To:	Planning Authority - Kingborough Council		
Project:	Flowerpot Jetty	Date:	03/03/2026
		Job No.	1922
From:	Burbury Consulting	Author:	Dave Unwin/Nige Palfreyman
Subject:	Coastal Hazard Report		

1. Introduction

This coastal hazard report has been prepared in response to the request for further information (RFI's) for DA-2025-82, outlined by Kingborough Council in their letter issued to Burbury Consulting - K Mahendran, dated 23rd April 2025. In addition, this report has been updated to include a response and provide supplementary information to capture the RFI's for DA-2025-82, outlined by Kingborough Council in their letter issued to Burbury Consulting - K Mahendran, dated 29th September 2025.

The following information provides a coastal hazard assessment against the requirements of the Kingborough Interim Planning Scheme 2015, for the proposed jetty and associated infrastructure at 'Drumnadrochit' 4101 Channel Highway, Flowerpot (Figure 1-1).

The proposal is for the construction of a small jetty and associated boat shed, in the adjacent coastal waters from crown land. The proposal will enable a visitor experience in association with the accommodation on site. Access to the proposed jetty will use an existing access path through the land at 4101 Channel Highway, and then use the foreshore (that has existing access), on crown land, to allow functional use of the jetty and boat shed.

The owner of the land at 4101 Channel Highway, is progressing an application with MAST to put a mooring in deeper water (approx. 150m from the shore), for the use of a larger vessel. To safely and efficiently access this larger vessel, due to the tidal constraints at the site, a jetty structure is required so that a smaller tender vessel can access the moored vessel.

The proposal will enable bespoke guided tours access to the adjacent D'Entrecasteaux Channel and is integral and compatible with the visitor accommodation approved on the adjacent private land (DA-2022-64).

1.1 Existing Site & Surrounds

The proposal is for the construction of a small jetty and associated boat shed, in the adjacent coastal waters from crown land, for the use as a jetty and boatshed ancillary to visitor accommodation. Access to the proposed jetty will use an existing access path through the land at 4101 Channel Highway, and then use the foreshore (that has existing access), on crown land, to enable functional use of the jetty and boat shed.

The proposed jetty will be designed to tie into an existing walkway leading down from the property with abutment piles.

1.2 Site geology review

A desktop geology review has been completed for the site based on the 1:250,000 scale Geology Data and Maps produced by Mineral Resource Tasmania (MRT). The site is dominantly quartz sandstone, and consists of Late Carboniferous to Triassic sedimentary Upper Fluviolacustrine Sequence - Quartz Sandstone Sequence (Rq). It is noted that the shoreline classification (Hazard Planning Maps produced by Department of Premier

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and Cabinet) highlights that the site consists of sloping hard rock shores with minimal vulnerability to flooding or erosion. Concurring with this classification is the information provided in the A “Detailed First Pass” coastal hazard assessment for a long complex coast: Kingborough LGA, Tasmania (Sharples & Donaldson, 2012) which provides a map of the site, that indicates it consists of sloping hard rock shores (with low susceptibility to erosion or recession). In contrast the shoreline type classifications (OSRA - Sharples 2000) highlights the site is moderately exposed, with gentle to moderate slope terrain 6 deg. - 20 deg, and consists of intertidal or shallow subtidal sandflats plus a rocky shore platform, with bedrock at the site - with or without soil (not notably cliffed and no dunes occurring).

A subsequent and recent site assessment by Burbury, indicates there is some irregularity with the geology and hazard classification at this site. The site exhibits evidence of shoreline recession along discrete areas of the foreshore zone, with the proposed jetty being one of those areas. Consequently, a design solution is required to manage the proposed infrastructure termination points of the abutment adjoining the shoreline and connecting the access path to the jetty. As shown in Figure 1-4, the shoreline at the jetty abutment would be classified as a steep, soft rock shoreline. The erosion visible here is likely occurring at a slow to moderate rate (compared to sandy shores) however this process is unlikely to reverse.

With a revised design solution, including localised rock armouring protecting the jetty abutment, the recession zone landwards of this hardened foreshore is considered to be manageable and tolerable.

