BOUDER SEAWALL
SP677 "SHIPMATES"
COLLAROY, NSW

International Coastal Management

DRAWING REGISTER	
GENERAL NOTES	SSW-00 (B)
SCHEME OF WORKS	SSW-01 (B)
SECTION DETAIL	SSW-02 (A)

1. Design Basis
   - 1.1. Seawall design is based on "Collaroy-Narrabeen Beach Coastal Protection Works Design Specifications" (2016).
   - 1.2. Protection against erosion is provided by a series of measures including the beach and dunes, the seawall and the building design. The seawall is expected to be periodically buried and exposed in response to prevailing conditions.
   - 1.3. Design is considered suitable for 60 year design life.
   - 1.4. Design is suitable for minimum recurrence interval of 100 years (ARI).
   - 1.5. Alignment of seawall face is defined by toe depth at -1m AHD, along boundary of private property SP677 as landward as practicable.
   - 1.6. Boulder seawalls are flexible structures which can accommodate some damage during a design event. Maintenance to be undertaken as required (may include restacking or top-up of armour after major events).
   - 1.7. The area landward of the leading edge of the seawall is subject to wave overtopping.
2. Seawall to tie in smoothly with adjacent seawalls at both ends in a manner that ensures filter layers (if present) are continuous and the integrity of the entire structure is smooth and continuous.
3. Where adjacent seawall does not have an adequate filter layer evident, a 3m (minimum) geotextile flap is to be provided at the extent of works to ease future tie-in.
4. Primary Armour boulders shall be igneous or metamorphic rocks suitable for use in the marine environment (e.g basalt). Boulders to be sound, hard, durable, angular and free of defects or signs of stress relief. Boulders to be clean and free of topsoil and organic matter. Boulders to be no more than 15% (by volume) olivine and no zones of secondary alteration such as chloritisation. Characteristics and grading see Table 1A & 2A.
5. Primary Armour may be Sandstone if meeting specification and grading Table 1B & 2B. Setout geometry will need to be altered (horizontal width of Primary Armour Layer = 4.7m; Secondary Armour Layer = 2.2m with excavation cut to move landward) to account for larger rock sizes. No additional shift of alignment further seaward is allowed.
6. Any quarry source not complying fully with Table 2A can only be utilised with written permission of the Engineer.
7. Secondary Armour boulders can be igneous or metamorphic as per Table 2A, imported sandstone that meets specifications in Table 2B, or sandstone from site upon inspection and approval from Engineer .
8. Boulders shall be placed in a random, interlocking pattern to achieve a low void ratio (~30%). Individual boulders to be stable with at least three points of contact with adjacent boulders.
9. Geotextile shall be non-woven needle punched staple fibre geotextile suitable for marine applications and meeting the requirements in Table 3. Geotextile to be laid vertically and joined to retain adequate filter function (stitched or lapped by minimum 1m).
10. All sand to be sieved through a 20mm sieve prior to backfilling. Sand shall be washed into the wall to fill the voids between boulders at the conclusion of the rock work. Any excess sand from excavations should be placed seaward of the wall. If possible, boulders should be buried on completion.
11. On completion of reprofiling, the reprofiled dune area is to be revegetated using suitable native dunal species. Final species distribution is to be agreed with Northern Beaches Council prior to commencement of works, but are expected to include:
    - **Spinifex grass** *Spinifex sericeus*
    - **Goat's foot convulvulus** *Ipomoea pes-caprae*
    - **Angular pigface** *Carpobrotus glaucascens*

    Reused spinifex runners are to be at least 0.75m in length and with a minimum of three nodes (unstruck buds) per runner. Runners are to be retained from the site during clearing activities or harvested from an adjacent area identified by the Council. Runners are to be planted in rows parallel to the water line. Along each row, runners are to be planted at 0.5m centres. Rows are to be spaced 1m apart. Runners are to be planted vertically to a minimum depth of 0.45m with approximately 125mm of the tip (growing end) exposed.

