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# DENHAMS BEACH DUPLEX - EMERGENCY ENVIRONMENTAL PROTECTION WORKS

217A BEACH ROAD, DENHAMS BEACH, NSW

SUBJECT OF THESE DRAWINGS AN THE ATTACHED SUPPORTING DOCUMENTS IS TO TELL A CHRONOLOGICAL FULL SITE HISTORY, TO PROVIDE A CLEAR GEOTECHNICAL AND STRUCTURAL PICTURE AND TO CLEARLY DESCRIBE THE WORKS CARRIED OUT AS EMERGENCY ENVIRONMENTAL PROTECTION WORKS.

DRAWING LIST	
No	Sheet Name
C000	COVER PAGE
C0001	EXISTING SITE CONDITIONS & EXTENT OF ERROSION 1
C0002	EXISTING SITE CONDITIONS & EXTENT OF ERROSION 2 - PHOTOS
C0003	GEOTECHNICAL INVESTIGATION AND WEED REMOVAL 1
C0004	GEOTECHNICAL INVESTIGATION AND WEED REMOVAL 2 - PHOTOS
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C0009	STRUCTURAL PROPOSAL AND ADVICE 4 - TERRAMAT INSTALLATION
C0010	CONSTRUCTION OF WORKS 1 - INTENT OF RETAINING WALLS AND PROPOSED STRUCTURE
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C0015	CONSTRUCTION OF WORKS 6 - PHOTOS

## ATTACHED SUPPORTING DOCUMENTS:

- |   |            |
|---|------------|
| • GEOTECHNICAL INVESTIGATION REPORT                       | 17/07/2023 |
| • CLIFF STABILIZATION LETTER FROM STRUCTURAL ENGINEER     | 21/09/2023 |
| • CLIFF STABILIZATION CONCEPT BY STRUCTURAL ENGINEER      | 22/09/2023 |
| • ARBORIST REPORT   | 07/12/2023 |
| • RETAINING WALL STRUCTURAL DESIGN BY STRUCTURAL ENGINEER | 05/02/2024 |
| • PRELIMINARY ENVIRONMENTAL ASSESSMENT REPORT             | 16/04/2024 |
| • RETAINING WALLS STRUCTURAL DESIGN STATEMENT             | 30/05/2024 |
| • VERTI-BLOCK BROCHURE                                    |            |

DA-C 13.09.24 Authorities Approval  
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6	11.10.24	General Updates
5	13.05.24	Response to Council's RFIs
4	12.02.24	Response to council's RFI
3	07.08.23	revised post Civil coordination
2	25.05.23	Draft DA for review
1	15.02.23	layout updates
REV	DATE	REV DESCRIPTION



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PROJECT  
**DENHAMS BEACH DUPLEX**

LOT 2 DP 773132  
@ 217a BEACH ROAD  
DENHAMS BEACH NSW

DESCRIPTION  
**COVER PAGE**

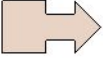
PROJECT STATUS  
**AUTHORITIES APPROVAL**

SCALE at A3	DATE 11.10.24
DESIGNED APA	JOB NO <b>J000167</b>
DRAWN MG	DRAWING NO <b>C000</b>
CHECKED NA	ISSUE <b>DA-C</b>

