

Development & Environment Committee

Meeting Date: Tuesday, 05 November, 2019

Location: Council Chambers, City Administrative Building, Bridge Road, Nowra

Attachments (Under Separate Cover)

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Post Exhibition Consideration - All additions are shown **highlighted**, deletions are shown **highlighted/strikethrough** and relocated/ consolidated text is shown **highlighted**.

Suggested changes based on Councillor Pakes' proposed amendments - All additions are shown **highlighted**, deletions are shown **highlighted/strikethrough**.

Amendment history

Version Number	Date Adopted by Council	Commencement Date	Amendment Type
1			Draft

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1 Purpose

This purpose of this Chapter is to facilitate quality development that is compatible with the bulk, **scale** and amenity of the existing and likely future residential development of adjoining land.

Note: The controls in this Chapter are supplementary to Shoalhaven Local Environmental Plan (LEP) 2014, Shoalhaven LEP (Jerberra Estate) 2014 and area specific Chapters of this **Development Control Plan**. Shoalhaven LEP 2014, Shoalhaven LEP (Jerberra Estate) 2014 and the area specific Chapters will prevail where there is an inconsistency with a provision in this Chapter.

2 Application

This Chapter applies to land where **dwelling houses** and **rural worker's dwellings** are permissible with development **consent**. This Chapter considers:

- **Dwelling houses**, including additions and alterations.
- **Rural worker's dwellings**, including additions and alterations.
- Relocation of second-hand **dwellings**.
- **Detached habitable rooms**.
- **Secondary dwellings**.
- Ancillary **structures**.
- Non-habitable **structures** on vacant land.

Note: Any proposal for a **rural workers' dwelling** in the RU1 Primary Production zone must demonstrate compliance with Clause 4.2F of **Shoalhaven LEP 2014**.

Clause 4.2D of **Shoalhaven LEP 2014** identifies the circumstances in which **Council** is able to grant **development consent** for the erection of a **dwelling house** on vacant land. Clause 4.2D applies to land in the following zones:

- Zone RU1 Primary Production.
- Zone RU2 Rural Landscape.
- Zone RU4 Primary Production Small Lots.
- Zone R5 Large Lot Residential.
- Zone E2 Environmental Conservation.
- Zone E3 Environmental Management.
- Zone E4 Environmental Living.

A **dwelling house** may not be permitted on all rural or environmental land.

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3 Context

The **development** of land for residential purposes has become complex due to an increasing number of constraints and controls. Over time, minimum lot sizes have often been reduced while **owner** and occupant needs and aspirations have increased. There are also competing demands by the **community** and neighbourhood for a pleasant environment with high levels of privacy and minimal adverse impacts.

This Chapter outlines generic controls to ensure **development** is compatible with the existing and future desired character of the streetscape and surrounding landscape. The impact of a proposal on the amenity of residents and adjoining properties is to be a principal consideration of applicants when preparing a **development** application.

4 Objectives

The **objectives** are to:

- i. Ensure a comprehensive design-oriented approach to housing resulting in high quality urban design, **development** and residential amenity.
- ii. Maintain and enhance the amenity of existing and future residential areas.
- iii. Ensure **development** is compatible with the bulk, **scale** and character of the area, including scenic, landscape, pastoral or environmental qualities.
- iv. Set appropriate environmental criteria for energy efficiency, **solar access**, privacy, noise, vehicular access, parking, landscaping and open space.
- v. Ensure that **development** has due regard and is sympathetic to the physical constraints of the site.
- vi. Allow for efficient use of existing services and facilities, including utility services, transport systems and **community** facilities.
- vii. Promote wider and more affordable housing choice in Shoalhaven.
Implement agreed strategic directions and respond to demographic needs.

5 General Controls

This Section applies to all **development** outlined in **Section 2** of this Chapter.

Note: Refer also to the other land use specific Sections of this Chapter as appropriate to the **development** proposal.

5.1 Building Envelope

The specific **objectives** are to:

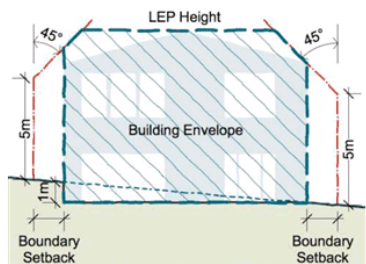
- i. Provide practical **building envelopes** for **development** to ensure that the height and **scale** of new **development** is not excessive, relates well to the local context/

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streetscape and is compatible with the existing or desired future environmental character within the locality.

- ii. Minimise the visual impacts of elements of the **development** that exaggerate the built form and impacts negatively on desired future streetscapes.

Performance Criteria	Acceptable Solutions
P1.1 The bulk and scale of development is compatible with the existing or desired future character of the area and minimises adverse amenity impacts on neighbours, the streetscape and public domain.	A1.1 Buildings are sited within a building envelope determined by the following method: planes are projected at 45 degrees from a height of 5m above ground level (existing) at the front, side and rear boundary as shown in Figure 1 .
P1.2 Development enables view sharing with neighbours and the public domain.	 <p>Figure 1: Building envelope</p> <p>Note: Exemptions to building envelope encroachments include gutter, fascias, downpipes, eaves up to 0.6m, aerials and masonry chimneys.</p> <p>For site slopes greater than 10%, or involving cut, fill or site excavations, the ground level (existing) and proposed building levels must be clearly identified on the plans and verified by a registered surveyor.</p>

5.2 Orientation and Siting

The specific **objectives** are to:

- i. Allow flexibility in the siting of **dwelling**s and other **buildings/structures**.
- ii. Ensure that design and site placement of **dwelling**s and other **buildings/structures** is compatible with and enhances the existing and future streetscape.
- iii. Locate **dwelling**s and other **buildings/structures** to ensure minimal loss of amenity (e.g. privacy, **views**, overshadowing, **solar access** or the like) to adjoining **development**.
- iv. Achieve a site layout that provides a pleasant, attractive, manageable and resource efficient living environment.

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- v. Ensure that **development** reflects the physical constraints prevalent on the site to minimise site disturbance.

Performance Criteria	Acceptable Solutions
<p>P2.1 The site analysis informs the site design and layout.</p> <p>P2.2 The site layout integrates with the surrounding environment through:</p> <ul style="list-style-type: none"> Adequate pedestrian, cycle and vehicle links to street and open space networks. Buildings that face and address streets and the public domain. Buildings, streetscape and landscape design that relates to the site topography and to the surrounding neighbourhood character. <p>P2.3 The site layout enhances personal safety and minimises potential for crime and vandalism.</p>	<p>A2.1 A site analysis plan is submitted with the development application which:</p> <ul style="list-style-type: none"> Meets the requirements of Chapter G1: Site Analysis, Sustainable Design and Building Materials Rural, Coastal and Environmental Areas of this Development Control Plan. Clearly provides the following detail for the site and adjoining/adjacent development: <ul style="list-style-type: none"> Height and use of buildings. Predominant building line of the street. Driveways. Boundary treatments (including retaining walls). Easements. Stormwater management. Trees to be retained, removed and replaced (site only). Landscaped area/s that can support deep soil plantings for mature tree and shrub growth (site only). <p>A2.2 The proposed site layout responds to and implements the findings of the site analysis prepared in accordance with A2.1.</p>
<p>P3 Buildings and structures are sited and designed to utilise construction techniques that:</p> <ul style="list-style-type: none"> Are sympathetic to the natural slope of the land. Minimise excessive disturbance of the site. Do not impact upon adjoining land. 	<p>A3.1 Buildings and structures are designed and sited so that:</p> <ul style="list-style-type: none"> Floor construction methods do not require cut and fill; or Cut and fill is limited to 1m (refer to Figure 2). <p>Note: The development application must take into consideration the visual impact of retaining walls.</p>

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- Minimise the need for structural retaining walls and changes to drainage systems.

Refer also to Chapter G26: Acid Sulfate Soils and Geotechnical (Site Stability) Guidelines of this Development Control Plan.

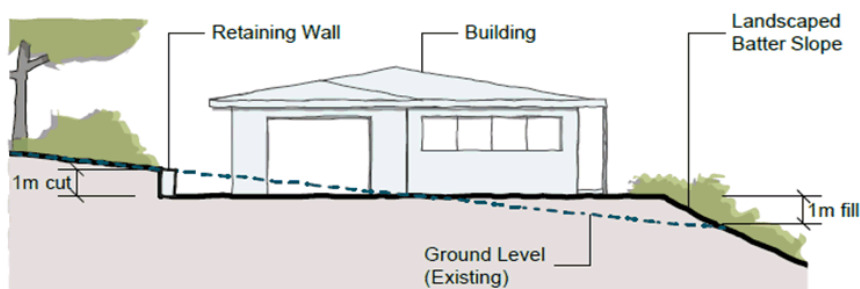


Figure 2: Maximum cut and fill

5.3 Local Character and Context

Note: The quality and character of an existing or new streetscape is important to residents, neighbours and the wider community. The thoughtful integration of a new development into the existing streetscape can improve community acceptance of a development proposal.

The specific objectives are to:

- Ensure that development enhances and makes a positive contribution to the character of existing buildings and streetscapes.
- Ensure that development is sensitive to the landscape, built form and environmental conditions of the locality, particularly where there is a distinctive character, view or heritage significance.
- Minimise adverse impacts on the existing visual amenity and character of residential areas when relocating second-hand dwellings.
- Retain, incorporate and sympathetically treat existing dwellings or buildings that contribute to streetscape character (including items of heritage significance or conservation significance).
- Encourage the sharing of views, while not restricting the reasonable development potential of a site.

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Performance Criteria	Acceptable Solutions
<p>P4 The scale and appearance of new development (including a relocated second-hand dwelling) is compatible with, and sympathetic to existing and future desired:</p> <ul style="list-style-type: none"> • Development in the locality; and • Amenity and character of the locality; <p>particularly where the development site or its surrounds has some heritage significance or distinctive character.</p>	<p>A4.1 The statement of environmental effects must identify:</p> <ul style="list-style-type: none"> • The local character/context of the area and streetscape. • How the proposal is sympathetic and compatible with the existing development, amenity and character of the locality. <p>Note: Where planning controls anticipate a change of character for an area, compatibility with the desired future character of the area should be regarded as more relevant than compatibility with the existing character.</p> <p>A4.2 The building design is sympathetic to the rural, environmental or coastal landscape and the character of the area.</p> <p>A4.3 The development must demonstrate that items of heritage significance or conservation significance are retained and sympathetically treated.</p> <p>Note: If the property is a heritage item, within a heritage conservation area or in the vicinity of a heritage item, the applicant must comply with Clause 5.10 Heritage Conservation of Shoalhaven LEP 2014. Area Specific chapters of this Development Control Plan may also include additional provisions relating to heritage (e.g. Kangaroo Valley, Berry, Milton).</p>
<p>P5 Existing or future views from the private or public domain (including heritage or familiar dominant landmarks that are recognised and valued by the community) are not substantially or unreasonably affected where it is possible to design for the sharing of views.</p>	<p>A5.1 Any reduction in views from existing dwellings or the public domain is not to be severe or devastating based on the following NSW Land & Environment Court Planning Principles:</p> <ul style="list-style-type: none"> • Views - General principles.

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- **Views** - Impact on public domain views.

Note: Where compliance with the objective, **performance criteria** and **acceptable solution** is achieved, the expectation of there being no change to existing **views** is considered unreasonable.

5.4 Building Form, Design and Materials

Note: **Buildings** in rural, environmental and coastal areas must also comply with:

- Chapter G1: Site Analysis, Sustainable Design and Building Materials in Rural, Coastal and Environmental Areas.
- Chapter G6: Coastal Management Areas.

The specific **objectives** are to:

- Ensure the provision of low-maintenance **development** that will retain an attractive appearance.
- Ensure the materials used in construction are sound and suitable for the intended use.
- Ensure that new **development** enhances and makes a positive contribution to the character of existing **buildings** and streetscapes and reinforces the built form and environmental conditions of the locality.
- Ensure that in rural/environmental areas and scenic protection area, **buildings** complement the existing landscape value rather than detracting from it, particularly where visible from public vantage points.

Performance Criteria	Acceptable Solutions
P6.1 The selection of building materials and design complements existing development and is sympathetic to the streetscape and existing landscape.	A6.1 New development , including alterations and additions to existing development , shall complement existing built form and be sympathetic to the streetscape.
P6.2 The building design, detailing, finish, articulation and modulation of building facades provide visual interest that enhances the streetscape and complements good quality surrounding development .	A6.2 Roof design is to be integrated harmoniously with the overall building form through the incorporation of: <ul style="list-style-type: none"> • Complimentary building materials. • Design proportionate to overall building size, scale and form.

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P6.3	Roof treatments are integrated into the building design and make a positive contribution to the streetscape.	<ul style="list-style-type: none"> Balanced composition of solid and void elements. Integration of service elements.
P6.4	Building walls use modulation and articulation and are limited in length to minimise massing and bulk issues as well as impact on neighbours and the public domain/streetscape.	A6.3 Building design shall use detail, modulation and articulation of building elements to articulate facades and to minimise the length of unbroken walls and glazed areas.
P6.5	External metallic wall and roof materials are suitable and minimise reflectivity.	A6.4 In certain rural, environmental, foreshore, restriction as to user or and scenic protection areas, external materials (including windows and other glazing), textures and colours are to blend with the surrounding landscape.
P6.6	Second hand building materials are suitable for the intended use and the appearance is compatible with surrounding development .	<p>Note:</p> <ul style="list-style-type: none"> A restriction as to user (i.e. 88B Instrument) may specify or restrict certain building materials, textures and colours. Council may require the provision of a colour and external material schedule to support a development application. A colour and external material schedule may be included as a condition of consent. White and bright colours are not acceptable in certain rural, environmental, foreshore, restriction as to user or scenic protection areas. Metal roofing, wall cladding and rainwater tanks should be pre coloured at the manufacturing stage.
P6.7	The development incorporates passive environmental design.	
		A6.5 External metallic walls and roof surfaces shall consist of colours and finishes that will minimise the reflectivity of the surface when viewed from the public domain or another dwelling .
		<p>Note: Use of traditional building materials, such as galvanised steel may be permitted in certain circumstances if it is justified in the context of the design of the building and/or it complements the heritage character of the building or area.</p>
		A6.6 Second hand materials shall be sound, appropriate and compatible with surrounding development .

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5.5 Visual and Acoustic Privacy

Note: Visual and acoustic privacy is important for the residents of proposed and existing dwellings. The design of new development must protect the privacy of residents and minimise the impact of existing and future dwellings within proximity of the development.

A privacy screen may be considered exempt development. Refer to Privacy Screen Development Standards in Clause 2.62 of State Environmental Planning Policy (Exempt and Complying Development Codes) 2008.

The specific objectives are to:

- i. Ensure the design of the site and buildings minimises impacts on the amenity of future and adjoining/adjacent living areas and principal private open space in relation to visual privacy, overlooking and noise.
- ii. Reduce the impacts of freestanding privacy screens on surrounding development.
- iii. Ensure the thoughtful location of noise generating plant, equipment and sources.

Performance Criteria	Acceptable Solutions
<p>P7.1 The visual privacy of indoor living areas and private open space is protected.</p> <p>P7.2 Direct overlooking of main internal living areas and private open space of other dwellings and adjoining properties is minimised by building layout, location and design of windows, balconies, screening devices, landscaping or other effective means.</p>	<p>A7.1 Direct views between living area windows of adjacent dwellings shall be screened or obscured where:</p> <ul style="list-style-type: none"> Ground and first floor windows are located within the privacy sensitive zone area, being a 9m radius from any part of the window of the adjacent dwelling (Figure 3). In the case of a dwelling with three or more storeys, windows are within the privacy sensitive zone described by a 12m radius (Figure 3). <p>A7.2 Direct views from living areas of dwellings into the principal area of private open space of adjacent dwellings shall be screened or obscured where located within a privacy sensitive zone within a 12m radius from the living area windows (Figure 4).</p>

Note:

- Direct views may be obscured by fencing, dense landscape screening (effective in 3 years), offsetting or splaying windows, 1.7m sill heights, fixed translucent glazing and/or vertical or horizontal fixed louvres or the like.
- Privacy screens can also provide a screen or visual barrier between a window of a habitable room or an outdoor area and will only be considered when building separation and orientation cannot reduce privacy impacts.

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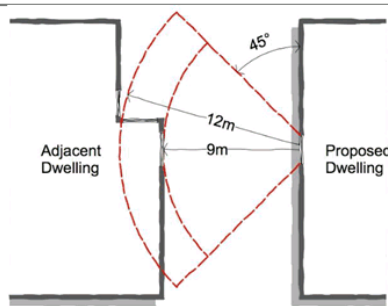


Figure 3: Privacy sensitive zone between living area windows

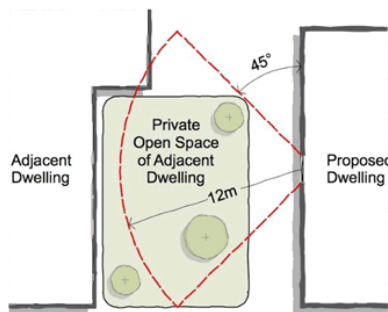


Figure 4: Privacy sensitive zone from living area windows to private open space

P8.1 The number of freestanding privacy screens does not constitute a composite structure that is out of character in the locality or allotment.

P8.2 The location, height, dimensions and materials of freestanding screens and ancillary structures do not cause significant loss of amenity for occupants of surrounding dwellings.

P8.3 The height of the freestanding privacy screen is sufficient for its purpose taking into account site terrain and ground levels and the relative location of a person standing on either side of the screen.

A8.1 Freestanding privacy screens shall meet the following minimum standards:

- A maximum of two (2) freestanding privacy screens are permitted on each lot.
- Any freestanding screen is located behind the primary and secondary building line.
- The screen is freestanding and is not attached to any common boundary fence.
- The maximum height of a freestanding screen is 2.4m above ground level (existing) or the adjacent boundary ground level whichever is the lower.

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	<ul style="list-style-type: none"> The maximum length of a freestanding screen is 6m; except where providing privacy for a swimming pool where maximum length is equal to the adjacent side of the pool plus 2m. Materials on both sides are new, a consistent colour, shape and design to the development and do not produce excessive glare. The privacy screen is structurally stable, constructed with quality workmanship and complies with the Building Code of Australia. The design ensures that solar access to the principal private open space area of adjoining dwellings is not reduced to less than 3 hours of continuous sunlight between 9am and 3pm on 21 June.
<p>P9 Site layout and building design:</p> <ul style="list-style-type: none"> Protects and minimises noise transfer and nuisance. Does not adversely impact the amenity of residents or adjoining properties. 	<p>A9.1 The noise level generated by any equipment must not exceed an LAeq (15min) of 5dB(A) above background noise at the property boundary.</p> <p>A9.2 All noise generating (mechanical) plant and equipment must be:</p> <ul style="list-style-type: none"> Acoustically screened (where appropriate). Sited to minimise noise impacts. Located at least 3m away from bedroom windows. <p>Note: Noise generating equipment includes, but is not limited to, air conditioning units, swimming pool filters, hot water systems, fixed vacuum systems, mechanical gates and garage doors.</p> <p>A9.3 Dwellings adjacent to high levels of external noise shall be designed to minimise the entry of that noise.</p> <p>Note: High levels of external noise may be generated from sources such as classified/main roads, railway line, aircraft noise, industrial landuses.</p>

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5.6 Solar and Daylight Access

Adequate solar and daylight access to living areas, especially to north facing windows and solar collectors, is an important aspect of ecological sustainability. It enables reduced reliance on artificial lighting and heating, reduced energy consumption and provides cost savings. Solar access to living spaces and private open space has also been shown to provide positive benefits to health and psychological wellbeing.

Passive solar design is the use of building design and construction that reduces the need for artificial ventilation, heating and cooling by maximising solar access to retain heat and light in winter and to exclude and dissipate heat in summer. These features can include the use and location of glazing (e.g. windows, sliding doors), insulation, natural ventilation, external shading including vegetation and thermal mass.

A reduction in solar access to north facing windows, solar collectors and the principle open space of an adjoining dwelling may create an adverse impact for residents and should be avoided by careful design. New development should not have an unreasonable impact on the solar access of an adjoining property and must carefully consider any impacts on solar collectors or passive solar design of adjoining properties.

Note: Refer to the [NSW Land and Environment Court – Planning Principle: Sunlight – Access to Sunlight](#).

The specific objectives are to:

- i. Ensure that opportunities for passive solar design for energy efficiency are maximised.
- ii. Minimise overshadowing impacts and reductions in the solar access of adjoining properties.
- iii. Protect and maintain solar access to solar collectors and limit impacts on the solar access of north-facing roof areas on adjoining and neighbouring properties.

Performance Criteria	Acceptable Solutions
<p>P10 Dwellings are sited and designed to:</p> <ul style="list-style-type: none"> • Maximise solar access to living areas and private open space. • Incorporate passive solar design features. • Minimise overshadowing of neighbouring properties. • Minimise impacts on the solar access and energy efficiency of adjoining properties including to private open space and solar collectors. 	<p>A10.1 Passive solar design features shall be incorporated to maximise the efficient use of sunlight, energy, water, ventilation and heating and cooling for thermal comfort.</p> <p>A10.2 Dwellings are sited and designed to maximise solar access by:</p> <ul style="list-style-type: none"> • Locating living areas and private open space on the northern side of the development; and • Locating non-habitable rooms/ areas to the south and west of the development.

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Note: Solar access for new development should consider the potential future development form on adjacent properties which may impact solar access to proposed living areas and solar collectors.

A10.3 The design ensures that each adjoining and adjacent dwelling retains at least 3 hours of direct sunlight between 9am and 3pm on June 21 to:

- 10m² of private open space; and
- 50% of windows and glazed doors of north facing living areas; and
- North facing roofs and existing solar collectors.

Note: Where sunlight to these areas is restricted, the setbacks of the proposal may need to be increased accordingly until the minimum requirement is met.

Solar collectors may require more than 3 hours of continuous direct sunlight for proper functioning. Building design and boundary setbacks should not unreasonably compromise existing performance of solar collectors on adjoining developments. New development may need to be modified to protect solar access to existing solar collectors.

A reliable and accurate shadow diagram may be required for:

- Two storey developments, particularly development of streets running north-south.
- Development on sloping lots with south-east to south-west aspects.
- Development within the minimum setbacks to southern boundaries.

The shadow diagram shall demonstrate compliance with solar access requirements in this Chapter, including the location of adjacent buildings affected by shadow as well as the location of its living areas, private open space areas and any solar collectors.

In determining extent of overshadowing, the impact of fences, roof overhangs and changes in level should be taken into consideration.

The design ensures that solar access is maintained to the solar collectors and north facing roofs of adjoining properties.

DE19.109 - Attachment 2

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A10.4 Proposed tree/vegetation plantings with similar properties to a solid fence must not unreasonably restrict solar access to adjoining properties.

Note: Tree plantings along boundaries should be limited to deciduous species.

5.7 Vehicle and Pedestrian Access

Note: The driveway location, grade and construction on-site and the access to the street carriageway from the property is important in achieving the safe movement of vehicles, pedestrians and bicycle riders in the vicinity.

Refer to Chapter G21: Car Parking and Traffic of this Development Control Plan for additional information.

The specific objectives are to:

- i. Encourage driveway design that minimises visual impact, stormwater runoff and retains established trees and vegetation.
- ii. Encourage an approach to access design that considers the site and its elements holistically (e.g. landscaping).
- iii. Provide adequate and safe vehicular and pedestrian access from the street to the site, development and parking spaces.
- iv. Ensure the safety of pedestrians and bicycle riders in proximity to the driveway area.

Performance Criteria	Acceptable Solutions
P11.1 Access arrangements are suitable for the development.	A11.1 The site is designed to encourage pedestrian access by providing a continuous path of travel from the street to the dwelling.
P11.2 The design of access from the roadway to the lot, the site and driveways, including manoeuvring areas, has regard to the safety of pedestrians, cyclists and vehicles.	A11.2 Driveways must be designed to: <ul style="list-style-type: none"> • Be all-weather. • Minimise the hardstand/paved footprint. • Be setback a minimum of 0.5m from the side and/or rear boundary to accommodate appropriate landscape elements. • Retain adjacent trees, established shrubs and vegetation, wherever possible, by locating the driveway outside the drip line.
P11.3 The access driveway onto and within the lot provides all-weather access for vehicles.	
P11.4 Driveways are designed to: <ul style="list-style-type: none"> • Minimise the volume of stormwater runoff. • Increase the area available for landscaping. • Retain established trees and vegetation. 	

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<ul style="list-style-type: none"> Accommodate public services and infrastructure. 	<ul style="list-style-type: none"> Accommodate all public services and infrastructure (e.g. street gully pits).
<p>P11.5 The visual dominance of driveways is minimised by:</p> <ul style="list-style-type: none"> The selection of paving materials e.g. decorative paving and brick banding. Breaking up the appearance of driveways with landscaping and screen planting. 	<ul style="list-style-type: none"> A grade no greater than 1:4, with transitions in accordance with the relevant Australian Standard. Maximise the availability of on-street parking. Achieve minimum sight lines for pedestrian safety in accordance with AS2890.1 (Figure 3.3).
<p>P11.6 The crossover is suitable for the development.</p>	<p>Note: A long section of the driveway (including the secondary frontage on corner blocks) must be provided prior to the issue of the construction certificate.</p>
	<p>A11.3 The total maximum vehicle crossover width for the site is 6m.</p> <p>Note: All works in the road reserve require approval by Council (section 138 of the Roads Act 1993).</p> <p>Vehicular access (driveway and associated footpath crossing) must be designed in accordance with the relevant Australian Standards.</p>

5.8 Trees and Vegetation

Good design ensures that natural features, including mature shade trees and vegetation, are incorporated into the development where possible to:

- Enhance the amenity of the streetscape.
- Improve microclimates.
- Reduce the heat island effect, particularly in urban areas.

Whilst a landscape plan is generally not required for a low density residential development, it is important that the design takes into consideration trees and landscaping elements.

The specific objectives are to:

- Retain, protect and incorporate as many mature shade trees as possible within and adjacent to the development.
- Improve the amenity and energy efficiency of new development and reduce the heat island effect by retaining (or replanting) mature shade trees.
- Encourage the planting of replacement semi-mature trees.
- Incorporate landscaped areas that are sufficient for the retention and planting of mature trees.

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- v. To ensure appropriate landscaping in bushfire prone areas to reduce the likelihood of building loss during a bushfire event.

Note: Refer to Chapter G4: Tree and Vegetation Management of this [Development Control Plan](#) for information on [tree](#) removal and required approvals.

In bushfire prone areas, careful plant selection is required to meet bushfire requirements for [asset protection zones](#). A landscape plan will be required for assessment against Planning for Bushfire Protection.

Performance Criteria	Acceptable Solutions
<p>P12.1 Existing mature/canopy trees, vegetation and shrubs are retained wherever practicable, through appropriate siting of development including driveways.</p> <p>Note: Conditions may be applied to ensure retention of mature shade trees or for planting of replacement trees.</p> <p>P12.2 The development is designed to:</p> <ul style="list-style-type: none"> • Preserve established tree and vegetation corridors and networks. • Provide a sufficient landscaped area for the retention, planting and replacement of semi-mature shade trees. 	<p>A12.1 Wherever practicable, existing mature shade/large canopy trees, vegetation and shrubs shall be retained in the vicinity of side, rear and front setbacks (including on adjoining land).</p> <p>A12.2 The development shall provide appropriate setbacks to existing mature shade/large canopy trees.</p> <p>A12.3 For each mature shade tree proposed to be removed, a replacement semi-mature tree planting of at least a 75L pot size shall be incorporated into the landscaping of the development.</p>

5.9 Servicing

The specific objective is to:

- i. Ensure residential areas are provided with essential services in a timely, cost effective and efficient manner.

Performance Criteria	Acceptable Solutions
<p>P13.1 Development is adequately and safely serviced.</p> <p>P13.2 The design and provision of public utilities, including sewerage, water, electricity, street lighting, telecommunication/ internet and gas services conform to the cost-effective</p>	<p>A13.1 Services and utilities including electricity, gas, water, sewer, roads and drainage must be available for the initial development and ongoing development needs.</p>

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	performance measures of the relevant servicing authority.	A13.2 Where connection to the services outlined in A13.1 is not available, the development application must provide alternatives to Council's satisfaction.
P13.3	Compatible public utility services are co-ordinated in common trenching in order to minimise construction costs for underground services.	Note: Refer to Chapter G8: Onsite Sewage Management of this Development Control Plan for further details on the management of sewerage in areas without reticulated services.
P13.4	Water supply for domestic and firefighting purposes is appropriate for the location and development type.	

5.10 Water Management and Conservation

Note: Refer to Chapter G2: Sustainable Stormwater Management and Erosion/Sediment Control of this **Development Control Plan** for further information on stormwater management, and erosion and sediment control.

The specific **objectives** are to:

- Ensure the protection of public health, surrounding land and the natural environment including soils, groundwater and surface waters.
- Encourage harvesting of rainwater and the incorporation of pervious areas.
- Protect the integrity of services, utilities, pipelines and associated infrastructure located within an easement.

Performance Criteria	Acceptable Solutions
<p>P14 Stormwater is appropriately accommodated in the design including:</p> <ul style="list-style-type: none"> Stormwater from roofed areas is collected, stored and/ or conveyed to appropriate discharge points or disposal areas. Paved areas associated with buildings and driveways are graded and drained to minimise the discharge of surface water onto adjoining land. Permeable areas are utilised to reduce stormwater runoff. Stormwater is allowed to permeate into the ground to facilitate healthy levels of ground waters. 	<p>A14.1 Roof water is to be collected by gutter and downpipe systems, or other equivalent means, and conveyed to an approved discharge point in accordance with the requirements of Part 3.1.3 of the Building Code of Australia to an approved discharge point. This could be:</p> <ol style="list-style-type: none"> A gutter or table drain in a road reserve, or A stormwater easement or easement to drain water, or A disposal/absorption trench, where (a) and (b) above are not available, and soil conditions are suitable, or A water tank / on-site detention system with an overflow connected

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to a disposal method in (a), (b) or (c) above.

Note: Harvesting roof water for toilet, laundry and garden use is encouraged. BASIX and/or plumbing requirements may apply.

A14.2 Surface water from paved areas in urban areas, including driveways, is to be directed to an approved discharge point (see A14.1) that minimises impact on adjoining land.

Note: The method selected for the discharge point in A14.1 and A14.2 above will be assessed against the suitability and hydraulic capability including pipe size and/or soil type. Pervious paving should be considered for infrequently trafficked areas.

A14.3 Where the area of buildings, pavement and other impervious areas exceeds 65% of the site area, the proposal is to include details of the methods to be used to harvest rainwater and minimise increased runoff to surrounding land and public stormwater infrastructure. The details are to include assessment of pre-development and post development stormwater flows.

Note: The calculation of the 65% area may include reasonable assumption of future paved areas such as driveways not shown on plans at development application stage.

5.11 Waste Management – Demolition and Construction

Note: Refer to Chapter G7: Waste Minimisation and Management Controls of this Development Control Plan for information on management of demolition and construction waste.

The specific objective is to:

- i. Minimise the impact of the demolition and construction of buildings on residents, adjoining land, pedestrians and the environment.

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Performance Criteria	Acceptable Solutions
P15 Buildings are demolished or constructed in a manner that minimise the impact upon residents, adjoining land, pedestrians and the environment, especially when they contain or may contain asbestos.	<p>A15.1 A Waste Management Plan is required to be submitted with the development application.</p> <p>A15.2 Demolition shall comply with the requirements of:</p> <ul style="list-style-type: none"> • The relevant Australian Standards relating to demolition. • Council's Asbestos Policy.

6 Dwelling Houses, Rural Worker's Dwellings and Associated Development

This Section applies to [dwelling houses](#) and [rural worker's dwellings](#), including:

- Additions and alterations.
- Relocation of second-hand [dwellings](#).
- [Detached habitable rooms](#).

The Section must be considered in addition to **Section 5** of this Chapter.

6.1 Principal Controls

6.1.1 Density

Note:

- Where an area is mapped on the [floor space ratio](#) map in Shoalhaven LEP 2014, the Shoalhaven LEP 2014 floor space ratio provisions for these sites prevail.
- For guidance when calculating floor space ratio (including exclusions), refer to:
 - **Figure 5.**
 - [Gross floor area](#) definition.
 - Clause 4.5 of Shoalhaven LEP 2014 and Shoalhaven LEP (Jerberra Estate) 2014.
- A maximum of 50m² of proposed garage floor area may be excluded from the [gross floor area](#) calculation where the garages are located within the [dwelling](#).

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- Where the **dwelling** contains a floor below natural ground level and the floor level of the floor above is less than 1.2m above ground level, only 20% of the **basement** habitable floor area will be counted in determining the floor space ratio.
- When calculating the **site area**, the area of any access handle or right of way is to be excluded.

The specific objective is to:

- Ensure that the bulk and **scale** of new **development** is compatible with the existing streetscape amenity and the existing or desired future character of the area.

Performance Criteria	Acceptable Solutions
<p>P16 The bulk and scale of new development, particularly on the perimeter of the development site, or where that locality or development site has heritage significance and/or distinctive character, is:</p> <ul style="list-style-type: none"> • Compatible, consistent and sympathetic to the bulk and scale of existing development in the locality. • Sympathetic with the streetscape and complements the existing and desired future character of the area. 	<p>A16.1 The maximum floor space ratio for the site is 0.5:1, where the site is located in the following zones:</p> <ul style="list-style-type: none"> • R1 General Residential. • R2 Low Density Residential. • R5 Large Lot Residential, where the site area is less than 2000m². • RU5 Village. • SP3 Tourist.

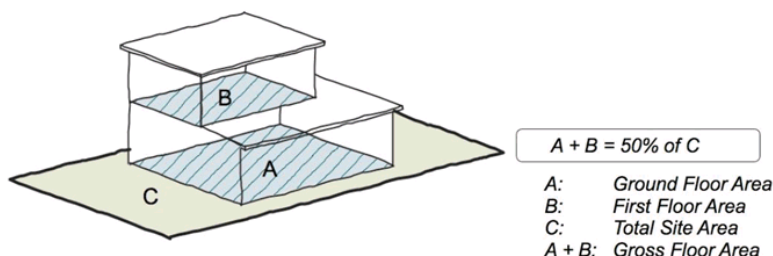


Figure 5: How to calculate floor space ratio (example FSR of 0.5:1)

6.1.2 Height and Setbacks

The specific **objectives** are to:

- Minimise the visual impacts of elements of the **development** that exaggerate the built form and impacts negatively on desired future streetscapes.

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- ii. Encourage design that creates desirable living conditions and ensures that the amenity of surrounding properties is properly considered and not adversely impacted.
- iii. Allow adequate separation between buildings to promote natural light, solar access, ventilation, landscaping and privacy.
- iv. Retain the amenity of the public domain.

Performance Criteria	Acceptable Solutions
<p>P17.1 The height of development:</p> <ul style="list-style-type: none"> Relates to the land form, with minimal cut and fill. Is compatible with the existing or desired future character of the area. Minimises adverse amenity impacts associated with overlooking and overshadowing of adjoining properties. <p>P17.2 In rural zones, environmental and coastal locations, the height and bulk of dwellings is compatible with the rural, environmental or coastal context in which they are located.</p>	<p>A17.1 Building heights must comply with Clause 4.3 of Shoalhaven LEP 2014 or Shoalhaven LEP (Jerberra Estate) 2014.</p> <p>A17.2 Any two-storey dwelling component is to be located to minimise the shading of adjacent private open space.</p> <p>A17.3 The difference in building height between existing buildings and new development is compatible when viewed from the public domain.</p>
<p>P18.1 The front setback is generally consistent with adjoining development and does not undermine the integrity of the prevailing building lines.</p> <p>P18.2 The location and siting of the building complements the existing setbacks in proximity to the site, foreshore (if applicable) and the streetscape.</p> <p>P18.3 The proposed development is setback and of a scale that is relative to the street reserve width, in such a way to ensure pedestrians do not feel buildings are overbearing.</p> <p>P18.4 Setbacks avoid loss of view, undue overshadowing and provide/maintain privacy (visual and acoustic), traffic safety and maintain adequate daylight and sunlight access.</p> <p>P18.5 Adequate levels of light and ventilation to adjoining buildings, landscaping, services and infrastructure are protected.</p>	<p>Note:</p> <p>1. The acceptable solutions for setbacks may need to be increased, reduced or modified depending upon factors such as:</p> <ul style="list-style-type: none"> Slope of the land. Requirements for asset protection zones. Foreshore setbacks. The requirement for effluent disposal areas to be contained wholly within the lot boundaries on unsewered residential lots. Location of existing buildings. The shape of the lot. Desire to create streetscape and visual interest.

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P18.6 The proposal maintains adequate provision for on-site car parking.

2. Down pipes, fascias, flues, pipes, domestic fuel tanks, cooling or heating appliances or other services, screens or sunblinds, light fittings, electricity or gas meters may encroach into the side or rear setback.

3. Additional building line and setback controls are included in the following Chapters of this Development Control Plan:

- Chapter G6: Coastal Management Areas.
- Chapter V2: Building Lines.
- Chapter V3: Miscellaneous Site Specific Issues.
- Other area specific chapters.

A18.1 Setbacks shall comply with the provisions in **Table 1**, where the site is located in the following zones:

- RU1 Primary Production.
- RU2 Rural Landscape.
- RU4 Primary Production Small Lots.
- E2 Environmental Conservation.
- E3 Environmental Management.
- E4 Environmental Living.
- R2 Low Density Residential, where the site area is equal to or greater than 2000m².
- R5 Large Lot Residential.

A18.2 Setbacks shall comply with the provisions in **Table 2**, where the site is located in the following zones:

- R1 General Residential.
- R2 Low Density Residential, where the site area is less than 2000m².
- RU5 Village.
- SP3 Tourist.

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A18.3 Despite A18.1 and A18.2, where the predominant setback of the same street is greater than the setback contained in Table 1 or Table 2 (as applicable), the required setback must be compatible with the existing setbacks on the same street in the general vicinity of the subject land (see Figure 6).

Note: If there is no obvious predominant building line, the setback must comply with Table 1 or Table 2 (as applicable).

Table 1: Setbacks in the RU1, RU2, RU4, E2, E3, E4, R2 (≥ 2000m²) and R5 zones

	Front Setback <i>Primary road frontage</i>	Front Setback <i>Secondary road frontage</i>	Side Setback	Rear setback
For lots up to 4,000m ²	12.5m	50% of the front setback	5m	7.5m
For lots between 4,000m ² and 10,000m ²	20m		7.5m	
For lots greater than 10,000m ² (1ha)	30m		10m	


Legend

- A: Minimum front setback in this Development Control Plan (e.g. 6m).
- B: Predominant front setback of the street (e.g. 7.5m).
- C: Proposed dwelling to align with predominant setback at B.

Figure 6: How to determine the prominent setback in a street

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Table 2: Setbacks in the R1, R2 (< 2000m²), RU5 and SP3 zones

Front Setback <i>Primary road frontage</i>	Parallel Road Frontage	Side Setback <i>No road frontage and to public reserve</i>	Side Setback <i>Secondary road frontage</i>	Rear setback	Rear/side setback to foreshore reserve
<p>Lots under 600m²:</p> <ul style="list-style-type: none"> • 5m to dwellings. • 4m to verandahs, patios and awnings. <p>Lots 600m² - 900m²:</p> <ul style="list-style-type: none"> • 6m to dwellings. • 5m to verandahs, patios and awnings. <p>Lots over 900m²:</p> <ul style="list-style-type: none"> • 7.5m to dwellings. • 6.5m to verandahs, patios and awnings. <p>Note: Reduced setbacks may be considered where the prevailing street character permits and the future desired character of the area is not prejudiced.</p>	3m	<p>900mm to dwellings and detached non-habitable outbuildings.</p> <p>450mm from eaves/ gutters.</p> <p>Where parking spaces are proposed at the rear of a dwelling, one 2.4m side setback is required for vehicular access.</p>	<p>Lots under 600m²: 3m</p> <p>Lots 600m² and over: 3.5m</p>	3m (average).	7.5m.

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Category of subject land	Front Setback <i>Primary road frontage</i>	Parallel Road Frontage	Front Setback <i>No road frontage</i>	Side Setback <i>Secondary road frontage</i>	Side Setback <i>No road frontage and to public reserve</i>	Rear setback <i>Including to public reserve</i>	Rear/side setback to foreshore reserve
Infill development	6m for lot depth of less than 30.5m 7.5m for lot depth of 30.5m or more	3m	N/A	3.5m	900mm to dwellings and detached non-habitable outbuildings. 450mm from eaves/ gutters.	4m to dwellings. 900mm to detached non-habitable outbuildings.	7.5m to dwellings and detached outbuildings.
New subdivisions approved on or after 18 February 2002 - Lots up to 600m ² . Lots in groups or clusters in subdivisions approved prior to 18 February 2002 - Lots up to 600m ² .	5.0m to dwellings 4.5m to open structures			3m	Where parking spaces are proposed at the rear of a dwelling, one		
New subdivisions approved on or after 18 February 2002 - Lots over 600m ² . Lots in groups or clusters in subdivisions approved prior to 18 February 2002 - Lots over 600m ² and less than 650m ² .	6.0m to dwellings 5.0m to open structures			3.5m	2.4m side setback is required for vehicular access.		
Battle-axe lots	N/A	N/A	3m	N/A	3m		
Note: 1. Lots are classified in this table based on the nature of the surrounding area. Infill lots are lots in an area that has been established for many years. If a dwelling is proposed on a newly subdivided lot in an infill area, then the lot would be classified as infill. The new subdivision categories are for lots that are created as part of large scale subdivisions that create new residential areas. 2. Open structures include the posts of awnings and carports, the furthest most point of cantilevered balconies and the like. 3. Setbacks to dwellings includes attached verandahs, patios, attached outbuildings/garages and the like. 4. Detached non-habitable outbuildings include swimming pools.							

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6.2 Amenity

6.2.1 Landscaping

The specific objectives are to:

- Ensure that landscaping maximises amenity for residents, neighbouring dwellings and the public domain.
- Ensure the provision of adequate and appropriate landscaping that is sympathetic to the local character.
- To ensure appropriate landscaping in bushfire prone areas to reduce the likelihood of building loss during a bushfire event.

Performance Criteria	Acceptable Solutions														
<p>P19.1 Sufficiently dimensioned landscaping provides amenity to residents, effective screening, and enables tree and large shrub planting.</p> <p>P19.2 A suitably sized deep soil planting area encourages:</p> <ul style="list-style-type: none"> Mature tree and shrub growth. Opportunity for surface water to infiltrate naturally to groundwater. <p>P19.3 Unpaved or unsealed areas are maximised and are designed to facilitate on-site infiltration of stormwater run-off subject to soil/drainage conditions.</p> <p>P19.4 The visual impact of ancillary landscaping or retaining structures is considered.</p>	<p>A19.1 A minimum landscaped area is provided that complies with the provisions in Table 3.</p> <p>Note: The landscaped area excludes any encroachments (i.e. any part of a building or structure), hardstand areas and any areas used for storage, clothes drying, and water tanks.</p> <p>Table 3: Minimum landscaped area</p> <table> <tr> <th>Lot Area</th><th>Minimum Landscaped Area (of lot area)</th></tr> <tr> <td>200m²–300m²</td><td>10%</td></tr> <tr> <td>>300m²–450m²</td><td>15%</td></tr> <tr> <td>>450m²–600m²</td><td>20%</td></tr> <tr> <td>>600m²–900m²</td><td>30%</td></tr> <tr> <td>>900m²–1,500m²</td><td>40%</td></tr> <tr> <td>>1,500m²</td><td>45%</td></tr> </table> <p>A19.2 Each landscaped area shall have a minimum dimension of 1.5m in any direction.</p> <p>A19.3 At least 35% of the front setback is to be landscaped.</p>	Lot Area	Minimum Landscaped Area (of lot area)	200m ² –300m ²	10%	>300m ² –450m ²	15%	>450m ² –600m ²	20%	>600m ² –900m ²	30%	>900m ² –1,500m ²	40%	>1,500m ²	45%
Lot Area	Minimum Landscaped Area (of lot area)														
200m ² –300m ²	10%														
>300m ² –450m ²	15%														
>450m ² –600m ²	20%														
>600m ² –900m ²	30%														
>900m ² –1,500m ²	40%														
>1,500m ²	45%														

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A19.4 Retaining walls greater than 0.6m within the front setback are to be softened by planting for a minimum depth of 600mm on the low side of the retaining wall, for the entire length of the retaining wall.

A19.5 In designated bushfire prone areas, non-combustible retaining walls and landscaping shall not abut the dwelling.

6.2.2 Private Open Space

The specific objectives are to:

- i. Ensure that the private open space provided for a dwelling is useable and meets user requirements for privacy, safety, access, active and passive outdoor recreational activities and landscaping.
- ii. Locate private open space to take account of outlook, natural features of the site, solar access and neighbouring buildings or the public domain without compromising the amenity or privacy of adjoining dwellings.

Performance Criteria	Acceptable Solutions
<p>P20 Private open space is:</p> <ul style="list-style-type: none"> Functional and useable for residents all year round. Dimensioned to suit the projected requirements of the residents, and to accommodate outdoor recreational needs and service functions. Capable of serving as an extension of the function of the dwelling for relaxation, dining, entertainment, active recreation and children's play. Located to take advantage of outlook and natural features of the site. Located to mitigate against external noise. Designed to limit the negative impact of overshadowing and consider privacy impacts on adjoining dwellings. 	<p>A20.1 A private open space area of at least 50m² must be provided that:</p> <ul style="list-style-type: none"> Is located behind the front building line and not within the front setback. Has a gradient no steeper than 1:20. Has a minimum dimension of 2m in any direction. Is adjacent to the dwelling with direct access from a living area. <p>Note: The private open space area may be included in the landscaped area at A19.1, except for any hardstand components.</p> <p>The private open space area excludes obstructions such as stairs, storage areas, clothes drying facilities, bin storage areas, hot water systems, effluent disposal, above ground rainwater tanks and the like.</p>

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6.2.3 Storage and Laundry Facilities

The specific **objectives** are to:

- Improve the functionality of **dwelling**s by ensuring adequate storage areas are provided of an appropriate size.
- Ensure that the location of storage areas do not impact on amenity, accessibility or the functionality of other spaces associated with the **dwelling**.
- Ensure laundry and clothes drying facilities are integrated into the **development**, can be conveniently reached, require minimal maintenance and do not detrimentally impact the streetscape.

Performance Criteria	Acceptable Solutions
<p>P21 External clothes drying facilities are provided that are separate to the laundry and are:</p> <ul style="list-style-type: none"> Adequate and easily accessible. Well located. Visually screened from the street. 	<p>A21.1 Separate laundry and external clothes drying facilities shall be provided.</p> <p>A21.2 External clothes drying facilities are to be:</p> <ul style="list-style-type: none"> Provided at a rate of 16m of line per dwelling. Located behind the front building line. Screened from view from the public domain.
<p>P22 Adequate space is provided to accommodate the laundry facilities, vehicle/s and associated circulation space in a garage.</p>	<p>A22.1 Where laundry facilities are provided in a garage, a clear space of at least 1.2m must be provided between any fixed laundry benches/appliances and the car space (minimum of 5.5m long) as shown in Figure 7.</p>

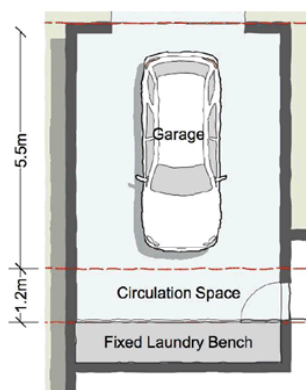


Figure 7: Circulation space required for laundry facilities in garages

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P23.1 Adequate, well-designed storage areas are provided.	A23.1 In addition to storage in kitchens, bathrooms and bedrooms, the following storage is encouraged to be provided :
P23.2 Storage areas are sympathetically integrated into the building design.	<ul style="list-style-type: none"> • 1 bed: 6m³. • 2 bed: 8m³. • 3+ bed: 10m³.
	A23.2 At least 50% of the required storage in A23.1 is to be located within the dwelling (excluding the garage and attic space).
	A23.2 Where located in a garage, storage areas must not encroach upon allocated car parking spaces .

6.2.4 Car Parking

Note: Refer to Chapter G21: Car Parking and Traffic of this **Development Control Plan** for additional information.

Additional vehicle types such as boat trailers, caravans and large recreational vehicles may also be parked or garaged on-site.

The specific objective is to:

- Provide convenient, accessible and safe parking to meet the needs of residents and visitors.

Performance Criteria	Acceptable Solutions
P24 Car parking arrangements are suitable for the development (residents and visitors), amenity of surrounding development and the surrounding road network.	<p>A24.1 Car parking shall be provided in accordance with Chapter G21: Car Parking and Traffic of this Development Control Plan.</p> <p>24.2 Car parking shall be wholly accommodated behind the building line.</p> <p>A24.2 For open car spaces, the maximum allowable grades are:</p> <ul style="list-style-type: none"> • Longitudinal - 5%. • Cross fall - 6.25%.

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6.3 Configuration and Design

6.3.1 Building Form, Design and Materials

The specific objectives are to:

- i. Ensure that new development enhances and makes a positive contribution to the character of existing buildings and streetscapes and reinforces the built form and environmental conditions of the locality.
- ii. Ensure opportunities for passive surveillance of the public domain and entrance to the development.

Performance Criteria	Acceptable Solutions
P25.1 The frontage, entries and habitable room windows of dwellings address the street.	A25.1 The dwelling shall: <ul style="list-style-type: none"> Address the street by having a front door facing the street at the ground level.
P25.2 The design and orientation of the dwelling: <ul style="list-style-type: none"> Enhances the streetscape. Complements existing development in the vicinity. Provides visual interest. Allow casual surveillance of public or communal streets or public domain. 	<ul style="list-style-type: none"> Ensure that any walls facing a street frontage (including secondary frontages) include a window to a habitable room on each level. Ensure upper level windows, balconies or terraces overlook the public domain. Provide surveillance of the street and entrance to the development.
P26 Attached garages and parking structures are sited and designed to: <ul style="list-style-type: none"> Add visual interest. Provide opportunity for passive surveillance. Not dominate the street frontage. 	A26.1 Attached garages and parking structures shall be compatible with the design of the building. A26.2 The width of garage facades addressing the street shall not exceed 9m or 50% of the length of the frontage, whichever is the lesser.

6.3.2 Detached Habitable Rooms and Studios

Note: Detached studios may be considered as complying development under State Environmental Planning Policy (Exempt and Complying Development Codes) 2008.

A detached habitable room should not be used as a private rental or be used as a bed and breakfast. Conditions may be applied in this regard.

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The specific objectives are to:

- i. Ensure detached habitable rooms/studios provide an option for a dwelling to have detached living spaces/bedrooms without being fully self-contained.
- ii. Ensure detached habitable rooms/studios function/operate as part of the principal dwelling and are linked by a continuously roofed or all-weather hard-stand connection.
- iii. Ensure detached habitable rooms/studios fit with the appearance of the principal dwelling.
- iv. Ensure there are no adverse impacts on the amenity, privacy or solar access of adjoining/neighbouring properties.

Performance Criteria	Acceptable Solutions
<p>P27 Detached habitable rooms/studios:</p> <ul style="list-style-type: none"> Are used for residential purposes only. Function as a part of the principal dwelling, and not as a separate dwelling. Are not self-contained. Rely on the principal dwelling for laundry and bathroom kitchen facilities. 	<p>A27.1 The principal dwelling and the detached habitable rooms/studios shall operate as a single dwelling house.</p> <p>A27.2 Detached habitable rooms/studios associated with the principal dwelling shall be located a maximum distance of 10m from the principal dwelling.</p> <p>A27.3 An all-weather connection shall be provided between the detached habitable room/studio and the principal dwelling so they are physically connected.</p> <p>Note: An all-weather connection must include a continuously roofed/covered deck or hard-stand pathway between the principal dwelling and the detached habitable room/studio.</p>

6.3.3 Relocation of Second-Hand Dwellings

Note: A dwelling must be suitable for relocation and restoration in accordance with Building Code of Australia requirements and good building practices. Council will require an inspection of the dwelling prior to relocation. Refer to Council's current Fees and Charges.

Buildings that contain bonded and friable asbestos materials may be more difficult or inappropriate to relocate. All asbestos must be removed prior to relocation.

Prior to the building approval being released, the applicant shall enter into an irrevocable bank

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guarantee in the amount detailed in [Council's current Fees and Charges](#). The guarantee shall include a condition which acknowledges that:

- [Council](#) can enter upon the land and carry out the works at its discretion to the value of the bank guarantee; and
- The bank guarantee can be only released upon compliance with all relevant conditions.

The specific [objectives](#) are to:

- Minimise adverse visual amenity and character impacts when relocating second-hand [dwellings](#).
- Ensure construction materials are sound and suitable for the intended use.
- Ensure that renovations are completed in a reasonable time frame.

Performance Criteria	Acceptable Solutions
<p>P28 The dwelling being relocated is:</p> <ul style="list-style-type: none"> • Compatible with the existing or desired future character of the area. • In good repair. • Structurally sound in its previous permanent location. • Suitable in terms of any second-hand material. 	<p>A28.1 The dwelling proposed to be relocated shall be capable of being restored and damaged materials replaced before occupation of the dwelling.</p> <p>A28.2 An asbestos clearance certificate must be provided with the development application demonstrating that all asbestos has been removed from the dwelling.</p> <p>A28.3 The materials and external finish shall be sound and compatible with the surrounding development.</p> <p>A28.4 The dwelling shall be suitably refurbished to the satisfaction of Council.</p> <p>A28.5 When required, recladding shall be completed using materials to the satisfaction of Council.</p> <p>Note: Council will strictly enforce conditions of approval, particularly that:</p> <ul style="list-style-type: none"> • No dwelling will be occupied until such time as all conditions have been complied with. • Where a building or structure being relocated has asbestos wall and/or roof sheeting, these materials are to be removed by a Workcover licensed contractor before relocating to the proposed site.

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- All renovations are to be completed within six months of relocating the dwelling to the proposed site.

6.3.4 Fences and Walls

Note: Certain fencing is considered exempt development under State Environmental Planning Policy (Exempt and Complying Development Codes) 2008. If the proposal does not meet the exempt criteria, consent is required from Council and the proposal is to comply with the standards below.

Figure 8 illustrates examples of good fence design.

The specific objectives is to:

- Ensure boundary fencing is of a high quality, promotes safety and surveillance and does not detract from the streetscape or public domain.

Performance Criteria	Acceptable Solutions
<p>P29.1 Front fences and walls:</p> <ul style="list-style-type: none"> • Enable some outlook from buildings to the street for safety and surveillance. • Do not impede the safety of pedestrians and cyclists with the movement of vehicles between the property and the roadway. • Avoid negatively impacting on the aesthetic and spatial quality of the street. • Assist in highlighting entrances and in creating a sense of communal identity within the streetscape. • Are designed and detailed to provide visual interest to the streetscape. • Are constructed of materials compatible with the proposed development and with attractive visible examples of fences and walls in the streetscape to offer a sense of continuity. • Are compatible with facilities in the street frontage area, such as mailboxes. 	<p>A29.1 Front fences and walls along the primary frontage (see Figure 9), shall be no higher than 1.2m (averaged for sloping sites).</p> <p>A29.2 On a corner lot, the fence or wall along the secondary frontage, behind the front building line (see Figure 9), shall be no higher than 1.8m.</p> <p>A29.3 A fence or wall along a primary or secondary frontage must contain:</p> <ul style="list-style-type: none"> • Open elements that make it at least 50% transparent; or • Where there are solid panels, articulated elements such as landscape screening, setbacks and varied materials. <p>A29.4 Despite A29.1, front fences and walls higher than 1.2m will only be supported where all the following is satisfied:</p> <ul style="list-style-type: none"> • The site is located on a classified road with high traffic volumes. • The site is not located in an area with an established heritage character.

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- Do not impede safe sight distances for road users and pedestrians along the adjoining roadway.
- P29.2 The use and/or design of fences and walls in streetscapes of significance are appropriate to the heritage or environmental context.
- The fence and/or wall does not exceed 10m in length without some articulation or detailing to provide visual interest.
 - Landscape planting is included within a 1.5m setback between the fence/wall and the boundary to achieve mature heights of at least 1.5m.
- A29.5 Fences and walls along a primary or secondary frontage shall maintain appropriate sight distances for road users and pedestrians in accordance with the relevant Australian Standards.
- A29.6 The design and materials of front fences or walls is to be compatible with the surrounding streetscape.
- A29.7 Solid metal fencing shall not be erected along a primary or secondary frontage.



Figure 8: Examples of good fence design

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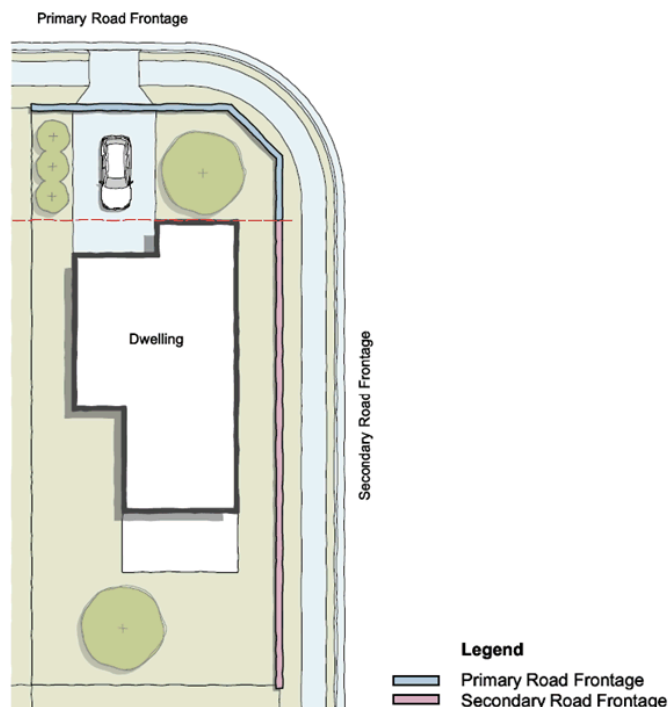


Figure 9: Primary and secondary frontages for fencing

6.3.5 Universal Design

This sub-section does not require a dwelling to include universal design features. It only applies when an applicant designs a dwelling to be accessible or adaptable. Designing a dwelling to be accessible or adaptable is encouraged as it supports changing needs of occupants over the life-time of the dwelling.

The specific objectives are to:

- Ensure that where an accessible or adaptable dwelling is proposed, the layout and design features accommodate the changing access and mobility requirements of residents and visitors.
- Promote ageing in place by extending the usability of dwellings to meet 'whole of life' needs of the community.

Performance Criteria	Acceptable Solutions
P30.1 The dwelling achieves appropriate levels of accessibility or is designed to be 'easily and affordably adaptable'.	A30.1 The dwelling shall be designed: <ul style="list-style-type: none"> To meet a silver standard for accessibility as outlined in the 'Livable Housing Design Guidelines'.

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Note: 'Easily and affordably adaptable' includes the future installation or alterations of inclusions to comply with the requirements of a silver standard as outlined in the 'Livable Housing Design Guidelines'. It does not include alterations and additions resulting in a change to the configuration of a room but may include, for example, the installation of a future domestic elevator or lift meeting compliance with a silver standard as outlined in the 'Livable Housing Design Guidelines'.

OR

- In accordance with an alternative solution report prepared by an accredited access consultant or an A1 accredited Building Surveyor that specifies how the proposal can be 'easily and affordably adaptable' at a silver standard as outlined in the 'Livable Housing Design Guidelines'.

Note: The alternative solution report is to be submitted with the development application.

P30.2 Access is provided from the car parking space located on the premises to the principal entrance of the dwelling and access to and within the following areas:

- A bedroom.
- Laundry.
- A bathroom that includes a shower, WC and vanity.
- Kitchen.
- A living area.
- An external private open space.

6.3.6 Waste Management – Bin Storage, Presentation and Collection

The specific objectives are to:

- Ensure waste storage and recycling areas are designed to be conveniently reached and require minimal maintenance.
- Ensure waste storage and recycling areas are attractive and compliment the streetscape.
- Ensure appropriate kerbside frontage is provided for bin presentation and collection.

Performance Criteria	Acceptable Solutions
P31.1 Bin storage, presentation and collection arrangements: <ul style="list-style-type: none"> • Are appropriate for the nature of the development. • Consider site configuration and adequate street frontage, especially lots at the head of cul-de-sacs and battle-axe lots. 	A31.1 The kerbside frontage required for waste collection is at least 1m per bin, 0.5m separation between bins and 1m behind each bin.

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|---|--|
| <p>P31.2 Bin storage is sited and designed for attractive visual appearance and for efficient and convenient use.</p> | <p>A31.2 Bin storage areas must be identified on the site plan and located behind the front building line. Where visible from the street, it must be appropriately screened to conceal the contents from the public domain and adjacent properties.</p> <p>A31.3 Bins must be able to be easily manoeuvred from the bin storage area for presentation at the kerbside.</p> |
|---|--|

7 Secondary Dwellings

This Section applies to [secondary dwellings](#) and must be considered in addition to **Section 5** of this Chapter.

Note: A [secondary dwelling](#) is a self-contained [dwelling](#) built in conjunction with and located on the same [lot](#) as a principle [dwelling](#). It may be located within, attached to or separate (detached) from the principle [dwelling](#). They are often, informally, referred to as 'granny flats'.

A [secondary dwelling](#) may be considered as complying [development](#) on land in certain residential zones if it meets the complying [development](#) provisions in State Environmental Planning Policy (Affordable Rental Housing) 2009 (AHSEPP).

A [secondary dwelling](#) in certain residential zones may also be considered via a [development](#) application. Such an application would be assessed and determined in accordance with the provisions contained in the AHSEPP and any relevant [Council](#) policies, which includes this [Development Control Plan](#).

Clause 5.4(9) Secondary dwellings of Shoalhaven LEP 2014 sets a total maximum floor area for [secondary dwellings](#). The AHSEPP prevails over any [Development Control Plan](#) provision to the extent of the inconsistency.

A [secondary dwelling](#) differs from a [dual occupancy](#) as they are generally smaller and cannot be subdivided from the principal [dwelling](#). Refer to Chapter G13: Medium Density and Other Residential Development of this [Development Control Plan](#) for information and requirements relating to dual occupancy [development](#).

[Secondary dwellings](#) are completely self-contained and therefore cannot be considered as a [detached habitable room](#) or a [detached studio](#).

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7.1 Principal Controls

The specific objective is to:

- i. Ensure the **secondary dwelling** does not impact on the amenity of the principal dwelling or adjoining dwellings.

Performance Criteria	Acceptable Solutions
P32.1 The location and siting of the building complements the existing setbacks in proximity to the site, foreshore (if applicable) and the streetscape.	A32.1 The development complies with: <ul style="list-style-type: none"> Shoalhaven LEP 2014 - Clause 5.4(9) Secondary Dwellings. AHSEPP - Schedule 1 Development standards for secondary dwellings as a guide.
P32.2 Setbacks avoid loss of view , undue overshadowing and provide/maintain privacy (visual and acoustic) and traffic safety.	
P32.3 The development minimises adverse amenity impacts on neighbours, the streetscape and public domain.	<p>Note: Where the proposal does not comply with a provision in Schedule 1 of the AHSEPP, a variation statement must form part of the development application in accordance with Chapter 1: Introduction of this Development Control Plan the proposal must demonstrate consistency with the relevant performance criteria within Sections 5 and 6 of this Chapter.</p> <ul style="list-style-type: none"> Any relevant policies of Council, including the provisions within this Development Control Plan. Relevant requirements of the Building Code of Australia and Australian Standards.

8 Ancillary Structures and Non-Habitable Structures on Vacant Land

Sections 8.1 - 8.3 apply to ancillary **structures** which includes **carports**, **garages**, sheds, freestanding pergolas, **swimming pools**, tennis courts and the like.

Note: Although the principal **dwelling** is usually the main **building**, a number of ancillary **structures** may be built to provide additional facilities or features for use by the residents.

Section 8.4 applies to non-habitable **structures** on vacant land prior to the construction of a **dwelling**. The construction of non-habitable **structures** on vacant land will only be considered where the **structure** is permissible with **development consent**.

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Note: Council may consider a proposal for a non-habitable structure on vacant land subject to the owner of the land furnishing Council with a written undertaking that the structure will not be used for habitable/residential purposes.

For rural zoned land, it is appreciated that some structures may be justified to enable maintenance of, or operation of the land, in conjunction with a lawful use.

This Section must be considered in addition to **Section 5** of this Chapter.

The objectives of Sections 8.1 – 8.3 are to:

- i. Minimise the impacts of ancillary structures on adjoining properties.
- ii. Ensure that residents have access to ancillary buildings and structures that are consistent with domestic needs.

8.1 Density, Height and Setbacks

The specific objectives are to:

- i. Ensure that the bulk and scale of new development is compatible with the existing streetscape amenity and the existing or desired future character of the area.
- ii. Minimise the visual impacts of elements of the development that exaggerate the built form and impacts negatively on desired future streetscapes.
- iii. Encourage design that ensures that the amenity of surrounding development is properly considered and not adversely impacted.
- iv. Allow adequate separation between buildings to promote natural light, solar access, ventilation, landscaping and privacy.
- v. Minimise the impacts upon the site and surrounding land following construction of non-habitable structures before the construction of a dwelling.
- vi. Retain the amenity of the public domain.

Performance Criteria	Acceptable Solutions
<p>P33.1 The bulk and scale of new development, particularly on the perimeter of the development site, or where that locality or development site has heritage significance and/or distinctive character, is:</p> <ul style="list-style-type: none"> Compatible, consistent and sympathetic to the bulk and scale of existing development in the locality. 	<p>A33.1 The maximum floor space ratio for the site is 0.5:1, where the site is located in the following zones:</p> <ul style="list-style-type: none"> R1 General Residential. R2 Low Density Residential. R5 Large Lot Residential, where the site area is less than 2000m². RU5 Village.

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<ul style="list-style-type: none"> • Sympathetic with the streetscape and complements the existing and desired future character of the area. 	<p>A33.2 The gross floor area and eave height of a garage, or other similar structure, complies with the provisions in Table 4.</p>
<p>P33.2 The size of a garage, or other similar structure, used in conjunction with a dwelling is appropriate for the garaging of resident's vehicles.</p>	<p>Note:</p> <ul style="list-style-type: none"> • Where an area is mapped on the floor space ratio map in Shoalhaven LEP 2014, the Shoalhaven LEP 2014 floor space ratio provisions for these sites prevail. • Refer to the following for guidance on calculating floor space ratio (including exclusions): <ul style="list-style-type: none"> - Figure 3 (Section 6.1.1) of this Chapter). - Gross floor area definition. - Clause 4.5 of Shoalhaven LEP 2014 and Shoalhaven LEP (Jerberra Estate) 2014. • When calculating the site area, the area of any access handle or right of way is to be excluded.
<p>P33.3 The size of the non-habitable structure is appropriate for its purpose.</p>	
<p>P34.1 The height of development:</p> <ul style="list-style-type: none"> • Is compatible with the existing or desired future character of the area. • Minimises adverse amenity impacts associated with overlooking and overshadowing of adjoining properties. • Relates to the land form, with minimal cut and fill. 	<p>A34.1 Building heights must comply with Clause 4.3 of Shoalhaven LEP 2014 or Shoalhaven LEP (Jerberra Estate) 2014.</p>
<p>P34.2 In rural zones, environmental and coastal locations, the height and bulk of dwellings is compatible with the rural, environmental or coastal context in which they are located.</p>	<p>A34.2 Any two-storey (or equivalent) component is to be located to minimise the shading of adjacent private open space.</p>
<p>P35.1 The front setback is generally consistent with adjoining development and does not undermine the integrity of the prevailing building lines.</p>	<p>A34.3 The difference in building height between existing buildings and new development is compatible when viewed from the public domain.</p>
<p>P35.2 The location and siting of the building complements the existing setbacks in proximity to the site, foreshore (if applicable) and the streetscape.</p>	<p>Note:</p> <ol style="list-style-type: none"> 1. The acceptable solutions for setbacks may need to be increased, reduced or modified depending upon factors such as: <ul style="list-style-type: none"> • Slope of the land. • Requirements for asset protection zones.

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P35.3 The proposed development is setback and of a scale that is relative to the street reserve width, in such a way to ensure pedestrians do not feel buildings are overbearing.

P35.4 Setbacks avoid loss of view, undue overshadowing and provide/maintain privacy (visual and acoustic) and traffic safety.

P35.5 Setbacks are progressively increased to reduce bulk and overshadowing while maintaining adequate daylight and sunlight.

P35.6 Adequate levels of light and ventilation to adjoining buildings, landscaping, services and infrastructure are protected.

P35.7 The proposal maintains adequate provision for on-site car parking.

- Foreshore setbacks.
- The requirement for effluent disposal areas to be contained wholly within the lot boundaries on unsewered residential lots.
- Location of existing buildings.
- The shape of the lot.
- Desire to create streetscape and visual interest.

2. Down pipes, fascias, flues, pipes, domestic fuel tanks, cooling or heating appliances or other services, screens or sunblinds, light fittings, electricity or gas meters may encroach into the side or rear setback.

3. Additional building line and setback controls are included in the following Chapters of this Development Control Plan:

- Chapter G6: Coastal Management Areas.
- Chapter V2: Building Lines.
- Chapter V3: Miscellaneous Site Specific Issues.
- Other area specific chapters.

A35.1 Setbacks shall comply with the provisions in Table 1 (Section 6.1.2 of this Chapter), where the site is located in the following zones:

- RU1 Primary Production.
- RU2 Rural Landscape.
- RU4 Primary Production Small Lots.
- E2 Environmental Conservation.
- E3 Environmental Management.
- E4 Environmental Living.
- R2 Low Density Residential, where the site area is equal to or greater than 2000m².
- R5 Large Lot Residential.

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A35.2 Setbacks shall comply with the provisions in **Table 2 (Section 6.1.2 of this Chapter)**, where the site is located in the following zones:

- R1 General Residential.
- R2 Low Density Residential, where the **site area** is less than 2000m².
- RU5 Village.
- SP3 Tourist.

A35.3 Despite **A39.1** and **A39.2**, where the predominant setback of the same street is greater than the setback contained in **Table 1** or **Table 2** (as applicable, see **Section 6.1.2** of this Chapter), the required setback must be compatible with the existing setbacks on the same street **in the general vicinity of the subject land** (see **Figure 6, Section 6.1.2** of this Chapter).

Note: If there is no obvious predominant **building line**, the setback must comply with **Table 1** or **Table 2** (as applicable, see **Section 6.1.2** of this Chapter).

Table 4: Gross floor area and wall height

	Gross Floor Area	Wall Height <i>From ground level (existing) to eave</i>
R1, R2 and SP3 (> 2000m ²), R3 and RU5 Zones	110m ²	3.0m Refer to Figure 10
R2 and SP3 (≤ 2000m ²)	To be assessed on merit	To be assessed on merit
RU1, RU2, RU4, E2, E3, E4, and R5 Zones	Site area up to 1 hectare - 140m ²	To be assessed on merit

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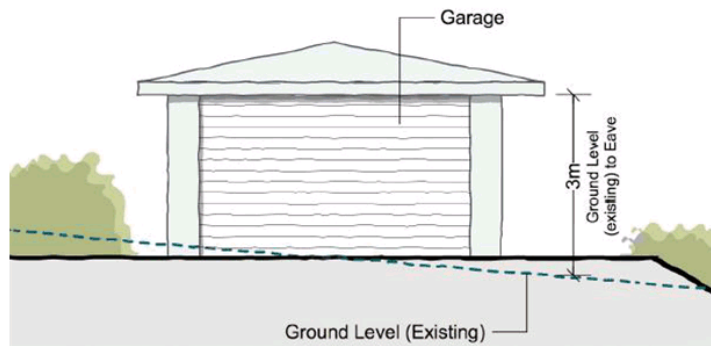


Figure 10: Wall height (example garage)

8.2 Building Form and Design

The specific objective is to:

- i. Ensure that new **development** enhances and makes a positive contribution to the character of existing **buildings** and streetscapes and reinforces the built form and environmental conditions of the locality.

Performance Criteria	Acceptable Solutions
P36 Ancillary structures are sited and designed to: <ul style="list-style-type: none"> Add visual interest. Provide opportunity for passive surveillance. Not dominate the street frontage. 	A36.1 Ancillary structures are compatible with the design of the principal dwelling . A36.2 The width of garage facades addressing the street shall not exceed 9m or 50% of the length of the frontage, whichever is the lesser.

8.3 Swimming Pools

The specific objective is to:

- i. Ensure the design of the **swimming pool** is safe and minimises impacts on the amenity of future and adjoining/adjacent **living areas** and principal **private open space** in relation to noise.

Performance Criteria	Acceptable Solutions
P37 The location of a swimming pool and associated noise generating equipment does not:	A37.1 Noise generating equipment associated with a swimming pool (e.g. filters) shall be:

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- Adversely impact the amenity of the adjoining properties.
- Negatively impact the structural integrity of adjoining development.
- Sited and installed to minimise noise impacts.
- Located at least 3m away from bedroom windows.
- Acoustically screened (where appropriate).

A37.2 The outside edge of a swimming pool wall shall be located at least 1200mm (horizontally) from building walls or foundations.

A37.3 The swimming pool shall comply with the relevant Australian Standards (including safety measures and setback provisions).

Note: Refer to the *Swimming Pool Act 1992* and associated regulations for information relating to swimming pool safety fencing and gate requirements.

9 Non-Habitable Structures on Vacant Land

This Section must be considered in addition to Section 5 of this Chapter.

8.4 Use of Non-Habitable Structures

The specific objectives are to:

- i. Ensure that non-habitable structures on vacant land are not used for habitable/residential purposes.
- ii. Ensure a dwelling can be located on the land in the future.
- iii. Minimise the impacts upon the site and surrounding land following construction of non-habitable structures before the construction of a dwelling.

Performance Criteria	Acceptable Solutions
<p>P38 A non-habitable structure on vacant land:</p> <ul style="list-style-type: none"> • Is justified, in terms of its use. • Is sited to enable further development of the site with a dwelling that complies with this Development Control Plan. • Will not be used for habitable/residential purposes. 	<p>A38.1 The non-habitable structure on vacant land is located so as not to preclude the development of a dwelling on the land.</p> <p>A38.2 The development application shall specify that the non-habitable structure on vacant land will not be used for residential purposes.</p> <p>Note: Conditions will be applied in this regard.</p>

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9 Advisory Information

9.1 Other legislation or policies you may need to check

Note: This Section is not exclusive and the applicant may be required to consider other legislation, policies and documents with the development application.

Council Guidelines	Policies &	<ul style="list-style-type: none"> • Shoalhaven Contributions Plan • Asbestos Policy • The Shoalhaven Plant Species List
External Guidelines	Policies &	<ul style="list-style-type: none"> • Building Code of Australia • Livable Housing Design Guidelines • NSW Land & Environment Court Planning Principles • Relevant Australia Standards • Planning for Bushfire Protection
Legislation		<ul style="list-style-type: none"> • Roads Act 1993 • Swimming Pool Act 1992 (and associated regulations) • State Environmental Planning Policy (Affordable Rental Housing) 2009 • State Environmental Planning Policy (Building Sustainability Index: BASIX) 2004 • State Environmental Planning Policy (Exempt and Complying Development Codes) 2008 • Shoalhaven Local Environmental Plan 2014 • Shoalhaven Local Environmental Plan (Jerberra Estate) 2014

Planning Report – S4.15 Assessment - [#Property AKA#]

	Planning Report S4.15 Environmental Planning & Assessment Act 1979
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DA Number	DA16/1341
Property	52 Cyrus Street, Hyams Beach
Applicant(s)	Peter Stutchbury Architecture
Owner(s)	T G Van Veenendahl

1. Detailed Proposal

The application proposes the demolition of all structures on the site and removal of vegetation, with 2 *Banksia integrifolia* identified as being retained at the south-eastern portion of the site.

The application proposes the construction of a two storey dwelling. The ground floor of the dwelling is to be constructed at RL 6.34 and steps down towards the rear to RL 5.46 and will be below street level. The ground floor contains an underground watertank in the front yard (under the driveway) and a storage room and covered terrace with storage and laundry (under the car parking) forward of the main body of the dwelling. A covered landscaped courtyard is proposed adjacent to the terrace and forward of the main body of the dwelling. At this level, the main body of the dwelling is to contain a master bedroom suite, with walk-in-robe/dressing room, bathroom, WC, study and storage at the higher level and an open plan kitchen/dining/living room at the lower level. The living area opens onto a covered outdoor terrace (depth 6m) that runs the full width of the dwelling.

The first floor contains double (stacked) parking space access by a driveway on the southern side of the property, with a bin store located at the front south-western corner of the site. The parking and driveway are constructed to RL 8.98, which roughly corresponds to the existing level of the nature strip adjoining the site. The main body of the dwelling, at this level, contains two bedrooms, a secondary lounge room and bathroom, all of which are located over the ground level master bedroom suite. The area over the ground floor living areas is a void.

The dwelling has a 10m front setback. The dwelling has an approximately 1.1m setback from the southern boundary and an approximately 2.2m setback from the northern boundary.

To the rear of the proposed dwelling, and stepping down from the covered terrace, is a levelled garden area at RL 4.58 and then a sloping landscaped area to the foreshore.

Running parallel with the southern boundary and setback approximately 1.1m from that boundary, is a roofed structure referred to throughout this report as the "boat shed arm". The boat shed arm extends from the roof over the covered terrace to the boat shed and has a width of approximately 1.3m and is roofed. The boat shed arm contains a vegetable garden and WC, along with an outdoor wash area containing a washing machine, sink and outdoor shower. The outdoor wash area is only partially covered and has a total width of approximately 3.2m. The path from the covered terrace to the outdoor wash area, the WC and the outdoor wash area are to be at RL 4.76, slightly above the level of the vegetable garden and levelled garden area. A set of stairs are proposed at the end of the boat shed arm, accessing the sloping rear landscaped area. Given the slope of the site the boat shed arm, which has a height of RL 7.76, varies in height above existing ground level from approximately 1.5m adjacent to the dwelling and 4.0m adjacent to the boat shed and has a floor to ceiling height of 3m to 3.2m.

To the rear of the boat shed arm is a proposed boat shed having a depth of 4.5m and a width of approximately 3.2m, with a height of RL 7.76 and a finished floor level of RL 4.76. As such the boat shed has a floor to ceiling height of 3m and a height above existing ground level varying from approximately 4m (at the south-west corner) to 4.4m (at the north-east corner). The boat shed has a variable setback from the rear boundary of between approximately 7.5m to 9.9m.

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2. Subject Site and Surrounds

The subject site is located on the eastern side of Cyrus Street, the low side, and is known as 52 Cyrus Road, Hyams Beach, having a legal description of Lot 58 in DP 577627. The site is an irregular rectangular shape, with an angled rear boundary to the foreshore. The site has a frontage of 13.715m to Cyrus Street and a rear boundary dimension of 21.925m, with a southern boundary dimension of 77.22m and a northern boundary dimension of 60.115m and a site area of 941.7m².



Figure 1: Site Location Map

The site slopes down from Cyrus Street to the foreshore by approximately 7.3m, with the steepness of the slope increasing in proximity to the foreshore. The site is currently developed with a small fibro clad, metal roofed cottage located towards the street. Vehicular access to the property is via a driveway at the northern side of the frontage, providing access down the side of the dwelling to a concrete area at the rear. It is noted that approximately half the driveway running down the side of the dwelling is located on the adjoining reserve and approximately a third of the concrete area at the rear of the dwelling is also located on the adjoining reserve.

A footpath runs diagonally across the rear of the site, extending onto the adjoining reserve to the north. The site contains a number of small trees (*Banksia*) along the southern boundary to the rear of the dwelling.

Running diagonally across the rear of the site is the sewer line.

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Photograph 1: Existing dwelling on subject site (indicated by red arrow) and adjoining dwelling at 54 Cyrus Street (to the right) viewed from the street

The site is immediately adjoined by only one residential property, being 54 Cyrus Street to the south. The dwelling on 54 Cyrus Street is a two storey dwelling of recent construction and elongated form. The dwelling has a similar setback from Cyrus Street as the existing dwelling on the subject site, but extends significantly further to the rear than that dwelling, having a total length of approximately 46m. To the rear of the dwelling is a swimming pool with surrounding coping area that is significantly elevated and is well above the height of the adjoining beach and the existing ground level of the subject site. The relationship of the dwelling on the subject site with the adjoining dwelling can be seen in the Photographs 1 and 2.



Photograph 2: Existing dwelling on subject site (indicated by red arrow) and adjoining dwelling at 54 Cyrus Street (to the left) viewed diagonally across the rear yard from the beach

Adjoining the site to the rear is the foreshore of Hyams Beach and to the north is a public reserve, known as Cyrus Street Reserve, providing a vegetated foreshore to Hyams Beach. Opposite the site, on the high side of Cyrus Street are a number of largely one storey cottages.

