

Assessment Report

DA CP 17-005

**Proposed Coastal Protection Works
46 Arrawarra Beach Road, Arrawarra**

Applicant: Arrawarra Beach Pty Ltd

October 2017

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1.0 Executive Summary

1.1 Proposed Development

The Development Application (DA) involves the reconstruction and extension of an existing revetment (seawall) located at 46 Arrawarra Beach Road, Arrawarra, within the Coffs Harbour Local Government Area. The DA details submit that the existing seawall is at the end of its service life, and that the proposed revetment will replace and extend the existing wall with a more suitable structure that has been designed to meet current coastal engineering standards. Two reasons for the proposed development are provided: to secure the site boundary from further erosion due to environmental and safety concerns, and to enable the existing caravan park to continue to meet contemporary tourism development standards and client expectations.

The DA (CP 17-005) the subject of this Assessment Report was lodged with the NSW Coastal Panel (the Panel) on 16 March 2017. A previous DA for a proposed new revetment wall at the site (CP 16-001) was refused by the Panel on 6 December 2016. It was considered that the primary purpose of the proposed revetment wall was to protect future residential development at the site from coastal hazards, rather than to protect the ecological and cultural values of the E2 Environmental Conservation zone in which the wall is sited. A separate DA (0667/16DA) has been lodged with Coffs Harbour City Council for a 24 lot residential subdivision of the subject site (refer to plan attached at **Appendix 1**).

1.2 Coastal Panel is consent authority

Pursuant to section 129A(2) of *State Environmental Planning Policy (Infrastructure) 2007* (the Infrastructure SEPP), the consent authority for the proposed development is the Coastal Panel under Part 2A of the *Coastal Protection Act 1979* (the CP Act), as no gazetted coastal zone management plan applies to the site.

1.3 Permissibility

The subject site is zoned R2 Low Density Residential and E2 Environmental Conservation under *Coffs Harbour Local Environmental Plan 2013* (CHLEP). However, the proposed revetment wall is located wholly within E2 zoned land. Development of 'coastal protection works' (including revetments) is permissible with consent in accordance with clause 129A of the Infrastructure SEPP.

In addition, development for the purposes of a 'seawall or beach nourishment' is permissible with consent pursuant to Clause 129A(1) of the Infrastructure SEPP. Additional key provisions under this enabling clause are as follows:

- (2) *If a coastal zone management plan does not apply to the land on which any such development is to be carried out, the Coastal Panel has the function of determining a development application for development to which this clause applies.*
- (3) *Before determining a development application for development to which this clause applies, the consent authority must take the following matters into consideration:*
 - (a) *the provisions of any coastal zone management plan applying to the land,*
 - (b) *the matters set out in clause 8 of State Environmental Planning Policy No 71— Coastal Protection,*
 - (c) *any guidelines for assessing and managing the impacts of coastal protection works that are issued by the Director-General for the purposes of this clause and published in the Gazette.*

Coffs Harbour City Council has adopted the *Coffs Harbour Coastal Zone Management Plan*. However, no gazetted coastal zone management plan applies to the site. Accordingly, the Coastal Panel is the consent authority for this development. It is noted that no gazetted guidelines for assessing and managing the impacts of coastal protection works apply to the site.

Significantly, in addition to the prescribed matters for consideration under Section 79C of the *Environmental Planning & Assessment Act 1979* (EP&A Act), the Coastal Panel in its role as consent authority is required to consider the provisions of Section 55M of the CP Act. In this regard, Section 55M(1) provides that consent must not be granted to development for coastal protection works unless the consent authority is satisfied that the works will not unreasonably limit public access to or use of a beach, nor pose a threat to public safety.

The Owner's consent has been provided to enable the determination of the DA.

1.4 Consultation

The DA was publicly exhibited from Saturday 20 May 2017 to Monday 19 June 2017. In response, 32 public submissions were received, including one from the Local Aboriginal Land Council. Three of the public submissions generally supported the proposal and 29 generally objected. Copies of all submissions to the DA have been uploaded to the Coastal Panel's website.

In addition, comments on the proposal were sought from Coffs Harbour City Council, the Office of Environment and Heritage (OEH), and the Integrated Development authorities Department of Primary Industries (DPI) – Fisheries and DPI – Water.

1.5 Independent Engineering Assessment

Royal Haskoning DHV (RHDHV) was retained by OEH to undertake an independent engineering assessment of the proposed revetment wall for DA CP 16-001. In particular, comment was sought on the engineering design of the proposed revetment wall, its overall suitability and whether it meets contemporary engineering design standards considered appropriate for this location.

On 22 September 2016, RHDHV provided an independent engineering assessment concluding that, overall, *'based on the key engineering elements as presented by the proponent ... and given that no assessment has been made to quantify off-site erosion impacts, inadequate information is currently before the NSW Coastal Panel in order for it to consider approval of the proposed revetment'* (**Appendix 2**).

Following a site inspection on 20 October 2016 (**Appendix 3**), and to address additional information submitted by the applicant on 28 October 2016, RHDHV provided a supplementary independent engineering assessment (**Appendix 4**). This further assessment found that *'various matters have now been satisfactorily addressed to assist the Coastal Panel in its consideration of the application'*. However, RHDHV remains concerned with the adopted height of the entrance saddle and the risk of severe wave overtopping of the revetment wall which will pose significant safety risks.

Given that the subject DA (CP 17-005) involves the same proposed revetment, located in the same position as the refused revetment, the 2016 independent engineering assessment and supplementary assessment remain valid and contemporary advice for the DA proposal under consideration.

1.6 Key Issues

The main issues identified in the DA assessment and/or raised in the submissions are as follows:

- Impacts on adjacent properties and the surrounding area from increased erosion, wave overtopping and coastal inundation;
- Safety implications of severe wave overtopping events;
- Impacts on biodiversity and the E2 zone, as well as marine and estuarine ecosystems (including Type 1 Key Fish Habitat);

- 'Sacrificial' nature of the offset/landscaping in the E2 zone;
- Impacts to estuarine and coastal processes;
- Impacts on Aboriginal cultural heritage (known nearby sites);
- Loss of beach access;
- Impact of increasing climate change risks;
- Impact on coastal foreshore amenity;
- Suitability of revetment wall design; and
- Ongoing management/maintenance and lifespan.

1.7 Conclusion

The proposed revetment wall is permissible development under Clause 129A(1) of the Infrastructure SEPP. As the consent authority, the Coastal Panel must be satisfied that, pursuant to the provisions of Section 55M(1)(a)(ii) of the CP Act, the proposed revetment wall will not, over its life, pose a threat to public safety.

In its advice of 30 November 2016 (**Appendix 4**), RHDHV finds that significant wave overtopping, in excess of 0.4m³/s/m, is predicted for the section of the revetment wall having a crest level of 3.0m AHD. *'The capacity and potential safety implications for severe wave overtopping to carry across the 20m wide E2 buffer and impact on [the existing caravan park or] future residential development should be investigated. A remedial strategy to manage wave overtopping impacts should be prepared. At present, there would appear to be insufficient information before the Panel for it to be satisfied that wave overtopping of the revetment wall section with a 3.0m AHD crest level is adequately appraised or managed.'*

As such, it would not be appropriate for the Coastal Panel as the consent authority to conclude that the proposed revetment wall will not pose a threat to public safety over the life of the wall.

With respect to Section 55M(1)(b) of the CP Act, the DA is lacking information on how the proposed legally binding arrangement for the ongoing management and maintenance of the revetment wall would be extended to the restoration of all adjacent land that may be eroded as a result of the proposed revetment wall. The draft agreement only includes adjacent 'council' land. No details have been provided to indicate how potential erosion impacts to E1 zoned land (NPWS estate) occupied by saltmarsh vegetation, Littoral Rainforest, and/or Aboriginal cultural heritage sites will be remediated. Further, the proponent has not provided any details indicating Coffs Harbour City Council's willingness to be a party to any arrangements under Section 55M(2) of the CP Act in respect of the proposed development.

As such, the DA does not contain enough detail to enable the framing of appropriate conditions of consent sufficient to satisfy Sections 55M(1)(b) and (2)(a) of the CP Act.

The subject proposal involves foreshore reclamation as defined by the *Fisheries Management Act 1994* and requires the approval of DPI – Fisheries. The proposed reclamation will directly and indirectly impact on Type 1 (highly sensitive) Key Fish Habitat within a habitat protection zone of the Solitary Island Marine Park. The proposal does not include strategies to mitigate or compensate these impacts. The proposal is inconsistent with the objective of the Solitary Islands Marine Park Habitat Protection Zone, and a number of DPI – Fisheries policies, and as such General Terms of Approval were unable to be issued.

DPI – Fisheries is also concerned that the construction of the proposed seawall around the entire surveyed MHWL boundary will have significant impacts on other areas of Arrawarra Creek. After considering the information supporting the development application, the significance and sensitivities

of Arrawarra Creek and the requirements of the *Marine Estate Management Act 2014*, DPI – Fisheries does not support the proposal in its current form.

OEH considers the proposed works to be inconsistent with the objectives of the E2 Environmental Conservation zone. The proposed wall would require significant disturbance to the landform and remnant native vegetation of the E2 zone, which provides a 20m riparian buffer to Arrawarra Creek and wildlife corridor function for moderately to highly mobile fauna. OEH also found that the Ecological Assessment and Aboriginal Cultural Heritage Assessment did not provide adequate assessment of the impacts from the proposed revetment wall.

In respect of the NSW Coastal Policy and Section 79C matters for consideration under the *Environmental Planning & Assessment Act 1979*, it is considered that the DA is not fully consistent with the Coastal Policy goals, SEPP 71 Clause 8 matters for consideration, CHLEP or *Coffs Harbour Development Control Plan 2015*.

In essence, the potential impacts of the proposed revetment wall have not been properly addressed and remedied. As such, it must be concluded that the subject site is not suitable for the proposed development in its current form and that the proposal is not in the public interest.

1.8 Recommendation

The NSW Coastal Panel, pursuant to clause 129A(2) of *State Environmental Planning Policy (Infrastructure) 2007* and section 80(1)(b) of the *Environmental Planning and Assessment Act 1979*, refuse consent to Development Application No CP 17-005 for the following reasons:

1. The Panel is not satisfied that the proposed revetment wall the subject of the Development Application will not, over the life of the works, pose or be likely to pose a threat to public safety as required by s55M(1)(a)(ii) of the *Coastal Protection Act 1979*.
2. The Panel considers that the Development Application does not contain sufficient information to demonstrate how the proposed legally binding arrangement for the ongoing management and maintenance of the proposed revetment wall may be extended to the restoration of all adjacent land that may be eroded as a result of the proposed revetment wall, such as the E1 zoned land occupied by saltmarsh vegetation, Littoral Rainforest and/or Aboriginal cultural heritage sites on the northern shore of Arrawarra Creek.
3. The Panel considers that the proposed revetment wall is inconsistent with the objective of the Solitary Islands Marine Park Habitat Protection Zone, and a number of DPI – Fisheries policies, resulting in DPI – Fisheries being unable to issue General Terms of Approval.
4. The Panel considers that the proposal's likely impacts on marine and estuarine ecosystems have not been adequately addressed and may result in a significant change to habitat, species diversity and abundance.
5. The Panel considers that the proposal is inconsistent with the objectives of the E2 Environmental Conservation zone which seek to protect, manage and restore areas of high ecological or cultural values and prevent development that could have an adverse effect on those values.
6. The Panel considers that the potential impacts of the proposed revetment wall have not been fully addressed and remedied. It is therefore considered that the subject site is not suitable for the proposed development and, as a result, the granting of consent is not in the public interest.

2.0 Background

The events relevant to this application are listed below:

- A previous DA (CP 16-001) for a proposed revetment wall was lodged with the NSW Coastal Panel on 22 February 2016;
- The Panel undertook a site inspection on 15 April 2016;
- Development consent for the previous DA (CP 16-001) was refused by the Panel on 6 December 2016 (**Appendix 5**);
- The current DA (CP 17-005) for a proposed revetment wall was lodged with the Panel on 16 March 2017;
- Acceptance of the current DA by the Panel was acknowledged on 6 April 2017;
- A request for further information was made by the Panel on 13 April 2017 noting that further information was required to enable proper assessment by the Panel (**Appendix 6**);
- A response to the Panel's request for further information was received from the applicant's consultant planner, Keiley Hunter, on 3 May 2017 (**Appendix 7** and **Appendix 8**);
- DA publicly exhibited from 20 May 2017 to 19 June 2017;
- Submissions received in response to exhibition of DA;
- Letter from Office of Environment and Heritage dated 7 June 2017 (**Appendix 9**);
- Letter from Coffs Harbour City Council dated 14 June 2017 (**Appendix 10**);
- Amended Aboriginal Cultural Heritage Assessment dated 14 July 2017 (**Appendix 11**);
- Letter from Department of Primary Industries – Fisheries dated 4 August 2017 (**Appendix 12**);
- Panel meeting to consider the development application on 5 October 2017; and
- Further consideration of the development application by the Panel on 27 October 2017

3.0 Description of Site and Locality

The subject site is located along the foreshore of South Corindi Beach, within the Coffs Harbour Local Government Area, at 46 Arrawarra Beach Road, Arrawarra (Lots 1 & 2 DP 1209371; and Lot 1 DP26125). It lies between Arrawarra Beach Road to the west, and Yarrowarra and Arrawarra Creeks to the north, east and south. Arrawarra Village is located approximately 150m west of the site. The site is located approximately 5km north of Woolgoolga and 30km north of Coffs Harbour. **Figure 1** shows the locality of the site.