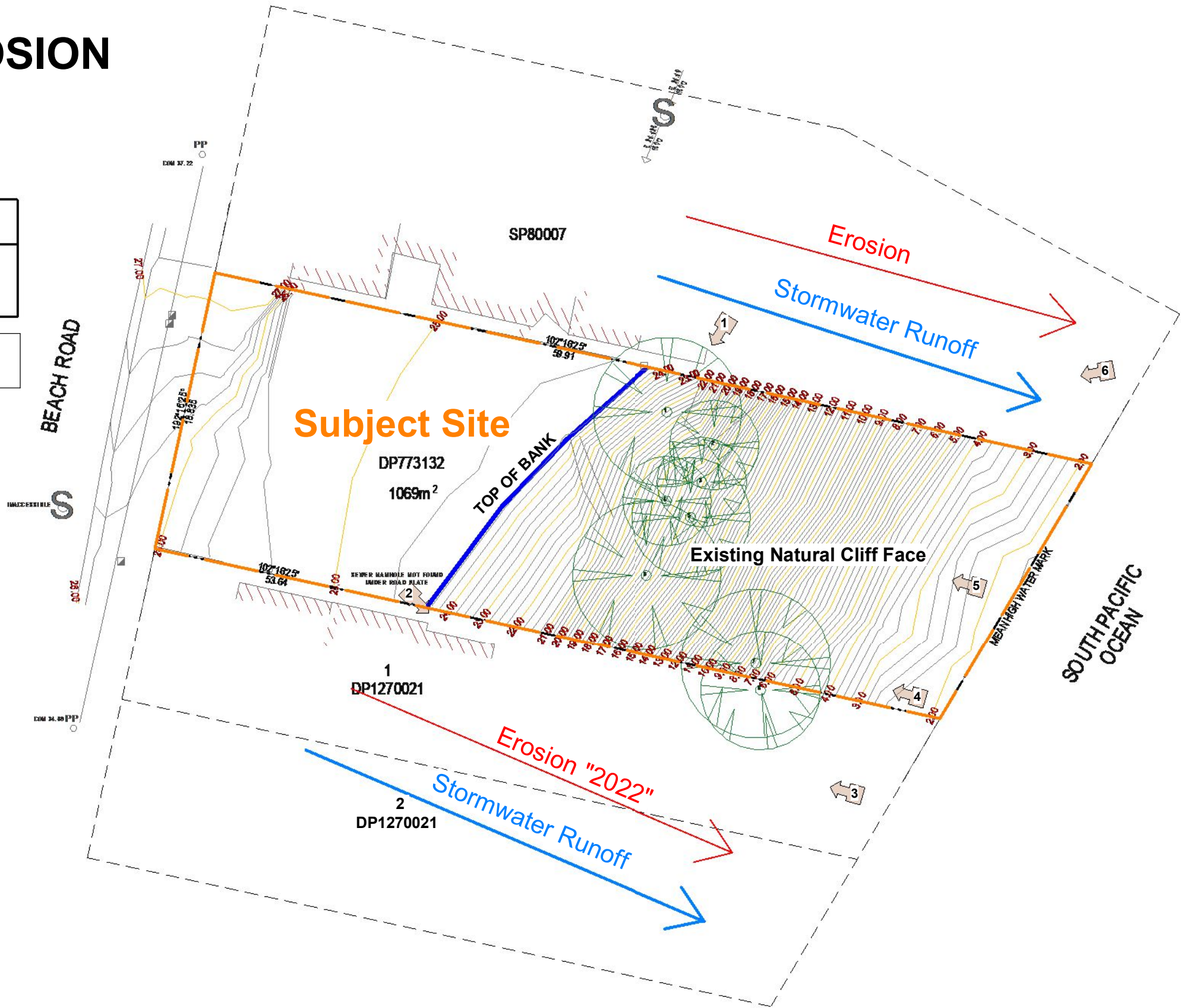


# 1. ENVIRONMENTAL EROSION

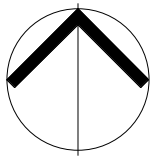
LEGEND

 Site Photos Showing Erosion and Original Site Condition

Note: Subject site information from survey undertaken on 05/09/2022



EXISTING SITE CONDITIONS & EXTENT OF ERROSION  
1 : 300







1 19/10/2022



2 28/11/2022



3 28/11/2022



4 02/03/2023



5 02/03/2023



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6 02/03/2023



## 2. REMEDIATION - SITE CLEARING AND WEED REMOVAL

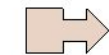


To gain better understanding of the condition of the subject site and the site erosion the following advice was obtained:

- Geotechnical investigation report
- Structural advice regarding condition of landslide
- Arborist report.

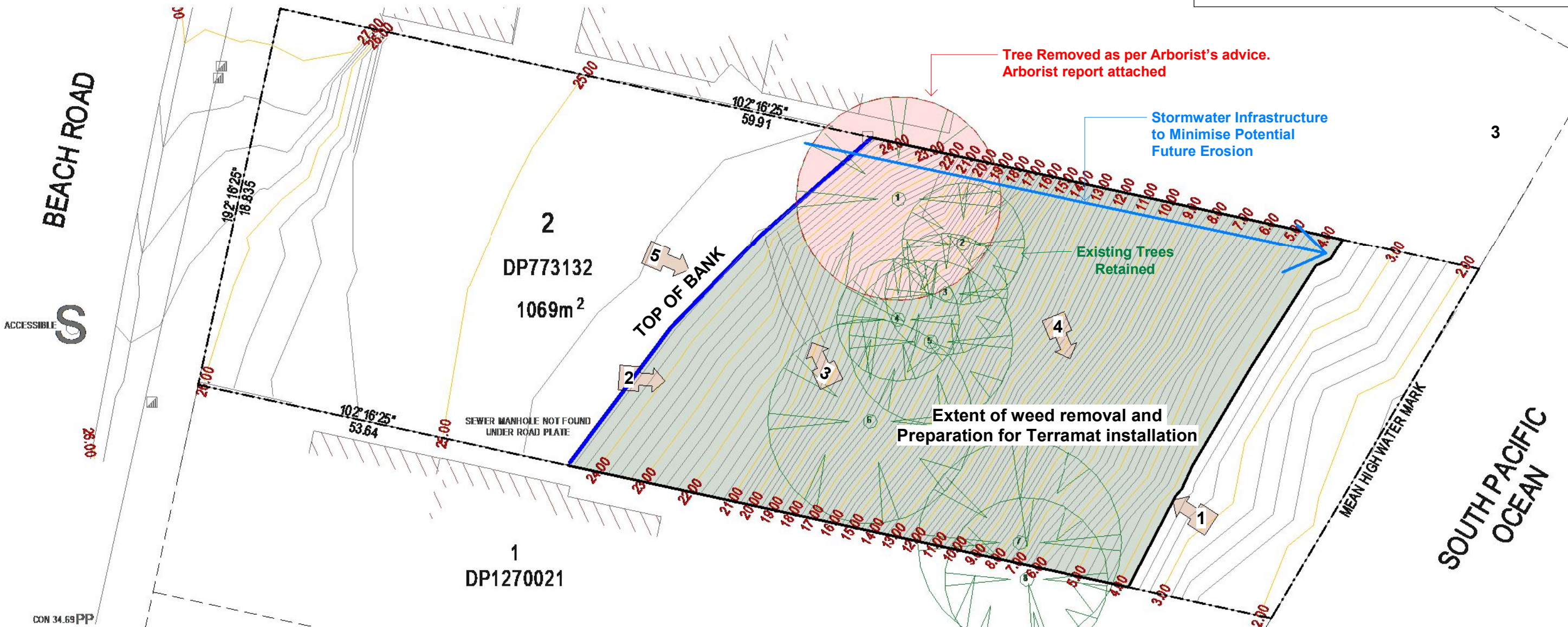
Necessary removal of weed was undertaken to expose the cliff face and to allow for appropriate and necessary cliff stabilization work. Every effort was done to retain all healthy plantation. All significant and healthy trees were retained except for one large tree removed as requested by neighbour's DA submission, and as per arborist advice.

Existing beach access steps, pathways and retaining walls were uncovered. The Site was re-surveyed post vegetation clearing.

