

CONSTRUCTION (INCLUDING DREDGING) AND OPERATION**NEW BERTHING FACILITY****ULLADULLA HARBOUR****1. Background**

A Review of Environmental Factors (REF) for a proposed new berthing facility in Ulladulla Harbour was prepared and determined in July 2021. Circumstances led to the proposed activity to be delayed until late 2023. Since the original REF was determined several minor changes to the project, to legislation, and to environmental planning instruments have occurred. Several environmental safeguards prescribed in the original REF have also been achieved.

This REF Addendum Document will describe the proposed modifications and changes as cover-pages to the original REF Document.

The original REF Document was prepared by Peter Dalmazzo in 2021 and is available as SCC document reference D21/443781 or on NSW Planning Portal reference P5-2023-102

(<https://www.planningportal.nsw.gov.au/part-5/construction-inlcuding-dredging-and-operation-new-berthing-facility-ulladulla-harbour>).

2. Summary changes to the proposal

Changes to proposed activity would involve the following:

- The demolition of an (~180m²) existing garden bed and planted vegetation including (Figure 1 and Photo 1 below):
 - three Spotted Gums *Corymbia maculata*
 - approximately 25 Swamp Oaks *Casuarina glauca*
 - one Spiny-headed Matt-rush *Lomandra*
- Relocation and lengthening of the access gangway and associated access gate including an additional piled concrete landing – no exacerbation of previously assessed environmental impacts.
- Minor adjustment to arrangement of the concrete pontoon walkway forming the berths and delineating areas - no exacerbation of previously assessed environmental impacts.
- Updated dredging plan factoring in current sea bed levels - no exacerbation of previously assessed environmental impacts.
- Reduced piling - no exacerbation of previously assessed environmental impacts.

As many of the prescribed environmental safeguards in the original REF have been completed, a revised list of environmental impact mitigation measures and safeguards for the proposed activity are prescribed in Section 4 of this REF Addendum Document.

New plans are provided as Appendix A.

Photo 1: Garden bed and vegetation to be removed



Figure 1: Location of raised garden bed to be removed



3. Summary changes to legislation and environmental planning instruments

Section 3 (*Legislation and Permit Requirements*) and Section 7 (*Statutory Assessments of Environmental Impacts*) of the original 2021 REF addressed legislation and environmental planning instruments pertaining to the proposed activity. Since 2021 there have been several changes to the NSW *Environmental Planning and Assessment Act 1979* and associated Regulations, and State Environmental Planning Policies (SEPPs). These changes are described below and act to update the 2021 REF.

3.1 Commencement of the NSW *Environmental Planning and Assessment Regulation 2021*

The original REF document referenced the *Environmental Planning and Assessment Regulation 2000*. The 2021 regulation commenced in 2022 after the determination of the REF. Relevant changes include:

1. a requirement to create a document in accordance with a published guideline (Section 171(3) of the Regulation).
2. A requirement to publish (*i.e.* on the NSW Planning Portal) the REF if the proposed activity met prescribed triggers (Section 171(4))
3. Additional environmental factors to be considered by the determining authority (Section 171(2)(q) and (r) of the Regulations).
4. A change to numbering in the prescribed list for designated development (Schedule 3).

Regarding the requirement of create a document in accordance with a published guideline, the original REF document generally met this requirement regardless of the new regulation. The

prescribed guideline is the NSW Department of Planning and Environment's *Guideline for Division 5.1 Assessments* <https://www.planning.nsw.gov.au/sites/default/files/2023-02/guidelines-for-division-51-assessments.pdf>. This addendum documents additional information and processes prescribed in this Guideline, for instance:

- The requirement to document and publish the REF process, *i.e.* the preparation of a "REF Document" and the preparation of an "REF Document Addendum" when required.
- Certification and Conclusion Statements – this is provided in Section 5 of this REF Addendum Document.
- Addendum REF Documents to provide an updated list of environmental impact mitigation measures – this is provided by Section 4 below.

The proposed activity met a few prescribed triggers for publishing in accordance with the Section 171(4) of the Regulation. The original 2021 REF has since been published on the NSW Planning Portal (reference number P5-2023-102). This REF Addendum Document shall also be published on the Planning Portal prior to the commencement of works.

The additional (Section 171) environmental factors to be considered are:

"(q) applicable local strategic planning statements, regional strategic plans or district plans made under the Act, Division 3.1

(r) other relevant environmental factors"

Regarding (q), the development is consistent with *Shoalhaven 2040 Strategic Statement* (<https://doc.shoalhaven.nsw.gov.au/displaydoc.aspx?record=D20/437277>) as it works towards Planning Priority 5 (Ulladulla Town Centre) and the associated action "CA5.1 work with the NSW Government to maintain and protect the operation of the working harbour and identify opportunities for broader cross-government collaboration to improve infrastructure delivery". The proposed activity is consistent with the *Illawarra Shoalhaven Regional Plan 2041* (<https://pnswwstg.prod.acquia-sites.com/sites/default/files/2023-03/illawarra-shoalhaven-regional-plan-2041.pdf>) as it directly works towards Objective 6 *Activate the region's harbours to promote a blue highway*. The proposed activity is not inconsistent with the remaining strategic statements and objectives contained in these plans.

With regard to (r), the original 2021 REF was comprehensive and covered all relevant environmental factors.

The change to clause numbers in Schedule 3 (*Designated Development*) from clause 23 to 32 (*Marinas and related land and water shoreline facilities*) is inconsequential to the proposed activity. The proposed facility with 19 berths for vessels up to 15 metres in length does not exceed the prescribed triggers for designated development if development consent was required, *i.e.*:

32 Marinas and related land and water shoreline facilities

- (1) Development for the purposes of a marina or related facility is designated development if the marina or facility has an intended capacity of—
 - (a) 15 or more vessels with a length of 20 metres or more, or
 - (b) 80 or more vessels of any length.
- (2) Development for the purposes of a marina or related facility is designated development if —
 - (a) the marina or facility has an intended capacity of 30 or more vessels of any length, and
 - (b) the marina or facility—
 - (i) is located in non-tidal waters or within 100 metres of a wetland or aquatic reserve, or
 - (ii) requires the construction of a groyne or annual maintenance dredging, or
 - (iii) has a ratio of car park spaces to vessels of less than 0.5:1.

An environmental impact statement is therefore still not required.

3.2 Commencement of the *State Environmental Planning Policy (Transport and Infrastructure) 2021 (T&I SEPP)*

The T&I SEPP commenced on the 1 March 2022 effectively combining the *State Environmental Planning Policy (Infrastructure) 2007* with several other relatable SEPPs. Regarding the proposed activity, the effect of the change in terms of permissibility and process was inconsequential; merely a change to section/clause numbers. The proposed activity can still be undertaken without consent through Section 2.80(4) and (7) of the T&I SEPP, *i.e.*:

“(4) Development for the purpose of wharf or boating facilities may be carried out by or on behalf of a public authority without consent on any land. However, such development may be carried out on land reserved under the [National Parks and Wildlife Act 1974](#) only if the development is authorised by or under that Act.

...

(7) In this section, a reference to development for the purpose of port facilities, navigation and emergency response facilities, wharf or boating facilities or associated public transport facilities for a public ferry wharf includes a reference to the operation of such a facility and to development for any of the following purposes if the development is in connection with such facilities—

- (a) construction works (including dredging or land reclamation, if the dredging or land reclamation is required for the construction of those facilities),*
- (b) routine maintenance works,*
- (c) environmental management works,*
- (d) alteration, demolition or relocation of a local heritage item,*
- (e) alteration or relocation of a State heritage item.”*

Apart from changed SEPP title and section numbers, the assessment and conclusion made in the original 2021 REF remain accurate. The proposed berthing facility can still be undertaken without development consent and no further consultation or assessment is required.

3.3 Commencement of the State Environmental Planning Policy (Hazards and Resilience) 2021 (H&R SEPP)

The H&R SEPP commenced on 1 March 2022 incorporating the effectively combining the *State Environmental Planning Policy (Coastal Management) 2018* (Coastal Management SEPP) with several other semi-relatable SEPPs. Regarding the proposed activity, the effect of the change in terms of permissibility and process was inconsequential; merely a change to section/clause numbers.

The proposed activity remains outside land identified as “coastal wetlands” or “littoral rainforest” on the Coastal Wetlands and Littoral Rainforests Area Map therefore development consent is not required by Section 2.7 of the H&R SEPP. The provisions of Sections 2.8, 2.9, 2.10 and 2.11 in relation to proximity areas, coastal vulnerability area, coastal environment area and coastal use area do not apply because development consent is not required.

Apart from changed SEPP title and section numbers, the assessment and conclusion made in the original 2021 REF remain accurate and contemporary. The proposed berthing facility can still be undertaken without development consent.

4. Environmental safeguards

The following environmental impact mitigation measures has been extracted from the original 2021 REF and updated where highlighted in yellow.

Approvals, Consultation and Design

1. It is recommended that advice be sought on whether any ‘exclusive possession act’ applies to the land (for example, a freehold title or lease) or the effect that any public works undertaken on the land may have had on native title. Based on that advice it might be necessary that, before the proposed work is undertaken, a notice be served on the Aboriginal and Torres Strait Islander Representative Body for NSW (currently NTSCORP) indicating that Council intends to carry out a ‘future act’ under the Australian Native Title Act 1993.

Action completed. SCC has notified NTSCORP with an intent to proceed issued on the 12/3/2021 D21/98746 - Notice of Intent to Commence - Shoalhaven City Council - Native Title Future Act - Referral Notice - Ulladulla Harbour Berthing Marina - Ulladulla Harbour - Construction licence - dredging - marina construction and [lon](#) and also D21/41102 (NTSCORP referral) and D21/73053 (reminder).

2. In accordance with the ~~State Environmental Planning Policy (Infrastructure) 2007~~ *State Environmental Planning Policy (Transport and Infrastructure) 2021*, Council shall give written notice of the intention to carry out the development to the **Roads and Maritime Services Transport for NSW (TfNSW)** and take into consideration any response to the notice that is received from that authority with 21 days after the notice is given.

Action completed. TfNSW notifications were evidenced in Attachment 1 of the original 2021 REF.

3. The Minister for Fisheries shall be notified by Department of Industry - Lands before carrying out or authorising dredging or reclamation work as required under section 199 of the Fisheries Management Act.

Action completed. In response to licence application NSW Fisheries provided comment to Crown Lands on 13 September 2021 (SCC reference D23/351557). NSW Fisheries provided a conditional no objection to the proposed activity. Although these conditions were not reflected in

the Construction Licence (SCC reference D22/95834), they reflect the environmental safeguards listed in the REF and this Addendum REF document.

4. Application shall be made for an exemption the NSW EPA for the beneficial reuse of harbour sediment (the Electrical Conductivity (EC) exceeds the maximum average (1.5 dS/m) and absolute maximum (3 dS/m), related to natural salt levels in the harbour).

Action completed. EPA licence variation for beneficial reuse at the West Nowra Recycling and Waste Facility (EPL) was obtained (SCC Document D21/153081).

5. Application shall be made for a section 205 permit under the Fisheries Management Act for the harming of marine vegetation.

Action required. Fisheries Permit was applied for and obtained (SCC reference D21/344332) however the permit expired on 12 August 2022. The Fisheries Permit shall be extended prior to the commencement of works.

6. Application shall be made for a s219 permit under the Fisheries Management Act for any blockages or obstructions to fish passage, whether temporary or permanent.

Action required. Fisheries Permit was applied for and obtained (SCC reference D21/344332) however the permit expired on 12 August 2022. The Fisheries Permit shall be extended prior to the commencement of works.

7. If there is to be any use of explosives in the waterway an approval under clauses 112-113 of the *Fisheries Management (General) Regulation 2002* shall be obtained.
8. During detailed design, attention shall be paid to ensuring “fish friendly designs” for any new infrastructure, such as including structural complexity in surfaces, and to minimise shading of the sea floor. The following should guide the design:
 - retain natural rock surface wherever possible
 - increase surface complexity of cut subtidal and intertidal rock faces by roughening or creating crevices
 - create some small, natural looking rock pools on the retained intertidal rock platform
 - install ~600mm dia rocks along the base of the stone seawall on the 1.3 metre wide rock platform and the new rock platform at -2.00 m AHD.

Action completed. Refer to detailed design plans provided in Attachment A.

Construction

9. All workers shall be inducted in occupational health and safety requirements for the work site.
10. When construction work is underway, the risks to members of the public shall be reduced by defining a no go area for public with hazard fencing and restricted area signs as appropriate. The safety fencing and signage shall be monitored daily by the contractor and immediately repaired or replaced if necessary and shall be removed when construction is completed.
11. Workers shall be informed of the possible presence of Aboriginal objects at the site and of their obligations and possible offences under the National Parks and Wildlife Act with respect to Aboriginal objects. Should any Aboriginal object (being Aboriginal artefacts, shell middens, bones and/or burials) be discovered during works, then work shall cease and the superintendent shall contact the Office of Environment and Heritage on (02) 4224 4188 as soon as possible.
12. Workers shall be informed of their obligations and possible offences with respect to the heritage value of the stone wall and other harbour components.

13. Workers shall be informed of their obligations and possible offences under the NSW Biodiversity Conservation Act and Australian Environmental Protection and Biodiversity Conservation Act with respect to threatened and migratory species. All workers shall be made aware that they are potentially working in or near the habitat of threatened and migratory species.
14. If native fauna is injured, immediate contact should be made with Wildlife Rescue South Coast and appropriate action taken.
15. If a seal or turtle has hauled out at a site when the work was being done, the advice of the Ulladulla office of the National Parks and Wildlife Service shall be sought for an appropriate course of action.
16. To maintain the integrity of the heritage listed stone wall:
 - The condition of the wall before and after the excavation works should be recorded including detailed photographs and survey positions of the top, middle and base of the wall to check for displacement.
 - Vibration monitoring should be carried out during the excavation process to assess whether vibration could potentially affect nearby masonry structures.
 - Install ~600mm diameter natural looking rocks along the base of the stone seawall on the 1.3 metre wide rock platform and the new rock platform at -2.00 m AHD
 - Grouting of weathered and eroded mortar joints and filling of voids in the wall should be carried out.
 - A temporary supporting wall should be constructed in front of the heritage stone wall with container bags / geotextile sand container, to approximately two-thirds of the wall height.
 - The first saw cut into the rock platform parallel to the stone wall should be offset at least 1.3m from the base of the wall.
 - The maximum batter slope of the tuffaceous sandstone along the eastern edge of the proposed harbour expansion should not exceed 2V:1H.
17. Shotcrete should not be used unless a suitably qualified engineer determines that stability of the rock batters is insufficient.
18. As far as possible, the works shall be undertaken at a time that would minimise disruption to the ongoing use of the facility by the community. Direct consultation with known likely affected users (e.g., fishing co-op, marine rescue, festival organisers) shall also be undertaken and timing of the work shall take into consideration the needs of those users.
19. Hours of operation of all construction works shall be restricted to between 7am and 6pm Mondays to Fridays and 8am to 3pm Saturdays.
20. An environmental management plan shall be prepared by the construction company that addresses, amongst other things, ways in which pollution by noise, dust, waste, fuel and oil will be avoided. This shall include protocols for equipment maintenance, storage of fuel and other chemicals and materials, management of waste and refuelling procedures.
21. To avoid pollution from machinery, refuelling shall generally be done off site, however if refuelling on site is required, due care shall be taken to avoid spilling fuel and a tray shall be used to catch any accidentally spilt fuel. Spill kits are to be available on site at all times during works.
22. No major equipment maintenance works shall be undertaken on-site.

23. To prevent contaminated material being placed on the site, if material is imported for fill, it shall be either virgin excavated natural material as defined in the *Protection of the Environment Operations Act* or be excavated natural material that has been tested in accordance with the 'excavated natural material exemption 2014'. Otherwise, an environment protection licence would be required under the Act or an exemption obtained from the NSW EPA.
24. To ensure that contaminated sediments are not disturbed, a dredging control plan shall be prepared that ensures dredging is carried out generally in accordance with the area indicated in the option 2 dredge area plan prepared by Westlake Punnett (Drawing No. 21511/C06 provided in Appendix A. ~~by Magryn (2021), as shown in Figure 5 above.~~
25. Prior to any works in or near waters commencing, silt curtains and floating booms shall be installed around the dredge site to contain the spread of turbid water. The silt curtain shall not be permanently removed until all works are completed, though it could be moved in and out as required.
26. The construction contractor shall keep an emergency spill kit on-site at all times with procedures to contain and collect any leakage or spillage of fuels, oils and greases from plant and equipment.
27. A visual inspection of the waterway for dead or distressed fish is to be undertaken twice daily during the works. Observations of dead or distressed fish are to be immediately reported to the Fishers Watch hotline on 1800 043 536.
28. Waste material (for example packaging, strapping, off-cuts, excess concrete) shall be contained within the land-based site during construction and then be removed to an authorised waste disposal facility or an appropriate storage area for reuse elsewhere. No material shall be placed in any location or in any manner that would allow it to enter the waterway or escape from the site into adjoining bushland areas. Stockpiles of debris and construction materials shall be stored at least 10 metres outside the harbour. General refuse shall be disposed of to a covered container stored at the site. This container, when full, shall be transported to a licenced waste disposal centre. No waste shall be burnt or buried on-site or disposed of in the waterway.
29. A preliminary environmental and acid soil management plan shall be prepared to monitor and validate the stockpiled sediment for PASS (if present) as dredging has potential for unexpected findings, odour and altering the sediment geochemistry. The plan would include pH testing of stockpiles to manage any PASS.
30. Following dewatering and any necessary treatment, all dredge spoil shall be disposed of to a suitably licenced onshore facility and/or an approved and lawful site for the land-based application of the waste spoil. The spoil shall be transported in sealed or covered trucks to the waste disposal locations. All disposal of spoil shall be in accordance with the NSW Protection of the Environment Operations Act 1997 and associated waste regulation. The application of waste to land outside licenced waste facilities would also be subjected to separate assessment under the NSW Environmental Planning and Assessment Act 1979.
31. To manage potential acid sulfate soils, dredge spoil must be kept wet at all times during excavation and subsequent handling, transport and storage, until it can be disposed of safely. It must be received at the proposed disposal point within 16 hours of being dug up. Alternatively, if sediments are to be temporarily stored on site, then a sediment management plan will be required.