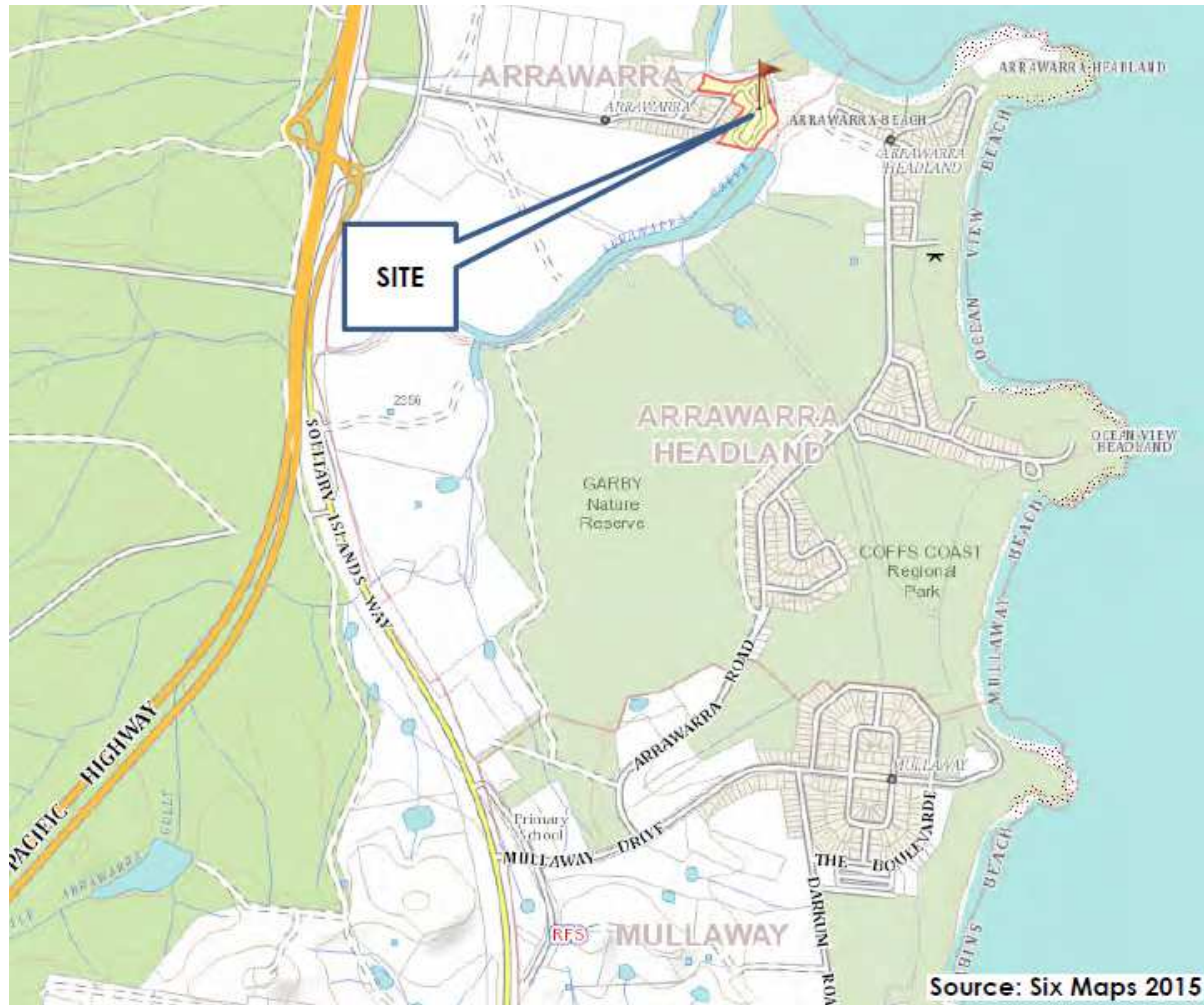


Figure 1: Site locality

The subject site is an irregular shaped parcel of land that gently slopes from north to south with an area of 2.598ha. The site has a 141.43m frontage to Arrawarra Beach Road and a frontage of approximately 420m to Yarrowarra and Arrawarra Creeks along the northern, eastern and southern boundaries. Residential land adjoins the site's western boundary. **Figure 2** provides an aerial overview of the subject site.

The subject site is zoned R2 Low Density Residential and E2 Environmental Conservation under the *Coffs Harbour Local Environmental Plan 2013*, as shown in **Figure 3**. The proposed revetment wall is located wholly within the E2 zone.

Plates 1 – 10 show various features of the site.



Figure 2: Aerial overview of site

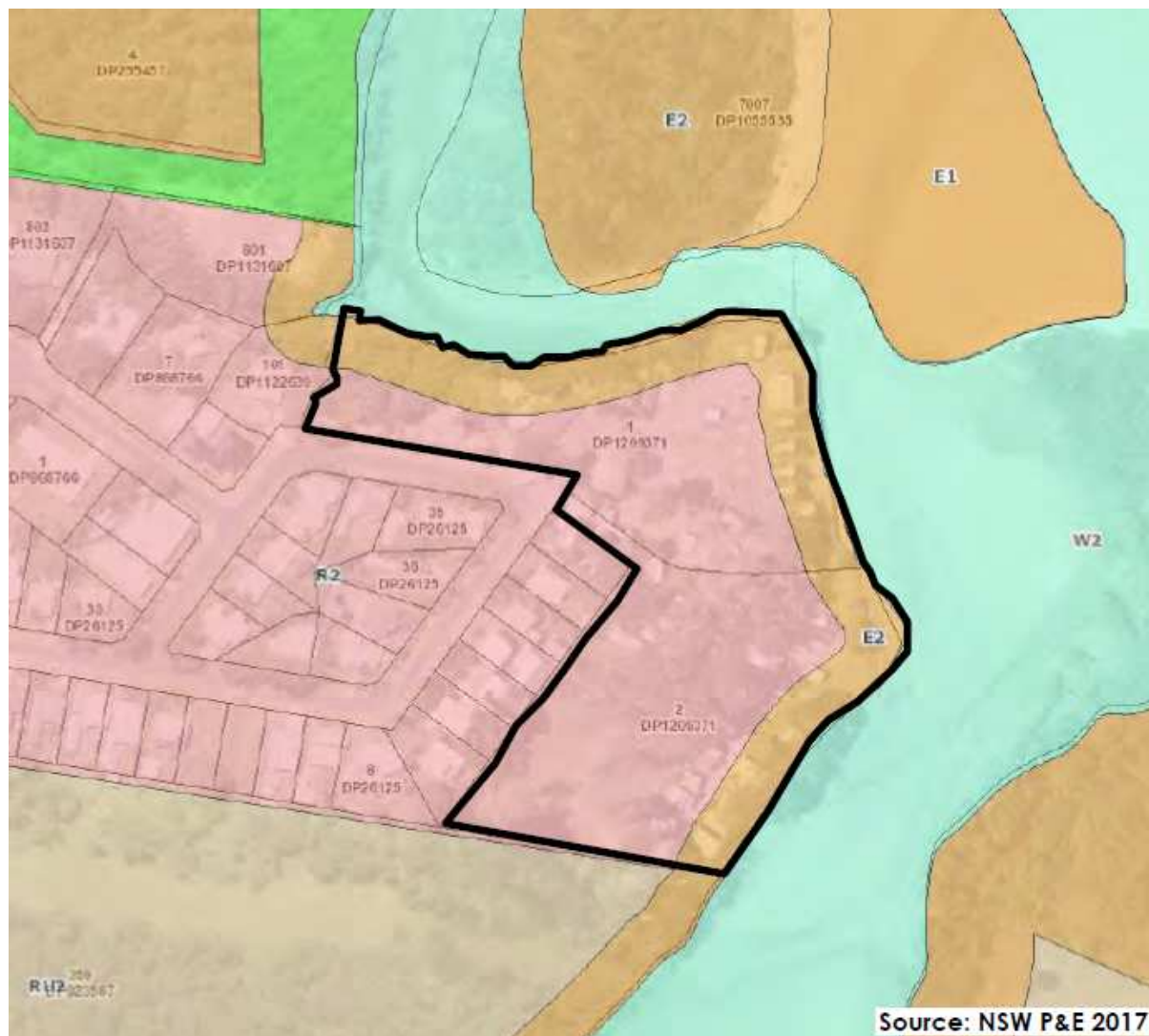


Figure 3: Land zoning



Plate 1: View of existing timber footbridge located within the north-east corner of the site which provides access to the coastal foreshore.



Plate 2: View looking along the site's northern boundary that adjoins Yarrawarra Creek from the timber footbridge.



Plate 3: View looking south-west back into the site from the timber footbridge, showing the existing gabion basket wall and timber retaining wall.



Plate 4: View looking south along the site's eastern boundary from the timber footbridge.



Plate 5: View looking south along the site's eastern boundary adjoining Arrawarra Creek, 20m wide E2 zoned buffer.



Plate 6: View of the footbridge looking north-east towards South Corindi Beach and the Pacific Ocean.



Plate 7: View of existing vegetation along the site's northern boundary.



Plate 8: View of existing vegetation along the site's eastern boundary.



Plate 9: Public right of footway to Yarrawarra Creek along the site's western boundary.



Plate 10: Public right of footway to Yarrawarra Creek along the site's western boundary.

Specific characteristics of the site are outlined in the following sections.

3.1 Existing development and land use

The site is currently occupied by a caravan park known as the Arrawarra Beach Holiday Park. Approval to operate under s68 of the *Local Government Act 1993* was granted to Astoria Group Pty Ltd from 1 September 2014¹ to 31 August 2017. It is unknown whether this approval has since been extended. The caravan park contains Spot X Surf School, several pre-fabricated cabins, caravan sites, a site office, amenity buildings and a manager's residence. According to the Statement of Environmental Effects – Supplementary Report prepared for DA CP 16-001 (**Appendix 13**), the caravan park is nearing the end of its economic life with ageing infrastructure.

A public footway located along the site's western boundary off Arrawarra Beach Road provides access to Yarrawarra Creek and South Corindi Beach at low tide. A timber footbridge located within the north-eastern corner of the site provides pedestrian access over Yarrawarra Creek to South Corindi Beach. This timber footbridge is maintained and operated by the Arrawarra Beach Holiday Park under a Crown licence/lease.

An existing rock gabion seawall, constructed in 1990 pursuant to DA 224/90, extends for approximately 210m along the site's Arrawarra Creek frontage. According to the Statement of Environmental Effects (SEE) prepared for the subject DA (**Appendix 14**), the gabion has begun to deteriorate. Warping and settlement is occurring in some places as a result of wave attack, tidal influences and sediment redistribution at the wall toe.

3.2 Coastal processes

Arrawarra Creek is an Intermittently Closed Open Lake or Lagoon, forming part of the Habitat Protection Zone of the Solitary Islands Marine Park (which extends north from Coffs Harbour to Sandon River). The site proposed for the revetment wall is located at the mouth of Arrawarra Creek where the location of the watercourse continually changes within a defined break out zone and water levels change according to local conditions.

The *Coffs Coast Coastal Processes and Hazards Definition Study Volume 1: Final Report* (BMT WBM 2011), commissioned by Coffs Harbour City Council, assesses the coastal hazard risks to South Corindi Beach, which includes Arrawarra and Yarrawarra Creek entrances. The study identifies a significant risk to the site from coastal inundation both now and increasingly into the future. The study also identifies South Corindi Beach as being under long-term recession by approximately 0.2m/year.

According to OEH (**Appendix 9**), increased sea level rise-induced recession will result in the subject land and proposed revetment becoming increasingly exposed to full open coast conditions over time, including coastal inundation, increased wave exposure and scouring of the adjacent intertidal and subtidal substrate. Such scouring could exacerbate erosion of the riparian zone around the creek mouth and the immediately adjacent beach and dunes.

3.3 Aboriginal heritage

In its letter of 22 April 2016 regarding DA CP 16-001 (**Appendix 15**), OEH notes the significance of the Arrawarra locality to the Aboriginal people. The site is in close proximity to the 'Arrawarra Fish traps', an item of local heritage significance under the *Coffs Harbour Local Environment Plan 2013*. In addition, two recorded Aboriginal sites are located within 50m of the site:

- 22 - 1 - 0034 'Arrawarra 3' artefact; and
- 22 - 1 - 0392 Arrawarra Headland Site (open midden/partially destroyed artefact and shell).

¹ Approval to operate the caravan park has been continuous since the park was constructed by previous land owners.

According to the site card for Arrawarra 3 (#22 - 1 - 0034), and the amended Aboriginal Cultural Heritage Assessment (**Appendix 11**), it is understood that Arrawarra 3 is located on the gravel bed of the north branch of Arrawarra Creek and is visible at low tide however, the exact location could not be ascertained. The Arrawarra Headland Site (#22 - 1 - 0392) is located immediately west of the project area and was reported to contain large greywacke cobbles and shell scatter.

Shell scatter located within the E2 zone on the site is identified as being part of the Arrawarra Headland Site on the basis of geographic proximity to the existing site record.

The amended Aboriginal Cultural Heritage Assessment (**Appendix 11**) notes that, based on geotechnical investigations, it is unlikely that a subsurface 'lens' type midden occurs within the site.

3.4 Ecology

The site falls within the Corindi – Arrawarra and the Arrawarra – Woolgoola Regional Corridors along the E2 zone. The purpose of the E2 zone at this location is to provide a 20m riparian buffer to Arrawarra Creek. In its current condition, vegetation within the E2 zone within the subject site is likely to provide a reduced wildlife corridor function.

Vegetation communities within the site, including Modified Swamp Sclerophyll Woodland and Modified Swamp Oak Woodland, consist largely of scattered mature remnant trees and regrowth native trees. A small area of Littoral Rainforest (listed as an Endangered Ecological Community under the *Threatened Species Conservation Act 1995*; does not meet listing criteria under the *Environment Protection and Biodiversity Conservation Act 1999*) occurs in the northern part of the site and consists of four trees over a disturbed understorey. Littoral Rainforest EEC is also located on the opposite bank of Yarrowarra Creek, approximately 80m north of the site, and on the opposite bank of Arrawarra Creek, approximately 120m east of the site. The site forms part of the 100m buffer to SEPP 26 Littoral Rainforest No 45. Marine vegetation, including Grey Mangrove trees and two small patches of Coastal Saltmarsh (listed as an EEC under the TSC Act; does not meet listing criteria under the EPBC Act), occur on the northern bank of Yarrowarra Creek and eastern bank of Arrawarra Creek. A planted specimen of Coolamon (listed as Vulnerable under the TSC and EPBC Acts) is located within the south-western boundary of the site. Secondary Koala Habitat, including a number of Swamp Mahogany trees, exists along the northern boundary of the site.

Arrawarra Creek forms an important part of the Solitary Islands Marine Park and functions as a food source, nursery and breeding area for many marine and estuarine species.

The site is mapped as Bushfire Prone land.

3.5 Acid Sulfate Soils

The site is predominately mapped as Class 5 Acid Sulfate Soils with small areas of Class 3 and Class 1 soils mapped along the eastern and southern boundaries.

4.0 Project Description

The DA seeks consent for coastal protection works. It is proposed to construct a 360m rock armoured revetment within private land above the Mean High Water Mark and demolish an existing 210m failing revetment (rock gabion) located along the estuarine boundary of the site.

The revetment has been designed to enable construction from the landward side enabling the work site to be located wholly within the site boundaries.

As described in Sections 1.1 and 2.0, the DA (CP 17-005) the subject of this Assessment Report was lodged with the Panel on 16 March 2017. A previous DA for a proposed new revetment wall at the site (CP 16-001) was refused by the Panel on 6 December 2016. The Coastal Engineering Design Report (February 2017) contained in Appendix C of the SEE supplements the design documentation previously provided by Coastal Engineering Solutions in 2015. Therefore the discussion of the proposed works contained in Section 4.1 below draws on design details associated with DA CP 16-001 as well as DA CP 17-005.

4.1 Design Aspects of Proposed Works

According to the Supplementary SEE for DA CP 16-001 (**Appendix 13**), the wall was designed to prevent further fluvial erosion of the subject site's estuarine boundary and to protect future residential land uses on the site from storm surge, accommodating potential sea level rise and climate change impacts.

The design of the wall as outlined in the Supplementary SEE was supplemented by the *Design Report* prepared by Water Technology in June 2016 (**Appendix 16**).

The originally proposed revetment wall contained the following features:

- Length: 360m;
- Crest level: 3m AHD (Design Type 1) and 2m AHD (Design Type 2);
- A scour blanket is indicated in Design Type 2 to mitigate erosion scour;
- Toe depth: -0.5m and -0.1 AHD;
- Wall slope: 1V:1.5H;
- Primary armour: 2 layers of rock (50% by number greater than 1 t), minimum layer thickness of 1330mm;
- Underlayer rock: 2 layers with an average size of 100kg, minimum underlayer thickness of 620mm;
- Minimum rock density: 2,650 kg/m³; and
- Geotextile on underlying bank slope: Eclomax 600R or an approved equivalent.

Figure 4, below, depicts the physical extent of the proposed armouring arrangement on the foreshore of the site. The extent of the various toe levels is shown conceptually in **Figure 5**, below.



Figure 4: Physical extent of armouring arrangements



Figure 5: Approximate location of toe levels

According to the Supplementary SEE for DA CP 16-001 (**Appendix 13**), partial tree removal was to be required within the E2 zoned land of the site to provide sufficient area for construction and access. Tree removal was proposed to be offset by the planting of native trees and shrubs within the E2 zoned environmental buffer within the site. It was proposed that landscape treatment would improve biodiversity and habitat corridors by locating native species within secure areas of the site. However, the Water Technology report (**Appendix 16**) submits that the landscaping in the E2 zone would need to be considered '*sacrificial*', in that it would be washed away during an extreme wave overtopping event.