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Figure 1-1 Location Plan

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Figure 1-2 Proposed Site Plan

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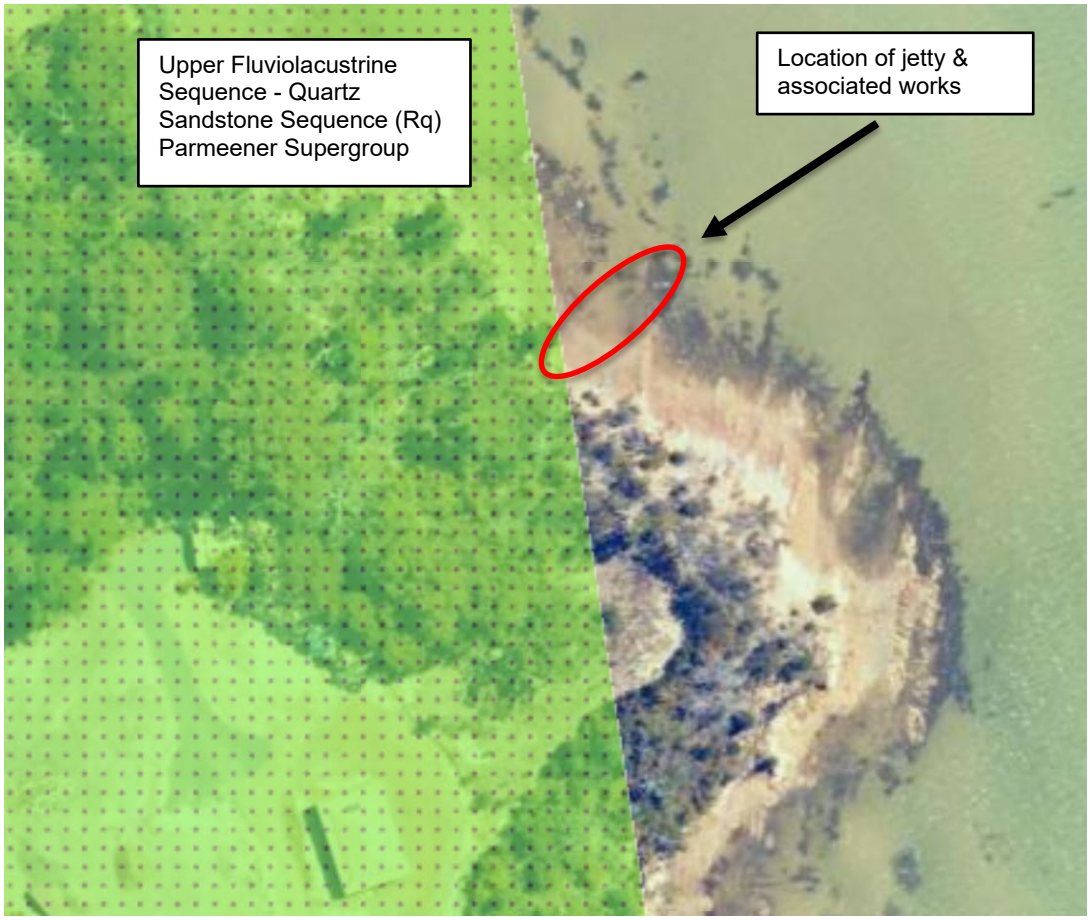

Figure 1-3 Desktop review of site Geology (Source: LISTmap)

Figure 1-4 Proposed jetty site

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2. Proposal

The proposed jetty is a (30 x 11.5 m) structure with boat storage to provided berthing and stowing of watercraft for use on the adjacent waterway. The proposed works are highlighted in Figure 1-2 above.

The proposed new fixed jetty will consist of the following key works:

- Installation of new jetty
  - Timber piles will be driven from a barge (on the water) and cut off to design level as per drawings;
  - Supply and install timber decking and crossheads from barge;
  - Design the lower landing with FRP decking and heavy duty “stormchief fixings” to manage any potential uplift and dissipate loading on the deck from inundation events:
- Terminating the jetty walkway at the existing path to provide access from the land onto the jetty at all tides;
- Installation of rock armouring and a retaining wall at the interface with the foreshore and jetty; and
- Upgrade to the access path interface with the proposed jetty, in accordance with the design outlined in the Jetty Track Plan (landscape and garden designer).

The new fixed jetty extension will be constructed with driven timber piles which accommodate for the fall and rise of tides and structural fixity. The new jetty will have a deck height of 2.5mCD.

