

COAST, ESTUARY & FLOODPLAIN ADVISORY SUB-COMMITTEE

Thursday 26 November 2020

Coast, Estuary & Floodplain Advisory Sub-Committee Meeting

Thursday, 26 November 2020

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Charter

Coast Estuary and Floodplain Advisory Sub-Committee

1.0 OBJECTIVES

- Assist Council in undertaking coast, estuary and floodplain management and planning.
- Assist Council in reviewing coast, estuary and floodplain studies, plans and policies.
- Engage with and provide input to Council on other coast, estuary and floodplain matters and issues which are relevant to the Local Government Area.
- Provide and receive two-way feedback from the community.

2.0 KEY FUNCTIONS

- Advise Council on conditions and management issues for the coast, estuaries and floodplains of the Port Macquarie-Hastings Local Government Area.
- Advise Council on the development of coastal, estuary and floodplain management plans for the Port Macquarie-Hastings Local Government Area.
- Advise Council on the implementation of adopted coastal, estuary and floodplain management plans.
- Act as a Sub-Committee for the purpose of relevant NSW guidelines as they relate to coastal, estuary and floodplain management.

3.0 MEMBERSHIP

3.1 Members

Community Representatives*

Name	Title	Catchment	Focus Area	Role	Year Term Expires
* Alan MacIntyre	Community Representative	Camden Haven	Coast and Estuary	Voting rights	2025
* Kingsley Searle	Oyster Industry and Community Representative	Hastings Valley	Coast and Estuary	Voting rights	2025
* Tony Troup	Oyster Industry	Camden Haven	Coast and Estuary	Voting rights	2025
* Vacant	Fishing Industry	Hastings Valley, Camden Haven, Lake Cathie	Coast and Estuary	Voting rights	2025
* Garry Fajks	Community Representative	Camden Haven	Flood	Voting rights	2025
* Stephen Healy	Community Representative	Hastings Valley	Flood	Voting rights	2025
* Marisha Ewart	Community Representative	Camden Haven	Coast and Estuary	Voting rights	2025
* Peter Fitzroy	Community Representative	Lake Cathie	Coast and Estuary	Voting rights	2025

* Vern Warner	Community Representative	Lake Cathie	Coast and Estuary	Voting rights	2025
* Vacant	Development Industry	Hastings	Flood	Voting rights	2025
* Vacant	Development Industry	Camden Haven	Flood	Voting rights	2025

Staff Representatives

Name	Title	Roles and Responsibilities
Peter Alley (Chairperson)	Councillor	Voting rights
Lisa Intemann (Deputy Chairperson)	Deputy Mayor	Voting rights
Melissa Watkins	Director Development and Environment	Advisory
Deborah Archer	Group Manager Environment and Regulatory Services	Advisory
Blayne West	Natural Resources Manager	Advisory
Jesse Dick	Technical Environmental Officer - Flood	Advisory
Vacant	Coast, Estuary, Flood Coordinator	Advisory
Vacant	Coast and Estuary Officer	Advisory
Hayley Owen	Community Inclusion Team Leader	Advisory, Aboriginal Land Council Liaison

Agency Representatives

Organisation	Focus Area	Roles and Responsibilities
Department of Primary Industries - Lands	All	Advisory
Department of Primary Industries - Fisheries	Coast and Estuary	Advisory
Department of Planning Industry and Environment - National Parks and Wildlife Services	Coast and Estuary and Flood	Advisory
Department of Planning Industry and Environment - Biodiversity and Conservation Division	Coast and Estuary and Flood	Advisory
State Emergency Service	Flood	Advisory
Roads and Maritime Service	Coast and Estuary	Advisory

3.2 Obligations of Members

- Act honestly and in good faith.
- Act professionally and respectfully.
- Act impartially at all times.
- Participate actively in the work of the Sub-Committee.
- Exercise care, diligence and skill that would be expected of a reasonable person in comparable circumstances.
- Comply with this Charter at all times.
- Facilitate and encourage community engagement with the Sub-Committee and Council.
- As per Section 226 (C) of the NSW Local Government Act 1993, the Mayor is the principal spokesperson for the governing body, and Councillors that are members of a Sub-Committee are required to obtain the Mayor's agreement to make media and other statements on behalf of Council. Further, only the Mayor or a Councillor with the Mayor's agreement and otherwise in accordance with Council policies and procedure may release Council information through media statements or otherwise, and the release of such information must be lawful under the Council adopted Code of Conduct.
- A Councillor as a member of a Sub-Committee or the Sub-Committee itself has no delegation or authority to make decisions on behalf of Council, nor to direct the business of Council. The only decision making power open to Councillors is through formal resolutions of Council.
- A Councillor as a member of a Sub-Committee or the Sub-Committee itself cannot direct staff and must abide by the decision of Council and the policies of Council.
- Councillors, Council staff and members of this Sub-Committee must comply with the applicable provisions of Council's Code of Conduct in carrying out the functions as Council officials. It is the personal responsibility of Council officials to comply with the standards in the Code of Conduct and regularly review their personal circumstances with this in mind.

3.3 Member Tenure

Sub-Committee members will serve for a period of five (5) years after which Council will call for expressions of interest for the next five (5) year period. Existing Sub-Committee members will be eligible to re-apply for a position and serve additional terms. Any changes in the composition of the Sub-Committee requires approval of Council.

3.4 Appointment of Members

- A formal Expression of Interest process will be undertaken across the Local Government Area as a way of determining the independent representatives on the Sub-Committee.
- Applications from individuals and representatives from interest groups and who meet the selection criteria will be encouraged.
- Council, by resolution duly passed, will appoint members to the Sub-Committee.

4.0 TIMETABLE OF MEETINGS

Meetings will be held quarterly as a minimum or more regularly if required.

5.0 MEETING PRACTICES

5.1 Decision Making

- Recommendations of the Sub-Committee shall be by consensus or by a majority vote of the members present at each meeting and each voting member shall have one (1) vote.
- The Chairperson shall not have a casting vote.
- In the event of an equality of votes on any matter, the matter shall be referred directly to Council's Executive Group and then to Council.
- Recommendations from the Sub-Committee are to be made through the relevant Director who will determine under delegation the process for implementation.
- The Sub-Committee has no delegation to allocate funding on behalf of Council. The Sub-Committee may make recommendations to Council about how funding should be spent in relation to the above-mentioned objectives, however those funds will only be applied and expended following formal resolution of Council.
- The Sub-Committee may establish working groups to support actions and activities within the strategies or to assist in the delivery of projects and events as deemed appropriate.
- All projects are to be aligned with Council's suite of Integrated Planning and Reporting documents.

5.2 Quorum

The quorum for the Sub-Committee will be half of the voting members plus one. A quorum must include a minimum of one (1) Councillor and one (1) Council staff member being present.

5.3 Chairperson and Deputy Chairperson

- The Chairperson shall be the Councillor, Chair Coast, Estuary and Floodplain Sub-Committee as determined by the Council.
- At all meetings of the Sub-Committee the Chairperson shall occupy the Chair and preside. In the absence of the Chairperson the Deputy Chairperson as determined by the Council shall act as Chairperson for that meeting. In the absence of both the Chairperson and Deputy Chairperson the Director will act as Chairperson for that meeting.

5.4 Secretariat

- The Director is responsible for ensuring the Sub-Committee 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, or earlier if possible.
- Minutes shall be appropriately approved and circulated to each member within three (3) weeks of a meeting being held.
- Any late papers are distributed as soon as practicable.
- All Sub-Committee agendas and minutes will be made available to the public via Council's website unless otherwise restricted by legislation.

5.5 Recording of decisions and explicit discussions on risk

The secretariat shall record all discussions that relate to risk.

6.0 CONVENING OF 'OUTCOME SPECIFIC' WORKING GROUPS

- The Sub-Committee can at times request a working group to be convened for a limited period of time for a specific action. These specifics will be minuted clearly. The working group will report back to the Sub-Committee with outcomes.
- Any working groups established under this Sub-Committee will be responsible for providing updates to the Sub-Committee. The working groups will be an informal gathering with notes collected and managed by the senior staff member in attendance and will be tabled at the Sub-Committee meetings.

7.0 CONFIDENTIALITY AND CONFLICT OF INTEREST

- Any voting members of the Sub-Committee or working group members will be required to complete a confidentiality agreement that will cover the period of their membership.
- Sub-Committee members must declare any conflicts of interest 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 or invitees at Sub-Committee meetings are deemed to have a real or perceived conflict of interest, it may be appropriate that they be excused from Sub-Committee deliberations on the issue where the conflict of interest may exist.

