FORTIFY
GEOTECH

Geotechnical Railway Impact Assessment - 849, 853 & 859 Pacific Highway, Chatswood

CLIENT

BB Wilson Property Pty Ltd

ADDRESS

Locked Bag 1400,
Meadowbank,
NSW

DATE

June 2025



39 Sydenham Rd, Marrickville NSW 2204
PO Box 9225, Deakin ACT 2600

Consulting Engineers

(02) 9188 4033
FortifyGeotech.com.au

02 June 2025
Our ref: S2207_GIA_01_Rev1

BB Wilson Property Pty Ltd

Via email: oscar.brady@billbergia.com.au

Attention: Mr Oscar Brady

849, 853 & 859 Pacific Highway, Chatswood, NSW

Geotechnical Railway Impact Assessment

We are pleased to present this report summarising our geotechnical railway impact assessment, in accordance with T HR CI 12090 ST – Airspace and External Developments, for the Sydney Trains (TfNSW) assets, as well as the Sydney Metro At Grade and Elevated Sections Corridor Protection Guidelines, in proximity to the proposed development at 849, 853 & 859 Pacific Highway, Chatswood, NSW.

The report outlines the assumptions, methodology and outcomes of our assessment and it has been reviewed by a TfNSW AEO/TAO.

Should you require any further information regarding this report, please do not hesitate to contact our office.

Yours faithfully
Fortify Geotech

Written by;



Manuel Neves
Principal Geotechnical Engineer
MICE CEng RPEQ RPEV PhD
Registered PE of Queensland (RPEQ) # 32190
VIC PE Registration # PE0006524
NSW PE Registration #PRE0002314

Reviewed by;



Jeremy Murray
Director | Senior Geotechnical Engineer
FIEAust CPEng Eng Exec NER RPEQ APEC Engineer IntPE(Aust)
Registered PE of Queensland (RPEQ) #19719
NSW PE Registration #PRE0001487

About us

We work with our clients to provide practical advice and solutions tailored to each project. Our professional services are reliable, responsive and efficient.

Our highly capable Geotechnical Engineers and Geologists have a comprehensive understanding of the industry. We provide the best engineering solution for complicated geotechnical engineering issues. This has earned us a solid reputation with our Construction Industry, Municipal and Government clients.

INDUSTRIES WE WORK IN

- Residential
- Commercial
- Transport Infrastructure
- Industrial Developments of all sizes.

SERVICES

- Geotechnical Site Investigations and Reporting;
- Engineering Geology;
- Mining/Rock Geotechnics;
- Foundation Engineering;
- Dam Engineering; Embankment Design and Specification;
- Geotechnical Design Recommendations;
- Pavement Engineering and Design;
- Pavement Condition Surveys;
- Slope Stability and Risk Assessments;
- Geotechnical and Hydrological Instrumentation and Monitoring;
- Footing and Excavation Supervision and Certifications;
- Excavated soil/rock assessments and VENM assessments;
- Supervision and Certification of Earthworks and Controlled Fill, including Level 1 supervision;
- Geotechnical Construction Specifications;
- Deep Excavation Support; and
- Slope/Retaining Structure Analysis and Design

Table of Contents

1 INTRODUCTION 1
2 INPUT INFORMATION 2
3 SITE CONDITIONS 2
3.1 Site Location and Description 2
3.2 Regional Geology 4
3.3 Subsurface Conditions 4
3.4 Geotechnical Design Parameters 5
3.5 Design Groundwater Levels 8
4 METHODOLOGY AND KEY ASSUMPTIONS 8
4.1 Methodology 9
4.2 Design Loading 10
4.3 Key Assumptions 10
4.4 Existing Sydney Trains / Sydney Metro Assets 11
4.4.1 Rail retaining wall along railway corridor 11
4.4.2 Wilson Street overbridge 12
4.4.3 SO'Brien St pedestrian bridge 13
5 CONSTRUCTION SEQUENCE 14
6 GEOMETRY AND STRUCTURAL INPUTS 18
7 GEOTECHNICAL ASSESSMENT RESULTS 22
7.1.1 Induced ground displacements 22
7.1.2 Stress changes to surrounding soil/rock mass 22
7.1.3 Induced track movement 24
8 INSTRUMENTATION AND MONITORING 24
9 KEY RISKS AND CONSIDERATIONS 25
REFERENCES 26

Tables

Table 3-1: Borehole Summary with Approximate RL's 4
Table 3-2: Key Geotechnical Parameters 5
Table 3-3: Unit stresses adopted for ground anchors 7
Table 6-1: Basement soldier pile wall 19
Table 6-2: – Ground anchors loading, ground anchor bond materials and strut loading 21

Table 7-1: Sydney Trains / Sydney Metro assets lateral displacements due to the proposed works 22
Table 7-2: Stresses in surrounding soil/rock mass of Sydney Trains / Sydney Metro assets 23
Table 7-3: Induced track movement on Sydney Trains / Sydney Metro lines 24

Plates

Plate 3-1: Site plan illustrating extent of Sydney Metro protection zone (highlighted in yellow) 3
Plate 3-2: Equivalent UCS values for the different weathering profile of shale based on PLT testing 7
Plate 3-3: Extent of drawdown from excavation [extract from Reditus' DWP] 8
Plate 4-1: Location of design sections covered as part of this assessment 9
Plate 4-2: As-built extracts with pile toe levels 11
Plate 4-3: As-built extracts with indicative location of design section 2 (and design section 3) 12
Plate 4-4: As-built extracts with indicative location of design section 3. 12
Plate 4-5: As-built extracts with indicative location of design section 3. 13
Plate 4-6: As-built extracts with indicative location of design section 1. 13
Plate 4-7: As-built extracts about front and rear foundation piles of O'Brien St pedestrian bridge 14
Plate 6-1: Design cross section 1 (based on structural section 4 but considering two retaining walls – inner and outer, as depicted in the shoring set) 18
Plate 6-2: Design cross section 2 (based on structural section 3 but considering the top of wall and anchor levels shown on the elevation drawing, as well as the proposed internal shoring bracing system) 19
Plate 6-3: Design cross section 3 (based on structural section 3, as well as the proposed internal shoring bracing system) 19

Figures

Figure 1: Site Locality 27
Figure 2: Aerial Photograph and 2023 Fortify Borehole Locations 28
Figure 3: Location of design sections 29

Appendices

Appendix A: Relevant extracts of reference documents and input information
Appendix B: 2023 Fortify Geotech's Geotechnical Investigation Report
Appendix C: Summary of soil-structure analysis for design sections 1 to 3
Appendix D: TAO/AEO review certificate
Appendix E: Limitations in the use and interpretation of this geotechnical report

FORTIFY
GEOTECH

Geotechnical Railway Impact Assessment

849, 853 & 859 Pacific Highway, Chatswood, NSW

QUALITY INFORMATION

Revision history

Reference/ Revision	Description	Date	Author	Reviewer
S2207_GIA_01_Rev0	First issue	11/04/2025	MN	JM
S2207_GIA_01_Rev1	Revision following update of structural layout	02/06/2025	MN	JM

BB Wilson Property Pty Ltd

849, 853 & 859 Pacific Highway, Chatswood, NSW

Geotechnical Railway Impact Assessment

1 INTRODUCTION

BB Wilson Property Pty Ltd (the Client) has engaged Fortify Geotech Pty Ltd (Fortify) to carry out a geotechnical railway impact assessment for the proposed multi-storey development at 849, 853 & 859 Pacific Highway, Chatswood, NSW. The requirement for this assessment has been triggered by TfNSW Standard T HR CI 12090 ST – Airspace and External Developments (Reference 1) requirements, in particular Clause 14.2.

> *"Where ground penetration is greater than 2 m within 25 m of the rail corridor, unless otherwise directed by TfNSW, the developer shall carry out an engineering analysis and impact assessment to demonstrate that the effects of the proposed development on the existing rail infrastructure facilities will not cause any adverse effect. This assessment shall be presented in an engineering assessment report. (…)*
>
> *The numerical modelling shall be based on the realistic geological model derived from the subsurface information gathered through the geotechnical investigation. It shall include critical geological features such as bedding planes, weak layers, joints and other discontinuities.*

In addition to the above TfNSW guideline, this impact assessment has also considered the requirements of Sydney Metro At Grade and Elevated Sections Corridor Protection Guidelines, in particular the geotechnical component described in Clauses 5.2 and 6.

> *"The main aim of these assessments (…) is to demonstrate that there will be no adverse effects arising from the proposed development within the defined protection reserves. The acceptability of the effects predicted (as determined through investigation and assessment) must be viewed against the performance requirements described in Section 6 of this guideline document, as well as compliance with relevant standards and codes.*

The project involves the construction of a multi-storey building, comprising a two-storey podium with a mix of commercial uses, two split residential towers of up to 36 storeys, and a 6-level basement extending to circa 20 m depth (the proposed bulk excavation level is at circa RL 84.9 m AHD, whereas existing ground surface across the site varies between RL103.5 and RL107 m AHD (and between 103.5 and 105 m AHD in proximity to the railway assets in analysis).

The aims of this assessment were to:

1. Undertake a numerical modelling assessment of the proposed works and its impacts on the adjacent Sydney Trains / Sydney Metro assets:
    a. Rail retaining wall along railway corridor (eastern boundary of the site)
    b. Wilson Street vehicle overbridge (at north-eastern corner of the site)
    c. O'Brien St pedestrian bridge (at south-eastern corner of the site)

2. Estimate the induced ground displacements at the location of the above railway assets, as well as stress changes to the surrounding soil/rock mass.

3. Estimate displacements on rail corridor land adjacent to the development (less than 10mm vertical and +/- 10mm horizontal)

4. Estimate track distortion (vertical dip of under 5mm)

2 INPUT INFORMATION

To assist with this assessment the following information was provided by the Client/Client's Design Consultants:

- Level survey *"Detail and Level Survey of Lot 1 in DP1189541, SP1496, SP60178, SP10110 and part of SP52947 – 849-859 Pacific Highway, 2 Wilson Street & Lot 1 O'Brien Street"*, produced by SGD Pty Ltd, reference 9062, issue C, dated 20-03-24

- Proposed Ground Floor and Site Plans, produced PBD Architects, Project 2308, Drawings DA004 & DA105, Issue 2, dated 22-04-24

- Dewatering Management Plan for "*849, 853 & 859 Pacific Highway and 2 and 8 Wilson Street, Chatswood NSW 2067*", produced by Reditus, Project No. 23210, version 1, dated 01-05-24

- Sydney Trains / Sydney Metro as-built records:

    - *"Down Side Outer Pile Retaining Wall"*, GC-3 Works Contract, unknown author, unknown date

    - *"Pacific Place Railway Street Chatswood"*, unknown author, dated October 2001

    - *"Wilson Street Overbridge"*, GC-3 Works Contract, unknown author, unknown date

- Shoring (Soldier Pile System) for *"849-859 Pacific Highway & 2-8 Wilson Street, Chatswood*", produced by Cadigal Group, Project Ref. 01-100084, Revision H, dated 09-05-25

- Internal shoring system drawing set, produced by Cadigal Group, Project Ref. 01-1000084, Revision A, dated 18-03-25

Relevant extracts of the above documentation are provided in Appendix A of this report.

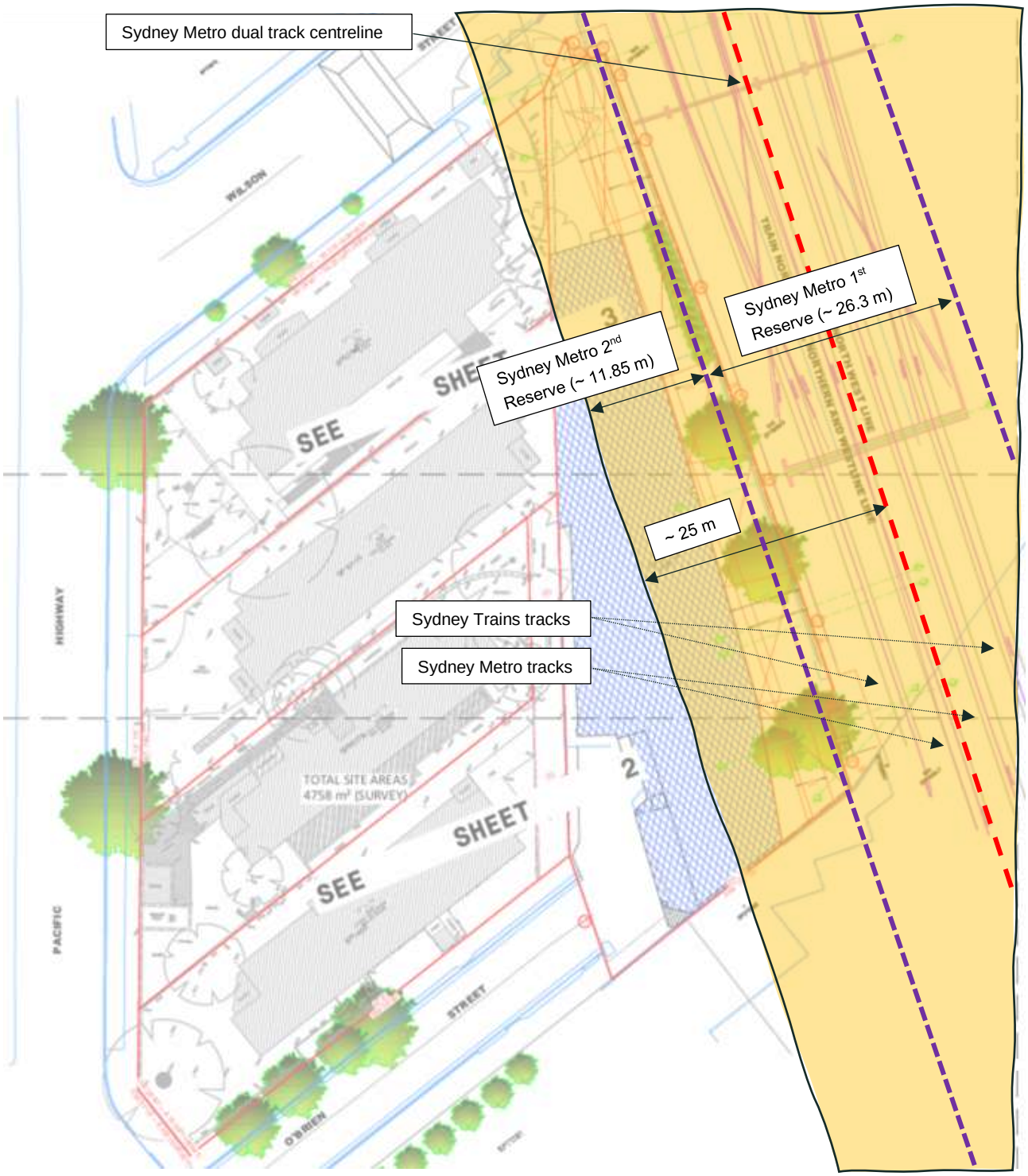
3 SITE CONDITIONS

3.1 SITE LOCATION AND DESCRIPTION

The site has a combined area of approximately ~4,660m2, and is irregular in shape. The site is bounded by Wilson Street to the north, Pacific Highway to the west, O'Brien Street to the south and a railway corridor to the east. The site is presently

occupied by existing residential unit buildings on the western portion of the site, and an existing warehouse structure on the eastern portion of the site. The ground surface is mostly concrete covered where not developed and is relatively flat, with a vertical cut at the eastern boundary of the site adjacent to the railway lines. Figure 1 shows the site locality and Plate 3-1 show the extent of the Sydney Metro protection zone in accordance with Clause 3.3 of Sydney Metro At Grade and Elevated Sections Corridor Protection Guidelines.

Plate 3-1: Site plan illustrating extent of Sydney Metro protection zone (highlighted in yellow)



3.2 REGIONAL GEOLOGY

The geological information provided by the Department of Regional NSW (Reference 2) indicates the area to be underlain by Middle Triassic age Ashfield Shale. Ashfield Shale consists of black to light grey marine shale and mudstone unit with minor siltstone and sandstone that outcrops in eastern Australia. Residual soils are expected above the shale bedrock.

Fortify has previously carried out a geotechnical investigation to investigate the subsurface conditions at the site, which comprised six (6) boreholes to a target depth of circa 20m with laboratory geotechnical testing of selected samples. Figure 2 shows the location of Fortify's 2023 boreholes, designed BH1 to BH6. The findings of the investigation are summarised in our report JS/S1998 Rev 2, dated 14 December 2023 (Reference 3) and the investigation's methods of description and classification of soils were based on the AS 1726-2017.

A supplementary investigation was conducted by Fortify and comprising of three (3) boreholes to a target depth of circa 27.5 m to inform the design of the additional basement levels and designated BH7 to BH9. The findings of the supplementary investigation are summarised in our report S2207_SGI_01_Rev2, dated 6 November 2024 (Reference 4). As part of the supplementary investigation three (3) dual groundwater monitoring wells were installed in boreholes BH7-BH9, with Reditus Consulting responsible for the installation and ongoing monitoring of data loggers. We understand that monitoring is still underway and that a revised Dewatering Management Plan will be prepared at a later date.

The findings of the site investigation broadly confirmed the information from the geological maps, with fill materials reported near surface, likely due to the existing residential/industrial developments at the site, overlying the natural soil.

3.3 SUBSURFACE CONDITIONS

For the purpose of this geotechnical assessment the ground conditions summarised in Table 3-1 have been adopted in our numerical analysis. These have been based on the initial and supplementary geotechnical investigation reports (References 3 and 4), which are included in Appendix B of this report. The inferred rock classification has been based on a new critical review of all available information with the team responsible for the Geotechnical Investigation team, which has considered rock weathering, point load test results, defect spacing and reported loss of material during coring. This has resulted in adjustments to the RLs (top and bottom) of some of the reported geological units, as well Unit 3c being re-classified as Class III / IV shale rock.

Table 3-1: Borehole Summary with Approximate RL's

Bore hole ID.	Approximate ground surface RL [1]	Top of Residual soils (Unit 2) (RL) [2]	Top of Shale Bedrock (RL) [2]					Top of Sandstone Bedrock (RL) [2]
			Class V Shale [Unit 3a]	Class IV Shale [Unit 3b]	Class III Shale [Unit 3c]	Class III/II Shale [Unit 3d]	Class II Shale [Unit 3e]	Class II Sandstone [Unit 4a]
BH1	103.6	103.3	98.8	95.8	94.1	88.6	86.6	N.E.
BH2	104.9	104.3	100.4	97.3	95.5	94.0	88.4	N.E.
BH3	105.8	105.3	101.3	98.3	97.7	96.7	90.7	N.E.
BH4	105.9	105.7	103.1	99.5	98.4	97.0	91.7	N.E.

Bore hole ID.	Approximate ground surface RL [1]	Top of Residual soils (Unit 2) (RL) [2]	Top of Shale Bedrock (RL) [2]					Top of Sandstone Bedrock (RL) [2]
			Class V Shale [Unit 3a]	Class IV Shale [Unit 3b]	Class III Shale [Unit 3c]	Class III/II Shale [Unit 3d]	Class II Shale [Unit 3e]	Class II Sandstone [Unit 4a]
BH5	105.7	105.1	102.5	99.7	97.3	96.2	89.7	N.E.
BH6	105.0	104.6	102.0	98.5	97.0	95.8	90.7	N.E.
BH7	104.8	103.8	99.3	99.0	91.8	N.C	87.8	N.E.
BH8	105.8	105.6	98.9	98.5	95.2	N.C	84.8	78.8
BH9	105.7	105.2	100.2	100.0	96.7	N.C	84.7	78.7

N.E. – Not encountered, N.C – Not considered

[1] RL's have been interpolated between survey points off the site survey.

[2] RL's have been calculated based on the interpolated RL at the top of each borehole.

3.4 GEOTECHNICAL DESIGN PARAMETERS

Table 3-2 summarises the key relevant geotechnical parameters of the soil/rock units used as part of this assessment. These have been discussed and agreed with the team responsible for the 2023 site investigation at the site and complement/supersede the original parameters derived in the geotechnical investigation report (Reference 3). These parameters have been based on the log description of the materials, previous experience in the area, as well as in-situ (SPT testing) and laboratory testing (e.g. Point Load Index – PLT testing). A summary of the PLT testing results is provided in Plate 3-1. The horizontal coefficient of earth pressures for Units 3b to 3e listed in Table 3-2 have been defined to replicate the range of likely horizontal stresses in the shale bedrock as defined in Bertuzzi (2014 – Reference 5) of $\sigma_H \approx 0.5 + 2.0 \times \sigma_V$.

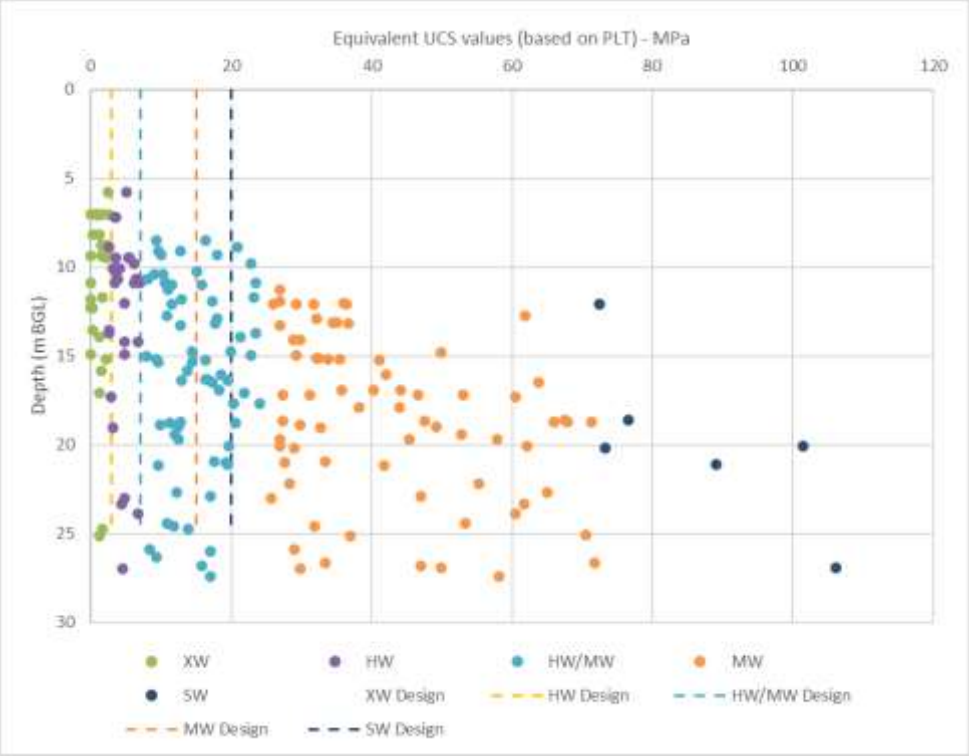
Table 3-2: Key Geotechnical Parameters

Unit	Typical description	Bulk Density γ_b (kN/m^3)	Effective Cohesion c' (kPa)	Friction Angle φ' (°)	Undrained Shear Strength s_u (kPa)	Design UCS (MPa)	Drained Young's Modulus E' (MPa)	Poisson Ratio ν	Horizontal K_0
Unit 1: Fill	Fine to coarse-grained Sandy GRAVEL and Gravelly SAND	18	0	30	N/A	N/A	10	0.3	0.53

Unit	Typical description	Bulk Density γ_b (kN/m^3)	Effective Cohesion c' (kPa)	Friction Angle φ' (°)	Undrained Shear Strength s_u (kPa)	Design UCS (MPa)	Drained Young's Modulus E' (MPa)	Poisson Ratio ν	Horizontal K_0
Unit 2: Residual Soil	Sandy Silty CLAY, stiff to hard	19	5	28	120	N/A	30	0.3	0.53
Unit 3a: XW Shale Bedrock		22	10	21	N/R	1	65	0.25	0.50
Unit 3b: HW Shale Bedrock **(Class IV)**		23	50	23	N/R	3	130	0.25	3.50
Unit 3c: HW/MW Shale Bedrock **(Class III / IV)**		23	100	28	N/R	7	300	0.2	3.50
Unit 3d: MW Shale Bedrock **(Class II / III)**		23	150	30	N/R	15	600	0.2	3.50
Unit 3e: SW Shale Bedrock **(Class II or better)**		24	400	32	N/R	20	700	0.2	3.50
Unit 4a: Class II Sandstone		24	500	40	N/R	25	900	0.2	3.50

N/A – Not applicable N/R – Not relevant

Plate 3-2: Equivalent UCS values for the different weathering profile of shale based on PLT testing



For the design of temporary ground anchors, the ultimate skin friction stresses provided in Table 3-3 have been adopted in this assessment. The have been based on the PLT results, as well as guidance from Pells et al. (2019 – Reference 6).

Table 3-3: Unit stresses adopted for ground anchors

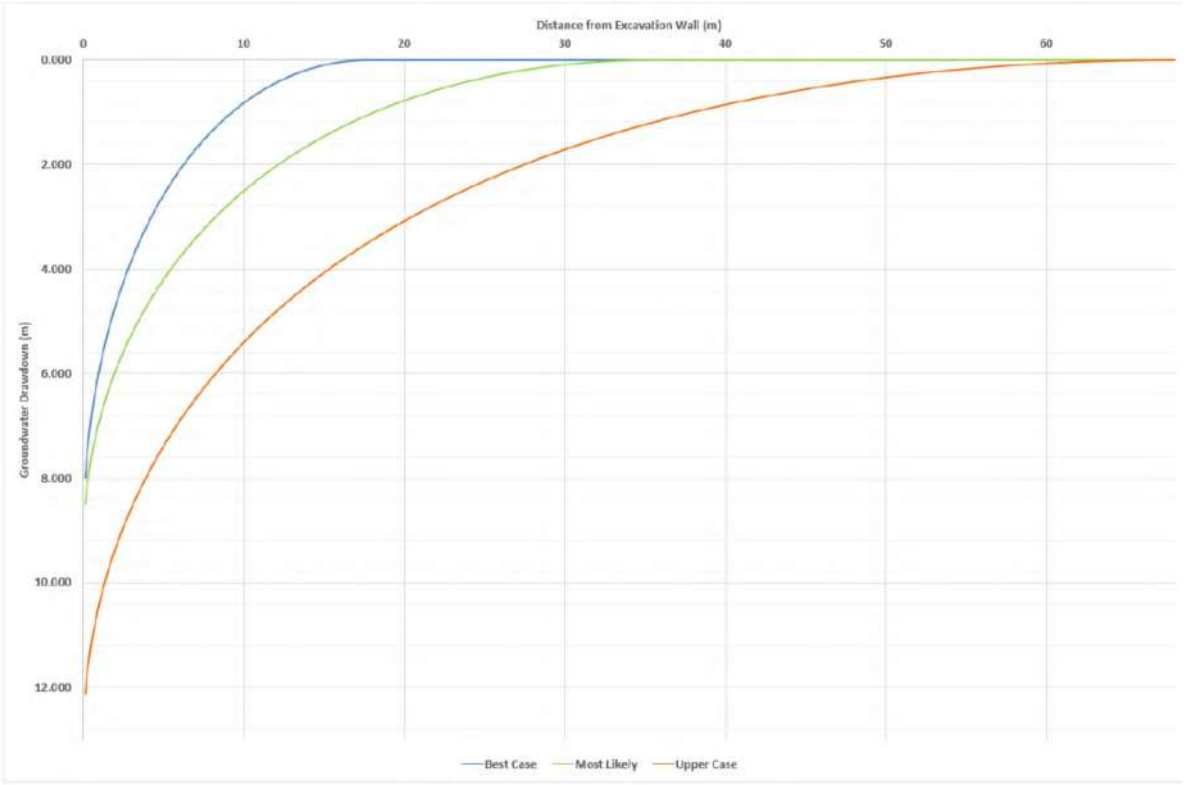
Unit	Allowable unit stresses for tension loads (kPa)
Unit 3a: XW Shale Bedrock	40
Unit 3b: HW Shale Bedrock **(Class IV)**	75
Unit 3c: HW/MW Shale Bedrock **(Class III / IV)**	100 - 225
Unit 3d: MW Shale Bedrock **(Class II / III)**	250 - 400
Unit 3e: SW Shale Bedrock **(Class II or better)**	> 400

3.5 DESIGN GROUNDWATER LEVELS

Groundwater levels (GWL) adopted in the analysis have been estimated based on the Dewatering Management Plan (DMP) for the site prepared by others. A 3-month monitoring campaign of GWL at the site, has reported GWL in proximity to the railway line to have a maximum standing water level of 97 m AHD, which has been adopted in this assessment.

As the proposed bulk excavation level for the development is RL 84.9 m AHD, it will intersect GWL. Given the proposals for a drained basement construction, long-term drawdown effects are expected in the area. The DMP has estimated the drawdown effect to extend to distances between 17.75 m to 67.50 m from the proposed excavation (Plate 3-1). However, note that this has been estimated for a 4-level basement excavation. An ongoing monitoring campaign is currently underway to inform the likely drawdown curves for a 6-level basement excavation.

Plate 3-3: Extent of drawdown from excavation [extract from Reditus' DWP]



A similar drawdown, albeit extending deeper into the ground profile and further away from the Site, has been adopted in this assessment. Note that these assumptions will have to be confirmed once a revised DMP for the Site is available and the analysis updated, if required.

4 METHODOLOGY AND KEY ASSUMPTIONS

The basement of the proposed development has been designed as a drained structure. As such, and as mentioned in Section 3.5, dewatering is assumed to occur progressively during construction, as the excavation intersects existing GWLs.

Based on the inputs provided by the Structural Engineer, the temporary lateral support for the excavation will be provided by multi-strand temporary ground anchors. These are expected to be sequentially de-activated as the permanent basement slabs are cast and connected to the retention piles.

As the design of the retention system is not part of the scope of this report, the following sub-sections provide details on the methodology and assumptions adopted for this assessment to infer the impact of the proposed works on the Sydney Trains / Sydney Metro assets listed in Section 1

The outcomes of the analyses are discussed in Section 7. Note that a sensitivity analysis has been carried out on all Design Sections considering a reduction in Young's Modulus values for all sol/rock layers of 25%, to capture the eventuality of more onerous ground conditions than anticipated.

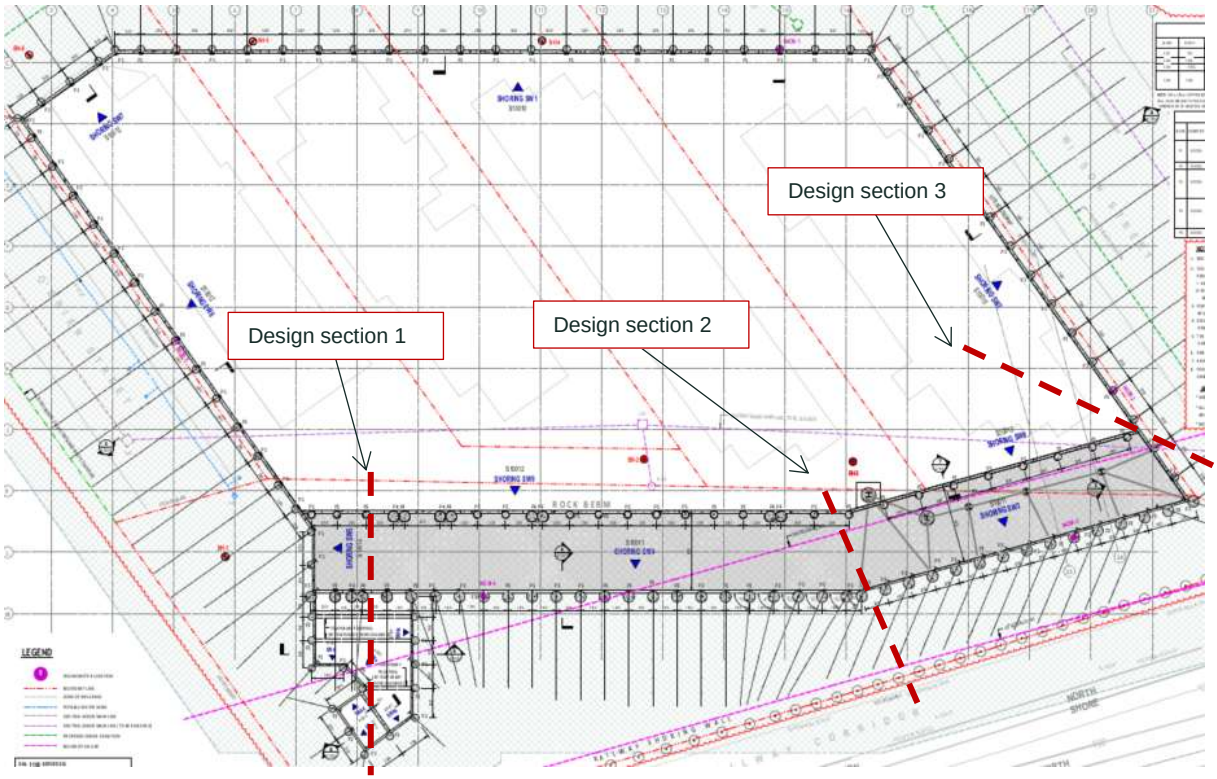
4.1 METHODOLOGY

The numerical analyses carried out as part of this assessment have made use of the commercially available finite element software PLAXIS-2D (V2024.1), which has accounted for the proposed construction sequence provided by the Structural Engineer.

The geometry and structural properties of the relevant railway assets have been based on the as-built records provided by the Client (refer to Section 4.4) and on past-experience.

The impact assessment was carried out by analysing three (3) design sections, designated as Sections 1 to 3 at the locations shown in Plate 4-1.

Plate 4-1: Location of design sections covered as part of this assessment



4.2 DESIGN LOADING

The following design loads have been adopted for the purpose of this assessment:

- Pedestrian traffic loading = 5 kPa
- Existing dwelling loading = 10 kPa / floor
- Communications hut loading = 10 kPa
- Train surcharge loading (300LA train) = 131 kPa, applied at the underside of the rail sleepers as per AS5100.2:2017 (Reference 7)
- 20 kPa surcharge at surface level between the basement walls and the railway corridor to allow for any future railway work (Clause 6.3 of Sydney Metro guideline – Reference 8), to be applied after construction is complete.

4.3 KEY ASSUMPTIONS

The following key assumptions have been considered in this geotechnical assessment:

- Geometry input provided by the Client and their Structural Engineer and largely based on the as-built records for the existing railway assets and the proposed Shoring System drawing set.
- Rock/soil relevant geotechnical design parameters used in the analyses based on Fortify's geotechnical investigation report for the site (report ref. S2207_SGI_01_Rev2, dated 6 November 2024) and summarised in Table 3-2.
- Clause 8.3.1 of AS5100.3 (Reference 8) requires that for a retaining wall stability assessment, the ground level in front of the wall to be lowered (i.e. passive resistance ignored) by 10% of the height of the wall beneath the lowest support, with a minimum value of 0.5 m. Based on the proposed levels for the lowest level of ground anchors (vary between approximately RL 93.1 m AHD and RL 90.3 m AHD), 10% of the remaining retained height corresponds to up to 0.8 m. However, as the excavation will be carried out in rock, we have assumed a 0.5 m over excavation sufficiently caters for this risk, as the likelihood of an over excavation extending past 0.5 m below BEL is very low.
- Except where stated otherwise, all results presented herein are based on unfactored loads and unfactored soil/rock parameters.
- Construction sequence and adopted RLs as advised by the Structural Engineer and summarised in Section 5. The assessment has only considered the impact of the proposed works until excavation to bulk excavation level (BEL) is reached, as well as the event of an accidental over-excavation, deemed as the most critical design scenario.
- Design GWLs considered as mentioned in Section 3.5 and presented in the outputs in Appendix C. Dewatering is assumed to occur progressively during construction, as the excavation intersects existing GWLs. The zone of influence of the GWL drawdown has been inferred based on the DMP for the site, yet considering the influence of a 6-level basement excavation, instead of 4-level.

- Given that only temporary conditions have been considered, the impacts of earthquake loading have not been included.

- Material proprieties for all structural elements have been agreed with the Structural Engineer and are listed in Section 6. In relation to the existing Sydney Trains / Sydney Metro assets, a reduction in their flexural rigidity (EI) to account for concrete cracking has been adopted throughout the entire analysis (EI = 0.6 x uncracked EI).

- The design of the temporary internal shoring system and its corresponding foundation piles is not part of the scope of this assessment and we assume that this will be designed by others at a subsequent stage of the design process. At this stage, we have assumed that the pile embedment below BEL will be sufficient to ensure adequate bearing capacity for any vertical and horizontal loads transferred through the internal bracing system. Overall, the geotechnical assessment has only considered a simplified approach to the modelling of this internal support structure, which should only be used for design validation. Results have been passed on to the Structural Engineer for verification against their structural model.

4.4 EXISTING SYDNEY TRAINS / SYDNEY METRO ASSETS

For the purpose of this assessment, three distinct existing Sydney Trains / Sydney Metro assets have been considered, which are described in the following subsections. A reinforced concrete Young's Modulus of 30 GPa has been assumed for all assets, albeit a reduction in EI to 60% of the uncracked value has been adopted in this assessment.

4.4.1 Rail retaining wall along railway corridor

An existing retaining wall runs along the railway corridor at the eastern boundary of the site. The wall comprises of a soldier pile wall with a continuous reinforced concrete capping beam at the top. The piles are 850 mm in diameter and have been installed at a 2.5 m spacing. Pile toe levels have been extracted from the as-built records (Plate 4-2).

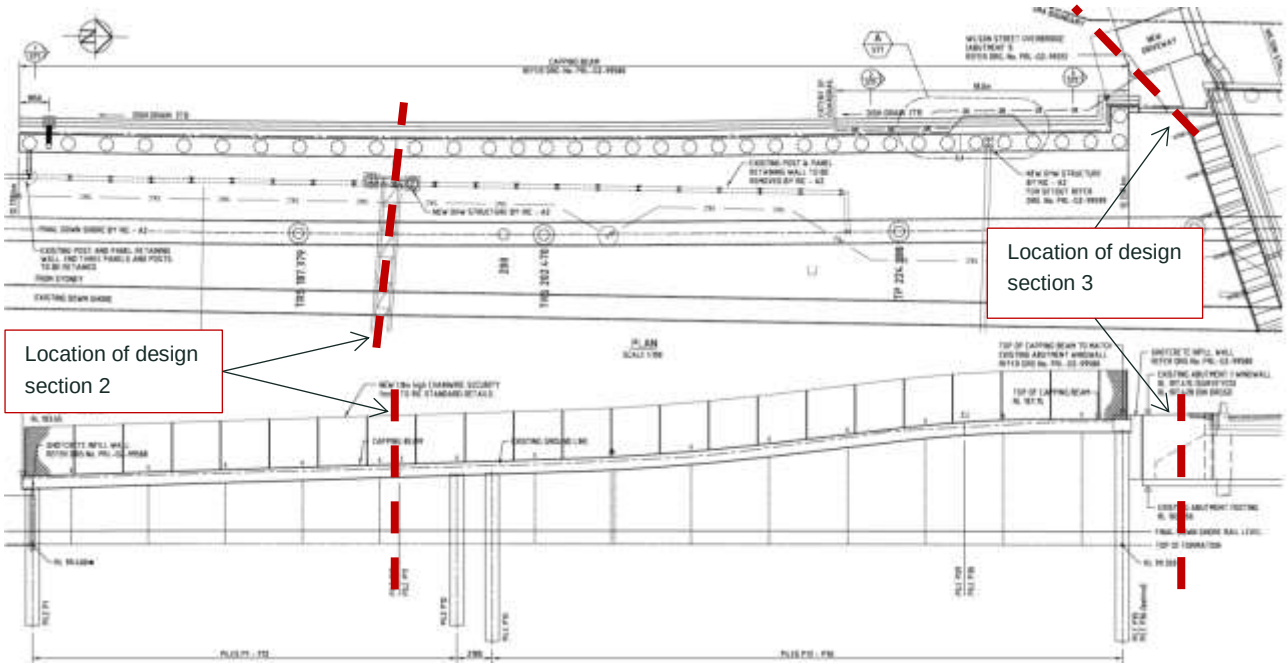
Plate 4-2: As-built extracts with pile toe levels

TABLE 1

PILE No	EASTING	NORTHING	DIAMETER	CUT OFF LEVEL	CONTRACT LEVEL	* ACTUAL FOUNDING LEVEL
P1	331 577.167	6 259 284.036	850	102.920	94.50	94.50
P2	331 577.085	6 259 286.405	850	102.995	94.50	94.50
P3	331 577.002	6 259 288.773	850	103.070	94.50	94.50
P4	331 576.917	6 259 291.142	850	103.145	94.50	94.50
P5	331 576.830	6 259 293.510	850	103.225	94.50	94.50
P6	331 576.739	6 259 295.879	850	103.300	94.50	94.50
P7	331 576.645	6 259 298.247	850	103.375	94.50	94.50
P8	331 576.548	6 259 300.615	850	103.450	94.50	94.50
P9	331 576.446	6 259 302.982	850	103.525	94.50	94.50
P10	331 576.339	6 259 305.350	850	103.600	94.50	94.50
P11	331 576.228	6 259 307.717	850	103.675	94.50	94.50
P12	331 576.112	6 259 310.085	850	103.750	94.50	94.50
P13	331 576.002	6 259 312.262	850	103.820	93.50	93.50
P14	331 575.910	6 259 314.020	850	103.875	93.50	93.50
P15	331 575.816	6 259 315.777	850	103.930	93.50	93.50
P16	331 575.719	6 259 317.535	850	103.990	93.50	93.50
P17	331 575.620	6 259 319.292	850	104.060	93.50	93.50
P18	331 575.519	6 259 321.049	850	104.185	93.50	93.50
P19	331 575.416	6 259 322.806	850	104.310	93.50	93.50

A design section aligned with the existing overhead wiring/signalling structure in the area has been selected, as show in Plate 4-3 against the as-built plan and elevation for the wall.

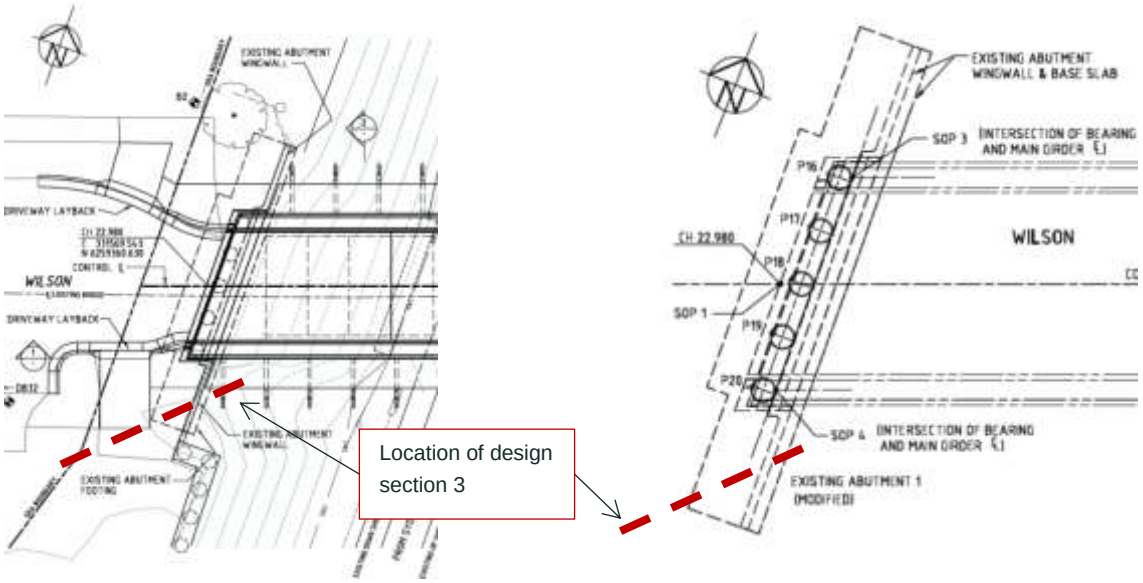
Plate 4-3: As-built extracts with indicative location of design section 2 (and design section 3)



4.4.2 Wilson Street overbridge

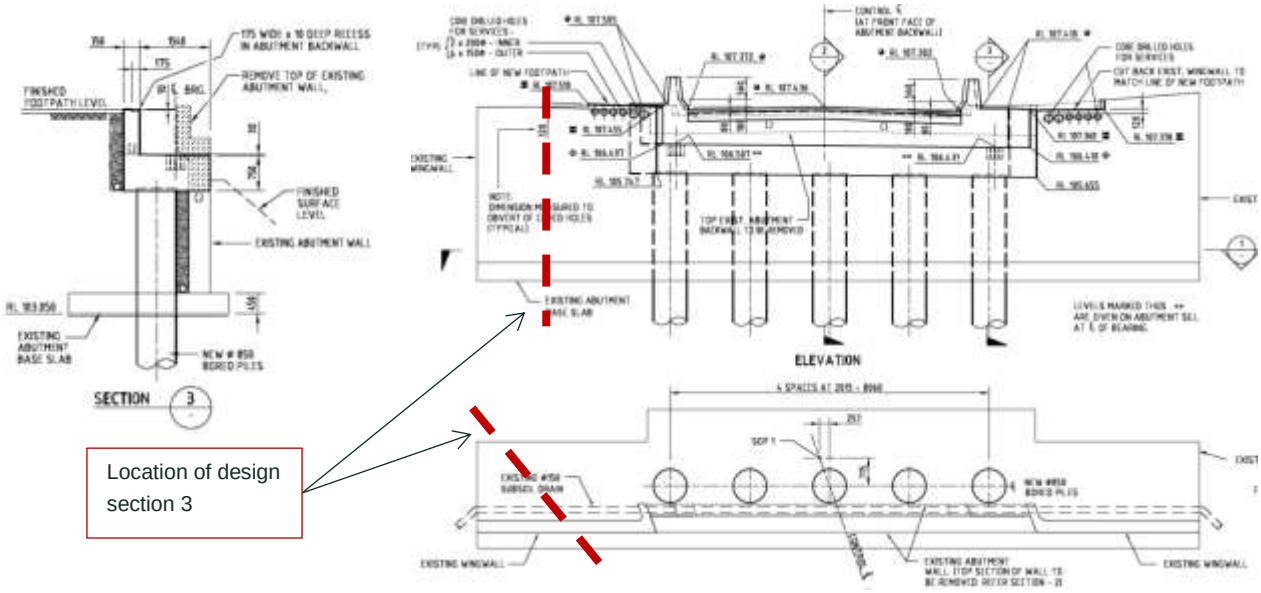
Wilson St overbridge is located to the northeast of the site. As-built records show the bridge to have the western abutment supported by piles that carry the bridge loads to a suitable foundation stratum, with L-shape retaining walls supporting the earth pressures acting on the abutment and wingwalls (Plate 4-4).

Plate 4-4: As-built extracts with indicative location of design section 3.



For the purpose of this assessment, the contribution of the foundation piles was ignored and the nearest wingwall to the excavation was considered as a standalone L-shape wall (Plate 4-5).

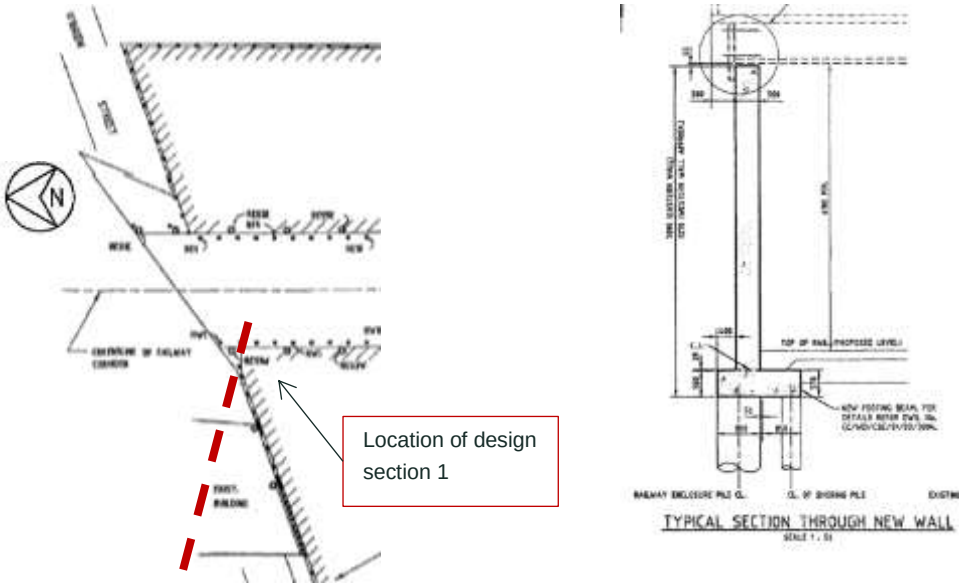
Plate 4-5: As-built extracts with indicative location of design section 3.