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It is noted that a number of the residential properties in proximity to the site do not appear to be occupied as dwelling houses, but rather appear to be used for short term holiday rental, including the adjoining property at 54 Cyrus Street and the properties opposite the site on the high side of Cyrus Street.

3. Background

History

The subject site, 54 Cyrus Street and the foreshore reserve to the north were subdivided in 1975 and the existing dwelling on the subject site appears to predate the subdivision of the land.

A recent approval, DA 11/2452, was granted for construction of a timber boundary fence between the subject site and 54 Cyrus Street.

Subject Application

The subject application has a long history, commencing with its lodgement with Council on 22 March 2016. This section of the report is not intended to give a comprehensive outline of the history of the application, but rather to provide context to the assessment report.

The application has undergone a number of variations since lodgement, largely dealing with the design of the boat shed arm and boat shed and additional geotechnical and coastal hazard assessment information has been provided in response to requests for information from Council.

The application, in its various forms, has been notified a number of times, including the following notifications prior to the current assessment process commencing.

- Initial notification 6 to 21 April 2016 (extended to 2 May 2016 in response to neighbour's request) – 8 submissions were received from or on behalf of 6 respondents, with an additional 5 submissions received from or on behalf of 1 respondent after the close of the notification period.
- Renotified 10 to 25 October 2016 (extended to 31 October 2016 in response to neighbour's request) – amended plans, boat shed arm design statement, initial and supplementary Coastal Hazards Risk Assessment Reports – 6 submissions were received from or on behalf of 4 respondent, with an additional 4 submissions received from or on behalf of 2 respondents after the close of the notification period.
- Renotified 17 February to 6 March 2017 – additional information on geotechnical and coastal hazard assessment issues - 16 submissions were received from or on behalf of 13 respondents, with an additional 2 submissions received from or on behalf of 2 respondents after the close of the notification period.

Overall, nearly half of all submissions (41% - 17 of 41) were made by or on behalf of the owner of the adjoining property at 54 Cyrus Street.

All notifications were undertaken in accordance with Council's Community Consultation Policy, with the letters for the first notification sent to the owners of four (4) properties lying within a 25m buffer of the site. Subsequent notifications were sent to the owners notified in the first round of notification and also to those people who made submissions during the first and second rounds.

It was resolved by Council at its Ordinary Meeting of 28 February 2017 that Council call in the application for determination due to the significant public interest in the development.

The application was considered at Council's meeting of 17 July 2017 where it was approved. Development Consent DA16/1341 was issued on 25 July 2017.

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Subsequent to the issue of Development Consent DA16/1341, the owner of 54 Cyrus Street challenged the legal validity of the consent in the Land and Environment Court. The proceedings were heard by Preston CJ and a decision was handed down on 9 March 2018 with Orders as follows:

The Court:

- (1) *Declares that the development consent granted by the second respondent on or about 25 July 2017 in respect of the Development Application 16/1341 for development at 52 Cyrus Street Hyams Beach ("Purported Consent for DA 16/1341") is invalid and of no effect.*
- (2) *Sets aside the Purported Consent for DA 16/1341.*
- (3) *Grants an injunction restraining the first respondent from undertaking any development in reliance upon the Purported Consent for DA 16/1341.*
- (4) *Lists the proceedings at 9:30am on 26 March 2018 for directions concerning the question of the costs of the proceedings.*

The effect of the Court's decision is that DA16/1341 remains undetermined, with the consent initially granted by the Council on 17 July 2017 having been declared invalid and set aside.

Subsequent to the judgement, amended plans were submitted by the applicant, with changes confined to the design of the boat shed and boat shed arm.

Given the long history of the application, the Council decided to have the amended proposal assessed by an independent consultant town planner. I was engaged by the Council to conduct that independent assessment. I have had 30 years of town planning experience and have had no prior involvement with the assessment of the application.

The purpose of the subject report is to assess the application and provide a recommendation to allow DA16/1341, as amended, to be determined by the Council.

4. Consultation and Referrals

The application was referred to the following internal sections of Council for comment on their areas of expertise.

- Coastal Hazards Officer
- Natural Resource and Floodplain Officer
- Property Officer
- Development Engineer
- Shoalhaven Water

The following comments are the final responses received from the internal sections of Council.

Coastal Hazard Officer

Coastal Risk

The reliance on interim protection for the public sewer placed in 2013 to secure the existing in ground pipeline placement only for security of these new elevated structures is a concern. The coastal report provides an adequate summary of available coastal information and an acceptable solution for the proposed boathouse. However, the impact of extreme events as seen in August 2015 and June 2016 that include elevated ocean levels (atmospheric and Spring tide), unusual swell direction that impacted on Hyams Beach combined with heavy catchment rainfall as discussed in SMEC 2009 for Collingwood Beach is not considered fully. Combined impacts could potentially result in significant land loss from the property and needs further consideration and remediation treatment within the proposed re development

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Comment: Since this referral to the Coastal Hazards Officer, these two concerns have been addressed in reports prepared for Council by Advisian which are discussed later in relation to Chapter G6 of SDCP. The final Advisian report (dated 1.11.18) assessed the impact of coastal processes on the amended proposal without regard to any protection afforded by the revetment wall installed in 2013 to protect the Council's sewer infrastructure.

Encroachment on Public Reserve

The survey provided by the applicant (D16/82877) indicates that the existing concrete driveway and footpath are encroaching on Council's land categorised community land/natural area/foreshore. The boundaries of the land need to be surveyed and clearly marked and any existing encroachment removed and rehabilitated to Council natural areas officer's specifications.

In addition it is recommended that some delineation all along the boundary between the public and private land be provided by either hedge planting or a fence.

Comment: A condition of consent is recommended requiring the removal of the encroachment of the existing driveway onto Council land and the rehabilitation of the affected land and the delineation of the boundary.

Flooding

No further information is required from a flooding perspective.

However, council suggests to monitor erosion from the creek at the northern property boundary as well, on top of the proposed monitoring of existing dunes and revetment for the beach recession and erosion, as mentioned under the coastal hazard risk assessment report.

Comment: Noted.

Natural Resource and Floodplain Officer

The site is unique and on the active coastal zone of Hyams Beach potentially affected by coastal erosion, coastal inundation combined with catchment flows impact. Interim coastal protection of the public sewer on the seaward boundary of 54 and 52 was installed by Council during 2013 and the landowner was involved in this process and aware of the coastal risk profile. A coastal engineering assessment of the site is required to ensure provision for suitable setback, foundations requirements and inundation are managed to Council standard.

Given the complexity of the coastal hazards issues the Natural Resources Section deferred to the advice of a specialist consultant.

Comment: The applicant provided a coastal engineering assessment, as did an objector. Advisian were engaged by Council to provide specialist consultant advice in relation to the impact of coastal processes on the proposed development and the impact of the development on coastal processes.

Property Officer

The adjoining Council owned land is classified Community land and categorised as Natural Area – Foreshore under the Local Government Act. The drainage of water (and therefore, the creation of an easement) over Council's Community land from a private development must be allowable by an express authorisation within the Plan of Management and meet the objectives for the categorisation of the land. I do not believe the requirement to drain onto Council's land meets this purpose and I strongly suggest that further comment is sought from Council's Natural Resources Unit in this regard.

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Comment: It is recommended that a condition of consent which requires the provision of an OSD system onsite and the use of either an absorption trench or level spreader onsite be imposed. This will avoid the need for the creation of an easement over Community Land.

Development Engineer

The development's stormwater is shown to discharge into the neighbouring council lot via 2 stormwater lines. There doesn't appear to be any easements over the council lot to allow the stormwater to discharge into the reserve. The council lot is zoned RE1 Public Recreation. A referral will need to be sent to councils Property Services section to check there requirements.

Once property services have provided comment then please see me to discuss.

Comment: Based the aforementioned requirements of the property branch, it is recommended that a condition of consent be imposed which requires the provision of an OSD system onsite and the use of either an absorption trench or level spreader onsite.

Shoalhaven Water

A s306 Notice under the Water Management Act 2000 was issued for the development.

Comment: Conditions included in recommendation.

External Referrals

Not required.

5. Other Approvals

Integrated Approvals and Concurrences

Not applicable.

6. Statutory Considerations

This report assesses the proposed development/use against relevant State and Local Environmental Planning Instruments and policies in accordance with Section 4.15(1) of the Environmental Planning and Assessment Act 1979 (EP&A Act). The following planning instruments apply to the proposed development:

- State Environmental Planning Policy No 55 - Remediation of Land
- State Environmental Planning Policy (Building Sustainability Index: BASIX) 2004
- State Environmental Planning Policy No. 71- Coastal Protection
- State Environmental Plan Policy (Vegetation in Non-Rural Areas)
- Shoalhaven LEP 2014

Assessment of the proposal's compliance with the above planning instruments is detailed below in Section 7 (Statement of Compliance/Assessment) of this report.

7. Statement of Compliance/Assessment

The following provides an assessment of the submitted application against the matters for consideration under Section 4.15 of the EP&A Act.

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(a) Any planning instrument, draft instrument, DCP and regulations that apply to the land

i) Environmental planning instrument

SEPP 55 Remediation of Land

SEPP 55 requires consideration of whether the site may contain contamination and the impact of such contamination on a proposed development and whether remediation is required to address any contamination. Given the history of the use of the site for residential purposes there is nothing to suggest a prior use which would have resulted in contamination of the land. This was also confirmed during my inspection of the site.

The site contains a dwelling which is of fibro construction and given its age has the potential to contain asbestos. Accordingly, conditions of consent are recommended requiring the dwelling to undergo a hazardous materials survey prior to demolition and, if hazardous materials are found, requiring that those materials be removed in an appropriate manner to protect workers and residents.

SEPP (Vegetation in Non-Rural Areas) 2017

The provisions of SEPP (Vegetation) have been considered in the assessment of the development application. The site is in a non-rural area for the purpose of the SEPP (Vegetation). Clause 26 of SEPP (Vegetation) is a transitional provision that states that, if an application has been made for removal of vegetation prior to the commencement of the Policy and not determined then the application may continue to be dealt with as if it had been made under the Policy.

The proposed development requires the removal of a number of trees planted along the southern boundary of the site, with two *Banksia integrifolia* identified on the landscape plan as being retained to the east of the proposed boat shed.

Whilst the vegetation to be removed is not particularly significant, it does assist in providing an attractive setting for the existing site and with soil/sand stabilisation. Notwithstanding this, the removal of the vegetation is considered reasonable in this case due to the proposed replacement vegetation which is to be planted on the site as shown on the landscape plan. This includes the planting of 6 trees on the site along with significant planting towards the foreshore boundary of the site.



Photograph 3: *Banksia integrifolia* to be retained identified in above photograph by red arrow

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The proposed boat shed is in reasonably close proximity to the *Banksia integrifolia* which are identified to be retained, and the works required for the footings of the boat shed have the potential to impact on these trees. The trees, seen in Photograph 3, will provide significant screening and softening of the visual impact of the boat shed as viewed from the beach to the east and their retention is appropriate for this reason. In order to ensure the retention of the trees, it is therefore proposed that a condition be placed upon any consent requiring the boat shed to be relocated 1.5m to the west, with the subsequent shortening of either the vegetable garden or outdoor wash area to accommodate the relocation.

State Environmental Planning Policy (Building Sustainability Index: BASIX) 2004

The application is accompanied by a BASIX certificate (No. 681954S) as required by SEPP (BASIX).

Conditions of consent have been included in the recommendation to ensure the fulfilment of the commitments listed in the BASIX certificate, as prescribed by Clause 97A of the Environmental Planning & Assessment Regulation 2000.

State Environmental Planning Policy – (Coastal Management) 2018

SEPP (Coastal Protection) commenced on 3 April 2018, however as the application was lodged on 22 March 2016 and has yet to be determined, is not applicable to the assessment of the subject application due to the savings provisions contained at clause 21(1) as follows:

- (1) The former planning provisions continue to apply (and this Policy does not apply) to a development application lodged, but not finally determined, immediately before the commencement of this Policy in relation to land to which this Policy applies.*

The former planning provision referred to remains applicable to the assessment of the application and is State Environmental Planning Policy No. 71 – Coastal Protection.

State Environmental Planning Policy No. 71 – Coastal Protection

The site is located within the Coastal Zone and as such the provisions of SEPP 71 are applicable to the assessment of the application. Clause 8 identifies the following matters for consideration in assessing a development application on land in the Coastal Zone:

- (a) the aims of this Policy set out in clause 2,*

The application is assessed against the aims of the Policy following:

- (a) to protect and manage the natural, cultural, recreational and economic attributes of the New South Wales coast, and*

This objective indicates the purpose of the Policy and is noted. The proposal is considered to be consistent with the aim of protecting the natural, cultural, recreational and economic attributes of the locality in which it is located.

- (b) to protect and improve existing public access to and along coastal foreshores to the extent that this is compatible with the natural attributes of the coastal foreshore, and*

The proposal has no detrimental impact upon access to the coastal foreshore. Given the residential nature of the use of the site, and the location of the public reserve to the north of the site, no improvement of public access across the site is necessary or reasonable.

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- (c) to ensure that new opportunities for public access to and along coastal foreshores are identified and realised to the extent that this is compatible with the natural attributes of the coastal foreshore, and*

See previous comment in relation to aim (b).

- (d) to protect and preserve Aboriginal cultural heritage, and Aboriginal places, values, customs, beliefs and traditional knowledge, and*

It is not considered that the proposal works would have a detrimental impact upon any Aboriginal cultural heritage, Aboriginal places, values, customs, beliefs or traditional knowledge.

- (e) to ensure that the visual amenity of the coast is protected, and*

The visual amenity of the coast is protected by the development, which has an acceptable visual impact as viewed from the adjoining reserve and beach subject to the recommended conditions of consent.

- (f) to protect and preserve beach environments and beach amenity, and*

The proposal does not result in any significant detrimental impact upon the beach environment or amenity, resulting in no significant shadowing and having an acceptable visual impact. The design of the proposal has had appropriate regard to coastal processes.

- (g) to protect and preserve native coastal vegetation, and*

The proposal seeks to remove minimal vegetation and provides for significant planting of appropriate native coastal vegetation, resulting in an improvement in the coastal vegetation in the area.

- (h) to protect and preserve the marine environment of New South Wales, and*

The proposal, subject to conditions, is designed to prevent uncontrolled runoff into the waterway and soil and sedimentation measures will be required during construction to ensure no detrimental impact upon the marine environment.

- (i) to protect and preserve rock platforms, and*

The proposal does not impact any rock platforms.

- (j) to manage the coastal zone in accordance with the principles of ecologically sustainable development (within the meaning of section 6 (2) of the [Protection of the Environment Administration Act 1991](#)), and*

The design of the development incorporates appropriate ecologically sustainable design features.

- (k) to ensure that the type, bulk, scale and size of development is appropriate for the location and protects and improves the natural scenic quality of the surrounding area, and*

The design of the development, subject to the recommended conditions of consent for increased landscape retention, is of an appropriate type for the site and will provide an appropriate bulk, scale and size for the location, being visually compatible with the adjoining recent dwelling.

- (l) to encourage a strategic approach to coastal management.*

This objective indicates the purpose of the Policy and is noted.

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- (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 coastal foreshore for pedestrians or persons with a disability should be improved,*

The proposal does not result in any detrimental impact upon access to the coastal foreshore for pedestrians.

- (c) opportunities to provide new public access to and along the coastal foreshore for pedestrians or persons with a disability,*

The site is privately owned and zoned for residential purposes. In such a situation it would be inappropriate to require public access across the subject site.

- (d) the suitability of development given its type, location and design and its relationship with the surrounding area,*

The type of development is residential, which is appropriate to the zoning of the site and the location of the dwelling and outbuildings are appropriate having regard to the existing adjoining development and the requirements of the DCP. The design of the proposal is acceptable to its context, subject to the recommended conditions of consent which will ensure the retention of existing trees on the site which will provide screening of the boat shed as viewed from the east.

- (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 proposed works are of such distance from the coastal foreshore that they will not result in any significant overshadowing to the foreshore and they will not result in any significant loss of views from a public place to the foreshore.

The development will be visible from the foreshore, and there is therefore potential for the development to impact upon the visual amenity of the coastal foreshore. However, given the conditioned increased setback allows for the retention of two Banksia forward of the boat shed and the proposed additional landscaping, the structure is largely screened from the closer viewing positions on the beach. The boatshed will be more visible as viewed from the north-east, but given it is viewed with the backdrop of the adjoining dwelling, it will appear to be subservient in size from this position. I have therefore assessed this impact as being acceptable.

The boat shed arm and boat shed are of a smaller scale than the dwelling, and the development on the adjoining site, being lower than the adjoining swimming pool and dwelling as viewed from the north. Given the relative heights, the boat shed arm and boat shed will not result in a detrimental visual impact as viewed from the north. As viewed from the east, the boat shed arm and boat shed would be significantly screened by the retention of trees. As discussed previously, an increased setback of the structures from the trees is recommended to ensure their survival.

As the piers for these structures would also be visible from the beach it is appropriate that screen planting be added to the landscape plans to screen the piers as viewed from the beach. A condition to this effect is recommended.

- (f) the scenic qualities of the New South Wales coast, and means to protect and improve these qualities,*

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Subject to the appropriate landscaping of the site and the increased setback of the boat shed from the foreshore to ensure retention of the two existing *Banksia integrifolia* trees, the proposal will not have an unacceptable impact upon the scenic qualities of the coastline given its appropriate design and height, bulk and scale.

(g) measures to conserve animals (within the meaning of the Threatened Species Conservation Act 1995 and plants (within the meaning of that Act), and their habitats,

The proposed works will not detrimentally impact any animal requiring conservation within the meaning of the *Threatened Species Conservation Act 1995*.

(h) measures to conserve fish (within the meaning of Part 7A of the Fisheries Management Act 1994 and marine vegetation (within the meaning of that Part), and their habitats

The proposed works will not detrimentally impact any fish requiring conservation within the meaning of the *Fisheries Management Act 1994*.

(i) existing wildlife corridors and the impact of development on these corridors,

The proposed works will not detrimentally impact any existing wildlife corridor.

(j) the likely impact of coastal processes and coastal hazards on development and any likely impacts of development on coastal processes and coastal hazards,

The impact of the development and upon the development in relation to coastal processes and hazards has been assessed in detail later in the report and, subject to recommended conditions, is acceptable.

(k) measures to reduce the potential for conflict between land-based and water-based coastal activities,

The proposed works are for residential purposes and are unlikely to result in conflict between land-based and water-based activities.

(l) measures to protect the cultural places, values, customs, beliefs and traditional knowledge of Aboriginals,

The majority of works are located within the portions of the site that are subject to previous disturbance and as such it is unlikely that they will disturb cultural places, values, customs, beliefs and traditional knowledge of Aboriginals.

(m) likely impacts of development on the water quality of coastal waterbodies,

Subject to appropriate soil and sedimentation controls during construction and connection to appropriate sewer and stormwater disposal systems (as conditioned), the proposal will not have any unacceptable impact upon the water quality of coastal waterbodies.

(n) the conservation and preservation of items of heritage, archaeological or historic significance,

The proposed works will not result in detrimental impact upon items of heritage, archaeological or historic significance.

(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,

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This matter is not applicable to the assessment of the application.

(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, and*
- ii. *measures to ensure that water and energy usage by the proposed development is efficient.*

The proposal is not likely to result in any unacceptable cumulative impacts upon the environment as all potential impacts have been assessed within this report as being acceptable. The BASIX report provided with the application ensures that the development will have appropriate water and energy efficiency devices incorporated.

The proposal is consistent with Clause 14 of SEPP 71 as it has no detrimental impact upon public access to the foreshore.

The proposal is consistent with Clause 15 of SEPP 71 as it proposes appropriate effluent disposal to a reticulated system.

The proposal is consistent with Clause 16 of SEPP 71 as it proposes an appropriate form of stormwater disposal which will not discharge untreated stormwater into the sea, a beach, an estuary, a coastal lake, a coastal creek or similar body of water or a rock platform.

Shoalhaven LEP 2014

Land Zoning

The land is zoned R2 Low Density Residential under the provisions of SLEP 2014.

Characterisation and Permissibility

The proposal is defined as a dwelling house and boat shed under the SLEP 2014, see following definitions.

dwelling house means a building containing only one dwelling.

boat shed means a building or other structure used for the storage and routine maintenance of a boat or boats and that is associated with a private dwelling or non-profit organisation, and includes any skid used in connection with the building or other structure.

The proposal is permitted within the zone with the consent of Council.

Zone objectives

To provide for the housing needs of the community within a low density residential environment.

The proposal for a dwelling house and an ancillary boat shed replaces an old dwelling on the site. The provision of a modern dwelling is consistent with providing for the housing needs of the community and given only one dwelling is proposed, the housing is appropriate for a low density residential environment. Satisfies the nominated objective.

To enable other land uses that provide facilities or services to meet the day to day needs of residents.

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This objective is not applicable to the application as it does not seek to provide facilities or services to meet the day to day needs of residents.

To provide an environment primarily for detached housing and to ensure that other development is compatible with that environment.

The application is for a detached dwelling house and ancillary boat shed and as such is consistent with the primary use identified for the zone. Satisfies the nominated objective.

Clause 2.7 Demolition requires development consent

The existing dwelling and associated ancillary structures are to be demolished. Consent is sought as part of this application to comply with this provision.

Clause 4.3 Height of building

The height control for the site is 7.5m. The maximum height of the proposed dwelling is under 7.5m at all points and the boat shed arm and boat shed are 3.2m and 4.4m respectively, complying with the provision.

Clause 5.5 Development within the coastal zone

This clause applies to development in the coastal zone and as such is applicable to the subject application.

Development consent must not be granted to development on land that is wholly or partly within the coastal zone unless the consent authority has considered:

- (a) *existing public access to and along the coastal foreshore for pedestrians (including persons with a disability) with a view to:*
 - i) *maintaining existing public access and, where possible, improving that access, and*
 - ii) *identifying opportunities for new public access, and*

The proposal does not have any detrimental impact upon public access to and along the foreshore. It is inappropriate to provide new public access as a part of the application given the residential zoning of the site and its private ownership.

- (b) *the suitability of the proposed development, its relationship with the surrounding area and its impact on the natural scenic quality, taking into account:*
 - i) *type of the proposed development and any associated land uses or activities (including compatibility of any land-based and water-based coastal activities), and*
 - ii) *the location, and*
 - iii) *the bulk, scale, size and overall built form design of any building or work involved, and*

The site is located in an area of natural scenic quality adjoining the foreshore of Hyams Beach. Given the significant setback of a minimum of approximately 13.5m of the dwelling from the foreshore and its two storey bulk and scale, it will not have an unacceptable visual impact upon the foreshore. Montages of the development (prepared by the Applicant) as viewed from the beach are shown in Figures 2 and 3.

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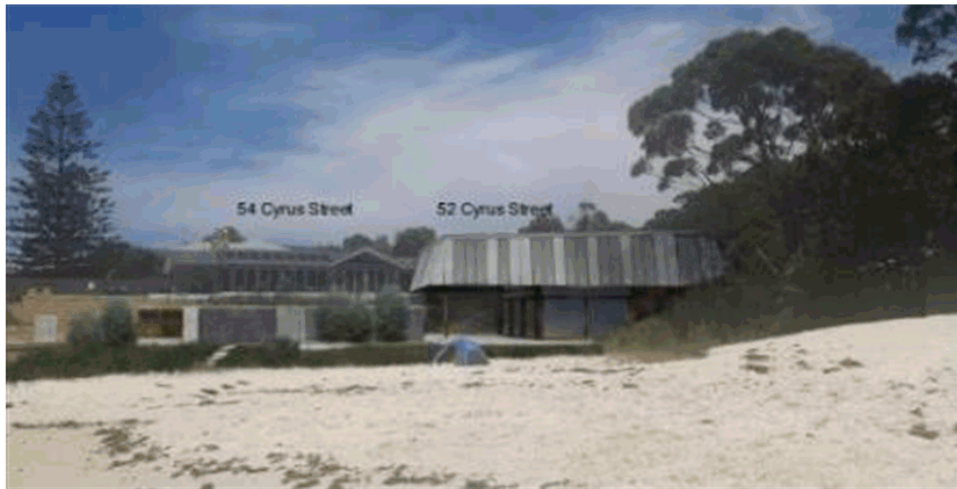


Figure 2: Montage provided by applicant of view of development from the north

The boat shed arm and boat shed are of a smaller scale than the proposed dwelling and the development on the adjoining site, being lower than the adjoining swimming pool and dwelling as viewed from the north. Given the relative heights, the boat shed arm and boat shed will be a subservient element to the dwelling at 54 Cyrus Street and will not result in a detrimental visual impact as viewed from the north.

As viewed from the east, the boat shed arm and boat shed would be significantly screened by the retention of trees. As discussed previously, an increased setback of the boat shed arm and boat shed structures from the trees is recommended to ensure their survival. Further the exposed piers of the structure should be screened by landscaping. Subject to conditions to this effect, the proposal will have an acceptable impact on the scenic quality of the area.



Figure 3: Montage provided by applicant of view of development from the east

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The design is appropriate to the location and incorporates an appropriate landscape setting, subject to the recommended conditions.

(c) the impact of the proposed development on the amenity of the coastal foreshore including:

- i) any significant overshadowing of the coastal foreshore, and*
- ii) any loss of views from a public place to the coastal foreshore, and*

The proposed works are of such distance from the coastal foreshore (minimum approximately 13.5m to the dwelling and 7.5m to the boat shed) that they will not result in any significant overshadowing to the foreshore. The works will not result in any significant loss of views from a public place to the foreshore.

The impact of the proposed development on the amenity of the coastal foreshore is considered above at page 11 and is considered acceptable.

(d) how the visual amenity and scenic qualities of the coast, including coastal headlands, can be protected, and

As is discussed above, the design, bulk and scale and landscape setting of the proposal is appropriate to the locality subject to the recommended conditions. As such the visual amenity and scenic quality of the coast will not be detrimentally impacted by the proposal, noting that the development is not located on a headland, does not interfere with views from public places and, to the extent it is visible from Hyams Beach looking landward, will be screened, where necessary, by vegetation and is considered not to adversely impact on visual amenity

(e) how biodiversity and ecosystems, including:

- i) native coastal vegetation and existing wildlife corridors, and*
- ii) rock platforms, and*
- iii) water quality of coastal waterbodies, and*
- iv) native fauna and native flora, and their habitats,*
can be conserved, and

The proposed development has no unacceptable impacts upon native coastal vegetation and wildlife corridors, removing only a small amount of vegetation. The proposal does not detrimentally impact rock platforms, native flora or fauna and their habitats. The proposal will not detrimentally impact the water quality of the waterbody, subject to appropriate soil and sedimentation during construction and given the conditioned stormwater disposal system.

(f) the cumulative impacts of the proposed development and other development on the coastal catchment.

The proposal is not likely to result in any unacceptable cumulative impacts upon the environment and all potential impacts have been assessed within this report as being acceptable.

Development consent must not be granted to development on land that is wholly or partly within the coastal zone unless the consent authority is satisfied that:

(a) the proposed development will not impede or diminish, where practicable, the physical, land-based right of access of the public to or along the coastal foreshore, and

The proposal will not detrimentally impact any land-based right of access of the public to or along the foreshore.

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(b) if effluent from the development is disposed of by a non-reticulated system, it will not have a negative effect on the water quality of the sea, or any beach, estuary, coastal lake, coastal creek or other similar body of water, or a rock platform, and

The effluent from the proposal is to be disposed of to a reticulated system via the sewer pipeline that transverses the property.

(c) the proposed development will not discharge untreated stormwater into the sea, or any beach, estuary, coastal lake, coastal creek or other similar body of water, or a rock platform, and

The application proposes an appropriate form of stormwater disposal which will not discharge untreated stormwater into the sea, a beach, an estuary, a coastal lake, a coastal creek or similar body of water or a rock platform.

(d) the proposed development will not:

- i) be significantly affected by coastal hazards, or*
- ii) have a significant impact on coastal hazards, or*
- iii) increase the risk of coastal hazards in relation to any other land.*

The proposal has been designed such that it will not be significantly affected by coastal hazards, with the footings being founded to rock and adequate regard had to the issues of wave run up and sea level rise, subject to the recommended conditions. The proposal does not significantly impact on coastal hazards or increase the risk of coastal hazards in relation to other land. These matters are addressed in more detail later in the report in relation to Chapter G6 of SDCP.

Clause 5.10 Heritage conservation

The site is within the vicinity of the following 4 items of heritage (see extract of the Heritage Map in Figure 4):

- The Green Cabins – 53 Cyrus Street
- Inter-war weekend cabin – 57 Cyrus Street
- Pacific House – 58-60 Cyrus Street
- Inter-war weekend cabin – 59 Cyrus Street

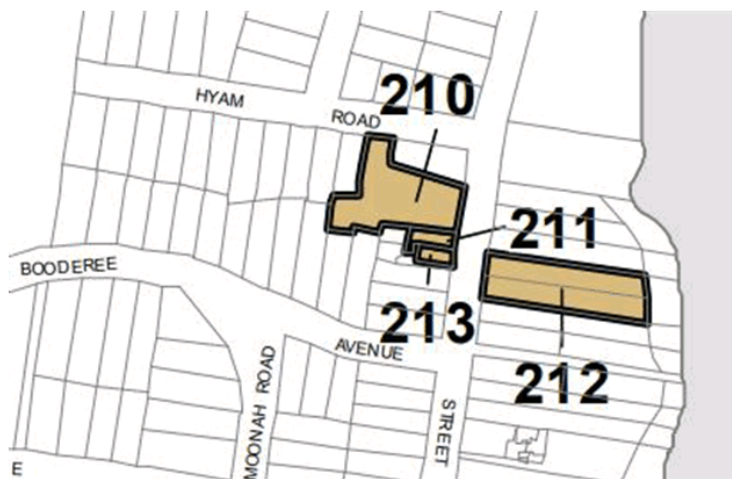


Figure 4: Heritage Map extract of site and surrounds

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Given the relatively small scale of the proposed dwelling (single storey as viewed from the street), the development will not have any detrimental impact upon the heritage significance of the items which are either located on the high side of the street or further from the site.

Further, whilst the proposal has an impact upon the views from the heritage items on the northern side of Cyrus Street, the impact is negligible and does not affect land-water interface views and as such is considered to be acceptable and does not detrimentally impact on the heritage significance of the heritage items.

Clause 7.1 Acid Sulfate soils

The site is located within a Class 5 area but is not located within 500m of a Class 1-4 area and as such no further assessment is required.

Clause 7.2 Earthworks

The proposed works involve relatively minor earthworks for construction of the dwelling, with up to 2m excavation for the rainwater tank, and the following matters require consideration:

- (a) *the likely disruption of, or any detrimental effect on, drainage patterns and soil stability in the locality of the development,*

The earthworks are minor in nature and will not detrimentally affect drainage patterns or soil stability.

- (b) *the effect of the development on the likely future use or redevelopment of the land,*

The earthworks are proposed to facilitate the future use of the site as a dwelling house and as such are appropriate.

- (c) *the quality of the fill or the soil to be excavated, or both,*

The earthworks proposed are minor in nature and do not involve the provision of any significant fill. A condition of consent is recommended requiring any fill imported to the site to be VENM.

- (d) *the effect of the development on the existing and likely amenity of adjoining properties,*

The earthworks are minor and the cut for the dwelling and boat shed arm is less than 800mm in proximity to the adjoining residential property at 54 Cyrus Street. Such a small extent of cut will not result in detrimental amenity impacts upon the adjoining property. Similarly, the excavation of up to 2m for the rainwater tank will not detrimentally impact the amenity of the adjoining property. The extent of cut and fill proposed is common for development of sloping sites.

- (e) *the source of any fill material and the destination of any excavated material,*

A condition of consent is recommended requiring any fill imported to the site to be VENM.

The extent of such material would be minor. Any excavation from the site would not be likely to be contaminated given the history of use of the site. As such, disposal of excavated material does not present any concerns given the minor nature of the excavation and fill proposed.

- (f) *the likelihood of disturbing relics,*

Given the depth of the excavation proposed and its location within a disturbed area of the site it is not likely to result in disturbance of relics.

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(g) the proximity to, and potential for adverse impacts on, any waterway, drinking water catchment or environmentally sensitive area,

Given the extent of earthworks, and subject to suitable soil erosion measures during construction, the works will not detrimentally impact any waterway, drinking water catchment or environmentally sensitive area. The required soil erosion measures are identified in recommended conditions of consent.

(h) any appropriate measures proposed to avoid, minimise or mitigate the impacts of the development.

The only required mitigation measures are to ensure any fill brought to the site is VENM and that soil erosion measures are implemented during construction and conditions of consent to this effect are recommended.

Clause 7.4 Coastal Risk Planning

The site is not mapped as being within a coastal risk planning area and as such the provisions are not applicable.

Clause 7.11 Essential services

The application proposes connection to water and electricity supplied and a reticulated sewerage system. A condition of consent will require the outdoor wash area to also be connected to the reticulated sewerage system.

ii) Draft Environmental Planning Instrument

The application is not inconsistent with any Draft Environmental Planning Instrument that is relevant to the assessment of the application.

iii) Any Development Control Plan

Shoalhaven DCP 2014

Section G1: Site Analysis, Sustainable Design and Building Materials in Rural and Coastal Areas

A BASIX Certificate has been lodged with the application. The design of the dwelling has had appropriate regard to the principles of passive solar design. The design has appropriate regard to the retention of solar access to the adjoining property to the south, having no detrimental impact upon north-facing windows of living areas and retaining a minimum of 3 hours of solar access at midwinter to at least 50% of the area of the principal area of open space

Section G2: Sustainable Stormwater Management and Erosion/Sediment Control

Subject to recommended conditions, the stormwater system and soil and sedimentation measures during construction will be consistent with the provisions of Section G2 of SDCP.

Section G3: Landscaping Design Guidelines

An appropriate landscape plan has been submitted with the application which will result in improved stabilisation of the currently poorly vegetated foreshore frontage of the site. A condition of consent is recommended requiring the deletion of the roof garden over the boat shed and boat shed arm.

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A further condition of consent is recommended requiring the planting of a hedge (of appropriate species) between the southern boundary fence and boat shed and boat shed arm to reach a maximum maturity height equivalent to the height of the structures. The hedge is required to be maintained at that maximum height. This condition will result in the outlook from the adjoining property to the south, towards the structures, being appropriately softened, whilst retaining the views over the structures. Finally, a condition is recommended requiring screen planting adjacent to the piers to soften their appearance from public places and for this vegetation to be maintained.

Section G4: Removal and Amenity of Trees

The impact of the proposal upon existing trees has been addressed previously in this report and is acceptable subject to the recommended condition requiring the boat shed to be relocated 1.5m to the west.

Section G5: Threatened Species Impact Assessment

The proposal will not have an unacceptable impact upon any threatened species, populations or endangered ecological communities or their habitats.

Section G6: Coastal Management Areas

The assessment of the application with regard to coastal hazards under the SDCP was one of the matters considered in the Class 4 Land and Environment Court Proceedings. The objector who filed the Class 4 proceedings has now provided a legal opinion to the Council on how this Chapter of the SDCP should be interpreted ("the Objectors Legal Opinion") a copy in full of which is attached as Appendix G). The crux of that opinion is that the application is subject to 5.1.1 of Chapter 6 of the SDCP.

The recommendation of this report is based on an assessment under my interpretation of Chapter 6 of the SDCP. However, as my interpretation differs from that in the Objector's Legal Opinion, I also provide a recommendation of the appropriate course of action if the objector's interpretation is supported by Council. I would also recommend, in this matter, that Council seeks its own legal advice prior to determining the application given the history of litigation of this application, and the potential for my interpretation to expose Council to further litigation.

Author's Opinion

Notwithstanding the Objectors Legal Opinion, my interpretation of the DCP is that clause 5.1.3 of Chapter 6 applies to this application.

Section 4.15 - Evaluation of the Environmental Planning and Assessment Act (the Act) details the matters that are required to be considered in the assessment of development applications. Section 4.15(1)(iii) of the Act requires that any Development Control Plan (DCP) is to be considered in the assessment of development applications.

Section 4.15(3A)(a) of the Act indicates that if the provisions of a DCP contains standards related to the development, and the development complies with the standard, Council cannot require more onerous standards with respect to that aspect of the development.

Section 4.15(3A)(b) of the Act further indicates that if the provisions set a standard with respect to an aspect of the development, and the development does not comply with those standards, Council is to be flexible in applying the provisions to allow reasonable alternative solutions that achieve the objects of the standards dealing with that aspect of the development.

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That s.4.15(3A)(b) mandates taking a flexible approach, and the necessity of determining whether the alternative solution offered by the development proponent achieves the object of the relevant DCP provision, was confirmed as the correct approach in *Trinvass Pty Ltd v Sydney City Council* [2015] NSWLEC 151 (at paragraph 67-68).

My interpretation of the above, is that if a standard (in this case an acceptable solution) is complied with, Council must accept that the relevant component of the application is acceptable. If the standard is not complied with, Council must flexibly apply the provision to determine whether another reasonable alternative to achieving the objectives of the standard (in this case the performance criteria) has been proposed.

Having interpreted the relevant provisions of the Act, I now address the provisions of the DCP. Chapter 1 of the Shoalhaven Development Control Plan 2014 (SDCP), at Section 7 indicates how the SDCP should be applied to development. Of relevance Section 7 of the SDCP indicates as follows:

Any application for development in the Shoalhaven LGA will need to address the provisions contained in this DCP. Throughout this DCP you may find a combination of Objectives, Mandatory Controls, Performance Criteria and Acceptable Solutions.

Objectives: *For each Section or topic of relevance, objectives will clearly state what Council seeks to achieve once the Controls or the Performance Criteria are met.*

Mandatory Controls: *Are specific, prescriptive measures required for achieving the desired objectives.*

Performance Criteria: *Identify how a development should perform so that the desired objectives can be achieved.*

Acceptable Solutions: *Indicate how the development can achieve the desired performance and objectives.*

Further Section 11 of SDCP addresses variations to the provisions of the DCP and indicates the following:

The DCP aims to allow flexibility in the application of such development controls to promote innovation and design excellence. Council may consider variations to the requirements of the Shoalhaven DCP 2014 in certain circumstances. In special circumstances, flexibility can produce improved and innovative solutions for particular sites.

Section 11 goes on to say that acceptable solutions are examples of what is acceptable to achieve a performance criteria but that alternative solutions can be considered which would satisfy the objectives and performance criteria.

This is consistent with the requirements of section 4.15 of the Act as previously discussed.

My interpretation is that SDCP requires that mandatory controls (for example, such as the mandatory bushfire protection controls) be complied with, but acceptable solutions are not required to be complied with as long as the performance criteria and objectives of the standard can be achieved in another manner. In interpreting the SDCP I have also considered the requirements of the Act previously discussed, which require a flexible assessment of the provisions of a DCP, accepting alternate solutions which meet the objectives of the standard.

Having identified how SDCP is to be used for the purpose of assessment, I now address the interpretation of Chapter G6 Coastal Management Areas.

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Section 1

Section 1 of Chapter G6 of SDCP (the Chapter) indicates the purpose of the chapter is to provide "guidelines" for areas of coastal management and specifically addresses development in areas of coastal management, residential development in foreshore areas and building on sand dunes. On the basis that the Chapter is intended to provide guidance only, and that it is subservient to the provisions of SLEP which permit the proposed development with consent, it is difficult to accept that any provision of the Chapter is intended to act as a strict prohibition to development. Rather, any prohibition would appear to be one example of the way to address the performance criteria (as indicated in Section 11 of Chapter 1 of SDCP). In this regard, it is relevant that Chapter G6 does not contain any 'mandatory controls'.

Section 4

Section 4 of the Chapter identifies the Key Objectives for the chapter, as follows.

- i. Ensure that future development in areas of coastal management considers the risks associated with coastal processes and is sympathetic to the physical constraints.
- ii. Consider local physical coastal processes and hazards to avoid significant adverse impacts from these processes.
- iii. Consider ecological processes and avoid significant adverse effects on the environment.
- iv. Ensure that future developments in the coastal zone consider the risks associated with local coastal hazards such as coastal erosion, shoreline recession, coastal inundation, coastal entrance migration, slope instability and stormwater erosion and their potential increase with projected Sea Level Rise.
- v. Provide correct management techniques for coastal management.

Based on my interpretation of the requirements for assessment of the development against SDCP, compliance with these Key Objectives is critical in determining whether the application complies with the provisions of SDCP.

Section 5

Section 5 of the Chapter provides controls for different categories of coastal instability/impact. All developments must be assessed having regard to the above identified Key Objectives where the control is not satisfied, where the controls are applicable to the assessment of the application.

Section 5.1 Areas of Coastal Erosion and Shoreline Recession of the Chapter indicates that the "section applies to land affected by beach erosion and/or coastal instability. These areas are identified on the Shoalhaven LEP Clauses Map." (my emphasis by underlining). The Section goes on to identify the areas of beach erosion and/or oceanic inundation and the areas of cliff/slope instability that are identified on the *Shoalhaven LEP Clauses Map*. The subject site is not identified in the relevant *Shoalhaven LEP Clauses Map*.

Section 5.1 of the Chapter also applies to "Other areas of potential coastal instability", including properties identified but for which studies have not yet been undertaken, which are shown hatched in *SMEC 2009 Coastal Hazards Map* as well as other areas subjected to coastal instability not previously identified. This site is considered to be 'another area of potential coastal instability'. For this reason Section 5.1 of the Chapter applies to the assessment of the application. I note that whether or not the site is shown on the *SMEC 2009 Coastal Hazards map* is not material, as both types of 'other areas of potential coastal instability' are subject to the same controls.

Section 5.1 then provides specific objectives for the assessment of development under that Section. The subject application must satisfy these objectives if it does not satisfy the relevant controls which are contained in Sections 5.1.1, 5.1.2 and 5.1.3 of the Chapter, as required by both the Act and Chapter 1 of SDCP.

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Section 5.1.1

Section 5.1.1 - Areas of Beach Erosion and/or Oceanic Inundation indicates that such areas can be broken into three different risk levels: high, moderate or low and that the precincts are shown on the *SMEC 2009 Coastal Hazards Map*. The site of this development is not located within an area of coastal hazard – beaches under the *SMEC 2009 Coastal Hazards Map*. As the site is not mapped as being in an area of beach erosion and/or oceanic inundation, the controls contained in Section 5.1.1, in my opinion, do not apply to the assessment of the application.

It is noted, notwithstanding this interpretation, were the controls of Section 5.1.1 to be applicable to the assessment of the application, the controls contain acceptable solutions and performance criteria, not mandatory controls. As such, as identified in Section 4 of Chapter 1 of SDCP, where the acceptable solutions (in this case the prohibition for works seaward of ZRFC 2025) are not complied with, development can still be approved subject to the performance criteria and objectives being satisfied. Further, Section 4.1.5(3A)(b) of the Act requires Council to be flexible in applying the provisions to allow reasonable alternative solutions that achieve the objects of the standards.

Section 5.1.2

Section 5.1.2 - Areas of Cliff/Slope Instability indicates that such areas are identified on the SLEP 2014 Coastal Risk Planning Map. The site is not identified on that map and as such this section does not apply to the assessment of the application.

Section 5.1.3

Section 5.1.3 - Other Areas of Potential Coastal Instability indicates where sites are located in an area of potential coastal instability, a site specific coastal hazard study and/or geotechnical report is to be prepared to identify the coastal hazard risks to enable the “relevant development standards of this Section to be applied” (my emphasis by underlining). As previously identified, the site is located in another area of potential coastal instability. In my opinion the relevant development standards referred to in Section 5.1 are those contained in Section 5.1.3, as Sections 5.1.1 and 5.1.2 are not applicable for the reasons given above. Again, the controls in Section 5.1.3 are acceptable solutions and performance criteria and are required to be applied flexibly. Notwithstanding this, the performance criteria for Sections 5.1.1 and 5.1.3 are the same so, if I am wrong in this assessment, compliance with the performance criteria would still allow approval of the application regardless of whether the Section 5.1.1 acceptable solutions apply (as it is to be considered as “an example” of how to address the performance criteria, not the only method of doing so).

Having set out my view on how to interpret Chapter G6 of the SDCP, I have made the following assessment. In doing so, I have largely relied on the expertise and advice provided by Advisian in its reports of 6.6.17 and 1.11.18. In my view, in response to the provision of ‘competing’ information’ by the applicant and objectors, it was reasonable for the Council to have obtained independent advice from Advisian and for the Council to rely on the advice provided by Advisian on matters within its expertise.

Key Objectives

Given the following assessment, it is considered that the proposal is consistent with the key objectives, subject to the recommended conditions contained in the Advisian report dated 1.11.18.

The objectives are to:

- i. *Ensure that future development in areas of coastal management considers the risks associated with coastal processes and is sympathetic to the physical constraints.*

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The design has regard to the risks of coastal processes and hazards at this specific location, with the boat shed arm and boat shed being founded on bedrock and having floors of light weight material located above the wave inundation level. The risk of coastal inundation, sea level rise, wave runup and scouring of the footings have all been considered in the Advisian assessments dated 6.6.17 and 1.11.18 for which Advisian concluded in its 1.11.18 report as follows.

It is considered that the proposed development meets the coastal engineering performance criteria outlined in Section 5.1.1 and 5.1.3 of Council's Shoalhaven DCP 2014 Chapter G6, subject to some modifications including:

- *Landward relocation of the toilet/washroom or alternatively, constructing it on a suspended deck consistent with the adjacent deck or raising the base of the floor slab so that it is at or above the wave runup level*
- *Modifying the sub-floor perimeter beam of the boathouse such that its base is above the wave runup level*
- *Providing piled foundations to bedrock along the entire length of the screen wall to reduce the risk of differential settlement and prevent cracking of the wall.*

It is noted that the *Response to 1 November 2018 Advisian Addendum Report* ("the Horton Report"), dated 19.12.18, prepared by Horton Coastal Engineering on behalf of the adjoining property owner did not detail an assessment of the application against the objectives of Section G6 or the performance criteria of Sections 5.1.1 and 5.1.3. Rather, the Horton Report takes the position, based on the objector's legal advice, that any works seaward of the 2025 ARFC are prohibited. I do not concur with this position. However, I do note that the Horton Report does agree, as follows, that an appropriate engineering design can be shown to meet the coastal engineering aspects of the performance criteria.

"Any development with appropriate engineering design can be shown to meet the coastal engineering aspects of the performance criteria, at any setback on private property, if the fundamental issue of setback is ignored."

Given my interpretation of how to assess the application under Section G6 of the DCP, I prefer the assessment by Advisian and consider that, subject to the recommended conditions in the Advisian report dated 1.11.18, the development will appropriately address the risks associated with coastal processes.

- ii. *Consider local physical coastal processes and hazards to avoid significant adverse impacts from these processes.*

[The design, subject to the recommendations of the Advisian report dated 1.11.18, has appropriately addressed the local physical coastal processes and hazards of coastal inundation, sea level rise, wave runup and scouring of the footings of the boat shed arm and boat shed. In response to the coastal processes and hazards, the design will found the works on bedrock and have floors of light weight material located above the wave inundation level. The risks have all been considered in the Advisian assessments dated 6.6.17 and 1.11.18 and the Advisian report dated 1.11.18 concludes the design, subject to recommended conditions, acceptably addresses the processes and hazards, avoiding significant adverse impacts.

- iii. *Consider ecological processes and avoid significant adverse effects on the environment.*

The design of the development aims to permit coastal processes, including wave runup and its resultant erosion of sand, by elevating the structures and avoiding fill in the wave runup area, ensuring no resultant pollution of the foreshore environment by the erosion of imported fill.

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The provision of planting in the area near the foreshore boundary and the retention of two trees will also assist in the stabilization of the land within the site. The design will avoid significant adverse effects on the environment and the landscaping will further reduce these effects on the environment.

- iv. *Ensure that future developments in the coastal zone consider the risks associated with local coastal hazards such as coastal erosion, shoreline recession, coastal inundation, coastal entrance migration, slope instability and stormwater erosion and their potential increase with projected Sea Level Rise.*
- v. *Provide correct management techniques for coastal management.*

The final coastal engineering report by Advisian (Addendum Report No. 2 dated 1/11/18) (see attached at Appendix F) addresses the design and is satisfied the design is appropriate for the site having regard to coastal processes and hazards and provides for correct management techniques and design for coastal management. As the report references a previous report (Addendum Report dated 26.6.18), the previous report is also attached at Appendix F.

The Advisian reports address the physical coastal processes and hazards of coastal inundation, sea level rise, wave runup and scouring of the footings of the boat shed arm and boat shed. The design responds to these processes and hazards by elevating the structures of the boat shed arm and boat shed above the wave inundation level, founding the piles of the structures on bedrock and providing lightweight floors to the structures. Based on the Advisian advice, I am satisfied that the design, subject to conditions, appropriately considers and responds to the risks associated with the local coastal hazards and provides appropriate management techniques to respond to those risks.

I note that the Horton Report concurs that an appropriate engineering solution can be provided for the development. However, based on the objector's legal advice that works seaward of 2025 ARFC are prohibited, does not support any works in this location. I do not agree with this opinion as I do not agree with its premise that the works are prohibited.

5.1.3 Other areas of potential coastal instability

The development application was accompanied by a site specific coastal instability study. Throughout the history of the assessment of this application several site specific coastal instability studies were prepared on behalf of the applicant and the objector with various levels of conflicting conclusions. As a result Council engaged Advisian to prepare a site specific coastal instability study, having regard to the other studies prepared, Advisian has prepared a number of reports based on the information and architectural plans it was provided, noting that the design has been changed on several occasions, and which at various times included the reports prepared on behalf of other parties.

Advisian's final reports (attached at Appendix F) identify the coastal instability risks and addresses the performance criteria P1.1-P1.7 based on merit and the assessment is provided following. Advisian's report was prepared on the assumption that the proposed development would not receive any potential benefit or protection from coastal hazards from the existing revetment wall which was constructed by the Council to protect the sewer line. The Advisian report, dated 1.11.18, indicates that the proposed boat shed extends seaward of the ZRFC 2025, as does a portion of the boat arm.

A section of the proposed boat arm and shed is provided in Figure 5, which shows the design providing a suspended structure from the WC to the east, with concrete piers to be founded in bedrock in accordance with engineering specifications and for a timber floor to the boat shed and outdoor wash area.

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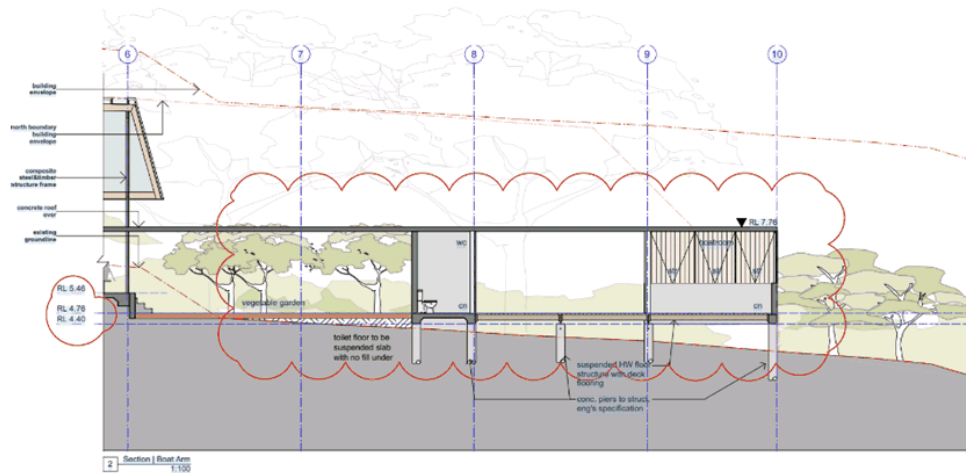


Figure 5: Section of boat shed and boat arm

I note, given the previously detailed interpretation of the requirements of this Chapter, that the acceptable solutions contained in Section 5.1.1 are not applicable, but that Section 5.1.3 applies. Acceptable solution 3.1 under Section 5.1.3 requires that a site specific coastal instability study and/or geotechnical report be submitted with a development application to which that clause applies and that the report identify the coastal instability risks and address performance criteria P1.1-P1.7 for assessment based on merit. However, if my interpretation of is incorrect and 5.1.1 applies rather than 5.1.3, as the same performance criteria apply for both sections, the following assessment of the performance criteria is still appropriate (noting that the "prohibition" of works seaward of the ZRFC 2025 is just an "example" of one way of satisfying the performance criteria in Section 5.1.1).

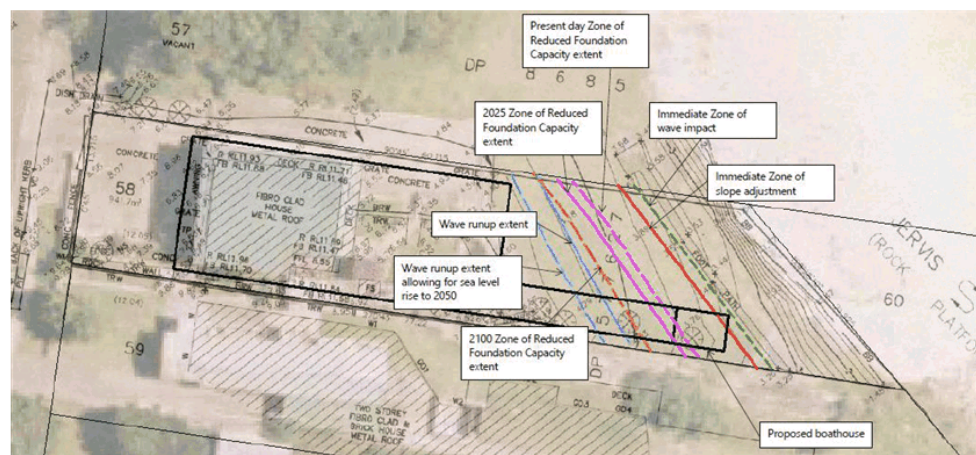


Figure 6: Excerpt from Advisian Report dated 1.11.18 showing various relevant hazard lines on subject site

Figure 6 is taken from Advisian's report and shows the various relevant hazard lines on the subject site, including the ZRFC and wave runup.

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P1.1 Development avoids or minimises exposure to immediate coastal risks (within the immediate hazard area or floodway).

Relevant extract from Advisian Report dated 1.11.18:

In accordance with the recommendations of Douglas Partners (2016) and BMT WBM (2016), it is recommended that the proposed buildings including the boat house are supported by piles bedded into the subsurface bedrock. To enable it to avoid or minimise exposure to immediate coastal risks, in its currently proposed location, the proposed boathouse would need to be constructed with a floor level above the wave inundation level plus suitable freeboard. Filling must not be allowed under the proposed boat house below the assessed wave inundation level as this would have an adverse impact on wave inundation levels.

These conditions appear to be satisfied in the updated plans, with the finished floor level of the boathouse being 4.76 m AHD as per the recommendations of Advisian's Addendum Report of 26 June 2018. It is noted from Figure 2 that there is no proposed filling below the boathouse or outdoor wash area.

Alternatively, as advised in Advisian's report of 26 June 2018, the proposed boathouse may be relocated such that it is located landward of the estimated extent of wave runup, shown in Figure 1. In that case, the floor level of the boathouse could be a paved or concrete floor located at ground level, recognising that future sea level rise greater than projected may lead to wave inundation.

It is noted that the proposed toilet area between the vegetable garden and the suspended deck depicted in Figure 2 is shown with the top of the floor level at the same height as the boathouse floor, but with a slab with filling under and an edge beam at its seaward edge. At its lowest point, scaling from the Drawing DA202 the bottom of the slab at its seaward edge is approximately 0.5 m below the finished floor level, or 4.25 m AHD. While this is 0.15 m below the current wave runup level, and the wave runup height declines as it proceeds up the beach profile, the wave action may impinge on the face of that edge beam and not be able to dissipate because the slatted floor does not continue past this point. This would not be likely to have a significant impact as the base of the slab would be at the same level as the sub-floor perimeter beam of the boathouse, however may cause some localised scour. It is recommended that the potential for scour be mitigated by adopting one of the following measures:

- *extending the suspended decking of the washdown area landward and moving the washroom/toilet landward so that the base of the concrete slab is above the wave runup level of 4.4 m AHD, or*
- *providing a suspended floor for the toilet consistent with the adjoining deck that is above the wave runup level of 4.4 m AHD, or*
- *raising the base of the slab so that it would be above the wave runup level of 4.4 m AHD.*

Comment: The amended plans have addressed this by raising the slab level. A condition of consent requiring that the development be carried out in accordance with the amended plans is recommended to ensure this occurs.

P1.2 Development provides for the safety of residents, workers or other occupants on-site from risks associated with coastal processes.

Relevant extract from Advisian Report dated 1.11.18:

As per the advice in Advisian's Addendum Report of 26 June 2018, the new development would provide for the safety of residents on-site from risks associated with coastal processes.

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The proposed boathouse would be founded on piles bedded into the subsurface rock and with a floor level above the assessed wave runup level. Notwithstanding the above, the boathouse is not a habitable structure and it is understood that it would be used as a storage area. Evacuation from the property in a coastal emergency would be available via Cyrus Street.

As the boathouse is not a habitable structure and thus would be unoccupied there would be no impact on safety of residents, workers or other occupants from risks associated with coastal processes in the event of a design storm event. Access from the proposed residence to the boathouse would continue to be maintained after a design storm event by the suspended and piled decking located above the wave runup level.

Comment: The fact that the boat shed will not be used for habitation, combined with the implementation of the design recommendations made by Advisian, will achieve compliance with P1.2 via an alternative solution. This will be supported by an appropriate condition of consent, as recommended below.

The boat shed building is approved as a non-habitable structure and must not be used for habitable purposes at any time.

P1.3 Development does not increase coastal risks to properties adjoining or within the locality of the site.

Relevant extract from Advisian Report dated 1.11.18:

The new development would not increase coastal risks to properties adjoining or within the locality of the site, provided that the proposed boathouse is founded on piles bedded into the subsurface rock, designed to withstand forces induced by the collapsing soil mass and wave impact in accordance with the recommendations of Douglas Partners (2016) and BMT WBM (2016), and with a floor level above the assessed wave runup level.

Horton Coastal Engineering (2018) undertook a calculation to estimate the extent of scour around the proposed piles based on scour around a cylindrical pile being in the shape of a cylindrical cone with the side slopes at the natural angle of repose of the sand (33°), with the maximum depth of scour being approximately equal to twice the pile diameter. That calculation assumed that the pile diameter was 500 mm and, hence, a maximum extent of scour around the piles of 1.5 m was derived. Advice from Council (pers. Comm. John Clague 17/10/18) has confirmed that the proposed pile diameter is 300 mm and, hence, the maximum horizontal extent of scour around the piles in accordance with the methodology applied by Horton Coastal Engineering would be 900 mm; an approach with which Advisian agrees. Therefore, any scour that would occur around the piles would be confined within the boundaries of the subject property and not extend into the neighbouring property. Hence, there would not be any increased coastal risk to the adjoining property in respect of scour around the proposed piles. However, the applicant could consider measures to provide scour protection around the piles to reduce the extent of scour around the piles.

Advisian's Addendum Report of 26 June 2018 noted that there is a proposed screen wall adjacent to the "boathouse arm" of the development and that the screen wall would also need to be designed in such a manner that it would not interfere with wave runup at the site.

The following observations can be made with respect to the proposed screen wall as presented in the updated Plans for the development:

- *The screen wall is parallel to the existing fence and is part of the wall structure of the boathouse, is now on piles and no longer extends down to the existing ground level.*

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- *The base of the screen wall and concrete sub-floor perimeter beam appears to be partially below the finished floor level of the boathouse. Scaling from the Drawing DA202 this appears to extend 0.5 m below the finished floor level of 4.76 m AHD, thus being 0.15 m below the estimated 1% AEP runup level of 4.4 m AHD.*

The base of the screen wall and concrete perimeter beam appears to be partly within the wave inundation area. However, the design of this has been modified since Advisian's previous assessment of 26 June 2018 and would now allow most of the wave runup to flow unimpeded below the wall. Any interaction between the base of the wall and the wave runup would be minor, not likely to affect wave runup levels on the neighbouring property and significant scour would not be induced due to the base of the wall being above the ground level. However, to obviate the present-day risk of scour from the perimeter subfloor beam being below the wave runup level it may be raised such that the base of this beam is at or above the wave runup level of 4.4 m AHD.

It is considered that the modified design would obviate the risk of scour around the base of the screen wall when compared with the previous design. However, to comply fully with the recommendations of the report 301015-03779-001, the side wall of the boathouse would extend only to the floor level and not all the way to ground level.

Advisian's advice of 26 June 2018 relating to the installation of a timber deck for the area landward of the boathouse, to maintain the finished floor level at the same level as the boathouse and allow wave runup flows to be unimpeded, has been followed for the updated design. The screen wall no longer extends to ground level below the deck level and is founded on piled foundations (note that these must be bedded into the underlying rock).

Advisian's advice of 26 June 2018 recommended that if the boathouse is to be located at the proposed location within the site, the boathouse, screen wall and washdown area could be constructed as a stand-alone structure with the floor level constructed of timber slats entirely above the wave runup level. With respect to the planned structure depicted in Figure 2, it is noted that the seaward side of the screen wall is shown to be on piled foundations while the landward side is not. If the screen wall is constructed as a single structure partially on piles and partially not, the section not on piles may be subject to a risk of differential settlement and hence could be subject to cracking. Therefore, it is recommended that the screen wall be constructed on piles down to bedrock along its entire length between the house and the toilet.

Comment: The base of the sub-beam has been raised in the amended plans however a condition of consent is recommended to ensure this occurs. Further, a condition of consent is recommended requiring the entire boat shed arm to be constructed on piles to prevent differential settlement.

I note that the Advisian report of 1.11.18 does not address the recommended condition of consent that would shorten the boat shed arm by 1.5m by relocating it westward by 1.5m. Subject to the construction remaining the same, as conditioned, the shortening of the structure would have no unacceptable impacts in relation to increasing coastal risks to adjoining properties.

P1.4 Infrastructure, services and utilities on-site maintain their function and achieve their intended design performance.

Relevant extract from Advisian Report dated 1.11.18:

The proposed development would not interfere with infrastructure, services and utilities on-site. It is noted, however, that a Council sewer line runs beneath the proposed boathouse and that the development must comply with Council requirements in relation to the sewer line.

As the boathouse is not considered to be a habitable area, the future inundation risk could be managed by ensuring that all electrical, wiring, fuel lines or any other service pipes and connections are located above the wave runup level plus a freeboard of 0.5 m.

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Access from the proposed residence to the boathouse would continue to be maintained after a design storm event by the suspended and piled decking located above the wave runoff level and, therefore, any services required for the boathouse can be designed to not be adversely affected by the design storm event.

Comment: Council's Development Engineer has considered the location of the sewer line and has no objections to the proposal as designed in this regard. Conditions of consent are recommended requiring the boat shed not be used for habitable purposes and the elevation of electrical, wiring, fuel lines or any other service pipes and connections are located above the wave runoff level plus a freeboard of 0.5 m. P1.5 Development accommodates natural coastal processes including those associated with projected sea level rise.

Relevant extract from Advisian Report dated 1.11.18:

The proposed development would accommodate natural coastal processes including those associated with projected sea level rise, as the revised plans show that the boathouse and base of the screen wall are constructed above the recommended levels which allow for wave runoff and sea level rise, and provided the boathouse is founded on piles (which need to be bedded into the underlying rock).

Comment: The assessment is noted and concurred with. The design allows for the coastal processes to occur whilst ensuring no detrimental impacts occur to adjoining properties and maintaining the structural integrity of the structures.

P1.6 Coastal ecosystems are protected from development impacts

Relevant extract from Advisian Report dated 1.11.18:

The development would not have any adverse impact on coastal ecosystems as it is located entirely within a residential lot within an already-developed area.

Comment *The author agrees that the area is developed, noting that there is an existing dwelling on the site and adjacent land, although the footprint of the proposed development will exceed that of the existing dwelling. The design is considered to have appropriate regard to the coastal ecosystem and subject to the recommended conditions will not result in uncontrolled stormwater entering the waterway or introduced fill being washed into the waterway. The retention of two trees to the rear of the boat shed and the proposed extensive native landscaping of the area seaward of the boat shed will assist in providing appropriate habitat for coastal species and stabilise the sand dunes, improving the quality of the coastal ecosystems.*

P1.7 Existing public beach, foreshore or waterfront access and amenity is maintained.

Relevant extract from Advisian Report dated 1.11.18:

The development would not have any adverse impact on beach, foreshore or waterfront access as it is located entirely within a residential lot within an already-developed area. As noted in Horton Coastal Engineering (2018), Advisian does not make any commentary about the effect of the bulk, scale or height of the building on beach amenity. However, as the building would have no impact on coastal processes outside the boundaries of the lot at 52 Cyrus Street, there would be no impact on coastal processes affecting public beach amenity as a result of the development.

Comment: The potential impacts upon the amenity of the beach with regard to solar access and visual bulk have been addressed elsewhere in this report and found to be acceptable subject to a condition requiring the boat shed to be relocated 1.5m to the west and for additional screen planting.

5.2.2 Building Envelope and Siting

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The building is to be sited within a building envelope projected at 45 degrees inward from a point 3.5m above existing ground level at the boundaries. The proposal breaches the building envelope for a small portion of the dwelling at the north-eastern portion of the roof by up to approximately 1.1m. The breach of the control can be seen in the following section diagram and is considered to be a relatively minor breach. Given the location of the breach on the site and the fact there is no adjoining residential property to the north, it has no detrimental impact upon privacy, solar access, visual bulk or views. Further, notwithstanding the breach of the control, the building has no detrimental impacts upon the amenity of the foreshore. Accordingly, notwithstanding the breach of the acceptable solution, the proposal is consistent with the performance criteria of the control and therefore is acceptable.

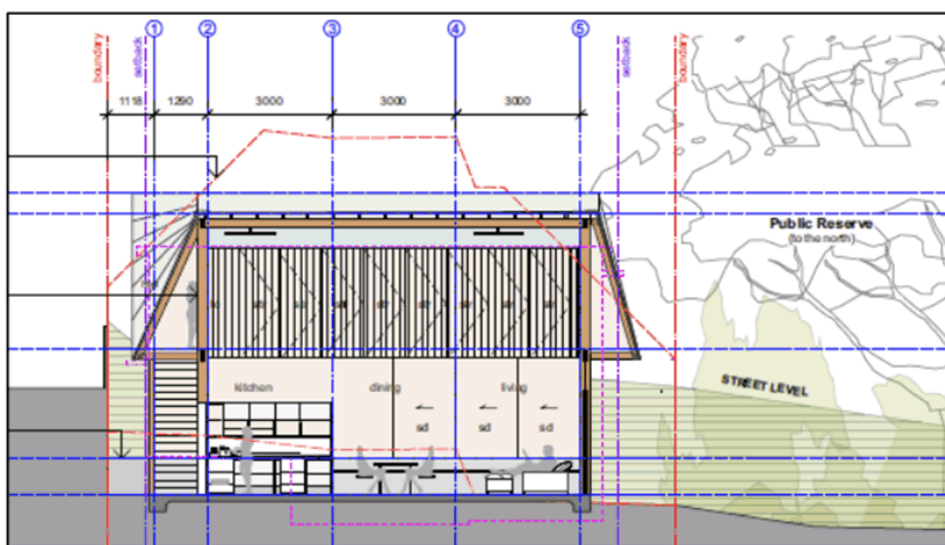


Figure 7: Section showing breach of building envelope control at north-eastern end of roof form

5.2.3 Site Setbacks

The building is required to be sited to provide one setback equivalent to 10% of the width of the allotment, with the setback preferably adjoining the wider setback of the adjoining development. The lot has a width of 13.7m, requiring a setback of 1.4m to one side. The dwelling has a setback of 2.26m to the wall from the northern boundary, but the eaves of the roof protrudes into the setback. The boat shed has a significant setback from the northern boundary of approximately 93, well in excess of the control requirement of 1.4m.

The location of the view corridor to the northern side the dwelling is considered preferable to adjoining 54 Cyrus Street as it allows a greater view corridor in conjunction with the reserve to the north. Notwithstanding the eaves project into the setback, the proposal therefore satisfies the performance criteria.

5.2.4 Building Material

A schedule of materials is supplied which is appropriate to the locality. The most significant visual element of the dwelling is the roof form.

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The roofing of the dwelling is to be medium grey colorbond metal sheeting with infill panels of translucent polycarbonate. Solar panels are proposed on the roof. It is appropriate that the solar panels should be flush mounted to avoid unsightly protrusion above the roof plane. A condition to this effect and requiring the roof and solar panels to not result in unacceptable levels of glare is recommended.

5.2.5 Trees and Vegetation

The issue of tree and vegetation removal has been addressed previously within this report and is appropriate subject to the recommended condition requiring the relocation of the boat shed 1.5m west.

5.2.6 Landscaping

The suitability of the landscape plan has been addressed previously within this report and is compliant with the provisions of this section of SDCP.

5.2.7 Site Stability, Excavation and Soil and Water Management

A maximum cut of 2.3 m is proposed under the driveway to provide for a 20,000 litre rainwater tank. The geotechnical report by Douglas Partners addresses this and finds that the cut is acceptable. There will be no adverse visual impact from the cut or from related retaining structures which will be concealed within the building structure. Conditions are recommended to require a dilapidation report for 54 Cyrus St and amended SWMP.

Section G7: Waste Minimisation and Management Controls

An appropriate waste minimisation and management plan has been submitted with the application.

Section G12: Dwelling houses, Rural Worker's Dwellings, Additions and Ancillary Structures

5.5.1 Floor Space Ratio

Maximum FSR 0.5:1 - The site area is 941.7m² and the GFA is 219.3m², resulting in a compliant FSR of 0.23:1.

5.1.2 Height of Buildings

The height of the building has been addressed in the assessment of the application against the SLEP provisions and is compliant with Acceptable Solution A2.1 and, performance criteria P2.

5.1.3 Setbacks and Building Lines

Minimum side setback 900mm Minimum 1.12m

Front setback 7.5m Minimum 10m

Rear setback 7.5m Minimum 7.5m

5.1.4 Design and Appearance

The acceptable solutions require that the dwelling be designed with use of modulation and articulation to articulate the facades and minimise lengths of unbroken walls and glazed areas. It further requires that buildings be of a suitable colour and materials to avoid excessive glare when viewed from another dwelling or public place.

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The design provides for appropriate modulation and articulation, in particular by way of the architectural roof form proposed, which wraps down around the first floor of the dwelling. Whilst not a traditional design, the modern design is appropriate. A colour scheme based on natural colours and appropriate materials such as concrete and metal is proposed, and will not lead to excessive glare

5.3.4 Views and Visual Privacy

View Impact

The acceptable solutions requires any reduction in views to not be considered to be severe or devastating based on the NSW Land and Environment Court Planning Principle – Views.

The proposal has the potential to affect views from properties located on the opposite side of Cyrus Road. These properties are significantly elevated above the subject site and are single storey in construction.



Photograph 4: View from in front of 53 Cyrus Street taken from nature strip

As viewed from these properties the height of the proposed building is increased by approximately 0.8m compared with the existing structure and will remain lower than the height of the adjoining building at 54 Cyrus Street.

The notion of view sharing is invoked when a property enjoys existing views and a proposed development would share that view by taking some of it away for its own enjoyment. I have first assessed the views which are likely to be affected.

Photograph 4 was taken from the nature strip in front of 53 Cyrus Street. It is noted that the views from the windows and verandah of the holiday cottage occur from a higher viewing point than shown in the photograph. When viewed from the increased height of the windows and verandah, the proposal will result in the loss of part of the water views, but will retain the more significant land-water interface views in the photograph. The view impact will occur from the two front windows and side balcony of the cottage and would be classified as negligible. I have also assessed the reasonableness of the proposal that is causing the impact. Given the proposed development is compliant with the height control by over 1m at the front edge of the roof, the design is considered to appropriately minimise the view impacts. As such the view impact on this property is compliant with the acceptable solution for Section 5.3.4.

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Photograph 5: View taken from nature strip in front of 57 Cyrus Street

Photograph 5 was taken from the nature strip in front of 57 Cyrus Street and a similar view (but more angled) is available from 59 Cyrus Street. It is noted that the views from the windows and verandah of the holiday cottages again occur from a higher viewing point than shown in the photograph. The increased height will result in the loss of part of the water views, but will retain the more significant land-water interface views in the photograph. The view impact will occur from the two front windows and front verandah of the cottages and would be classified as negligible. Given the building is compliant with the height control by over 1m at the front edge of the roof, the design is considered to appropriately minimise the view impacts. As such the view impact on this property is compliant with the acceptable solution for Section 5.3.4.

The proposal also has the potential to result in view impacts to the adjoining property to the south, 54 Cyrus Street. This property is constructed with a bedroom at the upper level adjoining the proposed dwelling on the subject site and a master and another bedroom on the ground level adjoining the boat shed arm and has living spaces at the first floor level adjoining the boat shed arm and boat shed.

The windows from the upper level bedroom provide views diagonally across the side boundary of the subject site and the views from the other rooms are enjoyed directly across the side boundaries, though there are also windows facing the rear boundary from the master bedroom and living space. The views across the side boundaries are inherently more difficult to retain.

Photographs 6 and 7 are taken from the master bedroom and show the views across the subject site and to the rear boundary. The views across the subject site are filtered water and reserve views and the views to the rear boundary are water views and land-water interface views.

The filtered water and reserve views from this window will be lost as a result of the proposal. A different design in which the height of the boat shed and boat shed arm were reduced would not result in the retention of these views.

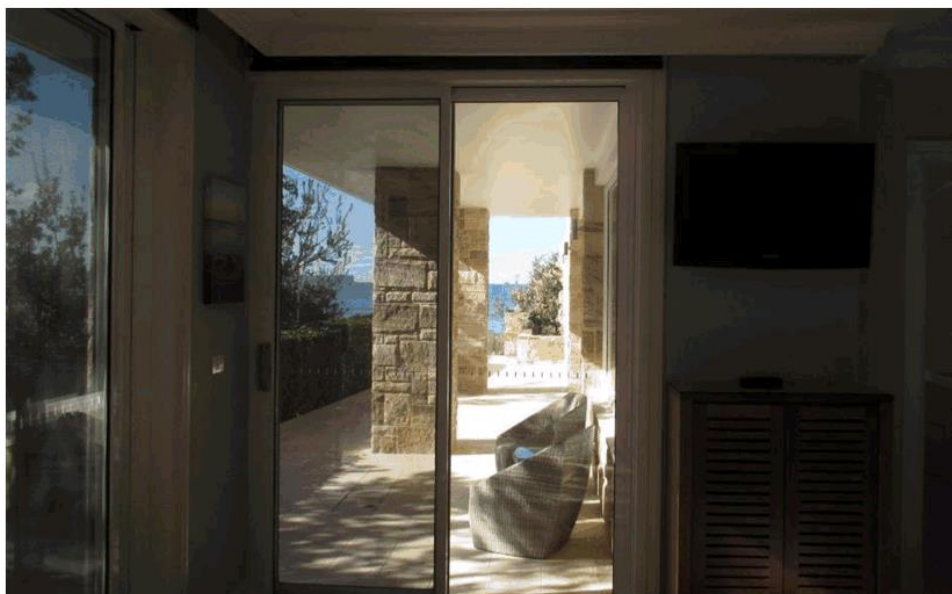
The view from the south facing window will not be impacted by the proposed works, given the recommended condition to increase the rear setback of the boat shed.

The dwelling also has a bathroom on the lower level with filtered views of the water, beach and reserve (including land-water interface) across the side boundary of the subject site. These views would largely be lost as a result of the proposal, with a small amount, in the order of 15-20%, of the view being retained with the recommended additional 1.5m setback of the boat shed.

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Photograph 6: View from master bedroom across subject site



Photograph 7: View from master bedroom towards rear boundary

DE19.110 - Attachment 1

Planning Report – S4.15 Assessment - [#Property AKA#]

Adjacent to the master bedroom and the bathroom is a partially covered side patio. This is an ancillary area of private open space and enjoys filtered views of the water, beach and reserve (including land-water interface) across the side boundary and water views and land-water interface views across the rear boundary. The filtered views from the patio across the side boundary to the beach and water (including land-water interface) would be lost as a result of the proposal, however some views of the trees within the reserve would be retained. A design in which the height of the boat shed and boat arm were reduced would not result in the retention of these views. The views across the rear boundary would be retained under the proposal.

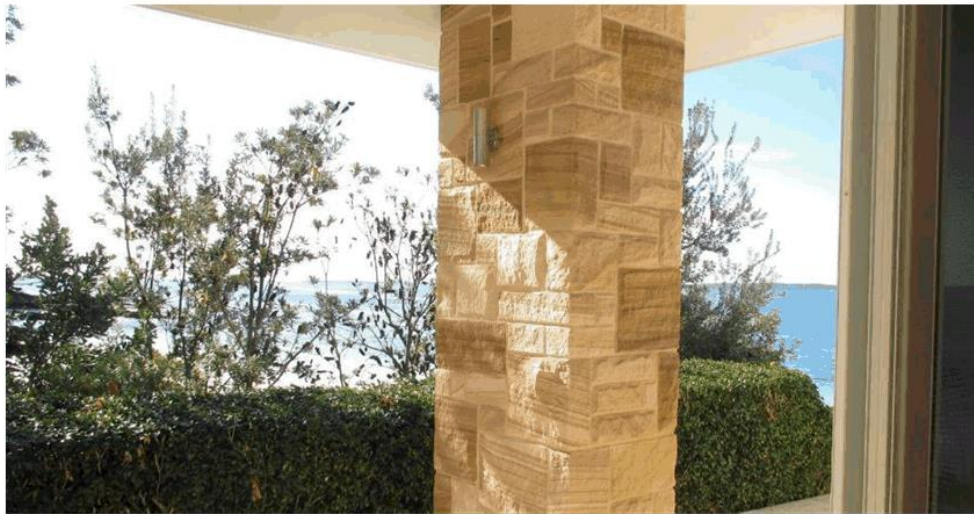
Finally, the rearmost bedroom at the ground level has views across the side boundary and diagonally across the side and rear boundary. The side views (shown in Photograph 8) are filtered views to the reserve, beach and water (including land-water interface) and those diagonally include unfiltered water views (including land-water interface). The proposal would result in the loss of the filtered water and beach views (including land-water interface) across the side boundary but would retain some views of the trees within the reserve. A design in which the height of the boat shed and boat arm were reduced would not result in the retention of these views. The diagonal view (shown in Photograph 9) would retain the views to the right of the sandstone pillar. The retained view would increase with the additional setback of the boat shed recommended.



Photograph 8: View from rearmost bedroom over side boundary

The upper level bedroom had views diagonally across the side and rear boundary which include both filtered views of the beach and water and partial water and beach views (including land-water interface). The proposal will result in the partial loss of the filtered views (beach) but would not impact the unfiltered water and beach views. The proposal would also improve the currently filtered water views due to the removal of some of the existing trees.

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Photograph 9: View from rearmost bedroom diagonally across side boundary



Photograph 10: View from upper level bedroom over rear boundary

The views from the dining/living area across the side boundary (Photograph 11) are filtered reserve, water and beach views. The impact upon the views of the proposal is the loss of the lower component of the view, which is largely views of vegetation and part of the filtered beach views. The water and reserve views will be improved with the removal of the vegetation which currently filters the view. The living areas also have views across the rear boundary which are not impacted by the proposal.

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Photograph 11: View from dining room diagonally across side and rear boundary



Photograph 12: View from rear balcony across side boundary

DE19.110 - Attachment 1

Planning Report – S4.15 Assessment - [#Property AKA#]

The dwelling has a covered rear deck with significant and uninterrupted beach and water views across the rear boundary and partially filtered reserve, beach and water views (including land-water interface) across the side boundary (Photograph 12). The view impact of the proposal would be the loss of the lower portion of the view, largely vegetation, with some loss of beach view. This view impact would be reduced by the increased setback of the boat shed by 1.5m as recommended.

Finally, the property enjoys views from the coping surrounding the pool and a rear paved area both to the rear (uninterrupted beach and water views) and over the side boundary (Photograph 13), reserve, beach and water views (with land-water interface). The proposal will result in the loss of the lower vegetation views across the side boundary.



Photograph 13: View from rear balcony across side boundary

In accordance with Step 1 of the Land and Environment Court Planning Principle – Views, the impact of the proposal upon the views from this property have been detailed above. As required by Step 2, the assessment identifies the part of the property from which the views are obtained and all views identified are from a standing position, with views from a seated position being harder to maintain. It is also noted that views across a side boundary, being the views which are impacted by the proposal, are more difficult to retain and the expectation to retain such views is often unrealistic according to the Planning Principle.

Step 3 is to consider the extent of the impact of the view from the property as a whole, with impacts from living areas being more significant than for bedrooms and service areas. Having regard to this assessment, and the limited view impact from living areas, the view impacts of the proposal upon the dwelling at 54 Cyrus Street, including consideration of the increased 1.5m setback of the boat shed, is categorised as minor.

Step 4 requires consideration of the reasonableness of the proposal. The proposal is compliant with the height control and the majority of the building envelope controls, with the controls varied not resulting in any increase in the view impacts. As such the design of the development is considered to be reasonable.

The design of the proposal, with the recommended condition, has ensured the views to the living and primary private open space areas of the dwelling are largely retained and/or improved.

