



Central Coast Council  
Supplementary Business Paper  
Ordinary Council Meeting  
**26 October 2020**





# COMMUNITY STRATEGIC PLAN 2018-2028

**ONE – CENTRAL COAST IS THE COMMUNITY STRATEGIC PLAN (CSP) FOR THE CENTRAL COAST LOCAL GOVERNMENT AREA**

**ONE – CENTRAL COAST DEFINES THE COMMUNITY'S VISION AND IS OUR ROADMAP FOR THE FUTURE**

**ONE – CENTRAL COAST BRINGS TOGETHER EXTENSIVE COMMUNITY FEEDBACK TO SET KEY DIRECTIONS AND PRIORITIES**

One - Central Coast will shape and inform Council's business activities, future plans, services and expenditure. Where actions are the responsibility of other organisations, sectors and groups to deliver, Council will work with key partners to advocate on behalf of our community.

Ultimately, every one of us who live on the Central Coast has an opportunity and responsibility to create a sustainable future from which we can all benefit. Working together we can make a difference.

## RESPONSIBLE

**WE'RE A RESPONSIBLE COUNCIL AND COMMUNITY, COMMITTED TO BUILDING STRONG RELATIONSHIPS AND DELIVERING A GREAT CUSTOMER EXPERIENCE IN ALL OUR INTERACTIONS.** We value transparent and meaningful

communication and use community feedback to drive strategic decision making and expenditure, particularly around the delivery of essential infrastructure projects that increase the safety, liveability and sustainability of our region. We're taking a strategic approach to ensure our planning and development processes are sustainable and accessible and are designed to preserve the unique character of the coast.

 **Good governance and great partnerships**

**G2** Communicate openly and honestly with the community to build a relationship based on transparency, understanding, trust and respect

There are 5 themes, 12 focus areas and 48 objectives



All council reports contained within the Business Paper are now aligned to the Community Strategic Plan. Each report will contain a cross reference to a Theme, Focus Area and Objective within the framework of the Plan.



# Meeting Notice

**The Ordinary Council Meeting  
of Central Coast Council  
will be held remotely - online  
Monday 26 October 2020 at 6.30pm,  
for the transaction of the business listed below:**

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- 6.2 Deferred Item - Deferred Item - Code of Conduct Investigation Report -  
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- 6.3 Deferred Item - Deferred Item - Code of Conduct Investigation Report –  
INV6/2020

Jamie Loader  
**Acting Chief Executive Officer**

## ADDITIONAL ITEM



**Item No:** 3.4  
**Title:** Deferred Item - The Entrance Channel - Studies and Reports  
**Department:** Environment and Planning

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26 October 2020 Ordinary Council Meeting

Reference: F2013/01559 - D14249918  
Author: Peter Sheath, Section Manager, Waterways  
Manager: Peter Ham, Unit Manager, Waterways and Coastal Protection  
Executive: Scott Cox, Director Environment and Planning

### Report Purpose

At its extraordinary meeting held 19 October 2020, the Council resolved as follows:

1026/20 *That Council defer all matters that are not time critical to the 26 October 2020 Ordinary Meeting.*

1027/20 *That Council consider the following items;*

- *6.1 – Deferred Item – Mayoral Minute – Staff Matter*
- *6.2 – Deferred Item - Code of Conduct Investigation Report - INV25/2019*
- *6.3 – Deferred Item - Code of Conduct Investigation Report – INV6/2020*
- *U5/20 – Motion of Urgency - State Advice, Council Restricted Funds, Legal Advice and Moving Forward*

At its meeting held 12 October 2020, the Council resolved, in part as follows:

963/20 *That Council defer all items with the exception of the following to an Extraordinary meeting to be conducted remotely on Monday, 19 October 2020 at 6.30pm:*

- *Item 1.3 – Notice of Intention to Deal with Matters in Confidential Session*
- *Item 1.4 - Mayoral Minute – Staff Matter*
- *Item 1.5 - Mayoral Minute – Establishment of a Finance Committee to Oversee Council's Forensic Financial Audit and 100-Day Action Plan to Recovery*
- *Item 3.7 – Council Representative for Hunter and Central Regional Planning Panel (Late Report)*
- *Item 3.8 – Serious Financial Situation (Late Report)*

### 3.4 **Deferred Item - The Entrance Channel - Studies and Reports (contd)**

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- *Notice of Motion 6.2 – Collapse of Confidence in Council's Internal Controls and Financial Management*

#### **Summary**

The purpose of this report is to list and summarise reports or surveys that have been undertaken in regard to The Entrance Channel/Tuggerah Lakes Flooding.

#### **Recommendation**

***That Council receive the report on Deferred Item - The Entrance Channel - Studies and Reports.***

#### **Background**

At its Ordinary Meeting on 10 February 2020, in response to the Notice of Motion: *Breakwall – Dredging – Now – Flood Risk Rising*, Council made 11 resolutions (67/20 to 77/20). These are listed below including a comment about the status of each.

- 67/20 *That Council acknowledge the ongoing resident dissatisfaction of the deteriorating condition of Tuggerah Lakes system and The Entrance Channel, and the public outcry for a permanent solution.*
- 68/20 *That Council acknowledge this issue has been long running, over many decades, and the as a new Super Council, we now have the size and capacity to lobby the State Government for change.*

#### *Status of 67/20 & 68/20 Council resolutions*

These issues were acknowledged by Council.

- 69/20 *That Council now consider allocation of sufficient funds in the 2020 budget to commence preliminary designs, with a view to submitting a proposal to the Minister.*

#### *Status of 69/20 Council resolution*

Council staff have already engaged Manly Hydraulics Laboratory to develop a berm management strategy for The Entrance Channel. It is recommended that any such design brief for an alternative permanent sea opening should firstly consider the recommendations arising following completion of the Tuggerah Lakes Coastal Management Program, which is currently in the scoping phase and due for completion at the end of 2021.

Regarding preliminary designs, no budget allocation has yet been made. Staff understand that the preliminary designs referred to are for a permanent break wall at The Entrance Channel. As is discussed in this report, from the numerous studies conducted to date, no net benefit has been demonstrated from the proposed construction of break walls at this location. In accordance with resolution 69/20, for Council's consideration, the estimated cost of development of preliminary designs for such a structure is \$400,000 (based on the current development of similar designs for a terminal protection structure at Wamberal Beach). With the berm management strategy currently being developed by Manly Hydraulics Laboratory, the Tuggerah Lakes Expert Panel currently undertaking independent assessment of various issues within Tuggerah Lakes (including The Entrance Channel), and staff resources and priorities currently focussed on the development of Coastal Management Programs for our coastal areas (including Tuggerah Lakes), it is not recommended that Council bring additional funds into the budget in order to progress such a design.