4.4.3 O'Brien St pedestrian bridge

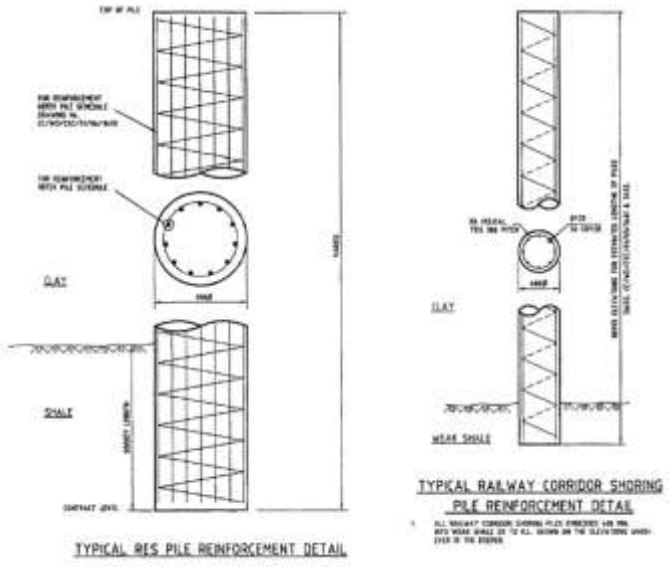
O'Brien St pedestrian bridge is located to the southeast of the site. As-built records show the bridge to have the western abutment supported by two sets of piles as shown in Plate 4-6.

Plate 4-6: As-built extracts with indicative location of design section 1.



The rear piles have 900 mm diameter and are spaced circa 7.5 m in plan. As-built toe levels have not been provided and an embedment of 2 diameters (1.8 m) into the underlying XW shale have been assumed based on the information shown in Plate 4-6. The front piles have 400 mm diameter and are spaced closer together at 2.5 m centres. Once again, no information about as-built pile toe levels has been provided, so for the purpose of this assessment an embedment of 1 diameter (0.4 m) into the underlying XW shale has been assumed based on the information shown in Plate 4-7.

Plate 4-7: As-built extracts about front and rear foundation piles of O'Brien St pedestrian bridge



As part of the numerical analysis a sensitivity assessment has been carried out by reducing the embedment of the rear piles from 2 diameters (1.8 m) to only 1 diameter (0.9 m). Given the distance between asset and the proposed excavation, this change has not impacted on the overall assessment results.

As the embedment of the existing piles is a function of the inferred ground model in the area, the updates and RL adjustments to inferred geological units following a review of all available information (refer to Section 3.3) have led to shorter foundation piles than previously assumed.

5 CONSTRUCTION SEQUENCE

The following construction sequences (staging) has been considered in this design geotechnical assessment:

Section 1

1) Establish initial site conditions;

2) Apply surcharge loading equivalent to current housing development;

3) Model railway trench excavation and associated retaining wall(s);

4) Apply train surcharge and reset deformation **(CURRENT CONDITION)**;

5) Demolition of current housing development;

6) Installation of outer soldier pile wall to the proposed toe level (RL 95.0 m AHD);

7) 1st level of excavation to RL 101.0 m AHD;

8) Installation of 1st level of ground anchors at RL 101.5 m AHD;

9) 2nd level of excavation to RL 97.6 m AHD;

10) Installation of inner soldier pile wall to the proposed toe level (RL 83.7 m AHD) and portion of basement slab connecting the outer and inner retaining walls;

11) 3rd level of excavation to RL 95.7 m AHD. **GWL lowered (dewatering)**;

12) Installation of 2nd level of ground anchors at RL 96.2 m AHD. **GWL lowered (dewatering)**;

13) 4th level of excavation to RL 92.7 m AHD. **GWL lowered (dewatering)**;

14) Installation of 3rd level of ground anchors at RL 93.2 m AHD. **GWL lowered (dewatering)**;

15) 5th level of excavation to RL 89.8 m AHD. **GWL lowered (dewatering)**;

16) Installation of 4th level of ground anchors at RL 90.3 m AHD. **GWL lowered (dewatering)**;

17) 6th level of excavation to RL 88.1 m AHD. **GWL lowered (dewatering)**;

18) Installation of rock berm shoring wall to the proposed toe level (RL 84.1 m AHD);

19) Excavation to BEL (RL 84.9 m AHD) with rock berm. **GWL lowered (dewatering)**;

- Undertake ‘phi-c’ strength reduction FoS check

19 a) Allow for an additional 0.5 m over-excavation;

- Undertake ‘phi-c’ strength reduction FoS check

20) Reduce bending stiffness of reinforced concrete elements to account for long-term effects. **GWL lowered (dewatering)**;

21) to 29) Sequentially install floor slabs and remove temporary ground anchors/struts. **Inferred Permanent GWL profile adopted.**

30) Apply 20 kPa surcharge between basement walls and railway corridor to allow for any future railway work (Clause 6.3 of Sydney Metro guideline – Reference 8). **Inferred permanent GWL profile adopted.**

Section 2

1) Establish initial site conditions;
2) Apply surcharge loading equivalent to current housing development;
3) Model railway trench excavation and associated retaining wall(s);
4) Apply train surcharge and reset deformation **(CURRENT CONDITION)**;
5) Demolition of current housing development;
6) Installation soldier pile wall to the proposed toe level (RL 83.7 m AHD);
7) 1st level of excavation to RL 103.8 m AHD;
8) Installation of 1st frame level support at RL 104.3 m AHD;
9) 2nd level of excavation to RL 101.7 m AHD;
10) 3rd level of excavation to RL 98.6 m AHD;
11) Installation of 2nd frame level at RL 99.6 m AHD and 1st level of ground anchors at RL 99.1 m AHD;
12) 4th level of excavation to RL 95.7 m AHD. **GWL lowered (dewatering)**;
13) Installation of 2nd level of ground anchors at RL 96.2 m AHD. **GWL lowered (dewatering)**;
14) 5th level of excavation to RL 92.2 m AHD. **GWL lowered (dewatering)**;
15) Installation of 3rd frame level at RL 93.6 m AHD and 3rd level of ground anchors at RL 92.7 m AHD;
16) 6th level of excavation to RL 88.1 m AHD. **GWL lowered (dewatering)**;
17) Installation of rock berm shoring wall to proposed toe level (RL 84.1 m AHD);
18) Excavation to BEL (RL 84.9 m AHD) with rock berm. **GWL lowered (dewatering)**;
    - Undertake ‘phi-c’ strength reduction FoS check

    18 a) Allow for an additional 0.5 m over-excavation;
    - Undertake ‘phi-c’ strength reduction FoS check
19) Reduce bending stiffness of reinforced concrete elements to account for long-term effects. **GWL lowered (dewatering)**;

20) to 28) Sequentially install floor slabs and remove temporary ground anchors/struts. **Inferred Permanent GWL profile adopted.**

29) Apply 20 kPa surcharge between basement walls and railway corridor to allow for any future railway work (Clause 6.3 of Sydney Metro guideline – Reference 8). **Inferred permanent GWL profile adopted.**

Section 3

1) Establish initial site conditions;

2) Apply surcharge loading equivalent to current housing development;

3) Model railway trench excavation and associated retaining wall(s);

4) Apply train surcharge and reset deformation **(CURRENT CONDITION)**;

5) Demolition of current housing development;

6) Installation soldier pile wall to the proposed toe level (RL 83.7 m AHD);

7) 1st level of excavation to RL 103.8 m AHD;

8) Installation of 1st frame level support at RL 104.3 m AHD;

9) 2nd level of excavation to RL 101.7 m AHD;

10) 3rd level of excavation to RL 98.6 m AHD;

11) Installation of 2nd frame level at RL 99.6 m AHD and 1st level of ground anchors at RL 99.1 m AHD;

12) 4th level of excavation to RL 95.7 m AHD. **GWL lowered (dewatering)**;

13) Installation of 2nd level of ground anchors at RL 96.2 m AHD. **GWL lowered (dewatering)**;

14) 5th level of excavation to RL 92.2 m AHD. **GWL lowered (dewatering)**;

15) Installation of 3rd frame level at RL 93.6 m AHD and 3rd level of ground anchors at RL 93.1 m AHD;

16) 6th level of excavation to RL 88.1 m AHD. **GWL lowered (dewatering)**;

17) Installation of rock berm shoring wall to proposed toe level (RL 84.1 m AHD);

18) Excavation to BEL (RL 84.9 m AHD) with rock berm. **GWL lowered (dewatering)**;

- Undertake ‘phi-c’ strength reduction FoS check

18 a) Allow for an additional 0.5 m over-excavation;

- Undertake ‘phi-c’ strength reduction FoS check

19) Reduce bending stiffness of reinforced concrete elements to account for long-term effects. **GWL lowered (dewatering)**;

20) to 29) Sequentially install floor slabs and remove temporary ground anchors/struts. **Inferred Permanent GWL profile adopted.**

30) Apply 20 kPa surcharge between basement walls and railway corridor to allow for any future railway work (Clause 6.3 of Sydney Metro guideline – Reference 8). **Inferred permanent GWL profile adopted.**

6 GEOMETRY AND STRUCTURAL INPUTS

Three cross sections have been selected as part of this geotechnical assessment, one for each asset in analysis and illustrated in Plates 6-1 to 6-3. Ground conditions at each design cross section have been interpolated based on the site investigation records and overall geometry has been based on the site survey provided by the Client.

Plate 6-1: Design cross section 1 (based on structural section 4 but considering two retaining walls – inner and outer, as depicted in the shoring set)

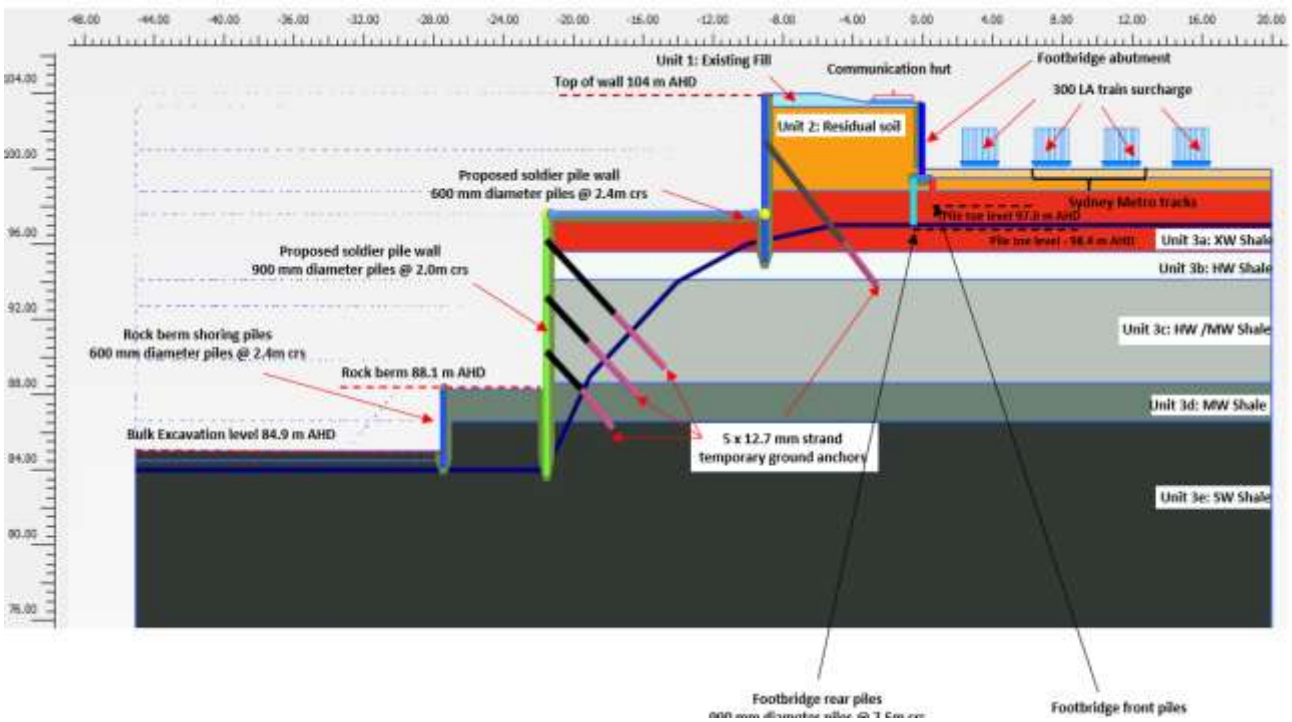


Plate 6-2: Design cross section 2 (based on structural section 3 but considering the top of wall and anchor levels shown on the elevation drawing, as well as the proposed internal shoring bracing system)

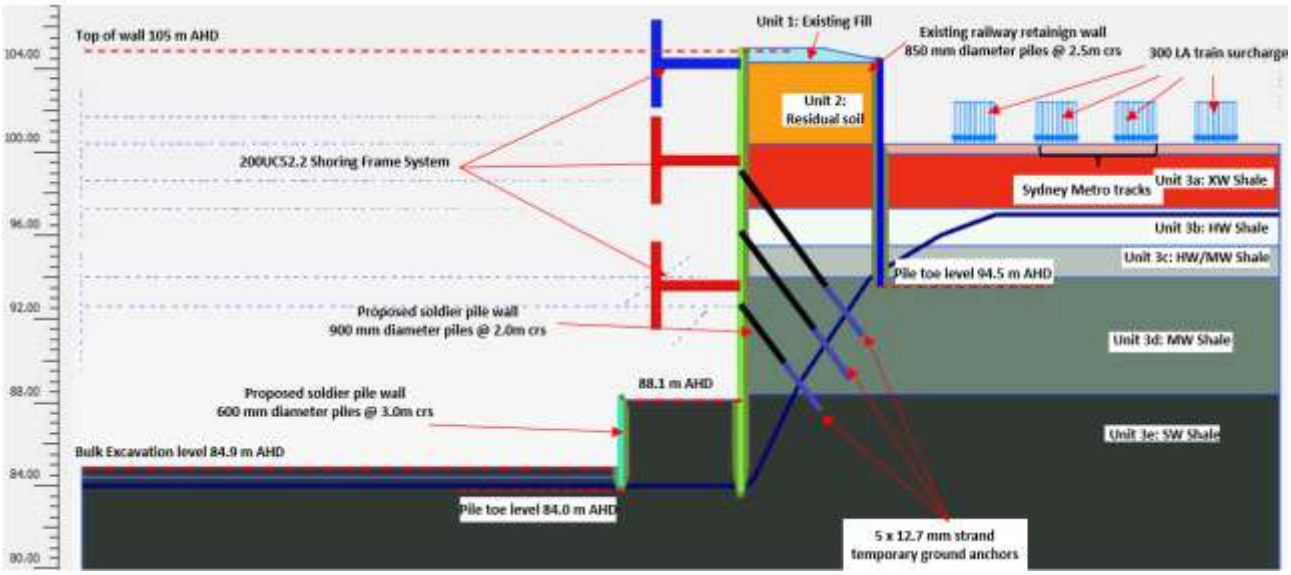
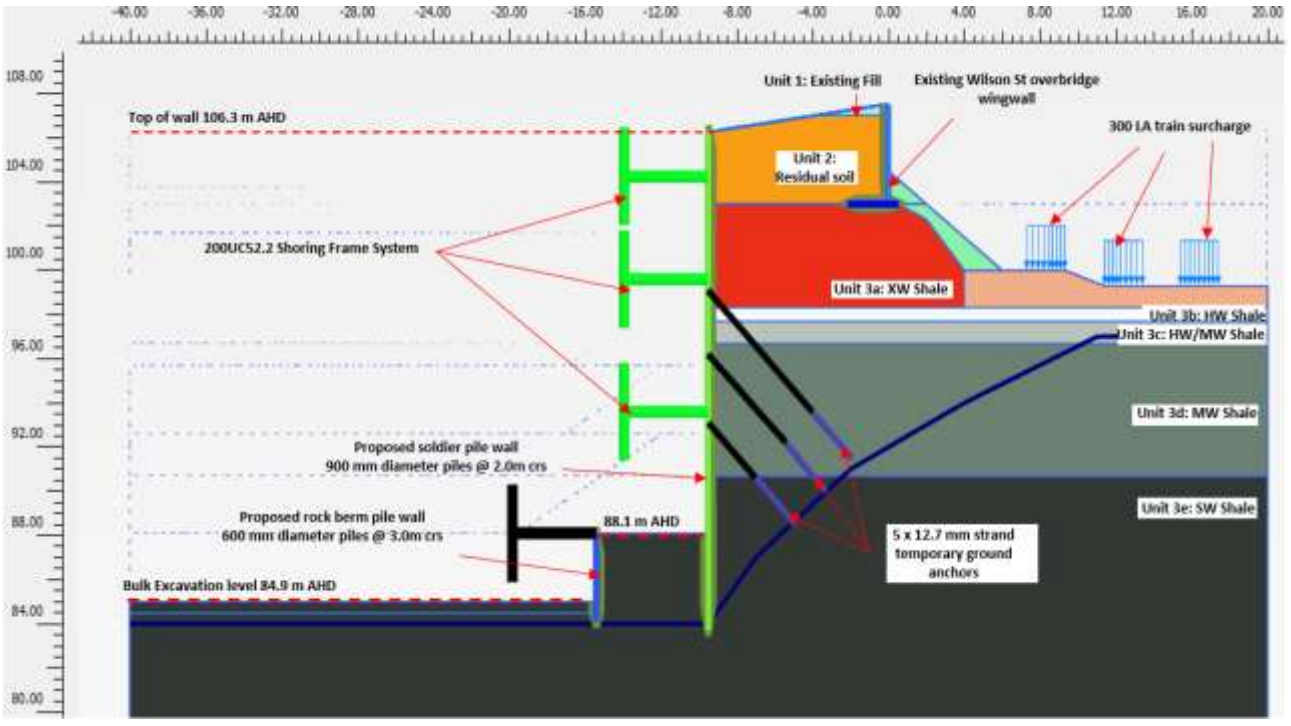


Plate 6-3: Design cross section 3 (based on structural section 3, as well as the proposed internal shoring bracing system)



The structural properties and dimensions adopted in this assessment are presented in Tables 6-1 and 6-2. Please note that the proposed shotcrete infill panels between soldier piles have been ignored for the purpose of the modelling.

Table 6-1: Basement soldier pile wall

Property	Section 1		Section 2	Section 3
Pile diameter and spacing	0.9 m @ 2.0 m crs (inner piles)	0.6 m @ 2.4 m crs (outer piles)	0.9 m @ 2.0 m crs	
E (GPa)	32.8			
EA (kN/m)	10.43E+06	3.86E+06	10.43E+06	
EI, short term / long term (kNm^2/m)[1]	475.0E+03 / 317.0E+03	78.2E+03 / 52.2E+03	475.0E+03 / 317.0E+03	
Existing surface level (m AHD)	104.0		105	107.5
Final surface level (m AHD)	104.0		105	106.3
Bulk excavation level (m AHD)	84.9			
Over-excavation level (m AHD)	84.4			
Pile toe level (m AHD)	83.7 (inner piles)	95.0 (outer piles)	83.7	83.7
Rock berm pile diameter and spacing	0.6 m @ 2.4 m crs		0.6 m @ 3.0 m crs	
Rock berm pile toe level (m AHD)	88.1			
Ground anchors embedment	HW Shale (inner piles)	HW Shale (outer piles)	MW Shale	MW to SW Shale
Ground anchors hole diameter (mm)	130	150		
Temporary strut [2] EA (kN)	N/A		30E3 (1st level) 120E3 (2nd & 3rd level)	240E3

[1] Short and long-term values of EI of 90% and 60%, respectively, of the uncracked stiffness values have been adopted in the assessment, following advice from the Structural Engineer.

[2] EA values for struts agreed with the Structural Engineer.

Table 6-2: – Ground anchors loading, ground anchor bond materials and strut loading

Design Section	Anchor / Strut Level	Anchors pre-stress load (kN)	Max anchor / strut load (kN)	Min bond length (m)	Bond material
1	GA 1	80	120	4	HW Shale
	GA 2	200	240	4	HW/MW Shale
	GA 3	200	270	4	HW/MW Shale
	GA 4	200	260	3	MW Shale
2	Strut 1	-	245	-	-
	Strut 2	-	715	-	-
	GA 1	250	275	3	MW Shale
	GA 2	250	280	3	MW Shale
	Strut 3	-	505	-	-
	GA 3	250	275	3	MW Shale
3	Strut 1	-	200	-	-
	Strut 2	-	400	-	-
	GA 1	230	270	3	MW Shale
	GA 2	275	325	3	MW Shale
	Strut 3	-	350	-	-
	GA 3	275	350	3	SW Shale

We recommend that the pre-stressing loads listed above are specified as part of the design, subject to confirmation/optimisation as part of the subsequent design stage (detailed design).

7 GEOTECHNICAL ASSESSMENT RESULTS

As described in Section 4, the numerical analysis carried out as part of this geotechnical assessment has been completed using the commercially available software PLAXIS-2D. The following subsections summarise the results of the geotechnical assessment. Further details on the soil-structure analysis can be found in Appendix C.

Although not part of the remit of this report, the 'phi-c' strength reduction analyses carried out in PLAXIS-2D have reported factors of safety higher than 1.5 against overall / global failure.

7.1.1 Induced ground displacements

Table 7-1 summarises the induced ground at the location of the relevant Sydney Trains /Sydney Metro assets.

Table 7-1: Sydney Trains / Sydney Metro assets lateral displacements due to the proposed works

Sydney Trains /Sydney Metro asset	Before 2nd Level of Strut / Excavation to Basement 3 Level (Stage 10/11)	End of excavation (Stage 18/19)	Removal of last level of ground anchors (Stage 28/29)	Largest differential to current conditions (Stage 4)
Rail retaining wall along railway corridor	< 5 mm	< 10 mm	< 10 mm	< 10 mm
Wilson Street vehicle overbridge	< 5 mm [1]	< 10 mm [1]	< 10 mm [1]	< 10 mm [1]
O'Brien St pedestrian bridge	< 5 mm	< 5 mm	< 5 mm	< 5 mm

[1] The estimates for the Wilson Street Overbridge wingwall are deemed as overestimate as they ignore the contribution of the bridge piles, as discussed in Section 4.4.2.

From an induced displacements point of view, the proposed works have minimum impacts on the existing Sydney Trains / Sydney Metro assets. No significant changes to the results shown above have been noted when a sensitivity analysis was carried out at each section with a reduction in Young Modulus values for all soils and rock layers of 25%.

On all design sections covered by this geotechnical assessment, the estimate of induced displacements on rail corridor land due to the proposed works are less than 10 mm.

7.1.2 Stress changes to surrounding soil/rock mass

Table 7-2 summarises the soil/rock stresses at the location of the relevant Sydney Trains /Sydney Metro assets prior to, during and post excavation works.

Table 7-2: Stresses in surrounding soil/rock mass of Sydney Trains / Sydney Metro assets

Sydney Trains / Sydney Metro asset		Current condition (Stage 4)	Before 2nd Level of Strut / Excavation to Basement-3 Level (Stage 10/11)	End of excavation (Stage 18/19)	Removal of last level of ground anchors (Stage 28/29)	Largest differential to Stage 4
XX (horizontal) direction [1]						
Rail retaining wall along railway corridor		0 to < 80 kPa (Units 1 to 3a) ~470 to < 730 kPa (Below Unit 3a)	0 to < 60 kPa (Units 1 to 3a) ~450 to < 710 kPa (Below Unit 3a)	0 to < 55 kPa (Units 1 to 3a) ~220 to < 370 kPa (Below Unit 3a)	0 to < 50 kPa (Units 1 to 3a) ~215 to < 365 kPa (Below Unit 3a)	< 30 kPa (Units 1 to 3a) < 390 kPa (Below Unit 3a)
Wilson Street vehicle overbridge	Stem	0 to < 60 kPa	0 to < 55 kPa	0 to < 65 kPa	0 to < 65kPa	< 10 kPa
	Base	< 20 to < 90 kPa	5 to < 75 kPa	35 to < 100 kPa	25 to < 100 kPa	< 35 kPa
O'Brien St pedestrian bridge		0 to < 35 kPa	0 to < 35 kPa	0 to < 35 kPa	0 to < 35kPa	< 5 kPa
YY (vertical) direction [1]						
Rail retaining wall along railway corridor		0 to < 260 kPa	0 to < 200 kPa	0 to < 220 kPa	0 to < 200 kPa	< 70 kPa
Wilson Street vehicle overbridge	Stem	5 to < 90 kPa	5 to < 85 kPa	5 to < 90 kPa	to < 95 kPa	< 15 kPa
	Base	~50 to < 210 kPa	~55 to < 205 kPa	~40 to < 240 kPa	~40 to < 235 kPa	< 25 kPa
O'Brien St pedestrian bridge		0 to < 75 kPa	0 to < 70 kPa	0 to < 70 kPa	0 to < 70 kPa	< 5 kPa

[1] Total stresses measured behind the retaining walls and beneath the base of the wingwall at Wilson St overbridge

With regards to changes to surrounding soil/rock mass, the proposed works have minimum impacts on the existing Sydney Trains /Syndey Metro assets. Furthermore, the foundations for the proposed building will all be constructed below the founding level of all Sydney Trains / Sydney Metro assets and away from their influence zone. The Structural Engineer has also confirmed that the basement piles, or any foundation pile in proximity to the railway corridor, will not be subject to tension loading on any load cases.

No significant changes to the results shown above have been noted when a sensitivity analysis was carried out at each section with a reduction in Young Modulus values for all soils and rock layers of 25%.

7.1.3 Induced track movement

On all design sections covered by this geotechnical assessment, the estimate of induced displacements at the location of the existing Sydney Trains/Sydney Metro railway tracks is not greater than 5 mm, as summarised in Table 7-3.

Table 7-3: Induced track movement on Sydney Trains / Sydney Metro lines

Sydney Trains / Sydney Metro lines / Design Section	Sydney Trains (West Line)	Sydney Metro (West Line)	Sydney Metro (East Line)	Sydney Trains (East Line)
Horizontal Displacement (mm)				
Rail retaining wall along railway corridor	< 5 mm	< 4 mm	< 3 mm	< 1 mm
Wilson Street vehicle overbridge	< 4 mm	< 3 mm	< 2 mm	Not covered in analysis
O'Brien St pedestrian bridge	< 3 mm	< 2 mm	< 1 mm	< 1 mm
Vertical Displacement (mm)				
Rail retaining wall along railway corridor	< 2 mm	< 2 mm	< 1 mm	1 mm
Wilson Street vehicle overbridge	< 1 mm	< 1 mm	< 1 mm	Not covered in analysis
O'Brien St pedestrian bridge	< 1 mm	< 1 mm	< 1 mm	< 1 mm

In light of the above, and considering the requirements of TfNSW Technical Note – TN 004:2015 and TfNSW Engineering Specification SPC 207, as the risk of track displacement is rack displacement equal to, or greater than 4 mm, track monitoring will be required during the works.

8 INSTRUMENTATION AND MONITORING

At this point of the design development the instrumentation and monitoring plan is yet to be developed and may be developed by others. Nonetheless, we recommend that active monitoring of the proposed basement wall is carried out through the works, as its behaviour will be critical to the performance of the existing Sydney Trains / Sydney Metro assets as construction progresses.

We envisage that the instrumentation and monitoring plan will comprise of survey monitoring prisms/points are installed along the caping beam and on selected vertical arrays. In conjunction with the survey monitoring prisms/points, we

consider it would be prudent to install borehole inclinometers at selected locations behind the proposed basement wall, so that the ground displacement profile with depth can also be assessed.

Monitoring points should also be installed at the location of the existing Sydney Trains / Sydney Metro assets and it will be important to have that carried ahead of the works to establish baseline readings. The proposed monitoring should also adhere to the requirements set out by TfNSW Technical Note – TN 004:2015 and TfNSW Engineering Specification SPC 207 regarding track monitoring.

9 KEY RISKS AND CONSIDERATIONS

Some of the key risks and considerations associated with the assessment presented in this report include:

- Impacts on and underground services in the vicinity, if any, have not been considered within this technical memorandum. Any temporary works stability associated with these works are also outside of the scope of this report.

- The inferred ground conditions are based on the existing geotechnical investigation, which was carried put in excess of 20 m away from the Sydney Trains / Sydney Metro assets in analysis. Actual ground conditions may vary for those presented in this report.

- Any soil consolidation settlement has not been considered as part of this assessment and may be dependent on the extent of groundwater drawdown in the area. However, given that the existing railway lines/assets are founded on XW shale rock or better, no long-term settlement (primary consolidation or creep) are anticipated.

- As no site-specific information is available about the locked-in stresses within the shale rock mass in the area, published literature (References 5 & 6) has been used to calibrate the numerical modelling.

- The global stability check carried out using the c-phi reduction method in PLAXIS 2D has limitations and may be influenced by the stiffness of the structural elements in the model and assumed groundwater profiles.

- This impact assessment has been carried out based on the preliminary design for the shoring system for the site. Should the design proposal be updated, this assessment may need to be revisited.

- Based on the overall ground conditions, distance to the proposed works and their construction sequence, the overall impact of the works on the existing railway assets is considered minor to negligeable.

Fortify Geotech Pty Ltd

REFERENCES

Transport for NSW – Asset Standards Authority, “T HR CI 12090 ST – Airspace and External Developments”, version 1.0, issue date 01 June 2021

MinView – geological map - https://minview.geoscience.nsw.gov.au - Accessed 6/05/2024

Fortify Geotech, “Geotechnical Investigation Report”, report reference JS/S1998 Rev 2, dated 14 December 2023

Fortify Geotech, “Geotechnical Investigation Report”, report reference S2207_SGI_01_Rev2, dated 6 November 2024

Bertuzzi, Robert, “Sydney Sandstone and Shale Parameters for Tunnel Design”, Australian Geomechanics Vol 49 No 1, March 2014.

Pells, P.J.N., Mostyn, G., Bertuzzi, R. and Wong, P. K., “Classification of Sandstones and Shales in the Sydney Region: A Forty Year Review”, Australian Geomechanics, Vol 54 No 2, June 2019.

Standards Australia, “AS5100.2-2017 - Bridge design Part 2: Design loads”

Standards Australia, “AS5100.3-2017 - Bridge design Part 3: Foundations and soil-supporting structures”

Transport for NSW – Sydney Metro Authority, “Sydney Metro At Grade and Elevated Sections Corridor Protection Guidelines”, Project No 657578, Revision 0, September 2018

Transport for NSW – Technical Note - TN 004: 2015 - “Buried services at turnouts and special trackwork”, issued 03 September 2015

Transport for NSW – Engineering Specification – SPC 207 “Track Monitoring Requirements for Undertrack Excavation”, version 1.5, issued April 2013

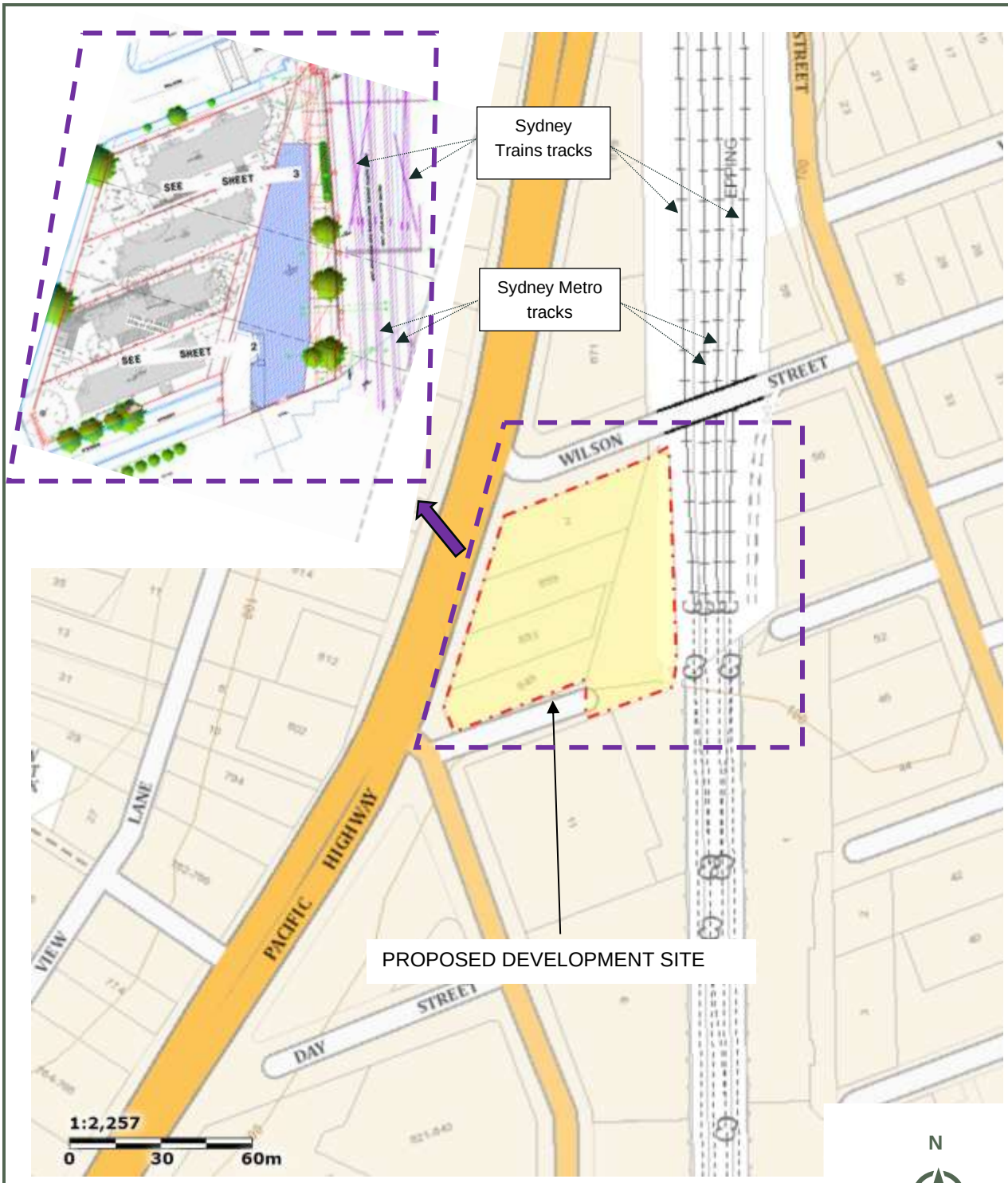


FIGURE 1: SITE LOCALITY | S2207



FIGURE 2: AERIAL PHOTOGRAPH AND 2023 FORTIFY BOREHOLE LOCATIONS

S2207

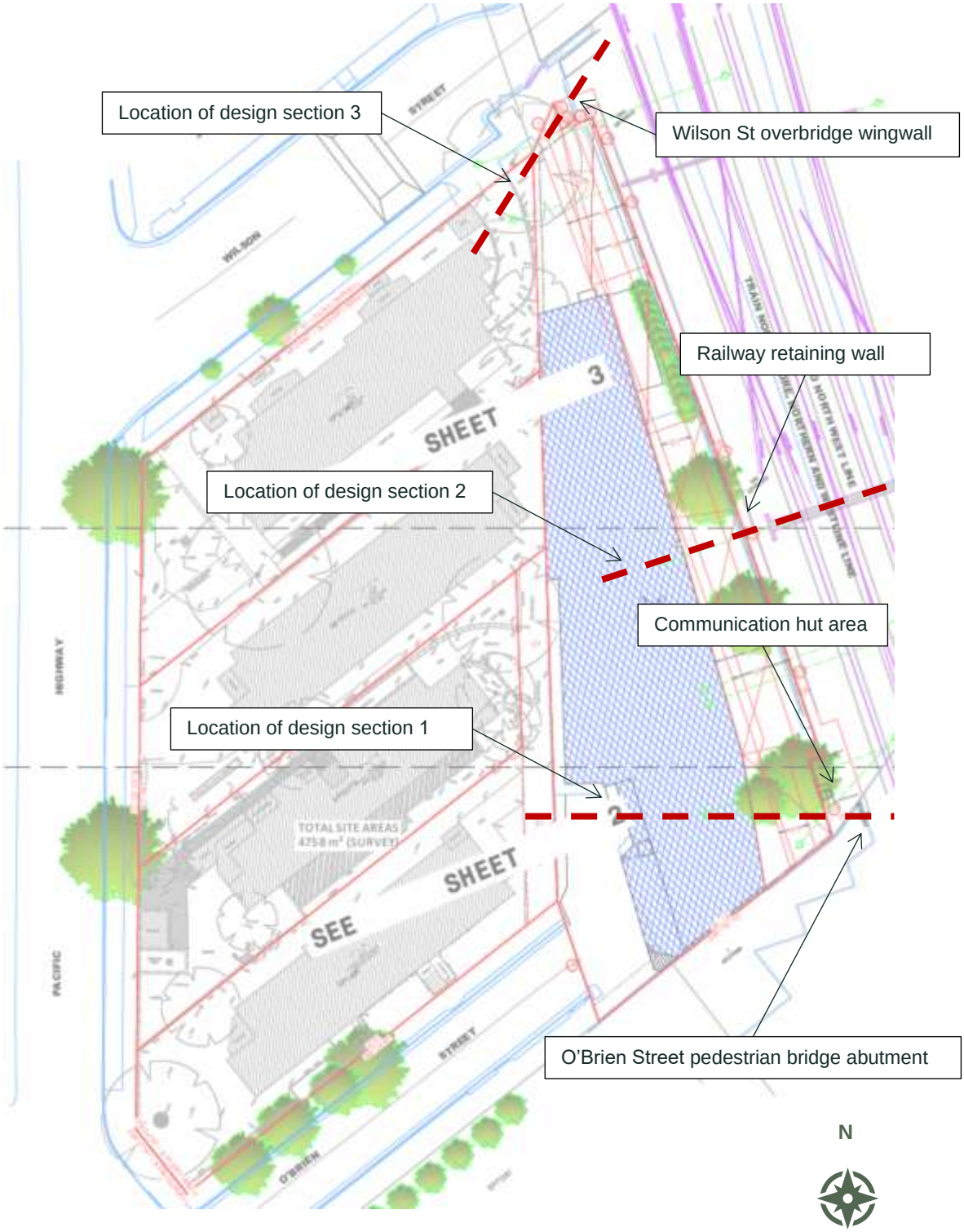


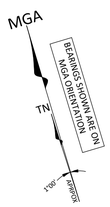
FIGURE 3: LOCATION OF DESIGN SECTIONS | S2207

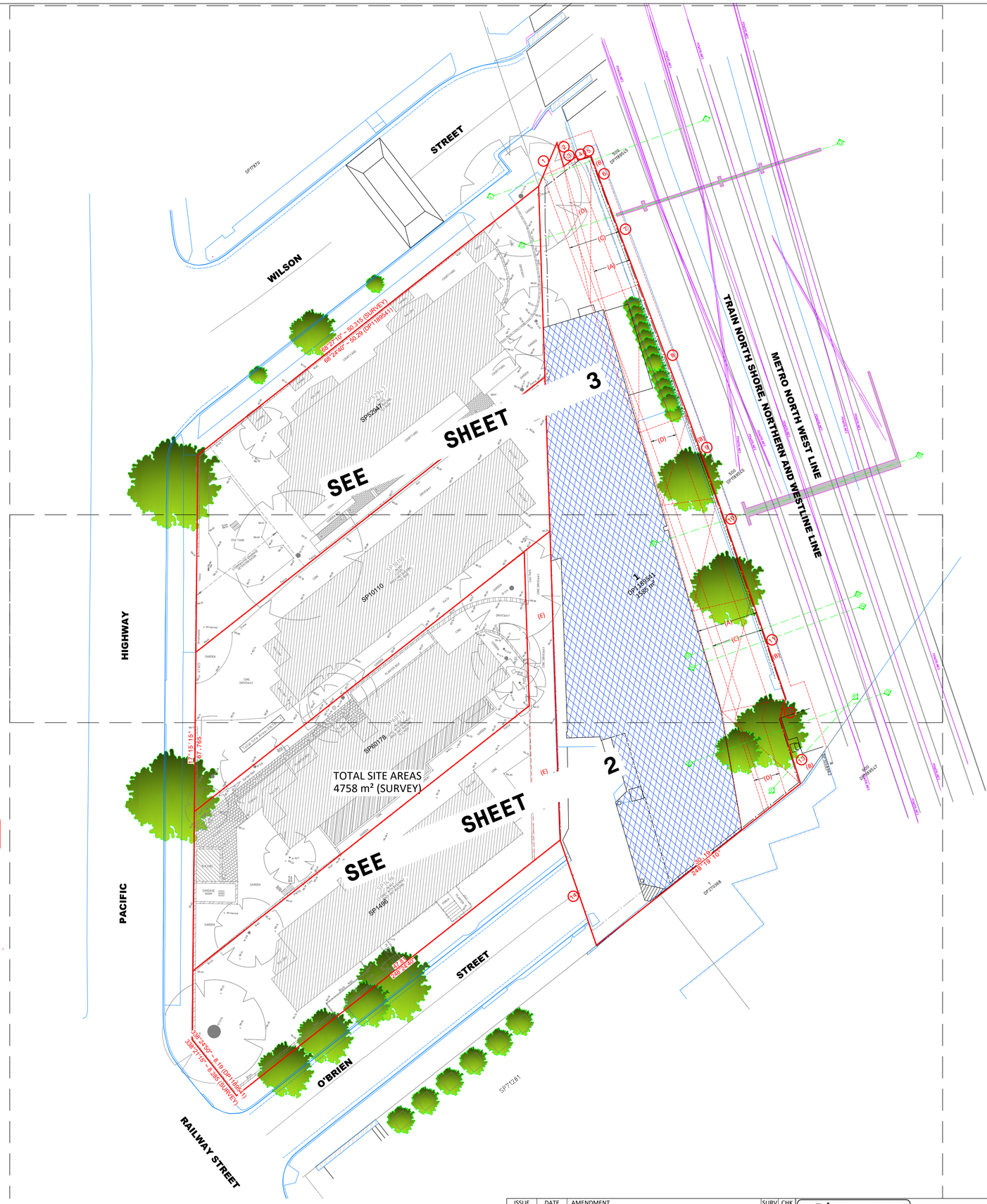
FORTIFY
GEOTECH

Appendix A

Relevant extracts of reference documents and input information

A1





SEE SHEETS 2 & 3 FOR UNDERGROUND SERVICE LINES, TREE INFORMATION & EASEMENT DETAILS

SEE SHEET 4 FOR UNDERGROUND SERVICE TABLES

SEE SHEETS 5-9 FOR RAIL SECTIONS AND PROPOSED DESIGN LOCATION

SCHEDULE OF SHORT LINES

No.	BEARING	DISTANCE
1	39°37'10"	5.455
2	180°30'50"	2.835
3	68°25'10"	1.88
4	178°31'50"	0.485
5	87°13'30"	1.62
6	176°43'10"	4.93
7	176°06'	11
8	176°15'10"	16.155
9	177°13'40"	10.205
10	177°31'40"	12.19
11	177°55'	12.365
12	212°50'20"	2.39
13	179°18'50"	7.955
14	357°41'50"	12.91

2 4 6 8 10 20 25
1:250

Schedule of Easements & Restrictions

No	Description
(A)	EASEMENT FOR GROUND SUPPORT (SOIL) VARIABLE WIDTH (LIMITED IN STRATUM) (DP1189541)
(B)	EASEMENT FOR SUPPORT 1 WIDE & VARIABLE WIDTH (DP1189541)
(C)	EASEMENT FOR GROUND SUPPORT (REINFORCING SYSTEMS IN SOIL) 6 WIDE & VARIABLE WIDTH (LIMITED IN STRATUM) (DP1189541)
(D)	EASEMENT FOR ACCESS 3 WIDE (AR288094)
(E)	RIGHT OF WAY 3.05 WIDE (550481)

NOTE:

UL 107.3 DENOTES UPPER LIMIT RL FOR STRATUM OF EASEMENTS SHOWN (4) AND (C)

WARNING

THE SURVEY INFORMATION RELATING TO SP52947, SP10110, SP60178 & SP1496 (SHOWN GREY) WAS TAKEN FROM THE DETAIL AND LEVEL PLAN PREPARED BY BURTON & FIELD DRAWING REF. E5380-78240 DATED 08/10/2020. THIS SURVEY HAS NOT BEEN VERIFIED SDG TAKES NO RESPONSIBILITY FOR THE ACCURACY OF THE INFORMATION TAKEN FROM THIS PLAN.

GENERAL NOTES

ONLY TREES GREATER THAN 2 METRES IN HEIGHT ARE SHOWN ON THIS PLAN AND THEIR POSITIONS ARE DIAGRAMMATIC ONLY AND MAY REQUIRE ADDITIONAL SURVEY WHERE CRITICAL TO DESIGN.

CONTOURS ARE INDICATIVE AT GROUND FORM ONLY. SPOT LEVELS ONLY SHOULD BE USED FOR CALCULATIONS OF QUANTITIES WITH CAUTION.

LEVELS ARE ON AUSTRALIAN HEIGHT DATUM (AHD).

ALL SETOUT LEVELS MUST BE REFERRED TO THE BENCH MARK SHOWN ON THIS PLAN.

BOUNDARY NOTES

A BASIC BOUNDARY SURVEY HAS BEEN DONE SUITABLE FOR DA LODGEMENT PURPOSES.

BOUNDARIES HAVE NOT BEEN MARKED.

SURVEY INFORMATION NOTES

THE ORIGIN OF COORDINATES COMES FROM PM290 E331528.198 N6259353.120 CLASS B POSITIONAL UNCERTAINTY (PU) 0.02 (MGA2020) ADOPTED FROM SCIMS DATED 02/11/2023.

THE ORIGIN OF LEVELS COMES FROM PM290 RL107.323 CLASS LA POSITIONAL UNCERTAINTY (PU) 0.02 ADOPTED FROM SCIMS DATED 02/11/2023.

THE ORIENTATION OF THIS PLAN IS MGA NORTH WHICH HAS BEEN DETERMINED BY DP1189451.

CERTIFICATE OF TITLE NOTES

THE FOLLOWING INFORMATION RELATES TO THE RESPECTIVE CERTIFICATE OF TITLE OF EACH LOTS:

- LOT 1 IN DP1189541
  (CT EDITION 7 DATED 16/10/2023 SEARCH DATE 07/11/2023)
  - AFFECTED BY:
    - EASEMENT FOR GROUND SUPPORT (SOIL) VARIABLE WIDTH (LIMITED IN STRATUM) SHOWN AS (A) (DP1189541)
    - EASEMENT FOR GROUND SUPPORT (REINFORCING SYSTEMS IN SOIL) 6 METRES WIDE AND VARIABLE WIDTH (LIMITED IN STRATUM) SHOWN AS (C) (DP1189541)
    - EASEMENT FOR ACCESS 3 WIDE SHOWN AS (D) (AR288094)
  - BENEFITED BY:
    - EASEMENT FOR SUPPORT 1 METRE WIDE AND VARIABLE WIDTH SHOWN AS (B) (DP1189541)
- CP/SP1496
  (CT EDITION 4 DATED 17/10/2023 SEARCH DATE 07/11/2023)
  - AFFECTED BY:
    - RIGHT OF WAY 3.05 WIDE SHOWN AS (E) (550481)
- CP/SP60178
  (CT EDITION 6 DATED 17/10/2023 SEARCH DATE 07/11/2023)
  - AFFECTED BY:
    - RESTRICTION(S) ON THE USE OF LAND (SP60178)
    - POSITIVE COVENANT (SP60178)
  - BENEFITED BY:
    - RIGHT OF WAY 3.05 WIDE SHOWN AS (E) (550481)
- CP/SP10110
  (CT EDITION 6 DATED 17/10/2023 SEARCH DATE 07/11/2023)
  - BENEFITED BY:
    - RIGHT OF WAY 3.05 WIDE SHOWN AS (E) (550481)
- CP/SP52947
  (CT EDITION 10 DATED 17/10/2023 SEARCH DATE 07/11/2023)
  - AFFECTED BY:
    - POSITIVE COVENANT (SP52947)
    - RESTRICTION(S) ON THE USE OF LAND (SP52947)

COVENANTS AND RESTRICTIONS NOTED ON THE TITLE HAVE NOT BEEN INVESTIGATED. THESE SHOULD BE INVESTIGATED PRIOR TO DESIGN TO ENSURE ANY FUTURE DEVELOPMENT COMPLIES.

BY LAWS RELATING TO EACH OF THE SCHEMES HAVE NOT BEEN INVESTIGATED.

SERVICES NOTES

ONLY THOSE SERVICES VISIBLE AT THE TIME OF SURVEY HAVE BEEN LOCATED AND ARE QUALITY LEVEL A AS DEFINED BY AS 5488.1:2019.

UNDERGROUND SERVICES HAVE BEEN LOCATED FOR BY 'ON POINT LOCATING' ON 31/10/2023 AND 01/11/2023 USING EQUIPMENT AS NOTED ON REPORT PROVIDED DATED 31/10/2023 AND 01/11/2023. THE SERVICE POSITION IS SHOWN ON THE PLAN AND THEIR RESPECTIVE DEPTH AND QUALITY ARE AS STATED IN THE TABLE.

UNDERGROUND SERVICES HAVE BEEN PLOTTED FROM 'DIAL-BEFORE'YOU-DIG' PLANS, ARE QUALITY LEVEL D AS DEFINED BY AS 5488.1:2019 AND ARE ONLY CURRENT AT THE DATE OF SEARCH.

ALL RELEVANT AUTHORITIES MUST BE CONTACTED TO DETERMINE THE FULL EXTENT OF SERVICES PRIOR TO ANY PLANNING OR WORKS NEAR THE SITE.

