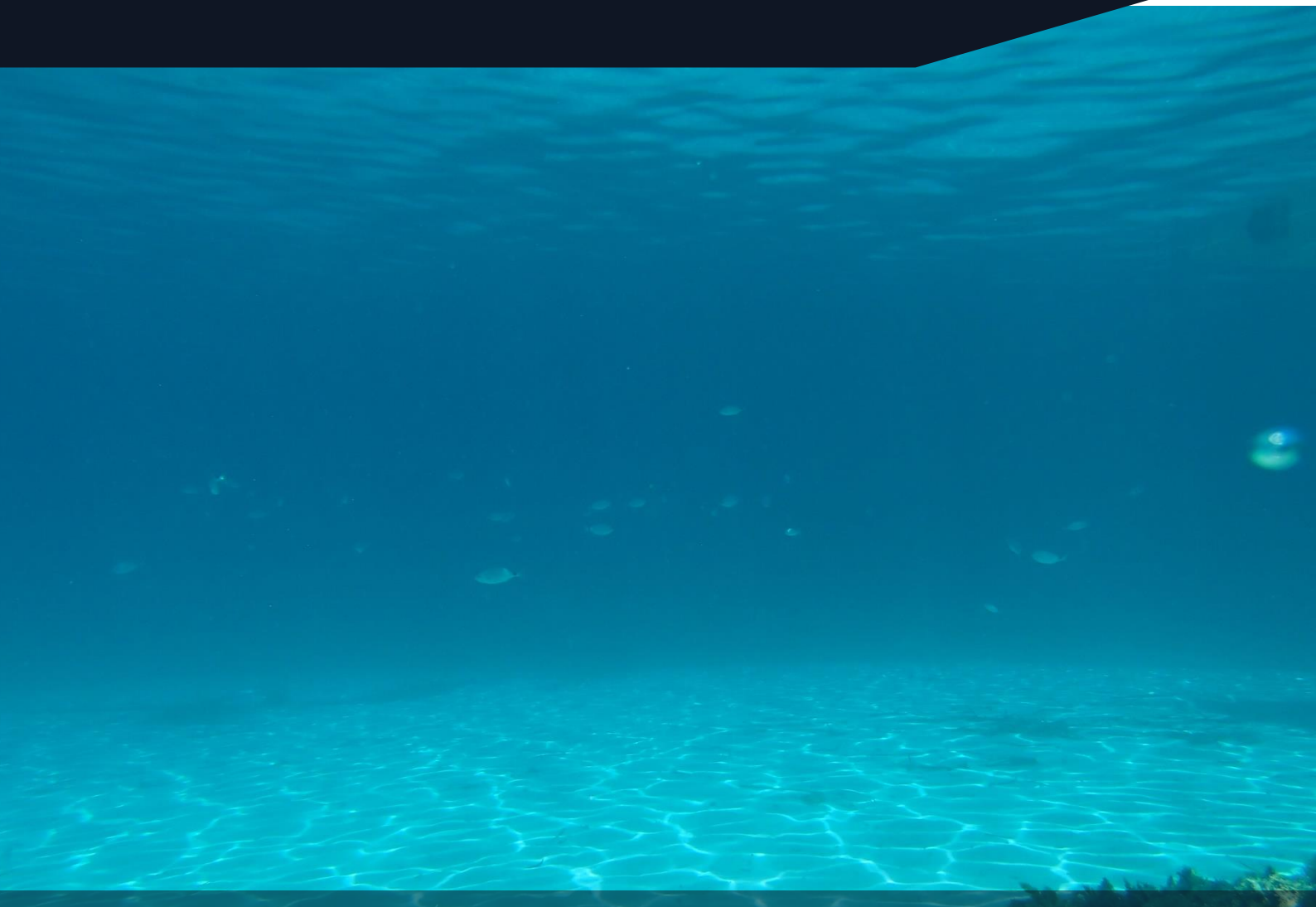
Marine Habitat Survey

206 McCarrs Creek Road, Church Point

Prepared For: Glenn Wightwick

Report Date16/10/2024



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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 Glenn Wightwick to provide a Marine Habitat Survey of the seabed and surrounding marine habitat at 206 McCarrs Creek Road, Church Point. The property adjoins Cicada Glen Creek 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 new waterfront structures at the above address. Under Part 4 of the Environmental 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 aquatic 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 recommendation that may include stipulating additional mitigation measures as a consent condition for the proposed development after review of this report.

This survey at 206 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 proposal and where appropriate recommend mitigation measures to ameliorate any environmental effects on the marine environment.
- Determine if the proposal meets requirements of NSW DPI Fisheries Policy for waterfront structures.

Locality

The Subject Site is a residential waterfront property located within the Pittwater estuary at Church Point.

The Subject Site is located on the eastern shores of Cicada Glen Creek, approximately 150 m to the southeast of the McCarrs Creek Boat Ramp (Figure 1).

The nearest protected aquatic habitat is the Barrenjoey Head Aquatic Reserve located on the southern side of Broken Bay, which is approximately 9.5 km from the Subject Site. There are no aquaculture activities, including priority oyster areas within the vicinity of the Subject Site (NSW DPI 2024).

