(7), F(11), F(12), F(13) and F(14), the hours of operation of the workshop are not restricted.²
- (9) (DDOCC00697) All loading and unloading in connection with the use must be carried out wholly within the property.
- (10) (DDOCC00698) All garbage areas are to be screened.

- (11) (F196) Provision is to be made during extended operational hours (6pm to 7am) of an additional car park on the existing hard stand area located on the northern side of the existing western shed as shown on the plan Birdon Marine Extended Hours Carpark (King & Campbell plan 6300P_Site Revision A dated 25 March 2020). The carparking area shall have capacity for 12 cars and is to be provided for employees working in the existing shed on Lot 17 during the extended hours of operation from 6pm to 7am.
- (12) (F197) The western sliding door of the western shed (as indicated in Figure 3-2 of the Matrix Thornton Noise Report for DA, dated 30 August 2019) shall be kept shut at all time when the processes of manufacturing and fabrication are being carried out within the western shed.

The western sliding door is permitted to be opened and closed for reasons of deliveries and boat/hull flipping only when no manufacturing and/or fabrication works/processes are being carried out or are occurring within the western shed.

The door may remain open during times of a flood risk emergency.²

- (13) (F198) No deliveries of goods or operation of transport vehicles including forklifts or the like, external to the western shed shall be permitted to occur on the lot during the extended hours from 6pm and 7am.²
- (14) (F199) Two months following the commencement of the extended hours of operation (from 6pm to 7am), a certificate of acoustic compliance, prepared by a suitably qualified and practising acoustic consultant, shall be submitted to Council to certify that all of the Project Noise Trigger Levels are being complied with during full operating capacity. Refer to the Matrix Thornton Noise Reports dated 30 August 2019 and 27 March 2020. The acoustic certification shall comply with all relevant Australian Standards and NSW EPA requirements, including the NSW Noise Policy for Industry.²

G - ADVICE

- (1) (DDADV00797) The workshop should be provided with a bund across the main entrance to contain contaminated wash waters and spillages.
- (3) (DDADV00798) The floor of the workshop and/or bunded areas should be constructed above the 1:100 flood level.
- (4) (DDADV00799) The applicant be advised to orientate the building to minimise the impact of flood velocities likely to be experienced in this location for a major flood event. Contact Council's Technical Services section for flood information available for this specific site.
- (5) Separate development consent will be required to erect any advertising sign onsite or change the use of the building, unless considered exempt development by Council.

The reason for this decision is that 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 interest and will not result in significant adverse social, environmental or economic impacts. The conditions referred to in this schedule are imposed in conformity with the relevant provisions of the Environmental Planning and Assessment Act and Regulations, the Local Government Act and Regulations, The Building Code of Australia and with Council's Policies and Development Control Plan or any other ancillary Act or Regulation in force at the time of the date of determination. The conditions are aimed at protecting the natural environment, preserving our heritage and providing a functional, safe and healthy built environment.

Rights of Appeal

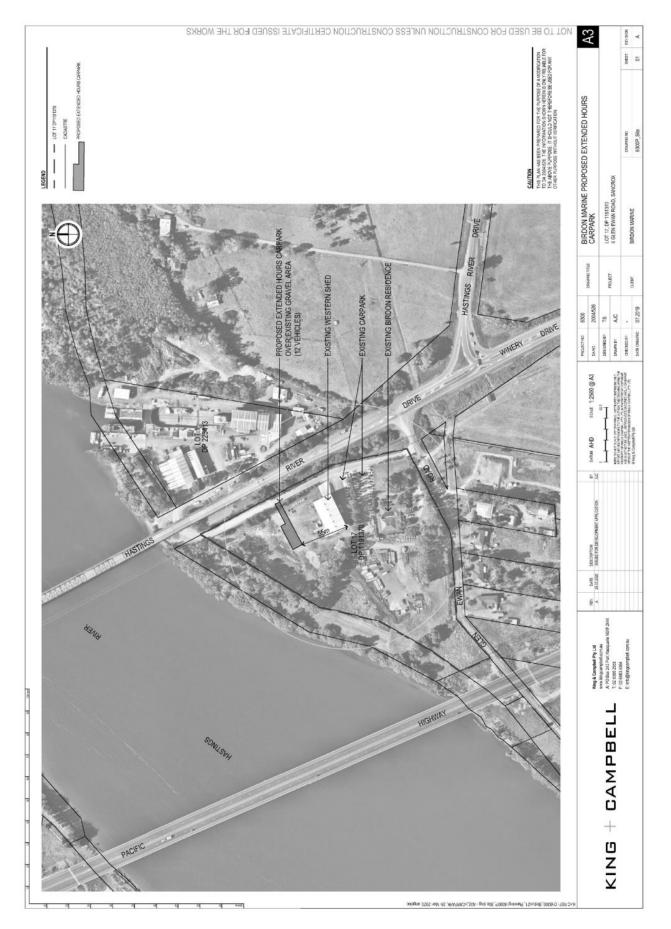
Item 10 Attachment 1 Page 705 If you are dissatisfied with this decision a request for a review of the determination may be made to Council, under the provisions of Section 8.2 of the Environmental Planning and Assessment Act 1979.

If you are dissatisfied with this decision, Section 8.9 of the Environmental Planning and Assessment Act 1979 gives you the right of appeal to the Land and Environment Court.