© COPYRIGHT
THIS PLAN IS NOT TO BE USED FOR ANY PURPOSE OTHER THAN ITS ORIGINAL INTENTION AND REMAINS THE PROPERTY OF SDG. THIS PLAN CANNOT BE REPRODUCED, COPIED OR DIGITALLY TRANSFERRED (IN WHOLE OR PART) WITHOUT PRIOR WRITTEN PERMISSION OF SDG.

PROJECT:
DETAIL AND LEVEL SURVEY OF
LOT 1 IN DP1189541, SP1496,
SP60178, SP10110 AND PART OF SP52947

849-859 PACIFIC HIGHWAY, 2 WILSON STREET & LOT 1 O'BRIEN STREET
CHATSWOOD

CLIENT: BB WILSON PROPERTY PTY LTD

FILE: 9062 - Detail & Level - Rev C - 849-859 Pacific Highway, 2 Wilson Street & Lot 1 O'Brien Street Chatswood

LGA: WILLOUGHBY

REF: 9062	CONTOURS: 0.5m
ISSUE: C	DATUM: AHD
SURVEY DATE: 20/03/2024	AZIMUTH: MGA2020
SCALE: 1:250	SHEET 1 OF 9 SHEETS

ISSUE	DATE	AMENDMENT	SURV	CHK
A	01/11/23	ORIGINAL ISSUE	PQ	MT
B	29/01/24	RIDGES AND GUTTERS OF ADJOINING LOTS ADDED	SY	MT
C	20/03/24	RAILWAY SECTION VIEWS ADDED	AZ	MT

BEFORE YOU DIG www.byda.com.au

GDA2020

Global-Mark.com.au

MICHAEL TRIFIRO ID: SU008624
REGISTERED LAND SURVEYOR

SDG Pty Ltd
abn 85 213 523 621
Suite 1, 3 Railway Street, Baulkham Hills NSW 2153
t: (02) 9630 7955 w: sdg.net.au
Liability limited by a scheme approved under Professional Standards Legislation

A1

SEE SHEET 3

MGA

TN

BEARINGS SHOWN ARE ON MGA ORIENTATION

1.700° EMPIRE

SPOT LEVELS SHOWN RED HAVE BEEN OBTAINED AS APART OF THIS SURVEY

1 DP1189541

SP10110

SP60178

SP1496

SP71281

TWO STOREY BRICK & METAL SHEET COMMERCIAL BUILDING
LOT 1 IN DP1189541
ACCESS FROM O'BRIEN STREET & WILSON STREET

STORMWATER PIT
Grate RL:103.61
Invert RL:102.87

HIGHWAY

PACIFIC

STREET

O'BRIEN

RAILWAY

MEDIAN STRIP

BACK OF KERB

CONCRETE FOOTPATH

PAVEMENT

GRASS

CONCRETE

BITUMEN

GRAVEL

GLASS FACADE

LANDING

RAMP

CONCRETE DRIVEWAY

STORMWATER PIT
Grate RL:103.25
Invert RL:101.68

STORMWATER PIT
Grate RL:103.16
Invert RL:101.93

STORMWATER PIT
Grate RL:103.04
Invert RL:102.09

STORMWATER PIT
Grate RL:103.26
Invert RL:102.35

STORMWATER PIT
Grate RL:103.40
Invert RL:101.88

STORMWATER PIT
Grate RL:103.27
Invert RL:N/A

LEVEL 1 CONCRETE SLAB
(NON-TRAFFICABLE ROOF)

GROUND FLOOR OUTLINE

RENDERED WALL

CONC WALL

LINTEL

GUARD

RAIL PLATFORM

DISH DRAIN

FACE OF CB

EDGE OF CONCRETE

CONCRETE TUNNEL ENTRY TOP RL:108.65

CONCRETE TUNNEL ENTRY BOTTOM RL:106.65

POWERLINES

SMH INVERT NOT SURVEYED

BENCHMARK
DRILL HOLE AND WING IN KERB

MAGENTA AND GREEN LINEWORK AND LEVELS SHOWN HAVE BEEN OBTAINED AS PART OF REVISION B

WARNING

THE SURVEY INFORMATION RELATING TO SP52947, SP10110, SP60178 & SP1496 (SHOWN GREY) WAS TAKEN FROM THE DETAIL AND LEVEL PLAN PREPARED BY BURTON & FIELD DRAWING REF. E5380-78240 DATED 08/10/2020. THIS SURVEY HAS NOT BEEN VERIFIED SDG TAKES NO RESPONSIBILITY FOR THE ACCURACY OF THE INFORMATION TAKEN FROM THIS PLAN.

2 4 6 8 10 15
1:150

ISSUE	DATE	AMENDMENT	SURV	CHK
A	01/11/23	ORIGINAL ISSUE	PQ	MT
B	29/01/24	RIDGES AND GUTTERS OF ADJOINING LOTS ADDED	SY	MT
C	20/03/24	RAILWAY SECTION VIEWS ADDED	AZ	MT

BEFORE YOU DIG www.byda.com.au

GDA2020

Global-Mark.com.au®

GENERAL NOTES

ONLY TREES GREATER THAN 2 METRES IN HEIGHT ARE SHOWN ON THIS PLAN AND THEIR POSITIONS ARE DIAGRAMMATIC ONLY AND MAY REQUIRE ADDITIONAL SURVEY WHERE CRITICAL TO DESIGN.

CONTOURS ARE INDICATIVE AT GROUND FORM ONLY. SPOT LEVELS ONLY SHOULD BE USED FOR CALCULATIONS OF QUANTITIES WITH CAUTION.

LEVELS ARE ON AUSTRALIAN HEIGHT DATUM (AHD).

ALL SETOUT LEVELS MUST BE REFERRED TO THE BENCH MARK SHOWN ON THIS PLAN.

BOUNDARY NOTES

A BASIC BOUNDARY SURVEY HAS BEEN DONE SUITABLE FOR DA LODGEMENT PURPOSES.

BOUNDARIES HAVE NOT BEEN MARKED.

SURVEY INFORMATION NOTES

THE ORIGIN OF COORDINATES COMES FROM PM290 E331528.198 N6259353.120 CLASS B POSITIONAL UNCERTAINTY (PU) 0.02 (MGA2020) ADOPTED FROM SCIMS DATED 02/11/2023.

THE ORIGIN OF LEVELS COMES FROM PM290 RL107.323 CLASS LA POSITIONAL UNCERTAINTY (PU) 0.02 ADOPTED FROM SCIMS DATED 02/11/2023.

THE ORIENTATION OF THIS PLAN IS MGA NORTH WHICH HAS BEEN DETERMINED BY DP1189451.

CERTIFICATE OF TITLE NOTES

THE FOLLOWING INFORMATION RELATES TO THE RESPECTIVE CERTIFICATE OF TITLE OF EACH LOTS:

- LOT 1 IN DP1189541
  (CT EDITION 7 DATED 16/10/2023 SEARCH DATE 07/11/2023)
  - AFFECTED BY:
    - EASEMENT FOR GROUND SUPPORT (SOIL) VARIABLE WIDTH (LIMITED IN STRATUM) SHOWN AS (A) (DP1189541)
    - EASEMENT FOR GROUND SUPPORT (REINFORCING SYSTEMS IN SOIL) 6 METRES WIDE AND VARIABLE WIDTH (LIMITED IN STRATUM) SHOWN AS (C) (DP1189541)
    - EASEMENT FOR ACCESS 3 WIDE SHOWN AS (D) (AR288094)
  - BENEFITED BY:
    - EASEMENT FOR SUPPORT 1 METRE WIDE AND VARIABLE WIDTH SHOWN AS (B) (DP1189541)
- CP/SP1496
  (CT EDITION 4 DATED 17/10/2023 SEARCH DATE 07/11/2023)
  - AFFECTED BY:
    - RIGHT OF WAY 3.05 WIDE SHOWN AS (E) (550481)
- CP/SP60178
  (CT EDITION 6 DATED 17/10/2023 SEARCH DATE 07/11/2023)
  - AFFECTED BY:
    - RESTRICTION(S) ON THE USE OF LAND (SP60178)
    - POSITIVE COVENANT (SP60178)
  - BENEFITED BY:
    - RIGHT OF WAY 3.05 WIDE SHOWN AS (E) (550481)
- CP/SP10110
  (CT EDITION 6 DATED 17/10/2023 SEARCH DATE 07/11/2023)
  - BENEFITED BY:
    - RIGHT OF WAY 3.05 WIDE SHOWN AS (E) (550481)
- CP/SP52947
  (CT EDITION 10 DATED 17/10/2023 SEARCH DATE 07/11/2023)
  - AFFECTED BY:
    - POSITIVE COVENANT (SP52947)
    - RESTRICTION(S) ON THE USE OF LAND (SP52947)

COVENANTS AND RESTRICTIONS NOTED ON THE TITLE HAVE NOT BEEN INVESTIGATED. THESE SHOULD BE INVESTIGATED PRIOR TO DESIGN TO ENSURE ANY FUTURE DEVELOPMENT COMPLIES.

BY LAWS RELATING TO EACH OF THE SCHEMES HAVE NOT BEEN INVESTIGATED.

SERVICES NOTES

ONLY THOSE SERVICES VISIBLE AT THE TIME OF SURVEY HAVE BEEN LOCATED AND ARE QUALITY LEVEL A AS DEFINED BY AS 5488.1:2019.

UNDERGROUND SERVICES HAVE BEEN LOCATED FOR BY 'ON POINT LOCATING' ON 31/10/2023 AND 01/11/2023 USING EQUIPMENT AS NOTED ON REPORT PROVIDED DATED 31/10/2023 AND 01/11/2023. THE SERVICE POSITION IS SHOWN ON THE PLAN AND THEIR RESPECTIVE DEPTH AND QUALITY ARE AS STATED IN THE TABLE.

UNDERGROUND SERVICES HAVE BEEN PLOTTED FROM DIAL BEFORE YOU DIG' PLANS, ARE QUALITY LEVEL D AS DEFINED BY AS 5488.1 2019 AND ARE ONLY CURRENT AT THE DATE OF SEARCH.

ALL RELEVANT AUTHORITIES MUST BE CONTACTED TO DETERMINE THE FULL EXTENT OF SERVICES PRIOR TO ANY PLANNING OR WORKS NEAR THE SITE.

LEGEND

TAG	DESCRIPTION	TAG	DESCRIPTION	TAG	DESCRIPTION
B	BOLLARD	LP	LIGHT POLE	WM	WATER METER
BOK	BACK OF KERB	MC	METAL COVER		
CB	CAPPING BEAM	PC	PRAM CROSSING		
CL	CENTRELINE OF ROAD	PP	POWER POLE		
COL	COLUMN	SC	STOP COCK		
COM	COMMUNICATIONS PIT	SGR	SEALED GRATE		
CONC	CONCRETE	SIP	SEWER INSPECTION PIT		
EP	ELECTRICITY PIT	SMH	SEWER MANHOLE		
GAS	GAS LID	SS	STREET SIGN		
GDN	GARDEN	ST	STAIRS		
GR	GRATE	SV	STOP VALVE		
GUARD	GUARD RAIL	TK	TOP OF KERB		
GUT	GUTTER OF KERB	TS	TRAFFIC SIGNAL		
HYD	HYDRANT	TSP	TRAFFIC SIGNAL PIT		
LIP	LIP OF KERB	VC	VEHICLE CROSSING		

© COPYRIGHT
THIS PLAN IS NOT TO BE USED FOR ANY PURPOSE OTHER THAN ITS ORIGINAL INTENTION AND REMAINS THE PROPERTY OF SDG. THIS PLAN CANNOT BE REPRODUCED, COPIED OR DIGITALLY TRANSFERRED (IN WHOLE OR PART) WITHOUT PRIOR WRITTEN PERMISSION OF SDG.

UNDERGROUND SERVICES LEGEND
QUALITY LEVEL B (AS 5488.1:2019)

W	POTABLE WATER MAIN
D	STORMWATER PIPE
S	SEWER MAIN
C	COMMUNICATIONS CABLES
E	ELECTRICITY CABLES
G	GAS MAIN
U	UNIDENTIFIED SERVICES

CAUTION: FIBRE OPTIC CABLES ARE PRESENT IN THIS AREA

SERVICES NOTES:-

1. ONLY THOSE SERVICES VISIBLE AT THE TIME OF SURVEY HAVE BEEN LOCATED AND IF SHOWN AS "+ 89.67" ARE QUALITY LEVEL A AS DEFINED BY AS 5488.1:2019. LEVELS SHOWN ARE SURFACE LEVELS UNLESS NOTED OTHERWISE.
2. UNDERGROUND SERVICES HAVE BEEN LOCATED FOR POSITION AND DEPTH AND HAVE BEEN DETERMINED FROM USING EQUIPMENT ON REPORT PROVIDED BY ONPOINT LOCATING ON 30/10/23 - 31/10/23. ALL RELEVANT AUTHORITIES MUST BE CONTRACTED TO DETERMINE THE FULL EXTENT OF SERVICES PRIOR TO ANY PLANNING OR WORKS NEAR THE SITE.

Schedule of Easements & Restrictions

No	Description
(A)	EASEMENT FOR GROUND SUPPORT (SOIL) VARIABLE WIDTH (LIMITED IN STRATUM) (DP1189541)
(B)	EASEMENT FOR SUPPORT 1 WIDE & VARIABLE WIDTH (DP1189541)
(C)	EASEMENT FOR GROUND SUPPORT (REINFORCING SYSTEMS IN SOIL) 6 WIDE & VARIABLE WIDTH (LIMITED IN STRATUM) (DP1189541)
(D)	EASEMENT FOR ACCESS 3 WIDE (AR288094)
(E)	RIGHT OF WAY 3.05 WIDE (550481)

NOTE:

UL 107.3 DENOTES UPPER LIMIT RL FOR STRATUM OF EASEMENTS SHOWN (A) AND (C)

Schedule of Trees

No	Diam	Spread	Height
1	0.1	2	5
2	0.2	5	5
3	0.2	2	5
4	1.0	10	11
5	1.0	10	11
6	0.2	3	3
7	0.2	3	3
8	0.2	3	3
9	0.2	3	3
10	0.2	3	3
11	0.2	3	3
12	0.5	8	8
13	0.3	5	6
14	0.4	6	7
15	0.4	6	7
17	0.2	2	2
18	0.4	7	7
19	0.4	8	8
20	0.2	5	5
21	0.4	8	8
22	0.2	2	2
23	0.2	2	2
24	0.2	2	2
25	0.2	2	2
26	0.2	2	2
27	0.2	2	2
28	0.2	2	2
29	0.2	2	2
30	0.2	2	2
31	0.2	2	2
32	0.2	2	2
33	0.2	2	2

SCHEDULE OF SHORT LINES

No.	BEARING	DISTANCE
1	39°37'10"	5.455
2	180°30'50"	2.835
3	68°25'10"	1.88
4	178°31'50"	0.485
5	87°13'30"	1.62
6	176°43'10"	4.93
7	176°06'	11
8	176°15'10"	16.155
9	177°13'40"	10.205
10	177°31'40"	12.19
11	177°55'	12.365
12	212°50'20"	2.39
13	179°18'50"	7.955

PROJECT:
DETAIL AND LEVEL SURVEY OF
LOT 1 IN DP1189541, SP1496,
SP60178, SP10110 AND PART OF SP52947

849-859 PACIFIC HIGHWAY, 2 WILSON STREET
& LOT 1 O'BRIEN STREET
CHATSWOOD

CLIENT: BB WILSON PROPERTY PTY LTD

FILE: 9062 - Detail & Level - Rev C - 849-859 Pacific Highway, 2 Wilson Street & Lot 1 O'Brien Street Chatswood

LGA: WILLOUGHBY

REF: 9062	CONTOURS: 0.5m
ISSUE: C	DATUM: AHD
SURVEY DATE: 20/03/2024	AZIMUTH: MGA2020
SCALE: 1:150	SHEET 2 OF 9 SHEETS

SDG Pty Ltd
abn 85 213 523 621
Suite 1, 3 Railway Street, Baulkham Hills NSW 2153
t: (02) 9630 7955 w: sdg.net.au
Liability limited by a scheme approved under Professional Standards Legislation

MICHAEL TRIFIRO ID: SU008624
REGISTERED LAND SURVEYOR

A1

UNDERGROUND SERVICES LEGEND
QUALITY LEVEL B (AS 5488.1:2019)

- W — POTABLE WATER MAIN
- D — STORMWATER PIPE
- S — SEWER MAIN
- C — COMMUNICATIONS CABLES
- E — ELECTRICITY CABLES
- G — GAS MAIN
- U — UNIDENTIFIED SERVICES

CAUTION: FIBRE OPTIC CABLES ARE PRESENT IN THIS AREA

SERVICES NOTES:-

1. ONLY THOSE SERVICES VISIBLE AT THE TIME OF SURVEY HAVE BEEN LOCATED AND IF SHOWN AS '+ 80.67' ARE QUALITY LEVEL A AS DEFINED BY AS 5488.1:2019. LEVELS SHOWN ARE SURFACE LEVELS UNLESS NOTED OTHERWISE.
2. UNDERGROUND SERVICES HAVE BEEN LOCATED FOR POSITION AND DEPTH AND HAVE BEEN DETERMINED FROM USING EQUIPMENT ON REPORT PROVIDED BY ONPOINT LOCATING ON 30/10/23 - 31/10/23. ALL RELEVANT AUTHORITIES MUST BE CONTRACTED TO DETERMINE THE FULL EXTENT OF SERVICES PRIOR TO ANY PLANNING OR WORKS NEAR THE SITE.

MAGENTA AND GREEN LINEWORK AND LEVELS SHOWN HAVE BEEN OBTAINED AS PART OF REVISION B

Schedule of Easements & Restrictions

No	Description
(A)	EASEMENT FOR GROUND SUPPORT (SOIL) VARIABLE WIDTH (LIMITED IN STRATUM) (DP1189541)
(B)	EASEMENT FOR SUPPORT 1 WIDE & VARIABLE WIDTH (DP1189541)
(C)	EASEMENT FOR GROUND SUPPORT (REINFORCING SYSTEMS IN SOIL) 6 WIDE & VARIABLE WIDTH (LIMITED IN STRATUM) (DP1189541)
(D)	EASEMENT FOR ACCESS 3 WIDE (AR288094)
(E)	RIGHT OF WAY 3.05 WIDE (550481)

NOTE:
UL 107.3 DENOTES UPPER LIMIT RL FOR STRATUM OF EASEMENTS SHOWN (A) AND (C)

WARNING

THE SURVEY INFORMATION RELATING TO SP52947, SP10110, SP60178 & SP1496 (SHOWN GREY) WAS TAKEN FROM THE DETAIL AND LEVEL PLAN PREPARED BY BURTON & FIELD DRAWING REF. E5380-78240 DATED 08/10/2020. THIS SURVEY HAS NOT BEEN VERIFIED SDG TAKES NO RESPONSIBILITY FOR THE ACCURACY OF THE INFORMATION TAKEN FROM THIS PLAN.

SCHEDULE OF SHORT LINES

No.	BEARING	DISTANCE
1	39°37'10"	5.455
2	180°30'50"	2.835
3	68°25'10"	1.88
4	178°31'50"	0.485
5	87°13'30"	1.62
6	176°43'10"	4.93
7	176°06'	11
8	176°15'10"	16.155
9	177°13'40"	10.205
10	177°31'40"	12.19
11	177°55'	12.365
12	212°50'20"	2.39
13	179°18'50"	7.955
14	357°41'50"	12.91

Schedule of Trees

No	Diam	Spread	Height
1	0.1	2	5
2	0.2	5	5
3	0.2	2	5
4	1.0	10	11
5	1.0	10	11
6	0.2	3	3
7	0.2	3	3
8	0.2	3	3
9	0.2	3	3
10	0.2	3	3
11	0.2	3	3
12	0.5	8	8
13	0.3	5	6
14	0.4	6	7
15	0.4	6	7
17	0.2	2	2
18	0.4	7	7
19	0.4	8	8
20	0.2	5	5
21	0.4	8	8
22	0.2	2	2
23	0.2	2	2
24	0.2	2	2
25	0.2	2	2
26	0.2	2	2
27	0.2	2	2
28	0.2	2	2
29	0.2	2	2
30	0.2	2	2
31	0.2	2	2
32	0.2	2	2
33	0.2	2	2
34	0.2	2	2

LEGEND

TAG	DESCRIPTION	TAG	DESCRIPTION	TAG	DESCRIPTION
B	BOLLARD	LP	LIGHT POLE	WM	WATER METER
BOK	BACK OF KERB	MC	METAL COVER		
CB	CAPPING BEAM	PC	PRAM CROSSING		
CL	CENTRELINE OF ROAD	PP	POWER POLE		
COL	COLUMN	SC	STOP COCK		
COM	COMMUNICATIONS PIT	SGR	SEALED GRATE		
CONC	CONCRETE	SIP	SEWER INSPECTION PIT		
EP	ELECTRICITY PIT	SMH	SEWER MANHOLE		
GAS	GAS LID	SS	STREET SIGN		
GDN	GARDEN	ST	STAIRS		
GR	GRATE	SV	STOP VALVE		
GUARD	GUARD RAIL	TK	TOP OF KERB		
GUT	GUTTER OF KERB	TS	TRAFFIC SIGNAL		
HYD	HYDRANT	TSP	TRAFFIC SIGNAL PIT		
LIP	LIP OF KERB	VC	VEHICLE CROSSING		

GENERAL NOTES

ONLY TREES GREATER THAN 2 METRES IN HEIGHT ARE SHOWN ON THIS PLAN AND THEIR POSITIONS ARE DIAGRAMMATIC ONLY AND MAY REQUIRE ADDITIONAL SURVEY WHERE CRITICAL TO DESIGN.

CONTOURS ARE INDICATIVE AT GROUND FORM ONLY. SPOT LEVELS ONLY SHOULD BE USED FOR CALCULATIONS OF QUANTITIES WITH CAUTION.

LEVELS ARE ON AUSTRALIAN HEIGHT DATUM (AHD).

ALL SETOUT LEVELS MUST BE REFERRED TO THE BENCH MARK SHOWN ON THIS PLAN.

BOUNDARY NOTES

A BASIC BOUNDARY SURVEY HAS BEEN DONE SUITABLE FOR DA LODGEMENT PURPOSES.

BOUNDARIES HAVE NOT BEEN MARKED.

SURVEY INFORMATION NOTES

THE ORIGIN OF COORDINATES COMES FROM PM290 E331528.198 N6259353.120 CLASS B POSITIONAL UNCERTAINTY (PU) 0.02 (MGA2020) ADOPTED FROM SCIMS DATED 02/11/2023.

THE ORIGIN OF LEVELS COMES FROM PM290 RL107.323 CLASS LA POSITIONAL UNCERTAINTY (PU) 0.02 ADOPTED FROM SCIMS DATED 02/11/2023.

THE ORIENTATION OF THIS PLAN IS MGA NORTH WHICH HAS BEEN DETERMINED BY DP1189451.

CERTIFICATE OF TITLE NOTES

THE FOLLOWING INFORMATION RELATES TO THE RESPECTIVE CERTIFICATE OF TITLE OF EACH LOTS:

- LOT 1 IN DP1189541
  (CT EDITION 7 DATED 16/10/2023 SEARCH DATE 07/11/2023)
  - AFFECTED BY:
    - EASEMENT FOR GROUND SUPPORT (SOIL) VARIABLE WIDTH (LIMITED IN STRATUM) SHOWN AS (A) (DP1189541)
    - EASEMENT FOR GROUND SUPPORT (REINFORCING SYSTEMS IN SOIL) 6 METRES WIDE AND VARIABLE WIDTH (LIMITED IN STRATUM) SHOWN AS (C) (DP1189541)
    - EASEMENT FOR ACCESS 3 WIDE SHOWN AS (D) (AR288094)
  - BENEFITED BY:
    - EASEMENT FOR SUPPORT 1 METRE WIDE AND VARIABLE WIDTH SHOWN AS (B) (DP1189541)
- CP/SP1496
  (CT EDITION 4 DATED 17/10/2023 SEARCH DATE 07/11/2023)
  - AFFECTED BY:
    - RIGHT OF WAY 3.05 WIDE SHOWN AS (E) (550481)
- CP/SP60178
  (CT EDITION 6 DATED 17/10/2023 SEARCH DATE 07/11/2023)
  - AFFECTED BY:
    - RESTRICTION(S) ON THE USE OF LAND (SP60178)
    - POSITIVE COVENANT (SP60178)
  - BENEFITED BY:
    - RIGHT OF WAY 3.05 WIDE SHOWN AS (E) (550481)
- CP/SP10110
  (CT EDITION 6 DATED 17/10/2023 SEARCH DATE 07/11/2023)
  - BENEFITED BY:
    - RIGHT OF WAY 3.05 WIDE SHOWN AS (E) (550481)
- CP/SP52947
  (CT EDITION 10 DATED 17/10/2023 SEARCH DATE 07/11/2023)
  - AFFECTED BY:
    - POSITIVE COVENANT (SP52947)
    - RESTRICTION(S) ON THE USE OF LAND (SP52947)

COVENANTS AND RESTRICTIONS NOTED ON THE TITLE HAVE NOT BEEN INVESTIGATED. THESE SHOULD BE INVESTIGATED PRIOR TO DESIGN TO ENSURE ANY FUTURE DEVELOPMENT COMPLIES.

BY LAWS RELATING TO EACH OF THE SCHEMES HAVE NOT BEEN INVESTIGATED.

SERVICES NOTES

ONLY THOSE SERVICES VISIBLE AT THE TIME OF SURVEY HAVE BEEN LOCATED AND ARE QUALITY LEVEL A AS DEFINED BY AS 5488.1:2019.

UNDERGROUND SERVICES HAVE BEEN LOCATED FOR BY 'ON POINT LOCATING' ON 31/10/2023 AND 01/11/2023 USING EQUIPMENT AS NOTED ON REPORT PROVIDED DATED 31/10/2023 AND 01/11/2023. THE SERVICE POSITION IS SHOWN ON THE PLAN AND THEIR RESPECTIVE DEPTH AND QUALITY ARE AS STATED IN THE TABLE.

UNDERGROUND SERVICES HAVE BEEN PLOTTED FROM 'DIAL-BEFORE'YOU-DIG' PLANS, ARE QUALITY LEVEL D AS DEFINED BY AS 5488.1:2019 AND ARE ONLY CURRENT AT THE DATE OF SEARCH.

ALL RELEVANT AUTHORITIES MUST BE CONTACTED TO DETERMINE THE FULL EXTENT OF SERVICES PRIOR TO ANY PLANNING OR WORKS NEAR THE SITE.

© COPYRIGHT
THIS PLAN IS NOT TO BE USED FOR ANY PURPOSE OTHER THAN ITS ORIGINAL INTENTION AND REMAINS THE PROPERTY OF SDG. THIS PLAN CANNOT BE REPRODUCED, COPIED OR DIGITALLY TRANSFERRED (IN WHOLE OR PART) WITHOUT PRIOR WRITTEN PERMISSION OF SDG.

PROJECT:
DETAIL AND LEVEL SURVEY OF
LOT 1 IN DP1189541, SP1496,
SP60178, SP10110 AND PART OF SP52947

849-859 PACIFIC HIGHWAY, 2 WILSON STREET
& LOT 1 O'BRIEN STREET
CHATSWOOD

CLIENT: BB WILSON PROPERTY PTY LTD	
FILE: 9062 - Detail & Level - Rev C - 849-859 Pacific Highway, 2 Wilson Street & Lot 1 O'Brien Street Chatswood	
LGA: WILLOUGHBY	
REF: 9062	CONTOURS: 0.5m
ISSUE: C	DATUM: AHD
SURVEY DATE: 20/03/2024	AZIMUTH: MGA2020
SCALE: 1:150	SHEET 3 OF 9 SHEETS

ISSUE	DATE	AMENDMENT	SURV	CHK
A	01/11/23	ORIGINAL ISSUE	PQ	MT
B	29/01/24	RIDGES AND GUTTERS OF ADJOINING LOTS ADDED	SY	MT
C	20/03/24	RAILWAY SECTION VIEWS ADDED	AZ	MT

BEFORE YOU DIG www.byda.com.au

GDA2020

MICHAEL TRIFIRO ID: SU008624
REGISTERED LAND SURVEYOR

SDG Pty Ltd
abn 85 213 523 621
Suite 1, 3 Railway Street, Baulkham Hills NSW 2153
t: (02) 9630 7955 w: sdg.net.au
Liability limited by a scheme approved
under Professional Standards Legislation

2 4 6 8 10 15
1:150

A1

SERVICES-COMMUNICATIONS			
No	Surface RL	Approx Depth	Service RL
1	104.30	0.90	103.40
2	104.54	0.90	103.64
3	105.04	0.70	104.34
4	105.15	0.60	104.55
5	105.85	0.50	105.35
6	106.01	0.40	105.61
7	106.07	0.40	105.67
8	106.26	0.50	105.76
9	106.42	0.30	106.12
10	106.48	0.60	105.88
11	106.61	0.60	106.01
12	106.56	0.30	106.26
13	106.86	0.40	106.46
14	106.86	0.60	106.26
15	107.48	0.80	106.68
16	107.53	0.80	106.73
17	107.46	0.30	107.16
18	107.53	0.30	107.23
19	107.55	0.60	106.95
20	107.52	0.50	107.02
21	107.56	0.60	106.96
22	107.61	0.80	106.81
23	107.64	0.80	106.84
24	107.62	0.30	107.32
25	107.70	0.20	107.50
26	107.66	0.70	106.96
27	107.62	0.60	107.02
28	107.55	0.50	107.05
29	107.44	0.60	106.84
30	105.90	0.40	105.50
31	105.64	0.30	105.34
32	105.34	0.40	104.94
33	105.06	0.40	104.66
34	104.84	0.40	104.44
35	104.74	0.30	104.44
36	104.44	0.40	104.04
37	104.10	0.40	103.70
38	103.74	0.40	103.34
39	103.51	0.40	103.11
40	103.42	0.60	102.82

SERVICES-SEWER			
No	Surface RL	Approx Depth	Service RL
41	105.14	2.80	102.34
42	107.38	4.10	103.28
43	103.23	2.61	100.62
44	105.13	2.90	102.23
45	103.21	2.63	100.58
46	103.33	1.50	101.83
47	103.65	1.90	101.75
138	107.38	0.98	106.40
139	107.37	3.94	103.43
140	107.36	3.83	103.53

SERVICES-GAS			
No	Surface RL	Approx Depth	Service RL
121	105.90	0.50	105.40
122	106.07	0.50	105.57
123	106.72	0.50	106.22
124	106.84	0.70	106.14
125	107.02	0.50	106.52

SERVICES-POTABLE WATER			
No	Surface RL	Approx Depth	Service RL
48	103.41	0.50	102.91
49	103.36	0.70	102.66
50	103.32	0.70	102.62
51	103.31	0.60	102.71
52	103.58	0.70	102.88
53	103.86	0.70	103.16
54	104.07	0.70	103.37
55	104.33	0.70	103.63
56	105.50	0.30	105.20
57	105.46	0.60	104.86
58	105.60	0.70	104.90
59	105.89	0.70	105.19
60	105.90	0.40	105.50
61	105.98	0.30	105.68
62	105.99	0.70	105.29
63	106.01	0.60	105.41
64	106.23	0.60	105.63
65	106.39	0.60	105.79
66	106.52	0.30	106.22
67	106.52	0.60	105.92
68	106.74	0.40	106.34
69	106.84	0.60	106.24
70	106.74	0.80	105.94
71	107.22	0.80	106.42
72	107.45	0.80	106.65

SERVICES-TRAFFIC			
No	Surface RL	Approx Depth	Service RL
73	104.32	0.60	103.72
74	104.17	0.50	103.67
75	104.40	0.50	103.90
76	104.58	0.40	104.18
77	104.59	0.30	104.29
78	104.84	0.30	104.54
79	104.99	0.50	104.49
80	105.19	0.60	104.59
81	105.31	0.50	104.81
82	105.36	0.45	104.91
83	105.31	0.45	104.86

SERVICES-UNIDENTIFIED			
No	Surface RL	Approx Depth	Service RL
126	107.29	0.60	106.69
127	107.34	0.60	106.74
128	107.23	0.60	106.63
129	107.30	0.60	106.70
130	106.57	0.50	106.07
131	106.61	0.50	106.11
132	106.50	0.50	106.00
133	106.53	0.50	106.03
134	106.15	0.40	105.75
135	106.07	0.40	105.67
136	106.12	0.30	105.82
137	106.09	0.30	105.79

SERVICES-ELECTRICTY			
No	Surface RL	Approx Depth	Service RL
84	103.23	0.80	102.43
85	103.37	0.40	102.97
86	103.37	0.50	102.87
87	103.80	0.70	103.10
88	104.03	0.50	103.53
89	104.34	0.45	103.89
90	104.33		
91	104.31	1.00	103.31
92	104.20	1.10	103.10
93	104.47	1.00	103.47
94	104.65	0.55	104.10
95	104.81	0.60	104.21
96	104.77	0.65	104.12
97	104.90	1.40	103.50
98	105.13	1.10	104.03
99	105.23	1.10	104.13
100	105.34	1.30	104.04
101	105.41	1.20	104.21
102	105.45	1.20	104.25
103	105.40	1.30	104.10
104	105.58	1.20	104.38
105	105.64	1.00	104.64
106	105.90	0.80	105.10
107	106.09	1.00	105.09
108	106.32	1.00	105.32
109	106.51	1.10	105.41
110	106.62	1.10	105.52
111	106.87	0.90	105.97
112	106.99	0.80	106.19
113	107.20	0.75	106.45
114	107.33	0.70	106.63
115	107.40	0.80	106.60
116	107.48	1.10	106.38
117	107.44	1.10	106.34
118	107.44	1.10	106.34
119	107.45	0.90	106.55
120	107.39	1.20	106.19

WARNING

ALL SERVICES LEVELS ARE OBVERT LEVELS WITH THE EXCEPTION OF SEWER AND DRAINGAGE

FOR PIPE SIZES REFER TO BYDA PLANS AND WHERE PIPE SIZING AND LEVELS ARE CRITICAL TO DESIGN, POTHOLING SHOULD BE UNDETAKEN

ISSUE	DATE	AMENDMENT	SURV	CHK
A	01/11/23	ORIGINAL ISSUE	PQ	MT
B	29/01/24	RIDGES AND GUTTERS OF ADJOINING LOTS ADDED	SY	MT
C	20/03/24	RAILWAY SECTION VIEWS ADDED	AZ	MT

BEFORE YOU DIG www.byda.com.au

GDA2020

MICHAEL TRIFIRO ID: SU008624
REGISTERED LAND SURVEYOR

GENERAL NOTES

ONLY TREES GREATER THAN 2 METRES IN HEIGHT ARE SHOWN ON THIS PLAN AND THEIR POSITIONS ARE DIAGRAMMATIC ONLY AND MAY REQUIRE ADDITIONAL SURVEY WHERE CRITICAL TO DESIGN.

CONTOURS ARE INDICATIVE AT GROUND FORM ONLY. SPOT LEVELS ONLY SHOULD BE USED FOR CALCULATIONS OF QUANTITIES WITH CAUTION.

LEVELS ARE ON AUSTRALIAN HEIGHT DATUM (AHD).

ALL SETOUT LEVELS MUST BE REFERRED TO THE BENCH MARK SHOWN ON THIS PLAN.

BOUNDARY NOTES

A BASIC BOUNDARY SURVEY HAS BEEN DONE SUITABLE FOR DA LODGEMENT PURPOSES.

BOUNDARIES HAVE NOT BEEN MARKED.

SURVEY INFORMATION NOTES

THE ORIGIN OF COORDINATES COMES FROM PM290 E331528.198 N6259353.120 CLASS B POSITIONAL UNCERTAINTY (PU) 0.02 (MGA2020) ADOPTED FROM SCIMS DATED 02/11/2023.

THE ORIGIN OF LEVELS COMES FROM PM290 RL107.323 CLASS LA POSITIONAL UNCERTAINTY (PU) 0.02 ADOPTED FROM SCIMS DATED 02/11/2023.

THE ORIENTATION OF THIS PLAN IS MGA NORTH WHICH HAS BEEN DETERMINED BY DP1189451.

CERTIFICATE OF TITLE NOTES

THE FOLLOWING INFORMATION RELATES TO THE RESPECTIVE CERTIFICATE OF TITLE OF EACH LOTS:

- LOT 1 IN DP1189541
  (CT EDITION 7 DATED 16/10/2023 SEARCH DATE 07/11/2023)
  - AFFECTED BY:
    - EASEMENT FOR GROUND SUPPORT (SOIL) VARIABLE WIDTH (LIMITED IN STRATUM) SHOWN AS (A) (DP1189541)
    - EASEMENT FOR GROUND SUPPORT (REINFORCING SYSTEMS IN SOIL) 6 METRES WIDE AND VARIABLE WIDTH (LIMITED IN STRATUM) SHOWN AS (C) (DP1189541)
    - EASEMENT FOR ACCESS 3 WIDE SHOWN AS (D) (AR288094)
  - BENEFITED BY:
    - EASEMENT FOR SUPPORT 1 METRE WIDE AND VARIABLE WIDTH SHOWN AS (B) (DP1189541)
- CP/SP1496
  (CT EDITION 4 DATED 17/10/2023 SEARCH DATE 07/11/2023)
  - AFFECTED BY:
    - RIGHT OF WAY 3.05 WIDE SHOWN AS (E) (550481)
- CP/SP60178
  (CT EDITION 6 DATED 17/10/2023 SEARCH DATE 07/11/2023)
  - AFFECTED BY:
    - RESTRICTION(S) ON THE USE OF LAND (SP60178)
    - POSITIVE COVENANT (SP60178)
  - BENEFITED BY:
    - RIGHT OF WAY 3.05 WIDE SHOWN AS (E) (550481)
- CP/SP10110
  (CT EDITION 6 DATED 17/10/2023 SEARCH DATE 07/11/2023)
  - BENEFITED BY:
    - RIGHT OF WAY 3.05 WIDE SHOWN AS (E) (550481)
- CP/SP52947
  (CT EDITION 10 DATED 17/10/2023 SEARCH DATE 07/11/2023)
  - AFFECTED BY:
    - POSITIVE COVENANT (SP52947)
    - RESTRICTION(S) ON THE USE OF LAND (SP52947)

COVENANTS AND RESTRICTIONS NOTED ON THE TITLE HAVE NOT BEEN INVESTIGATED. THESE SHOULD BE INVESTIGATED PRIOR TO DESIGN TO ENSURE ANY FUTURE DEVELOPMENT COMPLIES.

BY LAWS RELATING TO EACH OF THE SCHEMES HAVE NOT BEEN INVESTIGATED.

SERVICES NOTES

ONLY THOSE SERVICES VISIBLE AT THE TIME OF SURVEY HAVE BEEN LOCATED AND ARE QUALITY LEVEL A AS DEFINED BY AS 5488.1:2019.

UNDERGROUND SERVICES HAVE BEEN LOCATED FOR BY 'ON POINT LOCATING' ON 31/10/2023 AND 01/11/2023 USING EQUIPMENT AS NOTED ON REPORT PROVIDED DATED 31/10/2023 AND 01/11/2023. THE SERVICE POSITION IS SHOWN ON THE PLAN AND THEIR RESPECTIVE DEPTH AND QUALITY ARE AS STATED IN THE TABLE.

UNDERGROUND SERVICES HAVE BEEN PLOTTED FROM 'DIAL-BEFORE'YOU-DIG' PLANS, ARE QUALITY LEVEL D AS DEFINED BY AS 5488.1:2019 AND ARE ONLY CURRENT AT THE DATE OF SEARCH.

ALL RELEVANT AUTHORITIES MUST BE CONTACTED TO DETERMINE THE FULL EXTENT OF SERVICES PRIOR TO ANY PLANNING OR WORKS NEAR THE SITE.

© COPYRIGHT
THIS PLAN IS NOT TO BE USED FOR ANY PURPOSE OTHER THAN ITS ORIGINAL INTENTION AND REMAINS THE PROPERTY OF SDG. THIS PLAN CANNOT BE REPRODUCED, COPIED OR DIGITALLY TRANSFERRED (IN WHOLE OR PART) WITHOUT PRIOR WRITTEN PERMISSION OF SDG.

PROJECT:

DETAIL AND LEVEL SURVEY OF
LOT 1 IN DP1189541, SP1496,
SP60178, SP10110 AND PART OF SP52947

849-859 PACIFIC HIGHWAY, 2 WILSON STREET
& LOT 1 O'BRIEN STREET
CHATSWOOD

CLIENT: BB WILSON PROPERTY PTY LTD

FILE: 9062 - Detail & Level - Rev C - 849-859 Pacific Highway, 2 Wilson Street & Lot 1 O'Brien Street Chatswood

LGA: WILLOUGHBY

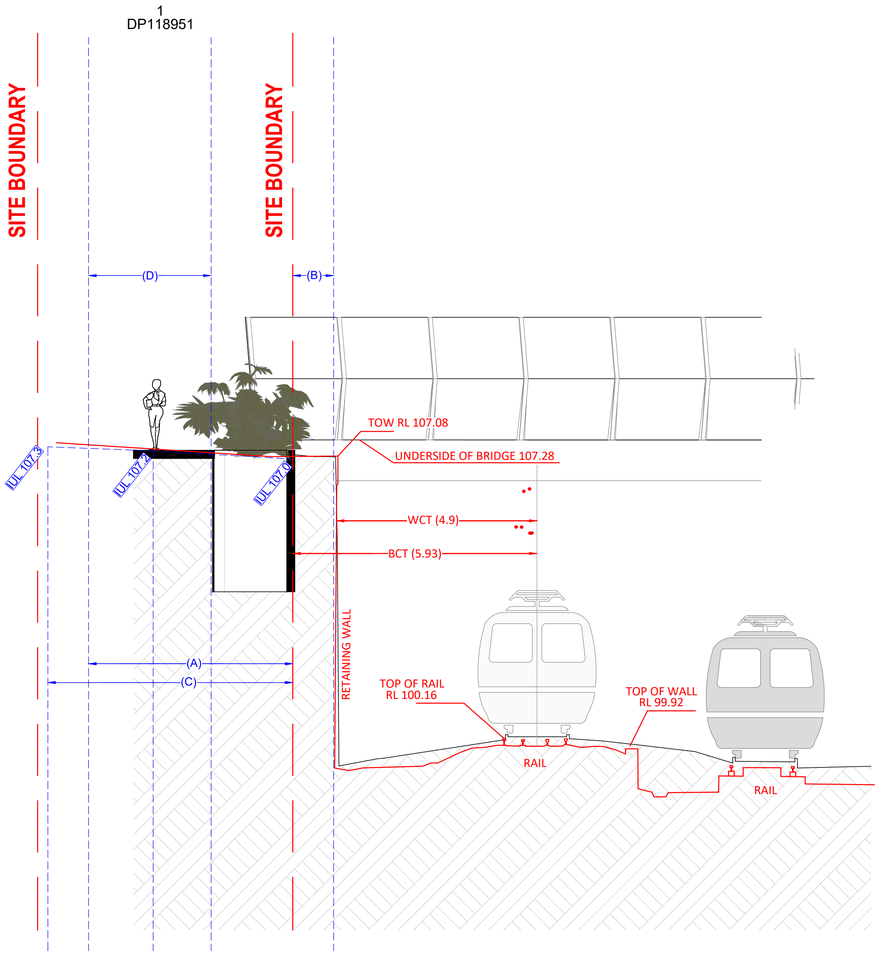
REF: 9062	CONTOURS: 0.5m
ISSUE: C	DATUM: AHD
SURVEY DATE: 20/03/2024	AZIMUTH: MGA2020
SCALE: N/A	SHEET 4 OF 9 SHEETS

SDG Pty Ltd
abn 85 213 523 621
Suite 1, 3 Railway Street, Baulkham Hills NSW 2153
t: (02) 9630 7955 w: sdg.net.au
Liability limited by a scheme approved
under Professional Standards Legislation

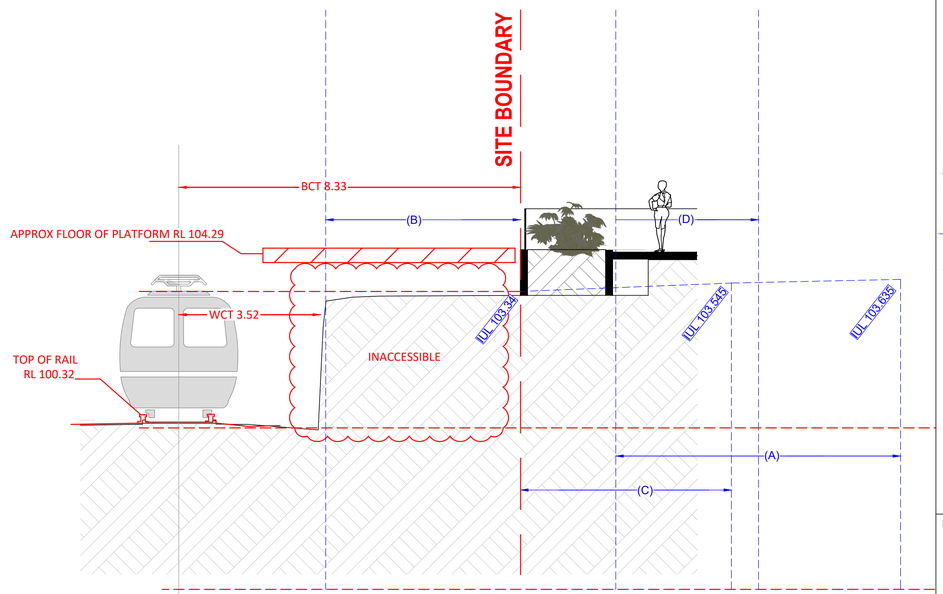
A1

• Denotes ELECTRICITY WIRES

1
DP118951



SECTION VIEW Ⓛ-Ⓛ



SECTION VIEW Ⓟ-Ⓟ

Schedule of Easements & Restrictions	
No	Description
(A)	EASEMENT FOR GROUND SUPPORT (SOIL) VARIABLE WIDTH (LIMITED IN STRATUM) (DP1189541)
(B)	EASEMENT FOR SUPPORT 1 WIDE & VARIABLE WIDTH (DP1189541)
(C)	EASEMENT FOR GROUND SUPPORT (REINFORCING SYSTEMS IN SOIL) 6 WIDE & VARIABLE WIDTH (LIMITED IN STRATUM) (DP1189541)
(D)	EASEMENT FOR ACCESS 3 WIDE (AR288094)
NOTE:	
IUL 107.3	DENOTES INTERPOLATED UPPER LIMIT RL FOR STRATUM OF EASEMENTS SHOWN (A) AND (C)

GENERAL NOTES

ONLY TREES GREATER THAN 2 METRES IN HEIGHT ARE SHOWN ON THIS PLAN AND THEIR POSITIONS ARE DIAGRAMMATIC ONLY AND MAY REQUIRE ADDITIONAL SURVEY WHERE CRITICAL TO DESIGN.

CONTOURS ARE INDICATIVE AT GROUND FORM ONLY. SPOT LEVELS ONLY SHOULD BE USED FOR CALCULATIONS OF QUANTITIES WITH CAUTION.

LEVELS ARE ON AUSTRALIAN HEIGHT DATUM (AHD).

ALL SETOUT LEVELS MUST BE REFERRED TO THE BENCH MARK SHOWN ON THIS PLAN.

BOUNDARY NOTES

A BASIC BOUNDARY SURVEY HAS BEEN DONE SUITABLE FOR DA LODGEMENT PURPOSES.

BOUNDARIES HAVE NOT BEEN MARKED.

SURVEY INFORMATION NOTES

THE ORIGIN OF COORDINATES COMES FROM PM290 E331528.198 N6259353.120 CLASS B POSITIONAL UNCERTAINTY (PU) 0.02 (MGA2020) ADOPTED FROM SCIMS DATED 02/11/2023.

THE ORIGIN OF LEVELS COMES FROM PM290 RL107.323 CLASS LA POSITIONAL UNCERTAINTY (PU) 0.02 ADOPTED FROM SCIMS DATED 02/11/2023.

THE ORIENTATION OF THIS PLAN IS MGA NORTH WHICH HAS BEEN DETERMINED BY DP1189451.

