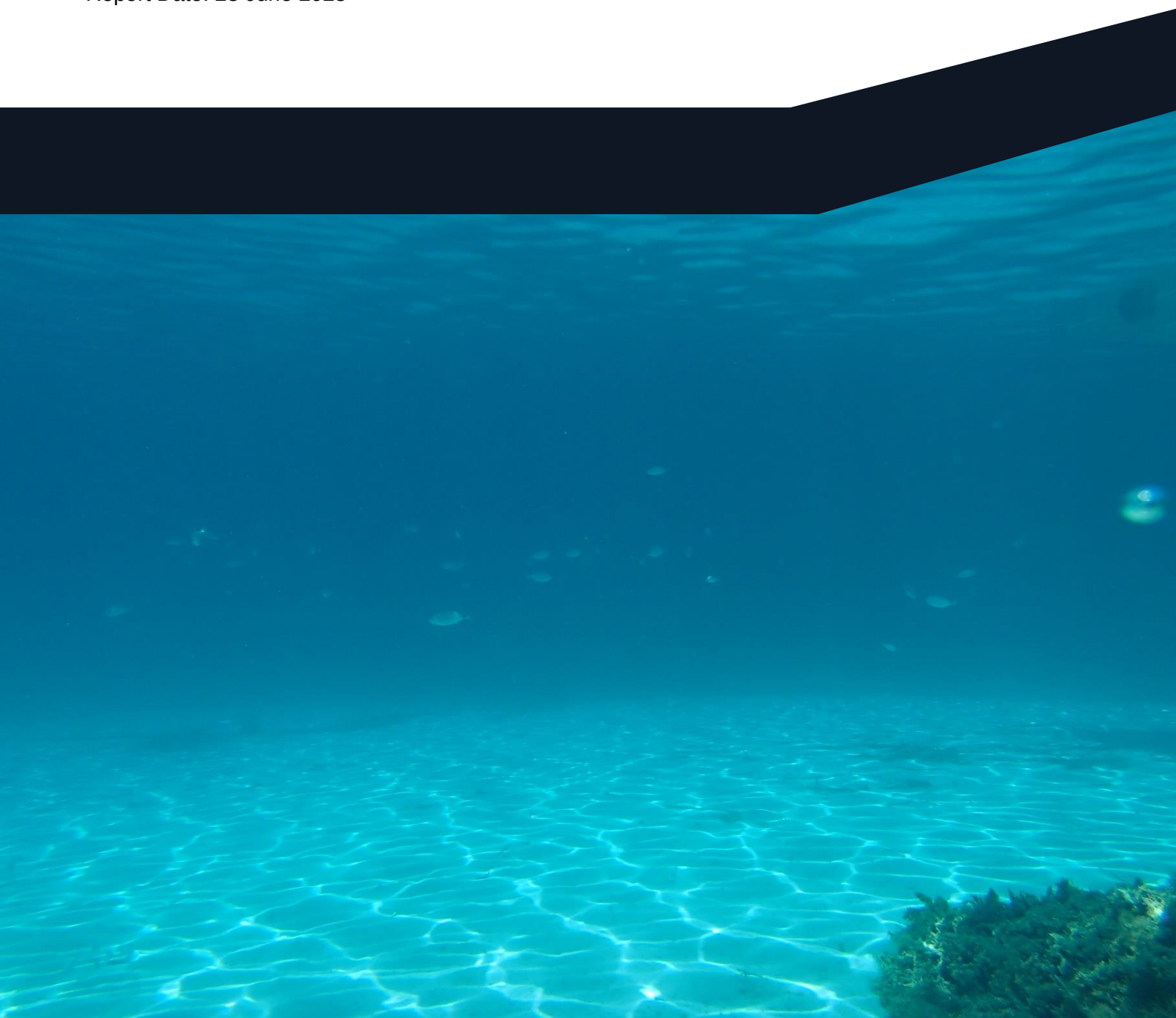
Marine Habitat Survey

158A (Lot 51) McCarrs Creek Road, Church Point

Prepared For: Phil Corbett

Report Date: 28 June 2023



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Document Details	
Report Title	Marine Habitat Survey
Project Title	158A (Lot 51) McCarrs Creek Road, Church Point
Prepared For	Phil Corbett
Report Date	28 June 2023
Project Number	2242
Project Team	David Cummings, Alex Swanson, Marc Green

Document Control			
Version	Author	Reviewer	Date
R0	Alex Swanson BMarBiol	David Cummings BSc (Hon) PhD	28/06/2023

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The information provided in this document is based on knowledge, understanding and field observations at the time of review of associated materials and/or site survey. The report should be read and considered in its entirety including consideration of the limitations described in the report.

