

DOCUMENTATION OF COASTAL PROTECTION WORKS
UPGRADED ROCK REVETMENT
 AT FLIGHT DECK, 1114 PITTWATER ROAD, COLLAROY, NSW
HORTON COASTAL ENGINEERING PTY LTD

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DRAWING LIST

Sheet Number	Sheet Title
S01	GENERAL NOTES
S02	UPGRADED REVETMENT PLAN
S03	LANDSCAPE PLAN
S04	EROSION AND SEDIMENT CONTROL PLAN AND WASTE MANAGEMENT PLAN
S10	SECTION 1
S20	ACCESS STAIRS

REFERENCE DOCUMENTS

- SURVEY DRAWING PREPARED BY:
 DETAILED SURVEYS
 Ph. (02) 9913 9525
 REF No. 05/17
 DATED: 01.03.2017
- PRE-STORM PROFILES
 DERIVED FROM OEH PHOTOGRAMMETRIC
 DATA DATED: 05.04.16
- POST-STORM PROFILES
 DERIVED UNSW WATER RESEARCH
 LABORATORY DATA
 DATED: 10.06.16

ROCK

- R1. INDIVIDUAL ROCKS SHALL BE FREE FROM CRACKS, CLEAVAGE PLANES, SEAMS AND DEFECTS WHICH WOULD RESULT IN THE BREAKDOWN OF THE ROCK IN A MARINE ENVIRONMENT
- R2. ROCK SHALL BE ROUGH AND ANGULAR
- R3. ROCK SHALL BE IGNEOUS WITH A MINIMUM DRY DENSITY OF 2,650kg/m³
- R4. PRIMARY ARMOUR ROCK SHALL HAVE A MASS GRADING AS FOLLOWS: MINIMUM MASS OF 2,250kg, MAXIMUM MASS OF 3,750kg, AND 50% OF ROCKS SHALL EXCEED A MASS OF 3,000kg (NOMINAL MINIMUM DIAMETER OF 1100mm, MAXIMUM DIAMETER OF 1300mm AND 50%ILE DIAMETER OF 1200mm)
- R5. ROCK SHALL HAVE A MINIMUM SATURATED POINT LOAD STRENGTH INDEX $I_{s(50)}$ OF 5.0MPa
- R6. ROCK SHALL HAVE A MAXIMUM LOS ANGELES ABRASION VALUE OF 30%
- R7. ROCK SHALL HAVE A MAXIMUM SODIUM SULFATE WEIGHT LOSS OF 12%
- R8. ROCK SHALL BE UNWEATHERED, WITHOUT SIGNIFICANT QUANTITIES OF DELETERIOUS MINERALS SUCH AS ANALCIME (HYDRATED SODIUM ALUMINIUM SILICATE) AND EXPANSIVE CLAY MINERALS OR UNFAVOURABLE LINEATIONS WITHIN THE MICROFABRIC
- R9. ROCK SHALL HAVE NOT MORE THAN 15% (BY VOLUME) OLIVINE AND SHALL EXHIBIT NO ZONES OF SECONDARY ALTERATION SUCH AS CHLORITISATION
- R10. ROCK SHALL SHOW NO SIGNS OF STRESS-RELIEF
- R11. ROCK SHALL NOT BE ROLLED OR DROPPED INTO POSITION, IT SHALL BE PLACED.
- R12. PLACED ROCKS SHALL BE WEDGED AND LOCKED TOGETHER SUCH THAT THEY ARE NOT FREE TO MOVE
- R13. THE RATIO OF THE MAXIMUM DIMENSION OF ANY ROCK TO THE MINIMUM DIMENSION, MEASURED AT RIGHT ANGLES TO THE MAXIMUM DIMENSION, SHALL NOT EXCEED 2.5
- R14. THE TOE ROCK IN EACH SECTION IS PERMITTED TO BE LARGER THAN THE MAXIMUM GRADING SPECIFIED ABOVE, AND SHOULD BE AT LEAST THE MAXIMUM MASS. ROCKS WITH A RELATIVELY FLAT BASE ARE PREFERRED, PLACED WITH THE BROADEST DIMENSION ON THE CEMENTED SAND LAYER