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Whilst views from the bedrooms and secondary private open space are impacted, none of these spaces suffer a complete loss of view and their location at ground level and the outlook to the views across a side boundary make retaining the views inherently difficult. As such the view impact on this property is compliant with the acceptable solution for Section 5.3.4

Privacy Impact

The acceptable solutions requires that direct views between living area windows of adjacent dwellings be screened or obscured where ground and first floor windows are within an area described by a 9m radius from any part of the window of the adjacent dwelling. Further, direct views from living areas of dwelling into the principal area of private open space of another dwelling are to be screened or obscured within a 12m radius.

The design ensures an appropriate level of privacy to the adjoining dwelling at 54 Cyrus Street, with windows from the living areas of the dwelling oriented to the rear of the site, having no unacceptable impact upon the privacy of the living areas or private open space of 54 Cyrus Street.

The provision of the boat shed arm will also afford additional privacy to the lower level windows (bedroom and bathroom) of the dwelling at 54 Cyrus Street when viewed from the rear yard of the subject site. The boat shed arm will also afford an improved level of privacy from those windows and from the living area windows of 54 Cyrus Street to the rear yard of the subject site as well as the proposed dwelling.

5.3.5 Freestanding Privacy Screens

The provisions related to freestanding privacy screens are not relevant to the assessment as the boat shed arm is not freestanding.

5.3.6 Solar Access

The solar access provisions are a repeat of those contained in Section G1 of SDCP and are satisfied by the proposal.

5.3.7 Car Parking, Driveways and Site Access

Two parking spaces are proposed which are behind the 7.5m building line.

5.3.8 Ancillary Structures

Ancillary structures are not to be capable of habitation and the boat shed satisfies this requirement.

5.3.9 Stormwater Management

The impervious area are is below 48%, and as such OSD is not required under the provision. However, given the need to discharge to an absorption trench or level spreader onsite, a revised stormwater design incorporating OSD is appropriate and a condition to this effect is recommended.

5.3.10 Site Stability and Excavation

The dwelling is located on the portion of the site with the most gentle slope and minimises cut and fill, satisfying the acceptable solution of a maximum of 1m cut, other than in relation to the location of the underground water tank. As addressed previously in this report, the variation to the extent of cut for the underground water tank is acceptable based on the geotechnical report by Douglas Partners. Given the relatively minor excavation proposed within the development, it satisfies Performance Criteria P30, to minimise excessive disturbance of the site, notwithstanding the variation to the acceptable solution control in relation to the rainwater tank.

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5.3.11 Environmental Constraints

The site is not subject to natural hazards other than in relation to coastal hazards, which are addressed in relation to Section G6 of the DCP previously in this report.

5.3.12 Requirements for Demolition and Waste Management

Appropriate provision has been made for the demolition works and waste minimisation subject to recommended conditions.

5.3.14 Heritage

As required by Acceptable Solution A35.1, the applicant submitted a heritage impact statement prepared by an appropriately qualified and experienced person that demonstrates that the heritage characteristics of a site or adjoining sites will not be detrimentally impacted by the building and site works. I have also considered the heritage impacts of the proposal and concluded these are acceptable, for the reasons set out in the SLEP section of this report.

5.3.18 Building Adjacent to Drainage Easement and Sewers

The application proposed the construction of the boat shed over the zone of influence of the sewer main. Shoalhaven Water has issued a Notice permitting this subject to conditions. Given the issue of the Notice by Shoalhaven Water, the proposal is considered to satisfy Performance Criteria P42.2 in relation to works over a sewer. The condition recommending an increased setback for the boat shed will reduce the impact.

Section G21: Car Parking and Traffic

The proposal provides 2 parking spaces in an appropriate design and location, satisfying the provisions.

iiia) Any planning agreement that has been entered into under section 7.4, or any draft planning agreement that a developer has offered to enter into under section 7.4

No planning agreement or draft has been entered into in relation to the application.

iv) **Environmental Planning and Assessment Regulation 2000**

NSW Coastal Policy 1997

Clause 92 of the Regulation required Council to consider the NSW Coastal Policy 1997 as a mandatory relevant consideration which must be considered in determining the development application. Clause 92 of the EPA Regulation was repealed by the *Environmental Planning and Assessment Further Amendment (Miscellaneous) Regulation 2018* and does not appear to be saved in relation to this application. However, the Council is required to consider the NSW Coastal Policy under clause 5.5 of its LEP. Although Clause 5.5 of its LEP is now also repealed, its application in relation to this development application is saved by clause 8 of the *Standard Instrument LEP Order 2006*, which states that amendments made by an amending order do not apply to or in respect of any development application that was made, but not determined, before the commencement of the amending order. Accordingly the provisions of the NSW Coastal Policy remain relevant to the Council's assessment to this development application. The elements of the NSW Coastal Policy relevant to the assessment of this development are outlined below.

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Objective 1.4.5: Development proposals on the coastline and foreshore, which are threatened by coastal hazards or where they pose a threat to the physical well-being of the coastline subject to the provisions of the Coastal Protection Act, 1979 will be approved subject to conditions which minimise impacts or rejected where they pose an unacceptable threat to the physical well-being of the coastline.

Comment: The assessment undertaken of the application has determined that this objective is met and suitable conditions of consent are recommended.

Table 2 in Appendix C (Explanatory Notes) to the Policy contains a list of the provisions of the policy that are most relevant to development control, while strategic action 3.2.4 contains the most detailed information on matters to be considered by council when assessing development applications and is outlined in Table 3.

All of these considerations find expression in SEPP 71 (made on 1 November 2002 and most recently amended on 22 February 2014), clause 5.5 of Shoalhaven LEP 2014 and Chapter G6 (Coastal Management Areas) of Shoalhaven DCP 2014. The development has been suitably assessed, as detailed elsewhere in this report and its annexures.

Coastal Design Guidelines for NSW (2003)

The Coastal Design Guidelines for NSW (2003) have been considered in the assessment of the application. Hyams Beach falls within the categorisation of 'coastal hamlet' under the Guidelines.

The development generally complies with the design guidelines for coastal hamlets. Its compliance will be enhanced by recommended conditions including:

- increased foreshore setback of the boathouse arm component;
- removal of encroachments (section of front fence and concrete driveway) on the adjoining public reserve.

The proposed development has been assessed in relation to all relevant regulations and is either acceptable or has been addressed by way of recommended conditions of consent.

v) Any coastal zone management plan

The Coastal Zone Management Plan 2018 was adopted in October 2018. The Plan seeks to ensure the appropriate management of the coastal zone. The assessment of the coastal impacts of this development in relation to coastal hazard, shadowing and visual bulk throughout this report indicate the proposal is acceptable development within the coastal zone. The development is considered to be consistent with the Coastal Zone Management Plan.

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

The likely impacts of the development in relation to the natural and built environment have been considered throughout this report and are acceptable.

The proposal will have no adverse social impacts and will have no adverse economic impacts.

(c) Suitability of the site for the development

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Having regard to the assessment contained within this report, particularly in relation to the coastal hazard assessment, the development is considered to be suitable for the site, subject to the recommended conditions of consent.

(d) Submissions made in accordance with the Act or the regulations

As has been indicated in the history section of this report, various versions of the application and supporting information were notified prior to the Land and Environment Court appeal and decision. The submissions which were received in relation to each notification process were addressed in detail in the original report to Council. The original report to Council and the assessment is attached at Appendix D of this report.

I generally concur with the assessment of and responses provided in response to those submissions in the original report, although the development application has been amended since these submissions were received and some of the issues initially raised in submissions are no longer relevant.

Fourth and Fifth Notifications

Since the Court's decision setting aside the consent granted by the Council, the application has been amended and has been notified a further two times.

The fourth notification occurred from 4 – 16 August 2018. In response to this notification thirteen submissions were received, including eight submissions on behalf of the adjoining owner at 54 Cyrus Street. These documents are attached to this report at Appendix E. The fifth notification period occurred from 4 – 19 December 2018. In response to the December notification two submissions were received on behalf of the adjoining owner at 54 Cyrus Street, along with a series of emails. A submission was also received from the applicant in response to the submissions. These documents are attached to this report, also at Appendix E.

Subsequent to the author's site inspection and inspection from the adjoining property, a further submission was received on behalf of the owner of 54 Cyrus Street which contained the following:

1. Chronology of events and notification of Shoreline Recession from coastal hazards.
2. Summary regarding DA 16/1341 with Annexures.
3. Bundle of documents:
 - (i) Submission by Hyams Beach Village Association
 - (ii) View from upper level of No 54
 - (iii) Photographs of Comparable concrete panels
 - (iv) Drawing – Northerly elevation of No 54 with comments
 - (v) Photographs showing shore line recession between 2001 (photographs 1, 2, 3) and 2011 (photograph 4 – shovel under sewer manhole).
 - (vi) Photographs of storms and shoreline recession
 - (a) 2001 (photograph 1, 2, 3, and 4)
 - (b) 2014 (photographs 5 to 8)
 - (c) 2016 (photographs 9 -13)
 - (vii) Stutchbury drawing of Boathouse Arm and Boathouse DA202 Issue 1 – 18.3.2016
 - (viii) Montage Showing impact of:
 - (a) Solar and view loss to lower floor and balcony of No 54 – Nos. 1 to 3
 - (b) Loss of amenity to adjacent public beach - No 4
4. Report of Advisian dated 2 May 2018.

Planning Report – S4.15 Assessment - [#Property AKA#]

The majority of this information has been previously lodged with Council. However, all of the additional submissions and information has been considered in this assessment of the application.

The matters raised in these submissions have been grouped into categories and are addressed below:

1. Questions about how the application can be assessed when the Land and Environment Court has set aside the consent.

Comment As the Court set aside the consent, the development application reverts to being undetermined. As such Council accepted amended plans from the applicant and will now determine the amended application in accordance with the requirements of the EPA Act.

2. Clarification is requested of the materials for the wall of the boat arm and whether it will extend to ground level.

Comment The wall of the boat arm is to be constructed of concrete. The wall does not extend below the floor level of the structure.

3. Questions about what the WC floor and boat shed floor is to be constructed of.

Comment The WC floor is proposed to be concrete and the boat shed floor is proposed to be constructed of timber.

4. Is there a revised SEE, coastal engineering report, engineering details or updated topographical diagram of the boat arm showing the wave runup and ZRFC provided by the applicant?

Comment No

5. Clarification is sought as to what the grey highlighted structure is that sits below the brown-highlighted structure on the revised plans

Comment The applicant advised that the structure is a concrete beam around the perimeter of the boat house that supports the structure. See later comments in response to concerns 16 and 17 below.

6. Given the Advisian report recommends a timber structure and wall and the application proposes concrete, concern is raised in relation to the safety of the structure.

Comment The applicant has proposed the use of concrete structures in part, with timber structures. Given Council is required to assess the application as lodged, Advisian provided further advice addressing the structures as proposed. A comment in response to the safety concerns which have been raised in submissions is provided in relation to concern number 24 below.

7. The design of the boat shed and arm has unacceptable visual impacts viewed from the beach and is excessively high and will set a precedence.

Comment The impact of the structure on the visual amenity of the beach and its height is addressed elsewhere in the report. This report recommends the imposition of a condition so that the structure is set back an additional 1.5m from the beach which will ensure the retention of two existing Banksia which will provide visual screening of the boat shed when viewed from the closest positions on the beach. With this change, the development is considered to be acceptable and of reasonable height.

Planning Report – S4.15 Assessment - [#Property AKA#]

The boundary of the property may also extend further seaward than members of the public realise. As the proposal has acceptable visual impacts it cannot set a detrimental precedent. Further, each application is required to be assessed on its merits.

8. Concern Council is using ratepayer's money to commission reports related to the proposed development.

Comment This is not a matter for consideration in assessing the application, but rather a matter for Council.

9. Request the matter be called to a full Council meeting

Comment This is a matter for Council, not a matter for consideration in the assessment of the application.

10. The wall is of excessive length and height.

The length of the boat arm and shed does not breach any controls of SLEP or SDCP. The height of the structure is considered acceptable and also complies with the SLEP and SDCP height controls.

11. Advisian and Council officers have changed their positions in the assessment.

The application has been assessed by a number of people over the significant period of time since it was lodged (in excess of 3 years ago) and has been amended in various ways. The Advisian reports have changed in response to additional information they were provided with or amendments to the plans. I can provide no comment on the positions in the assessment made by Council officers in the past but have assessed the application independent of these.

12. The piers upon which the boat shed and boat shed arm are to be constructed will be visible from the beach.

A recommended condition of consent is that the landscape plan be amended to require landscaping to the south of the boat shed and arm and to the north and west of the boat shed to achieve a height and density of vegetation that would visually screen the boat house arm and the piers of the boatshed arm and boat shed when viewed from the closest locations on the beach.

13. Request for additional time to prepare submission.

An extension of time was given.

14. It is inappropriate to reply upon Advisian's assessment of performance criteria P1 – P7 of Chapter G6 of SDCP.

The assessment against the performance criteria has been prepared by the author based on advice prepared by Advisian and all other information available, including submissions and the application.

15. Legal opinion provided that construction seaward of the ZRFC 2025 is prohibited.

Consideration is given to the legal opinions provided elsewhere in this report.

16. Clarification is sought as to whether it is proposed to have concrete perimeter beams supporting the masonry walls of both the boathouse and the outdoor wash area. If this is the case a diagram depicting the nature, extent and dimensions of that concrete perimeter beams should be provided.

Planning Report – S4.15 Assessment - [#Property AKA#]

Comment The applicant provided the following response to the above request for clarification.

"It is not proposed to have concrete perimeter beams supporting the masonry walls of both the boathouse and the outdoor wash area. The need for the concrete perimeter beams is no longer required as there is no concrete slab and the in situ concrete walls will be supported directly off the 300 diameter piers.

The walls to the boathouse and arm have always been nominated to be in-situ concrete – not masonry (blockwork) and as such the timber floor will be supported from hardwood timber beams (HW Structure) connected to the walls or the 300 diameter piers as detailed on the drawings. The outdoor wash area will be supported on southern side by the in situ concrete wall and on the other side by timber beams supported off the 300 diameter piers – as shown in the northern elevation drawing DA204 – Rev 3."

17. If there is no concrete perimeter to either the boathouse or the outdoor washroom, is it right that there are 3 concrete columns, each 300 mm in diameter, supporting a 10.5 m length of concrete wall approximately 4 m high, and a concrete roof, over the outdoor wash area and boathouse?

Comment The applicant provided the following response to the above request for clarification.

The concrete wall 200mm thick and 3.36m (RL 4.4 to RL 7.76) in height - not approximately 4 metres as suggested by Mr. Lynch.

The section drawing submitted DA302 – Rev 3 shows 5 concrete piers supporting the northern side of the boathouse structure and outdoor wash area structure. The southern elevation drawing DA202 – Rev A shows 5 concrete piers supporting the boathouse and boat arm wall structure.

18. Horton Coastal Engineering (on behalf of the owner of 54 Cyrus Street) provided a submission which raises concerns that it appears that the base floor level of the boathouse has been set at 4.40m AHD, with piling extending below that. However, aspects on some drawings are unclear, eg DA 302 seems to show fill below the vegetable garden and above the existing ground level and 4.4m AHD (which would alter wave runup levels, and was specifically prohibited in the previous DA consent). On DA103, a garden wall also appears to remain on the plan, which extends below 4.4m AHD and would alter wave runup levels, and was thus specifically prohibited in the previous DA consent.

Comment Conditions of consent are recommended which address this concern.

19. Development on the site seaward of ZRFC 2025 is prohibited by SDCP

Comment This concern has been addressed at length in the report and this report concludes that the development meets the applicable SDCP Performance Criteria.

20. It is poor coastal planning to construct seaward of the ZRFC 2025. The submission by Horton Coastal Engineering confirms that any structure can meet the coastal engineering aspects of the performance criteria on any setback on private property with appropriate engineering design. The submission then goes on to suggest that a precedent would be set by approving the development which would result in the DCP becoming useless in facilitating consistent coastal planning. The submission indicates the ZRFC 2025 line should be the minimum setback line on the site and to do otherwise would be to ignore the fundamental principles of the Coastal Zone Management Plan.

Planning Report – S4.15 Assessment - [#Property AKA#]

Comment It is agreed that with appropriate engineering the proposed structure can be located in its proposed position and satisfy the coastal engineering aspects of the performance criteria of Section 5.1.3 of Part G6 of the RDCP. Further, with the additional 1.5m setback recommended, the retention of the two trees forward of the boatshed and the landscaping required by the landscape plan and conditions of consent, the visual appearance and shadow impact upon the coastal foreshore will be acceptable. In such circumstances the proposal would be consistent with the provisions of Part G6 of RDCP and as such cannot be considered to be inconsistent with the Coastal Zone Management Plan which specifically indicates coastal hazard areas are to be managed through the application of the controls of the LEP and DCP. In this regard, it is noted that with the increased setback, the boat shed will be set well behind the required foreshore setback line of 7.5m contained in Chapter G12 of SDCP. In relation to precedence, from a planning perspective, if a development has an acceptable impact and appropriately responds to the provisions of SLEP and SDCP, as does the proposal, it cannot set an unacceptable precedence for future development. Further, the coastal hazard provisions of SDCP for sites such as the subject site which are not currently mapped require a site specific merit based assessment and given that, no precedence can be set by the approval of this particular application.

21. If Advisian is of the opinion that it is appropriate to construct seaward of the ZRFV 2025 it should provide reasons why it is acceptable and necessary to do so.

Comment There is no requirement within SDCP to provide justification for why development is to be constructed seaward of the ZRFC 2025 on the subject site which is not in a mapped area. Only an assessment against the performance criteria is required.

22. The submission by Horton Coastal Engineering indicates that when issues such as bulk, scale and height are considered in relation to public beach amenity it would result in justification as to why the proposed setback is inappropriate on a merit basis in relation to these matters.

Comment It does not appear that the author of the Horton Coastal Engineering report (or the Advisian report for that matter) are suitably qualified or experienced to address the concerns raised in relation to bulk, scale and height. These issues have been addressed elsewhere in this report, including in the assessment of the performance criteria of Section 5.1.3 and found to be acceptable subject to a condition relocating the boat shed 1.5m to the west.

23. Concern is raised as to scouring impacts upon the adjoining property as the potential for 900mm of scouring width may impact the adjoining property as it is unknown where the piles will be located. Further, without coastal engineering in relation to the diameter of the piles they may be increased which may result in impacts upon the adjoining property. Specialist coastal engineering input (from a suitably qualified coastal engineer) into the design of the proposed structure, including the piling, is considered to be necessary, as well as certification from a suitably qualified structural engineer that these coastal engineering matters have been considered.

The boat shed and boat shed arm is located 1.12m from the boundary of the subject site with 54 Cyrus Street and the plans show the piles siting northward of the southern extreme of the southern wall of the structure. As such 900mm of scouring would occur wholly on the subject site. The concern in relation to the sizing and design of the piling is appropriate and a condition of consent is recommended which would require the piling and structural design to be prepared in consultation with a suitably qualified and experienced coastal engineer and structural engineer and to ensure that the piling be designed in a manner that prevented scour occurring beyond the boundaries of the subject site. Such detailed design work is appropriate to occur at the Construction Certificate stage.

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24. The proposed boat shed and arm pose a significant safety risk due to their construction forward of the ZRFC 2025 and the lack of detailed design addressing the structural adequacy of the structure.

Advisian's assessment has confirmed that the structure can be designed and constructed in a manner that does not pose an unacceptable safety risk despite partly being located seaward of the ZRFC 2025.

25. The height of the boat arm is not in accordance with the acceptable solutions in Chapter G12 of RDCP and the breach is not consistent with the performance criteria as the impact of the structure is not minimised.

There is no applicable acceptable solution for the height of the boat arm contained in the above section of SDCP, with the only ancillary structure height control being applicable to garages. However, as addressed previously within this report it is considered that the height of the structure is acceptable, having an acceptable visual bulk as viewed from public and private places and not resulting in an unacceptable impact upon views.

26. Advisian is not an independent consultant

In response to the provision of 'competing' information' by the applicant and objectors, the Council commissioned independent advice from coastal engineering consultant, Advisian. Advisian is a consultant engaged by Council to provide it with independent coastal engineering advice in relation to the subject application. There is no evidence that Advisian has not provided an independent and considered view in responding to the questions asked of it. In this context, it is reasonable for the Council to rely on the advice provided by Advisian on matters within its expertise to inform its decision making. .

27. The revised plans do not comply with the Advisian report.

The Advisian Addendum 2 dated 1.11.18 report confirms the plans are not consistent with the Advisian report and recommends conditions of consent which have been included in the recommendation of this report.

28. In response to the above submissions the applicant provided the following comments:

Thank you – the submissions again contain items that are incorrect.

G+T Law submission

Item 1 to 3 DCP's are development controls – they place development standards – they do not impose prohibitions. The QC opinion is just that – an opinion. It should be noted that this opinion fails to acknowledge Section 4.15 (3A) (b) of the EPA Act:

"if those provisions set standards with respect to an aspect of the development and the development application does not comply with those standards—(the Consent Authority) is to be flexible in applying those provisions and allow reasonable alternative solutions that achieve the objects of those standards for dealing with that aspect of the development"

Item 4 The interim works undertaken by Council were undertaken to protect the Council's sewer line. This was undermined near the sewer pit located on No. 54 during the construction of that property. These works were also required to enable the owners of No. 54 construct a pit to enable the discharge of their stormwater onto the rock ledge. AT no time did Catherine or I demand or insist upon the Council undertaking at its cost emergency coastal protection works.

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Items 5 to 11 I do not believe that structural integrity is a requirement of a development consent and usually is a requirement to obtain a Construction Certificate. The sections of the Douglas Partners Report are taken out of context suggesting the lack of understanding of foundations, structures and the integrity of those structures. The design will be in accordance with the BCA and all applicable Australian Standards. Mr Horton in his submission states "Any development with appropriate engineering design can be shown to meet the coastal engineering aspects of the performance criteria".

Item 12 The structural engineer has specified a minimum bearing capacity of 1Mpa which is less than the bearing capacity of 1500kPa (1.5Mpa) therefore the bearing capacity is 1½ times that which is required.

Item 13 Collaroy beach is a completely different coastal hazard.

Item 14 The structure is not an enormous structure. Section 5.2 of the Council DCP – Chapter G6 - outlines controls for all residential development located on land that is the first lot back from a waterfront. The proposed development complies with the Acceptable Solutions in this Section of the DCP.

Item 15 & 16 This was dealt with in the Court's determination

Item 17 to 20 I assume that Advisian stand by their reports

Item 21 (a) DCP's are development controls – they place development standards – they do not impose prohibitions.

Item 21 (b) This is a subjective view and the G + T Law not substantiated their claim that the "screen wall pose a significant risk to the safety of the public and adjacent properties";

Item 21 (c) It is a performance based solution and has been dealt with in the Court's determination. The Performance Criteria identifies how a development should perform so that the desired objectives can be achieved. Acceptable Solutions indicate how the development can achieve the desired performance and objectives.

Item 21 (d) The application stands at submitted

Item 22 This item has been dealt with before

Item 23 G + T Law have had ample time to have their consultants prepare reports – they were aware of the new drawings and information prior to their email of 23rd November 2019 – some 4 weeks ago

Horton Coastal Engineering Submission

Section 2 The drawings are quite clear and not ambiguous.

Section 3.2 The QC opinion is just that – an opinion. It should be noted that this opinion fails to acknowledge Section 4.15 (3A) (b) of the EPA Act:

"if those provisions set standards with respect to an aspect of the development and the development application does not comply with those standards—the Consent Authority) is to be flexible in applying those provisions and allow reasonable alternative solutions that achieve the objects of those standards for dealing with that aspect of the development"

Planning Report – S4.15 Assessment - [#Property AKA#]

Section 3.3 Mr Horton suggests that the Council's DCP should now be changed to provide for new set back controls. Section 5.2 of the Council DCP – Chapter G6 - outlines controls for all residential development located on land that is the first lot back from a waterfront. The proposed development complies with the Acceptable Solutions in this Section of the DCP.

Section 3.4 Necessity is not a consideration in determining an application. The proposed development complies with the Acceptable Solutions in this Section 5.2 of the DCP.

Section 3.5 The drawings quite clearly show the piles are located on Grid line E which is 1120mm from the boundary. The design will be in accordance with the BCA and all applicable Australian Standards.

I also believe that Mr Horton should also substantiate his statement that "Advisian (2017, 2018a, 2018b) is fundamentally flawed in not reiterating this point in a similar manner, and inconsistent with their own work for Council (and other Council's) on coastal planning".

(e) The Public Interest

Having regard to the assessment contained in this report the development, as amended by conditions in the recommendation, would have no detrimental impacts upon the public interest.

Conclusion

Given the above assessment, the application is recommended for conditional approval.

This recommendation is based on an interpretation of the provisions of Chapter G6 of SDCP which is contrary to that articulated in the Objectors Legal Advice provided on behalf of the adjoining property owner. In such circumstances, and given the previous litigation filed by the adjoining property owner, it is recommended that Council seek their own legal advice as to the interpretation of the provisions of Chapter G6 to further inform its considerations of this matter.

Should Council determine that the provisions of Chapter G6 of SDCP prohibit the boat shed and boat shed arm seaward of the ZRFC 2025, contrary to the assessment in this report, then it is recommended that Council grant partial consent to the development application without the boat shed and boat shed arm, with the following changes to the conditions:

1. Condition 3 be deleted and replacement with the following:

The boat shed and boat shed arm are not approved under this consent and are to be deleted from the Construction Certificate plans prior to issue of the Construction Certificate.

- a. The boatshed arm and boat shed shall be deleted.

2. Condition 26 be amended by deletion of c, d and e.

3. Deletion of Conditions 8, 10 and 45.

Planning Report – S4.15 Assessment - [#Property AKA#]

Recommendation

This application has been assessed having regard for Section 4.15 (Matters for consideration) under the Environmental Planning and Assessment Act 1979. As such, it is recommended that Development Application No. 16/1341 be approved subject to the conditions attached at Appendix A.

Choose an item.

Choose an item.

Planning, Environment & Development Group

[Click here to enter a date.](#)

Choose an item.

Choose an item.

Planning, Environment & Development Group

List of Attachments

- | | |
|------------|--|
| Appendix A | Recommended conditions of consent |
| Appendix B | Copy of Plans |
| Appendix C | Original assessment report to Council |
| Appendix D | Original report and submissions assessment report to Council |
| Appendix E | Copy of submissions received in response to Notifications 4 and 5 and submission after site inspection |
| Appendix F | Copy of Advisian reports Addendum Report dated 26.6.18 and Addendum Report No. 2 dated 1/11/18 |
| Appendix G | Copy of Objector's Legal Advice |

Draft conditions of consent
DA16/1341

PART A

**CONDITIONS OF A GENERAL NATURE, INCLUDING A DESCRIPTION OF THE
PROPOSED DEVELOPMENT**

General

1. Where there is an inconsistency between the development application (including the documents lodged with the application) and the following conditions, then the conditions prevail to the extent of that inconsistency.
2. This consent relates to the **New Urban Dwelling & Demolition of Existing Dwelling** as illustrated on the plans (referenced in the table below), specifications and supporting documentation stamped with reference to this consent, as modified by the following conditions. The development must be carried out in accordance with this consent.

STAMPED DOCUMENTS (PLANS)	REF/SHEET NO.	PREPARED BY	DATED
Cover sheet and BASIX commitments	DA 010 Rev 2	Peter Stutchbury Architecture	7/6/16
Roof and site plan	DA 100 Rev 2	Peter Stutchbury Architecture	7/6/16
Roof and site plan	DA 101 Rev 2	Peter Stutchbury Architecture	7/6/16
Ground floor plan	DA 102 Rev 2	Peter Stutchbury Architecture	7/6/16
Boat House and garden plan	DA 103 Rev 3	Peter Stutchbury Architecture	9/11/18
First floor plan	DA 104 Rev 2	Peter Stutchbury Architecture	7/6/16
South elevation	DA 201 Rev 2	Peter Stutchbury Architecture	7/6/16
South elevation	DA 202 Rev 3	Peter Stutchbury Architecture	9/11/18
West elevation	DA 203 Rev 2	Peter Stutchbury Architecture	7/6/16
North elevation	DA 204 Rev 3	Peter Stutchbury Architecture	9/11/18
North elevation	DA 205 Rev 2	Peter Stutchbury Architecture	7/6/16
East elevation	DA 206 Rev 3	Peter Stutchbury Architecture	9/11/18
Section 1	DA 301 Rev 2	Peter Stutchbury Architecture	7/6/16
Section 1	DA 302 Rev 3	Peter Stutchbury Architecture	9/11/18
Section 2	DA 303 Rev 2	Peter Stutchbury Architecture	7/6/16
Demolition and waste management plan	DA401 Rev 2 (Council document no D16/170565)	Peter Stutchbury Architecture	7/6/16
DOCUMENTS	REF/SHEET NO.	PREPARED BY	DATED
BASIX Certificate	Certificate No 681954S	Peter Stutchbury Architecture	17 March 2016
Material schedule	Council document no D16/82962	Peter Stutchbury Architecture	Submitted 18 March 2016
Concept landscape plan	DA 402 Rev 1 (Council document no D16/83254)	Peter Stutchbury Architecture	18 March 2016
Report on Geotechnical Investigation	Project 89244.00 R.001. Rev2	Douglas Partners Pty Ltd	15 February 2017
Survey sketch plan	S16077 Rev 3 (Council document no D17/8200)	SET Consultants Pty Ltd	5/12/16

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Sketch plan showing sewer and bore hole levels	Ref no 16077 (Council document no D17/8192)	SET Consultants Pty Ltd	30/11/2016
Waste Minimisation and Management Plan	Council document no D16/83195	Peter Stutchbury Architecture	Submitted 22 March 2016

Notes:

- *Any alteration to the plans and/or documentation must be submitted for the approval of Council. Such alterations may require the lodgement of an application to amend the consent under s96 of the Act, or a fresh development application. No works, **other than those approved under this consent**, must be carried out without the prior approval of Council.*
- *Where there is an inconsistency between the documents lodged with this application and the following conditions, the conditions must prevail to the extent of that inconsistency.*
- 3. The boat shed building is approved as a non-habitable structure and must not be used for habitable purposes at any time.
- 4. The **New Urban Dwelling & Demolition of Existing Dwelling** must not be occupied or the use must not commence until all relevant conditions of development consent have been met or unless other satisfactory arrangements have been made with council (i.e. a security).

Occupation Certificate

- 5. An Occupation Certificate must be issued by the Principal Certifying Authority (PCA) before any building is used or occupied.

Note: Refer to Part F (Conditions that must be complied with before an Occupation Certificate can be issued or building occupied) of this development consent for additional requirements in relation to the above condition.

BASIX

- 6. All the commitments listed in the relevant BASIX Certificate for the development must be fulfilled in accordance with Clause 97 A (2) of the Environmental Planning & Assessment Regulation 2000. A relevant BASIX Certificate means:
 - a) A BASIX Certificate that was applicable to the development when this development consent was determined (or if the development consent is modified under section 96 of the Environmental Planning & Assessment Act 1979, a BASIX Certificate that is applicable to the development when this development consent is modified); or
 - b) If a replacement BASIX Certificate accompanies any subsequent application for a construction certificate, the replacement BASIX Certificate; and
 - c) A BASIX Certificate has the meaning given to that term in the Environmental Planning & Assessment Regulation 2000.

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Definitions

7. In this Consent, 'wave runup extent' means the line marked as such in Figure 1 of the report by Advisian Addendum Report No. 2 dated 1 November 2018 entitled '52 Cyrus St Hyams Beach (DA16/1341), reproduced at Attachment 1 to this consent.. "Wave runup area' means that part of the site that is seaward of the 'wave runup extent'.

In this Consent, "boat shed arm" means the roofed structure extending from the roof over the ground floor outdoor dining area to the boat shed.

PART C

CONDITIONS THAT MUST BE COMPLIED WITH PRIOR TO THE ISSUING OF A CONSTRUCTION CERTIFICATE

Amended plans

8. **Prior to the issue of the construction certificate**, the applicant must submit to the PCA amended building plans that address the following:
- a. The boat shed arm and boat shed must be reduced in length landwards such that its eastern extent is relocated 1.5m westward;
 - b. The WC within the boat shed shall be elevated such that the base of the slab shall be above RL 4.4 AHD;
 - c. The subfloor beam of the boat shed and boat shed arm shall be raised such that the base of the beam is at or above RL 4.4 AHD. This shall be achieved without increasing the height of the structure above RL 7.76 AHD;
 - d. The boat shed and entire boat shed arm shall be constructed on piled footings in accordance with the recommendations of the Report on Geotechnical Investigation by Douglas Partners Pty Ltd ref no Project 89244.00 R.001. Rev2 dated 15 February 2017;
 - e. All electrical, wiring, fuel lines or any other service pipes and connections to the boathouse arm must be located at least 500mm above the wave runup level; and
 - f. No filling shall be placed and no retaining walls shall be constructed in the wave runup area.

Design Standards

9. Engineering design plans and specifications for the work referred to in this consent are to be submitted for approval.
- a) Details of internal civil works must be submitted to nominated accredited certifier (Private Certifier or Council) for approval.
 - b) Details of all proposed works in the road reserve must be submitted and approved by Council.
All civil works are to be in accordance with Council's Engineering Design Specifications and Development Construction Specifications current at the time of construction unless otherwise specified in this consent.

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Design of Piers

10. The design and sizing of the piers for the boat shed and boat shed arm shall be prepared in consultation with a suitably qualified and experienced structural engineer and coastal engineer. The design shall ensure that the structure can withstand damage from coastal processes and that scouring around the piers is minimised and would not occur beyond the boundaries of the site.

Access Design Standards

11. A standard concrete gutter layback and footpath crossing must be designed at the driveway entrance in accordance with Council's Standard Drawings Plan Nos. 5104-07, 2026-05 and 2026-08 (Engineering Design Specification).

Stormwater Drainage Design

12. Major and minor drainage systems must be designed by a qualified practising engineer in accordance with Council's Engineering Design Specifications section D5 (Stormwater Drainage Design) and DCP 2014 – Chapter G2: Sustainable Stormwater Management and Erosion/Sediment Control. The minor and major systems must be designed for 20% AEP for residential / rural areas and also have consideration for the 1% AEP rainfall events respectively.

The design and construction of the stormwater drainage system must be consistent with the recommendations of the Report on Geotechnical Investigation by Douglas Partners Pty Ltd ref no Project 89244.00 R.001. Rev2 dated 15 February 2017.

All stormwater construction must be located wholly within the site. Untreated stormwater must not be discharged to any adjoining water body.

On-site detention

13. On-site detention storage for stormwater runoff from the site must be provided such that the discharge from the site for design storm events up to and including the 100 year average recurrence interval does not exceed the pre-developed conditions. Details must be submitted to Council or an accredited certifier for approval prior to the issue a construction certificate. All flow discharging from on-site detention is to be via gravity flow to an approved discharge location. Automatic pump out systems from on-site detention will not be allowed.

Erosion and Sediment Control

14. A Soil and Water Management Plan (SWMP) and accompanying specifications for the demolition and construction phases of the works, prepared by a suitably qualified and experienced person and based on the Landcom manual - "Soils and Construction, Managing Urban Stormwater, Vol 1, 4th Edition, March 2004", must be lodged with the nominated Certifier for works within the proposed lot and Council for works in the road reserve for approval. The erosion and sediment measures must be maintained for the life of the construction period and until runoff catchments are stabilised.

The SWMP must address soil and water management issues on the adjoining public reserve (lot 57 DP 8685) arising as a consequence of the requirement of this consent to remove the concrete driveway encroaching on the public reserve.

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Existing Services

15. The developer or his agent must check that the proposed works are not affected by or do not affect any Council, electricity, telecommunications, gas or other services. All services, existing and proposed, above or below ground are to be shown accurately on the engineering plans including longitudinal sections with clearances to proposed infrastructure clearly labelled. Any required alterations to services will be at the developer's expense.

Certificate of compliance – Shoalhaven Water

16. A Certificate of Compliance (CC) under Section 307 of Division 5 of Part 2 of Chapter 6 of the Water Management Act 2000 must be obtained to verify that all necessary requirements for matters relating to water supply and sewerage (where applicable) for the development have been made with Shoalhaven Water. A Certificate of Compliance shall be obtained from Shoalhaven Water after satisfactory compliance with all conditions as listed on the Development Application Notice and **prior to the issue of an Occupation Certificate**, Subdivision Certificate or Caravan Park Approval, as the case may be.

In the event that development is to be completed in approved stages or application is subsequently made for staging of the development, separate Compliance Certificates shall be obtained for each stage of the development.

Where a Construction Certificate is required all conditions listed on the Shoalhaven Water Development Application Notice under the heading "PRIOR TO THE ISSUE OF A CONSTRUCTION CERTIFICATE" must be complied with and accepted by Shoalhaven Water. The authority issuing the Construction Certificate for the development shall obtain written approval from Shoalhaven Water allowing a Construction Certificate to be issued. This shall also apply to approved staged developments.

Note: Relevant details, including **monetary** contributions (where applicable) under the Water Management Act 2000, are given on the attached Notice issued by Shoalhaven Water.

For further information and clarification regarding the above please contact Shoalhaven Water's Development Unit on (02) 4429 3111.

Front fence details

17. The plans submitted with the Construction Certificate application must contain sufficient detail to demonstrate compliance of the front fence with Acceptable Solutions A15.1, A15.2, A15.3, A15.4 and A15.8 of Shoalhaven DCP Chapter G12 (Dwelling Houses etc).

PART D

CONDITIONS THAT MUST BE COMPLIED WITH BEFORE WORK CAN COMMENCE

Construction Certificate

18. A Construction Certificate must be obtained from either Council or an accredited certifier before any building or road construction work can commence.

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Notice of commencement and appointment of PCA

19. The following requirements must be met before work commences:

- a) The person having benefit of this consent must appoint a Principal Certifying Authority (PCA) for the works.
- b) Notice must be given to Council **at least two (2) days prior to the commencement of building work.** (The attached form 'Notice of Commencement of Building or Subdivision Work and Appointment of Principal Certifying Authority' is to be completed and returned to Council.)
- c) Prior to the commencement of works (at least 2 days) Council must be advised in writing of the name and 24 hour contact number of the designated person/company nominated by the developer to be responsible for construction of all engineering works including erosion and sediment control measures and their maintenance. The person/company nominated must be a suitably qualified, experienced and practicing engineer or surveyor. The supervisor will be required to verify the works have been completed in accordance with the design and specification.

Residential Building Work

20. Any licensed contractor(s) *performing residential building work valued at \$20,000 or more* must obtain indemnity insurance as required by the Home Building Act 1989. Evidence of such insurance must be provided to the Principal Certifying Authority (PCA) before building works commence.

Notes:

- *This condition is prescribed under the Environmental Planning and Assessment Regulation 2000.*
- *If appointed as PCA, Shoalhaven City Council WILL NOT INSPECT any building work unless evidence of indemnity insurance has been provided. A copy of the Certificate of Insurance will suffice.*

Builders' Toilet

21. Before commencing building operations, a builder's water closet accommodation must be provided to Council's satisfaction.

A chemical toilet may be used on the site or alternatively the site may be provided with temporary closet accommodation connected to Council's sewer where sewer is available and operational.

Demolition generally

22. The following requirements must be met for any demolition work:

- a. Demolition work shall be carried out in accordance with Australian Standard AS2601-2001: The Demolition of Structures;
- b. Suitable measures shall be taken to ensure that there is no adverse effect to occupants of adjoining buildings and the public by the generation of dust and/or noise during demolition;
- c. Protection shall be afforded to users of any adjoining public places by the provision of suitable hoardings;

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- d. Precautions shall be taken in accordance with the requirements of SafeWork NSW in respect of:
 - i. protection of site workers and the public;
 - ii. asbestos handling and disposal where applicable;
- e. The developer must comply with the conditions of the **attached** Shoalhaven Water notice with respect to the temporary capping off of water service and sewer junction.

Hazardous Materials Survey

- 23. Prior to the commencement of any works, a report must be prepared by a suitably qualified person in relation to the existing building fabric to be demolished and/or disturbed identifying the presence or otherwise of asbestos contamination and, if asbestos contamination is present, making recommendations as to the work required to safely address the contamination. Should any asbestos be found during the survey, demolition shall occur in compliance with the following condition.

Demolition Involving asbestos

- 24. The following conditions must be complied with in respect of asbestos materials found during demolition activities:
 - a) Demolition works involving the removal and disposal of asbestos cement must only be undertaken by contractors who hold a current WorkCover Class 2 (Restricted) Asbestos Licence;
 - b) Fourteen (14) days **prior to the commencement of any demolition works involving asbestos**, all immediate neighbours shall be notified in writing of the intention to carry out asbestos demolition works. Copies of these written notifications should be retained and provided to Council.
 - c) Documentary evidence in the form of tip receipts from an approved Waste Management Facility shall be obtained demonstrating the appropriate disposal of any asbestos waste. Tip receipts shall be provided to Council at the completion of demolition works and prior to any further works on the site.
 - d) Following the removal of the bonded asbestos and **prior to further works being carried out on the site**, a clearance certificate from an independent person with a current WorkCover Class 2 (Restricted) Asbestos Licence in accordance with the National Occupational Health and Safety Commission Code of Practice for the Safe Removal of Asbestos is to be obtained and submitted to Council.

Works within the Road Reserve

- 25. Prior to undertaking any works within an existing road reserve, the contractor must obtain the consent of Council under Section 138 of the Roads Act, 1993 and have a set of council approved plans and the letter of approval as per the development consent conditions.

The following details must be submitted to Council to obtain the s.138 consent:

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- (a) Traffic Control Plan (TCP) to provide protection for those within and adjacent to the work site, including the vehicular and pedestrian public. The TCP must comply with the current RMS's manual Traffic Control at Work Sites. Warning and protective devices must comply with the provisions of AS 1742.3 – 2002 Traffic Control Devices for Works on Roads. The plan must be prepared, signed and certified by a person holding the appropriate RMS accreditation, a copy of which is to be submitted with the plan.
- (b) Insurance details
- (c) Name and contact information of the person/company appointed to supervise the construction.
- (d) Should the contractor want a single 138 approval to cover works additional to road, drainage and site regrading (e.g. water supply, sewerage, landscaping, etc), details of such works should be forwarded to the designer of the Traffic Control Plan. Copies of the layout plans and work method statements of these additional works are to be submitted to the Subdivision Manager in conjunction with the 138 application for road and drainage works.
- (e) Where the Traffic Control/Management Plan requires a reduction of the speed limit, a 'Direction to Restrict' must be obtained from the RMS - Traffic Operations Unit for RMS roads or Council for other roads and submitted with the section 138 application.

Landscaping plan

26. Landscaping shall be carried out on the land in accordance with a **plan lodged with an application for a construction certificate** and based on the Concept Landscape Plan Dwg No DA 402 Rev 1 dated 18 March 2016. Such a plan is to be prepared and endorsed by a practising, qualified landscape architect or landscape designer. The plan shall incorporate the following:
- (a) Any plantings between the building and the foreshore reserve must be of locally occurring endemic dune front species so as to integrate the site with its natural surroundings. Planting of small trees, shrubs and ground covers must be undertaken in this area to provide screening between the development and the foreshore and beach. No exotic grass species must be planted in this area.
 - (b) The two *Banksia integrifolia* to the east of the proposed boat shed shall be retained.
 - (c) A dense hedge shall be planted between the boat shed and boat shed arm and the southern boundary fence. The hedge shall be maintained at the height of the boat shed and boat shed arm structure.
 - (d) Planting shall be provided to the north and east of the boat shed of a dense nature and to reach a maturity height to the floor level of the structure to visually screen the piers.
 - (e) The roof top garden on the boat shed and boat shed arm shall be deleted.

Landscaping shall be maintained and, if necessary, renewed for the life of the development.

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Damage to Public Assets

27. The developer or his agent must undertake a site inspection of the adjacent kerbs, gutters, footpaths, walkways, carriageway, reserves and the like, prior to commencement of work and document evidence of any damage to existing assets. Failure to identify existing damage will result in all damage detected after completion of the building work being repaired at the applicant's expense.

Erosion and Sediment Control

28. The approved erosion and sediment measures must be implemented by the contractor and inspected and approved by the accredited certifier prior to the commencement of any other site works.

Dilapidation reports

29. The developer is to obtain, from a suitably qualified person, dilapidation reports in respect of buildings and structures at the adjoining property 54 Cyrus St. A copy of the reports is to be provided to Council **prior to the commencement of any works on site.**

Protection of Trees

30. The two *Banksia integrifolia* (located to the east of the proposed boat shed) shall be retained, as part of this consent and must be protected from any damage during construction works in accordance with AS4970-2009.

In the event that any tree required to be retained is damaged during works on the site, notice of the damage must be given to Council forthwith to identify the necessary rectification works.

PART E

CONDITIONS RELATING TO THE APPROVED WORK AND SITE MANAGEMENT

Building Code of Australia

31. All building work must be carried out in accordance with the requirements of the Building Code of Australia.

Note: *This condition is prescribed under the Environmental Planning and Assessment Regulation 2000.*

Erection of Signs

32. A sign must be erected in a prominent position on any site which building work or demolition work is being carried out:
- f. Showing the name, address and telephone number of the Principal Certifying Authority for the work.
 - g. Showing the name of the principal contractor (if any) for any building work and a telephone number on which that person may be contacted outside working hours.
 - h. Stating that unauthorised entry to the site is prohibited.

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Any such sign is to be maintained while the building work or demolition work is being carried out, but must be removed when the work has been completed.

Construction Hours

33. To limit the impact of the development on adjoining owners, *all* construction work must be restricted to the hours of 7.00am to 6.00pm Monday to Friday and 8.00am to 3.00pm Saturdays. No construction work must take place on Sundays or Public Holidays.

Waste Minimisation and Management

34. All waste must be contained within the site during construction and then be recycled in accordance with the approved Waste Minimisation and Management Plan (WMMP) or removed to an authorised waste disposal facility. No waste shall be placed in any location or in any manner that would allow it to fall, descend, blow, wash, percolate or otherwise escape from the site.

Compliance with the WMMP shall be demonstrated by the retention of relevant receipts. These must be submitted to Council, upon request.

Exterior Materials

35. Exterior materials (excluding windows and other glazing) are to be non-reflective and of muted natural colours that blend with the surrounding environment. White, light grey or bright colours are not acceptable. Metal roofing and wall cladding must be pre-coloured at the manufacturing stage. Water tanks must be coloured to match either the roof or walls.

Any changes to the approved exterior colour scheme will require Council's written agreement.

Erosion and Sediment Control

36. The erosion and sediment measures must be maintained for the life of the construction period and until runoff catchments are stabilised.

Impact of Works on Others

37. The following general conditions must be adhered to:
- a) Runoff currently entering the site from uphill properties must not be obstructed nor redirected from entering the site, other than by works in accordance with a plan approved by Council or to increase the quantity or concentration of surface runoff entering adjoining properties.
 - b) Any damage to the existing road pavements, reserves or any other public infrastructure that occurs during development works must be repaired by the developer. Restoration must be to the satisfaction of Council.
 - c) Existing roads adjacent to and nearby the site must be kept clear of soil, debris, materials and equipment except in accordance with the Traffic Control Plan or as otherwise approved in writing by Council.

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Excavations, Retaining Walls and Drainage

38. All excavations and backfilling must be executed safely and in accordance with appropriate professional standards. All excavations must be properly guarded and protected to prevent a danger to life or property.

If required by the grade of the site and soil conditions, suitable retaining walls with appropriate agricultural and stormwater drainage must be provided to prevent the movement of soil and subsequent nuisance to adjoining properties. All roof and surface stormwater from the site must be conveyed to a legal point of discharge.

Roof mounted solar collectors and other equipment

39. Any roof-mounted solar collectors or any other form of equipment so located must be designed to minimise its visual impact and glare. Such items should preferably be flush-mounted and in any case must not exceed a height of 0.5m above the roof surface.

Survey Certificate

40. A survey must be undertaken by a Registered Surveyor and a copy submitted to Council at:
- a) Formwork in place and prior to the pouring of concrete;
 - b) Ground floor slab level;
 - c) Completion of the building certifying that the building is correctly located in relation to the boundaries of the site.

Survey Certificate – maximum roof height

41. The building is subject to a maximum height in accordance with Shoalhaven LEP 2014 and as specified in Condition 1 of this consent. Accordingly a survey certificate by a Registered Surveyor must be submitted to Council immediately as the roof construction has been completed and prior to the fixing of the roof covering.

Removal of driveway from adjoining public reserve

42. The concrete driveway that encroaches on the adjoining public reserve (lot 57 DP 8685) must be removed at the developer's full cost **prior to the commencement of building works** on the subject site. That part of the public reserve affected by the removal of the concrete driveway is to be stabilised and revegetated in accordance with the Soil and Water Management Plan referred to above **prior to the issue of an occupation certificate**. No exotic plant species are to be planted in the public reserve.

No filling or retaining walls in wave runup area

43. No filling must be placed and no retaining walls must be constructed in the wave runup area.

Imported Fill

44. The only waste derived fill material that may be received at the development site is:
- a) Virgin excavated natural material (within the meaning of the Protection of the Environment Operations Act 1997); and

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- b) Any other waste-derived material the subject of a resource recovery exemption under cl. 51A of the Protection of the Environment Operations (Waste) Regulation 2005 that is permitted to be used as fill material.

Any waste-derived material the subject of a resource recovery exemption received at the development site, must be accompanied by documentation as the material's compliance with the exemption conditions and must be provided to the Certifying Authority on request.

Connection to Sewer

45. The proposed outdoor wash area shall be connected to the sewer.

PART F**CONDITIONS THAT MUST BE COMPLIED WITH BEFORE AN OCCUPATION CERTIFICATE CAN BE ISSUED OR BUILDINGS OCCUPIED**

46. Prior to the issue of an Occupation Certificate for the approved development:
- a. The requirements of Condition Nos. 11 (gutter layback and footpath crossing), 12 (stormwater drainage), 26 (landscaping) 39 (removal of concrete driveway), 39 (roof mounted equipment), and 39 (survey certificates) 42 and 43 (filling and retaining walls in wave runup area) must be complied with and completed;
 - b. The applicant must submit to the Principal Certifying Authority certification and/or documentation confirming that the building has been constructed in accordance with the details and commitments listed in the BASIX Certificate for the development;
 - c. The applicant must submit to the Principal Certifying Authority certification and/or documentation confirming that the requirements of the Notice issued by Shoalhaven Water have been met.

PART G**CONDITIONS THAT RELATE TO ONGOING MANAGEMENT OF THE PROPOSED DEVELOPMENT****Noise**

47. Noise levels from the premises from pumps, air conditioners, amplified music or any other equipment (measured using the L₁₀ noise level descriptor) must not exceed the background noise level in any octave band (measured using the L₉₀ noise level descriptor) by more than 5 dB(A) when measured at the boundary of the closest residential premises.

Landscaping - Noxious and Environmental Weeds

48. The planting of plant species listed on the Weeds Australia NSW weeds list (www.weeds.org.au) is prohibited for the life of the development.

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Roof glare

49. The developer is to manage glare from the roof and roof mounted fittings such as solar collectors such that objectionable glare is not experienced by the occupants of properties within 100m of the site. If objectionable glare is experienced the developer is to undertake measures to reduce glare to an acceptable level. Shoalhaven City Council shall be the arbiter of whether glare is objectionable.

Exterior lighting

50. Any outdoor lighting must be designed, installed and operated to minimise the impact on adjoining properties and the foreshore reserve and beach. Compliance with *Australian Standard AS4282-1997 Control of the Obtrusive Effects of Outdoor Lighting* is a minimum requirement of this condition.

Relationship to adjoining public reserve

51. There must be a clear definition maintained between the subject land and the adjoining public reserve (lot 57 DP 8685).

PART H

REASONS FOR CONDITIONS

Conditions of consent have been imposed to:

1. Ensure the proposed development:
 - a) achieves the objects of the Environmental Planning and Assessment Act, 1979;
 - b) complies with the provisions of all relevant environmental planning instruments;
 - c) is consistent with the aims and objectives of Council's Development Control Plans, Codes and Policies.
2. Ensure that the relevant public authorities and the water supply authority have been consulted and their requirements met or arrangements made for the provision of services to the satisfaction of those authorities.
3. Meet the increased demand for public amenities and services attributable to the development in accordance with Section 94 of the Environmental Planning and Assessment Act, 1979.
4. Ensure the protection of the amenity and character of land adjoining and in the locality of the proposed development.
5. Minimise any potential adverse environmental, social or economic impacts of the proposed development.
6. Ensure that all traffic, carparking and access requirements arising from the development are addressed.
7. Ensure the development does not conflict with the public interest.

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PART I

OTHER COUNCIL APPROVALS AND CONSENTS

Section 68 Local Government Act, Section 138 Roads Act

Approval for sewerage, plumbing and stormwater drainage is granted subject to the following conditions:

General

1. In accordance with the Plumbing and Drainage Act, 2011, plumbers must submit the following documents to Shoalhaven City Council:
 - a. Notice of Work is to be issued to Shoalhaven City Council no later than two (2) business days prior to the commencement of works.
 - b. A Certificate of Compliance is to be issued to Shoalhaven City Council and to the person for whom the work was carried out on completion of the final inspection.
 - c. A sewer service diagram is to be issued to Shoalhaven City Council and the owner of the land or the owner's agent at the completion of the drainage works.

All plumbing and drainage work must comply with the Plumbing Code of Australia and Australian Standard AS/NZS 3500, and the relevant NSW amendments.

Inspections

2. Council must be given at least 24 hours' notice to allow for the inspections of:

	Inspection
1	Internal drainage lines before the floor is laid or poured
2	External drainage lines before the backfilling of the trenches, including the tank placed in position
3	Water service plumbing lines prior to the internal lining of any walls
4	Disposal area including the irrigation lines
5	The system when completed and prior to use
6	Stormwater drainage lines, discharge point(s) and/or absorption trenches (where appropriate)
7	The building or structure when completed and before occupation or use is commenced.

Both the internal and external drainage lines are to be under hydraulic test at the time of the inspection.

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Stormwater

3. Stormwater from the **New Urban Dwelling & Demolition of Existing Dwelling** is to be conveyed to a lawful disposal location via drainage designed and constructed in accordance with AS/NZS 3500.3.2 – Stormwater drainage and the Building Code of Australia. Note: If stormwater is disposed of to an absorption trench, the trench is to be located not less than 3.0m from any building or contrary to the recommendations of the Report on Geotechnical Investigation by Douglas Partners Pty Ltd ref no Project 89244.00 R.001. Rev2 dated 15 February 2017.

Rainwater Facility – Below Ground

4. Water stored in the tank shall be plumbed into the dwelling such that it is supplied to each of the fixtures listed in the BASIX Certificate for the property. Plumbing shall be in accordance with the current edition of the AS/NZS 3500 National Plumbing & Drainage Code.

It will be necessary to install, maintain and repair the facility so that it functions in a safe and efficient manner in accordance with the current editions of AS/NZS 3500 National Plumbing and Drainage Code and the New South Wales Code of Practice Plumbing and Drainage.

The tank is to be installed on a firm, flat and stable base in accordance with the manufacturer's recommendations.

Pumps shall be located and installed to minimize any potential noise nuisance to surrounding residents, and in the case of a permanent electric pump, must be installed by a licensed electrician. Pump performance must achieve a minimum 300 Kpa output.

Overflow from the tank must be directed into an approved storm water disposal system so that it will not create a nuisance.

The property owner is required to have a **non testable vented dual check valve backflow prevention** device installed at the boundary water meter. The **backflow prevention** device must be installed by a licensed plumber in accordance with AS/NZS 3500.

Marking and labelling of rainwater services shall be in accordance with AS 1345, "Identification of the contents of pipes, conduits and ducts" including distribution pipes, rainwater pipes and tank outlets.

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ATTACHMENT 1

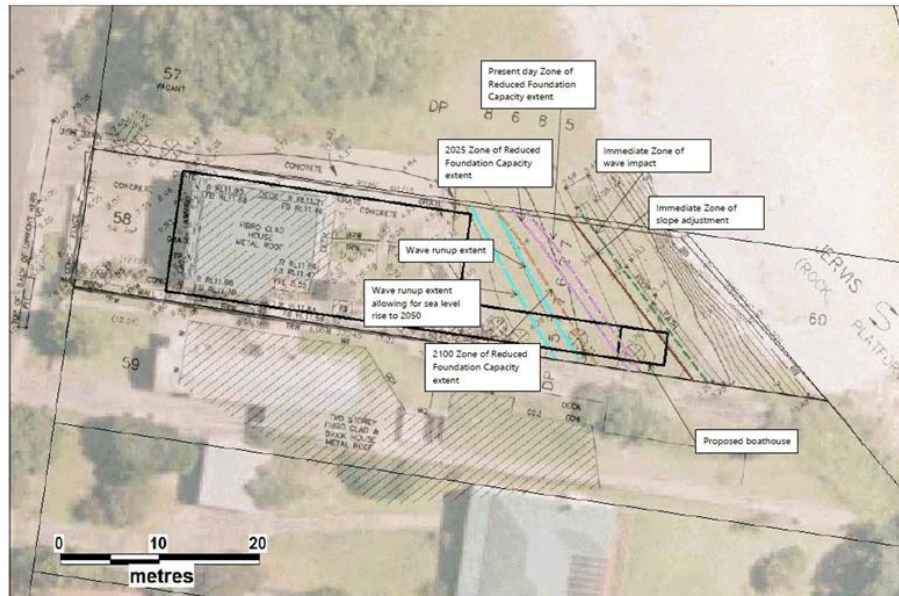


Figure 1 – Coastal hazard lines relative to proposed development, no seawall

(From the report by Advisian dated 16 June November 2018 entitled '52 Cyrus St Hyams Beach (DA 16/1341) – Addendum Report No. 2')



Bridge Rd, Nowra NSW 2541 | 02 4429 3111
Deering St, Ulladulla NSW 2539 | 02 4429 8999

Address all correspondence to

The Chief Executive Officer, PO Box 42, Nowra NSW 2541 Australia
council@shoalhaven.nsw.gov.au | DX5323 Nowra | Fax 02 4422 1816

shoalhaven.nsw.gov.au     

NOTICE TO APPLICANT OF DETERMINATION OF APPLICATION DEVELOPMENT CONSENT

Environmental Planning and Assessment Act, 1979
SF10689

TO:

PDC Planners
PO Box 214
Wollongong NSW 2520

being the applicant(s) for **SF10689** relating to:
Greens Rd, GREENWELL POINT - Lot 1 - DP 625828

APPROVED USE AND OR DEVELOPMENT:

Four (4) x lot Torrens Title subdivision and placement of fill

DETERMINATION DATE:

Pursuant to the section 4.18 of the Act, notice is hereby given that the above application has been determined by granting consent, subject to the conditions listed below.

CONSENT TO OPERATE FROM:

CONSENT TO LAPSE ON:

This consent is valid for five years from the date hereon.

In accordance with section 4.53 of the Act, development consent for the use of the land or the erection of a building does not lapse if building, engineering or construction work relating to the building or work or the use is physically commenced on the land to which the consent applies before the lapse date.

DETAILS OF CONDITIONS:

The conditions of consent and reasons for such conditions are set out as follows:

DE19.111 - Attachment 2

PART A

CONDITIONS OF A GENERAL NATURE, INCLUDING A DESCRIPTION OF THE PROPOSED DEVELOPMENT

1. **General**

This consent relates to four (4) x lot Torrens Title subdivision and placement of fill as illustrated on the plans (referenced in the table below), specifications and supporting documentation stamped with reference to this consent, as modified by the following conditions. The development must be carried out in accordance with this consent.

Where there is an inconsistency between the documents lodged with this application and the following conditions, the conditions prevail to the extent of that inconsistency.

DOCUMENT	REFERENCE	REVISION	PREPARED BY	DATED
Plan of Proposed Subdivision	17120C	-	Johnson Proctor Surveyors Pty Ltd	11/5/2018
Earthworks Sections Sheet 1	1002	A	Rienco Consulting	4/7/2018
Earthworks Sections Sheet 2	1003	A	Rienco Consulting	4/7/2018
Map of vegetation on the subject site, indicating areas of vegetation to be removed or retained	-	-	-	-

Note: Any alteration to the plans and/or documentation must be submitted for the approval of Council. Such alterations may require the lodgement of an application to amend the consent under Section 4.55 of the Act, or a fresh development application. No works, other than those approved under this consent, must be carried out without the prior approval of Council.

2. **Prescribed Conditions**

The development must comply with relevant prescribed conditions of consent as detailed in the *Environmental Planning and Assessment Regulation 2000*. (See Division 8A.)

3. The approved development must not be occupied or the use must not commence until all relevant conditions of development consent have been met or unless other satisfactory arrangements have been made with Council (i.e. a security).

4. **Subdivision Certificate**

A Subdivision Certificate is required to be issued to confirm completion of the subdivision development. All relevant conditions of development consent must be met or unless other satisfactory arrangements have been made with Council (i.e. a security). The applicant will be required to demonstrate compliance with this consent with application for a Subdivision Certificate.

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PART B

INTEGRATED DEVELOPMENT CONDITIONS

5. ***NSW Rural Fire Service – Integrated Development Conditions***

The conditions of the General Terms of Approval issued by NSW Rural Fire Service (Reference No. D18/6596, dated 16/1/2019) are included as conditions of this consent.

PART C

CONDITIONS THAT MUST BE COMPLIED WITH BEFORE WORK CAN COMMENCE

6. ***Principal Certifier, Construction Certificate and Notice of Commencement***

The following must be undertaken prior to the commencement of any construction works:

- a) A Principal Certifier (PC) must be appointed. For subdivision works in existing public roads, only Council can be appointed as the PC;
- b) A Construction Certificate must be obtained from either Council or an accredited certifier before civil works of any kind (internal or external) can commence;
- c) Notice must be given to Council at least two (2) days prior to the commencement of any works;
- d) Council must be advised in writing of the name and 24hr contact number of the designated person/company nominated by the developer or their agent to be responsible for construction of all engineering works including erosion and sediment control measures and their maintenance; and
- e) Any clearing of vegetation approved under this consent is not permitted unless:
 - i) The erosion and sediment control measures required by this consent have been implemented and inspected by Council;
 - ii) Evidence of an application for a Construction Certificate is provided to Council; and
 - iii) The clearing is carried out in accordance with the relevant conditions of this consent and the approved Waste Minimisation and Management Plans.

7. ***Existing Services/Damage to Public Assets (Dilapidation Report)***

Prior to the commencement of any work(s) associated with this development, the person benefitting from this consent must:

- a) Check that the proposed works are not affected by any Council, electricity, telecommunications, gas or other services. All services, existing and proposed, above or below ground are to be shown accurately on the engineering plans including longitudinal sections with clearances to proposed infrastructure clearly labelled. Any required alterations to services as a consequence of undertaking works under this consent or any repair to services will be at the expense of the person benefitting from this consent; and
- b) Undertake a site inspection and document any evidence of damage to the public assets prior to commencement of work. Any damage to the adjacent kerbs, gutters, footpaths (formed or unformed), walkways (formed or unformed), carriageway, reserves and the like, that occurs during development works must be repaired by the person benefitting

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from this consent. Failure to adequately identify existing damage will result in all damage detected by Council after completion of the building work being repaired at the expense of the person benefitting from this consent. A copy of the inspection documentation is to be submitted to Council prior to the commencement of works.

A copy of the inspection documentation is to be submitted to Council prior to the commencement of works.

8. Works within the Road Reserve

Prior to undertaking any works within an existing road reserve, the contractor must obtain the consent of Council under section 138 of the *Roads Act, 1993* and have a set of council approved plans and the letter of approval as per the development consent conditions. The following details must be submitted to Council to obtain the section 138 consent:

- a) Traffic Control Plan (TCP) to provide protection for those within and adjacent to the work site, including the vehicular and pedestrian public. The TCP must comply with the current RMS's manual *Traffic Control at Work Sites*. Warning and protective devices must comply with the provisions of Australian Standard *AS 1742.3 – 2002 Traffic Control Devices for Works on Roads*. The plan must be prepared, signed and certified by a person holding the appropriate RMS accreditation, a copy of which is to be submitted with the plan.
- b) Insurance details.
- c) Name and contact information of the person/company appointed to supervise the construction.
- d) Should the contractor want a single section 138 approval to cover works additional to road, drainage and site regrading (e.g. water supply, sewerage, landscaping, etc), details of such works should be forwarded to the designer of the Traffic Control Plan. Copies of the layout plans and work method statements of these additional works are to be submitted to the Development Manager in conjunction with the section 138 application for road and drainage works.
- e) Where the Traffic Control/Management Plan requires a reduction of the speed limit, a 'Direction to Restrict' must be obtained from the RMS - Traffic Operations Unit for RMS roads or Council for other roads and submitted with the section 138 application.

9. Construction Management Plan (Traffic & Parking)

Details of the proposed method of dealing with construction traffic and timing of works are to be submitted to Council for approval by the Subdivision Manager or delegate. The details are to be submitted with the construction certificate application and must include but are not limited to the following.

- a) Stabilised site construction access location.
- b) Proposed haulage routes for delivery of materials to the site and spoil disposal from the site.
- c) Estimated timing of construction works in the form of a Gant chart or similar.
- d) Parking arrangements for construction employees and contractors.
- e) Proposed maintenance of the haulage routes and the name of the person responsible for such maintenance. The approved haulage route may require upgrading and or maintenance prior to commencement of any work and maintenance during the

Development Consent - Page 5 of 18 - **SF10689**

construction period for public safety. If not approved prior to the issue of consent then necessary works will be required as part of the construction certificate approval.

10. **Erosion and Sediment Control**

Prior to the commencement of works, a Soil and Water Management Plan (SWMP) and accompanying specifications for the construction phase of the works, prepared by a suitably qualified and experienced person and based on the Landcom manual - *Soils and Construction, Managing Urban Stormwater*, Vol 1, 4th Edition, March 2004", must be submitted to the PC (for works within the development lot) and Council (for works within the road reserve) for approval.

Erosion and sediment control measures must ensure that no silt or sediment from the works must leave the site and enter into watercourses or nearby areas used as oyster farming leases.

11. Prior to the commencement of any works, the approved erosion and sediment control measures must be implemented by the contractor, and inspected and approved by the PC prior to the commencement of any other site works. The erosion and sediment measures must be maintained for the life of the construction period and until runoff catchments are stabilised.

12. **Sign – Supervisor Contact Details**

A sign must be erected in a prominent position on any site where any building, subdivision or demolition work is being carried out:

- a) Showing the name, address and telephone number of the PC for the work;
- b) Showing the name of the principal contractor (if any) for any building work and a telephone number on which that person may be contacted outside working hours; and
- c) Stating that unauthorised entry to the site is prohibited.

Any such sign is to be maintained while the work is being carried out.

13. **Public Safety and Protection of Public Property**

The site/area where works are being undertaken is to be fenced in accordance with Safework NSW requirements prior to the commencement of works, suitable for keeping members of the public and unauthorised people out.

14. **Earthworks**

Documentation from the supplier that certifies that imported fill material is not contaminated based on analyses of the material is to be provided to Council. Sampling and analysis of the imported fill material shall be conducted in accordance with the EPA Sampling Design Guidelines. Recycled materials must be accompanied by a copy of EPA exemption.

15. Details of fill storage, disposal and materials haulage routes to and from the site shall be submitted to Council for approval. All surplus excavated material shall be taken to an approved landfill site.

16. **Vegetation Removal**

Prior to the commencement of any clearing works the following requirements must be complied with:

- a) the extent of clearing as shown on the approved plans must be accurately measured and marked on the ground with temporary barrier fencing or similar visible material to

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aid in the selection of trees to be retained. Temporary fencing must remain in place until all works are completed.

- b) the drip-line (outer edge of the leaf canopy) surrounding trees to be retained must be clearly identified and protected with temporary barrier fencing to prevent mechanical damage of the tree trunk, mechanical disturbance to roots, or soil build-up around the base of the tree during and after clearing works (*refer to AS 4970; Protection of trees on development sites, 2009*).
- c) any trees indicated for removal on the approved site plan must be marked or tagged.

PART D

CONDITIONS THAT MUST BE COMPLIED WITH BEFORE A CONSTRUCTION CERTIFICATE CAN BE ISSUED

17. Waste Minimisation and Management

A detailed Waste Minimisation and Management Plan (WMMP) must be prepared in accordance with Chapter G7, Shoalhaven Development Control Plan 2014. The WMMP must be approved by Council or an accredited certifier prior to the issue of a Construction Certificate.

Note: "Waste" has the same meaning as the definition of "Waste" in the Protection of the Environment Operations Act 1997.

18. Amended Site Filling and Stormwater Plans

Prior to the issue of a Construction Certificate, amended site filling plans must be provided to Council for review and approval. The amended plans must show filling of the building pads to a contour level consistent the adjoining Greens Road. The amended plans must design and show stormwater drainage from each lot as being directed to Greens Road.

19. Design Standards

Prior to the issue of a Construction Certificate engineering design plans and specifications for the work referred to in this consent are to be submitted to the PC for approval. All works in the road reserve must be submitted to Council for approval.

- a) All civil works are to be in accordance with Council's Engineering Design Specifications and Development Construction Specifications current at the time of construction unless otherwise specified in this consent.
- b) The road pavement for roads within road reserves, community or common property, access ways and rights of way (existing or proposed) is to be designed by a qualified practising engineer in accordance with Council's Engineering Design Specifications section D2 (Flexible Pavement Design) (Specification can be found on Council's web site).
- c) The roads shall be designed by a qualified practising engineer in accordance with Council's Engineering Design Specifications section D1 (Geometric Road Design) (Specification can be found on Council's web site).
- d) The stormwater drainage design is to be carried out by suitably qualified and experienced practitioners with all work to be in accordance with Council's Engineering Design Specifications section D5 (Stormwater Drainage Design) (Specification can be found on Council's web site). The minor and major systems shall be designed for a 1:5 year and 1:100 year rainfall recurrence interval respectively, as follows

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- i) Major Systems shall be designed by a qualified practising engineer.
- ii) Minor Systems shall be designed by Registered Surveyor or Engineer.
- e) A soil and water management plan shall be designed by suitably qualified and experienced practitioner with all work to be in accordance with the Landcom manual - "Soils and Construction, Managing Urban Stormwater, Vol 1, 4th Edition, March 2004"

Note: Civil engineering work approvals and plans are only current for a period of 2 years.

20. Stormwater Drainage Design

Major and minor drainage systems must be designed by a qualified practising engineer in accordance with Council's Engineering Design Specifications, section D5 (Stormwater Drainage Design) and Chapter G2, Shoalhaven Development Control Plan 2014. The minor and major systems must be designed for 20% AEP for residential areas and also have consideration for the 1% AEP rainfall events respectively.

21. Detailed design of permanent stormwater quality improvement devices and major trunk drainage shall be designed in accordance with Shoalhaven DCP Chapter G2, and certified by a civil or environmental engineer who has current NPER-III registration or who can demonstrate the appropriateness of the proposed design for the site.

22. On-Site Detention

On-site detention storage for stormwater runoff from the site shall be provided such that the discharge from the site for design storm events up to and including the 100 year average recurrence interval does not exceed the pre-developed conditions.

23. Vegetation Removal

Where engineering works are proposed near treed or vegetated areas the applicant must provide dimensioned engineering plans that show all areas of vegetation / trees to be retained surrounded by temporary protective fencing. No plans should be approved unless these protective measures are shown and contain a note stating the fencing is to be installed prior to works and must remain in place until all works are completed. No services (water sewer etc) are to be approved within areas of vegetation to be retained or under the "drip line" of trees to be retained.

The Principal Certifier must obtain written approval from Shoalhaven City Council that the submitted information above is satisfactory prior to the issue of the Construction Certificate.

PART E
CONDITIONS RELATING TO THE APPROVED WORK AND SITE
MANAGEMENT

24. Road Design Standards (Urban)

Concrete integral kerb and gutter with either a minimum 30mm thick 10mm asphaltic concrete on a primer seal or 2 coat bitumen seal with 14mm & 7mm aggregate surfaced shoulder (to match the existing seal) and associated drainage shall be designed across the full road Greens Road frontage of the proposed new lot(s). The kerb and gutter shall have a standard upright profile.

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- a) The alignment shall provide for a minimum invert-to-invert carriageway width of 8m, with an indented bus bay at the existing bus stop.
- b) The shoulder crossfall to the lip of the gutter shall be no less than 2% and no greater than 5%. A minimum width of 1m is to be constructed adjacent to the lip of the gutter to facilitate compaction of the new pavement.
- c) The shoulder seal is to overlap the existing pavement by a minimum of 300mm with the existing seal to be saw cut and the exposed pavement is to have a tack coat or prime seal if finished with AC.
- d) The kerb and gutter shall have a minimum grade of 0.5% and the longitudinal design shall extend a minimum of 30 metres each end of the development and at least 60m if the grade is $<0.5\%$ or $\geq 0.3\%$. This is to ensure the proposed works will be compatible with the existing longitudinal pavement grade and allow future extension of the kerb without unnecessary modification of existing works.
- e) The road shoulder pavement shall be designed in accordance with Council's Engineering Design Specifications section D2.04 (Specification can be found on Council's web site).
- f) The road table drain either side of the proposed development is to be reconstructed as required to match the kerb and gutter and to prevent ponding of water, including any adjustment or reconstruction of nearby driveways.

Subsoil drainage is to be provided behind the kerb line where an outlet to existing underground drainage (or other alternative suitable to Council) is available. Subsoil drainage is to be placed on the high side of the road or both sides if the cross-fall is neutral.

25. Work Hours and Noise

The following must be complied with during demolition and construction works:

- a) To limit the impact of the development on adjoining owners, all demolition and construction work must be restricted to the hours of 7.00am to 6.00pm Monday to Friday and 8.00am to 3.00pm Saturdays. No work is to take place on Sundays or Public Holidays. Any proposed change to hours must be approved by Council in writing; and
- b) The noise from all activities associated with any demolition works and construction of the approved development must comply with the work practices as outlined in the NSW Department of Environment & Climate Change *Interim Construction Noise Guideline*. The LA10 level measured over a period of not less than 15 minutes when the construction site is in operation must not exceed the background (LA90) noise level by more than 10dB(A) when assessed at any sensitive noise receiver.

26. Impact of Works on Others

The following general conditions must be adhered to;

- a) Runoff currently entering the site from uphill properties must not be obstructed nor redirected from entering the site, other than by works in accordance with a plan

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approved by Council, to increase the quantity or concentration of surface runoff entering adjoining properties.

- b) Any damage to the existing kerb & gutter, footpaths, pathways, road pavements, reserves or any other public infrastructure that occurs during development works must be repaired by the developer. Restoration must be to the satisfaction of Council.
- c) Existing roads, footpaths and reserves adjacent to and nearby the site must be kept clear of soil, debris, materials and equipment except in accordance with the Traffic Control Plan or as otherwise approved in writing by Council.
- d) All vehicles associated with the construction works as conditioned in this consent must not block or hinder access to or from adjoining lots or through traffic movements without traffic control in accordance with the Roads and Maritime Services Traffic Control at Worksite Manual prepared, installed and controlled by personnel holding relevant qualifications. All signage must comply with AS 1742.3.
- e) All construction work is to be carried out so that at any time adjoining property owners are not deprived of an all-weather access or subjected to additional storm water runoff during the period of construction.
- f) Suitable dust suppression measures must be in place during filling of the site and associated earthworks. Site filling and earthworks must be managed so as to not cause a dust nuisance to adjoining properties, the public or the surrounding area.

27. Earthworks

Documentation from the supplier that certifies that imported fill material is not contaminated based on analyses of the material is to be provided to Council during the works. Sampling and analysis of the imported fill material must be conducted in accordance with the EPA Sampling Design Guidelines.

28. Site Filling

Lot filling is to comply with the following:

- a) The lot/site shall be filled to and graded generally in accordance with the Stormwater Concept Plan by Rienco Consulting, drawing no. 1001 rev. A dated 17/01/2018, and approved plans as required by condition 18 of this consent, having an absolute minimum grade of 1%. The filling specification shall be submitted to Council and require all allotment filling to be placed in accordance with AS 3798 and compacted at least to the

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minimum relative compaction listed in the standard applicable to the type of development / subdivision.

- b) To be performed under Level 1 Supervision by a suitably qualified engineer. A Level 1 Supervision Report is to be submitted to council prior to the release of the Subdivision Certificate;
- c) Shall obtain a lot classification, in accordance with AS2870, of no worse than 'H'; A Lot Classification shall be submitted to Council prior to the release of the Subdivision Certificate;
- d) To have a maximum batter of 25% (1V:4H) at any location;
- e) Not to encroach onto adjoining land;
- f) Not to cause the diversion or concentration of natural overland stormwater runoff onto adjoining property;
- g) To be protected against erosion, with measures incorporated in the erosion and sediment control plan;
- h) To include adjustment of services (manholes, inter-allotment drainage, etc.) in the scope of works.
- i) All fill outside the allotments areas shall be placed in accordance with Council's Development Construction Specification.

29. **Acid Sulfate Soil Management Plan**

All earthworks and excavation of soils and handling and management of acid sulfate soils must be carried out in accordance with the Acid Sulfate Soil Management Plan (Reference TERRA19172.ASSMP) prepared by Terra Insight and dated 12/6/2019.

30. **Coastal Wetlands**

No works other than environmental protection works are permitted to be carried out on the land mapped as 'coastal wetland' under *State Environmental Planning Policy (Coastal Management) 2018* under this consent.

Note: 'environmental protection works' are defined in *Shoalhaven Local Environmental Plan 2014*

31. **Vegetation Removal**

Any tree or vegetation removal carried out under this development consent must be in accordance with the following requirements:

- a) The removal and/or disturbance of indigenous vegetation on the property, including canopy trees, understorey and groundcover vegetation, is restricted to that required to construct and maintain the approved development and the associated NSW Rural Fire Services specified Asset Protection Zone.
- b) Trees to be cleared must be felled into the development area carefully so as not to damage trees to be retained in or beyond the development footprint
- c) Any hollow-bearing trees must be felled carefully in sections utilising a "cherry picker" or crane if necessary to allow the rescue of native fauna. Hollow-bearing sections must be carefully lowered to the ground so as not to injure native fauna.

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- d) All clearing works and the associated machinery and refuse must be contained within existing cleared areas and areas approved for vegetation removal.
- e) The parking of machinery and vehicles or the storing of building or landscaping materials, soil, spoil, or rubbish, within the fenced area around trees to be retained is prohibited.
- f) Sediment erosion controls must be in place immediately following clearing and on the same day as clearing works commence.
- g) Pruning or trimming of any trees to be retained must be undertaken in accordance with AS 4373-1996 "Pruning of Amenity Trees".

32. **Vegetation to be Mulched / Transported**

All vegetation, trees etc that are to be removed and existing stumps & logs shall be either mulched (material to pass through a 100mm sieve) on site or transported to a green waste receiving station or other approved location. Vegetation or other material shall not be burnt or stored permanently on site.

Onsite mulched material may be re-used throughout the site to aid in erosion control and for water conservation around landscaping. Details are to be included with the landscaping or construction plans for approval.

33. **Heritage**

Should any historical relics be unexpectedly discovered in any areas of the site, then all excavation or disturbance to the area is to stop immediately and the Heritage Council of NSW should be informed in accordance with Section 146 of the Heritage Act 1977.

34. Should any Aboriginal relics be unexpectedly discovered in any areas of the site, then all excavation or disturbance to the area is to stop immediately and the Office of Environment and Heritage should be informed in accordance with Section 89A of the National Parks and Wildlife Act, 1974.

35. **Waste Minimisation and Management Plan**

All waste must be contained within the site during construction and then be recycled in accordance with the approved Waste Minimisation and Management Plan (WMMP) or removed to an authorised waste disposal facility. No waste must be placed in any location or in any manner that would allow it to fall, descend, blow, wash, percolate or otherwise escape from the site.

Compliance with the WMMP must be demonstrated by the retention of relevant receipts. These must be submitted to Council, upon request.

Note: "Waste" has the same meaning as the definition of "Waste" in the Protection of the Environment Operations Act 1997.

PART F
CONDITIONS THAT MUST BE COMPLIED WITH BEFORE A SUBDIVISION
CERTIFICATE CAN BE ISSUED

36. **Subdivision Certificate**

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The person benefiting from this consent must submit two (2) copies of the plan of survey to Council for their record prior to the issue of a Subdivision Certificate.

37. A Subdivision Certificate must be issued prior to lodgement of the Final Plan of Survey with the Land Registry Service Office (LRS). Council must issue a Subdivision Certificate except where an environmental planning instrument provides that a Subdivision Certificate may be issued by an Accredited Certifier for a specified subdivision.

38. **Schedule of Compliance**

The application for a Subdivision Certificate must include a table addressing the conditions of consent detailing how those conditions have been addressed.

