

Construction Environmental Management Plan

Palm Beach Boat House

Joint Plan by Blue Pacific Constructions Pty Ltd and Ecological Consultants Australia Pty Ltd

August 2021



Statement of Authorship

This SEMP is by Blue Pacific Constructions and Ecological Consultants Australia at Studio 1/33 Avalon Parade, Avalon. The author of the report is Geraldene Dalby-Ball with qualifications BSc. majoring in Ecology and Botany with over 20 years' experience in this field, and Jack Hastings with qualifications BEnvSc. Majoring in Coastal Management.

Limitations Statement

Information presented in this report is based on an objective study undertaken in response to the brief provided by the client. Any opinions expressed in this report are the professional, objective opinions of the authors and are not intended to advocate any particular proposal or pre-determined position.

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1 Purpose and layout

The purpose of this document is to provide a Construction Environmental Management Plan for proposed rebuild and landscape works at Palm Beach Boathouse. The CEMP summarises actions needed, who is responsible and when it gets done once the DA conditions have been received they will go at eh back of the document as an additional check list. The CEMP checklist is at the end of the plan and is for use throughout the development stages.

The CEMP should be read in conjunction with the relevant repots and plans that make up the DA approval. The following sources of information have formed the nucleus for requirements related to the development and *those working on the project are to understand the requirements of documents relating to their part of the works.*

- Arborist Report (Urban Forestry Australia Pty Ltd). In particular the recommendations to ensure `` protection of the roots of the Norfolk Pines.
- Bushfire (Report First Field Environmental). NB: no requirements for this CEMP
- Coastal Engineering (Cardno). This review includes the proposed retaining wall under the building and to each side and the integration of this with proposed soft-engineering proposed in this plan.
- Hydraulic Services and Stormwater Report (ADCAR Consulting Pty Ltd)
- Landscape Plan by Selena Hannan Design updated to LP-01D, 22/2/21
- Ecological Report by Geraldene Dalby-Ball of ECA (2020)
- Aquatic Ecology Report (Cardno) Aquatic Ecology Report Boat House, Palm Beach 59916081 (August 2021)
- Coastal Engineering Assessment and Estuarine Risk Management Report (August 2021)
- Construction Noise and Vibration Management Plan (Day Design Consulting Acoustical Engineers August 30th 2021) Rep 6953-3.1R
- Noise and Vibration Letter (Coastal Engineer Lucus Maloy August 2021)
- Erosion and Sediment Management Plan (Coastal Engineer Lucus Maloy August 2021)

2 Project description – summary

Proposed development at Station Beach Boat House Wharf, 1191 Barrenjoey Rd Palm Beach. Proposed actions at the site include; the demolition of the existing “Boathouse” and associated structures and construction of a replacement 2 storey structure and ancillary structure for use as a café, boar hire and seaplane office.

The development will be constructed in three phases:

- Phase 1 – Demolition of majority of the existing buildings
 - Expected timeframe of 4 weeks
 - Activities include use of an excavator, hand tools, dump trucks and a rock breaker for concrete removal (approximately 4 days), as required.
- Phase 2 – Excavation and earth moving
 - Expected timeframe of 6 weeks
 - Activities include use of excavator and dump trucks, sheet piling (approximately 3 days), pile bore and a rock breaker for concrete removal (approximately 1 day), as required.
- Phase 3 – Construction
 - Expected timeframe 44 weeks
 - Activities include use of cement trucks, cranes, gensets, and hand tools.

The proposed hours of construction works, including delivery of materials to and from the site, are during standard construction hours, as follows:

- 7.00 am to 6.00 pm Monday to Friday;
- 8.00 am to 1.00 pm Saturday

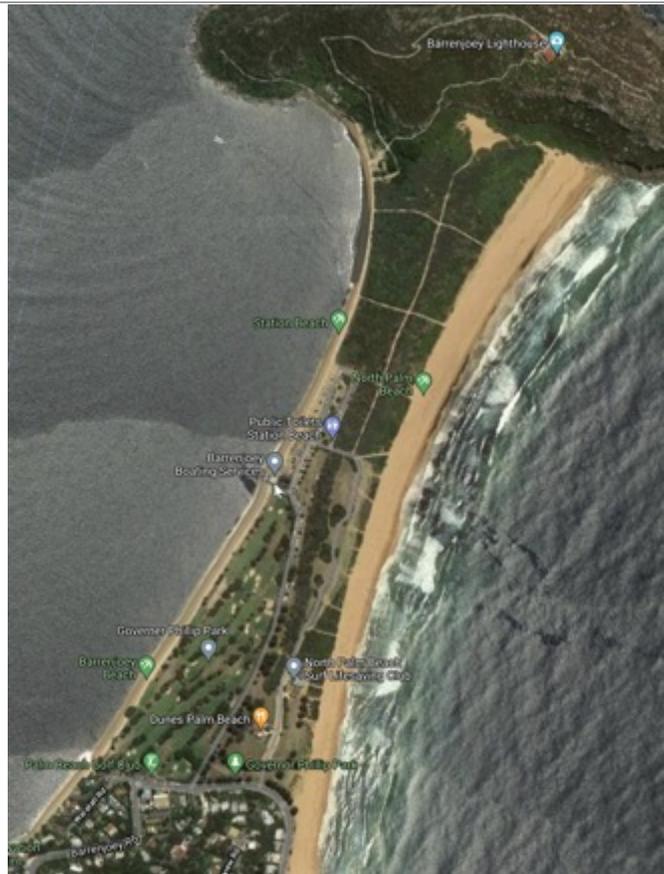
2.1 Location and Site Plans

The Subject Site (the “Site”) is the area of direct and likely indirect impacts and is defined as the whole of the property at 1191 Barrenjoey Rd Palm Beach (i.e. “boathouse, associated structures and gardens”). The Study Area includes the Subject Site, as well as any additional surrounding land traversed during the field survey. See below.

The proposed study area is within Lot 298/ DP 721522, in the local government area of the Northern Beaches Council.

Figure 2.1. - Location of the Boathouse.

Source: Google Maps



Figures 1.1 to 1.5 are included here and have key drawings from plans.



Figure 1.1. Site Design and Layout. Source: Canvas Architecture & Design, Feb 2021



Figure 1.2. Site Design. Source: Canvas Architecture & Design, Feb 2021.