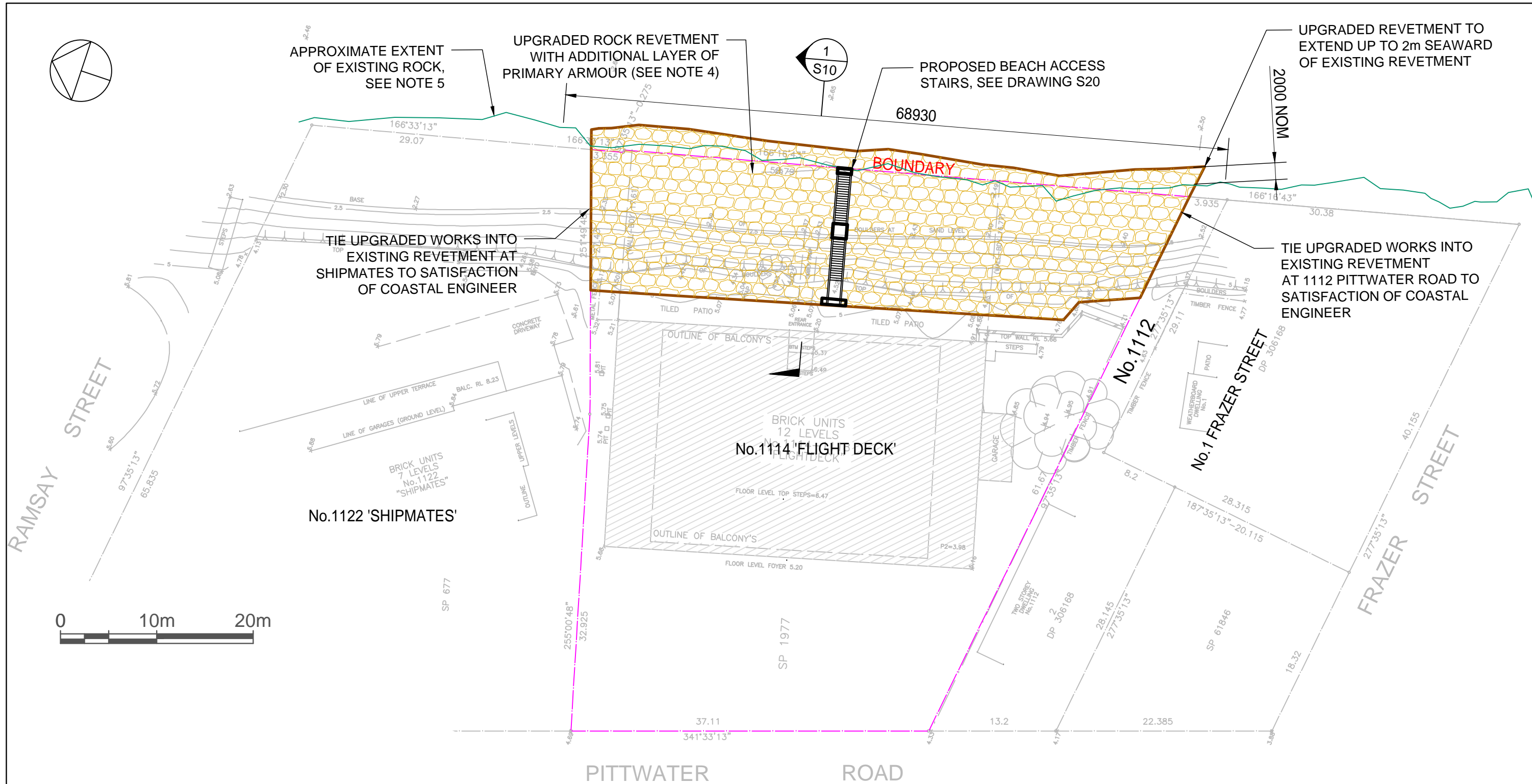
STRUCTURAL

- S1. ALL STRUCTURAL STEEL SHALL BE IN ACCORDANCE WITH AS4100
- S2. ALL TIMBER STRUCTURES SHALL BE IN ACCORDANCE WITH AS 1720, AS1684 AS REQUIRED
- S3. ALL PILING AND CONCRETE STRUCTURES SHALL BE IN ACCORDANCE WITH RELEVANT AUSTRALIAN STANDARDS