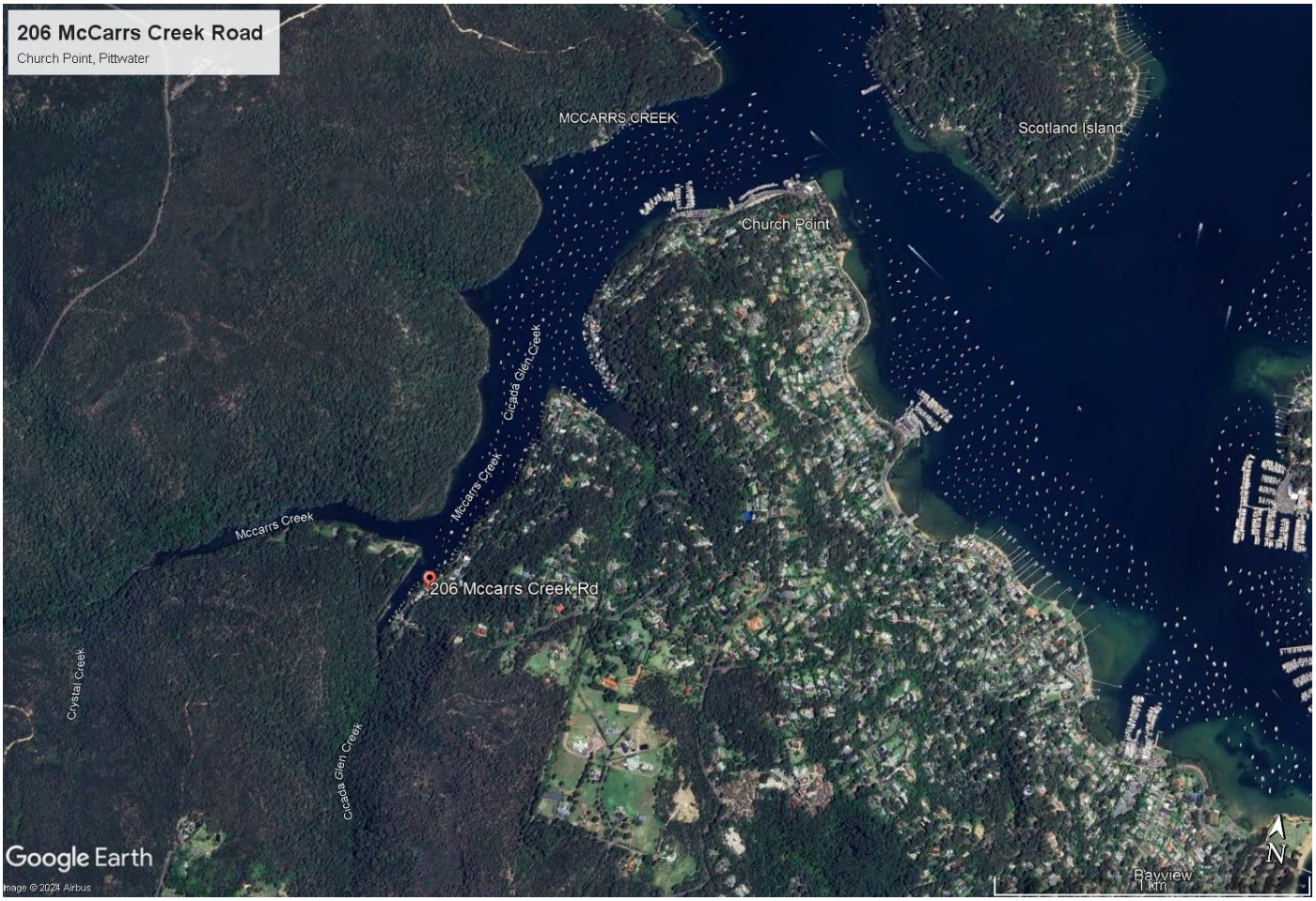


Figure 1: Locality of the proposed works at Church Point.

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 in Pittwater (Pittwater Council 2005).

NSW DPI habitat maps indicate the presence of seagrasses *Posidonia australis*, *Zostera capricorni* and *Halophila ovalis*, mangroves and saltmarsh communities in Pittwater (Creese *et al.* 2009). In six NSW estuaries including Pittwater, *P. australis* has been listed as an Endangered Population and added to Threated Species Schedules under the FM Act (NSW DPI 2012a), while *P. australis* seagrass meadows of the Manning-Hawkesbury ecoregion have been listed as Endangered Ecological Community (EEC) under the EPBC Act. Coastal Saltmarsh has also been listed as an EEC 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.

No EEC, including *P. australis,* has been previously mapped within the Subject Site, however two small beds of the seagrass *Zostera capricorni* have been mapped to occur within and in close proximity to the Subject Site (NSW DPI 2024) (Figure 2). Several large beds of *Z. capricorni* have also been mapped to occur ~100 m to the north, near the confluence to McCarrs Creek, with other beds mapped to occur ~250m upstream in Cicada Glen Creek. Previous mapping of macrophytes has shown variability in seagrass distribution in the locality from 2005 to 2019 (NSW DPI 2024b). Additionally, fringing mangroves are mapped to occur approximately 300 m west along the upstream shoreline of Cicada Glen Creek and approximately 250 m north of the Subject Site along the shoreline of McCarrs Creek (Figure 2).

The Pittwater State of the Environment Report (Pittwater Council 2005) indicates the management and control of the spread of the invasive green alga *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 done in Pittwater by NSW DPI indicates that *C. taxifolia* is common and well established throughout Pittwater (NSW DPI 2023).

Along the New South Wales coastline and associated deep-water estuaries, 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 over harvested, 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 also been listed as Endangered species under the FM Act. The natural habitats of 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 nearby Brisbane Water at the mouth of Broken Bay, where they grow in abundance, typically in areas with a sandy seabed and high current flow (NSW DPI 2021).Neither White's Seahorse nor the Cauliflower Soft Coral have recently been recorded within a 5 km radius of the Subject Site (ALA 2024), however, White's Seahorse are known to occur in the lower Pittwater estuary.