Yours sincerely

Apply electronic signoff

Item 10 Attachment 1



Item 10 Attachment 2



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Structural ≥ Civil ≥ Mechanical ≥ Acoustic

30 January 2020 Our Ref: M19054.03

King & Campbell PO Box 243 Port Macquarie NSW 2444 Attention: Terrance Stafford

Re: Birdon Marine 24 Hour Operation

Matrix Thornton Report M19054.02 included results of noise modelling of 24 hour operation to residences surrounding the Birdon facility at Glen Ewan Road. On 30 January 2020 we met with representatives of Council on the site of the proposal.

While the mitigation measures proposed in our acoustic report are predicted to reduce noise emission from the proposal to below the recommended trigger levels from the New South Wales Noise Policy for Industry, we have we have analysed the acoustic impact of further mitigation measures. Two further measures that could be implemented are:

- installation of approximately 500 m² of 100mm thick R1.5 polyester acoustic absorption/thermal blanket hung vertically on the internal face of the shed walls around the fabrication area. This would result in a reduction of noise emission from the shed of 2 dBA; and
- relocation of the car park for workers during the evening and night-time periods to be on the northern side of the building. Carpark noise would therefore be further from the residences, and partially shielded by the shed. This would result in a reduction of noise from car parking by 3 dBA.

Implementation of these mitigation measures would give a further reduction in noise of 2 dBA at all receivers. The results given in Table 6-1 of the acoustic report have been updated with these predictions and produced below.

We understand that there is a proposed residence at 7 Glen Ewan Road, across the road from the facility. We have therefore included that residence as Receiver 5 in our noise model, based on the recent aerial photography provided to determine the location, and the predicted noise levels have been included in the table.

As stated above the predicted noise levels already complied with the night time trigger levels. With a further 2 dBA reduction, the predicted noise level is even lower at all receivers.

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Receiver	Address	Shed	Carpark	Total Noise Levels	Trigger Level, Evening, Night Shoulder L _{Aeq,15min} (dBA)	Comments
1	11 Glen Ewan	31	29	33	48/43/38	Below trigger level all periods
2	15 Glen Ewan	35	28	36	48/43/38	Below trigger level all periods
3	17 Glen Ewan	34	24	34	48/43/38	Below trigger level all periods
4	21 Glen Ewan	33	24	34	48/43/38	Below trigger level all periods
5	7 Glen Ewan	32	30	34	48/43/38	Below trigger level all periods

Table 6-1

Predicted Levels of Site, LAeq, 15min (dBA)

P. Thornton

Philip Thornton BE(UNSW) MIE (Aust) Acoustic Consultant Chartered Professional Engineer pthornton@matrixindustries.com.au



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EXISTING INDUSTRIAL SHED

EXTENSION OF WORKING HOURS

NOISE REPORT FOR DA

Report No.	M19054.02
Site:	Birdon Pty Ltd 4 Glen Ewan Road, Port Macquarie NSW 2444
Prepared by:	Philip Thornton BE(UNSW) MIEAust CPEng NER Acoustic Consultant Matrix Thornton Consulting Engineers
Date:	August 30, 2019

SUMMARY

Birdon Pty Ltd is located within the IN4 Working Waterfront and W3 Working Waterways zoned land within Lot 1 DP 225413 and Lot 17 DP 1191371 at Glen Ewan Road, Port Macquarie. Birdon Pty Ltd proposes to operate 24 hours a day within its existing shipyard facility, identified as Shed 1 – West, located on Lot 17 DP 1191370. As part of the assessment of the potential acoustic impacts associated with the new proposed hours of operation, new measurements of background noise have been done because the realignment of the Pacific Highway has changed the noise environment in the surrounding area.

Noise is predicted to comply with the trigger levels during all periods of extended hours of operation.

No noise induced sleep disturbance is predicted due to noise emission from the site during night-time hours.

Item 10 Attachment 4

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1 INTRODUCTION

Birdon Pty Ltd conduct industrial activities in a shed at 4 Glen Ewan Road, Port Macquarie NSW 2444. Matrix Thornton Report M14318.01 of January 2015 was a noise assessment for the rezoning of the land where the shed was built. Approval was given for rezoning and the shed was subsequently built.

Matrix Thornton report M14318.02 of March 2015 discussed further the changing noise environment around the shed due to the relocation of the Pacific Highway to the west. The relocation of the Pacific Highway has been completed, and the highway is now operational in its new alignment.

Birdon now proposes to extend their operating hours to 24-hour operation, 7 days per week. This report presents a noise assessment of that proposal.

As the relocation of the Pacific Highway has changed the background noise levels in the area, new background noise monitoring has been done to set appropriate target noise levels for noise emission during extended hours.

2 PURPOSE OF THE REPORT

- Identification of the specific noise related activities and associated sources.
- Identification of all potentially affected noise sensitive receivers including residences and properties containing sensitive equipment.
- Obtain background noise measurements from noise logging for seven days;
- Determine the acceptable noise criteria within the limits of the NSW Environment Protection Authority - Noise Policy for Industry (NPfI), Protection of the Environment Operations Act 1997 -Offensive Noise.
- Analysis of noise sources and predict new levels of likely noise impacts at the nearest affected residences.
- Compare these figures against assessment criteria to determine if within acceptable levels.
- Suggest methods of noise mitigation required, if any, to achieve desired noise levels.
- Assess noise from traffic generated by the development.
- Prepare a report on these findings suitable for Port Macquarie-Hastings Council

3 DESCRIPTION OF THE DEVELOPMENT

3.1 LOCATION AND CONTEXT

The location of the shed is shown in Figure 3-1. New South Wales government overhead imagery has not been updated since the construction of the shed, which is shown as an orange rectangle. In the north east corner of the image is the old alignment of the Pacific Highway which is now located south west of the figure.