A pedestrian management plan was also proposed to be prepared to ensure that there would be access to the beach at all times throughout construction of the proposed revetment wall. Following the construction of the revetment wall, the existing wooden footbridge would be reconstructed. Further, it was proposed that the future residential subdivision (if approved) would involve the creation of a public access way through the site to the coastal foreshore via a 2m wide concrete path within a 3m wide easement. The pathway would link with the existing public footway and Arrawarra Beach Road.

The Supplementary SEE for DA CP 16-001 (**Appendix 13**) submitted that a legally binding arrangement for the ongoing management and maintenance of the revetment wall would be negotiated between the land owners and Coffs Harbour City Council. The arrangement was intended to extend to the management of potential erosion impacts to adjoining properties resulting from the works.

4.1.1 Additional Design and Construction Criteria

The proposed revetment was designed to enable construction from the landward side enabling the work site to be located wholly within the site boundaries. Responsibility for the construction of the revetment lies with the owner of the land.

The proposed wall was to be constructed in a way that would avoid erosion of the armoured layer, undermining and wave overtopping (Water Technology, 2016; **Appendix 16**).

Failure of a section of revetment occurs when armour rock is removed from the slope to the extent that the underlying material is exposed. The "up-slope" and "down-slope" surging of water can remove individual rocks from out of the face of the revetment and roll them down the slope. Once a rock is removed from the slope, adjoining rocks no longer have the same degree of physical support. The resulting effect is an increased vulnerability of the depleted armour layer to the surging forces running up and down the slope. The engineering design of revetments therefore directs considerable focus and effort on ensuring that rocks are correctly sized, and that during construction they are correctly placed as an interlocking matrix on an appropriate slope gradient. A tightly packed, well interlocked armour layer offers little opportunity for waves to remove individual rocks from the structure. Two layers of armour rock, with 50% by number greater than 1 tonne, were proposed (Water Technology, 2016; **Appendix 16**).

To avoid undermining, construction of the wall would need to involve placement of non-erodible material in front of the revetment (i.e. toe armour) or founding the revetment's armour layer at a depth below the expected level of scour. If the option of placing a scour blanket on the creek bed in front of the armoured slope was to be implemented, to remain within the property boundary, the revetment slope itself would need to be located further landward than the existing creek banks – necessitating excavation and relocation of the creek banks. Such excavation and landward relocation would be particularly significant along the high vegetated banks of Yarrawarra Creek. Founding the revetment slope deeper than the expected scour level of the creek bed was therefore the preferred option. It would enable the entire structure and all construction work (including excavation/backfilling for the deeper toe) to be located within the property boundary. It would also minimise any relocation or realignment of the existing creek banks (Water Technology, 2016; **Appendix 16**).

To mitigate wave overtopping damage, it was proposed to take advantage of the 20m buffer (E2 zone) between the wall and essential infrastructure, and to place a row of large abutment rocks at the rear of the crest to mitigate erosion of the revetment crest itself, and to provide a scour blanket of armour rocks behind the crest (Water Technology, 2016; **Appendix 16**). The landscaping over the top

of the scour blanket in the E2 zone would need to be considered '*sacrificial*', in that it would be washed away during an extreme wave overtopping event.

To allow for changed conditions under future climate change, a third layer of 1 tonne armour rocks may be added to the revetment.

4.2 Subject Proposal Design Considerations

The subject development proposal involves the same revetment, located in the same location as the revetment refused as DA CP 16-001.

Only the intended purpose of the proposed revetment has changed; originally the revetment was proposed to protect future residential development, now it is proposed to protect the existing caravan park.

A draft legally binding agreement for the ongoing maintenance of the proposed revetment, including the restoration of adjacent land that may be eroded as a result of the proposed revetment wall, has been prepared (**Appendix 17**).

4.3 Land Owners Consent and Access to Land

The DA seeks consent for coastal protection works within private land above the Mean High Water Mark and to demolish an existing 210m failing revetment (rock gabion) located along the estuarine boundary of the site. The development application form is signed by a Director of Arrawarra Beach Pty as the land owner.

5.0 Consultation

5.1 Public Submissions

DA CP 17-005 was placed on public exhibition from 20 May 2017 to 19 June 2017. In response, 32 public submissions were received, including one submission from the Coffs Harbour and District Local Aboriginal Land Council. Of the submissions received from the public, 3 generally supported the proposal and 29 generally objected. Copies of all public submissions on the DA have been uploaded to the Coastal Panel's website.

The Coffs Harbour and District Local Aboriginal Land Council objected to the DA noting that Everick Heritage Consultants did not consult with the Garby Elders who hold site-specific cultural knowledge and the cultural heritage assessment (**Appendix 21**) prepared for the development application is not sufficient to support the proposal. The Coffs Harbour and District Local Aboriginal Land Council note that there is inadequate assessment and consideration of impacts on an Aboriginal midden located on site which is likely to be impacted by the works associated with the proposed seawall. Following the public consultation period, Everick Heritage Consultants provided an amended Aboriginal Cultural Heritage Assessment dated 14 July 2017 (**Appendix 11**) however, the amended report also does not demonstrate consultation with the Garby Elders. With respect to the assessment of impacts on an Aboriginal midden located on site, the amended report recommends that an Aboriginal Heritage Impact Permit (AHIP) be obtained prior to commencement of works if the proposed work plans change and impacts are no longer avoidable. However, the Coffs Harbour and District Local Aboriginal Land Council submit that the midden will be impacted and that an AHIP is required.

The submissions from the community raised issues relating to the following:

Need for and intent of the proposal

- Existing structure considered adequate to protect current land use;
- Area proposed for seawall extension not eroding and doesn't need protection;
- Purpose of proposed wall is to back fill and build up (i.e. reclaim) an area for future housing, not for environmental purposes or to protect the caravan park;
- Excessive scale of proposed wall designed to accommodate future residential development; and
- Beneficial impacts of the seawall are unsubstantiated.

Impact on Aboriginal cultural heritage

- Proposed seawall will exacerbate impacts already caused by existing wall to Aboriginal midden on opposite side of Yarrawarra Creek.

Access impacts

- The socio-economic assessment is inaccurate in its description of public access and use of the beach;
- Loss of access to the river and boat ramps as a result of the seawall being extended;
- Restricted access to the beach for the public; and
- Lack of details about what will happen to the footbridge currently used by the community to access the beach.

Ecological impacts

- Impacts on the estuary, profile of the creeks, beach, flora, fauna and wetlands as a result of the end effects;
- The ecological assessment does not assess impacts from the seawall (being largely based on proposed housing subdivision);
- Inadequate assessment of the principles of ESD;
- Impacts on flows in the river;
- The environmental assessment 'advocates' for the proposal instead of being an independent assessment of the impacts; and
- The assessment does not adequately assess impacts on entities listed under the TSC Act and EPBC Act, including EPBC Act-listed Littoral Rainforest.

Social impacts

- Drainage (flooding) of Arrawarra village with the proposed revetment impeding water flow away from the village;
- Impacts on other beachside properties;
- Reclamation impacts not assessed;
- Impacts of additional traffic on local roads and the village of Arrawarra during construction;
- No assessment of the potential displacement of residents along the southern interface with Arrawarra Creek or other impacts to village residents;
- Inaccurate mapping of cabins which are actually visiting caravans; and
- The loss of affordable holiday accommodation due to the intended subdivision of the land for residential purposes.

Visual impacts

- Proposed revetment will be visually obtrusive and out of character with the surrounding beach; and
- The horizontal nature of the wall is not in keeping with the undulating landscape.

Revetment design

- works are outside of the site boundary – land eroded by sea becomes Crown land;
- Concerns about public safety of the revetment wall and structural design; and
- Ambiguity about the location of the works in relation to the property boundary.

Many of the submissions objecting to the proposed reconstruction and extension of the seawall are also opposed to the proposal for the development of the land for a 24 lot housing development. Residents were concerned that the application for the seawall is being considered separately to the application for the residential subdivision, which they see as being inherently linked. While the proponent claims in its application that the proposed works are for the protection of the current land use, being a caravan park, an application has been lodged with Coffs Harbour City Council for a 24 lot residential subdivision of the land.

Of the submissions in support of the proposal, one submission was supportive assuming that free access to the beach for the public is maintained. Another supported coastal protection works and people's rights to protect their properties.

5.1.1 Agency submissions

Submissions on the proposal were received from the Office of Environment and Heritage, Coffs Harbour City Council and DPI – Fisheries. DPI – Water were also invited to consider the application however no submission was received.

5.1.1.1 Office of Environment and Heritage

In its letter of 7 June 2017 (**Appendix 9**), OEH raises the following matters:

- The potential impact on and from physical coastal processes (including increased coastal inundation and wave exposure, and scouring of adjacent intertidal and subtidal substrate) has not been assessed over the intended life of the works;
- More rigorous justification for the adopted saddle level of 0.2m AHD is required, or sensitivity testing should be undertaken to determine the implications for seawall design specifications associated with lowering the level;
- The design conditions do not appear to consider the possible morphological response of the entrance area under projected future sea level rise and associated shoreline recession scenarios. For example, scour level is highly unlikely to remain at the static level of 0.2m AHD used in the development application, as the entrance area becomes more of an 'open coast' environment under increased sea level and shoreline recession projections;
- The potential impacts resulting from wave overtopping to public safety and development immediately behind the wall warrants more detailed consideration;
- The proposed toe depth of -0.5m AHD for the western and southern wall sections would appear optimistic and non-conservative for design purposes. This estuarine area is highly dynamic and will become subject to more intensive wave and scour impacts should the coast recede under projected sea level rise impacts;
- The possible impacts to estuarine and coastal processes from the proposed realignment/reclamation of the existing foreshore does not appear to be assessed or described and warrants further clarification;
- The DA does not provide an adequate level of detail on the proposed seawall monitoring or maintenance regime. This appears to inadequately address the requirements of Section 55M of the *Coastal Protection Act 1979* requiring satisfactory arrangements for the maintenance of the works, and repair of any offsite impacts resulting from the works;
- The 'Statutory Ecological Assessment' is largely silent on the anticipated biodiversity impacts of the revetment wall;
- Given the proposed location of the revetment wall within E2 zone, the revetment would require significant disturbance to the landform and remnant native vegetation. The E2 zone in this location provides a 20m riparian buffer to Arrawarra Creek, which forms part of the Solitary Islands Marine Park, as well as wildlife corridor function for moderately to highly mobile fauna species within a highly fragmented landscape. OEH's preferred response to managing biodiversity on site is to exclude the placement of any infrastructure, including the proposed revetment wall, from the E2 zone, given these works are inconsistent with the objectives of the Environmental Conservation zone;
- If construction of the revetment wall has direct or indirect impacts on biodiversity, then these impacts should be offset in perpetuity, in accordance with OEH's 13 principles for offsetting. The offset should include rehabilitation of the E2 zoned land and adjoining land to the west to

create a 40m wide vegetated corridor along Arrawarra Creek as per the Office of Water guidelines. This vegetated corridor would also provide an adequate vegetated separation between the existing caravan park and the Solitary Islands Marine Park; and

- The exhibited 'Aboriginal Cultural Heritage Assessment' is largely silent on the anticipated impact of the revetment wall on Aboriginal cultural heritage. Several inconsistencies and omissions within the Aboriginal cultural heritage assessment should be addressed before the development application is determined².

5.1.1.2 Coffs Harbour City Council

In its letter of 14 June 2017 (**Appendix 10**), Coffs Harbour City Council raises the following matters:

- That agreement from Crown Lands would be required before a construction certificate could be issued due to the proposal involving reclamation of part of the creek;
- Council was not satisfied that the assessment of impacts on biodiversity was adequate. The modelling of changes in hydrology was too limited to assess the impacts on the Coastal Saltmarsh EEC. Council considered that a Species Impact Statement should be prepared unless further information could be provided regarding indirect impacts of the works on the Coastal Saltmarsh EEC;
- The proposed revetment and associated significant disturbance to landform and remnant native vegetation would degrade one of the primary purposes of the E2 land, that is to provide a riparian buffer to Arrawarra Creek, part of the Solitary Islands Marine Park;
- Coffs Harbour City Council also raised concerns in relation to the proposed approach to offsetting the impacts, in particular, whether there is adequate land to meet the *Coffs Harbour Development Control Plan 2015* offsetting requirements, and whether private residences would allow planted and rehabilitating trees to grow and impede water views; and
- The existing timber footbridge, licenced by the Crown, appears in poor condition, is a risk to users and requires structural certification. The flood study did not consider any impacts due to this structure.

5.1.1.3 Department of Primary Industries – Fisheries

In its letter of 4 August 2017 (**Appendix 12**), DPI – Fisheries raises the following matters:

- The subject proposal involves foreshore reclamation as defined by the *Fisheries Management Act 1994* and requires the approval of DPI – Fisheries. The proposed reclamation will directly and indirectly impact on TYPE 1 (highly sensitive) Key Fish Habitat within a habitat protection zone of the Solitary Island Marine Park. The proposal does not include strategies to mitigate or compensate these impacts. The proposal is inconsistent with the objective of the Solitary Islands Marine Park Habitat Protection Zone, and a number of DPI – Fisheries policies, and as such General Terms of Approval were unable to be issued;
- The ecological assessment contained within the SEE is limited to terrestrial ecosystems and does not address the marine and estuarine environment;
- Replacing natural streambanks with artificial seawalls can have significant environmental consequences on species. Seawalls can change the natural habitat in many ways including changing hardness, surface texture, slope, microhabitats and hydrology. Changes in habitat type also lead to changes in species community composition and abundance, and these changes may not reflect the natural ecosystems of the area;

² The amended Aboriginal Cultural Heritage Assessment was not made publicly available or provided to agencies for comment.

- The proposed replacement vegetation will not provide the creek with the same benefits as the removed riparian vegetation (e.g. shading of the water);
- That the type and scale of the proposed seawall is not suitable for the site;
- DPI – Fisheries is very concerned that the construction of the proposed seawall around the entire surveyed MHWB boundary will have significant impacts on other areas of Arrawarra Creek. *‘Of particular concern is the proposal to build the seawall 13m out into what is currently Arrawarra Creek. This part of the proposal is likely to redirect stream flows, particularly during flood events. Additionally, the impact of wave deflection resulting from the construction of the proposed wall on adjacent land is also likely to be significant’.* It should be noted however, that the SEE (**Appendix 14**) clarifies that the proposed revetment would extend 4m at most, not 13m, out into Arrawarra Creek (although the 4m doesn’t include the extension of the toe of the revetment below the surface of the estuary bed); and
- After considering the information supporting the development application, the significance and sensitivities of Arrawarra Creek and the requirements of the *Marine Estate Management Act 2014*, DPI – Fisheries cannot support the proposal in its current form.

6.0 Independent Engineering Assessment

Royal Haskoning DHV (RHDHV) was retained by OEH to undertake an independent engineering assessment of the proposed revetment wall for DA CP 16-001. In particular, comment was sought on the engineering design of the proposed revetment wall, its overall suitability and whether it meets contemporary engineering design standards considered appropriate for this location. On 22 September 2016, RHDHV provided an independent engineering assessment concluding that, overall, *'based on the key engineering elements as presented by the proponent ... and given that no assessment has been made to quantify off-site erosion impacts, inadequate information is currently before the NSW Coastal Panel in order for it to consider approval of the proposed revetment'* (**Appendix 2**).