CERTIFICATE OF TITLE NOTES

THE FOLLOWING INFORMATION RELATES TO THE RESPECTIVE CERTIFICATE OF TITLE OF EACH LOTS:

- LOT 1 IN DP1189541
  (CT EDITION 7 DATED 16/10/2023 SEARCH DATE 07/11/2023)
  - AFFECTED BY:
    - EASEMENT FOR GROUND SUPPORT (SOIL) VARIABLE WIDTH (LIMITED IN STRATUM) SHOWN AS (A) (DP1189541)
    - EASEMENT FOR GROUND SUPPORT (REINFORCING SYSTEMS IN SOIL) 6 METRES WIDE AND VARIABLE WIDTH (LIMITED IN STRATUM) SHOWN AS (C) (DP1189541)
    - EASEMENT FOR ACCESS 3 WIDE SHOWN AS (D) (AR288094)
  - BENEFITED BY:
    - EASEMENT FOR SUPPORT 1 METRE WIDE AND VARIABLE WIDTH SHOWN AS (B) (DP1189541)
- CP/SP1496
  (CT EDITION 4 DATED 17/10/2023 SEARCH DATE 07/11/2023)
  - AFFECTED BY:
    - RIGHT OF WAY 3.05 WIDE SHOWN AS (E) (550481)
- CP/SP60178
  (CT EDITION 6 DATED 17/10/2023 SEARCH DATE 07/11/2023)
  - AFFECTED BY:
    - RESTRICTION(S) ON THE USE OF LAND (SP60178)
    - POSITIVE COVENANT (SP60178)
  - BENEFITED BY:
    - RIGHT OF WAY 3.05 WIDE SHOWN AS (E) (550481)
- CP/SP10110
  (CT EDITION 6 DATED 17/10/2023 SEARCH DATE 07/11/2023)
  - BENEFITED BY:
    - RIGHT OF WAY 3.05 WIDE SHOWN AS (E) (550481)
- CP/SP52947
  (CT EDITION 10 DATED 17/10/2023 SEARCH DATE 07/11/2023)
  - AFFECTED BY:
    - POSITIVE COVENANT (SP52947)
    - RESTRICTION(S) ON THE USE OF LAND (SP52947)

COVENANTS AND RESTRICTIONS NOTED ON THE TITLE HAVE NOT BEEN INVESTIGATED. THESE SHOULD BE INVESTIGATED PRIOR TO DESIGN TO ENSURE ANY FUTURE DEVELOPMENT COMPLIES.

BY LAWS RELATING TO EACH OF THE SCHEMES HAVE NOT BEEN INVESTIGATED.

LEGEND

BCT denotes BOUNDARY TO CENTERLINE OF TRACK
WCT denotes WALL TO CENTERLINE OF TRACK
TOW denotes TOP OF WALL
IUL denotes INTERPOLATED UPPER LIMIT
– – – denotes APPROXIMATE EASEMENT POSITION

NOTE:
DESIGN ELEVATIONS PROVIDED DIGITALLY BY PBD ARCHITECTS DRAWING NUMBER DA801 ISSUE 1 DATED 6/3/2024

THE BOUNDARY LINE WAS ADOPTED FOR THE POSITIONING OF THE SECTION

© COPYRIGHT
THIS PLAN IS NOT TO BE USED FOR ANY PURPOSE OTHER THAN ITS ORIGINAL INTENTION AND REMAINS THE PROPERTY OF SDG. THIS PLAN CANNOT BE REPRODUCED, COPIED OR DIGITALLY TRANSFERRED (IN WHOLE OR PART) WITHOUT PRIOR WRITTEN PERMISSION OF SDG.

PROJECT:
DETAIL AND LEVEL SURVEY OF
LOT 1 IN DP1189541, SP1496,
SP60178, SP10110 AND PART OF SP52947

849-859 PACIFIC HIGHWAY, 2 WILSON STREET
& LOT 1 O'BRIEN STREET
CHATSWOOD

CLIENT: BB WILSON PROPERTY PTY LTD

FILE: 9062 - Detail & Level - Rev C - 849-859 Pacific Highway, 2 Wilson Street & Lot 1 O'Brien Street Chatswood

LGA: WILLOUGHBY

REF: 9062	CONTOURS: 0.5m
ISSUE: C	DATUM: AHD
SURVEY DATE: 20/03/2024	AZIMUTH: MGA2020
SCALE: 1:75	SHEET 5 OF 9 SHEETS

ISSUE	DATE	AMENDMENT	SURV	CHK
A	01/11/23	ORIGINAL ISSUE	PQ	MT
B	29/01/24	RIDGES AND GUTTERS OF ADJOINING LOTS ADDED	SY	MT
C	20/03/24	RAILWAY SECTION VIEWS ADDED	AZ	MT

BEFORE YOU DIG www.byda.com.au

GDA2020

MICHAEL TRIFIRO ID: SU008624
REGISTERED LAND SURVEYOR

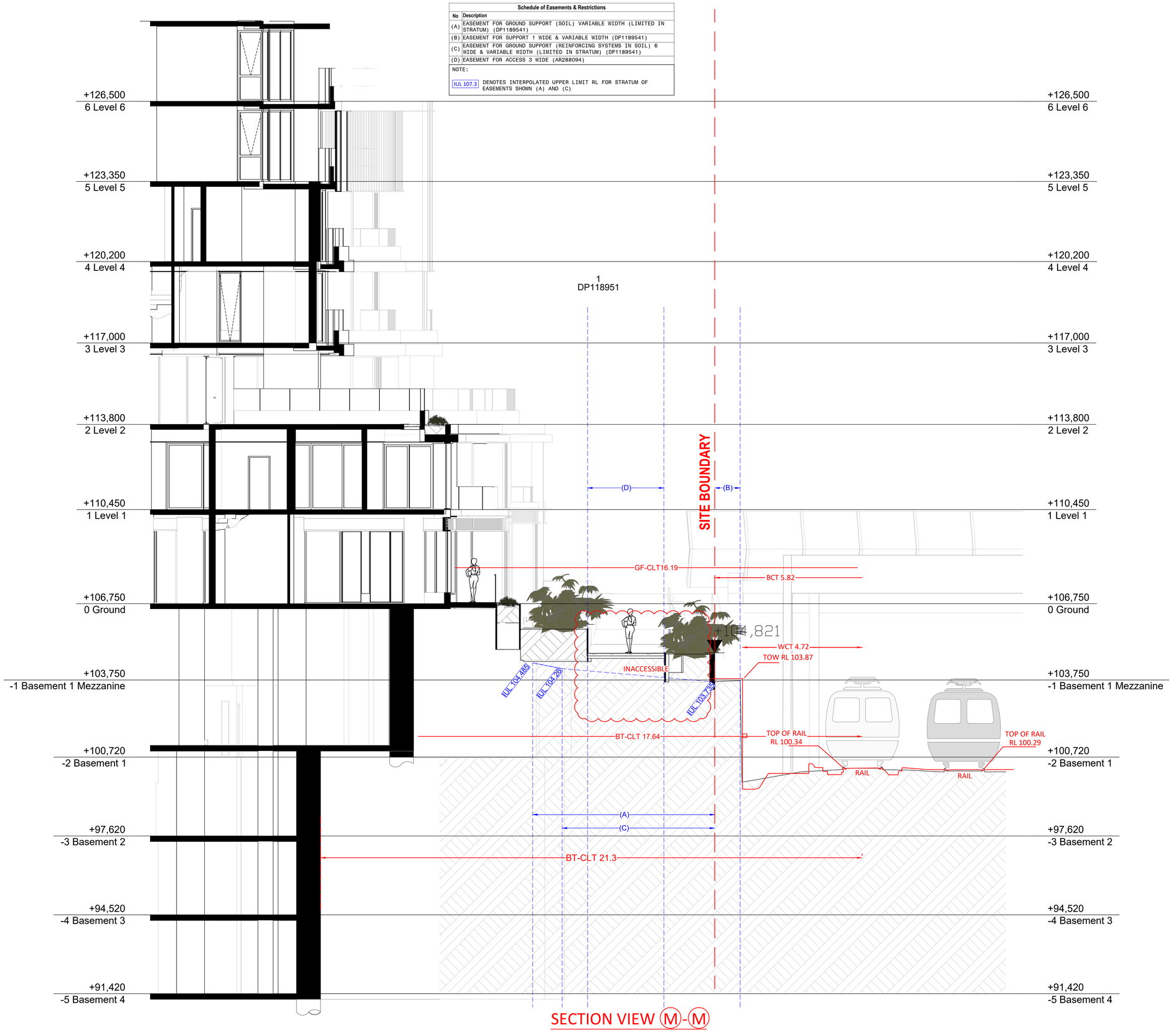
SDG Pty Ltd
abn 85 213 523 621
Suite 1, 3 Railway Street, Baulkham Hills NSW 2153
t: (02) 9630 7955 w: sdg.net.au
Liability limited by a scheme approved
under Professional Standards Legislation

A1

Schedule of Easements & Restrictions	
No	Description
(A)	EASEMENT FOR GROUND SUPPORT (SOIL) VARIABLE WIDTH (LIMITED IN STRATUM) (DP1189541)
(B)	EASEMENT FOR SUPPORT 1 WIDE & VARIABLE WIDTH (DP1189541)
(C)	EASEMENT FOR GROUND SUPPORT (REINFORCING SYSTEMS IN SOIL) 6 WIDE & VARIABLE WIDTH (LIMITED IN STRATUM) (DP1189541)
(D)	EASEMENT FOR ACCESS 3 WIDE (AR288094)

NOTE:

IUL 107.3 DENOTES INTERPOLATED UPPER LIMIT RL FOR STRATUM OF EASEMENTS SHOWN (A) AND (C)



SECTION VIEW Ⓜ-Ⓜ

GENERAL NOTES

ONLY TREES GREATER THAN 2 METRES IN HEIGHT ARE SHOWN ON THIS PLAN AND THEIR POSITIONS ARE DIAGRAMMATIC ONLY AND MAY REQUIRE ADDITIONAL SURVEY WHERE CRITICAL TO DESIGN.

CONTOURS ARE INDICATIVE AT GROUND FORM ONLY. SPOT LEVELS ONLY SHOULD BE USED FOR CALCULATIONS OF QUANTITIES WITH CAUTION.

LEVELS ARE ON AUSTRALIAN HEIGHT DATUM (AHD).

ALL SETOUT LEVELS MUST BE REFERRED TO THE BENCH MARK SHOWN ON THIS PLAN.

BOUNDARY NOTES

A BASIC BOUNDARY SURVEY HAS BEEN DONE SUITABLE FOR DA LODGEMENT PURPOSES.

BOUNDARIES HAVE NOT BEEN MARKED.

SURVEY INFORMATION NOTES

THE ORIGIN OF COORDINATES COMES FROM PM290 E331528.198 N6259353.120 CLASS B POSITIONAL UNCERTAINTY (PU) 0.02 (MGA2020) ADOPTED FROM SCIMS DATED 02/11/2023.

THE ORIGIN OF LEVELS COMES FROM PM290 RL107.323 CLASS LA POSITIONAL UNCERTAINTY (PU) 0.02 ADOPTED FROM SCIMS DATED 02/11/2023.

THE ORIENTATION OF THIS PLAN IS MGA NORTH WHICH HAS BEEN DETERMINED BY DP1189451.

CERTIFICATE OF TITLE NOTES

THE FOLLOWING INFORMATION RELATES TO THE RESPECTIVE CERTIFICATE OF TITLE OF EACH LOTS:

- LOT 1 IN DP1189541
  (CT EDITION 7 DATED 16/10/2023 SEARCH DATE 07/11/2023)
  - AFFECTED BY:
    - EASEMENT FOR GROUND SUPPORT (SOIL) VARIABLE WIDTH (LIMITED IN STRATUM) SHOWN AS (A) (DP1189541)
    - EASEMENT FOR GROUND SUPPORT (REINFORCING SYSTEMS IN SOIL) 6 METRES WIDE AND VARIABLE WIDTH (LIMITED IN STRATUM) SHOWN AS (C) (DP1189541)
    - EASEMENT FOR ACCESS 3 WIDE SHOWN AS (D) (AR288094)
  - BENEFITED BY:
    - EASEMENT FOR SUPPORT 1 METRE WIDE AND VARIABLE WIDTH SHOWN AS (B) (DP1189541)
- CP/SP1496
  (CT EDITION 4 DATED 17/10/2023 SEARCH DATE 07/11/2023)
  - AFFECTED BY:
    - RIGHT OF WAY 3.05 WIDE SHOWN AS (E) (550481)
- CP/SP60178
  (CT EDITION 6 DATED 17/10/2023 SEARCH DATE 07/11/2023)
  - AFFECTED BY:
    - RESTRICTION(S) ON THE USE OF LAND (SP60178)
    - POSITIVE COVENANT (SP60178)
  - BENEFITED BY:
    - RIGHT OF WAY 3.05 WIDE SHOWN AS (E) (550481)
- CP/SP10110
  (CT EDITION 6 DATED 17/10/2023 SEARCH DATE 07/11/2023)
  - BENEFITED BY:
    - RIGHT OF WAY 3.05 WIDE SHOWN AS (E) (550481)
- CP/SP52947
  (CT EDITION 10 DATED 17/10/2023 SEARCH DATE 07/11/2023)
  - AFFECTED BY:
    - POSITIVE COVENANT (SP52947)
    - RESTRICTION(S) ON THE USE OF LAND (SP52947)

COVENANTS AND RESTRICTIONS NOTED ON THE TITLE HAVE NOT BEEN INVESTIGATED. THESE SHOULD BE INVESTIGATED PRIOR TO DESIGN TO ENSURE ANY FUTURE DEVELOPMENT COMPLIES.

BY LAWS RELATING TO EACH OF THE SCHEMES HAVE NOT BEEN INVESTIGATED.

LEGEND

BCT	denotes BOUNDARY TO CENTERLINE OF TRACK
WCT	denotes WALL TO CENTERLINE OF TRACK
TOW	denotes TOP OF WALL
BT-CLT	denotes BASEMENT TO CENTERLINE OF TRACK
GF-CLT	denotes GROUND FLOOR TO CENTERLINE OF TRACK
IUL	denotes INTERPOLATED UPPER LIMIT
- - -	denotes APPROXIMATE EASEMENT POSITION

NOTE:
DESIGN ELEVATIONS PROVIDED DIGITALLY BY PBD ARCHITECTS DRAWING NUMBER DA801 ISSUE 1 DATED 6/3/2024

THE BOUNDARY LINE WAS ADPOPTED FOR THE POSITIONING OF THE SECTION

© COPYRIGHT
THIS PLAN IS NOT TO BE USED FOR ANY PURPOSE OTHER THAN ITS ORIGINAL INTENTION AND REMAINS THE PROPERTY OF SDG. THIS PLAN CANNOT BE REPRODUCED, COPIED OR DIGITALLY TRANSFERRED (IN WHOLE OR PART) WITHOUT PRIOR WRITTEN PERMISSION OF SDG.

PROJECT:

DETAIL AND LEVEL SURVEY OF
LOT 1 IN DP1189541, SP1496,
SP60178, SP10110 AND PART OF SP52947

849-859 PACIFIC HIGHWAY, 2 WILSON STREET
& LOT 1 O'BRIEN STREET
CHATSWOOD

CLIENT: BB WILSON PROPERTY PTY LTD	
FILE: 9062 - Detail & Level - Rev C - 849-859 Pacific Highway, 2 Wilson Street & Lot 1 O'Brien Street Chatswood	
LGA: WILLOUGHBY	
REF: 9062	CONTOURS: 0.5m
ISSUE: C	DATUM: AHD
SURVEY DATE: 20/03/2024	AZIMUTH: MGA2020
SCALE: 1:75	SHEET 6 OF 9 SHEETS

ISSUE	DATE	AMENDMENT	SURV	CHK
A	01/11/23	ORIGINAL ISSUE	PQ	MT
B	29/01/24	RIDGES AND GUTTERS OF ADJOINING LOTS ADDED	SY	MT
C	20/03/24	RAILWAY SECTION VIEWS ADDED	AZ	MT

BEFORE YOU DIG www.byda.com.au
GDA2020
OHS Management System ISO 45001 Global-Mark.com.au®
Quality Management ISO 9001 Global-Mark.com.au®
Environmental Management ISO 14001 Global-Mark.com.au®

MICHAEL TRIFIRO ID: SU008624
REGISTERED LAND SURVEYOR

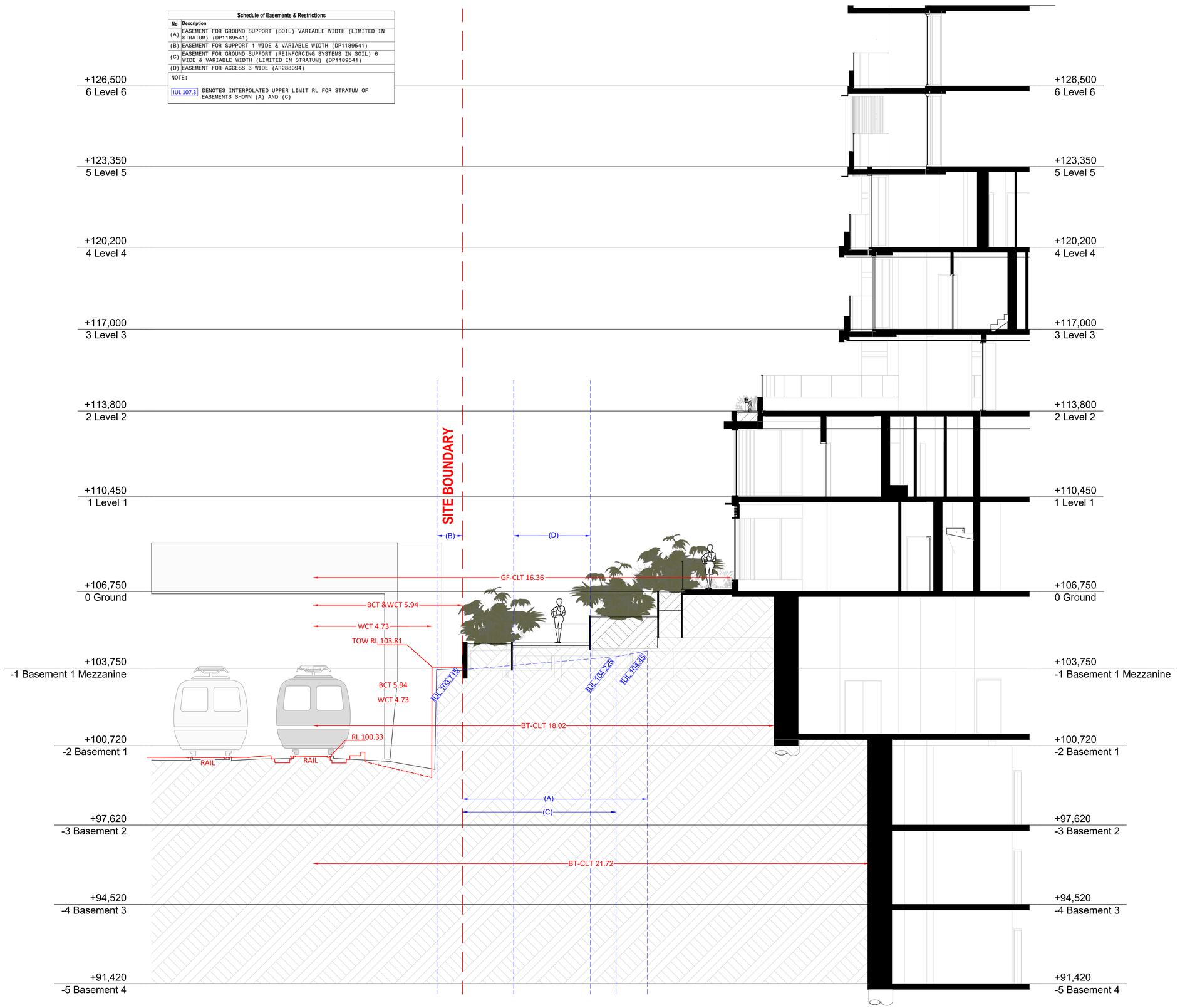
SDG Pty Ltd
abn 85 213 523 621
Suite 1, 3 Railway Street, Baulkham Hills NSW 2153
t: (02) 9630 7955 w: sdg.net.au
Liability limited by a scheme approved
under Professional Standards Legislation

A1

Schedule of Easements & Restrictions	
No	Description
(A)	EASEMENT FOR GROUND SUPPORT (SOIL) VARIABLE WIDTH (LIMITED IN STRATUM) (DP1189541)
(B)	EASEMENT FOR SUPPORT 1 WIDE & VARIABLE WIDTH (DP1189541)
(C)	EASEMENT FOR GROUND SUPPORT (REINFORCING SYSTEMS IN SOIL) 6 WIDE & VARIABLE WIDTH (LIMITED IN STRATUM) (DP1189541)
(D)	EASEMENT FOR ACCESS 3 WIDE (AR288094)

NOTE:

IUL 107.3 DENOTES INTERPOLATED UPPER LIMIT RL FOR STRATUM OF EASEMENTS SHOWN (A) AND (C)



SECTION VIEW Ⓝ-Ⓝ

ISSUE	DATE	AMENDMENT	SURV	CHK
A	01/11/23	ORIGINAL ISSUE	PQ	MT
B	29/01/24	RIDGES AND GUTTERS OF ADJOINING LOTS ADDED	SY	MT
C	20/03/24	RAILWAY SECTION VIEWS ADDED	AZ	MT

BEFORE YOU DIG www.byda.com.au

GDA2020

MICHAEL TRIFIRO ID: SU008624
REGISTERED LAND SURVEYOR

GENERAL NOTES

ONLY TREES GREATER THAN 2 METRES IN HEIGHT ARE SHOWN ON THIS PLAN AND THEIR POSITIONS ARE DIAGRAMMATIC ONLY AND MAY REQUIRE ADDITIONAL SURVEY WHERE CRITICAL TO DESIGN.

CONTOURS ARE INDICATIVE AT GROUND FORM ONLY. SPOT LEVELS ONLY SHOULD BE USED FOR CALCULATIONS OF QUANTITIES WITH CAUTION.

LEVELS ARE ON AUSTRALIAN HEIGHT DATUM (AHD).

ALL SETOUT LEVELS MUST BE REFERRED TO THE BENCH MARK SHOWN ON THIS PLAN.

BOUNDARY NOTES

A BASIC BOUNDARY SURVEY HAS BEEN DONE SUITABLE FOR DA LODGEMENT PURPOSES.

BOUNDARIES HAVE NOT BEEN MARKED.

SURVEY INFORMATION NOTES

THE ORIGIN OF COORDINATES COMES FROM PM290 E331528.198 N6259353.120 CLASS B POSITIONAL UNCERTAINTY (PU) 0.02 (MGA2020) ADOPTED FROM SCIMS DATED 02/11/2023.

THE ORIGIN OF LEVELS COMES FROM PM290 RL107.323 CLASS LA POSITIONAL UNCERTAINTY (PU) 0.02 ADOPTED FROM SCIMS DATED 02/11/2023.

THE ORIENTATION OF THIS PLAN IS MGA NORTH WHICH HAS BEEN DETERMINED BY DP1189451.

CERTIFICATE OF TITLE NOTES

THE FOLLOWING INFORMATION RELATES TO THE RESPECTIVE CERTIFICATE OF TITLE OF EACH LOTS:

- LOT 1 IN DP1189541
  (CT EDITION 7 DATED 16/10/2023 SEARCH DATE 07/11/2023)
  - AFFECTED BY:
    - EASEMENT FOR GROUND SUPPORT (SOIL) VARIABLE WIDTH (LIMITED IN STRATUM) SHOWN AS (A) (DP1189541)
    - EASEMENT FOR GROUND SUPPORT (REINFORCING SYSTEMS IN SOIL) 6 METRES WIDE AND VARIABLE WIDTH (LIMITED IN STRATUM) SHOWN AS (C) (DP1189541)
    - EASEMENT FOR ACCESS 3 WIDE SHOWN AS (D) (AR288094)
  - BENEFITED BY:
    - EASEMENT FOR SUPPORT 1 METRE WIDE AND VARIABLE WIDTH SHOWN AS (B) (DP1189541)
- CP/SP1496
  (CT EDITION 4 DATED 17/10/2023 SEARCH DATE 07/11/2023)
  - AFFECTED BY:
    - RIGHT OF WAY 3.05 WIDE SHOWN AS (E) (550481)
- CP/SP60178
  (CT EDITION 6 DATED 17/10/2023 SEARCH DATE 07/11/2023)
  - AFFECTED BY:
    - RESTRICTION(S) ON THE USE OF LAND (SP60178)
    - POSITIVE COVENANT (SP60178)
  - BENEFITED BY:
    - RIGHT OF WAY 3.05 WIDE SHOWN AS (E) (550481)
- CP/SP10110
  (CT EDITION 6 DATED 17/10/2023 SEARCH DATE 07/11/2023)
  - BENEFITED BY:
    - RIGHT OF WAY 3.05 WIDE SHOWN AS (E) (550481)
- CP/SP52947
  (CT EDITION 10 DATED 17/10/2023 SEARCH DATE 07/11/2023)
  - AFFECTED BY:
    - POSITIVE COVENANT (SP52947)
    - RESTRICTION(S) ON THE USE OF LAND (SP52947)

COVENANTS AND RESTRICTIONS NOTED ON THE TITLE HAVE NOT BEEN INVESTIGATED. THESE SHOULD BE INVESTIGATED PRIOR TO DESIGN TO ENSURE ANY FUTURE DEVELOPMENT COMPLIES.

BY LAWS RELATING TO EACH OF THE SCHEMES HAVE NOT BEEN INVESTIGATED.

LEGEND

BCT	denotes BOUNDARY TO CENTERLINE OF TRACK
WCT	denotes WALL TO CENTERLINE OF TRACK
TOW	denotes TOP OF WALL
BT-CLT	denotes BASEMENT TO CENTERLINE OF TRACK
GF-CLT	denotes GROUND FLOOR TO CENTERLINE OF TRACK
IUL	denotes INTERPOLATED UPPER LIMIT
- - -	denotes APPROXIMATE EASEMENT POSITION

NOTE:
DESIGN ELEVATIONS PROVIDED DIGITALLY BY PBD ARCHITECTS DRAWING NUMBER DA801 ISSUE 1 DATED 6/3/2024

THE BOUNDARY LINE WAS ADPOPTED FOR THE POSITIONING OF THE SECTION

© COPYRIGHT
THIS PLAN IS NOT TO BE USED FOR ANY PURPOSE OTHER THAN ITS ORIGINAL INTENTION AND REMAINS THE PROPERTY OF SDG. THIS PLAN CANNOT BE REPRODUCED, COPIED OR DIGITALLY TRANSFERRED (IN WHOLE OR PART) WITHOUT PRIOR WRITTEN PERMISSION OF SDG.

PROJECT:
DETAIL AND LEVEL SURVEY OF
LOT 1 IN DP1189541, SP1496,
SP60178, SP10110 AND PART OF SP52947

849-859 PACIFIC HIGHWAY, 2 WILSON STREET & LOT 1 O'BRIEN STREET
CHATSWOOD

CLIENT: BB WILSON PROPERTY PTY LTD

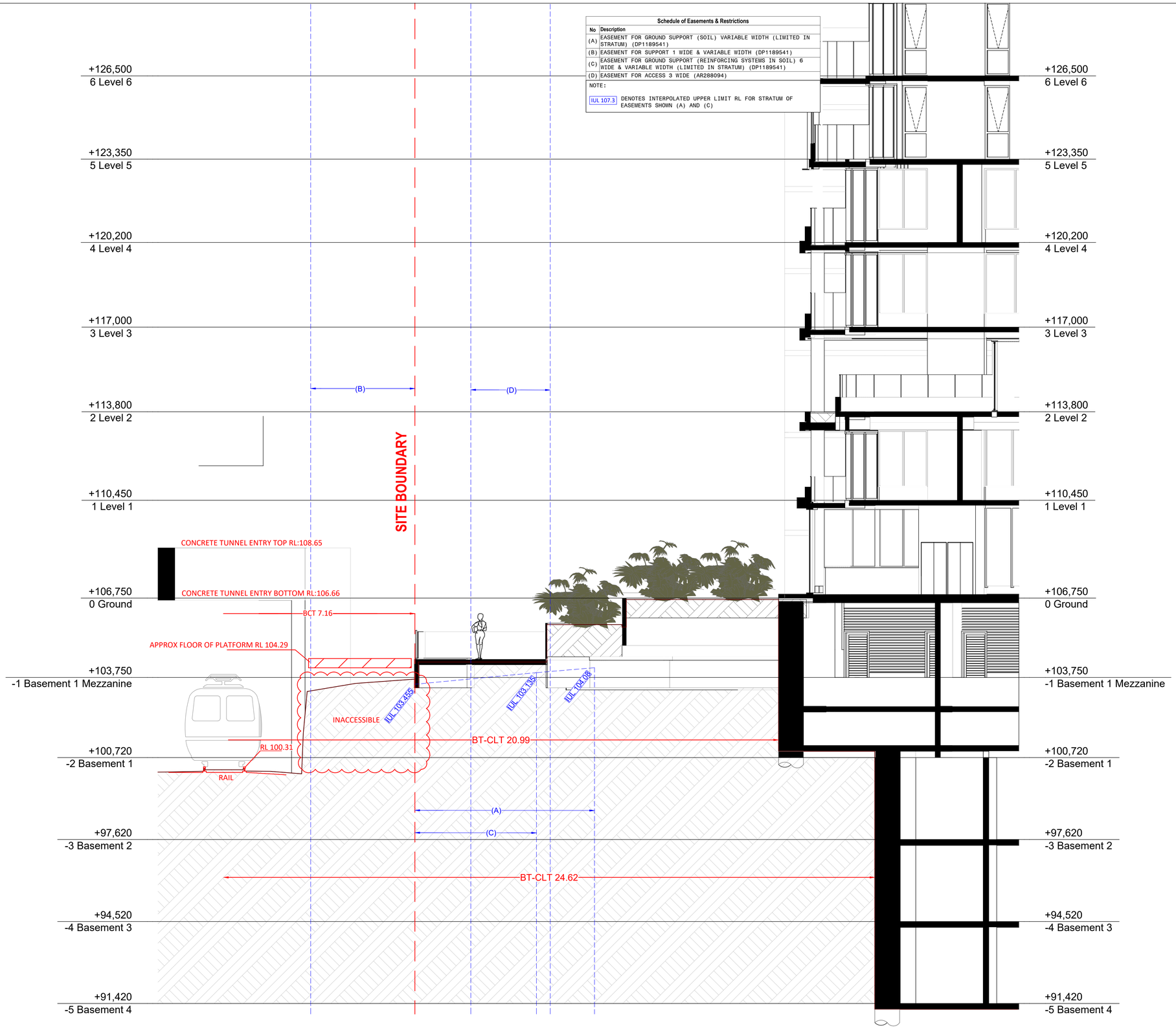
FILE: 9062 - Detail & Level - Rev C - 849-859 Pacific Highway, 2 Wilson Street & Lot 1 O'Brien Street Chatswood

LGA: WILLOUGHBY

REF: 9062	CONTOURS: 0.5m
ISSUE: C	DATUM: AHD
SURVEY DATE: 20/03/2024	AZIMUTH: MGA2020
SCALE: 1:75	SHEET 7 OF 9 SHEETS

SDG Pty Ltd
abn 85 213 523 621
Suite 1, 3 Railway Street, Baulkham Hills NSW 2153
t: (02) 9630 7955 w: sdg.net.au
Liability limited by a scheme approved under Professional Standards Legislation

A1



Schedule of Easements & Restrictions

No	Description
(A)	EASEMENT FOR GROUND SUPPORT (SOIL) VARIABLE WIDTH (LIMITED IN STRATUM) (DP1189541)
(B)	EASEMENT FOR SUPPORT 1 WIDE & VARIABLE WIDTH (DP1189541)
(C)	EASEMENT FOR GROUND SUPPORT (REINFORCING SYSTEMS IN SOIL) 6 WIDE & VARIABLE WIDTH (LIMITED IN STRATUM) (DP1189541)
(D)	EASEMENT FOR ACCESS 3 WIDE (AR288094)

NOTE:

IUL 107.3 DENOTES INTERPOLATED UPPER LIMIT RL FOR STRATUM OF EASEMENTS SHOWN (A) AND (C)

SECTION VIEW Ⓞ-Ⓞ

GENERAL NOTES

ONLY TREES GREATER THAN 2 METRES IN HEIGHT ARE SHOWN ON THIS PLAN AND THEIR POSITIONS ARE DIAGRAMMATIC ONLY AND MAY REQUIRE ADDITIONAL SURVEY WHERE CRITICAL TO DESIGN.

CONTOURS ARE INDICATIVE AT GROUND FORM ONLY. SPOT LEVELS ONLY SHOULD BE USED FOR CALCULATIONS OF QUANTITIES WITH CAUTION.

LEVELS ARE ON AUSTRALIAN HEIGHT DATUM (AHD).

ALL SETOUT LEVELS MUST BE REFERRED TO THE BENCH MARK SHOWN ON THIS PLAN.

BOUNDARY NOTES

A BASIC BOUNDARY SURVEY HAS BEEN DONE SUITABLE FOR DA LODGEMENT PURPOSES.

BOUNDARIES HAVE NOT BEEN MARKED.

SURVEY INFORMATION NOTES

THE ORIGIN OF COORDINATES COMES FROM PM290 E331528.198 N6259353.120 CLASS B POSITIONAL UNCERTAINTY (PU) 0.02 (MGA2020) ADOPTED FROM SCIMS DATED 02/11/2023.

THE ORIGIN OF LEVELS COMES FROM PM290 RL107.323 CLASS LA POSITIONAL UNCERTAINTY (PU) 0.02 ADOPTED FROM SCIMS DATED 02/11/2023.

THE ORIENTATION OF THIS PLAN IS MGA NORTH WHICH HAS BEEN DETERMINED BY DP1189451.

CERTIFICATE OF TITLE NOTES

THE FOLLOWING INFORMATION RELATES TO THE RESPECTIVE CERTIFICATE OF TITLE OF EACH LOTS:

- LOT 1 IN DP1189541
  (CT EDITION 7 DATED 16/10/2023 SEARCH DATE 07/11/2023)
  - AFFECTED BY:
    - EASEMENT FOR GROUND SUPPORT (SOIL) VARIABLE WIDTH (LIMITED IN STRATUM) SHOWN AS (A) (DP1189541)
    - EASEMENT FOR GROUND SUPPORT (REINFORCING SYSTEMS IN SOIL) 6 METRES WIDE AND VARIABLE WIDTH (LIMITED IN STRATUM) SHOWN AS (C) (DP1189541)
    - EASEMENT FOR ACCESS 3 WIDE SHOWN AS (D) (AR288094)
  - BENEFITED BY:
    - EASEMENT FOR SUPPORT 1 METRE WIDE AND VARIABLE WIDTH SHOWN AS (B) (DP1189541)
- CP/SP1496
  (CT EDITION 4 DATED 17/10/2023 SEARCH DATE 07/11/2023)
  - AFFECTED BY:
    - RIGHT OF WAY 3.05 WIDE SHOWN AS (E) (550481)
- CP/SP60178
  (CT EDITION 6 DATED 17/10/2023 SEARCH DATE 07/11/2023)
  - AFFECTED BY:
    - RESTRICTION(S) ON THE USE OF LAND (SP60178)
    - POSITIVE COVENANT (SP60178)
  - BENEFITED BY:
    - RIGHT OF WAY 3.05 WIDE SHOWN AS (E) (550481)
- CP/SP10110
  (CT EDITION 6 DATED 17/10/2023 SEARCH DATE 07/11/2023)
  - BENEFITED BY:
    - RIGHT OF WAY 3.05 WIDE SHOWN AS (E) (550481)
- CP/SP52947
  (CT EDITION 10 DATED 17/10/2023 SEARCH DATE 07/11/2023)
  - AFFECTED BY:
    - POSITIVE COVENANT (SP52947)
    - RESTRICTION(S) ON THE USE OF LAND (SP52947)

COVENANTS AND RESTRICTIONS NOTED ON THE TITLE HAVE NOT BEEN INVESTIGATED. THESE SHOULD BE INVESTIGATED PRIOR TO DESIGN TO ENSURE ANY FUTURE DEVELOPMENT COMPLIES.

BY LAWS RELATING TO EACH OF THE SCHEMES HAVE NOT BEEN INVESTIGATED.

LEGEND

BCT	denotes BOUNDARY TO CENTERLINE OF TRACK
WCT	denotes WALL TO CENTERLINE OF TRACK
TOW	denotes TOP OF WALL
BT-CLT	denotes BASEMENT TO CENTERLINE OF TRACK
IUL	denotes INTERPOLATED UPPER LIMIT
– – – –	denotes APPROXIMATE EASEMENT POSITION

NOTE:
DESIGN ELEVATIONS PROVIDED DIGITALLY BY PBD ARCHITECTS DRAWING NUMBER DA801 ISSUE 1 DATED 6/3/2024

THE BOUNDARY LINE WAS ADPOPTED FOR THE POSITIONING OF THE SECTION

© COPYRIGHT
THIS PLAN IS NOT TO BE USED FOR ANY PURPOSE OTHER THAN ITS ORIGINAL INTENTION AND REMAINS THE PROPERTY OF SDG. THIS PLAN CANNOT BE REPRODUCED, COPIED OR DIGITALLY TRANSFERRED (IN WHOLE OR PART) WITHOUT PRIOR WRITTEN PERMISSION OF SDG.

PROJECT:
DETAIL AND LEVEL SURVEY OF
LOT 1 IN DP1189541, SP1496,
SP60178, SP10110 AND PART OF SP52947

849-859 PACIFIC HIGHWAY, 2 WILSON STREET & LOT 1 O'BRIEN STREET
CHATSWOOD

CLIENT: BB WILSON PROPERTY PTY LTD

FILE: 9062 - Detail & Level - Rev C - 849-859 Pacific Highway, 2 Wilson Street & Lot 1 O'Brien Street Chatswood

LGA: WILLOUGHBY

REF: 9062	CONTOURS: 0.5m
ISSUE: C	DATUM: AHD
SURVEY DATE: 20/03/2024	AZIMUTH: MGA2020
SCALE: 1:75	SHEET 8 OF 9 SHEETS

ISSUE	DATE	AMENDMENT	SURV	CHK
A	01/11/23	ORIGINAL ISSUE	PQ	MT
B	29/01/24	RIDGES AND GUTTERS OF ADJOINING LOTS ADDED	SY	MT
C	20/03/24	RAILWAY SECTION VIEWS ADDED	AZ	MT

BEFORE YOU DIG www.byda.com.au

GDA2020

MICHAEL TRIFIRO ID: SU008624
REGISTERED LAND SURVEYOR

SDG Pty Ltd
abn 85 213 523 621
Suite 1, 3 Railway Street, Baulkham Hills NSW 2153
t: (02) 9630 7955 w: sdg.net.au
Liability limited by a scheme approved under Professional Standards Legislation

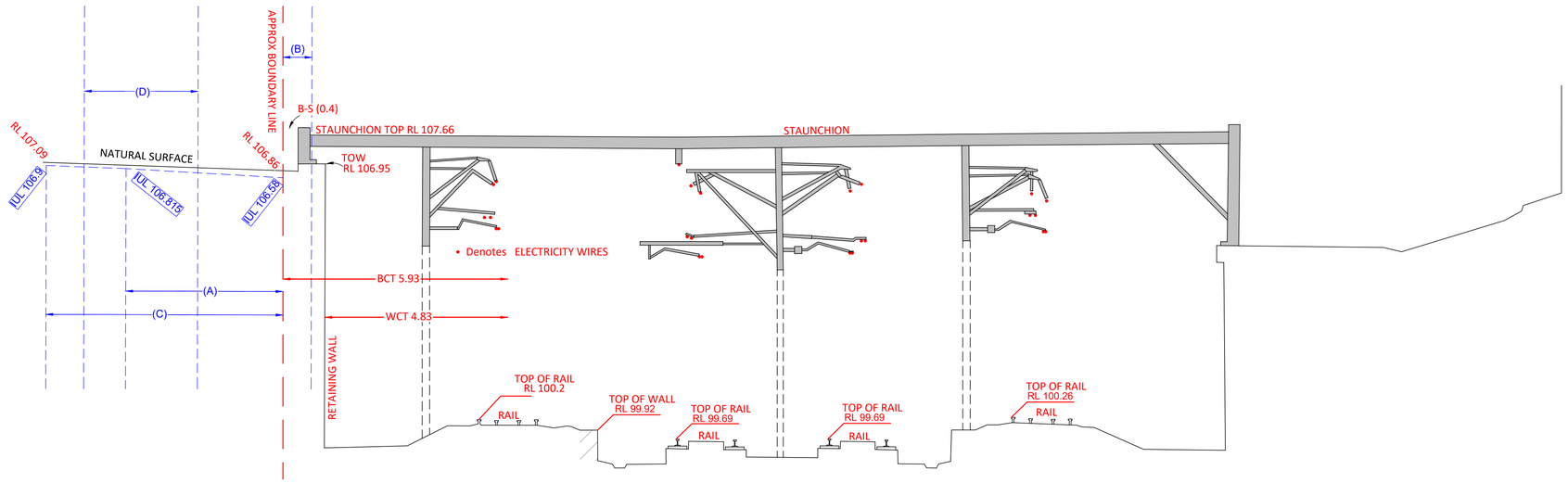
A1

Schedule of Easements & Restrictions	
No	Description
(A)	EASEMENT FOR GROUND SUPPORT (SOIL) VARIABLE WIDTH (LIMITED IN STRATUM) (DP1189541)
(B)	EASEMENT FOR SUPPORT 1 WIDE & VARIABLE WIDTH (DP1189541)
(C)	EASEMENT FOR GROUND SUPPORT (REINFORCING SYSTEMS IN SOIL) 6 WIDE & VARIABLE WIDTH (LIMITED IN STRATUM) (DP1189541)
(D)	EASEMENT FOR ACCESS 3 WIDE (AR288094)

NOTE:

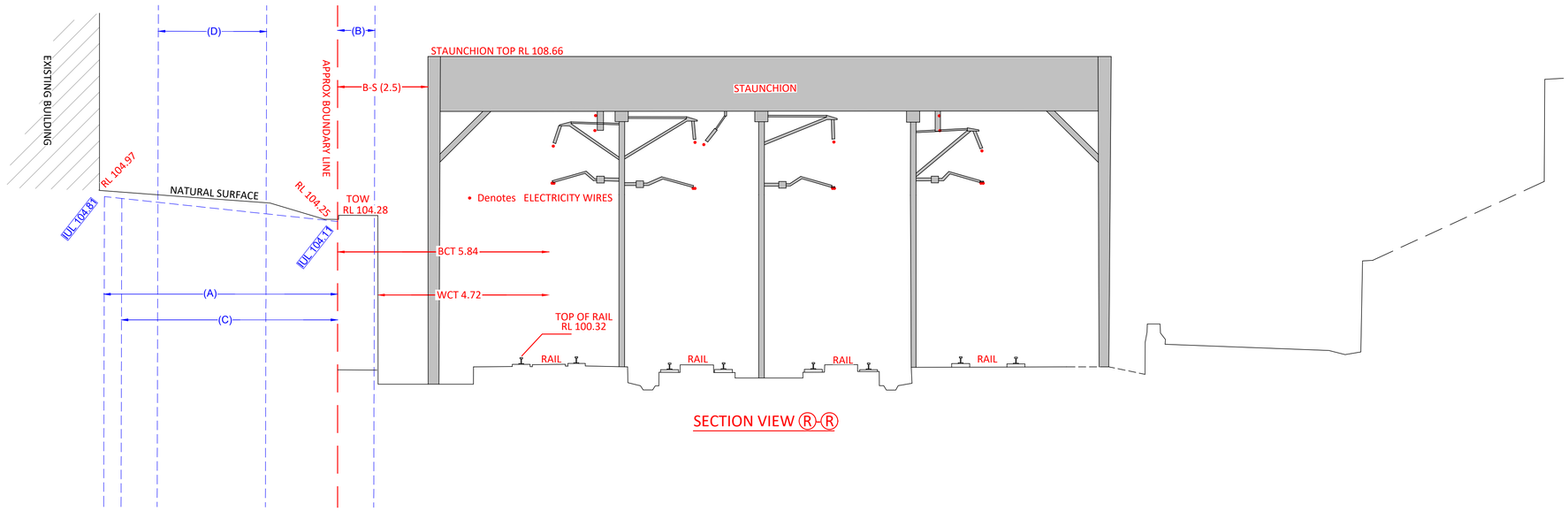
IUL 107.3 DENOTES INTERPOLATED UPPER LIMIT RL FOR STRATUM OF EASEMENTS SHOWN (A) AND (C)

1
DP118951



SECTION VIEW Ⓠ-Ⓠ

1
DP118951



SECTION VIEW Ⓡ-Ⓡ

GENERAL NOTES

ONLY TREES GREATER THAN 2 METRES IN HEIGHT ARE SHOWN ON THIS PLAN AND THEIR POSITIONS ARE DIAGRAMMATIC ONLY AND MAY REQUIRE ADDITIONAL SURVEY WHERE CRITICAL TO DESIGN.

CONTOURS ARE INDICATIVE AT GROUND FORM ONLY. SPOT LEVELS ONLY SHOULD BE USED FOR CALCULATIONS OF QUANTITIES WITH CAUTION.

LEVELS ARE ON AUSTRALIAN HEIGHT DATUM (AHD).

ALL SETOUT LEVELS MUST BE REFERRED TO THE BENCH MARK SHOWN ON THIS PLAN.

BOUNDARY NOTES

A BASIC BOUNDARY SURVEY HAS BEEN DONE SUITABLE FOR DA LODGEMENT PURPOSES.

BOUNDARIES HAVE NOT BEEN MARKED.

SURVEY INFORMATION NOTES

THE ORIGIN OF COORDINATES COMES FROM PM290 E331528.198 N6259353.120 CLASS B POSITIONAL UNCERTAINTY (PU) 0.02 (MGA2020) ADOPTED FROM SCIMS DATED 02/11/2023.

THE ORIGIN OF LEVELS COMES FROM PM290 RL107.323 CLASS LA POSITIONAL UNCERTAINTY (PU) 0.02 ADOPTED FROM SCIMS DATED 02/11/2023.

THE ORIENTATION OF THIS PLAN IS MGA NORTH WHICH HAS BEEN DETERMINED BY DP1189451.

CERTIFICATE OF TITLE NOTES

THE FOLLOWING INFORMATION RELATES TO THE RESPECTIVE CERTIFICATE OF TITLE OF EACH LOTS:

- LOT 1 IN DP1189541
  (CT EDITION 7 DATED 16/10/2023 SEARCH DATE 07/11/2023)
  - AFFECTED BY:
    - EASEMENT FOR GROUND SUPPORT (SOIL) VARIABLE WIDTH (LIMITED IN STRATUM) SHOWN AS (A) (DP1189541)
    - EASEMENT FOR GROUND SUPPORT (REINFORCING SYSTEMS IN SOIL) 6 METRES WIDE AND VARIABLE WIDTH (LIMITED IN STRATUM) SHOWN AS (C) (DP1189541)
    - EASEMENT FOR ACCESS 3 WIDE SHOWN AS (D) (AR288094)
  - BENEFITED BY:
    - EASEMENT FOR SUPPORT 1 METRE WIDE AND VARIABLE WIDTH SHOWN AS (B) (DP1189541)
- CP/SP1496
  (CT EDITION 4 DATED 17/10/2023 SEARCH DATE 07/11/2023)
  - AFFECTED BY:
    - RIGHT OF WAY 3.05 WIDE SHOWN AS (E) (550481)
- CP/SP60178
  (CT EDITION 6 DATED 17/10/2023 SEARCH DATE 07/11/2023)
  - AFFECTED BY:
    - RESTRICTION(S) ON THE USE OF LAND (SP60178)
    - POSITIVE COVENANT (SP60178)
  - BENEFITED BY:
    - RIGHT OF WAY 3.05 WIDE SHOWN AS (E) (550481)
- CP/SP10110
  (CT EDITION 6 DATED 17/10/2023 SEARCH DATE 07/11/2023)
  - BENEFITED BY:
    - RIGHT OF WAY 3.05 WIDE SHOWN AS (E) (550481)
- CP/SP52947
  (CT EDITION 10 DATED 17/10/2023 SEARCH DATE 07/11/2023)
  - AFFECTED BY:
    - POSITIVE COVENANT (SP52947)
    - RESTRICTION(S) ON THE USE OF LAND (SP52947)

COVENANTS AND RESTRICTIONS NOTED ON THE TITLE HAVE NOT BEEN INVESTIGATED. THESE SHOULD BE INVESTIGATED PRIOR TO DESIGN TO ENSURE ANY FUTURE DEVELOPMENT COMPLIES.

BY LAWS RELATING TO EACH OF THE SCHEMES HAVE NOT BEEN INVESTIGATED.

LEGEND

BCT denotes BOUNDARY TO CENTERLINE OF TRACK
WCT denotes WALL TO CENTERLINE OF TRACK
TOW denotes TOP OF WALL
B-S denotes BOUNDARY TO STAUNCHION
IUL denotes INTERPOLATED UPPER LIMIT
– – – – denotes APPROXIMATE EASEMENT POSITION

NOTE:
DESIGN ELEVATIONS PROVIDED DIGITALLY BY PBD ARCHITECTS DRAWING NUMBER DA801 ISSUE 1 DATED 6/3/2024

THE BOUNDARY LINE WAS ADPOPTED FOR THE POSITIONING OF THE SECTION

© COPYRIGHT
THIS PLAN IS NOT TO BE USED FOR ANY PURPOSE OTHER THAN ITS ORIGINAL INTENTION AND REMAINS THE PROPERTY OF SDG. THIS PLAN CANNOT BE REPRODUCED, COPIED OR DIGITALLY TRANSFERRED (IN WHOLE OR PART) WITHOUT PRIOR WRITTEN PERMISSION OF SDG.