The figure also shows the four nearest residential receivers:

- Receiver 1 11 Glen Ewan Road;
- Receiver 2 15 Glen Ewan Road;
- Receiver 3 17 Glen Ewan Road;
- Receiver 4 21 Glen Ewan Road.

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The residences are more than 140 m from the shed.

The figure also shows the locations of noise measurements, marked" Loggers". These locations will be discussed in later sections.

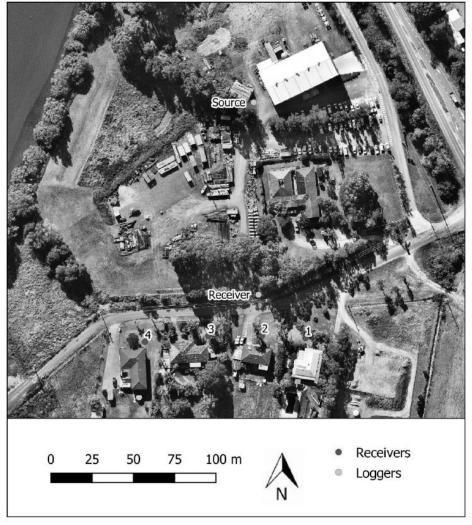


Figure 3-1 Site and Neighbourhood Context

3.2 DESCRIPTION OF THE SHED

Figure 3-2 shows a view of the shed from the south west. The shed is approximately 12m high, 20 m wide and 50 m long. There are large sliding doors at both ends of the shed. These doors are not acoustically treated, and there is a gap of approximately 150 mm at the bottom of the doors when they are closed. The gap on the western door will be acoustically sealed as part of the proposal.

Within the shed, activities including industrial construction occur, with noise from machinery such as grinders and hammering on metal.

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Figure 3-2 View of Shed showing sliding door.

3.3 CURRENT AND PROPOSED OPERATING TIMES

Current approved operating hours are from 7.00 AM to 6.00 PM Monday to Saturday, with no work on Sundays or Public holidays.

This report assesses potential operation for 24 hours per day, 7 days per week.

4 NOISE MEASUREMENTS

Noise measurements were done at the site to determine the existing long-term background noise levels. These will have changed since previous noise assessments due to the realignment of the Pacific Highway.

Noise logging was done at two locations denoted as Source and Receiver in Figure 3-1. The existing background noise environment at the location denoted Receiver is consistent with the existing background noise environment at the residential receivers on the southern side of Glen Ewan Road.

The logger denoted Source was located adjacent to the shed and was intended to measure the noise emission from the shed.

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Concerning noise from the shed we note:

- high noise levels occurred within the shed during the period of our site visit when loggers were placed;
- at the logger location Receiver, noise from the shed was inaudible;
- noise from the shed was inaudible at the receiver locations during that time;
- According to Birdon, high levels of activity, and therefore high noise levels within the shed, occurred from Friday 12 October through Wednesday 17 October.

4.1 BACKGROUND MEASUREMENT

Long term background noise levels were recorded from 12 to 22 July 2019. The location of the two noise loggers used for recording can be seen Figure 3-1.

Long term background noise measurements were recorded using a Type I integrating sound level meter (SLM), model EL-316X, manufactured by Acoustic Research Labs. A Lutron sound level calibrator, model SC-941, was used as a reference sound source immediately before and after measurements were taken. Both instruments are in current calibration from a NATA registered laboratory. An integrating sound level meter can process a continuous, variable, intermittent or impulsive signal to give a single integrated level or L_{Aeq} for the sampling period. This equipment complies with AS 1259 'Acoustics-Sound level meters", Part 2 "Integrating-Averaging" and the testing procedure with AS 2659 "Guide to the use of sound measuring equipment

Appendix B shows the daily noise charts at both locations. Periods of excess wind or rain have been excluded as per NPfI recommendations.

Noise levels at the Receiver Logger will be used to set appropriate noise trigger levels at the residential receiver locations.

Location	Period	RBL
	Daytime	47
Receiver Logger	Evening	45
	Night-time	37
	Daytime	50
Source Logger	Evening	47
	Night-time	38

Note: Daytime is defined as 7.00am to 6.00pm, Monday to Saturday; 8.00am to 6.00pm Sunday and Public Holidays. Evening is defined as 6.00pm to 10.00pm, Monday to Saturday and Public Holidays. Night is defined as 10.00pm to 7.00am, Monday to Saturday; 10.00pm to 8.00am Sunday and Public Holidays.

Table 4-1 Measured background A-weighted sound pressure levels

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5 NOISE POLICY FOR INDUSTRY

Assessment criteria are discussed in the New South Wales Noise Policy for Industry (NPfI). The NPfI gives a procedure for setting "trigger" noise levels. If noise is above a trigger level, a residual noise impact may exist. Depending on the severity of the impact noise mitigation or management needs to be considered.

The policy discusses "intrusiveness" and "amenity" levels which are a set based on the existing noise environment, and the type of residential area. The project specific trigger levels become the most stringent of the two.

5.1 INTRUSIVENESS NOISE LEVEL

For assessing intrusiveness, the background noise level (L_{A90}) is measured and the Rating Background Level (RBL) determined. The intrusiveness of an industrial noise source may generally be considered acceptable if the equivalent continuous noise level (L_{Aeq}) of the source (measured over a 15-minute period) does not exceed the background noise level (RBL) by more than 5 dB.