Following a site inspection on 20 October 2016 (**Appendix 3**), and to address additional information submitted by the applicant on 28 October 2016, RHDHV provided a supplementary independent engineering assessment (**Appendix 4**). This further assessment found that *'various matters have now been satisfactorily addressed to assist the Coastal Panel in its consideration of the application'*. However, RHDHV remains concerned with the adopted height of the entrance saddle and the risk of severe wave overtopping of the revetment wall which will pose significant safety risks.

6.1 Supplementary independent engineering assessment, 30 November 2016

Based on the additional material submitted by the applicant, key findings of the supplementary RHDHV assessment received on 30 November 2016 (**Appendix 4**) are summarised below:

- Removal of the existing gabion wall will provide a safety benefit;
- While the proposed revetment wall is proposed to be located behind the beach berm and entrance saddle, these features would progressively become less relevant over time as the coastline recedes and the revetment wall would become more exposed to wave action;
- Insufficient justification is given regarding the selection of +0.2m AHD as an appropriate entrance saddle level for design wave penetration. In the absence of further assessment, and based on a review of comparable creek systems in NSW, it is suggested that a -0.1m AHD saddle level be adopted. It is noted that a lower saddle level would permit larger wave penetration and would require a larger armour size;
- For the section of the revetment wall having a crest level of 2.0m AHD, an additional layer of 1.0 T armour rock within the E2 zone is considered acceptable to account for climate change effects to 2100, as this section of Arrawarra Creek is relatively protected from ocean wave penetration. However, it is recommended that the 3 layers of armour be placed as part of the initial construction of the revetment wall. Placing an extra layer of armour rock may require the revetment wall to be setback further from the MHW boundary;
- Significant wave overtopping, in excess of 0.4m³/s/m, is predicted for the section of the revetment wall having a crest level of 3.0m AHD. The capacity and potential safety implications for severe wave overtopping to carry across the 20m wide E2 buffer and impact on future residential development on the site should be investigated. A remedial strategy to manage wave overtopping impacts should be prepared. At present, there would appear to be insufficient information before the Panel for it to be satisfied that wave overtopping of the revetment wall section with a 3.0m AHD crest level is adequately appraised or managed;
- As is evident in **Figure 6**, below, approximately 90m of the gabion wall is currently exposed to 'almost certain' immediate wave erosion hazard. A length of the gabion wall longer than 90m is potentially impacted, but at a reduced level of likelihood. This description of immediate wave erosion hazard calculated using beach sand losses reinforces the level of scrutiny that should be brought to developing an appropriately conservative design for the revetment wall; and

- Having regard to the geotechnical investigation prepared by de Groot & Benson (2016), the incidence of stiff clay at around -0.5m AHD over the most exposed portion of the gabion wall, and the position and performance of the existing gabion wall structure, the proposed toe design is considered acceptable.

Overall, in its supplementary assessment, RHDHV found that *'various matters have now been satisfactorily addressed to assist the Coastal Panel in its consideration of the application'*. However, it remains concerned with the adopted height of the entrance saddle and the risk of severe wave overtopping of the revetment wall which will pose significant safety risks.

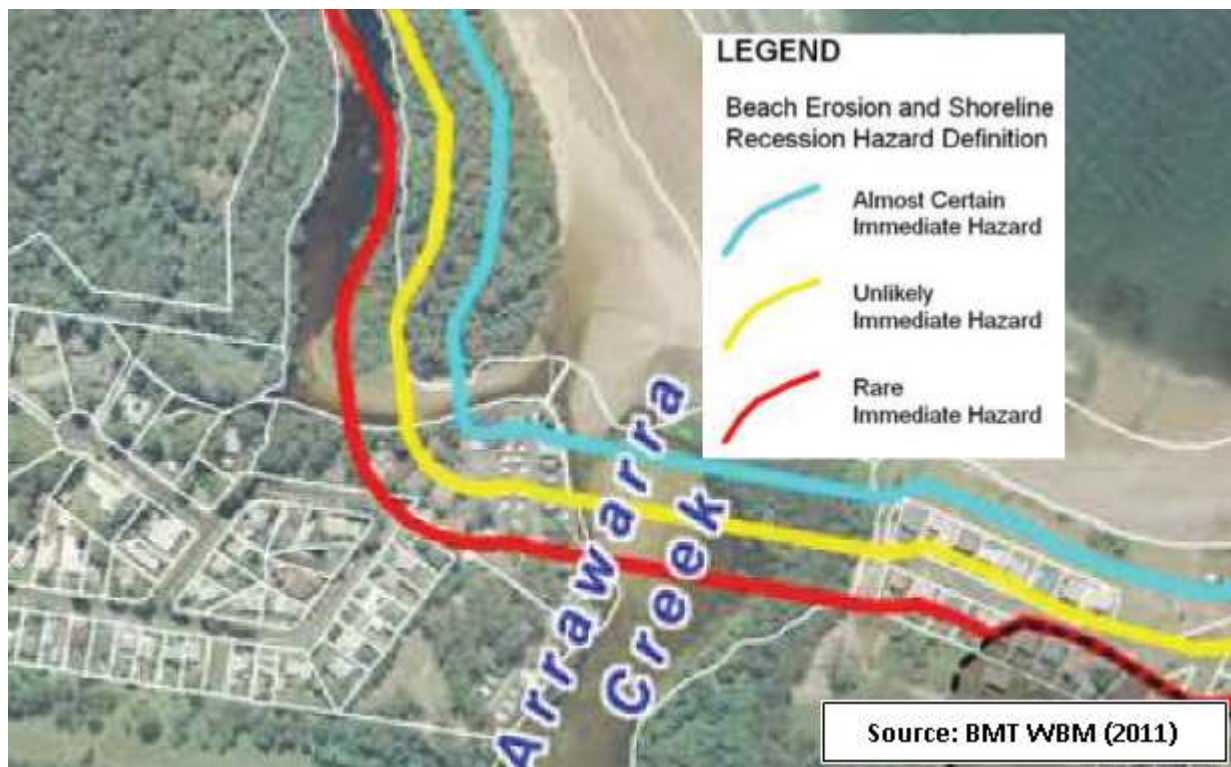


Figure 6: Immediate beach erosion hazard predicted for the site

Given that the subject DA (CP 17-005) involves the same proposed revetment, located in the same position as the refused revetment, the 2016 independent engineering assessment and supplementary assessment are still valid.

7.0 Statutory Considerations

7.1 Coastal Protection Act 1979

Section 55M(1) of the *Coastal Protection Act 1979* (CP Act) provides that, before granting consent under the EP&A Act to development for the purpose of coastal protection works, the consent authority must be satisfied that:

(a) *the works will not over the life of the works:*

(i) *unreasonably limit or be likely to unreasonably limit public access to or the use of a beach or headland, or*

(ii) *pose or be likely to pose a threat to public safety, and*

(b) *satisfactory arrangements have been made (by conditions imposed on the consent) for the following for the life of the works:*

(i) *the restoration of a beach, or land adjacent to the beach, if any increased erosion of the beach or adjacent land is caused by the presence of the works,*

(ii) *the maintenance of the works.*

Section 55M(2) of the CP Act provides that:

(2) *The arrangements referred to in subsection (1)(b) are to secure adequate funding for the carrying out of any such restoration and maintenance, including by either or both of the following:*

(a) *by legally binding obligations (including by way of financial assurance or bond) of all or any of the following:*

(i) *the owner or owners from time to time of the land protected by the works,*

(ii) *if the coastal protection works are constructed by or on behalf of landowners or by landowners jointly with a council or public authority—the council or public authority,*

(b) *by payment to the relevant council of an annual charge for coastal protection services (within the meaning of the Local Government Act 1993).*

Pursuant to Section 55M(3), *'the funding obligations referred to in subsection (2)(a) are to include the percentage share of the total funding of each landowner, council or public authority concerned.'*

7.1.1 S55M(1)(a) Public Access, Use and Safety

The SEE (**Appendix 14**) states that *'As the proposed revetment is to be contained in its entirety within the subject land, public access to the foreshore will not be impeded, nor will the wall pose a threat to public safety. Public access will continue under the present arrangements via the public walkway to Arrawarra Creek located within the Right of Footway, 1m wide, which runs along the western boundary of the site. The public footway may be temporarily closed during construction, however, an alternative public access will be made available within the site, until the Right of Footway is restored.'* And *'The proposed revetment has been designed to meet the relevant Australian Standard AS4997-2005 "Guidelines for the design of maritime structures" which nominates a 50-year design life...for a "normal commercial structure". The construction works will be carried out by appropriately qualified contractors and will not threaten public safety.'*

However, the supplementary RHDHV assessment (**Appendix 4**) raised concerns regarding the risk of severe wave overtopping of the revetment wall, which will pose significant safety risks. The RHDHV assessment recommended that the capacity and potential safety implications for severe wave

overtopping to carry across the 20m wide E2 buffer and impact on any future residential development on the site should be investigated, and that a remedial strategy to manage wave overtopping impacts should be prepared. RHDHV consider there to be insufficient information before the Panel for it to be satisfied that wave overtopping of the revetment wall section with a 3.0m AHD crest level is adequately appraised or managed.

As such, it would not be appropriate for the Coastal Panel as the consent authority to conclude that the proposed revetment wall will not pose a threat to public safety over the life of the wall.

7.1.2 S55M(1)(b) Arrangements for Restoration of Erosion and Maintenance

By constructing the revetment within the subject property boundary, the proponent assumes responsibility for its ongoing maintenance.

Regarding maintenance of the revetment, over the life of the works, the applicant proposes that the following condition of consent, or similar, could be imposed:

Pursuant to the provisions of Section 55M of the Coastal Protection Act 1979, a legally binding arrangement for the life of the works being negotiated and executed with Council to ensure:

- the restoration of the beach, or land adjacent to the beach, if any increased erosion of the beach or adjacent land is caused by the presence of the works, and*
- the maintenance of the works.*

An easement in favour of Council being created over the portion of the property affected by the revetment wall, and a positive covenant under Section 88BA of the Conveyancing Act 1919 being established over the easement, burdening the owners of the property and their successors to maintain the revetment wall to the satisfaction of the Council. Such maintenance is to also include management of future “outflanking”, public safety and upgrading of the works if necessary in the future to meet changed climatic conditions.

The NSW Coastal Panel imposed a similarly worded condition in DA Consent CP 13-001 for a revetment at Umina.

A draft legally binding agreement for the ongoing maintenance of the proposed revetment, including the restoration of adjacent land that may be eroded as a result of the proposed revetment wall, has been prepared (**Appendix 17**).

However, in terms of remedial works on adjacent land, the draft agreement only includes adjacent council land. No details have been provided to indicate how potential erosion impacts to E1 zoned land (NPWS estate) occupied by saltmarsh vegetation, Littoral Rainforest, and/or Aboriginal cultural heritage sites will be remediated. Further, the proponent has not provided any details indicating Coffs Harbour City Council’s willingness to be a party to any arrangements under Section 55M(2) of the *Coastal Protection Act 1979* in respect of the proposed development.

Therefore, the Coastal Panel cannot be satisfied that satisfactory arrangements have been made concerning the restoration of a beach, or land adjacent to the beach, if any increased erosion of the beach or adjacent land is caused by the presence of the works, or the maintenance of the works over the life of the works.

As such, there is not adequate information for the Panel to be satisfied that Sections 55M(1)(b) and (2)(a) of the CP Act is achieved

7.2 Environmental Planning and Assessment Act 1979 and Regulation 2000

7.2.1 Coastal Policy

The NSW Coastal Policy (1997) remains current. It seeks to manage the coast in an ecologically sustainable way. The objective of the policy is to protect and conserve the coast for future generations.

To achieve this vision, there are nine goals:

1. Protecting, rehabilitating and improving the natural environment of the coast;
2. Recognising and accommodating the natural processes of the coastal zone;
3. Protecting and enhancing the aesthetic qualities of the coast;
4. Protecting and conserving the cultural heritage of the coastal zone;
5. Provide for ecologically sustainable development and use of resources;
6. Providing for ecologically sustainable human settlement in the coastal zone;
7. Providing for appropriate public access and use;
8. Providing information to enable effective management of the coastal zone; and
9. Providing for integrated planning and management of the coastal zone.

Due to wave overtopping, the Water Technology report (**Appendix 16**) submits that the landscaping in the E2 zone would need to be considered '*sacrificial*', in that it would be washed away during an extreme overtopping event. Given that the proposed landscaping is proposed to offset the removal of remnant native vegetation from the E2 zone, a 20m riparian buffer to Arrawarra Creek which forms part of the Solitary Islands Marine Park as well as a wildlife corridor, the proposed sacrificial nature of the offset/landscaping is inconsistent with '*protecting, rehabilitating and improving the natural environment of the coast*' and '*protecting and enhancing the aesthetic qualities of the coast*'.

As discussed in **Section 6** of this report, RHDHV, in its advice of 30 November 2016, is concerned with the very significant wave overtopping rate inherent in the proposal, and the associated safety implications that would see the wave overtopping carry across the 20m wide E2 buffer into the proposed residential development (and existing caravan park). RHDHV suggests that this impact needs to be investigated and a remedial strategy proposed. However, the DA before the Coastal Panel does not contain such a remedial strategy. It would therefore be inappropriate for the Coastal Panel to conclude that the DA is consistent with the Coastal Policy's goals of '*providing for ecologically sustainable human settlement in the coastal zone*'.

It is not anticipated that the proposed revetment wall will impact on the use of the existing public footway to access the beach. RHDHV concludes that the revetment wall, '*...should not unreasonably limit or be likely to unreasonably limit public access to or use of the beach.*' Therefore, it is considered that the proposal is not inconsistent with the Policy's goal of '*providing for appropriate public access and use*'.

In line with '*protecting and conserving the cultural heritage of the coastal zone*', it is proposed (see Appendix G of the SEE) to 'fence off' a partially destroyed artefact and shell scatter site within the environmental zone. However, the Coffs Harbour and District Local Aboriginal Land Council submit that the proposed mitigation measures are inadequate and that an AHIP is required.

Overall, the proposal is not considered to be consistent with the NSW Coastal Policy.

7.3 Section 79C Matters for Consideration under Environmental Planning & Assessment Act 1979

Section 79C sets out several matters for consideration for consent authorities. These matters and the relevant considerations for the current DA are outlined below.

7.3.1 Section 79C(a)(i): the provisions of any environmental planning instrument

7.3.1.1 Coffs Harbour LEP 2013

The *Coffs Harbour Local Environmental Plan 2013* applies to the subject site. The proposed development is on land zoned R2 Low Density Residential and E2 Environmental Conservation. The revetment works are proposed wholly within the E2 zoned land. Offsite impacts may further affect land zoned E2, as well as land zoned E1 National Parks and Nature Reserves and RE1 Public Recreation. **Figure 3** shows the land zoning in the vicinity of the subject site.

The zone objectives of the Coffs Harbour LEP 2013 relevant to the proposed development are addressed in **Table 1** below.

In summary, the proposed development will comply in part only, with the zoning provisions of the Coffs Harbour LEP 2013.

