MARINE POLLUTION RESEARCH PTY LTD

Marine, Estuarine and Freshwater Ecology, Sediment and Water Quality Dynamics

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Mr A Elmslie and Mr C Bragg
1742 & 1744 Pittwater Road
BAYVIEW NSW 2105 **23 February 2022**

AQUATIC ECOLOGY ASSESSMENT
PROPOSED SHARED JETTY 1742 & 1744 PITTWATER ROAD BAYVIEW AND NEW BOATSHED, RAMP AND SEAWALL REPLACEMENT AT NO. 1744

Figure 1 Low tide aerial view of 1742 (Blue house) and 1744 (Red brick house) Pittwater Road, Bayview.

1 Introduction

I was requested by Mr Elmslie and Mr Bragg to update a previous report from 2017 on possible marine ecological impacts of the construction and use of a shared jetty set along the division of waterway between Nos. 1742 and 1744 Pittwater Road, Bayview (**Figure 1**) and to include assessment for a proposed replacement seawall plus a portion of concrete ramp and a new mesh skid facility beyond the MHW by title at No 1744. The proposal is shown on a series of plans prepared by SDG (Plan 6966 dated 27/10/21). A copy of this plan is appended to this report:

- The ramp and skid are connected to a proposed Boatshed at No 1744 that is wholly located within the property boundary and above HAT (2m Chart Datum) and is the subject of a separate Development Application for land-based works at the property.
- The portion of concrete ramp offshore of the MHWM/Property Boundary will be built on an existing approved reclamation that is currently above the HAT.
- The replacement seawall will be built on the existing approved seawall footprint.

The combined shared jetty works include the following construction requirements below Highest Astronomical Tide (HAT):

- Placement of single piles inshore to support the eastern side of the shared jetty to the northern extent of the elongated eastern boundary of property 1744.
- Placement of paired piles into intertidal sediments from the end of the common boundary to the end of the jetty 120m offshore.
- Construction of the jetty, outer landing and double sea-stairs over shallow sub-tidal sediments in depths between -0.075m and -0.1m depth ISLW (approx. LAT).
- The additional ramp and skid works at No 1744 will require placement of two sets of paired piles into intertidal sediments from the end of the existing river stone revetment.

The site is located on the southern shoreline of Pittwater. It faces north-east, and is exposed to winds from the north-east to north-west. The site is bounded be a large sand flat which would dissipate most transiting vessel wash/ waves before reaching the shore shoreline of the property.

1.1 Existing Aquatic Habitats

With respect to expected marine vegetation, **Figure 2** shows a portion of the DPI Fisheries Estuary Vegetation Map No 37 for Pittwater with the shared jetty location indicated. The latest 2019 mapping indicated only a small amount of *Posidonia* seagrass (Red) with no *Zostera* seagrass, where the 2005 mapping had an inner *Zostera* seagrass bed (light blue)

from about 140 to 180m offshore and a *Posidonia* seagrass bed (Red) in deeper waters from about 230 to 250m offshore from the subject property. *Posidonia australis* in Pittwater is listed as an *Endangered Population* under the NSW *Fisheries Management Act 1994 (FMA)* and as a *Threatened Ecological Community* under the Commonwealth *Environment Protection and Biodiversity Conservation Act 1999* (*EPBC Act*). There are no mangrove stands or saltmarsh areas indicated in the immediate vicinity of the property and the closest mature mangroves are located more than 200m to the south-east. Mangroves are protected under the FMA. There are no aquaculture or commercial fishing activities (hauling or meshing) in the locality (EPA 1992).

Figure 2 Portion of DPI Fisheries' Estuarine Vegetation Pittwater Map 37 showing marine vegetation located in relation to the subject property.

2 SITE AQUATIC ECOLOGY

An aquatic habitat assessment walk-over and snorkel survey was made of the common property boundary foreshore and of the seabed to the north-east on 2nd November 2017 for the earlier application and an update survey was undertaken on 10 February 2022 to check the validity of the original survey work and extend the survey west to incorporate the additional proposal work at No 1744 Pittwater Road Bayview. Both survey days were sunny with slight breezes. The combined results were used to overlay habitat areas onto a drone aerial photograph of the site obtained by Mr Elmslie on 5 January 2022.

