PLANNING APPLICATION

Status:

Reference
PLN-HOB-2025-0283

Address
58A NAPOLEON ST BATTERY POINT TAS 7004

Titles
47059/2, 47059/1

Before you start

Before you start your application, you will need to know if you require planning approval or not.

If you are unsure if you require a permit, use the PlanBuild Tasmania Enquiry Service to lodge a request for advice from the relevant Council.

Once your application has been submitted the Council will review your application. If payment has not been made, you will be sent a request for the payment of application fees via PlanBuild Tasmania.

Once the fees have been paid and the Council is satisfied with the information provided, the application will be assessed and you will be notified of the outcome.

If further action is required to assess your application you will receive an email notification containing a task to complete.

Pre-Application Advice

Have you spoken with anyone at Council about this application?

- [x] Yes - enter details below
- [ ] No - continue to the next section

If yes, provide the name of the person you contacted
Liz Wilson

Applicant

Personal Information Removed

Owners

Personal Information Removed

Certificate(s) of Title

Selected Titles

Total Area: 1119m^2

47059/2 47059/1

Owner Notification

Are you the sole owner of the land?

- [ ] Yes - continue to the next section
- [x] No - answer question below

If no, have you notified all owners, joint or part owners of your intention to submit this application?

- [x] Yes - enter owner details below
- [ ] No - you must notify all owners before proceeding with this application

List all owners, joint or part owners as recorded on the Title documents notified:
Ms Fengying Chen

Enter the date that the last owner, joint or part owner was notified
13/06/2025

Declaration

- [x] I declare that all land owners, joint or part owners have been notified of this planning application.

Crown Land Consent

Is Crown Land involved in the proposed use or development?

- [x] Yes - complete question below
- [ ] No - continue to the next section - see further information below
- [ ] Unsure

If yes, has written Crown Land consent been obtained?

- [ ] Yes - upload written consent
- [x] No - application will not be progressed until consent has been provided

General Manager Consent

Is Council-owned or administered land involved in the proposed use or development?

- [ ] Yes - complete question below
- [x] No - continue to the next section
- [ ] Unsure

If yes, has written consent been obtained from the Council General Manager?

- [ ] Yes - upload written consent
- [ ] No - application will not be progressed until consent has been provided

Proposed Use or Development

What is the reason for your planning application?

- [ ] I want to change how the property is used
- [ ] I want to use the property for visitor accommodation
- [ ] I want to subdivide
- [x] I want to undertake a new development or alteration
- [ ] I want to do a minor boundary adjustment
- [ ] I want to put up a sign(s)
- [ ] I want to demolish
- [ ] I want to do works only
- [ ] Other

If your application is to subdivide, please enter the number of proposed lots.
0

If your application is for signage, please enter the number of signs.

Is the property a Tasmanian Heritage Listed Property?

- [ ] Yes
- [x] No

Is the application for an EPA Activity under the Environmental Management and Pollution Control Act 1994?

- [ ] Yes
- [x] No
- [ ] Unsure

Is the proposed use or development permitted or discretionary?

- [ ] Permitted
- [x] Discretionary
- [ ] Unsure if permitted or discretionary

Provide a full description of the proposed use or development
New jetty and boat shed

Will the proposed use or development involve a road reserve?

- [ ] Yes - complete the section below
- [x] No - continue to the next section
- [ ] Unsure

If yes, enter the address(es) or locations below:

If yes, how will the road reserve be affected?

Value of Works

What is the estimated value of the works?
10000

Supporting Documents

Version	Document Date	Document Type	Description	Prepared By
1	16 June 2025	Property Title Document	FolioText-47059-2.pdf	Mr Jonathan Blood
1	11 Apr 2025	Property Title Document	FolioText-47059-1.pdf	Mr Jonathan Blood
1	16 June 2025	Property Title Document	FolioPlan-47059-2.pdf	Mr Jonathan Blood
1	11 Apr 2025	Property Title Document	FolioPlan-47059-1.pdf	Mr Jonathan Blood
1	9 June 2025	Architectural Plans	Plans	Mr Jonathan Blood
1	1 May 2025	Other	NVA Report	Marine Solutions Tasmania Pty Ltd

Next steps

When you have completed all the necessary fields and attached all required documents to support your application, click on the green 'Save & Submit' button at the top right of this form.

Once submitted, the Council will review your application. A request for the payment of application fees will be sent to you via PlanBuild Tasmania.

Once the fees have been paid and the Council is satisfied with the information provided, the application will be assessed and you will be notified of the outcome.

If further action is required to assess your application you will receive an email notification from PlanBuild which will tell you what you need to provide to continue the application.

Form published: 14/05/2025 15:58

RESULT OF SEARCH

RECORDER OF TITLES

Issued Pursuant to the Land Titles Act 1980

Tasmanian Government

SEARCH OF TORRENS TITLE

VOLUME	FOLIO
47059	1
EDITION	DATE OF ISSUE
16	27-Apr-2021

SEARCH DATE : 18-Nov-2024
SEARCH TIME : 02.18 PM

DESCRIPTION OF LAND

City of HOBART
Lot 1 on Sealed Plan 47059
Derivation : Part of 0A-1R-24.1/10Ps. (Section D.4) Gtd. to E. L. Crowther and Part of Allotment Gtd. to E.L. Crowther
Prior CT 4791/14

SCHEDULE 1

M882093 TRANSFER to FENGYING CHEN Registered 27-Apr-2021 at 12.01 PM

SCHEDULE 2

Reservations and conditions in the Crown Grant if any
SP 47059 EASEMENTS in Schedule of Easements
SP 47059 FENCING COVENANT in Schedule of Easements
C402206 BURDENING EASEMENT:Service Easement Right (appurtenant to Lots 1 & 2 on Plan 117840) over the Service Easement 1.00 wide on Sealed Plan 47059 (subject to provisions) Registered 05-Aug-2003 at noon
C914030 BURDENING EASEMENT: a right of carriageway (appurtenant to Lot 1 on Plan 121309) over the Right of Way on Sealed Plan 47059 Registered 11-Nov-2009 at 12.02 PM
M432028 BENEFITING EASEMENT: a right of footway over the land marked Right of Footway 1.50 wide on Sealed Plan 47059 Registered 01-Nov-2013 at noon
C310401 INSTRUMENT Creating Restrictive Covenants Registered 22-Mar-2002 at 12.01 PM
D43546 INSTRUMENT Creating Restrictive Covenants Registered 08-Nov-2012 at 12.01 PM

UNREGISTERED DEALINGS AND NOTATIONS

No unregistered dealings or other notations

RESULT OF SEARCH

RECORDER OF TITLES

Issued Pursuant to the Land Titles Act 1980

Tasmanian Government

SEARCH OF TORRENS TITLE

VOLUME	FOLIO
47059	2
EDITION	DATE OF ISSUE
10	27-Apr-2021

SEARCH DATE : 22-Apr-2025
SEARCH TIME : 10.12 AM

DESCRIPTION OF LAND

City of HOBART
Lot 2 on Sealed Plan 47059
Derivation : Part of 0A-1R-24.1/10Ps. (Section D.4) Gtd. to E. L.Crowther
Prior CT 4791/15

SCHEDULE 1

M882093 TRANSFER to FENGYING CHEN Registered 27-Apr-2021 at 12.01 PM

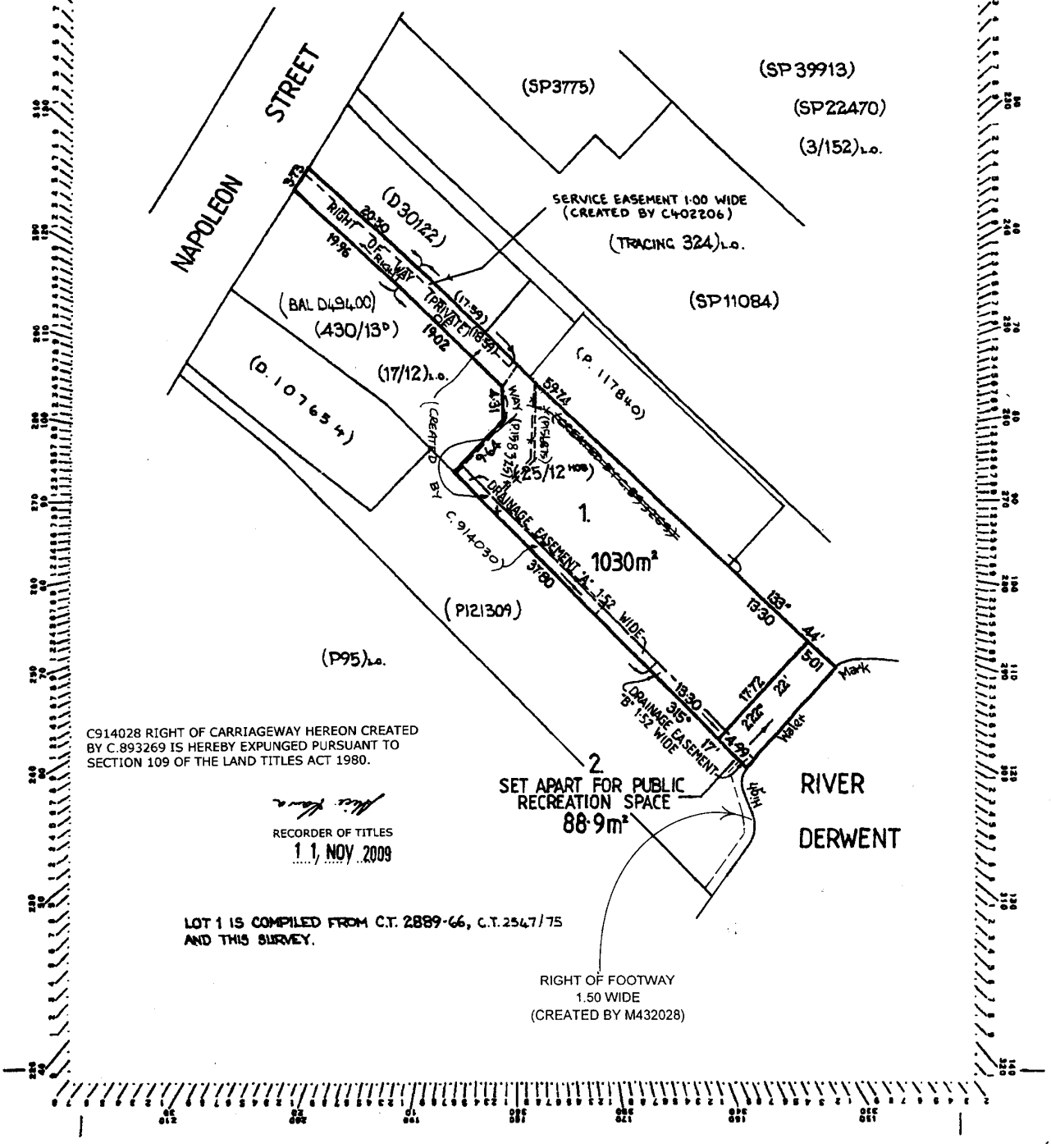
SCHEDULE 2

Reservations and conditions in the Crown Grant if any
SP 47059 EASEMENTS in Schedule of Easements
SP 47059 FENCING COVENANT in Schedule of Easements
M432028 BENEFITING EASEMENT: a right of footway over the land marked Right of Footway 1.50 wide on Sealed Plan 47059 Registered 01-Nov-2013 at noon

UNREGISTERED DEALINGS AND NOTATIONS

No unregistered dealings or other notations

Owner: GREGORY JOHN KAY & JENNIFER PATRICIA KAY	**PLAN OF SURVEY** by Surveyor A.M. PEACOCK of PEACOCK, DARCEY & ANDERSON PTY LTD AUTHORISED SURVEYORS 127 BATHURST STREET, HOBART of land situated in the CITY OF HOBART SCALE 1: 500 MEASUREMENTS IN METRES	Registered Number: **SP47059** Approved Effective from: JUL 1991 Recorder of Titles
Title Reference: C.T. 2547-75, C.T. 2889-66		
Grantee: PART OF 0-1-24¾0 GTD. TO EDWARD LODEWYCK CROWTHER.		



Owner: GREGORY JOHN KAY & JENNIFER PATRICIA KAY	PLAN OF SURVEY by Surveyor A.M. PEACOCK of PEACOCK, DARCEY & ANDERSON PTY LTD AUTHORISED SURVEYORS 127 BATHURST STREET, HOBART of land situated in the CITY OF HOBART SCALE 1: 500 MEASUREMENTS IN METRES	Registered Number: SP47059 Approved Effective from: JUL 1991 Recorder of Titles
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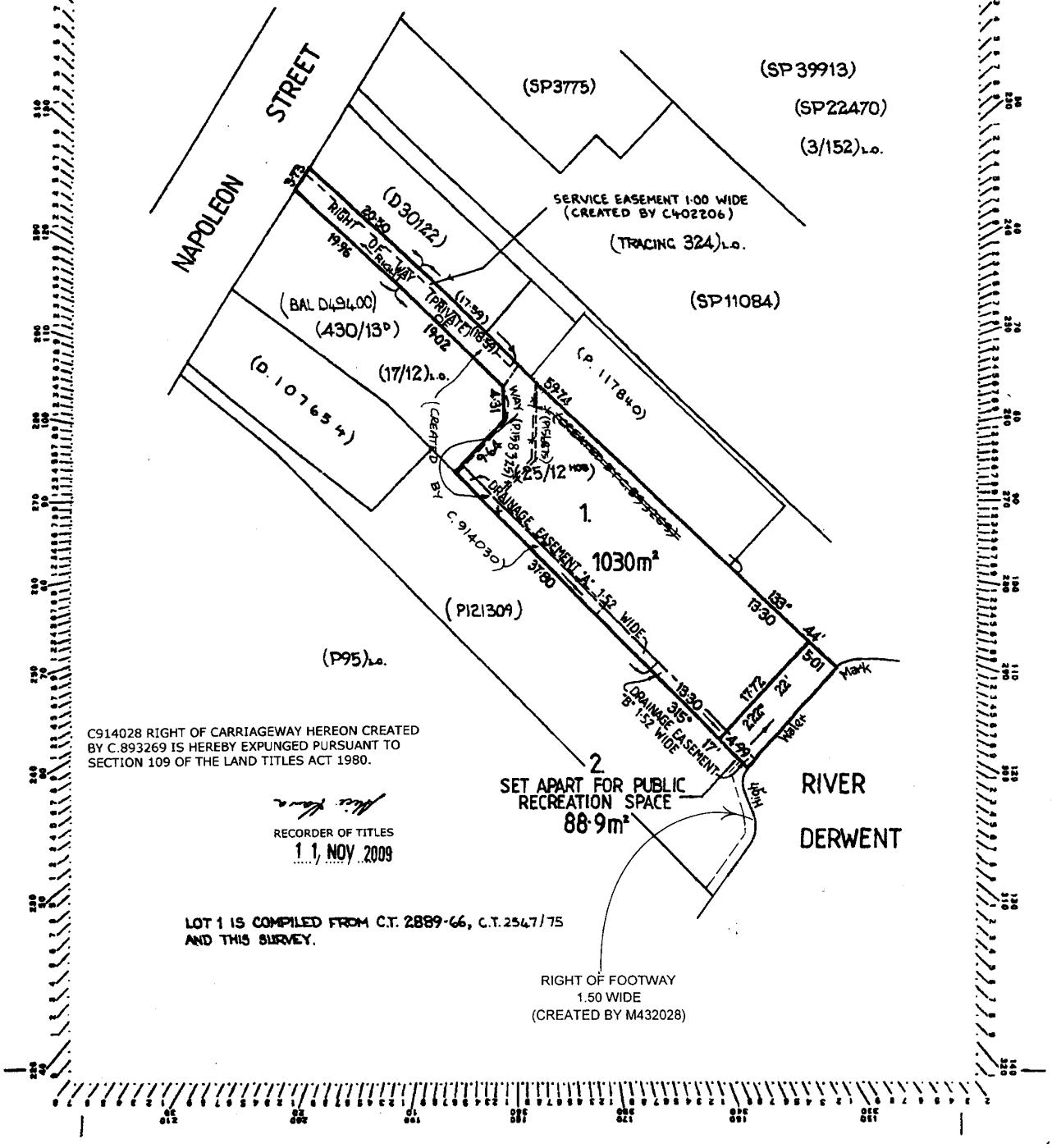
Grantee: PART OF 0-1-24½0 GTD. TO EDWARD LODEWYCK CROWTHER.		