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Background

H2O Consulting Group was engaged by Phil Corbett to provide a Marine Habitat Survey of the seabed and surrounding marine habitat at 158A (Lot 51 in DP547759), Church Point, hereafter referred to as Lot 51. The property adjoins Pittwater and falls within the Local Government Area of Northern Beaches Council.

The purpose of the Marine Habitat Survey is to support a development application for modification to existing waterfront structures at the above address. Under Part 4 of the E*nvironmental Planning and Assessment Act 1979*, NSW Department of Primary Industries (NSW DPI) is a 'determining authority' for integrated developments such as this, where there is potential that marine vegetation may be harmed.

In NSW, the *Fisheries Management Act 1994* (FM Act) provides conservation and protection of fisheries resources, fish habitat and threatened aquatic species in NSW waters. Under the FM Act as well as the New South Wales *Biodiversity Conservation Act 2016* (BC Act) and the Commonwealth *Environmental Protection and Biodiversity Conservation Act 1999* (EPBC Act) there are requirements for the protection of estuarine vegetation such as mangroves, saltmarsh and seagrass.

NSW DPI may make further assessment, evaluations and recommendations that may include stipulating additional mitigation measures as a consent condition for the proposed development after review of this report.

This survey at Lot 51 McCarrs Creek Road, Church Point has been conducted in accordance with the *Policy and Guidelines for Fish Habitat Conservation and Management* (Fairfull 2013).

Objectives

The objectives of this Marine Habitat Survey are to:

- Provide a clear description of the proposal, marine environment including presence of threatened and/or invasive species and any relevant hydrological features.
- Where present identify, describe (species & density) and map marine vegetation in the area effected and adjacent areas.
- Identify potential impacts from the proposed development and where appropriate recommend mitigation measures to ameliorate any environmental effects on the marine environment.

Regional Context

Pittwater Estuary (hereafter Pittwater) is a drowned valley estuary north of Sydney that adjoins Broken Bay at the mouth of the Hawkesbury River. It is approximately 10 km in length and 1 km in width (WBM 2006), with an estuary area of 18.4 km^2 and a total catchment area of 50.8 km^2 (NSW DPE 2023). Pittwater is a distinctive natural asset of the Northern Beaches and comprises of numerous estuarine habitats including beaches, rocky shores, mangroves, saltmarsh and mud flats (NBC 2023). The Subject Site is located on the eastern shore of the lower reaches of McCarrs Creek at the southern end of Pittwater (Figure 1).

The nearest protected aquatic habitat is the Barrenjoey Head Aquatic Reserve located at the confluence of the Hawkesbury River and the ocean, extending around from Palm Beach to Station Beach, which is

approximately 9.3 km from the Subject Site. There are no aquaculture activities within the vicinity of the Subject Site, and commercial fishing activities in Pittwater no longer occur.

Figure 1: Locality of the proposed development in McCarrs Creek.

Existing Information

Mangroves, saltmarsh and seagrasses are common and important to estuarine productivity and ecological function in Pittwater. Extensive development of the surrounding catchment and accommodation of over 3000 moorings has had a significant impact on aquatic vegetation, especially seagrass beds in Pittwater (WBM 2006). Controlling developments, urban storm water runoff and streamline erosion in the upper catchment remain key management actions in preserving the aquatic environment of Pittwater (Pittwater Council 2005).

NSW DPI habitat maps indicate the common occurrence of seagrasses *Posidonia australis*, *Zostera capricorni* and *Halophila ovalis*, mangroves and salt marsh communities in Pittwater. In six NSW estuaries including Pittwater, *P. australis* has been listed as an Endangered Population and added to Threatened Species Schedules under the FM Act (NSW DPI 2012a), while more recently *P. australis* seagrass meadows of the Manning-Hawkesbury Ecoregion Ecological Community have been listed as Endangered under the EPBC Act. Additionally, Coastal Saltmarsh has been listed as an Endangered Ecological Community on the NSW North Coast, Sydney Basin and South East Corner Bioregions under the BC Act, which also corresponds with the listing of Subtropical and Temperate Coastal Saltmarsh as a Vulnerable Ecological Community under the EPBC Act. Previous mapping conducted by NSW DPI indicates the presence of extensive fringing *Z. capricorni* seagrass beds and mangrove stands in shallow waters in

McCarrs Creek, particularly in the upper reaches. A moderately sized bed of *Z. capricorni* has been previously mapped close to shore to the southwest of the Subject Site (Figure 2).