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P.P.	R.Y.	ISSUED FOR DA	15.08.17	A
BY	CHKD	DESCRIPTION	DATE	REV

UPGRADED ROCK REVETMENT COASTAL PROTECTION WORKS AT FLIGHT DECK, 1114 PITTWATER ROAD, COLLAROY, NSW	COASTAL ENGINEERING DESIGN: HORTON COASTAL ENGINEERING PTY LTD 18 Reynolds Cres Beacon Hill NSW 2100 TEL: +61 (0)407 012 538 peter@hortoncoastal.com.au www.hortoncoastal.com.au	STRUCTURAL ENGINEERING DESIGN: James Taylor & Associates Civil & Structural Consulting Engineers SUITE 301, 115 MILITARY ROAD NEUTRAL BAY NSW 2090 TEL: 02 99691999 EMAIL: mail@jamestaylorassociates.com.au	DESIGN P.H.	DRAWN P.P.	PROJECT NO.	
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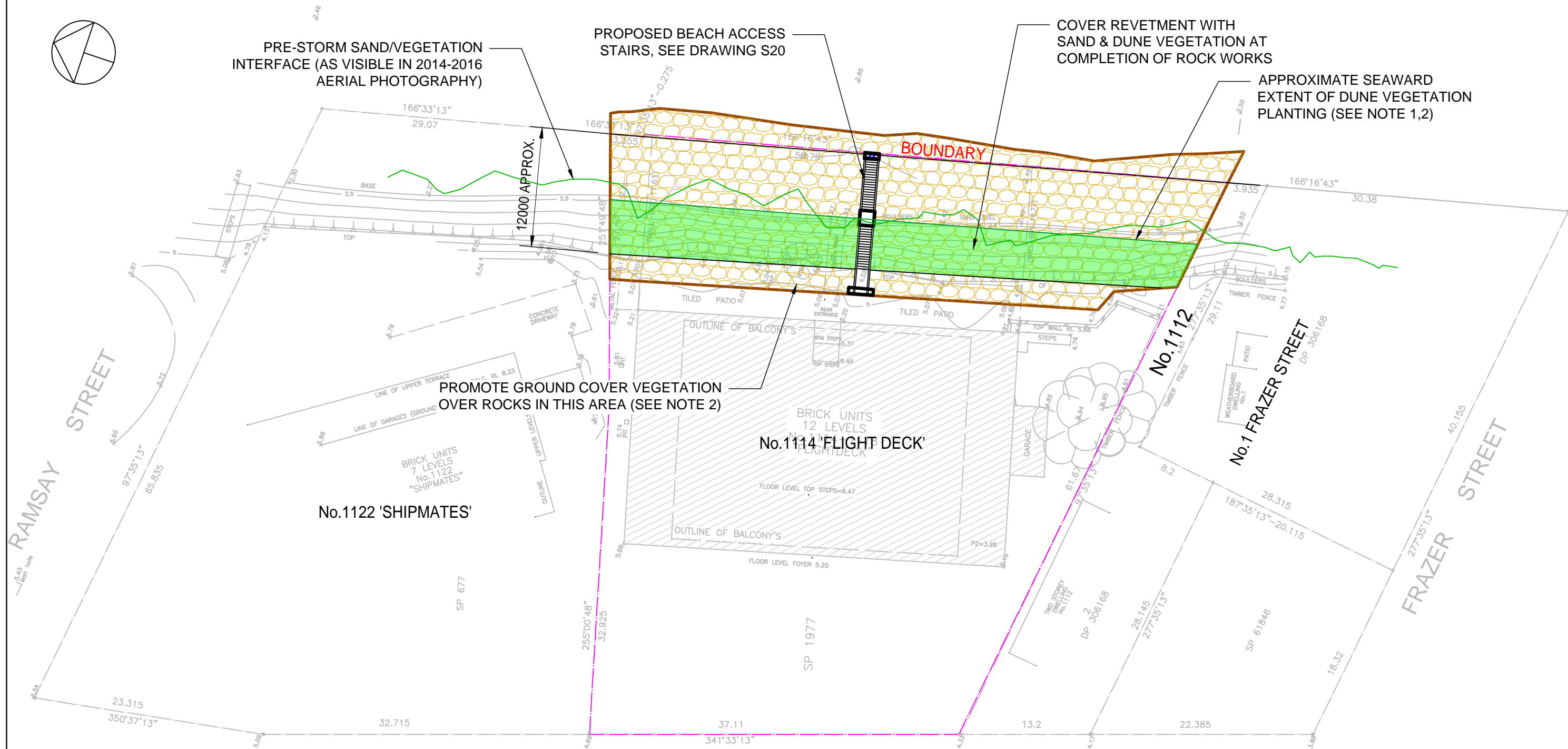
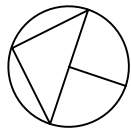