Figure 4 Aquatic Habitats at and around the subject property foreshore. From the aerial photograph, it is clear that portions of these rock + algae (yellow) can be smothered or exposed, as sand drifts move around seasonally.

The results of the aquatic habitat survey are shown on **Figure 4** above. There are two main aquatic habitats at the site, intertidal sediment habitat and rock rubble habitat:

- The sediment habitat comprises a mosaic of soft silty-sand patches inshore overlain with mobile and firm sand drift sections offshore (**Figures 4 and 5**).
- The rock habitat includes the intertidal surfaces of rock walls along the common boundary (**Figure 6**), finer gravel plus rock fragments generally along the foot of the subject property seawall (**Figure 6**) and exposed and fragmented basement rock habitat offshore from the property seawalls in the lower intertidal. These latter reef fragments support an intertidal assemblage based around the brown algae *Hormosira* (Neptune's Necklace) and Oysters (**Figure 7**).
- Whilst the lower sections of the sandstone rock wall at the site supports oysters and a variety of gastropod molluscs, the fine gravel and rock fragment habitat at the toe of the wall (**Figure 6**) did not support many oysters and also had less molluscs, probably owing to the constant smothering and uncovering of this habitat by sand drifts.
- There were small amounts of scattered shallow sub-tidal rock rubble well offshore which supported *Padina sp*. (**Figure 8**).
- Three grey mangrove seedlings were observed inshore along the seawall at 1744 west of the proposed ramp location (**Figure 9**).

Figure 5 View inshore over the intertidal sand flat offshore from properties 1742 and 1744.

Figure 6 View of common boundary between the two properties showing block sandstone seawall along the north-east edge of No 1744 property to be replaced and placed river cobbles lining the front edge of the seawall (to be retained).

Figure 7 View offshore from property 1744 of the rock/rock rubble with attached oysters and Neptune's necklace located west of the proposed ramp.

Figure 8 Shallow sub-tidal rock rubble, far offshore from site with attached *Padina sp*.

Figure 9 Grey Mangrove seedlings (three in total) located to the west of the ramp proposal.

3 Impact Assessment

There are several potential impacts arising from the proposed works; construction impacts associated with piling operations for the proposed jetty, ramp and support piles and post-construction impacts (shading and disturbance) arising from use of the new facility.

Figure 10 Approximate overlay of the proposed shared Jetty for property 1742 and 1744 (Grey shade) plus the ramp, seawall and boatshed proposal for property 1744 (Red outline). Exposed rock and rock rubble habitat is outlined in yellow.

3.1 Construction Impact

In terms of direct aquatic habitat loss to the project, oyster-based assemblages plus mobile marine intertidal fauna amongst the toe gravel and rock fragment habitat would be disrupted and lost to piling works, construction related trampling and possible smothering.

Loss of some of the inshore seawall toe rock fragment habitat is not considered significant and the loss of rock reef supporting algae would likely only involve one set of piles for the jetty structure and possibly one pile for the ramp proposal which could be avoided or mitigated to insignificance (see below):

- The extent of loss of rock reef habitat to piling can be partially avoided by adjusting the distances between piles where possible to avoid the areas of exposed rock reef.
- Where this cannot be achieved and piles need to be placed into rock reef habitat, losses can be mitigated by collecting larger rock fragments with attached algae from the proposed pile site prior to piling and off-setting them, preferable onto a sandy section amongst the reef rather than over other exposed rock with algae.
- The loss of rock rubble biodiversity would also be partially offset by the gain of additional wetted intertidal surface areas on piles that would in time support oyster-based assemblages.