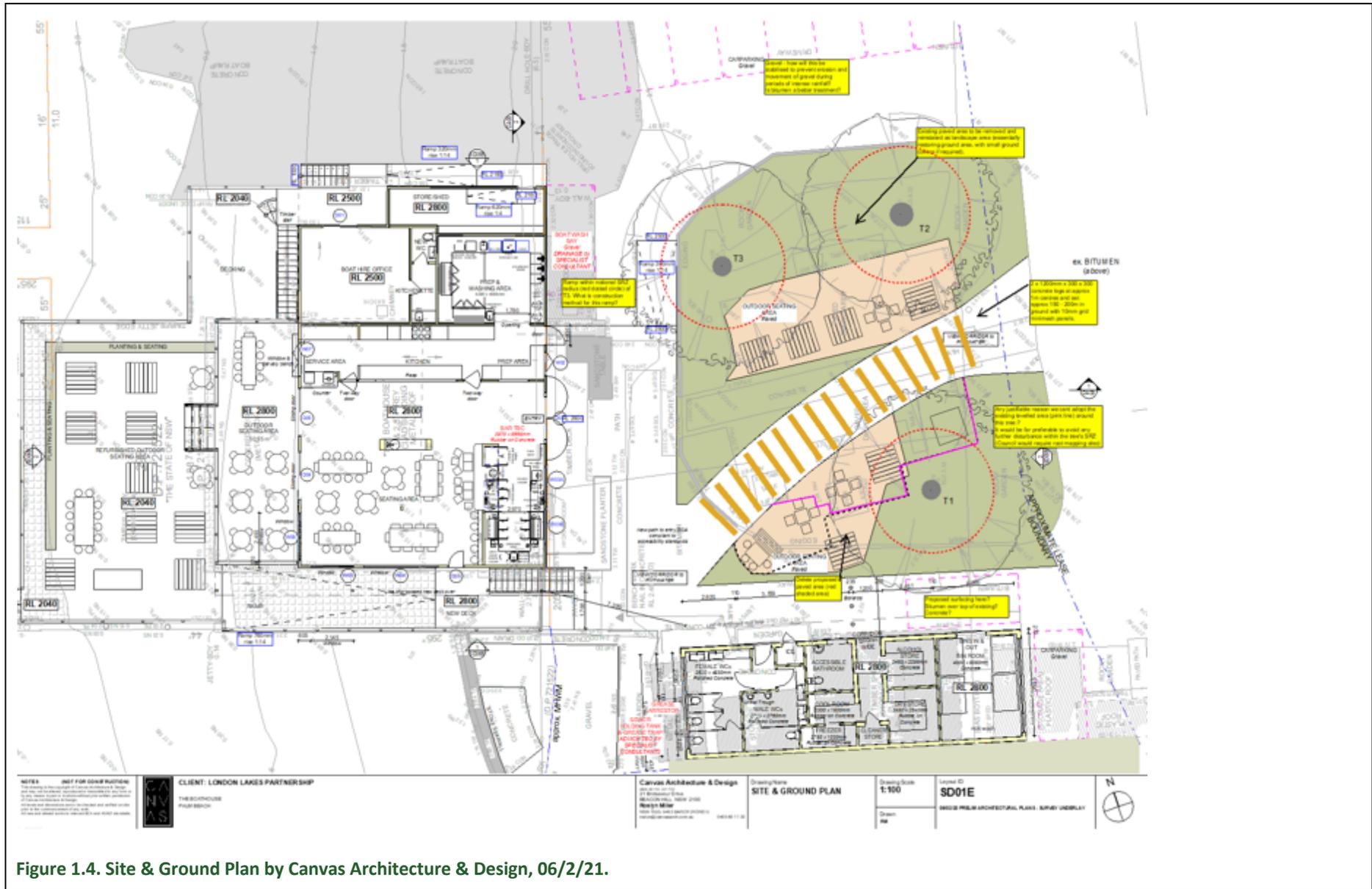


Figure 1.4. Site & Ground Plan by Canvas Architecture & Design, 06/2/21.

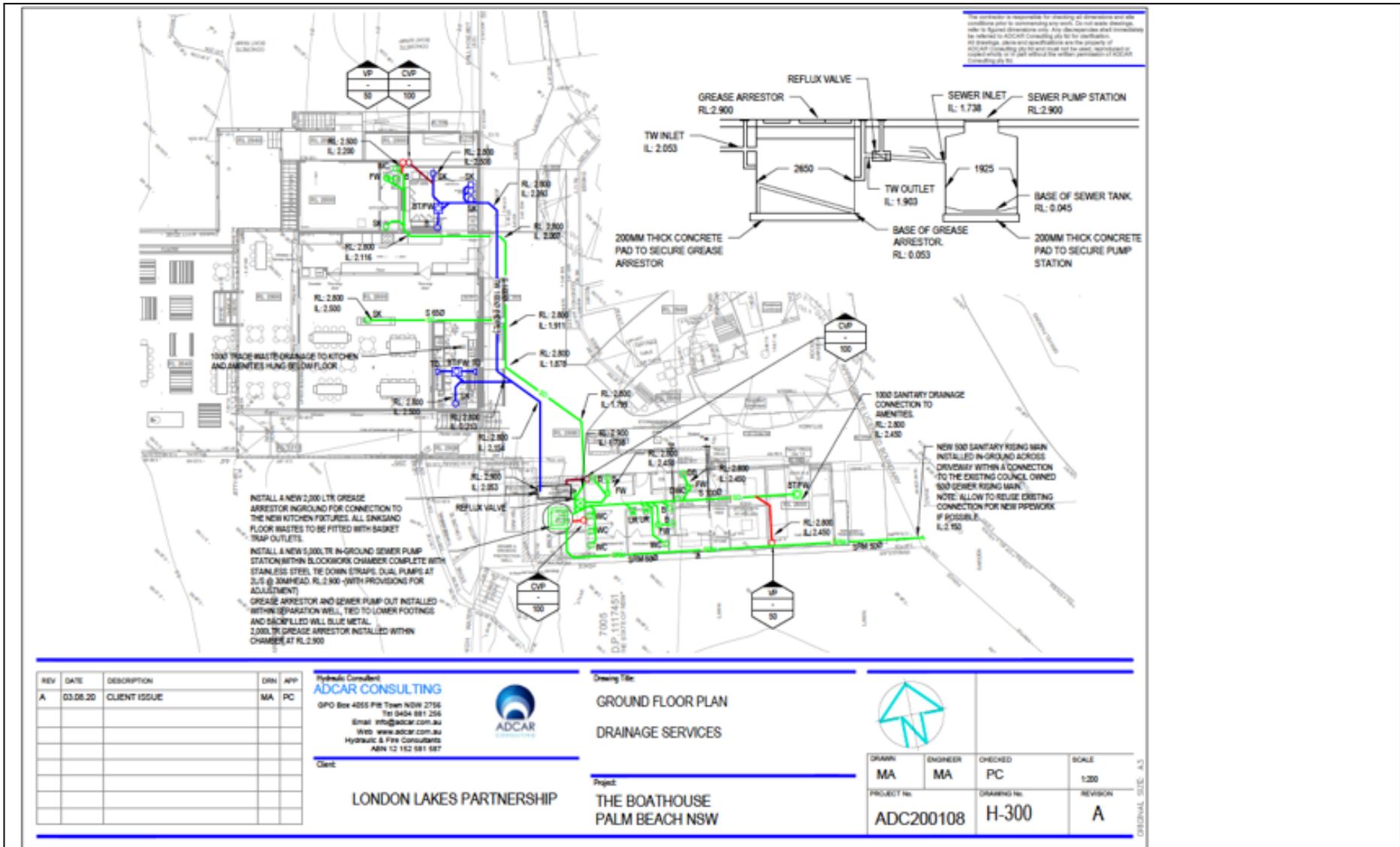


Figure 1.5. Ground Floor Plan Drainage Services. Source: ADCAR Consulting 03/06/20.