Coast, Estuary and Floodplain Management Plan Action Status

Specific Plan Action Number	Catchment/Management Area	Coast/Estuary/Flood	Key Issues	Management Action Required	Sub Tasks	Status Comment
5	Camden Haven	Floodplain Management		Emergency Management Measures		Complete.
6	Camden Haven	Floodplain Management		Improved Flood Access		Commenced & ongoing. Stage 1A (final stage to supplement Stages 1B & 1C) is now completed. Minor finishing construction works (hand rail and guard rail) is also complete. Year 2 of Bushland Management Works at the offset site in Bayside Circuit has also commenced and is due to be complete in March 2021.
1	Camden Haven	Floodplain Management		Planning & Development Controls		Complete.
8	Camden Haven	Floodplain Management		Small Levee in Lakewood Village		Project is considered a low priority. Numerous unsuccessful grant applications have impacted the delivery of this project. Due to the low cost/benefit ratio this project is unlikely to be completed.
7	Camden Haven	Floodplain Management		Voluntary House Raising		Yet to commence - Audit undertaken in 2007 showed project of high cost and mixed interest from owners. Pilot scheme was suggested to gauge likely issues. The pilot has not commenced at this time.
7	Hastings	Floodplain Management		Commission a Climate Change Assessment Study to investigate and quantify the implications of climate change on existing design flood predictions to Year 2100	1. Prepare Brief defining climate change scenarios to be investigated 2. Engage consultant to undertake associated modelling 3. Undertake Investigations and compare results to Design Levels adopted in Hastings FRMS (2011) 4. Adopt revised Design Flood Levels (as appropriate) 5. Determine and map Updated Flood Planning Area (as required)	Complete. Completed during 2018-19 FY.
8	Hastings	Floodplain Management		Commission a <u>Hibbard Precinct Floodway Refinement Study</u> to investigate potential options for the management of the designated floodway between Fernbank Creek and Hibbard, including potential options to modify the current floodway to accommodate existing development, while at the same time maintaining flow conveyance	1. Undertake "local scale" investigation to identify potential alternative floodway alignments through Hibbard Precinct 2. Consult with stakeholders including landowners to identify feasible floodway alternatives 3. Identify potential properties for buy back over time (potential may exist for voluntary purchase depending on funding availability). Funding opportunities to be determined in association with OEH. 4. Determine recommended alternate / refined floodway corridor 5. Identify potential properties for voluntary purchase 6. Develop Implementation Plan	Commenced. Flood Study phase is complete, however due to complexities in the adoption of the Hastings River Climate Change study the Hibbard Floodway Study was significantly delayed and grant funding requirements could not be met. Hence, the Floodplain Risk Management Study & Plan phase of the previous contract was not delivered. These stages will require a further grant funding application. Accordingly, the Floodplain Risk Management Study & Plan (FRMS/P) phase is yet to commence. Future grant application will be required to recommence the FRMS & FRMP phases of this project.
11	Hastings	Floodplain Management		Develop flood interpretation software package which incorporates flood warning data for use as a flood management tool	1. Identify flood interpretation software; e.g., waterRIDE or other software 2. Engage consultant to develop flood forecasting tool 3. Develop Flood Forecasting Tool 4. SES have obtained relevant software licenses and are currently working on producing inundation mapping and incident management plans for critical areas. A MOU is in place with MIDROC to provide a technical officer as part of the Incident management Team. 5. Undertake training of SES personnel in the use of the Flood Forecasting Tool	Yet to be scheduled - The NSW SES currently does not have the required resources and is not currently undertaking any work in this space.
5	Hastings	Floodplain Management		Prepare and Adopt LGA Wide Flood DCP/ Policy.	1. Prepare LGA Wide Flood DCP in line with Draft DCP recommendations to apply across the entire LGA, incorporating: - provision for climate change impacts on design flood levels and flood planning area - protocols for approvals on land within the Hibbard South Precinct 2. Exhibit draft Flood DCP in accordance with statutory	Complete. Updates to the Flood Policy were undertaken in 2018 to reflect new flood study information. Another review is required to incorporate new flood information and ensure that current deficiencies are addressed. Flood Policy review is expected to commence in early 2021.
2	Hastings	Floodplain Management		Construct Settlement Point Flood Protection Levee	1. Review results of Supplementary Study into climate change impacts on Design Flood Characteristics and determine short, medium and long term implications for Settlement Point. Establish projected timescale for levee that acknowledges community based safety requirements. 2. Undertake local scale stakeholder consultation to educate local community on implications of climate change on design flood characteristics and associated risk to life. 3. Prepare REF/EIA for Settlement Point Levee. Develop preliminary concept design that recognises staggered impacts of climate change. 4. Apply for funding under the floodplain management grants program 5. Develop formal concept design incorporating additional stakeholder / community consultation 6. Undertake Detail Design 7. Undertake staged construction as per climate change impact	Yet to be scheduled - Project was reviewed in line with other priority projects and is now considered a low priority as a result. Mapping of the recently completed flood studies (Hastings River Climate Change Modelling, Hibbard Precinct Floodway Investigation, Wrights Creek Flood Study) is now the main focus area. Mapping works are underway.
4	Hastings	Floodplain Management		Update Port Macquarie-Hastings LEP 2011 to reflect latest standard clauses for the management of flood prone land	1. Develop recommended changes in wording for flood related clauses within Port Macquarie - Hastings LEP 2011 2. Submit recommended clause changes to Council's Planning Department for consideration 3. Workshop with Council's Dept of Planning (as required) 4. Submit final recommended clause changes to Council for acceptance 5. Following Council acceptance, forward to NSW Dept of Planning & Infrastructure for adoption and incorporation into LEP 2011 6. Public notification of changes & incorporation of community feedback.	Commenced & Ongoing - now that the Hastings River Climate Change Flood Study & Wrights Creek Flood Study Projects are completed, Council staff are working towards producing revised flood mapping. Additional work is required to finalise this flood mapping.
10	Hastings	Floodplain Management		Investigate options for properties / dwellings that fall within the floodway corridors for <u>house raising</u>	1. Identify relevant floodway areas: - Oaks Crescent - Blackmans Point - Fernbank Creek - sections along Hastings River Drive in Hibbard 2. Engage consultant to investigate feasibility and cost for house raising works 3. Consult with residents and landowners to gauge their support for house raising 4. OEH guidelines confirm that grant funding for house raising is not available where the development falls within a floodway. However it is dependent on the individual circumstances of the site and each proposal would be assessed on a case by case basis.	Yet to be scheduled
19	Hastings	Floodplain Management		Develop and initiate flood education and awareness program for vulnerable groups and flood affected communities	1. Vulnerable Groups to include: - Heritage Christian School at Hibbard - Wauchope High School - St Josephs Primary School and Regional High School 2. Priority flood affected communities to target: - Settlement Point - Hibbard - Fernbank - Blackmans Point	Yet to be scheduled - 2016-17 Grant funding application not successful - not proposed to submit grant funding application in 2017/18 due to volume of other flood projects underway.
9	Hastings	Floodplain Management		Commission a <u>Climate Change Adaptation Study</u> for the lower Hastings River Estuary that sets a strategy for protecting (or otherwise) existing infrastructure that will be exposed to more frequent fluvial and tidal flooding as climate change impacts manifest	1. Review results of Supplementary Climate Change Modelling Investigation (Item 7) and prepare Brief defining climate change adaptation investigation requirements 2. Engage consultant 3. Undertake Investigations and Develop Adaptation Strategy	Yet to be scheduled

NOTE: YELLOW HIGHLIGHTING DENOTES CHANGE TO STATUS SINCE LAST COMMITTEE MEETING WAS HELD

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Coast, Estuary and Floodplain Management Plan Action Status