5.2 AMENITY NOISE LEVEL

The amenity assessment is based on noise criteria specific to land use and associated activities. The criteria relate only to industrial-type noise and do not include transportation noise.

The amenity noise level aims to limit continuing increases in noise levels which may occur if the intrusiveness level alone is applied to successive development within an area.

The recommended amenity noise level represents the objective for total industrial noise at a receiver location. The project amenity noise level represents the objective for noise from a single industrial development at a receiver location.

To prevent increases in industrial noise due to the cumulative effect of several developments, the project amenity noise level for each new source of industrial noise is set at 5 dB below the recommended amenity nose level. While amenity is assessed over the entire 13-hour daytime period, under the NPfl it can be compared directly to the 15-minute assessment of intrusiveness by adding 3 dB to the period level.

Amenity noise levels are not used directly as regulatory limits. They are used in combination with the project intrusiveness noise level to assess the potential impact of noise, assess mitigation options and determine achievable noise requirements.

An extract from the NSW NPfI that relates to the amenity noise levels for surrounding receivers is given in Table 5-1.

Type of Receiver	Indicative Noise Amenity Area	Time of Day	Recommended L _{Aeq} Noise Level dB
		Day	50
Residence	Suburban	Evening	45
	-	Night	40

Note: Daytime is defined as 7.00am to 6.00pm, Monday to Saturday; 8.00am to 6.00pm Sunday and Public Holidays. Evening is defined as 6.00pm to 10.00pm, Monday to Saturday and Public Holidays. Night is defined as 10.00pm to 7.00am, Monday to Saturday; 10.00pm to 8.00am Sunday and Public Holidays.

Table 5-1 Recommended amenity criteria from the NSW Noise Policy for Industry.

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5.3 PROJECT NOISE TRIGGER LEVELS

The project noise trigger levels are given in Table 5-2. The NPfI gives guidance on assessing the noise impact if the noise from industry exceeds the trigger level.

Period	Rating Background Level L _{A90,15min} (dBA)	Intrusiveness Noise Level ¹ L _{Aeq, ISmin} (dBA)	Project Amenity Noise Level ² L _{Aeq,15min} (dBA)	Project Trigger Levels L _{Aeq,15min} (dBA)
Daytime	47	48	58	48
Evening	45	50	43	43
Night-time	37	42	38	38

Note 1: Intrusiveness noise level is LAeq,15min ≤ RBL +5 dB

Note 2: Project amenity noise level (PANL) is suburban ANL minus 5dBA plus 3dBA to convert from a period level to a 15minute level.

Note 3: In accordance with the NPfI, community expectation is that the intrusiveness level for evening should generally not be higher than that for the daytime (NPfI Section 2.3)

Table 5-2 Project trigger levels

6 PREDICTED NOISE LEVELS AND ASSESSMENT

6.1 NOISE MODELLING

To predict noise levels at the receiver locations a noise model was prepared using the iNoise noise modelling program which takes into account noise radiation from the shed, shielding provided by buildings, and any other acoustic attenuation is between the shed and receivers.

6.2 NOISE FROM SHED

6.2.1 EXISTING NOISE EMISSION

The shed has large doors on both of the short ends (western and eastern). For prediction of noise it was assumed that the door in the eastern end would remain open and the door in the western end would remain fully closed.

There is a gap at the bottom of these doors through which noise can escape. This will be sealed under the proposal, however for purposes of calibrating the noise model it was assumed to be unsealed as was the case during measurements.

Smaller personnel doors were assumed to be closed.

The noise from the shed was determined using the Source noise logger. Examination of the noise logger charts in Appendix A for the day is Friday 12, and Monday 13, Tuesday 14 and Wednesday 15 July show typical maximum $L_{Aeq,15min}$ noise levels at the logger location of 60 – 65 dBA. For a conservative assessment it will be assumed that the typical maximum noise level is 65 dBA at that location.

The model was calibrated to predict 65 dBA at location of the "Source" noise logger.

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6.2.2 FUTURE NOISE EMISSION

Birdon Pty Ltd are proposing to seal the existing gap around the western door with 6mm loaded vinyl fabric or 10mm thick rubber strip and to ensure that this strip is in place and the western door remains closed during the extended hours.

From the site measurements and noise modelling, it was predicated that the internal noise level within the shed is L_{Aeq,15min} 89 dBA. This is a high level for industrial noise, and while it would typically occur in isolated places where noisy activities such as grinding occur, it is unlikely to ever occur at all locations within the shed at one time. Therefore, the assumption of uniform level of 89 dBA throughout the shed is a very conservative assumption. Installation of acoustic absorption material within the shed would reduce this figure and has the added benefit of creating a quieter work environment.

For modelling future noise emission, the following assumptions were made:

- Internal noise levels of 89dBA continued throughout the extended hours period;
- The eastern large door would remain open;
- The western large door would be acoustically sealed and closed during extended hours periods.

6.3 CARPARK NOISE

For a typical worst-case assessment, it was assumed that there would be 10 cars arriving or leaving in any 15 minute period. This would typically only occur at the beginning and end of shifts. Predicted noise from the carpark includes noise from cars moving through the car park, engine starts, door slams and voices of people walking through the car park. Based on previous measurements of carpark noise, the typical noise level of car is a sound power level of LAEq.15min 75 dBA per car.

6.4 TOTAL NOISE FROM SITE

Table 6-1 shows the predicted noise levels of the different noise sources and the combined total noise. Noise is predicted to be below the trigger level at all receivers during all periods of the proposed extended hours.