Table 1: Coffs Harbour LEP zoning considerations

Zone	Objectives	Permissibility / comment
E2	<ul style="list-style-type: none"> To protect, manage and restore areas of high ecological, scientific, cultural or aesthetic values. To prevent development that could destroy, damage or otherwise have an adverse effect on those values. 	<ul style="list-style-type: none"> Coastal protection works (including a revetment) are not permissible in the LEP's E2 zone but are permissible with consent under the Infrastructure SEPP. Inadequate assessment of Aboriginal cultural heritage. Removal of small area of Coastal Saltmarsh EEC not considered significant however indirect impacts to surrounding Coastal Saltmarsh EEC on E2 land not adequately assessed. Removal of small area of Littoral Rainforest EEC not considered significant however indirect impacts to surrounding Littoral Rainforest EEC on E2 land not adequately assessed. Removal of one planted Coolamon tree not considered significant. Potential offsite impacts to E2 land not explicitly addressed however hydrological modelling predicted off-site erosion to be negligible (Appendix 18).
R2	<ul style="list-style-type: none"> To provide for the housing needs of the community within a low density residential environment. To enable other land uses that provide facilities or services to meet the day to day needs of residents. 	<ul style="list-style-type: none"> The proposed revetment wall occurs outside the R2 lands however would provide protection from coastal hazards to the R2 lands.
E1	<ul style="list-style-type: none"> To enable the management and appropriate use of land that is reserved under the <i>National Parks and Wildlife Act 1974</i>. 	<ul style="list-style-type: none"> Potential offsite impacts to E1 land not explicitly addressed however hydrological modelling predicted off-site erosion to be negligible (Appendix 18).

Zone	Objectives	Permissibility / comment
	<ul style="list-style-type: none"> To protect the environmental significance of that land. 	<ul style="list-style-type: none"> Indirect impacts to Littoral Rainforest EEC on E1 land not adequately assessed.
RE1	<ul style="list-style-type: none"> To enable land to be used for public open space or recreational purposes. To provide a range of recreational settings and activities and compatible land uses. To protect and enhance the natural environment for recreational purposes. 	<ul style="list-style-type: none"> Potential offsite impacts to RE1 land not explicitly addressed however hydrological modelling predicted off-site erosion to be negligible (Appendix 18). Biodiversity values on RE1 land that may be indirectly impacted have not been identified.

Table 2 below considers other relevant clauses of the Coffs Harbour LEP 2013.

Table 2: Coffs Harbour LEP non-zoning considerations

Clause	Comment
5.5 Development within the Coastal Zone	The proposal partly complies. A detailed discussion on the proposal's compliance with coastal protection provisions is provided in Table 3 of this report (i.e. SEPP 71).
5.9 Preservation of Trees or Vegetation	<p>Removal of native trees located in the E2 zone is ancillary to the construction of the proposed revetment wall for which approval is being sought.</p> <p>Tree removal is proposed to be offset by the planting of native trees and shrubs within the E2 zone, which, according to the SEE, will preserve the amenity of the area.</p> <p>The 'Addendum to Statutory Ecological Assessment' prepared by Ecosure (Appendix 19) and 'Response to Request for Information Arrawarra Caravan Park' by Ecosure (Appendix 20) conclude that the proposed vegetation removal is unlikely to have a significant impact on the local population of the Coastal Saltmarsh and Littoral Rainforest EECs or Coolomon species. However, potential indirect impacts have not been adequately assessed.</p>
5.10 Heritage Conservation	<p>Three recorded Aboriginal sites are located within 200m of the site, two of which are located within 50m of the site. One site, the Arrawarra Headland Site, is located immediately west of the subject site. Shell scatter associated with the Arrawarra Headland Site is located within the E2 zone on the site. An Aboriginal Place has not been declared over the subject site, nor does the site contain any heritage items.</p> <p>Everick Heritage Consultants, in its January 2017 report 'Aboriginal Cultural Heritage Assessment' (Appendix 21), concludes that the proposal is unlikely to result in further harm to Aboriginal heritage. No Aboriginal Objects were identified within the area of proposed works. One known Aboriginal site ('Arrawarra Headland Site' #22 - 1 - 0392) occurs in proximity to the proposed works but will not be directly impacted. The 'Aboriginal Cultural Heritage Assessment' prepared by Everick provides recommendations for the management of potential impacts to Aboriginal heritage. The amended 'Aboriginal Cultural Heritage Assessment' dated 14 July 2017 (Appendix 11) draws the same conclusions.</p> <p>However, the Garby Elders were not consulted and the Coffs Harbour and District Local Aboriginal Land Council found the January 2017 Everick assessment to be inadequate (the July 2017 report was not made publicly available).</p>
7.1 Acid Sulfate Soils	The site is predominately mapped as Class 5 Acid Sulfate Soils. However, a band of Class 1 soils is located along the site's eastern boundary adjoining Arrawarra Creek. In addition, a small area of Class 3 soils is located within

Clause	Comment
	<p>the south-western corner of the site.</p> <p>A 'Preliminary Acid Sulfate Soils Assessment' undertaken by de Groot & Benson Pty (June 2016) (Appendix 22, Annexure C) found that mild amounts of acid sulfate soils are likely to be disturbed during construction. As such, an Acid Sulfate Management Plan is proposed to be implemented during construction to manage the impact of acid sulfate soils.</p>
7.4 Terrestrial Biodiversity	<p>The E2 zoned portion of the site is identified as 'biodiversity' on the <i>Terrestrial Biodiversity Map</i>.</p> <p>According to the SEE, the proposed revetment wall will have a positive impact on the E2 zoned land by protecting the site from wave attack and further coastal erosion. In addition, replacement native vegetation replanting within the E2 zone is proposed. Standard erosion control measures will be implemented to mitigate any potential adverse impact during construction.</p> <p>However, OEH, in its letter of 7 June 2017 (Appendix 9), notes that a number of potential coastal hazard issues, such as increased coastal inundations and wave exposure, and scouring leading to increased erosion impacts, have not been adequately addressed. The letter also notes that the proposed revetment would require significant disturbance to the remnant native vegetation within the E2 zone. The remnant vegetation forms part of a wildlife corridor for moderately to highly mobile fauna within a fragmented landscape. The proposed landscape plantings would take many years to provide the same corridor function.</p> <p>It should also be noted that the DA does not adequately address the potential offsite ecological impacts of the proposed revetment wall.</p>
7.6 Riparian Land and Watercourse	<p>Yarrawarra Creek and Arrawarra Creek are identified as a 'watercourse' on the <i>Riparian Lands and Watercourses Map</i>.</p> <p>According to the SEE, the proposed revetment wall will have a positive impact on riparian land and surrounding watercourses. In addition, the proposed revetment wall will secure and stabilise the bed and banks of the estuary and will result in improved aquatic and riparian habitat. Sediment and erosion controls will be implemented throughout the construction of the wall to maintain water quality and to protect the surrounding riparian environment. Hydrological modelling by Umwelt (2017) predicted off-site erosion, as a result of the proposed development, to be negligible (Appendix 18).</p> <p>However, the DA does not properly assess the potential impacts on marine and estuarine environments over the life of the revetment wall, including changes to habitat, species diversity and abundance. Thus, insufficient information is available to adequately assess the impact of the proposal on riparian land and surrounding watercourses.</p>
7.8 Koala Habitat	<p>Secondary Koala Habitat exists along the northern boundary and within the mid-southern part of the site. The 'Statutory Ecological Assessment' prepared by NatureCall (Appendix 23) includes an assessment of the proposed subdivision (DA 0667/16) under the planning controls of the Coffs Harbour Comprehensive Koala Plan of Management (KPoM) (1999). This assessment was based on the findings of the tree survey undertaken by NatureCall in October 2015. The DA does not include an assessment of the proposed revetment wall under the KPoM based on the updated tree survey which was undertaken by Ecosure on 15 June 2016 (Appendix 19).</p>

Clause 1.9 of the Coffs Harbour LEP indicates that the provisions of any State Environmental Planning Policy will prevail over the LEP as provided by section 36 of the *Environmental Planning and*

Assessment Act 1979 (EP&A Act). In this regard, the provisions of the *State Environmental Planning Policy (Infrastructure) 2007* are relevant.

7.3.1.2 State Environmental Planning Policy (Infrastructure) 2007

Clause 129A(1) of the Infrastructure SEPP allows that development for the purposes of a sea wall or beach nourishment may be carried out by any person with consent on the open coast or entrance to a coastal lake. In this case, the subject site is located on the open coast, and the proposed development could be described as a seawall. Therefore, the Infrastructure SEPP overrides the permissibility constraint imposed by the CHLEP and the proposed development is permissible.

The Infrastructure SEPP specifies (at cl129A(3)) that before determining a development application for development to which this clause applies, the consent authority must take the following matters into consideration:

- (a) *The provision of any coastal zone management plan applying to the land;*
- (b) *The matters set out in clause 8 of the State Environmental Planning Policy No 71 – Coastal Protection; and*
- (c) *Any guidelines for assessing and managing the impacts of coastal protection works that are issued by the Secretary for the purposes of this clause and published in the Gazette.*

Coastal Zone Management Plan

Coffs Harbour City Council has adopted the *Coffs Harbour Coastal Zone Management Plan*. However, no gazetted coastal zone management plan applies to the site. Accordingly, it is noted that no gazetted guidelines for assessing and managing the impacts of coastal protection works apply to the site.

State Environmental Planning Policy No 71 – Coastal Protection

The matters set out in clause 8 of *State Environmental Planning Policy No 71 – Coastal Protection* are addressed in **Table 3** below.

Table 3: Matters in Clause 8 of SEPP 71

Matter	Comment
(a) The aims of this Policy set out in clause 2, most relevantly to this DA: <ul style="list-style-type: none"> • protect & improve existing public access to and along coastal foreshores to the extent this is compatible with the natural attributes of the coastal foreshore, and • ensure the visual amenity of the coast is protected, and • protect & preserve beach environments and beach amenity 	Addressed below.
(b) Existing public access to and along the coastal foreshore for pedestrians or persons with a disability should be retained and, where possible, public access to and along the foreshore for pedestrians or persons with a disability should be improved.	During construction of the revetment wall, a pedestrian management plan will be prepared to ensure that public access to the beach is maintained at all times. Following construction, the existing wooden footbridge will be reconstructed to accommodate the proposed revetment wall.
(c) Opportunities to provide new public access to and along the coastal foreshore for pedestrians or persons with a disability.	As stated above.

Matter	Comment
(d) The suitability of the development given its type, location and design and its relationship with the surrounding area.	In principle, the concept of the proposed revetment wall is acceptable. However, elements of its design, together with the potential for significant wave overtopping, are not considered satisfactory.
(e) Any detrimental impact that development may have on the amenity of the coastal foreshore, including any significant overshadowing of the coastal foreshore and any significant loss of views from a public place to the coastal foreshore.	The amenity of the coastal foreshore may be impacted by the proposed revetment.
(f) The scenic qualities of the NSW coast, and means to protect and improve these qualities.	<p>The clearing of vegetation on the site, consisting predominately of mature tree species, to accommodate the proposed revetment wall will impact adversely on the site's visual amenity and the scenic qualities of the estuarine foreshore.</p> <p>Overtime, this impact will be reduced through the replacement landscaping proposed but a return to the amenity currently afforded by the existing trees will only occur over the long term.</p>
(g) Measures to conserve animals (within the meaning of the <i>Threatened Species Conservation Act 1995</i>) and plants (within the meaning of that Act) and their habitats.	<p>Three assessments of significance under the TSC Act were carried out for the Coolomon, Coastal Saltmarsh and Littoral Rainforest. Assessments of significance were not carried out for the Brush-tailed Phascogale or the Oxleyan Pygmy Perch as it is considered highly unlikely that either species occurs in the area.</p> <p>Based on the assessments of significance undertaken, removal of the Coolomon, saltmarsh and rainforest trees within the site is not considered to represent a significant impact to the local population of any of the species. The assessment of indirect impacts on surrounding Coastal Saltmarsh and Littoral Rainforest is considered inadequate.</p>
(h) Measures to conserve fish (within the meaning of Part 7A of the <i>Fisheries Management Act 1994</i>) and marine vegetation (within the meaning of that Part) and their habitats.	<p>Construction of the revetment wall will likely involve removal of 2 small patches of saltmarsh, one small patch of Littoral Rainforest and 2 mangroves. A permit under the <i>Fisheries Management Act 1994</i> will be required prior to any clearing of marine vegetation on the site.</p> <p>A number of mitigation measures have been proposed to minimise the impact of construction on the marine and estuarine environment. However, estuarine environments over the life of the revetment wall, including changes to habitat, species diversity and abundance, have not been addressed.</p>
(i) Existing wildlife corridors and the impact on development on these corridors.	The existing wildlife corridor has been described as degraded and providing only

Matter	Comment
	limited connectivity. However, the loss of remnant vegetation will further impact the quality of the wildlife corridor. The SEE provides that the proposed landscaping will improve biodiversity and habitat corridor values however, connectivity will be lost until landscape plantings have established and matured.
(j) The likely impact of coastal processes and coastal hazards on development and any likely impacts of development on coastal processes and coastal hazards.	Hydrological modelling by Umwelt (2017) predicted off-site erosion, as a result of the proposed development, to be negligible (Appendix 18). Umwelt also predicted only limited potential for scour to occur at the toe of the proposed seawall. However, it is considered that the DA has not fully assessed the likely impacts of the proposed revetment wall on coastal processes and coastal hazards.
(k) Measures to reduce the potential for conflict between land-based and water-based coastal activities.	N/A
(l) Measures to protect cultural places, values, customs, beliefs and traditional knowledge of Aboriginals.	<p>An Aboriginal Place has not been declared over the subject site.</p> <p>An Aboriginal cultural heritage assessment was prepared for the development. The assessment found that the site is already disturbed and the development is unlikely to result in any further harm to Aboriginal objects identified in the area, subject to implementation of certain mitigation measures.</p> <p>However, the Garby Elders were not consulted and the Coffs Harbour and District Local Aboriginal Land Council found the exhibited Aboriginal cultural heritage assessment to be inadequate.</p>
(m) Likely impacts of development on the water quality of coastal water bodies	Sediment and erosion control measures will be implemented and maintained during construction of the proposed revetment wall. Hydrological modelling by Umwelt (2017) predicted off-site erosion, as a result of the proposed development, to be negligible (Appendix 18).
(n) The conservation and preservation of items of heritage, archaeological or historic significance.	<p>Potential impacts to Aboriginal heritage will be managed by:</p> <ul style="list-style-type: none"> • Registering any Aboriginal cultural materials uncovered as a result of development activities within the site on the AHIMS database. • If impacts on Aboriginal Cultural Heritage values are unavoidable, an AHIP will be required and mitigation measures will need to be negotiated between the Proponent, OEH and the Aboriginal community.

Matter	Comment
(o) Only in cases in which a council prepares a draft local environmental plan that applies to land to which this Policy applies, the means to encourage compact towns and cities.	N/A
(p) Only in cases in which a development application in relation to proposed development is determined: (i) the cumulative impacts of the proposed development on the environment. (ii) measures that ensure that water and energy usage by the proposed development is efficient.	The cumulative impacts of the proposed revetment wall on the environment have not been fully assessed.

Guidelines for Assessing and Managing the Impacts of Coastal Protection Works

No guidelines have been gazetted by the Secretary for this purpose.

7.3.1.3 State Environmental Planning Policy No 71 – Coastal Protection

See **Table 3** above.

7.3.1.4 State Environmental Planning Policy No 14 – Coastal Wetlands

The subject site is located more than 500m from the nearest SEPP 14 wetland, located to the north. The potential for the proposed revetment wall to impact on coastal wetlands has not been addressed in the SEE.

7.3.1.5 State Environmental Planning Policy No 26 – Littoral Rainforest

A small area (600m²) of Littoral Rainforest, consisting of four trees over a disturbed understorey, occurs in the northern section of the site and will be removed. Areas of Littoral Rainforest extend along the facing bank of Yarrawarra Creek, approximately 80m north of the site, and on the facing bank of Arrawarra Creek, approximately 120m east of the site. The site forms part of the 100m buffer to SEPP 26 Littoral Rainforest No 45. The proposed revetment wall will be located within the buffer.