1. BASE INFORMATION FROM SURVEY UNDERTAKEN BY DETAILED SURVEYS DATED 1 MARCH 2017 (REFERENCE 015/17)
2. ELEVATIONS ARE IN METRES RELATIVE TO AUSTRALIAN HEIGHT DATUM (AHD)
3. 2016 ROCK EXTENT DERIVED FROM AERIAL PHOTOGRAPHY DATED 8 AND 10 JUNE 2016 AND CAPTURED BY UNSW WATER RESEARCH LABORATORY
4. FILL GAPS IN EXISTING ROCK ARMOUR WITH NEW ARMOUR AND REMOVE AND REPOSITION EXISTING ROCK AS REQUIRED AND AS DIRECTED BY COASTAL ENGINEER, PRIOR TO PLACING ADDITIONAL PRIMARY ARMOUR LAYER.
5. REPOSITION ANY LOOSE (NON-INTERLOCKED) ROCKS SEAWARD OF TOE AS NECESSARY, MOVING THESE ROCKS LANDWARD TO BE PART OF UPGRADED REVETMENT

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UPGRADED REVETMENT PLAN	COPYRIGHT: THIS DESIGN AND PLANS ARE NOT TO BE USED OR REPRODUCED WHOLLY OR IN PART WITHOUT WRITTEN PERMISSION FROM HORTON COASTAL ENGINEERING AND JAMES TAYLOR & ASSOCIATES		APPRD. P.H.		DRAWING NO.	REV
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PROMOTE GROUND COVER VEGETATION OVER ROCKS IN THIS AREA (SEE NOTE 2)

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1. PLANTING DENSITY EXPECTED TO BE 4 TUBESTOCK PLANTS PER m². SEAWARD EXTENT OF VEGETATION PLANTING TO BE CONFIRMED ON SITE (WILL DEPEND ON BEACH STATE AT TIME)
2. POTENTIAL VEGETATION SPECIES ARE DISCUSSED IN A REPORT PREPARED BY DIANE WIESNER AND DATED 6 JUNE 2017.



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UPGRADED ROCK REVETMENT COASTAL PROTECTION WORKS AT FLIGHT DECK, 1114 PITTWATER ROAD, COLLAROY, NSW