    Goat's foot convolvulus vine cuttings are to be sourced from areas identified by Council or from nursery. Cuttings are to be planted with the root-ball slightly below the surface. Vine cuttings are to be planted at 1m centres.

    Angular pigface vine cuttings are to be sourced from areas identified by Council or from nursery. Vine cuttings are to be planted by layering (rooting horizontal stem cuttings). Layers are to be around 30cm in length and planted leaving at least 5cm of the plant above the surface. Vine cuttings are to be planted at 1m centres.

TABLE 1A - ARMOURSTONE GRADING (IGNEOUS/ METAMORPHIC)

Grading	Primary Armour	Secondary Armour
Nominal Lower Limit (M15)	3.0t	280kg
M50	4.0t	380kg
Nominal Upper Limit (M85)	5.0t	520kg

TABLE 1B - ARMOURSTONE GRADING (SANDSTONE)

Grading	Primary Armour	Secondary Armour
Nominal Lower Limit (M15)	5.2t	380kg
M50	7.0	700kg
Nominal Upper Limit (M85)	8.7t	1020kg

TABLE 2 A - SPECIFICATIONS IGNEOUS/METAMORPHIC ARMOURSTONE

Parameter	Requirement
Density	> 2650kg/m3
Water absorption	<1.5%
Saturated point load strength index	>5.0MPa
Salt Attack (Sodium Sulfate Soundness)	<6%
Resistance to Breakage (Primary armour only)	<5% breakage from 50 rocks

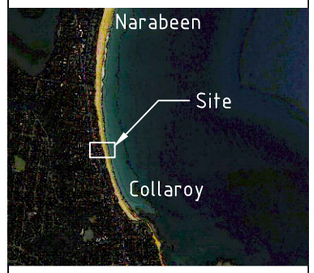
TABLE 2 B - SPECIFICATIONS SANDSTONE ARMOURSTONE

Parameter	Requirement
Density	> 23000kg/m3
Water absorption	<1.5%
Saturated point load strength index	>1.5 MPa
Salt Attack (Sodium Sulfate Soundness)	<9%
Wet/dry strength variation	<30%

TABLE 3 - SPECIFICATIONS GEOTEXTILE

Paramater	Standard	Requirement
Unit Weight	AS3706.1	> 1000g/m2
Grab Tensile Strength	AS2001.2.3	> 1000N in any direction in plane of geotextile
Trapezoidal Tear Resistance	ASTM D4533	> 600N in any direction
Water Permeability (10cm head)	AS3706.9	> 30 litres / m2 / second
Puncture resistance (CBR)	AS 3706.4	> 8kN
Pore size	AS3706.7	< 0.075mm
Elongation	AS3706.2	> 70%

LOCALITY PLAN



NOTES

VERTICAL DATUM: AHD | HORIZONTAL DATUM: MGA94

REVISION REGISTER

REV.NO.	DATE	DESCRIPTION	BY	ENG.	APP.
B	6/9	UPDATED COMMENTS	MM	BC	AJ
A	30/7	ISSUE FOR APPROVAL	MM	BC	AJ

International Coastal Management

PROJECT NAME
SHIPMATES SEAWALL

DRAWING TITLE
GENERAL NOTES

DRAWING No. **SSW-00** | REVISION:

DRAWN : | CHECKED : | APPROVED :

SIZE: A3 | SCALE : AS SHOWN | DATE : 30/7/19

MGA NORTH

EXTENT OF WORKS

Seawall works
within property boundary

LOT1
7351//DP1166942

Smooth transition
for continuity

Seawall works outside private property
to be carried out by Northern Beaches
Council as agreed prior.
(Refer Note 3)

EXTENT OF SEAWALL TOE

RP BOUNDARY

-1.0m
0.0m
1.0m
2.0m
3.0m
4.0m
5.0m
5.5m

SEAWARD EDGE OF CREST

LANDWARD EDGE OF CREST

RP BOUNDARY

STORMWATER OUTLET

3.0m
4.0m
5.0m

Extent of rock
line

RAMSAY ST

Existing Concrete
Steps (to be reinstated
by Council on completion)