The design allows for the safe berthing and protection for vessels onto the proposed jetty structure. The general arrangement and layout of the proposed jetty and associated works is detailed in the attached DA drawings.

The development will require a provision of a Crown Land License to facilitate construction and use of the proposed development area and infrastructure of the jetty. The proposed license area for the new jetty is 116m2. As part of the license agreement process, an application for a license on Crown Land has been submitted to Property Services.

The jetty is a low impact design, with only localised seabed disturbance during the installation of the piles.

As outlined the proposal will require discrete rock armouring and a retaining wall around the jetty and land interface, this engineered area is to ensure the protection of the jetty abutment and enable safe access to the land for the users of the jetty. The rock armouring zone will be formed using rock around the perimeter of the abutment. This rock armouring will provide protection for the infrastructure and mitigate erosion impacting on the site. While the revised design solution will manage erosion for the proposed jetty infrastructure and access track it is not expected to reduce the current recession away from the rock armouring, further along the foreshore. Over a considerable period of time, continual ongoing erosion of the neighbouring shoreline may require some management of the proposed armour rock, to maintain the stability of the walkway.

The proposed works will be constructed and managed in accordance with current best practices standards for design and construction and will ensure that suitable environmental management controls are in place.

3. About the practitioner and methodology

3.1 Practitioner details

The information provided outlines the details of the person preparing and verifying this report.

Lead / coordinating consultant name	Dave Unwin – Burbury Consulting
Academic Qualification/s	Bachelor of Engineering (Hons)

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Relevant Experience	Burbury Consulting is a professional services company based in Hobart providing engineering and project management services in the civil, structural and maritime industries. We have experience of planning assessment and engineering design requirements in coastal projects that extend from land to sea incorporating coastal impact assessments, inundation assessments and addressing planning scheme and regulatory risk-based reviews. We are preferred suppliers in maritime and coastal engineering for Department of State Growth, Tasmanian Ports Corporation and Marine and Safety Tasmania. BC have the expertise to complete the works having completed similar projects and scopes with: • Whitesands Estate Breakwater and boat ramp remediation including site assessments, Coastal hazard report, approvals, RAA and design for remediation; • Swanwick shoreline stabilisation and remediation including emergency works approvals; • Prosser River training wall stabilisation project including RAA, approvals, design, tendering and construction management; • Bicheno shoreline remediation and protection works including scoping and approvals support for Glamorgan Spring Bay Council; • Middleton shoreline stabilisation scoping, investigations, and approvals for shoreline protection; • Connellys Marsh property protection works for shoreline protection including site investigations, approvals, design, tendering and construction; • Salicia Nature Park Development coastal assessment for the Planning Authority; • Coastal hazard assessment for the Planning Authority, for sediment (sand) removal in the vicinity of Marine and Safety Tasmania (MAST) boat launching ramp within the entrance to Pipe Clay Lagoon in Cremorne. • Roches Beach coastal stability assessments for properties including specialist input to approvals and design works; and • St Helens Barway Breakwater extension including approvals for rock quarry establishment, rock transport and placement for the breakwater extension, design and construction management. Dave Unwin is a Senior Coastal and Maritime engineer at Burbury Consulting with over 12 years of coastal engineering experience specialising in metocean analysis and wave climate studies, fluid-structure interaction and the detailed design of maritime structures. Dave has undertaken Coastal Hazard Assessments for a range of private and public infrastructure works, in both swell-sheltered and exposed environments.
Business name and address	Burbury Consulting Pty Ltd 287 Macquarie Street, Hobart, TAS, 7000

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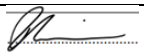
Signature	
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3.2 Methodology

This coastal hazard report has been prepared in accordance with the requirements of the Waterway & Coastal Protection Code and the Inundation Prone Areas Code outlined in the Kingborough Interim Planning Scheme 2015 and Director's Determination.

4. Coastal Processes

4.1 Waves

The Jetty and associated works are located within the D'Entrecasteaux Channel with the proposed location well protected from long-period ocean swells. However, wind waves can be generated from strong easterly and south-easterly winds that propagate across the channel, with a maximum fetch of around 9km. North to North-easterly wind waves could also impact the site, although given the limited fetch and extended shallow water off the coastline, these waves are likely to be less significant for design requirements. Typically, the site has a relatively low wave energy environment.