*70/20 Further Council also consider allocation suitable funding to commence a major 2020 Channel dredging program, and apply for relevant NSW State Government funding assistance.*

*Status of 70/20 Council resolution*

The 2020 dredging program is funded and is underway. A concept dredge plan has been prepared by consultants Royal Haskoning DHV, with dredging to be carried out by contractors to commence in late September 2020. Karagi carpark is being used as a contractor's compound. Sand is presently proposed to be pumped out of The Entrance Channel and into a dewatering area inside the channel near Karagi reserve. The waterway would be protected from environmental impacts by a series of silt curtains. Dredged sand, once dewatered, will also be moved using earthmoving equipment to be used for nourishment of eroded areas of North Entrance Beach.

Council staff are currently working with the consultant to address potential concerns arising from the works and their impact on the neighbouring Little Tern (*Sternula albifrons*) habitat prior to physical commencement of this stage of dredging. With the delivery aspects of the program changing significantly from the past in order to address environmental risk, productivity of the program may be reduced from that experienced in previous years.

*71/20 That Council recognises with the Entrance Channel now severely silted up, our Lakes System is very vulnerable to a repeat of the devastating multi-million-dollar floods of June 2007, that destroy many homes.*

*Status of 71/20 Council resolution*

Since the February 2020 flood the channel has remained wide open at a width of up to 300m. A post-flood hydrographic survey calculated that an estimated 140,000m<sup>3</sup> of sand was eroded from the channel area by the flood, which is approximately three

### 3.4 Deferred Item - The Entrance Channel - Studies and Reports (contd)

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times the amount of sand removed from a typical dredging program. The wide-open entrance has been associated with much higher than usual tidal energy that has swiftly moved sand shoals back into the estuary, which now extends west of The Entrance Bridge.

*72/20 That any design brief for a permanent sea opening take into consideration enhancement of the existing surf break, and consideration of a permanent sand by pass system, to create a Super bank surf break, similar to Greenmount / Kirra Queensland.*

*73/20 That Council allow the expert panel established by the State Government the opportunity to also review those reports and recommendations.*

#### *Status of 72/20 & 73/20 Council resolutions*

Any such design brief for a permanent sea opening would firstly consider the recommendations of the Tuggerah Lakes Coastal Management Program, which is currently in the scoping phase, with assistance being provided by the NSW Government appointed expert panel.

In relation to consideration of enhancement of the existing surf break. Note that this relates also to a more recent Council Resolution at the Ordinary Meeting of 10 August 2020. In response to the Notice of Motion: Wamberal – North Entrance – Artificial Reefs to the Rescue, Council made 3 resolutions (761/20 to 763/20). Resolution 761/20 called for a report on the economic and social benefits on artificial reefs, including for beach protection and increased surfing, fishing, kayaking and diving. Staff are still preparing a detailed response, but here is a preliminary partial response that is relevant to this discussion: artificial reefs constructed in Australia have mainly been for the sake of surfing alone, such as Cable Station Perth (WA), Middleton Beach Albany (WA), Gregs Reef Bagarra (near Bundaberg) (QLD), and Narrownneck (Surfers Paradise), Queensland. Of these the Narrownneck is the only structure intended for some coastal protection: to protect the thin strip of foreshore between a meander of the Nerang River and the beach, although anecdotal evidence suggests that it does little to support this outcome. These structures are typically located within an open stretch of beach, provide minimal benefits to beach protection, and are unlikely to provide further recreational benefits other than for surfing.

Artificial reefs are not likely to be effective in assisting to manage a permanent opening for Tuggerah Lakes. Based on information obtained by staff to date, evidence suggests that typically only emergent structures (that rise above the ocean surface level) support coastal protection.

*74/20 That Council not favour to prosecute Mr Ben Weber and those involved in the recent community excavation of The Entrance Beach to relieve flooding noting a warning would be more appropriate.*

*75/20 That further Council formally seek similar undertakings from State Agencies, Fisheries, EPA and Crown Lands.*

*Status of 74/20 & 75/20 Council resolutions*

Letters were sent to relevant State Agencies requesting no prosecution. No prosecutions were made.

*76/20 That Council as a matter of urgency bring forward those reports that are previously been raised in regards to The Entrance Channel/Tuggerah Lakes Flooding.*

*Status of 76/20 Council resolution*

Staff appreciate that Council likely preferred a timelier response in relation to this matter. The delay in providing this information is due to the number of documents that needed review and diversion of resources to address flooding and coastal erosion issues over recent months.

A list has been compiled of previous reports about The Entrance Channel and Tuggerah Lakes flooding. These are listed below in historical order. A summary of the purpose and recommendations of each report is provided. These reports have also been provided to the Tuggerah Lakes Expert Panel.

*77/20 That Council, given the unprecedented recent flood events, reconsider future trigger levels for dredging, height levels, flowrates and dimensions when opening the Channels.*

*Status of 77/20 Council resolution*

Council has engaged expert Coastal Engineers – Manly Hydraulics Laboratory - to develop an Entrance Management Procedure and Decision Support Tool. This project is also in response to one of the management actions in the Tuggerah Lakes Floodplain Risk Management Plan.

This tool will be a predictive model that is able to continuously forecast likely future conditions in the lake and at the entrance in the following 24-48 hours based on real-time telemetry (lake levels, rainfall, ocean levels) and recommend appropriate management actions. This work is expected to be completed by March 2021.

### **List of Reports in Historical Order**

Links to each these reports below can be found on Tuggerah Lakes Estuary Page of the Central Coast Council website.