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Marine SOLUTIONS TASMANIA PTY LTD

www.marinesolutions.net.au

MARINE NATURAL VALUES ASSESSMENT FOR A PROPOSED JETTY DEVELOPMENT AT 58A NAPOLEON ST, BATTERY POINT, TASMANIA

prepared for

Jonathan Blood, Loci Architecture & Planning

May 2025

Table of Contents

Version	Contributor/s	Date reviewed	Reviewed by	Notes
1	A. King	28/05/2025	E. Johnston	

Cover photo: Waterfront at 58a Napoleon Street, Battery Point (Marine Solutions, May 2025).

Table of Figures

Version	Contributor/s	Date reviewed	Reviewed by	Notes
1	A. King	28/05/2025	E. Johnston	

Cover photo: Waterfront at 58a Napoleon Street, Battery Point (Marine Solutions, May 2025).

Executive Summary

Marine Solutions was contracted by Loci Architecture & Planning to conduct a Marine Natural Values Assessment for a proposed jetty development at 58a Napoleon Street, Battery Point, southeast lutruwita/Tasmania. The assessment included a desktop review of marine natural values, utilising government tools including the Natural Values Atlas and the EPBC Protected Matters Search Tool. Fifteen threatened and protected marine species and one threatened ecological community were identified as possibly occurring or known to occur in the area. The desktop review was followed by field survey investigations and targeted, species-specific searches for threatened and protected marine species and communities.

The intertidal zone outside the property is composed of medium sized dolerite boulders with underlying bedrock to the south and a cobble beach to the north. The intertidal zone was dominated by pacific oyster (*Crassostrea gigas*), clusters of blue muscles were also observed within low lying rockpools. No threatened sea-stars (Derwent River seastar *Marginaster littoralis* and Tasmanian live-bearing seastar *Parvulastra vivipara*) were found during targeted searches conducted in the intertidal and subtidal zones.

A targeted search for the critically endangered spotted handfish (*Brachionichthys hirsutus*) found no individuals. Additionally, minimal suitable handfish habitat, only one stalked ascidian, the preferred spawning substrate of The Spotted Handfish, was found within the development footprint. Six introduced Northern Pacific seastars, a known predator of handfish eggs, were also present within the survey area.

The subtidal environment was dominated with seagrass beds at 95% coverage. Additionally, small patches of reef occurred along the shoreline.

Sediments in the area of the proposed development exceeded the ANZG DGVs (2018) for lead at the two survey sites, which was expected due to the historic contamination of the Derwent River.

In summary, the proposed development has minimal potential to adversely impact the immediate and surrounding ecological assemblages. Ecological risks can be reduced with the adoption of recommended impact mitigations.

1 Introduction

1.1 Proposal Brief

Marine Solutions was invited by Jonathan Blood at Loci Architecture & Planning to conduct a marine natural values assessment (NVA) in the vicinity of a proposed private jetty development at 58a Napoleon Street, Battery Point, Tasmania (Figure 1).

It is our understanding that the proposed development will extend from the waterfront of 58a Napoleon Street, Battery Point, Tasmania. The development includes the construction of a jetty 37.9 m from shore with a maximum width of 7.5 m and a development footprint of approximately 837 m^2 offshore of the property (Figure 1).

It is emphasized that the results herein only apply to the approximate development footprint and impacted areas outlined in Figure 1. and should final development plans extend outside of these then further assessment and surveys may be necessary.

Handfish Survey Diver Transect

Subtidal Habitat Survey Diver Transect

Source: ERSI Imagery
Spatial Reference: GDA 2020 MGA Zone 55
Produced by Marine Solutions

Figure 1 Map showing location of the proposed development at 58a Napoleon Street, Battery Point, Tasmania and defined footprint area.

1.2 Purpose and Scope

The purpose of this report is to identify potential interactions from the proposed development with marine natural values, threatened and protected species and communities found in the area, and to identify appropriate mitigations where applicable.

The scope of this report extends to a detailed summary of available information regarding marine natural values and ecology of the area. Please note that the scope does not extend to birds or terrestrial ecology.

Specifically, the project includes the following:

- Bathymetric mapping of the seabed within the development footprint and immediate surrounds,
- Desktop review of potential sensitive receptors both within the development footprint and the Derwent River in the near vicinity, including Natural Values and Protected Matters searches,
- Characterisation of the intertidal habitat within the development area,
- Underwater habitat characterisation,
- Underwater survey for threatened and protected species
    - Targeted underwater search for Spotted handfish (*Brachionichthys hirsutus*).
    - Intertidal search for live-bearing seastar and Derwent River seastar
- Sediment analysis for metal contamination
- Development of proposed impacts mitigation measures

1.3 Study Area

The study area is located with Battery Point on the western shoreline of the Derwent Estuary (Figure 2). The region is primaryly surrounded by residental houses and is adjacent to the captial city Hobart. Two marinas exist to the south of the proposed developmet location and the main marina, Port of Hobart, is to the north. Several existing private jettys occur along the shoreline of Battery Point.

The assessment has been carried out based on the approximate development footprint (837 m^2). These survey areas were determined in accordance with current guidelines relating to development impacts within the marine environment (NCH 2020).

Figure 2: Map showing the location of 58a Napoleon Street, Battery Point, Tasmania.

2 Desktop-Based Assessment of Aquatic Sensitive Receptors

2.1 Threatened and Protected Species/Ecological Communities

There are a number of marine species listed as threatened that may occur in the vicinity of the proposed development. Threatened species are protected under the *Threatened Species Protection* (*TSP*) *Act 1995* (Tasmanian state legislation) and/or the *Environment Protection and Biodiversity Conservation (EPBC) Act 1999* (EPBC) (Australian Government legislation).

Under the *TSP Act*, no listed species is allowed to be collected, disturbed, damaged or destroyed without a permit. Under the *EPBC Act*, any action with significant impact on a listed threatened species and/or community is prohibited without approval (Section 18 and 18A).

In addition to threatened species legislation, the *Fisheries (General and Fees) Regulations 2006* under the *Living Marine Resources Management Act 1995* (LMRMA) prohibits the taking/possession of a number of marine species, including Syngnathids (seahorses, seadragons and pipehorses), handfish, threefin blennies, limpets/false limpets of three superfamilies, and five species of shark. Additional species are protected by the schedules of the *Wildlife (General) Regulations 2010* (Regulations under the *Nature Conservation Act 2002*), under which a person must not take, buy, sell or have possession of any protected wildlife or any product of any protected wildlife without a permit.

Threatened species that could potentially occur within the vicinity of the study area are discussed in greater detail in this section.

2.1.1 Methods

The EPBC Protected Matters Search Tool (PMST) is a tool managed by the Department of Climate Change, Energy, Environment and Water (DCCEEW) to help determine whether Matters of National Environmental Significance (MNES) or other matters protected by the *EPBC Act* are likely to occur in a given area of interest. The PMST was used to identify protected matters relating the study area, with a buffer of 500 m and 5000 m (DCCEEW 2025). The summary report is provided in Appendix 1.

NRE Tas's Natural Values Atlas was then consulted to identify any verified records of threatened species occurring within the proposed development area (NRE Tas 2025).

Findings have then been used to determine species for which targeted field surveys are warranted.

2.1.2 Results

In a search of the Natural Values Atlas (NRE Tas, 2025) and EPBC Protected Matters Search Tool (PMST) (DCCEEW 2025), 15 threatened marine species and one threatened marine community were identified as possibly occurring or known to occur within the area. There are verified records of seven of these species within a 5000 m radius of the study area, of which five occurred within 500 m (NRE Tas, 2025) (Table 1).

On the basis of this desktop-based assessment and in line with the Guidelines for Natural Values Surveys by DPIPWE (2020) it has been determined that targeted field surveys are warranted for three species: *Marginaster littoralis, Parvulastra vivipara and Brachionichthus hirsutus (section 3.1)*.

Table 1 Summary of threatened and protected species, and migratory species, identified in a desktop-based assessment. Note that the scope does not extend to terrestrial or avian biota.

	Scientific Name	Common Name	Presence likelihood as per EPBC PMST *	Verified record? as per Tasmanian NVA**	Tas TSP Act Threatened Category	EPBC Act Threatened Category	EPBC Listed Migratory?
Community	*Macrocystis Pyrifera*	Giant kelp marine forests of south east Australia	Community *may* occur within 500 m	No	Not listed	Endangered	n/a
Macrophyte	*Parvulastra vivipara*	Live-bearing seastar	Species or species habitat *likely* to occur within 500 m	Yes – within 5000 m	Endangered	Vulnerable	No
	Marginaster littoralis	Derwent River seastar	*Not EBPC listed*	Yes – within 5000 m	Critically Endangered	Endangered	No
	Prototroctes maraena	Australian Grayling	Species or species habitat *likely* to occur within 500 m	Based on range boundaries – within 500 m	Vulnerable	Vulnerable	No
Fish & Elasmobranchs	*Brachionichthus hirsutus*	Spotted handfish	Species or species habitat *may* occur within 500 m	Yes – within 500 m	Endangered	Critically Endangered	No
	Carcharodon carcharias	Great White Shark	Foraging, feeding or related behavior *known* to occur within 500 m	No	Vulnerable	Vulnerable	Yes
	Galeorhinus galeus	Eastern School Shark	Species or species habitat *likely* to occur within 500 m	No	Not listed	Conservation	
	Seriolella brama	Blue Warehou	*Not EBPC listed*	Yes – within 5000 m	Not listed	Conservation Dependent	No
	Lagenorhynchus obscurus	Dusky Dolphin	Species or species habitat may to occur within 5000 m	No		*Not listed*	Yes
Ma m	*Arctocephalus tropicalis*	Sub-Antarctic fur seal	Not identified by PMST	Yes – within 5000 m	Endangered	Vulnerable	No

Scientific Name	Common Name	Presence likelihood as per EPBC PMST *	Verified record? as per Tasmanian NVA**	Tas TSP Act Threatened Category	EPBC Act Threatened Category	EPBC Listed Migratory?
Arctocephalus forsteri	New Zealand fur seal	*Not EPBC- listed*	Yes – within 5000 m	Rare	*Not listed*	*Not listed*
Mirounga leonina	Southern elephant seal	Not identified by PMST	Yes – within 5000 m	Endangered	Vulnerable	No
Lagenorhynchus obscurus	Dusky Dolphin	Species or species habitat may to occur within 5000 m	No		*Not listed*	Yes
Balaenoptera musculus	Blue Whale	Species or species habitat *likely* to occur within 500 m	No	Endangered	Endangered	Yes
Caperea marginata	Pygmy Wright Whale	Species or species habitat may to occur within 5000 m	No			
Eubalaena australis	Southern right whale	Species or species habitat *known* to occur within 500 m	Yes – within 500 m	Endangered	Endangered	Yes
Megaptera novaeangliae	Humpback Whale	Species or species habitat known to occur within 500 m	no	Endangered	*Not listed*	Yes

* Notes presence categorization of EPBC PMST (Commonwealth of Australia 2025)

** Verified records as per Tasmanian Government Natural Values Atlas (NRE Tas 2025). Note that the NVA does not document records of migratory species that are not threatened.

2.1.2.1 Giant Kelp Forests of South East Australia

Community Background

Giant Kelp Forests of South East Australia (GKFSEA) were added to federal legislation as a threatened ecological community in August 2012. The progressive decline of these forests has been the most noticeable in Tasmanian waters and is attributed to changing oceanographic conditions, including rising sea surface temperatures and changes to the East Australian Current (DSEWPC, 2012). The key species that forms this community is Giant Kelp (*Macrocystis pyrifera*), a fast-growing species of brown macroalgae that grows on rocky reefs in cold temperate waters off south-east Australia. The vertical structure provided by Giant Kelp increases local biodiversity by creating habitat for numerous marine species (DSEWPC, 2012). There are several criteria that must be met for a community to be classified as the threatened community GKFSEA (TSSC 2012):

1. *M. pyrifera* plants that form a marine forest with a canopy forming at or below the water surface;
2. *M. pyrifera* plants growing at a depth typically greater than eight metres below sea level;
3. A rocky substratum for *M. pyrifera* plants to attach to;
4. A diversity of marine species on the seafloor, in the understorey and throughout the water column. For example, other marine flora such as seaweeds and marine fauna including fish, molluscs (sea snails), bryozoans (lace corals), polychaetes (worms), crustaceans (crabs, isopods, amphipods), echinoderms (sea urchins, seastars) and sponges;
5. Cold water with mean sea surface temperature currently known to be between 5 °C and 20 °C;
6. Locations that receive moderate wave exposure; and
7. Distribution restricted to waters off the coast of Tasmania particularly in the Bruny, Freycinet and Davey bioregions, but also the Boags and, Flinders, Otway and Franklin bioregions, the coast of South Australia in the Otway, and Coorong bioregions as far west as Margaret Bock Reef, and the coast of Victoria in the Otway, Flinders, Central Victoria and Twofold Shelf bioregions as far east as Gabo Island.

The EPBC PMST report identified that giant kelp communities may occur within 500 m of the proposed development; however, the closest identifiable giant kelp community is towards Blackman's Bay, approximately 10 km away (LISTmap, 2025). No giant kelp was observed at the location of the proposed development during field surveys. The proposed location of the development is in shallow waters <2.5m and the substratum is comprised of silt and seagrass, which is not favourable habitat for giant kelp communities. Given the habitat at the location and the distance to known kelp forests, potential impacts of the proposed development to this threatened community are deemed negligible.

2.1.2.2 Seastars

The Tasmanian live-bearing seastar, *Parvulastra* (formerly Patiriella) *vivipara*, is endemic to Tasmania and is listed as vulnerable under the EPBC Act and TSP Act 1995. No known populations exist in the lower Derwent Estuary (TSSC 2025). Nevertheless, this species can be cryptic, and it is possible that populations exist that have not yet been discovered or reported. The EPBC PMST assessment identified that the live-bearing seastar or its habitat may occur within 500 m of the development area. The greatest threat to the live bearing seastar is changes to habitat as they are restricted to rocky reefs in a narrow intertidal zone and prefer living under rocks near the high tide mark. They are at risk from pollution, including eutrophication or sedimentation. Due to its limited distribution and rarity, the likelihood of the proposed development impacting any Tasmanian live bearing seastar population is considered to be low.

The Derwent River Seastar, *Marginaster littoralis*, is a rare species of seastar that occurs in the shallow rocky intertidal habitat within a restricted geographic range in the Derwent Estuary. Its total recorded range is less than 1 ha (Materia 1994), however the Natural Values assessment identified verified records of this species occurring within 5000 m of the development site in 1969. The Derwent River Seastar is morphologically very similar to the common introduced Regular Seastar (*Patiriella regularis*), making positive identification difficult (Materia 1994).

Known threats to the Derwent River Seastar include interspecific competition and anthropogenic habitat modification/destruction (Materia 1994). Derwent River Seastar populations are severely impacted by introduced species that co-occur in super-abundance (e.g. New Zealand Porcelain Crab *Petrolisthes elongata* and the Regular Seastar) (Barrett et al 2012; Materia 1994). To our knowledge,

no Derwent River seastar individuals have ever been recorded along the Battery Point foreshore. Due to its limited distribution and rarity, the likelihood of the proposed development impacting any Derwent River seastar populations is considered to be low.

A comprehensive targeted search across the intertidal and sublittoral zone within the development footprint and impacted area was conducted for both threatened species; refer to Section 3.1.

2.1.2.3 Australian Grayling

Species Background

Australian Grayling (*Prototroctes maraena*) is a medium-sized, slender, silver fish native to Tasmania and southeast mainland Australia. Migrating between fresh and marine waters, the Australian grayling is considered diadromous, though the majority of their lives are spent in freshwater and adults live and spawn in fresh water. Timing of spawning varies but is typically in late summer in Tasmania, with larvae transported to the sea via stream and river currents, before returning as migrating juveniles approximately 4 to 6 months later (Backhouse et al 2008a, b.)

The most serious threat facing the Australian grayling population is habitat disturbance resulting in barriers to migration. Pollution of waterways is also considered a threat to their survival. There are no foreseen consequences of the proposed development to the migratory route of the Australian grayling and as such the proposed development is not deemed to pose a risk to the Australian grayling population.