The water depths at the structure are also shallow (effectively dry at Lowest Astronomical Tide (LAT), and all waves are likely to be depth limited in extreme conditions.

The construction of any structure within the marine environment has the potential to impact localised wave conditions, either by shielding or reflecting incoming wave energy. The piled jetty is relatively open to water flow and will not measurably modify the incident wave conditions.

At the jetty abutment however, wave energy will impact these elements directly. Typically, steep or vertically faced elements such as sheet pile walls can cause significant reflection of incoming waves. Conversely, rock armouring (proposed at the site) on a shallow slope (1.5H:1V) is an excellent means of dissipating wave energy rather than reflecting it back. Accordingly, any potential changes to coastal process due to wave action caused by the jetty structure and the abutment to the access track is expected to be manageable and minimal.

4.2 Shoreline recession or accretion

While the site is classified as a hard-edged foreshore with minimal vulnerability to flooding or erosion, this is not what is typically occurring at the proposed jetty site. As outlined above in Section 1.2 there is some erosion occurring; hence the design requires rock armouring and a retaining wall (treated pine) to protect the proposed infrastructure. This irregularity with the geology and hazard classification at this site is noted on the DEA shoreline map (figure 4-1) that highlights some zones of shoreline recession north and south of the proposed jetty, however historically there are areas exhibiting a more stable foreshore. The site is swell-sheltered, and the erosion is likely driven by wind waves and a rising sea level, and only occurs at high water levels. The eroded shoreline may also 'self-armour to some extent, as the boulders may act to stabilise the toe of the foreshore embankment.

With a revised design solution, including localised rock armouring creating a resilient artificial shore, the recession zone landwards of this hardened foreshore is considered to be manageable and tolerable.

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Figure 4-1 Historical outline of shoreline extent (Source: Digital Earth Australia)

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Figure 4-2 Historical Aerial from 2005 (Source: Google Earth)

Figure 4-3 Historical Aerial from 2016 (Source: Google Earth)

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4.3 Water levels

Flowerpot has a peak tidal range of around 1.6m between highest and lowest astronomical tides (based on the nearest tide station at Hobart). Extreme design high water levels were calculated using the CSIRO Canute 3.0 tool [ref 6]. For planning purposes, a conservative Shared Socioeconomic Pathway (SSP) 8.5 was adopted as the climate scenario in line with current government practice, and a 66th percentile allowance level was used. This resulted in an expected sea level rise of 0.44m over 50 years, relative to 2026 levels.

Extracts of the Canute 3.0 output are provided in the table below.

Table 4-1 Extreme high-water levels, m AHD (Source: CSIRO)

Greenhouse gas scenario	SSP5_8.5							
Confidence interval	66%				95%			
Sea level rise/ARI (year)	SLR	1	10	100	SLR	1	10	100
2026	0.084	1.02	1.19	1.36	-0.73	1.04	1.21	1.37
2056	0.3	1.24	1.40	1.57	-0.46	1.31	1.48	1.64
2076	0.525	1.46	1.63	1.80	-0.19	1.58	1.75	1.91

A 100-year Annual Return Interval (ARI) water level is typically adopted for the design of marine structures, giving a design high water level or RL=+1.7m AHD, or around 800mm above current Highest Astronomical Tide (HAT).

4.4 Currents

The proposed Jetty site is located in a relatively open bay, and tidal currents are expected to be low (<0.5m/s).

4.5 Impact on infrastructure design

A piled structure such as the proposed Jetty has a negligible influence on broader coastal processes. Some localised scour may occur immediately adjacent to the concrete footings for the piles; however, this will be negligible, and the engineering design of the structure should take this into consideration.

The jetty and associated infrastructure proposed should be designed to accommodate inundation events through adequate drainage or construction type and durability.

Wave slamming loads on jetty decks can be extreme and the deck height adopted for the main wharf structure should be above likely wave crest heights. The nominated wharf deck height of RL=+2.5m AHD is nominally 0.8m above present day Highest Astronomical Tide (HAT) and is unlikely to overtop in normal operating conditions. Jetty deck heights are often a balance between providing access to vessels and preventing frequent inundation/overtopping. Consideration should be given in design to the structures to allow for an increase in floor height to adapt to an increase in wave runup should sea level rise lead to more frequent inundation events.