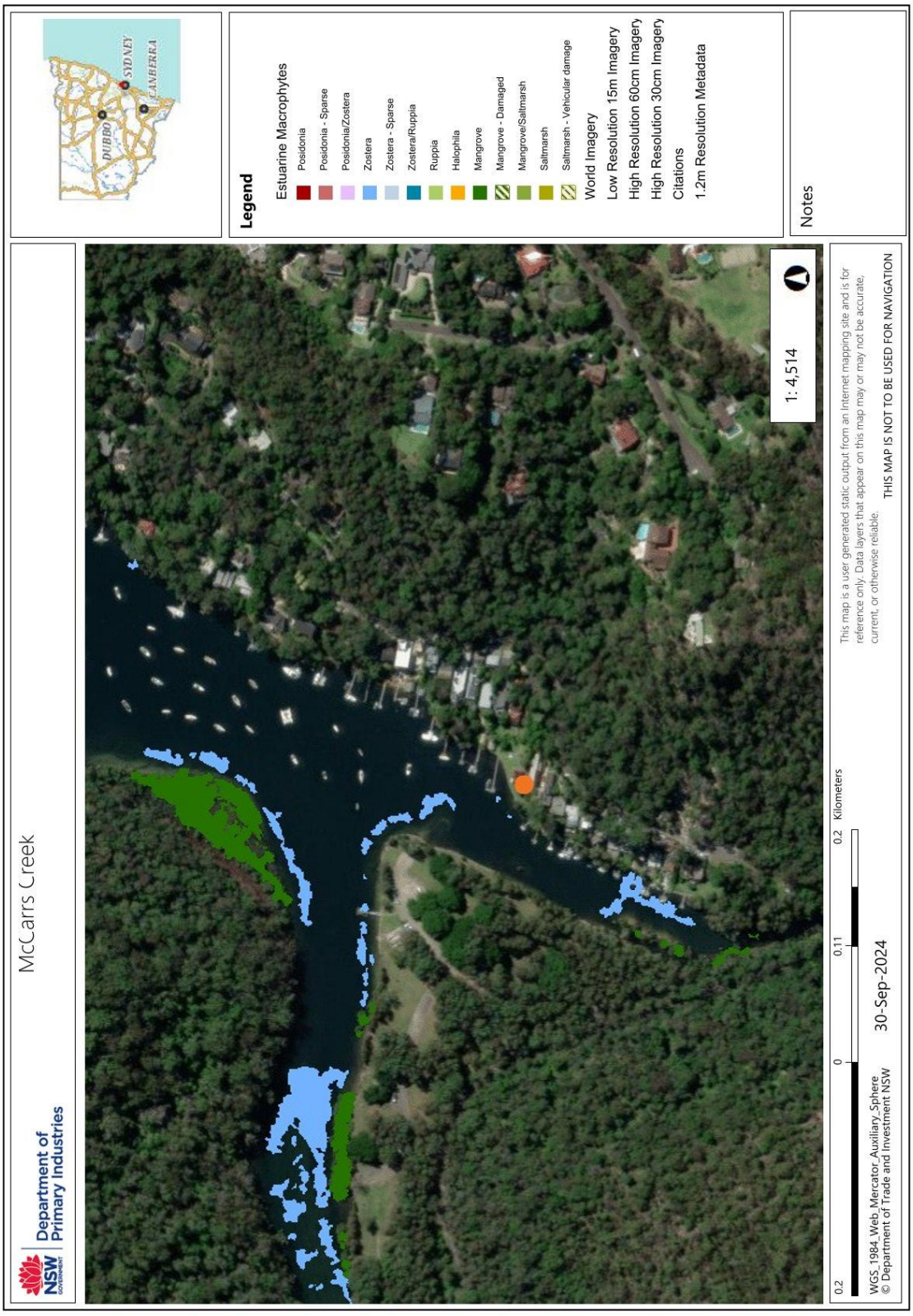


Figure 2: NSW DPI Fisheries mapping in the vicinity of the Subject Site (Source: NSW DPI 2024).

- Subject Site

Description of the Proposed Works

The proposed modifications include the following:

- Construction of new timber jetty with hinged platform (15.0 x 1.5 m) and timber footings,
- Construction of new floating pontoon (2.0 x 4.0 m) and 2 x timber pontoon piles,
- Construction of new sandstone retaining wall,
- Removal of existing piles x 2,
- Removal of existing rock groyne (~1.0 x 5.0m); and
- Removal of existing concrete retaining wall.

The proposed works will extend west into Cicada Glen Creek from the edge of the Subject Site (Figure 3), 15.0 m beyond the MHWM (Figure 4a,b)

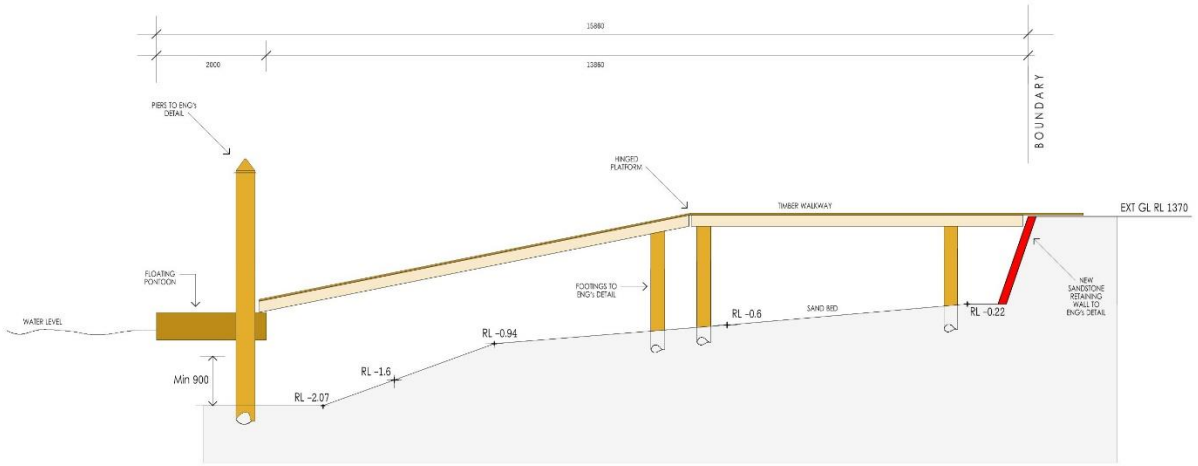
Figure 3: Existing structures at the Subject Site.

Figure 4a: Plans of the proposed works at the Subject Site.

Figure 4b: Plans of the proposed works at the Subject Site.

NOTES

Builder to check all dimensions on site prior to construction.
All dimensions that relate to site boundaries and easements are subject to verification by a site survey.
All work is to be in accordance with The Building Code of Australia, local council requirements & other relevant authorities.
Roof water and sub soil drainage to be disposed of in the approved manner or as directed by local council inspectors.
All electrical power and light outlets to be determined by the owner in conjunction with the builder.
All timber construction to be in accordance with the AS1684 Timber Framing Code.