2.1.2.4 Blue Warehou

Species Background

The blue warehou (*Seriolella brama*) is a mid-sized species of schooling fish often found under jetties, wharves, and moored boats, at depths between 3 and 550m (Bray and Gorman, 2011). Larger juveniles congregate in bays and estuaries until they reach 30cm when they are most abundant on the continental shelf further offshore (Gavrilov and Markina 1979; Bruce et al., 2002).

The key threat to blue warehou is fishing mortality. Blue warehou were historically taken as a target species in trawl and gillnet fisheries. The management arrangements outlined in the Stock Rebuilding Strategy for this species (AFMA 2022) are primarily aimed at reducing fishing mortality to minimise the threats to the species' recovery. Environmental variability including climate change is also a recognised but little-understood threat.

There are no foreseen consequences of the proposed development to the blue warehou given they are highly mobile and can avoid any construction works.

2.1.2.5 Spotted Handfish

Species Background

Spotted Handfish (*Brachionichthys hirsutus*) are endemic to south-east Tasmania. They were once locally common and widespread from the eastern coast of Tasmania to the D'Entrecasteaux Channel (Last et al. 1983) but declines in numbers, first reported in 1996, lead to concerns about their conservation (Barrett et al 1996). This resulted in the species being the first marine bony fish to be listed on the International Union of Nature Conservations (IUNC) Red List as Critically Endangered (Bruce and Last 1996). They are also listed as Critically Endangered under the Australian *Environment Protection and Biodiversity Conservation Act (1999)* and as Endangered in Tasmania, which is the highest level of concern, under the *Threatened Species Protection Act 1995*.

Reasons for declines in Spotted Handfish are likely related to historic and ongoing anthropogenic impacts to their habitats and certain characteristics of their life history. Spotted handfish are camouflaged to match the colour of scallop shell hash and extensive scallop dredging from the 1800s through to the 1940s in the Derwent River and D'Entrecasteaux Channel likely impacted populations from bycatch. Urbanisation, pollution, eutrophication and infrastructure such as moorings may also have had impacts, but the species was still considered common into the 1980s. The introduction of marine pests in the late 1980s and early 1990s, such as the Northern Pacific Seastar are also believed to have impacted Spotted Handfish as the seastars consume the Stalked Ascidians which the handfish use as spawning habitat. Declines in other spawning habitat such as seagrasses and *Caulerpa sp*., may also have contributed to reduced breeding success.

Verified records of spotted handfish (*Brachionichthys hirsutus)* were identified by Natural Values Atlas within 500 m of the proposed development. A comprehensive targeted search was conducted by divers for spotted handfish, potential habitat and handfish egg masses in the development area; refer to Section 3.2

2.1.2.6 White Shark

White sharks, also known as white pointers and great white sharks, are found throughout temperate and sub-tropical waters. They are a pelagic species, primarily found inside continental shelf waters. White sharks are long-lived with low reproductive rates, and these life history characteristics are likely contributors to population declines (Department of the Environment 2025) Threats to great white sharks include commercial fishing rather than shallow coastal developments (DSEWPC 2013). Therefore, it is unlikely that the proposed development would present any risk to white sharks given that they are highly mobile and can avoid any construction works. In addition, the development is unlikely to significantly alter any critical habitat of the white shark.

2.1.2.7 Eastern School Shark

Species Background

The eastern school shark (*Galeorhinus galeus*) is primarily a deep-water demersal species found in temperate waters of southern Australia. In Tasmania, inshore bays and estuaries are important as birthing and nursery sites. Threats to school sharks include fishing and habitat degradation of nursery grounds (Department of the Environment 2025a). It is unlikely that the proposed development would present any risk to school sharks given it is unlikely to significantly alter any critical habitat.

2.1.2.8 Marine Mammals

Various marine mammals are known to occur in the Derwent Estuary. The Natural Values Assessment (NVA) identified verified records of threatened marine mammals within 5,000 m of the proposed development, including the southern right whale (*Eubalaena australis*), sub-Antarctic fur seal (*Arctocephalus tropicalis*), and southern elephant seal (*Mirounga leonina*).

The EPBC Protected Matters Search Tool (PMST) indicated that the blue whale (*Balaenoptera musculus*) or its habitat is likely to occur in the area. The humpback whale (*Megaptera novaeangliae*) or its habitat is known to occur within 500 m of the proposed development, while the pygmy right whale (*Caperea marginata*) or its habitat may occur in the area.

Non-threatened but protected marine mammal species in the area may include the New Zealand fur seal (*Arctocephalus forsteri* subsp. *Doriferus*), Australian fur seal (*Arctocephalus pusillus* subsp. *Doriferus*), , common dolphin (*Delphinus delphis*), leopard seal (*Hydrurga leptonyx*), orca (*Orcinus orca*), and bottlenose dolphin (*Torsiops truncatus*).

The occurrence of whales and dolphins (cetaceans) in the Derwent Estuary tend to be sporadic and transitory but anecdotal evidence suggests that the frequency of their visitations may be increasing (MAST, 2020). All cetaceans are protected under the EPBC Act. Due to the shallow coastal nature of the development site there is unlikely to be any impact of the proposed development to this species. Blue and humpback whales may occur in Tasmanian waters during winter migrations but generally occur offshore. Therefore, the proposed development is not expected to impact on this species at local, regional or state-wide levels. Other species of cetacean known to be present at times in the area, including common dolphins, bottlenoses dolphin and orcas, tend to be highly transient and fast moving and therefore the proposed development is unlikely to have any notable impact on these species.

Numerous species of pinniped are known to occur in the Derwent Estuary. Observations of the New Zealand and Australian fur seal tend to be relatively common but the distribution of other more threatened and exotic species including the southern elephant, sub-Antarctic fur seal and leopard seals do not regularly visit Tasmania. Long range foraging trips and sickness result in rare occasional short stays of these species in Tasmanian waters. The processes threatening these species of seals does not include short term and shallow coastal development. Therefore, the proposed development is not expected to impact on this species at local, regional or state-wide levels.

Threats to marine mammals include acoustic pollution, entanglement (e.g., marine debris, fishing equipment), vessel-strike injury and water quality degradation. A visual inspection of the area for marine mammals should be conducted prior to and during construction works. If observed, works

involving underwater acoustic impacts should cease until the marine mammals are away from the area (Discussed further in section 4.1). Given the sheltered and shallow nature of the proposed location, interactions with marine mammals are unlikely.

2.2 Migratory Species

Migratory species are those animals that migrate to Australia and its external territories or pass through or over Australian waters during their annual migrations (DCCEEW 2021).

The proposed development will not introduce any barriers to migration and therefore poses negligible risk to migratory species.

2.3 Invasive Species

Marine pests are introduced into Australian waters and translocated by a variety of vectors (e.g. ballast water, biofouling, aquaculture operations, and ocean current movements). Once introduced, they often thrive as they may lack predators and/or competitors in their new environment (Whitehead 2008). Pests can have a significant impact on human health, fisheries and aquaculture, infrastructure, tourism, biodiversity and ecosystem health.

Seven species have been declared as noxious fish under State legislation[1]. All of which are known to occur within the Derwent Estuary, where the proposed development is located. These are:

- Northern Pacific seastar (*Asterias amurensis*),
- European shore crab (*Carcinus maenas*),
- European fan worm (*Sabella spallanzanii*),
- Japanese Wakame (*Undaria pinnatifida*) other than in restricted zone defined in legislation,
- European Carp (*Cyprinus carpio*), and

It should be ensured that no marine species are translocated as a result of vessel/equipment movement, by adopting a thorough cleaning protocol.

[1] *Fisheries (General and Fees) Regulations 1996*, *Part 20: Noxious* fish, outlined in the *Living Marine Resources Management Act 1995*

3 Natural Values Surveys

3.1 Intertidal Habitat and Targeted Seastar Search

3.1.1 Methods

An intertidal survey was conducted by marine scientists on 7th May 2024. The intertidal survey included habitat and species observations and a targeted search for the Tasmanian live-bearing seastar (*Parvulastra vivipara*) and the Derwent River seastar (*Marginaster littoralis*). Quadrats (0.3m^2) were placed haphazardly along the low and high tide lines where accessible across the length of the property (~18 m) (Figure 3). A total of 11 quadrats were photographed and searched for seastars and other present species. Surveys for threatened seastars were conducted by carefully checking exposed rock, cracks and the underside of rocks before returning them to their original position. Additionally, any species observed outside the quadrats were also recorded and photographed.

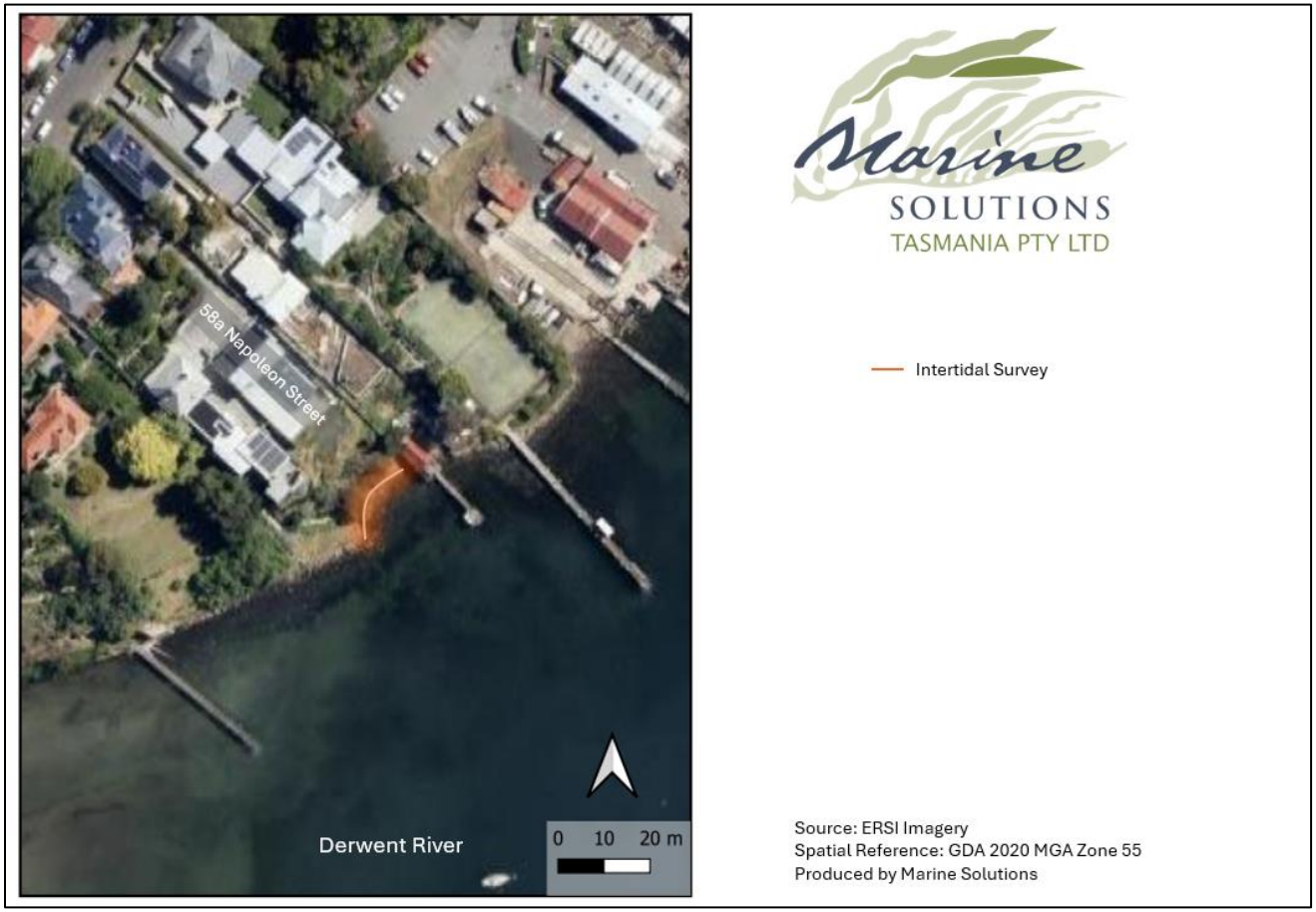

Figure 3 Search area for intertidal habitat classification and targeted sea star search.

3.1.2 Results

No seastars were observed during the targeted survey for live-bearing seastars and Derwent River seastars. The intertidal zone is composed of medium sized dolerite boulders with underlying bedrock to the south and a cobble beach to the north. On the southern end of the intertidal zone the boulders drop vertically into to the water which are surrounded by small rockpools. At the northern end there is a small cobble beach. The dominant species observed in the area was the pacific oyster (*Crassostrea gigas*) (Figure 4) which have colonised along the lower tidal zone, patches of blue mussel shells also occur within the low lying rockpools (Figure 4). Other species observations include the chitons (*Plaxiphora sp*), waratah anemones (*Actinia tenebrosa*), top shells *(Trochidae spp*) and the giant knot limpet (*Hemitoma subemarginata*) (Figure 4). Quadrat photos are available in Appendix 4..

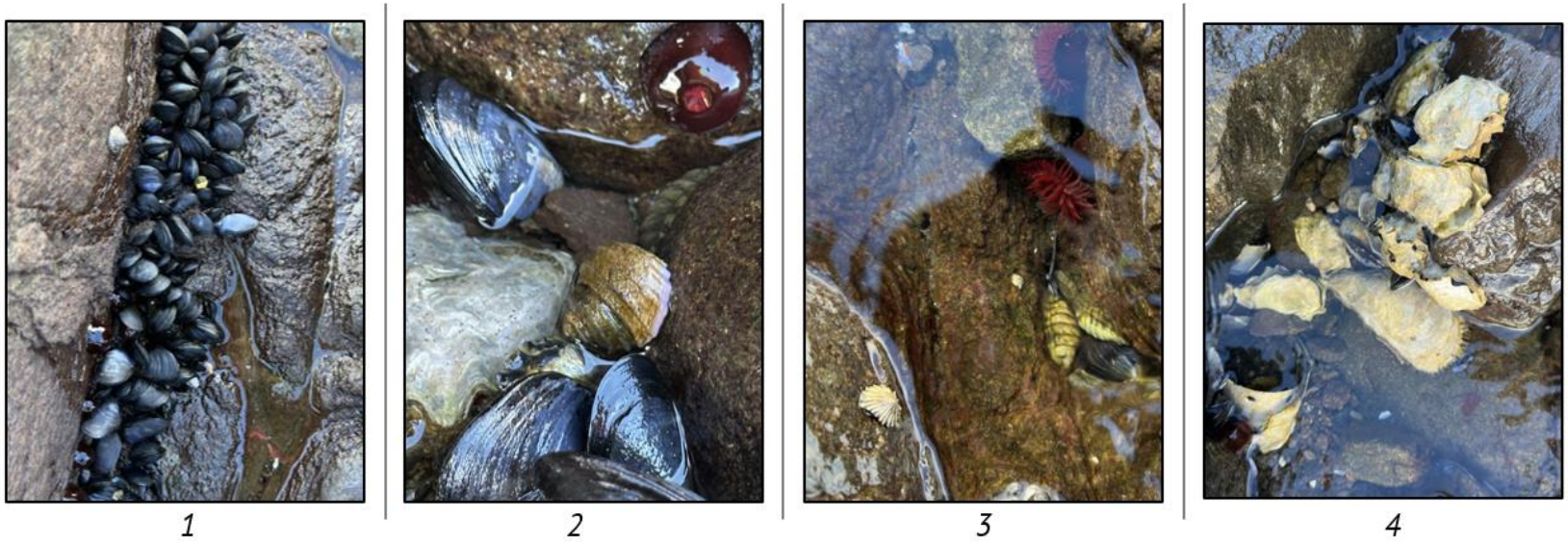

Figure 4: Images showing species observed throughout the intertidal search. Photo 1: Blue mussels. Photo 2: blue mussel, chitons (*Plaxiphora sp*), waratah anemones (*Actinia tenebrosa*), top shells. Photo 3: chiton (*Plaxiphora sp*), waratah anemones and limpet (*Hemitoma subemarginata*). Photo 4: pacific oysters (*Crassostrea gigas*).