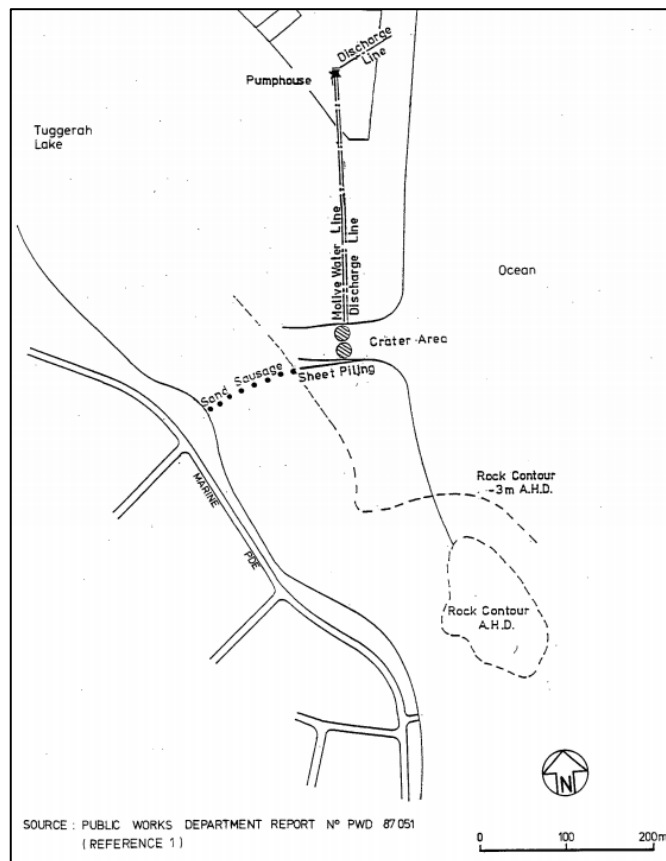
### 3.4 Deferred Item - The Entrance Channel - Studies and Reports (contd)

*Jet Pump Systems for Maintaining Tidal Entrances, NSW Public Works Department, 1987*

The report requested by Wyong Shire Council to look at the feasibility of installing jet pumps in the entrance channel as a means of maintaining a permanent entrance.

The report concluded that jet pumps may be subject to operational difficulties because of their susceptibility to blockage by kelp and other debris. Jet pumps would not be effective for an untrained channel as the channel would move rendering the pumps ineffective. Jet pumps would need to be located adjacent to a fixed wall which would be necessary to prevent the channel from migrating away from the pumps. For this reason, temporary sheet piling was recommended should this method of dredging be pursued, as shown in Figure 1 below.

Note that several years later, once a mobile suction-cutter dredge came into Council ownership, the opportunity was provided for Council to periodically dredge using the dredge from 1993 to 2018 to help maintain an open entrance. This dredge reached the end of its useful life and the asset has recently been disposed.



*Figure 1. Fixed jet-pump option (1987)*

*Tuggerah Lake Entrance Improvements Entrance Restraining Wall: Concept Design Report, Patterson Britton & Partners on behalf of the NSW Public Works Department, 1988*

### 3.4 Deferred Item - The Entrance Channel - Studies and Reports (contd)

The report was requested by Wyong Shire Council to devise a preliminary concept design for a sand-filled geotextile tube wall to be built on the southern foreshore at The Entrance, as shown in Figure 2 below.

The wall by itself would not be an appropriate entrance management strategy. However, it would restrain the entrance channel from migrating southwards where it becomes perched on a rock shelf causing tidal flows to weaken and thus contributing to blockage of the entrance by beach sands.

The wall would have a service life of 10-15 years at a cost of \$580,000 (\$1.35m in 2020).

The work was terminated due to the relatively high cost of the structure and concern about the adequacy of the scour protection system.

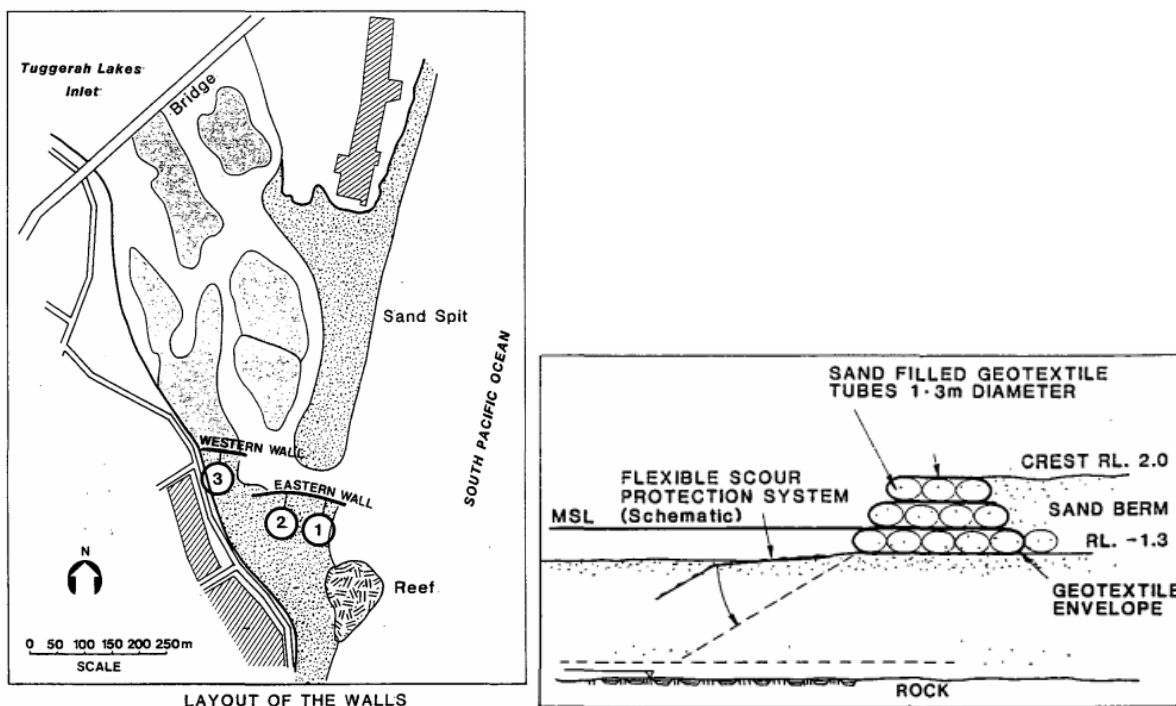


Figure 2: Sand filled geotextile wall proposal (1988)

*Sensitivity Analysis - The Entrance Channel Tuggerah Lake, Webb McKeown and Associates, 1992*

Assessment of the impact upon flood levels of various states of the ocean entrance channel, considering different tidal conditions, entrance width conditions, storm durations, and flood frequencies. The outcomes were used to inform the brief for a flood study (refer Lawson & Treloar 1994).

*Tuggerah Lakes Flood Study: compendium of data, NSW Public Works Department - Coast & Rivers Branch, 1992*

### **3.4 Deferred Item - The Entrance Channel - Studies and Reports (contd)**

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Report contains a compendium of data from 37 reports related to Tuggerah Lakes from the 1960s to early 1990s. This data was subsequently used in the Tuggerah Lakes Flood Study (Lawson & Treloar 1994).

*Tuggerah Lakes, Entrance Training Walls: Technical Discussion, Patterson Britton and Partners, 1994*

This report was commissioned by Wyong Shire Council to prepare a technical discussion of the feasibility of establishing training walls at The Entrance.