SOUTH WEST ELEVATION

JETTY APPLICATION
FOR
PROPOSED NEW DWELLING

Dwg No.2
Scale 1:50 @ A2
Ref: NBC1124
SEPT. 2024

Wightwick Residence
206 McCarrs Creek Rd., Church Point
Lot 15 DP 875022

Lionel Curtin
Design & Documentation
0402 833 626
85 Plateau Road Bilgola Plateau 2107

H2O CONSULTING GROUP

Survey Methods

The site survey was undertaken at 1330 hrs on the 09 September 2024 during the ebb tide. Tidal predictions for Church Point on the day was a 1.3 m high tide at 1220 hrs. Weather conditions were sunny, with light westerly winds, while in-water visibility was approximately 2-3 m.

The survey area was limited to the Subject Site and potential habitat within 10 m of the proposed works. The survey was conducted by inspection from the shore and in the water via underwater Remote Operated Vehicle (ROV). Marine habitat and features of interest were photographed, illustrated using a mud map based on measurements made on site, and described based on dominant flora and fauna observed. Key Fish Habitat type was assigned based on the classification scheme described by Fairfull (2013). For seagrass habitat, density (very low, low, medium and high), patchiness (continuous or scattered) and size (Patch < $5m^2$ or Bed >$5m^2$) were estimated.

Where Type 1 or Type 2 KFH habitat was found within the Study Area a habitat map using aerial imagery and measurements obtained during the site survey was prepared using GIS software.

Survey Results

The Subject Site is located along a ridgeline which directly rises to the east resulting in natural shading of the shoreline. Vegetation at the Subject Site consists of mixture native and exotic plants, with exotic grasses along the foreshore. The adjoining shoreline is a moderately modified residential waterfront with a westerly aspect across Cicada Glen Creek to McCarrs Creek.

A mixed concrete core retaining wall (~0.9 m in height) and concrete erosion mat runs across the entire waterfront of the site. Active shoreline erosion slumping was observed behind the concrete core retaining wall along the northern boundary. Waterfront structures at the Subject Site consists of a man-made rock groyne (~1.0 x 5.0 m) and two existing HDPE wrapped piles. To the north, the shoreline remains moderately modified with a number of private jetties and moorings, with similar waterfront structures observed to the south (Figure 5).

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

Intertidal Habitat

Intertidal habitat consists of broken rock shelf, rock and rubble, and fine estuarine silts and muds. Artificial intertidal habitat was provided by the man-made rock groyne, and dilapidated concrete retaining wall.

On the northern neighbouring property boundary above the Mean High-Water Mark (MHWM), a small area of Coastal Saltmarsh vegetation consisting of Sea Rush (*Juncus kraussii)* which is a characteristic species was observed (Figure 6). This saltmarsh stand is beyond the proposal footprint. No other marine vegetation, including macroalgae was recorded within the intertidal zone across the Subject Site.

Habitat in the high intertidal zones comprised of the concrete core retaining wall, retaining wall debris, broken rock platform, rubble, and as well as the rock groyne, which extended ~5 m seaward. Fauna was limited to mobile invertebrates including Variegated Shore Crab (*Cyclograpsus audouinii*) and occasional occurrences of Gold-mouth Conniwink (*Bembicium aurutum*) along the seawall. Substrate in the mid intertidal zone transitioned to silty, muddy estuarine sediment with rock and rubble, which supported similar species, and assemblages of the sessile Sydney Rock Oyster (*Saccostrea glomerata*). In the lower intertidal zone substrate predominantly consisted of muddy estuarine sediment, with high bioturbation of the sediment observed.

Figure 6: Typical intertidal habitat at the Subject Site, showing (a) Saltmarsh species *Juncus kraussii* above the MHWM along northern boundary (b) concrete core retaining wall with broken rock and rubble (c) communities of *B. auratum* along the mid - lower retaining wall; and (d) lower intertidal areas with assemblages of *S. glomerata* and rubble.

Subtidal Habitat

Subtidal habitat consists of broken rock shelf, rock and rubble with sediments of estuarine silt and muds. Artificial subtidal habitat was provided by existing piles, concrete retaining wall debris, plastic pvc pipe and rock groyne.

In areas nearer to the shore and above the -1 m depth contour the seabed was gradually sloping and consisted of bedrock, rubble, concrete retaining wall debris, and estuarine silts, while beyond the -1 m depth contour the seabed became slightly steeper (1:10) and consisted primarily of soft sediments. The soft sediments were observed to be predominately a mixture of silts and mud.

In shallow areas close to shore (within 6 m of seawall), subtidal habitat was sparsely vegetated with some occasional turfing algae on rock, rubble, and artificial substrate. Rocky reef habitat and rock groyne in this area supported high density assemblages of *S. glomerata*. Beyond this, the subtidal habitat transitioned to predominantly soft estuarine sediments. A large bed of the seagrass *Zostera capricorni* (32 m^2) was recorded ~8 m seaward of the retaining wall and ~3 m north of the rock groyne toe, along the slope. The bed was recorded extending north ~10 m towards the neighbouring jetty, and ~ 4 m west into deeper waters. The *Z. capricorni* was generally observed to be of medium density, appearing in moderate health with leaf lengths between 10-20 cm, although high epiphytic growth was notable (Figure 7).

Extending into deeper waters west of the seagrass bed, subtidal substrata consisted of unvegetated, soft silty estuarine sediments. A high density of bioturbation of the sediments was observed, indicating the presence of benthic in-fauna, such as polychaetes, gastropods, bivalves or fish. During the site inspection, maximum depth recorded was -3.4 m, approximately 30 m seaward of shore.

Artificial habitat was also provided by the existing HDPE wrapped piles and rock groyne toe, which supported dense assemblages of *S. glomerata*.

During the site survey no fishes were recorded, however Yellowfin Bream (*Acanthopagrus australis*), Sea Mullet (*Mugil cephalus*) and Flathead (*Platycephalus spp.)* are likely to occur.