32. The rock fissure sediments (approx. 1 tonne), surface hydrocarbon residues (to approx. 0.1m depth), localised tar and oysters/shells shall be removed to enable the dredged rock to be reclassified and re-used as VENM. Dredged rock shall be loaded into skip bins or directly onto dump trucks. The transportation, processing (crushing), storage and subsequent use of the rock shall be the subject of separate development applications.

Operation

33. Develop and implement a berthing facility operations manual that includes an environmental management system and operational procedures to be undertaken if moored vessels are ranging to an unacceptable degree.
34. Develop and enforce berthing facility user rules that include environmental protection provisions.

5. Conclusion

Assuming the prescribed environmental impact mitigation measures and safeguards are implemented (Section 4 above), the proposed activity is unlikely to have a significant impact on the environment and further environmental assessment (e.g. Environmental Impact Statement) is not warranted. In addition:

- The proposed activity will not be carried out in a declared area of outstanding biodiversity value and is not likely to significantly affect threatened species, populations or ecological communities, or their habitats and a Species Impact Statement / BDAR is not required.
- This REF requires publication before proceeding.

The proposed activity can proceed.

Document Review:

	Name	Signature	Date
Author*	Geoff Young Environmental Officer - Works and Services Shoalhaven City Council		05/09/2023

*Review and endorsement statement:

"I certify that I have reviewed and endorsed the contents of this REF document and, to the best of my knowledge, it is in accordance with the EP&A Act, the EP&A Regulation and the Guidelines approved under clause 170 of the EP&A Regulation, and the information it contains is neither false nor misleading".

ATTACHMENTS:

A – detailed design

ULLADULLA HARBOUR BERTHING FACILITY

ULLADULLA HARBOUR, ULLADULLA, 2539

DRAWING NO.	DRAWING DESCRIPTION	REV.
21511/C01	COVER SHEET AND LOCALITY PLAN	A
21511/C02	NOTES SHEET	A
21511/C03	DEMOLITION PLAN	A
21511/C04	GENERAL ARRANGEMENT PLAN	A
21511/C05	TYPICAL SECTIONS	A
21511/C06	DREDGE PLAN	A
21511/C07	SEDIMENT BULK EARTHWORKS PLAN	A
21511/C08	ROCK BULK EARTHWORKS PLAN	A
21511/C09	LANDING PLAN AND ELEVATIONS	A
21511/C10	EMERGENCY MOORING PLAN	A
21511/C11	PONTOON LAYOUT PLAN	A
21511/C12	MARINA SERVICES AND CLEAT PLAN	A
21511/C13	GANGWAY PLAN, SECTIONS AND DETAILS	A
21511/C14	STRUCTURAL DETAILS	A
21511/C15	STRUCTURAL DETAILS	A
21511/C16	STRUCTURAL DETAILS	A



LOCALITY PLAN
1:2500

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Rev.	Amendments	Approved	Date
A	ISSUED FOR CONSTRUCTION	P.LITTLE	29.08.2023

GENERAL STRUCTURAL NOTES

GENERAL

1. THESE DRAWINGS SHALL BE READ IN CONJUNCTION WITH ALL ARCHITECTURAL AND OTHER CONSULTANTS DRAWINGS AND SPECIFICATIONS. ANY DISCREPANCY SHALL BE REFERRED TO THE ENGINEER BEFORE PROCEEDING WITH THE WORK.
2. DIMENSIONS ARE NOT TO BE SCALED FROM THESE DRAWINGS.
3. THE ENGINEER IS TO INSPECT ALL WORK PRIOR TO THE POURING OF CONCRETE. PROVIDE 48 HOURS NOTICE FOR ALL INSPECTIONS.

EARTHWORKS

4. UNLESS NOTED OTHERWISE FILL IS TO BE IN ACCORDANCE WITH CIVIL ENGINEERING NOTES. REFER TO DRAWING 21511/C02.
5. **SITE DRAINAGE DURING CONSTRUCTION:**
DURING CONSTRUCTION WATER RUNOFF SHALL BE COLLECTED AND CHANNLED AWAY FROM THE STRUCTURE.

CONCRETE WORKS

4. ALL WORK TO BE INSPECTED BY THE ENGINEER PRIOR TO POURING.
7. **ALL CONCRETE IS TO HAVE 100mm SLUMP AND 20mm AGGREGATE UNLESS NOTED OTHERWISE. CONCRETE STRENGTH AND COVER ARE TO BE SHOWN IN TABLE S1 UNLESS NOTED OTHERWISE.**
8. ALL CONCRETE IS TO BE COMPACTED WITH A MECHANICAL VIBRATOR IN ACCORDANCE WITH AS3600.
9. ALL CONCRETE IS TO BE CURED IN ACCORDANCE WITH AS3600.
10. ALL WORK IS TO BE PROTECTED AGAINST TERMITE ATTACK IN ACCORDANCE WITH AS3660.1 AS REVISED.

TABLE S1				
ELEMENT	COVER (mm)			STRENGTH (MPa)
	TOP	BOTTOM	SIDES	
PILE INFILL GROUT	-	-	-	40
LANDING SLABS	45	45	45	40
PIERS (REINFORCED)	50	50	50	40

11. SERVICE TRENCHES MAY CAUSE DAMAGE TO FOUNDATIONS IF LOCATED CLOSE TO THE STRUCTURE. SEE TYPICAL DETAIL.
12. ALL REINFORCING BARS ARE TO BE D500N GRADE BARS UNLESS NOTED OTHERWISE. ALL REINFORCING MESH IS TO BE D50L UNLESS NOTED OTHERWISE.
13. PROVIDE 3-111M TRIMMER BARS MIN. 1500 LONG AT ALL EDGE AND STEP RE-ENTRANT CORNERS TIED TO THE UNDERSIDE OF SLAB MESH.
14. SPLICES IN REINFORCING BARS ARE TO LAP MIN 500mm.
15. PROVIDE 500x500 N12 'L' BARS AT ALL EXTERNAL CORNERS IN SLAB. 'L' BARS PROVIDED TOP AND BOTTOM IN PIERED AREAS. REFER TO TYPICAL DETAIL.
16. SLABS ARE TO BE LAIN ON 200um VAPOUR BARRIER ON 75mm COMPACTED DGB20 BLINDING LAYER.
17. PIERS ARE TO BE CLEANED OUT OF ALL LOOSE MATERIAL PRIOR TO THE INSPECTION BY THE ENGINEER. IN ADDITION THE CONTRACTOR IS TO ENSURE THAT ALL LOOSE MATERIAL IS REMOVED IMMEDIATELY PRIOR TO POURING. ALL PIERS ARE TO BE INSPECTED AND AFFIRMED BY THE ENGINEER PRIOR TO POURING.
18. THE CONTRACTOR IS TO ENSURE THAT THE FINISHED SURFACE GRADES AWAY FROM THE STRUCTURE AND THAT THE SITE STORMWATER AND DRAINAGE SYSTEMS ARE INSTALLED SO THAT WATER DOES NOT POND NEAR THE STRUCTURE DURING OR AFTER CONSTRUCTION.
19. IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO CHECK FOR ANY SEWER MAINS OR OTHER SERVICES LOCATED WITHIN THE ZONE OF INFLUENCE OF THE STRUCTURE, AND ADVISE THE ENGINEER OF THEIR PRESENCE.
20. THIS DESIGN HAS BEEN BASED ON THE FOLLOWING GEOTECHNICAL REPORTS:

GEOTECHNICAL AND SPECIALIST REPORT NOTES

1. THIS DESIGN IS BASED ON THE FOLLOWING REPORTS:
- REPORT NO. TERRA19780.REP1.REV0 BY TERRA INSIGHT.
 - REPORT NO. E2W-0327 DR001 (V1) BY EARTHZWATER.
 - REPORT NO. GEOTWOLL02606AA-AA BY COFFEY GEOTECHNICS.
 - REPORT NO. PA2707-RHD-ZZ-XX-RP-Z-0001 BY ROYAL HASKONING DHV
 - REPORT NO. 2126997 BY GHD

STRUCTURAL STEEL NOTES

1. ALL WORKMANSHIP AND MATERIAL SHALL BE IN ACCORDANCE WITH AS4100, AS5154 AND AS5131 EXCEPT WHERE VARIED BY THE CONTRACT DOCUMENTS.
2. CONSTRUCTION CATEGORY IN ACCORDANCE WITH AS/NZS5131 TO BE
- IMPORTANCE LEVEL -3
 - SERVICE CATEGORY -1
 - FABRICATION CATEGORY -1
 - CONSTRUCTION CATEGORY -2
3. UNLESS NOTED OTHERWISE, ALL STEEL SHALL BE C350 GRADE.
4. UNLESS NOTED OTHERWISE ALL BOLTS SHALL BE M16 CATEGORY 8.8/S. NO CONNECTION SHALL HAVE LESS THAN 2 BOLTS. ALL BOLTS AND WASHERS SHALL BE 316 GRADE STAINLESS STEEL.
5. FABRICATION SHALL COMPLY WITH AS5131.
6. ERECTION SHALL COMPLY WITH AS AS5131.
7. UNLESS NOTED OTHERWISE, ALL FILLET WELDS SHALL BE 6mm CONTINUOUS CATEGORY GP USING E41XX ELECTRODES. ALL BUTT WELDS SHALL BE COMPLETE PENETRATION BUTT WELDS TO AS 1554.1.
8. PROVIDE SEAL PLATES TO THE ENDS OF ALL HOLLOW SECTIONS.
9. ALL STEELWORK SHALL BE SECURELY TEMPORARILY BRACED BY THE ERECTOR AS NECESSARY TO STABILISE THE STRUCTURE DURING ERECTION.
10. IT IS THE BUILDERS RESPONSIBILITY TO PROVIDE ALL CLEATS AND HOLES AS REQUIRED FOR ALL CONNECTIONS, WHETHER OR NOT THEY ARE DETAILED ON THESE DRAWINGS.
11. ALL HOLDING DOWN BOLTS TO BE STAINLESS STEEL.
12. ALL CONNECTION DETAILS ARE TO BE IN ACCORDANCE WITH AISC STANDARDISED STRUCTURAL CONNECTIONS UNLESS NOTED OTHERWISE.

PIILING NOTES

1. PILES ARE DESIGNED IN ACCORDANCE WITH AS2159-2009 - PILING - DESIGN AND INSTALLATION FOR THE LOADS SPECIFIED IN THE PILING SCHEDULE ON DRAWING 21511/C04.
2. PILING INSTALLATION TO FOLLOW THE REQUIREMENTS PROVIDED BY THE FOLLOWING REPORTS:
- REPORT NO. TERRA19780.REP1.REV0 BY TERRA INSIGHT.
 - REPORT NO. E2W-0327 DR001 (V1) BY EARTHZWATER.
 - REPORT NO. GEOTWOLL02606AA-AA BY COFFEY GEOTECHNICS.
 - REPORT NO. PA2707-RHD-ZZ-XX-RP-Z-0001 BY ROYAL HASKONING DHV
 - REPORT NO. 2126997 BY GHD
3. AT THE COMPLETION OF THE WORK DEEMED SATISFACTORY BY THE ENGINEER, AN INSPECTION/PILE CERTIFICATE SHALL BE PROVIDED.
4. THE CONTRACTOR SHALL UTILISE A 'PILING INSTALLATION LOG-BOOK' DURING PILE INSTALLATION. THIS SHALL INCLUDE, BUT NOT BE LIMITED TO;
- PILE FOUNDING DEPTH
 - PILE EMBEDMENT DEPTH INTO ROCK
 - PILE CUT OFF LENGTH
 - INNER PILE VOLUME (WHEN COREFILLING IS REQUIRED)
5. THE CONTRACTOR IS TO ENSURE THE INSTALLATION EQUIPMENT IS CALIBRATED REGULARLY AT NO GREATER THAN SIX (6) MONTH INTERVALS.
6. CUT-OFF LEVELS PERFORMED BY THE CONTRACTOR MUST BE TRIMMED TO A TOLERANCE OF 25mm FROM THE DESIGNED CUT-OFF LEVEL.
7. ALL PILES SHALL HAVE HOLES CORED TO A DIAMETER AT LEAST MATCHING THAT OF THE PROPOSED P100 SDR17 PN10 PILE SLEEVE.
8. HDPE PILE SLEEVES TO EXTEND MINIMUM 500mm BELOW FINISHED ROCK SURFACE.
9. PILE SHAFTS TO BE INSTALLED AND HELD PLUMB TO CONTRACTORS DETAIL DURING INSTALLATION AND GROUTING.
10. PILES SHALL BE INSTALLED WITH A MAXIMUM OUT-OF-PLAN LOCATION TOLERANCE OF 25mm. PILES SHALL BE ACCURATELY SET OUT BY THE SITE SURVEYOR.
11. THE PILING CONTRACTOR SHALL BE RESPONSIBLE FOR THE CONSTRUCTION AND INSTALLATION OF THE PILES IN ACCORDANCE WITH THE CONSTRUCTION DRAWINGS.

DURABILITY OF PILES

1. PILES HAVE BEEN DESIGNED FOR A DESIGN LIFE OF 50 YEARS.

DREDGING NOTES:

1. ALL DREDGING AND EXCAVATION WORKS ARE TO BE CARRIED OUT STRICTLY IN ACCORDANCE WITH THE APPROVED REVIEW OF ENVIRONMENTAL FACTORS PREPARED BY PETER DALMAZZO VERSION v7 DATED 19 JULY 2021.
2. DREDGED MATERIAL IS TO BE SAMPLED AND TESTED IN ACCORDANCE WITH SAMPLING ANALYSIS AND QUALITY PLAN REF NO. E2W-0327 R001 (V3) BY EARTHZWATER. CONTRACTOR IS TO ADHERE TO SAMPLING METHODS, COLLECTION METHODOLOGY, SAMPLING FREQUENCY AND LABORATORY TESTING AS REQUIRED.
3. ADEQUATELY SAMPLED AND TESTED DREDGED SEDIMENT IS TO BE DISPOSED OF AT WEST NOWRA WASTE DEPOT. REFER TO EPA LICENCE VARIATION NOTICE NO. 1607043.
4. CUT AND DREDGED ROCK MATERIAL IS TO BE DISPOSED OF AT SHOALHAVEN CITY COUNCILS DEPOT IN CAMDEN STREET, ULLADULLA.

DESIGN LOADS

1. SUPERIMPOSED LOADS ARE GENERALLY IN ACCORDANCE WITH AS1170.1, AND AS NOTED BELOW UNLESS MORE STRINGENT REQUIREMENTS ARE SPECIFIED ELSEWHERE IN THE DOCUMENTATION.

TABLE L1	
LOCATION	LIVE LOAD (kPa)
PONTOONS/FINGERS	5
GANGWAYS	5
FLOATATION/STABILITY	3

2. DESIGN LIFE = 25 YEARS
3. ENVIRONMENTAL LOADS
- (i) WIND LOADS ARE IN ACCORDANCE WITH AS1170.2 AND AS3962-2020 AND AS FOLLOWS:
- WIND REGION - A2
 - TERRAIN CATEGORY - TC1.0
 - IMPORTANCE LEVEL - 3
 - ANNUAL PROBABILITY OF EXCEEDANCE - 1/1000
 - REGIONAL WIND VELOCITY (VRI) - 46 m/s
 - CONSIDERATION HAS BEEN MADE FOR THE FORCES OF DRAG ON VESSELS AND STRUCTURES.