Construction is likely to require floating plant (a barge mounted pile driver) and this would likely require a pushing vessel to bring the barge to site and remove it later. Whilst short term turbidity arising from vessel movements is not likely to have an impact on the aquatic ecology of the locality given the high ambient turbidity at the site during periods of low tides and on-shore winds, the construction works should still include measures to minimise turbidity and seabed sediment disturbances plus ensure no damage to the surrounding habitats. The following measures should be incorporated into the Construction Environment Management Plan (CEMP):

- To ensure minimum disturbance of seabed sediments during mobilisation, these operations will have to be done at a high tide, and the pushing vessel must be operated in such a manner as to minimise sediment disturbance or disturbance to the rocky reef or off-shore seagrass as identified in **Figures 2 and 4**.
- The barge will also need to be manoeuvred and then held in place for construction and possible piling operations and this would be either done using barge-mounted push in spuds, or by using barge mounted winches and wire connected to pre-placed mooring blocks. These manoeuvres should also be timed with the tides to minimise seabed disturbance.
- Placement of mooring spuds or mooring blocks must be undertaken in such a manner

that there is no risk of direct damage to the identified rocky reefs habitats from spud or block placement **and** that there is no risk of scalping the identified rock reef and seagrass habitats from cables hanging between the barge and mooring blocks, under any tide or tide/wind combination.

- The construction process is likely to require more than one tidal cycle, so the work barge will most likely need to be left on site over–night. It is preferable to leave the barge *in-situ* and on the bottom rather than move the barge back out to deeper waters each day. This will minimise overall sediment disturbance and minimise risk to rocky reef habitats. The barge settled on soft silty mud or sandy sediment over-night is not likely to have a detrimental impact on the local benthic assemblages over this short time.
- Pile placement and jetty construction will also require timbers to be cut to suit, and the CEMP should include a provision that there be no stockpiling of these construction materials on the existing seabed and that all off-cuts are to be retained and disposed of correctly off-site.

3.2 Operational Impacts

The innermost section of the jetty is positioned over a few thin sections of shallow intertidal rocky reef that support *Hormosira,* a brown algae species. Given the orientation of the facility to available sunlight plus the height of the facility above the rocky reef it is considered that there would not be any loss of algae habitat to shading.

Use of the ramp to access the shoreline for launching of small craft would necessitate some trampling over the outer portion of the intertidal rock rubble habitat but this outer rubble is generally smothered with mobile sands and supports no algae. Accordingly, there are no risks to marine vegetation habitat arising from use of the ramp to access the shore.

4 Conclusions

It is concluded that the proposed seawall, boatshed and ramp at 1744 Pittwater Road, Bayview plus the proposed shared jetty and sea-stairs with the neighbouring property at 1742 can be undertaken with no significant impact on marine vegetation or other aquatic habitats in the locality provided that the construction and demolition safeguards outlined in the above report are adopted. It is also concluded that the proposed facility would meet the aquatic ecological conservation requirements of the *Fisheries Management Act (1994*) as contained in the DPI (2013) Fish Habitat Protection Guidelines. The project would not require any permits under the FMA as there is low risk of *"harm to marine vegetation"* and there are no activities classified as "*reclamation or dredging"*.

5 References

DECC (2009)

Environmentally Friendly Seawalls, A Guide to Improving the Environmental Value of Seawalls and Seawall-lined Foreshores in Estuaries. DECC Report 2009/328 prepared on behalf of Sydney Metropolitan Catchment Authority, June 2009.

DPI Fisheries (2013)

Policy and Guidelines for Fish Habitat Conservation and Management (2013 update), NSW Department of Primary Industries, June 2013.

EPA (1992)

Coastal resource atlas for oil spills in Broken Bay, Pittwater and the Hawkesbury River. NSW EPA. March 1992.