3.2 Spotted Handfish Search & Underwater Habitat Characterization

3.2.1 Methods

A targeted search for spotted handfish (*Brachionichthys hirsutus*) was conducted in the vicinity of the proposed development along with general observations of the surrounding habitat and the sublittoral zone. The targeted search was conducted by a scientific diver on the 7th of May 2025 and covered belt transects of 2m wide over a total distance of 285m. The diver covered an area of 770m^2, which was effectively a census of the entire proposed development area plus buffer, as shown in Figure 5 below. As per survey guidelines, during the search for handfish, numbers of Northern Pacific seastar (*Asterias amurensis*), a known predator of handfish eggs, were recorded along with the presence of any suitable handfish spawning habitat structure such as ascidians, *Caulerpa* and seagrass. An additional 50m transect perpendicular to shore, was conducted by the diver for the purpose of capturing video footage to characterise the underwater habitat. Video footage is available from Marine Solutions upon request.

Handfish Survey Diver Transect

Subtidal Habitat Survey Diver Transect

Source: ERSI Imagery
Spatial Reference: GDA 2020 MGA Zone 55
Produced by Marine Solutions

Figure 5 Map showing location of spotted handfish and underwater habitat survey.

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3.2.2 Results

Close to shore, the sublittoral substrate was comprised of a combination of medium sized boulders and various pieces of old infrastructure colonised with green (*Codium sp and ulva sp*), brown and foliose red algae, a considerable amount of epiphytic algae reduced ability for induvial identification from video footage (Figure 6). Beyond the rigid substrate and patchy reef throughout the first 5 meters of transect, seagrass covered ~95% of the substrate, this was observed on the subtidal habitat transect and also throughout the handfish dive. Seagrass is considered a keystone species due to its ability to supports entire marine ecosystems by providing habitat, stabilizing sediment and improving water quality. Additionally, several small patches of sand and cobble occurred sporadically throughout the survey area.

No spotted handfish or *Caulerpa* were found within the survey area (Table 2). However, suitable handfish habitat and spawning substrate was found, the area included 95% seagrass coverage, and one ascidian was observed. Additionally, six Northern Pacific Seastars (*Asterias amurensis*) were observed, all of which were congregated around old infrastructure in the shallows approximately 5m from shore to the south of the survey area.

Table 2 Results of the spotted handfish survey.

Transect	Area	Handfish	Ascidians	NPSS	Caulerpa	Seagrass
1	770m^2	0	1	6	0	95%

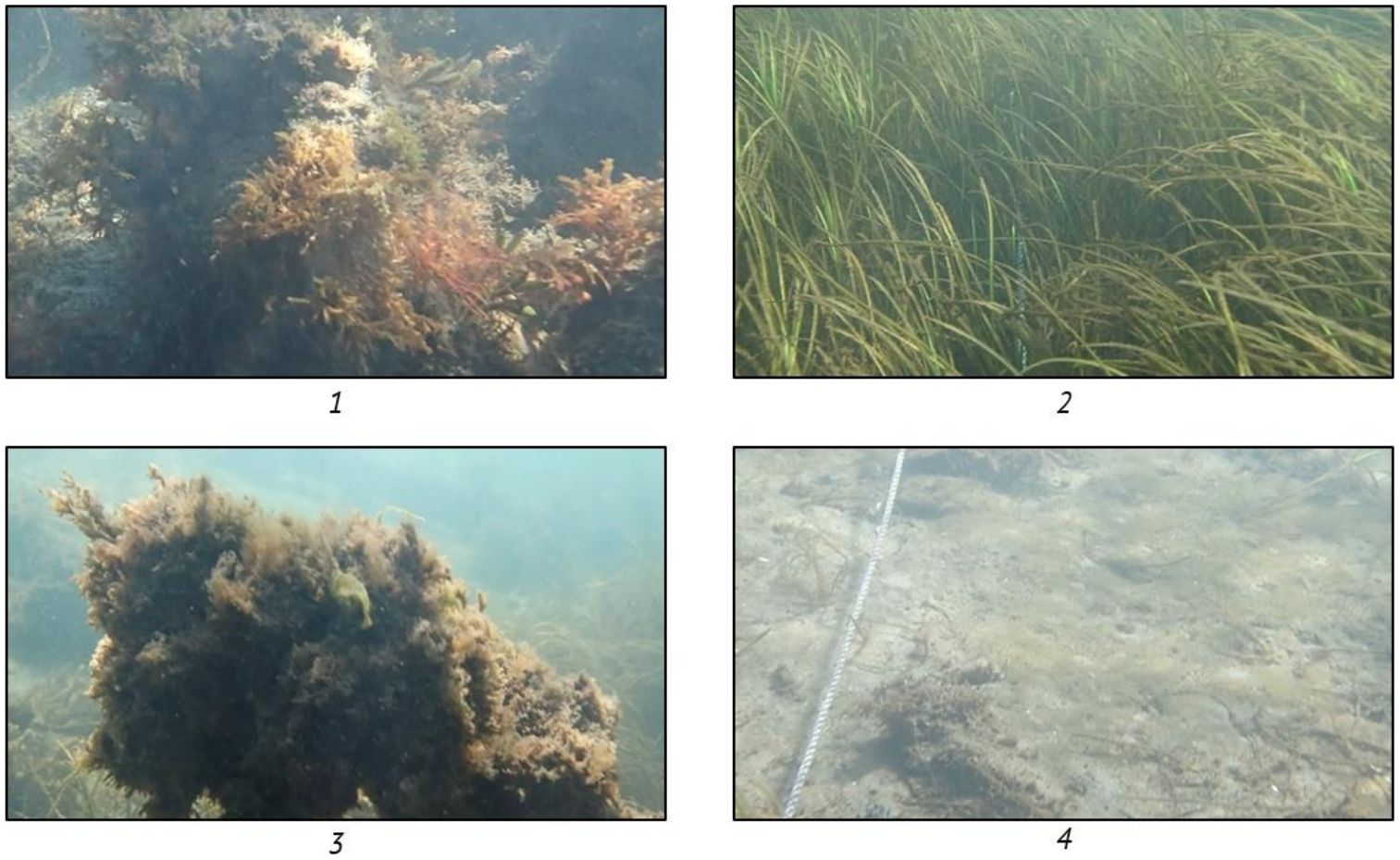

Figure 6: Photos of the habitats observed during the underwater habitat characterisation survey. Photo 1: Shallow reef. Photo 2: Seagrass. Photo 3: Algae colonising on old infrastructure. Photo 4: Sand patch .

Sediment Quality

3.3 Contaminants

3.3.1 Methods

2 x sediment samples (refer to Figure 7and Appendix 3 for locations – map and GPS coordinates, respectively) were collected for contaminant analysis of metals. Each sample was placed into laboratory-supplied glass jars and stored on ice prior to transport to Analytical Services Tasmania (AST). AST has up-to-date accreditation under the National Association of Testing Authorities (NATA), Australia.

All samples were tested for the following parameters::

- Metals (As, Cd, Co, Cr, Cu, Mn, Ni, Pb, Zn, Hg)

Laboratory results for the above parameters were then compared to the Australian and New Zealand Guidelines (ANZG) toxicant default guideline values for sediment quality (ANZG 2018). The default guideline values for sediment quality (DGVs) indicate the concentrations below which there is a low risk of unacceptable effects occurring, and should be used, with other lines of evidence, to protect aquatic ecosystems. In contrast, the 'upper' DGVs provide an indication of concentrations at which one might already expect to observe toxicity-related adverse effects.

Sediment sampling locations

Source: ERSI Imagery
Spatial Reference: GDA 2020 MGA Zone 55
Produced by Marine Solutions

Figure 7. Sediment sampling locations.

3.3.2 Results

Results of the sediment contaminant analysis indicated that lead exceeded the ANZG (2018) lower DGV at both sample sites (Table 3). All other parameters at all other sites were below the DGVs.

Table 3 Summary of results of sediment contaminant testing, compared against the ANZG Default Guideline Values trigger values where applicable. Orange highlight indicates if any DGVs have been exceeded.

			ANZECC/ARMCANZ Default Guideline Values		Results	
		Units	Lower trigger	Upper trigger	Sample 1	Sample 2
	Moisture content	%			69.2	36.3
Metals	Arsenic	mg/kg	20	70	5	4
	Cadmium	mg/kg	1.5	10	0.6	<0.5
	Cobalt	mg/kg	100**	-	4	4
	Chromium	mg/kg	80	370	10	9
	Copper	mg/kg	65	270	33	38
	Manganese	mg/kg	500*	-	86	88
	Nickel	mg/kg	21	52	6	6
	Lead	mg/kg	50	220	67	66
	Zinc	mg/kg	200	410	169	139
	Mercury (inorganic)	mg/kg	0.15	1	0.84	0.61

* No ANZECC trigger values given for this element so this information is derived from the EPA (2012)

** No ANZECC trigger values given for this element so this information is derived from the NEPM (2011)

Bathymetry

3.4 Methods

A 50-meter transect line was placed within the designated footprint area. Bathymetric data were collected at 11 evenly spaced points along the transect using a dive computer to measure depth. The recorded depths were used to generate a single-profile bathymetric depth graph, representing the underwater topography along the transect line.

3.5 Results

The maximum depth recorded was 2.4 meters at a distance of 50 meters from the shoreline. A steep increase in depth was observed within the first 5 meters from shore, followed by a relatively flat section extending approximately 15 meters. Beyond 20 meters from the shoreline, depth increased in a consistent linear trend. The depth gradient along the transect is illustrated in Figure 8.

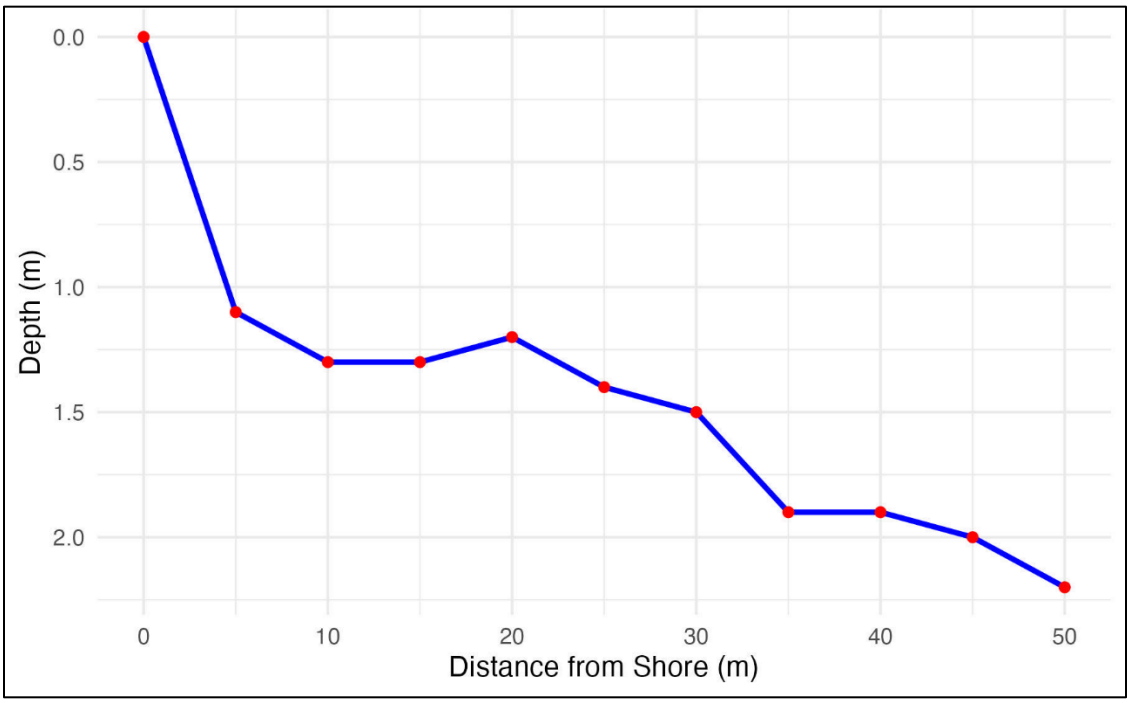

Figure 8. Single-profile bathymetric depth graph for 58a Napoleon Street, Battery Point.

4 Recommendations & Conclusions

The scope of this report extends only to the marine environment. Relevant experts (e.g. terrestrial, avian) should be consulted to ensure there are no unacceptable impacts to sensitive receptors that are outside the scope of this report.

Based on desktop and field findings, the following impact mitigations have been proposed for species and habitats that were identified as relevant to the proposed development area.

4.1 Marine Mammals

Marine mammals may be present periodically in the vicinity of the proposed development and as discussed in Section 2.1.2.8 , acoustic disturbance during construction may particularly affect marine mammals that rely on acoustic cues for social and reproductive behaviours.

Key mitigation:

It is recommended that standard operating procedures outlined in Underwater Piling Noise Guidelines (Government of South Australia, 2012) be adopted during construction works (e.g. piling) that may produce underwater impulse sound to minimize potential impacts on threatened marine mammals. The guidelines states that a 300 m radius exclusion zone should be applied around the construction site. This zone should be monitored for marine mammals prior to and during construction activities. Should any marine mammals be sighted within the exclusion zone, construction works should be halted until such time that no marine mammal has been sighted for 30 minutes. A slow start-up of construction works is recommended to avoid causing unnecessary shock to animals and to allow them to vacate the area.

4.2 Invasive Species

Key mitigation:

Introduction of marine pests are not thought to be a high consideration for this development. However, should marine construction equipment be sourced from outside the Derwent River system, or be leaving the system to travel elsewhere at the completion of work, a management system for cleaning including any ballast tanks and hull fittings should be introduced to mitigate the risk of spreading any introduced species. Existing state legislation provides controls by which to prevent the translocation of marine pest species.

4.3 Sediment displacement

Sediment lead contamination exceeded the ANZG (2018) DGVs at both sample locations. Due to the small volume of sediments likely to be displaced from piling, this not expected to have large or long-lasting effects regarding contaminant resuspension. However, if dredging were to occur, further assessment would be required. I Large beds of seagrass were observed throughout the survey area. Seagrass is essential for coastal productivity and biodiversity and is particularly sensitive to turbidity, as increased sediment in the water column can limit light penetration. Should dredging, piling or the disturbance of sediment be required through the construction process, there may be impacts on seagrass habitat in the area.

Key mitigation:

It is recommended that construction avoid any unnecessary disturbance of the benthos. Any construction phase which is likely to result in sediment being disturbed or agitated should implement the use of sediment controls such as silt curtains. Containing sediment plumes within the footprint of the development will avoid unnecessary localised impacts to marine flora, fauna, habitats and water quality. Additionally, the use of pile casings around each pile will assist in isolating the area during pile driving and prevent contaminated sediments from mixing with the ambient environment.

4.4 Impacts to seagrass

Seagrass in the vicinity of the proposed development is likely to be adversely impacted by reduction of light, due to shading the proposed jetty. The area of seagrass to be affected by shading is approximately 69$m^{2,}$ based on the size of the proposed jetty.

Key mitigation:

To minimise the impact of shading on underlying seagrass, the incorporation of grated or light-permeable decking materials in the jetty design can enhance light penetration to the benthic zone. Additionally, the height of the jetty should be maximised where practical, as increased elevation above the water surface reduces the intensity and duration of shadowing on the seafloor.

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6 Appendices

Appendix 1. EPBC Protected Matters Summary

Summary of the *EPBC Act* PMST findings within 5,000 m and 500 m of the project.