- (ii) WAVE LOADS ARE IN ACCORDANCE WITH T4.2 OF AS3692-2020 FOR A 'MODERATE' WAVE CLIMATE FOR BEAM SEAS:
- WAVE ARI UTILISED - 1/50
 - SIGNIFICANT WAVE HEIGHT, Hs - 0.31m
 - MINIMUM HORIZONTAL FORCE - 2kN/m
 - CONSIDERATION FOR SEICHING AND MEASURED SIGNIFICANT WAVE HEIGHTS HAVE BEEN ANALYSED IN ACCORDANCE WITH REPORT NO. MHL1632 (DATED MAY 2007) AND MHL2593 (DATED JUNE 2018) BY MANLY HYDRAULICS LABORATORY.

(iii) BERTHING LOADS

TABLE L2			
BERTHING ENERGIES			
VESSEL LENGTH (m)	APPROACH VELOCITY (m/s)	BERTHING ENERGY (kNm)	ABNORMAL BERTHING ENERGY (kNm)
10	0.3	0.25	0.50
12	0.3	0.43	0.86

4. LOAD COMBINATIONS

- (i) THE ABOVE LOADS HAVE BEEN ANALYSED WITH COMBINATIONS IN ACCORDANCE WITH AS1170.0 AND AS4997-2005.

SITE WORKS:

1. ALL WORKS TO BE IN ACCORDANCE WITH SPECIFICATIONS AND AUSTRALIAN STANDARDS. CONFLICTS SHALL BE REFERRED TO THE SUPERINTENDENT FOR DIRECTION.
2. THE CONTRACTOR IS TO DESIGN, OBTAIN APPROVALS AND CARRY OUT REQUIRED TEMPORARY TRAFFIC CONTROL PROCEDURES DURING CONSTRUCTION IN ACCORDANCE WITH RMS & SHOALHAVEN CITY COUNCIL REGULATIONS AND REQUIREMENTS.
3. THE CONTRACTOR IS TO OBTAIN ALL AUTHORITY APPROVALS AS REQUIRED.
4. RESTORE ALL PAVED, COVERED, GRASSED AND LANDSCAPED AREAS TO THEIR ORIGINAL CONDITION ON COMPLETION OF WORKS.
5. ON COMPLETION OF ANY TRENCHING WORKS, ALL DISTURBED AREAS SHALL BE RESTORED TO THEIR ORIGINAL CONDITION, INCLUDING KERBS, FOOTPATHS, CONCRETE AREAS, GRAVEL, GRASSED AREAS AND ROAD PAVEMENTS.
6. THE CONTRACTOR SHALL ARRANGE ALL SURVEY SETOUT TO BE CARRIED OUT BY A REGISTERED SURVEYOR.
7. THE CONTRACTOR SHALL VERIFY ALL DIMENSIONS AND EXISTING LEVELS ON SITE PRIOR TO LODGMET OF TENDER AND PRIOR TO CONSTRUCTION.
8. THIS PLAN IS TO BE READ IN CONJUNCTION WITH THE ENGINEERING PLANS, AND ANY OTHER PLANS OR WRITTEN INSTRUCTIONS THAT MAY BE ISSUED RELATING TO DEVELOPMENT OF THE SUBJECT SITE.
9. ANY EXISTING TREES WHICH FORM PART OF THE FINAL LANDSCAPING PLAN SHALL BE PROTECTED FROM CONSTRUCTION ACTIVITIES BY:
- (A) PROTECTING THEM WITH BARRIER FENCING OR SIMILAR MATERIALS INSTALLED OUTSIDE THE DRIP LINE.
 - (B) ENSURING THAT NOTHING IS NAILED TO THEM.
 - (C) PROHIBITING PAVING, GRADING, SEDIMENT WASH OR PLACING OF STOCKPILES WITHIN THE DRIP LINE EXCEPT UNDER THE FOLLOWING CONDITIONS:
 - (i) ENCROACHMENT ONLY OCCURS ON ONE SIDE AND NO CLOSER TO THE TRUNK THAN EITHER 1.5 METRES OR HALF THE DISTANCE BETWEEN THE OUTER EDGE OF THE DRIP LINE AND THE TRUNK, WHICH EVER IS GREATER.
 - (ii) A DRAINAGE SYSTEM THAT ALLOWS AIR AND WATER TO CIRCULATE THROUGH THE ROOT ZONE (E.G. A GRAVEL BED) IS PLACED UNDER ALL FILL LAYERS OF MORE THAN 300 MILLIMETRES DEPTH.
 - (iii) CARE IS TAKEN NOT TO CUT ROOTS UNNECESSARILY NOR TO COMPACT THE SOIL AROUND THEM.
10. DO NOT OBTAIN DIMENSIONS BY SCALING THE DRAWINGS.
11. IN CASE OF DOUBT OR DISCREPANCY REFER TO SUPERINTENDENT FOR CLARIFICATION OR CONFIRMATION PRIOR TO THE COMMENCEMENT OF CONSTRUCTION.
12. WHERE NEW WORKS ABUT EXISTING THE CONTRACTOR SHALL ENSURE THAT A SMOOTH EVEN PROFILE, FREE FROM ABRUPT CHANGES IS OBTAINED.
13. MAKE SMOOTH TRANSITION TO EXISTING FEATURES AND CONSTRUCTION.
14. THESE PLANS SHALL BE READ IN CONJUNCTION WITH ALL APPROVED DRAWINGS AND SPECIFICATIONS PREPARED BY OTHER PROJECT CONSULTANTS.
15. TRENCHES THROUGH EXISTING ROAD AND CONCRETE PAVEMENTS SHALL BE SAWCUT TO FULL DEPTH OF CONCRETE AND A MIN 50mm IN BITUMINOUS PAVING.
16. ALL CONSTRUCTION WORK IS TO BE CARRIED OUT SO THAT AT ANY TIME ADJOINING PROPERTY OWNERS ARE NOT DEPRIVED OF AN ALL-WEATHER ACCESS OR SUBJECTED TO ADDITIONAL STORM WATER RUN-OFF DURING THE PERIOD OF CONSTRUCTION.
17. ALL GREEN WASTE IS EITHER TO BE REMOVED FROM SITE OR MULCHED ON SITE AND SPREAD OVER DISTURBED AREAS. NO GREEN WASTE IS TO BE BURNT ON SITE.

EXISTING SERVICES:

1. CARE TO BE TAKEN WHEN EXCAVATING NEAR EXISTING SERVICES. NO MECHANICAL EXCAVATIONS ARE TO BE UNDERTAKEN OVER COMMUNICATION, GAS OR ELECTRICAL SERVICES. HAND EXCAVATION ONLY IN THESE AREAS.
2. IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO DETERMINE AND CONFIRM THE LOCATION AND LEVEL OF ALL EXISTING SERVICES PRIOR TO THE COMMENCEMENT OF ANY WORK. ANY DISCREPANCIES SHALL BE REPORTED TO THE SUPERINTENDENT. CLEARANCES SHALL BE DISCUSSED WITH THE RELEVANT SERVICE AUTHORITIES.
3. THE CONTRACTOR SHALL PROTECT AND MAINTAIN ALL EXISTING SERVICES THAT ARE TO BE RETAINED IN THE VICINITY OF THE PROPOSED WORKS. ANY AND ALL DAMAGE TO THESE SERVICES AS A RESULT OF THESE WORKS SHALL BE REPAIRED BY THE CONTRACTOR UNDER THE DIRECTION OF THE SUPERINTENDENT, AND AT NO EXTRA COST.
4. THE CONTRACTOR SHALL ALLOW FOR ADJUSTMENT (IF REQUIRED) OF EXISTING SERVICES IN AREAS AFFECTED BY WORKS.
5. THE CONTRACTOR SHALL ALLOW FOR THE CAPPING OFF, EXCAVATION AND REMOVAL (IF REQUIRED) OF EXISTING SERVICES IN AREA AFFECTED BY WORKS UNLESS DIRECTED OTHERWISE ON THE DRAWINGS OR BY THE SUPERINTENDENT.
6. THE CONTRACTOR SHALL ENSURE THAT AT ALL TIMES SERVICES TO ALL BUILDINGS NOT AFFECTED BY THE WORKS ARE NOT DISRUPTED.
7. PRIOR TO COMMENCEMENT OF ANY WORKS THE CONTRACTOR SHALL GAIN APPROVAL FOR THE RELOCATION AND/OR CONSTRUCTION OF TEMPORARY SERVICES AND FOR ANY ASSOCIATED INTERRUPTION OF SUPPLY.
8. THE CONTRACTOR SHALL CONSTRUCT TEMPORARY SERVICES TO MAINTAIN EXISTING SUPPLY TO BUILDINGS REMAINING IN OPERATION DURING WORKS TO THE SATISFACTION AND APPROVAL OF THE SUPERINTENDENT. ONCE DIVERSION IS COMPLETE AND COMMISSIONED THE CONTRACTOR SHALL REMOVE ALL SUCH TEMPORARY SERVICES AND MAKE GOOD TO THE SATISFACTION OF THE SUPERINTENDENT.
9. PRIOR TO COMMENCEMENT OF EXCAVATION, THE CONTRACTOR SHALL DETERMINE THE LOCATION OF ALL SERVICES AND WILL BE RESPONSIBLE FOR ADJUSTMENT AND REPAIR OF SERVICES.
10. ADJUST ALL UTILITY SERVICE COVERS TO SUIT NEW GRADES & LEVELS TO SERVICE PROVIDERS SATISFACTION.

EARTHWORKS:

1. EARTHWORKS ARE TO BE CARRIED OUT IN ACCORDANCE WITH GEOTECHNICAL ENGINEERS RECOMMENDATIONS. REFER TO INFORMATION PROVIDED BY SHOALHAVEN CITY COUNCIL.
2. STRIP TOPSOIL, VEGETABLE MATTER AND RUBBLE TO EXPOSE NATURALLY OCCURRING MATERIAL AND STOCKPILE ON SITE AS DIRECTED BY THE SUPERINTENDENT.
3. WHERE FILLING IS REQUIRED TO ACHIEVE DESIGN SUBGRADE, PROOF ROLL EXPOSED NATURAL SURFACE WITH A MINIMUM OF TEN PASSES OF A VIBRATING ROLLER (MINIMUM STATIC WEIGHT OF 10 TONNES) IN THE PRESENCE OF THE SUPERINTENDENT.
4. ALL SOFT, WET OR UNSUITABLE MATERIAL IS TO BE REMOVED AS DIRECTED BY THE SUPERINTENDENT AND REPLACED WITH APPROVED MATERIAL SATISFYING THE REQUIREMENTS LISTED BELOW.
5. THE CONTRACTOR SHALL PROGRAM THE EARTHWORKS OPERATION SO THAT THE WORKING AREAS ARE ADEQUATELY DRAINED DURING THE PERIOD OF CONSTRUCTION. THE SURFACE SHALL BE GRADED AND SEALED OFF TO REMOVE DEPRESSIONS, ROLLER MARKS AND SIMILAR WHICH WOULD ALLOW WATER TO POND AND PENETRATE THE UNDERLYING MATERIAL. ANY DAMAGE RESULTING FROM THE CONTRACTOR NOT OBSERVING THESE REQUIREMENTS SHALL BE RECTIFIED AT THE CONTRACTORS COST.
6. IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO ENSURE AND MAINTAIN THE INTEGRITY OF ALL SERVICES, CONDUITS AND PIPES DURING CONSTRUCTION, SPECIFICALLY DURING THE BACKFILLING AND COMPACTION PROCEDURE. ANY AND ALL DAMAGE TO NEW OR EXISTING SERVICES AS A RESULT OF THESE WORKS SHALL BE REPAIRED BY THE CONTRACTOR AT NO EXTRA COST.
7. USE OF VIBRATING ROLLERS ARE TO BE LIMITED DUE TO THE CLOSENESS OF EXISTING STRUCTURES. SAFE DISTANCE = 1.5 x DRUM WEIGHT (DMW)

TIDAL PLANES	
TIDAL PLANE	LEVEL (m AHD)
HAT	1.080
HHWSS	0.958
MHWS	0.617
MHW	0.509
MHWN	0.401
MSL	0.041
MLWN	-0.319
MLW	-0.427
MLWS	-0.536
ISLW	-0.779
LAT	-0.870
TIDAL PLANE VALUES TAKEN FROM AWRCH# 216471 FROM MANLY HYDRAULICS LAB.	

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Rev.	Amendments
A	ISSUED FOR CONSTRUCTION