Comments to note about Single Training walls:

- No significant benefits, minor impacts (p.11)
- Would not provide safe navigation (p.14)
- Loss of amenity and aesthetics (p.12)

Comments to note about Twin training walls:

- Navigation: not enough tidal power to create a deep bar depth in the surf zone suitable for large vessels (pp.15, 17). Potentially this could be overcome by major dredging within a narrower channel of the order of 60-80m wide (p.20)
- Flooding: would not be able to discharge major floods without significant increase in lake flood levels (pp.17, 20)
- Amenity: loss of amenity for wading/swimming and increase in hazard, but increase in fishing from rock walls and increased recreational boating; amenity of whole lake foreshore compromised (pp.17, 21)
- Aesthetics: natural beauty lost at The Entrance Channel and receding lake foreshores (p.18)
- Impact on North Entrance Beach: Potential increased erosion (pp.23-24)
- Impacts on The Entrance Foreshores: increased erosion from penetration of ocean swell (pp.23-24).
- Lake foreshore habitat: Profound adverse impacts (pp.23-24). Drop in lake levels would expose lake margins exacerbating the problems of noxious odours, die back of seagrass beds, increase in algal growth in shallow lake margins (p.18).
- Marine organisms: Enhance recruitment of prawns and fish; access for sharks increased along with public concern about shark attack (p.18).
- Impacts on roads: transportation of rock by heavy trucks over 18 months. Suitable hard rock not available in LGA. (p.18).

*Tuggerah Lakes Flood Study, Lawson and Treloar, 1994*

This report was commissioned by Wyong Shire Council. This Flood study modelling is the basis of current adopted flood levels within the lake.

The report discusses the joint probability of combinations of different storm scenarios: rainfall, wind, tide, waves. The adopted design conditions for the calculation of a 1% AEP

### **3.4 Deferred Item - The Entrance Channel - Studies and Reports (contd)**

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flood level was rainfall induced flood coinciding with spring tide and ocean swell of 4.5m (significant wave height), including an initial 20m wide channel with long overflow weir (sand spit), which breaches and erodes to a wider channel.

Comment: The recent February 2020 flood was a significant rainfall event with an initial channel width of 40m coinciding with a large spring tide and much larger ocean swell of 6.5m. A grant funding application has been lodged in March 2020 with Department of Planning and Environment to update this 1994 Tuggerah Lakes Flood Study.

*Recalibration of Tuggerah Lakes model and Evaluation of The Entrance Dredging Impacts, Lawson and Treloar, 1999*

This report commissioned by Wyong Shire Council to investigate the impacts of widening and deepening the entrance channel on normal lake levels.

Three options of 45m wide channels were investigated assuming different permanent dredging depths. Maintaining a channel to these dimensions would increase the mean tidal range and lower the mean lake level to between 0.15mAHD and 0.12mAHD, depending on the depth of dredging.

*Tuggerah Lakes Estuary Management Plan, Bio-Analysis, 2006*

This report was prepared for Wyong Shire Council and NSW Department of Natural Resources. The plan identified 27 programmes to address the most pressing estuary management issues as analysed in the Estuary Management Study, which was completed in 2005. One of the relevant actions was item PP18: maintain current flows through the entrance. The focus of this involved four actions (p.127):

- Provide funding and resources for the continuation of the dredging program
- Assess ocean entrance dredging effect on key estuarine/physical processes
- Develop flood, safety and ecological trigger that aid in determining dredging requirements/targets
- Review the dredging program considering any new information

*Entrance Channel Dredging – Ecological Impact Study, Cardno, 2009*

This report was commissioned by Wyong Shire Council to consider the ecological effect of the dredging program at the time.

The report found that benthos (worms, crabs, prawns) exhibit considerable resilience to dredging disturbance. The report supported ongoing dredging as required.

*Technical Advice on Dredging Related Matters, Worley Parsons, 2008*

This documents the existing dredging strategy, which was current at that time: the enhancement of the ebb dominant northern channel by creating a 50m-wide channel to a

### **3.4 Deferred Item - The Entrance Channel - Studies and Reports (contd)**

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level of -2m AHD by commencing the dredging at the upstream end near the road bridge and using a mobile dredging system.

*The Entrance Dredging Project, Review of Environmental Factors, Worley Parsons, 2009*

This is the Review of Environmental Factors (REF) that has guided dredging of the entrance channel over the last decade, including compliance with Environmental Protection Licence EPL3200. The REF allows for the sustainable local supply of sand suitable for nourishment of the depleted beaches including North Entrance Beach and Karagi Park foreshore. Nourishment of these areas minimises the potential for erosion to the adjacent dunes.

*Water Levels at Tuggerah Lakes, NSW Manly Hydraulics Laboratory, 2010*

Analyses of the a 15-year water level within Tuggerah Lake recorded between 1985 and 2010. An average water level rise ranging from 3.9 to 6.4mm/year over the period of data collection was calculated within the lake.

*Tuggerah Lakes Estuary Modelling, NSW Department of Environment, Climate Change and Water, 2011*

The Report was prepared by Prepared by K. Brennan, A. Ferguson, B. Sanderson, T. Weber and P. Scanes from NSW Department of Environment, Climate Change and Water. The report describes the results of a hydrodynamic model undertaken to study the water quality parameters within the lake system, including nutrient concentration, suspended sediment, phytoplankton, etc. Some details about the habitats and ecosystems were provided.

*Long Shore Sand Transport and Tidal Inlet Stability Study for The Entrance and The Entrance North, SMEC Australia, 2011*

The Report is a Coastal engineering assessment of tidal inlet stability. The report advises against training walls for the following reasons:

- Creation of a stronger ebb tide would build up a new entrance sand bar further offshore (p.31)
- Possible erosion of the entrance spit (p.31)
- Potential for significant impacts on the lakes, such as impact on the lake levels and tidal range, increased flooding, storm surge and wave climate in the entrance and shrinkage of the upstream entrance shoals (p.6, 32).

*Entrance Dynamics and Beach Conditions at The Entrance and North Entrance Beaches, Umwelt, 2011*

The aim of the study was to clarify sediment transport linkages between the entrance channel and North Entrance Beach. The report is included as Appendix 7 of document Umwelt 2011 Wyong CZMP (see next report below).

### **3.4 Deferred Item - The Entrance Channel - Studies and Reports (contd)**

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Conclusions and Recommendations from the report:

- Council should continue its existing dredging program.
- North Entrance Beach is receding. Placement of dredged sands on the beach will slow the recession.
- Council should not construct training walls at The Entrance as they would not benefit either the lake or North Entrance Beach.
- High volume dredging or removing the sand berm to a permanently wide condition are also not supported as it will cause enhanced wave penetration.