PROJECT:

DETAIL AND LEVEL SURVEY OF
LOT 1 IN DP1189541, SP1496,
SP60178, SP10110 AND PART OF SP52947

849-859 PACIFIC HIGHWAY, 2 WILSON STREET
& LOT 1 O'BRIEN STREET
CHATSWOOD

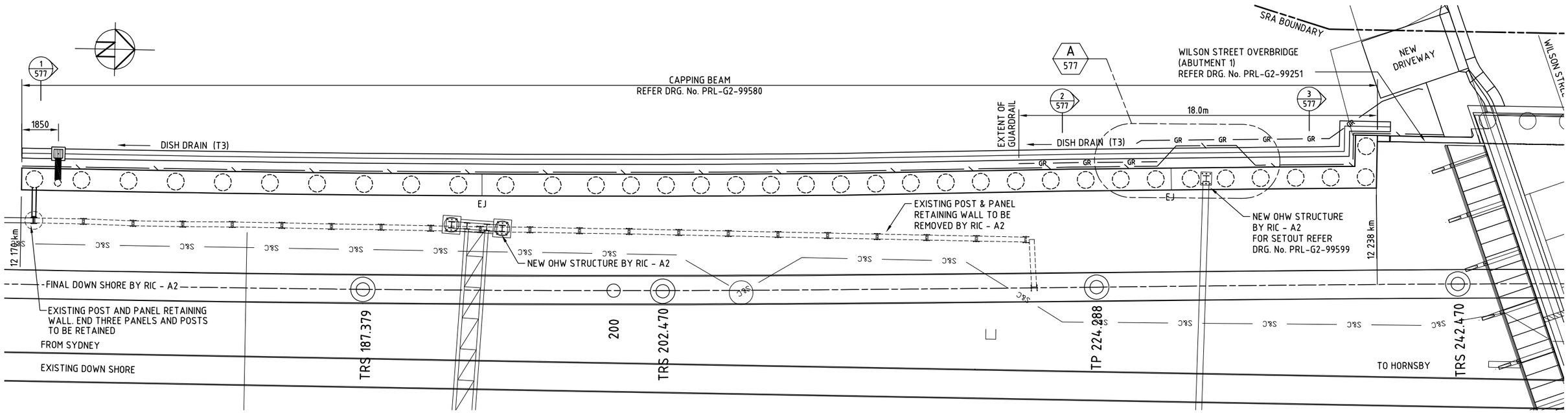
CLIENT: BB WILSON PROPERTY PTY LTD	
FILE: 9062 - Detail & Level - Rev C - 849-859 Pacific Highway, 2 Wilson Street & Lot 1 O'Brien Street Chatswood	
LGA: WILLOUGHBY	
REF: 9062	CONTOURS: 0.5m
ISSUE: C	DATUM: AHD
SURVEY DATE: 20/03/2024	AZIMUTH: MGA2020
SCALE: 1:75	SHEET 9 OF 9 SHEETS

ISSUE	DATE	AMENDMENT	SURV	CHK
A	01/11/23	ORIGINAL ISSUE	PQ	MT
B	29/01/24	RIDGES AND GUTTERS OF ADJOINING LOTS ADDED	SY	MT
C	20/03/24	RAILWAY SECTION VIEWS ADDED	AZ	MT

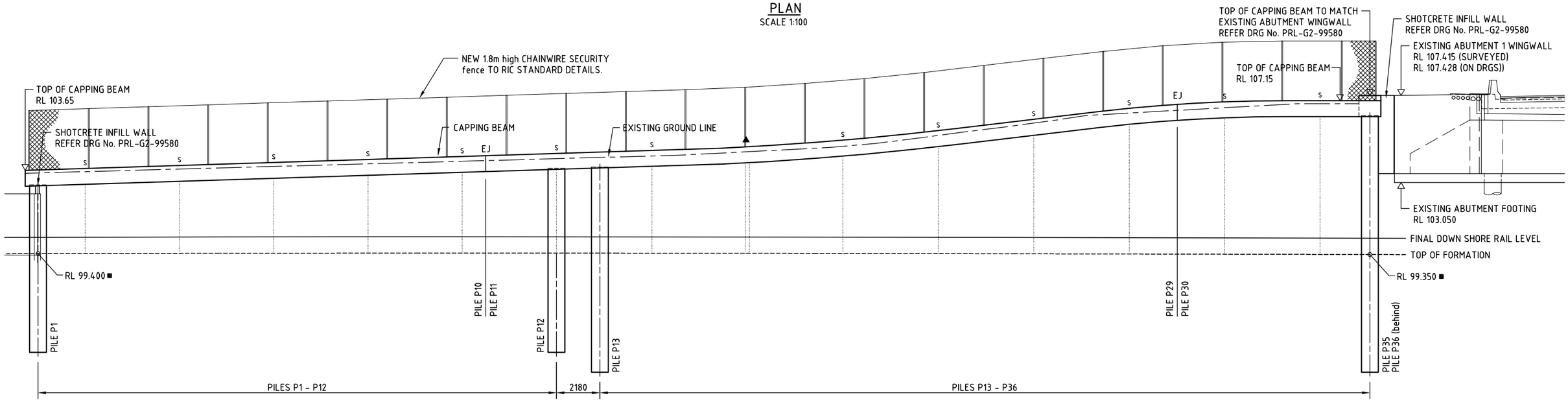
BEFORE YOU DIG www.byda.com.au
GDA2020
Global-Mark.com.au®

MICHAEL TRIFIRO ID: SU008624
REGISTERED LAND SURVEYOR

SDG Pty Ltd
abn 85 213 523 621
Suite 1, 3 Railway Street, Baulkham Hills NSW 2153
t: (02) 9630 7955 w: sdg.net.au
Liability limited by a scheme approved
under Professional Standards Legislation



PLAN
SCALE 1:100



ELEVATION
SCALE 1:100

LEGEND

- EJ ....EXPANSION JOINT
- ▲ ....PRIMARY CALIBRATION-URBAN DESIGN
- S ....SECONDARY CALIBRATION-URBAN DESIGN
- —S&C— ....SIGNAL & COMMUNICATIONS CABLING (TO BE RELOCATED BY RIC)
- —\—\— ....NEW CHAINWIRE FENCE (TO RIC STANDARD)
- —GR— ....NEW 'W' BEAM GUARDRAIL (TO RTA MODEL DRAWING Nos. MD.R132.A01.A1 & MD.R132.B01.A1)
- DISH DRAIN ....NEW DISH DRAIN (TYPE 3) (REFER DRAWING No. PRL-G2-99715 FOR DETAIL)
- ▣ ....NEW, (450x450x600 DEEP) PRECAST CONC. PIT WITH HEAVY DUTY 'V' GRATE INLET.
- o ....Ø225 UPVC PIPE & DROPPER

Scales
0 2 4
2 1
(1:100 BEFORE REDUCTION)
SCALE IN METRES
(AT A1 SHEET SIZE)

NOTES

GENERAL

1. DIMENSIONS ARE NOT BE SCALED FROM THIS DRAWING.
2. ALL DIMENSIONS ARE IN MILLIMETRES UNLESS NOTED OTHERWISE CHAINAGES & REDUCED LEVELS ARE IN METRES
3. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ESTABLISHING THE LOCATION OF ALL SERVICES AFFECTED BY THE WORKS PRIOR TO COMMENCEMENT OF ANY EXCAVATION.
4. LOCATION OF SERVICES SHOWN ON DRAWINGS IS INDICATIVE AND SHALL BE VERIFIED BY THE CONTRACTOR.
5. TOP OF FORMATION LEVEL AT BASE OF RETAINING WALL TO BE NOT LOWER THAN THE RL SHOWN ■ ON ELEVATION.
6. EXCAVATION IN FRONT OF PILE WALL NOT TO EXCEED 500mm BELOW FORMATION LEVELS.
7. SAFETY SCREENS TO FUTURE DETAIL.

DESIGN

1. DESIGN CODE : AUSTRALIAN BRIDGE DESIGN CODE.
2. DESIGN LOADING : T44 TRUCK LOADING
3. CONSTRUCTION SURCHARGE 20 kPa

SURVEY

1. ALL LEVELS ARE TO AUSTRALIAN HEIGHT DATUM (AHD).
2. ALL CO-ORDINATES ARE TO MAP GRID OF AUSTRALIA (MGA).
3. WHERE KILOMETRAGE IS USED TO INDICATE A START OR END POINT IT IS MEASURED PERPENDICULAR TO THE FINAL DOWN SHORE

SECURITY FENCE

1. NEW 1.8m HIGH SECURITY FENCE TO BE CONSTRUCTED IN ACCORDANCE WITH RIC STANDARDS AP6841 & C4501 AND RIC DRAWINGS 207-1353, SHEET 1; 207-1353, SHEET 2 AND 207-1353, SHEET 4.

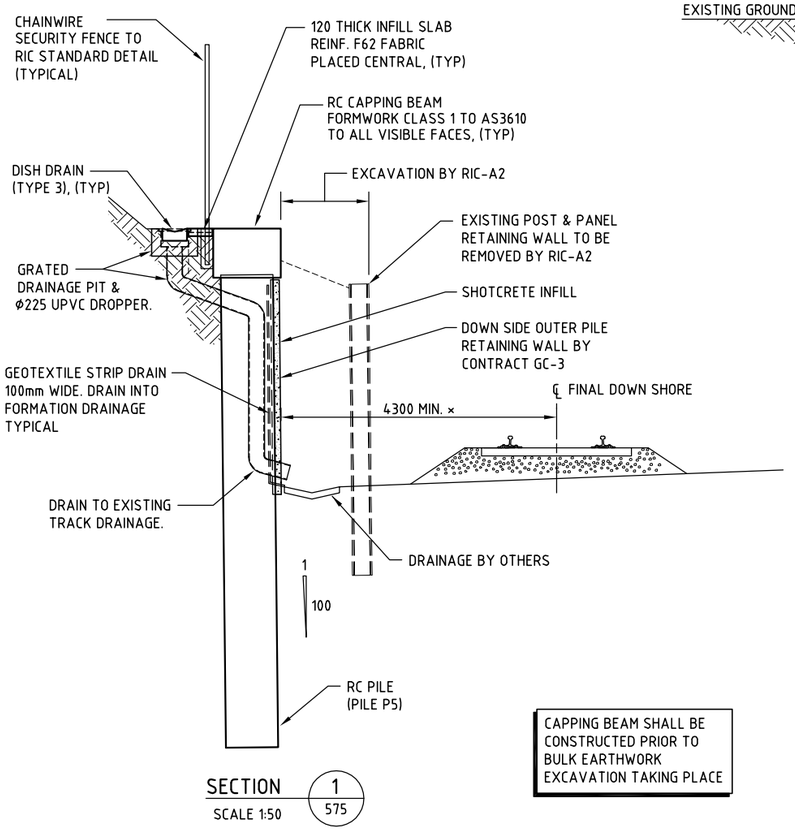
REFERENCES

TYPICAL WALL SECTIONS	DRG No PRL-G2-99577
PILE SETOUT	DRG No PRL-G2-99578
PILE DETAILS	DRG No PRL-G2-99579
CAPPING BEAM - CONCRETE	DRG No PRL-G2-99580
CAPPING BEAM - REINFORCEMENT	DRG No PRL-G2-99581
OHW STRUCTURES HOLDING DOWN BOLT DETAILS	DRG No PRL-G2-99599

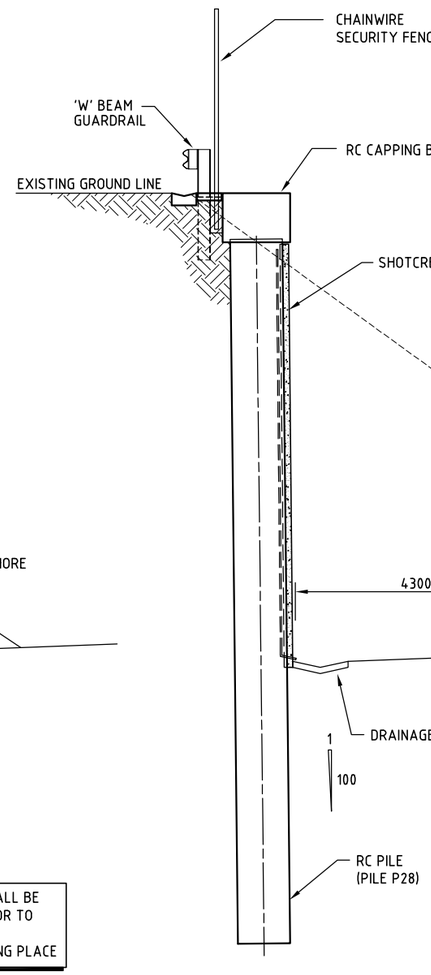
NOTE:
EXCAVATION & SHOTCRETE INFILL NOT COMPLETED AT TIME OF ISSUE

WORK AS EXECUTED
THIS DRAWING SHOWS WORK AS EXECUTED. ANY DEPARTURES FROM THE ORIGINAL DESIGN DETAILS ARE BASED SOLELY ON INFORMATION PROVIDED BY JOHN HOLLAND PTY LTD.

RIC/SRA EDMS ID CV0214762

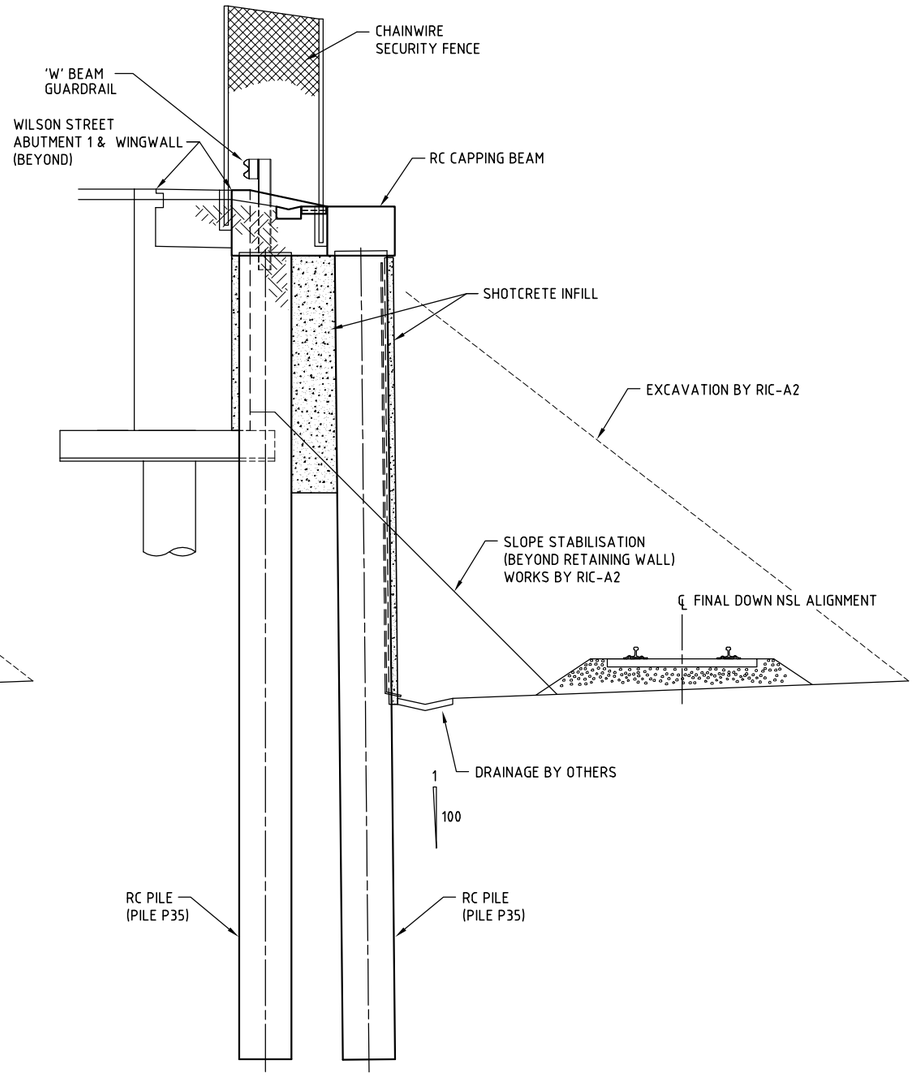


SECTION 1 / 575
SCALE 1:50

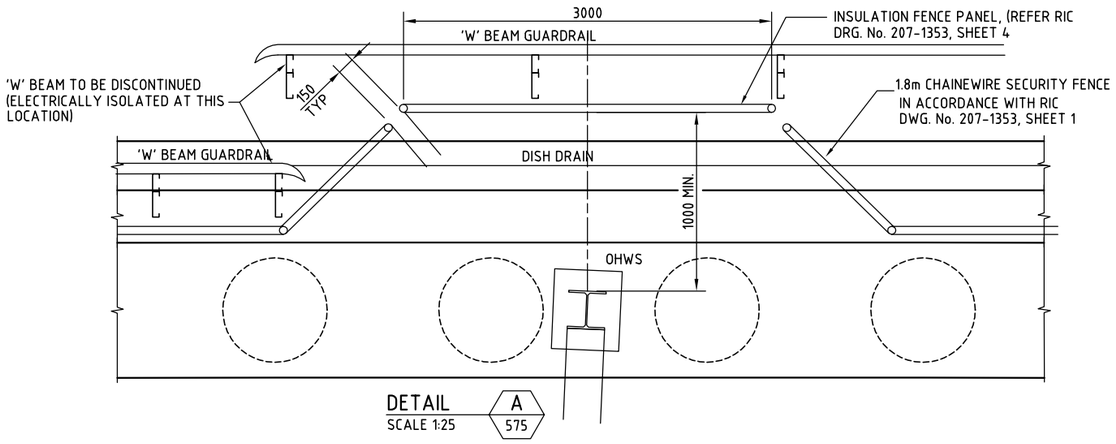


CAPPING BEAM SHALL BE CONSTRUCTED PRIOR TO BULK EARTHWORK EXCAVATION TAKING PLACE

SECTION 2 / 575
SCALE 1:50



SECTION 3 / 575
SCALE 1:50



DETAIL A / 575
SCALE 1:25

Scales
0 1000 2000
1000 500
(1:50 BEFORE REDUCTION)
SCALE IN MILLIMETRES (AT A1 SHEET SIZE)

NOTES

GENERAL
REFER TO DRG No PRL-G2-99575

× DIMENSION NOT TO BE USED FOR SETOUT

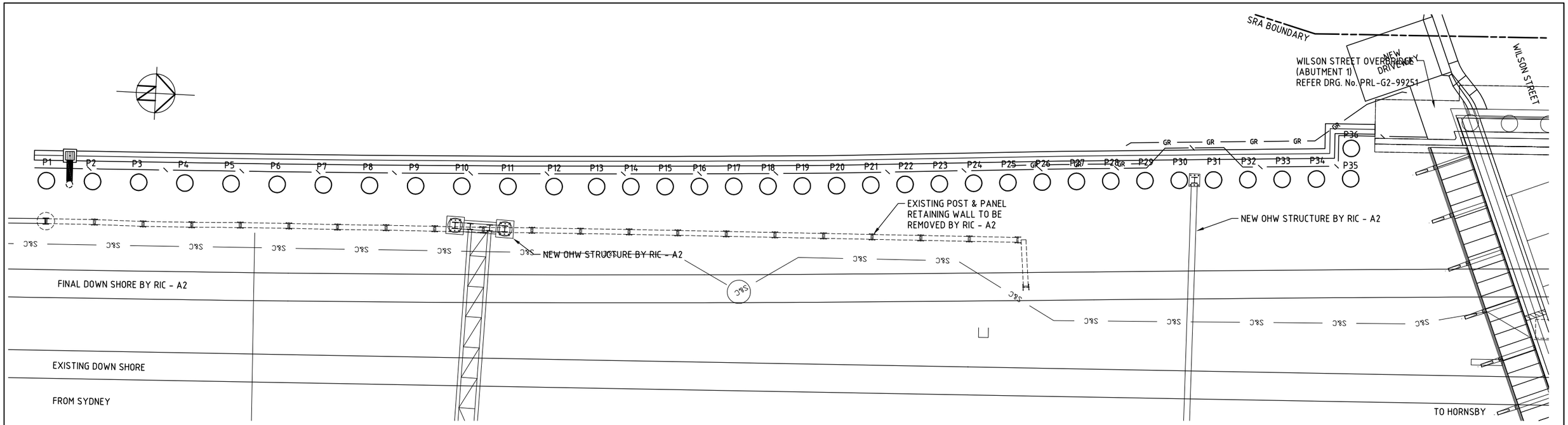
REFERENCES

GENERAL ARRANGEMENT	DRG No PRL-G2-99575
PILE SET OUT	DRG No PRL-G2-99578
PILE DETAILS	DRG No PRL-G2-99579
CAPPING BEAM - CONCRETE	DRG No PRL-G2-99580
CAPPING BEAM - REINFORCEMENT	DRG No PRL-G2-99581

NOTE:
EXCAVATION & SHOTCRETE INFILL NOT COMPLETED AT TIME OF ISSUE

WORK AS EXECUTED
THIS DRAWING SHOWS WORK AS EXECUTED. ANY DEPARTURES FROM THE ORIGINAL DESIGN DETAILS ARE BASED SOLELY ON INFORMATION PROVIDED BY JOHN HOLLAND PTY LTD.

RIC/SRA EDMS ID CV0214763



PILE SETOUT

SCALE 1:100

TABLE 1

PILE No	EASTING	NORTHING	DIAMETER	CUT OFF LEVEL	CONTRACT LEVEL	× ACTUAL FOUNDING LEVEL
P1	331 577.167	6 259 284.036	850	102.920	94.50	94.50
P2	331 577.085	6 259 286.405	850	102.995	94.50	94.50
P3	331 577.002	6 259 288.773	850	103.070	94.50	94.50
P4	331 576.917	6 259 291.142	850	103.145	94.50	94.50
P5	331 576.830	6 259 293.510	850	103.225	94.50	94.50
P6	331 576.739	6 259 295.879	850	103.300	94.50	94.50
P7	331 576.645	6 259 298.247	850	103.375	94.50	94.50
P8	331 576.548	6 259 300.615	850	103.450	94.50	94.50
P9	331 576.446	6 259 302.982	850	103.525	94.50	94.50
P10	331 576.339	6 259 305.350	850	103.600	94.50	94.50
P11	331 576.228	6 259 307.717	850	103.675	94.50	94.50
P12	331 576.112	6 259 310.085	850	103.750	94.50	94.50
P13	331 576.002	6 259 312.262	850	103.820	93.50	93.50
P14	331 575.910	6 259 314.020	850	103.875	93.50	93.50
P15	331 575.816	6 259 315.777	850	103.930	93.50	93.50
P16	331 575.719	6 259 317.535	850	103.990	93.50	93.50
P17	331 575.620	6 259 319.292	850	104.060	93.50	93.50
P18	331 575.519	6 259 321.049	850	104.185	93.50	93.50
P19	331 575.416	6 259 322.806	850	104.310	93.50	93.50
P20	331 575.308	6 259 324.563	850	104.450	93.50	93.50
P21	331 575.186	6 259 326.318	850	104.610	93.50	93.50
P22	331 575.063	6 259 328.074	850	104.790	93.50	93.50
P23	331 574.940	6 259 329.830	850	104.985	93.50	93.50
P24	331 574.818	6 259 331.585	850	105.195	93.50	93.50
P25	331 574.695	6 259 333.341	850	105.405	93.50	93.50
P26	331 574.572	6 259 335.097	850	105.615	93.50	93.50
P27	331 574.450	6 259 336.853	850	105.820	93.50	93.50
P28	331 574.339	6 259 338.609	850	106.015	93.50	93.50
P29	331 574.228	6 259 340.366	850	106.175	93.50	93.50
P30	331 574.118	6 259 342.122	850	106.270	93.50	93.50
P31	331 574.008	6 259 343.879	850	106.350	93.50	93.50
P32	331 573.899	6 259 345.635	850	106.400	93.50	93.50
P33	331 573.791	6 259 347.392	850	106.400	93.50	93.50
P34	331 573.684	6 259 349.149	850	106.400	93.50	93.50
P35	331 573.578	6 259 350.906	850	106.400	93.50	93.50
P36	331572.021	6 259 350.853	850	106.400	93.50	93.50

Scales

0 2000 4000

2000 1000

(1:100 BEFORE REDUCTION)
SCALE IN MILLIMETERS
(AT A1 SHEET SIZE)

NOTES

GENERAL

1. DIMENSIONS ARE NOT TO BE SCALE FROM THE DRAWING.
2. ALL DIMENSIONS ARE IN MILLIMETRES UNLESS NOTED OTHERWISE CHAINAGES & REDUCED LEVELS ARE IN METRES
3. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ESTABLISHING THE LOCATION OF ALL SERVICES AFFECTED BY THE WORKS PRIOR TO COMMENCEMENT OF ANY EXCAVATION.
4. LOCATION OF SERVICES SHOWN ON DRAWINGS IS INDICATIVE AND SHALL BE VERIFIED BY THE CONTRACTOR.

DESIGN

1. DESIGN CODE : AUSTRALIAN BRIDGE DESIGN CODE-1996.
2. DESIGN LOADING : CONSTRUCTION SURCHARGE 20 kPa, T44 TRUCK

SURVEY

1. ALL LEVELS ARE TO AUSTRALIAN HEIGHT DATUM (AHD).
2. ALL CO-ORDINATES ARE TO MAP GRID OF AUSTRALIA (MGA).
3. SETOUT POINT IS CENTRE OF PILE AT CUT OFF LEVEL.
4. PILES SHALL BE SURVEYED AFTER INSTALLATION TO DETERMINE DEVIATIONS FORM DESIGN SETOUT.

REFERENCES

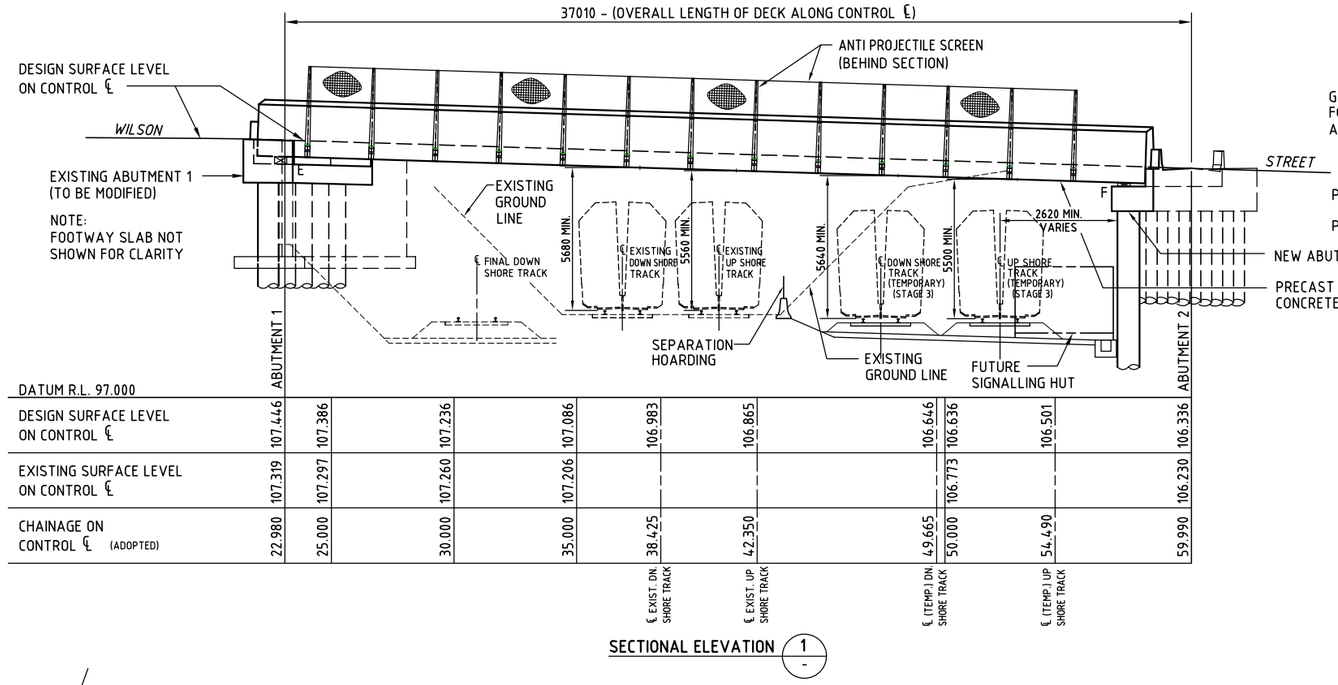
GENERAL ARRANGEMENT..... DRG No. PRL-G2-99575
PILE DETAILS..... DRG No. PRL-G2-99579

× COLUMNS FOR "ACTUAL FOUNDING LEVELS" AND "NATURE OF FOUNDING MATERIAL" TO BE COMPLETED BY THE CONTRACTOR (INCLUDING ANY VARIATION IN CONTRACT LEVEL SHOWN) AND SUBMITTED AS AN "AS BUILT" DRAWING

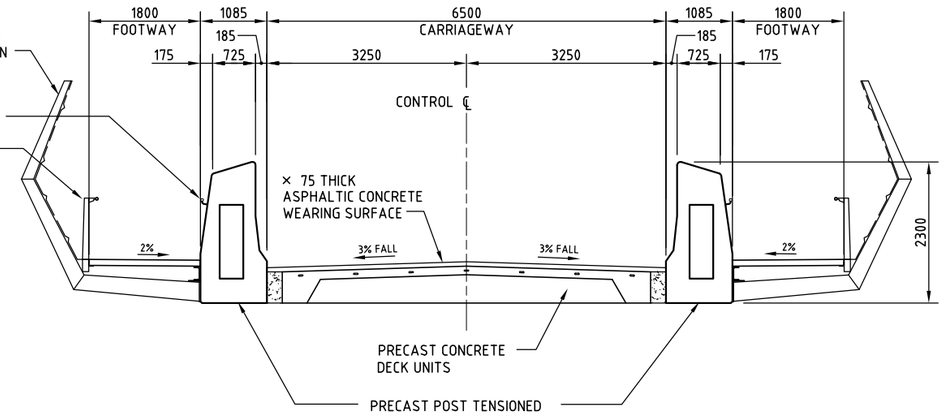
NOTE:
EXCAVATION & SHOTCRETE INFILL NOT COMPLETED AT TIME OF ISSUE

WORK AS EXECUTED
THIS DRAWING SHOWS WORK AS EXECUTED. ANY DEPARTURES FROM THE ORIGINAL DESIGN DETAILS ARE BASED SOLELY ON INFORMATION PROVIDED BY JOHN HOLLAND PTY LTD.

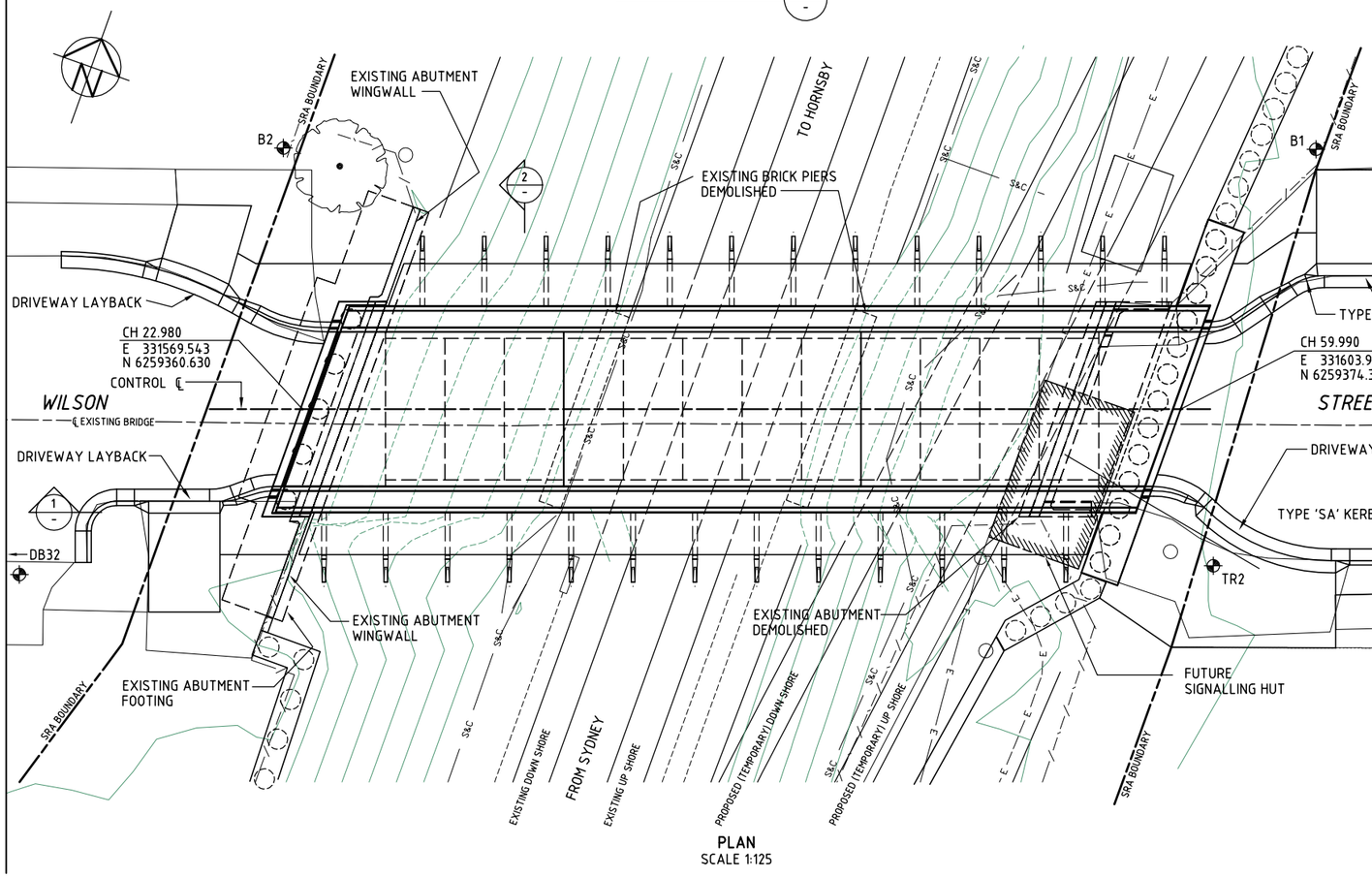
RIC/SRA EDMS ID CV0214764



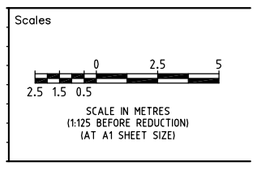
SECTIONAL ELEVATION 1 -

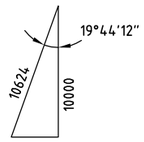


SECTION 2 -
SCALE 1:50

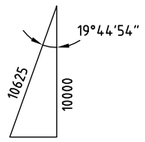


PLAN
SCALE 1:125





SKEW DIAGRAM ABUTMENT 1
NOT TO SCALE



SKEW DIAGRAM ABUTMENT 2
NOT TO SCALE

LEGEND

EXISTING UTILITIES

- E ——.....OVERHEAD/UNDERGROUND ELECTRICITY (TO BE RELOCATED BY RIC)
- S&C ——.....SIGNAL & COMMUNICATION CABLING (TO BE RELOCATED BY RIC)
- ——/——.....EXISTING FENCE LINE
- B1 ⊕ .....DENOTES APPROXIMATE BORE HOLE LOCATIONS

NOTES

GENERAL

SCALE 1:125 UNLESS NOTED OTHERWISE.
DIMENSIONS ARE NOT TO BE SCALED FROM THE DRAWINGS.
DIMENSIONS ARE IN MILLIMETRES,
REDUCED LEVELS ARE TO AUSTRALIAN HEIGHT DATUM (AHD)
CHAINAGES AND REDUCED LEVELS ARE IN METRES.
E DENOTES EXPANSION END
F DENOTES FIXED END

× DENOTES THICKNESS INCLUDES 70mm NOM. THICKNESS AC AND SPRAYED BITUMINOUS WATERPROOF MEMBRANE WITH 10mm COVER AGGREGATE.

DESIGN SPECIFICATION

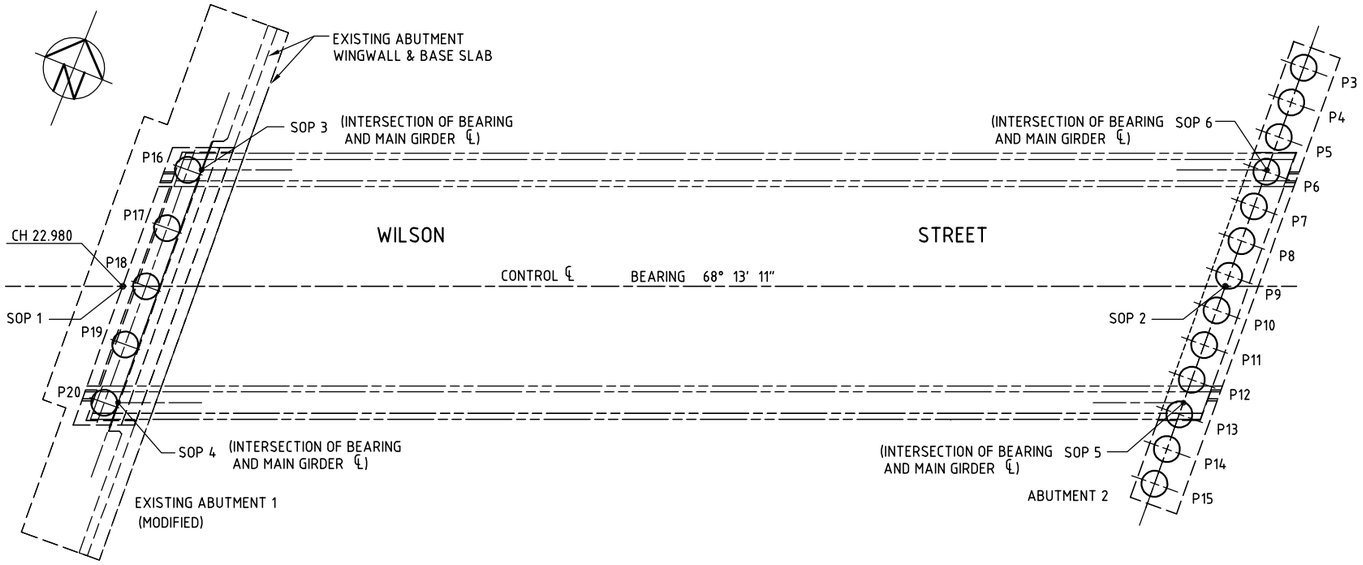
DESIGN LOADING: AUSTRALIAN BRIDGE DESIGN CODE 1996 T44 LOADING.
EARTHQUAKE ACCELERATION COEFFICIENT 0.08.

REFERENCE

PILE SETOUT DETAILS.....PRL-G2-99252
WILSON STREET LONGITUDINAL SECTION.....PRL-G2-99283

WORK AS EXECUTED
THIS DRAWING SHOWS WORK AS EXECUTED. ANY DEPARTURES FROM THE ORIGINAL DESIGN DETAILS ARE BASED SOLELY ON INFORMATION PROVIDED BY JOHN HOLLAND PTY LTD.

RIC/SRA EDMS ID CV0214640

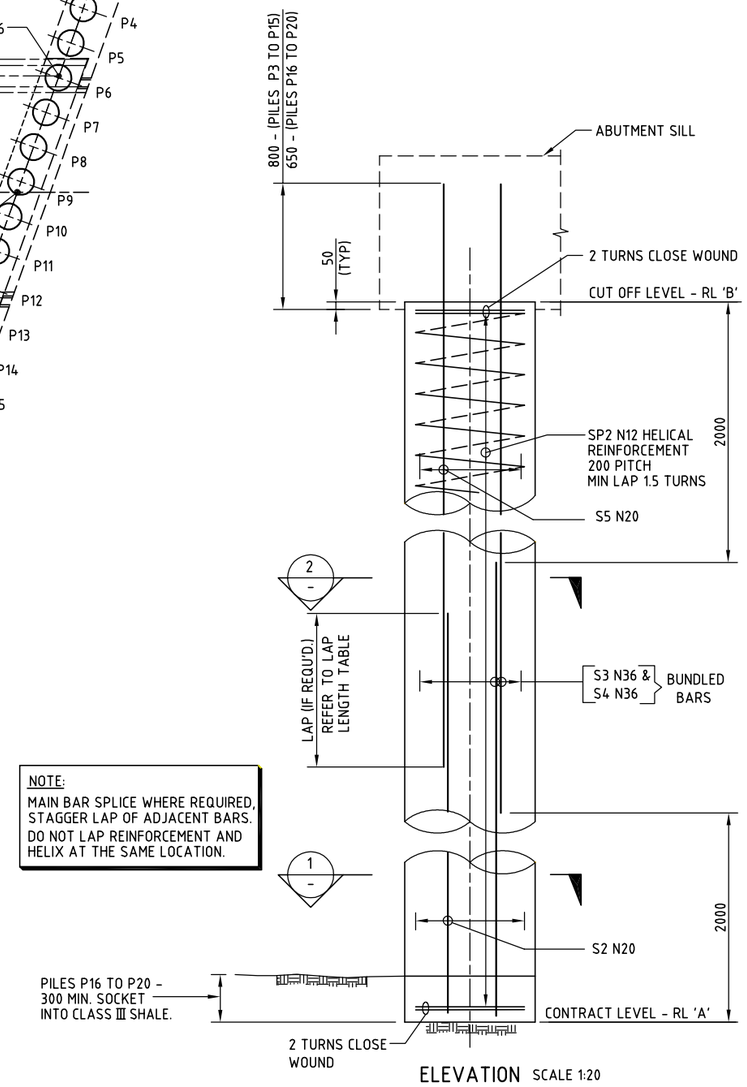


PLAN
SCALE 1:100

PILE SCHEDULE & DECK SET-OUT							
LOCATION	PILE No.	POINT	CO-ORDINATES		CUT OFF LEVEL RL 'B' (m)	CONTRACT LEVEL - RL 'A' (m)	
			EASTING	NORTHING		CONTRACT	ACTUAL
DECK SETOUT		SOP 1	331569.543	6259360.630	-	-	-
		SOP 2	331602.913	6259373.964	-	-	-
		SOP 3	331570.519	6259365.105	-	-	-
		SOP 4	331570.805	6259357.050	-	-	-
		SOP 5	331603.056	6259369.937	-	-	-
		SOP 6	331602.770	6259377.991	-	-	-
EXISTING ABUTMENT 1 (MODIFIED)	P1		NOT USED				
	P2		NOT USED				
	P16		331570.105	6259364.939	105.715	96.300	96.300
	P17		331570.177	6259362.926	105.735	96.300	96.300
	P18		331570.248	6259360.912	105.755	96.300	96.300
	P19		331570.320	6259358.899	105.775	96.300	96.300
	P20		331570.391	6259356.885	105.795	96.300	96.300
ABUTMENT 2	P 3		331602.644	6259381.526	104.375	94.500	94.500
	P 4		331602.686	6259380.327	104.395	94.500	94.500
	P 5		331602.729	6259379.127	104.410	94.500	94.500
	P 6		331602.772	6259377.928	104.425	94.500	94.500
	P 7		331602.814	6259376.729	104.440	94.500	94.500
	P 8		331602.857	6259375.530	104.460	94.500	94.500
	P 9		331602.899	6259374.330	104.475	94.500	94.500
	P10		331602.942	6259373.131	104.490	94.500	94.500
	P11		331602.984	6259371.932	104.510	94.500	94.500
	P12		331603.027	6259370.733	104.525	94.500	94.500
	P13		331603.069	6259369.533	104.540	94.500	94.500
	P14		331603.112	6259368.334	104.555	94.500	94.500
	P15		331603.154	6259367.135	104.575	94.500	94.500

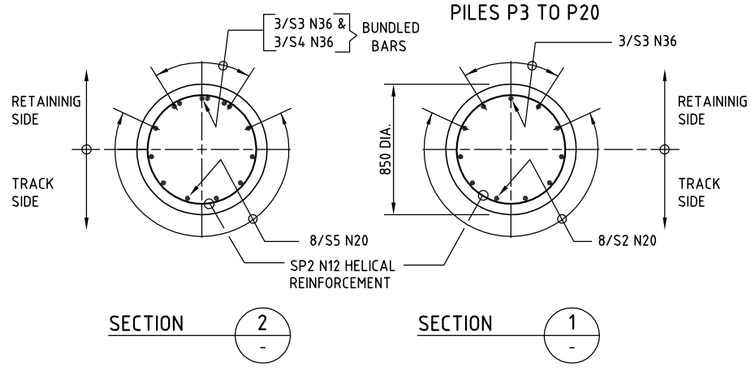
NOTE:
PILES TO BE CONSTRUCTED WITH A MAXIMUM OUT OF VERTICALITY TOLERANCE OF 1%

Scales
0 2 4
2 1 (1:100 BEFORE REDUCTION)
SCALE IN METRES
0 400 800mm
400 200 (1:20 BEFORE REDUCTION)
SCALE IN MILLIMETRES
(AT A1 SHEET SIZE)



NOTE:
MAIN BAR SPLICE WHERE REQUIRED, STAGGER LAP OF ADJACENT BARS. DO NOT LAP REINFORCEMENT AND HELIX AT THE SAME LOCATION.

ELEVATION SCALE 1:20
PILES P3 TO P20



NOTES

GENERAL
REFER DRG. No. PRL-G2-99251

PILES
1. PILES ARE DESIGNED IN ACCORDANCE WITH AS 2159-1995 AND THE AUSTRALIAN BRIDGE DESIGN CODE-1996.
2. THE PILES SHALL BE BORED CAST-IN-PLACE REINFORCED CONCRETE PILES (WITHOUT PERMANENT CASING), DERIVING LOAD CAPACITY FROM END BEARING, LATERAL RESISTANCE AND SHAFT FRICTION.
3. GEOTECHNICAL INFORMATION REFERRED TO IN THE SPECIFICATION MUST BE STUDIED BY THE CONTRACTOR TO APPRECIATE POTENTIAL CONSTRUCTION DIFFICULTIES.
4. FOUNDING MATERIAL DESIGN PARAMETERS ARE IN ACCORDANCE WITH THE INTERPETIVE GEOTECHNICAL REPORT BY GOLDER ASSOCIATES PTY LTD FROM MARCH 2003.
5. CONTRACT LEVELS SHALL BE CONFIRMED ON SITE BY A GEOTECHNICAL ENGINEER.
6. THE CONTRACTOR SHALL SUBMIT ALL THE RELEVANT PILING DETAILS TO THE PRINCIPAL IN ACCORDANCE WITH THE SPECIFICATIONS.

PILE CONSTRUCTION
1. PILES SHALL BE CONSTRUCTED IN ACCORDANCE WITH THE SPECIFICATION.
2. SOCKET ROUGHNESS CATEGORY TO BE R2 OR BETTER CORRESPONDING TO GROOVES OF DEPTH 1 - 4mm AND WIDTH GREATER THAN 2mm AT SPACING OF 50mm TO 200mm.
3. MINIMUM CLEARANCE TO PILE RIG SHALL BE 3.7m HORIZONTALLY FROM CENTRELINE OF ADJACENT TRACK. CONTRACTOR MUST SUBMIT WITH TENDER A LETTER INDICATING WHETHER PILES CAN BE CONSTRUCTED WITHOUT INFRINGING THIS DISTANCE. THE CONTRACTOR SHALL REFER TO SPECIAL CONDITIONS OF CONTRACT AND OBTAIN ALL NECESSARY APPROVALS FROM THE PRINCIPAL'S REPRESENTATIVE.
4. THE CONTRACTOR MUST SUBMIT COMPLETE DETAILS OF PILING RIG AND CLEARANCES TO THE PRINCIPAL TWO (2) WEEKS PRIOR TO COMMENCEMENT OF THE PILING SO THAT THE PRINCIPAL CAN DETERMINE THE TYPE OF TRACK PROTECTION NECESSARY FOR THIS WORK.

TESTING OF PILE
1. TESTING OF PILES SHALL BE IN ACCORDANCE WITH THE SPECIFICATION.

CONCRETE
1. ALL CONCRETE WORK SHALL COMPLY WITH THE SPECIFICATION.
2. CONCRETE 28 DAY COMPRESSIVE STRENGTH f'c = 40 MPa.
3. EXPOSURE CLASSIFICATION = B1.
4. SHOTCRETE LINING SHALL BE APPLIED TO THE EXPOSED FACE OF THE PILES REFER UPSIDE OUTER PILE RETAINING WALL DRAWINGS FOR TYPICAL DETAILS.