### LEGEND

-  Site Photos Showing Weed Removal
-  Area of Weed Removal
-  Removed Tree

Note: Subject site information from survey undertaken on 05/09/2022



### SITE CLEARING AND WEED REMOVAL

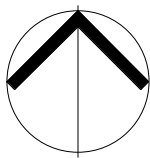
1 : 200

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1 11.10.24 General Updates  
REV DATE REV DESCRIPTION

#### NOTES

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  3. Termite Protection
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  5. Insulation Certificate
  6. Plumbing Final
  7. Electrical Final
  8. Certificate of Occupancy
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  - AS 1684: Framing Code
  - AS/NZ 3600 Plumbing, Drainage & Gas
  - AS 3600.1: Termite protection
  - AS 3740: Waterproofing of domestic wet areas
  - AS 3786: Smoke Alarms
  - HOUSING PROVISIONS OF THE BUILDING CODE OF AUSTRALIA:
  - PART 3.3: MASONRY
  - PART 3.7: FIRE SAFETY
  - PART 3.8: WC DOOR
  - PART 3.9: STAIRS AND BALUSTRADES



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PROJECT  
**DENHAMS BEACH DUPLEX**

LOT 2 DP 773132  
@217a BEACH ROAD  
DENHAMS BEACH NSW

DESCRIPTION  
**GEOTECHNICAL INVESTIGATION AND WEED REMOVAL 1**

PROJECT STATUS  
**AUTHORITIES APPROVAL**

SCALE at A3  
As indicated  
DESIGNED  
APA  
DRAWN  
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NA

DATE  
11.10.24  
JOB NO  
**J000167**  
DRAWING NO  
**C0003**  
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**DA-C**





1 09/11/2023



1 09/11/2023



2 09/11/2023





3 09/11/2023



4 09/11/2023



5 09/11/2023



### 3. REMEDIATION - STRUCTURAL WORKS

Site Weed removal was followed by emergency environmental protection works:

**Terramat:** Installation of 315m Terramat as per structural engineer's advice and design. (Terramat, is a lightweight, three-dimensional erosion mesh designed to provide permanent erosion control of soil and to reinforce the root system of grasses and vegetation – held in place by galvanised stabilising cable.)

**Stabilising Ground anchors:** 30 x 3m long anchoring bolts with plates installed into rock face.

**Retaining walls:** Structural engineer's design included 2 retaining walls at the bottom of the cliff to secure and stabilise the bank and batter. (Verti-block system was proposed as part of the design. Product brochure attached.). Note: Retaining walls similar in height and location to adjacent properties

**Rocks:** Local rocks were added at retaining walls base to provide additional protection from erosion / wave surges.

**Access:** Safe repairs to Australian standards of the existing beach access steps, pathways and retaining walls were necessary for site access, safety of employees, contractors and visitors, including local residents who might attempt access. Existing pathway routes and step locations were refurbished.

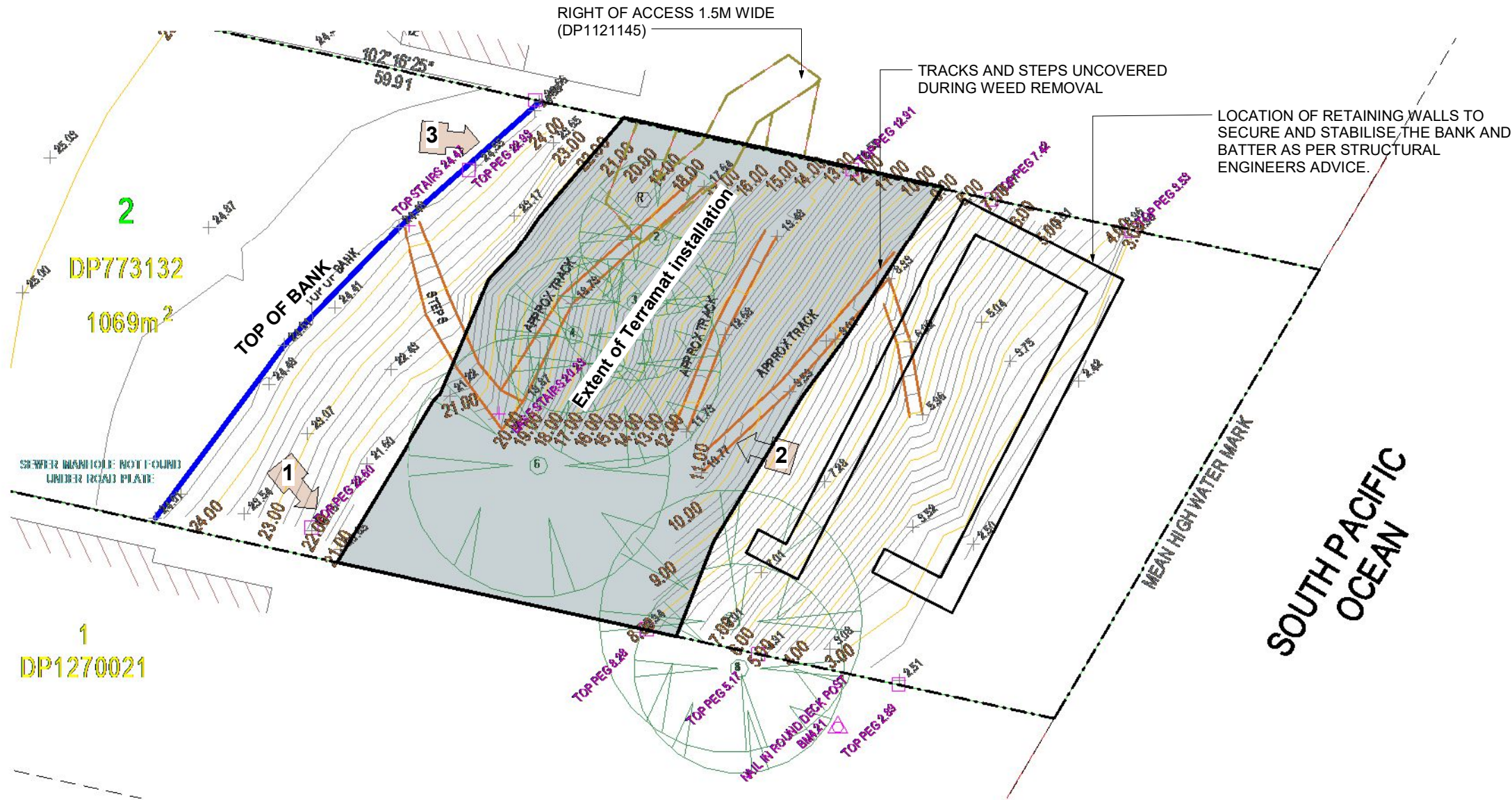
The Structural engineer's design diagrams included on Sheet No. C007 and No. C008 and are attached as part the supporting documents package.  
The structural engineer and architects did seek secondary advice from other Structural engineering firms.