RP BOUNDARY

30.0
25.0
20.0
15.0
10.0
5.0
0.0

1.8
3.8
17
9.5

TRANSITION TO LINK
WITH EXISTING SEAWALL
PROFILE AS REQUIRED

TRANSITION TO LINK
WITH EXISTING SEAWALL
PROFILE AS REQUIRED

CONCRETE SLAB / DRIVEWAY

FIRST FLOOR BALCONIES

EXTENT OF BUILDING

EXTENT OF BUILDING

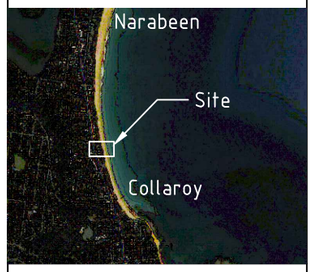
RP BOUNDARY

"SHIPMATES"
LOT 3
SP677

"FLIGHT DECK"
LOT 31
SP1977

0 5 10
Meters

LOCALITY PLAN



NOTES

1. Extent of adjacent rock seawall from aerial photo (8th June 2016).
2. ICM survey of adjacent rock seawall (March 2018).
3. Tie in works at northern property boundary (Ch. 29.3 - 38.7m) to be undertaken concurrently with lower section of wall by Council (blue section/ separate approval). This will allow the entire seawall to meet the seawall specification (Collaroy- Narrabeen Beach Coastal Protection Works Design Specifications 2016 and as detailed in the drawings).
   - 3.1. If not achievable, tie-in works will need to integrate with the base of the existing wall within property boundary (alignment may need to be modified on site).Integrity of this section of seawall would be significantly compromised and reconstruction would be required concurrent with future Council upgrades to achieve the required standard.
4. Refer to general notes SSW-00

LEGEND

- RP Boundary
- Existing Seawall
- Proposed Seawall (Inside Property Boundary)
- Proposed Seawall (Outside Property Boundary)