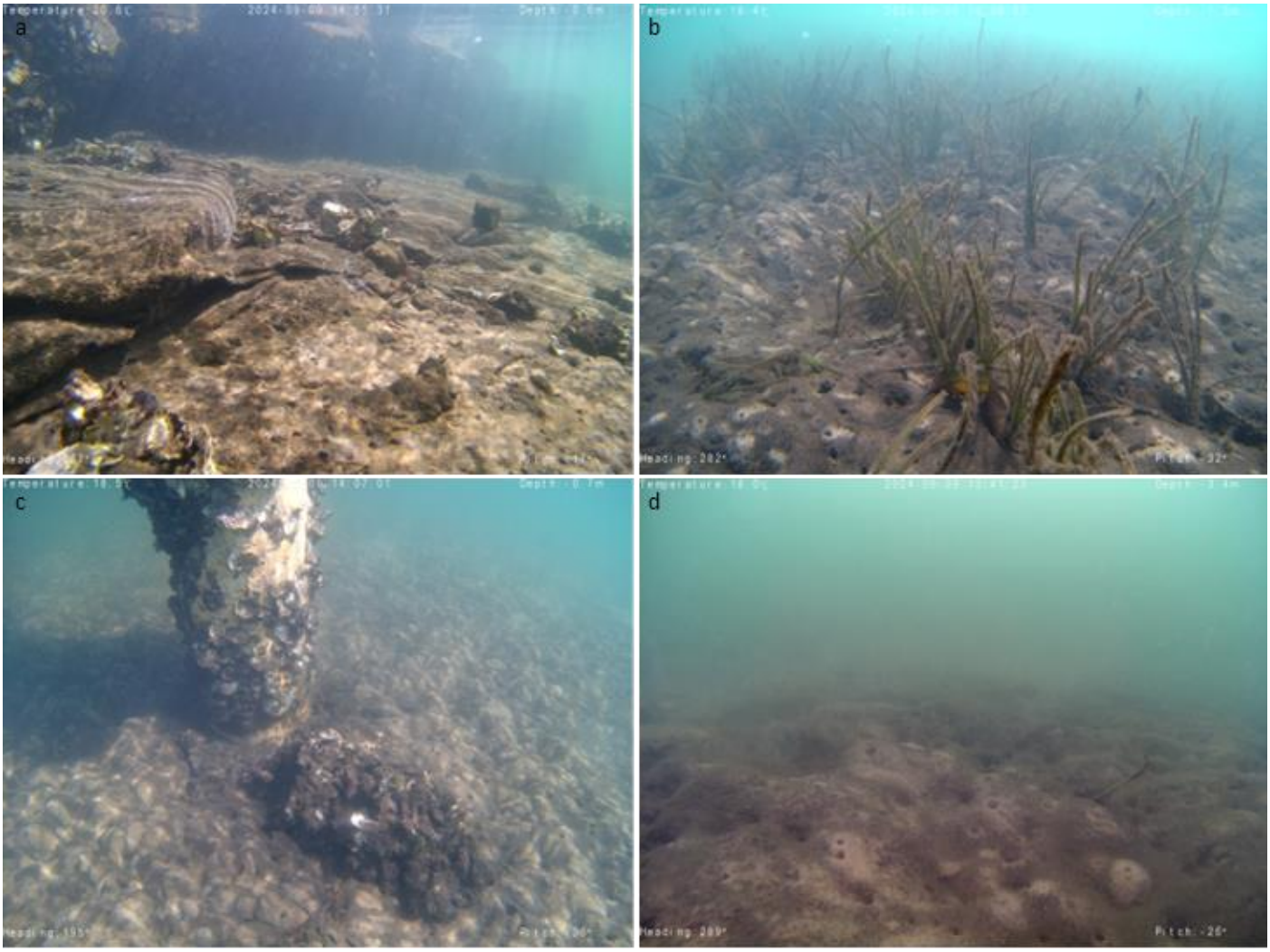


Figure 7: Typical subtidal habitat of (a) broken rock shelf and rocky rubble supporting *S. glomerata* (b) Medium density bed of *Z. capricorni* growing in soft sediments (c) typical pile with assemblages of *S. glomerata* in soft sediment seabed; and (d) bioturbated seabed 30 m seaward of shore.

Invasive Species

No invasive species including the green alga *Caulerpa taxifolia* were observed in the Study Area.

Threatened Species

The Endangered Coastal Saltmarsh community was recorded within the Study Area. The saltmarsh vegetation was recorded on the northern neighbouring property, however not within the Subject Site nor within the proposal footprint.

The seagrass *Posidonia australis,* which is an Endangered Population and considered an EEC in this region under the EPBC Act, was not found to occur at the Subject Site.

The Study Area included very minimal potential habitat for the Vulnerable Black Rockcod (*E. daemelii*) as it lacked suitable drops-offs, ledges, overhangs, or caves. Although Black Rockcod do occur in estuary habitats, it would likely utilise deep-water areas with rocky habitat in areas further downstream. Furthermore, the proposed works have minimal potential to pose a threat to this species.

The Subject Site provides minimal potential habitat for the Endangered White's Seahorse (*H. whitei*). Potential habitat was limited to *Z. capricorni* seagrass, which is not preferred habitat for this species. Adjacent pylons and jetties may provide some marginal habitat for this species at times, however, there have been no recorded sightings this far into the McCarrs Creek or Cicada Glen Creek (ALA, 2024).

Habitat within the Study Area consisted of a shallow, gradually sloping seabed with no evidence of any soft corals such as the Endangered Cauliflower Soft Coral (*D. australis*). Furthermore, the fine mud sediment that occur in this locality are not considered suitable habitat for this species.

Aquatic Habitat Type and Waterway Classification

The *Zostera capricorni* seagrass bed was observed to be greater than $5m^2$ in size and is considered Type 1 Highly sensitive KFH (Fairfull 2013). The Coastal Saltmarsh that extends into the northern neighbouring property and is < $5m^2$ is considered Type 2 Moderately sensitive KFH, while broken rock and rocky rubble provide some limited estuarine rocky reef habitat, which is considered Type 2 KFH (Fairfull 2013). Additionally, habitat within the Subject Site contained high populations of in-fauna along stable muddy flats, which is also considered Type 2 KFH (Fairfull 2013).