*Wyong Coastal Zone Management Plan, Umwelt, 2011*

The plan recommends actions to manage coastal risks. Those actions that relate to the entrance channel include:

- A67: Establish a detailed monitoring program to clarify how sand placed on North Entrance beach is redistributed and to facilitate a review to provide more effective sand retention.
- A9: Continue to dredge sand from the active tidal delta in The Entrance channel and place the sand on North Entrance beach. Some sand may also be placed on The Entrance Beach.

*Safety of Navigation should Training Walls be Established at the Bar Way Entry to The Entrance in New South Wales, Weston, 2013*

Report on the Safety of Navigation should Training Walls be Established at the Bar Way Entry to The Entrance in New South Wales, prepared by Captain Charles Weston for Cardno. This report was prepared to make recommendations about the safety of boaters navigating the entrance channel, with and without training walls. The report is included as Appendix H of the 2013 Cardno Entrance Morphodynamic Modelling Report (see next report below).

Recommendations from report:

- The existing bar-way is dangerous. Navigation should not be attempted. Navigation is typically only attempted by vessels such as jet-skis and kayaks.
- Should training walls be constructed then safe navigation would still not be possible if the existing rock shelf remains.
- Should the rock shelf be removed and the depth of the entry between training walls be increased by dredging then this would facilitate its use by larger vessels at all state of the tide with appropriate safety signage, navigation marks and assistance of Volunteer Marine Rescue to manage navigation.

*Tuggerah Lakes, The Entrance Morphodynamic Modelling, Cardno, 2013*

The Report was prepared for the NSW Government through the NSW Office of Environment and Heritage to assess the potential effectiveness of entrance training walls in addressing

### 3.4 Deferred Item - The Entrance Channel - Studies and Reports (contd)

water quality issues. A 3D numerical model was developed, which covers the 3 lakes as well as the adjacent ocean and beaches. The model can simulate the effects of tides, waves, wind, freshwater inflows, evaporation and both water and sand movement.

The model was used to independently assess the potential effectiveness of several scenarios as listed below and as illustrated in Figure 3:

- Existing case (no training wall)
- A single training wall located 150m north of the entrance training walls
- Dual training walls at 100m, 150m and 200m apart.



Figure 3. Cardno modelled training wall scenarios (2013)

It was found that the dual training wall option made flooding worse, resulting in flood levels 8cm higher in a 1% AEP (1 in 100y) flood. So dual training walls less than 150m wide makes flooding worse.

The report concluded that following a flood the channel will begin to shoal in all scenarios. Sand will not continue to self-scour, regardless of the width of training walls.

*Tuggerah Lakes, The Entrance Morphodynamic Modelling: Entrance Beach Management Investigations, Cardno, 2013*

This report was prepared for the NSW Government through the NSW Office of Environment and Heritage. The report was an assessment of several beach nourishment options. This resulted in the NSW Government – as an election commitment - building short groyne to hold sand on The Entrance Beach.

### **3.4 Deferred Item - The Entrance Channel - Studies and Reports (contd)**

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*Tuggerah Lakes Floodplain Risk Management Study and Plan, WMA Water Pty Ltd, 2014*

This report recommended several options to manage flooding in Tuggerah Lakes, which led to a short-list of 14 actions, one of which was to formalise an entrance management strategy to manage flooding, which is currently being prepared by Manly Hydraulics Laboratory.

The Floodplain Risk Management Plan also investigated many other options and opportunities related to flooding in Tuggerah Lakes, which were not recommended for implementation. One of these options that was not recommended was Enlarging the Entrance Channel.

The consultant referred to some simulations carried out in the late 1990s that found that a fully open channel, 250m wide, dredged to -1mAHD between the bridge and the ocean, including removal of the rock platform, would lower peak flood levels in large flood events by up to a reduction of 0.31m for the 1% AEP flood event (from 2.23m to 1.92m). To put this in context: these works would have likely lowered the February 2020 flood from 1.67m to about 1.55m.

However, this report did not recommend a 250m wide channel for the following reasons:

- Maintaining a fully open channel of these dimensions is not physically or economically feasible,
- Negative impacts on Tuggerah Lakes ecology
- Negative impacts of ocean wave impacts propagating into the entrance channel
- Concerns about the need to better consider scenarios that consider the impacts of large ocean swell events, which may produce higher levels in the lakes.

The report also acknowledged the subsequent work carried out by Cardno in 2013, which found that training walls less than 150m wide would make flooding worse.

*Additional Morphodynamic Modelling – The Entrance, Cardno, 2015*

After the finalisation of the Cardno Morphodynamic Modelling report (2013), representatives from Cardno were invited by Council to attend and present on the report at the previous Wyong Shire Council B Ward Forum at The Entrance on 8 May 2014. Some members of the community pointed out that the study had not considered the various training wall options together with deepening of the channel. This was reported to Council through the Tuggerah Lakes Estuary, Coastal and Floodplain Management Committee. Council subsequently resolved to engage Cardno to conduct further Morphodynamic Modelling, which led to this further report.

The report assessed different dredging depths (with and without training walls). Outcomes were as follows:

- All dredging channels will immediately start filling in (they would need continuous dredging)



### 3.4 **Deferred Item - The Entrance Channel - Studies and Reports (contd)**

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- Training walls alone have no benefit for water quality
- Assuming a dredged channel can be maintained (by continuous dredging) then:
  - The lake would become more saline
  - The average lake level would drop up to 200mm
  - There would be a tidal range in the lake, which may bring in mangroves
  - Greater tidal exchange may scour bridge piers or shorelines
  - There would be exposure of muddy shores
  - There would be reduced recreational value and potentially fish catch
  - There would be reduced estuary navigation and access to jetties and boat ramps
  - It would destabilise foundations of the Entrance Bridge
  - It would lead to permanent changes to the shorelines around Terilbah.

*Review of Environmental Factors - The Entrance Rock Groyne, NSW Department of Industries – Crown Lands, 2016*

This NSW Government report contains the Short Groyne design and an assessment of its environmental impacts.

*Breakwaters and training walls – The good the bad and the ugly, Advisian, 2017*

This presentation was published by Lex Neilson – Principal Consultant from Advisian. It examines the impacts, both positive and negative, of the construction of training walls at various locations on the NSW coast. The paper observes that breakwaters can change local wave transformation patterns, inducing large-scale changes to beach alignments.