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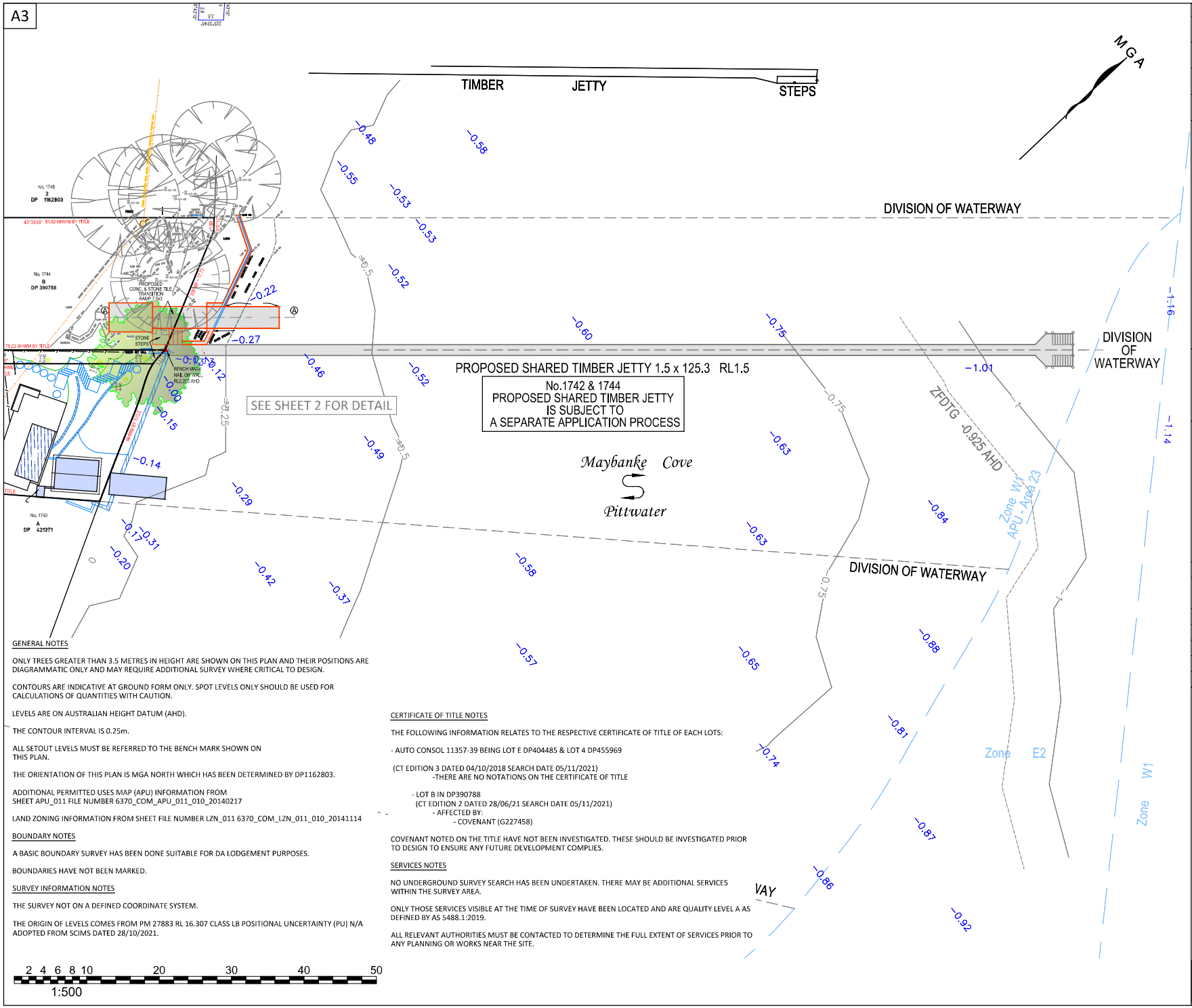

ISSUE	DATE	AMENDMENT	SURV	CHK
A	27/10/21	ORIGINAL ISSUE	GS	MT

LEGEND

TW	TOP OF WALL
BW	BOTTOM OF WALL
MLW	MEAN LOW WATER
MHWM	MEAN HIGH WATER MARK
ZFDTG	ZERO FORT DENISON TIDE GUAGE (RL -0.925 A.H.D.)
	PROPOSED WORKS

MICHAEL TRIFIRO ID: SU008624
REGISTERED LAND SURVEYOR

PROJECT:
PLAN SHOWING EXISTING WATERFRONT STRUCTURES, PROPOSED SKID RAMP, SEAWALL & BOATSHED

No.1744 PITTWATER ROAD
BAYVIEW

CLIENT: CLINT & HELEN BRAGG

FILE: 6966 WATERFRONT SHARED JETTY

LGA: PITTWATER

REF: 6966	CONTOURS: 0.25m
ISSUE: A	DATUM: AHD
SURVEY DATE: 27/10/2021	AZIMUTH: MGA2020
SCALE: 1:500	SHEET 1 OF 3 SHEETS

GENERAL NOTES

ONLY TREES GREATER THAN 3.5 METRES IN HEIGHT ARE SHOWN ON THIS PLAN AND THEIR POSITIONS ARE DIAGRAMMATIC ONLY AND MAY REQUIRE ADDITIONAL SURVEY WHERE CRITICAL TO DESIGN.