Habitat within the Subject Site was classified as Class 1 – Major key fish habitat, as an estuarine waterway (Fairfull 2013).

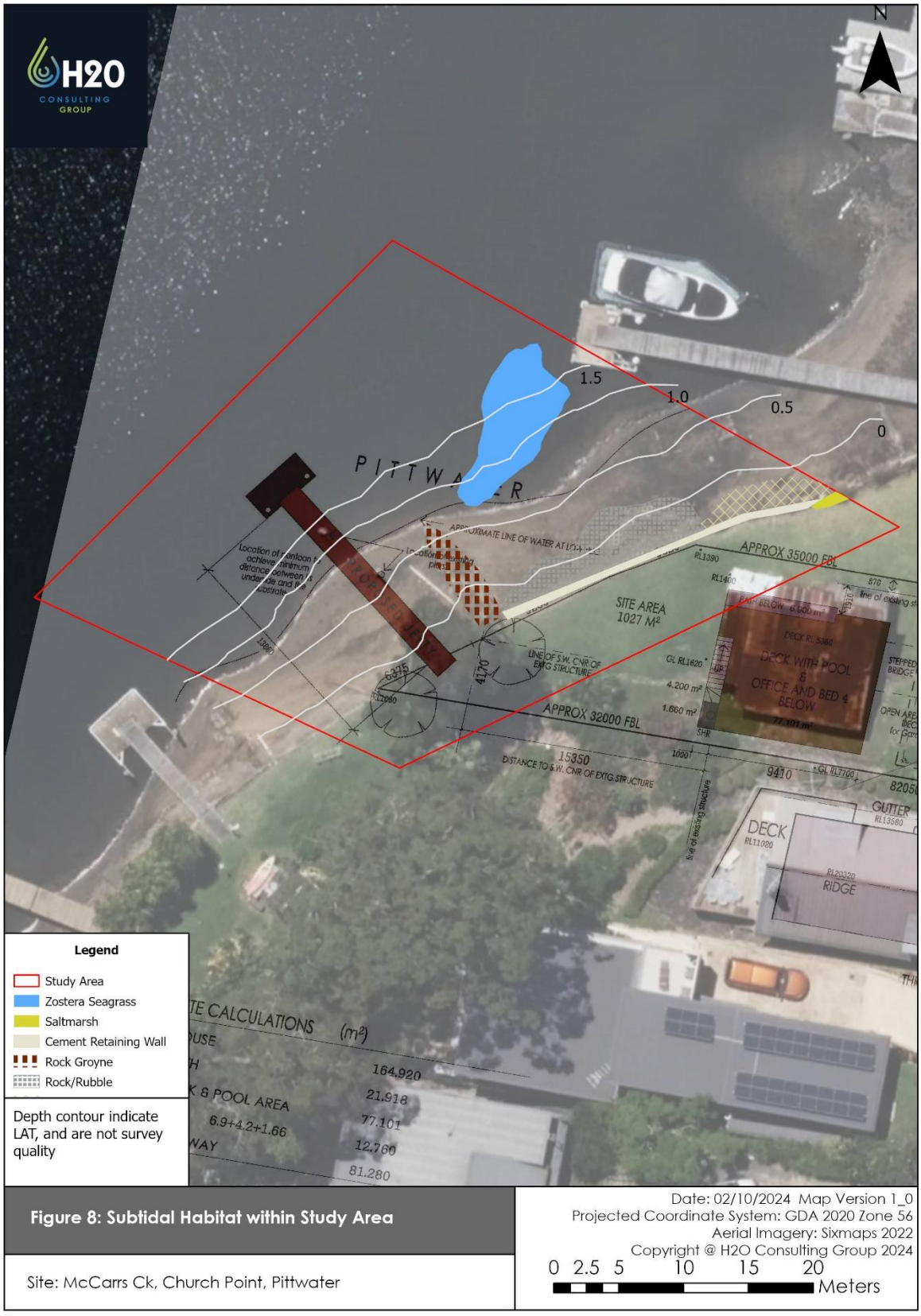


Figure 8: Subtidal Habitat within Study Area

Identification of Impacts and Mitigation Measures

Construction

The potential direct and indirect impacts on the marine environment from the construction works have been identified with appropriate mitigation measures in Table 1.

Table 1: Construction Impacts

Action	Potential Impact	Mitigation Measure
Use of barges or vessels	Disturbance of seabed in shallow areas with sensitive habitats from vessel props or grounding.	Avoid grounding and maintain 600mm clearance to the seabed when working over sensitive habitats such as seagrasses or reef communities.
	Disturbance of seabed that includes mapped seagrass from anchors or mooring lines.	No placement of anchors or mooring lines on, over or across seagrass habitat.
	Temporary shading by the barge or vessels, while on site.	No barges or construction vessels should be moored over areas of seagrass. Where this is unavoidable, a minimum depth between the seabed and vessel (including any motors) of 600 mm must be maintained at all times and the barge must not remain in this position for a period greater than 72hrs.
	Unplanned spill or leak of hydrocarbons	All construction equipment should be checked regularly for leaks, a spill kit should be kept on site. Hydrocarbon booms should be in place to contain any unplanned spills from construction barges or other mechanical equipment used on the site.
	Introduction of introduced or invasive marine species to the site. *C. taxifolia* is known to occur in Pittwater.	Construction equipment should be washed down and thoroughly cleaned prior to mobilisation and de-mobilisation from the site.
Removal of existing structures	Disturbance of seabed during removal of rock groyne and existing piles. Excavation methodologies that require large footprints may disturb adjacent rocky habitats.	Piles should be removed and replaced using methods that minimise seabed disturbance. These methods may include lifting or cutting of at the seabed and driving piles back into position. Use of excavation / digging equipment should be avoided Removal of existing rock groyne using practices that minimise seabed disturbance, by lifting. Use of excavation / digging equipment should be avoided All removed material to be taken offsite and disposed of appropriately.
	Removal of existing artificial habitat provided by the rock groyne, retaining wall and piles to be replaced. This includes artificial rocky intertidal and subtidal habitat. This habitat will be replaced by the new structures.	In-water structures to be removed must have 'significant marine growth'[#] removed before the structure is removed from the water. The removal is to be done by scraping to dislodge this growth and allowing it to settle below on the seabed. This process may be done on the water surface (at water level) as the structure is lifted from the water.