Approved	Date
P.LITTLE	29.08.2023

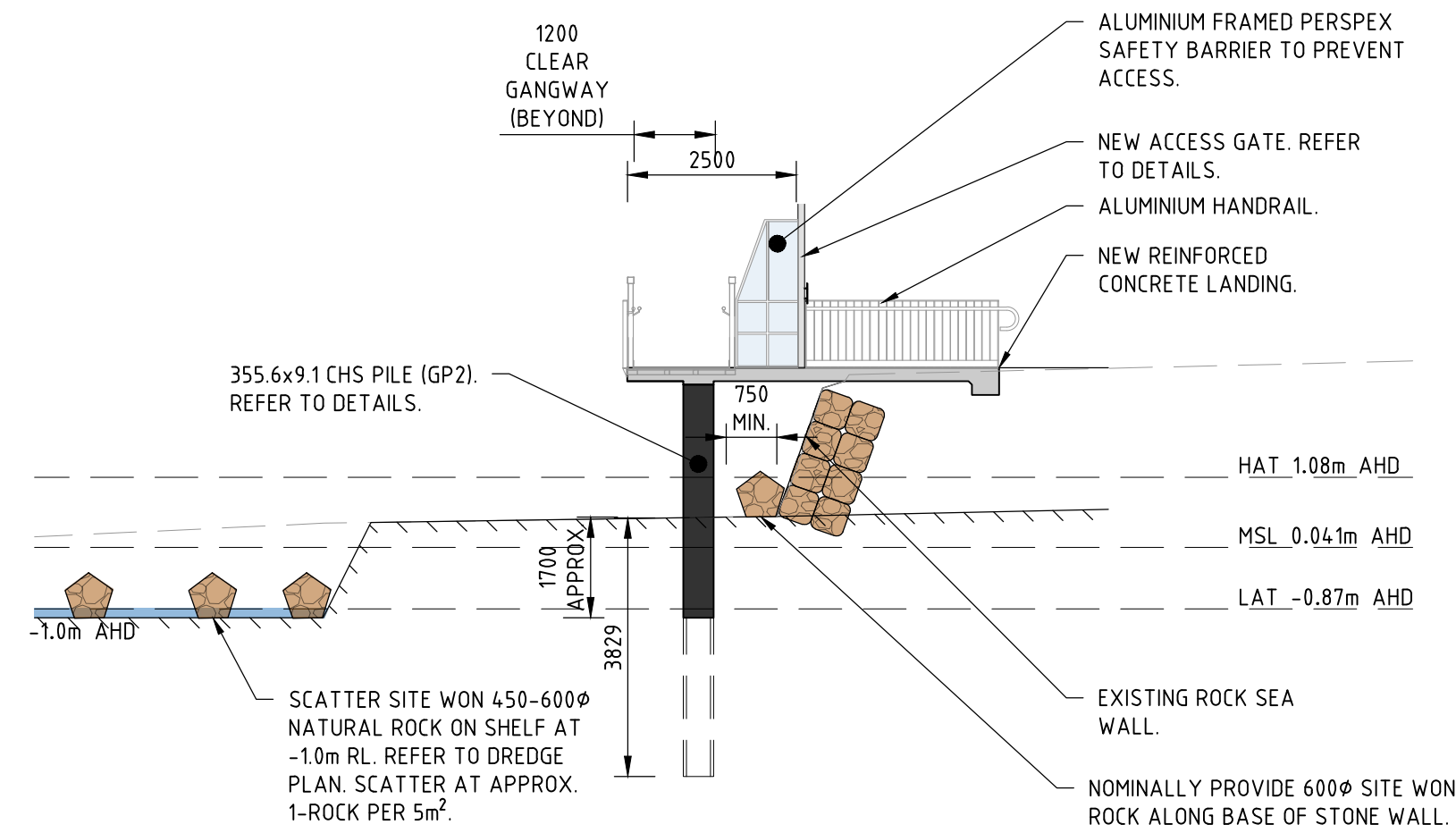


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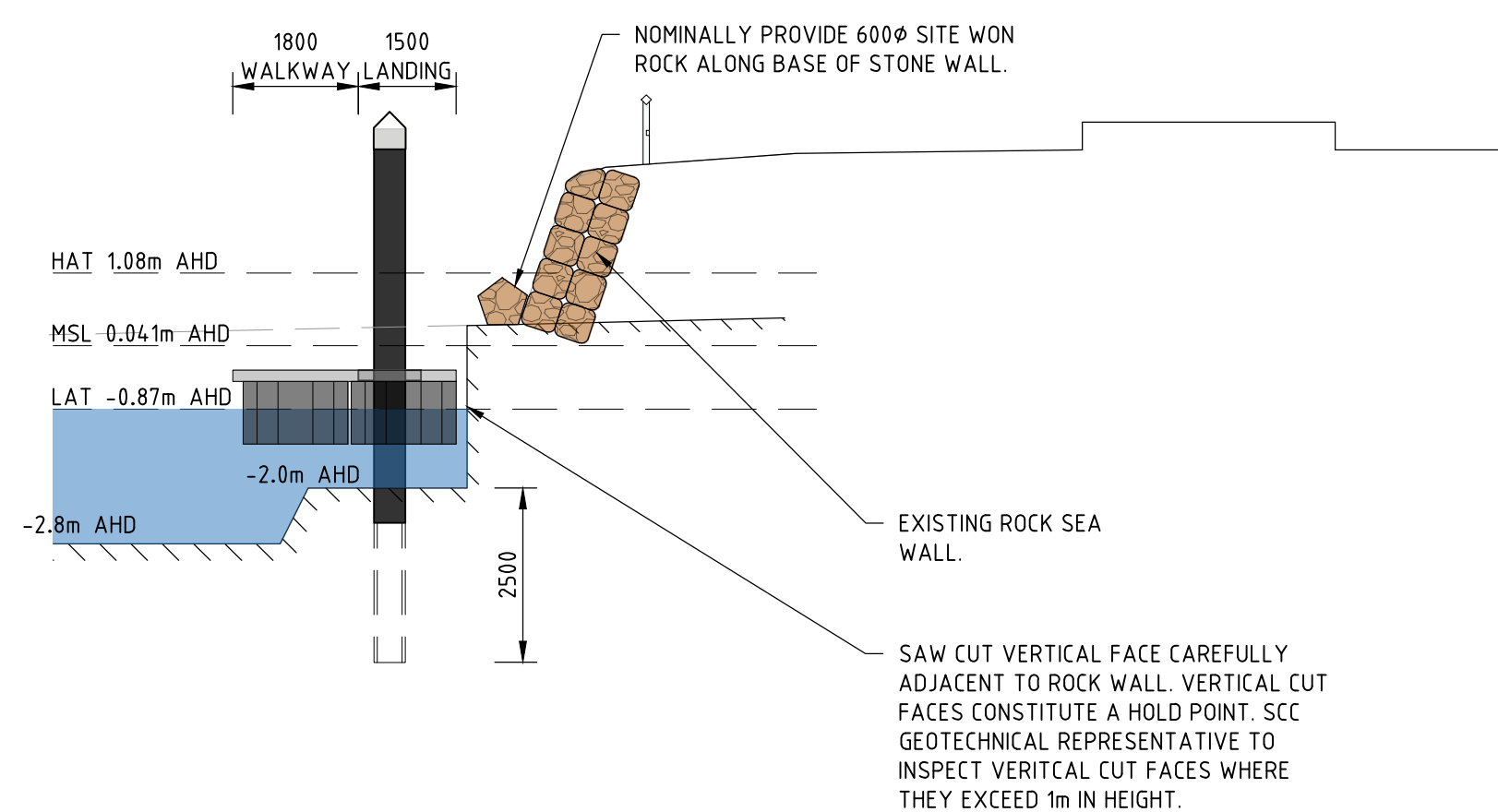
NOTES SHEET

PROJECT: ULLADULLA HARBOUR BERTHING FACILITY
AT: ULLADULLA HARBOUR
FOR: SHOALHAVEN CITY COUNCIL

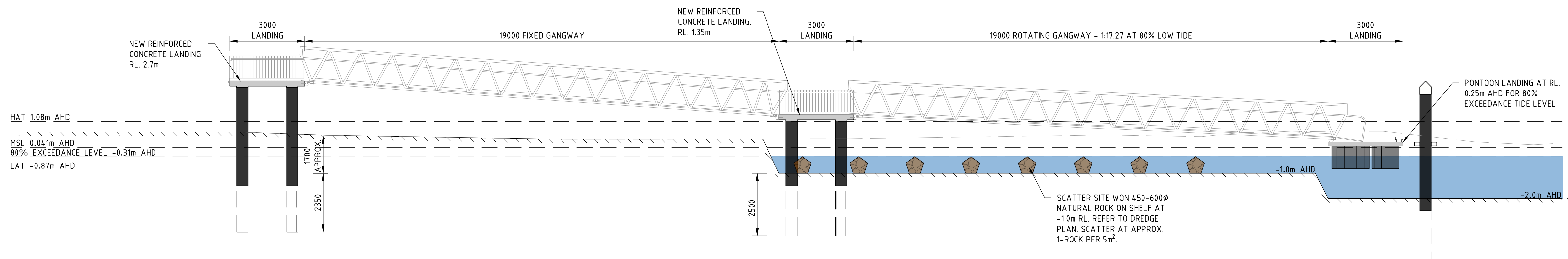
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Date: 29.08.2023	
Drawing No.	Rev
21511/C02	A



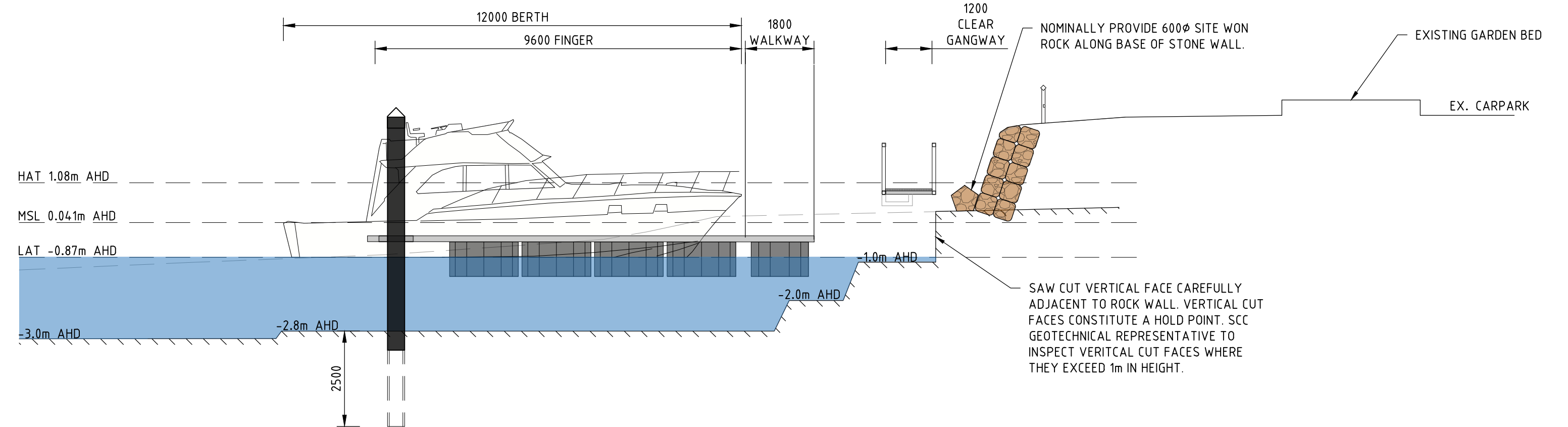
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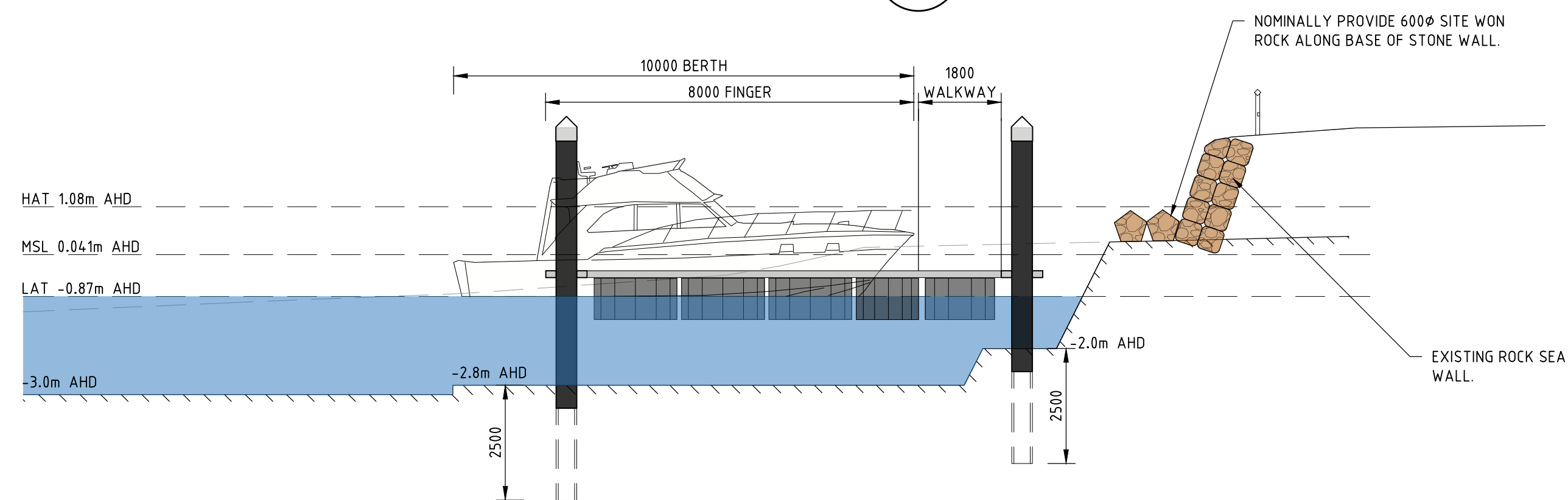
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TYPICAL CROSS-SECTION (SHOWN AT LAT) SCALE 1:100



SECTION 5
TYPICAL CROSS-SECTION (80% LOW TIDE) SCALE 1:100



SECTION 2
TYPICAL CROSS-SECTION (SHOWN AT LAT) SCALE 1:100



SECTION 4
TYPICAL CROSS-SECTION (SHOWN AT LAT) SCALE 1:100

- NOTES ON ROCK CUT BATTER:**
1. ENSURE ALL AREAS UNDER PROPOSED FLOATING PONTOONS AND BERTHS AND FAIRWAYS ARE CUT TO AT LEAST THE RL LEVELS SHOWN.
 2. RETAIN THE NATURAL ROCK SURFACE WHERE POSSIBLE.
 3. ROCK BATTERS AND ROCK FACES ARE TO BE ASSESSED ON SITE BY SCC GEOTECHNICAL REPRESENTATIVE.
 4. PLACE NATURAL ROCKS ON CUT ROCK PLATFORMS AT RL -1.0m AHD AT APPROX. 1-ROCK PER 5m². DO NOT PLACE UNDER FLOATING PONTOONS, BERTHS OR FAIRWAY.
 5. INCREASE SURFACE COMPLEXITY OF CUT BENCHES AND BATTERS WHERE POSSIBLE ON SUB-TIDAL AND INTER-TIDAL SURFACES BY ROUGHENING OR CREATING CREVICES.
 6. CREATE SMALL, NATURAL LOOKING ROCK POOLS WHERE POSSIBLE ON THE RETAINED INTER-TIDAL PLATFORM.



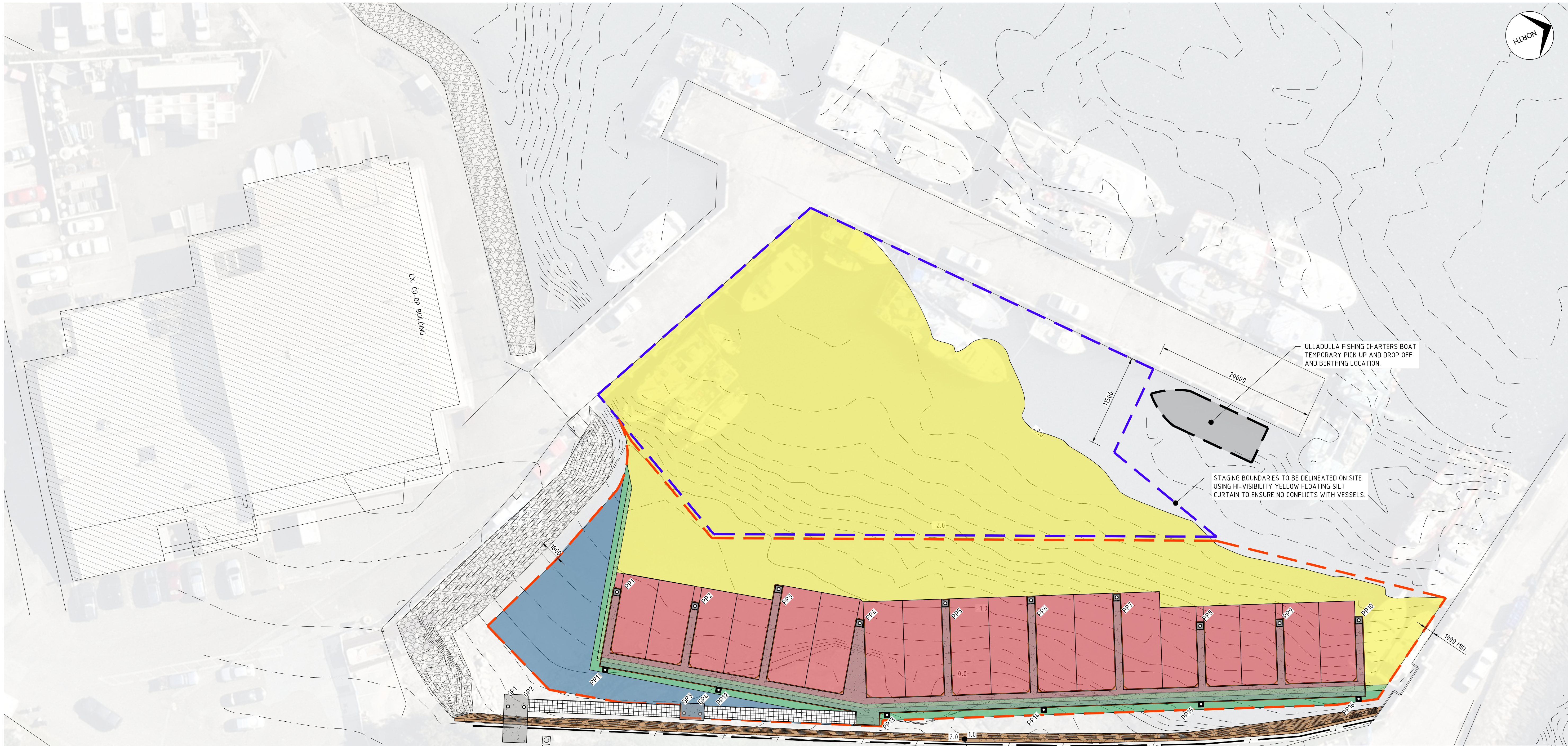
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TYPICAL SECTIONS		Design: P.LITTLE
PROJECT: ULLADULLA HARBOUR BERTHING FACILITY AT: ULLADULLA HARBOUR FOR: SHOALHAVEN CITY COUNCIL		Drawn: P.LITTLE
Date: 29.08.2023	Drawing No. 21511/C05	Rev A



CUT/FILL VOLUMES:

CUT AND FILL VOLUMES PROVIDED ARE BASED ON THE SUBTRACTION OF EXISTING SURFACES (SEDIMENT SURVEY LEVELS) FROM TRIANGULATED DESIGN SURFACES. CUT AND FILL VOLUMES ARE BASED ON THE FOLLOWING BATHYMETRIC DATA PROVIDED TO WESTLAKE PUNNETT & ASSOCIATES PTY LTD:

- SURVEY U17117_DET_A BY RYGATE AND WEST DATED 10.03.2017
- HYDROGRAPHIC SURVEY ULLADULLA HARBOUR BY HYDROGRAPHIC & CADASTRAL SURVEY PLAN NO. HCS465-1 DATED 11.08.2021.
- DCP LOGS BY TERRA INSIGHT PROJ. NO. TERRA22-315 DATED 08.08.2022.