Along the New South Wales coastline, Black Rockcod (*Epinephelus daemelii*) may utilise deeper shoreline areas along rocky drop-offs where ledges, overhangs and caves occur. The Black Rockcod has been listed as a Vulnerable fish species under the FM Act as they have been historically overharvested and risks remain from fishing, climate change and water pollution (NSW DPI 2012b). More recently White's Seahorse (*Hippocampus whitei*) and the Cauliflower Soft Coral *(Dendronephthya australis)* have been listed as an Endangered species under the FM Act. The natural habitats of the White's Seahorse include sponge gardens, seagrass meadows and soft corals, while it is also known to use artificial habitats such as protective swimming net enclosures and jetty pylons (NSW DPI 2019). The Cauliflower Soft Coral occurs sporadically in estuaries including Port Stephens and Brisbane Water, where they grow in abundance, typically in areas with a sandy seabed and high current flow (NSW DPI 2021).

The Pittwater State of the Environment Report (Pittwater Council 2005) indicates the management and control of the spread of the invasive green algae *Caulerpa taxifolia* as a significant ecological issue for aquatic habitats within Pittwater. *Caulerpa taxifolia* is a fast growing alga endemic to tropical waters of Australia that has rapidly colonised areas outside its natural range including within Pittwater. Mapping conducted in Pittwater by NSW DPI indicates that *C. taxifolia* is widespread around Scotland Island and occurs in the vicinity of the Subject Site (NSW DPI 2015).