	Item	5 km buffer		500 m buffer		Cross-reference Section of this report
		# ID'd by PMST	Incl. # aquatic matters	# ID'd by PMST	Incl. # aquatic matters	
Matters of National Environmental Significance	**World Heritage Properties**	1	0	0	0	N/A
	National Heritage Places	2	0	0	0	N/A
	Wetlands of International Importance	1	1	0	0	N/A
	Great Barrier Reef Marine Park	0	0	0	0	N/A
	Commonwealth Marine Area	0	0	0	0	N/A
	Listed Threatened Ecological Communities	4	1	3	1	Section 2.1
	Listed Threatened Species	69	9	62	8	Section 2.1
	Listed Migratory Species	34	7	32	5	Section 2.2
	Nuclear actions	*Not listed by PMST – none known.*				N/A
	Water resources	*Not listed by PMST – none known.*				N/A
Other Matters Protected by EPBCA	Commonwealth Land	24	0	6	0	N/A
	Commonwealth Heritage Places	4	0	3	0	N/A
	Listed Marine Species	53	15	53	15	N/A
	Whales and Other Cetaceans	9	9	7	7	N/A
	Critical Habitats	0	0	0	0	N/A
	Commonwealth Reserves Terrestrial	0	0	0	0	N/A
	Commonwealth Reserves Marine	0	0	0	0	N/A
	Habitat critical to survival of marine turtles	0	0	0	0	N/A
Extra Information	State and Territory Reserves	13	0	0	0	N/A
	Regional Forest Agreements	1	0	1	0	N/A
	Nationally Important Wetlands	0	0	0	0	N/A
	EPBC Act Referrals	17	0	4	0	N/A
	Key Ecological Features	0	0	0	0	N/A
	Biologically Important Areas	6	1	5	1	N/A
	Bioregional Assessments	0	0	0	0	N/A
	Geological and Bioregional Assessments	0	0	0	0	N/A

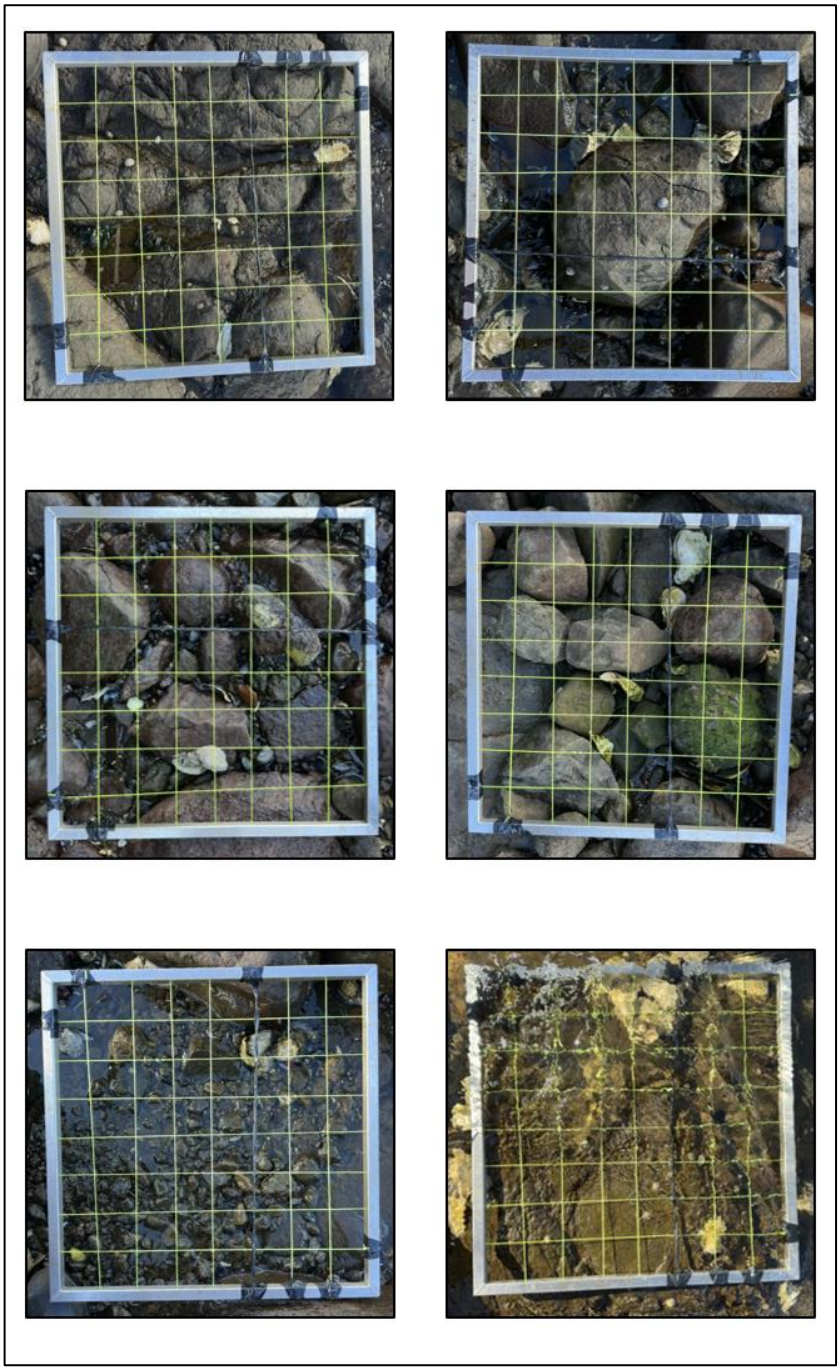
Appendix 2. Operational Summary

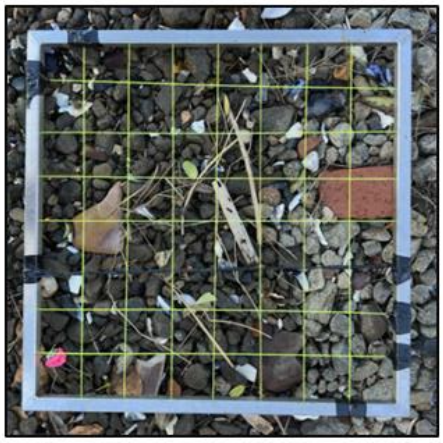
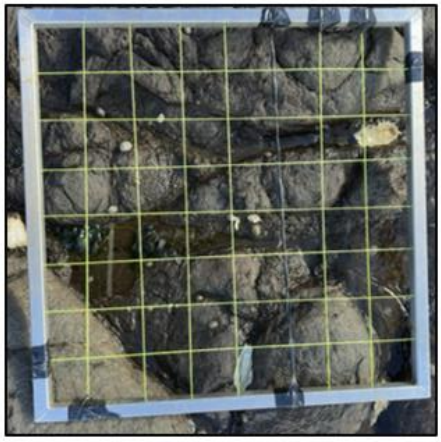
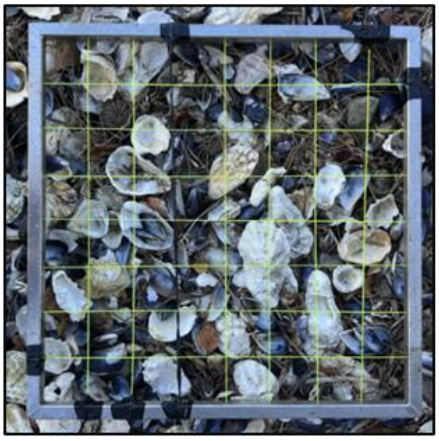
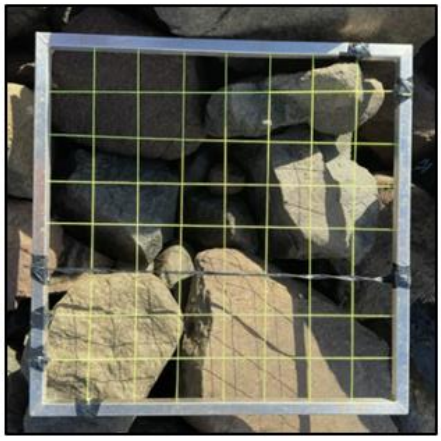
Date	Personnel	Time (start)	Time (end)	Cloud	Rain	Swell	Wind	Tide	Works conducted
7/05/2025	A. King E. Foster J. Watling	10:00AM	14:00	7/8	NA	Calm	W15	Mid - Falling	- Habitat survey - Handfish survey - Sediment sampling - Intertidal Survey

Appendix 3. GPS Positions of sampling locations

Name	Zone	Easting	Northing	Notes
Sediment 1	55G	527421.69	5250903.4	
Sediment 2	55G	527409.09	5250916.11	

Appendix 4. Intertidal Quadrats




loci architecture + planning

REQUEST FOR INFORMATION RESPONSE

Information Requested

#	Reason	Origin
1	Provide documentation from a suitably qualified person demonstrating that the proposed development landside of the high water mark meet the relevant requirements of the Natural Assets Code, specifically clause C7.6.1 P1.1 and P3.	
2	Provide documentation from a suitably qualified person demonstrating that the proposal meets the relevant requirements of the Coastal Inundation Hazard Code, specifically clause C11.6.1 P1.1 and P1.2.	

Response to Request

RFI #	Performance Criteria	Response
1	**C7.6.1 P1.1** Buildings and works within a waterway and coastal protection area must avoid or minimise adverse impacts on natural assets, having regard to: (a) impacts caused by erosion, siltation, sedimentation and runoff; (b) impacts on riparian or littoral vegetation; (c) maintaining natural streambank and streambed condition, where it exists; (d) impacts on in-stream natural habitat, such as fallen logs, bank overhangs, rocks and trailing vegetation; (e) the need to avoid significantly impeding natural flow and drainage; (f) the need to maintain fish passage, where known to exist; (g) the need to avoid land filling of wetlands; (h) the need to group new facilities with existing facilities, where reasonably practical; (i) minimising cut and fill; (j) building design that responds to the particular size, shape, contours or slope of the land; (k) minimising impacts on coastal processes, including sand movement and wave action; (l) minimising the need for future works for the protection of natural assets, infrastructure and property; (m) the environmental best practice guidelines in the *Wetlands and Waterways Works Manual*; and (n) the guidelines in the *Tasmanian Coastal Works Manual*.	List maps does not show this Code as applicable to the site. Notwithstanding, the proposal meets the performance criteria as follows: a) The proposed works formalize the retention of the topography, likely resulting in reduced impacts by erosion, siltation, and sediment runoff; b) There is no proposal to remove vegetation as part of this development application; c) Not applicable; d) Not applicable; e) Natural flow on the subject site is already significantly altered in the existing state. The proposed development is considered to improve flow and drainage and reduce the likelihood of erosion; f) Refer to the *Marine Natural Values Assessment For a Development at 58a Napoleon St, Battery Point, Tasmania* prepared by Marine Solutions, which form part of the Development Application; g) No filling of wetlands is proposed; h) No existing marine facilities service the subject site; i) Cut and fill is limited to that practically required for the proposed works; j) The design is considered in its response to topography and functionality of the proposed development; k) All retaining walls are contained within the property boundaries of 58a Napoleon St, Battery Point; l) The design considers the resilience and durability of infrastructure and property while preserving natural assets; m) The eight documents of the *Wetlands and Waterways Works Manual* will be made available to the contractor. Conditions can also be included in the Planning Permit to ensure compliance with the relevant documents, especially legislative and policy requirements; n) The *Tasmanian Coastal Works Manual*.will be made available to the contractor. Conditions can also be included in the Planning Permit to ensure compliance with the relevant documents, especially legislative and policy requirements.

	C7.6.1 P3 Development within a waterway and coastal protection area or a future coastal refugia area involving a new stormwater point discharge into a watercourse, wetland or lake must avoid or minimise adverse impacts on natural assets, having regard to: (a) the need to minimise impacts on water quality; and (b) the need to mitigate and manage any impacts likely to arise from erosion, sedimentation or runoff.	List maps does not show this Code as applicable to the site. Notwithstanding, the proposal meets the performance criteria as follows: a) The only stormwater proposed to discharge into the water course are ground water and roof drainage from the proposed boatshed. There is no increase in storm water over the existing conditions resulting from the proposed development. Indeed, improved runoff management would indicate the proposal would result in reduced sediment incursion into the watercourse; b) As above.
2	**C11.6.1 P1.1** Buildings and works, excluding coastal protection works, within a coastal inundation hazard area must have a tolerable risk, having regard to: (a) whether any increase in the level of risk from coastal inundation requires any specific hazard reduction or protection measures; (b) any advice from a State authority, regulated entity or a council; and (c) the advice contained in a coastal inundation hazard report.	Refer attached Coastal Vulnerability Assessment by GES Geo-Environmental Solutions dated 28.11.2025.
	C11.6.1 P1.2 A coastal inundation hazard report also demonstrates that the building or works: (a) do not cause or contribute to coastal inundation on the site, on adjacent land or public infrastructure; and (b) can achieve and maintain a tolerable risk from a 1% annual exceedance probability coastal inundation event in 2100 for the intended life of the use without requiring any specific coastal inundation protection works.	Refer attached Coastal Vulnerability Assessment by GES Geo-Environmental Solutions dated 28.11.2025.

Jonathan Blood
Architect + Town Planner

BEnvDes. GradDipEnvPlan. (GK.) BArch. RAIA A+

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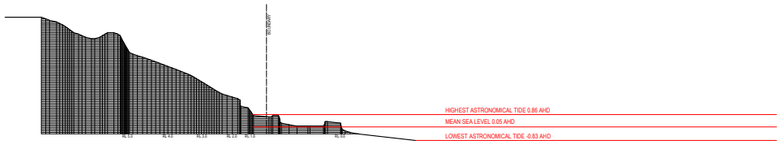

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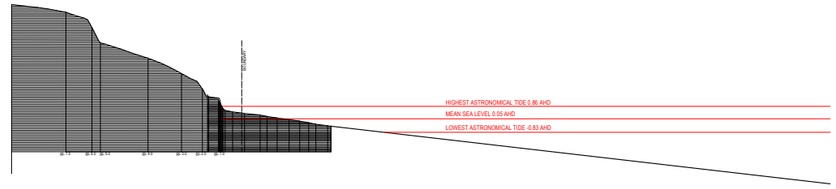

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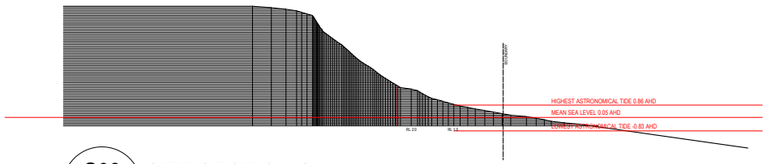

S03 / TP01 SITE SECTION S03
SCALE 1:400

01 / - SITE PLAN
SCALE 1:400

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Client
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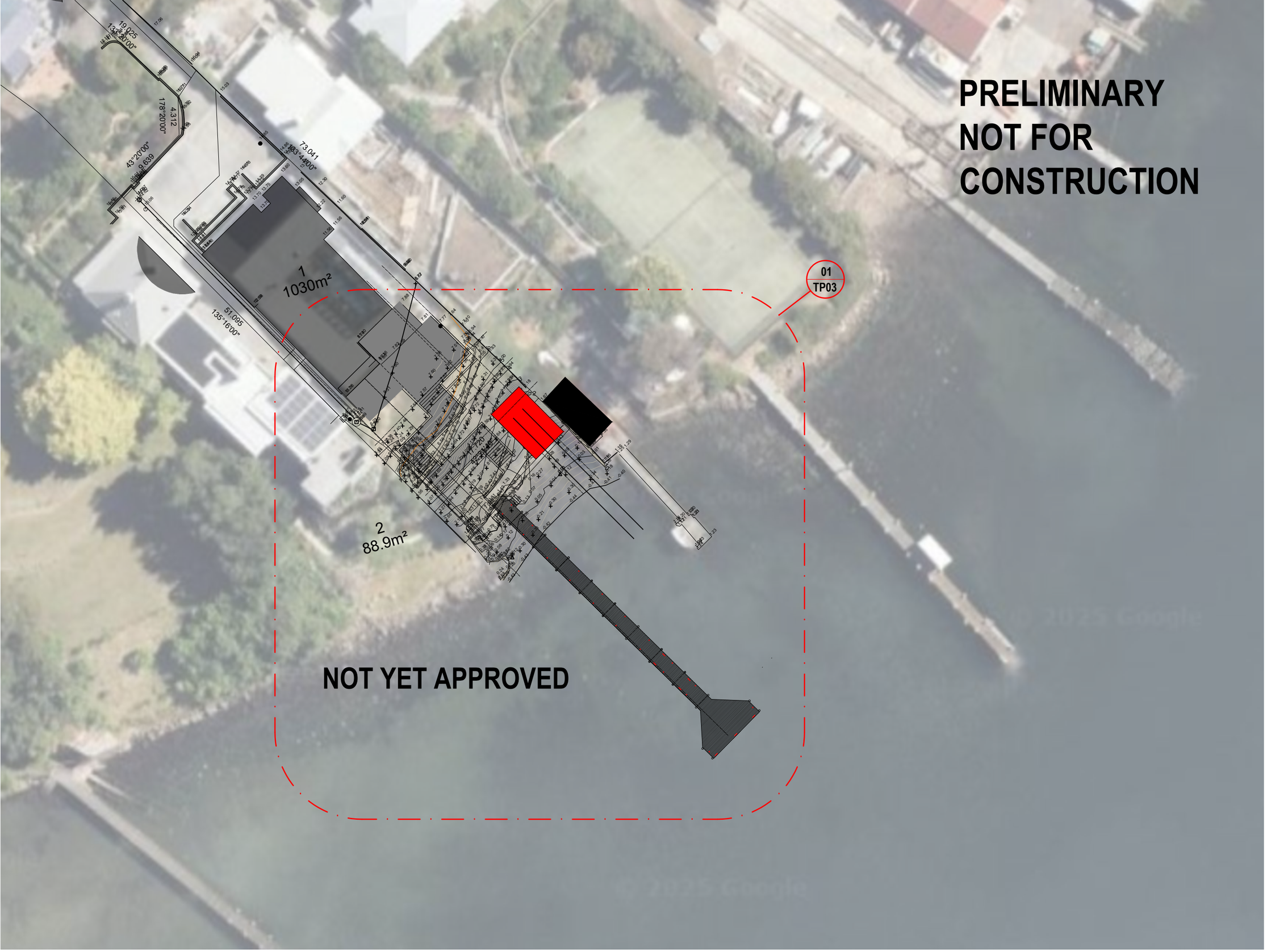
Drawing
EXISTING SITE PLAN & SECTIONS