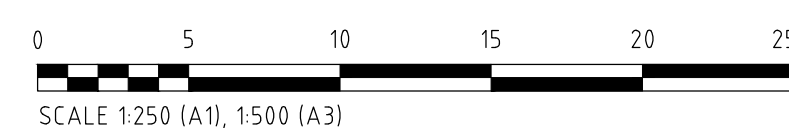
CUT TO DESIGN DREDGE LEVELS	
TOTAL CUT (SEDIMENT)	2187 m³
TOTAL CUT (ROCK)	2956 m³
TOTAL CUT	5143 m³

LEGEND

- DREDGE TO RL -3.0m AHD
- DREDGE TO RL -2.8m AHD
- DREDGE TO RL -2.0m AHD
- DREDGE TO RL -1.0m AHD. SCATTER NOM. 450-600Ø SITE WON ROCK ON RL -1.0m AHD PLATFORM AT APPROX. RATE OF 1-ROCK PER 5m².
- INDICATES LINE OF PROPOSED STAGE 1 DREDGE BOUNDARY
- INDICATES LINE OF PROPOSED STAGE 2 DREDGE BOUNDARY
- INDICATES EXISTING CONTOURS

DREDGING PLAN

SCALE: 1:250



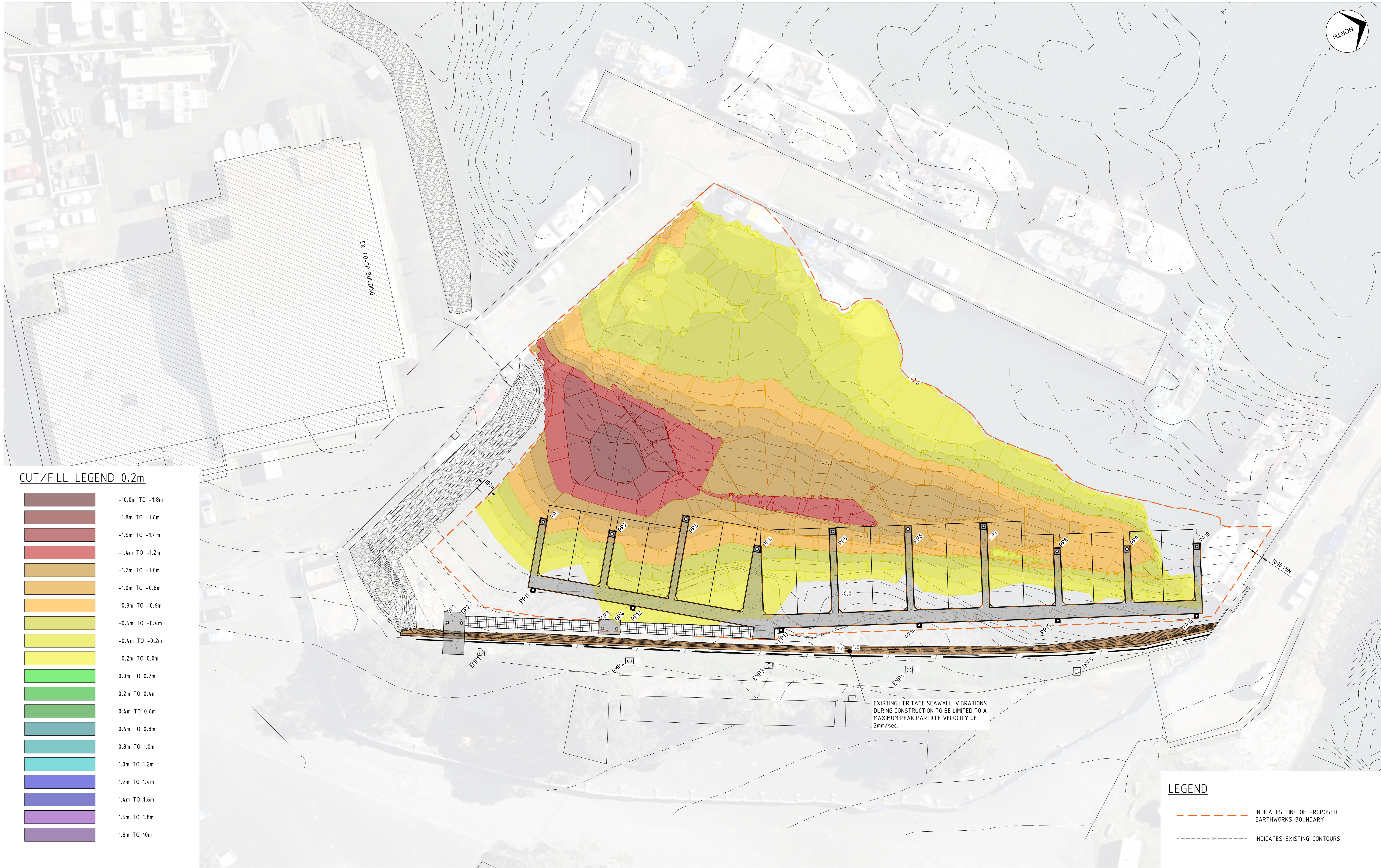
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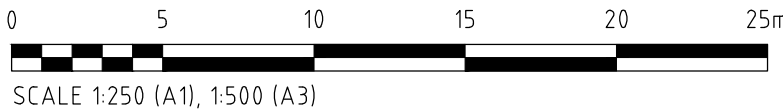
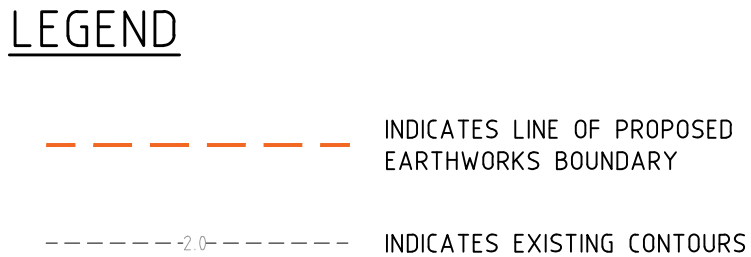
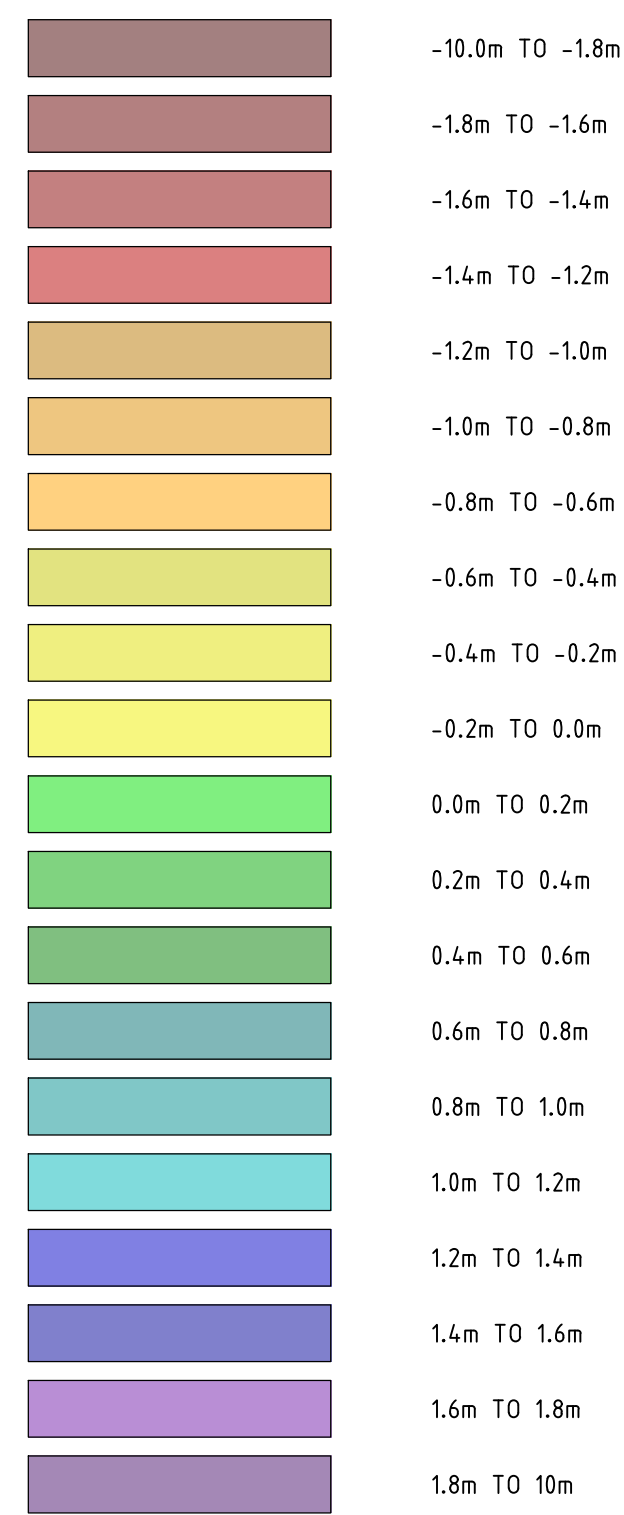
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DREDGE PLAN	
PROJECT: ULLADULLA HARBOUR BERTHING FACILITY AT: ULLADULLA HARBOUR FOR: SHOALHAVEN CITY COUNCIL	Design: P.LITTLE Drawn: P.LITTLE Checked: B.ASHE Date: 29.08.2023 Drawing No. 21511/C06 Rev A



CUT/FILL LEGEND 0.2m



SEDIMENT EARTH WORKS PLAN
SCALE: 1:250

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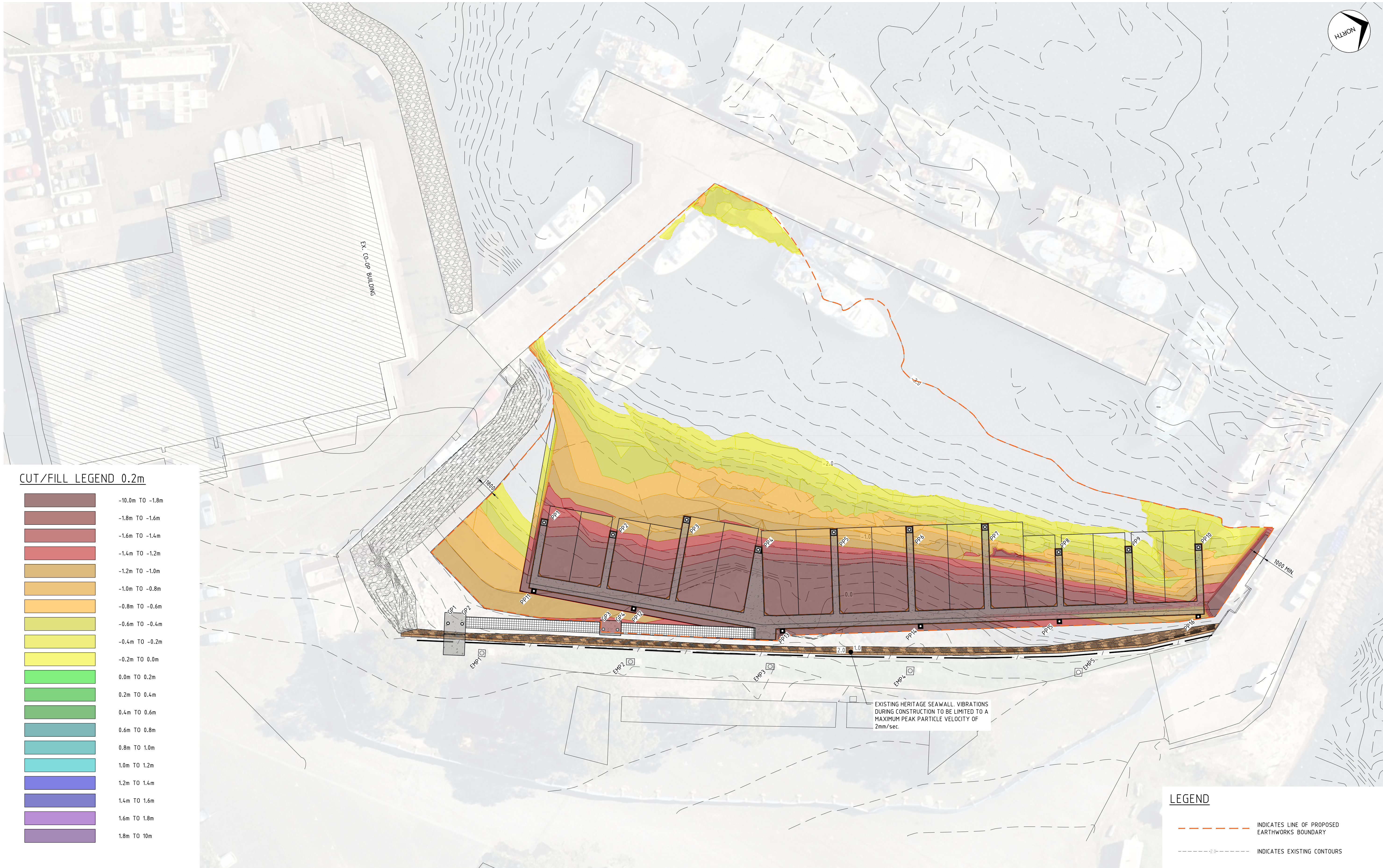
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SEDIMENT BULK EARTHWORKS PLAN		Design: P.LITTLE
PROJECT: ULLADULLA HARBOUR BERTHING FACILITY AT: ULLADULLA HARBOUR FOR: SHOALHAVEN CITY COUNCIL		Drawn: P.LITTLE
		Checked: B.ASHE
		Date: 29.08.2023
Drawing No.	Rev	
21511/C07	A	

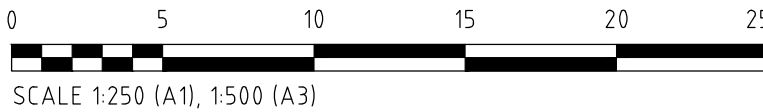


ROCK BULK EARTHWORKS PLAN
SCALE: 1:250

LEGEND

--- INDICATES LINE OF PROPOSED EARTHWORKS BOUNDARY

--- INDICATES EXISTING CONTOURS



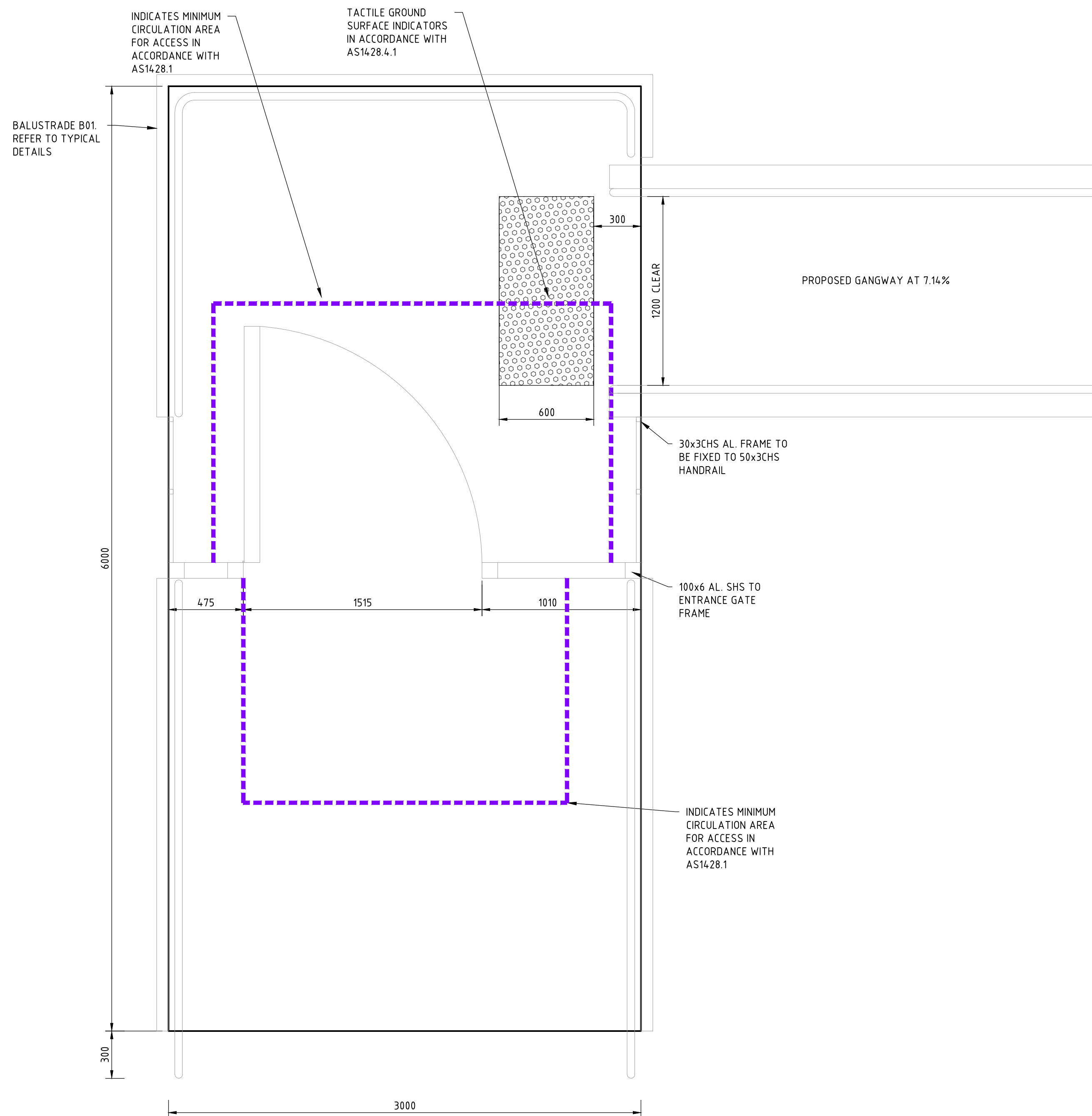
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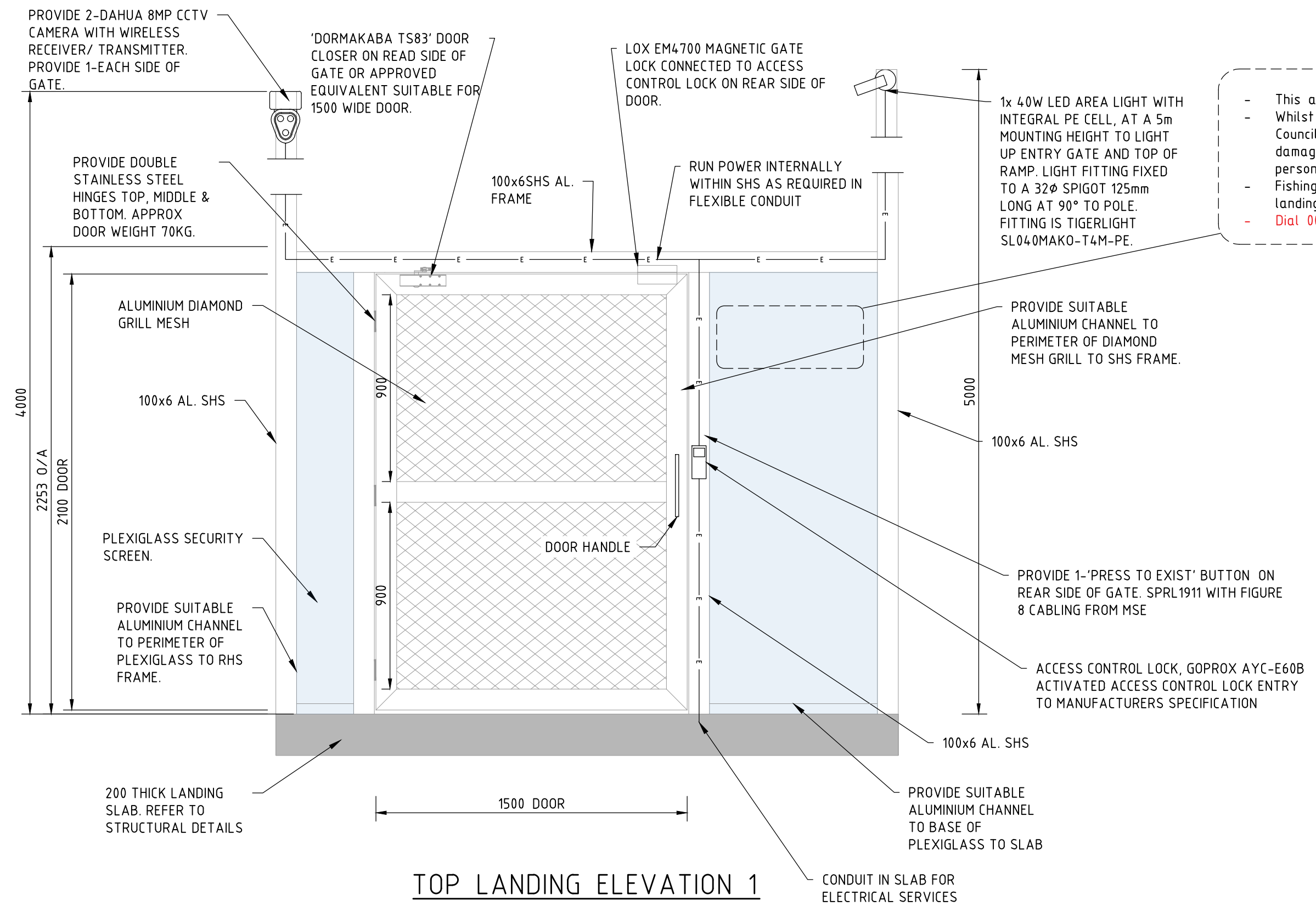