3 Project Roles, Responsibilities and Contacts

All positions across the project have environmental responsibilities to some extent. These vary in relation to duties described in Table 1, but everyone has a base level Duty of Care to prevent Environmental Harm as described in the Environmental Protection Act 1986.

The interdependencies of positions on the project are shown in Table 1. Names and contact numbers are correct for this revision, but may change during the project.

Table1: Project Roles, Responsibilities and Contact Details

POSITION	NAME	CONTACT
Project Manager and Site Supervisor & HSE Representative	Peter Heber	bluepacificconst@bigpond.com 0410 594 809
Environment Project Ecologist	Geraldene Dalby-Ball	ecologicalca@outlook.com 0488 481 929
	Marine Ecologists - Cardno	+61 2 9496 7700
Landscape and Tree Mgt	Selina Hanna	selena@selenalandscapeesign.com.au 0403 041 187

4 Summary of Actions Outcomes and Actions Required

4.1 Environment and Heritage Risk Management

The purpose of this section in a CEMP is to present a summary of the risks and controls that have been identified for the proposed construction project. Summarised in bullet point below and in the tables that follow are risk management tables for the following environmental management areas:

- *Noise Management*
- *Sediment, Silt, Erosion and Turbidity Management.*
- *Oil and Other Noxious Substances – Spill Mgt Plan*
- *Potential Acid Sulphate Soils*
- *Housekeeping and Resource Recovery (Waste Mgt)*
- *Terrestrial and Aquatic Fauna*
- *Aquatic Vegetation, Trees and Weeds*

4.2 Training, Awareness and Competency

Environmental training, awareness and competency will be delivered and assessed throughout the project, to ensure the relevant aspects of this CEMP are communicated to the project team (including contractors and sub-contractors). The following are being used by all contractors and principle:

- *Site Environment Induction*
- *Daily Pre-Start Meetings*
- *Environmental Toolbox Talks – including Marine ecology (Seagrass and Claurpa) and terrestrial (requirements from Arborist report.*
- *Near-miss and Incident bulletins*
- *Sub-contractors kick-off meeting*
- *Contractor and client site kick-off meeting*
- *Incident Reporting*
- *Monitoring, Review and Corrective Actions*

4.3 Community Safety

Information posted clearly about works. Relevant resident/community committees notified about start dates and durations.

Site fence for exclusion of community and their protection with appropriate signage.

During demolition appropriate signage warning people of asbestos removal will place on site fence around the site, on either side of approaching roadway and beach. The installation and checking of air monitoring equipment for asbestos removal.

Access and egress of large vehicles delivering piles will be controlled by traffic controllers.

Building and storage of material on site. All to be stored on site and within the area excluded from public access during works.

4.4 Council assets protected.

This includes the road, trees and park.

Condition of the existing road within 25metres of the site to be assessed prior to construction and a report file with certifier.

Any damage to the road caused by construction activity will be repaired.

Road openings for services to cross the road for power (which in the pom is to be underground) water and sewer points of connection are also on the other side of the road. The method will be discussed with Council Traffic and other relevant dept and their recommendations followed.

The connection of the sewer and water line will involve excavation of a trench once across the road no deeper than 400mm and 300 wide to lay sewer and water lines in. It will go through open grass land and re filled with excavated material. The trench line will be secured by orange bunting barrier. This is expected to take 2days.

Existing trees are far enough away from construction zone excepting the resurfacing of the existing parking bays on the opposite side of the road. This will not involve any major excavation excepting for minor removal of the current surface which was re-laid last year with what the different council depts agree upon.

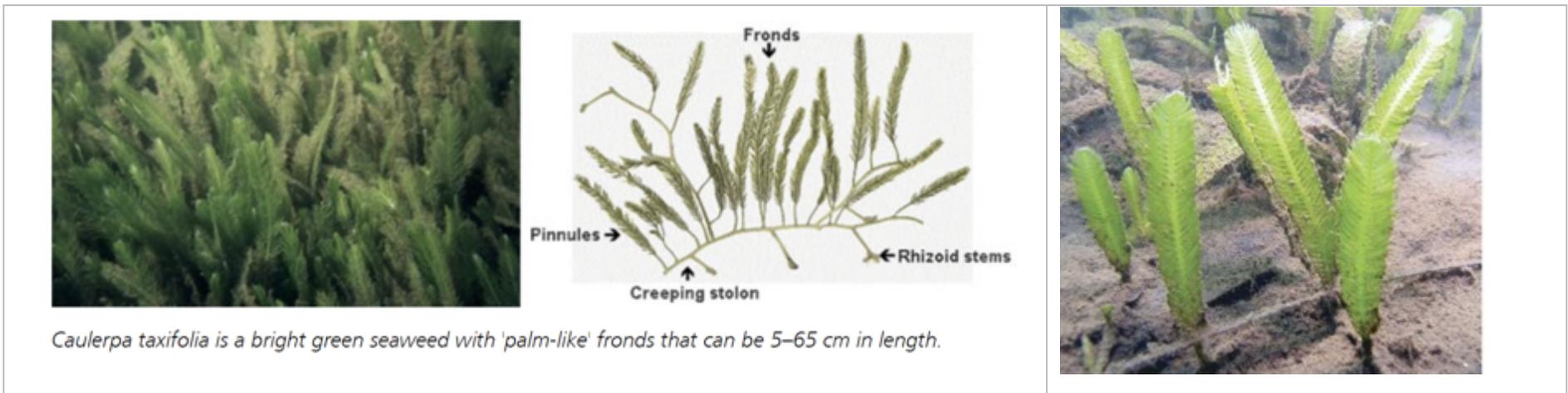
MARINE, TERRESTRIAL VEGETATION AND WEEDS			
Objective(s)	<ol style="list-style-type: none"> 1. To ensure protection of vegetation to be retained (particularly Norfolk Pines) 2. To protect Marine Vegetation – seagrasses and minimize the disturbance/damage to their habitat. 3. To minimize the introduction and/or spread of weed species 		
Management Strategy	<ul style="list-style-type: none"> • Follow recommendations of the Marine ecologist • Follow recommendations Arborist plan and Ecologist plan • Constant review and where appropriate improvement of the plan • Use of natural materials in construction were ever possible • Ensure impacts to native vegetation are minimized, impacts outside the disturbance zone are avoided and appropriate management is in place to control spread / introduction of weeds. • Works near Marine Vegetation will be supervised by people trained in sea-grass protection. Silt management will be in place resulting in no silt/sediment movement onto seagrasses. NB: No silt expected as these are heavy marine sands and surveys showed no organic accumulates. A silt curtain could cause more damage than not having on in this location. • All barge movements at high tide where close to seagrass (as per Marine Ecology Report requirements – Cardno 2021) and Erosion and Sediment Management Plan (Lucus Maloy 2021) • Plant and Barge to have silt arresting equipment ready if needed (unlikely needed). 		
			Responsibility (Role)
			Timing
Control(s)	<ul style="list-style-type: none"> • Provide site specific information on trees and marine vegetation within the Environmental Induction. • Ensure all Arborist requirements are fully complied with and any doubt consult with project Arborist. • Ensure no activities outside the works zone through clear delineation of the works area, and communication in site inductions. • Ensure all plant and equipment coming to site has been cleaned for site access (weeds including the marine weed <i>Caulerpa taxifolia</i>). • Ensure relevant staff know what <i>Caulerpa taxifolia</i> looks like. 		Peter (Construction Manager) and Geraldene (ECA project ecologist)
			All work times