DRAWN BY	SCALE
J.B.	1:400@A3
DATE	1:200@A1
08.10.2025	
PROJECT NO.	DRWN NO.	REV.
2415	TP01	A



01 LOCATION PLAN
SCALE 1:400

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Drawing
LOCATION PLAN

DRAWN BY	SCALE
J.B.	1:400@A3
DATE	1:200@A1
08.10.2025	
PROJECT NO.	DRWN NO. / REV.
2415	TP02 A

NOT YET APPROVED

01 SD02 **SITE PLAN**
SCALE 1:200

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Drawing
PROPOSED SITE PLAN

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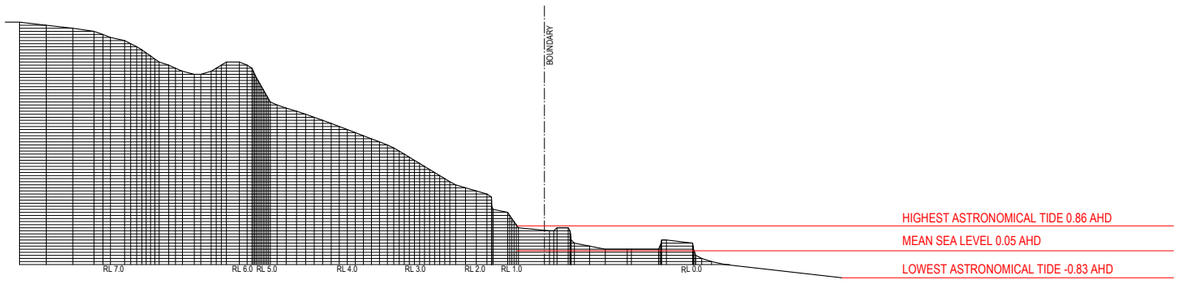
DATE	1:100@A1
08.10.2025	
PROJECT NO.	DRWN NO.	REV.
2415	TP03	B



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SECTION S01

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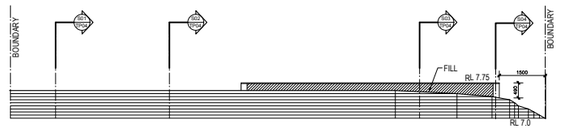

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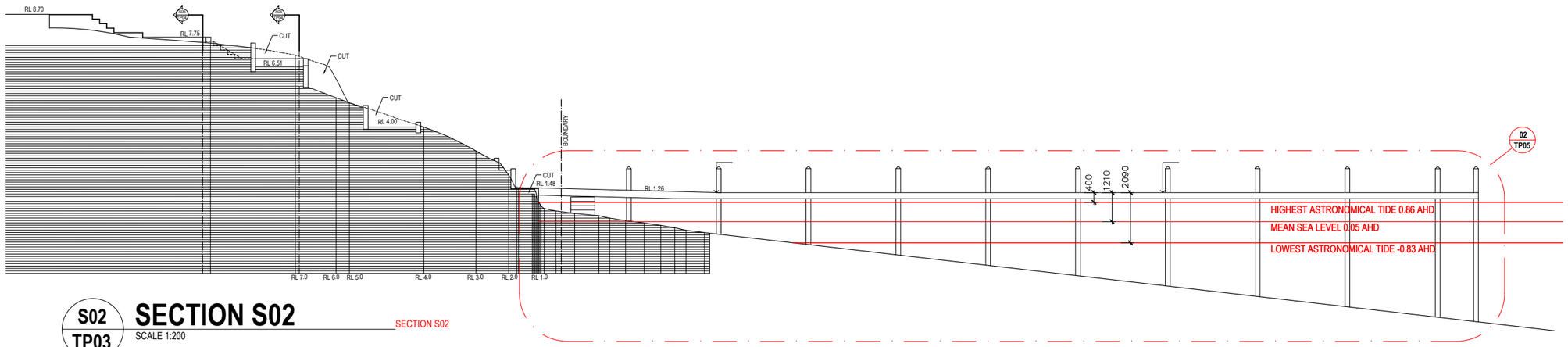

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SECTION S02

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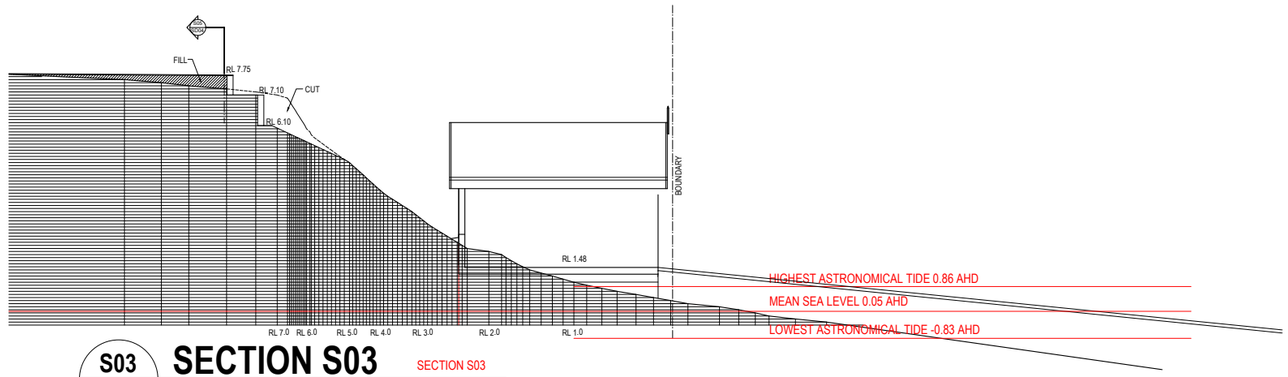

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SECTION S03

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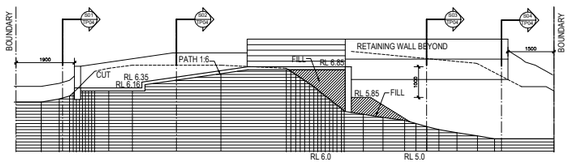

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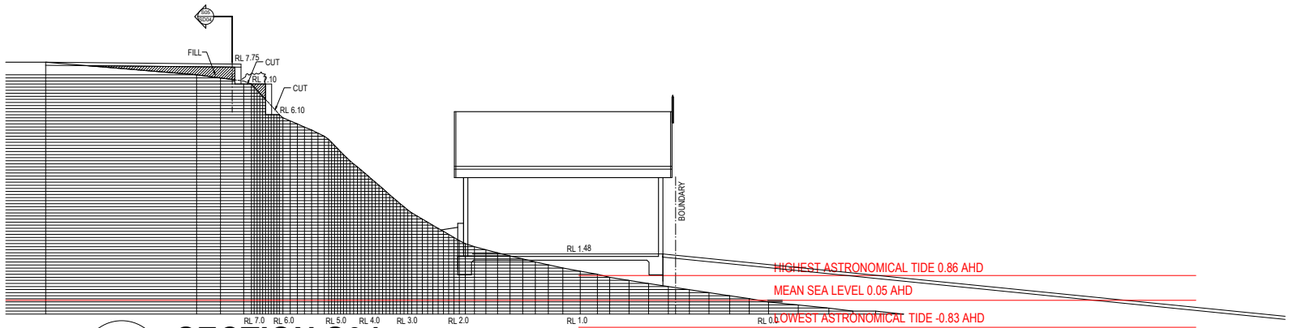

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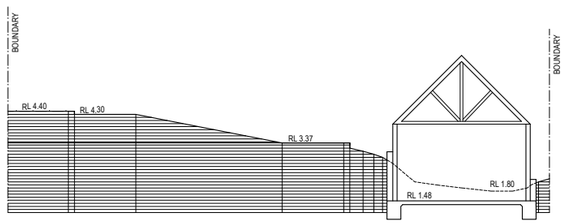

S07 / TP03 **SECTION S07**

SCALE 1:200

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Client
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Drawing
PROPOSED SECTIONS

DRAWN BY	SCALE
J.B.	1:200@A3
DATE	1:100@A1
08.10.2025	
PROJECT NO. / DRWN NO. / REV.	
2415 / TP04 / B	

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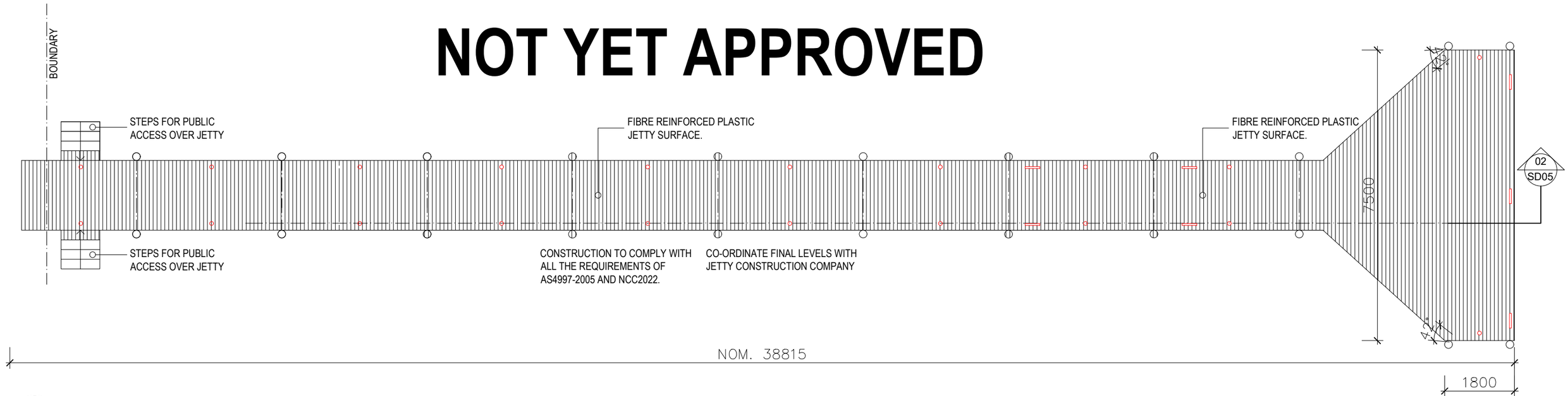
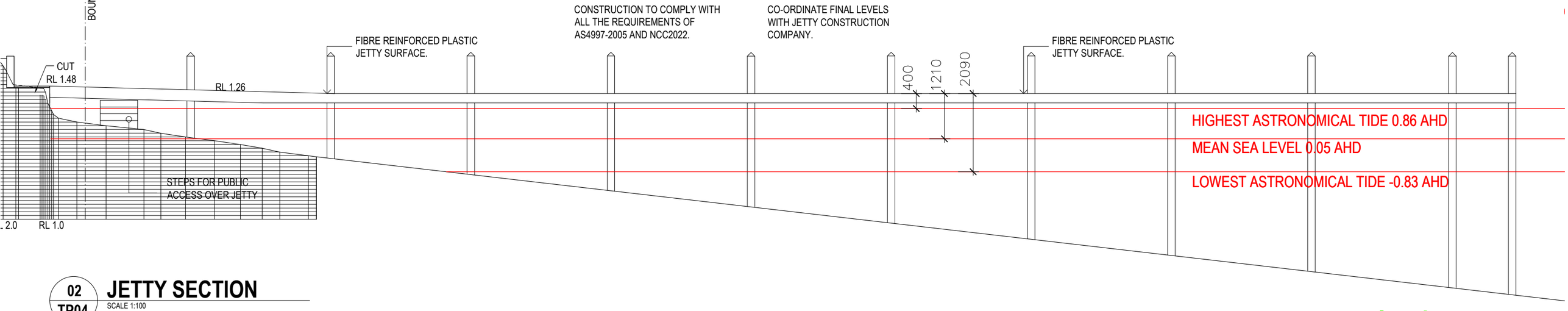


01 TP03 **JETTY PLAN**
SCALE 1:100



02 TP04 **JETTY SECTION**
SCALE 1:100

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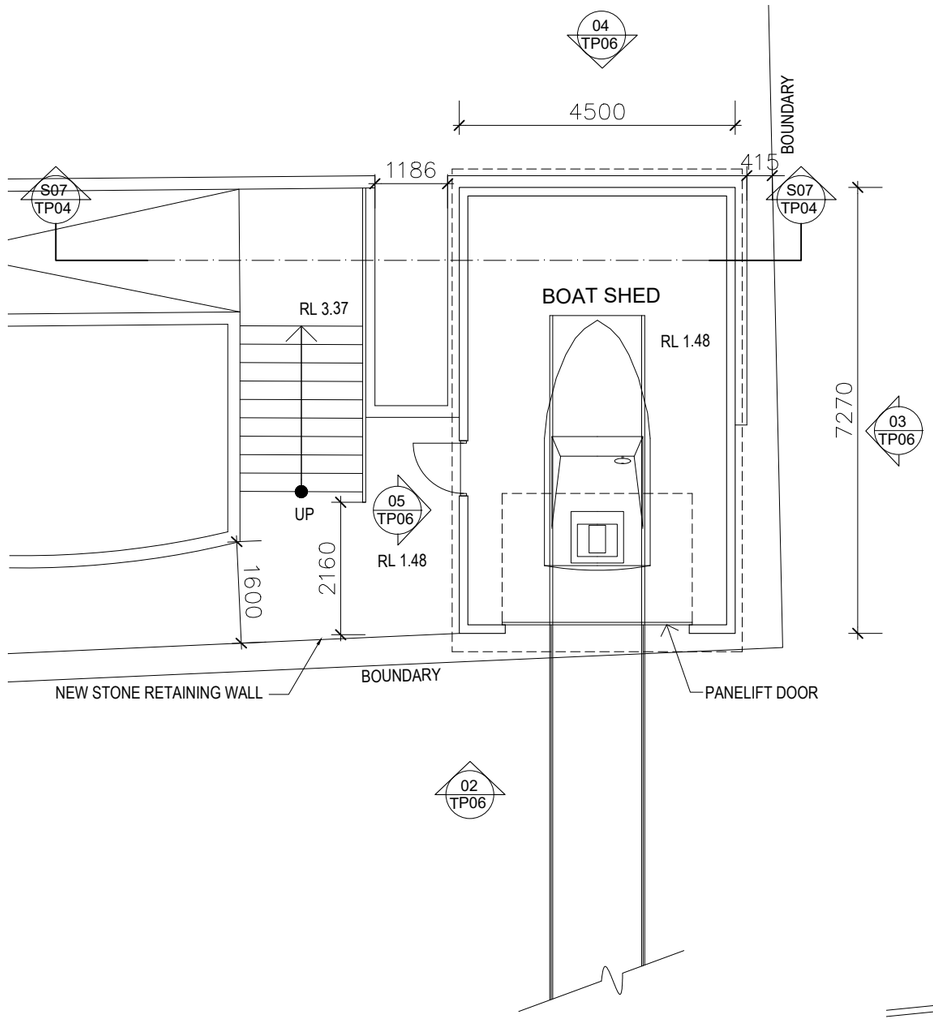
Drawing
PROPOSED JETTY PLAN & ELEVATION