CONTOURS ARE INDICATIVE AT GROUND FORM ONLY. SPOT LEVELS ONLY SHOULD BE USED FOR CALCULATIONS OF QUANTITIES WITH CAUTION.

LEVELS ARE ON AUSTRALIAN HEIGHT DATUM (AHD).

THE CONTOUR INTERVAL IS 0.25m.

ALL SETOUT LEVELS MUST BE REFERRED TO THE BENCH MARK SHOWN ON THIS PLAN.

THE ORIENTATION OF THIS PLAN IS MGA NORTH WHICH HAS BEEN DETERMINED BY DP1162803.

ADDITIONAL PERMITTED USES MAP (APU) INFORMATION FROM SHEET APU_011 FILE NUMBER 6370_COM_APU_011_010_20140217

LAND ZONING INFORMATION FROM SHEET FILE NUMBER LZN_011 6370_COM_LZN_011_010_20141114

BOUNDARY NOTES

A BASIC BOUNDARY SURVEY HAS BEEN DONE SUITABLE FOR DA LODGEMENT PURPOSES.

BOUNDARIES HAVE NOT BEEN MARKED.

SURVEY INFORMATION NOTES

THE SURVEY NOT ON A DEFINED COORDINATE SYSTEM.

THE ORIGIN OF LEVELS COMES FROM PM 27883 RL 16.307 CLASS LB POSITIONAL UNCERTAINTY (PU) N/A ADOPTED FROM SCIMS DATED 28/10/2021.

CERTIFICATE OF TITLE NOTES

THE FOLLOWING INFORMATION RELATES TO THE RESPECTIVE CERTIFICATE OF TITLE OF EACH LOTS:

- AUTO CONSOL 11357-39 BEING LOT E DP404485 & LOT 4 DP455969

(CT EDITION 3 DATED 04/10/2018 SEARCH DATE 05/11/2021)
-THERE ARE NO NOTATIONS ON THE CERTIFICATE OF TITLE

- LOT B IN DP390788
(CT EDITION 2 DATED 28/06/21 SEARCH DATE 05/11/2021)
- AFFECTED BY:
- COVENANT (G227458)

COVENANT NOTED ON THE TITLE HAVE NOT BEEN INVESTIGATED. THESE SHOULD BE INVESTIGATED PRIOR TO DESIGN TO ENSURE ANY FUTURE DEVELOPMENT COMPLIES.

SERVICES NOTES

NO UNDERGROUND SURVEY SEARCH HAS BEEN UNDERTAKEN. THERE MAY BE ADDITIONAL SERVICES WITHIN THE SURVEY AREA.

ONLY THOSE SERVICES VISIBLE AT THE TIME OF SURVEY HAVE BEEN LOCATED AND ARE QUALITY LEVEL A AS DEFINED BY AS 5488.1:2019.

ALL RELEVANT AUTHORITIES MUST BE CONTACTED TO DETERMINE THE FULL EXTENT OF SERVICES PRIOR TO ANY PLANNING OR WORKS NEAR THE SITE.