LEGEND

Site Photos Showing Installation of Terramat

Area of Installation of Terramat

Note: Subject site information from detailed topographical survey of the cliff face undertaken on 21/11/2023



NOTES

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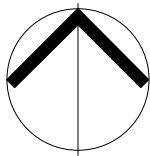
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• AS/NZ 3600 Plumbing, Drainage & Gas  
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• AS 3740: Waterproofing of domestic wet areas  
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PROJECT  
DENHAMS BEACH DUPLEX

LOT 2 DP 773132  
@ 217a BEACH ROAD  
DENHAMS BEACH NSW

DESCRIPTION  
STRUCTURAL PROPOSAL  
AND ADVICE 1

PROJECT STATUS  
AUTHORITIES APPROVAL

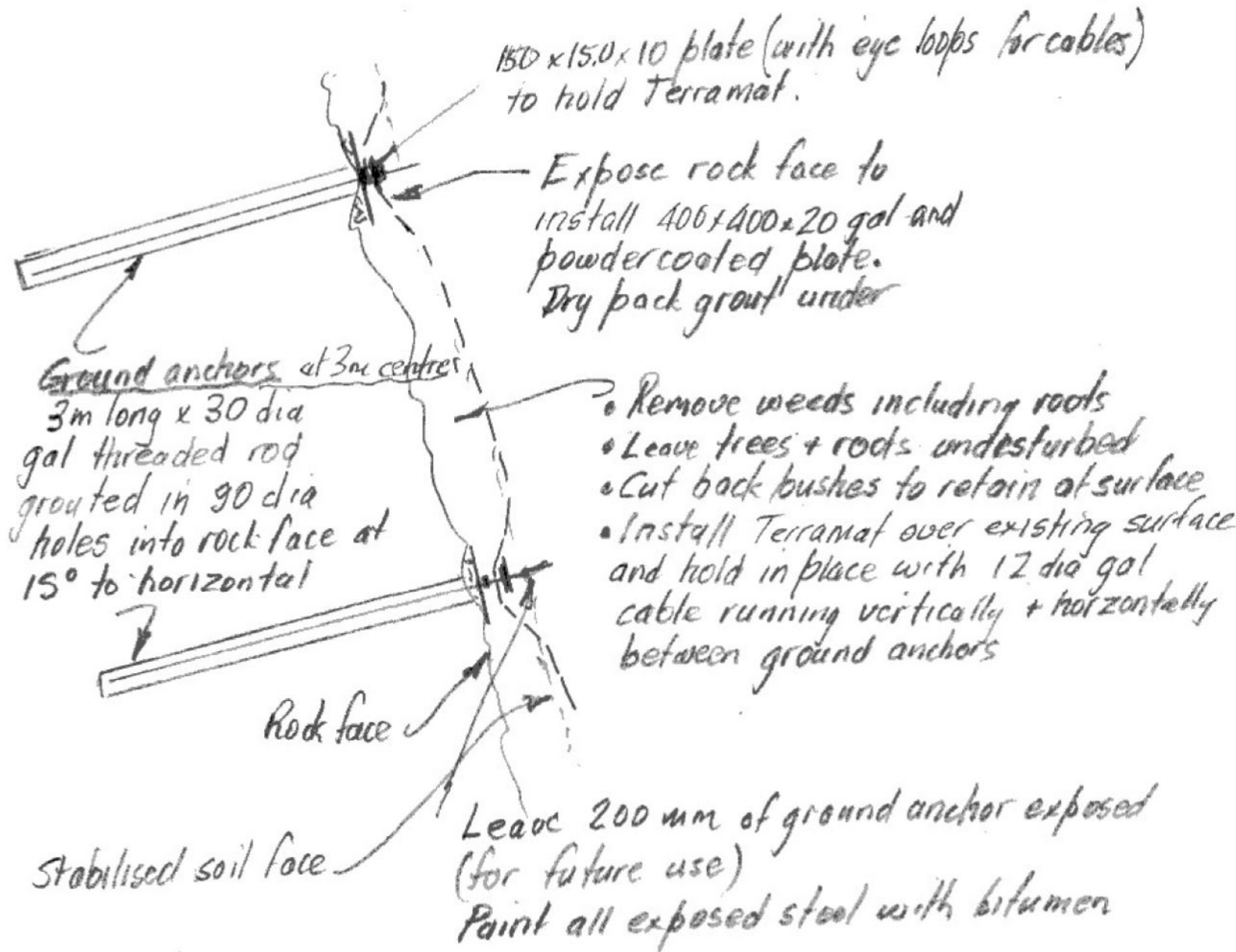
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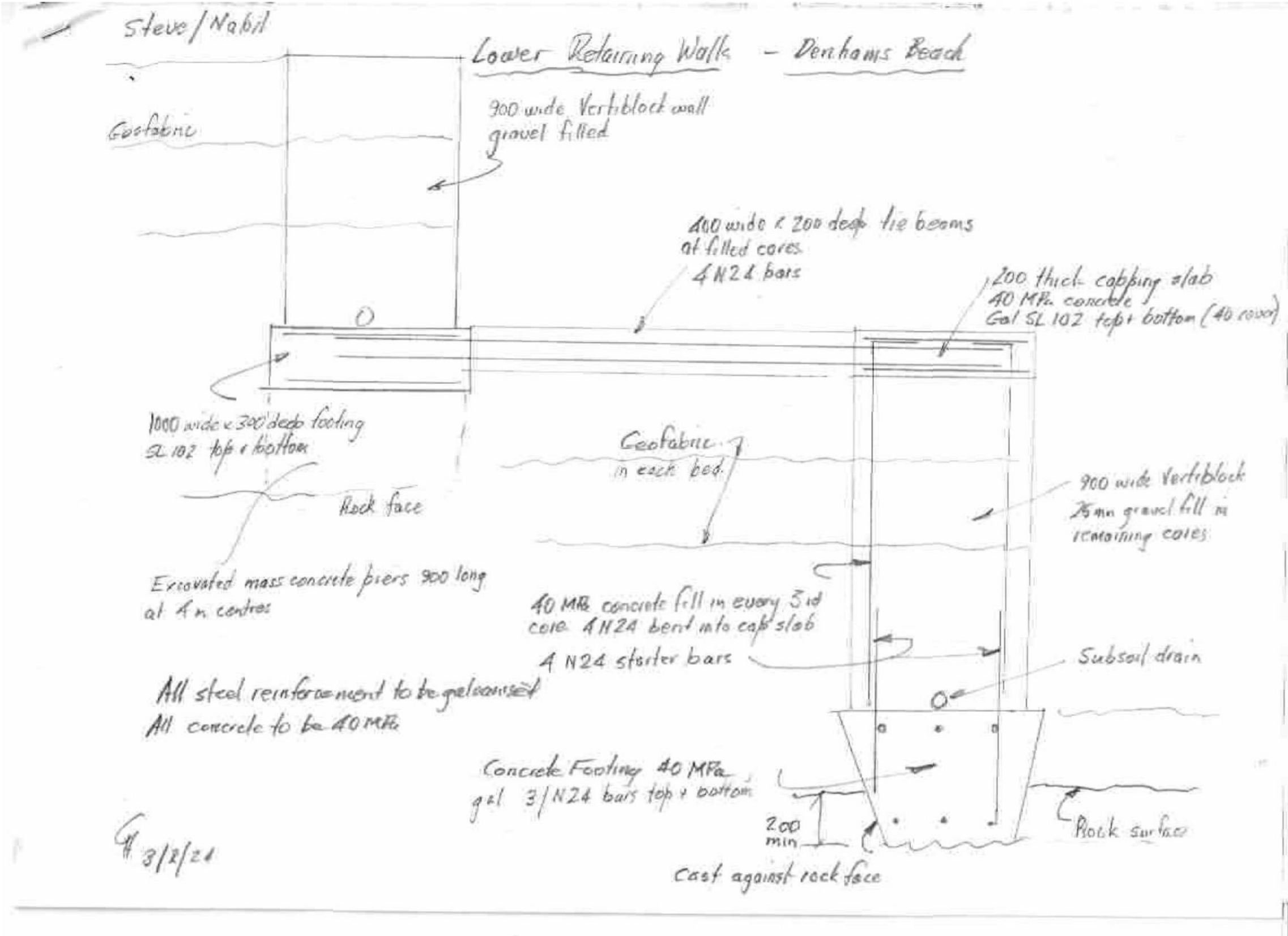
217 Beach Rd, Denhams Beach  
Slope Stabilisation