Receiver	Shed	Carpark	Total Noise Levels	Trigger Level, Evening, Night Shoulder L _{Aeq,15min} (dBA)	Comments
1	33	32	35	43/38	Below trigger level all periods
2	37	31	38	43/38	Below trigger level all periods
3	36	27	36	43/38	Below trigger level all periods
4	35	26	36	43/38	

Table 6-1 Predicted Levels of Site, LAeq, 15min (dBA)

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6.5 MAXIMUM NOISE LEVELS

It is proposed to operate during night-time hours from 10.00pm to 7.00am. The potential for sleep disturbance needs to be considered.

6.5.1 SCREENING LEVEL

The approach recommended by the NPfl is to apply the following initial screening noise levels:

- LAeq, 15min 40dBA or the prevailing RBL + 5dB, whichever is the greater; and/or
- LAFmax 52dBA or the prevailing RBL + 15dB, whichever is the greater.

The sleep disturbance screening noise levels apply outside bedroom windows during the night-time period. Where the screening noise levels cannot be met, a detailed maximum noise level event assessment should be undertaken.

The screening level for this development is $L_{\mbox{\scriptsize Amax}}$ 52 dBA.

6.5.2 PREDICTED LEVELS

Noise sources of short duration and high level that may cause disturbance to sleep, if occurring during nighttime, need to be considered. At this development, this short duration noise could come from cars in the carpark. The typical source noise level of car park events such as car doors slamming and cars accelerating is L_{AwMax} 95dBA.

Table 6.2 Predicted Maximum Levels of Cars, L_{AMax} dBA shows the predicted maximum noise levels of instantaneous events at the four receivers.

The predicted level is below the screening level at all receivers, and no further analysis is required for sleep disturbance. No mitigation is considered necessary for the potential for sleep disturbance from the proposal.

Receiver	Predicted Level of Car Doors, Cars Accelerating	Screening Shoulder	Level,	Night	Comments
1	44	52			Below screening level
2	42	52			Below screening level
3	39	52			Below screening level
4	38	52			Below screening level

Table 6.2 Predicted Maximum Levels of Cars, LAMax dBA

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7 CERTIFICATION FOR NOISE IMPACT STATEMENT

The noise impact associated with the proposed extended hours of the Birdon site will be to an acceptable level specified by the NSW Noise Policy for Industry, and Port Macquarie-Hastings Council policy at the most-affected position of the nearest adjoining neighbour. Based on the information obtained by on-site noise measurements and predicted operational noise, the development will not cause "offensive noise" as defined by the Protection of the Environment Operations Act 1997.

8 CONCLUSION

The industrial facility at Glen Ewan Road proposes to operate 24 hours a day. To assist the noise assessment, new measurements of background noise have been done because the realignment of the Pacific Highway has changed the noise environment at the residences nearest to the site.

Based on the updated measurements, trigger levels were set for the daytime, evening and night-time periods.

As the industrial operation is inaudible at the receiver locations, noise modelling was used to predict the levels during evening and night-time operation.

Noise mitigation proposed as part of this proposal included the provision of an acoustic seal to the door on the western end of the shed.

Noise is predicted to comply with the trigger noise levels at all receivers during all periods of the day.

No noise induced sleep disturbance is predicted due to noise emission from the site during night-time hours.

P. Thornton

Philip Thornton BE(UNSW) MIE(Aust) Acoustic Consultant Chartered Professional Engineer



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APPENDIX A: GLOSSARY OF ACOUSTIC TERMS

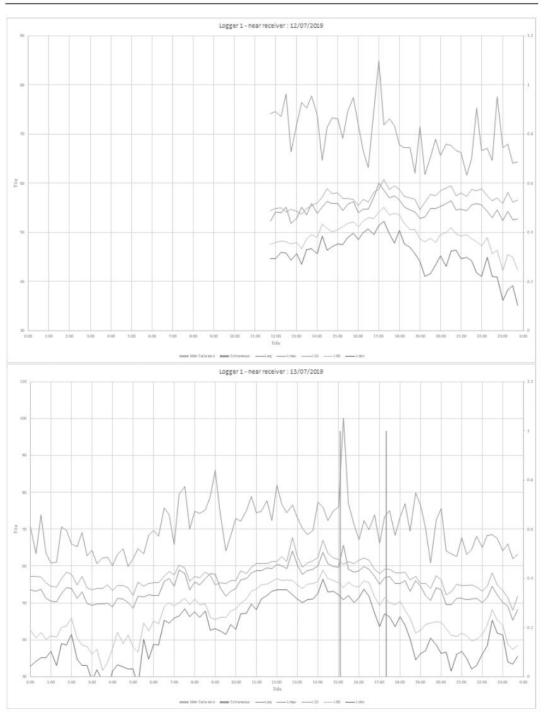
Assessment Period	The period in a day over which assessments are made.
dB(A)	Unit of sound level in A-weighted decibels. The A-weighting approximates the sensitivity of the human ear by filtering these frequencies. The dB(A) measurement is considered representative of average human hearing.
L _{Aeq}	The A-weighted equivalent continuous sound pressure level, used to quantify the average noise level over a time period.
Laio	The A-weighted sound pressure level exceeded for 10% of the measurement period. It is usually used as the descriptor for intrusive noise level.
L _{A90}	The A-weighted sound pressure level exceeded for 90% of the measurement period. It is usually used as the descriptor for background noise level.
L _{Aeq15} min	Refers to the A-weighted energy averaged equivalent noise level over a 15 minute time period.
L_{Cpeak}	The highest instantaneous C-weighted sound pressure level over the measurement period. It is usually used for high impulsive noise.
L _{Amax}	The maximum A-weighted sound pressure level for the measurement period.
Loudness	A 3dB(A) change in sound pressure level is just noticeable or perceptible to the average human ear; a 5dB(A) increase is quite noticeable and a 10dB(A) increase is typically perceived as a doubling in loudness.
RBL	The overall single figure background level representing the assessment period over the whole monitoring period. For the short-term method of assessment, the RBL is the measured $L_{A90, 15min}$ value, or where a number of measurements have been made, the lowest $L_{A90, 15min}$ value.