	<p>Recommendations of Aquatic Ecology Report The following recommendations of the Aquatic Ecology Report dated 26 April 2021 by Cardno Pty Ltd, must be complied with:</p> <ul style="list-style-type: none"> • Land based piling must be completed on the lowest possible tide (i.e. piling areas not inundated) and during dry weather to avoid potential run-off of excavated material. • Piling via barge is only to be completed on high tide and in suitable weather conditions. The barge must be only moved into position upon a high tide of at least 1.6m allowing sufficient water above the shallower areas adjacent to the northern pontoon. The boundaries of mapped areas of Posidonia shall be marked clearly at the water's surface without harm to the seagrass (i.e. Exclusion Zones) so that all vessels would avoided these areas during the barge escort. A minimum of 0.5 m above the seabed in any area is required as a precaution to avoid damage to the seabed or any marine flora or fauna occurring at the time of mobilisation. Once into proximity (near the four existing berthing piles) the barge can then be maneuvered into position during the high tide by ropes. Once in position the barge must be securely tied off and can remain over the bare sediment while the works progress. On completion of the works, the barge must only be moved out at high tide. • During the installation of the piles by barge (approx. seven piles), continuous visual monitoring of turbidity must be conducted. If water with higher turbidity than the surrounding existing water body reaches the nearby seagrass patches, then piling activities must cease and adjustments made to ensure turbid water does not reach the seagrass. <p>Inshore infrastructure for mooring vessels and plant must be used where suitable. Where mooring lines or cables are required, they shall be suitably buoyed prior to laying and kept buoyed once laid to prevent cable drag or swing damage (scalping). Where this is impractical, contractors should use a floating rope.</p> <p>Vessels must have adequate clearance over seagrass beds, including allowance for tidal movement, swell/wind wave heights and vessel propulsion.</p>		
<p>Performance Indicator(s)</p>	<p>Healthy Trees and seagrass with no disturbance of vegetation outside the approved disturbance zone No introduction or spread of weed species</p>		<p>All work times</p>
<p>Monitoring</p>	<p>Monitoring of intertidal area before/during/after marine works. Monitoring of tree works as per arborist report.</p>		<p>All work times</p>

Reporting	Any accidental clearing of native vegetation to be reported to the PPA project representative and followed through with an incident report.		All work times
Corrective Action(s)	<ul style="list-style-type: none"> Investigate cause of incident Implement corrective measures prior to the recommencement of site works Review opportunities/constraints for further minimisation of potential incidents given work procedure parameters. 		All work times

Background information on Caulerpa

[Caulerpa taxifolia - Assets & Environment - Maritime - Roads and Waterways – Transport for NSW](#) and [Caulerpa taxifolia \(nsw.gov.au\)](#)



Flattened feather-like fronds, bright green colour

4.6 Fauna (terrestrial and aquatic)

Areas with visible fauna, such as crabs, will not be changed as these areas are already at the ideal level. Plant movement will be in the smallest area practical and impacts on the intertidal area will be short-term. Areas with crabs are generally outside the proposed works area.

TERRESTRIAL FAUNA			
Objective(s)	1. To minimize the impact to terrestrial fauna 2. To prevent the spread of introduced species		
Management Strategy	Ensure impacts to fauna are minimized, and impacts outside the disturbance zone are avoided. Minimise works area in intertidal and beach area		
		Responsibility (Role)	Timing
Control(s)	Provide site specific information on fauna within the Environmental Induction (NB: marine fauna) Include toolbox talks for site specific fauna information during project to ensure currency of information Ensure no activities outside the works zone through clear delineation of the works area, and communication in site inductions Contact wildlife carer groups/vet for injured fauna	Peter (Construction Manager) and Geraldene (ECA project ecologist)	All work times
Performance Indicator(s)	No disturbance outside the disturbance zone No injury or death of any fauna caused by vehicles or excavations No injury or death of protected fauna. No domestic animals on-site		All work times
Monitoring	Daily inspection of work site to occur.		All work times
Reporting	Sightings and incidents reported in weekly contractor meetings. Injured native fauna to be reported to an Ecologist (Kingfisher).		All work times
Corrective Action(s)	Investigate cause of incident Review opportunities/constraints for further minimisation of potential incidents given work procedure parameters		All work times

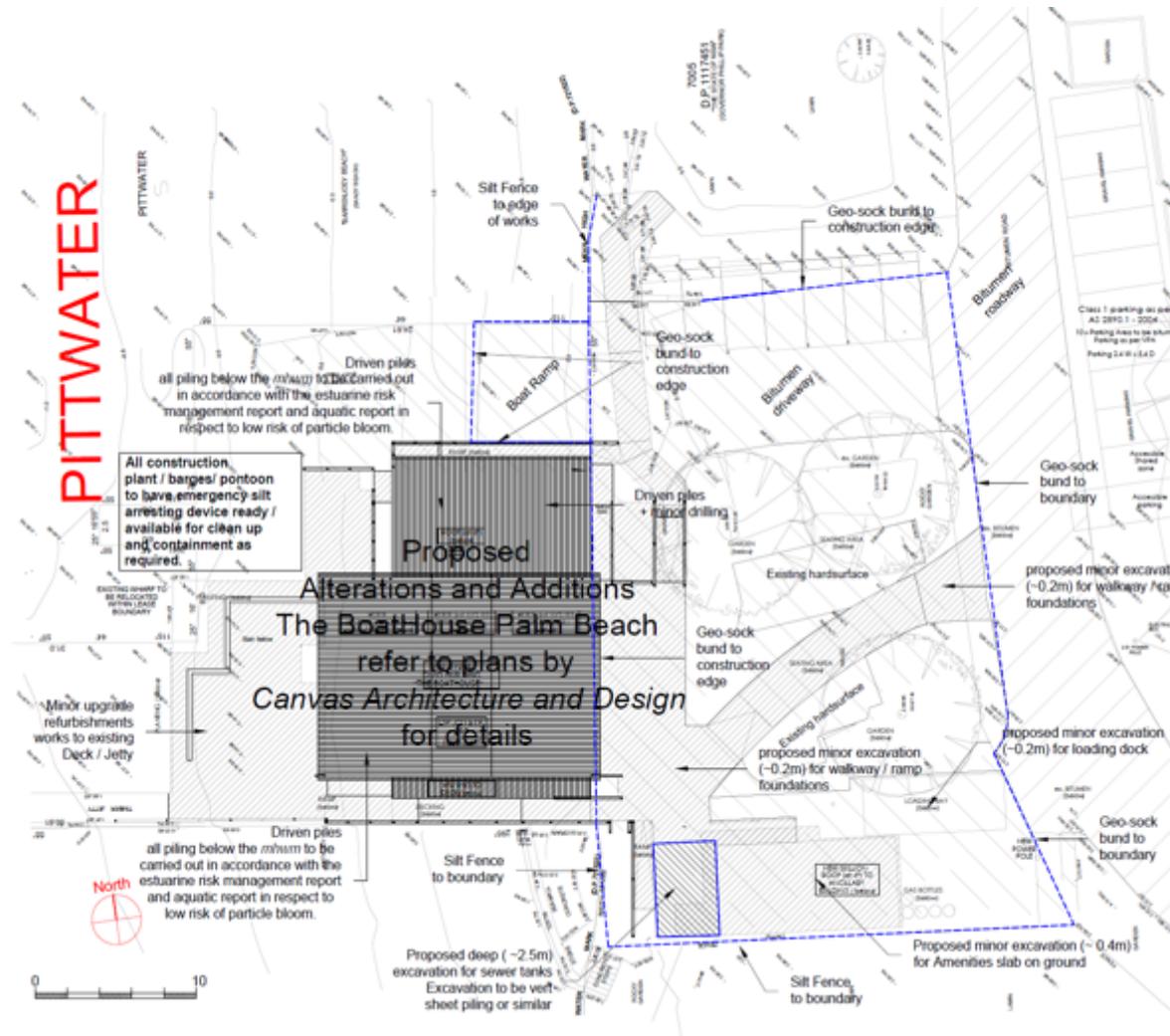
	Implement corrective measures prior to the recommencement of site works		
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4.6.1 Sediment and Erosion Control (NB silt in the marine environment is in a separate table)