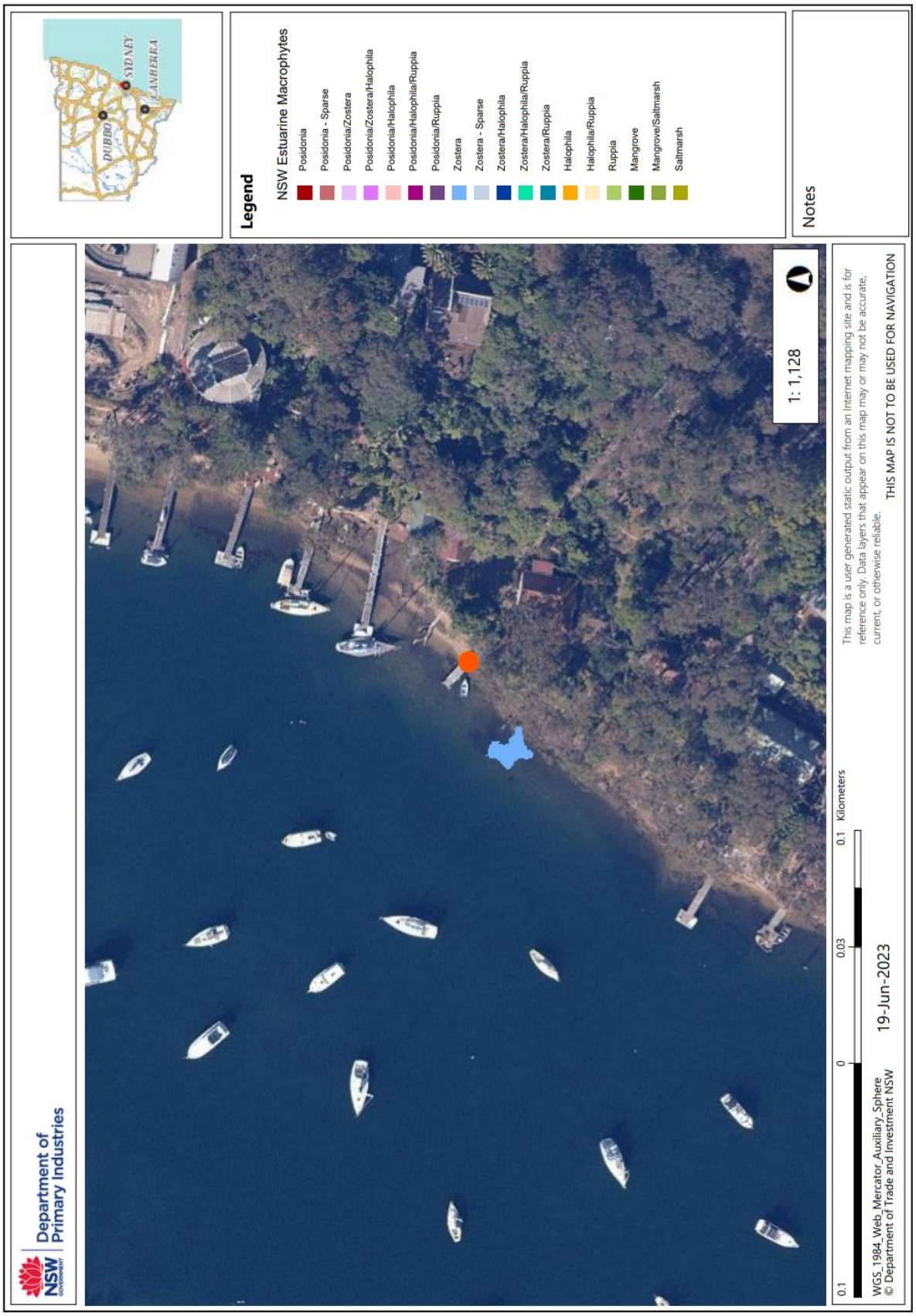

Figure 2: NSW DPI Fisheries mapping in the vicinity of the Subject Site (Source: NSW DPI 2023).
● Subject Site

Description of the Proposed Development

The proposed modifications include the following:

- Removal of existing timber jetty and associated jetty piles,
- Construction of new timber jetty (6.9 x 1.5 m), realigned with existing stone jetty,
- Construction of new ramp (6.0 x 1.5 m),
- Construction of new pontoon (3.6 x 2.4 m) and two stabilising piles; and
- Construction of new berthing area (9.0 x 5.0 m) and two mooring piles.

The proposal utilises the inner stone section of the existing jetty and extends approximately 13 m further seaward than the existing structure (Figure 3 and 4).

Figure 3: Existing waterfront structures at the Subject Site.