39. **Contributions for Additional Services and/or Facilities**

This development will generate a need for additional services and/or facilities as described in Council's *Contributions Plan 2019*, as itemised in the following table:

Project	Description	Rate	Qty	Total	GST	GST Incl
01AREC0009	Planning Area 1 recreational facilities upgrades various locations	\$730.69	3	\$2,192.07	\$0.00	\$2,192.07
01AREC2006	Northern Shoalhaven Sports Stadium	\$570.62	3	\$1,711.86	\$0.00	\$1,711.86
01AREC3007	Nowra Swimming Pool Expansion	\$406.19	3	\$1,218.57	\$0.00	\$1,218.57
01CFAC2012	Nowra District Integrated Youth Services Centre	\$32.51	3	\$97.53	\$0.00	\$97.53
CWAREC0005	Shoalhaven Community and Recreational Precinct SCaRP Cambewarra Road Bomaderry	\$2,473.36	3	\$7,420.08	\$0.00	\$7,420.08
CWCFAC0007	Shoalhaven Regional Gallery	\$70.87	3	\$212.61	\$0.00	\$212.61
CWCFAC2002	Shoalhaven Multi Purpose Cultural & Convention Centre	\$1,510.35	3	\$4,531.05	\$0.00	\$4,531.05
CWCFAC2006	Shoalhaven City Library Extensions, Berry Street, Nowra	\$850.55	3	\$2,551.65	\$0.00	\$2,551.65
CWFIRE2001	Citywide Fire & Emergency services	\$135.42	3	\$406.26	\$0.00	\$406.26
CWFIRE2002	Shoalhaven Fire Control Centre	\$198.11	3	\$594.33	\$0.00	\$594.33
CWMGMT3001	Contributions Management & Administration	\$563.13	3	\$1,689.39	\$0.00	\$1,689.39
Sub Total:						\$22,625.40
GST Total:						\$0.00
Estimate Total:						\$22,625.40

Contribution rates are adjusted annual on 1st July in accordance with the indexation formula indicated in the Contributions Plan (currently the implicit price deflator) and the total contribution levied will be adjusted accordingly at the time of payment. (i.e. contributions are calculated on the rate applicable at the date of payment, not the date of development consent.)

A total contribution, currently assessed as per the table above or as indexed in future years must be paid to Council before the issue of a Subdivision Certificate.

Contributions Plan 2019 can be accessed on Councils website www.shoalhaven.nsw.gov.au or may be inspected on the public access computers at the libraries and the Council Administrative Offices, Bridge Road, Nowra and Deering Street, Ulladulla.

40. **Provision of Works**

Provision of all works in accordance with relevant conditions of consent prior to the issue of a Subdivision Certificate.

41. **Schedule of Compliance**

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With application for a Subdivision Certificate, a schedule of compliance with this consent must be provided demonstrating how relevant conditions of consent have been resolved and complied with. This may be in the form of a spreadsheet or similar.

42. Utility Services

Utility services must be provided in accordance with the following:

- a) The provision of electricity to service allotments in the subdivision must be in accordance with the requirements of Endeavour Energy who are to confirm in writing that conditions of supply have been met.
- b) The submission of documentary evidence from an approved telecommunications carrier to the PC confirming that underground telecommunication services are available for this development.
- c) To facilitate broadband access, the application for broadband to the telecommunications provider.
- d) A Certificate of Compliance (CC) under Section 307 of Division 5 of Part 2 of Chapter 6 of the *Water Management Act 2000* must be obtained to verify that all necessary requirements for matters relating to water supply and sewerage (where applicable) for the development have been made with Shoalhaven Water. A Certificate of Compliance must be obtained from Shoalhaven Water after satisfactory compliance with all conditions as listed on the Development Application Notice and prior to the issue of a Subdivision Certificate, as the case may be.

In the event that development is to be completed in approved stages or application is subsequently made for staging of the development, separate Compliance Certificates must be obtained for each stage of the development.

Note: Relevant details, including **monetary** contributions (where applicable) under the *Water Management Act 2000*, are given on the attached Notice issued by Shoalhaven Water. For further information and clarification regarding the above please contact Shoalhaven Water's Development Unit on (02) 4429 3111.

43. Restrictions as to User / Registration of Easements

The following must be created as restrictions-as-to-user under Section 88B of the Conveyancing Act 1919.

- a) Easements must be provided where and as required for inter-allotment services, drainage and sewerage, including an easement for drainage over the existing road drainage discharge from Greens Road.
- b) No building or dwelling is to be erected on any lot unless it is provided with Onsite Stormwater Detention in accordance with a plan approved under a Construction Certificate as required by this consent.
- c) No development on any allotment that has been filled unless foundations are designed to the soil classification as stipulated in AS2870.
- d) Asset Protection Zones in accordance with the General Terms of Approval issued by the NSW Rural Fire Service.
- e) No removal or disturbance of indigenous vegetation on the property, including canopy trees, understorey and groundcover vegetation, without the prior written consent of the

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Shoalhaven City Council Director of Development & Environmental Services except for maintenance of Asset Protection Zones as required by this consent.

- f) To protect native fauna in the locality, cats must be kept completely within a dwelling, or in a cattery or cat run within the dwelling curtilage at all times (day and night).
- g) Any fencing along the eastern (rear) boundaries of proposed lots 1, 2 and 3 must be of solid colourbond fencing to protect the adjacent vegetation restrict the movement of weed propagules.
- h) Any fencing along the eastern (rear) boundary of proposed Lot 4 must be of colourbond fencing, but must not extend into areas of Swamp Oak Floodplain Forest EEC or Coastal Saltmarsh EEC identified for retention on the approved 'Map of vegetation on the subject site, indicating areas of vegetation to be removed or retained'.
- i) No removal of vegetation for any fence construction shall be undertaken within areas of Swamp Oak Floodplain Forest EEC or Coastal Saltmarsh EEC identified for retention on the approved 'Map of vegetation on the subject site, indicating areas of vegetation to be removed or retained'.
- j) The planting of plant species listed on the Shoalhaven City Council's weeds lists (<https://shoalhaven.nsw.gov.au/Environment/Weed-management>) is prohibited for the life of the development.
- k) No exotic perennial grasses listed on the Final Determination of the NSW Scientific Committee for the key threatening process *Invasion of native plant communities by exotic perennial grasses*, shall be sown within the outer protection area or the asset protection zone for the life of the development. Native grasses must be sown in these areas, as this is the interface between disturbed areas and the remaining native vegetation.
- l) In preparing the Instrument setting out the terms of easements and restrictions affecting this land, ensure that such restrictions cannot be varied, modified or released without the consent of the necessary parties involved and without the consent of the Shoalhaven City Council, where appropriate.
- m) Except those required by Council, the final plan and associated instruments must not contain restriction, that prohibit development allowed under the relevant environmental planning instruments applicable to the site.

Note: Easements may not be required where obligations are implied under the Strata Schemes Management Act 2015.

44. Street Numbering

Street numbering must comply with the State Governments Comprehensive Property Addressing System (CPAS), and Council's Property Address Numbering Policy. The property addresses for the proposed development, as per the lot numbers shown on the subdivision plan are as follows:

- a) Lot 1 – 144 Greens Road, Greenwell Point
- b) Lot 2 – 146 Greens Road, Greenwell Point
- c) Lot 3 – 148 Greens Road, Greenwell Point
- d) Lot 4 – 150 Greens Road, Greenwell Point

45. Verification of Works

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The person or company nominated by the applicant to be responsible for construction of all engineering works is to verify in writing that all works have been constructed in accordance with the approved plans and construction specifications.

46. Certification must be obtained from Council to verify that all works in the road reserve have been completed in accordance with the approved plans and construction specifications.
47. Certification must be obtained from council or an accredited certifier to verify that all inspections required by the PC have been completed in accordance with the approved plans and construction specifications.
48. A certificate from a qualified practising structural engineer shall be submitted to Council to certify all structural elements have been constructed in accordance with the approved plans
49. The Level 1 Supervision Report and Lot Classification Report are to be submitted to council.
50. All roads constructed as a part this development / subdivision are to be provided with final pavement tests to confirm material depth and compaction complies with the pavement design. Additional tests such as proof rolling may also be required by Council's Subdivision Inspector.
51. 'Work As Executed' (WAE) plans – one full set of work-as-executed plans and drawings in electronic CAD format (such as dwg,dxf) is to be certified by a consulting engineer or registered surveyor and must be submitted to Council for review and records upon completion of the works. The certification must state "the information shown on the plans is a true and accurate record of the constructed works". The WAE information for all works including subsoil drainage location is to be marked in red and be provided on a copy of the Council approved plans. Where works are not within the tolerances specified in Council's Development Construction Specifications, the certifying engineer / surveyor must confirm, in writing, the works comply with the intent of the original design, specifications and relevant Australian Standards.

Drainage WAE plans are to show subsoil drainage lines and flushing cap locations.

52. ***Maintenance Bond***

A cash bond or irrevocable bank guarantee, to repair any deficiencies in the works or to repair or mulch areas where grass seeding or turf did not establish, shall be lodged with Council if a Subdivision Certificate is sought prior to the end of the 12 month defects liability (maintenance) period for the works.

The amount shall be 5% of the cost of the civil works (excluding water supply and sewerage).

53. ***Compliance with General Terms of Approval***

Evidence of compliance with NSW Rural Fire Service General Terms of Approval, which are included as conditions of this consent, must be submitted to Council from a suitably qualified professional.

PART G
STATEMENT OF REASONS

Reasons for approval

1. The proposed development, subject to the recommended conditions, is consistent with the objectives of the applicable environmental planning instruments, notably the Shoalhaven Local Environmental Plan 2014 (SLEP 2014).

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2. The proposed development is, subject to the recommended conditions, consistent with the objectives of the Shoalhaven Development Control Plan 2014 (SDCP 2014).
3. The proposed development is considered to be suitable for the site.
4. The proposed development, subject to the recommended conditions will not result in unacceptable adverse impacts on the natural and built environments.
5. Any issues raised in submissions have been considered in the assessment of the application and where appropriate conditions have been included in the determination.

Conditions of consent have been imposed to:

1. Ensure the proposed development:
 - a) achieves the objects of the *Environmental Planning and Assessment Act, 1979*;
 - b) complies with the provisions of all relevant environmental planning instruments;
 - c) is consistent with the aims and objectives of Council's Development Control Plans, Codes and Policies.
2. Ensure that the relevant public authorities and the water supply authority have been consulted and their requirements met or arrangements made for the provision of services to the satisfaction of those authorities.
3. Meet the increased demand for public amenities and services attributable to the development in accordance with Section 7.11 of the *Environmental Planning and Assessment Act, 1979*.
4. Ensure the protection of the amenity and character of land adjoining and in the locality of the proposed development.
5. Minimise any potential adverse environmental, social or economic impacts of the proposed development.
6. Ensure that all traffic, carparking and access requirements arising from the development are addressed.
7. Ensure the development does not conflict with the public interest.

PART H
ADVICE ABOUT RIGHTS OF REVIEW AND APPEAL

Determination under Environmental Planning and Assessment Act, 1979

Division 8.2 of the EP&A Act, 1979 confers on an applicant who is dissatisfied with the determination a right to request the council to review its determination. The request must be made **within three (3) months** of the date of the receipt of the determination to allow Council time to undertake the review within the prescribed period of six (6) months and be accompanied by the prescribed fee.

Division 8.3 of the EP&A Act, 1979 confers on an applicant who is dissatisfied with the determination of a consent authority a right of appeal to the Land and Environment Court which can be exercised within 6 months after the applicant has been notified of the decision.

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An appeal under Division 8.3 of the EP&A Act, 1979 by an objector may be made only within 28 days after the date the objector is notified of the decision.

PART I

GENERAL ADVICE TO APPLICANT

Privacy Notification

Personal information contained on this Development Consent and any associated documents will be published on Council's website as required by the *Government Information (Public Access) Act 2009* (GIPAA).

Commonwealth Environment Protection and Biodiversity Conservation Act 1999

The *Commonwealth Environment Protection and Biodiversity Conservation Act 1999* provides that a person must not take an action which has, will have, or is likely to have a significant impact on

- a) A matter of national environmental significance (NES) matter; or
- b) Commonwealth land

without an approval from the Commonwealth Environment Minister.

This application has been assessed in accordance with the New South Wales *Environmental Planning & Assessment Act, 1979*. The determination of this assessment has not involved any assessment of the application of the Commonwealth legislation.

It is the proponent's responsibility to consult the Department of the Environment and Energy to determine the need or otherwise for Commonwealth approval and you should not construe this grant of consent as notification to you that the Commonwealth Act does not have application.

The Commonwealth Act may have application and you should obtain advice about this matter.

There are severe penalties for non-compliance with the Commonwealth legislation.

Disclaimer –Conveyancing Act 1919 – Division 4 – Restrictions on the Use of Land

The applicant should note that there could be covenants in favour of persons other than Council restricting what may be built or done upon the subject land. The applicant is advised to check the position before commencing any work.

Under Clause 1.9A of *Shoalhaven Local Environmental Plan 2014* agreements, covenants or instruments that restrict the carrying out of the proposed development do not apply to the extent necessary to enable the carrying out of that development, other than where the interests of a public authority is involved.

DBYD Enquiry - 'Dial Before You Dig'

In order to avoid risk to life and property it is advisable that an enquiry be made with "Dial Before You Dig" on 1100 or www.dialbeforeyoudig.com.au prior to any excavation works taking place to ascertain the location of underground services. You must also contact your Local Authority for locations of Water and Sewer Mains.

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Inspections

If Council is appointed Principal Certifier for this project, a minimum twenty-four (24) hours notice must be given to Council to make an inspection of the work.

SIGNED on behalf of Shoalhaven City Council:


Choose an item.

Choose an item.

Planning, Environment & Development Group

Planning Report – S4.15 Assessment - Greens Rd, GREENWELL POINT - Lot 1 DP 625828

Planning Report – S4.15 Assessment Greens Rd, GREENWELL POINT - Lot 1 DP 625828

	Planning Report S4.15 Environmental Planning & Assessment Act 1979
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DA Number	SF10689
Property	Greens Rd, GREENWELL POINT - Lot 1 DP 625828
Applicant(s)	PDC Planners
Owner(s)	J & V Farnham

Conflict of interest declaration

I have considered the potential for a conflict of interest under the [Code of Conduct](#) and to the best of my knowledge no pecuniary and/or significant non-pecuniary conflict of interest exists.

NOTE: If you determine that a non-pecuniary conflict of interest is less than significant and does not require further action, you must provide a written explanation of why you consider that the conflict does not require further action in the circumstances. This statement should then be countersigned by the section manager.

Name

Assessing Officer – Senior Planner
4/09/2019

1. Detailed Proposal

An application has been received for four (4) lot Torrens Title subdivision and placement of fill to create building platforms at Greens Road (Lot 1 DP 625828) Greenwell Point. The purpose of this report is to detail the s4.15 assessment undertaken for SF10689.

The proposal includes:

- For (4) lot Torrens Title subdivision
 - Lot areas are as follows:
 - Lot 1 = 1000m²
 - Lot 2 = 1000m²
 - Lot 3 = 1000m²
 - Lot 4 = 3750.2m²
 - Placement of fill to create building platforms above the 1% AEP flood planning level for lots 1-4.
 - Provision of on-site stormwater drainage infrastructure (absorption trenches and level spreaders) for each lot.
 - Removal of native vegetation and introduced plants/weeds

Information Referred

DOCUMENT	REFERENCE	REVISION	PREPARED BY	DATED
Plan of Proposed Subdivision	17120C	-	Johnson Proctor Surveyors Pty Ltd	11/5/2018
Detail and Level Plan	17120B	-	Johnson Proctor Surveyors Pty Ltd	11/5/2018
Stormwater Concept Plan	1001	A	Rienco Consulting	17/1/2018

Planning Report – S4.15 Assessment - Greens Rd, GREENWELL POINT - Lot 1 DP 625828

Earthworks Sections Sheet 1	1002	A	Rienco Consulting	4/7/2018
Earthworks Sections Sheet 2	1003	A	Rienco Consulting	4/7/2018
Map of vegetation on the subject site, indicating areas of vegetation to be removed or retained	-	-	-	-
Statement of Environmental Effects	S18-019	-	PDC Planners	26/7/2018
Flora and Fauna Assessment	-	-	Peter Dalmazzo	29/5/2018
Flood Impact Statement	17047	1	Rienco Consulting	17/1/2018
Response to SCC referral notes on proposed subdivision	17047-01	-	Reinco Consulting	21/11/2018
Bushfire Hazard Assessment Report	BAR 10074/18	-	Bushfire Building Solutions	22/5/2018
Report on Geotechnical Investigation	TERRA19172.Rep1.Rev1	1	Terrara Insight	13/6/2019
Acid Sulfate Soil Management Plan	TERRA19172.ASSMP	-	Terrara Insight	12/6/2019

2. Subject Site and Surrounds

The subject site is located on the eastern side of Greens Road, Greenwell Point. The lot is rectangular in shape and has a site area of 6,750m² with a frontage to Greens Road of 140m. The development site has a steep drop in slope away from Greens Road on the western portion of the site, with the eastern portion of the site largely flat.

The site is currently vacant and contains some established native vegetation with part of the land being mapped as 'coastal wetlands' under *State Environmental Planning Policy (Coastal Management) 20018*.

The surrounding area is residential in character, with the development site being adjoined by low density residential development to the west, an existing caravan/tourist park to the north and environmental conservation land to the south and east. The Crookhaven oyster farming area is located approximately 200m to the east of the site.

The majority of the site is flood prone land and is categorised as high hazard floodway. Although the section of Greens Road which the property fronts is above the 1% AEP flood planning level. This southern part of Greenwell Point would become isolated and has restricted evacuation to the Greenwell Point town centre during the 1% AEP flood event (see Figure 2).

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Figure 1: Aerial imagery of subject site.

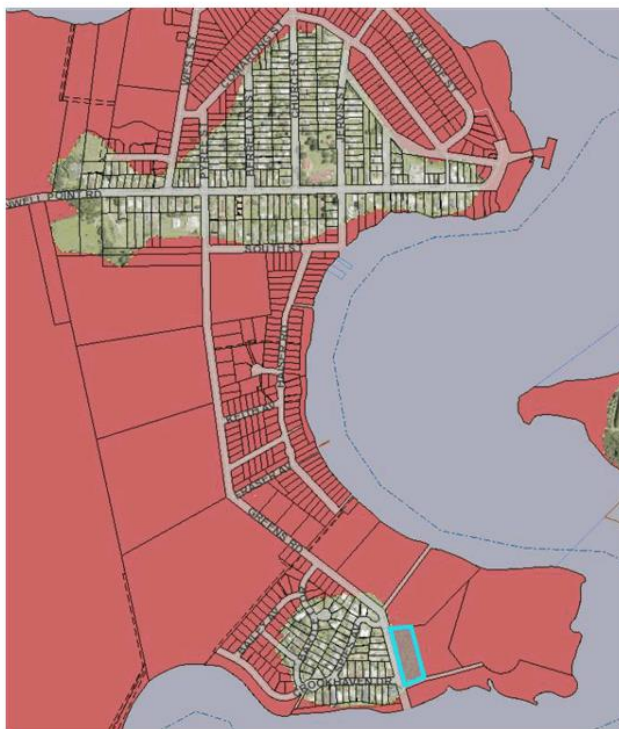


Figure 2: Map showing extent of flooding during the 1% AEP flood event. Subject property highlighted in blue.

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Deposited Plan and 88B Instrument

There are no identified restrictions on the use of the land that would limit or prohibit the proposed development.

3. Background

Post-Lodgement

6 June 2018	Application lodged with Council.
4 July 2018	Additional information requested by Council for applicant to clarify the proposed development, provide details of proposed filling and provide a variation statement to DCP controls with regard to subdivision and placement of fill on flood prone land
13 July 2018	Applicant submitted additional information in response to Council requests.
1 August 2018	Additional information requested by Council for applicant to clarify if proposal is considered to be 'Designated Development' under the <i>Environmental Planning and Assessment Act 1979</i> .
11 September 2018	Applicant provided legal opinion indicating that the application should not be considered as 'Designated Development'.
23 April 2019	Legal advice received from Council's Legal Department concurring that the application should not be considered as 'Designated Development'
24 April 2019	Additional information requested by Council for applicant to consider the proposed development's impact on acid sulfate soils, existing infrastructure, nearby oyster farms and associated infrastructure and provide additional information in regard to proposed filling.
12 June 2019	Applicant submitted additional information in response to Council requests.
13 May and 13 June 2019	Additional information requested by Council for applicant to consider the appropriateness of the development given site is mapped as flood prone land – high hazard floodway.
17 June 2019	Additional information requested by Council for applicant to provide geotechnical report and additional stormwater drainage infrastructure.
25 June 2019	At an Ordinary Meeting of Council, it was resolved that Council call-in SF10689 for determination by the elected Council due to the public interest (MIN19.451).
30 June 2019 and 12 August 2019	Applicant submitted additional information in response to Council requests. This additional information indicated: <ul style="list-style-type: none"> a) A 'variation statement' will not be provided as the submitted Flood Impact Statement has already considered the performance criteria set out in Chapter G9 of SDCP 2014. b) Additional stormwater information has been provided, however, if further information is necessary, applicant is happy to laise further with Council. This would occur if the elected Council decide to support the proposal on the grounds of flooding.

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Site History and Previous Approvals

The subject property was excised from the E2 Environmental Conservation zoned land to the east by way of subdivision which was registered 7 May 1982.

The subject site is vacant and has not been previously developed.

4. Consultation and Referrals

Internal Referrals			
Referral	Required	Recommendation	Comment
Subdivision Engineer	<input type="checkbox"/>	<p>Referral comments from Council's Subdivision Engineer raise concerns with flooding and stormwater drainage. Comments are similar to those concerns raised by Council's Assets and Works – Drainage Engineer and also the NRFU.</p> <p>Conditions have been provided if application is to be determined by way of approval.</p>	<p>Noted.</p> <p>The referral comments and advice provided by Council's Subdivision Engineer are concurred with.</p> <p>The application should be refused as it has not been demonstrated that adequate drainage for future development of the lots can be provided and also due flood issues as discussed in this report.</p>
Assets & Works	<input type="checkbox"/>	<p>The application proposes to dispose of stormwater for future development on each lot by way of absorption trenches and level spreaders.</p> <p>Referral comments from Council's Assets and Works – Drainage Engineer identify that based on the provided information and a review of the hydraulic conductivity of the site, the proposed stormwater drainage is unsatisfactory. It is considered that the land does not have capacity to dispose of stormwater through on site dispersal and if this system was approved overflow stormwater may flow onto adjoining properties.</p>	<p>Noted.</p> <p>The referral comments and advice provided by Council's Assets and Works – Drainage Engineer are concurred with.</p> <p>The application should be refused as it has not been demonstrated that stormwater from future development of the lots can be appropriately disposed of.</p>
Natural Resource & Floodplain Unit	<input type="checkbox"/>	<p>The subject site is categorised as high hazard floodway and the subdivision of and placement of fill in high hazard flood areas is not supported.</p>	<p>Noted.</p> <p>The referral comments and advice provided by NRFU are concurred with.</p>

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		Referral comments from NRFU identify that the proposed development is inconsistent with a number of performance criteria set out in Chapter G9 of SDCP2014 and raise objection to the proposed development on the basis that the development is not compatible with the flood hazard of the land, may adversely affect adjoining land and property by detrimentally displacing floodwater flows and presents an increased flood risk to life and property. The proposed development is not supported by NRFU.	The application should be refused for the flooding reasons identified in the NRFU referral comments and discussed in detail in this report.
EAO	<input type="checkbox"/>	No objection raised, subject to recommended conditions of consent as per referral comments dated 30/7/2019.	Conditions to be imposed if determined by way of approval.
EHO		Concerns raised relating to acid sulfate soils in relation to excavation for the absorption trenches	The applicant has prepared a further ASS Management Plan As identified in the referral comments from Council's Assets and Works – Drainage Engineer. This method of draining the land is not appropriate given the hydraulic of the land. The application should be refused as it has not been demonstrated that stormwater from future development of the lots can be adequately or appropriately disposed of.
Shoalhaven Water	<input type="checkbox"/>	No objection raised, subject to recommended conditions of consent as per referral comments dated 27/9/2019.	Section 306 notice provided. This is only valid if development consent is issued. Conditions to be imposed if determined by way of approval.
GIS	<input type="checkbox"/>	No objection raised, subject to recommended conditions of consent as per referral comments dated 2/8/2019.	Conditions to be imposed if determined by way of approval.
Legal Services	<input type="checkbox"/>	Advice that the proposed development is not considered Designated Development.	Noted
External Referrals			

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Agency	Required	Recommendation	Comment
DPI - Fisheries	<input type="checkbox"/>	No objection, subject to implementation of appropriate sediment and erosion controls as per referral dated 28/8/2019.	Noted. Appropriate conditions to be imposed if determined by way of approval.

5. Other Approvals

Integrated Approvals and Concurrences			
Agency	Required	Recommendation	Comment
Rural Fire Service	<input type="checkbox"/>	General Terms of Approval provided as per referral comments dated 16/1/2019.	BFSA issued. The GTAs would form part of a consent if application determined by way of approval and must be complied with.

6. Statutory Considerations

This report assesses the proposed development/use against relevant State, Regional and Local Environmental Planning Instruments and policies in accordance with Section 4.15 (1) of the Environmental Planning and Assessment Act 1979 (EP&A Act). The following planning instruments and controls apply to the proposed development:

Instrument	Relevant	Instrument	Relevant
Shoalhaven LEP 2014	<input type="checkbox"/>	State Environmental Planning Policy No 55 - Remediation of Land	<input type="checkbox"/>
State Environmental Planning Policy – (Coastal Management) 2018	<input type="checkbox"/>	State Environmental Planning Policy (Primary Production and Rural Development) 2019	<input type="checkbox"/>

Additional information on the proposal's compliance with the above planning instruments is detailed below in Section 7 (Statement of Compliance/Assessment) of this report.

7. Statement of Compliance/Assessment

The following provides an assessment of the submitted application against the matters for consideration under Section 4.15 of the EP&A Act.

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(a) Any planning instrument, draft instrument, DCP and regulations that apply to the land

Environmental Planning and Assessment Act 1979

Section 4.46 – Integrated Development			
Act	Provision	Approval	Relevant
Rural Fires Act 1997	100B	authorisation under section 100B in respect of bush fire safety of subdivision of land that could lawfully be used for residential or rural residential purposes or development of land for special fire protection purposes	<input type="checkbox"/>

i) Environmental planning instrument

SEPP (Coastal Management) 2018

The subject land is mapped as “coastal environment area”, “coastal use area”, “proximity area for coastal wetlands” and “coastal wetlands” under the SEPP.

10 *Development on certain land within coastal wetlands and littoral rainforest area*

Consideration	Comment
<p><i>The following may be carried out on land identified as “coastal wetlands” or “littoral rainforest” on the Coastal Wetlands and Littoral Rainforests Area Map only with development consent:</i></p> <ul style="list-style-type: none"> <i>a) the clearing of native vegetation within the meaning of Part 5A of the Local Land Services Act 2013,</i> <i>b) the harm of marine vegetation within the meaning of Division 4 of Part 7 of the Fisheries Management Act 1994,</i> <i>c) the carrying out of any of the following:</i> <ul style="list-style-type: none"> <i>i) earthworks (including the depositing of material on land),</i> <i>ii) constructing a levee,</i> <i>iii) draining the land,</i> <i>iv) environmental protection works,</i> <i>d) any other development.</i> 	<p>The application is for Torrens Title subdivision of Lot 1 DP 625828 which contains some land mapped as “coastal wetlands” under the SEPP. The proposal does not create any new boundaries that traverse the land mapped as “coastal wetlands” or involve any works or placement of fill on the mapped land.</p>
<p><i>Development for which consent is required by subclause (1), other than development for the purpose of environmental protection works, is declared to be designated development for the purposes of the Act.</i></p>	<p>The proposed temporary use does not involve activities on land mapped as “coastal wetlands”¹. The proposal is not considered to be designated development.</p>

¹ Advice received by Council suggests that the proposed subdivision does not involve the carrying out of work ‘on the land’ mapped as ‘coastal wetlands’ (i.e. no physical works are occurring on the mapped land). As such, the application is not considered to be Designated Development.

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<p><i>A consent authority must not grant consent for development referred to in subclause (1) unless the consent authority is satisfied that sufficient measures have been, or will be, taken to protect, and where possible enhance, the biophysical, hydrological and ecological integrity of the coastal wetland or littoral rainforest.</i></p>	<p>The proposal does not propose any work on the land mapped as “coastal wetlands”. However, the proposal involves works nearby this mapped land which may have an adverse impact on the coastal wetland.</p> <p>The proposed fill would likely alter floodwater behaviour and may redirect flows onto adjoining sensitive environments. The placement of substantial amounts of fill within a high hazard floodway may also result in displacement of fill material and potentially exacerbate siltation processes during flood events and lead to additional sediment entering into the coastal wetland area. This could have an adverse impact on riparian vegetation within nearby sensitive wetland environments.</p> <p>The application has not adequately demonstrated that the proposed development will not have an adverse impact on nearby sensitive environment. Insufficient information has been provided addressing potential environmental impacts on coastal wetlands or any measures proposed to protect the biophysical, hydrological and ecological integrity of the coastal wetland.</p> <p>Council is not satisfied that the proposed development is consistent with the requirements of clause 10 (3) of SEPP (Coastal Management) 2018.</p>

11 Development on land in proximity to coastal wetlands or littoral rain forest

Consideration	Comment
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DE19.111 - Attachment 4

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<p><i>Development consent must not be granted to development on land identified as “proximity area for coastal wetlands” or “proximity area for littoral rainforest” on the Coastal Wetlands and Littoral Rainforests Area Map unless the consent authority is satisfied that the proposed development will not significantly impact on:</i></p> <ul style="list-style-type: none"> <i>a) the biophysical, hydrological or ecological integrity of the adjacent coastal wetland or littoral rainforest, or</i> <i>b) the quantity and quality of surface and ground water flows to and from the adjacent coastal wetland or littoral rainforest.</i> 	<p>The proposed development and placement of substantial amounts of fill within the high hazard floodway will likely displace floodwaters and may potentially impact on nearby sensitive environment areas including the “coastal wetlands”.</p> <p>Insufficient information has been provided addressing potential environmental impacts on coastal wetlands or any measures proposed to protect the biophysical, hydrological and ecological integrity of the coastal wetland. The placement of fill within high hazard flooding areas may alter floodwater behaviour and may exacerbate siltation processes and lead to additional sediment being displaced and deposited onto the coastal wetland area. The application has not addressed how or if erosion, sediment and siltation processes can be managed. The proposed development may adversely impact on the quality of surface groundwater flows entering the coastal wetland area.</p> <p>The application has not adequately demonstrated that the proposed development will not have an adverse impact on nearby sensitive environment. Council is not satisfied that the proposed development is consistent with the requirements of clause 11 of <i>SEPP (Coastal Management) 2018</i>.</p>
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13 *Development on land within the coastal environment area*

Development consent must not be granted to development on land that is within the coastal environment area unless the consent authority has considered whether the proposed development is likely to cause an adverse impact on the following:

Consideration	Comment
<i>the integrity and resilience of the biophysical, hydrological (surface and groundwater) and ecological environment</i>	<p>The application has not adequately demonstrated that the proposed development will not have an adverse impact on nearby sensitive environment. Council is not satisfied that the proposed development is consistent with the requirements of clause 13(a) of <i>SEPP (Coastal Management) 2018</i>.</p>
<i>coastal environmental values and natural coastal processes,</i>	<p>The application has not adequately demonstrated that the proposed development will not have an adverse impact on nearby sensitive environment. Council is not satisfied that the proposed development is consistent</p>

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	with the requirements of clause 13(b) of <i>SEPP (Coastal Management) 2018</i> .
<i>the water quality of the marine estate (within the meaning of the Marine Estate Management Act 2014), in particular, the cumulative impacts of the proposed development on any of the sensitive coastal lakes identified in Schedule 1,</i>	The application has not adequately demonstrated that the proposed development will not have an adverse impact on water quality, particularly any stormwater overflow that may enter into adjoining coastal wetlands. Council is not satisfied that the proposed development is consistent with the requirements of clause 13(c) of <i>SEPP (Coastal Management) 2018</i> .
<i>marine vegetation, native vegetation and fauna and their habitats, undeveloped headlands and rock platforms,</i>	The application has not adequately demonstrated that the proposed development will not have an adverse impact on nearby sensitive environments, native vegetation or their habitats. Council is not satisfied that the proposed development is consistent with the requirements of clause 13(d) of <i>SEPP (Coastal Management) 2018</i> .
<i>existing public open space and safe access to and along the foreshore, beach, headland or rock platform for members of the public, including persons with a disability,</i>	The proposal will not restrict access.
<i>Aboriginal cultural heritage, practices and places,</i>	There are no identified impacts.
<i>the use of the surf zone.</i>	The proposal will not compromise the use of the surf zone.

14 Development on land within the coastal use area

Development consent must not be granted to development on land that is within the coastal use area unless the consent authority has considered whether the proposed development is likely to cause an adverse impact on the following:

Consideration	Comment
<i>existing, safe access to and along the foreshore, beach, headland or rock platform for members of the public, including persons with a disability,</i>	The proposal will not restrict access.
<i>overshadowing, wind funnelling and the loss of views from public places to foreshores,</i>	The proposal will not impact on overshadowing and wind funnelling and will not result in the loss of views from public places to foreshores.
<i>the visual amenity and scenic qualities of the coast, including coastal headlands,</i>	The proposal will not impact on the visual amenity and scenic qualities of the coast.
<i>Aboriginal cultural heritage, practices and places,</i>	There are no identified impacts.

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<i>cultural and built environment heritage, and</i>	There are no identified impacts.
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It is considered that the proposal is designed appropriately and will avoid adverse impact on the issues discussed above.

SEPP 55 Remediation of Land

Question	Yes	No
1. Is the proposal for residential subdivision or a listed purpose (the list provided in Table 1 of the contaminated land assessment guidelines)?	X Proceed to Question 3	Proceed to Question 2
2. Does the proposal result in a change of use (that is the establishment of a new use)?	Proceed to Question 3	Assessment under SEPP 55 and DCP not required.
3. Does the application proposed a new: <ul style="list-style-type: none"> ▪ Child care facility ▪ Educational use ▪ Recreational use ▪ Health care use ▪ Place of public worship ▪ Residential use in a commercial or industrial zone 	Proceed to Question 5	X Proceed to Question 4
4. Review the property file and conduct a site inspection of the site and surrounding lands. Is there any evidence that the land has been used for a listed purpose?	Proceed to Question 5	X Proposal satisfactory under SEPP 55 and DCP.
5. Is the proposed land use likely to have any exposure path to contaminants that might be present in soil or groundwater?	Request contaminated site assessment	Proposal satisfactory under SEPP 55 and DCP.

SEPP (Primary Production and Rural Development) 2019

Part 5 Sustainable Aquaculture

Division 4 Consideration of effects of proposed development on oyster aquaculture

Consideration	Comment
<i>Before determining a development application for any development, a consent authority—</i> <ul style="list-style-type: none"> a) <i>must consider whether, because of its nature and location, the development may have an adverse effect on oyster aquaculture development or a priority oyster aquaculture area, and</i> b) <i>if it suspects that the development may have that effect, must give notice of the application to the Secretary of the Department of Industry.</i> 	The subject site is located approximately 200m from existing oyster leases. The proposed development involves earthworks and the placement of substantial amounts of fill in a high hazard floodway in order to create building platforms. The proposed works may have an impact on existing aquaculture development. The application was referred to Department of Primary Industries (Fisheries) for comment. Referral comments from DPI (Fisheries) did not object to the development but did note that appropriate erosion and sediment control measures must be in place.

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<p><i>In determining a development application for any development, a consent authority must consider any comments received from the Secretary of the Department of Industry under subclause (1), including comments that identify—</i></p> <ul style="list-style-type: none"> <i>a) an adverse effect that the development may have on, or ways in which the development may impede or be incompatible with, oyster aquaculture development or priority oyster aquaculture area, and</i> <i>b) measures to avoid or minimise the adverse effect, impediment or incompatibility.</i> 	<p>The application was referred to DPI (Fisheries) for comment and not objection was raised subject to appropriate erosion and sediment controls being in place.</p> <p>It is considered that if the application is to be determined by way of approval, conditions of consent could be imposed to avoid or minimise any adverse effects of the development on nearby oyster leases.</p>
<p><i>A consent authority may refuse to grant consent to development—</i></p> <ul style="list-style-type: none"> <i>a) if it is satisfied that the development will have an adverse effect on, or impede or be incompatible with—</i> <ul style="list-style-type: none"> <i>i) an oyster aquaculture development that is being carried out (whether or not within a priority oyster aquaculture area), or</i> <i>ii) oyster aquaculture development that may in the future be carried out within a priority oyster aquaculture area, or</i> <i>b) if it is not satisfied that appropriate measures will be taken to avoid or minimise the adverse effect, impediment or incompatibility.</i> 	<p>It is considered that if the application is to be determined by way of approval, conditions of consent could be imposed to avoid or minimise any adverse effects of the development on nearby oyster leases.</p>
<p><i>In exercising its functions under this Division, a consent authority and the Secretary of the Department of Industry must each take into consideration the NSW Oyster Industry Sustainable Aquaculture Strategy.</i></p>	<p>The NSW Oyster Industry Sustainable Aquaculture Strategy has been taken into consideration.</p>

Shoalhaven LEP 2014

Land Zoning

The land is zoned R2 Low Density Residential under the SLEP 2014.

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Characterisation and Permissibility

The proposal is best characterised as subdivision of land as defined by the Environmental Planning and Assessment Act 1979 under the SLEP 2014. The proposal is permitted within the zone with the consent of Council.

Zone objectives

Objective	Comment
To provide for the housing needs of the community within a low density residential environment.	The proposal is not inconsistent with the objectives of the R2 zone.
To enable other land uses that provide facilities or services to meet the day to day needs of residents.	
To provide an environment primarily for detached housing and to ensure that other development is compatible with that environment.	

SLEP 2014 Clauses

Clause	Relevant	Comments	Complies/ Consistent
Part 2 Permitted or prohibited development			
2.6	<input type="checkbox"/>	Clause 2.6 of the SLEP specifies that land may be subdivided, but only with development consent.	Complies
Part 4 Principal development standards			
4.1	<input type="checkbox"/>	The Lot Size Map sets a minimum lot size of 500m ² for the land. All proposed lots have a site area greater than 500m ² .	Complies
Part 7 Additional local provision			
7.1	<input type="checkbox"/>	The subject site is mapped as containing ASS Class 5 and Class 2. The proposed development includes excavation to create absorption trenches for future residential development of the lots. The application has been supported by a Report on Geotechnical Investigation and also an Acid Sulfate Soil Management Plan.	Complies
7.2	<input type="checkbox"/>	The proposal involves the placement of substantial amounts of fill in a high hazard floodway to create building platforms. It is considered that the proposed development would likely affect the flow and behaviour of floodwaters and would have an adverse impact on adjoining property by redirecting flows onto adjoining land. The application has not adequately demonstrated that the development would not adversely impact on nearby environmentally sensitive areas.	Non-compliant

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		It is considered that the proposed development has not adequately addressed the requirements of clause 7.2 and will potentially have an adverse impact on nearby sensitive environments and also a detrimental impact on nearby properties by altering floodwater behaviour and flows.	
7.3	<input type="checkbox"/>	<p>The subject land is mapped as flood prone land and is categorised as high hazard floodway. The proposed subdivision will create four lots with dwelling entitlements with the implied right to construct a dwelling. To facilitate this, the development also includes the placement of up to 2.1m of fill above natural ground level to create building platforms above the 1% AEP flood planning level. The proposal will place obstructions in the high hazard floodway and will increase dwelling density of a high hazard flood area with restricted evacuation access.</p> <p>Council's Natural Resources and Floodplain Unit (NRFU) provided referral comments noting numerous non-compliances with the SDCP 2014 and other flood controls and also raising objection to the proposal. Referral comments indicated that the application should not be supported as the proposed subdivision would increase potential dwelling density in high hazard floodway land and presents a significant risk to life and property. The NRFU concluded that the development is not compatible with the land's flood hazard and should not be supported.</p> <p>The NRFU referral comments also note that rather than demonstrating any quantitative analysis, the Flood Impact Study only provides that in the view of the flood consultant, the proposed development will not have any significant adverse impact and the proposal is suitable in the opinion of that flood consultant. The Flood Impact Study also does not assess any hydraulic impact towards the neighbouring property due to the filling.</p> <p>Further, the NRFU also noted that although this section of Greens Road is above the 1% AEP flood level, only a small area of land in this part of Greenwell Point is above the present day 1% AEP flood level and is isolated from the main Greenwell Point township and the rest of the local government area during the 1% AEP flood event (see Figure 2).</p> <p>It is considered that the proposed development is not suitable with regard to the considerations of clause 7.3 (3) of SLEP 2014, specifically:</p> <ul style="list-style-type: none"> a) The proposed subdivision and placement of fill is not compatible with the flood hazard (high hazard floodway) of the land as it will likely negatively alter floodwater behaviour and present an increased risk to life and property. 	Non-compliant

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		<p>b) The application has not adequately demonstrated that the development, particularly the placement of fill, will not significantly adversely affect flood behaviour resulting in detrimental increase in the potential flood affectation of adjoining properties.</p> <p>c) The application has not adequately demonstrated that the development will not significantly adversely the environment or not exacerbate erosion or siltation processes or lead to the destruction of riparian vegetation through by altering floodwater behaviour.</p> <p>d) Subdivision of high hazard floodway land where safe evacuation or occupation out of the immediate area may not be achievable; this would increase dependence on emergency services. It is considered that the proposal would likely to result in additional social and economic costs to the community as a consequence of flooding.</p> <p>e) Safe occupation or evacuation from the immediate area may not be achievable in a flood event and access will be cut off from the Greenwell Point township during the 1% AEP flood.</p>	
7.6	<input type="checkbox"/>	<p>The subject site contains land identified as "Riparian Land" on the Riparian Lands and Watercourse Map, but is not identified as a "watercourse".</p> <p>The proposed development does not result in any work on or alteration of this "Riparian Land", however, the placement of fill as required by this development may result in the displacement of floodwater onto this land during a flood event. Further, the application has not demonstrated that the proposed development can adequately dispose of stormwater from future development of the lots without overflow being directed onto adjoining land, including the mapped "Riparian Land".</p> <p>Based on the information provided, Council cannot be satisfied that the proposed development will not have any adverse impact on the water quality of flows entering the "Riparian Land". Council cannot be satisfied that the proposed development will not have an adverse impact on aquatic and riparian species, habitats and ecosystems or future rehabilitation of this riparian area.</p> <p>The development is not likely to increase water extraction from any nearby watercourse.</p>	Non-compliant
7.11	<input type="checkbox"/>	All relevant services are available to the site.	Complies

ii) Draft Environmental Planning Instrument

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No draft Environmental Planning Instruments are applicable.

iii) **Any Development Control Plan**

Shoalhaven DCP 2014

Generic Chapters	Relevant
G1: Site Analysis, Sustainable Design and Building Materials in Rural and Coastal Areas	<input type="checkbox"/>
The proposal has been supported by appropriate Site Plans and site detail plans.	
G2: Sustainable Stormwater Management and Erosion/Sediment Control	<input type="checkbox"/>
<p>Concerns have been raised by Council's Subdivision Engineer and also be Council's Assets and Works – Drainage Engineer with the proposed method of draining the land through on site absorption trenches and level spreaders. The area where the absorption trenches are proposed is waterlogged and from a review of the hydraulic conductivity of the land, the proposed lots may not have sufficient capacity for on site stormwater disposal. Overflow from the proposed absorption trenches may flow on to adjoining land and into sensitive environments and may have an adverse or detrimental impact.</p> <p>The application has not adequately demonstrated that the proposed drainage method is suitable. It is considered that the land may not have sufficient capacity to adequately dispose of stormwater from future residential development of the lots.</p> <p><i>Note from Section Manager: Stormwater design may be something that can be addressed or explored as a condition of consent, if approval were to be recommended on issued. However, with any development it is highly recommended that suitable investigations are made and a concept provide to ensure adequacy of the design, ability to drain and to eliminate any 'surprises'.</i></p>	
G7: Waste Minimisation and Management Controls	<input type="checkbox"/>
The application has addressed waste management for the development. If approved, recommended conditions of consent will require a detailed waste minimisation and management plan be prepared and approved by the PCA prior to the issue of a CC.	
G9: Development on Flood Prone Land	<input type="checkbox"/>
See Appendix A.	
G11: Subdivision of Land	<input type="checkbox"/>
See Appendix B	
G26: Acid Sulphate Soils and Geotechnical (Site Stability) Guidelines	<input type="checkbox"/>
The subject site is mapped as containing ASS Class 5 and Class 2. The proposed development includes excavation to create absorption trenches for future residential development of the lots. The application has not adequately demonstrated that this method of stormwater disposal is appropriate.	

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The application has been supported by a Report on Geotechnical Investigation and also an Acid Sulfate Soil Management Plan. If approved, conditions of consent will require that the works and any handling of acid sulfate soil comply with the Acid Sulfate Soil Management Plan.

iiia) Any planning agreement that has been entered into under section 7.4, or any draft planning agreement that a developer has offered to enter into under section 7.4

There are no planning agreements applying to this application.

iv) **Environmental Planning and Assessment Regulation 2000**

The proposal ensures compliance with the applicable requirements within the Regulations subject to recommended conditions of consent.

Any coastal zone management plan

The application is not subject to any coastal zone management plan.

Council Policies

The following policies are relevant to the application.

Shoalhaven Contribution Plan 2019

The proposed development is considered to increase the demand for community facilities in accordance with the Shoalhaven Contributions Plan 2019 (the Plan). The development is most aptly characterised as a subdivision development for the purpose of calculating contributions under the Plan.

Section 94 ET Calculations - SF10689 (UPN: 5409)

Close Reset Print Return Calc

☒ Residential ☐ Non-Residential

Calculation Type: Subdivision

Subdivision

Proposed: 4 Lots

Existing: 1 Lots

Total ETs: 3

NOTE:
Prior to the issue of development consent which requires contributions in accordance with this Plan, credit of the respective ETs or m2 is given to recognise the original approved land use of the development site (i.e. dwelling / building / subdivision).

If the application were to be approved s7.11 contributions will be calculated and applied accordingly.

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

Head of Consideration	Comment
Natural Environment	Potential Impact on nearby sensitive environments

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Head of Consideration	Comment
	<p>The proposed development will likely alter flood behaviour and may redirect floodwaters onto adjoining sensitive environments. Further, the application has not demonstrated that the proposed lots have sufficient capacity to dispose of stormwater from future residential development of the site. Overflow stormwater may flow onto nearby sensitive environments.</p> <p>The application has not demonstrated that the proposal will not have an adverse or detrimental impact on nearby sensitive environments (e.g. coastal wetlands).</p> <p>The application should not be supported as the application has not demonstrated that the proposal will not have an adverse impact on the natural environment.</p>
Built Environment	It is not anticipated that the proposal will have a negative impact on the built environment.
Social Impacts	<p><u>Increased risk to life and property</u></p> <p>As noted previously in this report, the application proposes the placement of substantial amounts of fill within and also the subdivision of a high hazard floodway in direct contrast to the performance criteria set out in the SDCP 2014.</p> <p>The proposed development places an obstruction in the high hazard floodway and would likely alter the flood behavior and flows, potentially redirecting floodwater on to adjoining property.</p> <p>Further, although the site has a frontage to part of Greens Road which is above the flood level, evacuation from the immediate area to the Greenwell Point township is restricted during the 1% AEP flood event.</p> <p><u>Increased reliance of emergency services</u></p> <p>The proposed development involves the subdivision of a high hazard floodway with restricted evacuation access from the immediate area to the Greenwell Point township or other areas of the LGA. This would increase the communities reliance on emergency services.</p> <p>The application should not be supported due to the negative social impacts of the development.</p>
Economic Impacts	<p>It is considered that the proposed development will have a negative economic impact on the community by:</p> <p>a) Presenting an increased risk to life and property; and b) Presenting an increased reliance on emergency services during flood events.</p>

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Head of Consideration	Comment
	The application should not be supported due to the negative economic impacts of the development.

(c) Suitability of the site for the development

The application has not demonstrated that the subject site is suitable. Based on information submitted as part of this DA, the site is not suitable for the following reasons:

- The proposal is inconsistent with the requirements/considerations set out in clause 7.2, 7.3 and 7.6, specifically:
 - The application does not demonstrate that the land has sufficient capacity to dispose of stormwater on site through absorption trenches and level spreaders without detrimental impact to adjoining properties and nearby sensitive environments.
 - The proposed development presents and increased risk to life and property.
 - The proposed development is incompatible with the flood hazard of the land.
 - The application does not demonstrate that the proposed development will not significantly adversely affect flood behavior resulting in detrimental increases in the potential flood affectation of other development or properties.
 - The application does not demonstrate that the proposed development will not significantly adversely affect the environment or cause avoidable erosion, siltation, destruction of riparian vegetation or a reduction in the stability of river banks or watercourses
 - It is likely that the proposed development will result in negative social and economic impacts to the community as a consequence of flooding and alteration of flood behaviour and flows.
 - There is restricted safe evacuation access from the immediate area to the Greenwell point township and other areas of the LGA during the 1% AEP flood event.
- The application has not demonstrated that the proposal is satisfactory given the considerations set out in *SEPP (Coastal Management) 2018*, specifically the proposed developments impact on nearby "coastal wetlands"
- The proposal is inconsistent with the performance criteria set out in Chapter G9 of the SDCP 2014, specifically P2, P3.1, P3.2 and P3.3 as they relate to flooding, the placement of fill in high hazard floodways and the subdivision of high hazard flood areas.
- The application has not demonstrated that the proposed method of stormwater drainage is appropriate.

(d) Submissions made in accordance with the Act or the regulations

The DA was notified in accordance with Council's Community Consultation Policy for Development Applications. Submissions were received by Council objecting to the proposal. The concerns raised are outlined below:

Summary of Public Submissions	
Objection Raised	Comment
Submission 1	
Subdivision and filling of high hazard floodway.	The application has not adequately demonstrated that the proposed development

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	<p>will not adversely impact on adjoining properties.</p> <p>Similar concerns in relation to subdivision and filling of high hazard floodway land have been raised by Council's NRFU and by assessment staff. It is considered that the proposed development may adversely impact on adjoining land by altering flows and floodwater behaviour. The proposed subdivision and filling of land presents an increased flood risk to life and property.</p>
Stormwater management and water quality	<p>The application has not adequately demonstrated that the proposed stormwater drainage design with disposal by way of absorption trenches and level spreaders is appropriate.</p> <p>Similar concerns in relation to stormwater disposal have been raised by Council's Assets – Drainage Engineer and by assessment staff. Based on a review of the provided stormwater information and the hydraulic conductivity of the site, it does not appear that the proposal could effectively utilise absorption trenches to dispose of stormwater from future residential development of the lots.</p> <p>With regard to nearby oyster leases, referral comments from NSW Department of Primary Industries recommend that appropriate sediment and erosion controls must be in place to ensure that development does not impact on the health and lifecycle of aquatic organisms. Erosion and sediment controls could be applied to minimise impact on nearby oyster leases.</p>
Integrated development – proximity to watercourse	<p>The proposed development does not involve work within 40m of 'waterfront land' or a 'river' as defined under the <i>Water Management Act 2000</i>. The current application is not considered to be integrated under the <i>Water Management Act 2000</i>.</p>
Acid Sulfate Soils	<p>The application has not adequately demonstrated that the proposed stormwater drainage design with disposal by way of absorption trenches and level spreaders is appropriate.</p> <p>The application has been supported by a Report on Geotechnical Investigation and also an Acid Sulfate Soil Management Plan. If the</p>

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	application is to be approved in its current form conditions of consent will require that all work and handling of acid sulfate soils be in accordance with the Acid Sulfate Soil Management Plan.
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(e) The Public Interest

The application has been 'called in' to the elected Council for determination.

Due to the flooding and stormwater drainage issues, increased risk to life and property as well as the potential adverse impact on adjoining land and nearby properties, the proposed development is not considered to be in the public interest.

Delegations

On 25 June 2019, at an Ordinary Meeting of Council, it was resolved that Council call-in SF10689 for determination by the elected Council due to the public interest (MIN19.451).

In accordance with the resolution, the development application is to be determined by the Council.

Recommendation

This application has been assessed having regard for Section 4.15 (Matters for consideration) under the Environmental Planning and Assessment Act 1979. As such, it is recommended that Development Application No. SF10689 be refused.

Name

Senior Development Planner
Planning, Environment & Development Group
12/09/2019

As noted in this report, section 7.11 contributions would be calculated if the application were to be approved. This rationale has been reviewed and are agreed to.

Choose an item.

Choose an item.

Planning, Environment & Development Group

[Click here to enter a date.](#)

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Appendix A – Assessment Checklist: Chapter G19 – Development on Flood Prone Land

5.1 – General			
Performance Criteria	Acceptable solution	Proposal	Compliance
<p><i>P1</i> - Development or work on flood prone land will meet the following:</p> <ul style="list-style-type: none"> The development will not increase the risk to life or safety of persons during a flood event on the development site and adjoining land. The development or work will not unduly restrict the flow behaviour of floodwaters. The development or work will not unduly increase the level or flow of floodwaters or stormwater runoff on land in the vicinity. The development or work will not exacerbate the adverse consequences of floodwaters flowing on the land with regard to erosion, siltation and destruction of vegetation. The structural characteristics of any building or work that are the subject of the application are 	<p><i>A1.1</i> - The development satisfies the requirements as shown in the planning matrix at Schedule 2 including climate change considerations; and</p>	<p>The majority of the site is categorised as high hazard floodway.</p> <p>Schedule 2 of Chapter G 9 indicates that high hazard floodway areas are not suitable for subdivision.</p> <p>It is considered that the proposed development presents an increased risk to life and property and would likely alter floodwater behavior which may result in a detrimental impact on adjoining land and nearby properties. The proposed development would likely increase dependency on emergency services during a flood event. The proposed development is inconsistent with performance criteria P1.</p>	<p>Non-compliant with A1.1 and P1.</p>
	<p><i>A1.2</i> - Buildings and structures are constructed in accordance with the flood proofing guidelines (see Supporting Document 1: Chapter G9 – Guidelines for Development on Flood Prone Land); and</p>	<p>N/A – The proposal does not involve the construction of any buildings or structures.</p>	<p>N/A</p>

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<p>capable of withstanding flooding in accordance with the requirements of the Council.</p> <ul style="list-style-type: none"> The development will not become unsafe during floods or result in moving debris that potentially threatens the safety of people or the integrity of structures. Potential damage due to inundation of proposed buildings and structures is minimised. The development will not obstruct escape routes for both people and stock in the event of a flood. The development will not unduly increase dependency on emergency services. Interaction of flooding from all possible sources has been taken into account in assessing the proposed development against risks to life and property resulting from any adverse hydraulic impacts. The development will not adversely affect the integrity of floodplains and floodways, including riparian vegetation, fluvial geomorphologic environmental 	<p>A1.3 - Buildings and structures are constructed in accordance with the Building Code of Australia – Construction of Buildings in Flood Hazard Areas – Standard 2012. The controls in this Chapter are to be used in instances where this Chapter specifies more stringent controls; and;</p> <p>Buildings and structures are designed to withstand the forces of flood waters in accordance with best practice engineering standards; or</p>	<p>N/A – The proposal does not involve the construction of any buildings or structures.</p>	<p>N/A</p>
	<p>A1.4 – Where appropriate, structures are designed to collapse under the force of water to not obstruct the flood flow, but are sufficiently secured to not become floating debris and to not endanger people or animals; or</p>	<p>N/A – The proposal does not involve the construction of any buildings or structures.</p>	<p>N/A</p>
	<p>A1.5 - Openings in structures such as fences or the like will be provided below the flood planning level to allow free flow of water; and where relevant;</p>	<p>N/A – The proposal does not involve the construction of any buildings or structures.</p>	<p>N/A</p>

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processes and water quality.	A1.6 – Building foundations are designed by a suitably qualified geotechnical engineer to be suitable for grounds with potentially reduced bearing capacity under flooding conditions; and	N/A – The proposal does not involve the construction of any buildings or structures.	N/A
	A1.7 - The development complies with ecological sustainable development principles, taking into account floodplain ecology and integrity; and	The application has not adequately demonstrated that the development will not have a negative impact on floodplain ecology and integrity. The proposed development may have an adverse impact on nearby vegetation and environmentally sensitive areas. The proposal is inconsistent with performance criteria P1.	Non-compliant with A1.7 and P1.
	A1.8 - A report demonstrating that all performance criteria have been met is supplied with the development application.	The application has been supported by a Flood Impact Statement and a supporting letter. Assessment staff do not concur with the assessment set out in the Flood Impact Statement. It is considered that the application has not demonstrated that the development meets all the relevant flood related performance criteria.	Council assessment staff do not concur that the application and Flood Impact Statement have demonstrated that the development meets all the relevant flood related performance criteria. Non-compliant with A1.8 and P1.
5.2 – Fill or Excavation on the Floodplain			
Performance Criteria	Acceptable solution	Proposal	Compliance

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<p>P2 - Filling or excavation on flood prone land will meet the following:</p> <ul style="list-style-type: none"> • High hazard floodway areas are kept free of fill and/or obstructions. • The proposed fill or excavation will not unduly restrict the flow behaviour of floodwaters. • The proposed fill or excavation will not unduly increase the level or flow of floodwaters or stormwater runoff on land in the vicinity, including adjoining land. • The proposed fill or excavation will not exacerbate erosion, siltation and destruction of vegetation caused by floodwaters flowing on the land. • The proposed fill or excavation will not be carried out on flood prone land if sufficient flood free area is available for development within the subject property. 	<p>A2.1 - The development satisfies the requirements as shown in the planning matrix at Schedule 2.</p>	<p>The proposal involves subdivision and placement of fill in a high hazard floodway. Schedule 2 specifies that both subdivision and earthworks are not suitable types of development within the high hazard floodway.</p> <p>The proposal is inconsistent with Performance Criteria P2 as:</p> <ul style="list-style-type: none"> • it involves the placement of fill in high hazard floodway areas; • the proposed filling would likely affect the flow and behaviour of floodwaters and would have an adverse impact on adjoining property by redirecting flows onto adjoining land; • the application has not adequately demonstrated that the proposal would not exacerbate erosion or siltation processes nor have a significant impact on native vegetation or nearby environmentally sensitive ecosystems, such land mapped as 'coastal wetland' as a result of the alteration on floodwater behaviour 	<p>Non-compliant with A2.1 and P2.</p>
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	<p>A2.2 - The proposed fill volume occupies less than 1% of the 2050 20%, 5% and 1% AEP flood volume on the development site and does not create a depth exceeding 1 metre above natural ground level or require more than 250 cubic metres of filling materials.</p>	<p>The proposal involves the placement of substantial amounts of fill in the high hazard floodway which is inconsistent with P2.</p> <p>No quantitative analysis of the proposed filling has been undertaken by the applicant. It is however noted that the proposal involves filling of a substantial amount of the site and involves filling of up to 2.1m above natural ground level.</p> <p>The proposal is inconsistent with P2.</p>	<p>Non-compliant with A2.2 and P2.</p>
	<p>A2.3 - The proposed fill and excavation does not adversely affect neighbouring properties or the overall flood behaviour and flood storage volume.</p>	<p>No quantitative analysis of the proposed filling has been undertaken by the applicant. It is noted that the proposal involves filling of a substantial amount of the site and involves filling of up to 2.1m above natural ground level. This would likely adversely affect flood behaviour and flood storage volume.</p> <p>The application has not demonstrated that the proposal and proposed filling of land would not adversely affect neighbouring properties or negatively affect flood behaviour and flows.</p> <p>The proposal is inconsistent with P2.</p>	<p>Non-compliant with A2.3 and P2.</p>

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	A2.4 - The proposed fill is used only for the purpose of filling a local depression beneath the confines of a building within an existing residential/ commercial area.	The proposal involves the placement of substantial amounts of fill (up to 2.1m above natural ground level) to provide building platforms above the 1% AEP flood level. The proposal involves substantial filling of high hazard floodway and is inconsistent with P2.	Non-compliant with A2.4 and P2.
5.3 – Subdivision in the Floodplain			
Performance Criteria	Acceptable solution	Proposal	Compliance
P3.1 – The development (subdivision and intended future use) is a suitable land use, and is adequately designed, for the defined hazard/ hydraulic category.	A3.1 - The development (subdivision and intended future use) satisfies the requirements as shown in the planning matrix at Schedule 2; and	The proposal involves subdivision and placement of fill in a high hazard floodway. Schedule 2 specifies that both subdivision and earthworks are not suitable types of development within the high hazard floodway. The proposed development presents an increased risk to life and property and may alter flood behaviour and flows having a detrimental impact on adjoining properties and nearby sensitive environments. The proposal is not a suitable land use or compatible with the flood hazard of the land.	Non-compliant with A3.1 and P3.1.
P3.2 - The proposed subdivision will not create new lots that are affected by a high hazard area, or floodway in today's flood conditions or in climate change conditions up to the year 2100.	A3.2 - Flood conditions for the year 2100, which include the respective sea level rise projection, are used.	The subject land is categorized as high hazard floodway. The proposed development is not a suitable land use and is not compatible with the flood hazard of the land. As noted previously in this report, the proposed development will result in increase density in a high	Non-compliant with A3.2, P3.2 and P3.3.
P3.3 - The proposed subdivision will not			

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increase the potential population density in any areas (flood prone or flood free) with restricted evacuation access		hazard flood area and although the proposed lots have frontage to a section of Greens Road that is above the 1% AEP flood planning level, there is restricted evacuation access out of the immediate area to the Greenwell Point township and other areas of the LGA during a flood event.	
5.4 – Site Specific Flood Related Development Controls			
5.4.4 - Lower Shoalhaven River			
<p>The Lower Shoalhaven River Floodplain Risk Management Plan was adopted in 2007, with a Climate Change Assessment conducted in 2011. The Plan specifies that for Greenwell Point, further expansion or new development beyond the current residential zoning will not be permitted.</p> <p>The current proposal involves the subdivision and related placement of substantial amounts of fill within a high hazard floodway, in an area with restricted evacuation access from the immediate area. The proposal would result in intensification and increased density in a high hazard flood area and presents an increased risk to life and property. The subject site is not suitable for the proposed development and should not be supported.</p>			

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Appendix B – Assessment Checklist: Chapter G11 – Subdivision of Land

5.1 – Residential Neighbourhood Design			
Performance Criteria	Acceptable solution	Proposal	Compliance
<i>P1</i> - To ensure the subdivision layout responds to site characteristics, setting, landmarks and views through street and open space areas.	<i>A1.1</i> - No recommended acceptable solution. Each situation requires an individual approach.	The subject site is mapped as flood prone land and categorized as high hazard floodway. The proposed development does not appropriately respond to the flood hazard of the land.	Non-compliant with A1.1 and P1.
<i>P2</i> - To reinforce neighbourhood identity and focus on community facilities within convenient walking distances for residents.	<i>A2.1</i> - No recommended acceptable solution. Each situation requires an individual approach.	The proposal is for small-scale infill subdivision and no pedestrian pathways are proposed.	N/A
	<i>A2.2</i> - Where pedestrian access pathways are provided in a subdivision, the minimum width of these passage ways is to be 15m to improve accessibility to the community or access to public transport or other community facilities, addressing safer by design guidelines.	N/A – No pedestrian pathways are proposed or required.	N/A
<i>P3</i> - To provide a high level of internal access and external connections for local vehicular traffic, pedestrian and cycle movement, whilst deterring through traffic and creating safe road conditions for all users.	<i>A2.3</i> - No recommended acceptable solution. Each situation requires an individual approach.	The proposal is for small-scale infill subdivision and will not compromise vehicle and pedestrian movement in the local area.	Complies
<i>P4</i> - To design street layouts and lot density to minimise fuel consumption, reduce travel	<i>A4.1</i> - No recommended acceptable solution. Each situation requires an individual approach.	N/A – The proposal is for small-scale infill subdivision.	N/A

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distances, maximise public transport effectiveness and encourage walking and cycling.			
P5 - To ensure street and lot layout enable efficient provision of physical services.	A5.1 - No recommended acceptable solution. Each situation requires an individual approach.	The proposed lot layout allows for the efficient provision of physical services and utilities.	Complies
P6 - To provide a range of lot sizes to permit a variety of housing types and compatible land uses that are consistent with Council's Housing Strategy.	A6.1 - No recommended acceptable solution. Each situation requires an individual approach.	N/A - The proposal is for small-scale infill subdivision	N/A
P7 - To provide for higher densities in areas close to the CBD, services, public transport, open space that are consistent with the zone objectives.	A7.1 - Development is in accordance with Council's Housing Strategy and any relevant site specific chapters of this DCP.	N/A - The proposal is for small-scale infill subdivision	N/A
P8 - To distribute and locate public open space appropriately that contributes to a range of uses, stormwater management, environmental care and low maintenance costs.	A8.1 - No recommended acceptable solution. Each situation requires an individual approach.	N/A - The proposal is for small-scale infill subdivision	N/A
P9 - To ensure lot layout retains significant vegetation and natural areas, incorporates cultural and natural features, minimises soil erosion and avoids flood prone land.	A9.1 - No recommended acceptable solution. Each situation requires an individual approach.	The subject site is mapped as flood prone land and categorized as high hazard floodway. The proposed development does not appropriately respond to the flood hazard of the land. The proposal is inconsistent with P9.	U Non-compliant with A9.1 and P9.

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<i>P10</i> - To ensure integration of lot layout with the surrounding urban environment that complements existing desirable streetscapes and landscapes and promotes shared use of public facilities by adjoining communities.	<i>A10.1</i> - No recommended acceptable solution. Each situation requires an individual approach.	The proposed subdivision is consistent with the subdivision pattern of the area.	Complies
5.2 – Major Street Networks			
The proposal will have negligible impact on the existing major street network.			
5.3 – Local Street Networks			
The proposal will have negligible impact on the existing local street network.			
5.4 – Pedestrian and Cyclist Facilities			
The proposal does not propose or require the provision of any additional pedestrian or cyclist facilities.			
5.5 – Public Transport			
The proposal is for small-scale infill subdivision. Public transport is considered appropriate.			
5.6 – Public Open			
N/A – The application does not propose any public open space.			
5.7 – Street Design			
N/A – The application does not propose the construction of any public roads.			
5.8 – Street and Common Driveway Construction			
Performance Criteria	Acceptable solution	Proposal	Compliance
<i>P63</i> - Footpath/ verge edging and landscaping support the specified	<i>A62.1</i> - Footpath/ verge and landscaping materials are used to distinguish different street functions.	N/A – No footpaths are proposed or required.	N/A

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functions and amenity of the street.	Acceptable road pavements are: <ul style="list-style-type: none"> • unbound/bound flexible pavement; • Rigid pavement (concrete). 		
	A63.2 - Complies with Section 6.3.3	Noted.	Complies
P64 - Pavement edge: <ul style="list-style-type: none"> • Controls vehicle movements by delineating the carriageway for all users; • Assists in controlling stormwater runoff; • Provides for people with disabilities. 	A63.1 - To ensure wheelchair and pram access; and assist sight impaired people, pavement edges at pedestrian crossings are constructed in accordance with AS1428 Pt1 and Pt14.	N/A – No pedestrian crossings proposed or required.	N/A
	A64.2 – Devices must comply with RTAD 96/6- Use of Traffic Calming Devices at Pedestrian Crossings	N/A - No traffic calming or pedestrian crossings proposed or required.	N/A
P65 - Street and access handle pavement surfaces are will designed and durable enough to: <ul style="list-style-type: none"> • carry wheel loads of travelling and parked vehicles; • ensure safe passage of vehicles, pedestrians and cyclists; • discharge rainfall and preserve all-weather access; and 	A64.1 – Flexible pavement is constructed in accordance with Council's Engineering Design Specifications Chapter D2.	If the application were to be approved, conditions of consent would require driveways, laybacks and driveway crossings be appropriately constructed.	Complies
	A65.2 - Improvements are made to streets providing access to the subdivision and to lots within the subdivision in accordance with Engineering Design Specifications Appendix A: Street Improvements for site specific requirements for infill or two lot subdivision	If the application were to be approved, conditions of consent will require the provision of kerb and guttering along the property frontage.	Complies

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<ul style="list-style-type: none">• Allow for reasonable travel comfort.	<p>A65.3 - All newly created public roads having flexible pavements are surfaced with an approved base designed in accordance with APRG Report No. 21 for pavements with a traffic volume up to 5 x 105 ESA or AUSTRROADS, A Guide to the Structural Design of Road Pavements where Traffic Volumes Exceed 5 x 105 ESA. Pavements must be as follows:</p> <table><tr><td>Arterial roads</td><td>AC</td></tr><tr><td>local distributor roads including industrial roads</td><td>AC</td></tr><tr><td>local access roads serving allotments of up to 2000m²</td><td>AC or concrete</td></tr><tr><td>car parks</td><td>AC or patterned concrete</td></tr><tr><td>accessways</td><td>AC or patterned concrete</td></tr></table>	Arterial roads	AC	local distributor roads including industrial roads	AC	local access roads serving allotments of up to 2000m ²	AC or concrete	car parks	AC or patterned concrete	accessways	AC or patterned concrete	N/A – No public roads to be constructed.	N/A
Arterial roads	AC												
local distributor roads including industrial roads	AC												
local access roads serving allotments of up to 2000m ²	AC or concrete												
car parks	AC or patterned concrete												
accessways	AC or patterned concrete												
	<p>A65.4 – Concrete kerb and gutter, together with a concrete layback and footpath crossing, is to be provided to Council's specification for the full frontage of the development. Profiles are to comply with the requirements of Table 3.</p>	<p>If the application were to be approved, conditions of consent will require the provision of kerb and guttering along the property frontage.</p>	Complies										
	<p>A65.5 – Where subdivision of dual occupancy utilises kerb and gutter it is to be provided in accordance with Section 5.24.</p>	<p>N/A – The application is not for subdivision of a dual occupancy.</p>	N/A										
	<p>A65.6 – Vehicular kerb crossings connect to battle-axe driveways.</p>	<p>If the application were to be approved, conditions of consent would require driveways, laybacks and driveway crossings be appropriately constructed.</p>	Complies										
	<p>A65.7 – Driveway access to battle-axe lots be constructed to the rear of the front lots.</p>	<p>N/A – The proposal does not create any battle-axe lots</p>	N/A										

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	A65.8 – Access handles are constructed to the kerb line or to the bitumen seal the road fronting the subdivision.	N/A – The proposal does not create any battle-axe lots	N/A
	65.9 - Construction of driveway to: <ul style="list-style-type: none"> a single battleaxe lot – two reinforced concrete strips centrally placed each 0.8m wide, 125mm thick on 75mm FCR, AS72 fabric, 25MPa with full width footpath concrete cross over. two battleaxe lots - reinforced concrete pavement 3m wide 125mm thick on 75mm FCR, AS72 Fabric with 35mm topcover 20MPa concrete; or 3m wide hotmix sealed pavement minimum 25mm thick on 200mm of compacted road base including a subsoil drain on the high side. 	N/A – The proposal does not create any battle-axe lots	N/A
P66 – Access handles are to accommodate services.	A65.1 – Access handle is of sufficient width to permit the provision of services beside the constructed access.	N/A – The proposal does not create any battle-axe lots	N/A
5.9 – Utility Services			
Performance Criteria	Acceptable solution	Proposal	Compliance
P67 - Design and provide utility services that:	A66.1 - Design and provision of utility services, including broadband, conforms to the requirements of the	If the application were to be approved conditions of consent will require utility services be appropriately provided to all proposed lots.	Complies

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<ul style="list-style-type: none"> • are cost effective over their life cycle; and • Minimise short and long term adverse environmental and visual impacts. 	relevant service authorities.		
	A67.2 – Compatible services are located in common trenching.	If the application were to be approved conditions of consent will require utility services be appropriately provided to all proposed lots.	Complies
	A67.3 – Subdivisions are located where there is adequate water for domestic and fire-fighting purposes.	The subject site is connected to the reticulated water system.	Complies
	A67.4 – Subdivision is staged to ensure that each stage is fully serviced before a new area is released.	N/A – The proposed subdivision is not staged.	N/A
	A67.5 – Water supply and sewerage networks are accessible, easy to maintain and cost effective based on life cycle costs.	The subject site is connected to reticulated sewer and water.	Complies
	A67.6 – Adequate buffers between utilities and houses are provided, to protect residential amenity and health provide.	Adequate buffer distances can be achieved.	Complies
	A67.7 – Underground electricity supply is provided to residential areas, except where major technical difficulties are encountered, such as the presence of significant rock.	If the application were to be approved conditions of consent will require utility services be appropriately provided to all proposed lots.	Complies
	A67.8 - Provision of reticulated gas is subject to requirements of the service provider.	N/A – reticulated gas not available.	N/A

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	A67.9 – Underground telecommunications service, including NBN, is to be installed where underground electricity is to be provided.	If the application were to be approved conditions of consent will require utility services be appropriately provided to all proposed lots.	Complies
P68 – Services are to be available and accessible.	A67.1 – Where required, the subdivider is to provide, at no cost to Council: <ul style="list-style-type: none"> • Suitable easements for water and sewer rising main; • An agreed area of land for pumping stations; • Easements or land for access to pumping stations; • Easements for power to pumping stations. 	The application has not demonstrated that the proposed lots have sufficient capacity to dispose of stormwater from future residential development on site. Overflow may flow on to adjoining land where no easements are in place.	Non-compliant with A67.1.
5.10 – Stormwater Drainage			
Performance Criteria	Acceptable solution	Proposal	Compliance
<i>Major Systems (Engineering Design Specifications – D5.11 Major System Criteria)</i>			
N/A – No major stormwater systems are proposed.			
<i>Minor Systems (Engineering Design Specifications D5.08 Minor System Criteria)</i>			
P73 – Design systems with the capacity to control stormwater flows under normal operating conditions for the relevant design storm.	A72.1 - Design and construction of minor storm drainage systems is in accordance with this Section and Engineering Design Specifications Section D5 Stormwater Drainage Design.	Concerns have been raised by Council's Subdivision Engineer and Assets and Works – Drainage Engineer that the proposed method of drainage the land by way of absorption trenches and level spreaders is inadequate and given the hydraulic conductivity of the land, the proposed lots may not have capacity to dispose of stormwater on site.	Non-compliant with A72.1 and P73.

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		The application has not demonstrated that the land can adequately drain future residential development on the lots.	
	A73.2 – Drainage networks are well defined to ensure there are no hidden flow paths that could reduce their capacity to convey design flows.	Concerns have been raised by Council's Subdivision Engineer and Assets and Works – Drainage Engineer that the proposed method of drainage the land by way of absorption trenches and level spreaders is inadequate and given the hydraulic conductivity of the land, the proposed lots may not have capacity to dispose of stormwater on site. The application has not demonstrated that the land can adequately drain future residential development on the lots.	Non-compliant with A73.2 and P73.
	A73.3 - Design of minor systems takes full account of existing downstream systems.	Concerns have been raised by Council's Subdivision Engineer and Assets and Works – Drainage Engineer that the proposed method of drainage the land by way of absorption trenches and level spreaders is inadequate and given the hydraulic conductivity of the land, the proposed lots may not have capacity to dispose of stormwater on site. The application has not demonstrated that the land can adequately drain future residential development on the lots.	Non-compliant with A73.3 and P73.