Structural Engineer's Terramat Application Detail  
for Slope Stabilisation

Hinge  
22/9/23



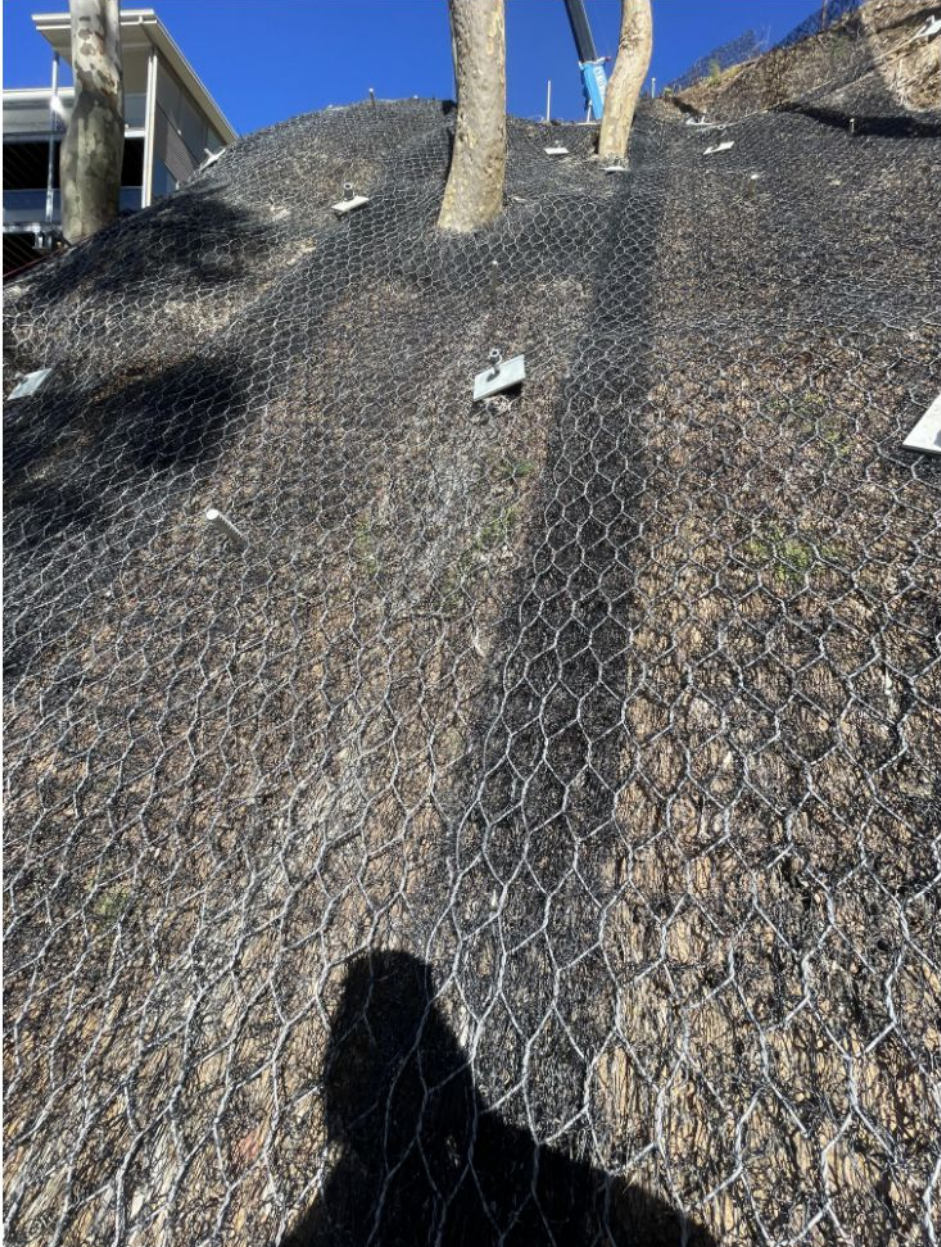


# Structural Engineer's Design for Cliff Stabilising Retaining Walls





1 22/12/2023



2 22/12/2023

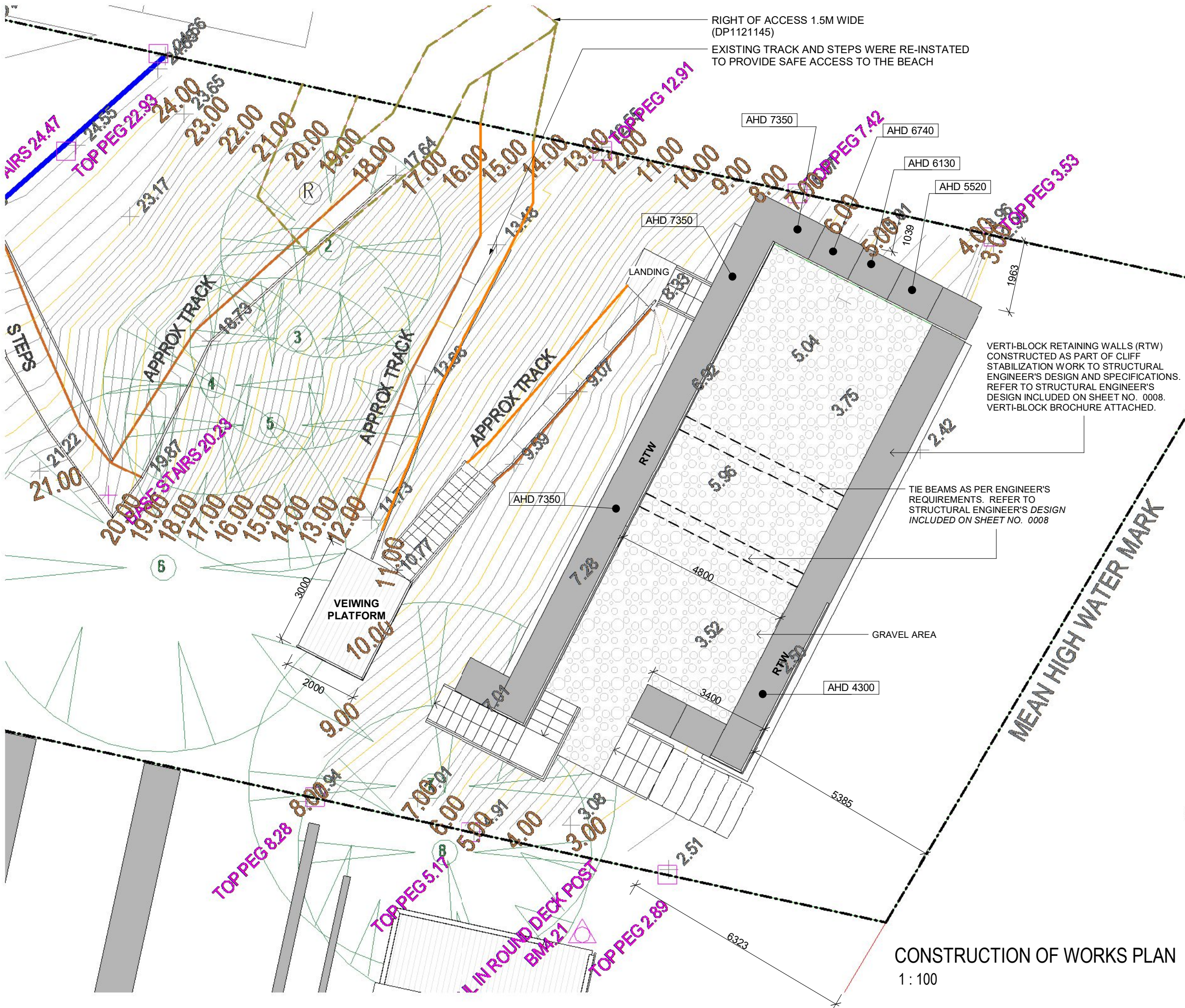


3 30/12/2023



# 4. REMEDIATION - STRUCTURAL WORKS

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- NOTES**
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- AS 1170.3: Snow Loading Code
  - AS 1288: Glass in buildings, section and installation
  - AS 1684: Framing Code
  - AS/NZ 3500 Plumbing, Drainage & Gas
  - AS 3660.1: Termite protection
  - AS 3740: Waterproofing of domestic wet areas
  - AS 3786: Smoke Alarms
  - HOUSING PROVISIONS OF THE BUILDING CODE OF AUSTRALIA:
    - PART 3.3: MASONRY
    - PART 3.7: FIRE SAFETY
    - PART 3.8: WC DOOR
    - PART 3.9: STAIRS AND BALUSTRADES
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  3. Termite Protection
  4. Glazing Certificate
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1	11.10.24	General Updates

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PROJECT  
**DENHAM'S BEACH DUPLEX**