LANDSCAPE PLAN

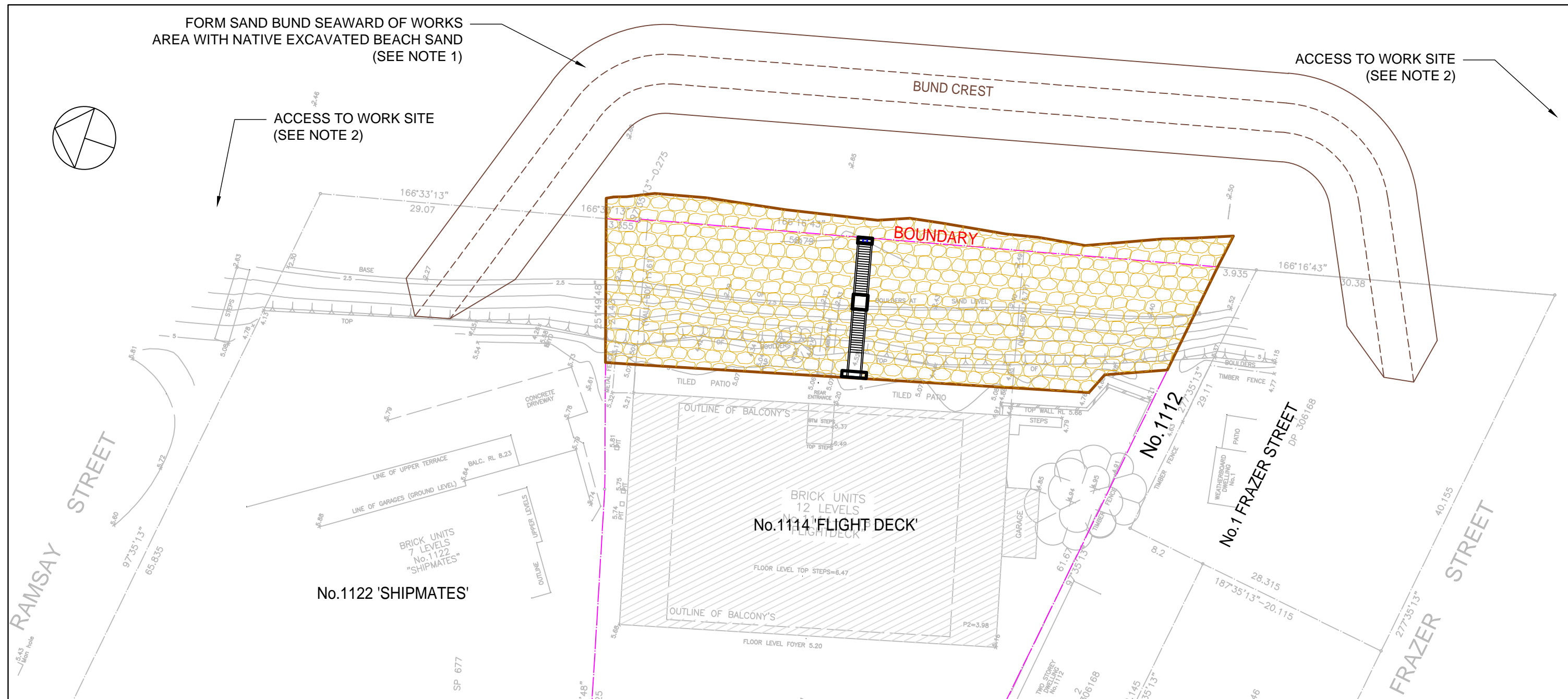
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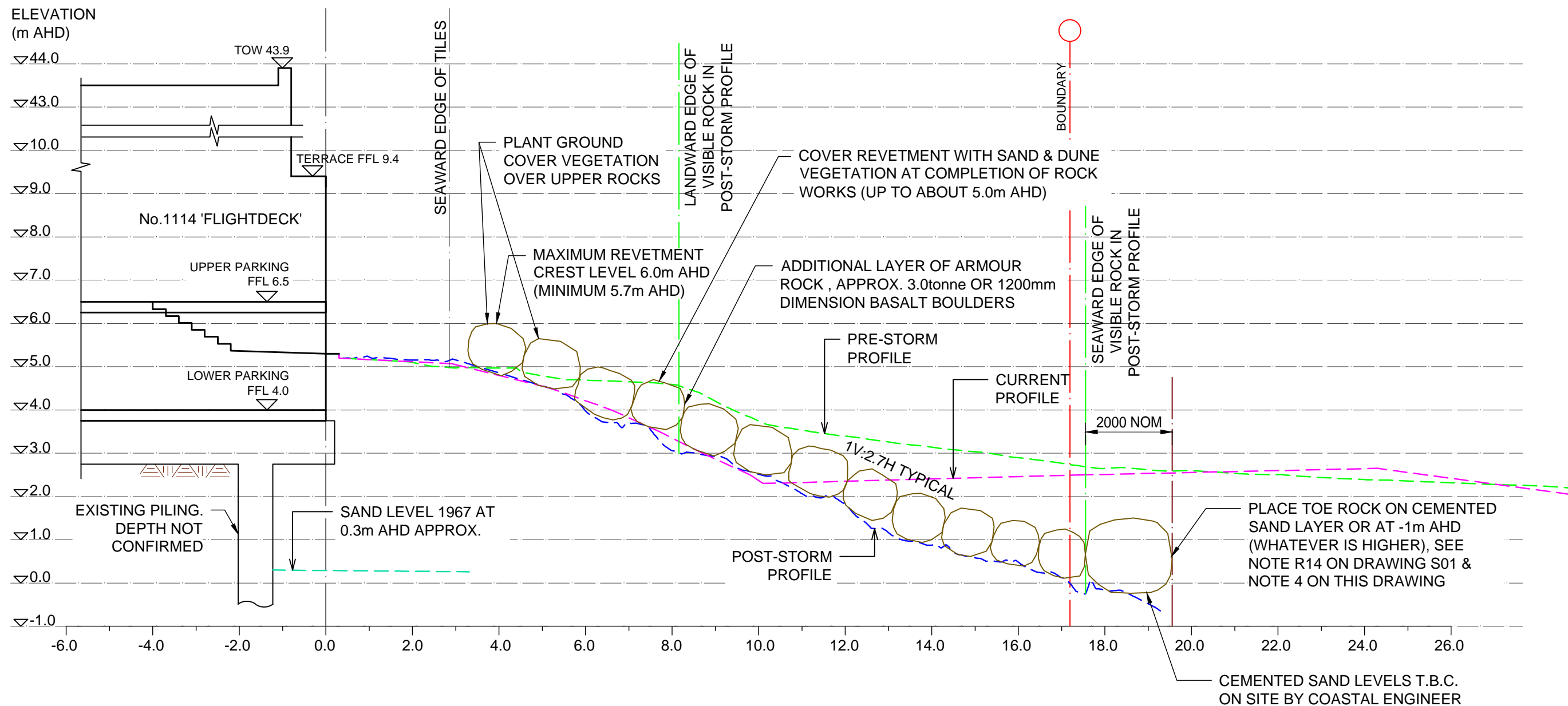
1. BUND MAY BE FORMED OVER A PORTION OR OVER THE ENTIRETY OF THE WORKS AREA DEPENDING ON CONSTRUCTION PROGRAM AND WAVE AND WATER LEVEL CONDITIONS, AS DIRECTED BY COASTAL ENGINEER OR CONTRACTOR. CREST LEVEL OF BUND IS EXPECTED TO BE 4m AHD OR HIGHER, AND CREST WIDTH OF BUND IS EXPECTED TO BE 3m OR WIDER, WHEN BUND CAN BE MAINTAINED
2. ACCESS TO WORKS SITE WILL BE VIA RAMSAY AND/OR FRAZER STREET AND/OR FRAZER RESERVE (SOUTH OF 1104 PITTWATER ROAD), AS AGREED BETWEEN CONTRACTOR AND COUNCIL
3. RUBBLE AND OTHER MATERIALS OR WASTE THAT WOULD BE UNSUITABLE ON A BEACH ARE TO BE SEPARATED AND STOCKPILED WHERE ENCOUNTERED DURING EXCAVATION (WITH RUBBLE POTENTIALLY TO BE REUSED, SEE NOTE 8)
4. ALL DELETERIOUS MATERIALS AND EQUIPMENT THAT COULD BE DAMAGED ARE TO BE REMOVED FROM WORK AREA IF BUND CANNOT BE MAINTAINED DUE TO ELEVATED WAVES AND WATER LEVELS
5. ALL MATERIAL STOCKPILES ARE TO BE LOCATED LANDWARD OF THE EXISTING ROCK REVETMENT. ANY STOCKPILE LOCATIONS ON COUNCIL LAND ARE TO BE AGREED BETWEEN COUNCIL AND CONTRACTOR
6. WHEN PLACING SAND OVER THE REVETMENT AT THE COMPLETION OF ROCK WORKS, SCREENING IS TO BE UNDERTAKEN TO REMOVE RUBBLE AND OTHER MATERIALS THAT WOULD BE UNSUITABLE ON A BEACH
7. ANY WASTE MATERIALS SHALL BE DISPOSED OF AT AN APPROPRIATE WASTE MANAGEMENT FACILITY OFF SITE.
8. RUBBLE MATERIALS MAY BE BURIED LANDWARD OF THE REVETMENT AS AGREED BY GEOTECHNICAL ENGINEER