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P74 - The system is designed to allow for safe passage of vehicles at reduced speed on streets that are affected by runoff from the relevant design storm.	A73.1 – Minor Road drainage systems are designed for the 20% AEP event	N/A – No public roads are proposed.	N/A
	A74.2 – Low flow pipes within public reserves contain 25% of the 10% AEP flow.	N/A – the proposal does not include the construction of any stormwater pipes within public reserves.	N/A
P75 – The system is accessible and easily maintained.	A74.1 - Design and construction of minor storm drainage systems is in accordance with this Section and Engineering Design Specifications Section D5 Stormwater Drainage Design.	Concerns have been raised by Council's Subdivision Engineer and Assets and Works – Drainage Engineer that the proposed method of drainage the land by way of absorption trenches and level spreaders is inadequate and given the hydraulic conductivity of the land, the proposed lots may not have capacity to dispose of stormwater on site. The application has not demonstrated that the land can adequately drain future residential development on the lots.	Non-compliant with A74.1 and P75.
	A75.2 - Access for maintenance is available where a portion of the minor system lies within a site.	Stormwater drainage infrastructure would be easily accessible.	Complies
	A75.3 - Selection of materials is based on their suitability, durability, maintainability and cost effectiveness.	If the application were to be approved, conditions of consent will ensure stormwater drainage infrastructure is constructed appropriately.	Complies
Bridges			
N/A – No bridges are proposed.			
Site Drainage			

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P77 – Subdivision design and layout provides for adequate site drainage.	A76.1 - Where site topography prevents the discharge of stormwater directly to the street gutter or a Council controlled piped system, inter allotment drainage is provided to accept runoff from all existing or future impervious areas that are likely to be directly connected.	<p>The application proposes to drain the lots through absorption trenches and level spreaders. Concerns have been raised by Council's Subdivision Engineer and Assets and Works – Drainage Engineer that the proposed method of drainage is inadequate and given the hydraulic conductivity of the land, the proposed lots may not have capacity to dispose of stormwater on site.</p> <p>The application has not demonstrated that the land can adequately drain future residential development on the lots.</p>	Complies
	A77.2 – Easements favouring the benefiting allotments are created over inter allotment drainage.	N/A - No easement proposed	N/A
	A77.3 – Stormwater discharge from a development site, including inter allotment drainage, is in accordance with Engineering Design Specifications Section D5 Stormwater Drainage Design.	<p>Concerns have been raised by Council's Subdivision Engineer and Assets and Works – Drainage Engineer that the proposed method of drainage is inadequate and given the hydraulic conductivity of the land, the proposed lots may not have capacity to dispose of stormwater on site.</p> <p>The application has not demonstrated that the land can adequately drain future residential development on the lots.</p>	Complies
5.11 – Stormwater Quality Management			

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Performance Criteria	Acceptable solution	Proposal	Compliance
<p>Note: The application must comply with the requirements of Chapter G2: Sustainable Stormwater Management & Erosion/Sediment Control</p>		<p>See assessment of G2 in part 7 of this report.</p> <p>The application has not adequately demonstrated that the proposed development and proposed drainage method is suitable, and the proposed lots may not have sufficient capacity to adequately dispose of stormwater for future residential development of the lots.</p>	Unsatisfactory
5.12 – Residential Streetscape			
Performance Criteria	Acceptable solution	Proposal	Compliance
<p>P78 - Street and landscape design:</p> <ul style="list-style-type: none"> creates attractive residential environments with distinct character and identity; respects existing attractive streetscapes in established areas; complements streetscapes in areas where desired future urban character has been defined; defines, where appropriate, a street theme for new streets and integrates with 	<p>A77.1' - A landscape plan showing the following is submitted:</p> <ul style="list-style-type: none"> street reserves and indicative locations of the carriageway, parking bays, footpaths, cycleway systems, speed control devices, bus stops, street lighting and substations; location of existing vegetation to be removed and/or conserve; footpath trees with a maximum spacing of 10 metres, minimum of two trees per lot, minimum distance from intersection 10 metres, provide a six-month maintenance period; 	<p>N/A - The proposal is for small-scale infill subdivision and as such a landscaping plan is not required.</p>	N/A

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<p>new developments;</p> <ul style="list-style-type: none"> • is sensitive to site attributes; • Complements the functions of the street. 	<ul style="list-style-type: none"> • the proposed general character of landscape treatment; • location, species and general character of tree planting, hard and soft landscape treatment; • indicative building locations; • boundaries and areas of communal open space including sites for specific recreational uses; • General arrangement of hard landscaping elements and major earth cuts, fills and mounding. 		
	<p>A78.2 – Tree planting that considers the natural landscape, the image and role of the street; solar access requirements, soils, suitability of species; and services is provided.</p>	<p>N/A – No tree planting proposed.</p>	<p>N/A</p>
	<p>A78.3 – Opportunities provided by views, vistas, existing vegetation and landmarks are documented and optimised in the subdivision design.</p>	<p>The proposed development would not impact on any views or vistas or compromise the visual amenity of the site.</p>	<p>Complies</p>
	<p>A78.4 – Where appropriate, the landscape plan demonstrates:</p> <ul style="list-style-type: none"> • A common design theme that aids street identity, lighting, 	<p>N/A – A landscaping plan is not required in this instance.</p>	<p>N/A</p>

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	<p>signs, tree guards, bus shelters. Street signs to be placed at all intersections in accordance with AS1743 Road Signs;</p> <ul style="list-style-type: none"> • provision of attractive and coordinated street furniture and facilities to meet user needs; • that maintenance and utility requirements are satisfied and the visual impact of above ground utilities is minimised; • that landscaped areas are maximised • appropriate consideration for streetscapes and landscapes of heritage significance; • integration and formation of linkages with parks, reserves and transport corridors; • promotion of the planting of native vegetation in environmentally sensitive areas; • incorporation of existing vegetation where possible and desirable; • a contribution to microclimate management; • an appropriate scale relative to both the street reserve width and existing or expected future building bulk; • improved privacy and minimisation of 		
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	<ul style="list-style-type: none">unwanted overlooking;landscaping of floodways, drainage lines, type of fencing, threshold treatment entrance statement;design that reinforces desired traffic speed and behaviour;safety and opportunity for casual street surveillance;satisfactory lines of sight for pedestrians, cyclists and vehiclesadequate lighting for pedestrian and vehicle safety;Enhanced opportunities for pedestrian comfort.																					
5.12 – Residential Streetscape																						
Performance Criteria	Acceptable solution	Proposal	Compliance																			
General																						
P79 - Lots have the appropriate area and dimensions for the siting and construction of a dwelling and ancillary outbuildings, the provision of outdoor space, convenient vehicle access and parking.	A78.1 - Minimum standard residential lot size in any residential subdivision is 500m ² .	All proposed lots have site areas >500m ²	Complies																			
	<p>A79.2 – Lot shape and dimensions:</p> <table><tr><td>Rectangular non-corner lots</td><td>16m square width minimum 30m minimum depth</td></tr><tr><td>Rectangular corner lots</td><td>Square width 20 metres Depth 30 metres</td></tr><tr><td>Irregular shaped lots</td><td>Square width 12m Width at building line 16m Mean width 16 m Depth 30m</td></tr><tr><td>Corner Splays</td><td>4m minimum</td></tr></table>	Rectangular non-corner lots	16m square width minimum 30m minimum depth	Rectangular corner lots	Square width 20 metres Depth 30 metres	Irregular shaped lots	Square width 12m Width at building line 16m Mean width 16 m Depth 30m	Corner Splays	4m minimum	<table><tr><th colspan="2">Lot 1 (Rectangular non-corner lot)</th></tr><tr><td>Square width</td><td>24.35m</td></tr><tr><td>depth</td><td>50.8m</td></tr></table> <table><tr><th colspan="2">Lot 2 (Rectangular non-corner lot)</th></tr><tr><td>Square width</td><td>20m</td></tr><tr><td>depth</td><td>50.8m</td></tr></table>	Lot 1 (Rectangular non-corner lot)		Square width	24.35m	depth	50.8m	Lot 2 (Rectangular non-corner lot)		Square width	20m	depth	50.8m
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		<table><tr><td colspan="2">Lot 3 (Rectangular non-corner lot)</td></tr><tr><td>Square width</td><td>20m</td></tr><tr><td>depth</td><td>50.8m</td></tr></table> <table><tr><td colspan="2">Lot 4 (Rectangular non-corner lot)</td></tr><tr><td>Square width</td><td>78.1m</td></tr><tr><td>depth</td><td>50.8m</td></tr></table>	Lot 3 (Rectangular non-corner lot)		Square width	20m	depth	50.8m	Lot 4 (Rectangular non-corner lot)		Square width	78.1m	depth	50.8m	
Lot 3 (Rectangular non-corner lot)															
Square width	20m														
depth	50.8m														
Lot 4 (Rectangular non-corner lot)															
Square width	78.1m														
depth	50.8m														
	<p>A79.3 - Small scale infill subdivision on flood prone land – For small scale infill subdivisions a nominal building envelope of approximately 15m wide and 21m deep, sited in accordance with the requirements of Chapter G12: Dwelling Houses, Rural Worker's Dwellings, Additions and Ancillary Structures be provided above the 1% flood level on each proposed lot in the subdivision.</p>	<p>The subject site is mapped as flood prone land and categorized as high hazard floodway. In order to facilitate the subdivision and provide building platforms above the 1% AEP flood planning level, a substantial amount of fill (up to 2.1m above natural ground level) is required to be placed in the high hazard flood way.</p> <p>The proposed development is not compatible with the flood hazard of the land.</p>	<p>Non-compliant with A79.1 and P79.</p>												
<p>P80 - Lot areas and dimensions take into account the site natural opportunities and constraints.</p>	<p>P79.1 – The subdivision lot design positively responds to:</p> <ul style="list-style-type: none">• Slope and desirability of minimizing earthworks/retaining walls associated with dwelling construction.• natural or cultural features;• soil erosion and bushfire risk;	<p>The proposal involves the subdivision of high hazard flood areas and the placement of substantial amounts of fill within the high hazard floodway.</p> <p>The proposal does not adequately respond to the natural constraints of the site.</p>	<p>Non-compliant with A79.1 and P80.</p>												

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	<ul style="list-style-type: none"> Special features such as trees and views, including identification of mature stands of trees to be retained and supplementary planting. 		
P81 – Provide coincidental legal and practical access.	A80.1 ¹ - Each lot is to have coincidental legal and practical access in a rural and/or residential subdivision.	Each of the proposed lots has coincidental legal and practical access.	Complies
<i>Battle-axe Lots</i>			
N/A – The proposal does not create any battle-axe lots.			
<i>Small Lot Subdivision</i>			
N/A – The application is not for small lot subdivision.			
<i>Large Lot Residential Subdivision</i>			
N/A – The application is not for large lot residential subdivision			
P90 - Ensure that the overall development is as energy efficient as possible and ensure that reasonable solar access is achievable for each lot. Subdivision design must maximise and protect solar access for each dwelling. The design is to define lot size, shape, orientation, the solar setback line and possibly a building height envelope. For any given lot these factors will determine	A89.1 ¹ - 80% of lots in a new subdivision have 5 star solar access, and the remainder either 4 or 3 stars.	The proposal is for small-scale infill subdivision. The lot layout and lot design is appropriate and has appropriate solar access.	Complies
	A90.2 - Lot sizes reflect reasonable consideration of the impact of topography and expect to maximise solar access.	The lot layout and lot design is appropriate and has appropriate solar access.	Complies
	A90.3 - Lots are of a suitable shape to permit the location of a dwelling with suitable solar access and private open space.	The lot layout and lot design is appropriate and has appropriate solar access.	Complies

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the ideal locations of northern walls and the solar access time of north facing windows.	A90.4 - Lots should be orientated so that one axis is within 300 east and 200 west of true solar north (see Figure 11).	The proposal is for small-scale infill subdivision. The lot layout and lot design is appropriate and has appropriate solar access.	Complies
	90.5 - North-facing slopes improve opportunities for solar access. Small lots are best suited to north facing slopes with gradient of less than 15% (or 1:9). South facing slopes impose a penalty on solar access, large lots/lowest densities are therefore best suited to south facing lots.	The proposal is for small-scale infill subdivision. The lot layout and lot design is appropriate and has appropriate solar access.	Complies
	A90.6 - Sloping sites are suitable for medium to large lots only.	N/A – The subject site is not steeply sloping.	N/A
	A90.7 – Subdivision design to consider the variation in the sun path during the year.	Each lot has appropriate solar access.	Complies
	A90.8 - Locate 350m ² – 450m ² lots on land with less than 15% (1:9) slope across the frontage.	N/A – all proposed lots have a site area >450m ²	N/A
	A90.9 - Lots > 450m ² are capable of containing a building platform rectangle 10m x 15m.	The proposed subdivision necessitates the placing of substantial amounts of fill within a high hazard floodway in order to provide building platforms above the 1% AEP flood planning level. Placement of this fill in the floodway is inappropriate.	Non-compliant with A90.9.

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	A90.10 – Variable setbacks and zero building lines are a means of maximizing solar opportunity, especially with small or narrow lots. Setbacks are manipulated to maximise solar access for all lots.	The proposal is for small-scale infill subdivision. Building setbacks would be considered by any future DA for the construction of a dwelling.	Complies
5.14 – Geotechnical			
Performance Criteria	Acceptable solution	Proposal	Compliance
P91 – Subdivision is prevented in high risk slip areas.	A90.1 - Subdivision designs exclude locating lots in areas with slope stability problems; or suitable advice from a practicing certified geotechnical engineer.	N/A - The proposal does not include the subdivision of high slip areas.	N/A
P92 - Subdivision is designed to provide for controlled filling and for the free flow of surface water.	A91.1 - Subdivisions are NATA Laboratory tested and subdivision design creates: <ul style="list-style-type: none"> all lots above flood level; minimum surface grade of 1% falling to the road or drainage system approved fill material placed in 150mm consolidated layers; minimum density 95% Standard Proctor Compaction Test AS1289 Where depth of fill exceeds 300mm, an 88B Restriction is imposed on the requiring foundation design in accordance with AS2870 1986. 	The proposed subdivision of a high hazard flood area involves the placement of substantial amounts (up to 2.1m above natural ground level) of fill within the high hazard floodway in order to create building platforms above the 1% AEP flood planning level. The proposed development does not respond to the flood hazard of the land and is inappropriate.	Non-compliant with A91.1 and P92.
5.15 – Strata and Community Title Subdivision			

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N/A			
5.16 – Rural Subdivision - General			
N/A			
5.17 – Rural Road Network			
N/A			
5.18 – Drainage			
Performance Criteria	Acceptable solution	Proposal	Compliance
Note: The application must comply with the requirements of Section 5.3 of Chapter G9: Development on Flood Prone Land.		See assessment in Appendix A.	Unsatisfactory
5.19 – Natural Environment			
Performance Criteria	Acceptable solution	Proposal	Compliance
<i>P99</i> - Lot locations are to provide house sites that consider: <ul style="list-style-type: none"> views and visual impact; landscape potential and building suitability; and Wind and fire protection. 	A98.1 - Designation of building envelopes and landscaping where deemed necessary by Council.	Due to flooding issues, if the application were to be approved the conditions of consent will require that all buildings be contained within the identified building envelopes.	Complies
	A99.2 - The use of Section 88B restrictions to define appropriate building materials, colours and regulate height of buildings in sensitive locations.	No additional restrictions on the use of the land are considered necessary in this instance.	Complies
<i>P100</i> – The subdivision considers active dune systems and other unstable areas.	A99.1 - No further subdivision on active dune systems or other unstable areas will be permitted.	N/A – The subject site is not situated on an active dune system or unstable area.	N/A
5.20 – Rural Services			

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N/A			
5.21 – Industrial Subdivision			
N/A			
5.22 – Commercial Subdivision			
N/A			
5.23 – Subdivision of Tourist Accommodation			
N/A			
5.24 – Dual Occupancy Subdivision			
N/A			
5.25 – Views			
Performance Criteria	Acceptable Solution	Proposal	Compliance
<i>P116</i> - Consider the significance of headlands and other prominent coastal features.	<i>A115.1¹</i> – Subdivisions will not be permitted on headlands or other prominent coastal features – other than those zoned for urban purposes.	The proposed subdivision will not have a negative impact on visually prominent locations.	Complies
5.26 – Public Natural Areas			
N/A			

List of penalties issued from 1 July 2019 to 30 September 2019 via offence Code

Team	Offence Code	Number	Amount	Total amount
Compliance	Development not accord consent - any other case - Corporation	2	6000	12000
Compliance	Development not accord consent - class 1a or 10 building - Corporation	1	3000	3000
Compliance	Development not accord consent - class 1a or 10 building - Individual	2	1500	3000
Compliance	Development without development consent - class 1a or 10 building - Individual	14	1500	21000
Compliance	Fail to comply with terms of development control order - Corporation	2	6000	12000
Compliance Pools	Development without development consent - class 1a or 10 building - Individual	1	1500	1500
Compliance Pools	Not comply with written direction - Owner	1	550	550
Enviro Health	Fail to comply with Food Standards Code - Corporation	1	880	880
Enviro Health	Burn anything in open in Schedule 8 Part 3 area without approval - Corporation	1	1000	1000
Enviro Health	Burn anything in open in Schedule 8 Part 3 area without approval - Individual	2	1000	2000
Enviro Health	Burn in open not prevent or minimise air pollution - Corporation	1	1000	1000
Enviro Health	Burn in open not prevent or minimise air pollution - Individual	1	500	500
Enviro Health	Development not accord consent - any other case - Individual	1	3000	3000
Enviro Health	Development without development consent - any other case - Individual	1	3000	3000
Enviro Health	Fail to comply with order number 21 (safety/health of land/premises)	1	330	330
Enviro Health	Not comply with written direction - Owner	1	550	550
Ranger Animal	Companion animal (other) not registered as prescribed - first offence	1	330	330
Ranger Animal	Cause or permit animal to be unattended in public place	7	330	2310
Ranger Animal	Fail to comply with nuisance dog order - 2nd plus offence	3	275	825
Ranger Animal	Fail to prevent dog from escaping - not dangerous/menacing/restricted dog	34	220	7480
Ranger Animal	In charge of dog not under control in public place	2	330	660
Ranger Animal	In charge of dog which rushes at/attacks/bites/harasses/chases any person/animal	2	1320	2640
Ranger Animal	Not comply notice re registration (other) - first offence	50	305	15250
Ranger Animal	Not identify companion animal as prescribed - not dangerous/menacing/restricted dog	2	180	360
Ranger Animal	Not notify change in registration or identification information - not dangerous/restricted dog	2	180	360
Ranger Animal	Owner of dog in prohibited public place	4	330	1320

Ranger Animal	Owner of dog not under control in public place	15	330	4950
Ranger Animal	Owner of dog which rushes at/attacks/bites/harasses/chases any person/animal	4	1320	5280
Ranger Environment	Abandon a motor vehicle in a public place	2	550	1100
Ranger Environment	Deposit litter excluding cigarette and from vehicle - Individual	2	250	500
Ranger Environment	Deposit litter from vehicle no exclusions - Individual	2	250	500
Ranger Environment	Aggravated deposit litter from vehicle no exclusions - Individual	2	450	900
Ranger Environment	Unlawfully remove plant/animal/rock/soil from public place	3	220	660
Ranger Parking	Disobey motor bike parking sign	8	114	912
Ranger Parking	Disobey no parking sign	1	114	114
Ranger Parking	Disobey no parking sign (in school zone)	1	191	191
Ranger Parking	Disobey no stopping sign	84	268	22512
Ranger Parking	Disobey no stopping sign (in school zone)	8	344	2752
Ranger Parking	Double park	2	268	536
Ranger Parking	Double park in school zone	1	344	344
Ranger Parking	Not angle park as on parking control sign or road marking	3	82	246
Ranger Parking	Not parallel park in direction of travel	15	268	4020
Ranger Parking	Not park at 45 degree angle	2	82	164
Ranger Parking	Not park wholly within parking bay	7	82	606
Ranger Parking	Not position rear of vehicle correctly - 45 degree angle parking	89	82	7548
Ranger Parking	Not stand vehicle in marked parking space	39	82	3420
Ranger Parking	Parallel park close to dividing line/strip	1	268	268
Ranger Parking	Park continuously for longer than indicated	75	82	6150
Ranger Parking	Park vehicle for longer than maximum period allowed	343	82	28126
Ranger Parking	Park vehicle not wholly in marked parking space	15	82	1230
Ranger Parking	Stop at side of road with continuous yellow edge line	17	268	4556
Ranger Parking	Stop in bus zone (in school zone)	9	344	3096
Ranger Parking	Stop in bus zone (not clearway or transit/bus lane)	2	268	536
Ranger Parking	Stop at/near bus zone	1	268	268
Ranger Parking	Stop in disabled parking area without current permit displayed	36	572	20592

Ranger Parking	Stop in loading zone	14	191	2674
Ranger Parking	Stop in loading zone longer than 30 minutes	4	191	764
Ranger Parking	Stop in taxi zone	17	191	3247
Ranger Parking	Stop on path/strip in built-up area	15	268	4005
Ranger Parking	Stop on/across driveway/other access to/from land	19	268	5092
SMF Team	Pollute waters – class 1 officer – individual	4	4000	16000
Total		1043		\$351,466

Summary via Team

Team	Number Issued	Total Amount	% of total amount
Compliance	51	\$136,920	38.5%
Compliance – Fire Safety	0	0	0%
Compliance – Pools	1	\$550	1%
Environmental Health	9	\$10,710	3%
Rangers – Animal issues	124	\$51,205	14.5%
Rangers – Environmental issues	16	\$9,070	2.5%
Parking	838	\$127,011	36%
Sewer Management Facility	4	\$16,000	4.5%
Total	1043	\$351,466	100%

Cautions issued

Compliance	Carry out development forbidden on land - any other case - Individual	4
Compliance	Development not accord consent - any other case - Corporation	1
Compliance	Development not accord consent - class 1a or 10 building - Individual	5
Compliance	Development without development consent - any other case - Corporation	2
Compliance	Development without development consent - any other case - Individual	15
Compliance	Development without development consent - class 1a or 10 building - Corporation	11
Compliance	Development without development consent - class 1a or 10 building - Individual	23
Compliance	Do plumbing and drainage work when not authorised	3
Compliance	Fail to provide sanitary drainage system plan to plumbing regulator - Individual	1
Compliance	Not comply with written direction - Owner	5
Compliance	Not notify plumbing regulator when work ready for inspection	3
Compliance	Not present and ensure work accessible for inspection	1
Compliance	Not provide notice of work to plumbing regulator	1
Compliance	Operate sewage management system otherwise than as approved	1
Compliance	Owner class 1a building not ensure smoke alarms in any storey with/without bedrooms - Corporation	1
Compliance	Pollute land - class 1 officer - Individual	16
Compliance	Pollute waters - class 1 officer - Corporation	2
	Total	95
Compliance Fire Safety	Not give fire safety statement - 1 week overdue – Corporation	1
	Total	1
Compliance Pools	Fail to maintain child-resistant barrier effective and safe	2
Compliance Pools	Fail to erect prescribed warning notice – Occupier	2
Compliance Pools	Fail to ensure registration information entered on Register	2
Compliance Pools	Residential pool not have complying barrier - Owner	4
	Total	10

Environmental Health	Development not accord consent - any other case - Individual	2
Environmental Health	Development without development consent - any other case - Individual	1
	Total	3
Ranger animal issues	Cause or permit animal to be unattended in public place	1
Ranger animal issues	Owner not comply with restricted dog control requirements	1
Ranger animal issues	Owner of dog in prohibited public place	2
Ranger animal issues	Owner of dog not under control in public place	7
Ranger animal issues	Owner of dog which rushes at/attacks/bites/harasses/chases any person/animal	6
	Total	17
Ranger environmental issues	Owner transport etc waste to unlawful facility - class 1 officer - Individual	1
Ranger environmental issues	Pollute waters - class 1 officer - Individual	2
Ranger environmental issues	Transport etc waste to unlawful waste facility - class 1 officer - Individual	1
	Total	4
Parking	Disobey motor bike parking sign	3
Parking	Disobey no stopping sign	18
Parking	Fail to comply with terms of notice erected by council (driving/parking/use of vehicle)	1
Parking	Not angle park as on parking control sign or road marking	1
Parking	Not parallel park in direction of travel	4
Parking	Not parallel park near left	4
Parking	Not position rear of vehicle correctly - 45 degree angle parking	4
Parking	Obstruct access to ramp/path/passageway	2
Parking	Park vehicle for longer than maximum period allowed	1
Parking	Park vehicle not wholly in marked parking space	1
Parking	Stop in bus zone (not clearway or transit/bus lane)	1
Parking	Stop in disabled parking area without current permit displayed	12
Parking	Stop in loading zone	6
Parking	Stop in loading zone longer than 30 minutes	1
Parking	Stop in taxi zone	9

Parking	Stop on path/strip in built-up area	27
Parking	Stop on/across driveway/other access to/from land	4
Parking	Stop within 10 metres of an intersection (no traffic lights)	1
Parking	Disobey no stopping sign	3
Parking	Disobey no stopping sign (in school zone)	2
Parking	Double park in school zone	22
Parking	Fail to comply with terms of notice erected by council (driving/parking/use of vehicle)	1
Parking	Fail to prevent dog from escaping - not dangerous/menacing/restricted dog	17
Parking	Not comply notice re registration (other) - first offence	1
Parking	Not position rear of vehicle correctly - 45 degree angle parking	1
Parking	Stop in bus zone (in school zone)	1
Parking	Stop in disabled parking area without current permit displayed	1
Parking	Stop on path/strip in built-up area	1
	Total	150
Sewer management facility	Development without development consent - any other case - Individual	1
Sewer management facility	Fail to comply with clean-up notice - class 1 officer - Individual	2
	Total	3



DRAFT

Shoalhaven Tree and Vegetation Vandalism Prevention Policy

Policy Number: POL19/44
Adopted: [Click here to enter date]
Minute Number: [Click here to enter Minute number]
File: 61751E
Produced By: Planning Environment & Development Group
Review Date: 1/12/2020

DE19.116 - Attachment 2

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1. INTRODUCTION

The Shoalhaven community is the custodian of rich and diverse vegetation, including trees and other natural landscapes. The purpose of this policy is to maintain a consistent and robust approach to the value, protection and management of trees and vegetation, specifically in deterring and responding to the loss of trees and vegetation arising from deliberate vandalism.

1.2. OBJECTIVE

~~The Shoalhaven community is the custodian of rich and diverse vegetation, trees and other natural landscapes. The purpose of this policy is to maintain a consistent and robust approach to the value, protection and management of trees and vegetation, specifically in deterring and responding to the loss of trees and vegetation arising from deliberate vandalism.~~

The primary objective of this Tree and Vegetation Vandalism Prevention Policy is to reduce and prevent the incidence of continued vandalism to trees and vegetation throughout the Shoalhaven by:

- (a) Promoting the value of and need for protection of trees and other vegetation to the community.
- (b) Reducing the incidence of tree and vegetation vandalism by establishing and promoting appropriate protective, investigative and response actions from Council.
- (c) Providing consistency in Council's deterrence, investigation, and response procedures to tree and vegetation vandalism.
- (d) Promoting and guiding broader community involvement in the prevention of vandalism, and in Council's response to vandalism incidents.
- (e) Providing guidance to Council's investigation officers in the legal uses of surveillance techniques for the purposes of investigating and prosecuting tree and vegetation vandalism offences.
- (f) Educating the community as a key mechanism to promote the value and protection of trees and vegetation, and to encourage the reporting of vandalism.

2.3. POLICY STATEMENT

~~The aim of this Policy is to reduce the incidence of tree and vegetation vandalism and to establish clear principles and guidelines for Council officers to assist them to act consistently and effectively in response to tree and vegetation vandalism.~~

This Policy applies to all public and private land within the Shoalhaven Local Government Area, other than State Forests, Defence Land, land reserved or acquired under the National Parks and Wildlife Act, Marine Parks and National Parks.

Shoalhaven City Council – Tree and Vegetation Vandalism Prevention Policy

3.1 – Scope

This policy outlines the recommended procedures and ~~activities~~ actions to provide:

1. A consistent approach by Council ~~to-for~~ deterring and responding to incidences of tree and vegetation vandalism on public and private land throughout Shoalhaven City Council's ~~public reserve network~~.
2. A consistent approach to engaging and involving the community in the long-term protection and management of trees and vegetation and in reporting vandalism.
3. Implement strategies to restore vandalised trees and vegetation.

This policy applies to all instances of tree and vegetation vandalism. In the event that this policy conflicts with any other Council policy, this Tree and Vegetation Vandalism Prevention Policy ~~supersedes~~ prevails over all other policies. A policy flowchart is included in Appendix 1.

3.2 Background

This Policy has been developed in light of persistent tree and vegetation vandalism on ~~Council-owned or managed public reserves~~ public and private land throughout the Shoalhaven Local Government Area.

Tree and vegetation vandalism has coincided in the coastal areas with development pressure and diminishing vista views resulting from tree and vegetation growth on public land. These same trees and vegetation are also important assets that preserve dune systems, ~~and~~ provide shade along pathways and vital ecological habitat.

The physical nature of tree and vegetation vandalism can occur in a variety of forms, including poisoning, pruning, burning, removal and **unauthorised** mowing and slashing of native vegetation. Vandalism is not just centred on the foreshore but can ~~also~~ occur on private property and in at other parks and reserves in the Shoalhaven.

Vandalism has a significant and cumulative impact on the environment. Particular impacts include reduced visual and community amenity, loss of environmental services such as carbon storage and sequestration, air pollution reduction, urban heat mitigation, wind-breaks and erosion control, and the loss of wildlife habitat and biodiversity values. There is also a social cost to vegetation vandalism with impacts on public health including mental health and general wellbeing, with the potential to create polarisation and conflict within the community.

Tree and vegetation vandalism can have substantial financial and human resource costs for Council including the direct loss of the asset value of the trees or vegetation, the cost of ~~the~~ investigation, rehabilitation/~~repair~~ costs and the cost of implementing potential punitive/deterrence measures.

This policy has been formulated after consultation with ~~a number of other~~ NSW Councils, ~~and some content of their policy documents have been included in this~~

~~Policy. The local community.~~ Further background information to the policy and the initiatives it comprises are included in Appendix 2.

4 PROVISIONS

4.1 Policy Principles

1. Vandalism of trees and vegetation can be a serious criminal offence;
2. The long-term protection and management of trees and vegetation ~~on public land~~ (including re-establishment in previously vandalised areas) is integral to maintaining the economic, cultural, environmental and social values of the Shoalhaven. Trees and vegetation contribute significantly to environmental health, and to human health and wellbeing;
3. The identification and prosecution of perpetrators of tree and vegetation vandalism should be pursued consistently throughout the Shoalhaven;
4. Council and the community have a responsibility for the prevention of tree and vegetation vandalism and the rehabilitation of damaged areas;
5. Implementation of strategies for rehabilitation of vandalised sites.

4.2 Definitions

~~**Tree** is a woody perennial plant, typically having a single stem or trunk growing to a considerable height and bearing lateral branches at some distance from the ground.~~

Tree and Vegetation Vandalism is the unlawful destruction, ~~removal (dead or alive)~~, damage or injury to trees and vegetation. Examples include poisoning, burning, ~~cutting down removal~~, ringbarking and ~~unauthorised~~ mowing (refer to Section 5.1, point 7), pruning and slashing.

Tree and Vegetation includes any of the following, whether dead or alive, native or exotic:

- a) A tree (including any sapling or shrub);
- b) An understorey plant;
- c) A groundcover (being any type of grass or herbaceous vegetation);
- d) A plant occurring in a wetland.

5 LEGISLATIVE PROVISIONS

There exists a range of offences in legislation that apply in cases of tree and vegetation vandalism. An overview of these offences, relevant legislation, responsible authorities and the nature of penalties that apply are included in Appendix 3.

6 STRATEGY RESPONSES

6.1 Education

The ~~main~~ aim of community education is to foster an appreciation of native vegetation in the community, including visitors to the Shoalhaven, with the aim to ~~This may~~ reduce the occurrence of tree and vegetation vandalism.

Council's community environmental education program includes the following key elements to ~~emphasise~~ sing the value of trees and vegetation:

1. Explanation of the various environmental functions of trees and vegetation in natural and urban environments including: habitat value, water quality, air quality, shade, erosion control, aesthetics, weed suppression, noise attenuation, climate change mitigation and wind breaks. Trees and vegetation are also important for maintaining human health and wellbeing.
2. Explanation of the cumulative impacts of tree and vegetation loss, so that the impact of a single act can be judged in the context of cumulative impacts over time. For example, function of dune stabilisation is reduced, visual amenity impacts, loss of habitat and biodiversity, reduction in appeal as a tourist destination.
3. Raise community awareness of the economic value of a tree that relates to for example carbon sequestration (refer to footnote 1 in Appendix 2), oxygen production, biodiversity support and erosion control for example.
4. Highlighting the legal significance of offences which may be criminal acts, and the potential fines and punishments, Information about rehabilitation and other positive outcomes, as well as successful prosecutions and enforcement actions that may be publicised.
5. Calculation and publication of the direct economic cost to residents of acts of vandalism, in terms of investigation, replacement and remediation costs.
6. Direct involvement of the community in maintenance and protection of trees and vegetation, and in rehabilitation of damaged areas.
7. ~~Not all mowing is acceptable as some areas are quite sensitive and need to be protected. If these areas are mown, it could endanger critical habitats and perhaps cause the loss of endangered flora and fauna. You should always check to ensure mowing activities are acceptable. Any mowing in Council reserves must be authorised by Council. Many reserves comprise endangered plants and vegetation communities protected by Biodiversity laws.~~ Unauthorised mowing may be an offence and can result in heavy penalties.
8. The identity of the perpetrator cannot be assumed.
9. Explanation of policies that are applicable and which exemptions may apply.
- 9.10. Information about rehabilitation and other positive outcomes.

6.2 Monitoring, Recording and Prevention

Council may prepare and adopt a management plan for reserved areas which are regarded as high-risk vandalism areas.

Shoalhaven City Council – Tree and Vegetation Vandalism Prevention Policy

Council will:

1. Record vandalism incidents and its response to these on a database to allow an assessment of the cumulative impacts of vandalism.
2. To identify high risk vandalism areas and to monitor the effectiveness of rehabilitation ~~and~~ response efforts and community education over time.
3. Actively promote community involvement in stewardship and maintenance of high-risk bushland areas.
4. Target community awareness raising initiatives toward high risk vandalism areas.
- ~~5. Record the number of incidents and requests reported by members of the community.~~
- ~~5. Not remove any poisoned-vandalised tree or vegetation from site unless assessed as a safety hazard, for 12 months and~~
6. Plant 5 trees for every tree that has been vandalised and rehabilitate vandalised vegetation sites with similar, appropriate native vegetation.
- ~~7. Provide rewards for information leading to a conviction regarding vandalism.~~

6.3 Regulation and Enforcement

1. Council will follow the Investigation and Response Protocol and Compliance Procedure included in Appendices ~~x-4 to 6~~ -when responding to tree and vegetation vandalism events.

6.4 – Rehabilitation

1. Rehabilitation is a key element in addressing tree and vegetation vandalism.
2. Council will seek to recover costs by way of agreement or court order with, persons and/or corporations identified as responsible for the tree and/or vegetation vandalism. Offenders ~~and~~ may be required to fund the full costs associated with response measures. This may include:
 - a) professional costs associated with assessing and reporting on the vandalism;
 - b) the costs of signage and its installation;
 - ~~c)~~ initial and follow up replanting and/or rehabilitation costs until the area vandalised has been adequately regenerated over time, or all the costs of Council carrying out the rehabilitation ~~is~~ to the satisfaction of Council's General Manager or delegate.
- ~~3.~~ Council will engage appropriately qualified personnel to prepare rehabilitation and restoration plans.

7 RESOURCES

Resources required for Council to implement this policy include:

1. Educational materials (e.g. brochures, multi-media, displays, posters)
2. Management plans and rehabilitation strategies

Shoalhaven City Council – Tree and Vegetation Vandalism Prevention Policy

3. Correspondence templates (e.g. for letter drops)
4. Signage
5. Investigative and regulatory staff
6. A-dDatabase management to record and monitor vandalism events
7. Access to endemic plants suitable for use in rehabilitation
8. Team and community Ttraining and supervision to carry out rehabilitation
- 9.8. _____

8 IMPLEMENTATION

Planning, Environment & Development Group; Assets & Works Group and Recreation, Community & Cultural Services Section.

9 REVIEW

The Environmental Services Section will review this policy within one year of the election of Council.

10 APPLICATION OF ECOLOGICALLY SUSTAINABLE DEVELOPMENT PRINCIPLES

Ecologically sustainable development (ESD) requires effective integration of social, economic and environmental considerations in decision-making processes. Ecologically sustainable development can be achieved through implementation of 4 principles and programs:

1. The precautionary principle
2. Intergenerational equity
3. Conservation of biological diversity and ecological integrity
4. Improved valuation, pricing and incentive mechanisms.

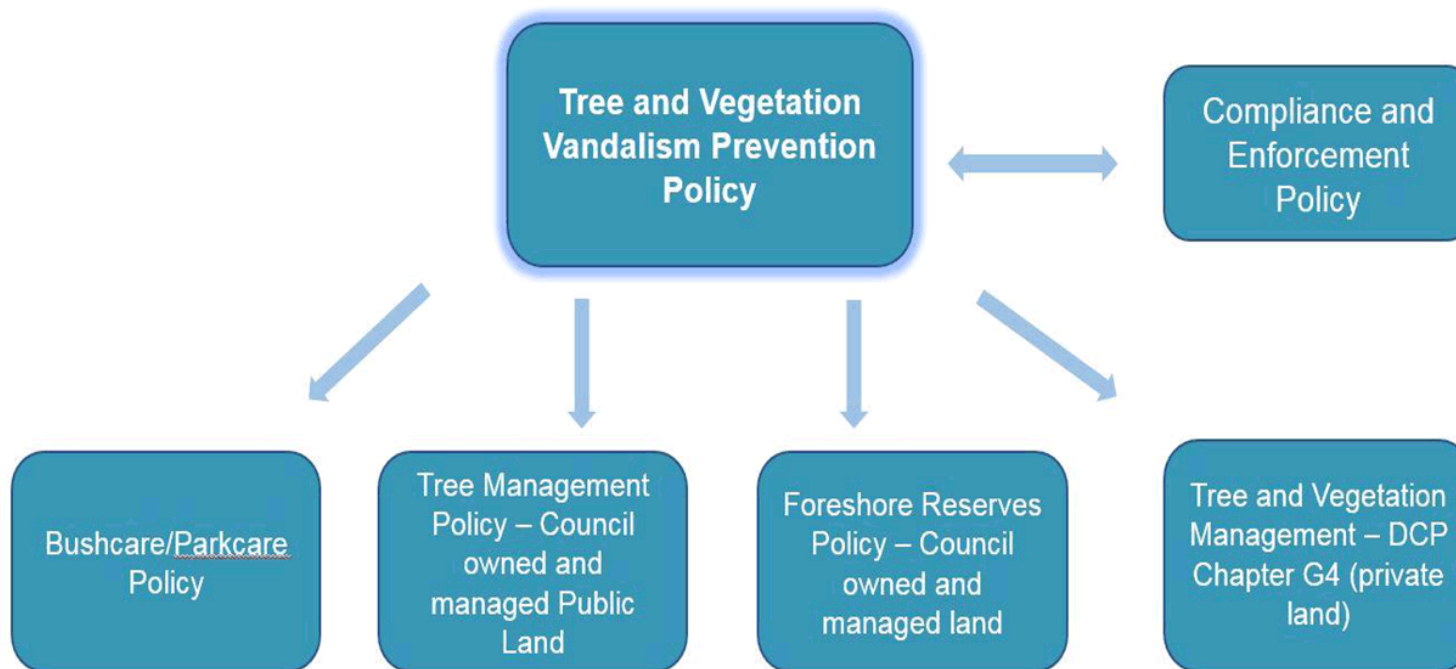
This Tree and Vegetation Vandalism Policy incorporates Ecologically Sustainable Development principles that manage, protect, restore and conserve the environment.

11 APPENDIX

1. Policy Flowchart
2. Tree and Vegetation Vandalism
3. Legislative framework
4. Investigation and Response Protocol
5. Example Response Assessment Model
6. Proposed response measures
7. Example Template Letter for Letterboxing
8. Example of Vegetation Vandalism Pamphlet
9. Example Signage template

Shoalhaven City Council – Tree and Vegetation Vandalism Prevention Policy

APPENDIX 1
POLICY FLOWCHART



APPENDIX 2

BACKGROUND INFORMATION -TREE AND VEGETATION VANDALISM

There are many things that motivate vandalism of trees and vegetation. Some acts are random and without purpose, while others occur through ignorance or are driven by personal self-interest or gain. Where possible, the response to acts of vandalism should be adapted to suit the perceived motivation. For example, community education and Ranger patrols may be the best response to random vandalism, while prosecution and fines may be the most effective deterrent to vandalism acts perceived to be economically motivated.

The physical nature of tree and vegetation vandalism can occur in a variety of forms, including poisoning, pruning, burning, removal and **unauthorised** mowing and slashing of native vegetation

This kind of vandalism has a significant and cumulative impact on the environment. Specific impacts include reduced or loss of visual and community amenity, loss of environmental services such as wind-breaks and erosion controls, loss of wildlife and plant habitat, increase risk to the community from coastal erosion hazards and significant negative impacts of overall environmental health.

Tree and vegetation vandalism can have substantial financial and human resource costs for councils. These include the direct loss of the asset value of the trees or other vegetation, the cost of the investigation, rehabilitation and repair costs, and the cost of implementing potential punitive / deterrence measures. The loss of carbon storage and sequestration and air pollution reduction as a result of vegetation vandalism can be estimated in financial terms¹

The ~~clandestine~~ nature of tree and vegetation vandalism on public land frequently makes the identification of perpetrators difficult. Even where it is possible to identify the most likely offender, it can be difficult to collect sufficient evidence to prove responsibility. With greater education, we anticipate a general willingness by the community to provide information and evidence when an offence has been witnessed.

~~Recognition of the broad tree and vegetation vandalism issues being experienced in the Shoalhaven as a result of Council passing a resolution to develop a robust tree and vegetation vandalism policy.~~ This policy will provide a greater level of organisational capacity and commitment to addressing this issue through a consistent approach.

¹ One hectare of vegetation is calculated to absorb 279 tons of CO₂ (valued at \$14,280) and air pollutants (valued at \$166) per annum. Reference: extrapolated from *Assessment of environmental, economic and social benefits of trees in a Shoalhaven City Council case study*. A contract report prepared for Shoalhaven City Council, Final Report September 2018, Dr Sumita Ghosh for University of Technology Sydney).

Shoalhaven City Council – Tree and Vegetation Vandalism Prevention Policy



Figure 1. Example of vegetation vandalism in Vincentia



Figure 2. Example of vegetation vandalism in Manyana

Shoalhaven City Council – Tree and Vegetation Vandalism Prevention Policy



Figure 3. Example of vegetation vandalism in Mollymook



Figure 4. Example of vegetation vandalism in Culburra

Shoalhaven City Council – Tree and Vegetation Vandalism Prevention Policy



Figure 5. Example of vegetation vandalism in St Georges Basin

Policy Responses

1. Education

When the community has an understanding of the benefits and value of trees and vegetation and the adverse impact of vandalism, it will be easier to sustain the level of community and political support necessary to deter and respond to such activities. There is no single strategy or argument that will be successful in engendering this support. Therefore long-term and varied integrated programs are required.

In this regard, a community environmental education program will explain the following:

1. The fundamental environmental functions of trees and vegetation in natural and urban environments including: habitat, water quality, temperature control, air quality, shade, erosion control, aesthetics, weed suppression, noise attenuation, climate change mitigation, wind breaks and personal well-being (Appendix 9).
2. The cumulative impacts of tree and vegetation loss, and how the combined impacts of one or a number of actions, occurring in the same area and over similar timeframes can adversely affect the existing environment.
3. The increased risk to both public and private assets from the damage or loss of coastal vegetation on coastal beaches, dune and headlands, from coastal erosion hazards.
4. The economic value flowing from the positive environmental functions of trees and so the loss in dollar terms of diminishing tree and vegetation cover which can be calculated by use of the ANZ Standard (Draft) or similar an agreed best practice approach - weighted calculation.
5. The legal significance of offences (i.e. they are criminal acts), and the potential fines and punishments.
6. The direct economic cost to residents of acts of vandalism, in terms of investigation, replacement and remediation costs
7. Successful rehabilitation and other positive outcomes, as well as successful prosecutions and enforcement actions.
8. The value of direct community involvement in the maintenance and protection of vegetation, and in the rehabilitation of damaged areas (e.g. through Bushcare and community group activities).

2. Monitoring and Prevention

Given the many years Council has dealt with unauthorised clearing and damage to vegetation, it is often possible to predict areas facing high risk of damage, such as new developments fronting waterways with bushland reserves.

The risk of damage to these areas will be reduced by:

1. Targeting community education material
2. Increasing the presence of enforcement officers
3. Monitoring vegetation condition by various methods e.g. photographs or aerial photography

4. Involving the community in stewardship and maintenance of bushland areas.
5. Developing and implementing action plans for these areas.

Community involvement and reporting of vandalism is integral to any monitoring and prevention program. The community can be confident that, when they do report incidents, they will be followed up promptly, effectively and confidentially by Council.

Recording and responding to information provided by the community is therefore extremely important and will be facilitated through the development of a tree and vegetation vandalism database. Maintenance of a database is integral to any monitoring and prevention program as it is the most effective means of recording and demonstrating the cumulative impacts of tree and vegetation vandalism over time.

3. Regulation, Enforcement & Rehabilitation

In order to promote consistency among Council officers when investigating and responding to vandalism events, a guideline protocol has been developed that is included in Appendix 4. Council's implementation of this protocol will ensure quick and consistent assessment of damage and determination of an appropriate response strategy. To support the effective implementation of this protocol, clear delineation of staff responsibilities within the process, and clear lines of communication need to be established between staff involved. This will ensure implementation of clear and consistent responses by council and assist in ensuring that staff and other resources required to initiate and implement a response are available.

Although comprehensive investigations and prosecution processes are difficult, their impact is significant in making the community aware of the seriousness of illegally damaging trees and vegetation. Involvement of police and/or private investigators may be warranted in serious cases to take advantage of their investigative skills. Establishing a body of specialist expertise and experience within the region is essential if investigations and prosecutions are going to succeed. This could be supported through an 'inter-council' mentoring system of staff who possess relevant expertise.

There are a range of responses that can be and have been used to deal with instances of vandalism to trees and vegetation. Experience has shown that the most effective responses involve a suite of actions, rather than a single action, and combine enforcement, education, and rehabilitation. Effective responses need to be quick, predictable, consistent, fair and well resourced. It needs to be recognised, however, that councils do not have the resources available to implement the full suite of response measures that are available every time a vandalism event is detected. Experience identifies that rehabilitation of a vandalised site is more often also vandalised.

To promote consistency within Council, a Response Assessment Model has been developed to assist Council in assessing the level of impact of vandalism damage, and in determining the appropriate level and type of response that is required. An example of such an Assessment Tool is included in Appendix 5.

Shoalhaven City Council – Tree and Vegetation Vandalism Prevention Policy

The model to be developed will consider factors such as the ecological value, cultural significance, natural condition, and public prominence of damaged trees and vegetation, and calculate the level of impact of the damage (i.e. high medium or low). The suite of potential responses considered appropriate for high, medium and low impact offences is included in Appendix 6.

4. Regional Resource Opportunities

The effective and consistent application throughout the region will be enhanced, and the resource implications for individual councils reduced through the sharing of experience, expertise and resources among councils. Examples of where such resource and information sharing could occur include:

1. Development and use of regional templates for:
 - Educational materials (e.g. brochures)
 - Management plans and rehabilitation strategies
 - Correspondence (e.g. for letter drops)
 - Signage
 - Recording vandalism incidents (e.g. Access database)
2. The sharing of specialist investigative resources and staff that are experienced in environmental investigation techniques. These skills need to be further developed and shared in the region.
3. The promotion and sharing of case studies that critique both successful and unsuccessful responses to vandalism events and the lessons learned from these.

Revenue raised through Penalty ~~Infringement~~ Notices ~~and successful court prosecutions~~ will ~~be used as a source of revenue to~~ assist with funding further preventive and regulatory initiatives.

Shoalhaven City Council – Tree and Vegetation Vandalism Prevention Policy

APPENDIX 3

LEGISLATIVE FRAMEWORK

OFFENCE	OFFENCE PROVISION	PROSECUTION AUTHORITY	JURISDICTION	SHORT OFFENCE CODE	PENALTIES (as at September 2019)	LIMITATION PERIOD (FROM THE DATE OF OFFENCE)	REMEDATION
Shoalhaven Development Control Plan 2014 Chapter G4-Tree & Vegetation Management Prohibited development undertaken	s. 4.3b of the Environmental Planning and Assessment Act 1979	Local Government	Penalty Infringement Notice	Carry out development forbidden on land	\$6000 – Corporation \$3000 – Individual	1 years	
Prohibited development undertaken Shoalhaven Development Control Plan 2014 Chapter G4-Tree & Vegetation Management	s. 4.3b of the Environmental Planning and Assessment Act 1979	Local Government	Local Court	Carry out development forbidden on land	Tier 1 monetary penalty, Max = 1000 penalty units	2 years	
Prohibited development undertaken Shoalhaven Development Control Plan 2014 Chapter G4-Tree & Vegetation Management	s. 4.3b of the Environmental Planning and Assessment Act 1979	Local Government	Land and Environment Court	Carry out development forbidden on land	Tier 1 monetary penalty, Corporation = Max \$5,000,000 Individual – Max \$1,000,000	2 years	A Court may impose remediation
Wilful or negligent use of a pesticide that injures the property of another person	s. 7(1)(b) of the Pesticides Act 1999	Environmental Protection Authority (EPA)	Land and Environment Court		Up to \$120,000 / \$250,000 (individual / corporation).	3 years from the date of the offence or the date on which the offence first came to notice of an "authorised officer".	A court may also, where the offence is proven, order the offender to restore land damaged as a result of the offence and / or order the offender to pay the costs of a "public authority" (which includes a Council) where that authority has incurred costs as a result of the offence or in the clean-up, abatement or
Use of a pesticide in a manner that harms the property of another person	s. 10(1)(b) of the Pesticides Act 1999	Environmental Protection Authority (EPA)	Infringement Notice		Corporation: \$1,500 Individual: \$750	3 years from the date of the offence or the date on which the offence first came to notice of an "authorised officer".	
Use of a pesticide in a manner that harms the property of another person	s. 10(1)(b) of the Pesticides Act 1999	Environmental Protection Authority (EPA)	Local Court		(2) Up to \$20,000	3 years from the date of the offence or the date on which the offence first came to notice of an "authorised officer".	
Use of a pesticide in a manner that harms the property of another person	s. 10(1)(b) of the Pesticides Act 1999	Environmental Protection Authority (EPA)	Land and Environment Court.		Corporation: \$120,000 Individual: \$60,000	3 years from the date of the offence or the date on which the offence first came to notice of an	

Shoalhaven City Council – Tree and Vegetation Vandalism Prevention Policy

Use registered pesticide in contravention of approved label	s.15(1) of the Pesticides Act 1999	Environmental Protection Authority (EPA)	As for offence under s.10(1)(b) of the Pesticides Act		As for offence under s.10(1)(b) of the Pesticides Act.	"authorised officer". As for offence under s.10(1)(b) of the Pesticides Act.	mitigation of pesticide pollution
Damaging habitat of threatened species or ecological communities	s.2.4 of the Biodiversity Conservation Act 2016	Office of Environment and Heritage	Land and Environment Court		\$330,000 for individuals or \$1,650,000 for corporations.	2 years after the date on which the offence is alleged to have been committed or on which evidence came to the attention of the relevant investigation officer	
Significant impact to a threatened species, threatened ecological communities and migratory species	s.18 of the Environment Protection and Biodiversity Act 1999	Minister for the Environment	Federal Court		5,000 penalty units – Individual 50,000 penalty units – body corporate		The Minister may ensure that appropriate steps are taken to rehabilitate the habitat
Use of pesticide in a manner that leads to pollution of lands	s.142A of the Protection of the Environment Operations Act 1997	Local Government	Penalty Infringement Notice Local Court Land and Environment Court		Up to \$500,000 for individuals or Up to \$2,000,000 for corporations.	3 years	Clean Up Notice Court Order Remediation
<u>Shoalhaven Development Control Plan 2014 Chapter G4- Tree & Vegetation Management</u> <u>Development undertaken without development consent and/or development not carried out in accordance with a consent or environmental planning instrument</u>	s.4.2 of the Environmental Planning and Assessment Act 1979	Local Government	Penalty Infringement Notice	Development without development consent	\$3000 – Individual \$6000 – Corporation		
<u>Development undertaken without development consent and/or development not carried out in accordance with a consent or environmental planning instrument</u> <u>Shoalhaven Development Control Plan 2014 Chapter G4- Tree & Vegetation Management</u>	s.4.2 of the Environmental Planning and Assessment Act 1979	Local Government	Local Court	Development without development consent	Tier 1 monetary penalty, Max – 1000 penalty units	2 years	
<u>Development undertaken without development consent and/or</u>	s.4.2 of the Environmental Planning and	Local Government	Land and Environment Court		Tier 1 monetary penalty. Tier 1 monetary penalty.	2 years	

Shoalhaven City Council – Tree and Vegetation Vandalism Prevention Policy

development not carried out in accordance with a consent or environmental planning instrument Shoalhaven Development Control Plan 2014 Chapter G4- Tree & Vegetation Management	Assessment Act 1979				Corporation – Max \$5,000,000 Individual – Max \$1,000,000		
without lawful excuse removes any plant from a public place	s.629(2) Local Government Act 1993	Local Government	Penalty Notice	Unlawfully remove plant from public place	\$220	6 months	
without lawful excuse removes any plant from a public place	S629(2) Local Government Act 1993	Local Government	Local Court	Unlawfully remove plant from public place	Up to 20 penalty units	6 months	

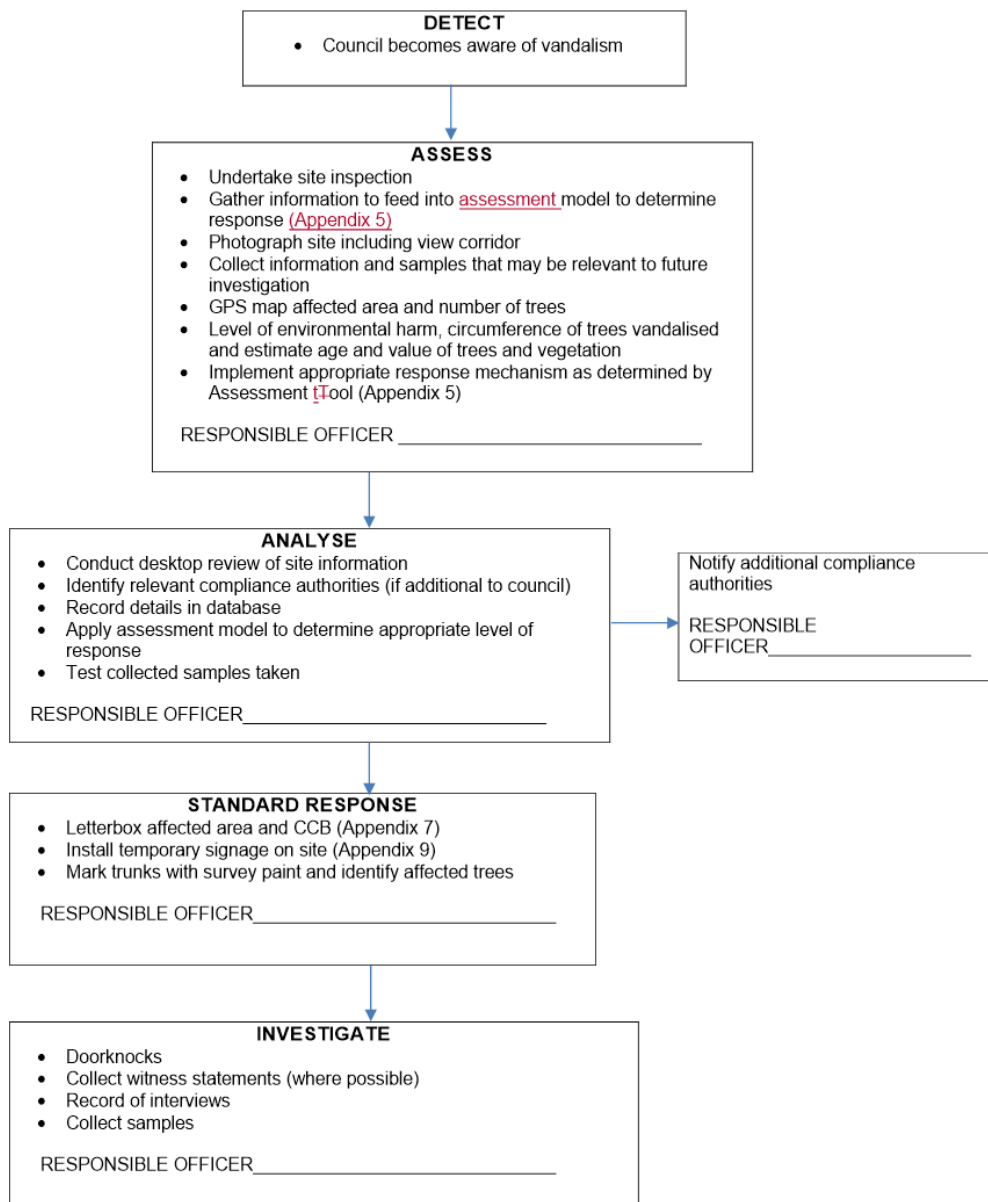
UNAUTHORISED REMOVAL OF VEGETATION IN OTHER AREAS NOT MANAGED BY COUNCIL

Area/zoning	Responsibility
National Parks <u>and lands reserved or acquired under the National Parks and Wildlife Act.</u>	NSW National Parks and Wildlife Service
Rural zoning*	<u>Department of Planning, Industry and Environment</u> <u>Local Land Services/ NSW Office of Environment and Heritage</u>
<u>Defence Lands</u>	<u>Commonwealth Government</u>
<u>Marine Parks</u>	<u>Department of Primary Industries</u>

* unless associated with a Development Application on private property then it is Shoalhaven City Council responsibility

APPENDIX 4

INVESTIGATION & RESPONSE PROTOCOL



APPENDIX 5

EXAMPLE RESPONSE ASSESSMENT MODEL

Location: _____
Officer: _____
Date: _____

Please tick the relevant boxes

Criteria	T*1	T*2	T*3	T*4	T*5	Comments
Significance of the tree						
Historical value						
Commemorative tree						
Significant tree (on register)						
Exceptionally old or fine specimen						
Curious growth habit or physical appearance						
Horticultural / scientific value						
Unusually large size						
Rare to the area						
Outstanding aesthetic quality						
Valuable habitat or corridor						
Keystone species						
Contributes to landscape						
Site						
Has the site been vandalised in the past (occasional, intermittent, frequent or constant)						

Legend
T*1, T*2 etc = Tree

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Environmental effects	T*1	T*2	T*3	T*4	T*5	Comments
Will method-vandalism cause problems e.g. poison contamination, <u>erosion or site instability</u>						
Will method cause problems e.g. erosion or site stability						
Will method cause problems <u>hazards</u> e.g. branches left on site						
Habitat – Loss of nesting trees						
Loss of habitat						
Loss of understorey shrubbery for small bird habitat						
Is the area able to be restored						
Does vandalism impact threatened species <u>or</u> an Endangered <u>Threatened Ecological Community</u>						
Does vandalism reduce shade area i.e. reduction in canopy						
Does vandalism reduce species diversity						
Does vandalism reduce viability/succession of trees and vegetation						
Does clearing expose site to increased wind impact						
Does the vandalism contribute to habitat fragmentation						

APPENDIX 6

PROPOSED RESPONSE MEASURES FOR LOW, MEDIUM AND HIGH IMPACT VANDALISM EVENTS

The suite of response measures considered appropriate to implement in response to high, medium and low impact tree and vegetation vandalism events on public and private land are outlined below. They include:

Low impact events

- Letterbox surrounding residents (often temporary occupants are perpetrators and letters need to be sent to the owner's residential address)
- Install temporary signage until rehabilitated tree or vegetation has been assessed to be adequately re-established
- Leave tree skeletons and any severed portions in place as far as safety allows
- Where sufficient evidence exists, issue Penalty Infringement Notice or pursue prosecution in the Local Court
- Rehabilitate site

Medium impact events

- Letterbox surrounding residents
- Erect temporary (consider permanent) signage until rehabilitated tree or vegetation has been assessed to be adequately re-established
- Leave tree skeletons in place as far as safety allows and stencil trunks
- Treat poisoned plants or soil to attempt to rescue affected vegetation
- Re-plant and rehabilitate damaged areas
- Where sufficient evidence is available, pursue legal proceedings in either the Local Court or Land & Environment Court (NB. While the penalties are more substantial in the Land & Environment Court, so too are the costs of proceedings and the burden of evidence that is required. The decision regarding which court to commence proceedings in will depend largely on an assessment of these factors).

High impact events

- Letterbox residents in the vicinity highlighting the damage and seeking information on perpetrators
- Leave tree skeletons in place as far as safety allows
- Erect permanent signs on the site highlighting damage and its consequences
- Publicise damage and responses in the media
- Protect site and rehabilitation works with fencing (e.g. construction fencing)
- Involve residents and community groups (e.g. Bushcare and schools) directly in planning and implementing rehabilitation strategies
- Treat poisoned trees, plants or soil to attempt to rescue affected vegetation

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- Increase the density or extent of trees and vegetation in rehabilitation works (e.g. “~~three~~five-for-one”)
- Persist with rehabilitation works and maintenance of rehabilitated areas to ensure no loss of trees and vegetation over time
- Offer rewards for information
- Pursue proceedings in the Land & Environment Court where sufficient evidence exists

For example, an integrated response to a major incident, combining a suite of actions, may include:

1. Immediately assess the site and gather information
2. Erect permanent signs pointing out the damage and seeking information on the perpetrators.
3. Letterbox residents in the vicinity to publicise the damage and seek information for the investigation.
4. Conduct a thorough investigation including door knocking local residents with a view to identifying potential witnesses.
5. Assess the best response to stabilise the area and ensure the vandalism isn't rewarded (e.g. by cutting down or clearing the dead vegetation).
6. Prepare and implement a rehabilitation plan, preferably involving local residents (although this may not always be possible or desirable). Successful rehabilitation can be linked with the removal of “punishments”. For example, signs may be removed ~~after 12 months~~ if re-planted vegetation is established and maintained. This will encourage residents to protect rehabilitation works.
7. Where sufficient evidence may be available, pursue prosecution in the NSW Land and Environment Court. If successful, publicise the outcomes.

SIGNIFICANCE	ACTION
Low Significance	A) Letterbox residents/send letter to absentee owners
	B) Leave trees in place and “tattoo” trunks
	C) Install temporary signage
	D) PIN or Local Court where evidence exists
Medium Significance	A) Letterbox residents
	B) Leave trees in place and “tattoo” trunks
	C) Install temporary / permanent signage
	D) Replant and rehabilitate
	E) Pursue action in the Local Court or Land &

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	Environment Court where evidence exists
High Significance	A) Letterbox residents
	B) Address hazardous trees and vegetation on site and leave all debris on site in natural areas
	C) Install permanent signage
	D) Replant and rehabilitate (involve community where possible)
	E) Increase density of trees and vegetation in rehabilitation works
	F) Offer rewards for information
	G) Pursue action in the Local Court or Land & Environment Court where evidence exists



Example of "tattooed" trunk

APPENDIX 7

EXAMPLE TEMPLATE LETTER FOR LETTERBOXING

Occupier
Address 1
Address 2

Dear Occupier

RE: DAMAGE TO TREES OR VEGETATION ON COMMUNITY RESERVE

In the last few months valuable trees / bushland in the community reserve at
LOCATION has been vandalised.

This vandalism has included [INSERT OFFENCE – EG POISONING OF 5 LARGE TREES]. The impacts from this deliberate vandalism of community property include [INSERT IMPACTS EG LOSS OF HABITAT, LOSS OF BIRDLIFE AND OTHER NATIVE SPECIES, SHADE AND AMENITY]. The cost to council of rehabilitating the damage caused is likely to exceed [INSERT VALUE], taking money away from other community services.

All native trees and vegetation on Council reserves is protected. Deliberately killing or pruning trees and other vegetation on Council reserves without approval is illegal, and can attract substantial penalties. Council is now investigating this particular incident with a view to identifying those responsible.

Council will be INSERT PROPOSED SUITE OF ACTIONS e.g. REPLACE THE POISONED TREES WITH THREE-FIVE NEW TREES OF THE SAME SPECIES; REHABILITATE THE SITE AND FENCE IT TO PREVENT FURTHER DAMAGE; INVITE THE LOCAL PRIMARY SCHOOL TO ASSIST IN REPLANTING THE DAMAGED AREA.

If you have any information that may help Council in its investigation, or if you would like to be involved in rehabilitating and protecting the site in future, please contact [NAME – POSITION] on [PHONE NUMBER].

Your assistance in this matter would be greatly appreciated.

Yours faithfully

MANAGER / MAYOR

DE19.116 - Attachment 2

Shoalhaven City Council – Tree and Vegetation Vandalism Prevention Policy

APPENDIX 8

EXAMPLE OF VEGETATION VANDALISM PAMPHLET

DE19.116 - Attachment 2

Shoalhaven City Council – Tree and Vegetation Vandalism Prevention Policy



Ranger
Services

Vegetation Vandalism



**Council needs your assistance to catch
the vegetation vandal in your area.**
Please see over for more information

shoalhaven.nsw.gov.au    

DE19.116 - Attachment 2

Shoalhaven City Council – Tree and Vegetation Vandalism Prevention Policy



It has come to Council's attention that vegetation has been damaged on public land in your area. If you witness someone damaging or removing flora / fauna on public land please contact Ranger Services as soon as possible. If you can assist Rangers with a photograph or a video of the incident, or any other details this would be most helpful.

Vegetation within coastal reserves plays a vital role to reinforce the dune system, which helps protect assets behind the dunes against storm wave attack.

Trees and shrubs on coastal and riparian fringes and other waterways are the home and breeding ground for many of our protected bird and fish species. Local volunteer groups work tirelessly to assist Council and residents in an effort to maintain the natural environment.

Council has initiated successful legal proceedings against persons who have damaged or removed flora from public reserves within Shoalhaven City.

A maximum penalty of up to \$1,100,000 applies.

Your support in helping to protect your area is appreciated.

Ranger Services P: 4429 3433

After hours P: 4421 3100 if the matter is urgent

shoalhaven.nsw.gov.au    

APPENDIX 9

EXAMPLE SIGNAGE TEMPLATES



Approximate sign size:
Metallic sign 600 x 600mm
Soft canvas banner 2000 x 1000mm



Approximate sign size: 600 x 600mm



Summary of Submissions

Amendment 26: Coastal Hazards Review Planning Proposal

Amendment 20: Chapter G6 of Shoalhaven DCP 2014

Public Exhibition: 6 February – 8 March 2019

Submission number	Summary of Submission	Comments
1.	SLEP 2014 - Coastal risk planning map Removing the coastal hazard mapping from the LEP will allow Council to amend the coastal hazard maps without any obligation to notify or consult the affected landowners.	Noted. Any future amendments to the coastal hazard mapping will be informed by specialist studies which are reported to Council. As a part of this reporting process, affected landowners will be notified and given an opportunity to comment.
	SDCP 2014 - General, Development controls The development controls within the DCP amendment will increase the costs and timeframe of a development application. This constitutes an unauthorized interference with the property rights of land owners.	Noted. The <i>Environmental Planning and Assessment Act 1979</i> enables Council to prepare a DCP to give effect to the aims of any environmental planning instrument (i.e. SLEP 2014). The proposed controls support Clause 7.4 Coastal Risk Planning of SLEP 2014.
	SDCP 2014 - Section 5.1.2 Areas of cliff/slope instability It is unclear who can prepare a geotechnical report and what the report is required to address.	Noted. Acceptable solution A2.1 addresses the requirements of a geotechnical report. The acceptable solution additionally states that a geotechnical report is to be prepared by a professional geotechnical engineer.
2. and 3.	SLEP 2014 - Clause 7.4 Coastal risk planning Broadening Clause 7.4 to apply to any land at risk from coastal hazards allows the clause to apply to properties without Council notifying the affected land owners.	Noted. Any studies that identify properties at risk of coastal hazards will need to be reported to and adopted by Council. As a part of this reporting process, affected landowners will be notified and given an opportunity to comment.
	SLEP 2014 - LEP Coastal Risk Planning Map Removing the coastal hazard mapping from the LEP will allow Council to amend the coastal hazard maps without any obligation to notify or consult the affected landowners.	
	SDCP 2014 - Section 5.1.1 Area of beach erosion and/or oceanic inundation	Noted. The wave run-up line illustrates the maximum wave run-up level for a 100-year average recurrence interval (ARI) storm event, not the current wave run-up level in ordinary conditions. The wave run-up line was

	The location of the wave run-up line at Culburra Beach is questionable, as the wave run-up has historically never encroached that far inland. What studies have been completed to warrant the inclusion of wave run-up as a new category of risk?	determined in the 2016 Shoalhaven Coastal Mapping Review prepared by coastal engineering experts Advisian Pty Ltd and adopted by Council in 2017.
	SDCP 2014 - Section 5.1.1 Area of beach erosion and/or oceanic inundation The presence of the wave run-up line may impact the value of a property.	Noted. Council has a responsibility to inform current and future land owners of the coastal risks associated with the land, regardless of whether that risk may reduce the value of a property.
	SDCP 2014 - Section 5.1.2 Areas of cliff/slope instability It is unfair to require properties within the potential cliff recession hazard area to complete their own geotechnical report to accompany any development application. Council should fund and complete the studies for these properties.	Not supported. Council has undertaken an extensive study of the areas at risk of potential cliff recession within the 2018 Royal Haskoning Shoalhaven Coastal Cliffs and Slopes Risk Management Recommendations Report. The report recommended Council require a geotechnical assessment with development applications for land within cliff recession risk areas.
	SDCP 2014 - Section 5.1.2 Areas of cliff/slope instability Development applications within the potential cliff recession hazard area are required to include a geotechnical report. This constitutes an unauthorised interference with the property rights of the landowners; and imposes a financial burden not envisaged by the Environmental Planning and Assessment Act 1979.	Noted. The <i>Environmental Planning and Assessment Act 1979</i> enables Council to prepare a DCP to give effect to the aims of any environmental planning instrument (i.e. SLEP 2014). The proposed controls support Clause 7.4 Coastal Risk Planning of SLEP 2014.
4.	General, Council's website <ul style="list-style-type: none"> • Include additional commentary on Council's coastline and waterways webpage to state that the Shoalhaven Sea Level Rise Policy will be updated every 7 years. • Replace references to a local civil engineer with "internationally recognized engineers and other expert coastal engineers who provide advice and solutions for Councils up and down the NSW coast." • Replace the statement "based on the NSW government sea level rise projections of 40cm by 2050 and 90cm by 2100" with "based on the NSW Labour Government's flawed sea level rise projections of 40cm by 2050 and 90cm by 2100." • Reference that Council's sea level rise projections are endorsed by the previous Minister for Environment Rob Stokes, including the additional commentary that the policy is pragmatic, of integrity, founded on scientific approach, defensible, and is reviewable. 	Not supported. Any proposed changes to Council's website are beyond the scope of this LEP/DCP amendment and should be considered separately.
	SDCP 2014 - Chapter G6, Throughout Replace references to "preserving vegetation" with "preserving appropriate vegetation."	Not supported. Acceptable solution A11.1 allows for the removal of inappropriate vegetation. It is redundant to specify that only appropriate vegetation should be preserved.

<p>SDCP 2014 - Section 3 Context Include the following text within the context, “flawed or outdated design of stormwater discharge from Council stormwater systems may lead to undermining or destruction of buildings, public pathways or cycle ways and Council sewerage systems during extreme storm events.”</p>	<p>Not supported. The context provides a brief introduction into the issues addressed within Chapter G6. As the chapter does not comment on Council’s stormwater systems it would be inappropriate to include the proposed wording within the context.</p>
<p>SDCP 2014 - Section 3 Context Amend the context to reference that vegetation mitigates erosion by allowing the dissipation of wave energy.</p>	<p>Not supported. The context already addresses how vegetation increases dune stability.</p>
<p>SDCP 2014 - Section 4 Key Objectives Replace references to “projected sea level rise” with “evidence-based increases from sea level rise.”</p> <p>SDCP 2014 - Section 5.1 Areas of coastal hazard risk Replace “predicted impact of climate change” with “evidence-based impacts of climate change.”</p>	<p>Not supported. It is redundant to include the proposed wording as Council’s adopted sea level rise projections are based on evidence from Council adopted studies.</p>
<p>SDCP 2014 - Section 4 Key Objectives Expand objective iii to read, “Consider ecological processes and avoid significant adverse effects on the environment whilst maintaining views from public walkways and from owner’s residences.”</p>	<p>Not supported. Objective iii) ensures developments avoid significant adverse impacts on the environment. As the controls within Chapter G6 do not prioritise protecting unimpeded views over environmental preservation, it would be inappropriate to include the proposed wording.</p>
<p>SDCP 2014 - Section 4 Key Objectives Expand objective iv to address the risk from stormwater discharge through Council’s stormwater systems.</p>	<p>Not supported. Objective iv already addresses the risk from stormwater erosion.</p>
<p>SDCP 2014 - Section 4 Key Objectives Either delete key objective vi or explain in more detail what this objective means and re-exhibit the amendment on public exhibition.</p>	<p>Not supported. Objective vi is to preserve the appearance and amenity of the foreshore through consideration of siting and design of development. The further detail on the physical implications of this objective are described in Section 5.2.2 Building Envelope and Siting.</p>
<p>SDCP 2014 - Section 5.1.1 Areas of beach erosion and/or oceanic inundation Using the Zone of Reduced Foundation Capacity to indicate the extent of coastal hazard risks is not appropriate for accreting beaches. Using the Zone of Slope Adjustment to indicate the area of risk is more appropriate.</p>	<p>Not supported. The Zone of Slope Adjustment (ZSA) only illustrates the level of wave impact. The Zone of Reduced Foundation Capacity (ZRFC) illustrates the area where coastal impacts have reduced the ability of the sand to support structures. It is more appropriate to use the ZRFC to manage coastal hazard risks as it more accurately demonstrates the extent of coastal impacts on development.</p>
<p>SDCP 2014 - Section 5.1.1 Areas of beach erosion and/or oceanic inundation</p>	<p>Noted. The useful life of a building is the period when the asset is expected to be used. If a building is soundly constructed and well maintained its useful life can extended indefinitely.</p>

	<p>It is an over statement of risk to use the 2100 Zone of Reduced Foundation Capacity line to illustrate risk for developments as the economical useful life of a building is only 40 years.</p>	
	<p>SDCP 2014 - Section 5.1.1 Areas of beach erosion and/or oceanic inundation</p> <p>The risk precincts should be amended for accreting beaches as follows:</p> <ul style="list-style-type: none"> a) Precinct 1 - High risk, the area between the Zone of Slope Adjustment and 2030 Zone of Reduced Foundation Capacity (ZRFC) line. b) Precinct 2 - Moderate risk, the area between 2030 and 2050 ZRFC lines. c) Precinct 3 - Low risk, the area landward of the 2050 ZRFC line. 	<p>Not supported. The risk precincts are based upon Council's adopted Zone of Reduced Foundation Capacity Lines. These lines were determined with regard to whether a beach is accreting or eroding.</p>
	<p>SDCP 2014 - Section 5.1.1 Areas of beach erosion and/or oceanic inundation</p> <p>Expand the description of Precinct 3 - Low risk to state that the development restrictions only apply if evidence-based proof of a risk exists.</p>	<p>Not supported. The restrictions for Precinct 3 only apply if the development is seaward of Council's adopted wave run-up line. This line is based on evidence from the 2016 Shoalhaven Coastal Mapping Review.</p>
	<p>SDCP 2014 - Section 5.1.1 Areas of beach erosion and/or oceanic inundation</p> <p>Replace "wave run-up risk" with "wave run-up risk be it over natural surface or consequences from flawed design of Councils stormwater discharge."</p>	<p>Not supported. Wave run-up risk is a broad term and encompasses any type of wave run-up risk regardless of the source.</p>
	<p>SDCP 2014 - Section 5.1.1 Areas of beach erosion and/or oceanic inundation</p> <p>Additional commentary should be included to reference the actions required by Council to mitigate the impacts from Council's stormwater system.</p>	<p>Not supported. An investigation into Council requirements to mitigate stormwater impacts is beyond the scope of this LEP/DCP amendment. It is noted that Council's Environmental Services Section and Asset & Works Group are working together to assess and address the stormwater management issues.</p>
	<p>SDCP 2014 - Section 5.1.1 Areas of beach erosion and/or oceanic inundation</p> <p>Amend performance criteria P1.5 to only require developments to accommodate natural coastal processes within the 40 years standard useful life of a building.</p>	<p>Not supported. Many buildings will have a useful life greater than 40 years. As this is a subjective measurement it would be inappropriate to include a standard timeframe within the performance criteria.</p>
	<p>SDCP 2014 - Section 5.1.1 Areas of beach erosion and/or oceanic inundation</p> <p>Amend acceptable solution A1.5 to withhold references to the wave run-up line until the mapping issues at Collingwood Beach are resolved.</p>	<p>Not supported. The wave run-up line has been adopted by Council and there are currently no plans to amend the wave run-up line along Collingwood Beach.</p>

<p>SDCP 2014 - Section 5.1.1 Areas of beach erosion and/or oceanic inundation</p> <p>Amend acceptable solution A1.9 to remove reference to planned retreat as an objective of the NSW Coastal Planning Guideline: Adapting to Sea Level Rise.</p>	<p>Supported. Planned or managed retreat is neither supported by the NSW Government, nor mentioned within NSW Coastline Planning Guideline: Adapting to Sea Level Rise.</p>
<p>SDCP 2014 - Section 5.1.2 Areas of cliff/slope instability and section 5.1.3 Other areas of potential coastal hazard risk</p> <p>Expand stormwater controls to apply to both private land owners and Council.</p>	<p>Not supported. Development controls within the DCP apply to any development regardless of whether the development is proposed by a private land owner or Council.</p>
<p>SDCP 2014 - Section 5.1.2 Areas of cliff/slope instability and section 5.1.3 Other areas of potential coastal hazard risk</p> <p>Amend acceptable solutions A2.3 and A3.3 to state that piping stormwater over Council foreshore land will only be considered where the proposal will not cause loss of sand from a dune system.</p>	<p>Not supported. Acceptable solutions A2.3 and A3.3 state that piping stormwater over Council foreshore land will only be considered where the proposed development will not result in an increase in geotechnical risk. A loss of sand from the dune system would constitute an increase in geotechnical risk.</p>
<p>SDCP 2014 - Section 5.2 Development in Foreshore Areas</p> <p>Add a new objective to ensure unimpeded views from properties are maintained and restored.</p>	<p>Not supported. Restoring unimpeded view from properties would require the removal of native foreshore vegetation. This conflicts with the current objectives and controls within the Chapter to preserve native vegetation and minimise clearing.</p> <p>It is noted that performance criteria P5.1 ensures that buildings enable view sharing.</p>
<p>SDCP 2014 - Section 5.2.2 Building Envelope and Siting</p> <p>Expand acceptable solution A5.2 to permit development taller than the adjacent tree canopy if an agreement can be reached by neighbours.</p>	<p>Not supported. It is inconsistent with the amenity protection objectives of Chapter G6 to allow structures to be developed that would overshadow the adjacent tree canopy regardless of an agreement between neighbours.</p>
<p>SDCP 2014 - Section 5.3 Building on Sand Dunes</p> <p>Amend acceptable solution A11.1 to include Pittosporum and Banksia as inappropriate vegetation unless planted on the hind dune.</p>	<p>Not supported. Acceptable solution A11.1 includes a note to refer to the NSW Coastal Dune Management Manual for correct revegetation techniques, which includes the geographical range for dune planting.</p>
<p>SDCP 2014 - Section 5.3.2 Species Recommended for Planting on Sand Dunes</p> <p>State that replanting should be completed in accordance with the NSW Coastal Dune Management Manual.</p>	<p>Not supported. Acceptable solution A11.1 directs developers to refer to the NSW Coastal Dune Management Manual for correct revegetation techniques.</p>
<p>SDCP 2014 - Section 5.3.2 Species Recommended for Planting on Sand Dunes</p> <p>References to Banksia as a recommended species for planting should specify that they only be planted on the hind dunes.</p>	<p>Not supported. The NSW Coastal Dune Management Manual, referred to within acceptable solution A11.1, notes that Banksia should be planted within the hind dune area. This is additionally reflected in Section 5.3.2 where Banksia is listed as a tertiary planting species.</p>

	SDCP 2014 - Section 5.3.2 Species Recommended for Planting on Sand Dunes A Management Plan should be put in place to stop propagation of inappropriate vegetation.	Not supported. Acceptable solution A11.1 allows for the removal of inappropriate vegetation.
	SDCP 2014 - Section 6.2 Other legislation or policies you may need to check Include the following documents in section 6.2; <ul style="list-style-type: none"> The presentation to the Policy and Resources Committee on the 10 February 2015 by George Kruk, Commentary and Analysis on the Whitehead & Associated 2014 NSW Sea-Level Report, and Royal Haskoning Erosion Remediation Report. 	Not supported. The three documents do not provide additional information relevant to the controls within Chapter G6 that are not already addressed within the documents listed within Section 6.2.
	SDCP 2014 - Section 6.2 Other legislation or policies you may need to check Include the Frequently Asked Questions tabled and presented to Council by the Collingwood Beach Preservation Group within section 6.2.	Not supported. The Frequently Asked Questions presented to Council is neither legislation nor policy. As such it would be inappropriate to include within Section 6.2.
	SDCP 2014 - Section 5.1.1 Areas of beach erosion and/or oceanic inundation The wave run-up line within Figure 1 appears unrelated to the Zone of Reduced Foundation Capacity Lines, a definition should be included to clarify if they are unrelated.	Partially supported. The wave run-up lines are clearly explained and defined within the 2016 Shoalhaven Coastal Mapping Review which will be included as advisory information within Section 6.2.
5.	SDCP 2014 - Section 5.1.1 Areas of beach erosion and/or oceanic inundation Figure 1 does not include the 2050 Zone of Reduced Foundation Capacity Line.	Noted. Figure 1 illustrates acceptable solutions for developments within the three risk precincts. As the 2050 Zone of Reduced Foundation Capacity Line is not used to determine the risk precincts it is unnecessary to include it within Figure 1.
	SDCP 2014 - Section 5.1.1 Areas of beach erosion and/or oceanic inundation <ul style="list-style-type: none"> Acceptable solution A1.2 should be amended to prohibit any net increase in floor area within the high risk precinct. Figure 3 should be amended to reflect the suggestion to prohibit any increase in floor area within the high risk precinct. 	Not supported. Acceptable solution A1.2 only applies to extensions and/or minor alterations to buildings or structures. It is appropriate to allow existing dwellings the ability to alter the built form assuming the proposed extensions or alterations are consistent with the other development controls within Chapter G6 and the DCP broadly.
	SDCP 2014 - Section 5.1.1 Areas of beach erosion and/or oceanic inundation	Partially supported. The 2016 Shoalhaven Coastal Mapping Review that determined the location of the wave run-up line will be included within Section 6.2.

	Provide additional commentary within acceptable solutions A1.5 and A1.8 regarding how the wave run-up level was determined.	
	<p>SDCP 2014 - Section 5.1.1 Areas of beach erosion and/or oceanic inundation</p> <p>Council's current plan requires developers to use concrete filled steel screw piles for the foundation of new dwellings. Acceptable solution A1.7 should be amended to allow flexibility in the design of dwelling foundations.</p>	<p>Not supported. Acceptable solution A1.7 only requires that the foundation of a new development is designed by a professional structural engineer to carry all foundation loads into the 2100 Safe Foundation Zone. There is no control requiring the use of concrete filled steel screw piles.</p>
	<p>SDCP 2014 - General, Setback requirements</p> <p>Does this chapter supersede the current setback requirements?</p>	<p>Noted. Setback requirements for dwellings are addressed in DCP Chapter G12 as well as Chapter G6. Any new dwellings will need to comply with the controls within both Chapters G12 and G6.</p>
6.	<p>SDCP 2014 - Chapter G6, Throughout</p> <p>Include a hyperlink to the Shoalhaven Coastal Hazard Interactive Mapping.</p>	<p>Supported. A link to the Shoalhaven Coastal Hazard Interactive Mapping will be included within the purpose of Chapter G6 to allow readers to easily locate the mapping.</p>
	<p>SDCP 2014 - Chapter G6, Throughout</p> <p>References to preserving trees, vegetation and species should be replaced with preserving appropriate trees, appropriate vegetation and appropriate species.</p>	<p>Not supported. It is redundant to specify that only appropriate trees, vegetation and species should be preserved as acceptable solution A11.1 allows for the removal of inappropriate vegetation.</p>
	<p>SDCP 2014 – Chapter G4</p> <p>The title of Chapter G4 should not be amended.</p>	<p>Not supported. A previous amendment to Chapter G4 changed the title of the chapter from "Removal and Amenity of Trees" to "Tree and Vegetation Management."</p>
	<p>SDCP 2014 - Section 4 Key Objectives</p> <p>Reference to "projected sea level rise" should be replaced with "evidence-based sea level rise."</p>	<p>Not supported. It is redundant to include the proposed wording as Council's adopted sea level rise projections are based on evidence from Council adopted studies.</p>
	<p>SDCP 2014 - Section 4 Key Objectives</p> <p>Amend objective v from "provide correct management techniques for coastal management" to "provide previously accepted management techniques for coastal management."</p>	<p>Not supported. The management techniques used need to address the specific constraints of the site. It is more appropriate to refer to using the correct management techniques as this will ensure that the techniques used adequately address the specific site constraints. Additionally, referring to previously accepted management techniques will limit the level of innovation and restrict the use of newly developed techniques.</p>
	<p>SDCP 2014 - Section 4 Key Objectives</p> <p>Expand objective vi to state that vegetation replanting should be done with care to maintain views from public areas and private dwellings.</p>	<p>Not supported. As the controls within Chapter G6 do not prioritise protecting unimpeded views over environmental preservation it would be inappropriate to include the proposed wording.</p>
	<p>SDCP 2014 - Section 5.1 Areas of coastal hazard risk</p> <p>The wave run-up line is potentially inaccurate and has a significant impact on the resale value of properties.</p>	<p>Noted. The wave run-up line was determined in the 2016 Shoalhaven Coastal Mapping Review by coastal engineering experts Advisian Pty Ltd and adopted by Council in 2017. While the wave run-up line may impact the</p>

		value of a property, Council has a responsibility to inform current and future land owners of the coastal risks associated with the land.
SDCP 2014 - Section 5.1.1 Area of beach erosion and/or oceanic inundation Include additional commentary referencing that the coastal hazard lines are to be reviewed every 7 years.		Not supported. There is no resolution to review the coastal hazard lines every 7 years. It is noted that Council has resolved to review the sea level rise projections at least every seven (7) years, which may result in amendments to the coastal hazard lines.
SDCP 2014 - Section 5.1.1 Area of beach erosion and/or oceanic inundation Acceptable solution A1.3 is identical to A1.9, one of these should be removed.		Not supported. Acceptable solution A1.3 applies to land within the high risk precinct while acceptable solution A1.9 applies to land within the moderate risk precinct.
SDCP 2014 - Section 5.1.1 Area of beach erosion and/or oceanic inundation Remove reference to planned retreat to reflect the NSW Government's position to not support a policy of planned or managed retreat.		Supported. Planned or managed retreat is neither supported by the NSW government, nor mentioned within NSW Coastline Planning Guideline: Adapting to Sea Level Rise.
SDCP 2014 – Section 5.1.2 Areas of cliff/slope instability Acceptable solution A2.3 should ensure that stormwater discharge will not result in loss of sand from the dune.		Noted. Acceptable solution A2.3 already ensures that proposed developments will not result in an increase in geotechnical risk.
SDCP 2014 – Section 5.1.3 Other areas of potential coastal hazard risk Acceptable Solutions A3.3 and P3.7 should include a provision to ensure stormwater discharge will not cause loss of sand from a dune system.		Not supported. Acceptable solution A3.3 is only considered where the proposed development will not result in an increase in geotechnical risk. A loss of sand from the dune system would constitute an increase in geotechnical risk and as such is already addressed, making the proposed amendment redundant.
SDCP 2014 – Section 5.3.1 General Pittosporum should be included as inappropriate for dune replanting within acceptable solution A11.1.		Not supported. Council's adopted studies do not state that pittosporum is an inappropriate species for dune replanting, however it is noted that Pittosporum is not listed as a species recommended for planting on sand dune within Section 5.3.2.
SDCP 2014 – Section 5.3.2 Species Recommended for Planting on Sand Dunes Any reference to Banksias should include that they are not appropriate vegetation for fore dune planting.		Not supported. Acceptable solution A11.1 includes a note to refer to the NSW Coastal Dune Management Manual for correct revegetation techniques. The locational preferences for planting Banksia are included within this manual.
SDCP 2014 – Section 5.3.2 Species Recommended for Planting on Sand Dunes Include a link to the list of species specifically recommended for coastal areas.		Not supported. A list of recommended species for planting or replanting on a sand dune area is included within Section 5.3.2.