See Also Environmental Protection - Marine

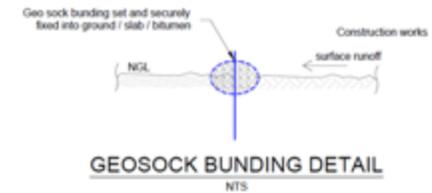
SEDIMENT AND EROSION CONTROL			
Objective(s)	1. To ensure that the effects of erosion and sedimentation on the environment and biological communities are minimised. 2. Minimise soil disturbance, degradation and erosion.		
Management Strategy	<p>Ensure that direct impacts (land disturbance) are limited to the works area, and that secondary impacts do not impact adjacent areas.</p> <p>Existing hard surfaces will be left intact as per Aborist report and other hard surfaces to remain until requirement to remove them. This is to limit sediment run off from the land so as to maintain existing situation. Appropriate silt barriers between the interface of MHW and landward side.</p> <p>Only vehicles on the beach will be pile driver and excavator directly involved in pile driving and baffles. These will be unloaded and loaded on Boat Ramp. To limit sand from the beach on the hard surfaces above MHW.</p> <p>Silt barriers to be installed and maintained around the Site as per Sediment control plan and amended as required.</p> <p>Aquatic vegetation – seagrasses are present near the proposed piling. Nearest are 15 m and this is a medium density patch of Zostera and Halophila. The closest Posidonia is 25m away. The sea bed between works zones and these areas is sand only. Management of these are detailed in the Marine Report (Cardno). It is noted that as the sands are heavy (large particle size) and there are no fines (no clays or other materials that would create turbidity) there is a low to very low risk of turbid conditions resulting from the works. Seagrasses will be monitored before, during and after works and actions taken to ensure their protection from proposed works at all times. Actions from protecting aquatic vegetation report are included in the check list at the end of this CEMP. NB: In this intertidal area, with heavy sands, a floating boom is likely to damage sea-grasses more than works could.</p>		
		Responsibility (Role)	Timing
Control(s)	Disturbance area will be minimised and clearly demarcated. Works will only be conducted within the works zone. Vehicle movements will be restricted to required tracks on hard surfaces		Peter (Construction Manager) All work times

	<p>Where possible, works area will be designed to ensure stormwater from the site is diverted away from the estuary. Note currently no stormwater drains on site or piping crossing site.</p> <p>Where runoff from the site is required, it will be via the parking bay to the north and down boat ramp and southern loading bay as no run off thru the existing garden to ensure maximise sediment retention. Flows to undisturbed areas will be prioritized.</p> <p>Where required, sediment controls will be put in place.</p> <p>If adequate warning of potential storm event extra sediment controls put in place.</p> <p>Sediment controls will be reviewed during site inspections and/or after significant rainfall (more than 10mm in 24hrs resulting in site runoff).</p> <p>See also Mgt Strategy section.</p>	<p>With advice from Ecologist (Geraldene and Dylis (Marine))</p>	
Performance Indicator(s)	No evidence of significant sediment deposition outside the works area. No evidence of significant rilling, gullies or other instances of run-off erosion.		All work times
Monitoring	<p>Daily inspection of work site to occur.</p> <p>Sediment controls will be reviewed during site inspections and/or after significant rainfall (more than 10mm in 24hrs resulting in site runoff). Review will include removal of accumulated sediments as required.</p>		All work times
Reporting	<p>Incident report for non-conformance of sediment control</p> <p>Logging of sediment control structures - location and condition during weekly site inspection</p>		All work times
Corrective Action(s)	<p>Investigate cause of sediment control failure</p> <p>Review flow path and determine most appropriate controls are in place, additional controls which can be place in-stream and/or changes that can be made to flow path</p> <p>Review similar controls on-site (even though these may not have failed) for similarities</p>		All work times



EXCAVATION, SEDIMENT & EROSION CONTROL PLAN

- 1:200
 WORKS TO BE INSTALLED PRIOR TO ANY EXCAVATION WORKS ARE CARRIED OUT ON SITE. INSTALLATIONS ARE TO BE CONTINUALLY REVIEWED, MAINTAINED, UPGRADED TO ENSURE SATISFACTORY CONTROL OF SEDIMENT AND EROSION.
 ALL PILING BELOW THE MSLWM TO BE CARRIED OUT IN ACCORDANCE WITH THE ESTUARINE RISK MANAGEMENT REPORT AND AQUATIC REPORT IN RESPECT TO LOW RISK OF PARTICLE BLOOM.
 ALL CONSTRUCTION PLANT / BARGES/ PONTOON TO HAVE EMERGENCY SILT ARRESTING DEVICE READY / AVAILABLE FOR CLEAN UP AND CONTAINMENT AS REQUIRED.



Extract from Erosion and Sediment control Plan see original for details (Maloy 2021). Also see requirements in Marine Ecology report by Cardno.

