

## **Marine Habitat Survey**

**Address | 963 Barrenjoey Road, Plam Beach**

**Client | Harbour Planning**

**Survey Date | 15 April 2024**

**Report Date | 7 July 2024**

**Job Number 24-097-11**

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# 1. Report Background

## 1.1 Purpose of the Report

Crown Lands require that all proposed waterfront development works involving load-bearing structures located below the Mean High Water Mark be reviewed for compliance with environmental regulations. The aim of these regulations is to protect the marine environment, in particular the local fauna and flora such as seagrasses, mangroves and macroalgae.

The existing timber deck at the top of the concrete ramp, timber jetty, timber ramp, pile stabilised pontoon and single mooring pile are not authorised at 963 Barrenjoey Road, Palm Beach ("The Property"). From a review of historical aerial imagery on NearMap, it appears that the unauthorised deck, jetty, ramp and pontoon were installed in 2010, and the mooring pile installed in mid-2022 (to replace a mooring pile located further south).

Crown Lands have requested that a Building Information Certificate Application be lodged for the unauthorised structures at The Property. As such, a Marine Habitat Survey is required to assess the effects (if any) that the unauthorised structures may have had on the marine environment.

## 1.2 On-Site Survey Methodology of The Property

The on-site survey of The Property was conducted at 12:45 on 15 April 2024 by Rick Johnson of Waterfront Surveys Australia. Weather conditions at the time of the survey were sunny with a minimal breeze. The water surface was calm and underwater visibility was approximately 1.5 m. At the time of the survey the tide was rising, with an approximate tidal height of 0.95 m.

The on-site survey area included the footprint of the unauthorised structures and extended a further 10 m in all directions from these unauthorised structures. The survey was conducted from the shore and inspection of the seabed was done on snorkel. Photos of each habitat were taken using an underwater digital camera and a description of each differing habitat, and species list of aquatic flora and fauna observed within the survey area, was recorded. A tape measure was used to obtain the distance of seagrass from structures/shoreline.

Seagrass species were given the following codes:

Hal – *Halophila ovalis* (paddleweed)

Pos – *Posidonia australis* (strapweed)

Zos – *Zostera capricorni* (eelgrass)

The level of patchiness was also estimated using three categories:

A – Individual strands or small clumps (< 2 m diameter);

B – Medium sized patches (2 - 10 m diameter); or

C – Beds of relatively even distribution (> 10 m diameter).

Estimates of seagrass density were made by ranking each observation point using three categories:

- 1 – Low density (< 15% seabed cover);
- 2 – Medium density (15% - 50% seabed cover); or
- 3 – High density (> 50% cover).

Leaf length of seagrass was categorised as follows:

*Halophila* – S (short < 1 cm), M (medium 1 cm – 3 cm), L (long > 3 cm);

*Posidonia* – S (short < 15 cm), M (medium 15 cm – 30 cm), L (long > 30 cm); or

*Zostera* – S (short < 5 cm), M (medium 5 cm – 15 cm), L (long > 15 cm).

These codes provide a description of the seagrasses within an area and are useful in determining the nature and ecological value of any seagrasses likely to be affected by the proposed works. For example, seagrass with shorter leaves and a lower density (e.g. ZosC1S) may have less ecological value compared with seagrass with longer leaves and a higher density (ZosC3L).

## 2. Existing Property Details

### 2.1 Existing Structures at The Property

The Property is located on the eastern shoreline of Pittwater. The Property faces in a westerly direction.

The existing unauthorised structures below the MHWL at The Property at the time of the on-site survey included (Photos 1 - 3):

- a small timber deck (1.5 x 4.6 m) at the top of the authorised concrete ramp;
- a timber jetty (4.0 x 4.0 m) on the northern side of The Property, supported on two outer timber piles;
- a timber ramp (6.0 x 1.5 m);
- a pile stabilised pontoon (3.4 x 3.7 m) with two inner corner timber stabilising piles; and
- a single timber mooring pile located 4 m south of the inner corner of the pontoon.

### 2.2 Existing Ecology at The Property

#### 2.2.1 Existing Ecology Based on Observations from the On-Site Survey

##### *a) Intertidal Ecology*

The intertidal zone within the on-site survey area of The Property consisted of natural and artificial habitats. The seawall that stretched across the inground pool to the authorised concrete ramp was composed of a natural bedrock base topped by concrete. The authorised concrete ramp and the unauthorised timber jetty, pontoon and mooring piles provided artificial intertidal habitat.