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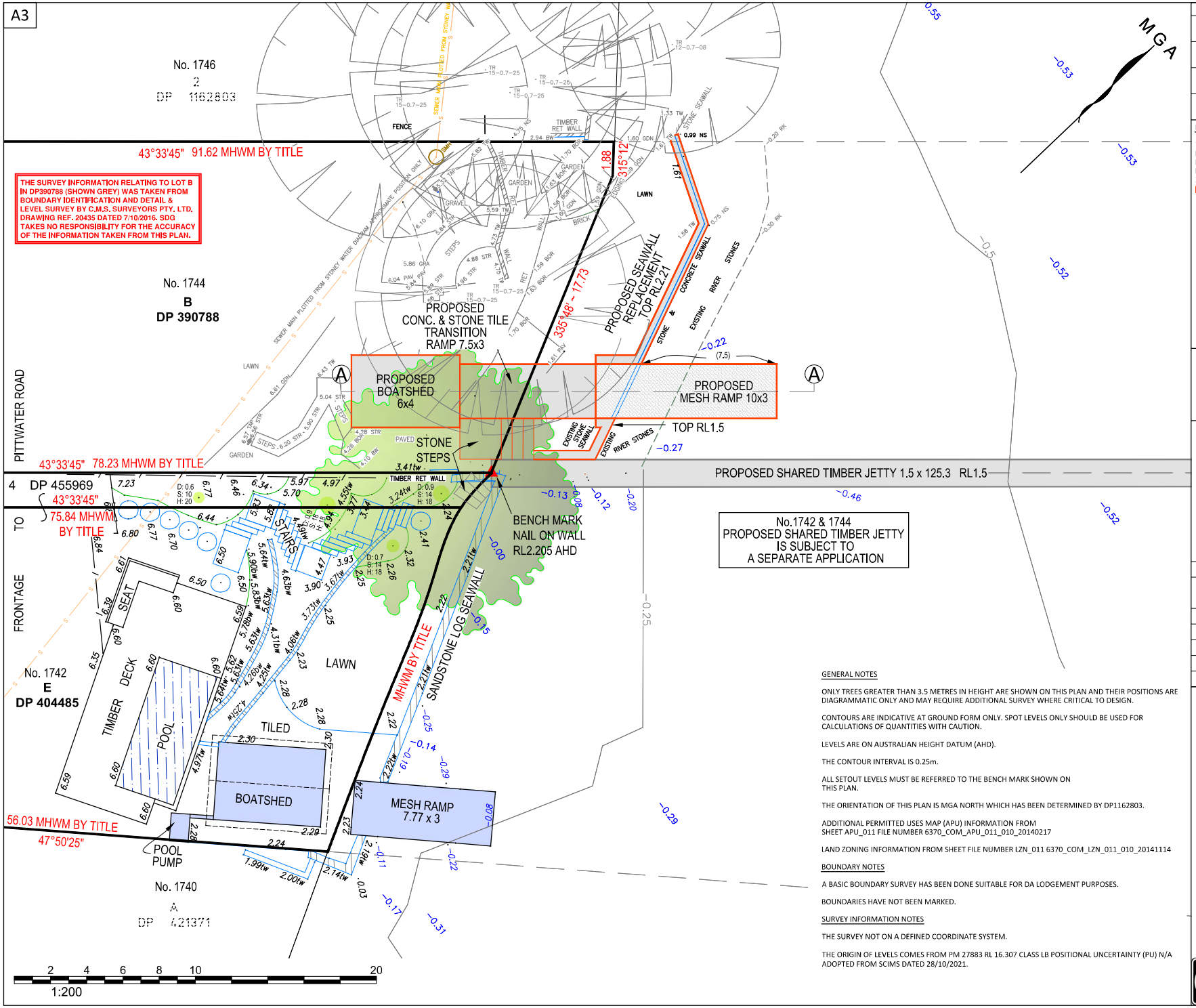

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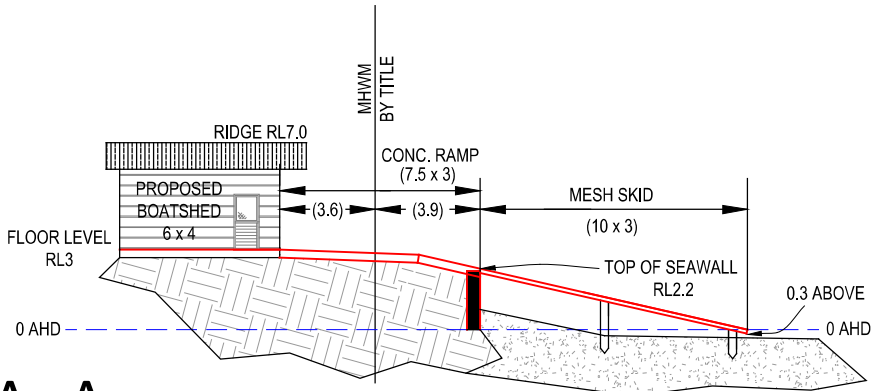

SECTION A - A

PROPOSED CONCRETE RAMP, MESH SKID & BOATSHED

SCALE 1:200

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