Specific Plan Action Number	Catchment/Management Area	Coast/Estuary/Flood	Key Issues	Management Action Required	Sub Tasks	Status Comment
12	Hastings	Floodplain Management		Install additional rainfall and streamflow gauges, particularly at Dennis Bridge and Telegraph Point and identify any additional sites required	1. Engage with BoM/MHL to identify process for installation of streamflow gauges 2. Procure gauge and commission installation	Commenced - First round of additional gauges installed with the installation of a new gauge at Munday's Lane. River Level & Rainfall Gauge installed at this location by MHL. Additional gauges may be installed in future years pending grant funding and other competing priorities.
1	Hastings	Floodplain Management		Construct North Shore Flood Protection Levee	1. Review results of Supplementary Study into climate change impacts on Design Flood Characteristics and determine short, medium and long term implications for North Shore. Establish projected timescale for levee that acknowledges community based safety requirements. 2. Undertake local scale stakeholder consultation to educate local community on implications of climate change on design flood characteristics and associated risk to life. 3. Prepare REF/EIA for North Shore Levee. Develop preliminary concept design that recognises staggered impacts of climate change. 4. Apply for funding under the floodplain management grants program 5. Develop formal concept design incorporating additional stakeholder / community consultation 6. Undertake Detail Design 7. Undertake staged construction as per climate change impact	Yet to be scheduled. Due to the inconclusive response from residents construction of a ring levee at North Shore may depend on community acceptance or a future change in flood policy.
13	Hastings	Floodplain Management		Raise Settlement Point Road between the ferry wharf and Park Street	1. Prepare REF/EIA for road raising 2. Apply for funding under the floodplain management grants program 3. Prepare concept & detail design 4. Undertake construction works	Yet to be scheduled - Project was reviewed in line with other priority projects, and is now considered a low priority as a result.
14	Hastings	Floodplain Management		Raise Hastings River Drive from <u>west of Boundary Road to Tuffins Lane</u>	1. Prepare REF/EIA for road raising 2. Apply for funding under the floodplain management grants program 3. Prepare concept & detail design 4. Undertake construction works	Yet to be scheduled - Road works to be progressively undertaken in conjunction with Council capital works program. Current priority is HRD from Hughes Place to Boundary Street and Boundary Street from HRD Intersection to Airport.
15	Hastings	Floodplain Management		Raise Hastings River Drive between Fernbank Creek bridge and the existing Pacific Highway	1. Prepare REF/EIA for road raising 2. Apply for funding under the floodplain management grants program 3. Prepare concept & detail design	Yet to be scheduled - Road works to be progressively undertaken in conjunction with Council capital works program. Current priority is HRD from Port Home Zone to Boundary Street and Boundary Street from HRD Intersection to Airport.
16	Hastings	Floodplain Management		Raise Fernbank Creek Road	1. Prepare REF/EIA for road raising 2. Apply for funding under the floodplain management grants program 3. Prepare concept & detail design 4. Undertake construction works	Yet to be scheduled - Road works to be progressively undertaken in conjunction with Council capital works program. Current priority is HRD from Port Home Zone to Boundary Street and Boundary Street from HRD Intersection to Airport.
18	Hastings	Floodplain Management		Raise short section of Shoreline Drive (near Riverside Drive intersection) (interim emergency response measure)	1. Prepare REF/EIA for road raising 2. Apply for funding under the floodplain management grants program 3. Prepare concept & detail design 4. Undertake construction works	Yet to be scheduled - Road works to be progressively undertaken in conjunction with Council capital works program. Current priority is HRD from Port Home Zone to Boundary Street and Boundary Street from HRD Intersection to Airport.
17	Hastings	Floodplain Management		Raise Shoreline Drive and North Shore Drive (subject to construction of North Shore and Settlement Point Levees)	1. Prepare REF/EIA for road raising 2. Apply for funding under the floodplain management grants program 3. Prepare concept & detail design with consideration of existing stormwater drainage issues 4. Undertake construction works	Yet to be scheduled - Road works to be progressively undertaken in conjunction with Council capital works program. Current priority is HRD from Port Home Zone to Boundary Street and Boundary Street from HRD Intersection to Airport..
2.1	Lake Cathie	Coastal Management	Development Controls	Review interim development controls with reference to the NSW Coastal Planning Guideline: Adapting to Sea Level Rise (DoP 2010) to provide more guidance including a definition of relocatable structures, triggers for relocation and requirements for geotechnical/coastal engineer's reports for foundation design.		Complete - coastal management planning guidelines updated and inserted into the DCP.
3.2	Lake Cathie	Coastal Management	Stormwater Management	Redirect Illaroo Rd stormwater to minimise the direct outflow of stormwater onto the beach. Illaroo Road only included as a contingency pending confirmation of the timing of the construction of the Revetment.		Commenced & ongoing - Detailed design plans completed. Grant application successful. Dumped asbestos has been uncovered as has Aboriginal archaeology. Aboriginal archaeology investigation works are now complete. Aboriginal Heritage Impact Permit to destroy artefacts will be submitted within coming weeks. The investigation works need to be completed before the asbestos can be remediated and the stormwater constructed.
3.1	Lake Cathie	Coastal Management	Stormwater Management	Continue to upgrade the stormwater outlets to the beach e.g.: placement of rock at outlets to reduce beach scour.		Commenced - numerous beach outlets upgraded within past 10 years. Grant funding application successful for Middle Rock & Chepana Street outlet works. Construction works completed for 2x outlets during 2018-19 FY.
5	Lake Cathie	Coastal Management	Ongoing Beach Nourishment	Any sand dredged/ excavated from the Lake Cathie entrance to be placed on the beach adjacent to Illaroo Road.		Nourishment efforts completed in 2015 & 2018.
7.4	Lake Cathie	Coastal Management	Foreshore Management	Batter back any storm erosion escarpment that forms at Foreshore Reserve (or in other locations) to ensure public safety and maintain park amenity.		Ongoing
9.2	Lake Cathie	Coastal Management	Public Access	Continue to monitor and rehabilitate informal beach access tracks		Ongoing
9.3	Lake Cathie	Coastal Management	Public Access	Reduce erosion escarpments at the base of beach accessways and carry out any necessary repairs following storm erosion		Ongoing
7.1	Lake Cathie	Coastal Management	Foreshore Management	Continue to control/ remove bitou bush along with regeneration/ revegetation with locally indigenous vegetation species.		Ongoing, subject to funding availability.
8.1	Lake Cathie	Coastal Management	Reserve Improvements	Prepare masterplan for foreshore reserves (Aqua Reserve, Foreshore Reserve and Johnathon Dixon Reserve), incorporating the following improvements: - additional lighting at Johnathon Dixon Reserve and in the vicinity of the Foreshore Reserve barbeque facilities - upgrade Johnathon Dixon Reserve to relieve pressure on Foreshore Reserve by providing shade, shelter and play areas. Upgrades should allow for revetment end effects.		Completed. Foreshore reserve masterplan developed and adopted by Council. Ongoing implementation will be undertaken over coming years.
2.2	Lake Cathie	Coastal Management	Development Controls	Review area subject to controls following construction of the revetment and when the hazard lines are reviewed. Note that the 50 year impact line would move over time due to shoreline recession (and possibly affect additional properties, e.g. along Chepana Street).		Yet to be scheduled
3.5	Lake Cathie	Coastal Management	Revetment	Call tenders and construct revetment.		Yet to be scheduled
3.6	Lake Cathie	Coastal Management	Revetment	Finalise private/ public cost-sharing arrangements including private payment plans.		Ongoing - Consultant has completed CBA & Funding Model. Community engagement yet to be undertaken. Council report prepared for August Council meeting with resolution to undertake direct consultation with affected properties. Drafting of consultation material is underway in preparation for engagement in early 2021.
3.7	Lake Cathie	Coastal Management	Revetment	Carry out post-storm assessments to identify revetment maintenance requirements and actions to address exacerbated erosion in front of, and at the ends of, the revetment.		Yet to be scheduled
4.1	Lake Cathie	Coastal Management	Contingency Measures	Develop a Servicing Strategy in consultation with other service providers in the event that access and services to Illaroo Road properties are threatened by coastal erosion, prior to construction of a revetment.		Yet to be scheduled

Coast, Estuary and Floodplain Management Plan Action Status

Specific Plan Action Number	Catchment/Management Area	Coast/Estuary/Flood	Key Issues	Management Action Required	Sub Tasks	Status Comment
4.2	Lake Cathie	Coastal Management	Contingency Measures	Designate Aqua Crescent/ Bundella Avenue and Illaroo as a one-way loop in a Local Area Traffic Management Plan in the event that damage to the road reserve occurs as a result of erosion events and the road pavement width needs to be reduced to maintain safe access, prior to the construction of a revetment.		Yet to be scheduled
26	Town Beach	Coastal Management		Maintain relatively natural pathway surfaces around southern headland (Flagstaff Hill)		Complete. Footpath surfaces determined as part of detailed design for upgrades having regard for access requirements and asset durability. Coastal Walk Upgrade between Kiosk and Flagstaff Hill complete.
24	Town Beach	Coastal Management		Design and install stormwater gross pollutant traps in car park at southern kiosk and car parks east and north of Gaol Point		Commenced - GPT installed adjacent to kiosk. Gaol Point GPT subject to review.
14	Town Beach	Coastal Management		Provide formalised stairway access from Gaol Point to the back beach area, on north and south faces of Gaol Point		Commenced - Stairs on southern face complete. Northern stairs yet to be scheduled.
8	Town Beach	Coastal Management		Construct new amenities building to service the northern reserve area		Complete.
10	Town Beach	Coastal Management		Install additional seating, tables and lighting in the northern reserve, in the same general style as that in the southern reserve		Complete.
16	Town Beach	Coastal Management		Upgrade pathways in Rotary Park and enhance landscaping to improve connectivity between the park, beach and adjacent accommodation		Complete.
20	Town Beach	Coastal Management		Install shade structures in the back beach reserve at the southern end of Town Beach, to complement planting of shade trees		Complete.
21	Town Beach	Coastal Management		Continue to use local flowering small trees for shade and to provide local habitat for foraging native species		Ongoing
1A	Town Beach	Coastal Management		Maintain Southern Breakwall of the Hastings River entrance, to replace dislodged rock and protect the wall core and raise crest height to 4.6 mAH		Complete. Works completed on Southern Breakwall by NSW Government in 2014.
1B	Town Beach	Coastal Management		Ongoing maintenance of Southern Breakwall		Complete. Works completed on Southern Breakwall by NSW Government in 2014.
2	Town Beach	Coastal Management		Remove displaced rock from the surf zone to reduce safety hazards to swimmers and surfers		Complete. Works completed on Southern Breakwall by NSW Government in 2014.
22	Town Beach	Coastal Management		Continue to remove weeds from coastal bluff grassland vegetation communities, replacing weeds with local coastal shrub and ground cover species		Ongoing
25	Town Beach	Coastal Management		Highlight pedestrian linkages from Town Green to Town Beach and beyond in tourist information and in sign posting/maps all key junctions along the walking paths. Develop major theme to integrate the walking track system. Sign posting to also be provided at Flagstaff Hill to highlight special visual features such as whale watching.		Commenced and ongoing - Port Macquarie Coastal Walk master planning phase complete, public consultation undertaken. Initial construction works commenced earlier this year with the first stage of the Charlie Upton Walk completed and stage 2 being delivered presently. Grant funding received for initial construction stages. Project will be rolled out over numerous years.
27	Town Beach	Coastal Management		Review safety of all pathways, stairways, elevated walkways and lookout fencing around Flagstaff Hill.		Ongoing
28	Town Beach	Coastal Management		Ensure that any further development of facilities in the woodland areas at Flagstaff Hill and beyond does not detract from the natural landscape character of this area.		Ongoing
11	Town Beach	Coastal Management		Upgrade and install pathways in the northern reserve, two metres wide and including art work or natural/cultural heritage information in the surface		Complete.
15	Town Beach	Coastal Management		Provide interpretative signage at Gaol Point about the history of the site, the harbour entrance, surf conditions, passing whales and dolphins, walking trails etc.		Complete.
7	Town Beach	Coastal Management		Construct a rotunda adjacent to the children's playground area		Yet to be scheduled
17	Town Beach	Coastal Management		Prepare Traffic Management Plan that includes investigation of the closure of the southern end of Stewart Street and installation of traffic calming devices to minimise potential conflicts with pedestrians		Yet to be scheduled
18	Town Beach	Coastal Management		Implement Traffic Management Plan		Yet to be scheduled
19	Town Beach	Coastal Management		Improve lighting along all pathways, using efficient lighting fixtures		Ongoing
23	Town Beach	Coastal Management		Wherever possible, introduce shade trees into car parking areas		Ongoing