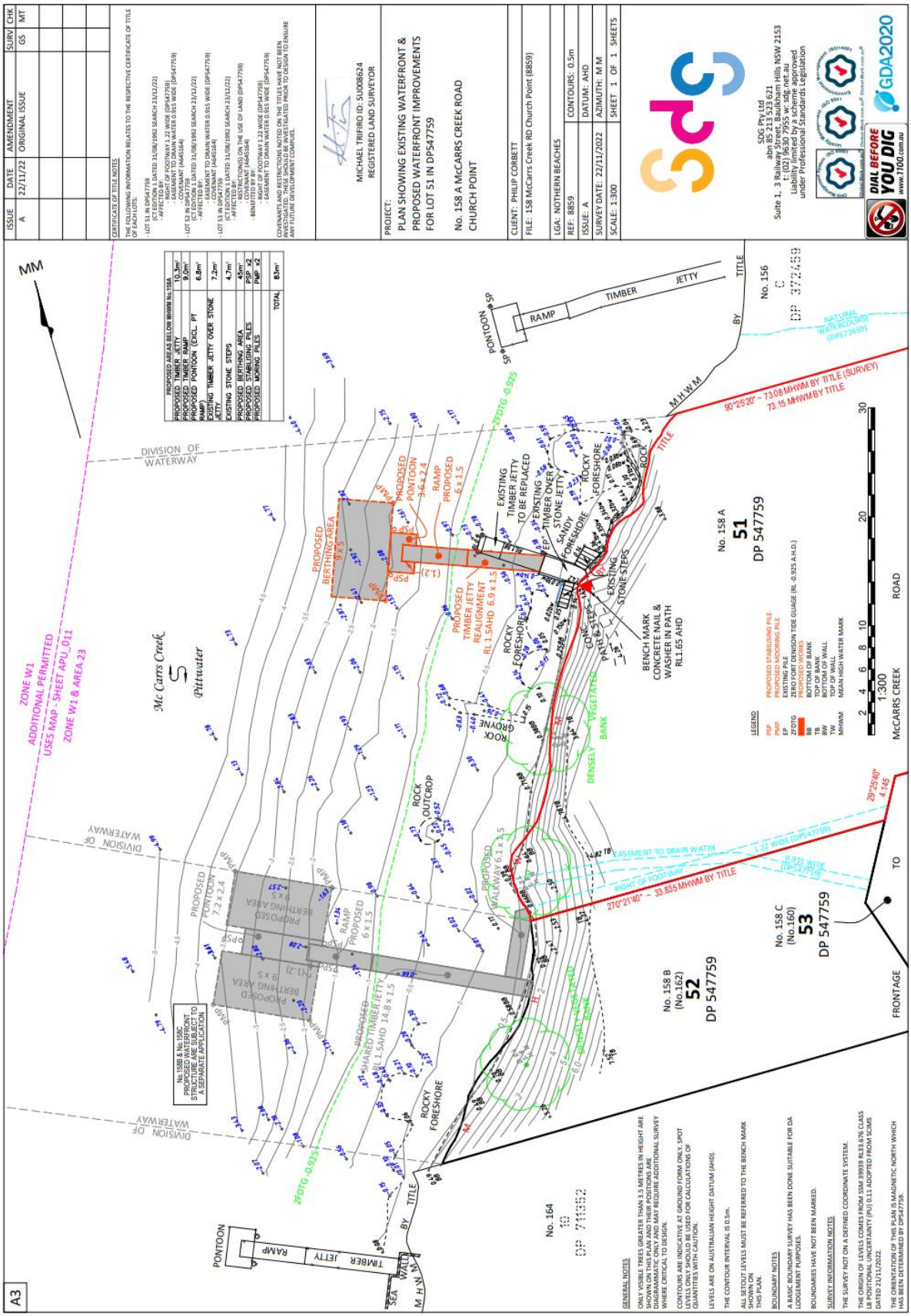

Figure 4: Plans of the proposed waterfront structures at the Subject Site.

Study Methods

The site survey was undertaken at 1013 hrs on the 13th of June 2023. Weather conditions were overcast with minimal to no wind, while water visibility was good at approximately 2.0 m. Tidal predictions for McCarrs Creek on the day were a 0.5 m low tide at 1022 hrs.

The Study Area was limited to the potential habitat within 10 m of the proposed works. Inspections were undertaken around the existing structures at the subject site and extended approximately 50 m from the shore. The survey was conducted by inspection from the shore and in the water using a Chasing M2 ROV with UHD video and still imagery capture capability. Marine habitat and features of interest were photographed with the ROV. Marine habitat was described based on dominant flora and fauna observed. For seagrass habitat, density (abundance) and patchiness (sociability) was estimated using categories for each seagrass species present as per King and Barclay (1986) (See Table 1).

Density	
Low	Sparse growth, up to 15% cover
Medium	Moderate growth 15 – 50% cover
High	Abundant growth greater than 50% cover
Patchiness	
Clumps	Individual strands or clumps (less than 1 m^2)
Patches	Patches of between 1 and 5 m^2
Beds	An area of relatively continuous seagrass greater than 5 m^2

Survey Results

The adjoining shoreline is a minimally modified residential waterfront that backs onto a densely vegetated escarpment, rising approximately 40 m to McCarrs Creek Road, with a westerly aspect across McCarrs Creek. The waterfront at the Subject Site comprised of naturally vegetated rock escarpment and sandy shore, with a sandstone block jetty footing and stairs, and a timber jetty. Waterfront structures to the northeast of the Subject Site included timber jetties, ramps and pontoons, whilst to the southwest the waterfront comprised of natural shore and rocky intertidal, with a jetty, ramp and pontoon further upstream (Figure 5).

Figure 5: Waterfront structures to the (a) northeast and (b) southwest of the Subject Site.

Intertidal Habitat

The intertidal habitat within the Study Area consisted of a combination of natural soft sandy shore, rock boulders and rock platform, and artificial habitat provided the lower sandstone block jetty and stairs, and existing piers (Figure 6). High intertidal habitat provided by the sandstone jetty sides and stairs supported sessile and mobile invertebrate species, including False Limpets (*Cellana tramoserica*) and Striped Conniwinks (*Bembicium nanum*) (Figure 6). On lower sections of the jetty in the mid intertidal zone, biota was dominated by dense assemblages of Sydney Rock Oysters (*Saccostrea glomerata*), with occasional presence of Mulberry Whelks (*Morula marginalba*), *B. nanum* and *C. tramoserica* (Figure 6). These species were observed in similar communities on the rock boulders and lower jetty and ramp piles in the low intertidal zone (Figure 6).

No intertidal vegetation including any mangroves or intertidal seagrasses occurred in the Study Area.

Figure 6: Typical intertidal habitat at the Subject Site, showing (a) natural soft sandy shore with natural rock formations and sandstone jetty stairs, (b) high intertidal habitat with *B. nanum*, (c) lower sandstone jetty side with dense *S. glomerata*; and (d) low intertidal habitat of rock boulders and lower piles populated by invertebrate species.

Subtidal Habitat

Subtidal habitat consisted of a moderately sloping seabed with silty soft sediment and occasional rock boulders close to shore. Artificial habitat was provided by lower piles associated with the existing jetty.

In shallow areas, rock boulders and lower piles provided habitat for sparse Sydney Rock Oysters (*S. glomerata*) and an epiphytic layer of green algae but were otherwise predominantly uninhabited (Figure 7). The seabed in this area was observed to have heavy depositions of detritus from eucalypts and nearby mangroves, a large fallen tree with some sections containing epiphytic algal growth and polychaetes, and sporadic occurrences of filamentous algal growth (Figure 7).