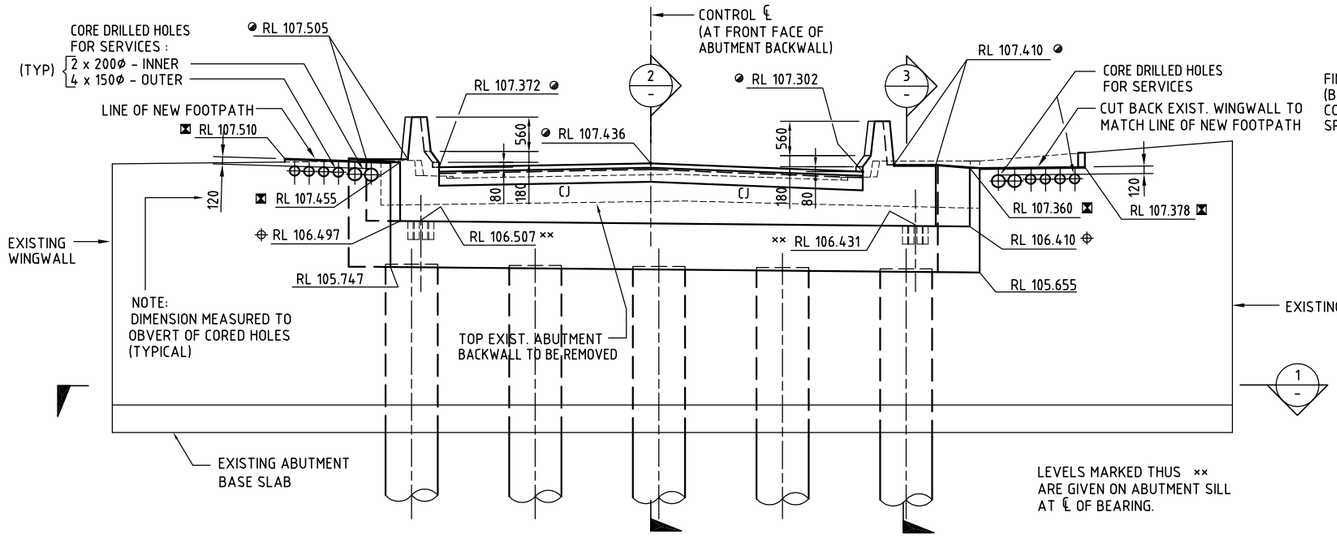
REINFORCEMENT
1. ALL REINFORCEMENT BARS SHALL BE IN ACCORDANCE WITH AS/NZS 4671:2001 WHERE ALL BARS ARE GRADE 500 DEFORMED RIBBED BAR UNO.
2. DESIGNATION OF REINFORCING BARS : 10/S1 N24-200 EF
   - No. OF BARS
   - BAR SHAPE NOTATION
   - DUCTILITY CLASS AND DIA
   - SPACING OF BARS
   - LOCATION COMMENT
3. CLEAR COVER TO PILE REINFORCEMENT SHALL BE 75mm
4. COGS AND HOOKS SHALL BE IN ACCORDANCE WITH AUSTRALIAN BRIDGE DESIGN CODE 1996.
5. SPLICES IN REINFORCEMENT SHALL BE MADE ONLY IN POSITIONS SHOWN OR AS APPROVED IN WRITING BY THE PRINCIPAL'S REPRESENTATIVE.
6. BAR SHAPES SHALL BE IN ACCORDANCE WITH AS/NZS 1100.501:2002.
7. THE FOLLOWING ABBREVIATIONS APPLY TO THE LOCATION OF REINFORCEMENT :
   - EW - EACH WAY
   - EF - EACH FACE
   - NF - NEAR FACE
   - FF - FAR FACE
   - T - TOP FACE
   - B - BOTTOM FACE
   - C - CENTRALLY PLACED
8. BAR LAPS SHALL BE AS FOLLOWS UNO;

BAR SIZE	LAPS (mm)	BAR SIZE	LAPS (mm)
N12	400	N28	1000
N16	500	N32	1300
N20	650	N36	1500
N24	750	N40	1700

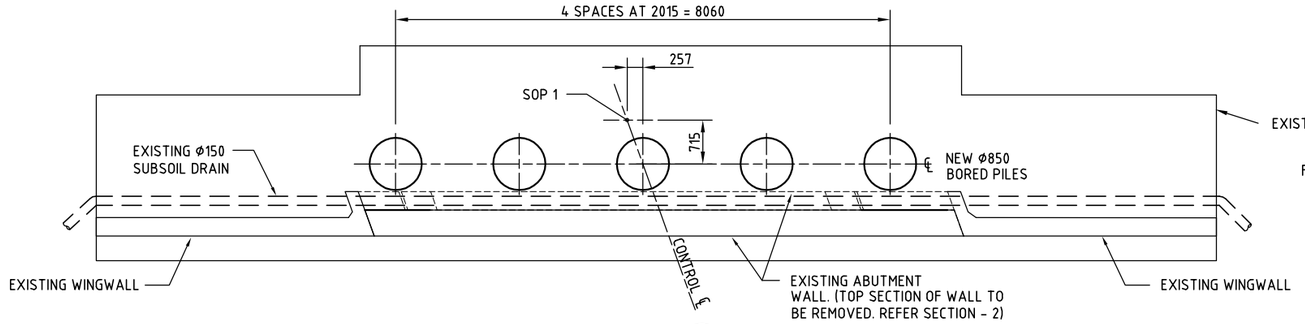
REFERENCE
GENERAL ARRANGEMENT . . . PRL-G2-99251

WORK AS EXECUTED
THIS DRAWING SHOWS WORK AS EXECUTED. ANY DEPARTURES FROM THE ORIGINAL DESIGN DETAILS ARE BASED SOLELY ON INFORMATION PROVIDED BY JOHN HOLLAND PTY LTD.

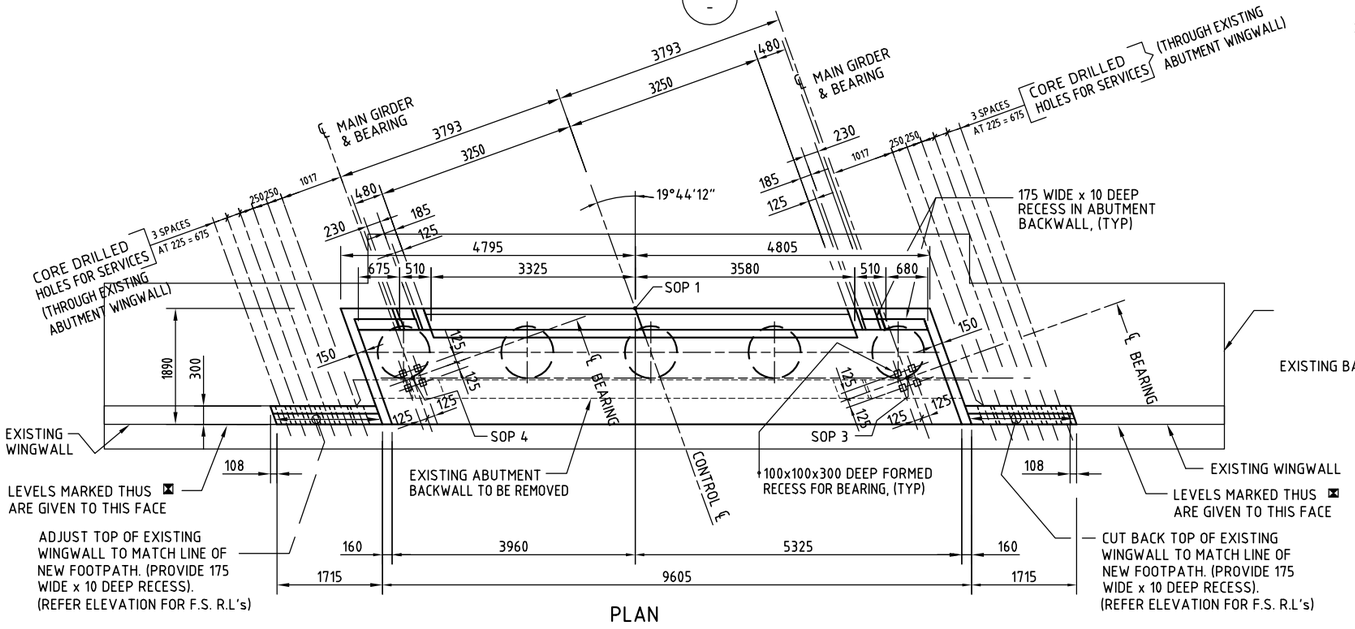
RIC/SRA EDMS ID CV0214641



ELEVATION

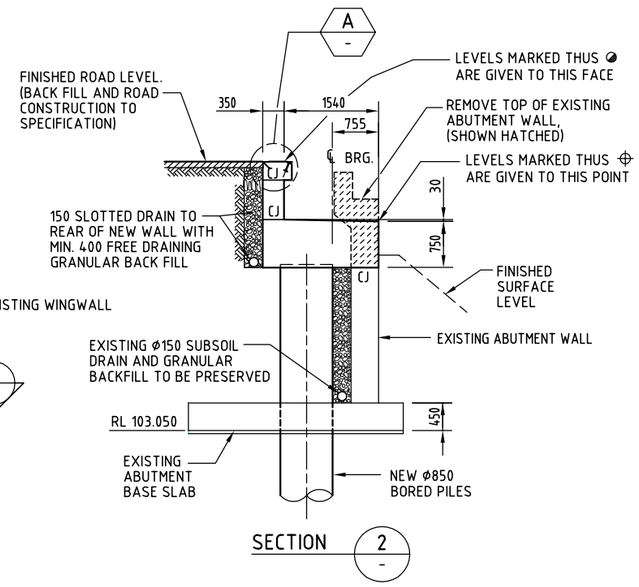


PLAN SECTION 1

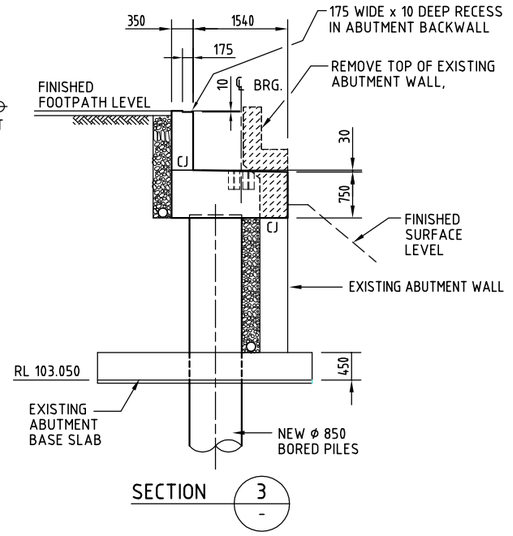


PLAN

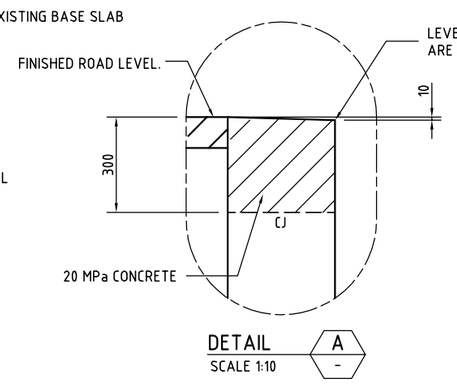
Scales
0 200 400mm
200 (1:10 BEFORE REDUCTION)
0 1 2
1 (1:50 BEFORE REDUCTION)
SCALE IN METRES (U.N.O.)
(AT A1 SHEET SIZE)



SECTION 2



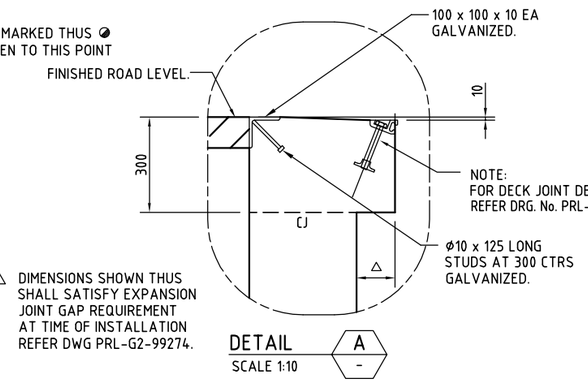
SECTION 3



DETAIL A
SCALE 1:10

(SHOWING TEMPORARY ABUTMENT BACKWALL OUTLINE)

NOTE: PRIOR TO INSTALLATION OF EXPANSION JOINT DEMOLISH PART OF BACKWALL ABOVE C.J. AND REBUILD TO SUIT EXPANSION REQUIREMENTS.



DETAIL A
SCALE 1:10

(SHOWING FINAL ABUTMENT BACKWALL OUTLINE)

NOTE: PLAN AND ELEVATION DRAWN FOR FINAL ABUTMENT BACKWALL OUTLINE)

NOTE:
WHERE NEW CONCRETE IS PLACED IN CONTACT WITH EXISTING CONCRETE SURFACES SHALL BE SCABBLED FREE OF DIRT AND DUST AND TREATED AS CJ

WORK AS EXECUTED
THIS DRAWING SHOWS WORK AS EXECUTED. ANY DEPARTURES FROM THE ORIGINAL DESIGN DETAILS ARE BASED SOLELY ON INFORMATION PROVIDED BY JOHN HOLLAND PTY LTD.

NOTES

GENERAL

SCALE 1:50 UNLESS NOTED OTHERWISE.
DIMENSIONS ARE NOT TO BE SCALED FROM THE DRAWINGS.
DIMENSIONS ARE IN MILLIMETRES,
CHAINAGES AND REDUCED LEVELS ARE IN METRES.
CONCRETE EXPOSURE CLASSIFICATION: B1.
MINIMUM 28 DAY COMPRESSIVE STRENGTH OF ALL CONCRETE SHALL BE 40MPa.
EDGES SHALL BE CHAMFERED 20x20 AND RE-ENTRANT ANGLES FILLETED 20x20 UNLESS SPECIFIED OTHERWISE.

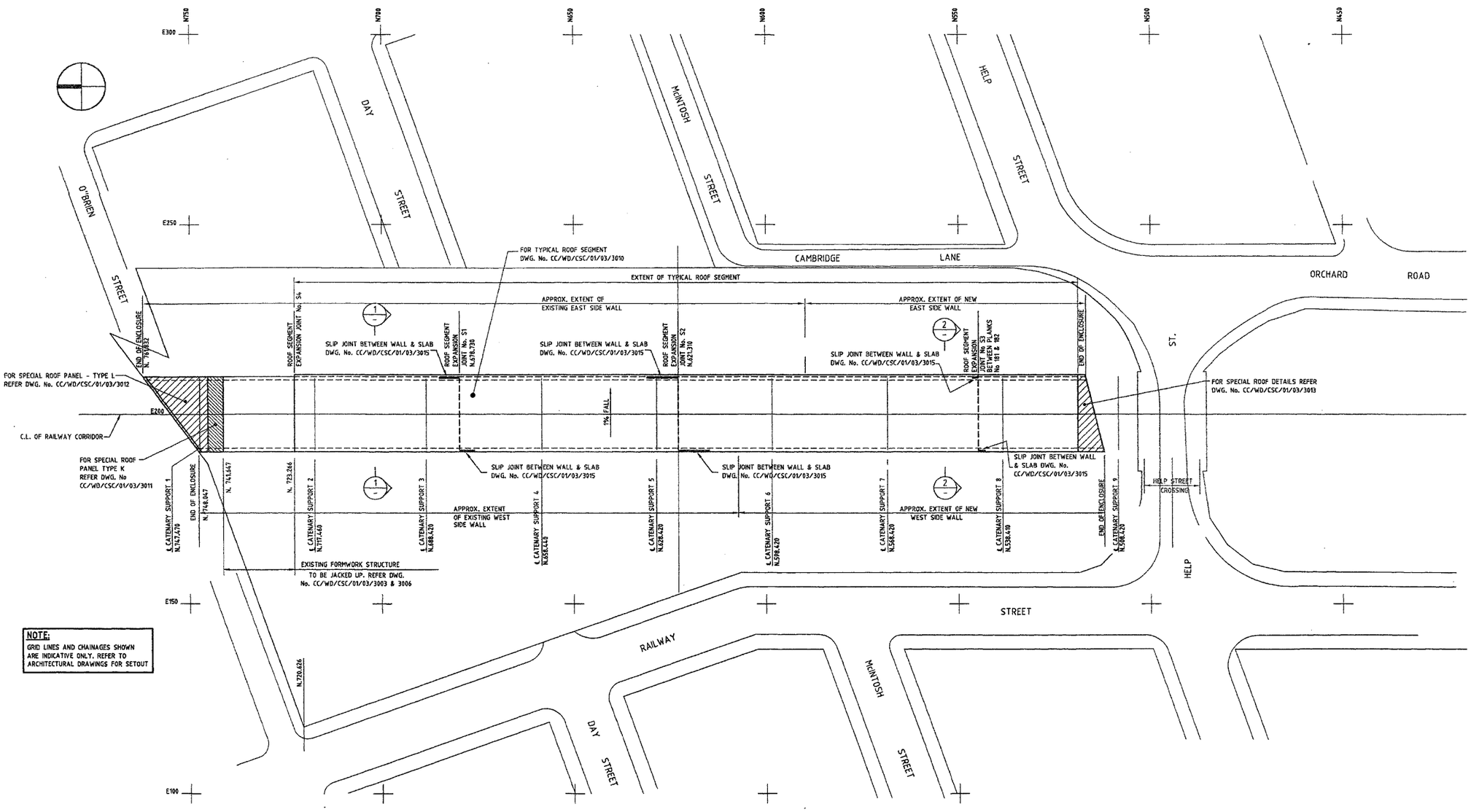
REFERENCE

GENERAL ARRANGEMENT.....PRL-G2-99251
PILE SETOUT AND DETAILS...PRL-G2-99252
ABUTMENT 1-REINFORCEMENT..PRL-G2-99256
DECK JOINT DETAILS.....PRL-G2-99274

RIC/SRA EDMS ID CV0214642

NOTES:

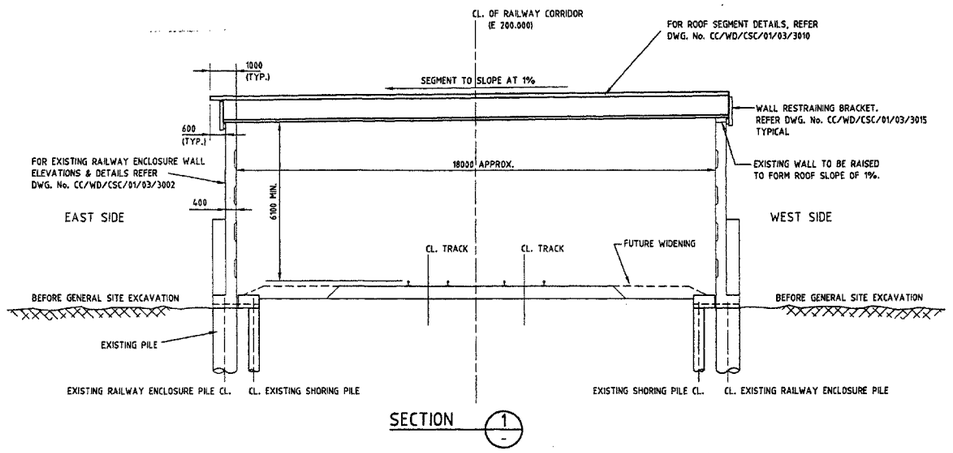
1. SCALES AS SHOWN.
2. DIMENSIONS ARE IN MILLIMETRES, CHAINAGES AND REDUCED LEVELS ARE IN METRES.
3. REDUCED LEVELS ARE TO AUSTRALIAN HEIGHT DATUM.
4. ENCLOSURE ROOF STRUCTURE SHALL BE GENERALLY CONSTRUCTED IN SEGMENTS USING 1000 DEEP x 970 WIDE PRETENSIONED CONCRETE 'I' SECTIONS CRANED INTO POSITION ON TOP OF EXISTING & NEW IN-SITU REINFORCED CONCRETE WALLS. SEGMENTS SHALL BE PLACED SIDE BY SIDE WITH 20mm NOM. GAP AND CONNECTED WITH SITE WELDED REINFORCEMENT IN REBATES LOCATED AT THE TOP OF FLANGES.
5. FOR STRUCTURAL NOTES REFER TO DRAWING NUMBER CC/WD/CSC/01/03/3045



NOTE:
GRID LINES AND CHAINAGES SHOWN ARE INDICATIVE ONLY. REFER TO ARCHITECTURAL DRAWINGS FOR SETOUT

RAILWAY ENCLOSURE PLAN

SCALE 1 ; 500

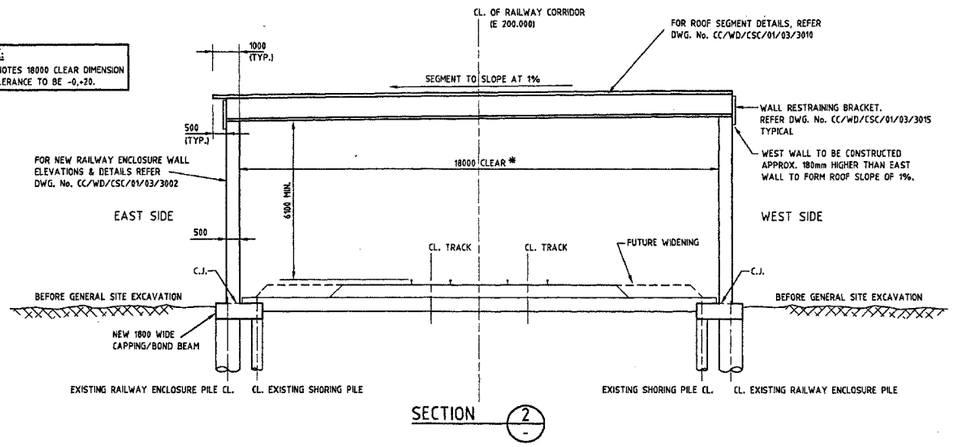


SECTION 1 / -

TYPICAL RAILWAY ENCLOSURE SECTION AT EXISTING WALLS

SCALE 1 : 100

NOTE:
* DENOTES 18000 CLEAR DIMENSION TOLERANCE TO BE -0,+20.



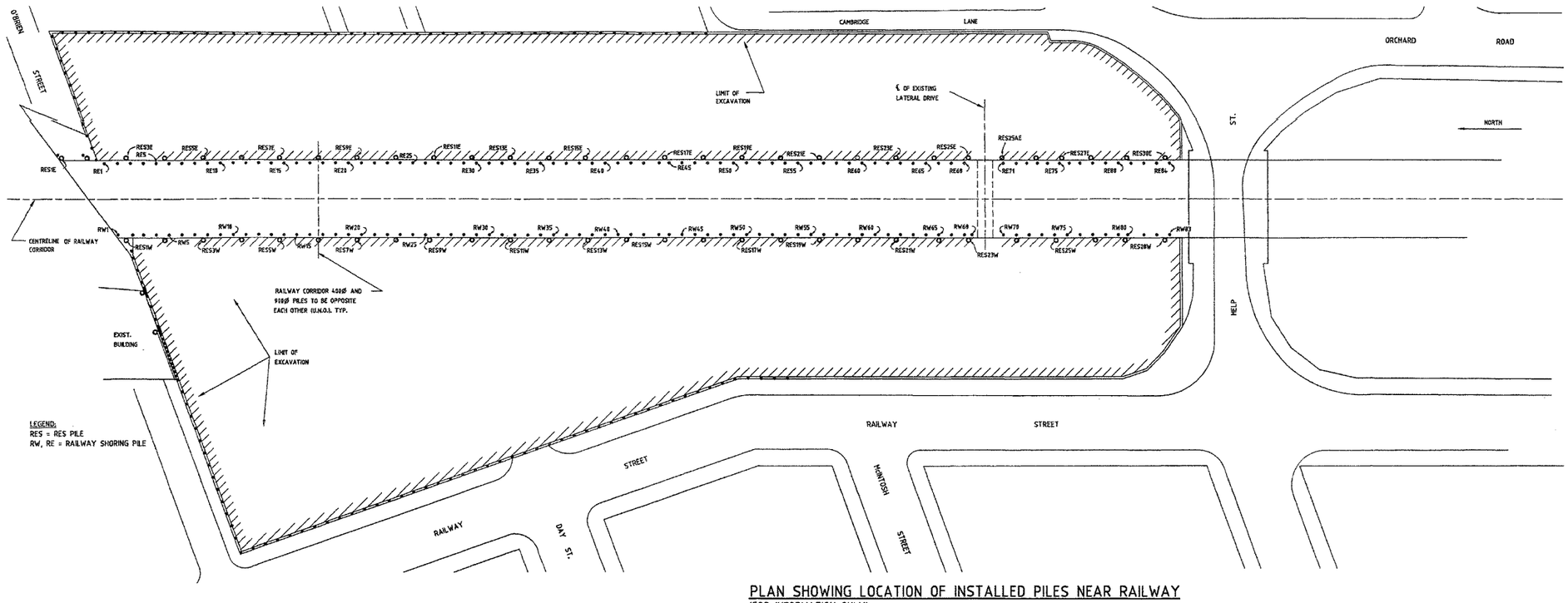
SECTION 2 / -

TYPICAL RAILWAY ENCLOSURE SECTION AT NEW WALLS

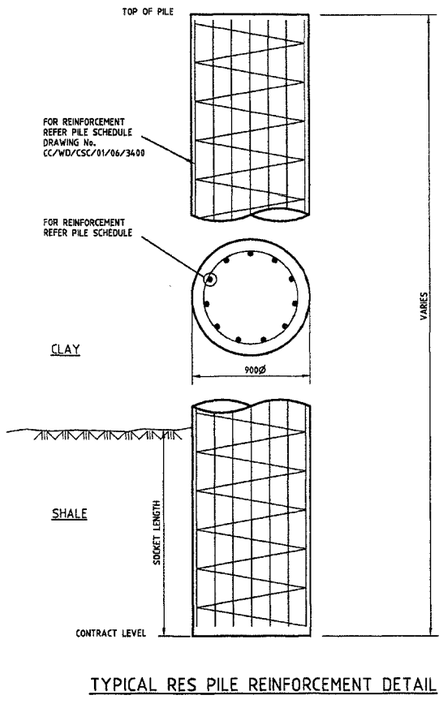
SCALE 1 : 100

EDMS CV0278720 WARNING SCANNED IMAGE

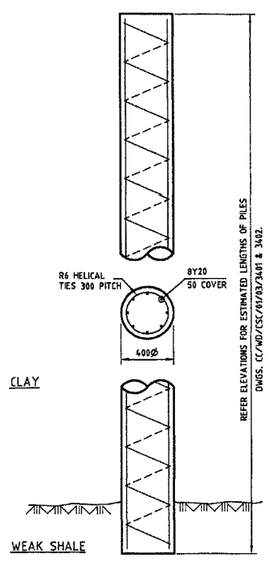
WORK AS EXECUTED



PLAN SHOWING LOCATION OF INSTALLED PILES NEAR RAILWAY
(FOR INFORMATION ONLY)



TYPICAL RES PILE REINFORCEMENT DETAIL

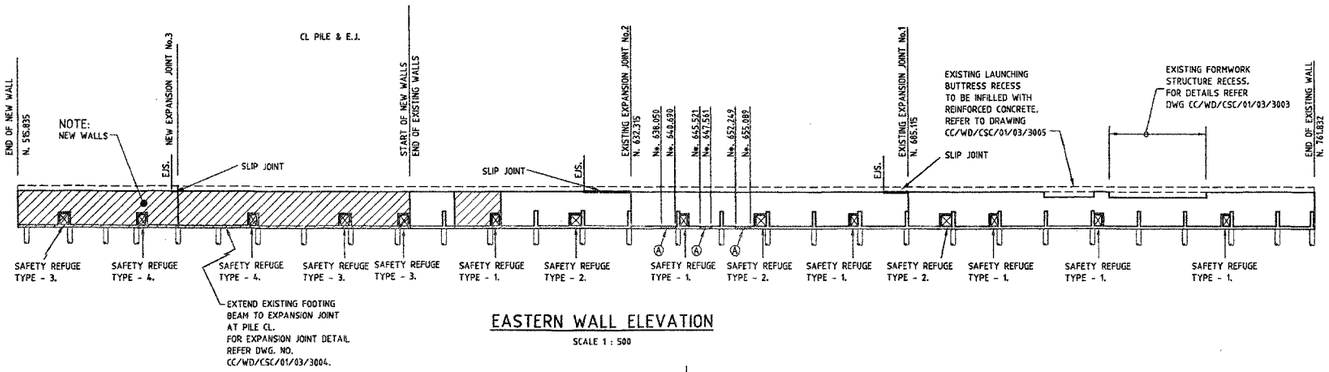


TYPICAL RAILWAY CORRIDOR SHORING PILE REINFORCEMENT DETAIL

1. ALL RAILWAY CORRIDOR SHORING PILES EMBEDDED 600 MIN. INTO WEAK SHALE OR TO R.L. SHOWN ON THE ELEVATIONS WHICH EVER IS THE DEEPER.

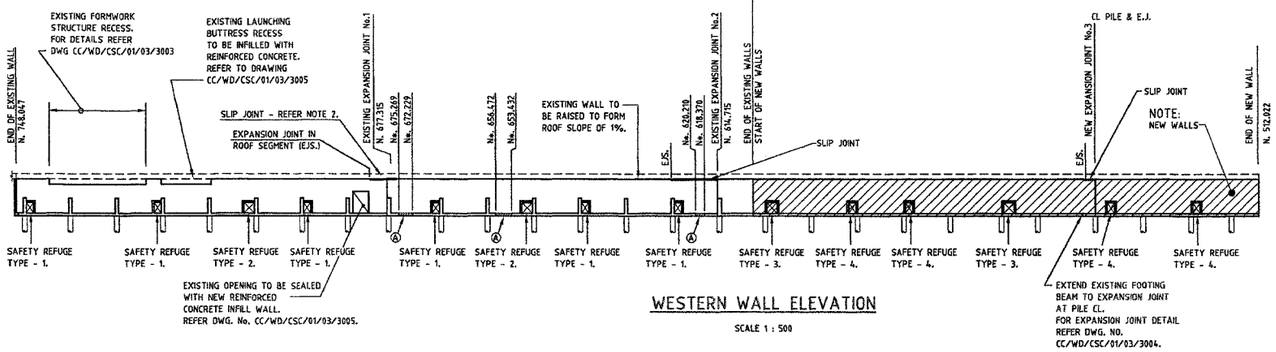
EDMS CV0278721 WARNING SCANNED IMAGE

WORK AS EXECUTED



EASTERN WALL ELEVATION

SCALE 1 : 500



WESTERN WALL ELEVATION

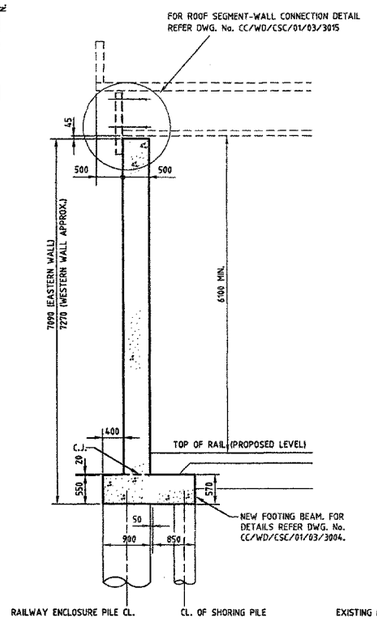
SCALE 1 : 500

NOTES:

1. No CO-ORDINATES OF RECESS IN WALL FLANGE TO ACCOMMODATE PREVIOUSLY PROPOSED TOWER COLUMNS.
2. FOR DETAILS OF SLIP JOINT BETWEEN WALL AND ROOF SEGMENT REFER TO DRAWING No. CC/WD/CSC/01/03/3015.
3. Ⓐ - DENOTES EXISTING FLANGE RECESS TO BE FILLED WITH REINFORCED CONCRETE LINK BEAM .

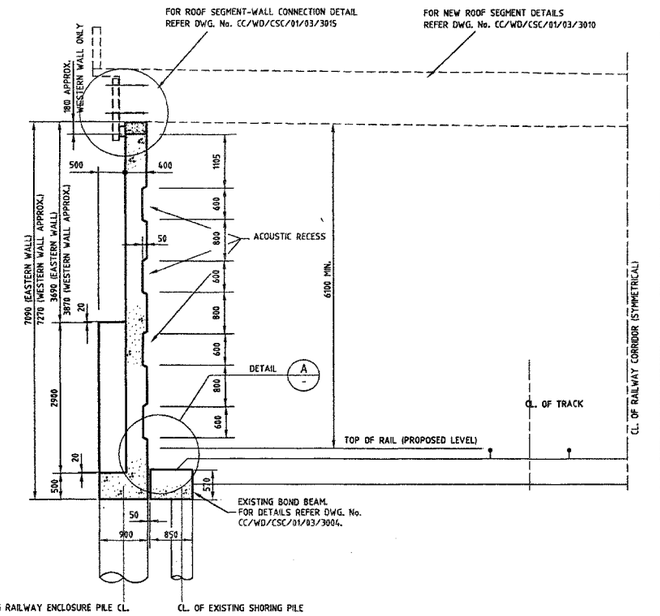
NOTES:

1. MINIMUM 28 DAY COMPRESSIVE STRENGTH OF EXISTING CONCRETE 32 MPa, & NEW CONCRETE SHALL BE 40 MPa. MAXIMUM SIZE AGGREGATE OF 20. MAXIMUM SLUMP 80.
2. HORIZONTAL CONSTRUCTION JOINT MAY BE PROVIDED IF REQUIRED - REFER SPECIFICATION.
3. CO-ORDINATES OF WALLS EXPANSION JOINTS ARE GIVEN FOR THE TOP OF WALL.
4. FOR STRUCTURAL NOTES REFER TO DWG. No. CC/WD/CSC/01/03/3045.



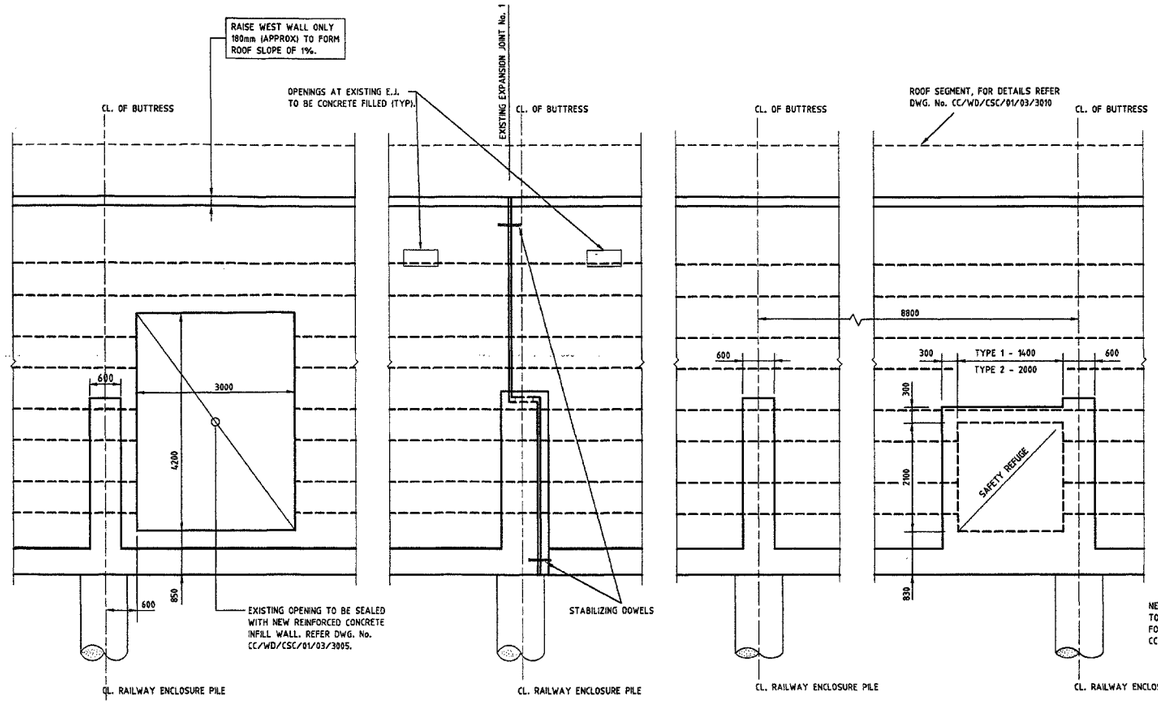
TYPICAL SECTION THROUGH NEW WALL

SCALE 1 : 50



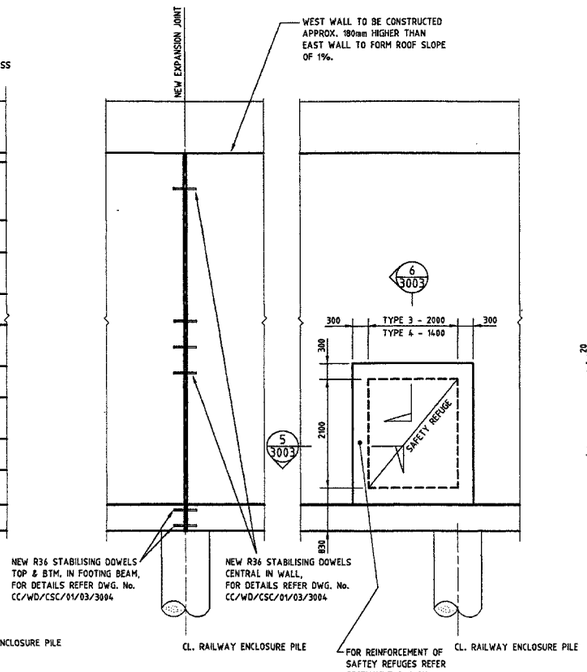
TYPICAL SECTION THROUGH EXISTING WALL

SCALE 1 : 50



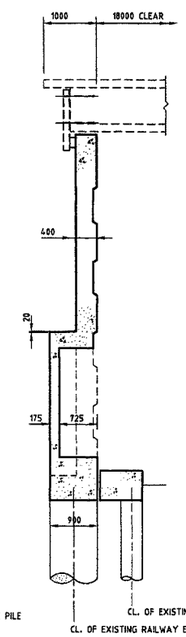
TYPICAL PART ELEVATION EXISTING WALL

SCALE 1:50



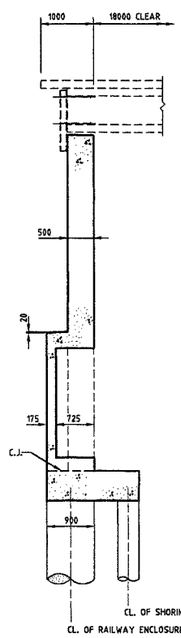
TYPICAL PART ELEVATION NEW WALL

SCALE 1:50



TYPICAL SECTION THROUGH EXISTING SAFETY REFUGES TYPES 1 & 2

SCALE 1 : 50



TYPICAL SECTION THROUGH NEW SAFETY REFUGES TYPES 3 & 4

SCALE 1 : 50

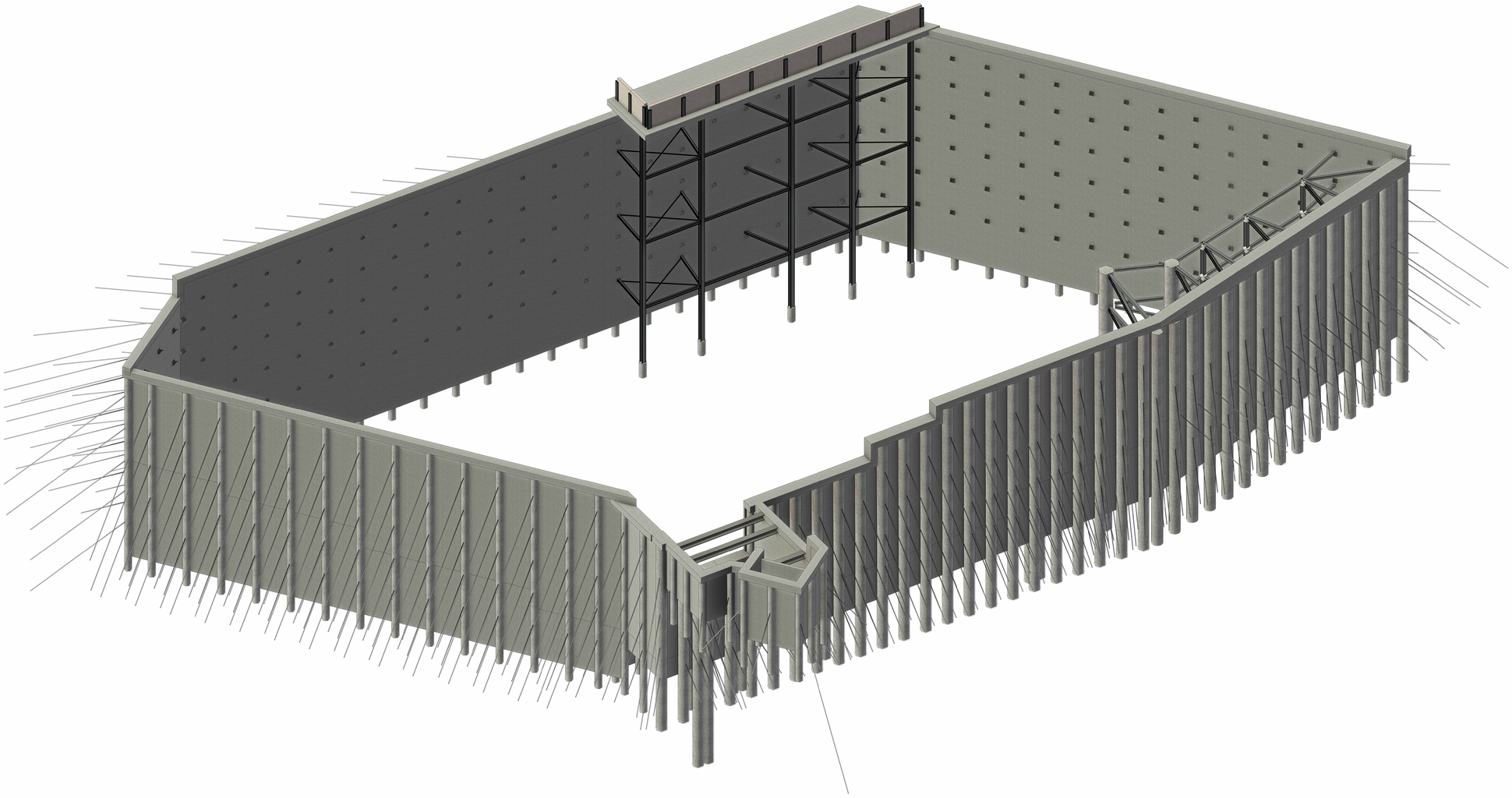
EDMS CV0278722 WARNING SCANNED IMAGE

WORK AS EXECUTED

NON-REGULATED DESIGN RECORD				
PROJECT ADDRESS: 849-859 PACIFIC HIGHWAY & 2-8 WILSON STEET, CHATSWOOD.				
PROJECT TITLE: CHATSWOOD GRAND RESIDENCES				
CONSENT No.:	DRAWING TITLE:	BODY CORP REG TAG:		
COVER SHEET & DRAWING LIST		DA No: DRAWING No: S00001		
REV	DATE	DESCRIPTION	DP FULL NAME	REG NO

MIXED USE DEVELOPMENT

849-859 PACIFIC HIGHWAY & 2-8 WILSON STREET, CHATSWOOD.



SHORING (SOLDIER PILE SYSTEM)

WORK IN PROGRESS
NOT SUITABLE FOR CONSTRUCTION

Rev	Description	Date	By	App
H	ISSUED FOR INFORMATION ONLY	25.05.09	RT	NAA
G	ISSUED FOR INFORMATION ONLY	25.04.03	RT	NAA
F	ISSUED FOR INFORMATION ONLY	25.03.25	RT	NAA
E	ISSUED FOR INFORMATION ONLY	25.03.11	RT	NAA
D	ISSUED FOR INFORMATION ONLY (PRELIMINARY DD 70%)	25.02.18	RM	JT

COPYRIGHT All rights reserved.

These drawings, plans and specifications and the copyright therein are the property of the Cadigal Group Engineers PTY LTD and must not be used, reproduced or copied wholly or in part without the written permission of Cadigal Group Engineers PTY LTD.

Project: **849-859 PACIFIC HIGHWAY & 2-8 WILSON STREET, CHATSWOOD.**

Developer: Billbergia creating communities®

Contractor:

Architect : pbd architects

Design Consultant: CADIGAL GROUP
1002, 22-24 Market Street, Sydney , NSW 2000 Australia
T: +61 2 8630 8559
info@cadigalgroup.com.au
© Copyright

Drawing Title:

COVER PAGE

STRUCTURAL DRAWINGS

Designed:	NAA	Project Director Approved	Date	North
Modelled:	RT	JT	05/09/25	
Scale:		Project Ref.	Drawing No.	Rev
Sheet:	A0	01-100084	S10000	H

0 10 20 30 50 100

NON DECLARED DESIGN

PROJECT ADDRESS: 849-859 PACIFIC HIGHWAY & 2-8 WILSON STREET, CHATSWOOD.

PROJECT TITLE: CHADSWOOD

CONSENT No.: BODY CORP REG TAG:

DRAWING TITLE: SPECIFICATION NOTES - SH1 DWG No: S00010

REV	DATE	DESCRIPTION	DP FULL NAME	REG NO

STRUCTURAL NOTES

STANDARD NOTES:

GENERAL:

G1. THESE DRAWINGS SHALL BE READ IN CONJUNCTION WITH ARCHITECTURAL AND OTHER CONSULTANTS DRAWINGS AND SPECIFICATIONS AND WITH SUCH OTHER WRITTEN INSTRUCTIONS OR SKETCHES AS MAY BE ISSUED DURING THE COURSE OF THE CONTRACT. ANY DISCREPANCY SHALL BE REFERRED TO THE SUPERINTENDENT BEFORE PROCEEDING WITH WORK.

G2. MATERIALS AND WORKMANSHIP SHALL BE IN ACCORDANCE WITH THE SPECIFICATION, CURRENT SAA CODES, BUILDING REGULATIONS AND THE REQUIREMENTS OF ANY OTHER RELEVANT STATUTORY AUTHORITIES.

G3. MATERIALS AND WORKMANSHIP SHALL BE IN ACCORDANCE WITH THE SPECIFICATION, CURRENT SAA CODES, BUILDING REGULATIONS AND THE REQUIREMENTS OF ANY OTHER RELEVANT STATUTORY AUTHORITIES.

G4. THE CONSULTING ENGINEER HAS DESIGNED THE PERMANENT STRUCTURE. THE CONTRACTOR IS RESPONSIBLE FOR THE DESIGN, IMPLEMENTATION AND CERTIFICATION OF ALL TEMPORARY WORKS, PROPPING, NEEDLING, FALSE WORK, BRACING, BACK-PROPPING, AND SO FORTH, NECESSARY TO COMPLETE THE WORK.

G5. DURING CONSTRUCTION THE STRUCTURE SHALL BE MAINTAINED IN A STABLE CONDITION AND NO PART SHALL BE OVERSTRESSED. THE CONTRACTOR SHALL ALLOW TO ENGAGE A CHARTERED (NPER-3) ENGINEER TO DESIGN, INSPECT THE TEMPORARY WORKS AND VERIFY THE TEMPORARY STABILITY OF THE STRUCTURE.

G6. THE APPROVAL OF A SUBSTITUTION SHALL BE SOUGHT FROM THE SUPERINTENDENT BUT IS NOT AN AUTHORIZATION OF A COST VARIATION. THE SUPERINTENDENT MUST APPROVE ANY COST VARIATION INVOLVED BEFORE ANY WORK STARTS.

G7. THESE DRAWINGS SHALL NOT BE USED FOR CONSTRUCTION UNTIL ISSUED AS "FOR CONSTRUCTION" BY THIS OFFICE.

G8. THE CONTRACTOR RETAINS RESPONSIBILITY OF THE WORKS EVEN IF THE ENGINEER HAS INSPECTED THE WORKS DURING CONSTRUCTION.

G9. WHERE ADDITIONAL CONSTRUCTION LOADS, SUCH AS TEMPORARY SHORING, MOBILE CRANES, ETC. ARE TO BE IMPOSED ON THE STRUCTURE, THE CONTRACTOR SHALL SUBMIT FULL DETAILS OF THE PROPOSED TEMPORARY SUPPORTS TO THE ENGINEER FOR REVIEW. SUCH INFORMATION MUST BE PROVIDED A MINIMUM OF 7 WORKING DAYS PRIOR TO THE PROPOSED WORKS COMMENCING.

G10. IF THE CONTRACTOR INTENDS TO VARY THE SCOPE OR METHOD OF WORKS OR MATERIALS USED, THE CONTRACTOR SHALL SUBMIT FULL DETAILS OF THE PROPOSAL TO THE DESIGN SUPERINTENDENT FOR DESIGN CHECK.

G11. ALL PROPRIETARY PRODUCTS SHALL BE INSTALLED STRICTLY IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS.

G12. ALL REQUIRED TESTS TO COMPLETE THE WORKS SHALL BE AT THE CONTRACTOR'S EXPENSE.

HEALTH AND SAFETY:

H1. THE OBLIGATION OF CADIGAL GROUP PTY LTD [OR OTHER RELEVANT CADIGAL ENTITY] (CADIGAL) AS THE DESIGN ENGINEER IS LIMITED TO ENSURING THAT THOSE PARTS OF THE STRUCTURE THAT ARE TO BE USED AS A WORKPLACE ARE, AS FAR AS REASONABLY PRACTICABLE, DESIGNED TO BE SAFE AND WITHOUT RISKS TO THE HEALTH OF THOSE PERSONS USING THE STRUCTURE AS A WORKPLACE FOR THE PURPOSE FOR WHICH IT WAS DESIGNED IN ACCORDANCE WITH SECT. 28 OF THE OCCUPATIONAL HEALTH AND SAFETY ACT 2004 (WC).