NOTE: YELLOW HIGHLIGHTING DENOTES CHANGE TO STATUS SINCE LAST COMMITTEE MEETING WAS HELD

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Electronic Transmission

To:	Port Macquarie-Hastings Council	CC:	Blayne West
Attention:	Jesse Dick	Date:	7 October 2020
Fax No:	Email	Document Ref:	M.A10464.002.LakeCathieModelReview.docx
From:	Toby Devlin, Matthew Barnes	No. of pages:	6

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Dear Jesse

RE: LAKE CATHIE MODEL REVIEW

In 2011 BMT (formerly BMT WBM) developed a model of the coastal hydrodynamics, sediment transport and entrance dynamics of the Lake Cathie/Lake Innes system. This development included calibration of the model to existing datasets and validation of entrance breakout dynamics. The model was then used to study four potential schemes for managing the lakes, focussing on impacts to water levels, salinity, tidal flushing rates and sedimentation patterns. These physical predictions were used to qualitatively infer potential ecological impacts of the schemes. The four schemes were:

- Widening the Kenwood Drive Bridge
- Changing the water level triggers for artificial entrance opening
- Dredging the channel upstream of Ocean Drive Bridge
- Isolating Lake Innes from the tidal system

The study found that isolating Lake Innes will change the system significantly, changing from a salt-water to freshwater system, which needs to be considered in the context of any net environmental benefit and other social costs. Widening the Kenwood Drive Bridge was shown to increase tidal propagation into Lake Cathie (when the entrance is open). It also scoured some areas within Lake Cathie, but also increased the siltation immediately upstream of Kenwood Drive Bridge.

BMT have been commissioned by Port Macquarie-Hastings Council (Council) to review the previous modelling work and to provide recommendations for updates or further work that may be required to answer the remaining questions relating to the management of these systems. This memorandum provides the results of that review by assessing the previous works against the following criteria:

- Existing guideline materials
- Model engine version and improvements
- Model configuration and capabilities
- Model Calibration and available datasets

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- Modelled scenarios

And provides a staged pathway to update the model and datasets to support decision-making.

1 Model Review

Model Engine

The 2011 modelling study utilised (then) recent developments in the TUFLOW-FV software package to couple hydrodynamic and wave models with a bed morphology update scheme.

This functionality has been revised, updated and standardised in more recent versions to include additional functionality and efficiencies.

The following findings/recommendations apply:

- As the 2011 model demonstrated appropriate calibration and validation, the existing model engine is suitable for the type of assessments for which it has been used
- The latest software version (v2020.02) includes advances in sediment transport calculations and can differentiate between sands, clays and silts.
- The latest software version includes an optional water quality module that allows for more direct modelling of the potential ecological and water quality drivers (nutrients, dissolved oxygen, acid, and algal blooms).

It is recommended that any further modelling works utilise the latest version, though the previous version will not have compromised the conclusions of the 2011 study.

Model Configuration

The existing modelling has been developed as a two-dimensional model with 6460 model elements. Element size ranges from 3 m (under the Kenwood Drive Bridge) to 750 m (offshore ocean boundary). Model bathymetry was sourced from hydro-survey from 1991/1992 and supplemented by Airborne LiDAR (ALS) and aerial photography. Coastal bathymetry was based on bathymetric chart data (AUS 811) and expert judgement/calibration of the entrance configuration.

The following findings apply:

- The resolution is suitable for the level of analysis that has been conducted to date.
- The existing bathymetry is sparse relative to the changing conditions, as such the modelling has largely assumed a single shape to the lakes, creeks and entrance channel.
- Present computing power would allow for any further model to increase resolution throughout the model (in particular Lake Cathie and Lake Innes) with typical 2D models containing up to 50,000 elements.
- Increased resolution may improve the model's ability to predict horizontal changes and differences within the estuary, particularly in terms of resolving the plumes of ocean water and estuarine water immediately after an opening.
- The mouth and entrance channel are in a constant state of flux. The mesh and bathymetry do not represent 2020 conditions, and the mesh resolution does not allow for different entrance channel alignments.
- Additional bathymetry datasets are now available, including publicly available ALS data (from 2012) and Marine LiDAR data (from 2018) that also includes resolution of the entrance and the coastal nearshore areas.

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It is recommended that further modelling works be undertaken to increase the resolution and take advantage of existing bathymetric datasets. Some additional bathymetric survey would be recommended to confirm current configurations.

Model Calibration and Available Datasets

The model was previously calibrated against water level and flow data collected by PWD in 1982 and water level measurements at Ocean Drive Bridge by MHL (since 1992).

The following findings apply:

- The model showed a fit-for-purpose calibration to the available flow and water level measurements.
- All datasets are dated (30-40 years old) and may not represent the current usage/management and constraints of the system.
- No suitable datasets were available to calibrate/validate the model's flushing performance.
- The lack of model calibration to such datasets limits the ability of the model to accurately predict any ecological response beyond the impact to tidal flow and to sedimentation patterns.
- Further datasets may now be available with regular water quality sampling conducted by Council and ongoing water level monitoring by MHL, though may not be sufficient for detailed further calibration/validation on its own.

It is recommended that for any additional modelling to answer further questions, additional data be collected. This would include:

- Multiple pressure-inducer water level instruments (fixed deployments at multiple locations within the estuary), to support hydrodynamic calibration.
- Acoustic Doppler Current Profiler (ADCP) transecting to measure currents and flow across channel sections throughout spring and neap tides (boat-based work, typically involving continuous measurements for ~12 hours from low tide to low tide). This supports hydrodynamic calibration.
- Hydrographic survey of key areas (namely the entrance channel) concurrent with the other sampling. This supports hydrodynamic calibration.
- Baseline water quality sampling may be required to assist in further development of the model to support a water quality/ecological response model calibration. This can also underpin an estuarine health assessment and help to 'benchmark' potential impacts and alterations. Sampling would include fixed loggers, monthly water samples and opportunistic wet-weather-event sampling of:
 - Dissolved Oxygen (DO)
 - Nutrients (Nitrogen, Phosphorus)
 - PH levels, including sediment acid potential
 - Salinity, temperature, depth and turbidity

Modelled Scenarios

The 2011 study modelled several different management options:

- Do Nothing (a 'base case')
- Widening the Kenwood Drive Bridge
- Revised opening strategies (three separate ones based on different breakout levels)
- Isolation of Lake Innes

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- Dredging of Tidal Flushing Channels.

These scenarios were focussed on the flushing through the entrance and into Lake Cathie based on all of these different options. It also included assessing the impact on erosion/deposition patterns through the lower estuary based on these changes.

The following findings apply:

- The scenarios were developed suitably to investigate tidal flow response to these options during and open-mouth condition or during the opening.
- None of these scenarios are able to target any impacts to ecology over the long-term and can only infer short-term changes from the tidal flows.
- Many of the present questions and concerns from Council and the community relate to water quality based on both environmental impacts as well as public use of the estuary

It is therefore recommended that if Council wish to use the modelling to further investigate the management of the estuary and lakes that the model be upgraded to include direct modelling of water quality processes. Following this, a set of targeted scenarios should be developed that cover a wide range of conditions including droughts, floods, and mouth conditions. The results of such a study could then provide useful (quantitative) inputs to a benefit/cost analysis to compare these options against the social, environmental and economic demands on the estuary.

2 Summary and Recommended Actions

The model has been shown to be fit-for-purpose for the scenarios that it assessed, and it was able to accurately determine what it set out to.

However, the available datasets and limitation of the software tools in not being able to simulate ecological impacts was key in shaping the range of scenarios that were possible in 2011. As such, the scenarios focussed on tidal flows during a recently opened mouth condition, as a proxy for assessing potential water quality impacts. While limited inferences on potential ecological impacts can be drawn from this assessment, it is not powerful enough to reliably weigh up the multiple demands on the estuary from public use, environmental conservation, commercial fisheries and tourism.