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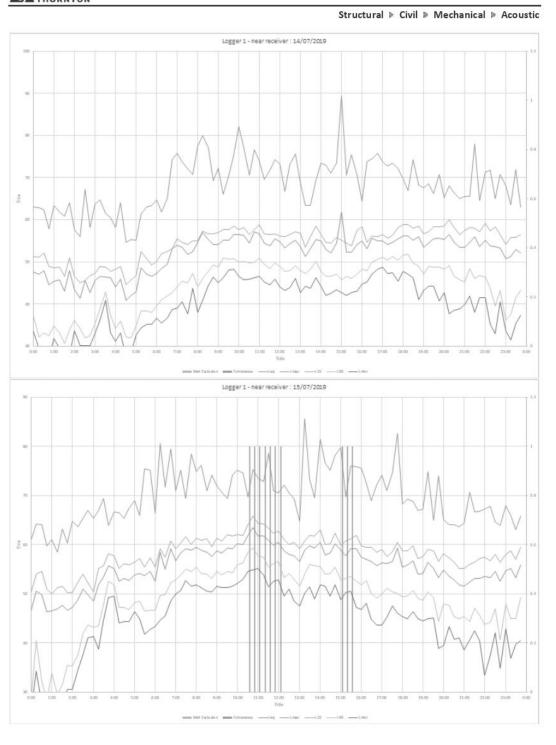
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APPENDIX B: NOISE LOGGER DAILY RESULTS



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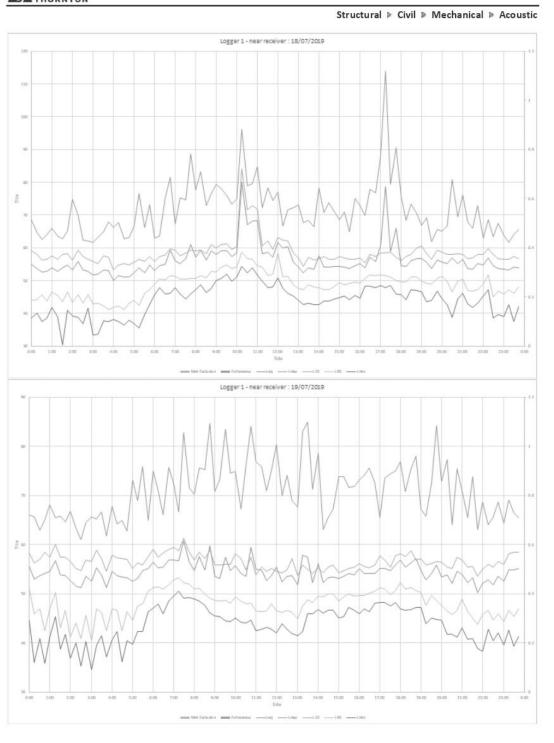
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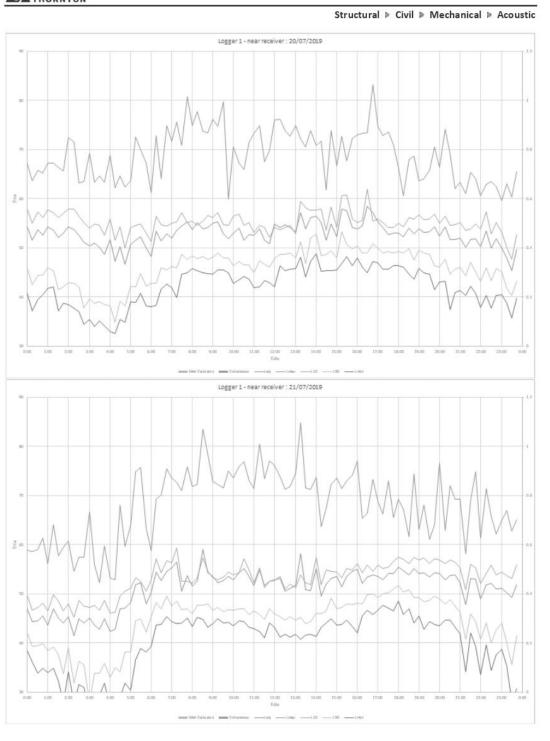
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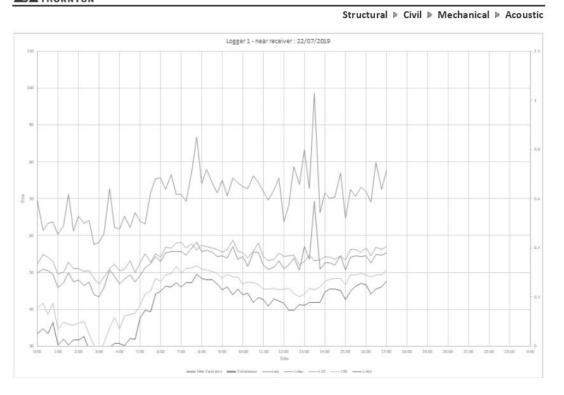
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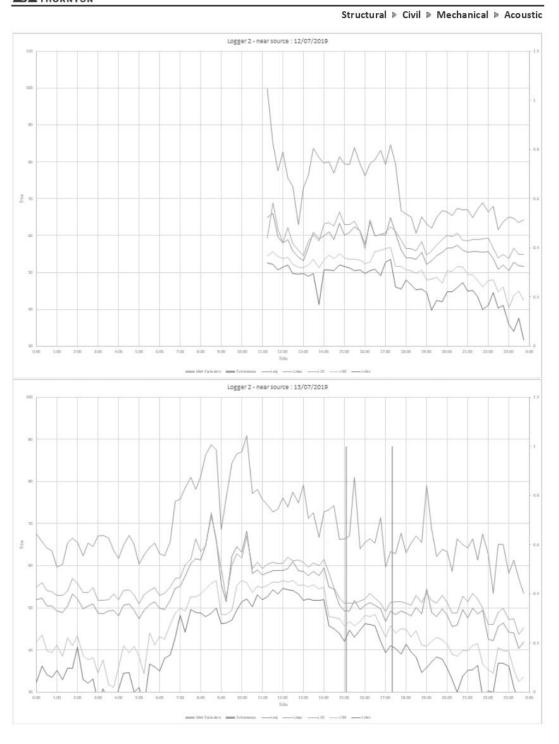
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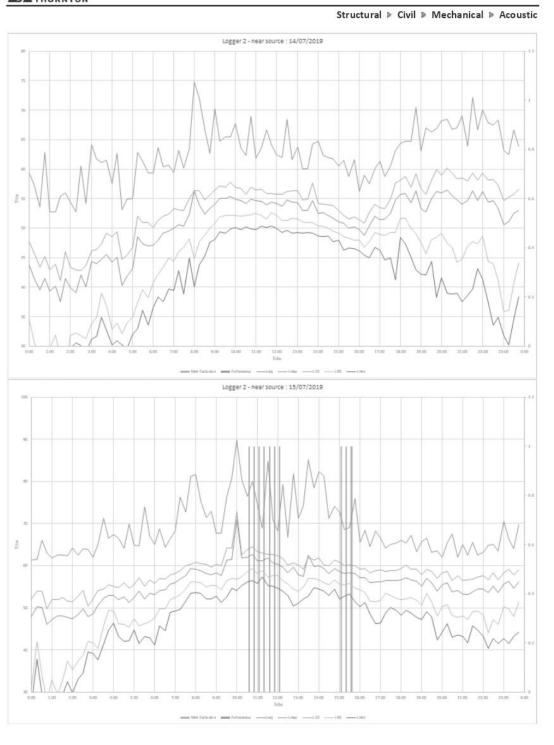
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M19054.02 Impact Noise Assessment