DRAWN BY	SCALE
J.B.	1:50 @A1
DATE	1:100 @A3
08.10.2025	
PROJECT NO. / DRWN NO.	REV.
2415 / TP05	B



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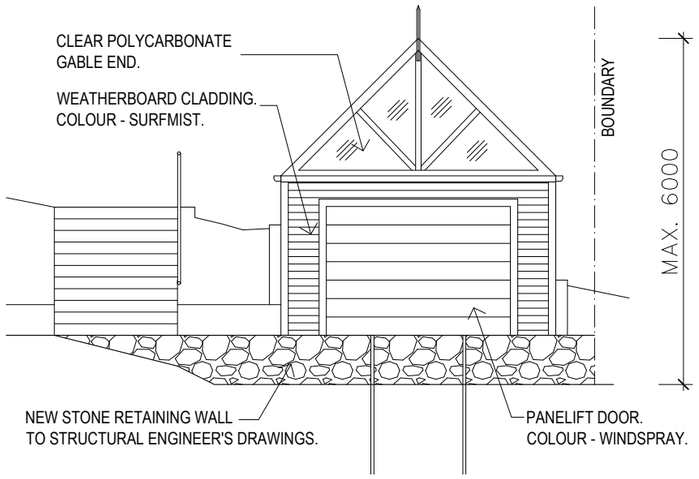
SCALE 1:100



02 TP06 SOUTH ELEVATION

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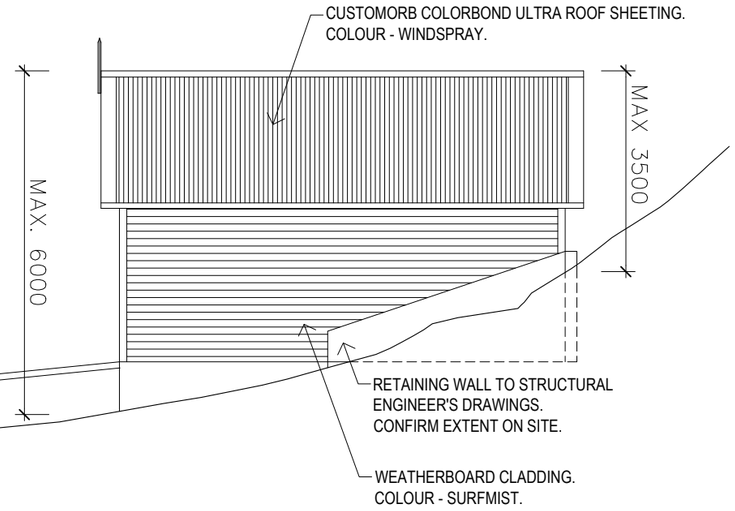
PRELIMINARY NOT FOR CONSTRUCTION



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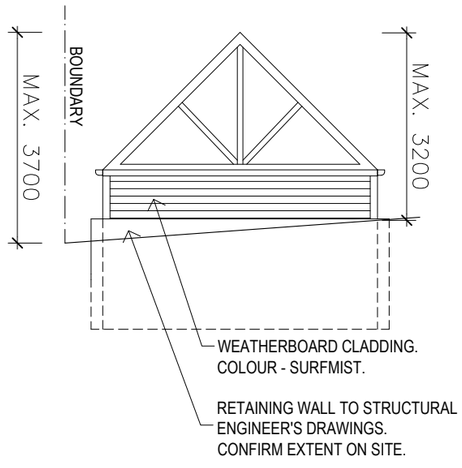

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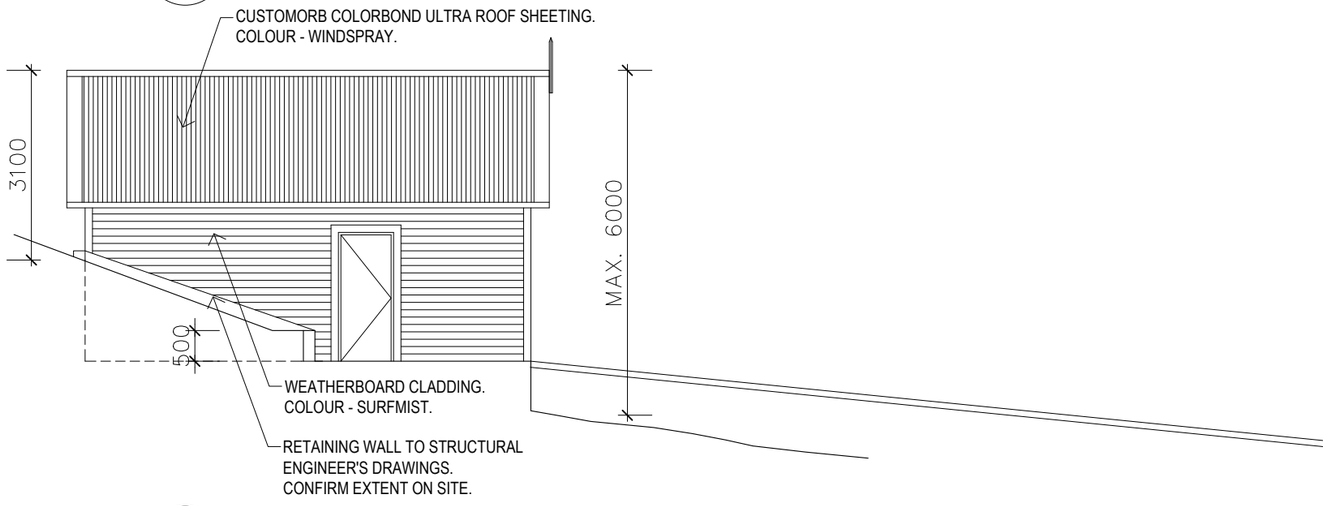

05 TP06 WEST ELEVATION

SCALE 1:100

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Client
Fengying Chen
58a Napoleon St, Battery Point, 7004

Drawing
BOAT SHED - PROPOSED FLOOR PLAN AND ELEVATIONS

DRAWN BY	SCALE
J.B.	1:100@A3
DATE	1:50@A1
08.10.2025	

PROJECT NO.	DRWN NO.	REV.
2415	TP06	B

GEO-ENVIRONMENTAL SOLUTIONS

COASTAL VULNERABILITY ASSESSMENT

PROJECT:

Proposed Jetty and Boat Shed

Site Address:

58a Napoleon Street
Battery Point
TAS
7004

CLIENT:

Fengying Chen

DATE:

28/11/2025

DOCUMENT CONTROL

Document Prepared By:

Geo-Environmental Solutions Pty Ltd

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DOCUMENT CONTROL		
Report Title:	58a Napoleon Street Battery Point TAS 7004	
Project Type:	Coastal Vulnerability Assessment	
Client:	Fengying Chen	
Project Job Number:	J12251	
Revision Version:	V01	
Date:	28/11/2025	
Approved By:	V.Gupta	
	Signature:	Date
		28/11/2025

FIGURES

TABLE

EXECUTIVE SUMMARY

Geo-Environmental Solutions Pty Ltd (GES) were contracted by Fengying Chen to prepare a coastal vulnerability assessment for a proposed works at Battery Point, Tasmania. The project area consists of a single cadastral title (CT 47059/1) located at 58a Napoleon Street Battery Point 7005 (The Site).

An application to conduct construction works has triggered the assessment in accordance with the Tasmania Planning Scheme (TPS) – Hobart City Council and following of the Director's Determination for Inundation areas which provides building requirements for building and demolition work in inundation hazard areas.

This report assesses the potential coastal inundation risk for the proposed non-habitable boat shed with reference to the Medium Coastal Inundation Hazard Area. The proposed boat shed has an expected design life of approximately 25 years, which is shorter than the design life typically required for habitable buildings under the Tasmanian Planning Scheme. GES projected total water levels by 2050, including storm tide, sea-level rise and wave setup, are estimated at approximately 1.45 m AHD, rising to around 1.78 m AHD during extreme weather events. Although the boat shed is a non-habitable structure, future coastal inundation risks still need to be appropriately managed.

As the proposed shed has a real level of 1.48 m AHD, which is just above the estimated 2050 water levels; consideration should be given to increasing the floor level to reduce future inundation risk. The boat shed should be designed to tolerate temporary overtopping, with elevated deck heights and the use of durable, corrosion- and water-resistant materials to accommodate projected coastal conditions. A maintenance and replacement schedule following storm events is recommended to ensure the structure remains functional throughout its intended lifespan.

GES has established from the risk assessment that the level of risk is tolerable within the lifetime of the proposed works. If the recommendations are adhered to, the proposed development will meet the requirements for works in the inundation hazard area and it will fulfill the performance solution codes C11.6.1, as outlined in the Tasmanian Planning Scheme – Hobart City Council (2021).

1 INTRODUCTION

Geo-Environmental Solutions Pty Ltd (GES) were contracted by Fengying Chen to prepare a coastal vulnerability assessment for a proposed works at Battery Point, Tasmania. The project area consists of a single cadastral title (CT 47059/1) located at 58a Napoleon Street Battery Point 7005 (The Site).

An application to conduct construction works has triggered the assessment in accordance with the Tasmania Planning Scheme (TPS) – Hobart Council and following of the Director's Determination for Inundation areas which provides building requirements for building and demolition work in inundation hazard areas.

GES have undertaken this assessment using available scientific literature and datasets. Estimations are determined by approximation with appropriate regional information applied where appropriate to site specific information. Data collection and site-specific modelling was undertaken in assessment of the site.

2 OBJECTIVES

The objective of the site investigation is to:

- Identify which codes need to be addressed in terms of coastal vulnerability and identify the performance criteria relevant to the project which need addressing;
- Conduct a literature review of all geological, geomorphologic, hydrodynamic information and any erosion or inundation assessments which are relevant to the site;
- Identify generalised site inundation potential;
- Review hydrodynamic assessments of the local area to determine projected sea level rise, storm tides and site-specific hydrodynamic conditions and where applicable,
- Conduct a site risk assessment for the proposed development ensuring relevant performance criteria are addressed; and
- Where applicable, provide recommendations on methods and design approach to reduce inundation and erosion impact.

3 SITE DETAILS

3.1 Project Area Land Title

The land studied in this report is defined by the following title reference:

- CT – 47059/1

3.2 Project Area

The property is located at 58a Napoleon Street, Battery Point, within the broader suburb of Sandy Bay. (Figure 1). The site occupies a waterfront position along the Derwent River estuary, with an access corridor leading to the shoreline. It is bordered on both its western and eastern boundaries by established residential properties. Given its estuarine and semi-exposed coastal setting, the site is subject to several key coastal processes, including:

- Coastal storm surge and tidal fluctuations associated with the Derwent Estuary, which can generate elevated water levels during extreme weather events;
- Long-term sea level rise, contributing to increased baseline water levels and potential impacts on low-lying foreshore areas; and
- Locally generated wind-wave activity, predominantly from the southeast, with an estimated wind fetch of approximately 15 km, allowing for the development of moderate wave energy at the shoreline.

3.2.1 Proposed Works

The project area is occupied with an existing dwelling and is approximately 1039m² in size. The proposed development includes the construction of a boat shed and a jetty along the southeast boundary of the site. The proposed jetty will be approximately 38 metres long and 1.8 metres wide, with an expanded platform at the seaward end of around 7.5 metres. Public access will be maintained via a set of stepped access points crossing over the jetty near the site boundary. The proposed boat shed will be situated to the northeast of the jetty. Access to the boat shed will be provided by a set of stairs reaching a real level of 3.37 m AHD, while the real level of the boat shed itself is at 1.48 m AHD.

Elevations across the site vary around 2.0m AHD (Australian Height Datum). The Hobart City 2024 LiDAR elevations have been used for Digital Elevation Model (DEM) display purposes. The plans for the proposed works were provided to GES from Loci architecture + planning (Dated: 09/06/2025) and are presented in Figure 2.

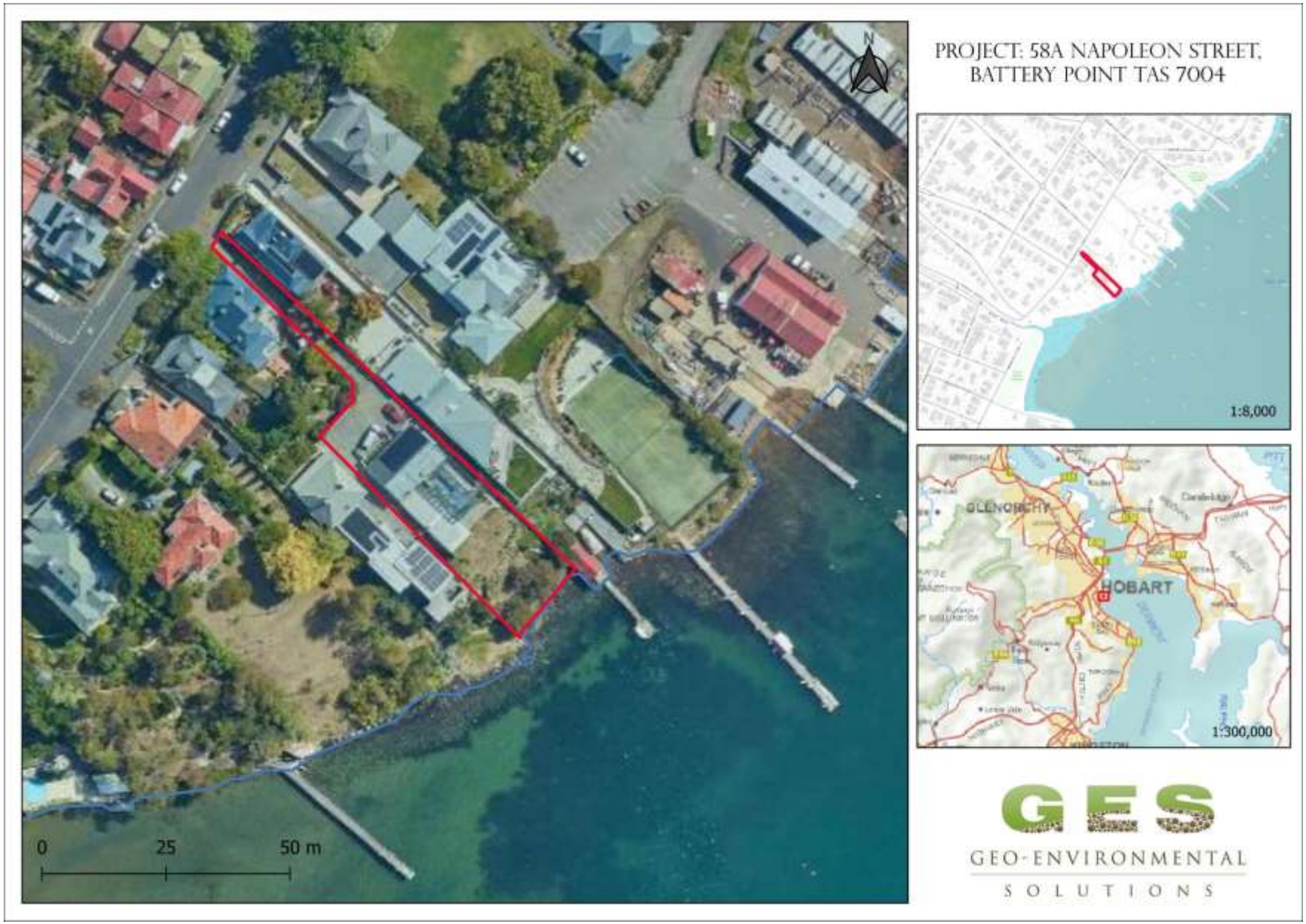

Figure 1 - Location of the site

Figure 2 - Site Plans

4 PLANNING

4.1 Australian Building Code Board

This report presents a summary of the overall building construction risk to coastal erosion and inundation processes. This assessment has been conducted a 'normal' building design life category based on a 2025 baseline (ABCB 2015).

'The design life of buildings should be taken as 'Normal" for all building importance categories unless otherwise stated.'

As per Table 3-1, the following sub systems are identified for the proposed development:

- Building foundations subsystems are considered not accessible or economical to repair and therefore are to be designed with a 50-year life till 2075; and
- Structure such as sheds used in agriculture/aquaculture are listed with a design life of approximately 15-50 years, whilst bridges, jetties, and marine farming infrastructure have a design life for capital depreciation of 10 to 20 years (ATO). In this case 25 years is taken as a reasonable value for design life marine related outbuilding.