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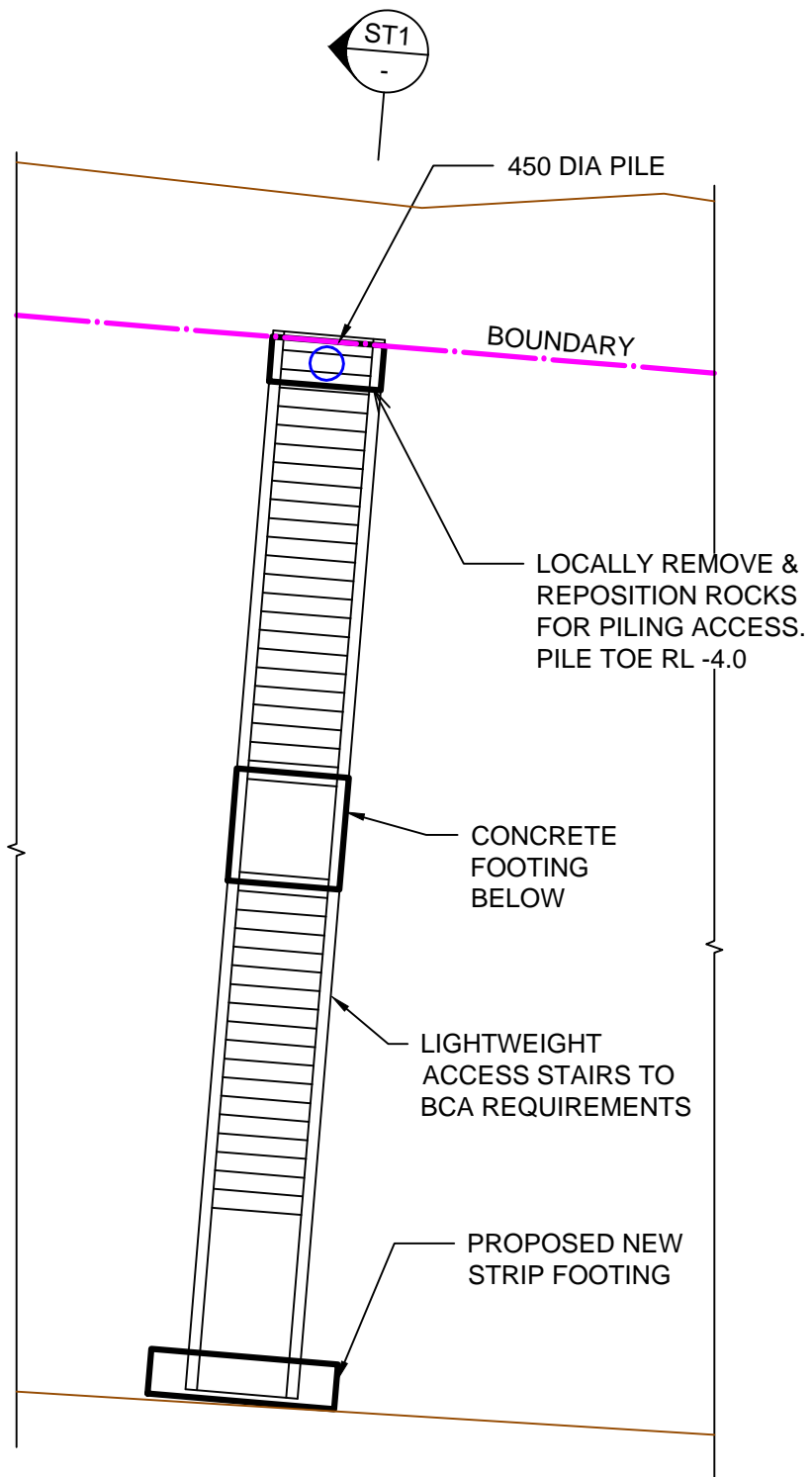