Sediment and silt in the marine environment

Objective(s)	1. To minimise the volume of fine sediments / silts introduced into the marine environment through various construction activities. 2. To minimise / manage the spread of sediments generated by construction activities			
Management Strategy	<ul style="list-style-type: none"> Undertake monitoring of turbidity through observations and in-situ measurements to proactively manage turbid plumes / sediment input. See 4.7.1 			
		Responsibility	Timing	
Control(s)	<p>Monitoring for turbid plumes generated by exposed soils. Observations will be recorded daily during those activities and will be from an elevated location ensuring line of sight is maximised. These observations will include (but are not limited to) recorded and site photographs demonstrating:</p> <p>(a) Plume extent (e.g. estimated distance in metres from works area)</p> <p>(b) Plume direction</p> <p>(c) Prevailing metocean conditions (e.g. wind and tide)</p> <p>All exposed soils from vegetation works will be covered with mulch within 48 hrs to minimize movement of material</p> <p>Any excavated VENM material for reuse or material brought in for garden landscape works or beach stabilization works will be covered or contained.</p> <p>Sediment Plumes</p> <p>The construction phase of the Palm Beach Boat House project will involve pile extraction and piled 'wharf' construction in the inter-tidal zone. These tasks will cause short term suspended sediment plumes. Cardno has made some appropriate assumptions to develop conceptual suspended sediment plume cases.</p> <p>Pile Driving</p>		Peter (Construction Manager) With advice from Ecologist (Geraldene and Dylis (Marine))	Throughout Works

	<p>A large number of piles are required at both sites to support the access jetties and wharves. Although there is underlying rock at both sites, Cardno have assumed that piles will be driven into sand. This process will displace/disturb the bottom sediments and thereby lead to the production of suspended sediment plumes – basically from the fines content (<65µm, about).</p> <p>There is no seabed particle size distribution information available for this site. Based on similar previous EIS investigations undertaken (Energy Australia’s southern Pittwater cable crossing project near Scotland Island, for example), Cardno has adopted a fines content of 10%. This is likely to be a conservative position at the Boat House; noting that wave breaking at the shoreline does show some fine sediment re-suspension. Although the seabed is ‘soft’ offshore, it is much firmer above low tide where wave action will have winnowed out the finer fractions.</p> <p>Cardno have assumed:</p> <ul style="list-style-type: none">• Pile embedment of 5m in 2 hours, diameter 0.3m• 10% of fines released as suspended sediments (Barnard, 1980). <p>Applying the results of the Pittwater regional current modelling described in Lawson and Treloar (2003), peak tidal current speeds in northern Pittwater may be up to 0.2m/s in the mid-channel area, but more likely lower nearshore, or even zero (pile driving at low tide is ‘in the-dry’). Hence a typical nearshore, shore parallel current speed of 0.05m/s has been adopted in a water depth of 1m, together with physically realistic horizontal and vertical dispersion coefficients, together with a fall velocity related to silt of diameter 70µm – typical, the plume results presented in Annexure A have been determined. Depths up to 4m downstream have been included. Concentrations would be higher for higher current speeds.</p> <p>Suspended sediment plumes require about 5mg/L to become visible – depending on sediment particle size.</p> <p>This result shows that there would no visible plumes other than immediately near a pile, noting also that most pile driving would occur at low tide so there would be no water depth and no plume.</p> <p>References: Lawson and Treloar (2003): Pittwater Estuary Processes Study. Report (J1942/R1945) prepared for Pittwater Council.</p>		
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Performance Indicator(s)	Turbidity measurements generated by sediment removal not to exceed background conditions.		Throughout Works
Monitoring	Daily (documented) observations and panoramic photographs of turbid plumes generated by work activities Daily inspections of worksite		Throughout Works
Reporting	All visual observations records (forms / photos etc.) of turbid plumes to be made available to PPA on request. All operational shut down events shall be immediately communicated to PPA Project Manager and Environment and Heritage Manager. Incidents (including breaches of this management plan) to be reported immediately to the PPA Project Manager and Environment and Heritage Manager.		Throughout Works
Corrective Action(s)	Should turbidity monitoring indicate a level of 5NTU above background @ 1000m has been exceeded, response will be to cease the work creating the plume until monitoring levels fall within compliance. Should the monitoring levels exceed the requirements on a continual basis, investigate and install and maintain additional measures to control turbidity		Throughout Works

4.6.1 Noise and Vibration

Expert report (construction noise and vibration management plan August 2021) indicate that the noise will only occasional exceed standards at the receipt point of residential dwellings. Vibration will be localised and short-term. Noise will be largely air (not water based). Vibration will be land and water. The short duration of both and using the methods and machinery that have the least impact are the control measures chosen for this project.

The duration of works with the highest level of noise and vibration is expected to be:

Activities include use of excavator and dump trucks, sheet piling (approximately 3 days), pile bore and a rock breaker for concrete removal (approximately 1 day), as required.

The Report is based on:

This construction noise and vibration management plan has been prepared in accordance with the Australian Standard AS2436:2010 *"Guide to noise and vibration control on construction, demolition and maintenance sites"*. Construction noise and vibration management levels have been derived from the Environment Protection Authority's *Interim Construction Noise Guideline 2009* and *Assessing Vibration: a technical guideline 2006* and are used for a quantitative assessment at the nearest affected residential, commercial and active recreation receiver locations.

Recommendations in Section 6 of the report are to be adhered to and include:

limiting construction activity to within the prescribed hours, selecting quiet equipment, incorporating periods of respite, maintaining community consultation relations, managing noise complaints and conducting ground-borne vibration monitoring (if necessary).

The construction will include the demolition of existing structures (where required), excavation of the site and the construction of the new *SBBHPB*. The proposed hours for construction are during the following standard working hours:

- 7.00 am to 6.00 pm Monday to Friday;
- 8.00 am to 1.00 pm Saturday; and
- No work on Sunday or Public Holiday.

4.6.2 Potential Acid Sulphate Soil (PASS)

It is expected that the soil is of EXTERMELY low risk, as the sediments origin is within the rock and marine sands from catchment and ocean. This is not an area of organics accumulation. Also, the buffering effect of saltwater would play a role in influencing the pH of this intertidal area. Potential Acid Sulfate Soil (PASS) and Actual Acid Sulfate Soils (ASS) can be managed on-site.

Sediment removal will be confined to the area above the expected natural soil level; there will be no excavating below 'original natural' levels. Pile driving will go into sediments and it not expected to exposed sediment to air. Lime will be kept on-site to treat any PASS. The ecologist on-site supervising works will also be experienced in identifying and treating PASS and ASS in-situ.

The geotechnical report has identified no Acid Sulphate Soils on site. Certified by Laboratory testing and the formation of the tombola by open sea currents. A management strategy has been prepared as a back-up. Test soils, that will have prolonged exposure to air, on-site when excavated and have lime available if needed to mix, test again and record all actions and test results.