The small area of Littoral Rainforest along the northern boundary of the site is listed as an Endangered Ecological Community (EEC) under the TSC Act. However, Ecosure found that this area is less than 0.1ha and does not have a canopy cover of 70%, and therefore does not meet the listing criteria under the EPBC Act for critically endangered Littoral Rainforests (**Appendix 20**).

Based on an assessment of significance (7-part test) for the TSC Act-listed EEC (**Appendix 20**), the removal of the trees will not have a negative impact on the surrounding EEC in the locality given the small number of trees being removed. Accordingly, a Species Impact Statement was not prepared as part of the DA. However, the assessment of significance does not adequately address indirect impacts to the surrounding EEC. Ecosure's response to question (g), that surrounding Littoral Rainforest will likely benefit from improved water quality, and not be significantly impacted by altered flow regimes, is unsubstantiated.

The Department of Primary Industries – Fisheries, in its letter of 4 August 2017 (**Appendix 12**), submits that construction of the revetment wall may have significant impacts on other areas of Arrawarra Creek. *'Of particular concern is the proposal to build the seawall 13m out into what is currently Arrawarra Creek'*. In this respect, the consequential potential for the proposed revetment to impact on surrounding Littoral Rainforest has not been adequately addressed in the DA. It should be noted however, that the SEE (**Appendix 14**) clarifies that the proposed revetment would extend 4m at most, not 13m, out into Arrawarra Creek (although the 4m doesn't include the extension of the toe of the revetment below the surface of the estuary bed).

7.3.1.6 State Environmental Planning Policy No 44 – Koala Habitat Protection

Secondary Koala Habitat exists along the northern boundary and within the mid-southern part of the site. The 'Statutory Ecological Assessment' prepared by NatureCall (**Appendix 23**) includes an assessment of the proposed subdivision (DA 0667/16) under the planning controls of the Coffs Harbour Comprehensive Koala Plan of Management (KPoM) (1999). This assessment was based on the findings of the tree survey undertaken by NatureCall in October 2015. The DA does not include an assessment of the proposed revetment wall under the KPoM based on the updated tree survey which was undertaken by Ecosure on 15 June 2016 (**Appendix 19**).

7.3.2 Section 79C(a)(ii): Proposed Instruments

Section 79C(a)(ii) requires the consent authority to consider the provisions of any proposed instrument that is or has been the subject of public consultation under this Act and that has been notified to the consent authority.

The *Coastal Management Act 2016* was assented to on 7 June 2016 and the associated draft *Coastal Management State Environmental Planning Policy* was publicly exhibited from 11 November 2016 to 20 January 2017. It is anticipated that the draft SEPP, and the *Coastal Management Act 2016* will commence later in 2017.

The Coastal Panel and Coffs Harbour City Council were both notified of the consultation of the draft Coastal Management SEPP, so it is therefore a relevant matter for consideration.

The draft SEPP is currently being finalised by the Department of Planning and Environment.

Part of the subject site is located within the proposed coastal zone under the *Coastal Management Act 2016* as it contains land identified as 'rainforest proximity area' on the Coastal Wetlands and Littoral Rainforests Area Map (see **Figure 7** below). Part of the proposed revetment wall will be located within the proposed coastal zone.

Clause 12(1) of the Draft SEPP provides that:

(1) Development consent must not be granted to development on land wholly or partly identified as ... "proximity area for littoral rainforest" ... unless the consent authority is satisfied that the proposed development will not significantly impact on:

- a) the biophysical, hydrological or ecological integrity of the adjacent ... littoral rainforest, or*
- b) the quantity and quality of surface and ground water flows to the adjacent ... littoral rainforest if the development is on land within the catchment of ... littoral rainforest.*

In this regard, the proposal to build the revetment wall at least 4m out into Arrawarra Creek, and its consequential potential to impact on Littoral Rainforest, has not been adequately addressed in the DA.

As stated in the 'Addendum to Statutory Ecological Assessment' prepared by Ecosure, 'These areas [of Littoral Rainforest] were well outside the boundary of the site, and were not surveyed or described in detail in the current assessment' (**Appendix 19**). Following a request for further information by Coffs Harbour City Council, Ecosure provided an assessment of significance for Littoral Rainforest (**Appendix 20**). The assessment of significance largely assesses direct impacts, with very little attention given to indirect impacts on the surrounding Littoral Rainforest. Ecosure's response to question (g), that surrounding Littoral Rainforest will likely benefit from improved water quality, and not be significantly impacted by altered flow regimes, is unsubstantiated.

Pursuant to Clause 16(1) of the Draft SEPP, in determining a DA for development on land within the coastal zone, the consent authority must be satisfied that '*the proposed development is not likely to cause increased risk of coastal hazards on that land or other land.*' In this respect, having regard to the matters considered under SEPP 71 and other matters in this Assessment Report, it is considered

that the DA has not fully assessed the likely impacts of the proposed revetment wall on coastal processes and coastal hazards.

Clause 17 of the Draft SEPP provides that, in determining a DA for development on land within the coastal zone, the consent authority must take into consideration the relevant provisions of the following:

(a) a coastal management program that applies to the land,

(b) a coastal zone management plan (within the meaning of the Coastal Protection Act 1979) that applies to the land that continues to have effect under clause 4 of Schedule 3 to the Coastal Management Act 2016.

No gazetted coastal zone management plan applies to the subject site.



Figure 7: Coastal Wetlands and Littoral Rainforests Area Map from draft Coastal Management SEPP

7.3.3 Section 79C(a)(iii): Development Control Plans

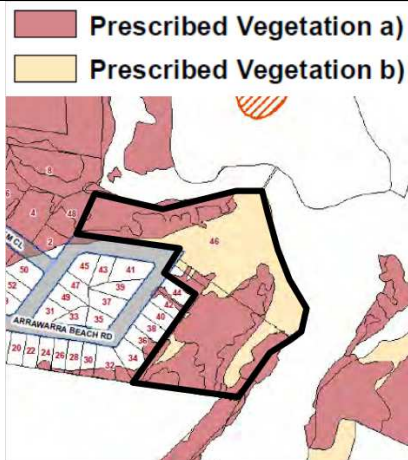
Section 79C(a)(iii) requires the consent authority to consider the provisions of any development control plan.

The *Coffs Harbour Development Control Plan 2015* (DCP) came into effect on 21 October 2015. The DCP includes Part E1 – Biodiversity. This chapter applies to the subject site.

Table 4 below provides an assessment of the proposal's compliance with the requirements of Part E1.

Table 4: Compliance with Coffs Harbour DCP 2015 – Part E1

DCP Control	Comment
E1.1 Preservation of Trees and Vegetation	As shown in the image below, the subject site contains prescribed vegetation (a) and (b). Removal of prescribed vegetation within the site is ancillary to the construction of the proposed revetment wall for which approval is being sought.

DCP Control	Comment
	 <p>Prescribed Vegetation a)</p> <p>Prescribed Vegetation b)</p>
E1.2 Compensatory Requirements	The 'Conceptual Vegetation Management Plan' (Appendix 24) addresses compensatory planting requirements, as required by Section E1.2(1) of the DCP.
E1.3 Riparian Zone Requirements	The proposal will require referral to the NSW Office of Water for a controlled activity approval. The DCP provides that Riparian zones are not to be used for private infrastructure purposes. The proposal is considered to effectively constitute a private infrastructure purpose and is therefore contrary to this DCP provision.

Part E2 – Coastal Hazards of the DCP has been deferred.

7.3.4 Section 79C(a)(iv): the provisions of the regulations (to the extent that they prescribe matters for the purposes of this paragraph)

Relevant to the determination of this DA, Clause 92 of the *Environmental Planning & Assessment Regulation 2000* (the Regulation) prescribes the provisions of the NSW Coastal Policy as matters to be considered by the consent authority when determining a DA within the coastal zone. In this respect the overriding vision of the Policy is the ecological sustainability of the NSW Coast.

The proposed revetment has been considered against the Coastal Policy's nine goals in Section 7.2.1 above.

Overall, the proposal is not considered to be consistent with the NSW Coastal Policy.

7.3.5 Section 79C(a)(v): Coastal Zone Management Plan

No gazetted coastal zone management plan applies to the subject site.

7.3.6 Section 79C(b): Environmental, Social and Economic Impacts

The likely impacts of the proposed development should be considered by the Coastal Panel in the context of the comments on the DA provided by RHDHV (**Appendices 2-4**), OEH (**Appendix 9**), Coffs Harbour City Council (**Appendix 10**) and DPI – Fisheries (**Appendix 12**).

Likely impacts of the proposed development of relevance to the determination of the DA concern the following:

Impact on coastal processes

The *Draft Guideline for Assessing the Impacts of Seawalls*, prepared by WRL on behalf of DECC&W (2011), outlines the following potential physical impacts of seawalls:

- Altered erosion and accretion seaward of the wall;

- Altered erosion and accretion along the shore from the wall;
- Altered recession (a net long-term landward movement of the shoreline caused by a net loss in sediment) and progradation (a net long-term seaward movement of the shoreline caused by a net gain in sediment) along the shore from the wall;
- The propensity for the seawall to form rips;
- Changes to wave run-up; and
- Reduced erosion landward of the seawall.

The proponent submits that the *'proposed revetment will be constructed entirely within the subject site and as such, will not adversely affect neighbouring properties'*.

A 'Geomorphic Impact Assessment' was prepared by Martens Consulting Engineers (**Appendix 8**) in 2017 in relation to the proposed seawall design for the subject land. The assessment found that, since wave heights within the estuary are very low and travel distances are generally long (> 50 m) over very shallow water, erosion on the opposite bank of Arrawarra Creek is unlikely to result from the proposed sea wall.

In addition, a 'Flow Velocity Modelling' report prepared by Umwelt in 2017 (**Appendix 18**) found that the range of modelled flow velocities for the existing and proposed systems are similar, and that the potential for increased erosion away from or off-site as a result of the proposed development are negligible. Modelling results also predicted only a limited potential for scour to occur at the toe of the seawall with predicted increases being localised and typically less than 0.1 m/s to 0.2 m/s.

However, OEH, in its letter of 7 June 2017 (**Appendix 9**), found that the site is at significant risk from sea level rise-induced long-term recession, which may result in increased coastal inundation, increased wave exposure, and scouring of the adjacent intertidal and subtidal substrate. OEH recommended further consideration of these issues over the intended life of the proposed seawall.

As noted by RHDHV in its advice of 30 November 2016 (**Appendix 4**), insufficient justification is given regarding the selection of +0.2m AHD as an appropriate entrance saddle level for design wave penetration. In the absence of further assessment, and based on a review of comparable creek systems in NSW, it is suggested that a -0.1m AHD saddle level be adopted. It is noted that a lower saddle level would permit larger wave penetration and would require a larger armour size.

The Department of Primary Industries – Fisheries, in its letter of 4 August 2017 (**Appendix 12**), submits that construction of the revetment wall may have significant impacts on other areas of Arrawarra Creek. *'Of particular concern is the proposal to build the seawall 13m out into what is currently Arrawarra Creek. This part of the proposal is likely to redirect stream flows, particularly during flood events'*. In this respect, the consequential potential for the proposed revetment to impact on coastal processes has not been adequately addressed in the DA. It should be noted however, that the SEE (**Appendix 14**) clarifies that the proposed revetment would extend 4m at most, not 13m, out into Arrawarra Creek (although the 4m doesn't include the extension of the toe of the revetment below the surface of the estuary bed).

Overall, the potential physical impacts of the proposed development on coastal processes have not been fully addressed in the DA

Given that the coastal hazard mapping undertaken by BMT WBM for Coffs Harbour Council shows that it is 'almost certain' that the site will be impacted by coastal erosion and shoreline recession as an immediate hazard (ie when the next large storm event occurs), The proposed development is expected to be inadequate to withstand expected coastal erosion impacts, as well as potentially exacerbating localised impacts from a storm event.

Impact on Aboriginal heritage

An 'Aboriginal Cultural Heritage Assessment' was prepared in January 2017 by Everick Heritage Consultants for the proposed revetment (**Appendix 21**). The assessment reports that:

- The 'Arrawarra Fish traps' will not be impacted on by the proposal;
- Three (3) recorded Aboriginal sites are located within 200m of the site, including: 22 - 1 - 0034 'Arrawarra 3' artefact; and 22 - 1 - 0392 'Arrawarra Headland Site' (partially destroyed artefact and shell);
- Arrawarra 3 could not be confidently located without access to a site card, which is not available on the AHIMS database. Arrawarra Headland Site is recorded immediately west of the subject site, with associated shell scatter located within the E2 zone on the site;
- The revetment and revegetation works are proposed in the general area where the shell scatter is located however, the assessment by Everick states that it won't be directly impacted. It is proposed (see Appendix G of the SEE) to 'fence off' the partially destroyed artefact and shell scatter site within the environmental zone;
- Based on geotechnical data which include descriptions of soil type and inclusions such as shell fragments, it is unlikely that a subsurface 'lens' type midden occurs within the site. A large amount of subsurface disturbance has taken place within the site since the establishment of the caravan park, which has not resulted in the identification or recording of midden material; and
- Recommendations for the management of potential impacts to Aboriginal heritage include:
 - Implementing an 'Aboriginal Objects Find Procedure';
 - Registering any Aboriginal cultural materials uncovered as a result of development activities within the site on the AHIMS database; and
 - If impacts on Aboriginal cultural heritage values are unavoidable, mitigation measures should be negotiated between the proponent, OEH and the Aboriginal community.

Everick Heritage Consultants provided an amended 'Aboriginal Cultural Heritage Assessment' dated 14 July 2017 (**Appendix 11**). The amended report included an updated AHIMS search and the previously unavailable site cards for the 'Arrawarra 3' site and 'Arrawarra Headland Site' were obtained. Additional information for 'Arrawarra 3' included a locational description of the site being located on the gravel bed of the north branch of Arrawarra Creek and being visible at low tide. However, the exact location could still not be determined. Additional information for the 'Arrawarra Headland Site' included that the site contains large greywacke cobbles and a scatter of shells.

The amended 'Aboriginal Cultural Heritage Assessment' does not explicitly refer to the third Aboriginal site which is located within 200m of the subject site however, based on information within the January 2017 report, the third site appears to be known as 'Arrawarra 1', a midden located across the creek.

Although the amended report considers there to be a moderate (rather than low) potential for artefact scatters within the project area, it still draws the same conclusions as the January 2017 report. An additional recommendation was made being that, should the proposed work plans change and impacts to the Arrawarra Headland Site be unavoidable, an AHIP would be required prior to commencement of works.

Previous advice from Everick Heritage Consultants dated 21 June 2016 (**Appendix 25**), provided in response to the Coastal Panel's request for additional information regarding DA CP 16-001, included:

- The excavation of archaeological test pits is not considered reasonable or practical given the requirement to 'bench' out the excavation walls when excavating deep sand deposits. The decision not to apply for an AHIP to undertake archaeological investigations outside the Code

of Practice was based on the conclusion from the geotechnical sample that midden material did not occur within the sand body;

- Cultural significance has not been assessed on the basis that the Arrawarra Headland Site is located within the proposed E2 reserve area and will not be subject to an AHIP application; and
- An Aboriginal Place has not been declared over the subject site. As such, assessment of the impact of the proposal on Aboriginal cultural values under the *National Parks and Wildlife Act 1974* is not required.