The lower landing (by definition) will be inundated. The structure should be designed to reduce wave uplift pressures (FRP decking and heavy duty “stormchief fixings”) and appropriately detailed to ensure durability in the marine environment.

Given that the proposed jetty infrastructure is to be erected on piles that are connected to engineered concrete footings that are founded on rock and extend seaward at elevation, the jetty does not present a risk of erosion.

Ensuring that the proposed rock armouring protecting the abutment and access track is terminated adequately at the shoreline will help to reduce any risk of end amplification effects and mitigate the risk of erosion on the adjacent coastline.

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With a properly engineered rock structure, the coastal erosion risk is manageable, and would be deemed to be tolerable for the type of structure proposed.

5. Interim Planning Scheme Code Classification

The proposal site is within the following mapped code overlays of the Kingborough Interim Planning Scheme 2015:

- Waterway and coastal protection area; and
- Coastal inundation hazard area (low).

5.1 Waterway and Coastal Protection Code

5.1.1 Jetty & Associated Works

The proposed work to build a new jetty and associated infrastructure predominantly occur in the adjacent water, however some works are required in the near foreshore zone. Consequently, the works trigger the performance criteria requirements within a waterway and coastal protection area under the Code as outlined in the Kingborough Interim Planning Scheme 2015.

Figure 5-1 – Kingborough Interim Planning Scheme - Waterway & Coastal Protection Area (Source: Listmap)

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5.2 Inundation Prone Areas Code

5.2.1 Jetty & Associated Works

The proposed work to build a new Jetty and boat shed predominantly occur in the adjacent water, however some works to upgrade the access track interface are required in the near foreshore zone. Consequently, the works trigger the performance criteria requirements within an inundation prone area under the Code as outlined in the Kingborough Interim Planning Scheme 2015.

Figure 5-2 Kingborough Interim Planning Scheme – Inundation Prone Areas Code Overlay (Source: LISTmap)

Coastal inundation prone areas and levels for Flowerpot are presented in Table 5-1 below.

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Table 5-1 Coastal Inundation High, Medium & Low Hazard Areas - Minimum Levels (Source: Kingborough Interim Planning Scheme 2015)

Locality		Building Control	High Hazard Band	Medium Hazard Band	Medium Hazard Band	Low Hazard Band
	Base_Ht	Highest Astronomical Tide (HAT)	Sea Level Rise by 20cm above 2010 base levels	Modelled 1% Annual Exceedence Probability for the year 2050	Sea Level Rise by 80cm above 2010 base levels	Modelled 1% Annual Exceedence Probability for the year 2100
Description	Rounded Up	Rounded Up	Rounded Up	Rounded Up & 300mm Freeboard	Rounded Up	Rounded Up & 300mm Freeboard
Flowerpot	0.6	0.8	0.8	1.9	1.4	2.5

6. Assessment - Interim Planning Scheme Code E11.0

6.1.1 Jetty & Associated Works

E11.6 Use Standards

There are no use standards in this code.

E11.7 Development Standards

E11.7.1 Buildings and Works

The proposed Jetty & associated works have been assessed against the E11.0 Waterway and Coastal Protection Code. Responses to the relevant development standards are presented below with additional information provided in Section 8.

Objective:

To ensure that buildings and works in proximity to a waterway, the coast, identified climate change refugia and potable water supply areas will not have an unnecessary or unacceptable impact on natural values.

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Performance Criteria	Response
P1 **Building and works within a Waterway and Coastal Protection Area must satisfy all of the following:**	
(a) avoid or mitigate impact on natural values;	No terrestrial vegetation or trees are required to be impacted from the proposed works. Minor upgrades to the access path interface with the proposed jetty, are required these works will be completed in accordance with the design outlined in the Jetty Track Plan (completed by a landscape and garden designer). No vegetation is to be impacted from the access track upgrades. A marine natural values assessment was completed for the site to ascertain the natural values and sensitive marine receptors at the site. No threatened species were detected in the field survey of intertidal and subtidal habitats in the vicinity of the proposed development. However, some potential impacts, relating to acoustic disturbance and to a lesser extent, seabed disturbance could occur. Mitigations have been proposed to reduce impact on these values. In summary the natural values assessment outlines the proposed development is expected to have minimal impacts on the marine environmental values. Refer to advise in the Aquenal Marine Natural Values Assessment, April 2020.
(b) mitigate and manage adverse erosion, sedimentation and runoff impacts on natural values;	The proposal is predominantly sited in the adjacent marine waters. The jetty arrangement design requires only minor landside works, with the elevated jetty connecting to the foreshore via rock armouring at the foreshore and clean fill material building up the foreshore level to meet the jetty deck, thereby reducing the potential impact of surface runoff. The main jetty structure will be supported on timber piles and deck elements, founded on stable seabed conditions, which ensures the jetty works do not present a risk of erosion to the adjacent shoreline.