Potential Acid Sulphate Soils			
Objective(s)	To ensure no PASS or ASS are exposed such that acid could be generate.		
Management Strategy	Do not disturb any PASS or ASS		
		Responsibility	Timing
Controls	Excavation and works that disturb deeper than original natural levels of soil (200mm) are supervised and any material exposed to air be tested and if needed treated with Ag lime at required rates. <ul style="list-style-type: none"> • Sewer pit depth 2.5m from AHD 2.4 to AHD-.100 • Rock revetment wall in front of sea wall to AHD.5 • Clean rubble from under superstructure from existing AHD 1.4 sloping down to AHD .6 for a depth of .7 meter 	Peter (Construction Manager) With advice from Ecologist (Geraldene and Dylis (Marine))	Throughout Works

	Installation of baffles for wave wall from .1 AHD to .4 AHD		
Performance Indicator(s)	No disturbance or expose of soil below original natural levels (200mm) except that approved for piling and piers, Sewer Tanks Plumbing, Electrical, rock revetment wall, and baffle wall		Throughout Works
Monitoring	Monitor for exposed soil		Throughout Works
Reporting	Report to site and field manager		If incident or near miss occurs
Corrective Action(s)	Apply Lime and field test (in field by expert in PASS/ ASS) to ensure no available acid or potential acid. Have consultant check and only dispose of in approved waste mgt or return to an area on-site within the terrestrial area buried where it can be under water		For planned action on PASS or if incident occurs

4.6.3 Noise

The noise management level for residences where the construction duration is greater than three weeks is the rating background noise plus 10dB(A) and the noise management level for the parkland would be 60dB(A). Based on the typical sound power levels in Table 5-2 and using the methodology in the Australian Standard AS2436-2010 Guide to Noise and Vibration Control on Construction, Demolition and Maintenance Sites and the Interim Construction Noise Guideline (DECCW, 2009), the maximum predicted noise levels at the parkland may exceed the recommended noise management levels during piling.

Mitigation measures required to minimise noise impacts during the construction phase are outlined below.

NOISE MANAGEMENT			
Objective(s)	<ol style="list-style-type: none"> 1. To minimise the impacts of noise on the amenity and native fauna of the surrounding areas. 2. Construction activities undertaken in accordance with <i>AS 2436-1981 Guide to Noise Control on Construction, Maintenance and Demolition Sites</i>. 3. Construction activities undertaken in accordance with <i>Environmental Protection (Noise) Regulations 1997</i> 		
Management Strategy	<p>Undertake sediment removal works between 7am to 6pm Monday to Friday and 8am to 1pm on Saturdays.</p> <ul style="list-style-type: none"> • Undertake regular maintenance of all plant and machinery. • During works, implement all reasonable and feasible control measures to minimise noise impacts. These measures would be specific to the site conditions and proposed work methods. • Works to establish deck levels for Superstructure and lower wharf deck limited to tides as work to be carried out at low tides. 		
		Responsibility	Timing
Control(s)	<p>All equipment used during the construction phase to be regularly maintained to ensure efficient operation;</p> <p>Pre-start checks and maintenance schedules to ensure equipment performance is as required;</p>	<p>Peter (Construction Manager) With advice from Ecologist (Geraldene ECA)</p>	<p>Throughout Works</p>

	<p>Noise-dampening equipment to be used on equipment with excessive noise generating characteristics;</p> <p>Construction activities in accordance with AS2436-1981 Guide to Noise Control on Construction, Maintenance and Demolition Sites.</p>		
Performance Indicator(s)	No complaints from adjacent commercial premises and/or community.		Throughout Works
Monitoring	<p>Daily inspection of works sites to occur</p> <p>Service logs for equipment/machinery used on site</p>		Throughout Works
Reporting	Any complaints or incidents to be reported to PPA project manager.		Throughout Works
Corrective Action(s)	<p>Investigate cause of excessive noise</p> <p>Implement corrective measures prior to the recommencement of site works</p> <p>Reschedule of noise-generating activities to reduce noise annoyance</p>		Throughout Works

4.7 Oil and Other Noxious Substances – Refueling and Spill Management

Emergency response plan

Spill kits on site for small spills as no large storage of fuels on site

Site register of emergency services to be kept in site office

OIL AND OTHER NOXIOUS SUBSTANCES			
Objective(s)	1. To minimise the potential for spills of oils and other noxious substances to as low as reasonably practicable.	Site Supervisor	
Management Strategy	Reduce quantity of hydrocarbons stored to that required, implement appropriate controls and provide appropriate training and resources for a spill response. Neutralize PASS/ASS on-site and store appropriately to prevent leachate running off the stockpiles of removed sediment.	Peter (Construction Manager)	
		Responsibility (Role)	Timing
Control(s)	All hydrocarbons to be stored in an appropriate bund that is capable of holding 110% of a spill from the largest container, or 10% of total volume of stored liquids, whichever is greater. Refuelling of vehicles/equipment will be undertaken on land (not over water), unless the task is not possible. Designated area for refueling where possible. To reduce the impact of a spill, the lowest volume of hydrocarbons required will be stored in proximity to the marine environment and in the onshore lay down areas. A copy of the current hydrocarbon MSDS will be kept at an appropriate location on site. Drip trays shall be placed under mechanical stationary equipment such as gensets if such equipment is not internally banded. Onsite spill response training will be carried out on a periodic basis. All deficiencies	Peter (Construction Manager)	Anytime All times during works or when noxious substances on site

	<p>identified through training and testing of the procedures will be documented and rectified immediately.</p> <p>All equipment will be regularly serviced to reduce emissions and reduce the chance of oil leaks on site and in marine environments. Appropriate controls in place to contain hydrocarbon leaks should they occur whilst servicing. Controls may include use of drip trays when changing oil and transporting waste oils in bunded containers.</p> <p>Only qualified personnel are to carry out services on plant, equipment and vessels.</p> <p>A prescribed Isolation procedure must be followed prior to work on any plant or equipment.</p> <p>Training / awareness to be included in site induction (including all staff, contractors, subbies etc.).</p> <p>Appropriate volume and type of spill response materials will be available at each work site</p> <p>Spill will be contained and cleaned-up immediately. Resultant wastes (soils, rags and absorbent material) appropriately stored and disposed of by an appropriately licensed waste contractor as controlled waste.</p> <p>All spills reported and investigated as required.</p> <p>Emergency spill kits must be kept at the site.</p> <p>Refueling of machinery must be undertaken in a dedicated area appropriately protected as outlined in the spill management plan and away from the lake.</p> <p>Any chemicals and fuels must be stored in a bunded area at least 50m away from the waterway.</p> <p>Workers are to be trained in the spill management plan and spill kits.</p> <p>Store any hazardous materials within an impervious and bunded enclosure capable of storing 120% of the volume of material.</p> <p>PASS/ASS sediments will need to be contained using impermeable material to prevent acid leachate running off the stockpiles eg. Sitting stockpiles on plastic sheeting that folded up around the base to contain run-off (like a bund) or placing excavated material in skip bins.</p>		
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<p>Performance Indicator(s)</p>	<p>Minor spills (<10L) to land contained, controlled and all contamination removed / cleaned-up within 24 hours.</p> <p>No spills to marine waters.</p> <p>No contamination of soil or surface / ground waters.</p> <p>No spills that require an emergency response</p>	<p>Peter (Construction Manager)</p>	
<p>Monitoring</p>	<p>Incident report outlining corrective actions taken and preventative measures to be implemented sent to PPA with 48 hours</p> <p>Statistics reported to PPA in weekly meetings and monthly reports.</p>	<p>Peter (Construction Manager)</p>	
<p>Reporting</p>	<p>All spills (regardless of volume) to be reported</p> <p>A spill of oil or any other hazardous or noxious substance is to be reported immediately to the Site Supervisor</p> <p>The following incidents must be reported to PPA on a monthly basis (e.g. at KPI meetings)</p> <ul style="list-style-type: none"> • If there is less than 10L spilt, the spill is contained on site and it is able to be fully cleaned up. <p>The following types of spill incidents must be reported to the PPA Environment and Heritage team immediately (including a follow-up incident investigation report within 48 hours):</p> <ul style="list-style-type: none"> • Any spill greater than 10L; • Any spill which cannot be fully cleaned up / contained immediately; OR • Any spill which leaves the lease area (e.g. as liquid discharge or dust emission). 	<p>Peter (Construction Manager)</p>	
<p>Corrective Action(s)</p>	<p>Stop work immediately, contain spill (if safe). Investigate cause of spill and assess. Implement improvements as required.</p> <p>Investigate and assess adequacy of response – implement improvements as required.</p> <p>Implement corrective measures prior to the recommencement of site works.</p> <p>Use correct neutralising quantities for PASS/ASS (see separate section on PASS/ASS)</p>	<p>Site Supervisor</p>	