In deeper areas beyond the existing jetty, from the -0.5 to -4.5 m depth contour, the seabed transitioned to silty soft sediment with occasional detritus. Sediment in this location was heavily bioturbated, indicating a high presence of epibenthic fauna such as polychaetes or crustaceans. No seagrass was observed within the Study Area, however, a large high-density bed of the invasive *Caulerpa taxifolia* (Figure 7) was

recorded approximately 25 m to the west of end of the existing jetty (Figure 8). This bed was observed to have an extensive spread and continued into deeper water further west into McCarrs Creek.

During the site survey no fish species were observed, however, species that are likely to be common at the Subject Site at times include Yellowfin Bream (*Acanthopagrus australis*), Luderick (*Girella tricuspidate*), Yellow-finned Leatherjacket (*Meuschenia trachylepis*), Silver Biddy's (*Gerres subfasciatus)*, Australian Sawtail (*Prionurus microlepidotus*), Sea Mullet (*Mugil cephalus*) and Tailor (*Pomatomus saltatrix*).

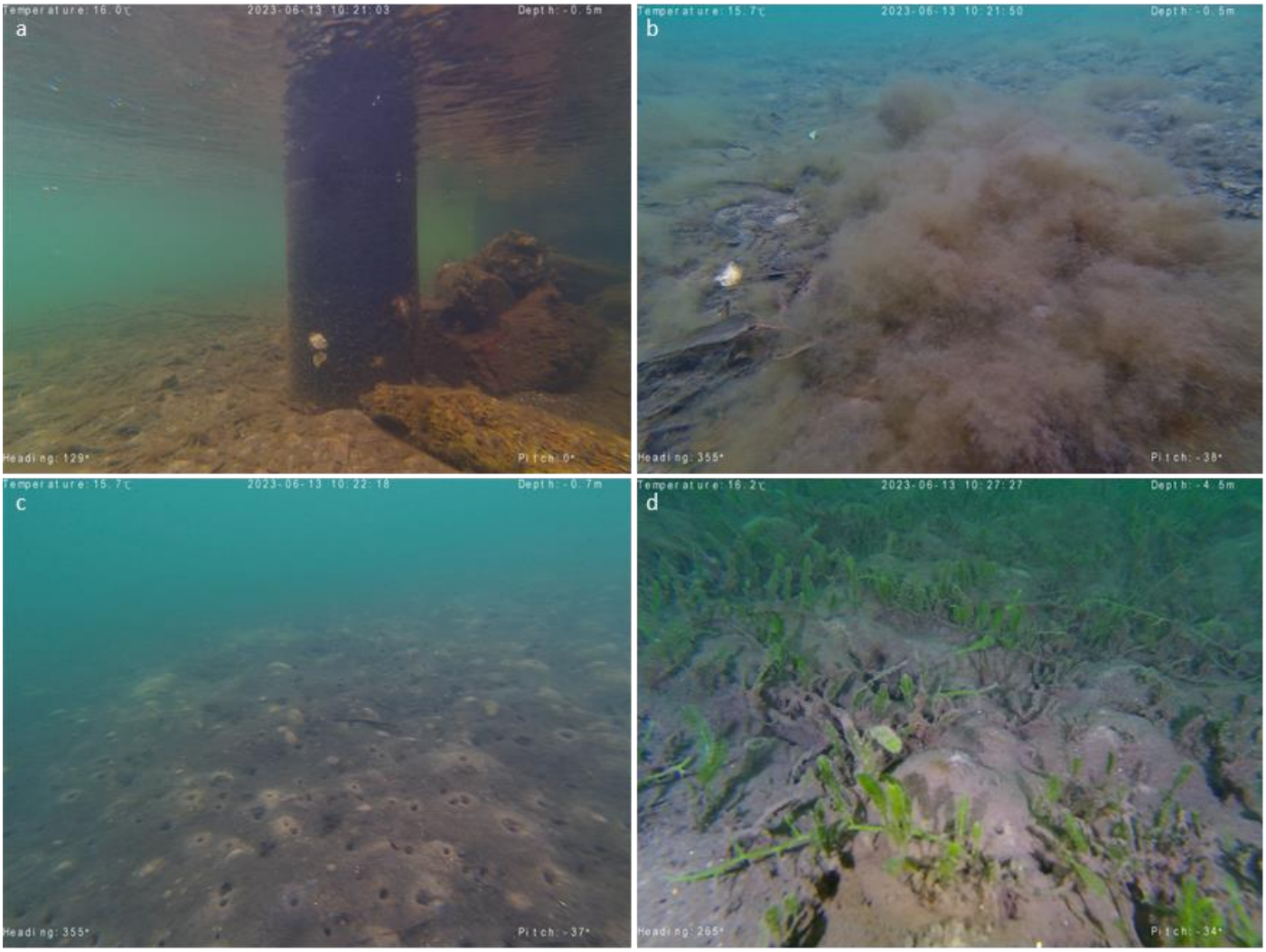

Figure 7: Typical subtidal habitat of (a) shallow subtidal habitat with rock boulders and lower pile supporting sparse *S. glomerata*, (b) silty soft sediment with detritus and filamentous algal growth, (c) silty, soft sediment heavily bioturbated; and (d) high-density bed of *C. taxifolia*.