7.	SLEP 2014 - Coastal Risk Planning Map Removing the coastal hazard mapping from the LEP will allow Council to amend the coastal hazard maps without any obligation to notify or consult the affected landowners.	Noted. Any future amendments to the coastal hazard mapping will be reported to Council. As a part of this reporting process affected landowners will be notified of the proposed amendments and given an opportunity to comment.
	SDCP 2014 – General, Interference with property rights The development controls within the DCP amendment will increase the costs and timeframe of a development application. This constitutes an unauthorized interference with the property rights of land owners.	Noted. The <i>Environmental Planning and Assessment Act 1979</i> enables Council to prepare a DCP to give effect to the aims of any environmental planning instrument (i.e. SLEP 2014). The proposed controls support Clause 7.4 Coastal Risk Planning of SLEP 2014.
	SDCP 2014 – Section 5.1.2 Areas of cliff/slope instability It is unclear who can prepare a geotechnical report and what the report is required to address.	Noted. Acceptable solution A2.1 states the requirements of a geotechnical report. The acceptable solution additionally states that a geotechnical report is to be prepared by a professional geotechnical engineer.
	General, Development assessments It is unclear whether Council may refuse a development application even if the geotechnical report supports the development.	Noted. As there are many factors that must be considered when assessing a development application, it is possible for a development to be supported by the geotechnical report and still refused due to another aspect of the development.
8.	SDCP 2014 - Chapter G4 The title of Chapter G4 should not be amended.	Not supported. A previous amendment to Chapter G4 changed the title of the chapter from "Removal and Amenity of Trees" to "Tree and Vegetation Management."
	SDCP 2014 - Chapter G6, Throughout Reference to "projected sea level rise" should be replaced with "evidence-based sea level rise."	Not supported. It is redundant to include the proposed wording as Council's adopted sea level rise projections are based on evidence from Council adopted studies.
	SDCP 2014 - Chapter G6, Throughout Replace phrases "coastal instability", "erosion and shoreline recession" and "beach erosion and/or coastal instability" with "coastal hazard risk" throughout.	Not supported. Coastal instability, erosions and shoreline recession and beach erosion and/or coastal instability are related but separate coastal hazards. It would be inappropriate to refer to "coastal hazard risk" as a general term when creating controls surrounding specific coastal hazards.
	SDCP 2014 - Chapter G6, Throughout Replace reference to "vegetation" with "appropriate vegetation."	Not supported. Acceptable solution A11.1 allows for the removal of inappropriate vegetation. As such it is redundant to specify that only appropriate vegetation should be preserved.
	SDCP 2014 - Section 4 Key Objectives Replace "correct management techniques for coastal management" with "previously successful management techniques for coastal management."	Not supported. The management techniques used need to adequately address the specific constraints of the site. It is more appropriate to refer to using the correct management techniques as this will ensure that the techniques used will adequately address the specific site constraints. Additionally, referring to previously accepted management techniques will limit the level of innovation and restrict the use of new techniques.

	<p>SDCP 2014 - 5.1 Areas of Coastal Hazard Risk The wave run-up line at Collingwood beach is inconsistent with dune heights and should be rechecked.</p>	<p>Not supported. The wave run-up lines were calculated with regard to topographical conditions, include dune heights. The dune heights were determined using LiDAR ground levels and photogrammetry information. While there are sections of dunes that would act as a barrier against wave run-up, there are gaps in the foredune that would allow wave run-up to get through to the lower lying land behind the dunes.</p>
	<p>SDCP 2014 - 5.1 Areas of Coastal Hazard Risk Replace "predicted impacts of climate change" with "evidence-based impacts of climate change."</p>	<p>Not supported. It is redundant to include the proposed wording as Council's predicted impacts of climate change are based on evidence from Council adopted studies.</p>
	<p>SDCP 2014 - 5.1.1 Areas of Beach erosion and/or beach inundation Remove reference to planned retreat to reflect the NSW Government's position to not support a policy of planned or managed retreat.</p>	<p>Supported. Planned or managed retreat is neither supported by the NSW government, nor mentioned within NSW Coastline Planning Guideline: Adapting to Sea Level Rise.</p>
	<p>SDCP 2014 - 5.1.2 Areas of cliff/slope instability and 5.1.3 Other areas of potential coastal hazard risk Acceptable solutions A2.3 and A3.3 should include a provision to ensure stormwater discharge will not cause loss of sand from a dune system</p>	<p>Not supported. Acceptable solutions A2.3 and A3.3 state that piping stormwater over Council foreshore land will only be considered where the proposed development will not result in an increase in geotechnical risk. A loss of sand from the dune system would constitute an increase in geotechnical risk.</p>
	<p>SDCP 2014 - 5.2.5 Trees and Vegetation Include a link to the vegetation protected under the NSW Fisheries Management Act 1994.</p>	<p>Not supported. The NSW Fisheries Management Act 1994 is included within Section 6.2.</p>
	<p>SDCP 2014 - Section 5.3.2 Species Recommended for Planting on Sand Dunes Require Management Plans be prepared to stop propagation inappropriate vegetation.</p>	<p>Not supported. Acceptable solution A11.1 allows for the removal of inappropriate vegetation.</p>
9. Consultancy: GKA Management	<p>SDCP 2014 - Section 6.1 Development Application requirements Development plans should not be required to illustrate the location of the wave run-up line until the line has been reviewed.</p>	<p>Not supported. The wave run-up line has been adopted by Council and there are currently no plans to amend the location of the wave run-up line.</p>
	<p>General, Wave run-up line The wave run-up line should be revised based on scientifically sound modelling methods and physically measured dune heights. Council must then identify which houses can be excluded from the inundation area based on the floor level of dwellings.</p>	<p>Noted. An investigation into the methods used to determine the wave run-up line is beyond the scope of this LEP/DCP amendment. It would be more appropriate to consider this methodology separately.</p>
	<p>SDCP 2014 - General, Zone of Reduced Foundation Capacity The Zone of Reduced Foundation Capacity should not be used to illustrate the extent of coastal risks as this zone is not affected by coastal processes.</p>	<p>Noted. The Zone of Reduced Foundation Capacity (ZRFC) illustrates the area where the capacity of sand to support building foundations is reduced. It is appropriate to use the ZRFC to manage coastal hazard risks as it</p>

	The Zone of Reduced Foundation Capacity has also been extended by a 1.5 Factor of Safety, which has arbitrarily increased the Zone of Reduced Foundation Capacity.	illustrates the extent of impact from coastal hazards on development. A factor of safety is used to account for a margin or error in geotechnical projects where one parameter wrongly determined can greatly overestimate or underestimate the foundation capacity. To protect both further developments and residents, a conservative 1.5 factor of safety was used by coastal engineering experts Advisian Pty Ltd in the 2016 Shoalhaven Coastal Hazard Mapping Review.
10.	SLEP 2014 - Coastal Risk Planning Map Removing the coastal hazard mapping from the LEP will allow Council to amend the coastal hazard maps without any obligation to notify or consult the affected landowners.	Noted. Any future amendments to the coastal hazard mapping will be informed by specialist studies which are reported to Council. As a part of this reporting process, affected landowners will be notified and given an opportunity to comment.
	SDCP 2014 - Section 5.1.2 Areas of cliff/slope instability It is unfair to require properties within the potential cliff recession hazard area to complete their own geotechnical report to accompany any development application. Council should fund and complete the studies for these properties.	Not supported. Council has undertaken an extensive study of the areas at risk of potential cliff recession within the 2018 Royal Haskoning Shoalhaven Coastal Cliffs and Slopes Risk Management Recommendations Report. The report recommended Council require a geotechnical assessment with development applications for land within cliff recession risk areas.
	SDCP 2014 - Section 5.1.2 Areas of cliff/slope instability Development applications within the potential cliff recession hazard area are required to include a geotechnical report. This constitutes an unauthorised interference with the property rights of the landowners; and imposes a financial burden not envisaged by the Environmental Planning and Assessment Act 1979.	Noted. The <i>Environmental Planning and Assessment Act 1979</i> enables Council to prepare a DCP to give effect to the aims of any environmental planning instrument (i.e. SLEP 2014). The proposed controls support Clause 7.4 Coastal Risk Planning of SLEP 2014.
	SDCP 2014 - Section 5.1.2 Areas of cliff/slope instability The presence of the cliff recession line through properties may impact the value of a property.	Noted. Council has a responsibility to inform current and future land owners of the coastal risks associated with the land, regardless of whether that risk may reduce the value of a property.
11. Internal Council: Environmental Services	SDCP 2014 - Section 1 Purpose Amend the description of Chapter G6 from addressing "development in areas of coastal management" to "development in areas of coastal hazard risk."	Supported. The proposed wording will make the purpose consistent with the areas of control within Section 5.
	SDCP 2014 - Section 5 Context Amend the context to reduce the repetitive text and increase readability.	Partially supported. There is merit in amending the Context to include the proposed wording within the submission. The suggested removal of sections of the context is not supported as the text provides necessary background to support the controls within Chapter G6.
	SDCP 2014 - 4 Key Objectives	Partially supported. The intention of the objective is to require development to consider the impacts from coastal processes and hazards. The following wording would enable this to occur:

	Amend objective ii to replace “local physical coastal processes” with “local coastal hazards” to simplify the control.	“Consider local coastal processes and hazards to avoid significant adverse impacts from these processes.”
	SDCP 2014 - 4 Key Objectives Amend key objective iii to only apply to land at risk of coastal hazards.	Not supported. There is no need to specific that the objective only applies to land at risk of coastal hazards as the Chapter applies to areas not at risk of coastal hazards (i.e. foreshore and sand dune areas).
	SDCP 2014 - 4 Key Objectives Amend key objective iii from “avoid significant adverse effects on the environment” to remove the word significant.	Not supported. Most development will have some degree of impact on the environment, as such it is more realistic to require development to avoid significant adverse effects on the environment.
	SDCP 2014 - 4 Key Objectives Amend objective iv to replace “local coastal hazards” with “coastal hazards.”	Not supported. Development only need to consider the risks from the coastal hazards that impact their local area.
	SDCP 2014 - 4 Key Objectives Amend key objective v from “provide correct management techniques for coastal management” to “provide correct management techniques to manage coastal hazards.”	Not supported. Developments are required to manage coastal constraints that are not classified as a coastal hazard (e.g. preserving the foreshore amenity).
	SDCP 2014 - 4 Key Objectives Amend key objective vi to replace “preserve the appearance and amenity of the foreshore through consideration of the siting and design of development” with “preserve the natural appearance and amenity of the foreshore through application of appropriate, coastal design principles.”	Not supported. Consideration of the siting and design of development is a more inclusive term and allows for greater flexibility in the design of the built form.
	SDCP 2014 - 4 Key Objectives Insert the following as a new key objective, “apply Adaptive Management principles to development in areas of coastal risk”.	Not supported. There are no controls within Chapter G6 regarding adaptive management.
	SDCP 2014 - Section 5.1 Areas of coastal hazard risk Amend objective iii from “avoid significant adverse effects on the environment” to remove the word significant.	Not supported. Most development will have some degree of impact on the environment, as such it is more realistic to require development to avoid significant adverse effects on the environment.
	SDCP 2014 - Section 5.1.2 Areas of cliff/slope instability and Section 5.1.3 Other areas of coastal hazard risk Amend performance criteria P2.1 and P3.1 to remove reference to floodways.	Not supported. The performance criteria applies to land within the immediate hazard area and floodway. The floodway encompasses areas outside of the immediate hazard area, as such it is not appropriate to remove the wording from the performance criteria.
	SDCP 2014 - Section 5.1.2 Areas of cliff/slope instability Include Narrawallee – Surfers Avenue/Bannister Head Road/Tallwood Avenue, Geotechnical Scoping Study and Stability Assessment, Douglas Partners 2012 within acceptable solution A2.1 as a document to be referenced within a geotechnical report.	Supported. This report provides relevant information to be addressed within a geotechnical report.

	SDCP 2014 - Section 5.2 Development in Foreshore Areas Amend the wording from 'lots landward side of an unformed road' to 'lots on the landward side of an unformed road.'	Supported. The suggested amendment increases the readability of the text.
12. Internal Council: Strategic Planning	SDCP 2014 - Section 5.1 Areas of coastal hazard risk In "Other areas of potential coastal hazard risk" dot point, remove the following from dot point 1: (e.g. 2016 Advisian hazard mapping at Appendix 1 of the Shoalhaven Coastal Zone Management Plan).	Supported. The content of the bracket introduces unnecessary confusion.

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Amendment history			
Version Number	Date Adopted by Council	Commencement Date	Amendment Type
1	14 October 2014	22 October 2014	New
2	23 June 2015	1 July 2015	Amendment
3	7 November 2016	30 November 2016	Amendment
4			Draft

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Draft Chapter G6: Coastal Management Areas

1 Purpose

The purpose of this Chapter is to provide guidelines for areas of coastal management throughout Shoalhaven. This Chapter specifically addresses:

- Development in areas of coastal management coastal hazard risk;
- Development in foreshore areas; and
- Building on sand dunes.

Advisory note:

In addition to the provisions outlined in this chapter, you must refer to the:

- Supporting documentation on [Council's website](#); and
- [Shoalhaven Coastal Hazard Interactive Mapping](#)

2 Application

This Chapter applies to areas of Shoalhaven coastline as defined in different Sections of this Chapter.

3 Context

Shoalhaven's coastal zone extends 165 km along the NSW south coast, from Shoalhaven Heads to North Durras. It includes 109 over 100 beaches, bays and headlands, creeks, lakes and estuaries, the Shoalhaven River estuary, 15 coastal lakes, and numerous small coastal creeks.

Shoalhaven coastal towns are situated to capture coastal views and access to the coast, being located at the mouths of coastal lakes, on coastal dunes, and adjacent headlands. This pattern of settlement means that there are a number of public and private properties and assets at risk from coastal hazards such as beach erosion, shoreline recession, coastal entrance instability, sand drift, coastal inundation, storm water erosion, and slope instability; all of which may be exacerbated by climate change.

The Shoalhaven coastline has evolved over the past 120,000 years with beaches and lakes formed by landward sand movement (marine transgression) driven by sea level rise. Coastal dynamics are complicated and unpredictable and will include periods of accretion where dunes grow and where beaches widen then periods of catastrophic storm erosion leading to the whole beach receding landward.

Sand dune systems are nature's buffer strip between the sea and land and they are vital as a defence mechanism against the erosional actions of the sea and the inland drifting of sand caused by wind erosion. Wind can blow away sand from de-vegetated beach-dune systems, cause recession of the shoreline and deplete sand reserves. This and the removal of vegetation may lead to undermining of buildings during extreme storm events.

Human interference with sand dunes by the removal of vegetation and the construction of roads and houses can have a substantial effect on dunal stability. The removal of vegetation coupled with exposure to the wind can lead to the erosion of the sand dune and can

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undermine the foundations under **buildings**. Once this action commences, immediate engineering works are required to stabilise the situation to prevent possible collapse of a **building**. **Vegetation** plays a vital role in keeping sand dunes stable by holding the sand together and shielding it from the wind.

Enabling a balance between the use and protection of foreshore areas, both for the present day and future generations, is important to enabling a sustainable future for Shoalhaven's coastline.

The Shoalhaven Coastal Zone Management Plan (**CZMP**) 2018 outlines an adaptive management framework that seeks to:

- Manage uncertainty, incomplete data and changing coastal systems.
- Improve and refine management responses over time.
- Reduce known coastal risk.

The CZMP 2018 and further information about coastal management can be found on [Council's website](#).

Council will continue to monitor the condition of the coast and shoreline responses to major storm or extreme water level events. This will ensure that Council and local communities have the best available knowledge to evaluate, review and adapt management actions.

4 Key objectives

The **objectives** are to:

- i. Ensure that future **development** in areas of coastal management considers the **risks** associated with coastal processes and is sympathetic to the physical constraints.
- ii. Consider local **physical** coastal processes and **hazards** to avoid significant adverse impacts from these processes.
- iii. Consider ecological processes and avoid significant adverse effects on the environment.
- iv. Ensure that future **development** in the **coastal zone** considers the **risks** associated with local **coastal hazards** such as coastal erosion, shoreline recession, coastal inundation, coastal entrance migration, slope instability and stormwater erosion and their potential increase with projected Sea Level Rise.
- v. Provide correct management techniques for coastal management.
- vi. Preserve the appearance and amenity of the foreshore through consideration of the siting and design of **development**.

5 Controls

5.1 Areas of coastal hazard risk

Note: This section is supplementary to Clause 7.4 Coastal Risk Planning in Shoalhaven Local Environmental Plan (LEP) 2014.

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This section applies to land affected by coastal hazard risk. The main areas of risk are identified in coastal hazard studies and are shown on the [Shoalhaven Coastal Hazard Interactive Mapping](#).

- Known areas of beach erosion and/or oceanic inundation include:
 - Collers Beach
 - Shoalhaven Heads
 - Culburra Beach
 - Warrain Beach
 - Currarong Beach
 - Callala Beach
 - Collingwood Beach
 - Bendalong Boat Harbour Beach
 - Narrawallee Beach
 - Mollymook Beach
- Known areas of cliff/slope instability include:
 - Penguin Head
 - Plantation Point
 - Hyams Beach
 - Berrara Bluff
 - Inyadda Point
 - Narrawallee
 - Bannisters Point
 - Collers Beach Headland
 - Rennies Beach
 - Racecourse Beach
- Other areas of potential coastal hazard risk include:
 - Properties identified but studies not yet undertaken (e.g. 2016 Advisian hazard mapping at Appendix 1 of the Shoalhaven Coastal Zone Management Plan); and
 - Other areas subjected to coastal hazard risk not previously identified as high risk in previous coastal hazard studies.

Note: If individual site investigations reveal that subsurface conditions are other than sand, the hazard lines can be reviewed with geotechnical and coastal engineering advice.

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The specific objectives are to:

- i. Accommodate existing coastal processes and to avoid significant adverse impacts from those coastal processes.
- ii. Enable safe evacuation of coastal risk areas in an emergency.
- iii. Avoid significant adverse effects on the environment.
- iv. Ensure that future development in the coastal zone considers the risks associated with coastal processes such as coastal inundation, slope instability, coastal erosion and wave runoff and that the resilience to such events is maximised.
- v. Guide foreshore development in areas of risk from coastal hazards identified in this Chapter.
- vi. Ensure minimal risk to buildings, private property, other public assets and existing natural features arising from coastal risks identified in this Chapter.
- vii. Ensure that the predicted impacts of climate change are recognised, reasonable risk management is observed and measures put in place in order to protect lives and assets.

5.1.1 Areas of beach erosion and/or oceanic inundation

The areas identified as being affected by beach erosion and/or oceanic inundation can be broken into four different levels of risk:

- Precinct 1 High Risk - Foreshore building exclusion areas (seaward of the 2030 zone of reduced foundation capacity (ZRFC)), where no new development within that part of an allotment of land is permitted, except for minor alterations to existing buildings or structures.
- Precinct 2 Moderate Risk – Restricted development area (landward of Precinct 1 between the 2030 and the 2100 ZRFC), where prescribed alterations to existing buildings, demolition and erection of new replacement buildings (where existing buildings are lawful) and outbuildings, located wholly or in part within Precinct 2, may be considered.
- Precinct 3 Low Risk – Sites landward of Precinct 2 (landward of 2100 ZRFC), limited restrictions.
- Precinct 4 – Sites outside of Precinct 1-3 at risk of oceanic inundation, below wave runoff levels.

These precincts are shown by the mapped hazard lines on the [Shoalhaven Coastal Hazard Interactive Mapping](#).

Where buildings lie partly in both high risk and moderate risk areas, the controls that relate to that particular risk area will apply to that part of the building within that area. A summary of the controls for various risk areas is shown in **Figure 1**.

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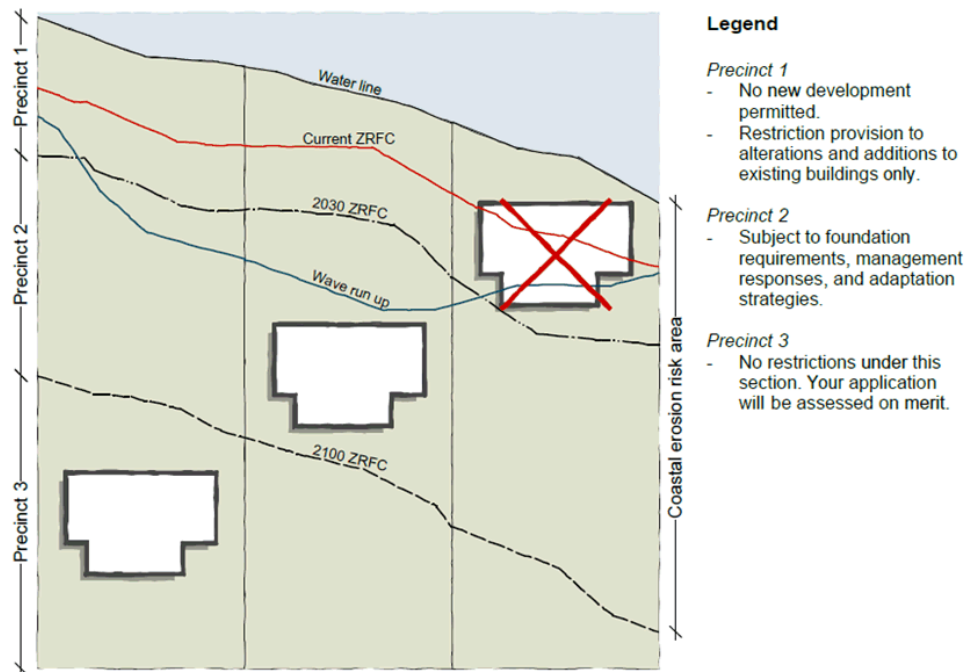


Figure 1: Summary of acceptable solutions for beach erosion and/or oceanic inundation areas

Performance Criteria	Acceptable Solutions
P1.1 Development avoids or minimises exposure to immediate coastal risks within the immediate hazard area.	Precinct 1 High Risk – Seaward of the 2030 ZRFC
P1.2 Development provides for the safety of residents, workers or other occupants on-site from risks associated with coastal processes.	A1.1 No new development is permitted.
P1.3 Development does not increase coastal risks to properties adjoining or within the locality of the site.	A1.2 Development that includes internal fit outs; and/or minor alterations; and/or additions or extensions to existing buildings or structures that are landward of the seaward alignment of existing buildings or structures (refer to Figure 2) must:
P1.4 Infrastructure, services and utilities on-site maintain their function and achieve their intended design performance.	<ul style="list-style-type: none"> • Demonstrate how the proposal meets performance criteria P1.1-P1.7.
P1.5 Development accommodates natural coastal processes including those associated with projected sea level rise.	<ul style="list-style-type: none"> • Include a coastal engineering report that has been prepared by a suitably qualified person (e.g. coastal engineer). The report is to also address the development application information requirements outlined in Section 6.1 of this Chapter.
P1.6 Coastal ecosystems are protected from development impacts.	

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Performance Criteria	Acceptable Solutions
P1.7 Existing public beach, foreshore or waterfront access and amenity is maintained.	<ul style="list-style-type: none"> Not include a net increase in floor area for that part of the building in the high-risk area of greater than 10% (refer to Figure 3) with no increase in floor area seaward of current ZRFC. <p>Note: In some circumstances it may not be possible to increase the floor area due to the specific site risks.</p>
	<p>A1.3 A management response and adaption strategy relevant to the proposal is to be submitted with the development application that addresses this Chapter's objectives and the NSW Coastal Planning Guideline: Adapting to Sea Level Rise August 2010 (eg. planned retreat, relocatable structures, lightweight materials/construction etc.).</p>
	<p>A1.4 A current condition report is to be submitted for the existing building prepared by a suitably qualified person that addresses:</p> <ul style="list-style-type: none"> The general condition of the building. The presence of any building defects associated with or due to deterioration of building members or materials or pests such as subterranean termites. Any non-compliances with current Building Code of Australia requirements, including footings, slabs, termite barriers, subfloor, walls and roof framework, structural steel, and any other structural elements such as posts or columns. <p>Note: The current condition report is to specifically address those parts of the existing building that are proposed to be retained.</p>
	<p>A1.5 Where the development is below the level of wave runoff as shown on the Shoalhaven Coastal Hazard Interactive Mapping, an inundation management plan shall be provided that includes:</p> <ul style="list-style-type: none"> No new habitable floor areas below the level of wave runoff.

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Performance Criteria	Acceptable Solutions
	<ul style="list-style-type: none"> No increase in the obstruction to wave runup. Wave runup hazard mitigation measures for any existing habitable floor area below wave runup level.
A1.6	<p>A development application for the purpose of public infrastructure on public land, including community facilities (e.g. surf clubs), shall:</p> <ul style="list-style-type: none"> Specify any coastal hazard protection works required. Specify the community benefit of maintaining and redeveloping the infrastructure. Include an economic assessment of the proposal in relation to the initial capital costs and the likely long-term costs of maintaining and protecting the infrastructure, considering the particular coastal hazard risks at the location.
	<p><i>Precinct 2 Moderate Risk – Land between the 2030 and 2100 ZRFC</i></p>
A1.7	<p>Foundations for new development are to be designed by a professional structural engineer to carry all foundation loads into the 2100 Safe Foundation Zone (SFZ) except where inappropriate due to management responses and adaption strategies incorporated into the design.</p>
A1.8	<p>All new development must be designed with a floor level above wave runup level and no obstructions to wave runup.</p>
A1.9	<p>A management response and adaption strategy relevant to the proposal is to be submitted with the development application that addresses this Chapter's objectives and the <i>NSW Coastal Planning Guideline: Adapting to Sea Level Rise August 2010</i> (e.g. planned retreat, relocatable structures, lightweight materials/construction etc.).</p>
A1.10	<p>Development applications will be assessed on their merits against the performance criteria P1.1-P1.7 for</p>

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Performance Criteria	Acceptable Solutions
	<p>internal fit outs, minor alterations, additions or extensions to existing buildings or structures.</p> <p>Note: Additional coastal engineering studies are unlikely to be required for development landward of 2050 ZRFC. This will be at the discretion of Council.</p>
	<p>A1.11 A development application for the purpose of public infrastructure on public land, including community facilities (e.g. surf clubs), shall:</p> <ul style="list-style-type: none"> Specify any coastal hazard protection works required when the proposed infrastructure is partially or fully seaward of the 2050 ZRFC. Specify the community benefit of maintaining and redeveloping the infrastructure. Include an economic assessment of the proposal in relation to the initial capital costs and the likely long-term costs of maintaining and protecting the infrastructure, considering the particular coastal hazard risks at the location. <p><i>Precinct 3 Low Risk – Land beyond the 2100 ZRFC</i></p>
	<p>A1.12 All development is to be designed to have all floor levels above wave runoff levels and not to deflect or displace wave runoff. A development application will be assessed on merit.</p>

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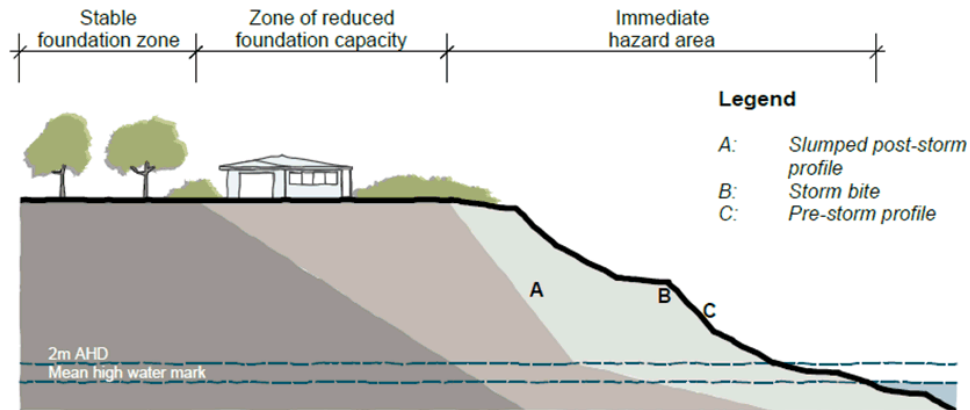


Figure 2: A typical cross-section of a sand dune
(Based on the Coastal Risk Management Guide, Department of Environment, Climate Change and Water NSW 2010)

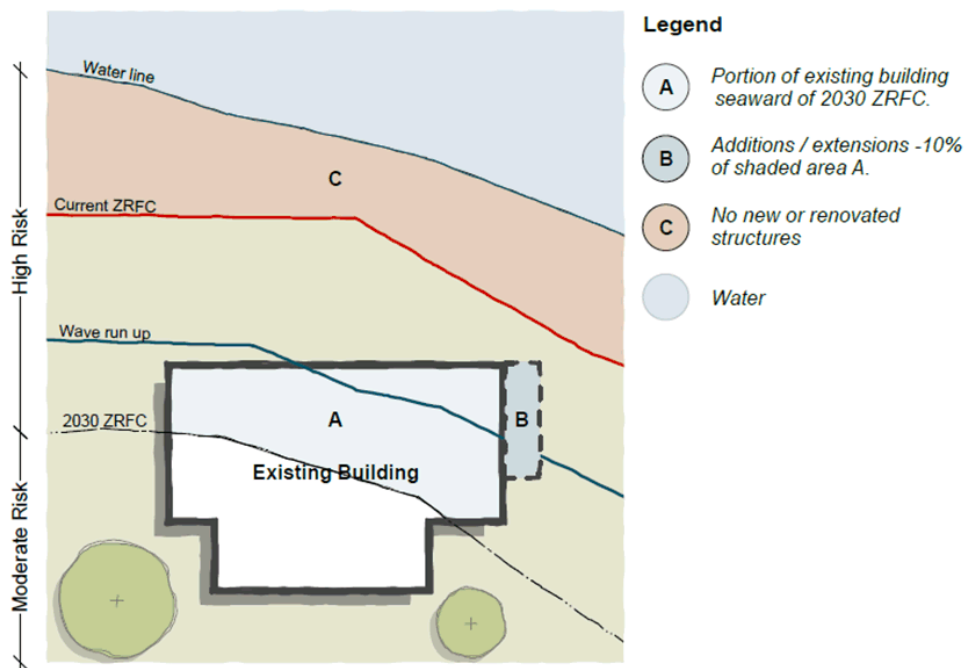


Figure 3: Plan indicating acceptable solutions area of building in high risk area

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5.1.2 Areas of cliff/slope instability

The areas identified as being affected by cliff/slope instability are identified on the [Shoalhaven Coastal Hazard Interactive Mapping](#).

Performance Criteria	Acceptable Solutions
P2.1 Development avoids or minimises exposure to immediate coastal risks within the immediate hazard area or floodway .	A2.1 A geotechnical report prepared by a professional geotechnical engineer is to be submitted with the development application. The report is to:
P2.2 Development provides for the safety of residents, workers or other occupants on-site from risks associated with coastal processes.	a. Analyse the existing site stability and the suitability of the proposed development and its likely impact on that site stability. The report is to make reference to:
P2.3 Development does not increase coastal risks to properties adjoining or within the locality of the site.	i. Shoalhaven City Council Coastal Zone Management Study and Plan – Coastal Slope Instability Hazard Study Final Report (SMEC August 2008); and
P2.4 Infrastructure, services and utilities on-site maintain their function and achieve their intended design performance.	ii. Douglas Partners Report – Supplementary Geotechnical Observations Project 72051-1 July 2011; and
P2.5 Development accommodates natural coastal processes including those associated with projected sea level rise.	iii. Douglas Partners Report – Scoping Study and Stability Assessment Project 78319 – Dec 2011; and
P2.6 Coastal ecosystems are protected from development impacts.	iv. Douglas Partners Report – Surfer Avenue/Bannister Head Road/Tallwood Avenue, Geotechnical Scoping Study and Stability Assessment; and
P2.7 Existing public beach, foreshore or waterfront access and amenity is maintained.	v. Royal Haskoning DHV Report – Shoalhaven Coastal Cliffs and Slopes Risk Management Program – 2018.
	b. Provide recommendations for engineering design of the proposal. This is to include building foundation design and stormwater drainage design and be prepared in accordance with the Guideline for Landslide Susceptibility, Hazard and Risk Zoning for Land Use Planning Accompanying Commentaries and Practice Note (Australian Geomechanics Society, 2007).

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Performance Criteria	Acceptable Solutions
	<p>A2.2 Stormwater from adjoining development shall be managed via interallotment drainage and discharged directly into a stormwater facility of Council (pit, drain, channel, pipe etc.).</p> <p>A2.3 Piping of stormwater through/over Council foreshore land to a stable location on the top of the slope will be only be considered where:</p> <ul style="list-style-type: none"> The proposed development will not result in an increase in geotechnical risk; and Other options for stormwater disposal have been exhausted (e.g. charged system, use of stormwater pump); and The applicant is able to demonstrate that the discharge of collected stormwater from their property through the community land will not compromise the core objectives of the plan of management applying to the land.
	<p>Note:</p> <ul style="list-style-type: none"> For additional information, refer to Council's Generic Community Lands Plan of Management – Natural Areas and Foreshore Reserves Policy. Council may require that stormwater arrangements be maintained as a condition of consent.

5.1.3 Other areas of potential coastal hazard risk

Note: Other areas of potential coastal hazard risk are those areas which may be at risk of coastal hazards but are outside of those areas that have been studied and therefore included on the Shoalhaven Coastal Hazard Interactive Mapping. An example would be a headland in a non-urban zone.

If the site is located in an area of potential coastal hazard risk, a site specific coastal hazard study and/ or geotechnical report must be carried out to identify the coastal hazard risks and to enable the relevant development standards of this Section to be applied.

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Performance Criteria	Acceptable Solutions
P3.1 Development avoids or minimises exposure to immediate coastal risks within the immediate hazard area or floodway .	A3.1 A site specific coastal hazard study and/or geotechnical report is to be submitted with a development application that: <ul style="list-style-type: none"> Identifies the coastal hazard risks. Addresses performance criteria P3.1-P3.7 for assessment based on merit.
P3.2 Development provides for the safety of residents, workers or other occupants on-site from risks associated with coastal processes.	
P3.3 Development does not increase coastal risks to properties adjoining or within the locality of the site.	A3.2 Stormwater from adjoining development shall be managed via interallotment drainage and discharged directly into a stormwater facility of Council (pit, drain, channel, pipe etc.).
P3.4 Infrastructure, services and utilities on-site maintain their function and achieve their intended design performance.	A3.3 Piping of stormwater through/over Council foreshore land to a stable location on the top of the slope will only be considered where: <ul style="list-style-type: none"> The proposed development will not result in an increase in geotechnical risk. Other options for stormwater disposal have been exhausted (e.g. charged system, use of stormwater pump). The applicant is able to demonstrate that the discharge of collected stormwater from their property through the community land will not compromise the core objectives of the plan of management applying to the land.
P3.5 Development accommodates natural coastal processes including those associated with projected sea level rise.	
P3.6 Coastal ecosystems are protected from development impacts.	
P3.7 Existing public beach, foreshore or waterfront access and amenity is maintained.	

Note:

- For additional information, refer to **Council's** Generic Community Lands Plan of Management – Natural Areas and Foreshore Reserves Policy.
- Council** may require, as a condition of consent, that stormwater arrangements are to be maintained.

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5.2 Development in Foreshore Areas

This section applies to all **development** located on land that is the first lot back from a **waterfront**, including lots **on the** landward side of an unformed road (**Figure 4**).

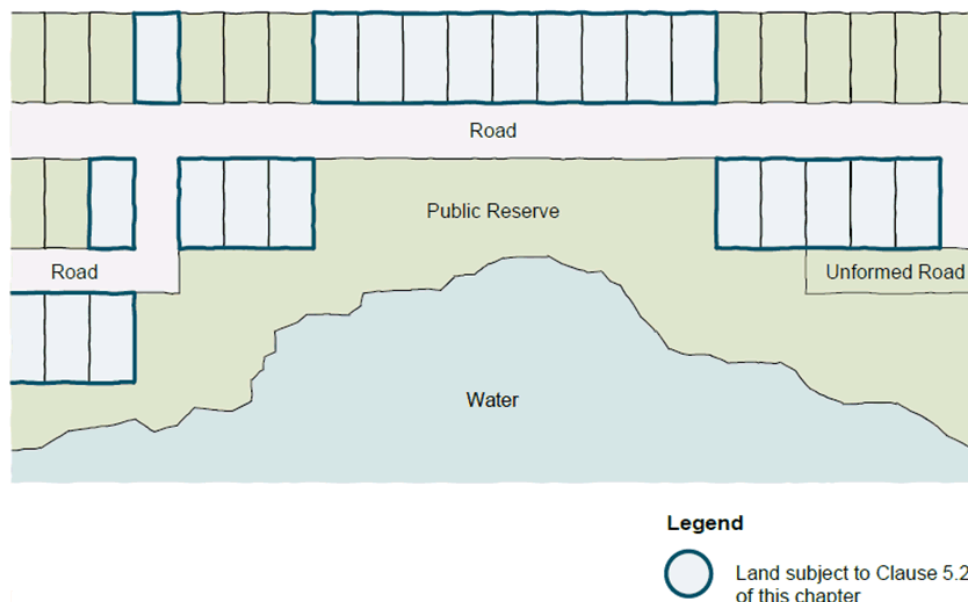


Figure 4: Example of land where Section 5.2 applies

The specific **objectives** are to:

- i. Preserve the appearance and amenity of the foreshore, including solar access, through the careful consideration of siting, height, bulk and **scale**.
- ii. Ensure that **development** is sympathetic to the physical constraints encountered along foreshore areas.
- iii. Encourage innovative design which reflects the need to preserve the amenity of foreshore areas, whilst having due regard to the physical constraints encountered in these areas.
- iv. Set appropriate environmental criteria for **development** in foreshore areas.
- v. Provide a comprehensive design-oriented approach to **development** in foreshore areas.
- vi. Achieve a site layout that provides a pleasant, attractive, manageable and resource efficient living environment.
- vii. Encourage **development** that considers the environmental attributes of a subject site.
- viii. Ensure that **development** integrates with the landscape.
- ix. Encourage the use of **building** materials and colours that complement the natural landscape and foreshore environment.

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- x. Ensure that materials are suitable to withstand coastal weather conditions.
- xi. Preserve, where possible, **trees** and **vegetation** along foreshore areas.
- xii. Minimise excessive **clearing of vegetation** along foreshore areas.
- xiii. Provide essential stability and **groundcover** to highly erodible and unstable soils.
- xiv. Improve the appearance of **development** in foreshore areas through landscape works.

5.2.1 Site Planning and Layout

Performance Criteria	Acceptable Solutions
P4.1 The site layout integrates with the surrounding environment through buildings , streetscape and landscape design relating to topography and to the surrounding neighbourhood character.	<p>A4.1 A detailed site plan should be prepared that addresses the issues outlined within this Chapter and reflects the site analysis plan.</p> <p>Note: Refer to Chapter G1: Site Analysis, Sustainable Design and Building Materials in Rural, Coastal and Environmental Areas for information on the preparation of a site analysis plan.</p>
P4.2 The site layout takes into account on-site features identified by the site analysis.	
P4.3 Where proposed, dwelling s are sited and designed to maximise solar access to living areas .	

5.2.2 Building Envelope and Siting

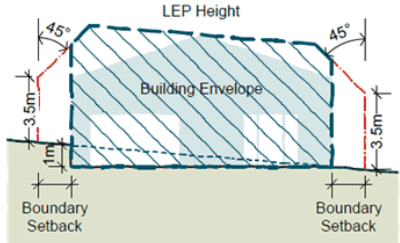
Performance Criteria	Acceptable Solutions
<p>P5.1 Buildings are located, and are of such length, bulk and height, that there is no significant loss of amenity to foreshore areas, and adjoining development. This can be achieved through:</p> <ul style="list-style-type: none"> • Building siting and height that are related to land form, with minimal cut and fill. • Building bulk that is low profile and generally distributed to reduce impact on foreshore areas, adjoining properties and the public road. 	<p>A5.1 Buildings are sited within a building envelope determined by the following method: planes are projected at 45 degrees from a height of 3.5m above ground level (existing) at the front, side and rear boundary. See Figure 5.</p> 

Figure 5: Building envelope

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<ul style="list-style-type: none"> • Building heights similar to those in the public streetscape, with higher components of buildings setback, and out of direct view from the street and foreshore area. • Building forms that enable a sharing of views with neighbours. • Walls, limited in length and height, to minimise the impacts on foreshore areas, adjoining development and public road. 	<p>Note:</p> <ol style="list-style-type: none"> 1. Exemptions to building envelope encroachments include gutter, fascias, downpipes, eaves up to 0.6m, aerials and masonry chimneys. 2. For site slopes greater than 10%, or involving cut, fill or site excavations, the ground level (existing) and proposed building levels must be clearly identified on the plans and verified by a registered surveyor.
<p>P5.2 To make provision for innovative design, as well as giving consideration to difficulties that may arise in connection with steeply sloping properties, buildings only encroach outside of the general building envelope where it is demonstrated that the proposal will not adversely affect the visual amenity of the area in general.</p>	<p>A5.2 Where there is mature tree cover on or adjacent to the site, no structure shall be higher than the tree canopy.</p> <p>A5.3 Despite A5.1, variations will be considered where minimum floor levels are required in flood prone land. Where such levels may necessitate two storey construction or elevated construction, consideration will still be required to be given to issues of privacy, overshadowing, and visual impact.</p>
<p>P5.3 The proposed development does not adversely impact on adjoining development and has regard to privacy, overshadowing and/or solar access.</p>	<p>A5.4 Any proposed two storey building will require the following additional detail:</p> <ul style="list-style-type: none"> • A visual analysis, including a photographic assessment, that outlines how the proposal will not be visually prominent from the foreshore, or adversely affect the visual amenity of the locality. • Details outlining how the proposal will not adversely affect the privacy of adjoining development. • Details, including a shadow diagram, outlining that excessive overshadowing is not likely to occur as a result of the proposal. In this regard, it would be expected that living areas as well as useable open space areas of neighbouring dwellings receive at least 3 hours of direct sunlight between 9am and 3pm on June 21.
<p>P5.4 The development does not result in the overshadowing of beaches or adjacent waterfront reserves.</p>	<p>Note: Where a two storey building is proposed, it is recommended that preliminary consultation is undertaken with Council. Applicants are urged also to consult with adjoining land owners likely to be affected by their proposal prior to lodging a development application with Council. Such</p>

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consultation will allow the concerns of affected parties to be taken into account during the design process and may thereby minimise the delays in the processing of the application.

5.2.3 Side Setbacks

The provisions in this subsection do not apply to foreshore blocks that are located on the landward side of a road that is opposite a waterfront reserve, as shown in **Figure 6**, the exception being lots landward side of an unformed road.

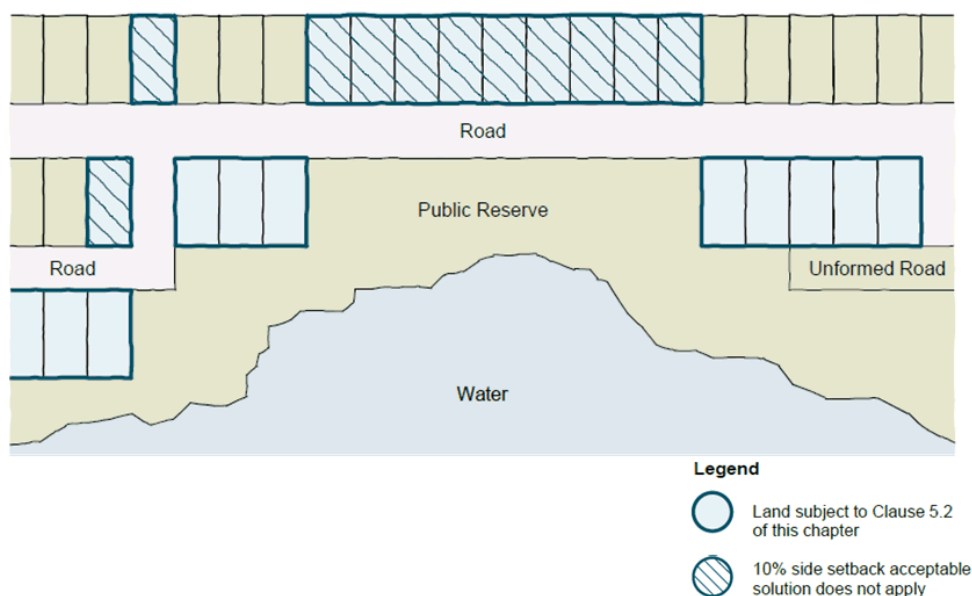


Figure 6: Example of land where side setback controls do not apply

Performance Criteria	Acceptable Solutions
P6.1 Buildings are located and are of a width that provides opportunities for intermittent views from the public road through to the water.	A6.1 The building is to be sited to provide one minimum side setback equivalent to 10% of the width of the allotment, and up to a maximum of 3.5m in any case (Refer to Figure 7).

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Performance Criteria	Acceptable Solutions
	<p>Note: In cases where allotments are irregular in shape and the width varies, the width of the allotment for the purposes of calculating the side setback is the average width of the allotment over the length of the building.</p> <p>A6.2 Where possible, side setbacks should be provided along a side boundary with an adjoining building which has a similar corresponding side setback, so as to maximise the view corridor. This side setback is not to be built out with any structure.</p>

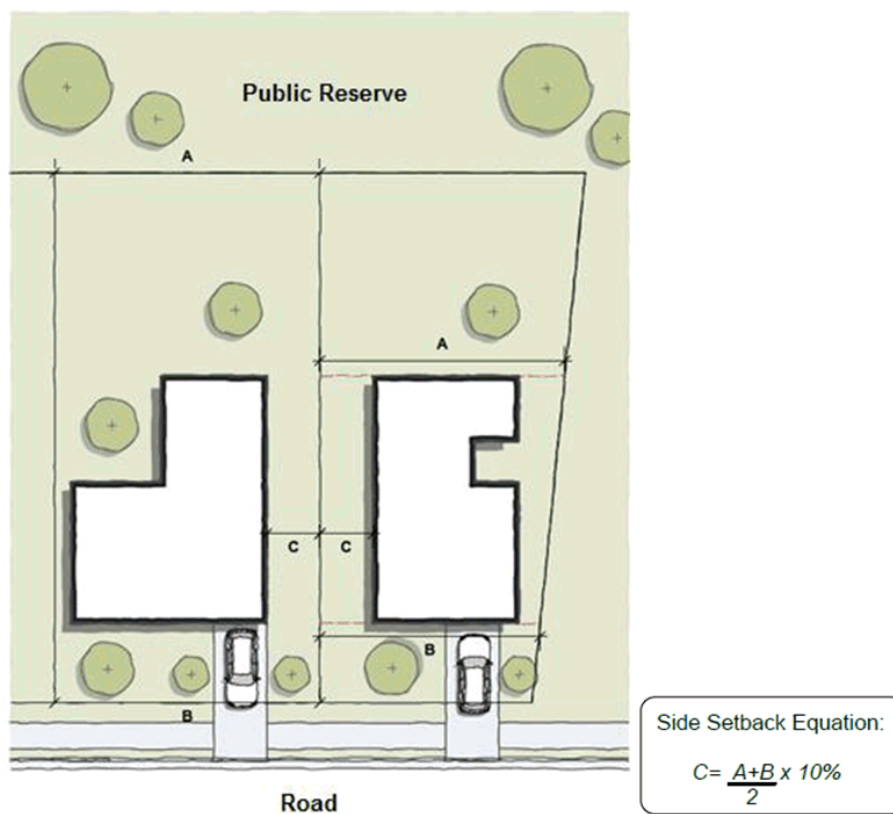


Figure 7: Side setback calculation

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5.2.4 Building Materials

Performance Criteria	Acceptable Solutions
P7.1 All materials and colours used are appropriate to the local landscape.	A7.1 Details of the intended materials and colours to be used for a proposed development shall be submitted with the development application.
P7.2 Where development is located in essentially native bushland situations, consideration is given to utilising materials and colours that reflect the characteristics of the native vegetation that surround the development site.	<p>Note: Highly reflective materials are not acceptable in most situations.</p>
P7.3 Materials are salt tolerant.	A7.2 In locations with a high quality natural landscape value, structures should not strongly contrast with the background, whether by location, colour or choice of materials.

5.2.5 Trees and Vegetation

Note:

- Refer to Chapter G1: Site Analysis, Sustainable Design and Building Materials in Rural, Coastal and Environmental Areas and Chapter G4: Tree and Vegetation Management for more information on site analysis and tree management.
- No clearing of the site is to be undertaken until such time as plans and specifications have been approved.

Performance Criteria	Acceptable Solutions
P8.1 Development is sited in a manner which minimises the removal of trees and native vegetation on the site.	A8.1 Details are to be provided with any development application outlining existing vegetation on the site, and indicating what vegetation will be removed and retained
P8.2 No vegetation located on public land is damaged, disturbed or removed.	
P8.3 All vegetation that is classified as marine vegetation in Part 7 of the Fisheries Management Act 1994 is protected in its natural state.	A8.2 Measures including the use of fencing should be utilised for the protection of vegetation during construction phase.

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5.2.6 Landscaping

Note: The controls in this section are in addition to those detailed in the following Chapters:

- Chapter G3: Landscaping Design Guidelines;
- Chapter G4: Tree and Vegetation Management; and
- Chapter G5: Threatened Species Impact Assessment.

Performance Criteria	Acceptable Solutions
P9.1 Exotic species of vegetation are limited to feature trees or shrubs within a native setting.	A9.1 A concept landscape plan shall be submitted with the development application, particularly where it is proposed to develop sites which have been undeveloped and consist largely of native bushland foreshore vegetation .
P9.2 Access to public land by members of the public is preserved.	<p>Note: Council has prepared suitable Shoalhaven Plant Species Lists for the various towns and villages within Shoalhaven. Advice regarding these lists is available from Council.</p> <p>A9.2 Following construction, any exposed areas must be stabilised by the use of ground covering plants or mulches to minimise the effects of erosion. This information shall be included on the concept landscape plan.</p> <p>A9.3 All work associated with a proposal are to be confined on private property.</p> <p>A9.4 Access to public foreshore reserves by the public is not to be restricted by the extension of landscaping, or other works, onto public land from private property.</p>

5.2.7 Site Stability, Excavation and Soil and Water Management

Note: The controls in this Section are in addition to those outlined in Chapter G2: Sustainable Stormwater Management and Erosion/Sediment Control and Chapter G26: Acid Sulfate Soils and Geotechnical (Site Stability) Guidelines of this DCP.

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Performance Criteria	Acceptable Solutions
P10.1 Development is designed to utilise construction techniques that reflect the slope of the land and does not introduce measures that require excessive disturbance to the natural slope of a site.	A10.1 Maximum cut and fill permitted for a site is 1m. Details of cut and fill must be provided as part of the development application, indicating how cut and fill areas will be stabilised. Refer to Figure 8 .
P10.2 Development is designed and constructed to reflect specific geotechnical difficulties that may exist in an area.	A10.2 Excavated fill or other material is not to be placed or fall onto adjoining lands.
P10.3 Measures are utilised, both during and after construction, to control erosion and sedimentation of local water courses and drainage systems.	A10.3 All stormwater quality controls are to be contained within the development site, and discharge is not to be concentrated onto adjoining lands.

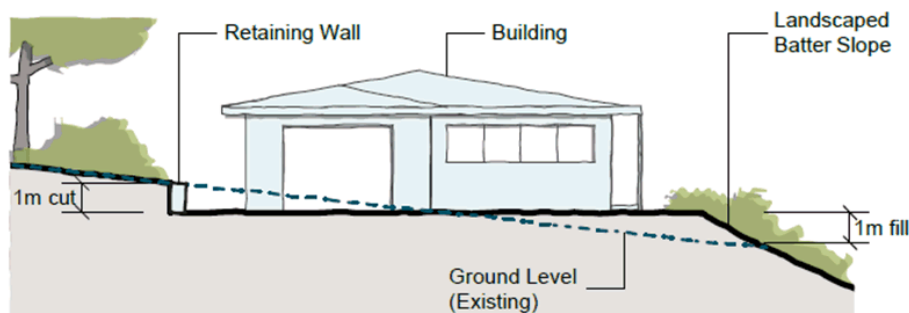


Figure 8: Cut and fill

5.3 Building on Sand Dunes

This Section applies to all land on a sand dune area where **development** is permissible with development **consent**.

The specific **objectives** are to:

- Make people aware of the problems and **risks** associated with sand dunes.
- Outline the importance of sand dune systems to the coastal environment.
- Provide details for the placement of houses on sand dunes.
- Detail the correct management techniques for the short and long-term stability of sand dune systems.

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5.3.1 General

Performance Criteria	Acceptable Solutions
P11.1 Development has a minimal effect on the dune and adjoining properties.	A11.1 Bare dune areas should be replanted with recommended species and other vegetation that is not appropriate (bitou bush, asparagus fern, lantana etc) should be gradually removed.
P11.2 Areas of dunal vegetation are protected and replanted.	<p>Note: Refer to the NSW Coastal Dune Management Manual for correct techniques for revegetation and stabilisation of dunes</p> <p>This work should only be done in consultation with Council's Environmental Services Section and the NSW Office of Environment and Heritage.</p> <p>A11.2 Buildings should be sited in an area which will have minimal effect on the dune and adjoining properties. Sufficient space should be left between the building and the dividing boundary to allow vegetation to assist in stabilising the dune.</p> <p>A11.3 Batters should not exceed 1:4.</p> <p>A11.4 Reshaping of dunes is not permitted unless you have obtained approval from Council and the NSW Office of Environment and Heritage.</p> <p>Note: Only pathways set aside by Council should be used for access to the beach. Additional access points should not be cut into the dune as this will destabilise the dune and cause sand to drift inland.</p> <p>Reshaping dunes can lead to an increased risk of coastal inundation from wave runup.</p> <p>A11.5 Access roads should be kept to an absolute minimum and access ways should be shared where practical.</p> <p>A11.6 New and innovative building designs which may be more compatible with the topography and risk should be considered in the design of new buildings/structures.</p> <p>Note: Buildings using pole or demountable construction are suggested.</p>

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5.3.2 Species Recommended for Planting on Sand Dunes

The **vegetation** between **development** and the beach (usually within a reserve) is particularly vital for dune stabilisation and care should be taken not to disturb this area. Replanting of bare areas on the dune is recommended for dune stability and habitat protection.

Council recommends the following species when planting or replanting a sand dune area.

Table 1: Recommended species for planting or replanting

Primary (Plant First)	Secondary Planting (Plant Second)	Tertiary Planting (Plant Last)
<i>Carpobrotus glaucescens</i> (Pig Face)	<i>Acacia longifolia</i> subsp. <i>Longifolia</i> (Sydney Golden Wattle)	<i>Casuarina glauca</i> (Casuarina)
<i>Dianella caerulea</i> (Native Lily)	<i>Correa alba</i> (White Correa)	<i>Leptospermum leavigatum</i> (Coastal Tea Tree)
<i>Ficinia nodosa</i> (Knobby Club Rush)	<i>Acacia longifolia</i> subsp <i>sophorae</i> (Coastal Wattle)	<i>Banksia integrifolia</i> (Coastal Banksia)
<i>Lomandra longifolia</i> (Spiny Matt Rush)	<i>Myoporum acuminatum</i> (Boobialla)	<i>Glochidion ferdinandi</i> (Cheese Tree)
<i>Spinifex sericus</i> (Spinifix Grass)	<i>Rhagodia candolleana</i> (Seablite)	<i>Eucalyptus botryoides</i> (Southern Mahogany)

6 Advisory Information

6.1 Development Application requirements

In addition to application requirements outlined throughout this Chapter, an application for **development** in a **coastal hazard** area must also show that:

- The proposal meets the **objectives** of this Chapter; and
- Complies with the *NSW Coastal Planning Guideline: Adapting to Sea Level Rise* August 2010.

Applications for **development** in areas of **coastal hazard** must show that the proposal satisfies the relevant **performance criteria** in this Chapter. In order to do so, the following information is to be submitted with the development application, as part of the Statement of Environmental Effects, as appropriate to the **scale** and location of the proposal:

1. Information outlining the type of proposed **development** including:
 - Nature, bulk, **scale** and location of proposed **development**.
 - Proposed use and occupation of **buildings**, and those on adjoining land.

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2. Plans illustrating the position and configuration of the proposed **development** in relation to coastal **risks** including:
 - Position of the 2100, 2050 and 2030 ZRFC lines and wave run-up lines in relation to the property boundaries prepared by a registered Land Surveyor.
 - Position of the existing and proposed **buildings**.
 - Existing ground levels related to **Australian Height Datum (AHD)** around the perimeter of the **building**.
 - Existing or proposed floor levels related to **AHD**.
 - Foundation type.
 - Topographic levels of the site to an accuracy of 0.1m, and **structures** to an accuracy of 0.01m, showing relative levels related to **AHD**.
 3. A report on the following **hazards** (if relevant) at the site and their potential increase in the future due to projected sea level rise:
 - Projected increase in sea level rise and its influence (if any) on the local tidal range.
 - Soft coast erosion – beach and fore dune loss and/or migration, shoreline recession, beach realignment.
 - Coastal **flooding**.
 - Coastal entrance behaviour.
 - Reconfiguration of intermittently open and closed lakes and lagoons.
 - Cliff and slope instability.
 - Ground water elevation and/or salinisation.
- The report should also demonstrate whether the **development** proposal:
- Is consistent with the relevant coastline or **flood risk management plan**;
 - Is consistent with any relevant section of this plan that relates to coastal or **flood** issues;
 - Meets the coastal protection and **flood risk** management requirements of Shoalhaven LEP 2014; and
 - Incorporates appropriate management responses and adaptation strategies.

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6.2 Other legislation or policies you may need to check

Note: This section is not exclusive, and you may be required to consider other legislation, policies and other documents with your application

Council Planning Studies, Policies & Guidelines

- SMEC, August 2008, Shoalhaven City Council Coastal Slope Instability Hazard Study – Final Report
- Umwelt, August 2008, Draft Shoalhaven Coastal Zone Management Plan – Priorities for a Sustainable Shoalhaven Coastline
- SMEC, December 2007, Shoalhaven Coastal Hazard Study – Summary Report -Report No. 3001209-018
- SMEC, January 2008, Shoalhaven Coastal Hazard Study – Summary Report
- SMEC, 2003, Callala Beach Erosion Study
- Shoalhaven Coastal Zone Management Plan: Coastal Hazard Study Summary Report (July 2009)
- SMEC 2009 Coastal Hazards Maps
- Report on Scoping Study and Stability Assessment on Various Lots Surfers Ave, Tallwood Ave and Bannister Head Rd Narrawallee -Douglas Partners – 78319 January 2012
- Report on Supplementary Geotechnical Observations – Coastal Slope Instability Hazard Study Various Sites Shoalhaven City Council LGA – Douglas Partners – Project 72051-1 July 2011
- Council's adopted sea level rise position MIN15.39612
- Royal Haskoning DHV Report – Shoalhaven Coastal Cliffs and Slopes Risk Management Program – 2018
- **Advisian Report – Shoalhaven Coastal Hazard Mapping Review - 2016**
- Council's Generic Community Lands Plan of Management – Natural Areas and Foreshore Reserves Policy
- [Shoalhaven Plant Species List](#).
- Shoalhaven Coastal Zone Management Plan 2018.

External Policies & Guidelines

- NSW Coastal Planning Guidelines: Adapting to Sea Level Rise (August 2010)
- NSW Coastal Policy 2009
- Guideline for Landslide Susceptibility, Hazard and Risk Zoning for Land Use Planning Accompanying Commentaries and Practice Note (Australian Geomechanics Society, 2007)
- [NSW Coastal Dune Management Manual](#)

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Legislation

- Coastal Management Act 2016
 - Shoalhaven Local Environmental Plan 2014
 - Fisheries Management Act 1994
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Tabourie Lake

Entrance Management Policy

59917098

Prepared for
Shoalhaven City Council

22 October 2019



DE19.122 - Attachment 2



Tabourie Lake
Entrance Management Policy

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Document Information

Prepared for	Shoalhaven City Council
Project Name	Entrance Management Policy
File Reference	59917098_Tabourie EMP_R002_RevD.docm
Job Reference	59917098
Date	22 October 2018

Version Number	Rev 0
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Effective Date	22 October 2019
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Date Approved:	22 October 2019
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Document History

Version	Effective Date	Description of Revision	Prepared by:	Reviewed by:
Rev A	07/05/2017	Draft for client review.	Madelaine Hooper Luke Evans	Tanja Mackenzie
Rev B	08/06/2018	Draft options report.	Chris Beadle	Tanja Mackenzie
Rev C	23/08/2018	Draft EMP for client review.	Chris Beadle	Tanja Mackenzie
Rev D	18/10/2018	Final Draft EMP	Chris Beadle	Tanja Mackenzie
Rev E	03/06/2019	Final EMP	Ester Groenendaal	Tanja Mackenzie
0	22/10/2019	Issued for use	Chris Scraggs	Doug Treloar



Executive Summary

Cardno was engaged by Shoalhaven City Council (Council) to review the existing Entrance Management Policy (EMP) for Tabourie Lake. Tabourie Lake is a small coastal lake located in the Shoalhaven Local Government Area (LGA) (refer **Figure 1-1**). It is what is referred to as an Intermittently Closed and Open Lake or Lagoon (ICOLL), and has periods during which the entrance is closed off from the ocean by the formation of berm. The study area for this EMP comprises the tidal waterway of Tabourie Lake, its foreshores, and the adjacent lands.

Background

A *Draft Entrance Management Policy and Review of Environmental Factors* was developed for Tabourie Lake by Peter Spurway & Associates in 2005. This existing EMP has been used since that time by Council to guide the management of the entrance of Tabourie Lake for flood mitigation purposes (refer **Section 2**). Under the Draft EMP the entrance is mechanically opened by Council when:

- > Lake water levels are equal to, or in excess of, 1.17 m AHD initiates an immediate entrance opening; or
- > Lake water levels stabilise after rainfall at a level between 1.00 m and 1.17 m AHD and a period of over two months has elapsed since attaining that level, resulting in below floor level flooding of foreshore land.

Peter Spurway & Associates (2005) recommends that the assumptions of the Draft EMP and the management framework contained therein be reviewed following adoption of the Tabourie Lake Floodplain Risk Management Study and Plan (FRMS&P). The FRMS&P was completed in 2016, and one of the recommended actions in the FRMS&P was to review the Draft EMP in light of the improved understanding of flood behaviour.

Given the significant amount of time that has passed since the Draft EMP was prepared, and acknowledging the changes in the catchment and improved understanding of flood behaviour, Council determined to proceed with a review of the Draft EMP and preparation of a final EMP.

Review of Existing Information

There is a range of existing information for Tabourie Lake that is of relevance to understanding the need and context for the EMP. ICOLL behaviour, entrance behaviour and flooding processes (refer **Sections 3.3-3.5**) are important determinants of the level of risk to low-lying development from inundation, and aid in determining potential entrance management options. The statutory and policy context (refer **Sections 3.1-3.2**), and environmental and social values of Tabourie Lake (**Section 3.6**), are important in assessing the appropriateness and acceptability of these different options from both regulatory and stakeholder perspectives.

Review of Entrance Management Options

Based on the review of existing information presented in **Section 3**, six potential entrance management options were developed for assessment:

- > Option 1: A "Do Nothing" option. Under this scenario, there is no active management of the lake entrance. For the 'do nothing' option the entrance berm would be overtopped when water levels rise during a rainfall event and the entrance breaks out naturally without any intervention.
- > Option 2: The continuation of the existing management approach, comprising mechanical entrance opening when lake water levels reach the trigger level of 1.17 m AHD.
- > Option 3: Raising the trigger Level to 1.3 m AHD. This would lead to fewer mechanical openings of the entrance of Lake Tabourie, thereby reducing the environmental impact of the current practices on the Lake.
- > Option 4: Berm height management. This involves managing the entrance berm height (when closed) such that it does not exceed a pre-determined level; this is known as maintaining a 'dry notch', which is a low or 'saddle' point in the entrance berm which the water can preferentially flow across. The purpose of the notch is to dispense with the need to mechanically open the lake when a flood occurs.



- > Option 5: Construction of a permanently open entrance, through the use of rock armoured training walls.
- > Option 6: Implementation of a pilot channel - a mechanical excavation of sand from the entrance berm 1-3 days before a large storm is scheduled to arrive, by digging a pilot channel starting from the ocean. The exercise is intended to reduce the volume of sand required to be removed to instigate a lake breakout, thereby inducing an earlier breakout and reducing flood levels within the lake.

These options, and their relative pros and cons, are discussed in **Section 4**.

Assessment of Entrance Management Options

In order to identify a preferred option for entrance management, the potential options were assessed using a multi-criteria analysis informed by:

- > Stakeholder and community feedback (refer **Section 5.2**);
- > Hydrodynamic and morphological computer-based modelling of a sub-set of options in order to determine the impacts of each option on flood levels and the duration of inundation in the lake (refer **Section 5.3**); and
- > A semi-quantitative triple-bottom line assessment, including consideration of the cost of implementation of each option (refer **Section 5.4**).

The six management options were then ranked on the basis of the Adjusted Benefit Index. The results of the options assessment are provided in **Table 5-5**.

The highest ranked option was Option 3 (raising the trigger level). Options 2 (existing approach) and 4 (pilot channel) were the second highest ranked options, followed by Option 6 (pilot channel). The lowest ranking options were Option 5 (permanently open entrance) and Option 1 (do nothing).

Based on the options assessment outcomes, the preferred option is Option 3 - which comprises the raising of the existing trigger level to 1.30 m AHD.

The Entrance Management Policy

Section 6 of this report contains the updated, final EMP. The aim of the policy is to address the following issues:

- > The rear yards and below-floor areas of at least four houses along the Princes Highway are inundated by lake levels as low as 1.0 m AHD. Although not resulting in direct damage as such, saturated soil can cause odours from rotting vegetation and limit access to outbuildings if sustained for lengthy periods;
- > Garages and outbuildings such as laundries and sheds in this location can flood if the lake reaches a level of around 1.3 to 1.4 m AHD; and
- > The lowest house floor level is 2.0 m AHD.
- > In the 20% AEP flood event, two properties experience over floor flooding and 21 properties have flooding below floor level (refer **Section 2.2**).

The EMP clearly sets out the procedure by which Council will make a decision to open the entrance of Tabourie Lake for flood mitigation purposes (refer **Section 6.2**), whether in response to a flood event or to alleviate below floor level inundation of foreshore land. It includes:

- > Consultation and communication protocols (**Section 6.3**) for notification of agencies and other stakeholders,
- > Roles and responsibilities for implementing the EMP (**Section 6.4**);
- > The procedure or methodology by which the entrance should be mechanically opened (**Section 6.5**) and how the entrance should be monitored following a natural or mechanical opening and up until it closes again (**Section 6.6**); and
- > Advice on how the works should be managed with respect to safety and environmental impacts (**Sections 6.5 and 6.8**).

It is recommended that Council adopt the final EMP and undertake the necessary environmental approvals pathway to enable practical implementation. **Section 7** contains some additional recommendations for Council's consideration.



Glossary and Abbreviations

Term / Abbreviation	Explanation
Annual Exceedence Probability (AEP)	The chance of a flood of a given or larger size occurring in any one year, usually expressed as a percentage; e.g. for a 5% AEP flood event, there is a 5% chance (that is a one-in-20 chance) that this sized flood event or larger occurring in any one year.
AHIMS	Aboriginal Heritage Information Management System.
ASS	Acid Sulfate Soils
Australian Height Datum (AHD)	A common national surface level datum appropriately corresponding to mean sea level.
CAMBA	China-Australia Migratory Bird Agreement.
Catchment	The area of land that drains to a common location or watercourse. This always relates to a particular location and may include the catchments of tributary streams as well as the main stream.
Coastal Inundation	A natural process whereby elevated ocean water levels combined with wave run-up result in seawater overtopping coastal and estuarine foreshores during storm events. This process is generally rare and episodic, occurring principally around the peak of a high tide, creating a hazard particularly in areas below about 5 m AHD.
CLM Act	NSW <i>Contaminated Land Management Act 1995</i> .
CSIRO	Commonwealth Scientific and Industrial Research Organisation.
DPI	NSW Department of Primary Industries
EEC	Endangered Ecological Community as identified under the TSC Act
EMP	Entrance Management Policy
EPA	Environmental Protection Authority
EP&A Act	NSW <i>Environmental Planning and Assessment Act 1979</i> .
EPBC	Commonwealth <i>Environment Protection and Biodiversity Conservation Act 1999</i> .
Fluvial	Relating to, or inhabiting a river or stream.
FM Act	NSW <i>Fisheries Management Act 1994</i> .
Foreshore	The area of land at the land-water interface that is likely to be affected by coastal and catchment processes.
FRMS&P	Floodplain Risk Management Study and Plan.
Highest Astronomical Tide (HAT)	A highest level of water which can be predicted to occur under average meteorological conditions any combination of astronomical conditions over 18 years (however water levels can often exceed HAT values because of the influence of wind and waves)
Hs	Significant Wave Height. The average height of the one-third highest waves of a given wave group.
IBE	Inverse Barometer Effect
ICOLL	Intermittently Closed and Open Lake or Lagoon.
Inundation	Flooding, by the rise and spread of water, of a land surface that is not normally submerged.
ISEPP	NSW State Environmental Planning Policy 2007.
JAMBA	Japan-Australia Migratory Bird Agreement
LALC	Local Aboriginal Land Council
LEP	Local Environmental Plan
LGA	Local Government Area
m AHD	Elevation in metres with respect to the Australian Height Datum.
MWL	Mean water level



Tabourie Lake
Entrance Management Policy

Term / Abbreviation	Explanation
NSW	New South Wales
PoEO Act	NSW <i>Protection of the Environment Operations Act 1997</i> .
REF	Review of Environmental Factors
ROKAMBA	Republic of Korea-Australia Migratory Bird Agreement.
Run-off	That proportion of rainfall that drains off the lands surface.
SCC	Shoalhaven City Council, or referred to as 'Council'
SEPP	State Environmental Planning Policy.
SEPP 14	State Environmental Planning Policy No. 14 – Coastal Wetlands.
Still Water Level (SWL)	Average water-surface elevation at any instant including the effects of tides and storm surge, but excluding local variation due to wind and waves.
Storm Surge	The increase in coastal water level caused by the effects of storms. Storm surge consists of three components: the increase in water level caused by the reduction in barometric pressure (barometric set-up or IBE), the increase in water level caused by the action of wind blowing over the sea surface (wind set-up), and the increase in water level caused by the piling up of waves against the coast (wave set-up).
Storm Tide	Storm tide is different from storm surge in that it includes all the elements of storm surge (IBE, wave set-up and wind set-up) as well as the astronomical tidal level.
TSC Act	NSW <i>Threatened Species Conservation Act 1995</i>
Wave Run-up	The vertical distance above mean water level reached by the uprush of water from waves across a beach or up a structure.
Wave Set-up	The increase in water level within the surf zone above mean still water level caused by the breaking action of waves.



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1 Introduction

Cardno was engaged by Shoalhaven City Council (Council) to review the existing Entrance Management Policy (EMP) for Tabourie Lake.

1.1 Area to Which the Policy Applies

Tabourie Lake is a small coastal lake located in the Shoalhaven Local Government Area (LGA) (refer **Figure 1-1**). It is what is referred to as an Intermittently Closed and Open Lake or Lagoon (ICOLL), and has periods during which the entrance is closed off from the ocean by the formation of berm. The study area for this EMP comprises the tidal waterway of Tabourie Lake (also referred to as Tabourie Creek or Tabourie Lagoon), its foreshores, and the adjacent lands up to 2 m Australian Height Datum (AHD). This is considered to be the maximum height that the berm could reach (Wainwright and Baldock, 2010), and therefore includes all potentially affected lands.

Tabourie Lake is located on the NSW South Coast, south of Ulladulla. The township of Lake Tabourie is the only settlement in the study area. The majority of residences in the township straddle Lemon Tree Creek. On the northern side of Tabourie Lake where it meets the Tasman Sea is the Lake Tabourie Tourist Park. There are also 12 low-lying residences along Princes Highway.

The village of Tabourie Lake is low-lying with an elevation of around 2 m AHD and as a result low level persistent flooding is common. The Tabourie Lake study area has experienced major flooding in the past due to a number of contributing factors. The entrance (i.e. where Tabourie Creek discharges to the ocean) has the capacity to close due to formation of a sand berm which can lead to water levels rising throughout the floodplain. High antecedent lake conditions, coupled with large rainfall events, have caused major flooding in the past, including in 1971, 1975 and 1988. For this reason, the entrance is managed by Council, whereby it is broken open (if required) during a flood event to minimise the risk to property. Flooding has also occurred due to elevated ocean levels rather than catchment flooding, as was the case in 1974.

1.2 Objectives for Entrance Management

Council, in conjunction with the NSW Government, is responsible for managing the entrance of Tabourie Lake for the purpose of below floor level flood mitigation. Due to the historical development of the catchment and development of the floodplain, low-lying properties are at risk of flooding under certain rainfall and entrance conditions.

The specific objectives of the Tabourie Lake EMP, as articulated in (Peter Spurway & Assoc., 2005), are to:

- > Implement a management regime which is consistent with the principles of ecologically sustainable development;
- > Ensure that entrance opening follows as natural a regime as possible within the constraints of property inundation and flooding;
- > Gain broad based community understanding and support for management of the lake entrance;
- > Deter unauthorised opening of the lake;
- > Streamline the decision-making and approvals process in relation to artificial opening events;
- > Provide a mechanism for review and update of the EMP;
- > Ensure the appropriate level of environmental assessment and consultation are undertaken before the lake is artificially opened;
- > Clarify responsibilities and accountabilities in relation to artificially opening the lake;
- > Clarify when, where and how the lake is artificially opened;
- > Detail the procedure for monitoring the lake entrance after it has been opened; and



- > To identify and implement actions that allow for the progressive increase of the opening trigger level with sea level rise.

1.3 The Tabourie Lake Floodplain Risk Management Study and Plan

It should be noted that Shoalhaven City Council have recently developed a Floodplain Risk Management Study (FRMS), and Floodplain Risk Management Plan (FRMP) for the Lake Tabourie Township and its surrounds. The FRMS investigated what could be done to reduce or manage the effects of flooding in the catchment, and recommended a mix of strategies and options to manage the risks of flooding. These options included:

- > Flood modification measures;
- > Property modification measures; and
- > Emergency response measures.

Those options selected for inclusion in the FRMP were based upon both their likely benefit and the funding available from Council and the State Government. These options included structural options aimed at preventing, avoiding or reducing the likelihood of flood risks – including the construction of levees behind properties and raising roads in specific locations.

It is anticipated the implementation of the measures outlined in the FRMP would, in the future, likely remove the need to undertake entrance management and mechanical lake opening as a means of mitigating below floor level flooding. Therefore, it is intended that this Entrance Management Plan should be adopted as an “interim” policy, until the measure outlined in the FRMP have been fully funded and implemented.



Tabourie Lake
Entrance Management Policy



Figure 1-1 Tabourie Lake Study Area

1.4 Definition of Terms

Figures 1-2 and 1-3 explain the key features of the Lake entrance, as discussed in this report.

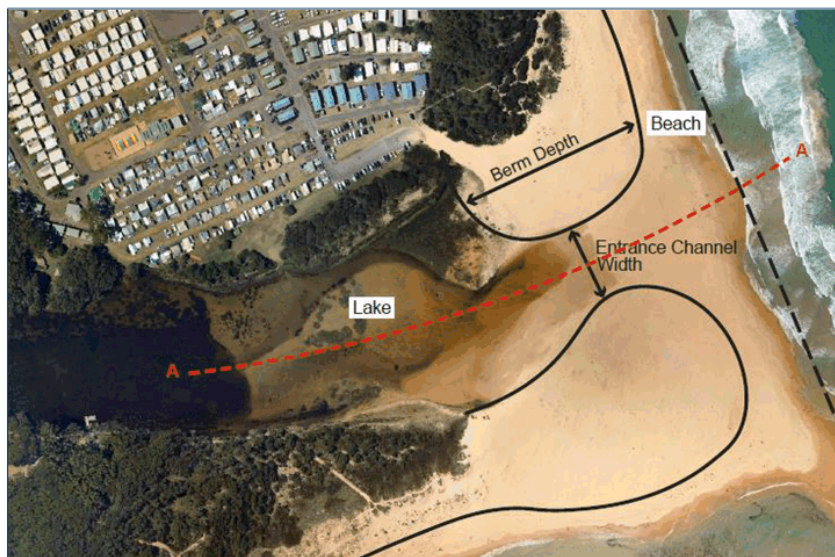


Figure 1-2 Plan View of Lake Entrance

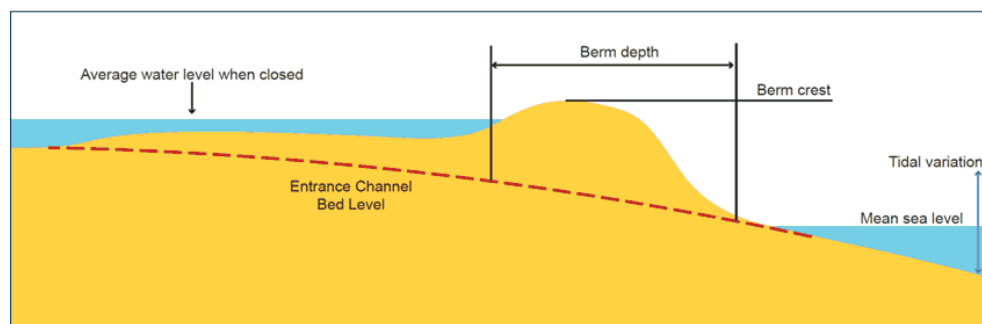


Figure 1-3 Conceptual Cross Section of Lake Entrance

1.5 Policy Statement

The Tabourie Lake EMP seeks to provide Council and the community with a detailed procedure for the short and long-term management of the Tabourie Lake entrance.

This policy will be implemented by Shoalhaven City Council in consultation with the appropriate State Government Agencies.



2 Background

2.1 Existing Draft Entrance Management Policy

A *Draft Entrance Management Policy and Review of Environmental Factors* was developed for Tabourie Lake by Peter Spurway & Associates in 2005. This existing EMP has been used since that time by Council to guide the management of the entrance of Tabourie Lake for flood mitigation purposes.

It includes:

- > Purpose and policy context for the Draft EMP;
- > Aims and objectives;
- > Description of the existing environment and management issues;
- > A review of the management context for the lake, including statutory context and the Tabourie Lake Estuary Management Plan (SCC, 2012);
- > The procedures for opening the lake and required monitoring;
- > Recommendations for management; and
- > A Review of Environmental Factors (REF) for the entrance management prepared in accordance with Part 5 of the *Environmental Planning and Assessment Act 1979* (EP&A Act).