However, the Coffs Harbour and District Local Aboriginal Land Council, in their submission dated 9 June 2017, noted that Everick Heritage Consultants did not consult with the Garby Elders who hold site-specific cultural knowledge and the cultural heritage assessment prepared for the development application is not sufficient to support the proposal. The Coffs Harbour and District Local Aboriginal Land Council note that there is inadequate assessment and consideration of impacts on an Aboriginal midden located on site which is likely to be impacted by the works associated with the proposed seawall. The amended 'Aboriginal Cultural Heritage Assessment' does not appear to address these concerns.

The Coffs Harbour and District Local Aboriginal Land Council also contend the reasons given for not undertaking test excavations and applying for an AHIP. The Coffs Harbour and District Local Aboriginal Land Council state that test pits would only need to be dug down to approximately 1m at most, with the majority being 15-30cm deep, and that the presence of the surface midden in the north-eastern corner of the project area indicates that cultural material is present and that test pitting is warranted.

Flood and Stormwater Management

The site is located within the 1% AEP Flood Extents area and within a Flood Planning Area.

Umwelt carried out a flood study for the site in 2003 to determine the 100 year ARI flood levels for the site. The 2003 model was updated to incorporate tail water effects and to include the proposed revetment wall design. In addition to a baseline scenario, sea level rises of 0.4 and 0.9 metres were modelled.

Based on updated modelling (**Appendix 26**), Umwelt found that the combination of the 5% AEP storm event and the 1% AEP ocean tide condition resulted in a maximum modelled flood elevation of 2.65m AHD at the site. This reflects the dominance of the ocean tide condition in dictating flood levels at the site.

In its letter of 14 June 2017 (**Appendix 10**), Coffs Harbour City Council accepts Umwelt's 2017 review of the 2003 flood study (**Appendix 26**), stating that the update considers the proposed seawall, sea level rise, a range of flood events and ocean storm surge. However, the existing timber footbridge, licenced by the Crown, appears in poor condition, is a risk to users and requires structural certification. The flood study did not consider any impacts due to this structure.

Although no flood history of the site was included in the application, it is evident from a visit to the site that flooding has caused scour of the creek bank and eroded some of the subject site. The proposed development would result in armouring of one side of the creek bank. This scenario typically directs flood flows onto the opposite bank – where sensitive land containing SEPP 26 littoral rainforest is located.

The application does not propose any mitigation measures to address these impacts, and given the sensitive nature of the environment, these impacts are not considered acceptable.

Water quality impact

The Geomorphic Impact Assessment by Martens Consulting (**Appendix 8**) reviewed existing water quality monitoring results for the area. The EPA have previously recorded elevated bacterial levels at

the site and, although the source of pollution was inconclusive, levels were at their highest during rainfall events. This suggests the source of contamination was related to wet weather such as urban stormwater runoff. The OEH (then DECC) have previously attributed poor swimming conditions to elevated levels of enterococci in both wet and dry conditions. The then Department of Natural Resources found that periods of extremely low water quality in Arrawarra Creek, particularly during summer months may have been the result of sediment closing the mouth of the estuary to tidal flows (as can happen when offshore storm events produce large swell conditions causing the deposition of large quantities of sand onshore). A site inspection in 2006 showed the creek mouth to be closed and revealed algal blooms along Arrawarra Creek indicating elevated levels of nutrients and water temperatures.

The Geomorphic Impact Assessment by Martens Consulting (**Appendix 8**) includes an assessment of potential impacts of the proposed revetment on water quality. The assessment found that increased turbidity adjacent to the wall is possible during construction; re-suspension of bed sediments is possible both in the short and long term; and minor alterations to circulation patterns (resulting in redistribution of aquatic food) could occur during construction. Mitigation measures are proposed to reduce the impacts. The Geomorphic Impact Assessment also recommends that water quality be monitored not only during the construction period but also on a long-term scale to ensure impacts do not arise in the future.

Umwelt's modelling (**Appendix 18**) demonstrates insignificant changes pre and post construction to flow velocity in the creek, indicating the proposed revetment would be unlikely to exacerbate any existing water quality issues. Umwelt's modelling also predicted off-site erosion, as a result of the proposed development, to be negligible.

The SEE (**Appendix 14**) states that any material removed from the estuary that is to be temporarily deposited or stockpiled on land will be located away from drainage lines and overland flow paths. It will also be located above the 1:100 year flood level and contained by appropriate sediment control devices.

The proponent notes that the proposed revetment will secure and stabilise the bed and banks of the estuary and will result in improved aquatic and riparian habitat. Sediment and erosion controls will be implemented throughout the construction of the revetment to maintain water quality and to protect the surrounding riparian environment. However, only one bank of the creek would be armoured as part of the proposal increasing scour on the opposite bank.

Noise impact

The construction phase has the potential to generate a significant level of noise from the use of machinery. In this respect there are dwellings in close proximity to the proposed works. The proponent acknowledges the potential noise impacts to nearby residences during construction work, noting that it will be of a short duration.

The proponent does not address the possibility of minimising noise impacts on nearby residents, for example by limiting construction works hours. However, this could be addressed by an appropriate condition..

Waste impact

The construction phase of the proposed development has the potential to generate a significant quantity of waste. The proponent submits that there is sufficient space within the site for the storage of construction materials associated with the removal of the existing rock gabion seawall and revetment works.

Air quality impact

Air emissions may be generated from plant and equipment during construction and the proponent acknowledges minor dust impacts to nearby residences during construction. However, the proponent does not address measures to monitor air quality during construction.

Ecological impact

A 'Statutory Ecological Assessment' was prepared in December 2015 by Naturecall for the proposed residential subdivision (**Appendix 23**). In response to the Panel's request for additional information on 19 April 2016, an 'Addendum to Statutory Ecological Assessment' was prepared by Ecosure in June 2016 (**Appendix 19**). This addendum relates to the proposed subdivision, as well as the proposed revetment wall. Ecosure provided a letter and assessments of significance on 29 September 2016 in response to Coffs Harbour City Council's request of 24 August 2016 for further information regarding the subdivision DA (**Appendix 20**). Ecosure have prepared a Conceptual Vegetation Management Plan (March 2017) for the proposed revetment (**Appendix 24**). The Naturecall and Ecosure documents have been appended to the SEE.

In relation to the proposal's potential ecological impacts, the proponent has made the following comments:

- Based on an assessment of significance (7-part test)³, the planted Coolamon tree (*Syzygium moorei*) on the site is outside of its natural range and therefore its removal is not considered to represent a significant impact to the local population of this species. As such, a Species Impact Statement was not prepared;
- Based on the 7-part test undertaken, removal of the two small patches (20m²) of Coastal Saltmarsh on the site may have a moderate, but non-significant, impact on the Coastal Saltmarsh EEC within the Arrawarra estuary. Accordingly, a Species Impact Statement was not prepared as part of the DA. The Coastal Saltmarsh on site does not meet the EPBC Act listing requirements;
- Based on the 7-part test undertaken, the small patch (600m²) of Littoral Rainforest on the site is highly degraded, consisting of four trees over a disturbed understorey, and its removal would be unlikely to result in a significant impact on the Littoral Rainforest EEC within the Arrawarra estuary. Accordingly, a Species Impact Statement was not prepared as part of the DA. The Littoral Rainforest on site does not meet the EPBC Act listing requirements;
- An assessment of significance was not carried out for the Oxleyan Pygmy Perch (*Nannoperca oxleyana*), which is a freshwater fish, as it is considered that any potential impacts will be restricted to the estuarine reaches of Yarrawarra and Arrawarra Creeks (i.e. impacts are not expected in areas of freshwater habitat);
- An assessment of significance was not carried out for the Brush-tailed Phascogale (*Phascogale tapoatafa*) as it is considered highly unlikely that it occurs in the area;
- Removal of vegetation along the drain in the south of the site during construction could result in sediment entering the drain and erosion of the banks during heavy rainfall. Appropriate sediment and erosion control measures will be implemented during the construction phase. During the post construction phase, stormwater management has been designed for water quality and quantity leaving the site to improve on, or equal, current levels;
- An ecological assessment of the Yarrawarra and Arrawarra Creeks confluence carried out by Eco Logical Australia in 2007 found that no aquatic vegetation (e.g. seagrass) was observed within the estuarine portions of Arrawarra and Yarrawarra Creeks;
- The main impact on marine and estuarine environments during construction relates to mobilisation of sediments. Other impacts relate to the exposure of acid sulfate soils. A 'Preliminary Acid Sulfate Soils Assessment' undertaken by de Groot & Benson Pty (June

³ Note that the *Biodiversity Conservation Act 2016* commenced on 25 August 2017 and the 7-part test has been superseded. However, savings and transitional arrangements given effect through the Biodiversity Conservation (Savings and Transitional) Regulation 2017 mean that the 7-part test is still an appropriate assessment for this development application.

2016) found that mild amounts of acid sulfate soils are likely to be disturbed during construction. As such, an Acid Sulfate Management Plan is proposed to be implemented during construction to manage the impact of acid sulfate soils;

- A permit under the *Fisheries Management Act 1994* will be required prior to any clearing of marine vegetation on the site;
- Many of the native trees located in the E2 zone will be removed or modified;
- The following major recommendations have been made to reduce the ecological impacts of the proposal:
 - Ensure any vegetation clearing is confined to the approved construction footprint;
 - The E2 zone Conceptual Vegetation Management Plan (CVMP) will involve tree protection measures for retained trees; removal of weeds; and, supplementary/infill planting of native trees and shrubs, with Koala food trees to offset loss of trees on the remainder of the site. The CVMP states that no hollow-bearing trees will be removed;
 - A certified Fauna Rescue person must assess the area prior to any clearing. If fauna habitat trees are identified for removal, a certified Fauna Rescue person must be present. Check all trees for nests and other resident animals before removal. In the event a nest is found, remove in conjunction with a qualified Fauna Rescue person; and
 - No fencing across the E2 zone is to be allowed, and other restrictions are to be put in place to protect habitat offset areas.
- The trees proposed to be removed/retained are preliminary only and subject to final civil and earthworks design. Once the number of trees to be removed/retained has been determined, the final compensatory numbers will be calculated; and
- Habitat linkages from the Crown Land to the south of the site and the Coffs Coast Regional Park to the north will be significantly improved once the trees, shrubs and groundcovers are established in the E2 environmental conservation zone.

However, in its letter of 14 June 2017 (**Appendix 10**), Coffs Harbour City Council considers that indirect impacts on Coastal Saltmarsh EEC have not been adequately addressed and that additional information is required or a Species Impact Statement should be prepared. Coffs Harbour City Council also consider that the application has not demonstrated that the development has adequately avoided or mitigated the impacts to the natural environment with the emphasis being to offset rather than retain existing vegetation.

OEH, in its letter of 7 June 2017 (**Appendix 9**), submits that the proposed revetment would require significant disturbance to the landform and remnant native vegetation within the E2 zone. The E2 zone in this location provides a 20m riparian buffer to Arrawarra Creek, which forms part of the Solitary Islands Marine Park, as well as wildlife corridor function for moderately to highly mobile fauna species within a highly fragmented landscape. OEH's preferred response to managing biodiversity on site is to exclude the placement of any infrastructure, including the proposed revetment wall, from the E2 zone. Unavoidable impacts should be offset in accordance with OEH's 13 principles for offsetting.

The proposed landscaping in the E2 zone, offered as an offset for the removal of remnant native vegetation from the E2 zone, would need to be considered '*sacrificial*', in that it would be washed away during an extreme wave overtopping event (**Appendix 16**). This is inconsistent with the OEH principles of providing an enduring offset, and an offset that would result in a net improvement in biodiversity over time.

The *Coffs Harbour City Council Development Control Plan 2015* (DCP 2015) states that riparian zones are not to be used for private infrastructure purposes. The proposal is considered to effectively constitute a private infrastructure purpose and is therefore contrary to this DCP provision.

The Department of Primary Industries – Fisheries, in its letter of 4 August 2017 (**Appendix 12**), submits that construction of the revetment wall may have significant impacts on other areas of Arrawarra Creek. *‘The proposed seawall is significantly different to the natural stream bank (coffee rock, overhanging trees and undercut banks) that is present over much of the site boundary. Replacing natural streambanks with artificial seawalls can have significant environmental consequences on species. Seawalls can change the natural habitat in many ways including changing hardness, surface texture, slope, microhabitats and hydrology. Changes in habitat type also lead to changes in species community composition and abundance, and these changes may not reflect the natural ecosystems of the area’.* In this respect, the consequential potential for the proposed revetment to impact on surrounding biodiversity, community composition and stream morphology has not been adequately addressed in the DA.

The proponent acknowledges that a permit under the *Fisheries Management Act 1994* will be required prior to any clearing of marine vegetation on the site however, DPI – Fisheries (**Appendix 12**) consider the proposed development also includes reclamation works (see ‘site boundary’ below). A permit is also required for reclamation works. In its letter of 4 August 2017 (**Appendix 12**), DPI – Fisheries determine the proposed reclamation will directly and indirectly impact on TYPE 1 (highly sensitive) Key Fish Habitat, specifically a habitat protection zone within the Solitary Islands Marine Park. Due to inconsistencies with the Solitary Islands Marine Park habitat protection zone objective and a number of DPI – Fisheries policies, DPI – Fisheries were unable to provide General Terms of Approval for the proposed revetment.

Access impact

A public footway located along the site’s western boundary off Arrawarra Beach Road allows access to Yarrowarra Creek and the beach at low tide. The proponent submits that a pedestrian management plan will be prepared to ensure that public access to the beach is maintained at all times during construction. The public footway may be temporarily closed during construction, however, an alternative public access will be made available within the site, until the Right of Footway is restored.

The proponent submits that, following the construction of the proposed revetment wall, the existing wooden footbridge (not a public footway) may be repaired or rebuilt to accommodate the revetment.

Visual impact

The proposed revetment will not result in loss of views from a public place. The proponent submits that the natural rock design of the proposed revetment is visually less obtrusive than the existing rock gabion seawall. The proponent submits that the visual amenity of the creek edge will be significantly improved by the proposed landscape treatment. According to the proponent, the proposed replacement planting, as well as any retained vegetation within the E2 zone on the site will visually screen the site from the coastal foreshore, while maintaining the coastal character at this locality.

The proponent considers that, over time, the visual impact of the proposal will lessen, as replacement planting and landscaping within the site matures.

By way of comment, it is considered that the clearing of vegetation on the site, consisting predominately of mature tree species, to accommodate the proposed revetment will impact adversely on the site’s visual amenity and the scenic qualities of the estuarine foreshore. While this impact may be reduced overtime through the replacement landscaping proposed, a return to the amenity currently afforded by the existing trees will only be achieved over the long term.

Construction impact

The proponent considers that there is sufficient area within the site for the safe and efficient operation of machinery, on-site parking and storage of construction materials associated with the removal of the existing rock gabion seawall and the proposed revetment works.

Standard sediment and erosion control measures will be implemented and maintained consistent with *Managing Urban Stormwater: Soils and Construction* (Landcom, 2004) to mitigate any potential adverse impact during construction.

Rocks for the proposed revetment are to be sourced from Woolgoolga Quarry.

As noted by RHDHV in its advice of 30 November 2016 (**Appendix 4**), a third layer of rock armour to account for climate change effects to 2100 is supported. However, RHDHV recommend that the third layer be placed as part of the initial construction of the revetment, noting that the extra layer may require the revetment to be setback further from the MHW boundary.