H2. CADIGAL IS NOT RESPONSIBLE FOR THE OCCUPATIONAL HEALTH AND SAFETY OF PERSONS AT THE SITE AS THOSE OBLIGATIONS RESIDE WITH THE CONTRACTORS AND/OR SUBCONTRACTORS WHO OCCUPY OR HAVE CONTROL OF THE SITE IN ACCORDANCE WITH APPLICABLE OCCUPATIONAL HEALTH AND SAFETY LEGISLATION, CODES OR PRACTICE, GUIDANCE NOTES, AUSTRALIAN STANDARDS AND OTHER RELEVANT DOCUMENTATION.

H3. ANY ADVICE OR GUIDANCE CONCERNING OCCUPATIONAL HEALTH AND SAFETY ISSUES ARISING AT THE SITE SHOULD BE DIRECTED TO THE HEALTH AND SAFETY EXECUTIVE OR OFFICER NOMINATED FOR THE PROJECT.

FOUNDATIONS:

F1. REFER TO THE GEOTECHNICAL REPORT FOR A DESCRIPTION OF THE ANTICIPATED SITE CONDITIONS. THE BUILDER IS TO STUDY THE REPORT AND MAKE HIS OWN EVALUATION ON THE SITE CONDITIONS. ANY ADDITIONAL COSTS INCURRED SHALL BE BORNE BY THE BUILDER.

F2. ALL FOOTINGS SHALL BE FOUNDED AT THE RECOMMENDED DEPTH AND INTO THE APPROPRIATE MATERIAL AS SPECIFIED IN THE GEOTECHNICAL REPORT. THE ALLOWABLE BEARING CAPACITY SHALL BE AS SPECIFIED IN THE FOOTING SCHEDULE. THE TOPS OF FOOTINGS SHALL BE A MINIMUM OF 300mm BELOW THE LOWEST ADJACENT STRUCTURAL FLOOR LEVEL UNLESS NOTED OTHERWISE.

F3. THE ALLOWABLE BEARING CAPACITY SHALL BE VERIFIED BY GEOTECHNICAL ENGINEER, WHO SHALL BE EMPLOYED BY THE BUILDER, BEFORE ANY CONCRETE IS PLACED, WHEREVER THE BEARING CAPACITY AT THE FOOTING BASE IS INADEQUATE, EXCAVATION SHALL CONTINUE UNTIL SUITABLE MATERIAL IS FOUND OR THE FOOTING IS ENLARGED TO THE ENGINEER DETAILS.

F4. BASES OF ALL FOOTINGS SHALL BE CLEANED OF ALL LOOSE MATERIAL PRIOR TO POURING OF CONCRETE. IN WET CONDITIONS, A 300 x 300 x 300 PIT SHALL BE DUG AT THE CORNER OF THE FOOTING FOR DEWATERING THE EXCAVATION BEFORE CONCRETING. A 50mm MINIMUM BLINDING LAYER OF N15 GRADE CONCRETE SHALL BE USED, UNLESS OTHERWISE APPROVED BY THE ENGINEER.

F5. WHENEVER A FOOTING IS LOCATED CLOSE TO A BATTER , AN EXISTING FOOTING, EXISTING OR NEW SERVICES, A LINE DRAWN AT THE BOTTOM OF THE FOOTING AT 40 DEGREES TO THE HORIZONTAL SHALL FALL BELOW THE BATTER, EXISTING FOOTING OR SERVICES. IF THIS DOES NOT HAPPEN THE FOOTING BASE SHALL BE DEEPENED AS REQUIRED TO ACHIEVE THE FORMER.

F6. THE OVER BREAK BETWEEN THE APPROVED FOUNDING LEVEL AND THE UNDERSIDE OF THE FOOTING SHALL BE FILLED WITH GRADE N15 CONCRETE. ANY OVER BREAK AT THE SIDES OF THE FOOTING SHALL BE FILLED WHEN CONCRETING THE FOOTING.

F7. THE BUILDER SHALL REMOVE ALL SPOIL FROM THE SITE, AND DEWATER THE EXCAVATION AS REQUIRED.

BULK EXCAVATION NOTES :

B1. THE CONTRACTOR IS TO NOTIFY ALL SERVICE AUTHORITIES AND ARRANGE FOR DISCONNECTION OF SERVICES OR SUPPLY AS APPLICABLE INCLUDING ALL CUTTING, DISCONNECTION OR SEALING OFF OF SERVICES AND DRAINS AS REQUIRED. SERVICES OR SUPPLY LINES THAT ARE TO BE RETAINED SHALL REMAIN UNDAMAGED AND GIVEN ALL NECESSARY PROTECTION.

B2. THE BULK EXCAVATION SHALL BE CARRIED OUT TO THE BULK EXCAVATION PROFILE ON THE DRAWINGS OR TO THE UNDERSIDE OF THE STRUCTURE, INCLUSIVE OF SUBBASE MATERIALS. THE CONTRACTOR SHALL VERIFY ANY LEVELS SHOWN ON THE STRUCTURAL DOCUMENTS WITH THE ARCHITECTURAL DOCUMENTS. ANY DISCREPENCY SHALL BE REFERRED TO THE ENGINEER FOR DIRECTION.

B3. UNLESS AUTHORISED BY THE ENGINEER OVER- EXCAVATIONS SHALL NOT BE CLAIMED AS VARIATION. SUCH EXCESS EXCAVATIONS SHALL BE FILLED WITH 3% CEMENT STABILISED SAND UNLESS COMPACTED BACKFILLING IS APPROVED BY THE ENGINEER.

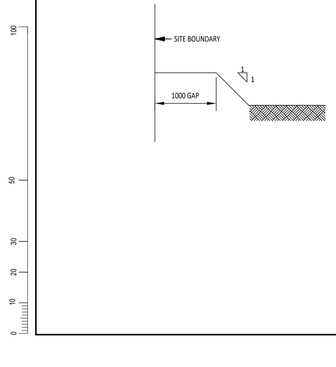
B4. THE CONTRACTOR SHALL PROVIDE ALL BRACING NECESSARY TO RETAIN EARTH BANKS, ROADS, PAVEMENTS, WALLS AND FOOTINGS OF ADJOINING PROPERTIES AND PREVENT CAVING AND DISPLACEMENT OF ADJACENT SOIL OR STRUCTURES. THE CONTRACTOR SHALL PROVIDE AND DESIGN ALL NECESSARY COMPONENTS OF SUCH BRACING.

B5. EXCAVATED MATERIAL SHALL BE REMOVED FROM THE SITE. THIS MATERIAL SHALL NOT BE USED FOR LEVELLING, FILLING EXCESS EXCAVATIONS OR BACKFILLING BEHIND RETAINING WALLS UNLESS WRITTEN APPROVAL HAS BEEN OBTAINED FROM THE ENGINEER. CONTAMINATED MATERIAL SHALL BE RETAINED AND USED AS NON-ENGINEERED FILL UNDER THE BUILDING.

B6. EXCAVATED MATERIAL SHALL BE REMOVED FROM THE SITE. THIS MATERIAL SHALL NOT BE USED FOR LEVELLING, FILLING EXCESS EXCAVATIONS OR BACKFILLING BEHIND RETAINING WALLS UNLESS WRITTEN APPROVAL HAS BEEN OBTAINED FROM THE ENGINEER. CONTAMINATED MATERIAL SHALL BE RETAINED AND USED AS NON-ENGINEERED FILL UNDER THE BUILDING.

B7. ALL GROUND UNSUITABLE FOR THE PURPOSES OF THE WORKS, SHALL BE REMOVED AND FILLED WITH 3% CEMENT STABILISED SAND OR APPROVED COMPACTED BACKFILLING AS NOMINATED BY THE GEOTECHNICAL ENGINEER.

B8. BULK EXCAVATION BATTERS AROUND THE PERIMETER OF THE SITE ARE TO BE AS SHOWN BELOW UNLESS NOTED OTHERWISE ON THE DRAWINGS OR GEOTECHNICAL REPORT.



PILING NOTES:

BP1. THE WORK TO BE CARRIED OUT BY THE PILING CONTRACTOR COMPRISES OF THE DESIGN AND CONSTRUCTION OF THE BORED PILES TO THE REQUIREMENTS OF AS2159. PILE DETAILS ON THESE DOCUMENTS ARE TO BE USED AS A GUIDE.

BP2. THE PILING CONTRACTOR SHALL DESIGN THE PILES FOR THE REQUIRED SAFE WORKING LOADS AS NOTED ON THESE DRAWINGS AND THE RECOMMENDATIONS OF THE GEOTECHNICAL REPORT.

BP3. PILE DESIGN COMPUTATIONS CERTIFICATION AND DOCUMENTATION SHALL BE SUBMITTED TO THE ENGINEER FOR COMMENT PRIOR TO CONSTRUCTION.

BP4. THE PILING CONTRACTOR IS FULLY RESPONSIBLE FOR THE PILE PERFORMANCE.UNDER THE SCHEDULED PILE LOADS, THE PILE SETTLEMENTS SHALL NOT EXCEED:
TOTAL LONG TERM SETTLEMENT = 10mm DIFFERENTIAL SETTLEMENT BETWEEN ADJACENT PILES = 5mm OR DISTANCE/1000, WHICH EVER IS LESS

BP5. FOUNDING LEVELS OF THE BORED PILE BASES ARE TO BE DETERMINED ON SITE AND APPROVED BY THE GEOTECHNICAL ENGINEER.

BP6. THE TRIMMED TOP OF THE PILES SHALL BE WITHIN ± 25mm OF THE UNDERSIDE OF THE FOUNDATION WORKS.

BP7. THE PILE LOCATION NOMINATED ON THE DOCUMENTS ARE TO BE WITHIN 75mm IN ANY DIRECTION OF THE POSITION SHOWN ON THESE DRAWINGS. TOLERANCE ON DEPARTURE FROM TRUE VERTICAL SHALL BE LESS THAN 4%.

BP8. THE SOCKET IS THE BOTTOM LENGTH OF THE SHAFT OF THE PILE THAT IS ENTIRELY IN THE FOUNDING MATERIAL. THE SURFACE OF THE SOCKET SHALL BE ROUGHENED BY SPIRAL GROOVING. IT MUST BE FREE FROM LOOSE MATERIAL AND/OR CLAY SMEAR.

THE PILING CONTRACTOR IS TO MAKE ADJUSTMENTS TO THE LENGTH OF THE SOCKET AS NECESSARY TO SUIT THE ACTUAL FOUNDING MATERIAL ENCOUNTERED DURING BORING OPERATIONS.

BP9. TEMPORARY LINING OF SHAFTS SHALL BE PROVIDED BY THE CONTRACTOR TO PREVENT COLLAPSE DUE TO THE PRESENCE OF UNSTABLE MATERIAL, GROUND WATER OR OTHER UNFORESEEN CIRCUMSTANCES. THE PLACEMENT AND REMOVAL OF TEMPORARY LINERS.
PERMANENT LINING IF USED SHALL BE CONSIDERED IN THE DESIGN AND SHALL BE DETAILED ON THE PILE DOCUMENTS BY THE CONTRACTOR.

BP10. THE SHAFT BASES SHALL BE CLEANED OUT AND RECEIVE APPROVAL FROM THE GEOTECHNICAL ENGINEER BEFORE REINFORCEMENT CAGES ARE SET IN POSITION AND CONCRETE PLACED. THE CONTRACTOR SHALL RECORD THE PILE LENGTH AND LOG THE EXCAVATED MATERIAL. BOTH THE CONTRACTOR AND GEOTECHNICAL ENGINEER SHALL PROVIDE A STATEMENT REGARDING THE COMPLIANCE OF THE MATERIAL TO THE ASSUMED DESIGN CONDITIONS AND SOIL REPORT.
CLEARING OUT THE BASE MEANS THAT ALL LOOSE AND SOFTENED MATERIAL SHALL BE REMOVED.

BP11. SHOULD GROUND WATER BE ENCOUNTERED, THE CONTRACTOR SHALL SUPPLY AND INSTALL A PUMP OF ADEQUATE CAPACITY TO DIVERT WATER TO A PROPERLY SITED SUMP. A STANDBY PUMP OF SIMILAR CAPACITY SHALL ALSO BE AVAILABLE.

BP12. ALL REINFORCEMENT SHALL COMPLY WITH AS4671 AND AS3600.

BP13. REINFORCEMENT SHALL BE FREE OF LOOSE MILL SCALE, RUST, OIL, PAINT, GREASE AND OTHER. IT SHALL BE FREE OF SUCH MATTER UNTIL CONCRETE IS PLACED.

BP14. REINFORCEMENT SHALL BE PROPERLY FABRICATED INTO CAGES THAT SHALL BE INSTALLED IMMEDIATELY AT THE BASE OF ANY SHAFT THAT HAS BEEN APPROVED. REINFORCEMENT SHALL BE SECURELY FIXED SO THAT NO VERTICAL MOVEMENT OCCURS WHILST CONCRETE IS BEING PLACED. APPROVED SPACERS SHALL BE PROVIDED AT 2 METRES MAXIMUM CENTRES ALONG THE LENGTH OF THE PILE TO MAINTAIN ADEQUATE COVER.

BP15. CONCRETE SHALL BE PLACED USING A TREMIE CONTINUOUSLY TO THE TOP OF THE SHAFT. WHERE PERMITTED BY THE ENGINEER, CONCRETE MAY BE PLACED UNDERWATER. THE POUR SHALL PROCEED WITH THE TREMIE DISCHARGE AT ALL TIMES 1.5 METRES BELOW THE SURFACE OF THE CONCRETE.

BP16. PILES SHALL BE POURED TO NO LESS THAN 75mm ABOVE THE REQUIRED CUT OFF LEVEL OR HIGHER IF NECESSARY TO ALLOW FOR CONTAMINATED CONCRETE REMOVAL. THE PILE SHALL BE TRIMMED TO THE REQUIRED LEVEL REMOVING ALL WEAK CONCRETE AND LATENCY CARE SHALL BE TAKEN THAT THE FULL CROSS SECTION OF THE PILE IS LEVEL AND THE REINFORCEMENT IS UNDAMAGED.

BP17. EXCAVATED MATERIAL SHALL BE REMOVED FROM THE SITE.

SLAB ON GROUND NOTES:

SOG1. ALL CONCRETE WORK TO COMPLY WITH AS 3600.CONCRETE CODE, AND BCA SECTIONS 3.1 AND 3.2

SOG2. CONCRETE GRADE N20 MINIMUM (RESIDENTIAL)
CONCRETE GRADE N32 MINIMUM (ALL OTHER STRUCTURES)

SOG3. ALL VEGETATION SHALL BE STRIPPED TO A MINIMUM DEPTH OF 150mm. ANY SOFT SPOTS OR DELETERIOUS MATERIAL SHALL BE REMOVED AND REPLACED WITH APPROVED GRANULAR FILLING COMPACTED TO 100% AS. STANDARD COMPACTION. MINOR FILLING (800 MAXIMUM) SHALL BE PROVIDED WHERE REQUIRED TO BRING SUB GRADE TO REQUIRED LEVEL IN ACCORDANCE WITH LIMITS STATED IN AS 2870 AND BCA. FILLING SHALL BE APPROVED GRANULAR MATERIAL PLACED IN 150mm AND COMPACTED TO 100% AS. STANDARD COMPACTION.

SOG4. A 0.2mm VAPOUR BARRIER SHALL BE USED, LAPPED A MINIMUM OF 200mm AT JOINTS AND TAPED AROUND SERVICES FITTINGS WITH ADHESIVE TAPE NOT INFERIOR TO DOUBLE SIDED BUTYL ADHESIVE TAPE. THE VAPOUR BARRIER SHALL BE PLACED ON A 50mm MINIMUM SAND BED OR SIMILAR APPROVED MATERIAL. PROTECT MEMBRANE FROM DAMAGE.

SOG5. TRENCH MESH IN BEAMS SHALL BE OVERLAPPED BY THE WIDTH OF FABRIC AT "T" AND 'L" INTERSECTIONS AND SPLICED WITH A LAP OF 500mm. RANDOM LAPS IN N12 BARS BY 500mm STAGGERED. THE OUTER BAR AT 'L' INTERSECTION MUST BE BENT AND CONTINUED FOR 500mm AROUND THE CORNER.

SOG6. SLAB FABRIC TO BE LAPPED SUCH THAT THE TWO OUTERMOST TRANSVERSE WIRE OF ONE SHEET OF MESH OVERLAP THE TWO OUTERMOST TRANSVERSE WIRES OF THE SHEET BEING LAPPED BY A MINIMUM OF 25mm AND BE SUPPORTED ON BAR CHAIRS AT 800mm MAXIMUM CENTERS.

SOG7. THIS DRAWING IS TO BE READ IN CONJUNCTION WITH THE SITE INVESTIGATION REPORT TO DETERMINE FOUNDING DEPTHS.

SOG8. SITE CLASSIFICATION TO AS 2870 CLASS H ENGINEERING PRINCIPLES TO SECTIONS 4 OF AS 2870.

SOG9. LOAD BEARING EXTERNAL AND INTERNAL BEAMS AND LOAD SUPPORT THICKENINGS ARE TO BE FOUNDED ON NATURAL SOIL WITH AN ALLOWABLE BEARING PRESSURE OF NOT LESS THAN 100 kPa.

SOG10. SLAB PANELS ARE TO BE FOUNDED ON NATURAL SOIL WITH AN ALLOWABLE BEARING PRESSURE OF NOT LESS THAN 50 kPa.

SOG11. TOP OF SLAB SHALL BE 150mm MINIMUM ABOVE THE FINAL GROUND LEVEL.

SOG12. DRAINAGE AND GRADING AWAY FROM SLAB SHALL BE PROVIDED TO PREVENT WATER COLLECTING ADJACENT TO SLAB. TREATMENT OF AREAS SURROUNDING SLAB SHALL ALSO BE IN ACCORDANCE WITH RECOMMENDATIONS BY THE HOUSING INDUSTRY ASSOCIATION AND THE CHEMICAL SUPPLIER. A COPY OF THE INFORMATION SHEET No. 10-19.

SOG13. BRICKWORK CONTROL JOINTS ARE TO BE PROVIDED ON SIDES EXCEEDING 6000mm IN LENGTH OR THROUGH LARGE OPENINGS FROM EAVES TO SLAB OR THROUGH FULL HEIGHT WINDOWS AND DOORS.

SOG14. WHERE REQUIRED BY COUNCIL PROTECT THE STRUCTURE FROM SUBTERRANEAN TERMITES IN ACCORDANCE WITH AS 3660 AND BCA

SUSPENDED SLAB ON GROUND NOTES:

SSG1. ALL CONCRETE WORK TO COMPLY WITH AS 3600 CONCRETE CODE, AND BCA VOLUME 1, SECTIONS 3.1 AND 3.2

SSG2. CONCRETE GRADE N32 MINIMUM

SSG3. ALL VEGETATION SHALL BE STRIPPED TO A MINIMUM DEPTH OF 150mm.

SSG4. ALLOW FOR COMPACTION OF EXISTING GROUND SURFACE OR FILL SUFFICIENT TO SUPPORT WET WEIGHT OF SUSPENDED SLAB ON GROUND PLUS FORMWORK AND PROPPED STRUCTURE ABOVE, AS ADVISED BY GEOTECHNICAL CONSULTANT

SSG5. ANY SOFT SPOTS OR DELETERIOUS MATERIAL SHALL BE REMOVED AND REPLACED WITH SELECTED FILL COMPACTED IN ACCORDANCE WITH NOTE SSG4.

SSG6. PROVIDE SELECTED FILL TO ACHIEVE REQUIRED SUB-GRADE R.L., COMPACTED IN ACCORDANCE WITH NOTE SSG4.

SSG7A. 0.2mm VAPOUR BARRIER SHALL BE USED, LAPPED A MINIMUM OF 200mm AT JOINTS AND TAPED AROUND SERVICES FITTINGS WITH ADHESIVE TAPE NOT INFERIOR TO DOUBLE SIDED BUTYL ADHESIVE TAPE. THE VAPOUR BARRIER SHALL BE PLACED ON A 50mm MINIMUM SAND BED OR SIMILAR APPROVED MATERIAL TO PROTECT MEMBRANE FROM DAMAGE.

SSG8. TOP OF SLAB SHALL BE 150mm MINIMUM ABOVE THE FINAL GROUND LEVEL.

SSG9. DRAINAGE AND GRADING AWAY FROM SLAB SHALL BE PROVIDED TO PREVENT WATER COLLECTING ADJACENT TO SLAB.

SSG10. WHERE REQUIRED BY COUNCIL PROTECT THE STRUCTURE FROM SUBTERRANEAN TERMITES IN ACCORDANCE WITH AS 3660 AND BCA.

SSG11. BAR CHAIR BASES ARE TO BE PROVIDED BENEATH ALL REINFORCING BAR CHAIRS TO ENSURE NO SETTLEMENT TO REINFORCEMENT OR DAMAGE TO VAPOUR BARRIER.

SSG12. SUB-GRADE AND SLAB TO BE PREPARED SUCH THAT A STABLE AND LEVEL PLATFORM IS CONSTRUCTED ENSURING UNIFORM COVER TO REINFORCEMENT IS ACHIEVED ACROSS THE ENTIRE EXTENT OF THE SLAB.

POST TENSIONED CONCRETE: SHALL COMPLY TO AS3600 AND AS3610

PT1. FULL COMPUTATIONS AND DETAILS OF PROPOSED SYSTEM SHALL BE SUBMITTED TO THE ENGINEERS FOR APPROVAL, INCLUDING DEAD, LIVE ANCHORAGE DETAILS AND LOSSES OCCURRING THROUGHOUT THE ANCHOR AND ATTACHMENTS. ANY POST TENSIONING MATERIALS AND OPERATIONS SHALL COMPLY WITH THE REQUIREMENTS OF THE SPECIFICATION AND WITH AS 3600.

PT2. CONCRETE: f'c = 32 MPa
SLUMP = 60mm ± 15mm
BASIC SHRINKAGE STRAIN = 700 x 10^-6 AT 56 DAYS

PT3. TENDONS SHALL COMPRISE OF A NUMBER OF STRANDS AS NOTED ON THE DRAWINGS. STRANDS SHALL BE 7 WIRE STRESS RELIEVED LOW RELAXATION 12.7mm DIAMETER SUPERGRADE STRAND OF 184kN MINIMUM BREAKING LOAD. WHERE 15.2mm DIAMETER STRANDS ARE SPECIFIED THEY SHALL BE SUPERGRADE STRANDS OF 250kN MINIMUM BREAKING LOAD. STEEL PRESTRESSING MATERIALS FOR CONCRETE SHALL COMPLY WITH AS/NZS 4672. WHERE APPLICABLE, MATERIALS SHALL BE CUT AND BENT IN ACCORDANCE WITH AS 3600, AS 5100 OR AS 2870. ACCEPTABLE MANUFACTURERS AND PROCESSORS OF STEEL REINFORCING AND PRESTRESSING MATERIALS MUST ALSO HOLD A VALID CERTIFICATE OF APPROVAL, ISSUED BY THE AUSTRALIAN CERTIFICATION AUTHORITY FOR REINFORCING STEELS LTD (ACRS). MATERIALS CERTIFIED TO AN ALTERNATIVE SYSTEM SHALL NOT BE USED WITHOUT DEMONSTRATED EQUIVALENCE AND SUBSEQUENT WRITTEN APPROVAL FROM THE SPECIFIER. EVIDENCE OF COMPLIANCE WITH THIS CLAUSE MUST BE OBTAINED WHEN CONTRACT BIDS ARE RECEIVED.

PT4. THE CONTRACTOR MUST SUBMIT FOR APPROVAL OF SHOP DRAWINGS OF THE TENDON LAYOUT SHOWING TENDON PROFILES, ANCHOR DETAILS AND PROPOSED STRESSING SEQUENCE.

PT5. THE CONTRACTOR SHALL SUBMIT FOR APPROVAL CALIBRATION DATA FOR EVERY JACK TO BE USED ON THE JOB.

PT6. THE POST TENSIONED STRUCTURE SHALL BE CAST AS INDICATED ON THE PLAN WITH 25% PARTIAL TENSIONING APPLIED AT NOT MORE THAN 24 HOURS AFTER CASTING. AND WHEN fcp = 7 MPa (FOR 12.7mm DIA. STRANDS), OR WHEN fcp = 9 MPa (FOR 15.2mm DIA. STRANDS).

PT7. FINAL TENSIONING SHALL BE APPLIED NOT LESS THAN 4 DAYS AFTER FINAL CASTING AND WHEN fcp = 20 MPa (BY TEST). THE NEW FLOOR OVER SHALL NOT BE POURED UNTIL FINAL TENSIONING HAS BEEN APPLIED TO THE FLOOR BELOW.

PT8. TENDONS SHALL BE STRESSED TO A MAXIMUM OF 85 % OF THE TENSILE STRENGTH OF THE STRAND. RESTRESSING OF TENDON (AFTER INITIAL STRESSING) SHALL BE CARRIED OUT WHERE NECESSARY TO MAINTAIN "DESIGN" PRESTRESSING FORCES AT ANCHORAGES AT THE LEVELS SPECIFIED.

PT9. THE FLOOR DESIGN ASSUMES A 75mm WIDE x 19mm DEEP DUCT OF ZINC COATED STEEL HAVING A CURVATURE COEFFICIENT (u) = 0.20 AND AN ANGULAR COEFFICIENT (B) = 0.02

PT10. DRAPED DIMENSIONS ARE MEASURED FROM THE CONCRETE SOFFIT TO UNDERSIDE OF DUCT. ANCHORAGE DIMENSIONS ARE FROM CONCRETE SOFFIT TO CENTRE LINE OF DUCT. TENDON DRAPE BETWEEN POINTS NOMINATED ARE PARABOLIC WITH SHALLOW CURVATURE AT CHANGE OF GRADE AS REQUIRED. THE SLAB TENDON PROFILES SHALL BE KEPT HORIZONTAL ACROSS THE WIDTH OF THE BEAMS UNLESS OTHERWISE NOTED. THE TOLERANCE ON THE TENDON PROFILE IS TO BE ± 3mm. TENDON SETOUTS SHALL TAKE PRECEDENCE OVER NON- TENSIONED REINFORCEMENT.

PT11. ENSURE MINIMUM 50mm SPACING BETWEEN BARS AND TENDONS FOR CONCRETE PLACING. PROVIDE SPECIAL CARE TO ENSURE PLACEMENT AND PROPER COMPACTION OF CONCRETE AROUND TENDONS AND ANCHORAGES.

PT12. ALL STRESSING EXTENSIONS RESULTS ARE TO BE SUBMITTED FOR APPROVAL BEFORE ANY STRANDS ARE CUT. TENDONS SHALL BE FULLY GROUTED AFTER APPROVAL OF STRAND EXTENSION RESULTS AND WITHIN 4 WEEKS OF POURING IN A MANNER APPROVED BY THE ENGINEER.

CONCRETE: SHALL COMPLY TO AS3600 AND AS3610

C1. CONCRETE SIZES DO NOT INCLUDE FINISHES.

C2. NO HOLES, CHASES OR EMBEDMENTS OTHER THAN THOSE SHOWN ON DRAWINGS SHALL BE MADE IN CONCRETE ELEMENTS WITHOUT ENGINEER'S APPROVAL.

C3. DEPTHS OF BEAMS ARE GIVEN FIRST AND INCLUDE SLAB THICKNESS, SLABS AND BEAMS SHALL BE CAST TOGETHER UNLESS OTHERWISE NOTED.

C4. CONCRETE SHALL BE KEPT FREE OF SUPPORTING MASONRY WITH TWO LAYERS OF SUITABLE MEMBRANE (MALTHOID OR EQUAL). VERTICAL FACES SHALL BE SEPARATED BY 12mm BITUMINOUS CANETTE. ALL NON - LOAD BEARING WALLS SHALL BE KEPT 20 mm CLEAR OF THE UNDERSIDE OF SLABS AND BEAMS UNLESS NOTED OTHERWISE.

C5. CONSTRUCTION JOINTS SHALL BE PROPERLY FORMED AND LOCATED TO THE SATISFACTION OF THE ENGINEER. BUILDER SHALL ALLOW FOR ALL NECESSARY CONSTRUCTION JOINTS.

C6. WHERE NOTED ON DRAWINGS CAMBER TO SUSPENDED SLABS AND BEAMS SHALL BE 5 FOR EVERY 2500 OF SPAN UNLESS OTHERWISE NOTED. WHERE THE CONCRETE SOFFITS ARE CAMBERED, THE UPPER SURFACE SHALL BE SIMILARLY CAMBERED. DEPTH GAUGES SHALL BE USED TO VERIFY THE SLAB THICKNESS.

C7. REINFORCEMENT IS SHOWN DIAGRAMATICALLY AND IS NOT NECESSARILY IN TRUE PROJECTION. SPLICES TO REINFORCEMENT SHALL BE MADE ONLY AT THE LOCATION SHOWN OR AS OTHERWISE APPROVED BY THE ENGINEER. WELDING OF REINFORCEMENT SHALL BE CARRIED OUT BY A QUALIFIED WELDER IN ACCORDANCE WITH AS/NZS 1554 AND THE REINFORCEMENT SUPPLIER RECOMMENDATIONS. THE INTERPASS TEMPERATURE SHALL BE LESS THAN 200 DEGREES IN ACCORDANCE WITH AS/NZS 1554 PART 3.

C8. THE REINFORCEMENT SYMBOLS ARE:
N NORMAL DUCTILITY CLASS HOT ROLLED 500N DEFORMED BARS WITH fsy = 500 MPa.
R NORMAL DUCTILITY CLASS 250N PLAIN ROUND BARS WITH fsy = 250 MPa.
L LOW DUCTILITY CLASS HARD DRAWN 500L WIRE REINFORCING MESH WITH fsy = 500MPa.
DO NOT USE LOW DUCTILITY CLASS L REINFORCEMENT UNLESS SHOWN ON THE DRAWINGS.
THE NUMBER FOLLOWING THE REINFORCEMENT SYMBOL IS THE NOMINAL BAR DIAMETER IN MILLIMETERS. ALL REINFORCEMENT SHALL COMPLY WITH AS/NZS 4671.
STEEL REINFORCING MATERIALS FOR CONCRETE SHALL COMPLY WITH AS/NZS 4671. WHERE APPLICABLE, MATERIALS SHALL BE CUT AND BENT IN ACCORDANCE WITH AS 3600, AS 5100 OR AS 2870.
ACCEPTABLE MANUFACTURERS AND PROCESSORS OF STEEL REINFORCING AND PRESTRESSING MATERIALS MUST ALSO HOLD A VALID CERTIFICATE OF APPROVAL, ISSUED BY THE AUSTRALIAN CERTIFICATION AUTHORITY FOR REINFORCING STEELS LTD (ACRS). MATERIALS CERTIFIED TO AN ALTERNATIVE SYSTEM SHALL NOT BE USED WITHOUT DEMONSTRATED EQUIVALENCE AND SUBSEQUENT WRITTEN APPROVAL FROM THE SPECIFIER. EVIDENCE OF COMPLIANCE WITH THIS CLAUSE MUST BE OBTAINED WHEN CONTRACT BIDS ARE RECEIVED.

C9. HOOKS AND COGS SHALL COMPLY WITH AS3600 UNLESS NOTED OTHERWISE. ALL PULL OUT BARS SHALL BE TEMPCORE BARS OR APPROVED EQUIVALENT. BENDING AND REBENDING OF BARS SHALL BE CARRIED OUT IN ACCORDANCE WITH AS3600, AS/NZS 4671, THE SPECIFICATIONS AND THE REINFORCEMENT SUPPLIER RECOMMENDATIONS. BARS SHALL NOT BE HEATED ABOVE 400 DEGREES WITHOUT THE ENGINEER'S WRITTEN APPROVAL. THERMAL CRAYONS SHALL BE USED TO ENSURE COMPLIANCE WITH THIS TEMPERATURE LIMIT.

C10. COVER TO REINFORCEMENT (IN mm) AND CONCRETE GRADES SHALL BE AS FOLLOWS UNLESS NOTED OTHERWISE: THE COVER SHALL NOT BE LESS THAN THE BAR DIAMETER AND:

ELEMENT	FORMED INTERNAL	FORMED AND EXPOSED TO WEATHER (1.)	NOT FORMED CAST AGAINST GROUND (2.)
FOOTINGS, PILE CAPS	-	60	75
COLUMNS, PEDESTALS	40	50	75
SLABS, BAND BEAMS	20	40	60
BEAMS	30	40	60
WALLS HORIZONTAL	30	40	60
VERTICAL	40	50	60

1. FOR EXPOSURE CLASSIFICATION B2 ADD 5mm TO THE COVER AND THE CONCRETE GRADE SHALL BE N40 MINIMUM.
2. IF THE ELEMENT IS CAST ON A DAMP PROOF MEMBRANE, DECREASE THE COVER BY 20mm.
3. FOR PRESTRESSING TENDONS THE MINIMUM COVER SHALL BE 25mm.
4. IN CORROSIVE SOILS AND WATER: N50

NOTES:

(i) COVER IS THE CLEAR DISTANCE BETWEEN ANY REINFORCING (INCLUDING FITMENTS) AND THE FACE OF THE STRUCTURAL ELEMENT.

(ii) FOR ALL EXTERNAL SURFACES, PROVIDE FULLY PLASTIC BAR CHAIRS. TIE WIRE SHALL NOT BE NAILED TO THE FORMS, REINFORCING BARS SHALL NOT BE USED TO KEEP FORMS APART AND A THROUGH TIE SYSTEM SHALL BE USED TO TIE FORMS.

(iii) PROVIDE AN APPROVED VAPOUR BARRIER FOR SLABS, BEAMS AND THICKENING

NON DECLARED DESIGN

PROJECT ADDRESS: 849-859 PACIFIC HIGHWAY & 2-8 WILSON STREET, CHATSWOOD.

PROJECT TITLE: CHADSWOOD

CONSENT No.: | BODY CORP REG TAG:

DRAWING TITLE: SPECIFICATION NOTES - SH2 | DA No: S00011

REV	DATE	DESCRIPTION	DP FULL NAME	REG NO

DESIGN CRITERIA NOTES:

DC1. THE SUPERIMPOSED DEAD AND LIVE LOADS SHALL BE CALCULATED IN ACCORDANCE WITH AS1170.1 AND AS1170.0. REFER TO THE GENERAL ARRANGEMENT DRAWINGS FOR SPECIFIC LOAD CRITERIA.

DC2. THE WIND LOADS SHALL BE CALCULATED IN ACCORDANCE WITH AS1170.2 AND AS1170.0. THE FOLLOWING CRITERIA APPLY:

TERRAIN CATEGORY	3
PROBABILITY OF EXCEEDANCE	1/1000
REGION	A2

DC3. THE EARTHQUAKE LOADING SHALL BE CALCULATED IN ACCORDANCE WITH AS1170.4. THE FOLLOWING CRITERIA APPLY:

IMPORTANCE LEVEL	3
PROBABILITY OF EXCEEDANCE	1/1000
PROBABILITY FACTOR	1.3
HAZARD FACTOR	0.08
SITE SUBSOIL CLASS	Ce
EARTHQUAKE DESIGN CATEGORY	III

DC4. THE MINIMUM LATERAL RESISTANCE LOAD OF 2.5% OF (Gi+ c Qi) FOR EACH LEVEL, SHALL BE APPLIED SIMULTANEOUSLY AT EACH LEVEL FOR A GIVEN DIRECTION, IN ACCORDANCE WITH AS1170.0.

DC5. THE CADIGAL GROUP PTY STRUCTURAL DESIGN BASIS RECORD SHALL FORM PART OF THE DESIGN CRITERIA FOR ANY PROJECT ASSOCIATED DESIGN COMPLETED AND IS AVAILABLE UPON REQUEST.

DC6. THE GENERAL DEFLECTION LIMITS ARE AS FOLLOWS:

ELEMENT	SERVICEABILITY PARAMETER	ELEMENT RESPONSE
TOTAL DEFLECTION	MIDSPAN	SPAN / 250
TOTAL DEFLECTION	CANTILEVER	SPAN / 125
MEMBERS SUPPORTING BRITTLE PARTITIONS	MIDSPAN (AFTER ADDITION OF PARTITIONS)	SPAN / 500
MEMBERS SUPPORTING BRITTLE PARTITIONS	CANTILEVER (AFTER ADDITION OF PARTITIONS)	SPAN / 250
WIND LOAD STEEL BUILDING WITH BRITTLE (MASONRY) FINISHES	DEFLECTION AT TOP	HEIGHT / 240
WIND LOAD BUILDING CLAD IN STEEL / ALUMINIUM (NO BRITTLE INTERNAL FINISHES)	DEFLECTION AT TOP	HEIGHT / 150
WIND LOAD MULTISTOREY CONCRETE BUILDING SWAY	DEFLECTION AT TOP	HEIGHT / 600
HORIZONTAL DEFLECTION OF HANDRAIL HORIZONTALS	MIDSPAN	SPAN / 240
HORIZONTAL DEFLECTION OF HANDRAIL STANCHIONS	DEFLECTION AT TOP	HEIGHT / 60
GLAZING SUPPORT FRAME	MIDSPAN	MAX OF SPAN / 240 OR 20mm
GLAZING SYSTEM (BOWING)	MIDSPAN	SPAN / 400

DESIGN FOR SAFER WORKPLACES:

DS1. THIS PROPOSED BUILDING OR STRUCTURE, OR PART OF IT, HAS BEEN DESIGNED TO BE USED AS A WORKPLACE UNDER THE COMMON DEFINITION OF THE RESPECTIVE OHS ACT.

DS2. THE ABOVE HAS BEEN DETERMINED VIA ARCHITECTURAL DRAWINGS. REFER TO THE ARCHITECTURAL DRAWINGS FOR ALL WALKWAY, BALUSTRADE AND ACCESS SYSTEM DETAILS.

DS3. THE PURPOSE, OR FORESEEABLE PURPOSE OF THE PROPOSED BUILDING / STRUCTURE IS A MIXED-USE DEVELOPMENT.

DS4. THE BELOW TABLE IS PROVIDED TO THE CLIENT FOR THEIR RECORDS. THE RISKS IDENTIFIED ARE CURRENT AT THE TIME THIS DOCUMENT WAS CREATED, WITH WHAT INFORMATION WAS AVAILABLE. THE CLIENT MAY WISH TO SEEK FURTHER ADVICE FROM CADIGAL GROUP OR A SPECIALIST OHS PROFESSIONAL ON HOW TO FURTHER REDUCE THEIR RESIDUAL RISKS.

DS5. ALL FALL ARREST AND FALL RESTRAINT SYSTEMS SHALL BE DESIGNED, DOCUMENTED AND CERTIFIED BY THE CONTRACTOR. THE CONTRACTOR SHALL ALLOW PROVISION OF ADDITIONAL SUPPORT STRUCTURE FOR ALL CONNECTION POINTS OF THE FALL ARREST OR RESTRAINT SYSTEM.

HAZARD CATEGORY	HAZARD / ISSUES IDENTIFIED	IDENTIFIED LEVEL OF RISK (MEDIUM / HIGH)	RISK CONTROL MEASURES	RESIDUAL RISKS
SITING	CHANGES IN LEVEL	LOW (TRIP HAZARD)	BCA REQUIREMENT REFER ARCHITECT DRAWINGS FOR STEP TREATMENT	NONE
HIGH CONSEQUENCE	NONE	N / A	N / A	N / A
SYSTEM OF WORK	ROOF / CEILING MOUNTED SERVICE ACCESS FACADE ACCESS GUTTER ROOF MAINTENANCE	MEDIUM (FALL)	BCA REQUIREMENT REFER ARCHITECT DRAWINGS FOR ALL ACCESS SYSTEMS	CLIENT TO MAINTAIN ALL ACCESS SYSTEMS
INCIDENT MITIGATION	NONE	N / A	N / A	N / A

SITE SUPERVISION AND INSPECTION NOTES:

SI1. THE CONTRACTOR SHALL ENSURE A SUITIBLY QUAUIFIED, REGISTERED BUILDING PRACTITIONER CARRIES OUT ALL THE REQUIRED INSPECTIONS, AS SPECIFIED BY THE BUILDING SURVEYOR, TO ENABLE IT TO PROVIDE A CERTIFICATE OF COMPLIANCE - CONSTRUCTION AT THE CONCLUSION OF THE WORKS.

SI2. CADIGAL GROUP PTY LTD HAVE ALLOWED FOR STRUCTURAL INSPECTIONS TO SATISFY OUR PROFESSIONAL OBLIGATIONS IN ASSISTING THE CONTRACTOR TO FOLLOW THE DESIGN INTENT OF OUR DOCUMENTS BUT NOT NECESSARILY TO INSPECT ALL ELEMENTS.

SI3. THE CONTRACTOR SHALL GIVE A MINIMUM OF TWO (2) WORKING DAYS NOTICE PRIOR TO INSPECTIONS BEING REQUIRED. SCHEDULED INSPECTIONS SHOULD BE CANCELLED A MINIMUM OF FOUR (4) WORKING HOURS PRIOR TO THE SCHEDULED TIME IF WORK WILL NOT BE READY FOR INSPECTION.

IF AN AREA OF WORK IS NOT COMPLETED AT THE SCHEDULED TIME OF INSPECTION, OR IT IS DEFECTIVE AND REQUIRES RE-INSPECTION, THE RE-INSPECTION SHALL BE AT THE CONTRACTORS EXPENSE.

INSPECTION TIMES SHALL BE BETWEEN THE ENGINEERS WORKING HOURS OF 9AM TO 4PM MONDAY TO FRIDAY (EXCLUDING PUBLIC HOLIDAYS). GENERALLY NO INSPECTIONS SHALL BE CARRIED OUT ON SATURDAYS, SUNDAYS OR PUBLIC HOLIDAYS EXCEPT IN EMERGENCY SITUATIONS AND BY SPECIAL BOOKING ARRANGEMENTS (INCLUDING PROVISION FOR ADDITIONAL FEES FOR THE ENGINEER).

SI4. THE CONTRACTOR SHALL ALLOW IN THEIR PROGRAMME A MINIMUM PERIOD OF TEN (10) WORKING DAYS FROM RECEIPT OF THE SHOP DRAWINGS BY THE ENGINEER TO APPROVAL OF THE DRAWINGS.

UNLESS OTHERWISE ARRANGED, THE DRAWINGS SHALL BE SUBMITTED PROGRESSIVELY IN COMPLETED PACKAGES (RELATING TO MARKING PLANS) SO AS TO ALLOW THE ENGINEER TO CHECK THE DRAWINGS IN A TIMELY MANNER.

WATERPROOFING:

1. REFER TO ARCHITECTS DOCUMENTATION FOR WATERPROOFING DETAILS AND PRODUCT SPECIFICATIONS GENERALLY.
2. WHILE THE SELECTION AND DETAILING OF WATERPROOFING PRODUCTS IS OUTSIDE THE SCOPE OF THE STRUCTURAL DOCUMENTATION, THE FOLLOWING ITEMS MUST BE NOTED:

(i) REINFORCED CONCRETE AND REINFORCED CONCRETE BLOCKWORK ON THEIR OWN ARE NOT WATERPROOF.

(ii) CADIGAL GROUP RECOMMENDS WATERPROOFING MEASURES FOR ALL EXTERNAL SLABS OVER USABLE SPACES AND EXTERNAL SINGLE SKIN MASONRY.

(iii) FAILURE TO PROVIDE WATERPROOFING, OR INADEQUATE WATERPROOFING MEASURES MAY RESULT IN LEAKS.

(iv) PROLONGED LEAKS CAN LEAD TO PREMATURE DETERIORATION OF STRUCTURAL ELEMENTS.

(v) WATER LEAKING THROUGH CONCRETE STRUCTURES TYPICALLY CONTAINS CALCIUM WHICH CAN DAMAGE PAINTWORK.

REINFORCEMENT:

1. REINFORCEMENT IS TO BE IN ACCORDANCE WITH THE AS/NZS4671 AND TO BE FIXED AS SHOWN ON THE DRAWINGS.

MATERIAL IS INDICATED BY THE FOLLOWING SYMBOLS:

N- HOT ROLLED RIBBED REBAR (500 MPa)
R - HOT ROLLED PLAIN ROUND (250 MPa)
SL - SQUARE MESH
RL - RECTANGULAR MESH
TM - TRENCH MESH

THE BAR SIZE IS INDICATED BY A NUMBER AFTER THE ABOVE SYMBOL, WHICH INDICATES THE BAR DIAMETER IN MILLIMETRES.

2. CONCRETE STRENGTHS TO CONCRETE ELEMENTS AND LAP LENGTHS TO REINFORCEMENT BARS IN SLABS AND BEAMS IS TO BE AS NOTED ON THE RELEVANT DRAWINGS. IF RELEVANT INFORMATION IS NOT SUPPLIED THE CONTRACTOR IS TO CONTACT THE ENGINEER IMMEDIATELY.
3. COVER TO BE MAINTAINED DURING POURING BY USE OF PLASTIC TIPPED METAL CHAIRS, PLASTIC CHAIRS AND/OR MORTAR BLOCKS. COVER SHALL BE AS NOTED ON DRAWINGS. CHAIRING SHALL BE SPACED SUCH THAT THE FOLLOWING TOLERANCES ARE ACHIEVED DURING CONCRETE POUR

ABOVE GROUND - +10 mm/-5 mm
BELOW GROUND - +40 mm/-20 mm

4. SPLICES IN REINFORCEMENT SHALL BE MADE ONLY IN THE POSITION SHOWN. WRITTEN APPROVAL BY THE STRUCTURAL ENGINEER SHALL BE OBTAINED FOR ANY OTHER SPLICES.
5. WELDING OF REINFORCEMENT WILL BE PERMITTED ONLY AFTER APPROVAL BY THE STRUCTURAL ENGINEER.
6. REINFORCEMENT SHALL BE BENT COLD IN ACCORDANCE WITH AS3600 EXCEPT WHERE APPROVED BY THE STRUCTURAL ENGINEER. NO RE-BENDING SHALL BE PERMITTED UNLESS APPROVED BY THE STRUCTURAL ENGINEER.
7. ALL REINFORCEMENT SHALL BE SECURELY SUPPORTED IN ITS CORRECT POSITION DURING CONCRETING BY APPROVED PLASTIC BAR CHAIRS U.N.O. MAXIMUM CENTRES OF SUPPORTING CHAIRS SHALL BE 600mm FOR FABRIC, 600mm FOR BARS UP TO 12mm DIAMETER, 900mm FOR BARS 16mm AND GREATER.
8. ALL OPENINGS AND RE-ENTRANT CORNERS IN THE CONCRETE SHALL HAVE 2-N12 BARS x 1200 LONG TOP AND BOTTOM, CENTRED DIAGONALLY ACROSS THE CORNER.

ANCHORAGE / SPLICE LENGTH TABLE

SPLICE LENGTHS OF TENSION BARS IN SLABS AND BEAMS (mm)

BAR SIZE	LESS THAN 300mm OF CONCRETE BELOW BAR OR VERTICAL BAR				MORE THAN 300mm OF CONCRETE BELOW BAR			
	CONCRETE GRADE							
	N32		>=N40		N32		>=N40	
	SLAB	BEAM SLAB		BEAM	SLAB	BEAM	SLAB	BEAM
N10	400	400	400	400	500	450	500	400
N12	500	500	500	500	650	550	600	500
N16	750	650	700	650	1000	850	900	750
N20	1000	900	900	800	1300	1150	1150	1050
N24	1250	1150	1100	1050	1600	1500	1450	1350
N28	1500	1450	1350	1300	2000	1900	1750	1700
N32	1800	1750	1600	1600	2300	2300	2050	2050
N36	2100	2100	1900	1900	2700	2700	2400	2400
APPROXIMATE SPLICE RULE	55 db		50 db		75 db		65 db	
APPROXIMATE ANCHORAGE RULE	45 db		40 db		60 db		55 db	

1. THESE LENGTHS APPLY FOR ALL BARS IN BEAMS AND SLABS.
2. THE MINIMUM COVER TO THE BAR UNDER CONSIDERATION IS TO BE THE GREATER OF 20MM FOR SLABS, 35MM FOR BEAMS, OR THE BAR DIAMETER.
3. THE CLEAR SPACING BETWEEN SPLICED BARS MUST BE LESS THAN ONE BAR DIAMETER.
4. FOR N25 CONCRETE, MULTIPLY THE LENGTHS OF N32 CONCRETE BY 1.15.
5. UNLESS SHOWN ON THE DRAWINGS THE SPLICE LOCATIONS MUST BE APPROVED BY THE ENGINEER.
6. FOR ANCHORAGE LENGTHS OF BARS, MULTIPLY THE SPLICE LENGTHS BY 0.8
7. DB DENOTES BAR DIAMETER .
8. THE MINIMUM CLEAR SPACING OF BARS TO BE 120MM.