Invasive Species

The invasive green alga *Caulerpa taxifolia* was observed in a high-density bed on the silty soft sediment on the western border of the Study Area.

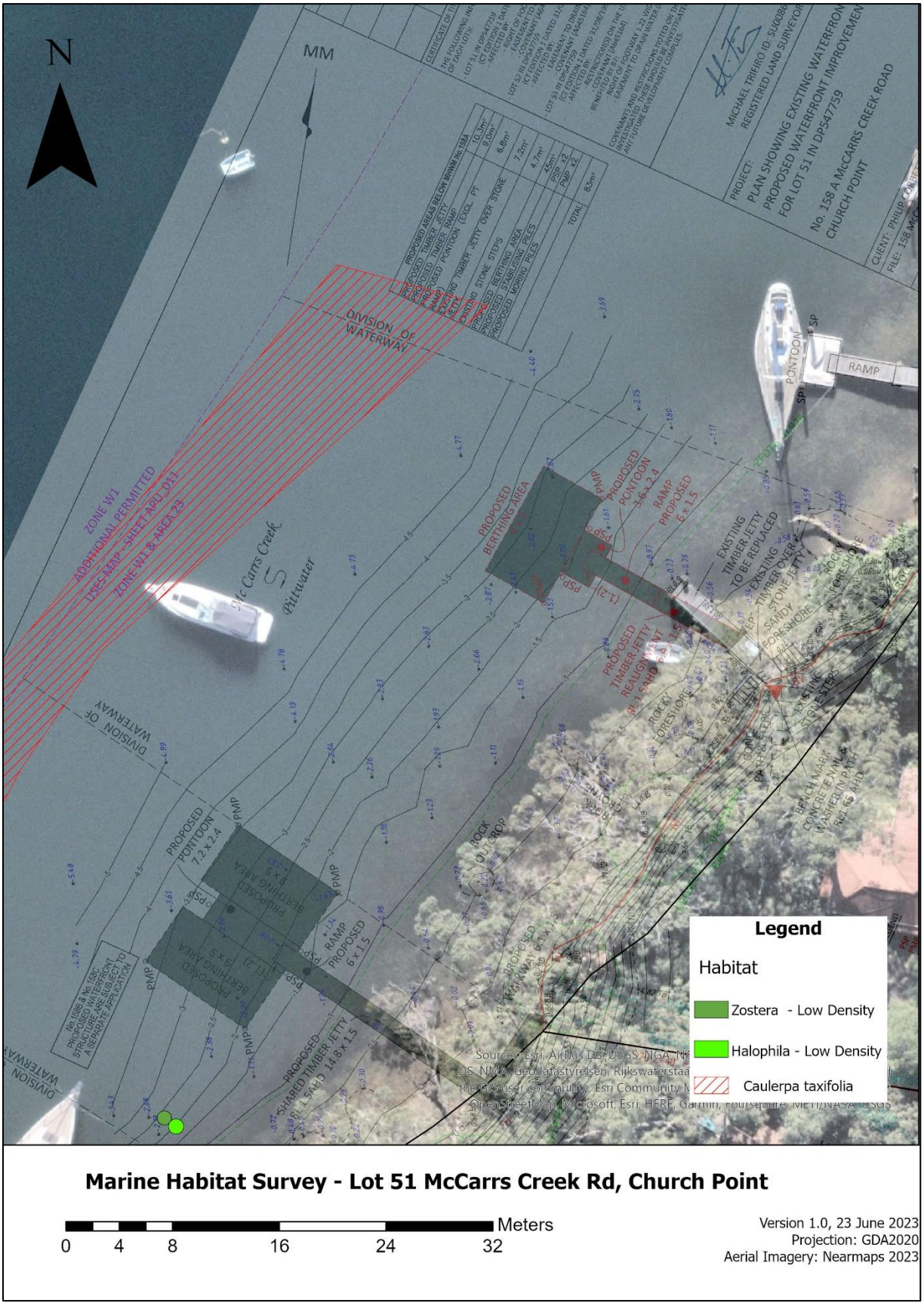

Figure 8: Habitat map showing seagrasses within the Study Area.