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Performance Criteria	Response
	The access track will be upgraded at the interface with the jetty to use natural bedrock, where required to manage erosion and build up the level of the track where required to ensure a safe access is established. To manage potential sedimentation during construction, seabed disturbance will be confined to the minimum necessary footprint. A Construction Environmental Management Plan (CEMP) will be implemented to mitigate any potential erosion, siltation, and sedimentation impacts during the construction phase, including visual monitoring of sediment plumes and adaptive measures such as silt curtains if required.
(c) avoid or mitigate impacts on riparian or littoral vegetation;	The proposed does not require the removing of any tress/vegetation. Refer to advise in the Aquenal Marine Natural Values Assessment, April 2020.
(d) maintain natural streambank and streambed condition, (where it exists);	No natural streambank and streambed exist at the site. Not Applicable. Refer to advise in the Aquenal Marine Natural Values Assessment, April 2020.
(e) maintain in-stream natural habitat, such as fallen logs, bank overhangs, rocks and trailing vegetation;	No natural in stream habitat exists at the site. Not Applicable. Refer to advise in the Aquenal Marine Natural Values Assessment, April 2020
(f) avoid significantly impeding natural flow and drainage;	The proposed does not change the natural flow and drainage that exist on site or from the upgradient residential areas. The Jetty infrastructure has a design level which is well above HAT to rise and fall with the tides and not impeded the natural variances of tidal action.
(g) maintain fish passage (where applicable);	Refer to advise in the Aquenal Marine Natural Values Assessment, April 2020.
(h) avoid landfilling of wetlands;	Wetlands do not exist at the site.

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Performance Criteria	Response
	Refer to advise in the Aquenal Marine Natural Values Assessment, April 2020
(i) works are undertaken generally in accordance with Waterways and Wetlands Works Manual (DPIWE, 2003) and Tasmanian Coastal Works Manual (DPIPWE, December, 2010), and the unnecessary use of machinery within watercourses or wetlands is avoided.	The proposed works have been designed to minimise the civil works and reduce impacts to the site and the extent of modification needed to ensure user safety at the site to access and use the proposed Jetty. All works need to be completed in accordance with the Tasmanian Coastal Works Manual and the Wetlands and Waterways Works Manual.

E11.7.2 Buildings and Works Dependant on a Coastal Location

Objective:

To ensure that buildings and works dependent on a coastal location are appropriately provided for, whilst minimising impact on natural values, acknowledging the economic, social, cultural and recreational benefits that arise from such development.

Performance Criteria	Response
P1 **Buildings and works must satisfy all of the following:**	
(a) need for a coastal location is demonstrated;	The proposal is in accordance with existing facilities with the channel area. There are several existing jetties and marine infrastructure located within the D'Entrecasteaux Channel. The proposed works as a jetty and boatshed use rely on a coastal location.
(b) new facilities are grouped with existing facilities, where reasonably practical;	The proposal sits in an area of the channel that has existing marine facilities, Woodbridge has existing wharves and marine infrastructure. Gordon has a boat ramp, rock groyne and jetties. Middleton has a boat ramp and rock groyne. In addition, there are several boat moorings and fish farm infrastructure in the waters located within the D'Entrecasteaux Channel.
(c) native vegetation is retained, replaced or re-established so that overall impact on native vegetation is negligible;	No terrestrial vegetation or trees are required to be impacted from the proposed works. Minor upgrades to the access path interface with the proposed jetty, are required these works will be completed in accordance with the design outlined in the