At the time it was prepared, the Draft EMP (Peter Spurway & Assoc., 2005) addresses the particular flooding issues as follows:

- > Inundation of yards of at least four properties along the Princes Highway when lake water levels are as low as 1.0 m AHD;
- > Inundation of garages and other ancillary buildings in this area when lake water levels reach 1.3-1.4 m AHD; and
- > Above floor level flooding of houses, which occurs when lake water levels are 1.83 m AHD or more.

Peter Spurway & Associates (2005) established in the Draft EMP essential conditions under which the entrance can be breached, as follows:

1. Lake water level equal to, or in excess of, 1.17 m AHD initiates an immediate entrance opening;

OR

2. Lake water level stabilises after rainfall at a level between 1.00 m and 1.17 m AHD and a period of over two months has elapsed since attaining that level;

AND

3. Non-breeding season for threatened shorebirds, or clearance from NPWS has been obtained.

The Draft EMP lists the following conditions as desirable (but not essential) to a successful opening:

- > Continuing moderate to heavy rainfall;
- > Relatively large ocean tidal range (greater than 1.0 m) with opening to coincide with a falling tide; and
- > Relatively low wave action at opening location north of tombolo.

If the above essential condition 1 is not met for an immediate entrance opening, the Draft EMP requires that a 28 day consultation period apply after the lake attains a level at or above 1.0 m AHD.

Peter Spurway & Associates (2005) specify the location of opening as being north of Crampton Island (refer **Figure 1-1**), which was identified as being the most frequently occurring entrance channel location determined from historical observations and aerial photography analysis. The channel is to be excavated with a width of around 2 m, starting from the ocean and working back towards the lake entrance.



It is understood that due to the difficulty of safely excavating the channel during adverse weather conditions, Council often commence the channel excavation and leave a "notch" or plug of sand at the lake edge until such time as the trigger level is reached.

It is understood that access by machinery is via the Lake Tabourie Holiday Park carpark.

Peter Spurway & Associates (2005) recommends that the assumptions of the Draft EMP and the accompanying REF be reviewed following adoption of the Tabourie Lake Floodplain Risk Management Study and Plan (FRMS&P). Failing preparation of the FRMS&P, the Policy should be reviewed in 2010.

2.2 Tabourie Lake Floodplain Risk Management Study and Plan

A FRMS&P (Cardno, 2016) was recently completed for Tabourie Lake by Council in accordance with the requirements of the *NSW Floodplain Development Manual* (NSW Government, 2005) and with support from the NSW Office of Environment and Heritage (OEH).

The FRMS&P defined and assessed flood risks in the Tabourie Lake catchment. The 20% Annual Exceedance Probability (AEP) and 1% AEP flood extents are mapped in **Figure 2-2**. It should be noted that %AEP refers to the probability of exceedance of a particular discharge (and associated peak level) each and every year, irrespective of the time since the last occurrence. Floor level survey was undertaken to inform the assessment of economic damages from flooding presented in the FRMS&P, identified that:

- > In the 20% AEP flood event, with a peak flood level at the Tabourie Creek gauge of 2.0 m AHD, two properties experience over floor flooding and 21 properties have flooding below floor level; and
- > In the 1% AEP event, , with a peak flood level at the Tabourie Creek gauge of 2.66 m AHD, 42 properties have over floor flooding and 121 have flooding below floor level.

The floor level for the lowest-lying property in the floodplain 2.0 m AHD, not 1.83 m AHD as stated in Peter Spurway & Associates (2005). This is thought to be due to the recent re-development of two lots. Inundation of lots tends to occur at lake water levels of around 1.0 m AHD.

Details of the flood behaviour of the study area are provided in **Section 3.4**.

In accordance with the requirements of the Floodplain Development Manual (NSW Government, 2005) a range of structural, property modification (e.g. planning controls), emergency response modification and other options were subjected to a cost-benefit analysis to shortlist of recommended actions for implementation by Council.

One of the recommended actions in the FRMS&P was to review the Draft EMP in light of the improved understanding of flood behaviour.



Tabourie Lake
Entrance Management Policy



Figure 2-1 20% and 1% AEP Flood Extents for Tabourie Lake



3 Review of Existing Information

This section presents a review of existing information of relevance to entrance management. It includes:

- > A review of the statutory and policy context (**Sections 3.1 and 3.2**);
- > A description of ICOLL behaviour (**Section 3.3**);
- > A description of flood behaviour (**Section 3.4**);
- > A description of entrance behaviour (**Section 3.5**);
- > A description of the environmental and social values of the Lake. (**Section 3.6**); and
- > An assessment on the potential impacts of climate change on entrance management (**Section 3.7**).

It concludes with a statement on the ongoing need for entrance management based on the findings of the review.

3.1 Policy Context

3.1.1 State Rivers and Estuaries Policy

There are a number of State Government Policies and Guidelines supporting the management of estuaries in a manner that promotes the maintenance of natural processes. The objective of the NSW State Rivers and Estuaries Policy is to manage the rivers and estuaries of NSW in ways which:

- > Slow, halt or reverse the overall rate of degradation in their systems;
- > Ensure the long term sustainability of their essential biophysical functions; and
- > Maintain the beneficial use of these resources.

The Policy aims to phase out degrading, non-sustainable uses of estuaries. Under the Policy, there is an intent to reduce or avoid entrance management for Tabourie Lake.

3.1.2 State ICOLL Management Policy

The NSW Department of Industry (The Department) management policies and guidelines for the management of ICOLLs are:

1. Any proposals for artificial opening of ICOLLs must seek the approval or concurrence of The Department under the *Fisheries Management Act 1994*.
2. The Department supports minimal interference with ICOLL entrance barriers and advocates natural processes being allowed to operate to the greatest extent possible.
3. The Department does not support the artificial opening of an ICOLL unless the proponent (i.e. Council or other agency) can demonstrate that the social, environmental and economic benefits greatly outweigh any potential adverse impacts.
4. The Department supports using estuary management plans and environmental assessment processes to analyse the issues relating to opening a particular ICOLL, and to develop an entrance management plan or entrance management policy. Proposals for artificial openings which are to be carried out according to a formulated entrance management plan or policy are more likely to be approved by I&I NSW.

In the long-term, The Department objective is that local councils and government agencies should aim to reduce the need for artificial manipulation of ICOLL entrances by taking active measures to remove, relocate or otherwise manage items of low-lying infrastructure that currently necessitate breaches below the natural breakout range.



3.1.3 **Flood Prone Land Policy**

The primary objective of the NSW Flood Prone Land Policy is to reduce the impact of flooding and flood liability on individual owners of property, and to reduce public and private losses from floods, using ecologically positive methods, wherever possible. The EMP aims to achieve this objective for the community of Tabourie Lake.

The Policy espouses a merit based approach to decision making, taking into account social, economic and ecological factors, as well as flooding considerations. This principle is applicable to this EMP review.

3.2 **Statutory Context**

3.2.1 **Environmental Planning and Assessment (EP&A) Act 1979**

Part 5, Section 111 of the EP&A Act requires that a public authority by or on whose behalf an activity is to be carried out (in this case Shoalhaven City Council) has a duty to examine and take into account to the fullest extent possible all matters affecting or likely to affect the environment. Furthermore, this duty to consider environmental impacts extends to any public authority whose approval is required for the activity (in this case Department of Lands).

Section 112 of the EP&A Act requires that if any of the above authorities considers that there is likely to be a significant effect on the environment then an Environmental Impact Statement must be prepared.

Once the preferred entrance management option is selected, it will be necessary to confirm the approvals pathway and ensure these requirements are addressed in the environmental impact assessment for the ongoing entrance management.

3.2.2 **State Environmental Planning Policy (Infrastructure) 2007**

The State Environmental Planning Policy (Infrastructure) 2007 (ISEPP) aims to facilitate the effective delivery of infrastructure across the state. Division 7, Clause 50 of ISEPP permits development on any land for the purpose of flood mitigation work to be carried out by, or on behalf of, a public authority without consent.

Shoalhaven City Council is proposing to clear the entrance of Tabourie Lake for flood mitigation purposes, and therefore the entrance management works would be defined as "infrastructure" works under Division 7, Clause 50 of the ISEPP.

3.2.3 **State Environmental Planning Policy (Coastal Management) 2018**

The aim of the SEPP is to promote an integrated and co-ordinated approach to land use planning in the coastal zone in a manner consistent with the objects of the *Coastal Management Act 2016*. The SEPP applies to land defined under the *Coastal Management Act 2016* as the "coastal zone", which is comprised of land mapped as:

- > Coastal wetlands and littoral rainforests area;
- > Coastal vulnerability area;
- > Coastal environment area; and/or
- > Coastal use area.

The Lake Tabourie entrance falls within both the coastal environment and the coastal use areas. Clauses 13 and 14 list matters that must be considered prior to granting development consent on land within these two coastal management areas respectively. However, as noted in **Section 3.2.2**, consent would not be required for the proposed works.

3.3 **ICOLL Behaviour**

ICOLLs are common along the southeast of the NSW coastline. In terms of physical processes, the key driver of the ICOLL system is the entrance condition. The entrance berm is the sand bar that separates the lagoon from the ocean during periods when the entrance is closed. When the entrance is closed, both catchment inputs and in-lake processes are the key influences on factors such as circulation and water quality.



Rainfall events lead to stormwater runoff that flows into the lake raising water levels. Following inflow events water levels gradually decrease due to evaporation from the water surface and seepage through the berm, particularly at higher lake water levels. Successive inflows will eventually cause the water levels to rise above the berm crest height and overtop the berm initiating scouring of the berm sands to form a channel connecting the lake to the ocean. During this breakout process, significant volumes of water can flow out of the lake over a period of hours. The frequency with which the entrance breaks out is therefore determined by rainfall patterns in the catchment and the volume or capacity of the lake that is in turn determined by the berm height prior to break out.

When the entrance is open, coastal processes play a more significant role in the hydrodynamics of the lagoons. Tidal processes influence lake water levels and exchange of lake and ocean waters, thereby influencing water quality and circulation patterns in the lake. During this time, however, the action of coastal waves and currents that drive littoral sediment transport will also gradually begin to fill in the entrance channel and re-build the berm. The sand that previously formed the entrance berm gets deposited in the nearshore zone as an ebb tide delta during the entrance breakout event. During flood tides both cross-shore and long-shore currents transport this sand from this nearshore area into the open lake entrance channel, where the lower energy environment leads to deposition and formation of a flood tide delta. In this manner, more and more sand is deposited back into the entrance and the berm re-builds. The duration of entrance open conditions is determined by these coastal processes, and in high energy coastal environments such as those occurring in the study area, the lake entrance will typically close over a period of days to weeks. As the channel accretion process progresses, the magnitude of tidal exchange gradually decreases, until the berm crest exceeds ocean high tide and blocks the ocean waters from entering the lake. **Figure 3-1** depicts a closed entrance condition at the lake.

The entrance condition reflects a balance between these two sediment transport forces: catchment inflows and coastal processes. The natural balance between these competing processes is interrupted by mechanical opening of the lake before/during heavy rainfall events. Past land use and development in low-lying areas around the foreshore of the lake has resulted in a practice of entrance management for flood mitigation.



Figure 3-1 Lake Tabourie Entrance Circa 2001 (image courtesy of OEH, 2012)

Due to its relatively small waterway area (1.4 km²) and catchment size (46 km²) (OEH, 2012), Tabourie Lake is a wave dominated estuary. This means that the wave action is at times so dominant that entrance closure occurs on an intermittent basis, and may thereafter persist for extended periods of time.



3.4 Flood Behaviour

Flood behaviour for the study area was defined in the Tabourie Lake FRMS&P (Cardno, 2016). A comprehensive description of the flood behaviour of the study area is provided in that report, and is summarised below.

3.4.1 Flood Mechanisms

The Tabourie Lake community is subject to flooding from three primary mechanisms:

- > Flooding of Tabourie Creek arising from catchment rainfall;
- > Flooding of Tabourie Creek from elevated ocean water levels (e.g. storm surge); and
- > Slow build-up of water levels in Tabourie Creek (below floor level flooding) when the estuary entrance is closed.

The entrance condition plays a role in each of these flooding mechanisms.

Catchment rainfall results in the worst case flooding scenario for the study area, resulting in inundation of the Pacific Highway and of key access roads along Lemon Tree Creek. For catchment flooding events, the entrance plays little role in influencing flood behaviour. This is due to relatively small volume of the lake relative to the catchment size, and the berm quickly overtops and is naturally broken open in advance of the flood peak.

Elevated ocean water levels affects those properties closest to the entrance, with the impact reducing for properties further upstream. The entrance, if closed, provides protection against smaller ocean events and provides some buffering in larger events.

The occurrence of low level, persistent flooding is wholly driven by the entrance condition. When open, water is allowed to drain to the ocean and lake water levels do not become high enough to inundate foreshore properties. As the entrance closes and the berm crest level gradually gets higher, the lake water levels tend to increase due to periodic catchment inflows. If the entrance is closed for long enough, and the catchment inflows exceed evaporation, the water levels in the lake will continue to gradually rise and impact low-lying land. This issue will persist until the entrance is opened, either naturally or mechanically.

3.4.2 Rate of Rise

The typical rate of rise for the study area in a 1% AEP catchment rainfall event is shown in **Figure 3-2**. The rate of rise quickly increases from 0.1 m per hour to 0.4 m per hour, illustrating the fast response time of the lake to catchment rainfall. The rate of rise increases to 0.55 m per hour, before beginning to fall off as the flood reaches its peak. There is a three hour period up until the peak flood level where the average rate of rise is over 0.4 m per hour. This poses a significant hazard to residents, as access to and from properties and along local roads is quickly inundated, with little or no warning.

There is around three hours between the time when the lake water level reaches the trigger level for opening (1.17 m AHD; refer **Figure 3-2**) and when the 1% AEP peak flood level occurs. There is very little time between reaching the trigger level for opening and until lake water levels reach 2.0 m AHD and the lowest-lying property is subject to over floor flooding.

The typical rate of rise for a 20% AEP event is shown in **Figure 3-3**. The rate of rise quickly increases for this event, increasing to 0.3 m per hour before falling off as the flood reaches its peak. There is a three hour period up until the peak flood level where the average rate of rise is over 0.3 m per hour.

Analysis of the flood model results for different design events presented in the FRMS&P (Cardno, 2016) indicates that the rate of rise of lake water levels from the 1.17 m AHD trigger levels are:

- > 45 to 60 minutes to reach 1.50 m AHD;
- > 60 to 90 minutes to reach 1.80 m AHD; and
- > 90 to 120 minutes to reach 2.0 m AHD.



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There is around 45 to 120 minutes between the time lake water levels reach 1.50 m AHD and the time they reach 2.0 m AHD.

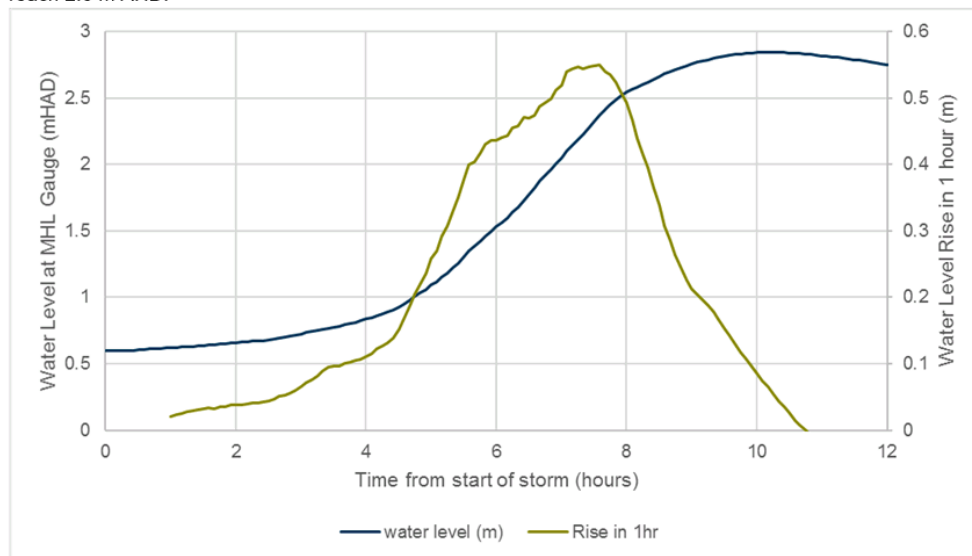


Figure 3-2 Rate of Rise for the 1% AEP Flood Event

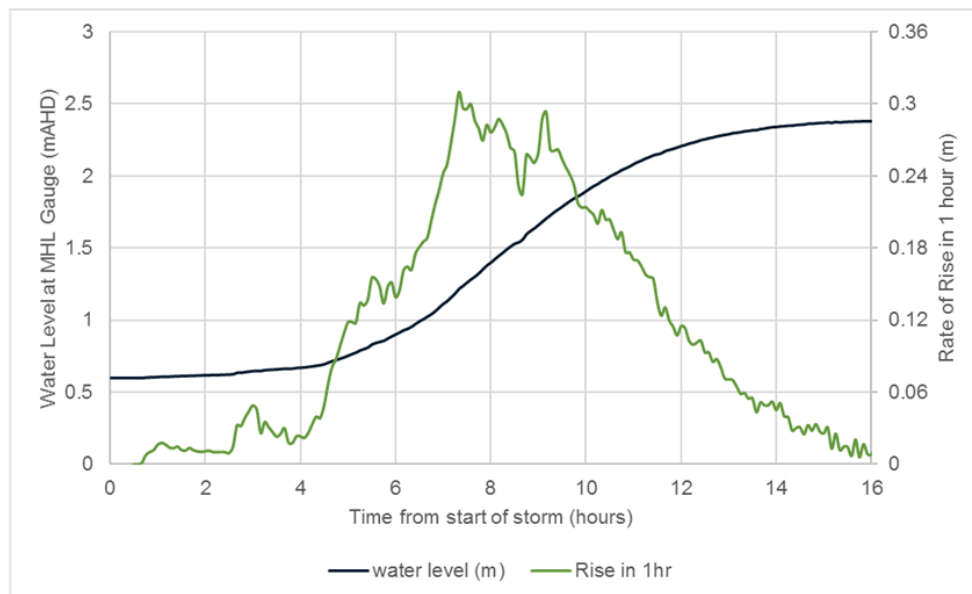


Figure 3-3 Rate of Rise for the 20% AEP Flood Event



3.4.3 Flood Emergency Response Planning Classifications of Communities

The FRMS&P included mapping of Flood Emergency Response Planning Classifications across the study area (refer **Figure 3-4**). This mapping is an important tool for the initial planning of emergency response, and highlights which areas of the community are most at risk in flood events.

The mapping identifies two regions of low flood islands where access roads are inundated. This represents a significant hazard to residents, as by the time they become aware of flooding on their land, their chance to evacuate may already have been lost.



Figure 3-4 Flood Emergency Classifications for Tabourie Lake

3.4.4 Inundation of Assets

The terrain surrounding Tabourie Lake is relatively flat immediately adjacent to the creek, with sharper rises in terrain occurring to the north and west. Much of the development in the area has been undertaken on this flat region adjacent to the lake. As such, many of the built assets of the town are affected by flooding.

Key assets located on this low-lying land are:

- > *Residential properties* – a number of residential properties are affected by flooding. The FRMS&P (Cardno, 2016) reports that:



- 21 properties experience flooding of their land in the 20% AEP, and two properties experience over floor flooding, and
- Flood level rise quickly in larger events, and in the 1% AEP 121 properties experience flooding of their land and 42 properties experience over floor flooding. Most of these properties are single storey, increasing the flood risk to residents;
- > *Lake Tabourie Holiday Park* – located immediately north of the entrance, the caravan park is built on low-lying flood-prone land. Of particular concern for the caravan park, flooding first affects the access road, resulting in the site quickly becoming isolated during flood events. The high proportion of tourists that visit the site, particularly in the summer, further increases the risk profile of the site, as tourists are unlikely to be familiar with the flood behaviour and flood risk ;
- > *Tabourie Child Care Centre* – The Tabourie Child Care Centre is located on River Road, adjacent to an unnamed tributary of Tabourie Creek. The site experiences flooding in minor events from both catchment and ocean backwater flooding;
- > *Bridges and Roads* – There are two major bridge crossings in the study area, the Princes Highway crossing of Tabourie Creek, and the Centre Street crossing of Lemon Tree Creek. Both these bridges are affected by flooding in events as small as the 5% AEP event;
- > *Rural Fire Service* – There is a Rural Fire Service building and equipment storage shed at the end of Bridge Road. The site is flood free, even in the PMF, and was suggested as an emergency evacuation site for nearby residents during large flood events; and
- > *Petrol Station and Tabourie Lake Motor Inn* – Located on the Princes Highway, these premises are outside of the floodplain. However, access along the Princes Highway is lost both north and south from these sites, preventing access to and egress from these sites during large flood events.

3.5 Entrance Behaviour

3.5.1 Berm Behaviour

Tabourie Lake has a relatively small estuary area (1.4 km²) and large catchment size (46 km²) and, like most ICOLLs along the NSW coast, is a wave dominated estuary. This means that the wave action is at times so dominant that entrance closure occurs on an intermittent basis, and may thereafter persist for extended periods of time. Analysis by Peter Spurway & Associates (2005) found that from 1987-2005, the lake was open approximately 47% of the time. Analysis of lake water level data extending from 1992 to 2017 shows that the lake was open approximately 32% of the time during that period.

While entrance opening occurs naturally during flood events, the entrance is opened more often artificially using mechanical equipment for the purpose of mitigating below floor level flooding. The Flood Study (BMT WBM, 2010) and FSRMP (Cardno, 2016) showed that mechanical opening does little to reduce peak flood levels during rarer, more severe catchment flooding events. Peter Spurway & Associates (2005) found that from 1987 to 2005, the lake was mechanically opened 24 times, and only opened naturally twice. It is therefore reasonable to assume that the Lake is open much more frequently than would naturally be the case.

As discussed in **Section 3.3**, the formation of the entrance berm closes off the lake from the ocean. Many studies have investigated the models of berm development in ICOLLs. Weir *et al.* (2006) proposed two different modes of berm development:

1. Vertical growth of a principal berm at higher due to substantial swash overtopping; and
2. Horizontal progradation at lower tides through the formation of a secondary berm located lower, and further seaward of the principal berm.

The maximum height of the berm will depend upon vertical extent of wave run-up. This means that, generally speaking, the berm will continue to grow until the berm crest reaches the maximum the level of day to day wave run-up experienced at the site. The height of wave run-up is a product of incident wave conditions (wave height and period) and beach slope. Beaches exposed to higher incident waves tend to have higher wave run-up and could therefore be expected to have higher (on average) berm levels. Beach slope is related to sediment grain size, with coarse grained beaches exhibiting steeper slopes than fine grained



beaches. Steeper beaches also tend to have higher run-up, and as such steeper, coarse grained beaches could also be expected to experience higher (on average) berm levels (Hanslow *et al.*, 2000). It should be noted that in some instances the berm may continue to grow higher than the maximum wave run-up level due to aeolian (wind-blown) sediment transport, which may blow sand higher up the beach during extended periods of onshore winds.

Some information regarding historical berm levels for Tabourie Lake was available from Peter Spurway & Associates (2005), reproduced in **Table 3-1**.

Table 3-1 Recorded Berm Levels at Tabourie Lake

Date	Beach Berm Level (mAHD)	Comment	Time Since Entrance Closure (months)
1978	2.0	Maximum berm level reported in EMP	Not known
21 April 1986	1.6	Aerial photogrammetry DIPNR*	Not known
14 May 1993	1.4	Aerial photogrammetry DIPNR	Approx. 2 months
1 February 2005	1.5	Aerial photogrammetry DIPNR	Approx. 2 months
June 2005	1.7 to 1.8	Survey by Council	Approx. 5 months

*DIPNR = Department of Infrastructure, Planning and Natural Resources, now OEH.

The data in **Table 3-1** suggests that the maximum level that the lake would attain prior to commencement of natural breakout would only rarely exceed 2.0 m AHD. Wainwright and Baldock (2010) estimated exceedance probabilities for the berm height at Tabourie Lake based on analysis of ocean water levels (i.e. wave run-up levels) (refer **Table 3-2**). The data supports the review by Peter Spurway & Associates (2005), indicating that the berm crest level would exceed 2.0 m AHD around 5% of the time.

Table 3-2 Estimated Berm Elevation Exceedances for Tabourie Lake

% of Time Exceeded	Present Day (m AHD)	2050 (m AHD)
80	1.80	2.22
50	1.91	2.33
20	1.99	2.41
10	2.03	2.45
5	2.06	2.48
1	2.10	2.52

Given the lack of data on the berm behaviour at Tabourie Lake, an analysis of lake water level data from 1992 to present was undertaken as a proxy for berm height. The analysis is presented in **Figure 3-5**. Water level data was provided by Council for the water level gauge situated inside approximately 200 m upstream from the entrance (refer **Figure 2-2**).

The water level data was investigated to identify three different entrance conditions:

- > **Entrance Open:** When the entrance is open, semi-diurnal tidal variations (that is, two high tides, and two low tides per day) are visible in the water level data, with daily variations in the order of 0.2 – 0.5 m. These continue after a breakout, and the daily variations gradually reduce as the entrance infills, until they are no longer visible when the entrance closes;
- > **Entrance Closed or Very Weakly Open:** When the entrance is closed, no semi-diurnal tidal variations are visible in the water level data. Some variations during entrance closure still occur due to rainfall and evaporation, however these are easily distinguishable from the semi-diurnal tide; and
- > **Entrance Opening and Breakout:** These were identified by a significant and rapid drop in water levels inside the lake, that are generally (but not always) preceded by a rapid rise in levels due to rainfall.

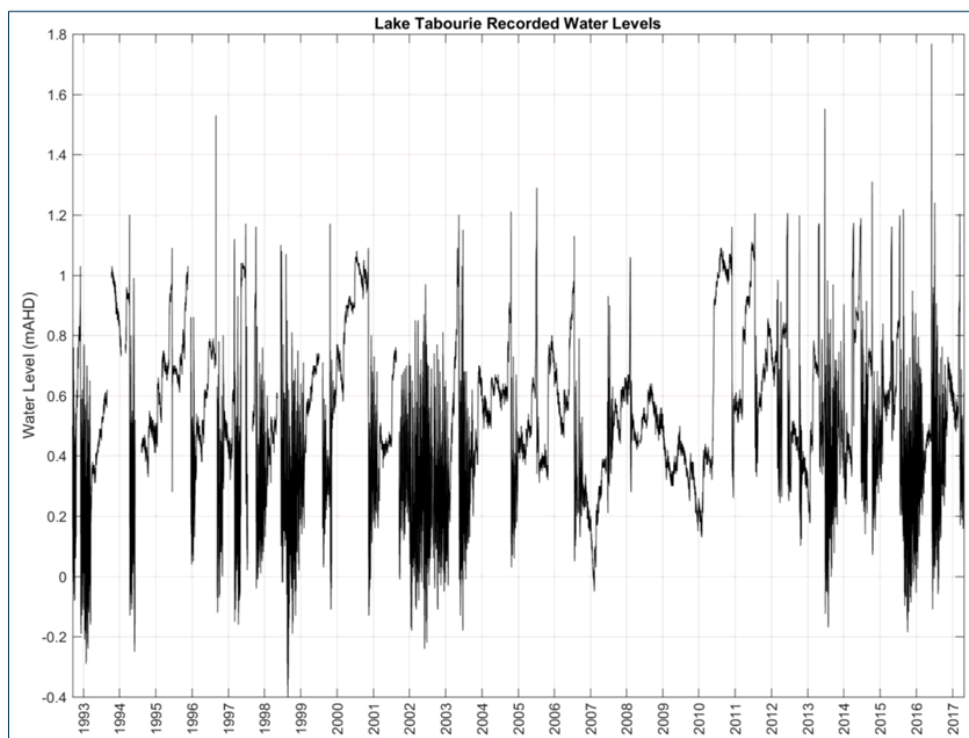


Figure 3-5 Lake Tabourie Recorded Water Levels 1992-2017

Figure 3-6 shows an example of the various entrance conditions and their effect on lake water levels. The figure depicts Tabourie Lake water level data for October 2014 to March 2017 against the corresponding daily rainfall data from the Bureau of Meteorology rainfall gauge at Ulladulla, approximately 10 km to the north of Tabourie Lake. **Figure 3-6** depicts a somewhat typical cycle of entrance openings and closure, and demonstrates the close correlation between entrance openings and rainfall events. The figure also depicts typical durations of the open entrance condition that follows a breakout event and the gradual reduction in tidal range within the lake as the entrance slowly re-closes.

Councils EMP (Peter Spurway & Assoc., 2005) has as its trigger for mechanical opening of the entrance when water levels inside the lake reach 1.17 m AHD. This level was selected to prevent or minimise the flooding of a number of low-lying properties around the estuary foreshore, although it is noted that the floor level of lowest-lying property is now 2.0 m AHD (refer **Section 2.2**).

Analysis of recorded lake water levels indicates that over the period 1992 to 2017, entrance openings (mechanical or otherwise) occurred at an average frequency of 1.5 times per year, or every 258 days (see **Table 3-3** and **Figure 3-5**). The average duration of the open entrance condition was 77 days, though some individual open periods lasted significantly longer, such as between September 2001 and August 2002, where a series of rainfall events kept the entrance open for 351 days. Conversely, average duration of the closed entrance condition was 171 days, with the longest duration event lasting over 1000 days between February 2008 and December 2010.

Table 3-3 shows that the average peak water level immediately prior to entrance opening events is 1.19 m AHD, which is in close keeping with Council's trigger level of 1.17 m AHD. However, some events show significantly higher peak water levels, such as the opening event in June 2016, where peak water levels reach 1.79 m AHD prior to entrance opening (see **Figure 3-5**). This is likely due to the fact that that lake is very small in size compared to its catchment, and so has limited capacity for flood storage. This means that



water levels in the lake are highly responsive to rainfall, and heavy rainfall events can result in rapid water level rises. Consequently, during severe rainfall events, lake water levels can exceed the mechanical opening threshold before Council has a chance to respond and mechanically open the lake.

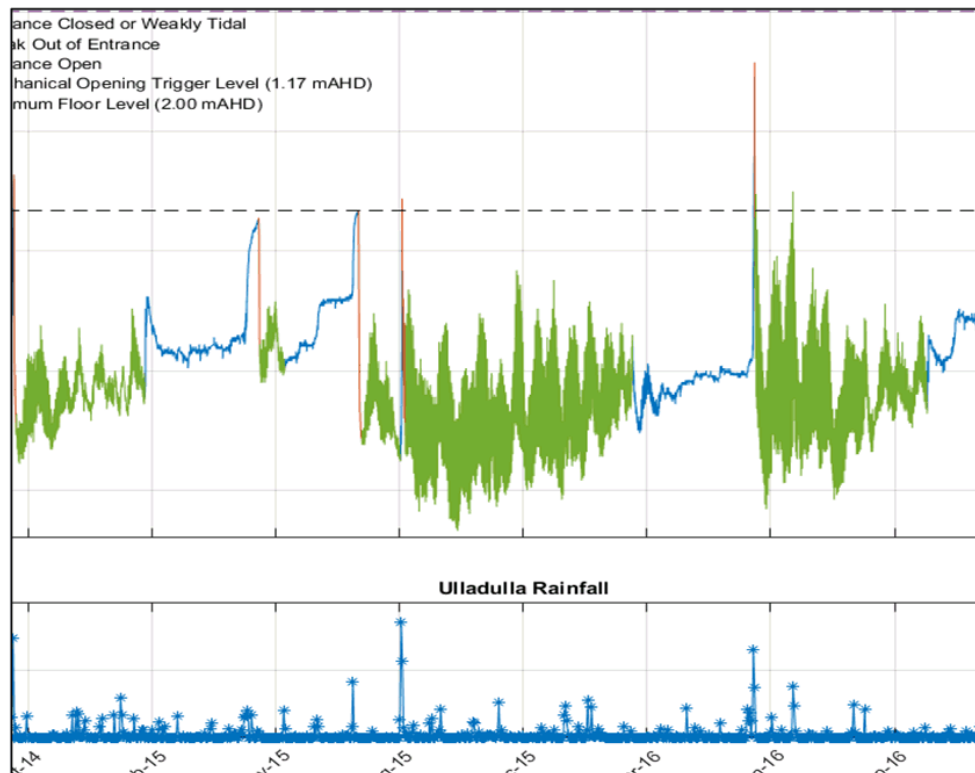


Figure 3-6 Lake Tabourie Berm Status, Water Levels and Rainfall

Table 3-3 Lake Tabourie Berm Status and Rainfall Statistics

Total Openings	36
Average Openings Per Year	1.5
Average Duration Open	77 days
Average Duration Closed	171 days
Average Time Between Openings	248 days
Average Peak Water Level At Opening	1.19 m AHD

Figure 3-7 shows an entrance opening event during July 2015. This figure shows the evolution of the entrance condition (from closed, to breakout, to open) that occurred over a period of months during a significant rainfall event.



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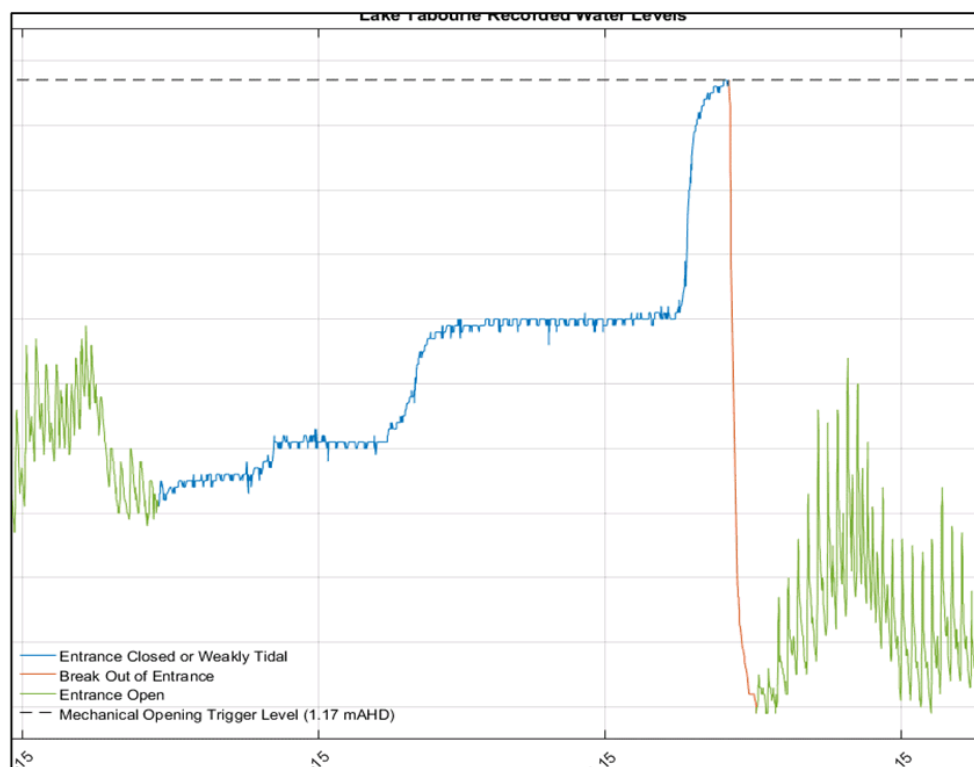


Figure 3-7 Zoomed Lake Tabourie Berm Status and Water Levels: May – June 2015

3.5.2 Ocean Inundation

While catchment flooding is the predominant flooding mechanism in the lake (refer to **Section 3.4.1**), ocean inundation of foreshore land may also occur if large spring tides (such as king tides) or storm tides occur while the entrance is still open in the weeks / months following a breakout.

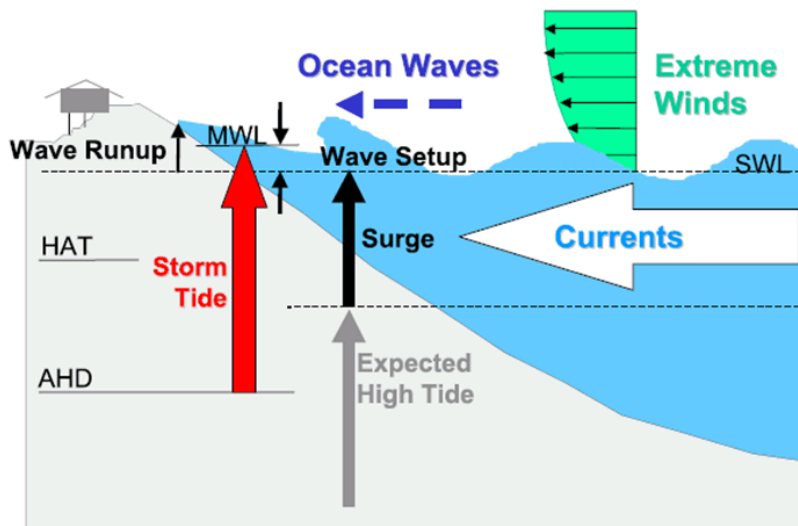
During an open entrance condition, high spring tides or storm tides may propagate into the estuary. There is some attenuation of the tide (or storm tide) as it travels upstream due to the bed form of the estuary, however it is possible that the full spring or storm tide levels would be observable as far upstream as the Princes Highway bridge. Large astronomical spring tides occur several times a year and are the result of the gravitational attraction of the moon and the sun.

Storm tides can significantly exceed the astronomical tide level, and are the result of significant short duration variation from the predicted astronomical tide referred to as storm surge. The physical processes that contribute to storm surge are depicted in **Figure 3-8**, and include:

- > Wind Set-up – the increase in water level that results from strong onshore winds piling water up against the shoreline;
- > The Inverse Barometer Effect – the resultant increase in sea level associated with a decrease in barometric pressure; and
- > Wave Set-up – the elevation of the still water level that can be considered as a piling up of water against the shoreline that is caused by breaking waves.



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*HAT = highest astronomical tide, MWL = mean water level, SWL = still water level.

Figure 3-8 Storm Surge Conceptualisation

The Tabourie Lake Flood Study (BMT WBM, 2010) included detailed hydrodynamic modelling of both catchment & ocean derived storm surge design events. As part of that study, the 1% AEP ocean storm tide level was determined as 2.51 m AHD at the entrance, & 2.57 m AHD inside the lake body (it assumed a fully scoured entrance as the starting condition for ocean inundation events).

A supplementary review of existing information was undertaken to provide a simplistic assessment of *potential* ocean inundation inside Tabourie Lake based on potential design still water levels and wave set-up (i.e. storm tide). Offshore design still water levels recommended by OEH (2015) for the NSW coast south of Crowdy Head are presented in **Table 3-4**. Design significant wave heights (Hs) have been taken from Cardno (2012), which presents the Extreme Value Analysis of Hs for the Batemans Bay waverider buoy data from 1998 – 2009. **Table 3-4** provides a preliminary estimate of the total design still water level including wave set-up, for Tabourie Lake, assuming that wave set-up is approximate to 12% of the offshore wave height (OEH, 2015).

Based on the data presented in **Table 3-4**, it is reasonable to assume that the berm height, and therefore the lake water levels, could be as high as 2.4 m AHD if the berm were allowed to keep on building. The data also indicates that, if the entrance is open during a coastal storm, there is potential for ocean inundation of foreshore properties. The estimated 100% AEP storm tide level, which has potential to occur once every year, is 1.9 m AHD, well above the trigger level of 1.17 m AHD and close to the floor level of 2.0 m AHD of the lowest lying property.



Table 3-4 Design Still Water Levels

AEP	Design Still Water Level (m AHD) – Excl. Wave Set- up (OEI, 2015)	Design Significant Wave Height at Batemans Bay (m)	Potential Storm Tide Level at Lake Entrance (m AHD) (Incl. Wave Set-up)
1%	1.45	7.9	2.4
2%	1.40	7.5	2.3
5%	1.37	7.0	2.2
10%	1.35	6.6	2.1
100%	1.25	5.1	1.9
HAT	1.10	-	-

It should be noted that these storm surge levels are likely to be conservative as in reality there is likely to be some attenuation of incident wave energy provided by Crampton Island that would reduce the overall wave energy (and hence total wave set-up) at the shoreline.

3.5.3 Inundation of Assets

The entrance behaviour will affect the inundation of properties and other assets in two distinct ways.

- > A closed entrance condition may result in inundation of low-lying assets due to catchment flooding (see **Section 3.4**); and
- > An open entrance condition may result in inundation of low-lying assets due to ocean inundation.

The Lake Tabourie Flood Study (BMT, WBM, 2010) found that the flooding behaviour within the study area was only somewhat sensitive to the berm conditions at the onset of flooding. This sensitivity was most pronounced in smaller flood events. In larger (rarer) flood events, where the entrance is quickly overtopped, entrance conditions had a smaller influence on peak flood levels. These differences were largely restricted to the creek and overbank areas.

During more severe flood events the entrance quickly breaks out and washes away due to the rapid rise of lake water levels, and that this overtopping occurs in advance of the peak flood. Therefore, it is not practically feasible to manage the entrance (i.e. break it open) to mitigate flood risk from a 1% AEP event.

3.5.4 Entrance Management Policy

The current Tabourie Lake Draft EMP (Peter Spurway & Associates, 2005) stipulates the conditions under which mechanical opening is to occur (refer **Section 2.1**). The current trigger level of 1.17 m AHD appears to be relatively effective for mitigation of below floor level flooding of properties; **Figure 3-5** shows that lake levels have only exceeded 1.3 m AHD four times between 1993 and 2017 (approximately every six years). This would suggest that the current opening level generally allows enough time for council entrance opening to take place before over floor flooding of properties can occur.

The desired condition for mechanical opening of the entrance is for a large ocean tidal range (greater than 1.0 m) with opening to coincide with a falling tide is considered appropriate. The policy states that the mechanical opening is to be planned so that, where possible, the actual opening of the lake occurs shortly after the tide turns from high to low, ideally within 30 minutes of the published high tide time. This will normally require mobilisation of the digger and commencement of excavation just after the low tide, as a total of four to six hours excavation across the beach would commonly be necessary according to Peter Spurway & Associates (2005). The idea is that there would be sufficient time to undertake the entrance opening so that there is a large head difference between the lake and ocean water levels. The greater this head difference, the more rapidly the lake will drain and the more sand will be scoured out of the entrance, hopefully leading to longer opening duration. While these are the preferred conditions and procedure for commencement of mechanical opening of the entrance, they may not always be achievable.

It should be noted that opening the lake during a spring tide may result in tidal inundation of foreshore lands on subsequent high tides following the initial opening. It may therefore be appropriate to consider an



additional “desirable condition” for entrance opening that it should not coincide with a spring tide. A reasonable guideline for this condition would be that it is preferable that predicted high tides in the week following breakout not exceed 0.8 m AHD, although this may not be feasible given the requirement to respond to lake water levels.

The potential impacts of climate change may also a review of entrance management policy in the future.

Section 3.5.4 discusses the potential impacts of climate change on entrance management.

3.6 Environmental and Social Values

A desktop review of publically available information on the existing social and environmental constraints was carried out on 11 April 2017. Further consideration of these issues was undertaken during the options assessment, and any impacts formally assessed in an environmental impact assessment for the preferred option in the Entrance Management Policy (refer **Section 6**).

3.6.1 Aboriginal Cultural Heritage

The traditional custodians of the land which is the subject of the EMP are the Budawang people. The study area falls within the boundary of the Ulladulla Local Aboriginal Land Council (LALC), which was confirmed in consultation with the Ulladulla LALC Chief Executive Officer (pers. comm, T. Mackenzie, Cardno – S. Carriage, LALC, 21/04/2017).

A number of archaeological and other sites of Aboriginal cultural heritage significance protected under the *National Parks and Wildlife Act 1974* were identified through a detailed search of the Australian Heritage Information Management System (AHIMS). A total of five sites were identified based on a search adopting a buffer of 1 km around the lake entrance. These sites comprise:

- > An isolated find and midden; and
- > Four midden sites.

Of the five sites, none are located in the area that would be subject to direct impact due to the entrance management works; however, this should be reviewed during the options assessment phase.

There is potential for Aboriginal sites or artefacts to exist in the study area that may not have been recorded in the AHIMS database, and thus not formally recorded. It is, however, unlikely that any such artefacts exist in the area that would be disturbed by the works due to the highly active nature of the beach, particularly where it breaks out and can be subject to significant scouring.

3.6.2 Non-Aboriginal Heritage

Non-Aboriginal heritage (or European heritage) is classified into three statutory listings, namely Commonwealth, State and local.

A desktop assessment of the following data bases was undertaken for the Shoalhaven LGA on 11 April 2017 to identify any non-Aboriginal heritage sites in the study area:

- > Australian Heritage database which incorporates the World Heritage List, National Heritage List, Commonwealth Heritage List and includes sites and relics protected under the EPBC Act;
- > State Heritage Register, established under the NSW *Heritage Act 1977*; and
- > Local heritage sites as listed on the *Shoalhaven Local Environmental Plan 2011* (LEP).

There were no records of sites or relics in Australian Heritage Database or the State Heritage Register in the study area or surrounds.

As discussed above with reference to Aboriginal cultural heritage, there is also a risk of uncovering previously unidentified sites or relics of non-Aboriginal cultural heritage significance, although this is considered unlikely due to the dynamic nature of the lake entrance and beach.

3.6.3 Topography and Soils

Sourcing information from the 1:100,000 map sheet (Geoscience Australia, 2008), the soil type is identified as sulfidic extratidal hydrosol and neutral peat soil (OEH, 2016).



The LEP indicates the presence of Acid Sulfate Soils (ASS) in the study area, primarily class 1 and 3 near the entrance (on a scale of 1 to 5, 1 being the most extreme acidic conditions). However, as discussed in Peter Spurway & Associates (2005) there is no evidence of ASS in the entrance area, and the lithology of the Tabourie Lake entrance is primarily coarse, poorly graded marine sands. Given the dynamic nature of the entrance channel and adjacent beach, it is considered reasonable to assume that the entrance channel comprises marine sand and is free of ASS.

3.6.4 Contaminated Land

Contaminated land refers to land that contains, within their soils or otherwise, concentrations of contaminants that pose a risk to environmental or human health. Contaminated land is managed under the NSW *Contaminated Land Management Act 1997* (CLM Act).

The OEH regulates contaminated land, maintaining records of written notices issued by the Environmental Protection Authority (EPA) in relation to the investigation and/or remediation of contamination. A search of the OEH Contaminated land register conducted on 11 April 2017 for the Shoalhaven LGA returned records of two sites in Nowra, some distance from the study area. There were no records of any contaminated lands in the study area. It is important to note that there are limitations to the registers and some contaminated sites may yet to be reported or investigated by the EPA, as such, may not be recorded on the register. Noting, however, the presence of clean marine sand in the entrance area (refer **Section 3.5.3**) and dynamic nature of the environment in this area, it is considered unlikely that any contaminated material would be encountered in the entrance area.

A search of the licensed premises public register on 21 March 2017, identified one premises in the study area that have a current Environment Protection Licence for pollution discharges. Lake Tabourie Tourist Park holds an Environment Protection Licence issued under the *Protection of Environment Operations Act 1997* (PoEO Act) for the operation of a sewage treatment and exfiltration plant. The licence permits discharges to waters at any time of between 20 – 100 ML.

3.6.5 Flora and Fauna

Meroo National Park intersects the study area, spanning from Ulladulla in the north to Termeil to the south of Tabourie Lake and including Crampton Island (refer **Figure 3-9**). It borders the north-western shores of Tabourie Lake upstream of the Princes Highway, but otherwise does not interact with the study area for the EMP. The Termeil State Forest is located southwest of Tabourie Lake.

Figure 3-9 presents mapping of Endangered Ecological Communities (EEC) and SEPP 14 Wetlands in the study area. The EECs comprise:

- > Bangalay Sand Forest;
- > Coastal Saltmarsh;
- > Swamp Oak Floodplain Forest; and
- > Swamp Sclerophyll Forest on Coastal Floodplains.

All four communities are listed under the *Biodiversity Conservation Act, 2016* (BCA Act). There were six Threatened Ecological Communities (TECs) as listed under the EPBC Act returned on the Protected Matters Search Tool with potential to occur in the study area, although only the Coastal Saltmarsh is confirmed from the study area.

Mapping of estuarine macrophytes prepared by DPI (Fisheries) has also been included in **Figure 3-9**, and shows the extent of seagrasses and saltmarshes in the study area. The seagrasses are mapped as *Zostera* and a mixed bed of *Zostera* and *Halophila*. Shoalhaven Council's Tabourie Lake Estuary Health Report Card showed that seagrasses in Lake Tabourie Lake decreased by 82% between 1985 and 2006, though this was attributed to largely due to natural processes associated with fluctuating water levels and associated changes in Salinity.

Searches of the following databases were conducted on 11 April 2017, adopting a 10 km by 10 km search area, to investigate the potential occurrence of threatened species in the study area:



- > EPBC Protected Matters Search Tool for species listed under the EPBC Act. The Tool also includes records of migratory birds protected under the Japan-Australia Migratory Bird Agreement (JAMBA), China-Australia Migratory Bird Agreement (CAMBA) and Republic of Korea-Australia Migratory Bird Agreement (ROKAMBA);
- > OEH BioNet Atlas for species listed under the BCA Act; and
- > Department of Primary Industries (Fisheries) threatened species distribution mapping for species listed under the *Fisheries Management Act 1994*.

There were not threatened fish species records for Tabourie Lake.

There are a number of records of threatened species listed under the BCA Act and/or the EPBC Act, as shown in **Table 3-5**. The BioNet database results for species listed under the BCA Act is based on actual observations of species in the search area, noting that some records may be from a number of years ago, or may represent a single occurrence of the species in the search area (i.e. as opposed to a resident species or population).

The Protected Matters Search tool results for EPBC Act listed species are less reliable as they are based on the species distributions and potential occurrence, as well as species records. Similarly, the species records may be from migratory species or those transiting the area, as well as resident species.

The three bird species with records immediately around the entrance include:

- > Sooty Oystercatcher – wader bird with potential to forage in and/or around the lake, the last sighting is from the 1990's; and
- > Little Tern – potential to nest on the sand, although there are no records since 1950.

The assessment of the preferred option should consider the potential impacts on biodiversity, and these threatened species in particular. In the event any significant impacts on threatened species are identified, this may trigger the requirement for a Species Impact Statement.

Table 3-5 Threatened Species Records for the Study Area

Species Name	Common Name	BCA Act Listing*	EPBC Act Listing^
Amphibia			
<i>Litoria aurea</i>	Green and Golden Bell Frog	E1,P	V
<i>Heleioporus australiacus</i>	Giant Burrowing Frog		V
<i>Litoria Littlejohni</i>	Littlejohn's Tree Frog		V
<i>Mixophyes balbus</i>	Stuttering Frog		V
Reptiles			
<i>Caretta</i>	Loggerhead Turtle		E
<i>Dermochelys coriacea</i>	Leatherback Turtle		E
<i>Eretmochelys imbricata</i>	Hawksbill Turtle		V
<i>Natator depressus</i>	Flatback Turtle		V
<i>Chelonia mydas</i>	Green Turtle	V,P	V
<i>Hoplocephalus bungaroides</i>	Broad-headed Snake		V
Aves			
<i>Stictonetta naevosa</i>	Freckled Duck	V,P	
<i>Thalassarche cauta</i>	Shy Albatross	V,P	V
<i>Thalassarche cauta steadi</i>	White-capped Albatross		V
<i>Thalassarche melanophris</i>	Black-browed Albatross	V,P	V
<i>Diomedea antipodensis</i>	Antipodean Albatross		V
<i>Diomedea antipodensis gibsoni</i>	Gibson's Albatross		V



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Species Name	Common Name	BCA Act Listing*	EPBC Act Listing^
<i>Diomedea epomophora</i>	Southern Royal Albatross		V
<i>Diomedea exulans</i>	Wandering Albatross		V
<i>Diomedea sanfordi</i>	Northern Royal Albatross		E
<i>Phoebastria fusca</i>	Sooty Albatross		V
<i>Thalassarche bulleri</i>	Buller's Albatross		V
<i>Thalassarche bulleri platei</i>	Northern Buller's Albatross		V
<i>Thalassarche eremita</i>	Chatham Albatross		E
<i>Thalassarche impavida</i>	Campbell Albatross		V
<i>Thalassarche salvini</i>	Salvin's Albatross		V
<i>Macronectes giganteus</i>	Southern Giant Petrel	E1,P	E
<i>Macronectes halli</i>	Northern Giant Petrel		V
<i>Graculus grallaria</i>	Storm Petrel		V
<i>Pterodroma leucoptera</i>	Gould's Petrel		E
<i>Pterodroma neglecta</i>	Kermadec Petrel		V
<i>Haliaeetus leucogaster</i>	White-bellied Sea-Eagle	V,P	C
<i>Hieraetus morphnoides</i>	Little Eagle	V,P	
<i>Pandion cristatus</i>	Eastern Osprey	V,P	
<i>Esacus magnirostris</i>	Beach Stone-curlew	E4A,P	
<i>Haematopus fuliginosus</i>	Sooty Oystercatcher	V,P	
<i>Thinornis rubricollis</i>	Hooded Plover	E4A,P	V
<i>Limosa lapponica baueri</i>	Bar-tailed Godwit	P	V,C,J,K
<i>Limosa lapponica mensbieri</i>	Bar-tailed Godwit		CE
<i>Rostratula australis</i>	Australian Painted Snipe		E
<i>Numerius madagascariensis</i>	Eastern Curlew	P	CE,C,J,K
<i>Calidris ferruginea</i>	Curlew Sandpiper		CE
<i>Sterna albifrons</i>	Little Tern	E1,P	C,J,K
<i>Callocephalon fimbriatum</i>	Gang-gang Cockatoo	V,P	
<i>Calyptorhynchus lathami</i>	Glossy Black-Cockatoo	V,P	
<i>Pezoporus wallicus</i>	Eastern Ground Parrot	V,P	
<i>Lathamus discolor</i>	Swift Parrot		CE
<i>Neophema chrysogaster</i>	Orange-bellied Parrot		CE
<i>Ninox strenua</i>	Powerful Owl	V,P	
<i>Tyto novaehollandiae</i>	Masked Owl	V,P	
<i>Tyto tenebricosa</i>	Sooty Owl	V,P	
<i>Anthochaera phrygia</i>	Regent Honeyeater	E4A,P	CE
<i>Grantia picta</i>	Painted Honeyeater		V
<i>Botaurus poiciloptilus</i>	Australian Bittern		E
<i>Dasyornis brachypterus</i>	Eastern Bristlebird		E
<i>Daphoenositta chrysoptera</i>	Varied Sittella	V,P	
<i>Pachyptila turtur subantarctica</i>	Fairy Prion (southern)		V
<i>Artamus cyanopterus</i>	Dusky Woodswallow	V,P	
<i>Petroica phoenicea</i>	Flame Robin	V,P	



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Species Name	Common Name	BCA Act Listing*	EPBC Act Listing^
Fish			
<i>Epinephalus daemeli</i>	Black Rockcod		V
<i>Prototroctes marena</i>	Australian Grayling		V
Sharks			
<i>Charcharias Taurus</i>	Grey Nurse Shark		CE
<i>Carcharodon carcharias</i>	White Shark		V
<i>Rhincodon typus</i>	Whale Shark		V
Mammalia			
<i>Balaenoptera borealis</i>	Sei Whale		V
<i>Balaenoptera musculus</i>	Blue Whale		E
<i>Balaenoptera physalus</i>	Fin Whale		V
<i>Eubalaena australis</i>	Southern Right Whale		E
<i>Megaptera novaewangliae</i>	Humpback Whale		V
<i>Isodon obesulus</i>	Southern Brown Bandicoot		E
<i>Dasyurus maculatus</i>	Spotted-tailed Quoll	V,P	E
<i>Sminthopsis leucopus</i>	White-footed Dunnart	V,P	
<i>Cercartetus nanus</i>	Eastern Pygmy-possum	V,P	
<i>Petaurus australis</i>	Yellow-bellied Glider	V,P	
<i>Petaurus norfolkensis</i>	Squirrel Glider	V,P	
<i>Petauroides volans</i>	Greater Glider	P	V
<i>Petrogale penicillata</i>	Brush-tailed Rock-wallaby		V
<i>Phascolarctos cinereus</i>	Koala		V
<i>Potorous tridactylus</i>	Long-nosed Potoroo		V
<i>Psuedomys fumeus</i>	Smoky Mouse		E
<i>Psudomys novaehollandiae</i>	New Holland Mouse		V
<i>Pteropus poliocephalus</i>	Grey-headed Flying-fox	V,P	V
<i>Mormopterus norfolkensis</i>	Eastern Freetail-bat	V,P	
<i>Chalinolobus dwyeri</i>	Large-eared Pied Bat	V,P	V
<i>Kerivoula papuensis</i>	Golden-tipped Bat	V,P	
<i>Myotis macropus</i>	Southern Myotis	V,P	
<i>Scoteanax rueppellii</i>	Greater Broad-nosed Bat	V,P	
<i>Vespadelus troughtoni</i>	Eastern Cave Bat	V,P	
Flora			
<i>Cryptostylis hunteriana</i>	Leafless Tongue Orchid	V,P	V
<i>Galium australe</i>	Tangled Bedstraw	E1,P	
<i>Boronia deanei</i>	Deane's Boronia		V
<i>Bundawangs gnidioides</i>	Budawangs Cliff-heath		V
<i>Caladenia tessellate</i>	Thick-lipped Spider-orchid,		V
<i>Correa baeuerlenii</i>	Chef's Cap		V
<i>Euclptus aggregate</i>	Black Gum		V
<i>Genoplesium baueri</i>	Yellow Gnat-orchid		E
<i>Genoplesium vernale</i>	East Lynne Midge-orchid		V



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Species Name	Common Name	BCA Act Listing*	EPBC Act Listing^
<i>Haloragis exalata subsp. exalata</i>	Wingless Raspwort		V
<i>Leptospermum thompsonii</i>	Monga Tea-tree		V
<i>Leucopogon exolasius</i>	Woronora Beard-heath		V
<i>Melaleuca biconvexa</i>	Biconvex Paperbark		V
<i>Periscaria elatior</i>	Knotweed		V
<i>Pterostylis gibbosa</i>	Illawarra Greenhood		E
<i>Pultenaea baeuerlenii</i>	Budawangs Bush-pea		V
<i>Syzygium paniculatum</i>	Magenta Lilly Pilly		V
<i>Thesium australe</i>	Austral Toadflax		V
<i>Triplarina nowraensis</i>	Nowra Heath-myrtle		E
<i>Zieria tuberculata</i>	Warty Zieria		V

*Key: P = Protected, V = Vulnerable, E1 = Endangered, E4A = Critically Endangered.

^Key: V = Vulnerable, E = Endangered, CE = Critically Endangered, C = CAMBA, J = JAMBA, K = ROKAMBA

DE19.122 - Attachment 2



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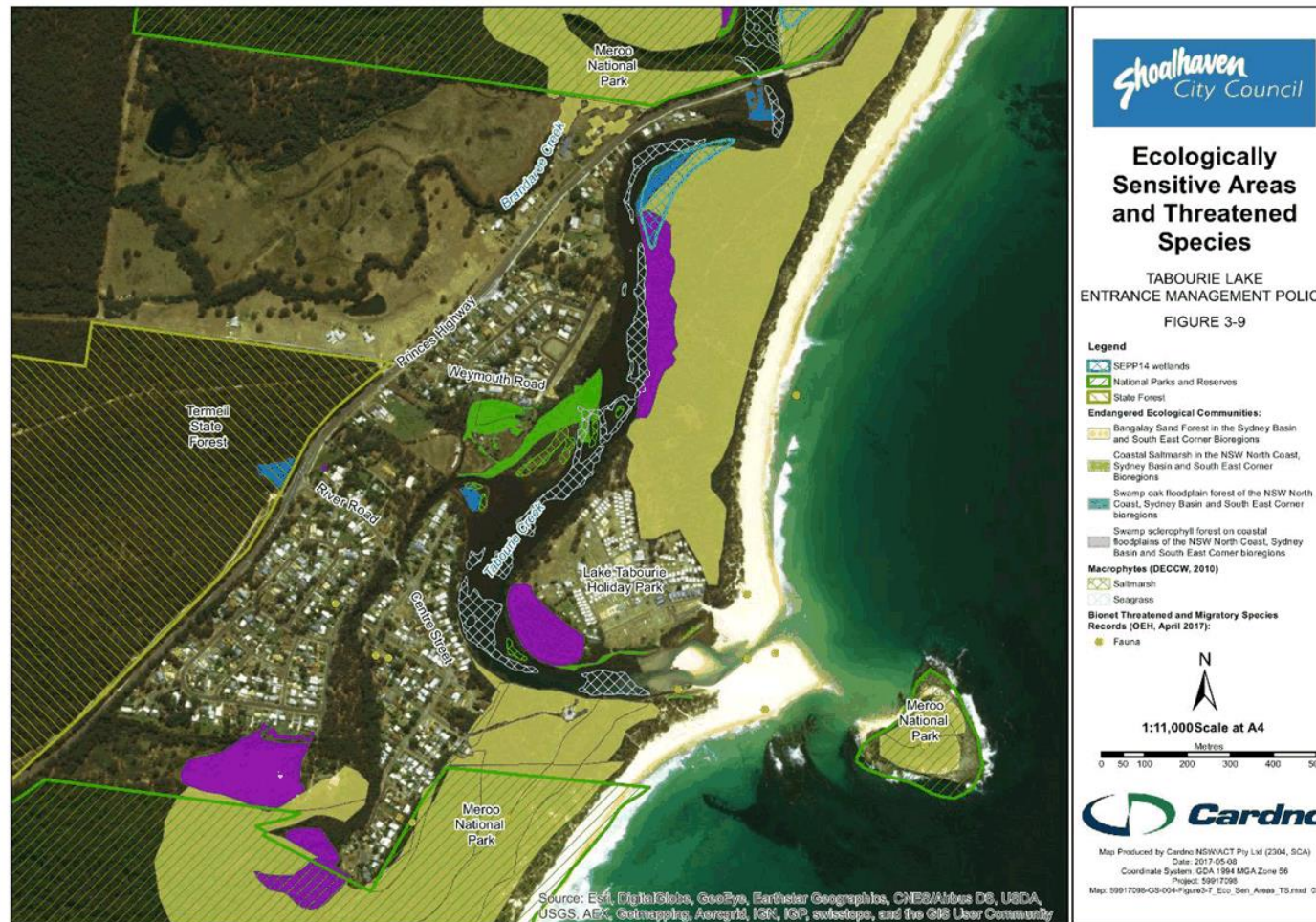


Figure 3-9 Mapping of Endangered Ecological Communities (EEC) and SEPP 14 Wetlands in the study area



3.6.6 **Water Quality**

Tabourie Lake is defined as an ICOLL (refer **Section 3.3**). Both natural and mechanical openings of the lake have an impact on water quality. While the entrance is closed, any pollutants residing within the lake system will be trapped and remain until the entrance is either naturally or artificially open (though some will also be assimilated within the system). Given the average depth of 0.8 m (estimated by Roper *et al.*, 2011), it is assumed that while closed, mixing primarily occurs via wind forces and catchment inflows (Peter Spurway & Assoc., 2005). The water quality processes in the estuary will be very complex, and highly variable at any given time based on the balance of environmental forcing. It is not the intent of this report to document this in detail.

A number of physical changes to the characteristics of water are expected to change dramatically with the mechanical opening of the entrance. Peter Spurway & Associates (2005) report that during quarterly monitoring salinity concentrations have consistently been recorded as 35 to 36 ppt (parts per thousand), which is equivalent to that of seawater. Ocean flushing is likely to result in higher than normal turbidity conditions, temperature fluctuations (introduction of typically warmer ocean water) and dissolved oxygen fluctuations (with the influx of less oxygen dense ocean water).

Council has monitored water quality regularly since 1989 across 19 sites, of which nine are currently inactive (SCC, 2012). Council uses a Water Quality Index to rate sites on a scale from 'very poor' to 'excellent'. The 2008 – 2010 sampling period indicated the lake to fluctuate between 'medium' and 'good' water quality (SCC, 2012).

It is noted that the properties in the study area are now connected to the reticulated sewage system, and therefore there is now low risk of overflows from on-site sewage systems negatively impacting on the lake.

3.6.7 **Potential Approvals Pathway for the EMP**

The environmental and social values to be considered for the updated entrance management policy of Tabourie Lake include:

- > Provided no significant impacts are identified during the assessment of the preferred option, and assuming also that the review of the EMP confirms the need for entrance opening, it is likely that the ongoing entrance management works would be defined as infrastructure works under the ISEPP and would fall under Part 5 of the EP&A Act;
- > A number of threatened species and EECs/TECs were identified within Tabourie Lake and the wider study area. The potential impacts on these species and communities will require careful consideration in the impact assessment;
- > The potential impacts of the works on the AHIMS sites in the entrance area will also require careful consideration, and may require further assessment under the *National Parks and Wildlife Act 1979*; and
- > The works will likely also require other approvals, permits and licences, including (but not necessarily limited to) landowner access under the *Crown Land Management Act 2016* and a Fisheries Permit under the FM Act.

3.7 **Potential Impacts of Climate Change on Entrance Management**

As the morphology of the entrance berm is a product of the interaction between fluvial, tidal and wave processes, any impact on these processes associated with climate change may also affect the entrance behaviour, resulting in a new 'dynamic equilibrium'.

Specifically, climate change is expected to result in changes to the Tabourie Lake entrance behaviour due to the following processes, as outlined by Haines *et al.* (2007):

- > Mean sea level rise;
- > Changes in offshore wave climate; and
- > Changes in rainfall behaviour.



3.7.1 Mean Sea Level Rise

It is generally considered that mean sea level rise is likely to result in an accompanying shoreline recession. For a lake entrance, this recession would also be accompanied by a landwards and upwards translation of the entrance berm (Hanslow, 2010), as seen in **Figure 3-10**. This shift in berm position would result in higher maximum lagoon water levels and a higher associated flood risk. The magnitude of the upwards movement of the entrance berm will be governed by the magnitude of the corresponding mean sea level rise. As berm height is controlled by wave run-up processes, any increase in mean sea level will likely result in an equal increase in berm level.

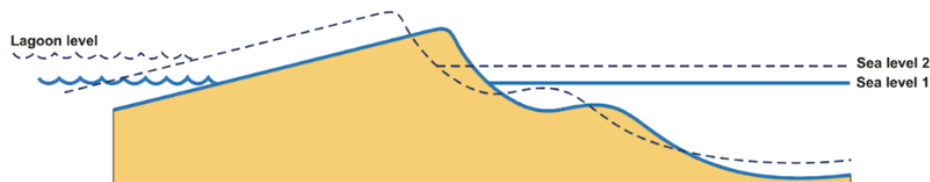


Figure 3-10 Upward and Landward Translation of the Berm Crest due to Mean Sea Level Rise (after Hanslow, 2010)

3.7.2 Offshore Wave Direction

In addition to changes in sea level, climate change may also lead to changes in the direction of wave approach. Hennessy *et al.* (2004) posits that this may result in the prevalent offshore wave conditions shifting to slightly a more southerly direction. This change in wave direction may result in an increase in the south to north longshore sediment transport, and an overall 'rotation' of the beach compartment. At Tabourie Lake, this may result in an increase in the amount of sand washed into the estuary during an open entrance condition. This would increase the speed at which the entrance closes after an opening event, and hence decrease the average amount of time the entrance is open.

It should be noted that there is still a reasonable degree of uncertainty associated with the likelihood changes in wave height and direction, and the magnitude is presently difficult to quantify without detailed numerical modelling.

3.7.3 Rainfall Behaviour

The frequency of flooding and breakout events in an ICOLL are dependent on the total rainfall occurring within the catchment. Therefore, changes to both average annual rainfall and rainfall intensity and frequency will affect the frequency of opening events. CSIRO and Bureau of Meteorology (2015) indicate that over the 21st century mean annual rainfall is likely to decrease in southern Australia, and that extreme rainfall events may become less frequent, but more severe. As a result, it is possible that the frequency of entrance opening may decrease (though this would be offset somewhat by the increase in average lake level due to mean sea level rise), while the magnitude of scour of the entrance during severe rainfall events may increase. However, this impact may be mediated by other factors that affect amount of entrance scour during opening events, such as the presence of underlying bedrock.

It should be noted that there is presently considerable uncertainty regarding climate change projections for changes in rainfall, compared to effects on temperature and mean sea level, of which there is relatively high confidence.

3.7.4 Implications for Entrance Management

As stated in the Lake Tabourie FRMS&P (Cardno, 2016), the potential increase in entrance berm level does not necessitate a change in entrance management, and the trigger level would likely still need to be set with a view to preventing over floor flooding of properties. However, maintaining the existing trigger level does have some consequences:

- > The entrance will require more frequent openings, as an increase in mean lake water level means that the trigger level would be reached more frequently;



- > There will be a reduced head difference between lake water levels and ocean water levels at the time of breakout, which will result in a less efficient breakout process and less sand being scoured from the entrance; and
- > The entrance will be more difficult to keep open as a result of the reduced scour.

If it is elected to increase the trigger level in line with projected sea level rise:

- > There will be a greater risk of inundation of foreshore development (although it is noted that there will be a greater risk of inundation regardless of entrance trigger level, as mean water levels approach the current trigger level over time);
- > The capacity of the estuary (storage volume) would increase, which may reduce the frequency of breakouts.

The relative levels of the lake, entrance and ocean would remain similar, so opening behaviour and duration should remain closer to the current regime.

3.8 Review of the Need for Entrance Management

The assessment is the FRMS&P (Cardno, 2016) found that entrance management is not an effective flood management strategy, even in small events. In the 20% AEP, for example, if the entrance is closed and is allowed to break open naturally, peak flood levels still exceed 2.0 m AHD and over floor flooding would affect at least one property. There may be some reduction in flood levels for this event if the entrance is open prior to the flood event, whether achieved naturally or mechanically. However, when the entrance is open, there is risk of storm tide inundation of foreshore properties, with the 100% AEP storm tide level being 2.4 m AHD. There is, therefore, a trade-off between risk of catchment flooding and storm tide inundation of properties. If the catchment flood event coincides with an ocean storm, it may not be practical to open the entrance. Hence, the management procedure may require review to take into account these processes.

It is noted that at the time the Draft EMP was prepared, only Council was able to access the lake water level data (with a password). This is now publicly available in real time, and there may be no need for to provide an additional gauge to make reading water levels easier.



4 Alternatives for Entrance Management

4.1 Option 1 - 'Do Nothing' Option

Under this scenario, there is no active management of the lake entrance. For the 'do nothing' option the entrance berm would be overtopped when water levels rise during a rainfall event and the entrance breaks out naturally without any intervention. Under this management approach, the water levels in the lake would be governed by the amount of rainfall over a given time period, the height of the entrance berm, and the rate of entrance scour during the breakout event.

Table 3-2 provides estimated probability of exceedances for berm heights at Lake Tabourie, noting that 80% of the time the berm height exceeds 1.80 m AHD. This means that flood levels within the lake body would likely exceed this level at least 80% of the time, resulting in more frequent and longer inundation of foreshore lands. While this is a natural process, the historic development of the lake foreshores has resulted in a risk to public and private property due to flooding.

This approach is keeping with the NSW DPI policy on ICOLL management, which supports minimal interference with ICOLL entrance barriers, and advocates natural processes being allowed to operate to the greatest extent possible (unless the social, environmental and economic benefits of artificial opening outweigh any potential adverse impacts).

4.2 Option 2 - Continue Existing Approach

Option 2 provides for the continuation of the existing management approach. As stated in **Section 3.5.4**, the current management practice of mechanical entrance opening has proved to be a relatively effective approach for the mitigation of below floor level flooding of properties (noting that there is little benefit in terms of mitigation of more extreme flood events). The trigger level of 1.17 m AHD for mobilisation to open the lagoon generally allows sufficient time for Council to open the entrance before over-floor flooding of properties can occur.

The current approach does, however, significantly increase the amount of times the Lake entrance is opened and the duration of opening beyond that which would naturally occur, leading to environmental impacts.

4.3 Option 3 - Raise Trigger Level

Option 3 proposes continuing the existing management approach, but with a higher mechanical opening trigger level of **1.30 m AHD**. As for Option 2, this option would predominantly serve to address below floor level flooding. The main benefit of this option is that it would lead to fewer mechanical openings of the entrance of Lake Tabourie, thereby reducing the environmental impact of the current practices on the Lake. This option is more in keeping with the minimal interference policy of NSW DPI.

However, there are also several potential negative consequences. Raising the level would result in less reaction time for Council to mobilise and open the lake before lake levels rose high enough to cause below floor level flooding.

4.4 Option 4 - Berm Height Management

When the lake entrance is closed, the berm height plays a very important role in determining the maximum water level that may be reached in Tabourie Lake. The berm height can be managed such that it does not exceed a pre-determined level; this is known as maintaining a 'dry notch', which is a low or 'saddle' point in the entrance berm which the water can preferentially flow across. The purpose of the notch is to dispense with the need to mechanically open the lake when a flood occurs.

If maintained correctly, the notch would breach when the lake water level reaches the appropriate level without requiring Council to mobilise excavators during the event. Option 4, berm height management, would require more frequent mobilisation of an excavator to the beach in order to maintain the notch level, and therefore has potential to result in increased risk to the public and more regular impact on the environment where the excavator accesses the beach.



The setting of the level of the notch needs to consider both its effectiveness in mitigating flooding and the practicality maintaining the notch. If the notch level is set too high, then it is essentially rendered ineffective for below floor level flooding mitigation purposes. However, the level of the notch also needs to be set high enough so that it is not affected by normal coastal processes such as tides and wave run-up. If the notch is set too low, then it may begin to be filled in by sand transported by waves or the wind. This would compromise the maintenance life of the notch to the point where it may become impractical to maintain.

Other ICOLLs that have successfully implemented dry notches (such as Shoalhaven River) are generally in locations where beach berms are naturally higher, and so notches can be set at levels that are less affected by coastal processes. In order to make the dry notch more effective than the present mechanical opening approach for Tabourie Lake, the dry notch level would need to be set lower than the present mechanical opening trigger level of 1.17 m AHD, to say 1 m AHD or possibly lower. Wainwright (2010) estimated that the berm level naturally ranges from 1.8 m AHD (exceeded 80% of the time) to 2.1 m AHD (exceeded 1% of the time).

Therefore, the dry notch is considered to be impractical at Tabourie Lake for two reasons:

- > This naturally low berm level means that the notch would likely be affected by the local coastal processes, and would likely fill-in frequently enough that maintenance would be less practical than the current mechanical opening approach; and
- > If the notch was set back far enough to be less frequently affected by wave-over wash, then the notch itself would be so small that it would be rendered only minimally effective.

For these reasons, Option 4 has not been subjected to detailed assessment via computer modelling.

4.5 Option 5 - Construct a Permanently Open Entrance

Option 5 proposes constructing a permanently open entrance through the use of rock armoured training walls. A permanently open entrance would, in theory, lower peak catchment flood levels within the lake by facilitating a more rapid release of flood waters to the ocean. Training walls have been successfully implemented at a number of other ICOLLs along the NSW coastline, such as at Lake Illawarra and the Shoalhaven River. In these instances, training walls have managed to maintain a permanently open estuary and reduce extreme catchment flooding. However, the implementation of training walls at these locations have also led to a number of other physical and environmental impacts.

There are, however, several issues associated with Option 5. From a flooding perspective, the main issue is that a permanently open entrance would allow high spring tides (which occur several times a year) and storm tides to propagate up the estuary and flood low lying properties (as discussed in **Section 3.5.2**). The estimated 100% AEP storm tide level, which has potential to occur once every year, is 1.9 m AHD (refer **Section 3.5.2**), close to the 2.0 m AHD floor level of the lowest lying property. Over time, sea level rise due to climate change would increase the incidence of elevated lake water levels due to coastal processes.

Another issue associated with the trained entrance is the significant cost involved. Rock armoured coastal structures can come with significant costs associated with the design, sourcing and transporting of suitable rock material for construction, and for the ongoing maintenance of the structure. Previous experience in design and cost of such structures indicates that the cost for the required training walls (two walls of 400-500 m length) could be of the order of millions, to tens of millions, of dollars.

Other issues to consider include the visual impact and loss of beach amenity, as well as the disruption to the local community associated with the construction phase.

There is also the impact on the local terrestrial and aquatic ecology, due to the significant alteration of the tidal regime inside the lake. Once constructed, the altered tidal regime within the lake could have impacts on:

- > Entrance morphology - The increased tidal prism and tidal velocities would likely change the pattern and scale of shoaling and scouring in the entrance channel, and may also lead to erosion around the lake foreshore. This has potential to negatively impact assets and important ecological areas, such as the dunes and areas used by birds. It would likely also prevent public access for people walking along the beach and may under certain conditions make swimming in the estuary more hazardous;



- > Water quality and ecology – It is possible that the increased tidal exchange may improve flushing of the estuary, though detailed studies on the impacts of training walls at nearby Lake Illawarra have not observed such improvements to water quality subsequent to training wall implementation. It would, however, make more of the estuary more saline than is currently the case, with potential to significantly alter the distribution and occurrence of flora and fauna species. This could impact estuarine vegetation such as saltmarsh and seagrass, and increase the occurrence of mangroves, with flow on effects for fauna. Furthermore, the impacts of training walls on water levels within the lake system would also adversely affect estuarine vegetation such as seagrass.

4.6 Option 6 - Pilot Channel

Option 6 involves a mechanical excavation of sand from the entrance berm 1-3 days before a large storm is scheduled to arrive, by digging a pilot channel starting from the ocean. The channel is then progressed lake-wards, with a small width of berm left in place so as not to induce entrance breakout (at least initially). The exercise is intended to reduce the volume of sand required to be removed to instigate a lake breakout, thereby inducing an earlier breakout and reducing flood levels (and possibly duration) within the lake. This would reduce risk to personnel, who often have to excavate the entrance during a storm event under the current management practice.

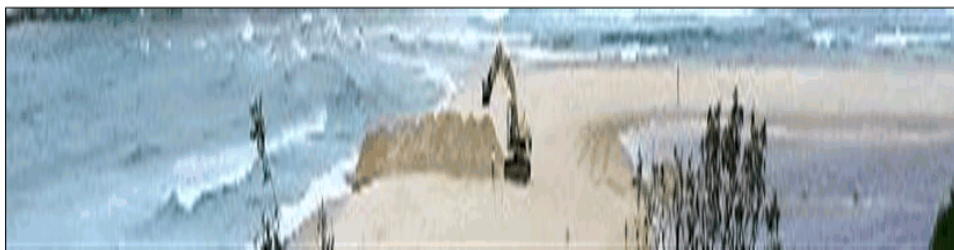


Figure 4-1 Excavation of the Pilot Channel on 17 March 2017

The option would be undertaken as an additional component to Council's current entrance management policy of opening the lake once trigger levels reach 1.17 m AHD. The potential benefits of this option are:

- > The mobilisation of personnel and machinery to the mechanically open the lake is a faster and safer process, as most of the required excavation has already been undertaken;
- > If the storm is particularly severe, then the lake may open naturally before Council has time to mobilise following the trigger level exceedance, and this natural opening would occur earlier than would otherwise be the case, thereby lowering flood levels; and
- > If the forecasted lake water level does not arrive, or turns out to be less severe than anticipated, then the pilot channel may remain effective for a brief period of time (before coastal processes re-fill the channel) should a subsequent severe storm arrive with little warning.

This option is theoretically effective; however, there are some issues to consider. The first is that if the pilot channel is excavated too early, then coastal processes will begin to re-fill the channel before the storm arrives, thereby reducing its effectiveness. If the channel is excavated too late, then Council may as well remain on-site to open the lake, as returning several hours later to open the lake may be impractical.

While this option may theoretically have positive flooding implications, it is also dependant on storm forecasts, which may not be sufficiently accurate or available far enough ahead of time in order to properly implement. Therefore, it could only ever be considered as an option that supplements Council's current management policy, rather than a replacement.

Another consideration is that excavation of the initial pilot channel would make easier for members of the public to undertake unauthorised opening of the entrance - with a shovel for instance. Such openings are illegal, and may result in the lake opening prior to the optimal time in terms of tidal driven head difference.



5 Assessment of Management Options

5.1 Options Assessment Methodology

In order to identify a preferred option for entrance management, the potential options outlined in **Section 4** were assessed using a multi-criteria analysis informed by:

- > Stakeholder and community consultation feedback (refer **Section 5.2**);
- > Hydrodynamic and morphological computer-based modelling of a sub-set of options in order to determine the impacts of each option on flood levels and the duration of inundation in the lake (refer **Section 5.3**); and
- > A semi-quantitative triple-bottom line assessment, including consideration of the cost of implementation of each option (refer **Section 5.4**).

5.2 Stakeholder and Community Consultation

A community workshop was held in Lake Tabourie on the 9 August 2017 to present the initial findings of this entrance management policy review, including the results presented in **Sections 1 to 3** of this report. The six options discussed in **Section 4** were also presented and discussed with the community.