Negative impacts from other estuaries that have been trained with breakwalls include:

- Loss of seagrass and saltmarsh (Lake Illawarra)
- Changes to commercial fish populations (Lake Illawarra)
- Loss of endangered Little Tern habitat (Lake Illawarra)
- Migration of the flood tide delta sands much further into the estuary (Lake Macquarie)
- Exposure and oxidisation of acid sulphate soils (Tweed & Shoalhaven Rivers)
- Mangrove ingress to the intertidal zone (Lake Illawarra)
- Erosion of seawalls and foreshore infrastructure (Swansea Channel)
- Bridge pier instability (Windang Bridge, Lake Illawarra)

The paper warns that training walls at The Entrance would be likely to cause coastal realignment, such that the coastal erosion hot-spot at Curtis Parade, North Entrance, would likely suffer increased coastal erosion, as shown in Figure 4.



Figure 4 - Training walls at The Entrance would likely cause coastal realignment leading to erosion at Curtis Parade (slide 10 from Neilson presentation)

A link to the Neilson presentation is found at: <https://www.advisian.com/en-us/global-perspectives/breakwaters-and-training-walls---the-good-the-bad-the-ugly#>

*Review of Wyong Coastal Hazard Study, BMT, 2018*

The review is an assessment of shoreline change and sediment movement for Entrance South and Entrance North. It also discusses The Entrance dynamics.

*The Entrance Channel Dredging Operations Feasibility Review, GHD, 2019*

The report was commissioned by Central Coast Council and is a review of:

- Historical reasons for dredging and current dredging requirements
- Benefits of ongoing dredging operations as concluded by previous studies
- Challenges associated with current dredging operations
- Review of effectiveness of dredging operation and potential impacts of the 'do nothing' option

It proposes alternative dredging work methods and procurement strategies. It recommends Council undertake "an entrance adjustment trial in conjunction with emergency entrance berm clearing operations using land-based equipment."

*Survey of rock shelf at The Entrance, Central Coast Council, 2020*

Council staff carried out a ground survey of levels of The Entrance Channel rock shelf as at January 2020. The levels of the existing rock shelf vary from approximately 0.5m to 1.0m above sea level (AHD). The minimum channel width, as measured at the time at low tide, was 30m wide. Figure 5 shows the extent of the survey; Figure 6 is an enlargement of the rock shelf area for the sake of clarity.

3.4 Deferred Item - The Entrance Channel - Studies and Reports (contd)



Figure 5. Survey is shown with an enlarged area of the rock shelf for clarity.



Figure 6. Survey is shown with an enlarged area of the rock shelf for clarity.

### **3.4 Deferred Item - The Entrance Channel - Studies and Reports (contd)**

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*Tuggerah Lakes Catchment February 2020 flood summary and historical comparison, NSW Manly Hydraulics Laboratory, 2020*

This report was commissioned by Central Coast Council. February 2020 recorded high rainfall intensities exceeding those of the June 2007 event, and equalling 1% AEP intensities at Yarramalong. The maximum water levels of the February 2020 flood event were 1.67mAHD at Long Jetty (30mm higher than June 2007) and 1.66mAHD at Toukley (10mm lower than February 2007).

#### **Key conclusions from a review of previous reports**

##### *Options with no merit*

- A jet pumping installation is not recommended for an untrained entrance as the channel opening location is variable (PWD 1987)
- Twin training walls are not recommended. Negative impacts include; loss of amenity and aesthetics in the entrance area, coastal realignment and increased erosion of North Entrance Beach near Curtis Parade, drop in average lake levels creating large mud flats and affecting foreshore habitat as well as reducing estuary navigation and access to jetties and boat ramps, increased flooding (unless at least 150m apart), potential ingress of sharks, need to remove rock shelf, sand bar in the surf zone would still make navigation hazardous for larger vessels, potentially destabilise foundations of the Entrance Bridge (PBP 1994, SMEC 2011, UMWELT 2011, Weston 2013, Cardno 2013 & 2015). Furthermore, it would not be economically or physically possible to maintain a deep dredged channel between twin training walls as the channel would be constantly be prone to shoaling (Cardno 2013, WMA 2015, Advisian 2017)
- Removal of the sand berm to a permanently wide condition is not recommended as it will cause enhanced wave penetration (UMWELT 2011)

##### *Options that may have merit*

- A small single training wall on the south side may have merit to restrain the entrance channel from migrating southwards where it can become perched on the rock shelf (PBP 1988). However, a single training wall would still not provide for safe navigation and would be associated with some loss of amenity and aesthetics (PBP 1994).
- Council should continue to place sand on North Entrance Beach to slow the rate of beach recession (UMWELT 2011)
- Council should formalise an entrance management strategy to manage flooding (WMA 2014) [this work is underway as discussed above in relation to resolution 77/20]
- Council may consider an entrance adjustment trial (no dredging) in conjunction with emergency entrance berm clearing operations using land-based equipment (GHD 2019).

### **3.4 Deferred Item - The Entrance Channel - Studies and Reports (contd)**

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Finally, any permanent solution should firstly consider the recommendations of the Tuggerah Lakes Coastal Management Program, which is currently in the scoping phase, with assistance being provided by the NSW Government appointed expert panel (as discussed above in relation to the status of resolutions 72/20 & 73/20).

#### **Link to Community Strategic Plan**

Theme 3: Green

#### **Goal F: Cherished and protected natural beauty**

F1: Protect our rich environmental heritage by conserving beaches, waterways, bushland, wildlife corridors and inland areas, and the diversity of local native species.

#### **Attachments**

Nil

## ADDITIONAL ITEM



**Item No:** 3.5  
**Title:** Deferred Item - The Entrance Beach North - Coastal Erosion Update  
**Department:** Environment and Planning

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26 October 2020 Ordinary Council Meeting

Reference: F2020/00039 - D14249919  
Author: Ben Fullagar, Section Manager, Coastal Protection  
Manager: Peter Ham, Unit Manager, Waterways and Coastal Protection  
Executive: Scott Cox, Director Environment and Planning

### Report Purpose

At its extraordinary meeting held 19 October 2020, the Council resolved as follows:

*1026/20 That Council defer all matters that are not time critical to the 26 October 2020 Ordinary Meeting.*

*1027/20 That Council consider the following items;*

- *6.1 – Deferred Item – Mayoral Minute – Staff Matter*
- *6.2 – Deferred Item - Code of Conduct Investigation Report - INV25/2019*
- *6.3 – Deferred Item - Code of Conduct Investigation Report – INV6/2020*
- *U5/20 – Motion of Urgency - State Advice, Council Restricted Funds, Legal Advice and Moving Forward*

At its meeting held 12 October 2020, the Council resolved, in part as follows:

*963/20 That Council defer all items with the exception of the following to an Extraordinary meeting to be conducted remotely on Monday, 19 October 2020 at 6.30pm:*

- *Item 1.3 – Notice of Intention to Deal with Matters in Confidential Session*
- *Item 1.4 - Mayoral Minute – Staff Matter*
- *Item 1.5 - Mayoral Minute – Establishment of a Finance Committee to Oversee Council's Forensic Financial Audit and 100-Day Action Plan to Recovery*
- *Item 3.7 – Council Representative for Hunter and Central Regional Planning Panel (Late Report)*
- *Item 3.8 – Serious Financial Situation (Late Report)*

### **3.5 Deferred Item - The Entrance Beach North - Coastal Erosion Update (contd)**

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- *Notice of Motion 6.2 – Collapse of Confidence in Council's Internal Controls and Financial Management*

#### **Summary**

The purpose of this report is to provide an update on the coastal erosion at The Entrance North since the resolution of Council at its ordinary meeting of 9 June 2020 and how staff have assisted these residents.

#### **Recommendation**

***That Council note the information contained within this information report.***

#### **Context**

At its ordinary meeting on 9 June 2020 Council resolved:

- 460/20 *That Council notes with concern the temporary emergency works recently carried out on The Entrance North beach by staff.*
- 461/20 *That Council in partnership with relevant agencies seek to urgently assist local beachside residents with suitable approvals to carry out emergency beach stabilisation works in the affected The Entrance North area.*
- 462/20 *That Council note that any such works will be carried out at the expense of affected residents.*
- 463/20 *That Council request the Chief Executive Officer to provide a report on the progress of this initiative as a matter of urgency.*

#### **Background**

The Entrance North Beach has historically experienced coastal erosion as documented in the Wyong Beaches Coastal Zone Management Plan (CZMP) 2011. The CZMP identifies a number of private residences positioned on the ocean side of the immediate coastal hazard line. The Entrance North Beach has also been identified as a 'significant open coast hazard' location by the NSW Government in the guidelines for the Coast and Estuary Grant funding program.

Increased erosion occurred at The Entrance North Beach from February 2020 and continuing throughout the winter period.



### **3.5 Deferred Item - The Entrance Beach North - Coastal Erosion Update (contd)**

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#### **Council assistance following the 9 June Council meeting**

Following the 9 June Council meeting staff undertook a number of actions to assist residents. Council staff periodically continued to complete beach scraping (which had already commenced in May 2020) to assist with the recovery of the beach and to also reduce the safety risk to users of the beach from the steep erosion scarp.

Council engaged a consulting surveyor to complete a property boundary survey from 1 Hutton Rd to 25 Hargraves Street. This survey was undertaken to provide information on the location of the erosion scarp in relation to the built structures and the property boundaries. This survey has also been provided to the residents for their information and to assist them should they wish to seek development approval for coastal protection works in the future.

In accordance with resolution 461/20, on 26 June 2020 Council officers met with representatives from NSW Department of Planning, Industry and Environment to discuss the approval pathways and licences required for both public and private coastal protection works. This information was obtained to assist residents with any proposed applications for coastal protection works.

Council staff have written to each of the property owners outlining the above information and also outlining that Council is undertaking a new Coastal Management Program, with the Stage 1 scoping study currently underway. During Stage 2 onwards Council will be working with the community on the development of the new Coastal Management Program and there will be opportunities for the residents and wider community to be involved in this process.

#### **Emergency Temporary Toe Protection Works – Following July coastal erosion event**

Following the July 2020 coastal erosion event, the Local Emergency Operations Controller (LEOCON) under the local emergency plan assumed control of the response. The LEOCON subsequently issued a direction under section 61 of the State Emergency and Rescue Management Act 1989 requiring Council to protect property (including the environment) threatened by the imminent emergency posed by the forecast weather event.

Central Coast Council has worked closely with State Government agencies and the LEOCON in response to significant areas of coastal erosion at Wamberal Beach and The Entrance North. Coastal remediation work in accordance with the direction was carried out under with advice from coastal engineers. At The Entrance North, emergency toe protection work has been completed which involved the placement of approximately 3,000 tonnes of rock on the beach between Karagi Reserve beach access and Hargraves Street beach access. Council staff have sought confirmation from Public Works Advisory that the works satisfy the direction and will thereafter seek sign off from the LEOCON. Once that sign off has been received, Council will submit its claim for reimbursement of the costs incurred to the LEOCON. It is expected the LEOCON will then submit Council's claim for reimbursement to the relevant state government agencies for a response.

### **3.5 Deferred Item - The Entrance Beach North - Coastal Erosion Update (contd)**

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Crews will continue to inspect the work over coming weeks and the above accesses to the beach have been closed until they are considered safe and accessible.

The Karagi Reserve carpark will remain closed as Council will use it as a staging area for upcoming dredging works in The Entrance Channel. Some of the sand used from dredging will be used to further nourish the North Entrance beach.

Following the completion of the emergency works a letter was emailed to the residents to provide them with information on the works and their options with regard to coastal protection works. Council staff have also sent copies of the boundary survey to residents for their information in order to help assist them with any proposed private coastal protection works by providing additional relevant information to support any proposed development application.

#### **Financial Impact**

The estimated total cost of the emergency works at The Entrance North is approximately \$780,000. These costs are being included in a funding application that is seeking one hundred percent reimbursement from the NSW Government under the Coastal and Estuary Grant Program.

#### **Link to Community Strategic Plan**

Theme 3: Green

#### **Goal F: Cherished and protected natural beauty**

G-F1: Protect our rich environmental heritage by conserving beaches, waterways, bushland, wildlife corridors and inland areas, and the diversity of local native species.