VERTICAL DATUM: AHD | HORIZONTAL DATUM: MGA94

REVISION REGISTER

REV.NO.	DATE	DESCRIPTION	BY	ENG.	APP.
B	6/9	UPDATED COMMENTS	MM	BC	AJ
A	30/7	ISSUE FOR APPROVAL	MM	BC	AJ

International Coastal Management

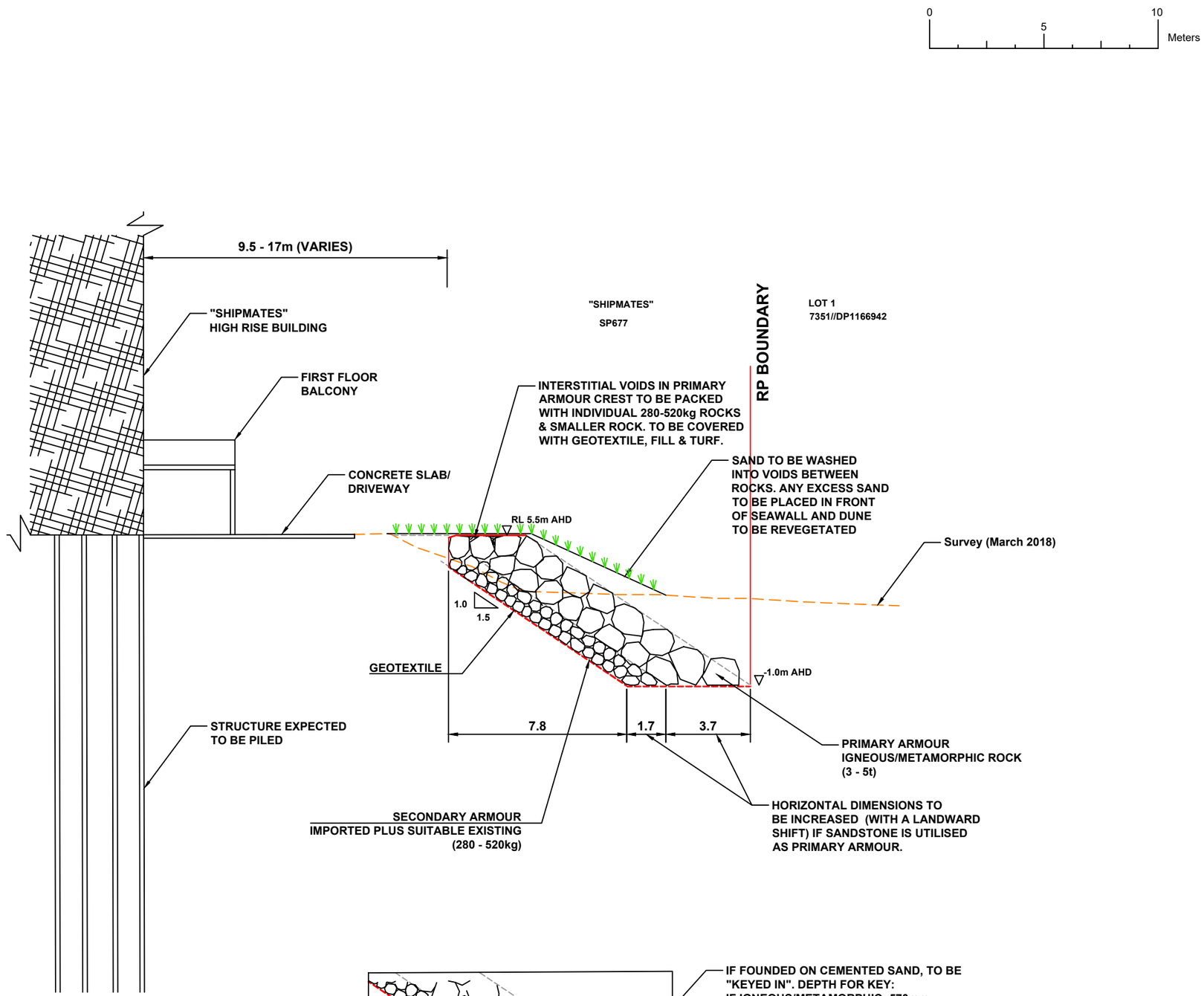
PROJECT NAME
SHIPMATES SEAWALL

DRAWING TITLE
SCHEME OF WORKS

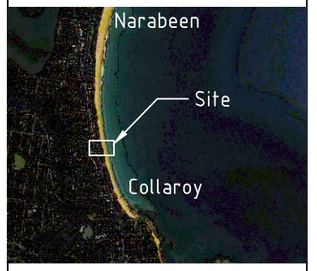
DRAWING No. SSW-01 | REVISION: B

DRAWN : | CHECKED : | APPROVED :

SIZE: A3 | SCALE : AS SHOWN | DATE : 30/7/19



LOCALITY PLAN



NOTES

1. Alignment defined by toe at -1.0m. If significant extent, strength and thickness of cemented sand is encountered higher than -1.0m, toe may be "keyed-in" 0.5*Dn50 to this material, at this level. Toe to be relocated landward to maintain consistent wall alignment and tie in. To be confirmed by Engineer on site.
2. Refer general notes SSW-00.

VERTICAL DATUM: AHD | HORIZONTAL DATUM: MGA94

REVISION REGISTER

REV.NO.	DATE	DESCRIPTION	BY	ENG.	APP.
A	30/7	ISSUE FOR APPROVAL	MM	BC	AJ

International Coastal Management

PROJECT NAME
SHIPMATES SEAWALL

DRAWING TITLE
TYPICAL SECTION

DRAWING No. **SSW-02** | REVISION: **A**

DRAWN : | CHECKED : | APPROVED :

SIZE: A3 | SCALE : AS SHOWN | DATE : 30/7/19