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Performance Criteria	Response
	Jetty Track Plan (completed by a landscape and garden designer). A marine natural values assessment was completed for the site to ascertain the natural values and sensitive marine receptors at the site. No threatened species were detected in the field survey of intertidal and subtidal habitats in the vicinity of the proposed development. However, some potential impacts, relating to acoustic disturbance and to a lesser extent, seabed disturbance could occur. Mitigations have been proposed to reduce impact on these values. In summary the natural values assessment outlines the proposed development is expected to have minimal impacts on the marine environmental values. Refer to advise in the Aquenal Marine Natural Values Assessment, April 2020
(d) building design responds to the particular size, shape, contours or slope of the land and minimises the extent of cut and fill;	The jetty will be constructed as a fixed structure, and in compliance with Australian Standards, to enable the structure to be functional and safe. The general arrangement of the jetty has been selected to suit the existing foreshore access point and minimise required earthworks. No significant cut or fill is required for the proposal. Some landside works include the installation of rock armouring and a timber retaining wall, which will mitigate potential erosion of the proposal. Upgrading of the existing access track is required at the jetty interface to meet the jetty levels for ease of access, and some steps are required to manage the slope of the land prior to meeting acceptable levels on the existing track. All works will be completed in accordance with the design outlined in the Jetty Track Plan (completed by a landscape and garden designer). The design of the jetty and associated infrastructure has been undertaken to enable an easily built structure that has minimal and localised impacts on the seabed. piles will be connected to

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Performance Criteria	Response
	concrete footings that will be boxed out and pour onto the bedrock on the seafloor.
(e) impacts to coastal processes, including sand movement and wave action, are minimised and any potential impacts are mitigated so that there are no significant long-term impacts;	All the proposed works are designed to manage and minimise impacts to coastal processes. Given the low energy wave environment, and the proposed hardened foreshore the proposed Jetty & associated infrastructure will not impact erosion on adjacent land. Wave action and sand movement will not be impacted by the proposal. The proposed works will not change the existing coastal processes on site. The site is not a significant source of sediment for the channel, and the site is underlain by bedrock, making this hardened foreshore less likely to have significant erosion to occur.
(f) waste, including waste from cleaning and repairs of vessels and other maritime equipment and facilities, is managed in accordance with current best practice so that significant impact on natural values is avoided.	No vessel cleaning & repairs are planned to be completed at the Jetty site.
P2 **Dredging or reclamation must satisfy all of the following:**	
(a) be necessary to establish a new or expanded use or development or continue an existing use or development;	No dredging or reclamation is required. Not Applicable
(b) impacts on coastal processes that may lead to increased risk of inundation, including sand movement and wave action, are minimised and potential impacts are mitigated so that there are no significant long-term impacts;	No dredging or reclamation is required. Not Applicable

7. Assessment - Interim Planning Scheme Code E15.0

7.1.1 Jetty & Associated Works

E 15.6 Use Standards

Not Applicable for this proposal.

E15.7 Development Standards for Buildings and Works

As the proposal site has been classified as within a coastal inundation hazard band (low band), it is required to be assessed against the against the E15.0 Inundation Prone Areas Code. Responses to the relevant use and development standards are presented below with detailed information provided in Section 8.

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E15.7.6 Development Dependent on a Coastal Location

Development Standards for Buildings and Works	Criteria	Response
E15.7.6 To ensure that buildings and works dependent on a coastal location are appropriately designed and sited to account for risk from inundation, taking into account the nature of the development.	P1 (a), (b), (c), (d) and (e)	Responses to the Performance Criteria P1 are detailed in Section 8 of this report (coastal hazard report).
	P2	Not Applicable No dredging or reclamation is required.
	P3	Not Applicable No coastal protection works proposed or required

8. Conclusions about the proposal

8.1 Likelihood of the proposed use or development to cause or contribute to the occurrence of coastal erosion and/or coastal inundation on the site or adjacent land.

8.1.1 Jetty & Associated Works

From a coastal engineering perspective, the proposed works do not involve the construction of any infrastructure or modification of levels that would impact coastal processes. The immediate foreshore where the works are to be completed requires some rock armouring and a small retaining wall to protect the new abutment. The requirement to have an access that can meet the levels of the jetty is essential for the safe operations of the jetty. The hardened foreshore from the armouring works will dissipate wave action on the foreshore and will be designed so that wave rebound will be absorbed into the rock structure rather than be directed further along the coastal profile. This more hardened foreshore will consequently have negligible impacts to the coastal processes are the site.