#### **Attachments**

Nil

## **ADDITIONAL ITEM**



**Item No:** 5.3  
**Title:** Deferred Item - Notice of Motion - Leveraging Jobs Hub off \$250M State Government Rail Investment at Kangy Angy  
**Department:** Councillor

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26 October 2020 Ordinary Council Meeting

Reference: F2020/00039 - D14249920  
Author: Greg Best, Councillor  
Rebecca Gale, Councillor  
Bruce McLachlan, Councillor  
Troy Marquart, Councillor

### **Report Purpose**

At its extraordinary meeting held 19 October 2020, the Council resolved as follows:

- 1026/20 *That Council defer all matters that are not time critical to the 26 October 2020 Ordinary Meeting.*
- 1027/20 *That Council consider the following items;*
- 6.1 – *Deferred Item – Mayoral Minute – Staff Matter*
  - 6.2 – *Deferred Item - Code of Conduct Investigation Report - INV25/2019*
  - 6.3 – *Deferred Item - Code of Conduct Investigation Report – INV6/2020*
  - U5/20 – *Motion of Urgency - State Advice, Council Restricted Funds, Legal Advice and Moving Forward*

At its meeting held 12 October 2020, the Council resolved, in part as follows:

- 963/20 *That Council defer all items with the exception of the following to an Extraordinary meeting to be conducted remotely on Monday, 19 October 2020 at 6.30pm:*
- *Item 1.3 – Notice of Intention to Deal with Matters in Confidential Session*
  - *Item 1.4 - Mayoral Minute – Staff Matter*
  - *Item 1.5 - Mayoral Minute – Establishment of a Finance Committee to Oversee Council's Forensic Financial Audit and 100-Day Action Plan to Recovery*
  - *Item 3.7 – Council Representative for Hunter and Central Regional Planning Panel (Late Report)*
  - *Item 3.8 – Serious Financial Situation (Late Report)*

### **5.3 Deferred Item - Notice of Motion - Leveraging Jobs Hub off \$250M State Government Rail Investment at Kangy Angy (contd)**

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- *Notice of Motion 6.2 – Collapse of Confidence in Council's Internal Controls and Financial Management*

At its meeting held 28 September 2020, the Council resolved as follows:

565/20 *That Council defer consideration of item 6.3 - Notice of Motion - Leveraging Jobs Hub off \$250M State Government Rail Investment at Kangy Angy to the 12 October 2020 Ordinary Meeting.*

- 1 *That Council congratulates the key contractors, their some 300 employees and the State Government for their \$250 million intensity rail hub investment at Kangy Angy that will employ more than 300 FTEs.***
- 2 *That further Council recognises the outstanding contribution by the former Wyong Council and its staff in being able to competitively secure such an extraordinary jobs boost for our region.***
- 3 *That despite this Council's strident opposition and repeated representations against this massive investment and jobs initiative, council now look to leverage from this project through the establishment of a Local Rail Hub Business Network not unlike the vision Wyong Council staff had for the job-generating proposed Airport Hub at Warnervale.***
- 4 *That Council in partnership with the State, the Regional Development Australia (RDA) and the broader business community with a view to bring together a taskforce to investigate this unique opportunity and potential jobs bonanza.***
- 5 *That Council request the Chief Executive Officer to report on such an initiative providing preliminary advice and possible direction that council may wish to consider.***

#### **Councillors Note**

Despite the Central Coast having extraordinarily high unemployment, this Council chose to object at every opportunity through its strident opposition to this massive investment that would underpin and employ hundreds of local Central Coast residents. It is not surprising that we were not invited to the recent opening of this facility, however, if we can now put behind ourselves this unfortunate chapter and genuinely reach out to our State counterparts and the Business Community with a view to developing a Specialist Rail Repair and Service Hub not unlike the vision that staff held in Wyong Council around the Airport Hub.

Now that we are in the COVID environment, every job is even more precious. It is with this understanding that I encourage this Council to move forward and seek to work cooperatively with the Government and key stakeholder groups.

**5.3 Deferred Item - Notice of Motion - Leveraging Jobs Hub off \$250M State Government Rail Investment at Kangy Angy (contd)**

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**Chief Executive Officer Response**

The Chief Executive Officer has further considered this notice of motion for legal, strategic, financial or policy implications which should be taken into consideration by the meeting. As a result, the Chief Executive Officer has determined a report in relation to the notice of motion will not be required.

**Attachments**

Nil

## ADDITIONAL ITEM



**Item No:** 5.4  
**Title:** Deferred Item - Notice of Motion - Tradie led COVID recovery for the Central Coast  
**Department:** Councillor

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26 October 2020 Ordinary Council Meeting

Reference: F2020/00039 - D14249921  
Author: Bruce McLachlan, Councillor  
Greg Best, Councillor

At its extraordinary meeting held 19 October 2020, the Council resolved as follows:

- 1026/20 *That Council defer all matters that are not time critical to the 26 October 2020 Ordinary Meeting.*
- 1027/20 *That Council consider the following items;*
- *6.1 – Deferred Item – Mayoral Minute – Staff Matter*
  - *6.2 – Deferred Item - Code of Conduct Investigation Report - INV25/2019*
  - *6.3 – Deferred Item - Code of Conduct Investigation Report – INV6/2020*
  - *U5/20 – Motion of Urgency - State Advice, Council Restricted Funds, Legal Advice and Moving Forward*

At its meeting held 12 October 2020, the Council resolved, in part as follows:

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- *Item 1.3 – Notice of Intention to Deal with Matters in Confidential Session*
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  - *Item 3.7 – Council Representative for Hunter and Central Regional Planning Panel (Late Report)*
  - *Item 3.8 – Serious Financial Situation (Late Report)*
  - *Notice of Motion 6.2 – Collapse of Confidence in Council’s Internal Controls and Financial Management*

**5.4 Deferred Item - Notice of Motion - Tradie led COVID recovery for the Central Coast (contd)**

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- 1 That Central Coast Council recognises the local economy is one of its core pillar responsibilities, and that COVID 19 economic impacts now require Council to urgently provide Economic leadership, and stimulus to the Central Coast Region.**
- 2 That Council acknowledges the key role of its Planning Department, and its ability via fast tracking of the DA process, an immediate boost to construction, our second largest workforce on the Central Coast.**
- 3 That Council Finances, even with maximum Rate Rise percentages allowed, is projecting at \$50M budget loss for 2020, resulting in a cut backs to Capital Works programmes across the Coast.**
- 4 That any increased efficiency of the Planning Dept, can play a vital role in increasing Council revenues, through collection of Development Contributions, Fees and Charges.**
- 5 That Council via the Chief Executive Officer now investigate and report back to Council, measures to assist in the fast tracking of DA approvals, including allocating additional resources to the Planning Department, in order to reduce DA approval turnaround times.**

**Councillor Note**

WHEN THE HAMMERS SWING - THE COAST SINGS

Our tradies are the backbone of our local economy, and construction is are second largest workforce on the Coast.

Each new residential build employs approximately 50 individual trades, and any delay in the DA approval process, has a serious detrimental effect on the industry, and a drag on the Central Coast economy.

One of the immediate, tangible, and measurable economic stimulus avenues available to Council, is the ability to fast track the DA approvals, at the same time collecting additional Council revenue.

Re allocation of resources to improve output of the Planning Dept should be considered, as it is a revenue raising Dept. with the ability to improve Councils finances, which will in turn help reduce pressure to increase residents Rates.

**Attachments**

Nil