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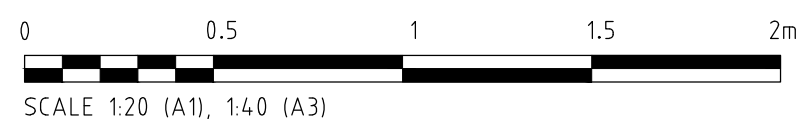
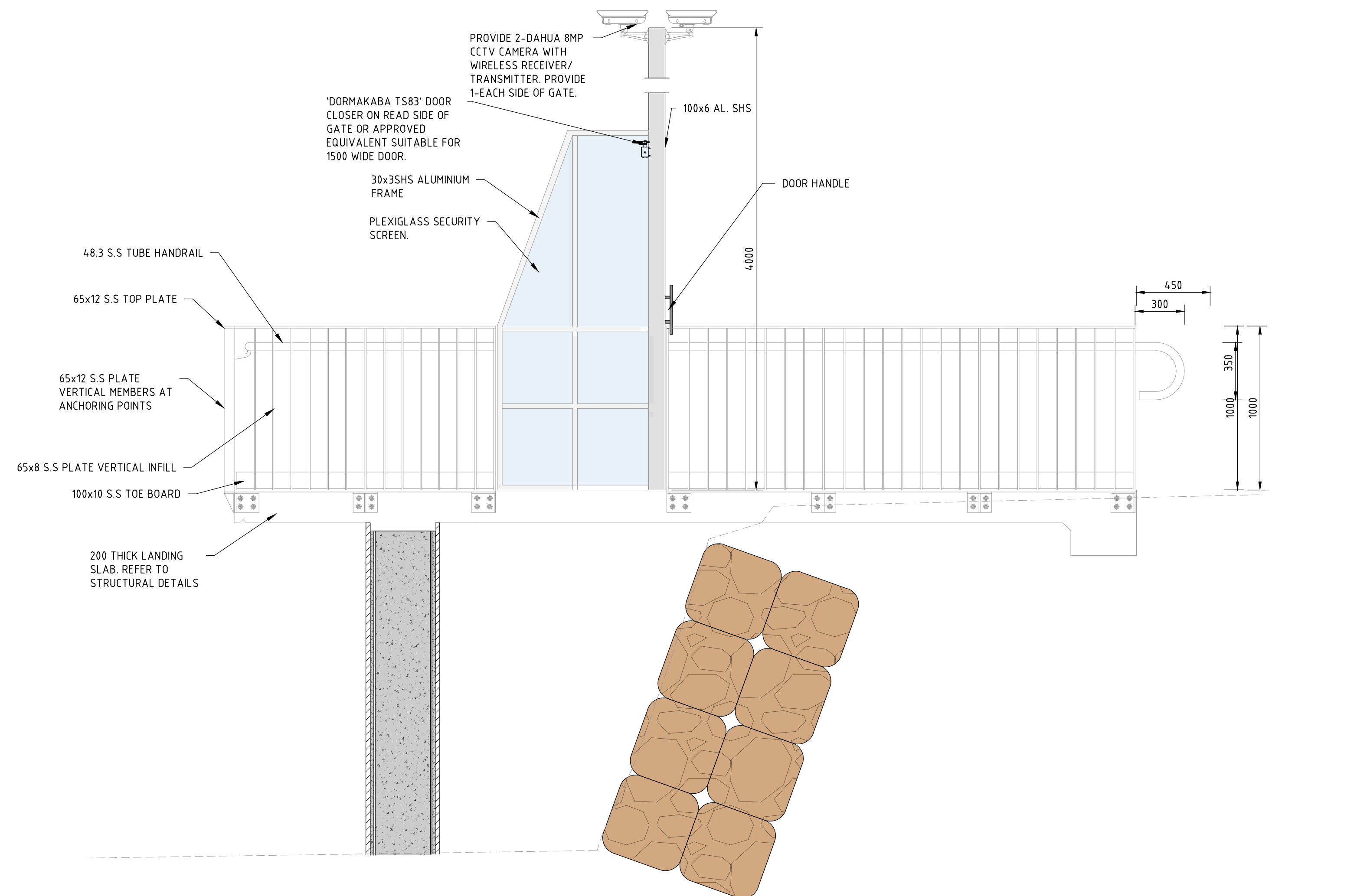
ROCK BULK EARTHWORKS PLAN		Design: P.LITTLE
		Drawn: P.LITTLE
		Checked: B.ASHE
PROJECT: ULLADULLA HARBOUR BERTHING FACILITY		Date: 29.08.2023
AT: ULLADULLA HARBOUR		Drawing No.
FOR: SHOALHAVEN CITY COUNCIL		21511/C08
		Rev A



TOP LANDING LAYOUT PLAN
SCALE: 1:20



- This area is under 24hr CCTV surveillance.
- Whilst every care has been taken, Shoalhaven City Council takes no responsibility or liability for damage, loss or injury to marine craft, property or persons using these facilities.
- Fishing is not permitted off the pontoons or landings.
- Dial 000 in Emergencies.



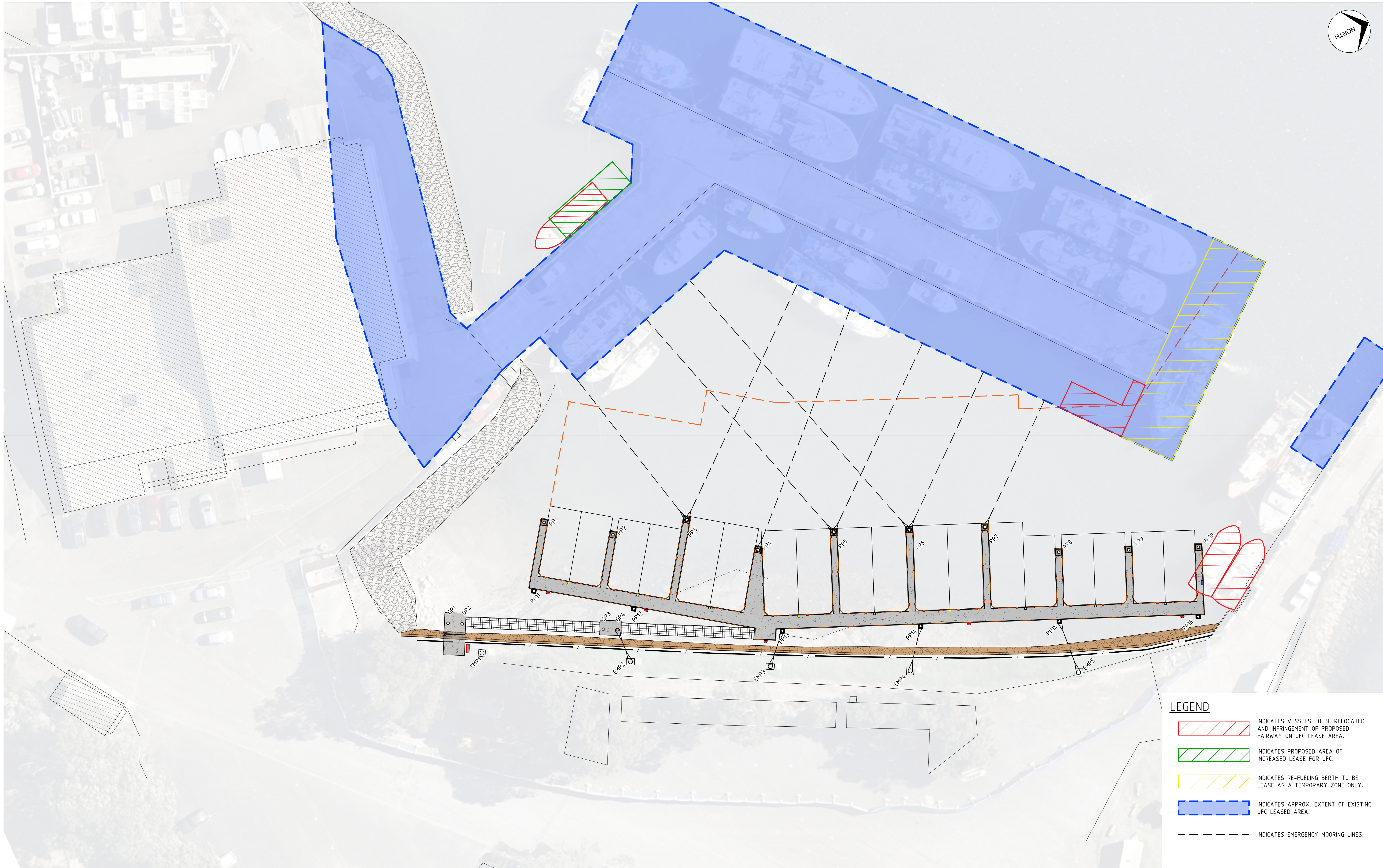
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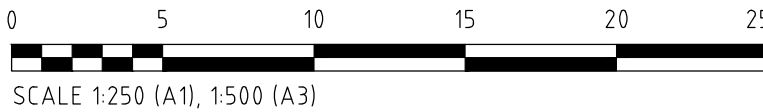
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LANDING PLAN AND ELEVATIONS		Design: P.LITTLE
		Drawn: P.LITTLE
		Checked: B.ASHE
PROJECT: ULLADULLA HARBOUR BERTHING FACILITY AT: ULLADULLA HARBOUR FOR: SHOALHAVEN CITY COUNCIL		Date: 29.08.2023
Drawing No.	Rev	
21511/C09	A	



EMERGENCY MOORING PLAN
SCALE: 1:250

- LEGEND**
- INDICATES VESSELS TO BE RELOCATED AND INFRINGEMENT OF PROPOSED FAIRWAY ON UFC LEASE AREA.
 - INDICATES PROPOSED AREA OF INCREASED LEASE FOR UFC.
 - INDICATES RE-FUELING BERTH TO BE LEASE AS A TEMPORARY ZONE ONLY.
 - INDICATES APPROX. EXTENT OF EXISTING UFC LEASED AREA.
 - INDICATES EMERGENCY MOORING LINES.



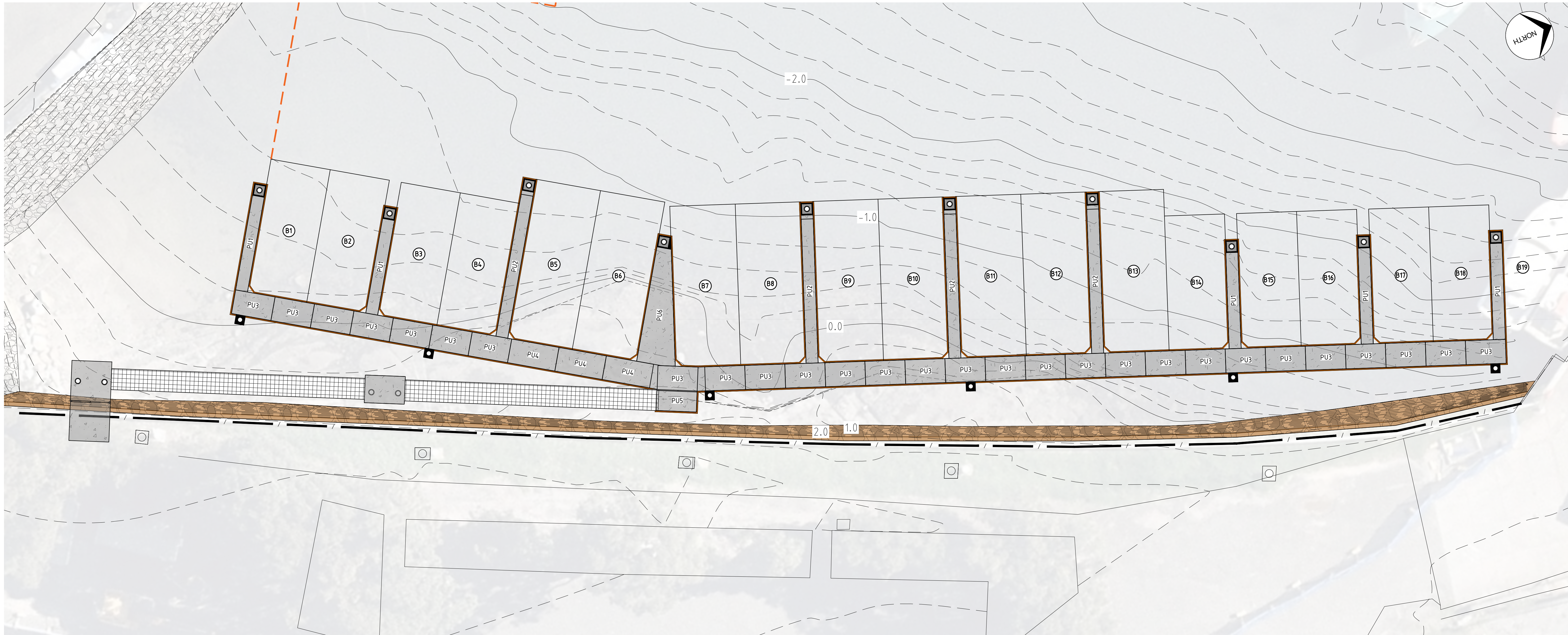
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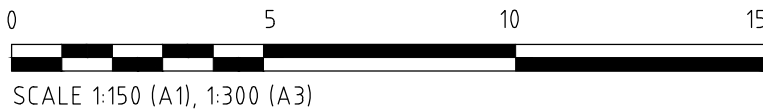
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EMERGENCY MOORING PLAN		Design: P.LITTLE
		Drawn: P.LITTLE
		Checked: B.ASHE
PROJECT: ULLADULLA HARBOUR BERTHING FACILITY		Date: 29.08.2023
AT: ULLADULLA HARBOUR		Drawing No.
FOR: SHOALHAVEN CITY COUNCIL		21511/C10
		Rev A



PONTOON LAYOUT PLAN
SCALE: 1:150

- LEGEND**
- PU1 PONTON UNIT SUITABLE FOR FINGER PONTON FOR 10m BERTH. APPROX. 7.2m x 0.9m WITH CONCRETE FINISH.
 - PU2 PONTON UNIT SUITABLE FOR FINGER PONTON FOR 12m BERTH. APPROX. 10.8m x 0.9m WITH CONCRETE FINISH.
 - PU3 PONTON UNIT SUITABLE FOR 1.8m WIDE WALKWAY. APPROX. 3m x 1.8m WITH CONCRETE FINISH.
 - PU4 PONTON UNIT SUITABLE FOR 1.8m WIDE WALKWAY. APPROX. 3.6m x 1.8m WITH CONCRETE FINISH.
 - PU5 PONTON UNIT SUITABLE FOR 1.5m WIDE LANDING. APPROX. 3m x 1.5m WITH CONCRETE FINISH.
 - PU6 CUSTOM FINGER PONTON UNIT WITH CONCRETE FINISH.
- INDICATES EXTENT OF TIMBER FENDERS.