It is recommended that in order to accurately compare management options under this lens, the model be updated to include a water quality module, and the results of this be compared against thresholds for different outcomes. Table 2-1 presents an approximate overview of a staged process that could achieve these goals. This process would require the following key elements (also refer to Table 2-1):

- Additional flow, current, water level and bathymetric survey to support hydrodynamic calibration (Stage 1)
- Model update to the latest version and calibration to recent data (Stage 1)
- A baseline monitoring campaign of additional water quality parameters (monthly sampling and some permanent loggers) (Stage 2a)
- Water quality calibration/validation (Stage 2a)
- Assessment of management options over a range of climate, weather and entrance conditions (Stage 2a).

This modelling tool would then be capable of assessing impacts to the estuary and lake system in response to a number of potential management options. The outputs from this would be *directly* relatable to water

quality conditions, which could be used to compare *costs* with *outcomes*. Importantly, these updates would also demonstrate to the agencies (e.g. DPIE in a CMP context), and potential independent peer reviewers, that the model is suitable for supporting present-day decisions regarding the holistic management of the estuary system.

Note: suitable scenarios for assessing management options would need to be scoped in consultation with Council and stakeholders to ensure that the key questions are targeted and resolved. Ideally, this would include input from economists that specialise in valuing natural resources to ensure the modelling scope and outputs can be integrated with quantitative (e.g. cost-benefit analysis) and qualitative socio-economic appraisal.

This model development could proceed in a staged manner that would also be useful for additional studies of the system. The initial hydrodynamic data collection and model upgrade would develop an intermediate tool that could be used for studying flood response and for assessing coastal hazards and climate risk.

This intermediate tool may be applicable for running preliminary scenarios of flushing response in order to rule-out management options based on negative performance but will not be able to accurately determine the actual water quality and ecological response until the completion of the full hydrodynamic and water quality model (Stage 2a).

An additional component has been identified in Stage 2b that allows the model (or element of the model) to be repurposed to also function as a flood modelling tool (i.e. including the floodplain and catchment inflows as part of a Floodplain Management Plan). It is possible that Stage 2b could occur in parallel to the hydrodynamic, sediment transport and water quality modelling. It should be noted that several management options driven by water quality concerns (i.e. widening Kenwood Drive Bridge or isolating Lake Innes) may introduce a potential impact to flood risk that would require a Stage 2b model to assess. Several model iterations may be needed to establish the most appropriate strategy that balances water quality objectives and floodplain risk management.

Table 2-1 Proposed Stages of Model Upgrade & Extension

	Development	Recommended Minimum Data Requirements	Model Capability & Decision-Making Support	Indicative Costs (high level)	Indicative Timeframe (see note 1)
Stage 1	Hydrodynamics (Nearshore Coastal & Estuary)	<ul style="list-style-type: none"> Continuous water level recordings at multiple locations throughout the estuary (minimum two months) ADCP current/flow transects (neap and spring tides) Bathymetry survey of lower estuary Recent ALS for areas surrounding the estuary Nearshore marine LiDAR 	<ul style="list-style-type: none"> Hydrodynamic impact assessment associated with development and/or climate scenarios Preliminary estuary/lake flushing time assessment associated with development and/or climate scenarios Coastal hazard assessment for current and future climate scenarios 	\$70k - \$80k	12 months
	Sediment Transport	<ul style="list-style-type: none"> Surface sediment samples analysed for particle size distribution 	<ul style="list-style-type: none"> Morphological change associated with development and/or climate scenarios (entrance stability hazards) Scour potential Dredge plume assessment 	\$40k - \$50k	4 months
Stage 2a	Water Quality	<ul style="list-style-type: none"> Estuary water quality, baseline and following rainfall (recommend commencing at Stage 1): <ul style="list-style-type: none"> Dissolved Oxygen (DO) Nutrients (Nitrogen, Phosphorus) PH levels, including sediment acid potential Salinity, temperature, depth and turbidity Catchment loads modelling (<i>Not included in indicative costings</i>) 	<ul style="list-style-type: none"> Detailed estuary/lake flushing time assessment associated with development and/or climate scenarios Estuary health assessment associated with development and/or climate scenarios, including (for example): <ul style="list-style-type: none"> Impact to ecology Risk to public health Lake acidification 	\$100k - \$120k (see note 2)	12 – 18 months
Stage 2b (independent of Stage 2a)	Flood Hydraulics (Rainfall & Catchment)	<ul style="list-style-type: none"> Developed design rainfall events using latest industry guidelines (e.g. ARR 2019) Hydrologic modelling to estimate runoff flows based on the design rainfall events for current and future climate scenarios Details of hydraulic structures across catchment and within estuary Details of land use across catchment Recent ALS for entire catchment 	<ul style="list-style-type: none"> Lower catchment flood hazard assessment Lower catchment flood impact assessment associated with development and/or climate scenarios Design criteria for development (e.g. water levels, currents, flows) 	\$100k - \$150k	6 – 12 months (could occur in parallel to above)

Note 1: Some stages may be able to occur in parallel, though depend on seasonality and timing of field data collection logistics

Note 2: Costs of water quality monitoring may be able to be reduced if incorporated with existing monitoring programme

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Item: 13.05Subject: **KENWOOD DRIVE BRIDGE LAKE CATHIE - REVIEW OF 2011
HYDRODYNAMIC REPORT FINDINGS - STATUS UPDATE**Presented by: Development and Environment, Melissa Watkins

Alignment with Delivery Program

4.6.1 Develop and implement a range of programs for the environmental management of lands within the local government area.

RECOMMENDATION

That Council:

1. Note the information provided in this report.
2. Note that a review of the Lake Cathie/Lake Innes Estuary Hydrodynamic Model is warranted and should be undertaken as part of Stage 2 of the Coastal Management Program.
3. Consider funding opportunities to undertake the review of the Lake Cathie/Lake Innes Estuary Hydrodynamic Model with the development of the 2021/2022 Operational Plan and budget.
4. Note that a review of the findings of the 2011 Lake Cathie/Lake Innes Estuary Hydrodynamic Model Development and Investigation Report cannot be undertaken until the Model has been reviewed and tested.

Executive Summary

This report provides an update to the 23 September Ordinary Council Meeting where Council resolved as follows:

*RESOLVED: Pinson/Griffiths**That Council:*

1. Note the information provided in this report.
2. Note that a further report will be prepared for the October 2020 Council Meeting outlining the process, timeframe and costs associated with reviewing the 2011 Lake Cathie/Lake Innes Estuary Hydrodynamic Model Development and Investigation Report.
3. Note that a review of the findings of the 2011 Lake Cathie/Lake Innes Estuary Hydrodynamic Model Development and Investigation Report cannot be undertaken until the Model has been reviewed and tested.

*CARRIED: 7/0**FOR: Alley, Dixon, Griffiths, Hawkins, Intemann, Pinson and Turner**AGAINST: Nil*

Since this resolution, BMT Commercial have undertaken a detailed review of the 2011 Hydrodynamic Model (**Attachment 1**). The report confirms that a review of the 2011 report is appropriate and should be undertaken in order to ensure that the



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model is suitable for supporting present-day decisions regarding the complete management of the estuary system.

Table 2.1 from **Attachment 1** provides an overview of the recommended work that is required to successfully update the model. The work has been staged, with indicative process, costs and timeframes outlined. It is important to note that whilst the project has been broken down into stages, the costs nominated reflect the completion of multiple stages together (i.e. under a single tender). As such, it is recommended that the project be completed as a package, undertaking stages 1, 2a and 2b concurrently.

DiscussionReview Process

BMT recommend that in order to accurately compare management options, the model be updated to include a water quality module, and the results of this be compared against thresholds for different outcomes. Table 2-1 (see **Attachment 1**) presents an approximate overview of a staged process that could achieve these goals.

This process would require the following key elements (also refer to Table 2-1):

- Additional flow, current, water level and bathymetric survey to support hydrodynamic calibration (Stage 1)
- Model update to the latest version and calibration to recent data (Stage 1)
- A baseline monitoring campaign of additional water quality parameters (monthly sampling and some permanent loggers) (Stage 2a)
- Water quality calibration/validation (Stage 2a)
- Assessment of management options over a range of climate, weather and entrance conditions (Stage 2a).

This would then ensure that the Hydrodynamic Model is capable of assessing impacts to the estuary and lake system in response to a number of potential management options. The outputs from this would be *directly* relatable to water quality conditions, which could be used to compare costs with *outcomes*. Importantly, these updates would also demonstrate to the agencies (e.g. DPIE in a CMP context), and potential independent peer reviewers, that the model is suitable for supporting present-day decisions regarding the complete management of the estuary system.

Review Costs

As per table 2.1, indicative costs to review and update the model range from \$310,000 to \$400,000.

It should be noted that suitable scenarios for assessing management options would need to be scoped in consultation with the relevant stakeholders to ensure that the key questions are targeted and resolved. Ideally, this would include input from economists that specialise in valuing natural resources to ensure the modelling scope and outputs can be integrated with quantitative (e.g. cost-benefit analysis) and qualitative socio-economic appraisal. Therefore, the costs could be significantly impacted depending on the number of management scenarios modelled.



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Under stage 2a, the costs associated with 'Catchment loads modelling' have not been included in this estimate, but are likely to be substantial if this aspect of work is included in the project.

The amount of time that could be saved by running tasks in parallel is unknown at this stage, but it is likely to represent a reasonable time saving.

The costs associated with undertaking single stages (rather than all three stages under a single engagement) is also unknown but is likely to be considerably higher if broken down under separate contracts.