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DENHAM'S BEACH NSW

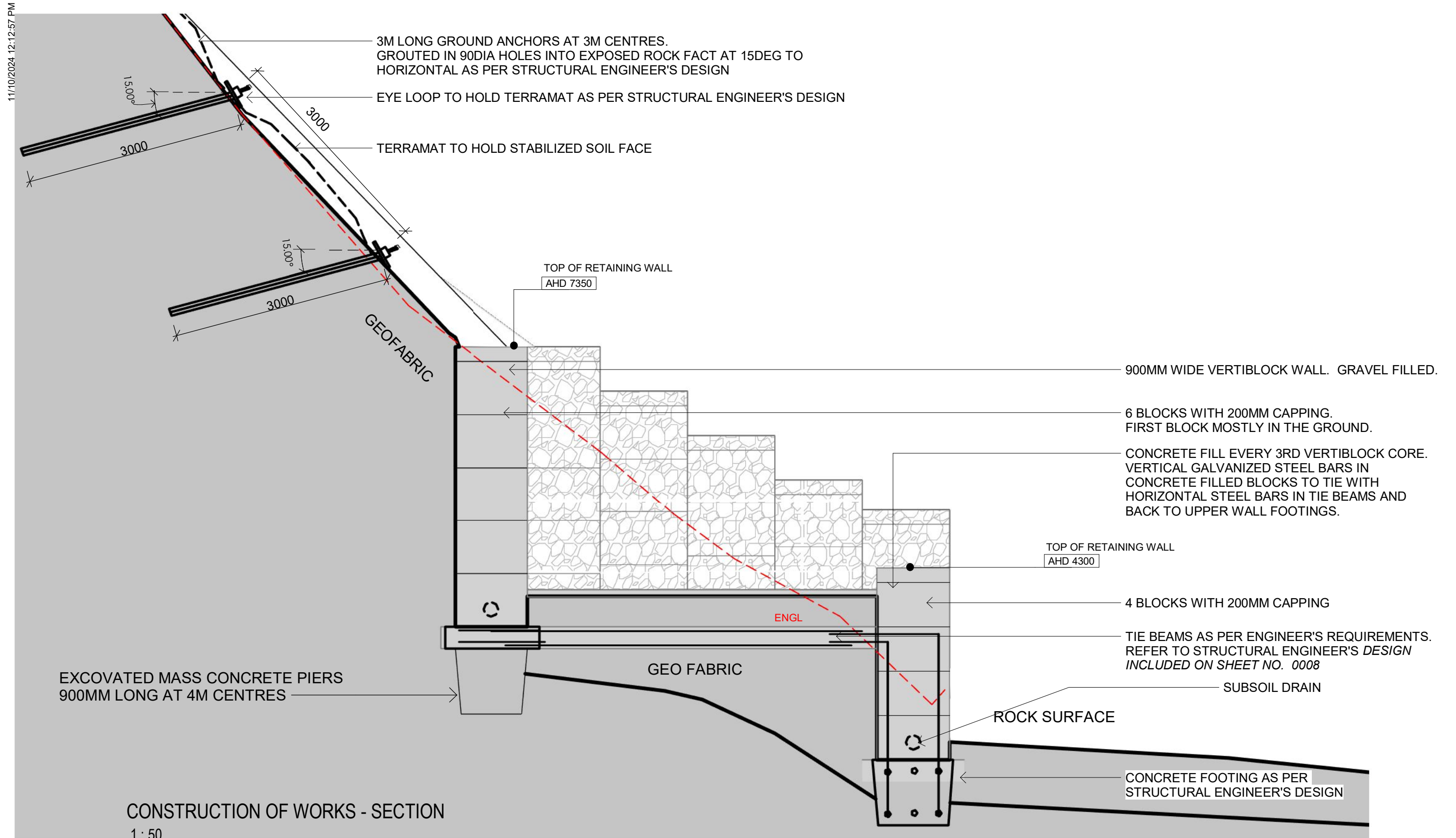
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**CONSTRUCTION OF WORKS 1 -  
INTENT OF RETAINING WALLS AND  
PROPOSED STRUCTURE**

PROJECT STATUS  
**AUTHORITIES APPROVAL**

SCALE at A3 1 : 100	DATE 11.10.24
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CONSTRUCTION OF WORKS PLAN  
1 : 100





CONSTRUCTION OF WORKS - SECTION  
1 : 50

DA-C	13.09.24	Authorities Approval	1	11.10.24	General Updates
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## NOTES

**NOTES**

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  - AS 1702: Snow Loading Code
  - AS 1288: Glass in buildings, section and installation
  - AS 1684: Framing Code
  - AS/NZ 3500 Plumbing, Drainage & Gas
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  - PART 3.3: MASONRY
  - PART 3.7: FIRE SAFETY
  - PART 3.8: WIND DOOR
  - PART 3.9: STAIRS AND BALUSTRADES



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PROJECT  
**DENHAMS BEACH DUPLEX**

LOT 2 DP 773132  
@217a BEACH ROAD  
DENHAM'S BEACH NSW

DESCRIPTION	PROJECT STATUS
CONSTRUCTION OF WORKS 2 - INTENT OF RETAINING WALLS AND PROPOSED STRUCTURE	AUTHORITIES APPROVAL

SCALE at A3 1 : 50	DATE 11.10.24
DESIGNED APA	JOB NO <b>J000167</b>
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**NOTES**

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• PART 3.9: STAIRS AND BALUSTRADES



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PROJECT  
**DENHAMS BEACH DUPLEX**

LOT 2 DP 773132  
@217a BEACH ROAD  
DENHAMS BEACH NSW

DESCRIPTION  
**CONSTRUCTION OF  
WORKS 3 - PHOTOS**

PROJECT STATUS  
**AUTHORITIES APPROVAL**

SCALE at A3

DESIGNED  
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11.10.24  
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DRAWING NO  
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**DA-C**