The natural bedrock on the lower half of the seawall was colonised by a high density cover of Sydney rock oysters (*Saccostrea glomerata*), and the concrete on the top half of the seawall was bare. The top half of the authorised concrete ramp was bare (Photo 3) and the bottom half colonised by oysters.

The unauthorised timber deck was devoid of any intertidal biota (Photo 3). The intertidal sections of the unauthorised timber jetty and pontoon piles were bare. The intertidal section of the single unauthorised timber mooring pile was colonised by barnacles (*Tesseropora rosea*).

##### *b) Subtidal Ecology*

The subtidal zone within the on-site survey area of The Property started at the base of the seawall and consisted of a moderately sloping rocky reef (Photos 4 - 5) that continued offshore 4.5 m, finishing 1 m offshore of the jetty piles. From there the seabed transitioned to gradually sloping silty sand that continued offshore beyond the extent of the survey area (Photos 6 - 9). There was a large boulder located 2.5 m south-west of the pontoon.

The rocky reef (Photos 4 - 5) was colonised by a high density cover of brown algae (bubbleweed *Sargassum* sp., kelp *Ecklonia radiata*, scrollweed *Padina* sp. and turfing filamentous) and red coralline alga (*Corallina officinalis*). The jetty piles were located within this rocky reef (Photo 5). The silty sand seabed across the site was colonised by a low density cover of the green pest alga *Caulerpa taxifolia* (Photo 6). The *Caulerpa* was present under the unauthorised ramp and pontoon (Photo 6) and around the pile locations. There was a patch of low density *Halophila* seagrass present on the southern side of the pontoon (Photos 7 - 9). Within this *Halophila* patch there were several sparsely scattered individual shoots of *Posidonia* (Photo 9; see section c. below for further seagrass details).

The subtidal sections of the unauthorised timber jetty, pontoon and mooring piles were colonised by turfing cover of brown and red filamentous algae, along low numbers of barnacles (*Tessieropora rosea*). The unauthorised pontoon (Photo 10) provided a subtidal habitat that was colonised by a diverse matrix including brown algae (scrollweed and filamentous), green alga (sea fingers *Codium fragile*), red algae (branching *Laurencia* sp. and filamentous *Gelidium* sp.), solitary ascidians (*Styela plicata*), hard bryozoa (*Watersipora* sp.) and barnacles.

Fish observed during the survey were yellowfin bream (*Acanthopagrus australis*) and luderick (*Girella tricuspidata*).

#### c) Seagrass and Mangroves

There was a patch of low density *Halophila* seagrass (HalC1S; Photos 7 - 8) present on the southern side of the outer half of the ramp and the pontoon (see seagrass mapping in Appendix B). The *Halophila* started 1.5 m south of the unauthorised ramp and 0.5 m south of the unauthorised pontoon. The *Halophila* patch surrounded the unauthorised mooring pile (Photo 8). Within the *Halophila* patch there were low numbers of sparsely scattered individual shoots of *Posidonia* (PosA1L; Photo 9). The closest the *Posidonia* shoots were to the southern edge of the unauthorised was 1 m (see seagrass mapping in Appendix B).

There was a patch of high density *Posidonia* located in the northern neighbouring property, that started 3 m north of the unauthorised ramp and pontoon.

The unauthorised ramp and pontoon were located over a soft seabed colonised by a low density cover of *Caulerpa* (Photo 6), there was not any seagrass under these unauthorised structures.

No mangroves were observed within the on-site survey area of The Property.

### 2.2.2 Existing Ecology Based on Government Published Records

NSW Fisheries has done extensive mapping of the estuarine habitats and vegetation in all of NSW's estuaries (NSW DPI 2023). The online map of January 2023 indicates the presence of the southern end of a thin bed of *Posidonia* seagrass at The Property, located only on the northern side of the ramp and pontoon.

### 3. Assessment of Potential Impacts of the Unauthorised Structures on the Existing Ecology of The Property

In summary, the potential impacts on the aquatic ecology at The Property from the unauthorised existing timber deck at the top of the concrete ramp, timber jetty, timber ramp, pile stabilised pontoon and single mooring pile have been assessed as potentially minor.

The rocky reef under the unauthorised jetty was not adversely impacted by the jetty, as it had the same diversity and cover of algae as the adjacent rocky reef habitat.