Collection of field data is highly susceptible to climatic conditions and prevailing lake entrance conditions during the project. This has the potential to significantly impact on the costs, timing and success of the project.

Project Timeframe

As per table 2.1, indicative timeframes to review the model range from 34 months to 46 months (noting that some tasks could be run in parallel thereby reducing the indicative timeframe).

Having the model developed in a staged approach would also be useful for additional studies of the system to occur in tandem with the hydrodynamic model review project. The initial hydrodynamic data collection and model upgrade would develop an intermediate tool that could be used for studying flood response and for assessing coastal hazards and climate risk.

This intermediate tool may be applicable for running preliminary scenarios of flushing response in order to rule-out management options based on negative performance but will not be able to accurately determine the actual water quality and ecological response until the completion of the full hydrodynamic and water quality model (Stage 2a).

Management Options

BMT have undertaken a thorough review of the 2011 report and have outlined a scope of works that can be used as the basis of a tender brief to engage a contractor to undertake the additional modelling works.

The work completed by BMT can be used to inform the procurement phase and puts Council in a good position to accurately scope, budget and program the works that are required to update the model.

As outlined in the Council report from 23 September 2020, management options for issues such as Kenwood Drive Bridge can only be properly assessed once the Hydrodynamic Model has been sufficiently developed. Given the abovementioned timeframes to review the model, it is likely that the investigation into management options (i.e. augmentation Kenwood Drive Bridge) will not be undertaken until 16 - 24 months into the project.

Furthermore, as outlined in the Council report from 23 September 2020, the next steps and timeframes that can be expected following completion of the Hydrodynamic Model would be approximately 3.5 years to complete:

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- Multi-criteria assessment of options developed and preferred option to progress, possible Benefit to Cost Analysis (3 Months)
- Community consultation and preferred option to progress (3 Months)
- Concept design development including ground investigations (geotech, survey, environmental studies) (12 Months)
- Environmental Assessment – EIS will be required due to Coastal SEPP (12 Months)
- Community consultation on final design prior to Detailed Design (3 Months)
- Detailed Design and preparations for construction. (12 Months)
- Construction (12 Months).

Options

Council has the following options in respect of this matter:

1. Elect to proceed with a review of the 2011 Hydrodynamic Model before finalisation of the CMP Scoping Study, noting that the Council would be required to fully fund the entire project.
2. Elect to proceed with the CMP Scoping Study and update it to include reference to the Hydrodynamic Model review as a priority task noting that this will ensure priority funding for CMP Stage 2 projects and will enable Council to apply for grant funding at a 2:1 ratio (state: local).
3. Resolve in some other manner.

Community Engagement and Internal Consultation

Due to significant time constraints, consultation with managing stakeholders (i.e. DPIE, NPWS, DPI Fisheries) was not able to be undertaken during the review process. However, when scoping the project and undertaking the procurement phase, consultation will be undertaken with relevant management stakeholders at that time.

Planning and Policy Implications

Stage 1 of the Coastal Management Program (Scoping Study Stage) should be completed before moving into Stage 2 projects, such as the Hydrodynamic Model Review.

The Stage 1 Scoping Study will be updated to include the information provided by BMT and will identify the Hydrodynamic Model review as a priority project for completion.

Financial and Economic Implications

This report recommends that Council forward plan for the 2021-22 FY and give consideration to funding a review of the Hydrodynamic Model (noting that the project would be dependent on a successful grant funding application) in conjunction with development of the draft 2021/2022 Operational Plan and budget

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Attachments

1.  Lake Cathie/Lake Innes Hydrodynamic Model Review - BMT

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MINUTES
Ordinary Council Meeting
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**13.05 KENWOOD DRIVE BRIDGE LAKE CATHIE - REVIEW OF 2011
HYDRODYNAMIC REPORT FINDINGS - STATUS UPDATE**

RESOLVED: Pinson/Griffiths

That Council:

1. Note the information provided in this report.
2. Note that a review of the Lake Cathie/Lake Innes Estuary Hydrodynamic Model is warranted and should be undertaken as part of Stage 2 of the Coastal Management Program.
3. Consider funding opportunities to undertake the review of the Lake Cathie/Lake Innes Estuary Hydrodynamic Model with the development of the Draft 2021-2022 Operational Plan and budget.
4. Note that a review of the findings of the 2011 Lake Cathie/Lake Innes Estuary Hydrodynamic Model Development and Investigation Report cannot be undertaken until the Model has been reviewed and tested.
5. Request the General Manager to develop a project plan and indicative costings for the replacement or augmentation of the Kenwood Drive Bridge for consideration by Council in the development of the Draft 2021-2022 Operational Plan and future draft Delivery Program and Operational Plans.
6. In considering funding opportunities referenced in Item 3 above, also investigate any grant funding opportunities that are available once the CMP Scoping Study has been completed, with the inclusion of reference to the Hydrodynamic Model Review as a priority task.

CARRIED: 7/0

FOR: Alley, Dixon, Griffiths, Hawkins, Intemann, Pinson and Turner

AGAINST: Nil



Mr Craig Swift-McNair
General Manager
Port Macquarie-Hastings Council
PO Box 84
PORT MACQUARIE NSW 2444

Our Ref. DOC20/170643
Contact officer: John Schmidt
02 6561 4975

Attention: Jesse Dick

Dear Mr Swift-McNair

**Subject: Application for funding under the 2019-20 Coastal And Estuary Planning Program
Lake Innes acid sulfate soil management options study
Grant reference no. 2019-20-CEMP-0001**

I refer to Port Macquarie-Hastings Council's application requesting financial assistance under the 2019-20 Coastal and Estuary Planning Program for the above project.

The application has been assessed and approved for placement on the reserve list. This list may be activated at any time up until the opening of the 2020-21 funding round, if funding is available under the program. For this grant to be considered eligible for activation, Council needs to meet the following condition:

1. Port Macquarie-Hastings Council must complete the required scoping study, prior to this project being activated.

Council will be contacted by the Grants Branch once we have received advice that the scoping study has been completed to a satisfactory standard. Council should consider reapplying if the grant has not been activated from the reserve list at the opening of the 2020-21 funding round.

If Council no longer wishes to proceed with the project or does not want to remain on the reserve list for 2019-20, please advise me as soon as possible.

The Grants Branch would like to thank Council for their interest in the Coastal And Estuary Planning Program.

If Council has any queries regarding this letter, please contact me on 02 9895 6494 or at coastalestuary.floodgrants@environment.nsw.gov.au.

Yours sincerely

27/03/2020

Alexandra Gardiner
A/Manager Contestable Grants - Coast, Estuary and Flood
Grants Branch, Environment, Energy and Science

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Item: 13.06Subject: LAKE INNES ACID SULPHATE SOIL MANAGEMENT OPTIONS
STUDY - GRANT APPLICATION UPDATEPresented by: Development and Environment, Melissa Watkins

Alignment with Delivery Program

4.6.1 Develop and implement a range of programs for the environmental management of lands within the local government area.

RECOMMENDATION

That Council:

1. Note the outcome of the Coast and Estuary Management Grant application.
2. Fund the budget shortfall of \$145, 500, outlined in the Financial and Economic Implications section of this report, from funds identified in Council's resolution in respect of Item 10.08 (Borrowing for Projects) at the Ordinary Council Meeting on 16 October 2019.
3. Note that a tender will not be sought for the Lake Innes Acid Sulphate Soil Management Options Study in accordance with the Local Government Act 1993 section 55(3)(b) being a *"contract entered into by a Council with the Crown (whether in right of the Commonwealth, New South Wales or any other State or a Territory), a Minister of the Crown or a statutory body representing the Crown"*.
4. Accept the quotation from the NSW Government Soil Conservation Services to undertake the Lake Innes Acid Sulphate Soil Management Options Study for \$293,000 (ex GST).

Executive Summary

As resolved by Council on 16 October 2019, Council applied for grant funding through the Coast and Estuary Management Grants to undertake background studies that were identified by the Government stakeholders in consideration of long term solutions to issues affecting the Lake Innes Lake Cathie Estuarine System as follows (with estimated costs):

1. A digestion model of the Acid Sulphate Soil (ASS) uncovered as a result of a study commissioned by Council and NPWS in May 2019 - \$185,000
2. A review of 2013 Lake Inness Reversion Study - \$50,000
3. An ecological condition assessment of the saltmarsh community within Lake Innes - \$10,000. NB: The Australian Government has listed *Subtropical and Temperate Coastal Saltmarsh* as vulnerable in the *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act).
5. Review of possible short term emergency ASS containment works - \$50,000.

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In the October 2019 report the above actions were estimated to cost \$295,000. Council resolved to fund 50% of the cost of these studies and seek funding for the other 50%.

Council was advised in March 2020 by the NSW Department of Industry and Environment (DPIE) that this application has been included on the "reserve list", with funding subject to completion of the Coastal Management Program (CMP) Scoping Study prior to the next round of funding opening in August 2020. A copy of the advice is provided attached as **Attachment 1**.

Although all attempts have been made to meet this timeframe, it is not possible, given the need for a 28-day community consultation period for the draft CMP Scoping Study and the fact that the final Scoping Study requires endorsement from Council and DPIE prior to being eligible for funding, that this deadline could be met. Further delays in commencing this project will have significant flow on impacts for the Lake Cathie/Lake Innes and Bonnie Hills chapter of the CMP. It is therefore recommended that Council allocate funding from previously approved borrowings (Item 10.08 (Borrowing for Projects)) adopted at the Ordinary Council Meeting on 16 October 2019 to allow this project to commence so as to not unreasonably delay the CMP process for Lake Cathie/Lake Innes and Bonnie Hills. A copy of this Notice of Motion and resolution is included here as **Attachment 2**.