The proposed Jetty is nominally perpendicular to the shoreline and will be built on piles that will sit on engineered footings on the seafloor. Given the shoreline is underlain by bedrock, and with the resilient rock shoreline, the proposed infrastructure will not impact erosion on the adjacent land.

The proposed Jetty has been designed (by a coastal engineer), to be elevated above highest astronomical tide (AHD) conditions and projected sea level rise. No significant differential in water level can occur across the structure. The Jetty will not constrict or inhibit the natural flow of water. The lower landing part of the structure should be designed for inundation and uplift loading (as discussed above).

The site is not a significant source of sediment for the bay and any modifications to the site have no impact on the geomorphology of the estuary system.

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Can the proposed use or development achieve and maintain a tolerable risk for the intended life of the use or development, having regard to the following:

ITEMS	RESPONSE
the nature, intensity and duration of the use.	The nature, intensity and duration of the use as a Jetty have no impact on the development achieving and maintaining a tolerable risk of inundation and erosion.
the type, form and duration of any development.	The Jetty has been designed to be a raised structure that can maintain a tolerable risk for the intended life of the development. The proposed works are considered a low impact solution, which has minimal impact to the coastal processes and function of the existing use at the site. The level of risk at the site will not change from these works being completed.
the likely change in the risk across the intended life of the use or development.	The design of the Jetty and associated infrastructure is such that it will accommodate the expected sea level rise. The level of risk at the site will not change from these works being completed.
the ability to adapt to a change in the level of risk.	Given the Jetty and associated infrastructure is designed for inundation, there is no foreseeable change to the level or risk of inundation. The design and location of the Jetty is a revised design solution, including localised rock armouring creating a resilient artificial shore, the recession zone landwards of this hardened foreshore is considered to be manageable and tolerable . The design of the Jetty structure will ensure the structure will have a design life to maintain a tolerable risk to erosion.
the ability to maintain access to utilities and services.	The proposed Jetty has no impact on access to utilities and services on the adjacent land. No services are required on the Jetty (solar lightning will be used for operational uses and lightning requirements).
the need for specific coastal erosion or coastal inundation hazard reduction or protection measures on the site.	Not required.
the need for coastal erosion or coastal inundation reduction or protection measures beyond the boundary of the site.	Not required.
any coastal erosion or coastal inundation management plan in place for the site or adjacent land.	Not required.

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8.2 Ongoing Management

8.2.1 Jetty & Associated Works

Minor maintenance of the structures may be required after exposure to the coastal elements after some time which will require management to maintain safe operating conditions.

Over a considerable period of time, continual ongoing erosion of the neighbouring shoreline may require some management of the proposed armour rock, to maintain the stability of the walkway/ access path.

No ongoing management is required regarding the risk of inundation.

8.3 Is the use or development located on an actively mobile landform within the coastal zone?

☐ Yes ☒ No

8.3.1 Jetty & Associated Works

The jetty and associated works are not considered to be located on an actively mobile landform.

From a coastal engineering perspective, the proposed works do not involve the construction or modification of any infrastructure that would impact the landward transgression of sand dunes. The foreshore is a typical hardened rock area, and no sand dunes are present to be impacted.

8.4 Conclusions relating to any matter specifically required by Performance Criteria in the Waterway and Coastal Protection Code (E11.0) or the Inundation Prone Areas Code (E15.0).

8.4.1 Jetty & Associated Works

The coastal assessment identifies that the proposed Jetty, will have negligible impacts to the existing coastal processes, tidal and flood aspects of the site.

It should be outlined that the Jetty and associated infrastructure are reliant on a coastal location. The proposed works will not constrict or inhibit the natural flow of water. The low landing area of the Jetty structure will inundate at high water levels however this will not impact inundation of the surrounding area.

Given the structures are designed for inundation, there is no foreseeable change to the level or risk of inundation.

The risk of localised increase to scour/erosion at the toe of the piles rock armouring and retaining wall is low but should be monitored post-construction.

The rate of shoreline recession should be monitored to ensure the infrastructure remains located outside any instability zone.

The nature, intensity and duration of the use as a Jetty will have no impact on the development achieving and maintaining a tolerable risk of inundation and erosion.

The coastal hazard assessment identifies that the proposal will have negligible impacts to the existing coastal processes, tidal and flood aspects of the site.

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