4.8 Resource Recovery and Waste Management

- Construction/Demolition waste, excess concrete, old footings, all to be removed from site and disposed as per waste management plan. Nothing to be buried or left buried on site.

Exception where it might interfere with tree roots.

- The management and clean-up of equipment and any spills.

Most likely contributors are concrete and refueling heavy machinery. The building is of class 3 construction and 80 percent of material will be timber

Appropriate measures for the wash up and containment and disposal of waste from concrete pump wash up.

Establish a wash up containment area and disposal of waste into bins.

Before refueling of machinery appropriate clean up kit to be available onsite. Refueling to be monitored by representative of the builder and any spill to be cleaned immediately. The refueling is only to take place in a designated area. No large quantities of fuel to be kept on site. Smaller quantities =< 50 litres to be kept in bunded area large enough to contain the fuel with appropriate signage.

Dewatering of the excavation for sewer and grease traps via sediment control containment zone. This area is adjacent to MHWL so will be tidal. The establishment of a coffer dam will limit majority of water ingress from the side but water will still be able to rise from the base of the excavation. The area has been tested for acid sulphate soils and has returned a negative result. Contaminated land report has also returned a negative result for contaminants as it examined water at the water table. The excavation material has been also categorised as VENM and can be reused on site.

Note dewatering plan being undertaken by an engineer should be available towards in another week and will be updated for final plan along with insertion of DA conditions.

Objective(s)	Reduce waste volume, maximise recycling, reuse and recovery, prevent any construction waste/litter entering the environment.
Management Strategy	<p>Minimise environmental impacts through appropriate controls and site inductions of employees and sub-contractors.</p> <p>The proposal would result in waste in the form of vegetation and workers wastes such as drinks containers, food scraps, etc.</p> <p>To ensure that environmental harm does not occur as a result of uncontrolled or inappropriate collection, transport and disposal the relevant provisions of the following Acts would be implemented:</p>

	<ul style="list-style-type: none"> • Waste Avoidance and Resource Recovery Act 2001 • Protection of the Environment Operations Act 1997 • Protection of the Environment Operations (Waste) Regulation 2005 <p>The waste management control procedures and/or measures listed below would be implemented for the proposed works.</p>		
		Responsibility (Role)	Timing
Control(s)	<p>Provide appropriate waste bins, type, volume and service frequency to accommodate anticipated waste streams.</p> <p>All loads arriving or leaving the site will be appropriately secured.</p> <p>Provide information regarding waste management in site specific inductions, including waste separation and importance of securing vehicle loads.</p> <p>Ensure licensed contractors are used to collect controlled wastes</p> <p>Minimal waste will be generated as all is vegetation waste. If materials are found within the vegetation they will be managed. Vegetation will be mulched and reused on-site.</p>	Peter (Construction Manager)	During works
Performance Indicator(s)	<p>Hazardous materials all appropriately disposed.</p> <p>Recycling of all recyclable construction metal waste</p> <p>Records kept of waste leaving site.</p>		
Monitoring	<p>Daily inspection of work site to occur. Review of waste bins (% full, time to next service).</p> <p>Waste volumes leaving site from waste contractors</p>		
Reporting	<p>Environmental incident reports.</p>		Throughout project
Corrective Action(s)	<p>Investigate cause of inappropriate waste disposal</p> <p>Review cause of issue and develop response, such as variation to bin size, service schedule or waste separation awareness.</p> <p>Implement controls</p>		Throughout project

4.1 Traffic management plan (TMP)

Objective(s)	<i>All vehicle movements to result in safety to public, infrastructure, environment and drivers, and will deliver and remove plant, equipment and materials in an efficient manner.</i>		
Management Strategy	<ul style="list-style-type: none"> • Have an active relevant TMP governing the movement of vehicles to and from the site for deliveries and removals. • Have the proposed phases of construction identify the types of heavy vehicles and numbers required to visit the site. 		
		Responsibility (Role)	Timing
Control(s)	<ul style="list-style-type: none"> • Public safety barriers/ or stop/go person in place where traffic moving. • Access and egress from site will be clearly marked and on the existing road and to the site (small site). • For larger vehicles appropriate guidance to protect both other road users and pedestrians shall be employed. • Temporary standing zones for the larger vehicles. At this stage similar to where film crews park 8 large trucks beside the golf course • The construction zone above MHWL will remain mainly hard surface during most of the earth works during construction. The site is sand as per Geotech and Contaminated Land reports so no clay particles present. The Contaminated soil report has identified no hazards. Vehicle tires shall be checked before leaving the site and brushed down where appropriate. Monitoring of the council road for any missed particles of sand to enable action to clean up. • Deliveries of materials will all remain on clean hard surface. Machinery will be the only vehicles on the sand and these will be removed from site by low loaders. 	Peter (Construction Manager)	During works

	<ul style="list-style-type: none"> The speed limit in the park is 10k/h. this will enable safe movement thru the park. All vehicles to remain on road and designated parking and queuing zones. 		
Monitoring & Performance Indicator(s)	Monitoring will be at all times there are construction vehicle movements. Performance indicators is number of safe days that is with no near-miss or incidents and any hazards identified swiftly and managed.		
Reporting & Corrective Action(s)	Any near-miss, hazards or incidents will be reported, investigated and corrective actions implemented.		Throughout project

5 Sequence of Actions and Sign-off Table

The following table will include the final DA conditions that **requires an action**.

This action Table will be arranged in Pre Construction, During Construction and Post Construction actions.

As this can only be filled in post DA approval and conditions being issued it will occur then.

5.1 Pre Demolition Construction

Condition	Action Required
Insert Condition	

Condition	Action Required