1. PRE-STORM PROFILE DATED 5 APRIL 2016, SOURCED FROM OEH
2. POST-STORM PROFILE DATED 10 JUNE 2016, SOURCED FROM UNSW WATER RESEARCH LABORATORY
3. CURRENT PROFILE FROM DETAILED SURVEYS SURVEY DATED 1 MARCH 2017
4. THE 2000 NOMINAL DIMENSION SHALL TAKE PRECEDENCE IN THE POSITIONING OF THE TOE ROCK

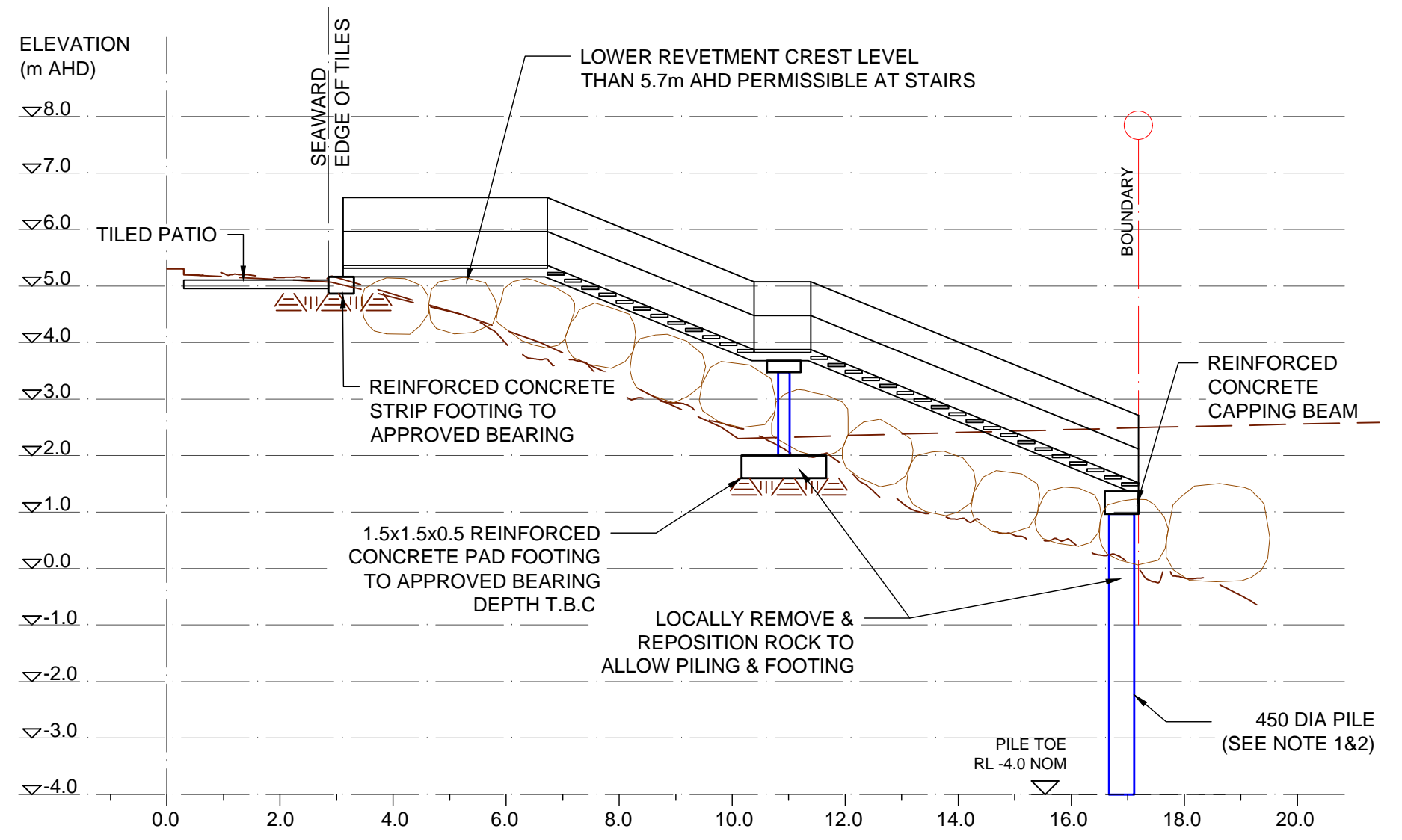
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ACCESS STAIRS
SCALE 1:100



Section ST1
1 : 100

1. IF AGREED BY A COASTAL ENGINEER, PILE MAY BE SUBSTITUTED WITH A CONCRETE FOOTING SITTING ON A SUITABLE SELECTED ARMOUR ROCK BOULDER, WITH VERTICAL STARTER BARS PENETRATING THE BOULDER AND TIED INTO THE FOOTING REINFORCEMENT.
2. SCREW PILES MAY BE SUBSTITUTED FOR 450Ø CFA PILE. ALLOW FOR RAKING PILE.

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