Maintenance

A draft legally binding agreement for the ongoing maintenance of the proposed revetment, including the restoration of adjacent land that may be eroded as a result of the proposed revetment wall, has been prepared (**Appendix 17**). However, in terms of remedial works on adjacent land, the draft agreement only includes adjacent council land. No details have been provided to indicate how potential erosion impacts to E1 zoned land (NPWS estate) occupied by saltmarsh vegetation, Littoral Rainforest, and/or Aboriginal cultural heritage sites will be remediated. Further, the proponent has not provided any details indicating Coffs Harbour City Council's willingness to be a party to any arrangements under Section 55M(2) of the *Coastal Protection Act 1979* in respect of the proposed development.

Site boundary

The proponent submits that the proposed revetment is located wholly within the site boundary as defined by the Mean High Water Mark (MHW) site survey undertaken by NKWP Surveyors in April 2015, and confirmed by Crown Lands.

Given that the proposed seawall alignment follows the property boundary rather than the current shoreline, DPI – Fisheries, in its letter of 4 August 2017 (**Appendix 12**), have formed the view that the proposed development satisfies the definition of reclamation works under the *Fisheries Management Act 1994* (where existing aquatic habitat is filled in or drained to become dry land), and that the proposed reclamation will directly and indirectly impact on TYPE 1 (highly sensitive) Key Fish Habitat, specifically a habitat protection zone within the Solitary Islands Marine Park. Due to inconsistencies with the Solitary Islands Marine Park habitat protection zone objective and a number of DPI – Fisheries policies, DPI – Fisheries were unable to provide General Terms of Approval for the proposed revetment.

Further, as noted by RHDHV in its advice of 30 November 2016 (**Appendix 4**), a third layer of rock armour to account for climate change effects to 2100 may require the revetment to be setback further from the MHW boundary (i.e. if space for the placement of the third layer within the MHW boundary is not accounted for during initial construction of the revetment, future installation of the third layer may extend beyond the site boundary).

Social and economic impacts

The proponent submits that the proposed development will result in positive social and economic impacts by enabling the continued safe occupation of the caravan park up to a 100 year planning horizon in terms of protection of the land from coastal processes arising from predicted climate change and sea level rise.

The SEE (**Appendix 14**) states protection of the estuarine boundary of the site will facilitate the ongoing use of the land for tourism purposes, including passive recreation, as well as provide additional protection to adjoining residences. In the longer term, the works will ensure that private land and public infrastructure located beyond the site will also be protected from coastal processes.

The proponent points out the following comment previously made by RHDHV in relation to their assessment of DA CP16-001: *'The 360m revetment is to be located on private land, above the MHW. Along approximately one half of the length of this boundary is a gabion wall in a variable state of disrepair. Parts of this wall would currently pose or likely pose in the near future a hazard to persons who access the bed areas of the creek over the gabion wall. Removal of this gabion wall would remove a structure which is potentially hazardous, thereby providing a safety benefit.'*

However, RHDHV in their advice of 30 November 2016, also raise concern over safety implications of the proposed revetment due to significant wave overtopping: *'Significant wave overtopping, in excess of 0.4m³/s/m, is predicted for the section of the revetment wall having a crest level of 3.0m AHD. The capacity and potential safety implications for severe wave overtopping to carry across the 20m wide E2 buffer and impact on future residential development on the site [or existing caravan park] should be investigated. A remedial strategy to manage wave overtopping impacts should be prepared. At present, there would appear to be insufficient information before the Panel for it to be satisfied that wave overtopping of the revetment wall section with a 3.0m AHD crest level is adequately appraised or managed.'*

Further, due to wave overtopping, the Water Technology report (**Appendix 16**) submits that the landscaping in the E2 zone would need to be considered *'sacrificial'*, in that it would be washed away during an extreme overtopping event. The social and economic impacts of the loss and replacement of damaged landscaping within the E2 zone have not been discussed.

The proponent submits that the construction and ongoing maintenance or repair costs associated with the revetment will be the responsibility of the land owner.

Overall, there are several impacts on the environment, social and economic impacts associated with the proposed development. Given the sensitive surrounding land uses of NPWS estate, a marine park, SEPP 26 littoral rainforest and an endangered ecological community, the presence of Aboriginal sites and concerns raised by objectors, and the nature of the coastal erosion and flood impacts known to affect the site, there are several impacts which are unable to be mitigated or conditioned.

7.3.7 Section 79C(c): Suitability of the Site

The proposed revetment wall is permissible with development consent having regard to the various environmental planning instruments applying to the site. However, there are unresolved issues that deem the site unsuitable for the proposed revetment wall in its current form. Of principal concern is the severe risk of wave overtopping, coastal inundation and the potential erosion effects associated with the proposed revetment wall. In this respect, OEH considers that the impact of the proposed revetment wall on surrounding areas is likely to increase over time and believes that these impacts have not been adequately addressed in the DA.

The potential impacts of the proposed revetment wall have not been fully addressed and remedied. As such, it must be concluded that the subject site is not suitable for the proposed development in its current form.

[Note: Given that the proposed seawall alignment follows the property boundary rather than the current shoreline, DPI – Fisheries, in its letter of 4 August 2017 (**Appendix 12**), have formed the view that the proposed development satisfies the definition of reclamation works under the *Fisheries Management Act 1994* (where existing aquatic habitat is filled in or drained to become dry land), and that the proposed reclamation will directly and indirectly impact on TYPE 1 (highly sensitive) Key Fish Habitat, specifically a habitat protection zone within the Solitary Islands Marine Park. Due to inconsistencies with the Solitary Islands Marine Park habitat protection zone objective and a number of DPI – Fisheries policies, DPI – Fisheries were unable to provide General Terms of Approval for the proposed revetment.]

7.3.8 Section 79C(d): Submissions

During the public exhibition period for the DA (20 May to 19 June 2017) the Panel received 32 public submissions. Copies of all submissions to the DA have been uploaded to the Panel's website. The issues raised in the submissions are summarised in **Section 5** of this Assessment Report.

7.3.9 Section 79C(e): The Public Interest

Section 79C(e) requires the consent authority to consider the public interest. Having regard to the statutory matters for consideration in the determination of this DA, various public interest issues have

arisen. These principally concern the provisions of the CP Act. Specifically, Section 55M(1) provides that, in determining a DA for coastal protection works, the consent authority must be satisfied that:

(a) the works will not over the life of the works:

(i) unreasonably limit or be likely to unreasonably limit public access to or the use of a beach or headland, or

(ii) pose or be likely to pose a threat to public safety, and

(b) satisfactory arrangements have been made (by conditions imposed on the consent) for the following for the life of the works:

(i) the restoration of a beach, or land adjacent to the beach, if any increased erosion of the beach or adjacent land is caused by the presence of the works,

(ii) the maintenance of the works.

As discussed in **Section 6**, RHDHV remains concerned with the adopted height of the entrance saddle and the risk of severe wave overtopping of the revetment wall which will pose significant safety risks. The RHDHV assessment (**Appendix 4**) recommended that the capacity and potential safety implications for severe wave overtopping to carry across the 20m wide E2 buffer and impact on future residential development on the site (or the existing caravan park) should be investigated, and that a remedial strategy to manage wave overtopping impacts should be prepared. RHDHV consider there to be insufficient information before the Panel for it to be satisfied that wave overtopping of the revetment wall section with a 3.0m AHD crest level is adequately appraised or managed.

Accordingly, it would not be appropriate for the Panel to conclude that the proposed revetment wall would satisfy the provisions of Section 55M(1)(a)(ii) of the CP Act as it cannot be satisfied that the potential for wave overtopping would not '*pose or be likely to pose a threat to public safety*'.

In conclusion, the public interest will not be served through the approval of this development application.

8.0 Conclusion

The proposed revetment wall is not permissible development within the E2 Environmental Conservation zone under the *Coffs Harbour Local Environmental Plan 2013* (CHLEP) but is permissible with consent under Clause 129A(1) of the Infrastructure SEPP. The provisions of the SEPP prevail over the LEP's provisions. As the consent authority, the Coastal Panel must be satisfied that, pursuant to the provisions of Section 55M(1)(a)(ii) of the *Coastal Protection Act 1979* (CP Act), the proposed revetment wall will not, over its life, pose a threat to public safety.

In its advice of 30 November 2016 (**Appendix 4**), RHDHV finds that significant wave overtopping, in excess of 0.4m³/s/m, is predicted for the section of the revetment wall having a crest level of 3.0m AHD. *'The capacity and potential safety implications for severe wave overtopping to carry across the 20m wide E2 buffer and impact on [the existing caravan park or] future residential development should be investigated. A remedial strategy to manage wave overtopping impacts should be prepared. At present, there would appear to be insufficient information before the Panel for it to be satisfied that wave overtopping of the revetment wall section with a 3.0m AHD crest level is adequately appraised or managed.'*

As such, it would not be appropriate for the Coastal Panel as the consent authority to conclude that the proposed revetment wall will not pose a threat to public safety over the life of the wall.

With respect to Section 55M(1)(b) of the CP Act, the DA is lacking information on how the proposed legally binding arrangement for the ongoing management and maintenance of the revetment wall would be extended to the restoration of all adjacent land that may be eroded as a result of the proposed revetment wall. The draft agreement only includes adjacent 'council' land. No details have been provided to indicate how potential erosion impacts to E1 zoned land (NPWS estate) occupied by saltmarsh vegetation, Littoral Rainforest, and/or Aboriginal cultural heritage sites will be remediated. Further, the proponent has not provided any details indicating Coffs Harbour City Council's willingness to be a party to any arrangements under Section 55M(2) of the CP Act in respect of the proposed development.

As such, the DA does not contain enough detail to enable the framing of appropriate conditions of consent sufficient to satisfy Sections 55M(1)(b) and (2)(a) of the CP Act.

The subject proposal involves foreshore reclamation as defined by the *Fisheries Management Act 1994* and requires the approval of DPI – Fisheries. The proposed reclamation will directly and indirectly impact on TYPE 1 (highly sensitive) Key Fish Habitat within a habitat protection zone of the Solitary Island Marine Park. The proposal does not include strategies to mitigate or compensate these impacts. The proposal is inconsistent with the objective of the Solitary Islands Marine Park Habitat Protection Zone, and a number of DPI – Fisheries policies, and as such General Terms of Approval were unable to be issued.

DPI – Fisheries is also concerned that the construction of the proposed seawall around the entire surveyed MHW boundary will have significant impacts on other areas of Arrawarra Creek. After considering the information supporting the development application, the significance and sensitivities of Arrawarra Creek and the requirements of the *Marine Estate Management Act 2014*, DPI – Fisheries does not support the proposal in its current form.

OEH considers the proposed works to be inconsistent with the objectives of the E2 Environmental Conservation zone. The proposed wall would require significant disturbance to the landform and remnant native vegetation of the E2 zone, which provides a 20m riparian buffer to Arrawarra Creek and wildlife corridor function for moderately to highly mobile fauna.

In respect of the NSW Coastal Policy and Section 79C matters for consideration under the *Environmental Planning & Assessment Act 1979*, it is considered that the DA is not fully consistent with the Coastal Policy goals, SEPP 71 Clause 8 matters for consideration, CHLEP or *Coffs Harbour Development Control Plan 2015*.

In essence, the potential impacts of the proposed revetment wall have not been properly addressed and remedied. As such, it must be concluded that the subject site is not suitable for the proposed development in its current form and that the proposal is not in the public interest.

9.0 Recommendation

The NSW Coastal Panel, pursuant to clause 129A(2) of *State Environmental Planning Policy (Infrastructure) 2007* and section 80(1)(b) of the *Environmental Planning and Assessment Act 1979*, refuse consent to Development Application No CP 17-005 for the following reasons:

1. The Panel is not satisfied that the proposed revetment wall the subject of the Development Application will not, over the life of the works, pose or be likely to pose a threat to public safety as required by s55M(1)(a)(ii) of the *Coastal Protection Act 1979*.
2. The Panel considers that the Development Application does not contain sufficient information to demonstrate how the proposed legally binding arrangement for the ongoing management and maintenance of the proposed revetment wall may be extended to the restoration of all adjacent land that may be eroded as a result of the proposed revetment wall, such as the E1 zoned land occupied by saltmarsh vegetation, Littoral Rainforest and/or Aboriginal cultural heritage sites on the northern shore of Arrawarra Creek.
3. The Panel considers that the proposed revetment wall is inconsistent with the objective of the Solitary Islands Marine Park Habitat Protection Zone, and a number of DPI – Fisheries policies, resulting in DPI – Fisheries being unable to issue General Terms of Approval.
4. The Panel considers that the proposal's likely impacts on marine and estuarine ecosystems have not been adequately addressed and may result in a significant change to habitat, species diversity and abundance.
5. The Panel considers that the proposal is inconsistent with the objectives of the E2 Environmental Conservation zone which seek to protect, manage and restore areas of high ecological or cultural values and prevent development that could have an adverse effect on those values.
6. The Panel considers that the potential impacts of the proposed revetment wall have not been fully addressed and remedied. It is therefore considered that the subject site is not suitable for the proposed development and, as a result, the granting of consent is not in the public interest.

APPENDICES

Appendix 1 – Residential Subdivision Plan for 0667/16DA

de Groot and Benson

Appendix 2 – RHDHV Independent Engineering Assessment, 21 September 2016

Royal Haskoning DHV

Appendix 3 – RHDHV Site Visit Memo, 31 October 2016

Royal Haskoning DHV

Appendix 4 – RHDHV Supplementary Independent Engineering Assessment, 30 November 2016

Royal Haskoning DHV

Appendix 5 – Notice of Refusal for CP 16-001

NSW Coastal Panel

Appendix 6 – Request for Further Information for CP 17-005, 13 April 2017

NSW Coastal Panel

Appendix 7 – Response to Request for Further Information, 3 May 2017

Keiley Hunter Town Planning

Appendix 8 – Geomorphic Impact Assessment, 3 May 2017

Martens Consulting Engineers

Appendix 9 – OEH Submission, 7 June 2017

Office of Environment and Heritage

Appendix 10 – CHCC Submission, 14 June 2017

Coffs Harbour City Council

Appendix 11 – Amended Aboriginal Cultural Heritage Assessment, 14 July 2017

Everick Heritage Consultants

Appendix 12 – DPI Fisheries Submission, 4 August 2017

Department of Primary Industries – Fisheries

Appendix 13 – Supplementary SEE for CP 16-001, October 2016

Keiley Hunter Town Planning

Appendix 14 – Statement of Environmental Effects for CP 17-005, March 2017

Keiley Hunter Town Planning

Appendix 15 – OEH letter for CP 16-001, 22 April 2016

Office of Environment and Heritage

Appendix 16 – Revetment Design Report, 30 June 2016

Water Technology

Appendix 17 – Draft Legally Binding Maintenance Agreement

Keiley Hunter Town Planning

Appendix 18 – Flow Velocity Modelling, January 2017

Umwelt (Australia) Pty Limited

Appendix 19 – Addendum to Statutory Ecological Assessment, June 2016

Ecosure

Appendix 20 – Ecosure Letter and Assessments of Significance, 29 September 2016

Ecosure

Appendix 21 – Aboriginal Cultural Heritage Assessment, 16 January 2017

Everick Heritage Consultants

Appendix 22 – Geotechnical Investigation, 2 June 2016

de Groot and Benson

Appendix 23 – Statutory Ecological Assessment, 15 December 2015

NatureCall Environmental

Appendix 24 – Conceptual Vegetation Management Plan, March 2017

Ecosure

Appendix 25 – Everick Heritage Consultants Letter, 21 June 2016

Everick Heritage Consultants

Appendix 26 – Flooding and Stormwater Assessment, January 2017

Umwelt (Australia) Pty Limited