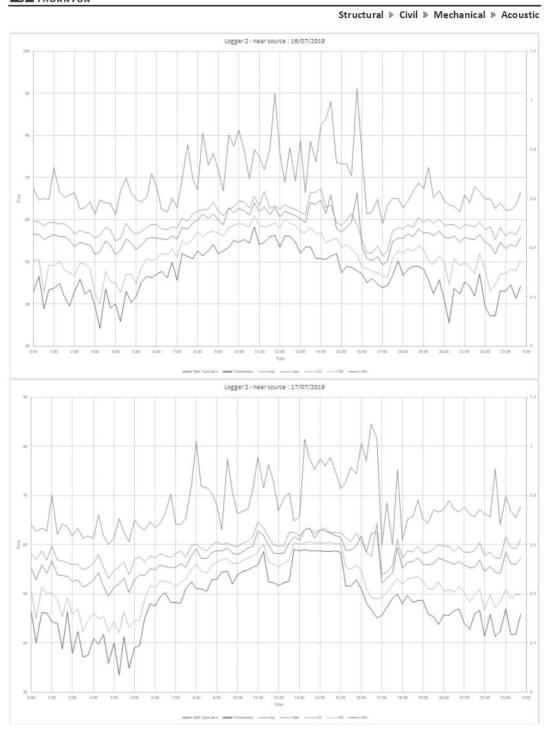
Matrix Thornton Consulting Engineers

M19054.02 Impact Noise Assessment



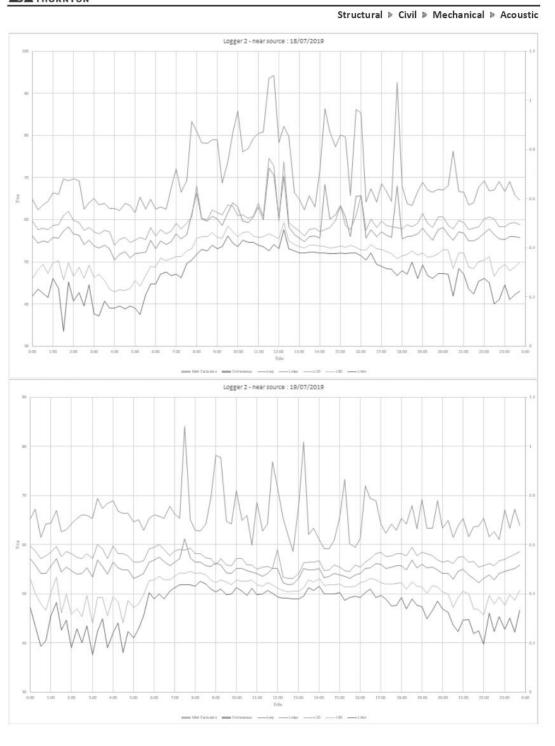
Matrix Thornton Consulting Engineers

M19054.02 Impact Noise Assessment



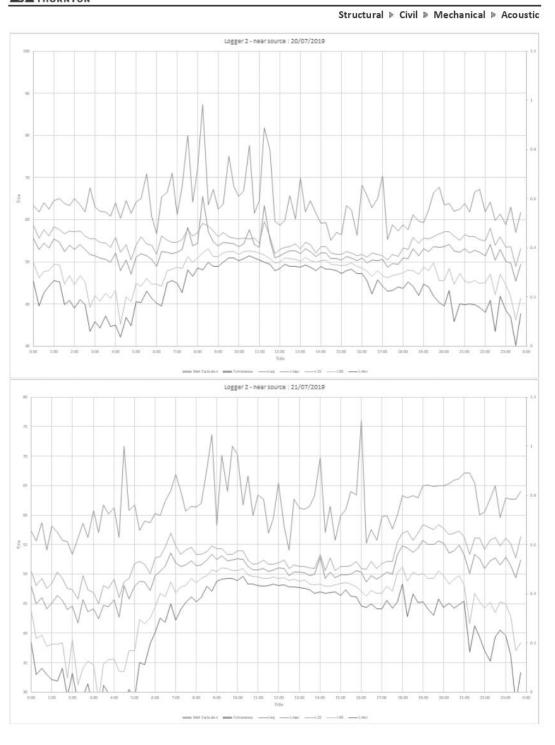
Matrix Thornton Consulting Engineers

M19054.02 Impact Noise Assessment



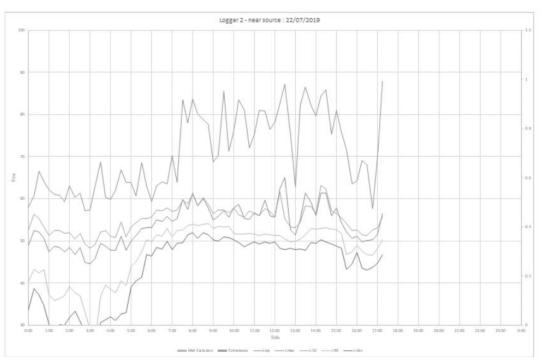
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M19054.02 Impact Noise Assessment



M19054.02 Impact Noise Assessment

Structural > Civil > Mechanical > Acoustic



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M19054.02 Impact Noise Assessment

Structural > Civil > Mechanical > Acoustic

APPENDIX C: PHOTOS



Matrix Thornton Consulting Engineers

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From: George Jenner <<u>george.jenner.matrix@gmail.com</u>> Sent: Friday, 24 January 2020 10:11 AM To: Terrance Stafford <<u>terrances@kingcampbell.com.au</u>> Subject: Re: 6300 Birdon - RE: Birdon Noise, submission queries

Terrance

My comments below:

• (7 Glen Ewan Road): The sound bounces off the Dennis Bridge abutment and is directed straight at my house.

Sound can be reflected from vertical surfaces and noise modelling takes this into account. Noise levels given in our report include any reflections from topography. In the case of 7 Glen Ewan Road there could be a small component of noise reflected from the bridge abutment. However, because the abutment is low, not vertical, shielded by vegetation, and 40m from the noise source, any increase at houses on Glen Ewan Road due to reflections would be less than 0.3dBA and would not make any audible difference at the houses.

• (19 Glen Ewan Road): The NSW Industrial Noise Policy states that potential future development should be not more than 5dB above background noise, colourbond is not best practice technology to ensure emission targets.

According to our noise modelling the acoustic properties of Colorbond cladding are sufficient to reduce noise from the facility to below the target noise levels at the residences.