The unauthorised ramp and pontoon were located over a silty sand seabed. This soft seabed was colonised by a low density cover of the green pest alga *Caulerpa taxifolia* across much of the site. There were no seagrass habitats observed in the footprint of any of the unauthorised structures. The closest seagrass habitat was a patch of low density *Halophila* located 1.5 m and 0.5 m south of the unauthorised ramp and pontoon respectively. There were low numbers of sparsely scattered individual shoots of *Posidonia* mixed within the *Halophila* patch, however, there was a buffer of 1 m from the southern edge of the pontoon to the closest the *Posidonia* shoots.

Due to the fact that there was no *Posidonia* patch on the southern side of The Property (like there was a patch on the northern neighbouring property) colonising a soft seabed that is several metres away from any structures or mooring pile; it is difficult to ascertain retrospectively whether there would have been any seagrass (*Posidonia* or *Halophila*) on the seabed under the unauthorised ramp and pontoon before they were installed. As such, the impacts of the installation of the unauthorised ramp and pontoon can only be assessed as potentially minor, though the impacts could also have been negligible if there was no seagrass ever on the seabed in their footprint.

The site inspection seagrass findings correspond to the NSW DPI mapping of *Posidonia* being located only on the northern side of the ramp and pontoon.

The unauthorised timber jetty piles, pontoon piles, mooring pile and pontoon were observed to be beneficial to the aquatic ecology at the site. These structures provided artificial intertidal and subtidal habitats that were colonised by flora and fauna, that otherwise would not be present at the site.

Prepared by



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## Appendix A - On-site Survey Photos

The following photographs taken by Rick Johnson during the on-site survey conducted at The Property on 15 April 2024 are provided overleaf:

- Photos 1 - 3. Existing unauthorised waterfront structures and intertidal habitats at The Property.
- Photos 4 - 5. Rocky subtidal habitats at the site
- Photos 6 - 9. Soft seabed with *Caulerpa* and seagrass habitats at the site.
- Photo 10. Subtidal biota on the unauthorised berthing pontoon.



**Photo 1.** The foreshore at The property - with the unauthorised jetty, ramp, pontoon and mooring pile off the right-hand side of the pool.



**Photo 2.** The unauthorised timber ramp, pile stabilised pontoon and single mooring pile.





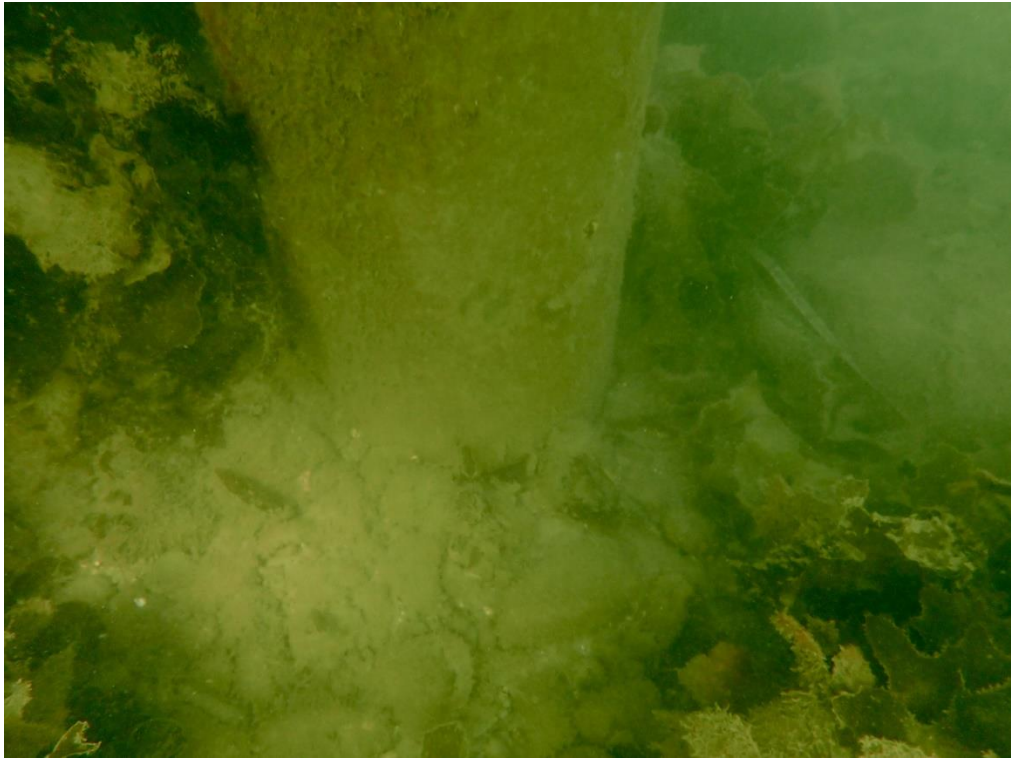
**Photo 3.** The unauthorised timber deck at the top of the concrete ramp, which was bare of intertidal biota.