Following the workshop, a survey was released to enable the community to rank each of the six options and identify their preferred option, or to suggest an alternative option for consideration. Over 90 responses were received.

The following questions were asked in the survey:

- > Q1 - We may wish to discuss your responses with you, and would be grateful if you could please provide your contact details below. Please be assured your contact details will remain confidential.
- > Q2 - We appreciate that, as a member of the Lake Tabourie community, you will have a view on how the entrance should be managed into the future. We have prepared six management options for your consideration. Please rank the options from 1 (most preferred) to 6 (least preferred).
- > Q3 - Do you feel there are any other entrance management options that have not been considered? If so, please provide further information below.

Table 5-1 and **Figure 5-1** show the options ranking results, including an indication of how respondents ranked each option. An average score is also provided, whereby each respondent ranked their most preferred option '1' and their least preferred option '6'. The survey results were inconclusive, with no clear preference indicated by the community. The 'most preferred' options were Options 3 (Raise trigger level) and 4 (Dry notch) with an average score of 3.1 out of 6, followed closely by Option 2 (Existing approach) with a score of 3.2.

The least preferred options were Option 1 (Do nothing), which would allow flooding to occur with no intervention. Option 6 (Construction of a permanently open entrance) appeared to be a fairly polarising option, being scored as the most preferred option by 38.8% of respondents, and least popular by 30.6% of respondents.

Table 5-1 Question 2 - Preferred Management Options Scores

Entrance Management Option	Rank 1	Rank 2	Rank 3	Rank 4	Rank 5	Rank 6	Average Score
Option 1 – Do nothing	6.7%	4.4%	10.0%	6.7%	20.0%	52.2%	4.9
Option 2 - Current approach	20.0%	13.3%	17.8%	33.3%	8.9%	6.7%	3.2
Option 3 – Raise trigger level	17.8%	24.4%	13.3%	22.2%	18.9%	3.3%	3.1
Option 4 – Berm height management	12.0%	27.2%	25.0%	14.1%	19.6%	2.2%	3.1



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Entrance Management Option	Rank 1	Rank 2	Rank 3	Rank 4	Rank 5	Rank 6	Average Score
Option 5 - Permanently open entrance	38.8%	7.1%	5.1%	3.1%	15.3%	30.6%	3.4
Option 6 - Pilot channel	5.3%	22.3%	30.9%	18.1%	18.1%	5.3%	3.4

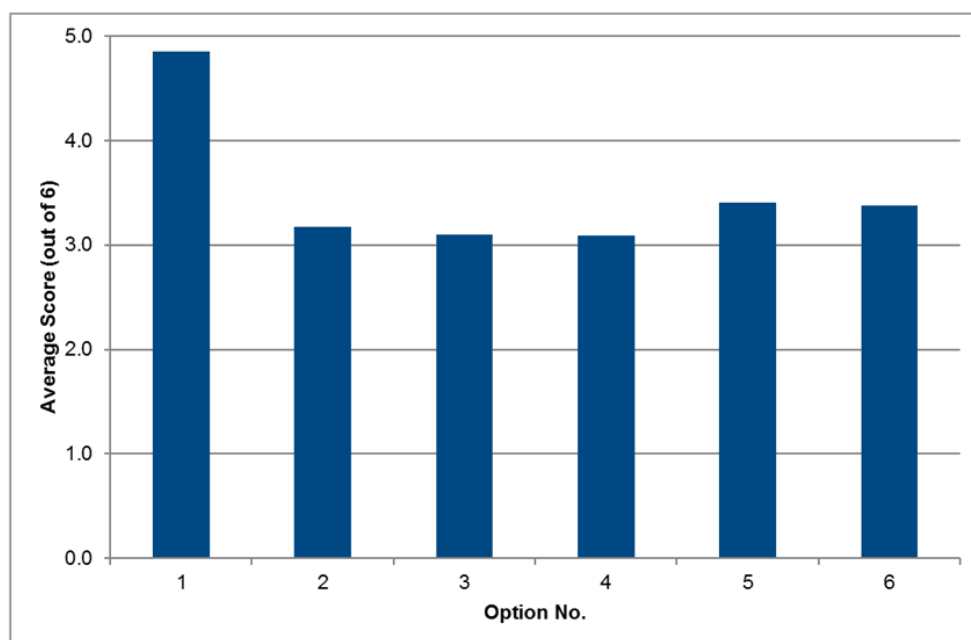


Figure 5-1 Options Ranking by the Community (lower scores indicate the preferred options)

The options are ranked based on community feedback alone in **Table 5-2**. The community feedback was incorporated directly into the multi-criteria options assessment matrix (refer to **Section 5.4**).

Table 5-2 Options Ranking Based on Community Feedback

Management Option	Rank
Options 3 and 4	1
Option 2	3
Options 5 and 6	4
Option 1	6

5.3 Options Modelling

5.3.1 Modelling Methodology

Computer-based numerical modelling of various a sub-set of the entrance management options was undertaken using the Delft3D hydrodynamic and morphological model of the Tabourie Lake Estuary, which was established during the Tabourie Lake FRMS&P (Cardno, 2016). It used the same model set-up and catchment inflow data used in that study.



Numerical modelling was undertaken to assess the impact of three of the potential management options on peak flood levels and durations for the more regularly occurring flood event of a 20% AEP event (5 years ARI). It is noted that the 1% AEP flood event occurs so rapidly that entrance management is not feasible for purposes of flood mitigation; hence it was not considered in the options assessment.

Option 1 was not modelled as it was lowest ranking and was considered unacceptable to the community. Option 5 was not modelled as it was considered unacceptable due to its lower ranking, high cost of implementation and risk of coastal inundation (refer **Section 4.5**). Option 4 was not modelled due to its higher cost and the fact that its technical feasibility was questionable (refer **Section 4.4**).

The remaining three options modelled included:

- > **Option 2:** Existing approach with trigger level of 1.17 m AHD;
- > **Option 3:** Raising the trigger level to 1.30 m AHD; and
- > **Option 6:** Incorporation of a pilot channel (in conjunction with the existing trigger level).

Each of the three options was modelled under five discrete conditions, summing to a total of 15 model simulations:

- > **Condition A:** High High Water Springs (HHWS; plus wave set up) and initial berm height of 2.1 m (i.e. 1% berm height, refer **Table 3-2**);
- > **Condition B:** HHWS (plus wave set up) and initial berm height of 1.8 m (i.e. 80% berm height, refer **Table 3-2**);
- > **Condition C:** 1% AEP ocean level (plus wave set up) and initial berm height of 2.1 m (i.e. 1% berm height, refer **Table 3-2**);
- > **Condition D:** 1% AEP ocean level (plus wave set up) and initial berm height of 1.8 m (i.e. 80% berm height, refer **Table 3-2**);
- > **Condition E:** HHWS + 0.4 m sea level rise (plus present day wave set up) and initial berm height of 2.2 m (i.e. 80% berm height under sea level rise conditions, refer **Table 3-2**).

The model results are discussed in **Section 5.3.2** and were used to inform the multi-criteria matrix-based options assessment (refer **Section 5.4**).

5.3.2 Results

Peak water levels at the MHL gauge located on the east of the lake near the caravan park are provided for the full suite of simulations are provided in **Table 5-3**. There was very little spatial variation across the study area where properties may be affected, and so the peak water levels can be considered representative for purposes of assessing the potential flood impacts of each option. The results have generally been compared back to the existing management approach (i.e. Option 2).

Results have been presented for Conditions A, C and E in **Figures 5-2, 5-3 and 5-4** respectively.

Figure 5-2 Peak Water Levels for Each Option for Each of Model Run

Option	Condition A	Condition B	Condition C	Condition D	Condition E
Option 2	1.86	1.86	2.52	2.53	1.86
Option 3	1.93	1.93	2.52	2.53	1.93
Option 6	1.76	1.76	2.52	2.52	1.77



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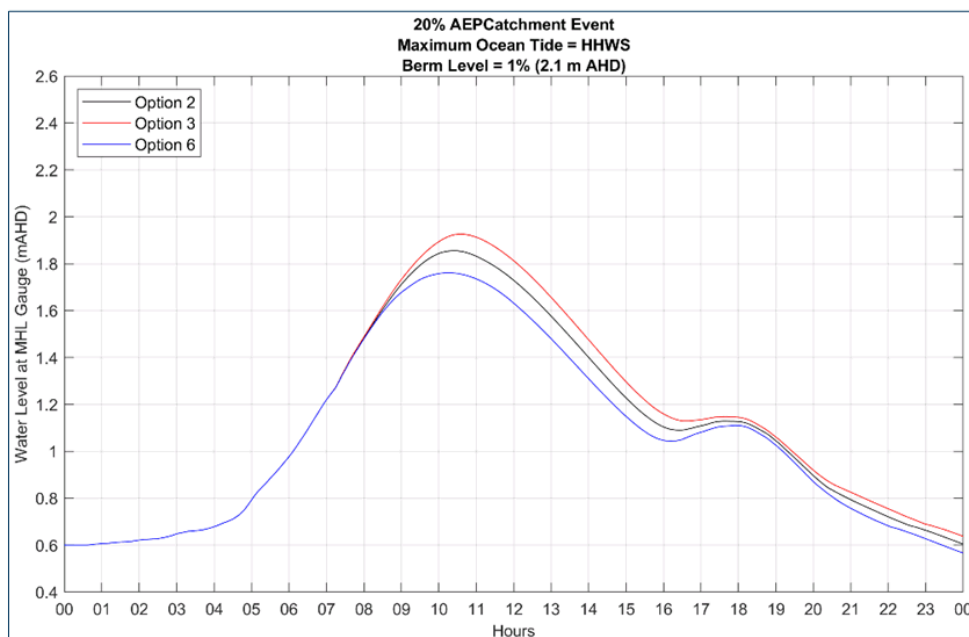


Figure 5-3 Results for Condition A

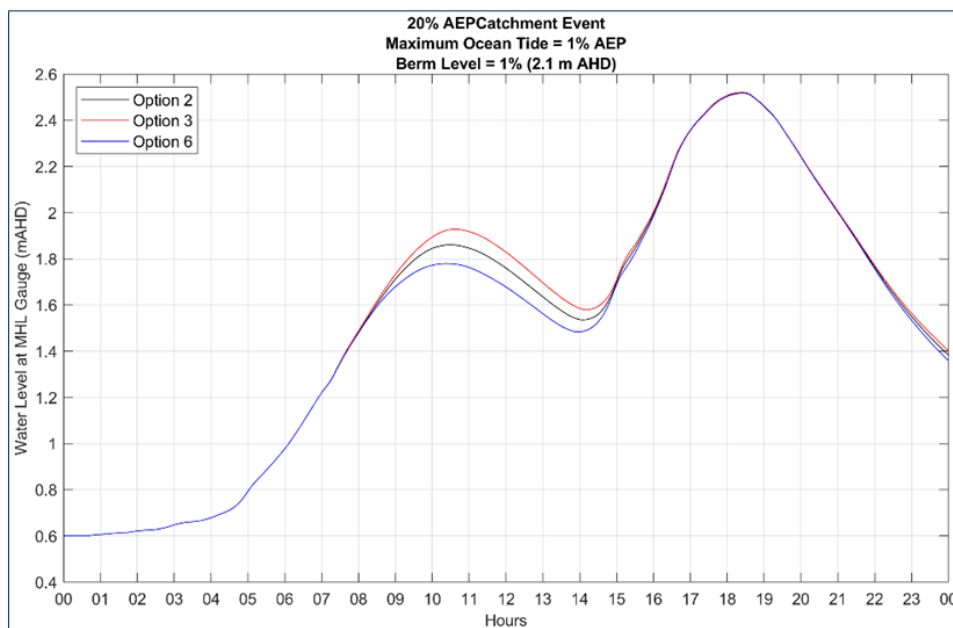


Figure 5-4 Results for Condition C



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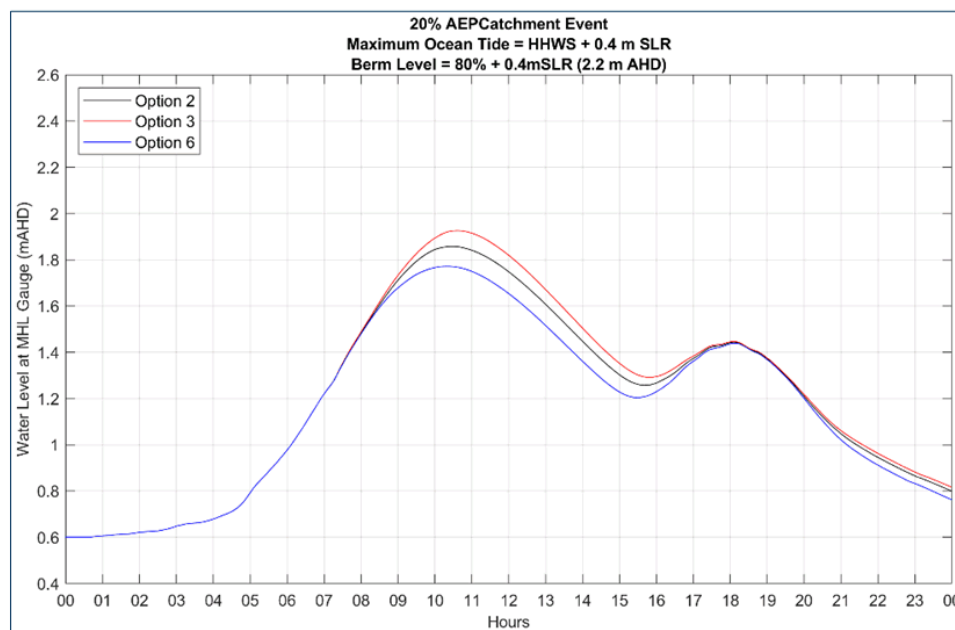


Figure 5-5 Results for Condition E

Impact of Berm Height

The initial berm height did not appear to have a significant impact on flood impacts.

The results for the Conditions A and B simulations show minimal difference in terms of peak flood level, and hence the rate of drainage of flood waters from the lake. This indicates that for more frequent flood events like the 20% AEP, the water levels at the entrance aren't high enough to overtop the berm completely. While the maximum water levels at the location of the MHL water level gauges are slightly different at around 1.86 m AHD and 1.93 m AHD, being higher than the 1.80 m AHD berm level, the water surface slopes downward getting closer to the entrance, until it is lower than 1.80 m AHD berm at the entrance. Therefore, for more frequent flood events, the height of the berm is less important, and each option will produce more or less the same flood mitigation result regardless of the berm height at the time of implementation. The height of the berm would likely effect flood levels for more severe, rarer events, such as those of magnitude 10% AEP or larger.

For Conditions C and D, the results show that the height of the berm (and the degree of entrance scour after catchment flooding) has minimal impact on the tidal inundation during a 1% AEP tide (including wave set-up).

Comparison of Condition E with Conditions A and B shows that each option will keep the same level of efficacy under a 0.4 m sea level rise condition. That is, the higher ocean tides, and resulting loss of head between the lake and ocean has only minimal impact for the 20% AEP event.

Option 3: Raise the Trigger Level

Comparison of results for Options 2 and 3 shows that raising the trigger level from 1.17 m AHD to 1.30 m AHD (an increase of 13 cm) would result in an increase in the maximum flood level. However, the increase in flood level is not one for one, and flood levels only increase for Option 3 by around 7 cm (from 1.86 to 1.93 m AHD) for conditions A and B. The increase is non-linear due to the fact that as flood level increases, so too does the available flood storage. Additionally, the flood levels are likely heavily influenced by the geometry of the entrance channel, which constricts the rate of lagoon outflow.



The results also indicate show the same level of storm tide inundation for Options 2 and 3. This would suggest that Options 2 and 3 result in a comparable level of entrance scour, and therefore allow ingress of the storm tide to the same degree.

Option 6: The Pilot Channel

For Option 6 (pilot channel plus existing trigger level) does have a quantifiable flood benefit. The results for the Conditions A and B simulations show that the addition of a pilot channel results in a reduction of peak flood levels of around 10 cm when compared to Option 2 (existing approach). The pilot channel facilitates more rapid entrance breakout by reducing the volume of sand to be scoured out during the flood event. Option 6 also has potential to reduce flood duration (i.e. time spent above 1.2 m AHD) by about an hour. It should be noted that this modelling assumes no channel infilling in between the excavation of the channel and the entrance break out during the flood event. As discussed in **Section 4.6**, in reality the pilot channel may be infilled by coastal waves during the time between its excavation and the entrance breakout, such as during an east coast low when heavy rainfall and high wave conditions tend to occur at the same time.

The results also indicate show the same level of storm tide inundation for Options 2 and 6. This would suggest that Options 2 and 6 result in a comparable level of entrance scour, and therefore allow storm tide ingress to the same degree.

5.4 Multi-criteria Options Assessment

Each management option was assessed using a multi-criteria matrix based framework that acts as a decision-support tool. The multi-criteria matrix incorporates the calculation of a cost-benefit index based on a quadruple bottom line assessment in accordance with the requirements of the NSW Government's Estuary Management Policy.

Each option was scored against the following social, environmental and governance criteria:

- > Environmental criteria:
 - Impact on natural physical processes,
 - Impact on ecological processes,
 - Sustainability under a climate change (sea level rise) scenario (informed to some extent by the modelling results);
- > Social criteria:
 - Level of risk to infrastructure and property (e.g. from flooding; informed by modelling results),
 - Impact on recreational amenity, public access and public safety,
 - Level of community support, based on the community survey results (refer **Section 5.2**); and
- > Governance criterion:
 - Compatibility with the policy and legislative framework.

Scores ranging from -3 (strongly negative impact) to 0 (neutral or no impact) and +3 (strongly positive impact) were allocated for the environmental, social and governance criteria as described in **Table 5-4**. The scores for each of these criteria were summed to calculate the raw benefit index.

The economic impact of each option was assessed by calculating the Net Present Value of Implementation of each option, which was based on a function of any capital and ongoing costs of implementation over a ten year period of implementation, adopting a 7% discount rate. The cost estimates are preliminary in nature, and have been based on information provided by Council on their current entrance management costs.

Finally, a cost:benefit index is calculated based on a function of the net present value (cost of implementation) and the raw benefit index. The cost:benefit index can then be used to rank the options against each other.



Table 5-3 Options Scoring Descriptors

Criteria	Score						
	-3	-2	-1	0	+1	+2	+3
Impact on natural physical processes	Significant change to natural tidal processes, beach morphology, estuarine water levels, estuarine water quality and entrance behaviour.	Moderate or occasional change to natural tidal processes, beach morphology, estuarine water levels, estuarine water quality and entrance behaviour.	Negligible change to natural tidal processes, beach morphology, estuarine water levels, estuarine water quality and entrance behaviour.	No impact on natural hydraulic processes.	N/A	N/A	N/A
Impact on estuarine ecology	Permanent change in estuarine ecology (e.g. shift in ecosystems).	Moderate and/or longer-term negative impact on estuarine ecology. May be restored.	Minor, short-term negative impact on estuarine ecology. Natural recovery likely.	No impact on estuarine ecology.	N/A	N/A	N/A
Sustainability under climate change scenario	N/A	Not sustainable in the long term (e.g. up to 0.9 m sea level rise).	Not sustainable in the short term (e.g. up to 0.4 m sea level rise).	N/A	Sustainable in the short term (e.g. up to 0.4 m sea level rise).	Sustainable in the long term (e.g. up to 0.9 m sea level rise).	N/A
Level of risk to infrastructure and properties from inundation	Significant increase in risk to property and people.	Moderate increase in risk to property and people.	Minor increase in risk to property and people.	No change in level of risk from flooding or coastal processes under "do nothing" approach.	Minor reduction in risk to property and people.	Moderate reduction in risk to property and people.	Significant reduction in risk to property and people.
Impact on recreational amenity, access and public safety	Long-term or permanent reduction in recreational amenity and/or access. Increased risk to public safety.	Impact on recreational amenity, public access and/or public safety that requires active management.	Minor, short-term impact on recreational amenity, public access and/or public safety during the works.	No impact on recreational amenity, access or public safety.	Provides short-term improvement recreational amenity (e.g. via improved water quality for primary and secondary recreation).	Provides medium-term improvement recreational amenity, access or public safety.	Provides long-term improvement recreational amenity, access or public safety.
Likely level of community support	N/A	Unacceptable to community and/or highly divergent range of views with potential for conflict amongst community members.	Not supported by community.	N/A	Supported by small number of community members.	Supported by a large number of community members.	N/A



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Criteria	Score						
	-3	-2	-1	0	+1	+2	+3
Compatibility with statutory and policy context	N/A	N/A	Not likely to be supported.	N/A	Compatible. Requires environmental approvals.	Preferred. May or may not require environmental approvals.	N/A



The full list of management options was ranked on the basis of the Adjusted Benefit Index. The results of the options assessment are provided in **Table 5-5**.

The highest ranked option was Option 3, which provides for the raising of the existing trigger level to 1.30 m AHD. Options 2 (existing approach) and 4 (pilot channel) were the second highest ranked options, followed by Option 6 (pilot channel). The lowest ranking options were Option 5 (permanently open entrance) and Option 1 (do nothing).

Based on the options assessment outcomes, the preferred option is Option 3.

5.5 Community Consultation on the Draft Policy

The outcome of the options assessment and the draft EMP were subject to public exhibition by Council between 21 January 2019 and 22 March 2019. As part of this public exhibition, the Draft EMP was presented to the local community on 20 February 2019 at a Community Workshop at the Tabourie Lake Rural Fire Service (RFS) Shed. More than 30 community members attended this workshop.

In total 12 online submissions have been received, of which seven submissions were in support of the draft EMP, one was neutral, and four were against. Of the submissions that were not in favour of the Draft EMP, one submission was made by ten residents.



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Table 5-4 Multi-Criteria Options Assessment Results

Option Description	Impact on natural physical processes	Impact on estuarine ecology	Sustainability under climate change scenario	Level of risk to infrastructure & properties	Impact on recreational amenity, access & public safety	Likely level of community support	Compatibility with statutory & policy context	Raw Benefit Index	Preliminary Estimate of Capital Cost	Preliminary Estimate of Annually Recurrent Cost	10 Year Net Present Value	Benefit Cost Index	Rank
Option 1 – Do nothing.	0	0	-1	-3	-2	-2	-1	-9	\$ -	\$ -	\$ 0	-1.7	5
Option 2 - Current approach (open at 1.17 m AHD).	-1	-1	-2	2	0	1.5	1	0	\$ -	\$ 7,500	\$ 52,677	0.1	2
Option 3 – Raise trigger level (open at 1.30 m AHD).	-1	-1	-1	2	0	2	2	3	\$ -	\$ 5,000	\$ 35,118	0.7	1
Option 4 – Dry notch.	-1	-1	-2	1	0	2	1	0	\$ -	\$ 15,000	\$ 105,354	0.0	3
Option 5 - Permanently open entrance.	-3	-3	-3	-2	-2	0	-1	-14	\$ 5,000,000	\$ 5,000	\$ 5,035,118	-9.4	6
Option 6 - Pilot channel.	-2	-1	-2	3	-1	1	1	-1	\$ -	\$ 10,500	\$ 73,748	-0.2	4



6 Entrance Management Policy

6.1 Entrance Management Policy

The logic behind this policy relates to the threat of flooding of private property and public assets situated on low lying areas around the lake foreshore. The aim of the policy is to address the following issues in particular:

- > The rear yards and below-floor areas of at least four houses along the Princes Highway are inundated by lake levels as low as 1.0 m AHD. Although not resulting in direct damage as such, saturated soil can cause odours from rotting vegetation and limit access to outbuildings if sustained for lengthy periods;
- > Garages and outbuildings such as laundries and sheds in this location can flood if the lake reaches a level of around 1.3 to 1.4 m AHD; and
- > The lowest house floor level is 2.0 m AHD.
- > As discussed in **Section 2.2**, the FRMS&P, identified that in the 20% AEP flood event, two properties experience over floor flooding and 21 properties have flooding below floor level.

The entrance management policy contains the following appendices and attachments:

- > **Appendix A:** Includes a flowchart of outlines the decision making process;
- > **Appendix B:** A list of relevant contacts;
- > **Appendix C:** A map of the entrance and preferred location and orientation of the channel for a mechanical opening; and
- > **Appendix D:** A copy of the entrance monitoring sheet.

6.2 Decision Making Framework

There is a need to address extended elevated lake levels due to the impact over time on flooded yards. This policy addresses this issue by considering a lake opening if lake water levels have been at an elevated level (defined as being **above 1.0 m AHD**) for a continuous period of two months. The requisite is that after two months, lake opening can take place only in a non-breeding season for threatened shorebirds or if clearance from NPWS for the excavation has been obtained.

The policy also allows for the mechanical opening of the entrance when lake water levels are elevated and heavy rain is predicted such that lake water levels are likely to exceed 1.3 m AHD overnight. This provision is required because, even for more frequent events (such as the 20% AEP), the rate of rise of lake water levels can be as high as 0.3 m per hour (see **Section 3.4.2**). Due to these high rates of rise, when lake water levels exceed 1.0 m AHD it may be necessary to proactively open the entrance to prevent overnight flooding where heavy rain is forecast overnight. Forecasts of heavy rain are typically provided 24 to 48 hours in advance.

Appendix A (attached to this policy) outlines the decision making process to be followed before a mechanical entrance opening is undertaken. The following summarises conditions under which the lake entrance can be mechanically opened:

1. If the lake water level at or exceeding 1.3 m AHD - then the lake shall be mechanically opened as soon as conditions permit (see **Section 6.4** for a description of those conditions);
2. If the lake water level stabilises after rainfall at a level between 1.0 m and 1.3 m AHD, then
 - a. If heavy rain is predicted and lake water levels are likely to exceed 1.3 m AHD overnight;

OR

 - b. If a period of over two months has elapsed since attaining a level of 1.0 m AHD;

AND



- c. If it is non-breeding season for threatened shorebirds, or clearance from NPWS has been obtained (the breeding period typically extends from late August to March in any year).

Additionally, the following conditions are desirable to enable a successful opening, but are not essential:

- > Continuing moderate to heavy rainfall, to allow a greater degree of entrance channel scour;
- > Relatively large ocean tidal range (greater than 1.0 m), with opening to coincide with a falling tide. Preference should be given to undertaking the works during a spring tide, but since these only occur for a few days every fortnight this is not always possible. Nonetheless, the mechanical opening should only be undertaken when high tides are predicted to be lower than the pre-opening lake levels; and
- > Relatively low wave action at opening location north of Crampton Island – for safety reasons.

6.2.1 Monitoring of Conditions and Forecasts

At levels below 1.3 m AHD, there is better opportunity to plan an opening. Once water levels reach 1.0 m AHD and rainfall is predicted, monitoring of water levels is to be undertaken so that an opening can be planned for in the event of water levels reaching 1.3 m AHD.

The water level in the lake is to be monitored at 15 minute intervals at the MHL gauge located on the east of the lake near the caravan park, which is reported via: <https://mhl.nsw.gov.au/Site-216440>

It is important to note that while the data is regularly logged, the information on this webpage may not necessarily be available in real time.

Rainfall in the locality can also be monitored via routine checks of the nearby MHL rainfall gauge at Conjola Lake, which is reported via: <https://mhl.nsw.gov.au/Site-216420D>

Predicted rainfall and other weather forecasts can be accessed via the following Bureau of Meteorology (BOM) web pages:



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> South East Districts Forecast: - <http://www.bom.gov.au/products/IDN10061.shtml#ILL>

Australian Government Bureau of Meteorology

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NSW VIC QLD WA SA TAS ACT NT AUSTRALIA GLOBAL ANTARCTICA

Bureau Home > Australia > New South Wales > Forecasts > Batemans Coastal Waters Forecast: Ulladulla to Montague Island

Batemans Coastal Waters Forecast: Ulladulla to Montague Island

View the current warnings for New South Wales

Forecast issued at 4:05 pm EST on Wednesday 15 August 2018.

Weather Situation

Vigorous west to northwest winds are being generated today due to the passage of a cold front. Winds will ease later Thursday as the front shifts further east and a high pressure ridge builds in its wake. Another strong cold front looks set to arrive on the weekend.

Forecast for Wednesday until midnight

Gale Warning for Wednesday for Batemans Coast

Winds	Westerly 20 to 30 knots, reaching up to 35 knots offshore north of Moruya Heads in the evening.
Seas	2 to 3 metres.
Swell	Northeasterly below 1 metre.
Weather	Mostly clear.

Thursday 16 August

Winds	Westerly 10 to 15 knots, reaching up to 25 knots offshore early in the morning. Winds tending southeast to southwesterly in the early afternoon then tending northwest to northeasterly in the late evening.
Seas	1.5 to 2.5 metres, decreasing below 1 metre during the afternoon.
Swell	Southerly below 1 metre inshore, increasing to 1 to 2 metres offshore during the morning.
Weather	Sunny.

Friday 17 August

Winds	Southeast to southwesterly 10 to 15 knots becoming variable about 10 knots before dawn then becoming northwest to northeasterly 15 to 20 knots in the late afternoon.
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Please be aware

Wind gusts can be 40 percent stronger than the averages given here, and maximum waves may be up to twice the height.

Nearby Coastal Waters

QLD, Double Island, Cape Byron, Point Danger, NSW

Figure 6-1 Example Screenshot Showing South East Districts Weather Forecast

DE19.122 - Attachment 2



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> 128 km Canberra Radar - <http://www.bom.gov.au/products/IDR403.loop.shtml#skip>

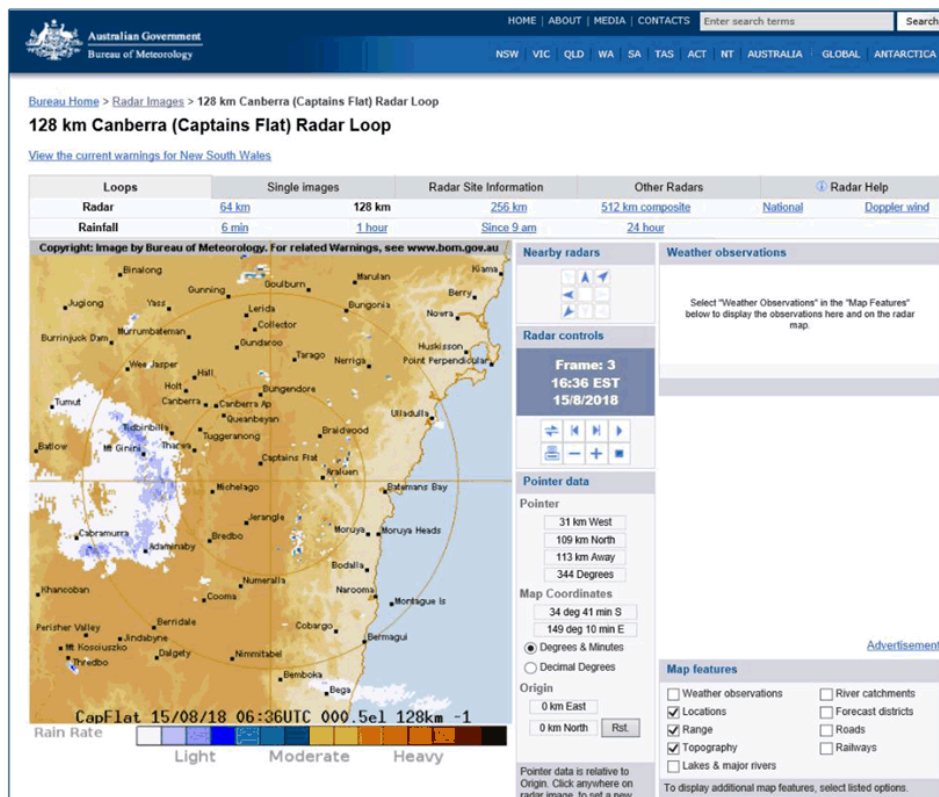


Figure 6-2 Example Screenshot Showing Canberra Region Rainfall Forecast

6.3 Consultation and Communication Protocols

Once a decision has been made to undertake a mechanical breakout, consultation with the following agencies must be undertaken to advise of the planned mechanical breakout:

- > The NSW DPI - Fisheries,
- > The NSW OEH; and
- > The NSW NPWS.

These agencies should be provided with the following information:

- > Proposed time of opening;
- > Purported reason(s) for opening; and
- > Potential health impacts on recreational swimmers on the adjacent beach areas for the following three days.

Failure to notify the public about the health and safety hazards could result in Council being liable for any incidents. Therefore, a press release is necessary.

A list of contacts is provided in **Appendix B**.



Any matters concerning the opening that are raised by the above agencies should (where reasonable and feasible) be satisfactorily addressed by Council prior to the commencement of entrance opening works. Assets around Tabourie Lake are particularly low-lying, and emergency situations are common (when water levels have risen rapidly and urgent opening for flood relief is necessary). Therefore this policy proposes that notification to the above bodies is required, although a three-day consultation period would not be feasible. This policy is subject to council satisfying itself that the accompanying REF is a suitable level of environmental impact assessment for each particular opening event.

6.4 Roles and Responsibilities

Shoalhaven City Council is responsible for entrance opening, should intervention be necessary. The responsible officer in respect to sanctioning mechanical intervention is Shoalhaven City Council Director Assets and Works or their appointed delegate.

The responsible officer in managing the mechanical opening and monitoring process shall be the Shoalhaven City Council City Services Works and Services Manager. The Works and Services Manager would normally delegate responsibility for emergency openings in accordance with this plan, to officers in Council's Natural Resources and Floodplain Management Unit ("Flood Engineers"). The site works would normally be delegated to Council's District Engineer – Southern, who will assign the task to the "Site Supervisor."

The Works and Services Manager will also nominate an officer to liaise with other groups as required. These would include Council's Rangers, Council's Liaison Officer at the Emergency Operations Centre, the State Emergency Service, and NSW Government agencies such as OEH, NPWS and DPI - Fisheries.

The NPWS Area Manager, Shoalhaven Area, is the officer that will arrange for Shoalhaven City Council City Services to be informed whether shorebirds are known to be nesting in the vicinity of the Lake Tabourie entrance.

Details of essential emergency communications are set out in the "Procedures" attachments to this plan.

6.5 Entrance Opening Procedure

Once the decision has been made to undertake a mechanical opening in accordance with the framework in **Section 6.2**, the following breakout procedure should be undertaken:

1. The mechanical opening is to be planned so that where possible the actual opening of the lake occurs shortly after the tide turns from high to low, preferably for the lower of the two high tides of the day;
2. Opening should not be undertaken if wave conditions are dangerous (i.e. if H_s is greater than 4 m):
 - a. Predicted offshore wave heights from the BOM can be accessed at:
<http://www.bom.gov.au/marine/waves.shtml>
 - b. Real-time offshore wave-rider buoy measurements can be obtained from the MHL at:
<https://mhl.nsw.gov.au/>
3. A mechanical opening should only be undertaken when high tides are predicted to be lower than the pre-opening lake levels:
 - a. Predicted tides can be accessed via at the BOM at:
http://www.bom.gov.au/oceanography/projects/ntc/nsw_tide_tables.shtml. Tide data is provided for Port Kembla, and this can be considered applicable at Lake Tabourie in this instance. Note that the datum for these predictions are Lowest Astronomical Tide (LAT) - not AHD. At Lake Tabourie AHD \approx LAT - 0.9 m
4. The recommended access point for the 4WD backhoe operator to access the beach is provided in the figure in **Appendix C**. The machine will access the site as much as possible via the established roads and access ways. Particular care should be taken to avoid damage to or disturbance of vegetated areas of sand dunes;
5. The figure provided in **Appendix C** shows the recommended position and orientation of the excavated channel. The channel should be located to the north of Crampton Island, such that the



lake will drain to the north of Crampton Island, a location that is more sheltered from offshore waves;

6. The opening should be deep enough for scouring flow to develop (i.e. with a flow velocity of greater than 0.4 m/s), at least 1 m. The 4WD backhoe operator is to dig a 'pilot' excavation channel starting at the ocean end of the berm and moving progressively towards the lake. The pilot channel is to be around one bucket-width (commonly 2 m or less) and the bed should be graded down to the ocean. The last section of the channel (at the lake end) should be kept closed, and where possible, opened shortly after the next high tide (i.e. the highest possible tide of the day) turns from high to low.
7. In terms of timing, ideally the initial breaching should occur 30 minutes after the published high tide time (adjusted for daylight saving time when appropriate). Initiation of a breakout at this time is likely to result in the most effective and sustained mechanical breakout due to the increasing hydraulic head difference between the water in the lake and the ocean through the progression of the breakout. This will normally require commencement of excavation just after the preceding low tide, allowing for a total of 4 to 6 hours excavation time across the beach;
8. Where access to the internet is not available (due to loss of power during a storm), checking of a water level marker (a 'tide board') at a location visible from the Beach St wharf (to be installed at the landward side of the wharf at the approximate location depicted in **Appendix C**) should be undertaken.
9. The volume of sand to be excavated for the breakout channel is expected to be small. This sand is to be retained on the beach, and should be placed to one or both sides of the excavated channel. It may be washed into the channel as it expands laterally. The location for placement of the excavated sand is shown on the Figure in **Appendix C**. *Excavated sand is not to be removed from the beach area.*
10. Appropriate action should be taken to protect public health and safety at the site while excavation equipment is operating and the entrance breakout event is underway. Signage should be erected warning the public of the safety hazards a mechanical opening. There is considerable danger to members of the public that might choose to be at the site during excavation. The potential hazards include being hit by large machinery or being swept to sea by the river as the banks of the scouring entrance channel collapse. To help reduce such risks, Council's Rangers will provide crowd control when an opening is taking place.
11. Compliance with the occupational health and safety legislation and Council's health and safety systems is required for the works. The activity requires a clear Safe Work Method Statement. Given the nature of the work and likely hazards, a clear description of operation would address issues such as induction of operators, the use of public access barriers, temporary signage, and hazards management.
12. Declines in water quality, including at adjacent surf beaches, may occur as a result of the lake emptying. Council should consider the need to notify the community of this issue for at least the first 7 days after the opening has occurred.

6.6 Entrance Monitoring

6.6.1 Mechanical Entrance Openings

When mechanical openings have been carried out, monitoring of the entrance should be undertaken to determine the efficiency of the opening and for use in a possible future flood study. Council's Natural Resources and Floodplain Manager will be responsible for this monitoring function.

For each opening attempt, the following data will be recorded:

- > Level of lake prior to opening;
- > Date and time of opening;
- > Location and length of excavation;
- > Approximate width and depth of channel;



- > Ocean swell conditions (wave height and direction)
- > Rainfall in the preceding 48 hours;
- > Date of natural closure of the entrance and cause (if evident); and
- > Digital photographs of the opening and breakout development.

The information is to be recorded on a standard monitoring sheet (**Appendix D**).

If possible, an estimate of depth and peak flow velocity should be made coincident with ocean low tide, as well as photographs of the water surface at each time interval. Comment should be made on apparent depth, velocity and width variations along the channel. Tides and prevailing winds should also be recorded.

Once the breach is completed and water starts flowing outwards, the data listed above should be recorded at hourly intervals (at least). Once the lake has emptied to tidal conditions, record keeping can revert to being undertaken on a daily basis. The intent of the data collection is to record the event in such a way that the scouring process can be studied/assessed after each event and so that opportunities to progressively improve the process are identified.

6.6.2 Unassisted Entrance Openings

Monitoring should also include unassisted breakouts, where possible, recording the prior lake level, time and date of opening, the date of lake closure, and any other relevant comments. The monitoring is to be carried out by Council.

The information is to be recorded on a standard monitoring sheet (**Appendix D**), which is to be completed for every entrance opening, whether mechanical or unassisted.

6.7 Entrance Berm Clearance

The berm height and depth (refer **Section 1.3** for defined terms) at Lake Tabourie entrance may build up to such a volume that a mechanical breakout would be difficult, and the length of time it would take to open the entrance would increase substantially. Due to the relatively fast rate of rise of Lake water levels, the increased time required to undertake a mechanical opening under these conditions may result in inundation of low-lying assets around the Lake.

Therefore, it may be necessary on an infrequent basis to undertake an entrance berm clearance. Entrance berm clearance would involve the redistribution of built up sand from the entrance berm to the surrounding beach area. This would increase the likelihood of an unassisted breakout and reduce the amount of time required to undertake a mechanical breakout.

The decision to undertake a major entrance berm clearance project will be undertaken by Council's Natural Resources and Floodplain Manager after conferring with:

- > The NSW DPI – Fisheries;
- > The NSW OEH; and
- > The NSW NPWS.

This decision will only be made after reference to information provided through the lagoon monitoring system, and by acquisition of berm and bathymetric survey.

Entrance berm clearance operations are a major capital project cost to Shoalhaven City Council and require inclusion in a Capital Works Budget prior to the consideration of such operations.

The essential consideration prior to the initiation of an entrance berm clearance operation is whether the lake berm volume (i.e. depth and/or height) is considered of sufficient size such that the corresponding time required to undertake natural or mechanical breaching of the entrance berm is high that the additional risk to low lying assets is considered unacceptably high.

The following conditions are desirable to enable a successful entrance berm clearance operation:

- > Mechanical closure of the entrance may be required if a breakout occurs during a berm clearance operation;



- > The entrance berm clearance operations should ideally be conducted in the winter months to minimise disruption to the recreational users of the lake, lake entrance and beach areas.

A separate REF and relevant consultation would be required if entrance berm clearance works are to be undertaken.

6.8 Management of Environmental Impacts

Any mechanical entrance openings conducted under this Policy are subject to the:

- > Environmental management and mitigation measures listed in the accompanying environmental impact assessment prepared under the EP&A Act; and
- > Requirements of any associated permits or licences obtained for the works.



7 Recommendations

7.1 Adoption of the EMP

It is recommended that Council adopt Option 3 (raising trigger level to 1.3 m AHD) as the Tabourie Lake EMP, as described in Chapter 6. This recommendation is based on the technical assessment presented in Section 5.4, which included a triple bottom line cost-benefit assessment. The assessment resulted in highest score for Option 3 out of the six options considered.

Appendices A, B, C and D are to be used for implementing the Policy.

This document comprises the Entrance Management Plan for Tabourie Lake, and henceforth supersedes the previous Peter Spurway & Associates (2005) EMP. This EMP sets out the procedure by which Council will make a decision to open the entrance of Tabourie Lake for flood mitigation purposes, whether in response to a flood event or to alleviate below floor level inundation of foreshore land.

It should be noted that Shoalhaven City Council have developed a FRMS&P for the Lake Tabourie Township and its surrounds. The options selected for inclusion in the FRMP were based upon both their likely flood mitigation benefit and the funding available from Council and the State Government. These options included structural options aimed at preventing, avoiding or reducing the likelihood of flood risks – including the construction of levees behind properties and raising roads in specific locations.

It is anticipated the implementation of the measures outlined in the FRMP would, in the future, likely remove the need to undertake entrance management and mechanical lake opening as a means of mitigating below floor level flooding. Therefore, it is intended that the EMP be adopted as an “interim” policy, until the relevant measures outlined in the FRMP have been fully funded and implemented.

7.2 Infrastructure and Monitoring Systems

The following infrastructure and monitoring systems should be implemented as part of this Policy:

- > A water level marker should be placed at the Beach Street wharf, in the location identified in **Appendix C**. This will assist with determining water levels in the event of a mechanical breakout if access to the internet is lost. The water level marker should be accompanied by clear signage which outlines this Policy and the marker should have a clear mark at 1.3 m AHD (the trigger level). This will inform residents of the Policy and the level at which Council will undertake a mechanical breakout.

7.3 Review and Update of This Policy

This policy and the associated environmental impact assessment should be reviewed every five years, or in response changes in the relevant legislation (as required). Review of the policy should include analysis of all monitoring data collected over that period to ensure that predictions and assumptions outlined in the policy and the environmental impact assessment are correct.

A review of the trigger level should also be in relation to the latest floor level data and levels of any other infrastructure on low lying land at risk of inundation from floodwaters. If any of the low-lying assets listed in this policy are removed or modified, the trigger level should be subject to review and the policy updated as required.



8 Limitations

Opening of the entrance of the Lagoon will not prevent flooding of property and dwellings in many circumstances. For example, even if the entrance is fully open at the start of a large flood (i.e. it has recently been scoured by a preceding flood event) there are existing dwellings that would be expected to be affected by flooding. The Policy aims to reduce (where possible) but not eliminate the impacts of catchment flooding. Further, there may be circumstances (e.g. closed access roads, night, or dangerous sea conditions) where, despite its best endeavours, Council cannot act to mechanically open the entrance of the lake at the levels indicated in this Policy.

The opening of the entrance during times of flood is only one of a range of floodplain management measures discussed in the FRMS&P (Cardno, 2016). It should not be considered in isolation as the overall solution to the flood problem.



9 References

- BMT WBM. (2010). *Tabourie Lake Flood Study*. Broadmeadow, NSW: BMT WBM.
- Cardno (2012) *NSW Coastal Waves: Numerical Modelling*. Prepared for Office of Environment and Heritage.
- Cardno (2016) *Tabourie Lake Floodplain Risk Management Study and Plan*. Prepared for Shoalhaven City Council.
- Cardno Lawson Treloar (2007). *Lake Tabourie Entrance Management Policy*. Prepared for Wollongong City Council.
- Chapman G.A., Murphy, C.L., Tille P.J., Atkinson G. and Morse R.J. (2009) Ed., *Soil Landscapes of the Sydney 1:100,000 Sheet map*, Department of Environment, Climate Change and Water, Sydney
- CSIRO and Bureau of Meteorology (2015) *Climate Change in Australia Information for Australia's Natural Resource Management Regions: Technical Report*.
- Geoscience Australia (2008). 1:100,000 Scale Topographic Maps. [Online]. Available from: <http://www.ga.gov.au/scientific-topics/national-location-information/topographic-maps-data/printed-topographic-maps/1-100k-scale-maps>.
- Gordon, A.D. (1990) *Coastal Lagoon Entrance Dynamics*. Proc. Int. Conf. on Coastal Engineering, pp: 2880-2893.
- Haines, P.E. and Thom, B.G. (2007) *Climate Change Impacts on Entrance Processes of Intermittently Open / Closed Coastal Lagoons in New South Wales, Australia*. Journal of Coastal Research, Special Issue 50, 2007 (Proceedings of the 9th International Coastal Symposium, pp: 242 – 246. Gold Coast, Australia).
- Hanslow, D.J., Davis, G.A., You, B.Z. and Zastawny, J. (2000) *Berm heights at coastal lagoon entrances in NSW*. Proceedings 10th NSW Coastal Conference, 20-24 November 2000, Yamba, NSW.
- Hennessy, K., McKinnes, K., Abbs, D., Jones, R., Bathols, J., Suppiah, R., Ricketts, J., Rafter, T., Collins, D. and Jones, D., (2004) *Climate change in New South Wales: Part 2 – Projected changes in climate extremes*. Aspendale, Victoria: Australia, Commonwealth Science and Investigation Research Organisation.
- NSW Government (2005) *NSW Floodplain Development Manual*.
- OEH (2012). *Tabourie Lake - Physical characteristics* [Online]. Available from <http://www.environment.nsw.gov.au/estuaries/stats/TabourieLake.htm>.
- OEH (2015) *Floodplain Risk Management Guide. Modelling the Interaction of Catchment Flooding and Oceanic Inundation in Coastal Waterways*. State of NSW and Office of Environment and Heritage
- OEH (2016) *Sydney Basin – landform*. Office of Environment & Heritage. [Online]. Available from: <http://www.environment.nsw.gov.au/bioregions/SydneyBasin-Landform.htm>.
- Peter Spurway & Associates (2005) *Tabourie Lake Entrance Management Policy and Review of Environmental Factors*. Peter Spurway & Associates Pty Limited.
- Roper T., Creese B., Scanes P., Stephens K., Williams R., Dela-Cruz J., Coade G. and Coates B. (2011) *Assessing the condition of estuaries and coastal lake ecosystems in NSW*. Office of Environment and Heritage, Sydney.
- Shoalhaven City Council (2012) *Revised Estuary Management Plan – Tabourie Lake*.
- Wainwright, D., and Baldock, T.E. (2010) *A Framework for Probabilistic Berm Height Determination – Application to ICOLL Flood Studies*. 50th Annual Floodplain Management Authorities Conference. Gosford, Central Coast, 23 – 26 February 2010.
- Weir, F. M., Hughes, M. G. and Baldock, T. E. (2006) *Beach face and berm morphodynamics fronting a coastal lagoon*. *Geomorphology*, 82 3-4: 331-346. doi:10.1016/j.geomorph.2006.05.015

Entrance
Management Policy

APPENDIX

A

MECHANICAL
OPENING DECISION
FRAMEWORK

Entrance Management
Policy

APPENDIX

B

EMP CONTACT LIST



Entrance Management
Policy

APPENDIX

C

MECHANICAL
ENTRANCE OPENING
SCHEMATIC



Entrance Management
Policy

APPENDIX

D

ENTRANCE BREAKOUT
MONITORING SHEET



About Cardno

Cardno is a professional infrastructure and environmental services company, with expertise in the development and improvement of physical and social infrastructure for communities around the world. Cardno's team includes leading professionals who plan, design, manage and deliver sustainable projects and community programs. Cardno is an international company listed on the Australian Securities Exchange [ASX:CDD].

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The Marketing Clan

Communicating Water Restrictions in the
Shoalhaven LGA
[Report v.Final Draft]

Prepared for
The Marketing Clan on behalf of
Shoalhaven City Council

Prepared by
IRIS Research

August 2019

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DE19.125 - Attachment 1

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1 RESEARCH OBJECTIVE

New South Wales is in the grip of a long-term drought and water restrictions have recently come into force for many regions.

The Shoalhaven's water is supplied locally by Shoalhaven Water (Council) which actively encourages water conservation among its customers. With increasing pressure to manage its water resource, Shoalhaven Water needs effective communication strategies to achieve water conservation in the Shoalhaven community.

The purpose of this research was to:

1. Investigate the residents' perception of the two proposed water restriction policies; and
2. Identify the effectiveness of communications channels on residents' behavioural responses and advocacy. This will be employed to guide Council with its marketing strategies.

2 KEY FINDINGS

- ▶ Nearly all residents (96 percent) are convinced Council's water restriction messages indicate that there are current water shortages.
- ▶ One third (36 percent) of residents do not understand the meaning of Level 1, 2, 3 and 4 water restrictions. Among residents that claim to do so, the research found most cannot actually discern the differences between the four levels of water restrictions.
- ▶ Shoalhaven residents are less supportive of severe intermittent water restrictions than less severe, permanent ones.
- ▶ [Female] Baby Boomers are most likely to oppose either policies while Millennials are more likely to support them.
- ▶ There is a strong link between awareness of its water source and support for water conservation policies but almost half (45 percent) of the Shoalhaven residents do not know the source of their water supply.
- ▶ Mainstream media platforms are the top sources of information about water restrictions for Shoalhaven residents, but direct correspondence from Council is also a common information source.
- ▶ Radio messages from Council are more likely to influence advocacy behaviour than any other medium.
- ▶ Word-of-mouth dominates the method of sharing information about water restrictions amongst residents.
- ▶ Most (84 percent) Shoalhaven residents proactively advocate water conservation within their households.

3 KEY RECOMMENDATIONS

- ▶ Increase residents' understanding of Level 1, 2, 3 and 4 water restrictions through advertising and educating the community.
- ▶ Develop specific water conservation messages that raise awareness of water conservation policy benefits and actions targeting female Baby Boomers.
- ▶ Increase community awareness of its water sources to engender stronger water conservation attitudes and behaviours.
- ▶ Council should have a multimedia approach to messaging, favouring radio and social media channels where community water conservation advocacy is the goal.
- ▶ Council should encourage residents' natural inclination to discuss [water conservation and restrictions] with each other in social settings.
- ▶ Council should undertake independent monthly consumer/resident behaviour tracking to understand policy and communication effectiveness going forward.

4 BACKGROUND

IRIS Research was commissioned by The Marketing Clan to undertake this research on behalf of Shoalhaven City Council.

The purpose of this research was to:

1. Investigate the residents' perception of the two proposed water restriction measures.
2. Identify the effectiveness of communications channels on residents' behavioural responses and advocacy. This will be employed to guide Council with its marketing strategies.

A cross-sectional survey and simple random sampling methodology were employed.

Data collection was undertaken between 18 to 22 July 2019, within the IRIS Research Computer-Assisted Telephone Interviewing (CATI) facilities in Wollongong. An online version of the survey, hosted on Council's website, ran concurrently.

Overall, 390 residents completed CATI interviews and 17 provided online responses making a total of 407 completed responses collected.

To qualify as a survey respondent, the individual must:

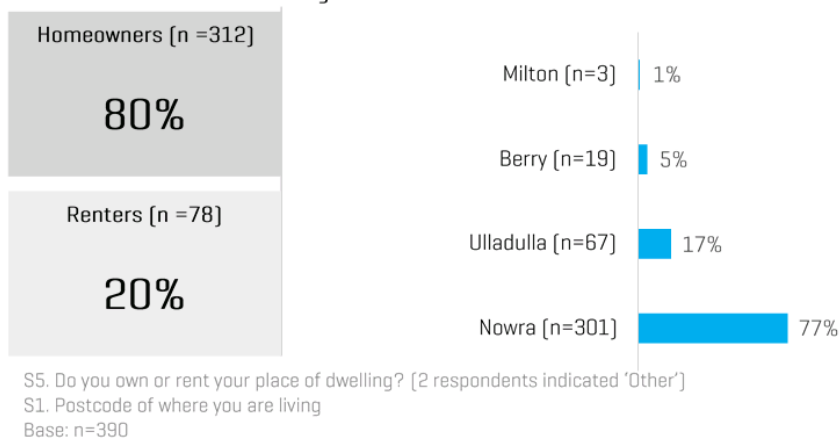
- ▶ receive town water
- ▶ be a permanent resident of Shoalhaven City Council
- ▶ not be an employee of Council.

This report focuses on the results from the CATI interviews.

5 RESPONDENT PROFILES

The demographic variables of interest for this study include home ownership, gender and age. Most respondents are homeowners (80%) and living in Nowra (77%).

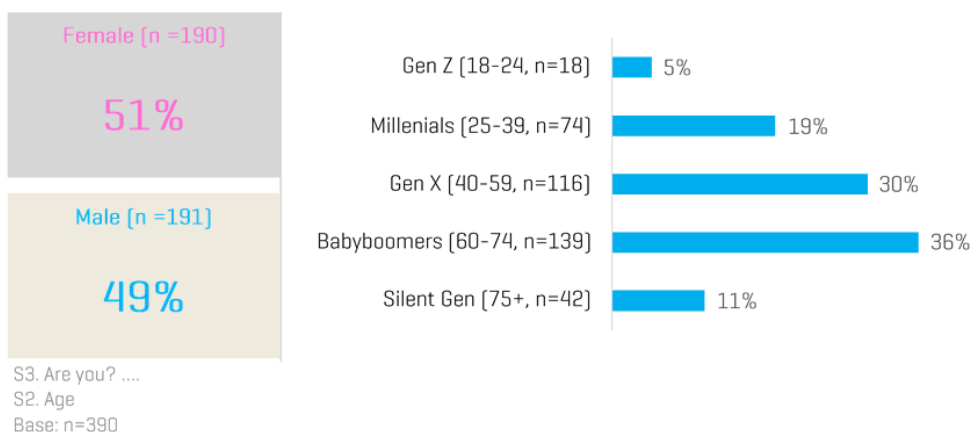
Figure 1: Place of residence



Fifteen percent (n=46) of homeowners indicated that they also own other properties around Shoalhaven. These were mostly 'rental flats' (n=37) and 'rental houses' (n=26). Of the 46 property owners, eight said that they also own a business premise and five indicated they owned an unoccupied residential property.

The survey collected completed responses from across all demographic groups, with most of the respondents were either Baby Boomers [b.1946-64] (36%) and Generation X [b.1965-1979] (30%).

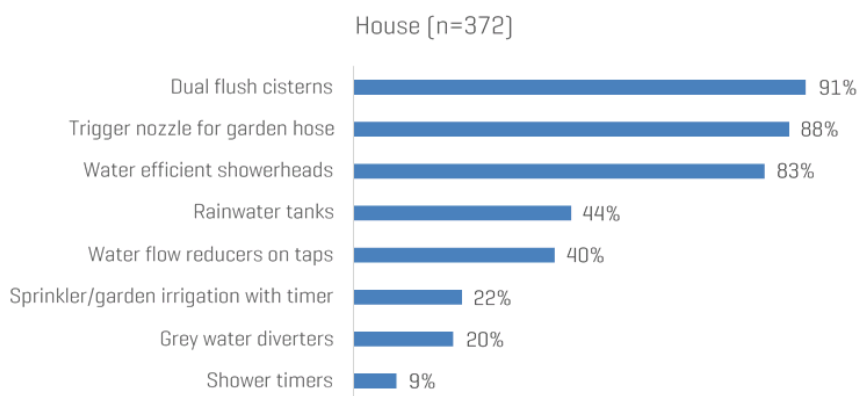
Figure 2: Gender and Generations



6 HOUSEHOLD WATER SAVING DEVICES

For the purpose of gauging the water saving devices in households, only those who live in a house as a dwelling place (n=372) are reported. Those living in a flat were omitted because of the small sample size (n=8), which is insufficient for statistical analysis. Figure 3 shows that water saving devices are mostly found inside the home, with dual cisterns (91 percent) and water efficient showerheads (83 percent) on the Top Three.

Figure 3: Household Water Saving Devices



F1. Does your household have any of the following?

Base: n=372 House as dwelling, flats were omitted in the analysis because of small sample size (n=8), Other n = 10

7 METHODOLOGY

Computer Aided Telephone Interviewing (CATI) was employed as the appropriate and most efficient means of data collection, which is the most accurate and effective medium for a quantitative survey.

A pilot test was conducted on 15 July 2019 for the purpose of identifying improvements to the draft survey questionnaire; no changes were recommended.

CATI data collection was undertaken between 16 to 19 July 2019 on IRIS Research premises.

The questionnaire was also made available to residents online, hosted on Council's website and run concurrently with the CATI survey. 17 surveys were completed – this sample size was insufficient for analysis and reporting and therefore excluded from the results.

A simple random sampling method was employed, with a total sample of n=390 achieved. In order to qualify for the interview, participants' household must:

- ▶ receive town water
- ▶ live within the Shoalhaven City Council area and
- ▶ not be an employee of the Council.

The Marketing Clan and Shoalhaven City Council has a soft copy of the survey questionnaire and as such, it is not attached to this report.

8 RESULTS

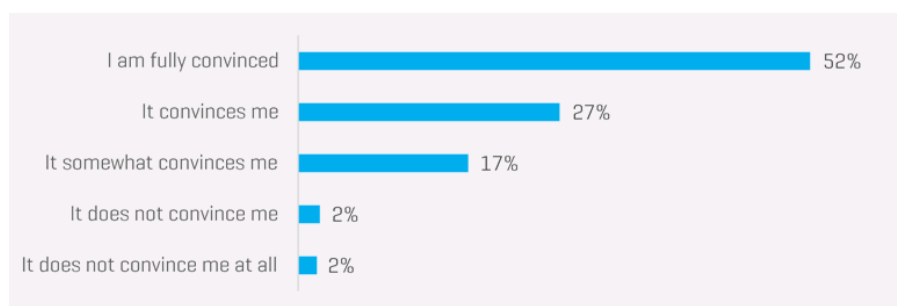
Believability of Water Restrictions in the Shoalhaven

The central aim of water restriction messaging is to convince people that there is water shortage, with the view to encouraging water conservation behaviour.

Residents were asked how convinced they are when they hear that there are water restrictions imposed by the Council. The results show that residents interpret water restriction messages as an indicator of water shortage.

In total, 96 percent of residents are convinced about water restriction messaging, with 52 percent 'fully convinced'. Only four percent (4%) residents do not feel convinced by the messaging. This result suggest that the Shoalhaven residents are attuned to water restriction messaging, which ultimately impacts upon their attitude towards water conservation.

Figure 4: Believability of Water Restriction messaging that there is water shortage



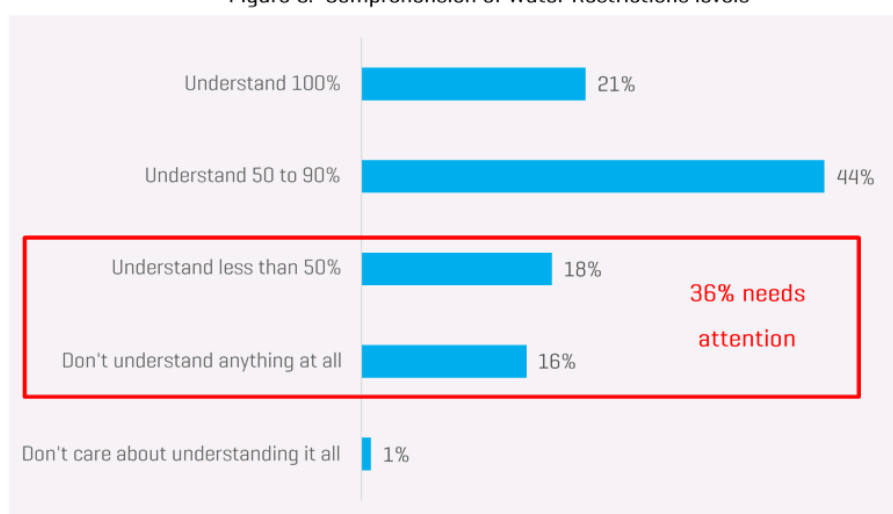
C2. In general, when you hear there are water restrictions imposed around the Shoalhaven, how much does it convince you that there is water shortage problem?

Base: n=390

Understanding of Level 1, 2, 3 and 4 water restrictions

Residents were asked if they understood the actions that they should take to comply with the four levels of water restrictions. Six in ten indicated that they understood 50 percent to 100 percent of the actions required for each level. The key point of interest in the findings is the 36 percent aggregate which comprises of residents who understands less than 50 percent to nothing at all about the actions they need to undertake based on the differences in Level 1, 2, 3 and 4 requirements.

Figure 5: Comprehension of Water Restrictions levels



C3. How much do you understand the difference between level 1,2 ,3, 4 water restrictions in terms of actions that you have to make to comply with the guidelines?
Base: n=390

Response to proposed water restriction policy

There are two proposed water restriction policies that were tested in the survey:

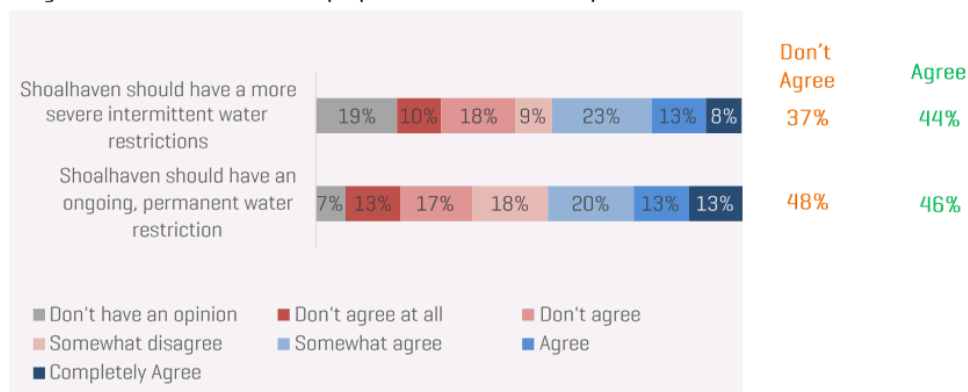
- ▶ More severe intermittent water restrictions
- ▶ Ongoing (but lesser) permanent water restrictions.

Respondents were asked how much they agree with each of the proposed policy.

The results, as illustrated on Figure 6, shows that Shoalhaven residents share similar agreement levels regarding both policies. The distinctive difference rests with the differences in those who do not agree that Shoalhaven should have an on-going permanent restriction. Nearly half of the residents (47%) do not agree that Shoalhaven should have a more severe intermittent water restriction, whilst nearly 4 in 10 (36%) disagree that there should be a permanent water restriction. Based on this narrow margin, it is advised that extra care needs to be taken when deciding based on the outcome.

When residents who indicated they 'don't have an opinion' are removed, the proportion that agree with more severe, intermittent restrictions is 53 percent and the proportion that agree with ongoing, permanent restrictions is 47 percent.

Figure 6: Attitude towards the proposed water restriction policies



D1. How much do you agree that Shoalhaven should have an ongoing permanent water restriction?

E1. How much do you agree that Shoalhaven should have a more severe intermittent water restriction?

Base: n=390

Baby Boomers are most likely to oppose either proposed policy. Millennials are more likely to support the shift towards further conservation, as can be visibly seen in their significantly positive sentiment towards the policies., refer Figures 7a and 7b below,

Figure 7a: Shoalhaven should have an on-going permanent water restriction

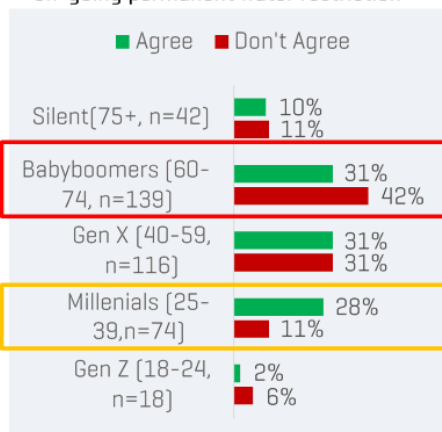
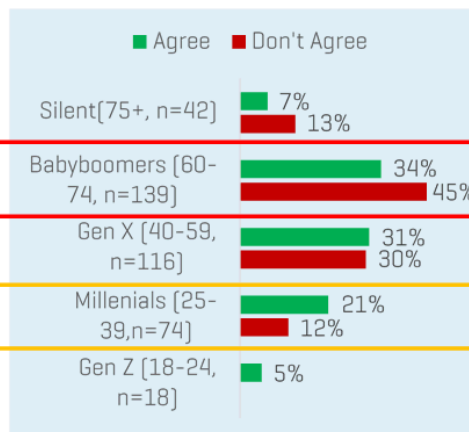


Figure 7b: Shoalhaven should have a more severe intermittent water restriction



Females are more likely to oppose an on-going permanent water restriction, with 60 percent majority disagreeing with the policy compared with the 40 percent of men who don't agree. On the other hand, there is an even ration on both gender for the severe intermittent water restrictions.

Figure 7aa: Shoalhaven should have an on-going permanent water restriction

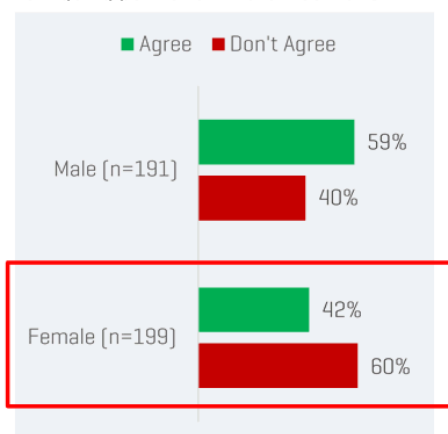
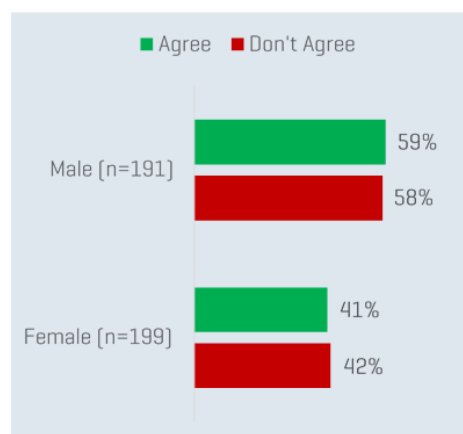


Figure 7bb: Shoalhaven should have a more severe intermittent water restriction

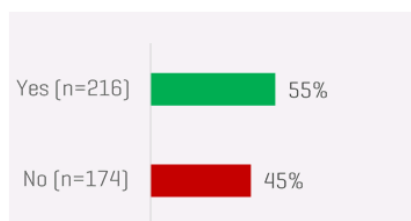


D1. How much do you agree that Shoalhaven should have an ongoing permanent water restriction?
E1. How much do you agree that Shoalhaven should have a more severe intermittent water restriction
Base: n=390

Residents' awareness of water resources

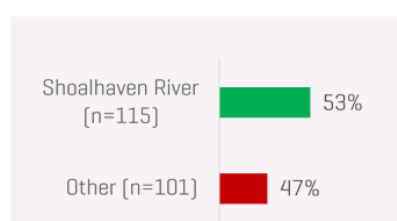
Residents were asked if they are aware of the origins of their water supply. Just over half [55 percent] of the residents said that they do know where their water supply comes from. Of those, only half [53 percent] identified the Shoalhaven River as the source of water. Nearly two-thirds [61 percent] of those who identified Shoalhaven River as the source of water supply, also said that there should be on-going permanent water restrictions.

Figure 8a: Awareness of water supply



A1. Do you know where your water supply comes from? Base n=390

Figure 8b: Source of water supply

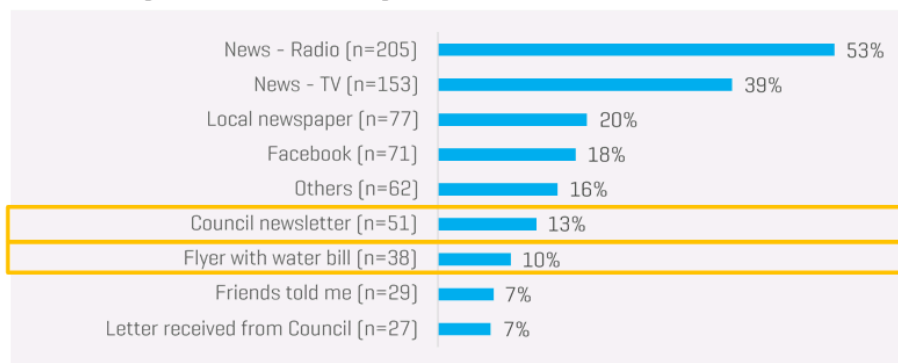


A1A. Where does it come from? Base n=216

Source of information relating to water restrictions

Mainstream media platforms are the top sources of information about water restrictions for Shoalhaven residents, see figure 9. The results also reveal that residents refer to direct communication channels from Council as alternatives to the mainstream communication channels.

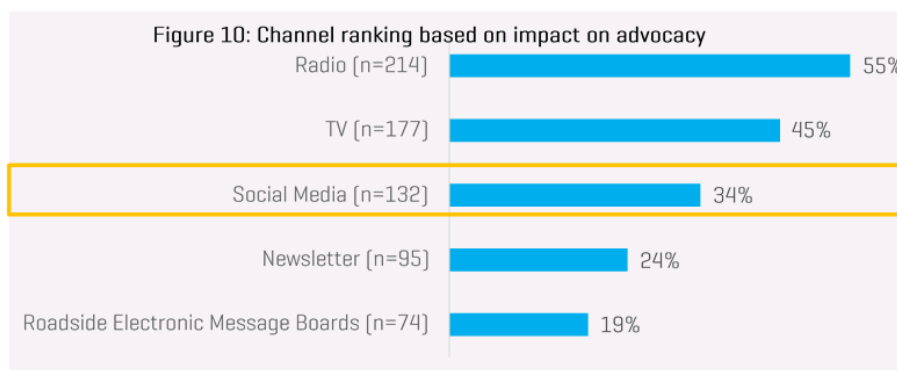
Figure 9: Where residents get information from about water restrictions



A2. Where do you get your information from regarding water restrictions? Base n=390

Impact factor of information channel on advocacy behaviour

Messages heard on the radio are more likely to influence advocacy, with 55 percent of the residents indicating that they pass information to others when they hear about water restrictions on the radio. Social media platforms appear to have a stronger impact to encourage advocacy than print media.

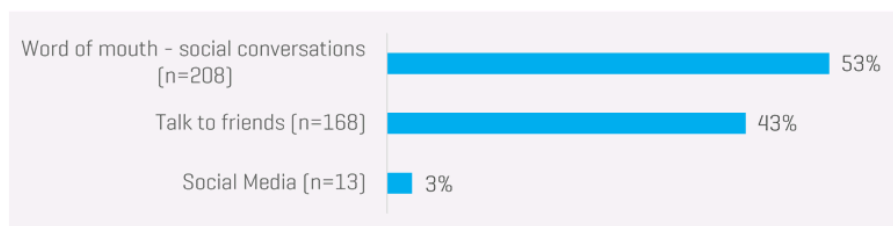


A3. When you find out about water restrictions in Shoalhaven through each of the following medium, do you pass on the information to others when you hear it from...
Base n=390

Word-of-mouth dominates the method of sharing information about water restrictions amongst the residents. Despite the 34 percent who indicated they gather information from Social Media, this interactive platform is the least [3 percent] used medium to pass information.

It is important to keep in mind that 36 percent of residents understood 50 percent or nothing about the water restrictions requirements. Hence, upon conversations, there is a possibility that the 36 percent may benefit from council initiatives to raise awareness, in order to share a more accurate information.

Figure 11: Means of passing information

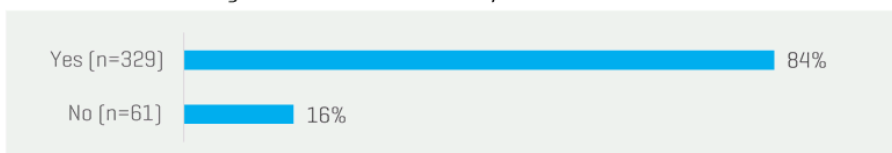


A3a. How do you usually pass on the information to others?
Base n=390

Proactive advocacy

Besides sharing information about the water restrictions, Shoalhaven residents are proactive in advocating water conservation within their households. Figure 12 illustrates that 84 percent of residents take a proactive stance to influence members of their households in this regard.

Figure 12: Proactive Advocacy



A4. Did you encourage other members of your household also to participate in making the extra effort to conserve water?

Base n=390

Interpretation of “Water Restrictions”

The term “water restrictions” may be interpreted with various dimensions. The results reveal that there are three dimensions in which residents perceive ‘water restrictions’:

1. Water restrictions enhance the consciousness towards self-regulatory water savings behaviour.
2. Water restrictions are interpreted as the overarching instructional signal to conserve water, together with the types of relevant actions that depends on the restriction levels.
3. Water restrictions evoke empathy towards the environment. It triggers sympathy and future consideration for when drought happens and to availability of water for the future.

Figure 18: Key themes on perceiving the semantics of “water restrictions”

1. Self-regulatory	“Watch my water usage” “Restrict water use and do what they say” “Not enough water, we need to monitor what we use” “Restrict my use of water”
2. Instructional to conserve	“Listen carefully to what has to be done” “Restrict water use and do what they say” “Use water following the guidelines” “Be mindful of water level, abide by the guidelines”
3. Empathise with the environment	“Water is getting low, we need to conserve water” “We are in a drought, we need to conserve” “If we don’t take care, our water might run out” “Cut back in water in drought, no rain”

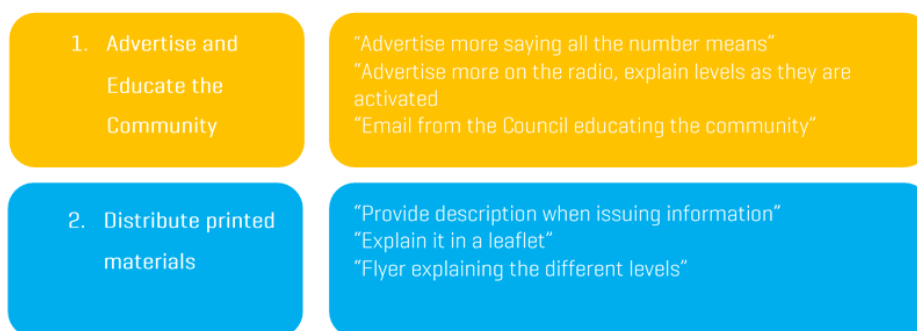
C1. When you hear “Water Restrictions”, what does it mean to you?

Base n=390

Improving the messaging of Levels 1, 2, 3 and 4 Water restrictions

A discernable the differences between the four levels of water restrictions is only apparently clear to 21 percent of residents who claim that they understood 100 percent [see Figure 5]. Each are distinguished by the actions required for community members. When asked what would make it easier for the community to understand the differences between the four levels of restrictions, “advertisement” and “educating the community” were the most common open-ended responses. These were followed by printed materials, which may be complimentary to the suggested educational mediums.

Figure 19: Means of improving water restrictions messaging



C4. What would make it easier for you to understand about the differences between Level 1, 2, 3 and 4?
Base n=390

Information Journey

Table 1 depicts the possible behaviours that a person may exhibit after processing water restrictions information. Consistent with earlier discussions, mainstream media champions effectiveness and reaching the community about water restrictions. The cells highlighted in yellow emphasise the two key desirable behaviours is [1] following the water restriction and [2] telling others about it. Radio by far exceeds all other effective media channels. The results for the “inserts on water bill” is also consistent with earlier discussions (Figure 10) about the effectiveness of direct communications as an alternative to mainstream media.

Table 1: Behavioural Outcome as influenced by channels of communication

	Behavioural Outcome				
	Ignore It (%)	Take it seriously, but take no action (%)	Take it seriously and follow water restriction (%)	Take it seriously, act and tell others about it (%)	I don't know anything about it (%)
Radio announcements/ads	0	1	40	26	33
TV	0	2	35	23	39
Information insert in water bill	1	2	34	20	44
Popular news sources/ages	0	1	25	14	59
In your Neighbourhood	0	1	18	13	67
Outdoor media	0	2	19	13	65
NSW Government Public Announcement	0	1	22	12	65
Other local papers (print copy)	0	0	20	11	69
Email notification from SCC	0	1	13	11	76
South Coast Register Newspaper (print copy)	0	0	18	10	72
SCC Facebook Page	0	1	13	9	77
Non-Shoalhaven Social Media Channel	1	1	12	9	78
SMS from SCC	0	1	12	8	79
Noticeboards in Shoalhaven Facilities	0	1	12	7	80
South Coast Register Newspaper (online)	0	1	10	7	83
Bus Advertising	0	2	10	5	82
Other local papers (online)	0	1	10	5	85
SCC Community Consultations	0	1	8	4	87

B1. In general, could you please indicate what best describes your reaction when you hear about water restrictions?
Base n=390

CONCLUSIONS

The study has surveyed to 390 Shoalhaven residents. Mainstream media (TV and radio) are the most referred and effective medium to communicate messages about water restrictions. Nevertheless, considerations for direct marketing or direct communication medium may be of benefit, most especially when inserts inside the water bill can influence people's behaviour towards advocacy and regulation initiatives.

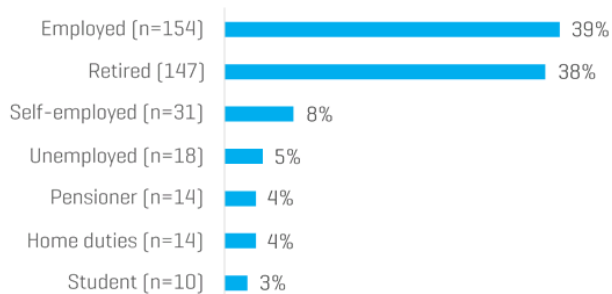
The findings show that the 84 percent of the community encourages their household to partake in water conservation. Although it appears the Shoalhaven community are proactive and highly engaged in water conservation, the results revealed a near even split in support and opposition of the proposed policies.

Water conservation support is most likely going to be garnered from Millennials, whilst the Baby Boomers are not supportive today. It is important to exercise prudence upon interpreting results related to the proposed policy because 36% indicated lack of comprehension about the four levels of water restrictions. However, people are open to receiving education through advertising, radio, television and community consultations.

As Council develops and implements its water conservation policies and communication strategy it should undertake independent monthly consumer/resident behaviour tracking to understand policy and communication effectiveness going forward.

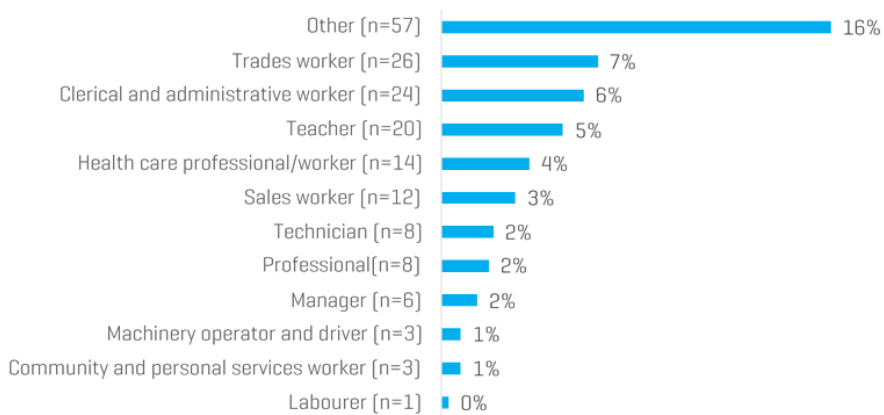
APPENDIX

1. Employment Status



G1. What is your employment status?
Base: n=390

2. Occupation



G2. What is your occupation?
Base: n=390