Action	Potential Impact	Mitigation Measure
		A saltwater wash down should be applied to structures removed from the water to dislodge any other mobile fauna. At no times should high pressure or water blasting be used to removing marine growth from these piles.
	Mobilisation of sediments as a result of any seabed disturbances during removal. The benthic sediments at the Subject Site are typically fine silts, however given the tidal exchange in this area are expected to settle or dissipate quickly	Given that tidal exchange in the upper reaches of the estuary is lesser, sediments include some finer silts and sensitive seagrass beds in the wider locality, silt curtains should be in place to minimise the dispersion of mobilised sediment during works that result in seabed disturbances. The silt curtains must not be positioned over or within 2m of any mapped or observed seagrass beds.
	Disturbance of the seabed during construction, driving or augering of the new piles and footings.	Where possible driving methods should be used over augering. Where augering is required, tailings must be removed where seagrass, macroalgae or 'reef communities'* occur within 2m.
	Smothering and or physical damage of habitat by placing on the seabed or disposing of materials in the water	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.
	Spread of introduced or invasive marine species	Construction equipment should be washed down and thoroughly cleaned prior to de-mobilisation from the site.
Piling, footing and retaining wall construction	Mobilisation of soft sediments during piling or footing construction by pile driving methodologies.	Expected to settle/ dissipate quickly. Visual plume monitoring is considered sufficient.
	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.	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.
	Some disturbances to water quality by mobilisation of sediments during construction of retaining wall, piling or if required augering. This may result in some short-term reductions in water quality and sedimentation or smothering of adjacent habitats from tailings during auguring.	Given that tidal exchange in the upper reaches of the estuary is lesser, sediments include some finer silts and sensitive seagrass beds in the wider locality, silt curtains should be in place to minimise the dispersion of mobilised sediment during works that result in seabed disturbances. The silt curtains must not be positioned over or within 2m of any mapped or observed seagrass beds Should pluming occur the sediments should be collected on the surface and removed from site

Action	Potential Impact	Mitigation Measure
	Disturbance of soft sediments and benthic infauna within the piling footprint (<1 m^2).	Mobile infauna would be expected to disperse from disturbance. Infauna assemblages that may be removed or disturbed from piling would be expected to recolonise in surrounding sediments following works.
	Sedimentation of adjacent habitats from tailings during augering. This may smoother adjacent aquatic habitats that include mapped seagrass.	Where augering is required, tailings must be removed where seagrass, macroalgae or 'reef communities'* occur within 2m.
	Shoreline erosion and additional sedimentation of adjacent habitats including seagrass during construction as a result of the shoreline being exposed to wash and tidal disturbances.	Construction should commence once existing retaining wall has been removed. Installation of retaining wall to occur during ebb tides only, minimising coastal erosion. Silt curtains should be in place to minimise the dispersion of mobilised sediment during works that result in seabed disturbances. The silt curtains must not be positioned over or within 2m of any mapped or observed seagrass beds.
	Smothering and or physical damage of habitat by placing on the seabed or disposing of materials in the water	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.

#Signficant Marine Growth: includes front forming or macroalgae stalks, stalked ascidian, large, massive sponges.
**Reef Communities: Include communities of sessile invertebrates such as soft corals, bryozoans, ascidians or sponges.*

Operation

The potential direct and indirect impacts on the marine environment from the operation of the proposed modified structure have been identified with appropriate mitigation measures in Table 1.

Table 2: Operational Impacts

Action	Potential Impact	Mitigation Measure
Disturbance of the seabed during vessel use of the structures.	Disturbance or scouring of the seabed by vessels during approach and departure, where the structures are located in shallow water.	Structure has been designed to provide 0.9m depth above LAT. Mooring of vessels and use of the pontoon should be restricted to vessels with adequate draught.
Increased and or new shading footprint	Permanent structures above the water can result in direct and indirect shading of the seabed. This can reduce available light for photosynthesis of aquatic plants and some macroalgae species.	Structures in most part have been placed over unvegetated habitat, and ~ 10 m south, away from mapped seagrass. This impact is considered negligible.

Findings

Compliance with Policy and Guidelines

The below table addresses compliance with relevant foreshore structure policy and guidelines at the Subject Site as per the Policy and Guidelines for fish habitat conservation and management (Fairfull 2013).

Table 3: Relevant policy and guidelines to the proposed works and expected compliance (Fairfull 2013).

Policy	Compliance	Comment
5.1.2 General policies for foreshore structures		
1) NSW DPI will generally not support/permit foreshore structures and works in TYPE 1 habitat unless property access is only available by water and no other alternative sites exist.	Yes	TYPE 1 habitat occurs within Study Area, however, is outside of the proposed works zone.
2) NSW DPI will generally not support/permit dredging or reclamation for private foreshore works in TYPE 2 habitat unless the impacts can be mitigated or compensated	Yes	Removal of the artificial rocky habitat and concrete retaining wall within the Subject will be replaced by new sandstone seawall. Additional foreshore works will also improve shoreline stability
4) NSW DPI will generally not support foreshore works that contribute to the further degradation of native riparian vegetation	NA	
5) NSW DPI will generally not support/permit foreshore works that will have significant impacts on commercial fishing access	NA	
6) NSW DPI will require an environmental bond and/or long-term monitoring program where a significant negative impact is likely to occur to TYPE 1 or 2 habitats or where vegetation replanting is undertaken.	NA	
7) Foreshore works that extend into a waterway should not restrict fish passage irrespective of the type of aquatic habitats present.	Yes	The proposed jetty does not result in any restrictions to fish passage.
8) During and after construction, precautions must be taken to avoid damage beyond the immediate work area (see section 3.3.2) and allowance should be made for unhindered flow of water to downstream areas.	NA	
5.1.6 Policy and guidelines for jetties and wharves		
1) NSW DPI will generally not approve proposals for permanent berthing over TYPE 1 or 2 seagrass, except within existing canal estates.	Yes	The proposed jetty does not overshadow Type 1 or 2 seagrass.
2) NSW DPI will generally not approve of proposals for jetties, wharves, or similar structures over Posidonia australis seagrass, unless property access is only available by water and no other alternative sites exist.	Yes	No *Posidonia* was observed or recorded in Study Area.
3) Proposals for jetties, wharves and similar structures should incorporate design features to reduce the effects of shading on marine and freshwater aquatic vegetation, where present.	Yes	Habitat in the proposed footprint is predominantly unvegetated estuarine silts and minor assemblages of turfing algae. Seagrass is confined to habitat 10 m north from the proposed structures.