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NOTES

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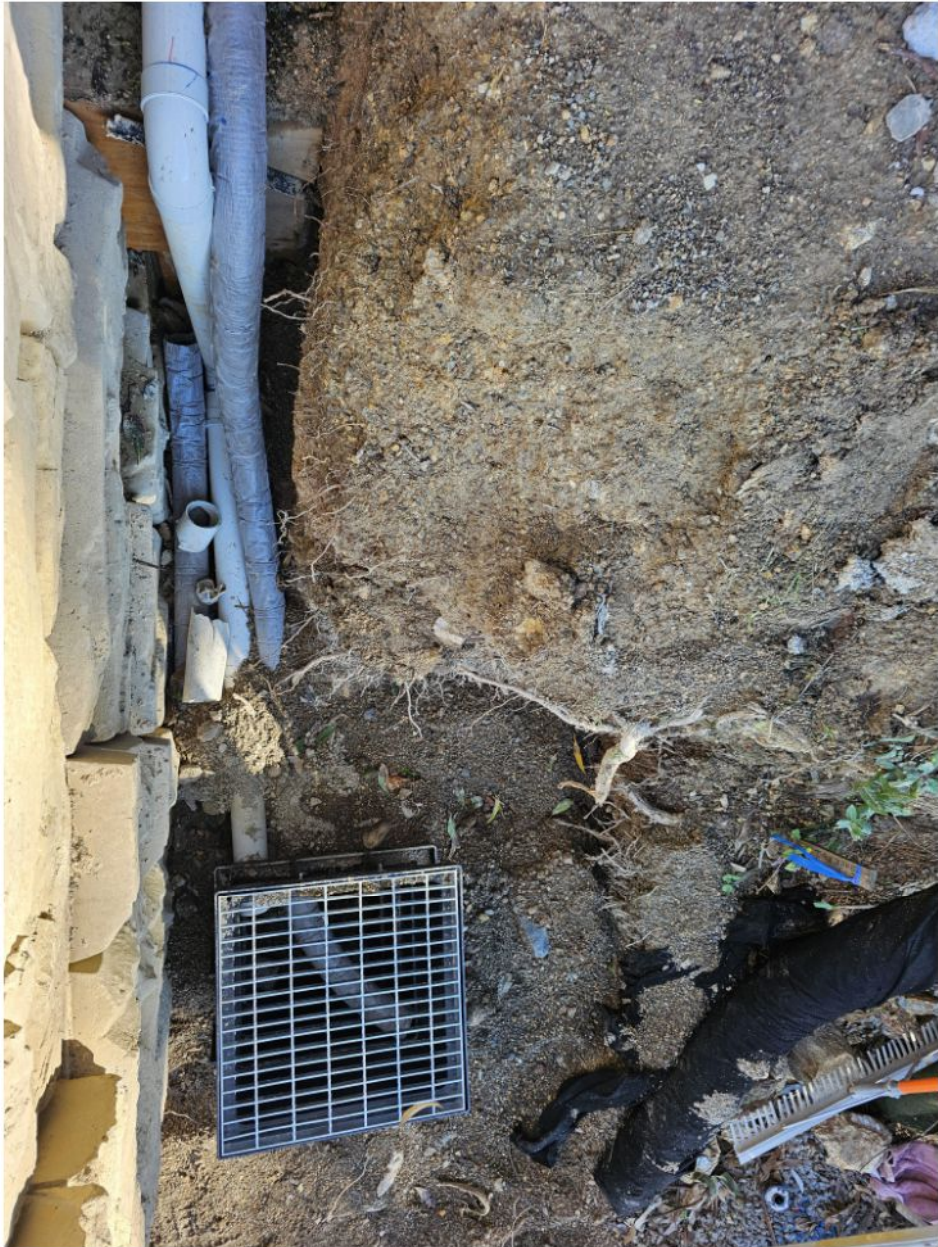


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PROJECT  
**DENHAMS BEACH DUPLEX**  
  
LOT 2 DP 773132  
@217a BEACH ROAD  
DENHAMS BEACH NSW

DESCRIPTION  
**CONSTRUCTION OF  
WORKS 4 - PHOTOS**  
  
PROJECT STATUS  
**AUTHORITIES APPROVAL**

SCALE at A3  
  
DESIGNED  
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DATE  
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JOB NO  
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# STORMWATER INFRASTRUCTURE

As shown on diagram on Sheet No. C0003

DA-C 13.09.24 Authorities Approval			1	11.10.24	General Updates
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<b>NOTES</b> Verify all dimensions on site Use Dimensions DO NOT SCALE Prior to completion of works, certificates to be provided to architect and home owner: 1. Certification of Footings, & Structure 2. Wet Sealing 3. Termite Protection 4. Glazing Certificate 5. Insulation Certificate 6. Plumbing Final 7. Electrical Final 8. Certificate of Occupancy		All works are to comply with the Building Code of Australia and referenced Australian Standards, including and not limited to: • AS 1170.3: Snow Loading Code • AS 1288: Glass in buildings, section and installation • AS 1684: Framing Code • AS/NZ 3600 Plumbing, Drainage & Gas • AS 3660.1: Termite protection • AS 3740: Waterproofing of domestic wet areas • AS 3786: Smoke Alarms • HOUSING PROVISIONS OF THE BUILDING CODE OF AUSTRALIA: • PART 3.3: MASONRY • PART 3.7: FIRE SAFETY • PART 3.8: WC DOOR • PART 3.9: STAIRS AND BALUSTRADES
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PROJECT <b>DENHAM'S BEACH DUPLEX</b>
LOT 2 DP 773132 @217a BEACH ROAD DENHAM'S BEACH NSW

DESCRIPTION <b>CONSTRUCTION OF WORKS 5 - PHOTOS</b>
PROJECT STATUS <b>AUTHORITIES APPROVAL</b>

SCALE at A3	DATE 11.10.24
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COMPLETED WORKS

DA-C 13.09.24 Authorities Approval  
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1 11.10.24 General Updates  
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DENHAMS BEACH NSW

DESCRIPTION  
**CONSTRUCTION OF  
WORKS 6 - PHOTOS**

PROJECT STATUS  
**AUTHORITIES APPROVAL**

SCALE at A3

DESIGNED  
APA

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11.10.24

JOB NO  
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**C0015**

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