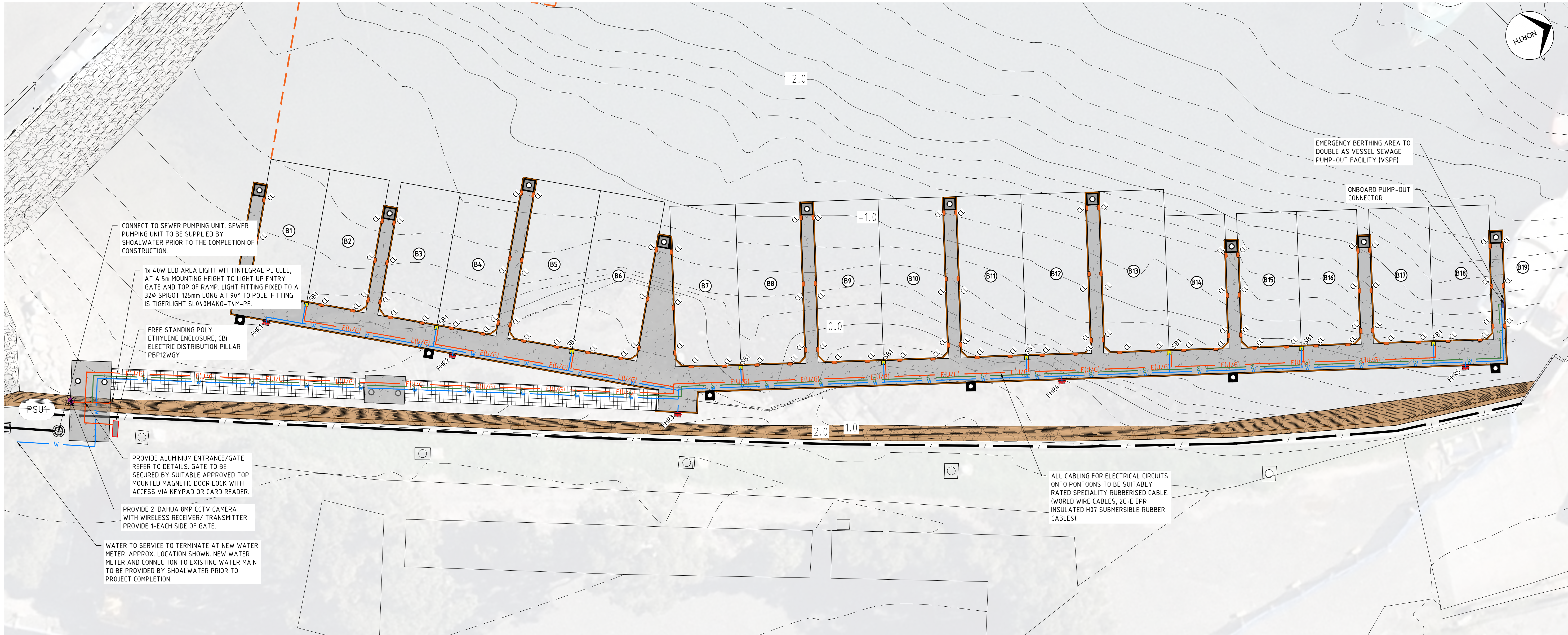
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PONTOON LAYOUT PLAN		Design: P.LITTLE
		Drawn: P.LITTLE
		Checked: B.ASHE
PROJECT: ULLADULLA HARBOUR BERTHING FACILITY AT: ULLADULLA HARBOUR FOR: SHOALHAVEN CITY COUNCIL		Date: 29.08.2023
Drawing No.	Rev	
21511/C11	A	



MARINA SERVICES AND CLEAT PLAN
SCALE: 1:150

- ELECTRICAL:**
- ALL ELECTRICAL INSTALLATIONS ARE TO BE CARRIED OUT IN ACCORDANCE WITH AS3004.1 AND AS/NZS3000 AS WELL AS THE REQUIREMENTS OF AS3962.
 - EARTH LEAKAGE CIRCUIT BREAKER DEVICES SHALL BE USED ON ALL ELECTRICAL CIRCUITS, INCLUDING MARINA BERTHS.
 - ALL ELECTRICAL WORK TO BE IN ACCORDANCE WITH SPECIFICATION NO 2201/R01 BY EIVSON LITTLE ELECTRICAL DATED 09.12.2022.
 - LEAD IN POWER TO BE SUPPLIED BY OTHERS FOLLOWING COMPLETION OF CONSTRUCTION WORKS. TEMPORARY POWER TO BE PROVIDED BY THE CONTRACTOR FOR THE DURATION OF CONSTRUCTION AND FOR COMMISSIONING.
- WATER:**
- WATER SUPPLY IS TO BE PROVIDED SHOALHAVEN CITY COUNCIL.
 - PIPING OF WATER IS TO BE PROVIDED IN A FLEXIBLE, NON-CORRODIBLE, ULTRAVIOLET-STABILISED PIPING IN ACCORDANCE WITH AS3962.
- SEWER PUMP OUT:**
- ALL SEWER PUMP OUT WORKS ARE TO BE CARRIED OUT IN ACCORDANCE WITH THE NSW DEPARTMENT OF WATER AND ENERGY 'LIQUID TRADE WASTE REGULATION GUIDELINES - 2009' AND THE NSW DPIE 'LIQUID TRADE WASTE MANAGEMENT GUIDELINES - 2021'.
 - PUMP OUT ARRANGEMENT TO BE GENERALLY IN ACCORDANCE WITH FIGURE 10 OF THE NSW DEPARTMENT OF WATER AND ENERGY 'LIQUID TRADE WASTE REGULATION GUIDELINES'.
 - AN INSPECTION AND MAINTENANCE PLAN SHALL BE PROVIDED TO THE PRINCIPAL FOR THE PUMP OUT FACILITY.

LEGEND

- CL INDICATES 300 LONG CAST-ALLOY CLEAT. CLEAT-1386 BY MARINE DOCK SYSTEMS OR APPROVED SIMILAR.
- SB1 INDICATES M-TECH STERLING MARINE PEDESTALS, MP1100ST. EACH PEDESTAL TO COMPRISE:
 - 2x15A RCBO
 - 1x6A RCBO
 - 2x15A SOCKET OUTLETS
 - 1x LED TOP LIGHT WITH INTEGRAL PE CELL
 - 1x 3/4" TAP FOR WATER
- CCTV INDICATES 2-DAHUA 8MP CCTV CAMERA WITH WIRELESS RECEIVER/ TRANSMITTER. PROVIDE 1-EACH SIDE OF GATE.
- FHR INDICATES FIRE HOSE REEL
- S INDICATES SEWER SUCTION LINE
- E(U/G) INDICATES ELECTRICAL SUPPLY LINE
- W INDICATES WATER SUPPLY LINE



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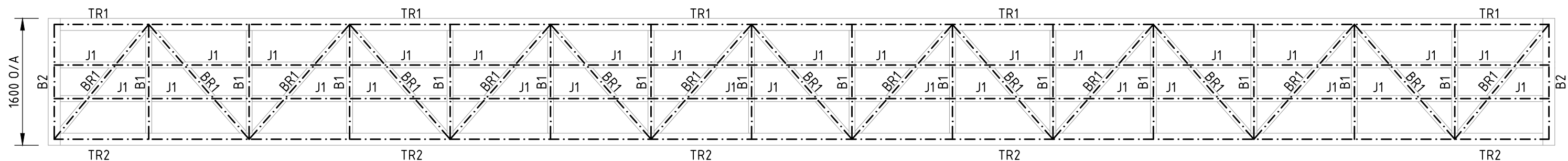


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MARINA SERVICES AND CLEAT PLAN CONCEPT - PONTOON MANUFACTURER TO CONFIRM		Design: P.LITTLE
PROJECT: ULLADULLA HARBOUR BERTHING FACILITY AT: ULLADULLA HARBOUR FOR: SHOALHAVEN CITY COUNCIL		Drawn: P.LITTLE Checked: B.ASHE
Date: 29.08.2023		Drawing No. 21511/C12
Rev A		

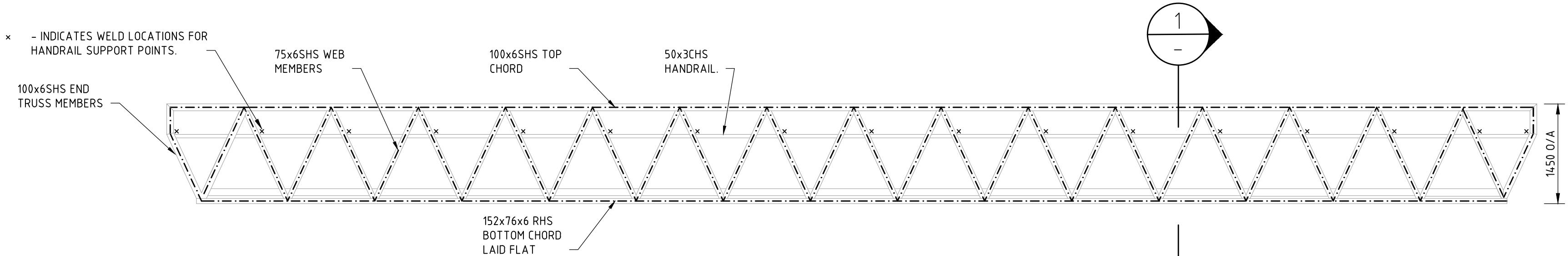
MEMBER LIST:

- B1 = 75x3SHS AL.
B2 = 152x76x6RHS AL. LAID FLAT EACH END.
BR1 = 75x3SHS AL. DIAGONAL BRACE
J1 = 75x3SHS AL. JOISTS
TR1-TR2 = GANGWAY TRUSS CONSTRUCTED USING 100x6SHS AL. TOP CHORD, 152x76x3RHS AL. BOTTOM CHORD AND 75x6SHS AL. WEB MEMBERS.