Threatened Species

The Endangered Coastal Saltmarsh community does not occur at the Subject Site.

The seagrass *P. australis*¸ which is considered an Endangered Population under the FM Act within Pittwater and an EEC in this region under the EPBC Act does not occur at the Subject Site.

The Study Area possessed minimal habitat for the Vulnerable Black Rockcod (*E. daemelii*) in the given the absence of suitable drop-offs, crevices and overhangs. Furthermore, the proposed works have minimal potential to pose a threat to this species.

The Endangered White's Seahorse (*H. whitei*) was not observed during the survey. Potential Syngnathidae habitat was not observed in the Study Area, with a lack of suitable seagrasses, macroalgae or artificial habitat such as swimming nets.

The Endangered Cauliflower Soft Coral (*D. australis*) was not observed during the survey.

Conclusions and Recommendations

Effects on the marine environment from the proposed structures are likely to include:

- Increased potential for siltation on nearby habitats during construction works with potential to mobilise sediments. The sedimentation generated from this proposal is expected to be minimal and can be further mitigated with the use of suitable sediment controls.
- Increased short-term turbidity during works to install new piles. This may result in some short-term reductions in water quality and very localised potential for increased sedimentation. Any disturbance from this proposal will be short-term, likely dissipate quickly and unlikely to be of an ecological significance given the close proximity to the deeper tidal channel.
- Disturbance of benthic habitat during removal and installation of the piles. Piles will be removed and constructed in small areas of habitat that primarily consist of unvegetated, silty, soft sediment, with any disturbance confined to potential epibenthic fauna in the immediate vicinity.
- Increased shading of the subtidal habitat from permanent in water structures and temporary shading from berthed vessels. The area of affected habitat consists of unvegetated silty, soft sediment and does not include any seagrasses, which are more susceptible to shading impacts. Shading of intertidal habitat is expected to remain the same.
- Removal of subtidal habitat and sessile invertebrates during removal of existing piles. These artificial structures were found to support a low population and diversity of biota, with common species likely to re-colonise on new structures.
- Disturbance to and removal of intertidal habitat and sessile invertebrates during removal of existing piles. Intertidal areas of these structures provided habitat for a low population and diversity of biota, which were localised to rocky substrate in the intertidal area. Any biota that may be disturbed are limited to common species likely to re-colonise on new or existing intertidal habitats.
- Generation of underwater noise during piling works. This may have behavioural and physiological impact on any marine fauna in close proximity to the piling works. Any presence of marine fauna typically susceptible to underwater noise, is likely to be very transient in this area.
- Creation of artificial habitat from the permanent presence of additional in-water structures. This may increase fish presence and provide additional substrate for sessile invertebrates. Given the presence of biota on nearby artificial structures, it is expected that these structures would be colonised by biota similar to those found on these nearby structures.

The proposed development is not expected to have any impacts on any threatened marine species or ecological communities, including those that may occur transiently in subtidal areas at the locality at times. Any additional impacts on marine habitat from the proposed development will be confined to a small area of unvegetated, silty, bioturbated soft sediment.

The invasive green alga *C. taxifolia* was observed in high densities at the western border of the Subject Site. The proposed works may facilitate the further spread of this species. It is essential that care is to be taken to ensure construction equipment is clean before leaving site and does not facilitate the spread of this species to new sites.

There remains some potential that construction works as part of this proposal could impact on adjacent or nearby marine habitat and its quality. To manage potential impacts during construction on marine habitat and species the following safeguards are recommended for adoption:

- Appropriate sediment and erosion control measures should be implemented in accordance with the 'Blue Book' (Landcom 2004).
- Piling should include a soft start procedure to allow marine fauna such as fish to move away from the areas safely. This should consist of a start at 50% piling impact energy increased gradually over 10 minutes.
- Hydrocarbon booms should be in place to contain any unplanned spills from construction barges or other mechanical equipment used on the site.
- Construction equipment should be washed down and thoroughly cleaned prior to mobilisation and de-mobilisation from the site.
- No materials should be stored or placed on the seabed.
- All materials, debris and rubbish should be removed from the site at the end of construction works.
- All construction equipment should be checked regularly for leaks, a spill kit should be kept on site.

In summary, the proposed development at Lot 51 McCarrs Creek Road, Church Point is not expected to have any ecologically significant impacts on marine habitat. Those impacts that do occur will be confined to some short-term disturbance to areas of unvegetated, silty soft sediment with epibenthic fauna. The adoption of measures identified in this report can minimise and mitigate any further potential impacts on aquatic habitat, particularly to nearby seagrass beds.

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