It is also recommended that Council directly engage the NSW Soil Conservation Service (SCS) to undertake a review of the *Lake Innes Environmental Assessment* (2013) including background studies as detailed above. The project will consist of specialist studies that quantify the Acid Sulphate Soil (ASS) risk to the lake system, review the 2013 Lake Innes reversion study in light of these findings, and detail management options to address the ASS risk.

Discussion

In early 2019, Port Macquarie-Hastings Council (PMHC) and NSW National Parks (NPWS) engaged the NSW Soil Conservation Service (SCS) to undertake an assessment of the current and potential Acid Sulphate Soil (ASS) risk of the Lake Cathie and Lake Innes estuary system.

The *Lake Cathie and Lake Innes Acid Sulphate Soil Risk Assessment* (2019) identified a significant ASS risk in Lake Innes.

Due to the drought conditions at that time, Council was (and still is) receiving a significant amount of community feedback about the management of the lake despite Council not being the owner or the manager of either Lake Cathie or Lake Innes. These community concerns along with the ASS issue resulted in Council facilitating a number of meetings with the key government agencies involved in the management of the Lake Cathie and Lake Innes estuary system to discuss solutions and options. These stakeholders include: NPWS, Department of Primary Industries - Fisheries (DPI Fisheries), Department of Primary Industries - Crown Lands (DPI Crown Land). Please note following a NSW Government restructure all of these agencies now fall under a 'super' department called the Department of Planning, Industry and Environment (DPIE).

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In September 2019, all of the stakeholder government agencies agreed on a way to progress the situation, and on 16 October 2019, a recommendation was put to Council requesting approval of 50% funding for the following:

- A digestion model of the acid sulphate soil within Lake Innes as a result of the recent ASS study undertaken by SCS.
- A review of the *Lake Innes Environmental Assessment (2013) (the reversion study)*
- An ecological condition assessment of the saltmarsh community within Lake Innes.
- A review of possible emergency ASS containment works.

Council resolved in Item 13.09 at the 16 October 2019 meeting the following:

RESOLVED: Alley/Griffiths

That Council:

1. *Note the information provided in the Lake Innes/Lake Cathie Estuary System Update Report.*
2. *Request the General Manager to seek 50% Coastal Management Program funding to undertake the initial background studies as outlined, for input to the Lake Innes/Lake Cathie Coastal Management Program being \$147,500.*

CARRIED: 8/0

FOR: Alley, Dixon, Griffith, Hawkins, Intermann, Levido, Pinson and Turner

AGAINST: Nil

Council applied for funding on 2 December 2019 as part of the Coastal and Estuary Management Grants in the amount of \$147,500 to cover 50% of the costs. Council was notified 27 March 2020 that the application was placed on a "reserve list" subject to the completion of the PMHC Coastal Management Program (CMP) Scoping Study before the next round of funding opens in August 2020. A copy of the advice is included here as **Attachment 1**.

The Lake Cathie and Lake Innes estuarine system is managed by a number of NSW State bodies, namely NPWS, Fisheries and Crown Land. In order to understand the constraints and issues within the estuarine system a number of studies must be undertaken to better inform planning and decision making. As such in mid-2019 Council and NPWS engaged Soil Conservation Service of NSW (SCS) to undertake initial investigations of the risk of acid sulphate during the drought and what would be the possible impacts on the lake if an opening was undertaken. The conclusion of that initial review provided guidance for addition studies that needed to be done in order to better inform management of acid sulphate in Lake Innes. At the October 2019 Council meeting these studies were supported and funding was sought as per the Coast and Estuary Management Grant funding program.

The acid sulphate studies that are requested to be undertaken include:

- Quantify the ASS risk of the lake system using ASS digestion and hydrodynamic modelling.
- Review the 2013 Lake Innes reversion study in light of the findings.
- Provide management options to address the ASS risk and review the preferred option under 2030 and 2070 climate change projections.



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SCS provided Council with a quote which proposes to form a partnership between Southern Cross University, DPIE Environment, Energy and Science, Aquatic Science Management and Midcoast Consulting Engineers to provide a multidisciplinary team to deliver the work.

The work is of a specialized nature and as such Council has sought out experts in this field of work. SCS provides not only expertise but is able to coordinate an effective partnership with other organisations to deliver excellent on-ground outcomes.

Given this ongoing specialised work a tender will not be sought for the Lake Innes Acid Sulphate Soil Management Options Study in accordance with the Local Government Act 1993 section 55(3)(b) being a *"contract entered into by a Council with the Crown (whether in right of the Commonwealth, New South Wales or any other State or a Territory), a Minister of the Crown or a statutory body representing the Crown"*. Accordingly, this report also recommends that Council accept the quotation from the NSW Government Soil Conservation Services to undertake the Lake Innes Acid Sulphate Soil Management Options Study for \$293,000 (ex GST)

The CMP Scoping Study is currently being developed. It is the foundational guiding document for the Coastal Management Program for PMHC and as such is imperative to ensure it is well written and allows time to undertake meaningful and effective community consultation. A separate report has been included on the May 2020 Ordinary Council Meeting agenda relating to the draft CMP Scoping Study which recommends that the draft Scoping Study be placed on public exhibition for a period of 28 days which means, that if adopted, it is unlikely that Council would meet the funding deadline of August 2020 and if it did it is likely to be a further period of time delay while applications were considered and granted by the DPIE.

It is also important that Council begin work on the CMP for Lake Cathie/Lake Innes and Bonny Hills Estuary and Coastline for Stage 2. As such, the proposed Acid Sulphate work is an integral portion of this stage 2 work and is at a risk of an unreasonable delay if the project is not funded by Council or is contingent on grant funding.

Council would however, continue to apply for future funding for the development of the CMP.

Options

Council could opt to:

1. Continue to work on the draft CMP Scoping Study with the intention of making a further funding application in August 2020 to access the funding; or
2. Fund the cost of the ASS Management Options Study to allow commencement and apply for funding in the new funding round for other works related to the CMP; or
3. Resolve in some other manner.

Consultation

Internal consultation regarding the requirements for the Lake Innes Acid Sulphate Soil Management Options Study has been previously completed with:



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- Waste and Environmental Manager, formally Development and Environment;
- Environmental Projects Officer, Development and Environment;
- Group Manager, Environment and Regulatory Services;
- Director, Development and Environment; and
- Strategic Procurement Manager, Procurement

External consultation regarding the requirements for the Lake Innes Acid Sulphate Soil Management Options Study has been undertaken with:

- Department of Planning, Industry and Environment (DPIE) - various divisions.

Planning and Policy Implications

Failure to secure funding and complete the Lake Innes Acid Sulphate Options Study may impact on completion of the Coastal Management Program for Lake Cathie/Lake Innes and Bonny Hills Estuary and Coastline CMP.

Financial and Economic Implications

An application for grant funding for 50% (\$147,500) of the Lake Innes Acid Sulphate Options Study is contingent on having the CMP Scoping Study endorsed by Council by August 2020. It is anticipated that this may not be obtainable. Therefore, failure to obtain this round of funding will require a new funding option to be secured which will delay the project further. This will result in potential delays to the completion of the CMP for Lake Cathie/Lake Innes and Bonny Hills Estuary and Coastline.

It is requested that an additional \$145,500 (based on the quotation received from Soil Conservation Commission of NSW) be allocated to this project from funds identified in Item 10.08 Borrowing of Projects as resolved at the Ordinary Council Meeting on 16 October 2019. At this meeting Council resolved that funds would be allocated to "Carry out investigations and planning with respect to undertaking tidal improvements that form part of the Lake Innes and Lake Cathie Estuarine System from the Ocean Drive bridge in a westerly direction." A copy of this resolution is attached as **Attachment 2**.

Attachment 3 is a copy of the quote (consultancy agreement). This confidential attachment titled "*Soil Conservation Service Consultancy Agreement - Lake Innes Acid Sulphate Management Options Study*" contains information that relates to commercial information of a confidential nature that would, if disclosed, prejudice the commercial position of the person who supplied it. *Local Government Act 1993 - Section 10A(2)(d)*.

Attachments

1. Acid Sulphate - Grant Application Letter -Reserve List
2. Ordinary Council Meeting Minutes 16/10/2019 - Resolution - Borrowing for Projects - Lake Cathie October
3. Confidential - Soil Conservation Service Consultancy Agreement - Lake Innes Acid Sulphate Management Options Study - D2019/409907 (Confidential)

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**MINUTES**
Ordinary Council Meeting
20/05/2020

EXTENSION OF TIME

RESOLVED: Dixon/Hawkins

That, as per Clause 18.2 of the adopted Code of Meeting Practice, Council extend the finish time of this meeting to 11:00pm.