Table 3-1 Design life of building and plumbing installations and their components

Building Design Life Category	*Building Design Life (years)*	*Design life for components or sub systems readily accessible and economical to replace or repair (years)*	*Design life for components or sub systems with moderate ease of access but difficult or costly to replace or repair (years)*	*Design life for components or sub systems not accessible or not economical to replace or repair (years)*
Short	1 < dl < 15	5 or dl (if dl<5)	dl	dl
Normal	50	5	15	50
Long	100 or more	10	25	100

Note: Design Life (dl) in years

4.2 The Tasmanian Building Regulations 2016

The Tasmanian Building Regulations are regulated by the Consumer, Building and Occupation Services (CBOS) department and are formed from the Tasmanian Building Act 2016. New state-wide planning and building requirements are being implemented for hazardous areas. These include areas potentially subject to landslip, bushfire, flooding, coastal erosion, & costal inundation. Details of the Tasmanian Building Regulations are presented in Appendix 1.

4.3 Tasmanian Planning Scheme Overlay – Hobart City Council (TPS, 2021)

4.3.1 Coastal Inundation Hazard Code Overlay (CIHC)

The proposed works are partially located within the Medium Coastal Inundation Overlay (CIHC) Figure 3.

Figure 3 - Coastal Inundation Hazard Overlay (Source: The List)

4.4 Development & Works Acceptable Solutions

Where applicable, the need for further performance criteria compliance is outlined in Appendix 1.

4.4.1 Coastal Inundation Hazard Areas Code (CIHC)

C11.6.1.P1 Buildings and works.

The proposed development fall within the CIHC overlay and there are no acceptable solutions for buildings and works in a CIHC Area.

The following performance criteria need to be addressed:

- C11.6.1 P1.1 and P1.2

As per Tasmanian Planning Scheme – Hobart City Council requirements for the minimum level of the habitable rooms finished floor for the site in Sandy Bay the 1% AEP flood level for 2100 is defined at 2.5 m AHD for Hobart (which includes 300mm freeboard for defined flood level of 2.2m AHD). However, the proposed works are non-habitable, marine structures with an expected design life of approximately 25 years.

5 COASTAL INUNDATION HAZARD ASSESSMENT

As identified in the directors Determination and regulation 56(3) of the Building Regulations 2016, the defined flood level is the level above the 0 metre Australian Height Datum with a one percent probability of being exceeded in a storm surge flooding event in the year 2100, as specified in the Coastal Inundation Hazard Band Levels List for the relevant locality in the relevant Local Provisions Schedule of the Tasmanian Planning Scheme.

5.1 Storm Tide

Storm tide events may be defined in terms of the culmination of astronomical tide and storm surge events. Maximum storm tide inundation levels have been adopted for the site based on a 1% AEP that an inundation event will occur. GES obtained data for storm tide levels from Canute 3.0. taking in account greenhouse gas emission scenario - very high RCP 8.5, Climate Model Ensemble Percentile Upper (95th), IPCC Version AR6 (Baseline 1995 -2014). (Source: Canute 3.0)

- *The storm tide level adopted for the site is 1.21 m AHD by 2050*

5.2 Sea Level Rise

Storm tide events may be defined in terms of the culmination of astronomical tide and storm surge events. Maximum storm tide inundation levels have been adopted for the site based on a 1% AEP that an inundation event will occur. The TPS – Hobart City Council SLR adopted 0.2m rise by 2050. However, the GES has adopted the most recently published following sea level rise estimates-based Canute 3.0, IPCC AR6 projections (very high RCP8.5 climate scenario):

- *0.26m rise by 2050*

5.1 Stillwater Levels

The effects of storm tide may be combined with sea levels projections to provide baseline water levels (reported in m AHD) which are referred to as still water level. The still-water levels adopted for the site is based on 1% AEP estimates Table 1.

Table 1 Summary of Site Stillwater Levels for 2050 estimates (1% AEP)

Stillwater Elevations	2050 (Canute 3.0)
Sea Level Rise (m, AHD)	0.26
Tidal Influence & Barometric Low Influence (m)	1,21
Summary (m, AHD)	~ 1,47

5.1.1 Site Wave Conditions

Table 2 provides a summary of the dominant waves intercepting the site.

Table 2 Details of Dominant Waves for the Site

Wave Details	Local Wind Fetch
Direction	Southeast
Wave Height (m)	1.5
Period	4.2
Approach Angle	30

5.1.2 Site Inundation Levels

The table below presents a summary of the possible site inundation levels based on 1% AEP still water, wave set up (rule of thumbs) inundation levels for 2050 (Source: Canute 3.0).

Table 3 Modelled Site Inundation Levels

1% AEP Inundation Levels (m AHD)	2050 RCP8.5
Still Water Elevations including Wind Setup	1.47
Wave Setup Inundation	1.78

6 CONCLUSIONS AND RECOMMENDATIONS

GES has conducted a site assessment to evaluate the potential risks of sea level rise associated with the proposed works. The proposed boat shed is classified as non-habitable building, with an expected building life of approximately 25 years. GES has applied water levels projected for 2050, which exceed the expected life of the building. The potential total water levels for Hobart by 2050 are approximately 1.45 m AHD under typical conditions, rising to around 1.78 m AHD during extreme weather events with elevated waves. Although the boat shed is a non-habitable structure, future coastal inundation risks still need to be appropriately managed and recommendation implemented:

- The boat shed should be designed to tolerate temporary overtopping, including elevated deck heights.
- Use durable, corrosion- and water-resistant materials to accommodate projected coastal conditions.
- Implement a maintenance and replacement schedule following storm events to ensure ongoing functionality throughout the structure's intended lifespan

7 RISK ASSESSMENT

The qualitative risk assessment criteria have been developed to identify key risks that may arise from building works in areas that are vulnerable to inundation hazard. The risk assessment based on year 2050, 0.26 AHD high SLR scenario. Given the current data set and uncertainty over long term responses to climate change the calculated long term future risk must be viewed with caution, and adjustments to the risk assessment will need to be made over time. Future data and modelling may calculate a low or higher risk, and it is important to understand that the risk estimations in this report are based upon worst case scenario sea level rise from the current data sets. The criteria are based on a risk assessment matrix consistent with Australian Standard AS4360 on Risk Management (AS4360). The qualitative assessment of risk severity and likelihood were used to help provide a qualitative risk assessment based upon the coastal vulnerability assessment completed for the site.

A detailed risk assessment addressing the performance criteria is presented in Appendix 4. GES has established from the risk assessment that the level of risk is tolerable within the lifetime of the proposed development works.

LIMITATIONS STATEMENT

The following limitations apply to this report:

- Climate Futures Light Detection and Ranging (LIDAR) digital elevation model is used for the site modelling;
- The values estimated in this report provide an order of magnitude for assessing climate change impacts and in particular climate change induced sea level rise impacts. The information is based on a collation of existing information and data, with some site specific modelling for planning purposes.

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APPENDIX 1 – ACCEPTABLE SOLUTIONS

Coastal Inundation Hazard Code (CIHC) Areas

C11.6.1 Buildings and works, excluding coastal protection works, within a coastal inundation hazard area

Objective:

That:

(a) building and works, excluding coastal protection works, within a coastal inundation hazard area, can achieve and maintain a tolerable risk from coastal inundation; and

(b) buildings and works do not increase the risk from coastal inundation to adjacent land and public infrastructure.

Acceptable Solutions	Performance Criteria
A1 No Acceptable Solution.	**P1.1** Buildings and works, excluding coastal protection works, within a coastal inundation hazard area must have a tolerable risk, having regard to: (a) whether any increase in the level of risk from coastal inundation requires any specific hazard reduction or protection measures; (b) any advice from a State authority, regulated entity or a council; and (c) the advice contained in a coastal inundation hazard report. **P1.2** A coastal inundation hazard report also demonstrates that the building or works: (a) do not cause or contribute to coastal inundation on the site, on adjacent land or public infrastructure; and (b) can achieve and maintain a tolerable risk from a 1% annual exceedance probability coastal inundation event in 2100 for the intended life of the use without requiring any specific coastal inundation protection works.

APPENDIX 2 – DIRECTORS DETERMINATION & BUILDING REGULATIONS 2016 COASTAL INUNDATION HAZARD REPORTING

Works in a Coastal Inundation Hazard Area

According to this director's determination, the following regulations are applicable for the works in a coastal inundation hazard area:

(1) For the purposes of this Determination and regulation 56(3) of the Building Regulations 2016, the defined flood level is the level above the 0 metre Australian Height Datum with a one percent probability of being exceeded in a storm surge flooding event in the year 2100, as specified in the Coastal Inundation Hazard Band Levels List for the relevant locality in the relevant Local Provisions Schedule of the Tasmanian Planning Scheme.

(2) Where land is not located in a specified locality, the defined flood level for the relevant municipal area average applies.

(3) A coastal inundation hazard report must be prepared.

(4) The design of the building footing system must be prepared by an engineer-civil.

(5) The building design (including the footing system) must take into account the coastal inundation hazard report.

(6) In determining an application for a Certificate of Likely Compliance, the building surveyor must:

(a) take into account the coastal inundation hazard report and any relevant coastal inundation management plan; and

(b) be satisfied that the proposed work will not cause or contribute to coastal inundation on the site, on adjacent land or of public infrastructure; and

(c) be satisfied that the proposed work can achieve and maintain a tolerable risk for the intended life of the building without requiring any specific coastal inundation protection measures.

(7) In determining an application for a permit, the permit authority must take into account the coastal inundation hazard report and any relevant coastal inundation management plan.

Report Determination Criteria	Coastal Inundation Hazard Report Compliance Checklist	Compliance	Specific Comments
4. (1)	Report is prepared by a specified practitioner being a practitioner with relevant qualifications, experience and competence in the preparation of coastal inundation hazard reports	Yes	Up to date models, literature and methods are used in this assessment, which draw on regional and site-specific information to determine present day and forward projected site hazards.
4. (1) (a)	Signed Declaration	Yes	
4. (1) (b)	Conclusions based on consideration of the proposed work as to:	Yes	
4. (1) (b) (i)	whether the work is likely to cause or contribute to coastal inundation on the land or on adjacent land or of public infrastructure;	Yes	
4. (1) (b) (iii)	whether the work can achieve and maintain a tolerable risk for the intended life of the building having regard to:	Yes	Modelling has been conducted with measures put in place to ensure that by the end of the building's lifetime, the risks are tolerable in line with the sites typical residential use and typical intensity of this use. This assessment is based on the intended use as outlined in the development application. All potential and site-specific inundation factors are considered to assess tolerable risks which include: • Government sea level projections which are calibrated to the Local Government Authority area and scaled to the building design life (DPAC 2016), • Storm tide projections (combined 1% AEP storm surge and tides) which are calculated on a local scale (0.5 km accuracy)
	• the nature, intensity and duration of the use;	Yes	The risk assessment herein is based on the highest intensity of use. The full inundation extent is based on a 1% AEP event occurring at the end of the buildings design life.
	• the type, form and duration of any development;	Yes	This assessment is based on the specific plans as outlined in the development application, with the duration based on the building design life as defined herein.
	• the likely change in the risk across the intended life of the building;	Yes	As indicated in 4. (1) (b) (iii), consideration is given to risk in the most adverse of modelled consecutive 1% AEP storm conditions for the projected end life of the building. Where deemed necessary, a 0.3 m freeboard 'buffer' is to be applied to design 1% AEP stillwater level for the building end of life.

	• the ability to adapt to a change in the risk;	Yes	Engineering solutions may be applied if it is so desired to reduce the risk through hazard reduction. Increased risk may occur as a result of increased user vulnerability beyond what is modelled as a tolerable risk in this assessment. Eg. Changed site layout meaning reduced access during a floodwater event. Hazard reduction may include onsite wave attenuation structures such as wave breaker walls and/or revetments.
	• the ability to maintain access to utilities and services;	Yes	
	• the need for specific coastal inundation hazard reduction or protection measures on the site;	Yes	Coastal inundation hazard reduction or protection measures are not recommended on the site based on the projected lifetime of the proposed development.
	• the need for coastal inundation hazard reduction or protection measures beyond the boundary of the site;	NA	Coastal inundation hazard reduction or protection measures are not recommended beyond the boundary of the site based on the projected lifetime of the proposed development.
	• any coastal inundation management plan in place for the site and/or adjacent land.	NA	
4. (2)	protection measures for any hazardous chemical used, handled, generated or stored on the site, taking into consideration the potential risks of the hazardous chemical to human health and safety as a consequence of coastal erosion on the site or adjacent land.	Yes	GES are not aware of any proposal for hazardous chemicals to be used, handled, generated or stored on the site. It is recommended that if such chemicals are to be stored within the proposed extension, they are elevated above the designated inundation level.
4. (4)	The declaration format for a coastal inundation hazard report must contain:		
4. (4) (a)	details of, and be signed by, the person who prepared or verified the report;	Yes	

4. (4) (b)	confirmation they have the appropriate qualifications, expertise and level of current indemnity insurance;	Yes	
4. (4) (c)	confirmation that the report has been prepared in accordance with the specified methodology.	Yes	

APPENDIX 3 QUANTITATIVE RISK ASSESSMENT TABLES

Consequence Index

Consequence	Details - Storm Erosion and Inundation	Details – Waterways and Coastal Protection
Catastrophic	Loss of life, loss of significant environmental values due to a pollution event where there is not likely to be recovery in the foreseeable future.	Very serious environmental effects with impairment of ecosystem function. Long term, widespread effects on significant environment (eg. RAMSAR Wetland)
Major	Extensive injuries. Complete structural failure of development, destruction of significant property and infrastructure, significant environmental damage requiring remediation with a long-term recovery time.	Serious environmental impact effects with some impairment of ecosystem function. Relatively widespread medium-long term impacts.
Moderate	Treatment required, significant building or infrastructure damage i.e. loss of minor outbuildings such as car ports, garages and the like. Replacement of significant property components. linings, hard paved surfaces, cladding, flooring. Moderate environmental damage with a short-term natural or remedial recovery time.	Moderate effects on biological or physical environment (air, water) but not affecting ecosystem function. Moderate short term widespread impacts (e.g. significant spills)
Minor	Medium loss – repair of outbuildings and repair and minor replacement of building components of buildings. Replacement of floor/window coverings, some furniture through seepage (where applicable). Minor environmental damage easily remediated.	Minor effects on biological or physical environment. Minor short-term damage to small area of limited significance.
Insignificant	No injury, low loss – no replacement of habitable building components, some remediation of garden beds, gravel driveways etc. Environment can naturally withstand and recover without remediation. Inundation of the site, but ground based access is still readily available and habitable buildings are not inundated, including incorporated garages.	Limited damage to minimal area of low significance.

Likelihood Index

Level	Descriptor	Description	Guideline
A	Almost Certain	Consequence is expected to occur in most circumstances.	Occurs more than once per month.
B	Likely	Consequence will probably occur in most circumstances.	Occurs once every 1 month – 1 year.
C	Occasionally	Consequence should occur at some time.	Occurs once every 1 year - 10 years.
D	Unlikely	Consequence could occur at some time.	Occurs once every 10 years – 100 years.
E	Rare	Consequence may only occur in exceptional circumstances.	Occurs less than once every 100 years.

Source: AS/NZS 4360:2004 Risk Management

Qualitative Risk Matrix

Likelihood of the Consequence	Maximum Reasonable Consequence				
	(1) Insignificant	(2) Minor	(3) Moderate	(4) Major	(5) Catastrophic
(A) Almost certain	11 High	16 High	20 Extreme	23 Extreme	25 Extreme
(B) Likely	7 Moderate	12 High	17 High	21 Extreme	24 Extreme
(C) Occasionally	4 Low	8 Moderate	13 High	18 Extreme	22 Extreme
(D) Unlikely	2 Low	5 Low	9 Moderate	14 High	19 Extreme
(E) Rare	1 Low	3 Low	6 Moderate	10 High	15 High

Source: AS/NZS 4360:2004 Risk Management

APPENDIX 4 QUANTATIVE RISK ASSESSMENT

BUILDING AND WORKS WITHIN A COASTAL INUNDATION HAZARD

Performance Criteria C11.6.1 P1.1 Buildings and works, excluding coastal protection works, within a coastal inundation hazard area must have a tolerable risk, having regard to:	Relevance	Management Options	Preliminary Risk Assessment (where relevant)			Further Assessment Required
			Consequence	Likelihood	Risk	
a) whether any increase in the level of risk from coastal inundation requires any specific hazard reduction or protection measures;	Proposed development will not impose any additional risk.		Minor (2)	Unlikely (D)	Low (5)	No
b) any advice from a State authority, regulated entity or a council; and	N/A		Minor (2)	Unlikely (D)	Low (5)	No
c) the advice contained in a coastal inundation hazard report.	Refer to conclusions		Insignificant (1)	Rare (E)	Low (1)	No