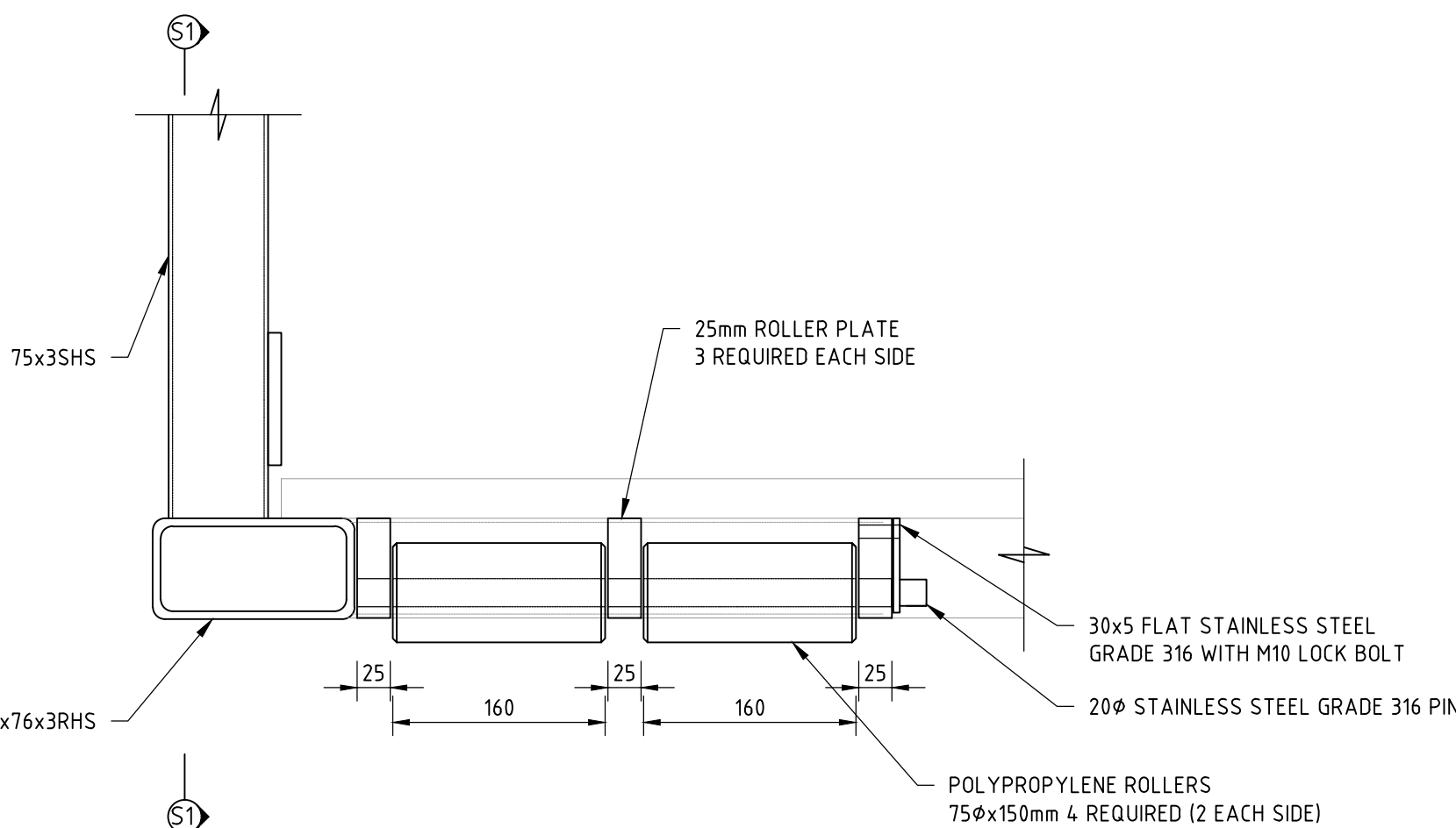
GANGWAY LAYOUT PLAN

SCALE: 1:50



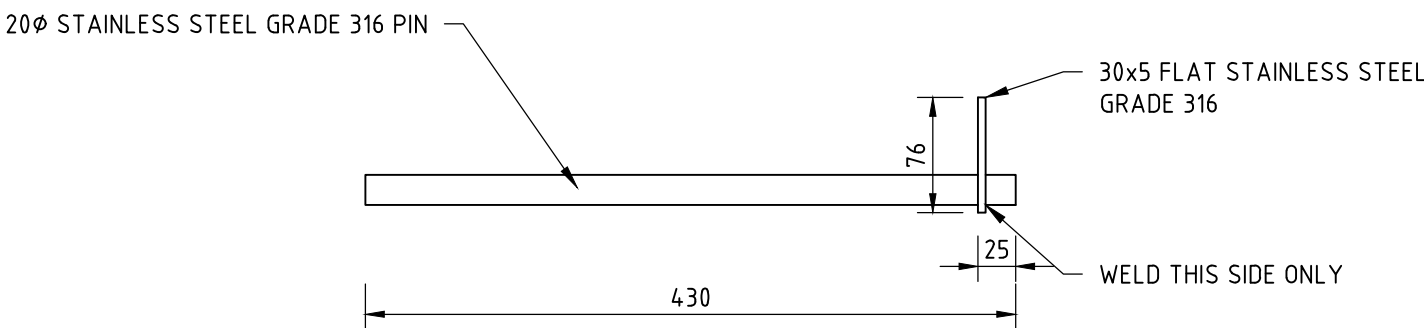
GANGWAY ELEVATION

SCALE: 1:50



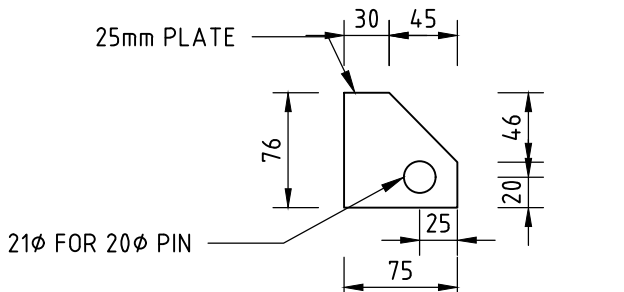
TYPICAL GANGWAY ROLLER SUPPORT DETAIL

SCALE 1:5



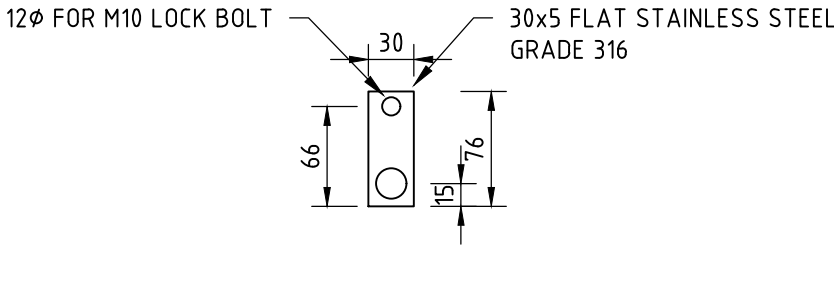
ROLLER PIN DETAILS

SCALE 1:5



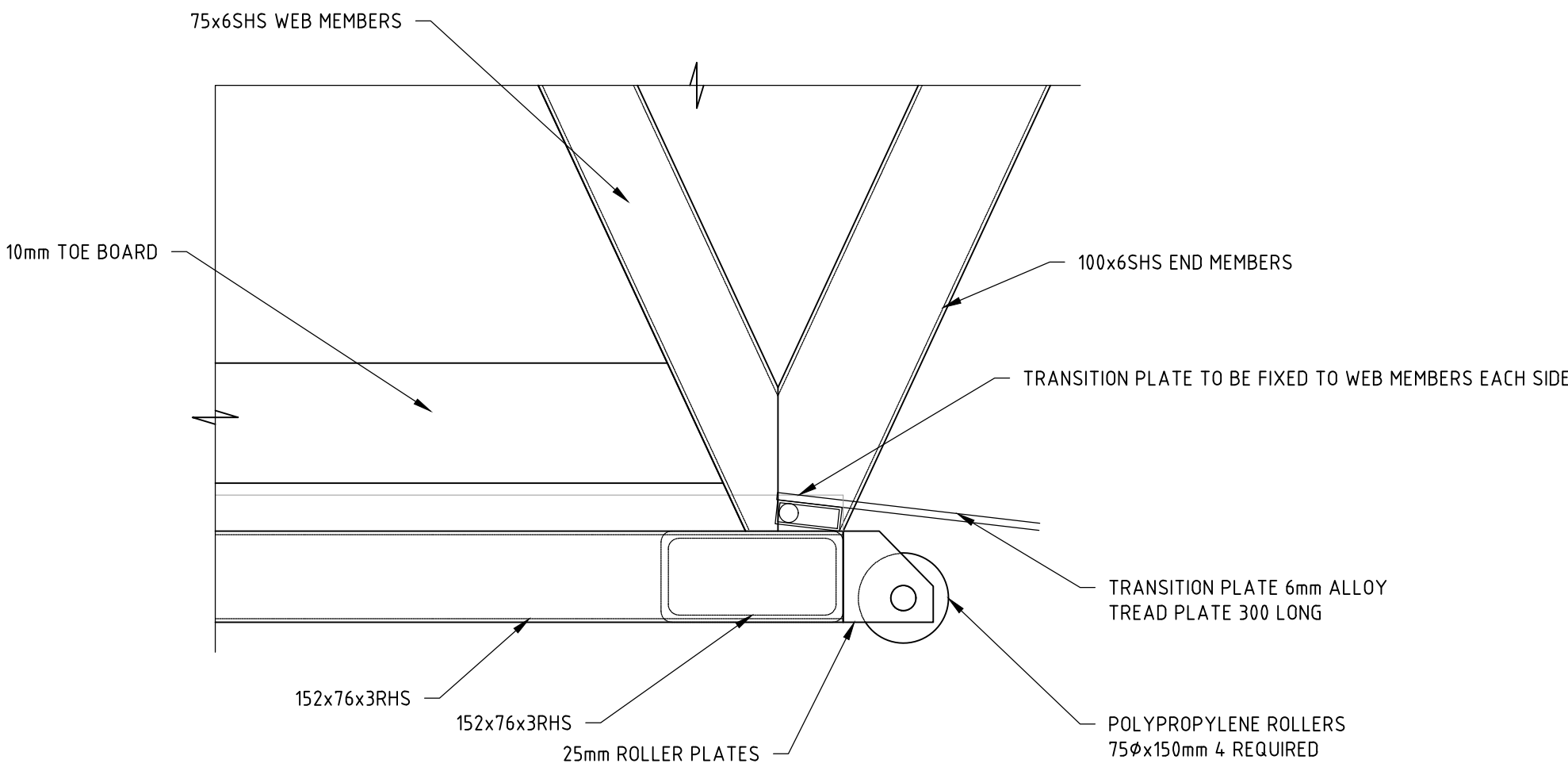
ROLLER PLATES DETAIL

SCALE 1:5



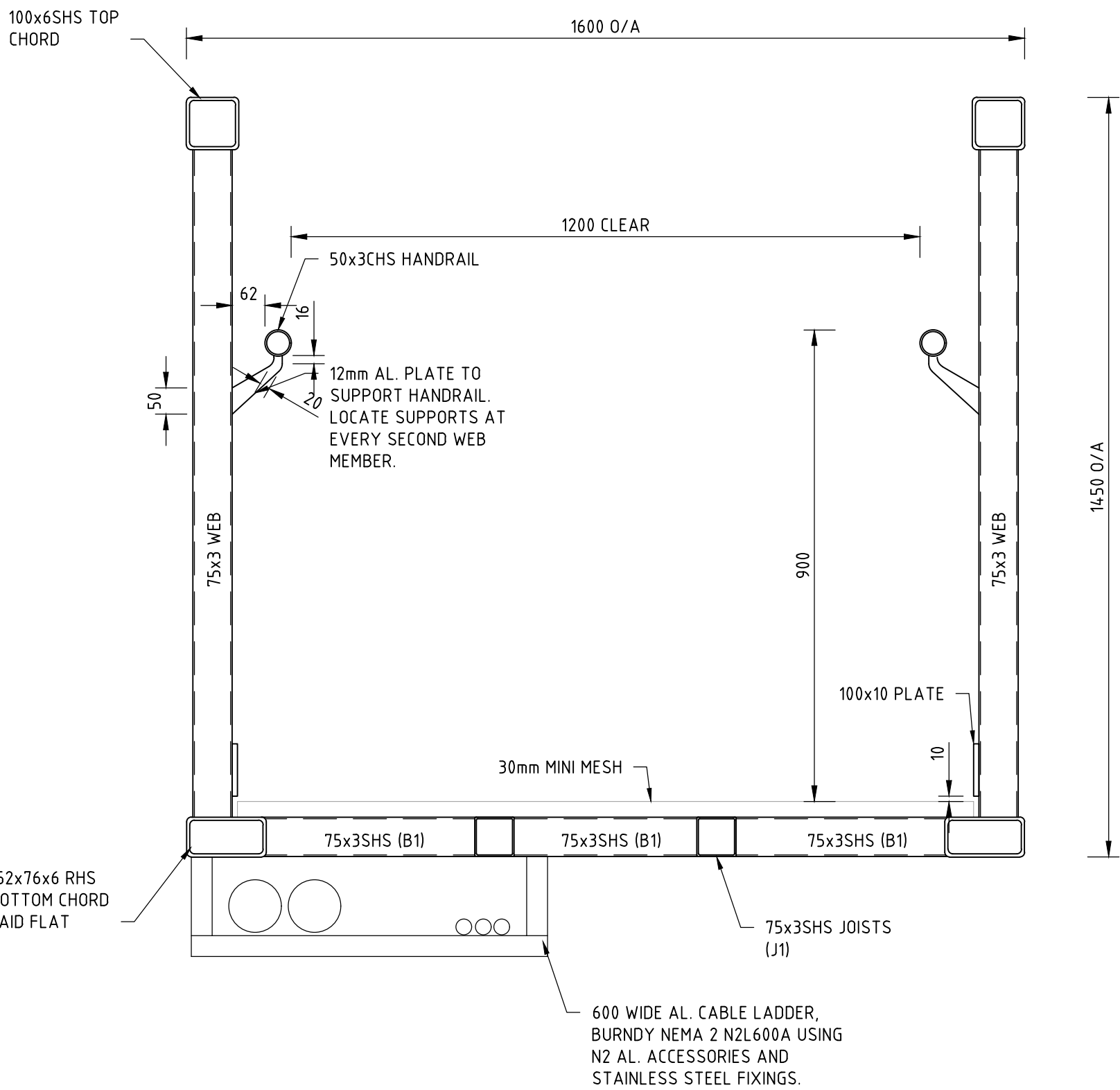
LOCKING PLATE DETAILS

SCALE 1:5



SECTION S1

SCALE 1:5

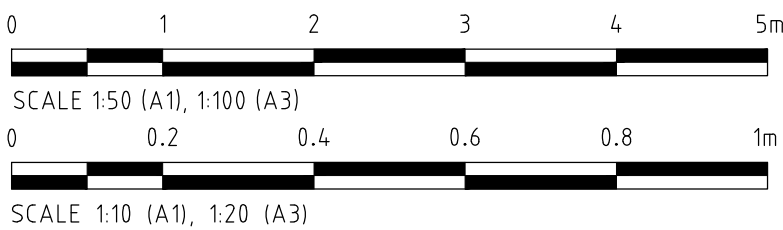


SECTION 1

TYPICAL SECTION THROUGH GANGWAY

SHEET

SCALE



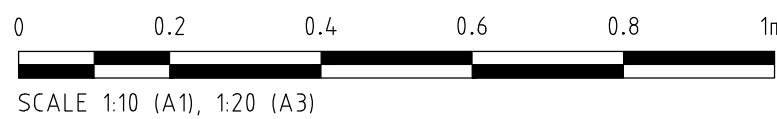
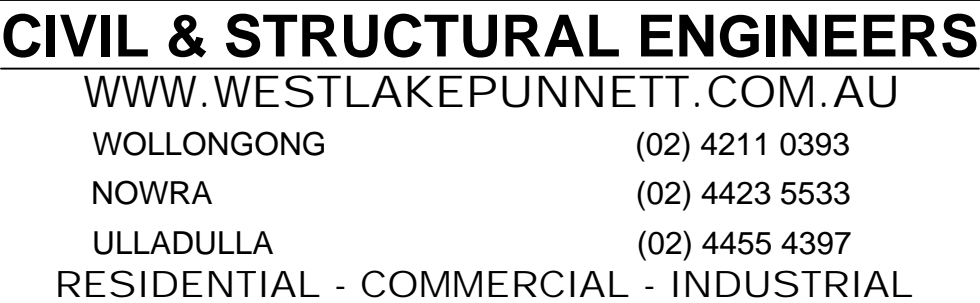
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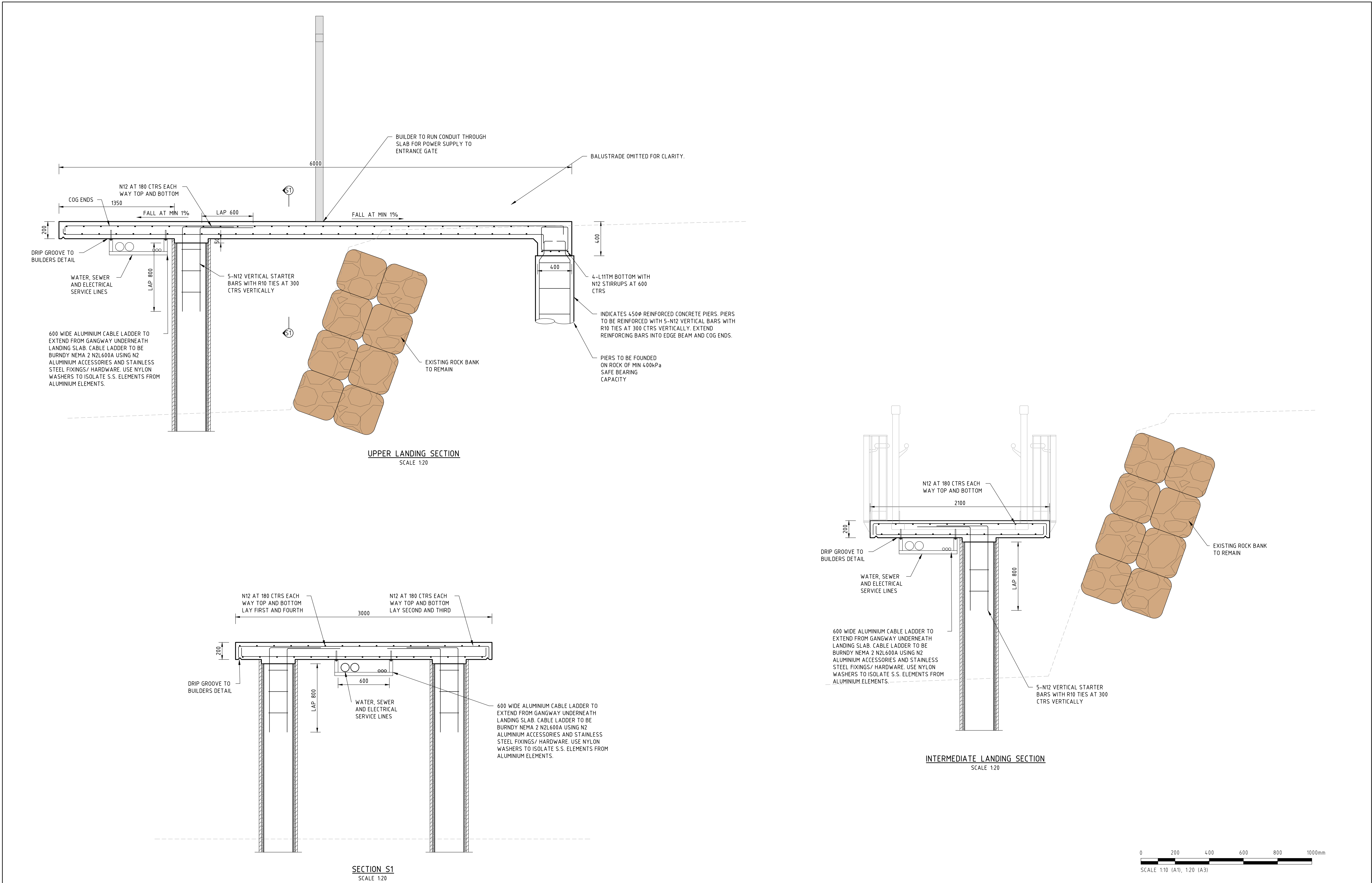
GANGWAY PLAN, SECTIONS AND DETAILS		Design: P.LITTLE
PROJECT: ULLADULLA HARBOUR BERTHING FACILITY AT: ULLADULLA HARBOUR FOR: SHOALHAVEN CITY COUNCIL		Drawn: P.LITTLE Checked: B.ASHE Date: 29.08.2023 Drawing No. 21511/C13 Rev A

[illegible]

STRUCTURAL DETAILS
SHEET 1 OF 3

PROJECT: ULLADULLA HARBOUR BERTHING FACILITY
AT: ULLADULLA HARBOUR
FOR: SHOALHAVEN CITY COUNCIL

Design: P.LITTLE	
Drawn: P.LITTLE	
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Date: 29.08.2023	
Drawing No. 21511/C14	Rev A



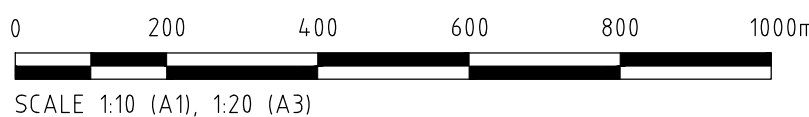
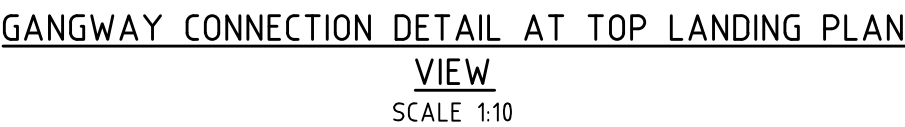
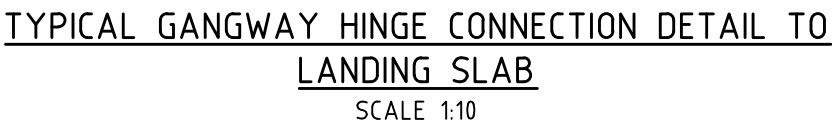
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STRUCTURAL DETAILS SHEET 2 OF 3		Design: P.LITTLE
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Drawing No.	Rev	
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Design: P.LITTLE	
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