CARRIED: 8/0

FOR: Alley, Dixon, Griffiths, Hawkins, Intemann, Levido, Pinson and Turner

AGAINST: Nil

13.06 LAKE INNES ACID SULPHATE SOIL MANAGEMENT OPTIONS STUDY - GRANT APPLICATION UPDATE

RESOLVED: Intemann/Turner

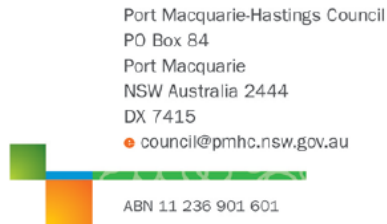
That Council:

1. Note the outcome of the Coastal and Estuary Management Program Grant application.
2. Note that:
 - (a) Council's application was for 50:50 NSW funding for studies recommended by officers of the NSW Department of Planning, Industry and Environment (DPIE), as being necessary to address the significant acid sulphate soil risk in the Lake Cathie-Lake Innes estuarine system.
 - (b) The land or water the subject of the studies is owned by the NSW Government (National Parks & Wildlife and NSW Crown Lands), not Council.
 - (c) Council was notified on 27 March 2020 that the application for funding was placed on a "reserve list" subject to the completion of the PMHC Coastal Management Program (CMP) Scoping Study before the next round of funding opens in August 2020.
 - (d) Council has developed a draft Scoping Study under stage 1 of the Coastal Management Program, ready for community engagement due to the complexity of the issues, and therefore will not be available for inclusion in any funding application in August.
 - (e) Work has commenced on the Coastal Management Program for Lake Cathie/Lake Innes and Bonny Hills Estuary and Coastline as Stage 2 of the Program, and the proposed Acid Sulphate studies are an integral portion of this stage 2 CMP work and it will be at a risk of an unreasonable delay if the Acid Sulphate studies are delayed.
3. Request the General Manager to contact the Department of Planning, Industry and Environment (DPIE), and the State Member for Port Macquarie Leslie Williams, to explain the situation and seek urgent 50:50 NSW funding for the recommended Acid Sulphate Studies.

CARRIED: 8/0

FOR: Alley, Dixon, Griffiths, Hawkins, Intemann, Levido, Pinson and Turner

AGAINST: Nil



Ref: D2020/118341

2 June 2020

Leslie Williams MP
Member for Port Macquarie
6/27 Grant Street
PORT MACQUARIE NSW 2444

Dear Ms Williams,

Coastal and Estuary Management Program Grant for Acid Sulphate Studies - Lake Cathie

Council considered the attached report regarding an update on the Lake Innes Acid Sulphate Soil Management Options Study Grant Application on 20 May 2020 and resolved as follows:

That Council:

1. *Note the outcome of the Coastal and Estuary Management Program Grant application.*
2. *Note that:*
 - (a) *Council's application was for 50:50 NSW funding for studies recommended by officers of the NSW Department of Planning, Industry and Environment (DPIE), as being necessary to address the significant acid sulphate soil risk in the Lake Cathie-Lake Innes estuarine system.*
 - (b) *The land or water the subject of the studies is owned by the NSW Government (National Parks & Wildlife and NSW Crown Lands), not Council.*
 - (c) *Council was notified on 27 March 2020 that the application for funding was placed on a "reserve list" subject to the completion of the PMHC Coastal Management Program (CMP) Scoping Study before the next round of funding opens in August 2020.*
 - (d) *Council has developed a draft Scoping Study under stage 1 of the Coastal Management Program, ready for community engagement due to the complexity of the issues, and therefore will not be available for inclusion in any funding application in August.*
 - (e) *Work has commenced on the Coastal Management Program for Lake Cathie/Lake Innes and Bonny Hills Estuary and Coastline as Stage 2 of the Program, and the proposed Acid Sulphate studies are an integral portion of this stage 2 CMP work and it will be at a risk of an unreasonable delay if the Acid Sulphate studies are delayed.*
3. *Request the General Manager to contact the Department of Planning, Industry and Environment (DPIE), and the State Member for Port Macquarie Leslie Williams, to explain the situation and seek urgent 50:50 NSW funding for the recommended Acid Sulphate Studies.*

pmhc.nsw.gov.au

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PORT MACQUARIE OFFICE
17 Burrawan Street, Port Macquarie NSW 2444
t 02 6581 8111 f 02 6581 8123

WAUCHOPE OFFICE
49 High Street, Wauchope NSW 2446
t 02 6589 6500

LAURIETON OFFICE
9 Laurie Street, Laurieton NSW 2443
t 02 6559 9958



I am writing in relation to Resolution 3 above, to request a review of the decision regarding grant funding for the Lake Innes Acid Sulphate soil management options study. Council received advice (attached for your information), on 27 March 2020 that Council's application had been assessed and approved for placement on the reserve list which may be activated at any time up until the opening of the 2020-21 funding round. We were also informed that Council would need to meet the following condition before consideration of funds were made available:

1. *Port Macquarie-Hastings Council must complete the required scoping study, prior to this project being activated.*

This decision was not what was expected by Council since the study was recommended and endorsed by the members of the Coast, Estuary, Flood Subcommittee which includes membership from NSW Crown Lands, Fisheries, and NPWS. The purpose of commissioning the study is to better understand the impacts of Acid Sulphate on the Lake Innes estuary which is a key question in Stage 2 of the Coastal Management Program (CMP).

Council is in the final stages of development of the Scoping Study. The draft PMHC Scoping Study is currently on public exhibition for 28 days and will be presented to the 15 July Ordinary Council meeting for final endorsement. Upon endorsement, Council will pursue approval from the State Government. This timeline may not allow us to be eligible for funding under the current Coast and Estuary Grant stream and as such additional work will have to be done to reapply for the grant funding late in 2020. This delay will result in a delay of stage 2 of the CMP.

As per the information provided above, I am requesting, on behalf of Council, your assistance with securing the requested funding under the current Coast and Estuary funding stream for 2019/20 now, taking into consideration the progress of the required Scoping Study. A similar request has been forwarded to the Department of Planning Industry and Environment.

Yours sincerely

A handwritten signature in black ink, appearing to read "Craig Swift-McNair".

Craig Swift-McNair
General Manager



Planning,
Industry &
Environment

Our ref: MD20/4490
Sender ref: D2020/118335

Mr Craig Swift-McNair
General Manager
Port Macquarie-Hastings Council
PO Box 84
PORT MACQUARIE NSW 2444

By email: council@pmhc.nsw.gov.au

Dear Mr Swift-McNair

Subject: Grant funding for Lake Innes acid sulfate soil management options study

Thank you for your letter of 2 June 2020 regarding funding for the 'Lake Innes acid sulphate soil management options study' through the Coastal and Estuary Grants Program. As this matter relates to my portfolio, I have been asked to respond on behalf of Jim Betts.

I am advised that Council submitted a grant application in November 2019 requesting \$147,500 in funding, to investigate risks from acid sulfate soils to the Lake Innes ecosystem and management options to address these risks. I am further advised that such a project is conducted in stage two of the development of a Coastal Management Program.

Following review of the application, assessors determined that further work was required on the scoping study (stage one), before funding an options study (stage 2) could be awarded. This resulted in Council's application being placed on a reserve list until the scoping study was completed.

Your correspondence indicates that Port Macquarie-Hastings Council is nearing completion of the scoping study (stage one) and that it will be presented for endorsement at a Council meeting in July 2020.

The process for activation of the Lake Innes acid sulfate soil management options study grant requires Council to advise DPIE Grants Branch on the completion of stage one and provide evidence of Council endorsement, such as the minutes of the relevant council meeting. Once this information is provided, funding can be awarded, and a grant agreement will be provided to Council for signing.

Based on the information you have provided, it appears that there will be sufficient time available to allow funding to be provided to Council prior to the opening of the next funding round of the Coastal and Estuary Grants Program in August 2020, without causing delays for Council. I would encourage Council to promptly advise the Grants Branch once the scoping study is completed and endorsed.



Planning,
Industry &
Environment

If you have any questions about this advice, please do not hesitate to contact Ms Alex Gardiner, A/Manager Contestable Grants – Coast, Estuary and Flood, via Alexandra.Gardiner@environment.nsw.gov.au or 02 8837 6333.

Yours sincerely

A handwritten signature in black ink, appearing to read 'Tina Bidese'.

Tina Bidese
A/Executive Director
Strategy, Delivery and Insights

26 June 2020



Mr Jeffery Sharp
General Manager
Port Macquarie-Hastings Council
PO Box 84
PORT MACQUARIE NSW 2444

Our Ref. DOC20/671669

Attention: Jesse Dick

Dear Mr Sharp

**RE: Application for funding under the 2019-20 Coastal and Estuary Planning Program
Lake Innes acid sulfate soil management options study
Grant Reference Number: 2019-20-CEMP-0001**

I refer to correspondence dated 27 March 2020 advising Council that the application for the above project had been placed on the reserve list, pending completion of a scoping study for the area. The letter also advised that the project could be activated at any time up until the opening of the 2020-21 funding round.

The 2020-21 round is now open, and the abovementioned project can no longer be activated from the reserve list, which has now lapsed.

I would encourage Council to reapply to undertake this project once the scoping study for Lake Innes is complete.

If Council has any questions, please contact me on 02 8837 6333 or at coastalestuary.floodgrants@environment.nsw.gov.au.

Yours sincerely

19/08/2020

Alexandra Gardiner
A/Manager Contestable Grants - Coast, Estuary and Flood
Grants Branch, Environment, Energy and Science

Contact officer: John Schmidt
02 6561 4975