**Photo 4.** The subtidal rocky reef located off the front of the seawall and under the unauthorised timber jetty.



**Photo 5.** The unauthorised outer jetty pile located within the rocky reef habitat.



**Photo 6.** The silty sand seabed in the footprint of the unauthorised ramp and pontoon, colonised by a low density cover of *Caulerpa*.





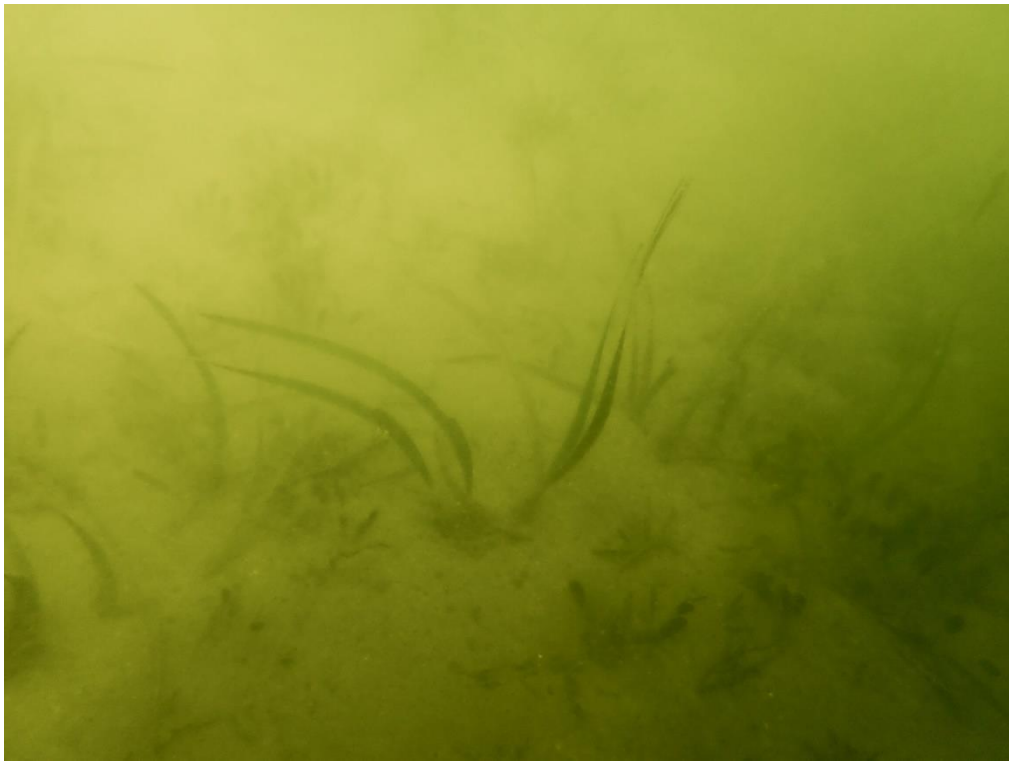
**Photo 7.** Low density patch of *Halophila* located to the south of the unauthorised pontoon.



**Photo 8.** Low density *Halophila* colonising the soft seabed around the unauthorised mooring pile.



**Photo 9.** Low density patch of *Halophila* with sparsely scattered individual shoots of *Posidonia*, located to the south of the unauthorised pontoon.