• (47, 63, 69 & 79 Glen Ewan Road): The sound/noise will funnel under the Hastings River Bridge and travel up river and across the flood plane

Yes noise will travel up river to houses west of the facility. However, due to the distance to those houses, noise will be below the target noise levels (if noise complies at the nearest houses in accordance with our report.)

I'm available till about 11:30 if you need more information. I can talk this afternoon but won't be back at the computer till Tuesday. I can add more detail the answers if you think it necessary.

Item 10 Attachment 5 Page 735 I will do a noise calculation to 7 Glenewan as it wasn't in the report, and will reinforce what I said above. I'll send the result next week before Thursday.

George

From: George Jenner <george.jenner.matrix@gmail.com> Sent: Wednesday, 18 March 2020 12:21 PM To: Terrance Stafford <terrances@kingcampbell.com.au>; philip@matrixthornton.com.au Subject: Re: 6300 RE: update on application assessment 6300 Proposed Modification of DA 2004 526 Birdon, Lot 17 DP 1191370, Glen Ewan Road, Sancrox

Terrance

Matrix Thornton Report 19054.01 was a noise assessment of the proposed extended operating hours of the Birdon Marine facility at Sancrox. I confirm that all noise modelling and monitoring performed for that report was done in accordance with the NSW Noise Policy for Industry (2017), the current policy in NSW.

We understand that from the submissions there is a question as to whether the surrounding residences should be considered "Rural residential" or "Suburban residential" as described in Table 2.3 of the Noise Policy for Industry. While we stand by our assessment that they are best considered "Suburban residential" from the point of view of noise assessment, we note that it makes no difference to the outcome. This is because:

- our noise trigger levels were based on monitoring;
- the night time and evening amenity levels are the same for suburban and rural receivers (40dBA); and
- we were only considering activity during evening and night time.

Hence the choice of "Suburban residential" of "Rural residential" makes no difference to the outcome.

George Jenner

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