Policy	Compliance	Comment
4) NSW DPI will generally not approve stub end jetties that end in or near TYPE 1 or 2 seagrass unless there is 0.9m of water depth over the seagrass all times, except within existing canal estates.	NA	
5.1.7 Policy and guidelines for boat ramps, boat sheds, pontoons, and sliprails		
1) NSW DPI will generally not approve reclamation for the construction of boat sheds and boat ramps below highest astronomical tide (1.0 m AHD), or on the banks of rivers and streams in an active erosion or sediment deposition zone.	NA	
2) NSW DPI will generally not approve private boatsheds, boat ramps, pontoons, sliprails, or similar structures that are likely to harm TYPE 1 aquatic habitats or restrict commercial and recreational fishing access.	Yes	TYPE 1 habitat occurs within Study Area, however, is located outside of the proposed works zone.
3) NSW DPI will only approve the installation of pontoons that overshadow TYPE 2 aquatic habitats if suitable mitigation or compensation measures are employed	Yes	The pontoon is confined to areas over soft sediments where only minor assemblages of turfing algae where observed.
4) NSW DPI requires that sliprails be constructed so that the end of the sliprails are not located within seagrass and/or there is adequate water depth at low tide to ensure no risk of propeller dredging of seagrass during their use.	NA	

Threatened Species, Populations and Communities

Habitat of threatened species listed under the FM Act, that they may be reliant on or important to their survival was considered very limited and marginal within the Study Area. Any use of the habitat by a threatened species would likely only be as part of transient movements through the area.

The proposal is not expected to result in any impacts on any threatened ecological communities or populations listed under the FM Act.

Key Fish Habitat

The proposal is not expected to result in the disturbance, removal or loss of any Type 1 KFH. The Type 1 *Z. capricorni* seagrass bed is approximately 10 m from works. Disturbances to this habitat is expected to be limited to short-term disturbances to water quality and sedimentation.

A small area of <1 m^2 stable estuarine sediments containing highly populated infauna, which is considered Type 2 KFH may be disturbed during the installation of piles, however this is likely to recover within a short time period.

Removal of the artificial rock groyne will result in the loss of ~5m^2 of artificial rocky habitat, which may contribute to some Type 2 KFH. The artificial rock groyne is not consistent with the natural shoreline along this section of Cicada Glen Creek. Artificial rocky habitat will be replaced by the new sandstone retaining wall.

Offsetting or Compensation

The construction of the new pontoon piles, jetty footings and artificial sandstone retaining wall will provide at least a 2:1 offset in additional habitat associated with the removal of artificial rocky habitat.

Conclusion

The mitigation measures identified in Table 1 and 2 should be adopted during construction to minimise potential disturbances to marine habitat and species. During construction the removal of and/or disturbance to common marine species that have colonised in the estuarine sands and along the artificial rock groyne and retaining wall structures to be removed will be unavoidable. Marine habitat to be disturbed by the new structures will be confined to unvegetated areas.

In summary, the impacts on marine habitat at 206 McCarrs Creek Rd, Church Point from the proposed modifications are expected to be minimal and can in most part be adequately controlled through adoption of the identified mitigation measures during construction.

References

Creese, R.., Glasby, T.M., West, G. and Gallen, C. (2009). Mapping the habitats of NSW estuaries. Industry & Investment NSW Fisheries Final Report Series 113. Port Stephens, NSW.

Fairfull, S. (2013), Policy and guidelines for fish habitat conservation and management. NSW Department of Primary Industries, Fisheries, Woolongbar, NSW.

NSW DPI (2011). Pittwater (Map based on survey data since 2002), Caulerpa taxifolia Map. Available online: https://www.dpi.nsw.gov.au/__data/assets/pdf_file/0004/637249/Pittwater.pdf

NSW DPI (2012a). Endangered populations in NSW, *Posidonia australis* in Port Hacking, Botany Bay, Sydney Harbour, Pittwater, Brisbane Waters and Lake Macquarie. NSW Department of Primary Industries Fisheries Ecosystems Unit, Port Stephens Fisheries Institute, NSW.

NSW DPI (2012b). Black Rockcod (*Epinephelus daemelii*) recovery plan. NSW Department of Primary Industries Fisheries Ecosystems Unit, Port Stephens Fisheries Institute, NSW.

NSW DPI (2014). NSW Oyster Industry Sustainable Aquaculture Strategy, NSW Department of Primary Industries, Second Edition.

NSW DPI (2016). Caulerpa taxifolia in NSW, Primefact 1471, first edition, Aquatic Biosecurity & Risk Management. NSW Department of Primary Industries

NSW DPI (2019). White's Seahorse (*Hippocampus whitei*). Primefact 1702, NSW DPI Fisheries. NSW Department of Primary Industries, Threatened Species Unit, NSW.

NSW DPI (2021). Cauliflower Soft Coral (*Dendronephthya australis*). Primefact INT21/391176, NSW DPI Fisheries. NSW Department of Primary Industries, Threatened Species Unit, NSW

NSW DPI (2024). NSW Fisheries Spatial Data Portal. NSW Department of Primary Industries. Accessed June 2024, https://www.dpi.nsw.gov.au/about-us/science-and-research/spatial-data-portal.