**Photo 10.** Matrix of subtidal biota colonising the unauthorised pontoon.



## **Appendix B – Site Plan and Seagrass Map**

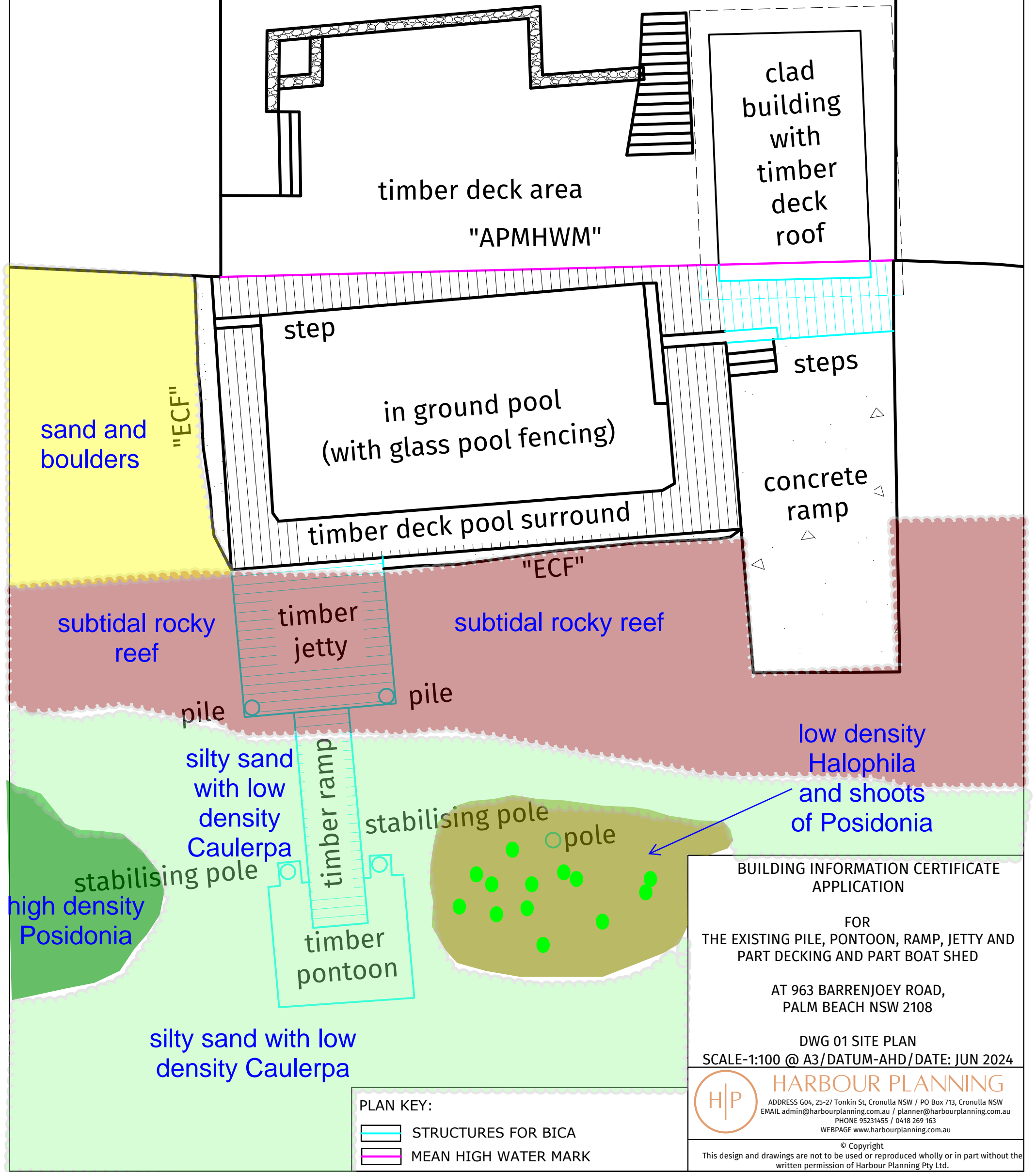
The plan of the unauthorised structures (provided by Harbour Planning) and mapped seagrass for 963 Barrenjoey Road, Palm Beach is provided overleaf.

"ECF"  
denotes exposed  
concrete  
foundations

# Lot 44 DP 13620

No. 963 Barrenjoey Road  
Palm Beach NSW 2108

"APMHWM"  
denotes the  
approximate  
position of Mean  
High Water Mark  
by DP13620



## Appendix C - References

NSW Department of Primary Industries (Jan 2023). *NSW Estuarine Habitat Dashboard*.  
[https://nsw-dpi.shinyapps.io/NSW\\_Estuarine\\_Habitat/](https://nsw-dpi.shinyapps.io/NSW_Estuarine_Habitat/)