PILE SPLICES AND ANCHORAGES

THE PILE SPLICE LENGTH MAY BE REDUCED FROM 40 TO 32 BAR DIAMETER AND THE ANCHORAGE LENGTH MAY BE REDUCED FROM 22 TO 16.5 BAR DIAMETER , IF THE FOLLOWING TIES AND SPACINGS OCCUR WITHIN THE ANCHORAGE AND SPLICE LENGTHS.

LONGITUDINAL BAR SIZE (mm)	MINIMUM LIGATURE SIZE (mm)	MINIMUM LIGATURE SIZE (mm)	LAP LENGTH (mm)	ANCHORAGE LENGTH
20	10	250	650	350
24	10	170	800	400
24	12	240	800	400
28	10	120	900	500
28	12	170	900	500
32	12	130	1050	550
32	16	250	1050	550
36	12	100	1150	600
36	16	190	1150	600

FORMWORK:

1. FORMWORK SHALL BE DESIGNED BY A REGISTERED ENGINEER ENGAGED BY THE FORMWORK CONTRACTOR AND ERECTED IN ACCORDANCE WITH AS3610-1995 AND AS3610.1-2010.
2. MINIMUM DESIGN LOADS FOR THE FORMWORK SHALL INCLUDE AT LEAST THE FOLLOWING:

(a) THE WEIGHT OF CONCRETE DURING PLACING, PLUS AN ALLOWANCE FOR REINFORCING,
(b) LIVE LOADING OF 1.0 kPa GENERALLY, OR 3.0 kPa CONCENTRATED LOAD OVER AN AREA OF 1.6 m², WHICHEVER IS MORE SEVERE,
(c) A LOADING OF 4.0 kPa FROM STACKED MATERIALS.

3. MINIMUM STRIPPING TIMES ARE TO COMPLY WITH AS3610-1995, TABLE 5.4.1.
4. BACKPROPPING SHALL BE DESIGNED BY A REGISTERED ENGINEER ENGAGED BY THE FORMWORK CONTRACTOR TAKING INTO ACCOUNT THE VARIATION IN THE STRENGTH OF THE CONCRETE WITH AGE, THE DESIGN LOADINGS FOR THE SLABS, AND THE CONSTRUCTION CYCLE.
5. DESIGN LOADS FOR THE PERMANENT STRUCTURE ARE AS NOTED ON THE DRAWINGS AND CARE SHALL BE TAKEN TO ENSURE THAT THE DESIGN LOADS ARE NOT EXCEEDED DURING CASTING OF CONCRETE OR BY STACKED CONSTRUCTION MATERIALS.
6. PRECAMBER SHALL BE PROVIDED IN SLABS WHERE NOTED ON THE DRAWINGS.
7. THE CONTRACTOR SHALL SUBMIT THE PROPOSED POURING SEQUENCE TO THE ENGINEER FOR APPROVAL.

CHEMICAL & MECHANICAL ANCHORS:

1. "CHEMSET" DENOTES RAMSET GRADE 5.8 HOT DIPPED GALV. STUDS FIXED WITH RAMSET CHEMSET REO 502 WITH THE FOLLOWING MINIMUM EMBEDMENTS:

M12 CHEMSETS - 110mm EMBEDMENT U.N.O.
(MIN EDGE DISTANCE - 175)

M16 CHEMSETS - 125mm EMBEDMENT U.N.O.
(MIN EDGE DISTANCE - 190)

M20 CHEMSETS - 150mm EMBEDMENT U.N.O.
(MIN EDGE DISTANCE - 255)

M24 CHEMSETS - 160mm EMBEDMENT U.N.O.
(MIN EDGE DISTANCE - 315)

2. "CHEMSET MAXIMA CAPSULES" DENOTES RAMSET CHEMSET MAXIMA SPIN CAPSULES WITH STUDS AND EMBEDMENTS AS DEFINED IN NOTE 1.
3. "TRUBOLTS" DENOTES RAMSET TRUBOLT HOT DIPPED GALV. STUD ANCHORS WITH THE FOLLOWING MINIMUM EMBEDMENTS WITH MIN. EDGE DISTANCE OF 300mm:

M12 TRUBOLTS - 80mm EMBEDMENT U.N.O.
M16 TRUBOLTS - 110mm EMBEDMENT U.N.O.
M20 TRUBOLTS - 135mm EMBEDMENT U.N.O.

4. "CHEMSET 101 ANCHORS" DENOTES RAMSET GRADE 5.8 HOT DIPPED GALV. STUDS, FIXED WITH AN EFFECTIVE DEPTH OF 70mm INTO EXTRUDED BRICK OR HOLLOW CONCRETE BLOCK, USING THE MANUFACTURER'S SLEEVES/SIEVES AND RAMSET CHEMSET INJECTION 101.
5. ALL ANCHORS ARE TO BE FIXED IN ACCORDANCE WITH THE MANUFACTURER'S WRITTEN RECOMMENDATIONS.
6. REINFORCEMENT BARS FIXED INTO CONCRETE USING RAMSET CHEMSET REO 502 EPOXY ARE TO HAVE THE FOLLOWING MINIMUM EMBEDMENTS:

N12 (500 MPa) BARS - 110mm EMBEDMENT U.N.O.
(MIN EDGE DISTANCE - 175)

N16 (500 MPa) BARS - 125mm EMBEDMENT U.N.O.
(MIN EDGE DISTANCE - 190)

N20 (500 MPa) BARS - 175mm EMBEDMENT U.N.O.
(MIN EDGE DISTANCE - 255)

N24 (500 MPa) BARS - 400mm EMBEDMENT U.N.O.
(MIN EDGE DISTANCE - 315)

N GRADE BAR DIAMETERS GREATER THAN THE ABOVE ARE TO BE REFERRED TO THE STRUCTURAL ENGINEER FOR ASSESSMENT. MINIMUM EDGE DISTANCE FOR ALL EPOXIED BARS TO BE 150mm UNO.

STEELWORK:

1.(a) FABRICATE & ERECT THE STRUCTURAL STEELWORK IN ACCORDANCE WITH CURRENT REVISIONS OF AS4100, AS1554 PARTS 1 & 2, AND AS1101 PART 3.

(b) AT LEAST 7 BUSINESS DAYS BEFORE FABRICATION COMMENCES, THE CONTRACTOR SHALL SUBMIT TWO COPIES OF SHOP DRAWINGS TO THE ENGINEER FOR APPROVAL OF THE GENERAL ARRANGEMENT OF STRUCTURAL ELEMENTS.

(c) ALL DIMENSIONS RELEVANT TO SETTING OUT AND SITE WORK ARE TO BE CHECKED ON SITE BY THE CONTRACTOR PRIOR TO WORK COMMENCING.

(d) DO NOT SCALE DRAWINGS.

(e) UNLESS NOTED OTHERWISE :-
(i) ALL BOLTS SHALL BE M20 8.8/S.
(ii) INSTALL ALL BOLTS IN ACCORDANCE WITH AS4100.
(iii) CONNECTION & STIFFENER PLATES SHALL BE 10mm THICK.
(iv) ALL WELDS TO BE 6 mm CONTINUOUS FILLET WELDS. MADE WITH E48XX MILD STEEL ELECTRODES.
(v) UNLESS NOTED OTHERWISE ALL STRUCTURAL STEEL SHALL BE :-
GRADE 250 HOT ROLLED PLATES & FLATS.
GRADE 300 PLUS UB, UC, PFC, TFB, EA & UA.
GRADE 300 WB, WC.
GRADE 350 RHS, SHS & CHS.

(f) TEMPORARY BRACING TO BE PROVIDED IN ACCORDANCE WITH AS4100.
(g) CHIP ALL WELDS FREE OF SLAG.
(h) UNLESS NOTED OTHERWISE, ALL STEELWORK SHALL BE PREPARED, PRIMED AND PAINTED IN ACCORDANCE WITH THE SPECIFICATION. ALL EXTERNAL STEELWORK TO BE HOT DIP GALVANISED.

(i) UNLESS NOTED OTHERWISE, ALL HOLDING DOWN BOLTS TO BE M20 H.D. BOLTS HOT DIP GALVANISED.

2. THE CONTRACTOR SHALL IDENTIFY SAFE WORKING PRACTICES FOR THE ERECTION OF STRUCTURAL STEEL AND INCORPORATE THEM INTO THE WORKPLACE HEALTH AND SAFETY PLAN FOR THE PROJECT. THE WORKING PRACTICES IDENTIFIED SHALL COVER AT LEAST THE FOLLOWING ITEMS:

(a) HANDLING, LIFTING, STORAGE, STACKING AND TRANSPORTATION OF STEEL COMPONENTS.
(b) SAFE ACCESS FOR ERECTION.
(c) THE ERECTION SEQUENCE.

3. ERECTION TOLERANCES FOR STRUCTURAL STEELWORK AS PER AS4100.
4. ALL BOLTS, NUTS, WASHERS AND OTHER FASTENERS SHALL COMPLY WITH THE CURRENT EDITIONS OF THE FOLLOWING STANDARDS, AS APPROPRIATE: AS/NZS1110, AS/NZS1111, AS/NZS1112, AS/NZS1252, AS1275, AS/NZS1559 AND AS4291.
5. FOR GRADE 8.8 BOLTS, COPIES OF MANUFACTURER'S TEST CERTIFICATES & STATEMENTS OF COMPLIANCE BASED ON LOCAL NATA ACCREDITED TESTING TO THE CURRENT AUSTRALIAN STANDARDS SPECIFIC TO THE BATCH OF BOLTS BEING USED SHALL BE PROVIDED TO THE ENGINEER.
6. WHERE FABRICATION INVOLVES FULL PENETRATION BUTT WELDS, THE FABRICATOR SHALL CARRY OUT NON-DESTRUCTIVE TESTING BY ULTRASONIC, RADIOGRAPHIC OR OTHER METHODS APPROVED BY THE ENGINEER. NON-DESTRUCTIVE TESTING SHALL BE CARRIED OUT AT A RATE IN ACCORDANCE WITH AS1554 PART 1, BUT SHALL BE NOT LESS THAN 5% OF BUTT WELDS, UNLESS NOTED OTHERWISE ON THE DRAWINGS. ACCEPTANCE OF WELDS SHALL BE IN ACCORDANCE WITH SECTION 6 OF AS1554 PART 1.
7. COLD FORMED SECTIONS SHALL BE WELDED WHERE REQUIRED WITH A 2mm CONTINUOUS FILLET WELD USING AN E70 OR E80 LOW HYDROGEN COATED ELECTRODE OR MIG. EQUIVALENT. ALL WELDS SHALL BE TOUCHED UP WITH AN APPROVED ZINC RICH PRIMER.
8. BOLT TYPES (AND DESIGNATIONS, WHERE USED) SHALL BE AS FOLLOWS:

• 4.6/S - COMMERCIAL BOLTS TO AS1111 AND AS1112 SNUG TIGHTENED.

• 8.8/S - HIGH STRENGTH STRUCTURAL BOLTS, NUTS AND HARDENED WASHERS TO AS1252, SNUG TIGHTENED.

• 8.8/TF - HIGH STRENGTH STRUCTURAL BOLTS AS ABOVE, FULLY TENSIONED TO AS1511 IN FRICTION TYPE JOINT AND UNLESS NOTED OTHERWISE, WITH CONTACT SURFACE LEFT UNCOATED.

• 8.8/TB - HIGH STRENGTH STRUCTURAL BOLTS AS ABOVE, FULLY TENSIONED IN BEARING TYPE JOINT.

9. ALL BOLTS, NUTS AND WASHERS INCLUDING H.D. BOLTS ARE TO BE HOT DIP GALVANISED. ALL CAST IN FERRULES AND MASONRY ANCHORS TO BE PASSIVATED ZINC COATED. ALL GALVANISED COMPONENTS TO BE CAST INTO CONCRETE MUST BE PASSIVATED.
10. THE FOLLOWING STEELWORK SHALL BE HOT DIP GALVANISED:

• PLATE/ANCHOR ROD ASSEMBLIES CAST INTO CONCRETE.
• ALL MEMBERS BUILT INTO BLOCKWORK OR BRICKWORK.
• ALL EXTERNAL EXPOSED STEELWORK.

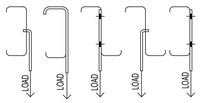
11. ALL STRUCTURAL STEEL FIXING DETAILS ARE TO BE BASED ON A.S.I. STANDARDISED STRUCTURAL CONNECTIONS, UNLESS NOTED OTHERWISE.

• ALL BOLT HOLES 2mm OVERSIZE U.N.O.
• HOLES FOR H.D. BOLTS 6mm OVERSIZE U.N.O. OVERSIZE HOLES FOR H.D. BOLTS WILL REQUIRE OVER SIZE WASHERS UNDER NUTS.
• BOLT HOLES IN STEELWORK CONNECTING TIMBER SHALL PROVIDE A SNUG FIT, i.e. NO GREATER THAN 0.5 mm LARGER THAN BOLT DIA.

12. STIFFENER PLATES WHERE DETAILED ARE TO BE PLACED ON BOTH SIDES OF WEB TO U.B.'S AND U.C.'S.
13. THE ENDS OF ALL TUBULAR MEMBERS ARE TO BE SEALED WITH 6mm THICK PLATES AND CONTINUOUS SEAL WELDS, UNLESS DETAILED OTHERWISE.
14. CLEANING AND PAINTING OF STRUCTURAL STEELWORK:

ABRASIVE BLAST CLEAN TO CLASS 2 AND 1/2.
ONE COAT PRIMER (GREY) MINIMUM DRY FILM THICKNESS OF 0.05 mm.
ONE COAT OF (SELECTED COLOUR) TO A DRY FILM THICKNESS OF 0.04 mm.
ASPECTS OF THE PREPARATION AND APPLICATION OF THE PAINT SYSTEM ARE TO BE CARRIED OUT IN STRICT ACCORDANCE WITH THE MANUFACTURER'S WRITTEN SPECIFICATION.

15. THE CONTRACTOR SHALL PROVIDE TEMPORARY BRACING AND LEAVE IN PLACE UNTIL PERMANENT BRACING ELEMENTS ARE CONSTRUCTED, SUCH TEMPORARY BRACING AS IS NECESSARY TO STABILISE THE STRUCTURE DURING ERECTION.
16. ALL FLOOR JOISTS USED TO SUPPORT CEILINGS, PIPES, MECHANICAL DUCTS ETC. SHALL BE SUPPORTED USING ONLY THE METHODS SHOWN IN THE DIAGRAMS BELOW:



IF IN DOUBT, OBTAIN APPROVAL FROM THE ENGINEER PRIOR TO PROCEEDING WITH ANY WORKS.

ALTERATIONS AND ADDITIONS:

1. THESE DRAWINGS SHALL BE READ IN CONJUNCTION WITH ALL ARCHITECTURAL AND OTHER CONSULTANTS DRAWINGS AND SPECIFICATIONS AND WITH SUCH OTHER WRITTEN INSTRUCTIONS AS MAY BE ISSUED DURING THE COURSE OF THE CONTRACT.
2. ALL DISCREPANCIES SHALL BE REFERRED TO THE ARCHITECT FOR DECISION BEFORE PROCEEDING WITH THE WORK.
3. THE WORK SHOWN ON THESE DRAWINGS IS BASED ON INFORMATION DERIVED FROM AN INSPECTION OF THE EXISTING BUILDING. ON OPENING UP, SHOULD THE BUILDER ASSERTAIN THAT CONDITIONS ARE NOT AS HAVE BEEN ASSUMED, HE SHALL INFORM THE CONSULTING ENGINEER AND OBTAIN INSTRUCTIONS BEFORE PROCEEDING FURTHER.
4. THE BUILDER SHALL BE RESPONSIBLE AT ALL TIMES FOR MAINTAINING THE BUILDING IN A STABLE AND SAFE CONDITION. DETAILS OF PROPOSED TEMPORARY WORKS, METHODS AND PROCEDURES SHALL BE SUBMITTED TO THE CONSULTING ENGINEER FOR APPROVAL PRIOR TO COMMENCING WORK.
5. THE BUILDER SHALL SECURELY NEEDLE, TOM, PROP AND BRACE ALL EXISTING BRICKWORK, BEAMS AND OTHER STRUCTURE AS NECESSARY TO PREVENT ANY MOVEMENT AND TO ENSURE SAFETY OF PERSONS DURING BUILDING OPERATIONS.
6. TOMMING AND PROPPING OF THIS STRUCTURE SHALL BE DETERMINED BY A CHARTERED STRUCTURAL ENGINEER TO THE APPROVAL OF THE ENGINEER.
7. NEW BEAMS INCLUDED TO PROVIDE SUPPORT TO EXISTING BRICKWORK OR SLAB SHALL BE WEDGED DOWN FROM THAT BRICKWORK OR SLAB AFTER SECURELY BEDDING AT ENDS AND GROUTING UP ACCORDINGLY.
8. WEDGES TO BE OF MILD STEEL AND POSITIONED AT 1200mm MAXIMUM CENTRES. WHEN IN FINAL POSITION WEDGES TO BE SPOT WELDED TO BEAM TO AVOID MOVEMENT DURING GROUTING PROCESS.
9. CONTRACTOR IS TO ALLOW TO FIRE RATE ALL EXISTING (INCLUDING REPLACEMENT OF ANY FIRE RATING MATERIAL FOR THE PURPOSES OF COMPLETING THE WORKS) AND NEW STRUCTURE INCLUDING BUT NOT LIMITED TO STRUCTURAL STEEL, RISERS, PENETRATIONS ETC. IN ACCORDANCE WITH THE REQUIRED CODES AND STANDARDS.

PROPPING AND TOMMING:

1. THE BUILDER SHALL SECURELY NEEDLE, TOM, PROP AND BRACE ALL EXISTING RETAINING WALLS, BRICKWORK, BEAMS AND OTHER STRUCTURE AS NECESSARY TO PREVENT ANY MOVEMENT AND TO ENSURE SAFETY OF PERSONS DURING BUILDING OPERATIONS.
2. TOMMING AND PROPPING OF THIS STRUCTURE SHALL BE DETERMINED BY A CHARTERED STRUCTURAL ENGINEER TO THE APPROVAL OF THE ENGINEER.
3. NEW BEAMS INCLUDED PROVIDED TO PROVIDE SUPPORT TO EXISTING BRICKWORK OR SLAB SHALL BE WEDGED DOWN FROM THAT BRICKWORK OR SLAB AFTER SECURELY BEDDING AT ENDS AND GROUTING UP ACCORDINGLY.
4. WEDGES TO BE OF MILD STEEL AND POSITIONED AT 1200mm MAXIMUM CENTRES WHEN IN FINAL POSITION WEDGES TO BE SPOT WELDED TO BEAM TO AVOID MOVEMENT DURING THE GROUTING PROCESS.
5. IF WHEN THE JOB IS OPENED UP, IT IS FOUND THAT THE EXISTING CONDITIONS DIFFER FROM THAT ASSUMED, THE BUILDER IS TO INFORM THE BUILDERS ENGINEER IMMEDIATELY, SINCE ADDITIONAL DESIGN MAY BE NECESSARY. THIS SHALL BE DONE TO THE APPROVAL OF THE ENGINEER.

WORK IN PROGRESS
NOT SUITABLE FOR CONSTRUCTION

Rev	Description	Date	By	App
F	ISSUED FOR INFORMATION ONLY	25.05.09	RT	NAA
E	ISSUED FOR INFORMATION ONLY	25.03.11	RT	NAA
D	ISSUED FOR INFORMATION ONLY (PRELIMINARY DD 70%)	25.02.18	RM	JT
C	ISSUED FOR INFORMATION ONLY (DD 30%)	25.01.17	RM	JT
B	ISSUED FOR INFORMATION ONLY	24.08.05	RM	JT

COPYRIGHT All rights reserved.
These drawings, plans and specifications and the copyright therein are the property of the Cadigal Group Engineers PTY LTD and must not be used, reproduced or copied wholly or in part without the written permission of Cadigal Group Engineers PTY LTD.

Project:

849-859 PACIFIC HIGHWAY & 2-8 WILSON STREET, CHATSWOOD.

Developer:

Billbergia creating communities®

Contractor:

Architect : pbd architects

Design Consultant:

CADIGAL GROUP STRUCTURAL • CIVIL • FACADE
1002, 22-24 Market Street,
Sydney , NSW 2000
Australia
T: +61 2 8630 8559
info@cadigalgroup.com.au

© Copyright

Drawing Title:

SPECIFICATION NOTES - SHEET 2

STRUCTURAL DRAWINGS

Designed: NAA	Project Director Approved	Date	North
Drawn: RT	JT	05/09/25	
Scale AS1100 A1	Project Ref.	Drawing No.	Rev
Sheet A1	01-100084	S00011	F

0 10 20 30 50 100

NON DECLARED DESIGN

PROJECT ADDRESS: 849-859 PACIFIC HIGHWAY & 2-8 WILSON STREET, CHATSWOOD.

PROJECT TITLE: CHADSWOOD

CONSENT No.: BODY CORP REG TAG:

DRAWING TITLE: SPECIFICATION NOTES - SH3 DA No: S00012

REV	DATE	DESCRIPTION	DP FULL NAME	REG NO

DEMOLITION NOTES:

1. SOFT STRIP OUT OF FLOOR CAN OCCUR SIMULTANIOUSLY ON ALL LEVELS.
2. ONCE ALL STRIP OUT HAS OCCURED, A VISUAL INSPECTION OF ALL STRUCTURE TO BE CARRIED OUT BY STRUCTURAL ENGINEER.
3. VISUAL INSPECTION OF STRUCTURE AND REPORT / RECORDING TO OCCUR PRIOR TO DEMOLITION, DURING AND AFTER DEMOLITION. TO BE COMPLETED AND CROSS REFERENCED AGAINST DILAPIDATION REPORT.
4. DEMOLTION SHALL BE CARRIED OUT IN A MANNER TO ENSURE THAT STRUCTURE TO BE RETAINED IS MAINTAINED IN AN UNDAMAGED CONDITION.
5. CONTRACTOR TO ALLOW FOR TREATMENT OF EXPOSED REINFORCEMENT WITH CONCRESSIVE 2525 OR APPROVED EQUIVALENT.
6. THE STRUCTURAL ENGINEER IS RESPONSIBLE FOR THE STRENGTH AND STABILITY OF THE PRIMARY STRUCTURE IN ITS COMPLETED FORM.
7. THE CONTRACTOR IS RESPONSIBLE FOR:
   - COORDINATING DETAILS AND ACCURACY OF THE WORK
   - CONFIRMING AND CORRELATING ALL QUANTITIES AND DIMENSIONS
   - SELECTING FABRICATION PROCESSES
   - PERFORMING WORK IN A SAFE AND SECURE MANNER
8. THE CONTRACTOR IS RESPONSIBLE FOR THE MEANS AND METHODS OF DEMOLITION AND ALL JOBS RELATED TO SAFETY STANDARDS TO MEET LEGISLATIVE REQUIREMENTS.
9. THE CONTRACTOR SHALL AT THEIR DISCRETION EMPLOY A REGISTERED PROFESSIONAL ENGINEER FOR THE DESIGN OF ANY TEMPORARY BRACING AND SHORING REQUIRED DURING DEMOLITION.
10. THE CONTRACTOR IS RESPONSIBLE FOR THE STRENGTH AND STABILITY OF THE STRUCTURE DURING DEMOLITION AND CONSTRUCTION AND SHALL PROVIDE TEMPORARY SHORING, BRACING AND OTHER ELEMENTS REQUIRED TO MAINTAIN STABILITY UNTIL THE STRUCTURE IS COMPLETE. IT IS THE CONTRACTOR'S RESPONSIBILITY TO BE FAMILIAR WITH THE WORK REQUIRED IN THE CONSTRUCTION DOCUMENTATION AND THE REQUIREMENTS FOR EXECUTING IT PROPERLY.
11. LOADS ON THE STRUCTURE DURING CONSTRUCTION SHALL NOT EXCEED THE DESIGN LOADS AS NOTED.
12. THE CONTRACTOR SHALL VERIFY ALL DIMENSIONS AND CONDITIONS AT THE SITE INCLUDING EXISTING STRUCTURE. CONFLICTS BETWEEN THE DRAWINGS AND ACTUAL SITE CONDITIONS SHALL BE BROUGHT TO THE ATTENTION OF THE ARCHITECT / ENGINEER PRIOR TO PROCEEDING WITH THE WORKS.
13. THE CONTRACTOR SHALL DETERMINE THE LOCATION OF ALL ADJACENT UNDERGROUND UTILITIES PRIOR TO EARTHWORKS, FOUNDATIONS, SHORING AND EXCAVATION. ANY UTILITIES INFORMATION SHOWN ON THE DRAWINGS AND DETAILS IS APPROXIMATE AND NOT NECESSARILY COMPLETE.
14. ALTERNATE PRODUCTS OF SIMILAR STRENGTH, NATURE AND FORM FOR SPECIFIED ITEMS MAY BE SUBMITTED WITH ADEQUATE TECHNICAL DOCUMENTATION TO THE ARCHITECTS / ENGINEER FOR REVIEW. ALTERNATE MATERIALS THAT ARE SUBMITTED WITHOUT ADEQUATE TECHNICAL DOCUMENTATION OR THAT SIGNIFICANTLY DEVIATE FROM THE DESIGN INTENT OF MATERIALS SPECIFIED MAY BE RETURNED WITHOUT REVIEW. ALTERNATES THAT REQUIRE SUBSTANTIAL EFFORT TO REVIEW WILL NOT BE REVIEWED UNLESS AUTHORIZED BY THE OWNER.
15. ALL SCABBLING OF EXISTING STRUCTURES TO BE MINIMUM CSP 8 REFERENCED IN GUIDELINE No. 310-2R-2013 (PUBLISHED BY INTERNATIONAL CONCRETE REPAIR INSTITUTE) UNLESS NOTED OTHERWISE.

CONTRACTOR SUBMISSIONS:

1. THE REINFORCEMENT, PRESTRESSING AND STRUCTURAL STEEL MATERIAL SUPPLIER MUST BE CERTIFIED BY ACRS (AUSTRALIAN STANDARDS CERTIFICATION AND VERIFICATION OF REINFORCING, PRESTRESSING AND STRUCTURAL STEELS) FOR THE SUPPLY OF REINFORCEMENT, PRESTRESSING AND STRUCTURAL STEEL.
2. SUBMIT CURRENT CERTIFICATES.

SHORING GENERAL NOTES:

G1. THESE DRAWINGS AND NOTES SHALL BE READ IN CONJUNCTION WITH ALL ARCHITECTURAL AND OTHER CONSULTANT'S DRAWINGS, REPORTS, SPECIFICATIONS AND ANY OTHER WRITTEN INSTRUCTIONS AS MAY BE ISSUED DURING THE COURSE OF CONSTRUCTION. ALL DISCREPANCIES SHALL BE REFERRED TO THE ENGINEER FOR CLARIFICATION OR DECISION BEFORE PROCEEDING WITH THE WORK.

G2. CONSTRUCTION FROM THESE DRAWINGS SHALL NOT COMMENCE UNTIL THEY ARE APPROVED BY THE RELEVANT AUTHORITIES.

G3. DIMENSIONS SHALL NOT BE OBTAINED FROM THE STRUCTURAL DRAWINGS BY WAY OF SCALING (OR DETERMINING UNDIMENSIONED MEASUREMENTS FROM THE ELECTRONIC DRAWING). WALL, PIER, AND COLUMN THICKNESS', AND STRUCTURAL MEMBER SIZES SHOWN ON THESE DRAWINGS SHALL TAKE PRECEDENCE OVER THOSE SHOWN ON THE ARCHITECT'S DRAWINGS. THE BUILDER SHALL VERIFY ALL DIMENSIONS ON SITE AND BE RESPONSIBLE FOR THE SETTING OUT OF THE BUILDING.

G4. ELEMENTS INDICATED ON THESE DRAWINGS ARE SHOWN IN THEIR INTENDED COMPLETE STATE. THE BUILDER SHALL PROVIDE ANY TEMPORARY WORKS INCLUDING PROPPING, BRACING, SHORING AND ANY OTHER REQUIREMENTS NECESSARY TO MAINTAIN THE STRUCTURE, OR ANY PART OF IT, IN A STABLE CONDITION DURING CONSTRUCTION. IF THE BUILDER IS IN ANY DOUBT AS TO HOW TO ACHIEVE THIS HE SHALL OBTAIN ADVICE FROM APPROPRIATELY QUALIFIED AND EXPERIENCED PERSONNEL. UNLESS STATED OTHERWISE TEMPORARY WORKS SHALL BE THE BUILDERS RESPONSIBILITY.

G5. THE BUILDING SHALL NOT BE ERECTED ON OR ADJACENT TO ANY OF THE FOLLOWING HAZARDS UNLESS THE HAZARD IS INDICATED ON THE STRUCTURAL DRAWING:- EMBANKMENTS, BATTERS, WATER RETAINING STRUCTURES, RETAINING WALLS, PITS, SEWERS, SERVICE TRENCHES, DRAINAGE CHANNELS, STREAMS OR ANY POTENTIAL SOURCE OF DAMAGE TO THE STRUCTURE. IF ANY SUCH HAZARDS ARE ENCOUNTERED THE ENGINEER SHALL BE NOTIFIED AND HIS APPROVAL OBTAINED BEFORE PROCEEDING.

G6. THE BUILDER SHALL LOCATE ALL EXISTING AND PROPOSED SERVICES AND EASEMENTS, ON AND ADJACENT TO THE SITE. THE APPROVAL OF THE RELEVANT STATUTORY AUTHORITY AND THE ENGINEER SHALL BE OBTAINED BEFORE BUILDING ON OR OVER ANY SERVICES OR EASEMENTS.

G7. THE BUILDER SHALL NOT EXCAVATE BELOW THE LEVEL OF THE FOOTINGS TO ANY EXISTING BUILDINGS WITHOUT THE WRITTEN CONSENT OF THE ENGINEER.

G8. THE WRITTEN CONSENT OF ADJOINING PROPERTY OWNERS SHALL BE OBTAINED BEFORE INSTALLATION OF UNDERPINNING, ANCHORING WORK, DRAINAGE LINES OR ANY OTHER WORK BEYOND THE PROPERTY BOUNDARY.

G9. ADJACENT STRUCTURE ON BOUNDARY. THE FOUNDATION TYPE AND FOUNDING LEVEL OF THE FOOTING OF THE ADJACENT BUILDING NEIGHBOURING STRUCTURE MUST BE EXPOSED AND CONFIRMED PRIOR TO CONSTRUCTION SO THAT CADIGAL GROUP PTY LTD MAY INSPECT AND CONFIRM THE APPROPRIATE UNDERPINNING AND RETENTION SOLUTION.

G10. NO HOLES OR CHASES SHALL BE MADE IN ANY STRUCTURAL ELEMENT, UNLESS SHOWN ON THESE DRAWINGS OR WRITTEN APPROVAL OF THE ENGINEER.

G11. A FULL DEPTH 'V' JOINT SHALL BE STRUCK IN RENDER WHERE TWO DIFFERING STRUCTURAL MATERIALS ABUT. i.e. AT THE JUNCTION OF MASONRY WITH CONCRETE.

G12. ALL WORKMANSHIP AND MATERIALS SHALL BE IN ACCORDANCE WITH THE RELEVANT AUSTRALIAN STANDARDS, THE BUILDING CODE OF AUSTRALIA, AND THE REQUIREMENTS OF THE RELEVANT STATUTORY AUTHORITIES. ALL WORKMANSHIP SHALL BE CONSISTENT WITH GOOD TRADE PRACTICE.

G13. AUSTRALIAN STANDARDS REFERRED TO ON THESE DRAWINGS SHALL BE THE LATEST REVISIONS OF THE NOMINATED STANDARD.

G14. APPROVAL OF A SUBSTITUTION OR ALTERNATIVE FROM THE ENGINEER IS NOT, IN ITSELF AUTHORISATION FOR A VARIATION.

G15. THE ENGINEER SHALL BE GIVEN 48 HOURS NOTICE FOR INSPECTIONS.

G16. THE WORD ENGINEER AS USED IN THESE NOTES REFERS TO AN EMPLOYEE OR NOMINATED REPRESENTATIVE OF CADIGAL GROUP PTY LTD.

G17. UNLESS OTHERWISE NOTED, ALL LEVELS ARE GIVEN IN METRES AND ALL DIMENSIONS ARE IN MILLIMETERS. REDUCED LEVELS (RL'S) ARE REFERENCED TO AUSTRALIAN HEIGHT DATUM.

G18. A DILAPIDATION SURVEY OF ADJACENT PROPERTIES AND STRUCTURES IS REQUIRED IMMEDIATELY PRIOR TO THE COMMENCEMENT OF THE WORKS. COMPARISON DILAPIDATION SURVEY IS REQUIRED TO BE UNDERTAKEN AT THE COMPLETION OF THE WORKS.

G19. ALL SITE RECORDS RELATED TO THE WORKS SHALL BE SUBMITTED TO CADIGAL GROUP PTY LTD ON A WEEKLY BASIS FOR REVIEW.

G20. THE CONTRACTOR SHALL ENSURE A SERVICES SEARCH HAS BEEN CARRIED OUT, AND THAT ALL EXISTING STRUCTURES, SERVICES (INCLUDING REDUNDANT SERVICES) AND UTILITIES ARE LOCATED PRIOR TO COMMENCEMENT OF WORKS. THE ACCURACY OF THIS INFORMATION SHOULD BE VERIFIED AS NECESSARY BEFORE WORK COMMENCES ON SITE.

G21. CONTRACTOR TO REVIEW LOCATIONS OF SERVICES AND UTILITIES AND TO IMPLEMENT PROTECTION AND AVOIDANCE METHODS TO ENSURE NO DAMAGE OCCURS IN THE PROCESS OF CARRYING OUT THE WORKS.

G22. CADIGAL GROUP PTY LTD HAS RELIED ON THE ACCURACY OF THE GEOTECHNICAL INVESTIGATION CONDUCTED BY GEOTECHNICAL ENGINEER FOR DETERMINING SUBSURFACE CONDITIONS.

G23. CADIGAL GROUP PTY LTD SHALL BE NOTIFIED IMMEDIATELY IF SUBSURFACE GROUND CONDITIONS ENCOUNTERED ON SITE DIFFER FROM THE GEOTECHNICAL INVESTIGATION, DESIGN REPORT OR DRAWINGS AND/OR FOR ANY REASON THE REQUIRED DESIGN DEPTH CANNOT BE ACHIEVED.

G24. UNDER NO CIRCUMSTANCES SHALL ANY OF THE WORKS BE DAMAGED BY ANY PLANT/MACHINERY OR DURING WORKS BY OTHER TRADES. IN THE EVENT THAT DAMAGE DOES OCCUR, CADIGAL GROUP PTY LTD SHALL BE NOTIFIED IMMEDIATELY.

G25. WHERE TRIMMING IS REQUIRED, CARE SHALL BE TAKEN TO PREVENT CRACKING OR OTHERWISE DAMAGING THE STRUCTURAL ELEMENTS BELOW CUT-OFF LEVEL OR DAMAGING THE STEEL REINFORCEMENT. ADOPTED METHODOLOGY FOR TRIMMING SHALL BE PRESENTED TO CADIGAL GROUP PTY LTD FOR APPROVAL PRIOR TO COMMENCEMENT OF TRIMMING WORKS.

G26. AT THE COMPLETION OF THE WORKS, THE CONTRACTOR SHALL PROVIDE A CERTIFICATE STATING THAT ALL WORKS HAVE BEEN COMPLETED IN ACCORDANCE WITH CADIGAL GROUP PTY LTD DRAWINGS AND THE RELEVANT AUSTRALIAN STANDARDS.

SAFETY IN DESIGN INFORMATION

ARE THERE ANY ADDITIONAL HAZARDS / RISKS NOT NORMALLY ASSOCIATED WITH THE TYPES OF WORK DETAILED ON THIS DRAWING?

☒ NO ☐ YES

DO NOT SCALE FROM THIS DRAWING

WORKING PLATFORM NOTES:

WP1. WORKING PLATFORM TO BE DESIGNED BY OTHERS TO MEET MINIMUM STABILITY AND BEARING REQUIREMENTS AS PROVIDED BY THE PILING CONTRACTOR.

WP2. INDEPENDENT VERIFICATION OF PILING PLATFORM AND ISSUE OF PLATFORM CERTIFICATE REQUIRED PRIOR TO COMMENCEMENT OF WORKS.

WP3. NO OVER-EXCAVATION FOR BASEMENT PLATFORM OR SUBGRADE HAS BEEN ALLOWED FOR IN THE SHORING DESIGN.

SHORING WALL NOTES:

SW1. SETOUT OF INDIVIDUAL PILES IS THE CONTRACTORS RESPONSIBILITY.

SW2. DESIGN EXCAVATION LEVELS SHOWN ON THE DRAWINGS ARE THE MAXIMUM EXCAVATION LEVELS ALLOWED FOR IN THE DESIGN. WRITTEN APPROVAL MUST BE OBTAINED FROM CADIGAL GROUP PTY LTD PRIOR TO ANY EXCAVATION (DETAIL OR OTHERWISE) BELOW THESE LEVELS.

SW3. THE SHORING WALL DESIGN HAS NOT CONSIDERED ANY UNPLANNED OVER-EXCAVATION. THE BUILDER AND CONTRACTOR SHALL ENSURE NO UNPLANNED OVER-EXCAVATION OCCURS. IF THIS REQUIREMENT CANNOT BE ADHERED TO, PLEASE ADVISE CADIGAL GROUP PTY LTD FOR REDESIGN OF THE SHORING WALL PRIOR TO THE COMMENCEMENT OF WORKS.

SW4. STABILITY OF ALL TEMPORARY BATTERS IS THE BUILDERS/CONTRACTORS RESPONSIBILITY.

SW5. A GEOTECHNICAL INSPECTION WILL BE REQUIRED FOR ANY UNSUPPORTED EXCAVATION IN ROCK.

SW6. THE MAXIMUM ESTIMATED DEFLECTION IS 15mm. CADIGAL GROUP PTY LTD HAVE MADE NO ASSESSMENT OF THE EFFECT OF ESTIMATED DEFLECTIONS ON ADJACENT STRUCTURES AND/OR SERVICES. IF THESE DEFLECTIONS AND THE ASSOCIATED RISK OF DAMAGE TO ADJACENT STRUCTURES AND/OR SERVICES IS NOT ACCEPTABLE, PLEASE NOTIFY CADIGAL GROUP PTY LTD FOR THE SHORING WALL TO BE REDESIGNED PRIOR TO THE COMMENCEMENT OF WORKS.

SW7. EXCAVATION BELOW GROUND ANCHOR LEVELS SHALL BE NO MORE THAN 500mm UNTIL GROUND ANCHORS ARE STRESSED AND CERTIFIED.

SW8. MAX 15kPa CONSTRUCTION SURCHARGE ALLOWANCE FOR THE SHORING WALL DESIGN. UNLESS NOTED OTHER WISE THESE SURCHARGES MUST NOT BE EXCEEDED AT ANY TIME. PRIOR WRITTEN APPROVAL FROM CADIGAL GROUP PTY LTD IS REQUIRED IF ANY SPECIFIED GENERAL SURCHARGES ARE REQUIRED TO BE EXCEEDED FOR TEMPORARY CONSTRUCTION REQUIREMENTS, SUCH AS MOBILE CRANES, BOOM PUMPS, MATERIALS STORAGE ETC.

SW9. CAPPING BEAM MUST BE INSTALLED PRIOR TO EXCAVATION, UNO.

SW10. FOR SOLDIER PILES, ENSURE THE LONGITUDINAL BARS OF THE PILE REINFORCEMENT CAGE ARE ALIGNED TO ALLOW FOR ANCHOR INSTALLATION THROUGH THE PILE AT THE SPECIFIED ANGLE.

SW11. A GEOTECHNICAL DESIGN AND INSPECTION IS REQUIRED FOR ANY PILING EMBEDMENT LENGTH WITHIN SOIL.

SHOTCRETE NOTES:

SC1. MINIMUM SHOTCRETE F'c = 40 MPa AT 28 DAYS, UNO.

SC2. LAPS NOT SHOWN ON DRAWINGS SHALL BE STAGGERED SO THAT NO MORE THAN 50% OF BARS ARE LAPPED IN ANY ONE CROSS SECTION.

SC3. MINIMUM LAP LENGTHS FOR N16 BARS = 500mm UNLESS NOTED OTHERWISE

SC4. MINIMUM COVER = 60mm FOR F'c = 40MPa, UNO.

SC5. ENSURE PILES HAVE BEEN CLEANED OF ALL SOIL/ROCK PRIOR TO SHOTCRETING TO ENSURE THERE IS NO CONTAMINATION OF THE COLD JOINT.

MONITORING REQUIREMENTS FOR SHORING:

BUILDER TO NOTE THE MONITORING REQUIREMENTS FOR ALL SHORING INSTALLATIONS AND THIS INCLUDES:

1. A DAILY WALK AROUND THE SITE AND REGULAR PHOTOGRAPH.
2. REGULAR, ACCURATE SURVEY OF MONITORING POINTS LOCATED BOTH ALONG AND DOWN THE FACE OF THE SHORING WALL.
3. REGULAR, ACCURATE READING OF OTHER MONITORING INSTRUMENTS. (i.e. SURVEY POINTS)
4. MONITORING RESULTS TO BE PROVIDED TO THE ENGINEER WITH 48 HOURS
5. PROPOSED TRIGGER LEVEL FOR THE LATERAL DEFORMATION OF THE SHORING WALL IS 15mm AT THE TOP OF CAPPING BEAM.
6. IN CASE OF DEFLECTION MORE THAN THE ABOVE MENTIONED LIMIT THE STRUCTURAL AND GEOTECHNICAL ENGINEER TO BE INFORMED IMMEDIATELY

THRESHHOLD VIBRATION LIMITS:

ASSET TYPE	THRESHOLD VALUES FOR VELOCITY (PPV) MEASURED ON THE ASSET IN MM/S
BRITTLE PIPE ASSETS- RC, VC/EW, CICL	MAXIMUM PPV FOR INTERMITTENT VIBRATIONS 10MM/S MAXIMUM PPV FOR CONTINUOUS VIBRATIONS 5MM/S
DUCTILE PIPE ASSETS- SCL, DI, PVC, PE, PP, GRP	MAXIMUM PPV FOR INTERMITTENT VIBRATIONS 20MM/S MAXIMUM PPV FOR CONTINUOUS VIBRATIONS 10MM/S
MASONARY	3 MM/S
UNREINFORCED CONCRETE	3 MM/S

NOTE: THIS IS APPLICABLE FOR BURIED ASSETS, IN SOUND CONDITION, AND LAID IN A TYPICAL SOIL TRENCH IN STABLE GROUND. ALTERNATIVE CRITERIA SHALL BE DEVELOPED FOR OTHER ASSET TYPES, ABOVE GROUND ASSETS, CONCRETE ENCASED PIPES, PIPES ON PILED/ SPECIAL SUPPORTS AND PIPES IN TUNNELS OR OF OTHER UNUSUAL CONSTRUCTION OR GROUND CONDITIONS.

MONITORING IS TO BE CARRIED OUT AT THE FOLLOWING STAGES FOR SHORING WALLS:

1. AFTER CONSTRUCTION OF THE RETAINING STRUCTURES, BUT BEFORE COMMENCEMENT OF EXCAVATION TO DETERMINE BASELINE READINGS, TWO INDEPENDENT SETS OF MEASUREMENTS MUST BE TAKEN CONFIRMING MEASUREMENTS CONSISTENCY.
2. AFTER EXCAVATION TO EACH ROW OF SUPPORTS, BUT PRIOR TO INSTALLATION OF SUPPORTS OR ANCHORS.
3. AFTER EXCAVATION TO THE BASE OF THE EXCAVATION.
4. AFTER COMPLETION OF THE EXCAVATIONS NOT LESS THAN A WEEK APART SHOWING NO FURTHER MOVEMENTS.
5. AFTER DE-STRESSING AND REMOVAL OF ANY ROW OF SUPPORTS.
6. ONE MONTH LATER COMPLETION OF THE PERMANENT RETAINING STRUCTURE OR AFTER THREE CONSECUTIVE MEASUREMENTS NOT LESS THAN A WEEK APART SHOWING NO FURTHER MOVEMENTS, WHICH EVER IS THE LATER.
7. ALL MONITORING DEVICES SHOULD BE KEPT IN OPERATIONAL CONDITION AT ALL TIMES. CONSTRUCTION WORKS SHOULD BE SUSPENDED WHERE MORE THAN 30% OF THE DEVICES MALFUNCTIONED.

INSTRUMENTATION AND MONITORING MUST BE CARRIED OUT BY A COMPETENT PERSON EXPERIENCED IN THE EQUIPMENT USED. THE RESULTS OF EACH MONITORING STAGE MUST BE REPORTED TO THE DESIGN ENGINEER. BEFORE WORK PROCEEDS TO THE NEXT STAGE THE DESIGN ENGINEER MUST VERIFY THAT ON THE MONITORING RESULTS AND INSPECTION CARRIED OUT THE STRUCTURE IS PERFORMING IN ACCORDANCE WITH THE DESIGN INTENT AND THAT WHERE TRIGGER LEVELS HAVE BEEN EXCEEDED, ACTION HAS BEEN TAKEN IN ACCORDANCE WITH THE MONITORING PLAN. VERIFICATION BY THE DESIGN ENGINEER MUST CONSTITUTE A 'HOLD POINT' FOR EACH STAGE OF CONSTRUCTION.

TRIGGER CRITERIA:

ALERT (UNITS)	ACTION (UNITS)	ALARM (UNITS)
70% OF MAXIMUM PREDICTED	<100% OF MAXIMUM PREDICTED	>=100 OF MAXIMUM PREDICTED (BUT NOT GREATER THAN ASSET CAPACITY)

INCLINOMETER NOTE:

TAKE AT LEAST TWO BASELINE READINGS BEFORE THE COMMENCEMENTS OF EXCAVATIONS.

DILAPIDATION NOTE:

DILAPIDATION SURVEY INCLUDING THE PAVEMENT AND ROAD DRAINAGE SHOULD BE PREPARED PRIOR TO ANY EXCAVATION WORKS. A COPY OF THE REPORT SHOULD BE FORWARDED TO RMS PRIOR TO ANY EXCAVATION ACTIVITY ON SITE FOR RECORD PURPOSES

DIAL 1100 BEFORE DIG

BUILDER TO DETERMINE THE EXACT LOCATIONS OF EXISTING SERVICES PRIOR TO THE START OF ANY CONSTRUCTION WORK. BUILDER TO CONTACT 'DIAL BEFORE YOU DIG' AND THE AUTHORITIES CONCERNED TO CONFIRM THE ACTUAL LOCATIONS OF EXISTING SERVICES. IN THE EVENT THAT ANY OF THE SERVICES MIGHT BE AFFECTED BY STRUCTURAL WORK, STRUCTURAL ENGINEER IS TO BE NOTIFIED AND CONSULTED IMMEDIATELY TO REVIEW THE STRUCTURAL DETAILS AFFECTING THE SERVICES.

www.dialbeforeyoudig.com.au

WORK IN PROGRESS
NOT SUITABLE FOR CONSTRUCTION

Rev	Description	Date	By	App
F	ISSUED FOR INFORMATION ONLY	25.05.09	RT	NAA
E	ISSUED FOR INFORMATION ONLY	25.03.11	RT	NAA
D	ISSUED FOR INFORMATION ONLY (PRELIMINARY DD 70%)	25.02.18	RM	JT
C	ISSUED FOR INFORMATION ONLY (DD 30%)	25.01.17	RM	JT
B	ISSUED FOR INFORMATION ONLY	24.08.05	RM	JT

COPYRIGHT All rights reserved.
These drawings, plans and specifications and the copyright therein are the property of the Cadigal Group Engineers PTY LTD and must not be used, reproduced or copied wholly or in part without the written permission of Cadigal Group Engineers PTY LTD.

Project:

849-859 PACIFIC HIGHWAY & 2-8 WILSON STREET, CHATSWOOD.

Developer:

Billbergia creating communities®

Contractor:

Architect :

pbd architects

Design Consultant:

CADIGAL GROUP
1002, 22-24 Market Street,
Sydney , NSW 2000
Australia
T: +61 2 8630 8559
info@cadigalgroup.com.au

© Copyright

Drawing Title:

SPECIFICATION NOTES - SHEET 3

STRUCTURAL DRAWINGS

Designed:	NAA	Project Director Approved	Date / North
Drawn:	RT	JT	05/09/25
Scale		Project Ref.	Drawing No. / Rev
Sheet	A1	01-100084	S00012 / F

0 10 20 30 50 100

NON-REGULATED DESIGN RECORD				
PROJECT ADDRESS:	849-859 PACIFIC HIGHWAY & 2-8 WILSON STEET, CHATSWOOD.			
PROJECT TITLE:	CHATSWOOD GRAND RESIDENCES			
CONSENT No.:	DRAWING TITLE:	BODY CORP BEG TAG:		
SITE RETENTION PLAN	DA No:			
	DRAWING No: S10001			
REV	DATE	DESCRIPTION	DP FULL NAME	REG NO

PACIFIC HIGHWAY

SITE BOUNDARY

SITE BOUNDARY

PROPOSED SEWER DEVIATION

EXISTING SEWER MAIN LINE (TO BE DISUSED)

PROPOSED SEWER DEVIATION

SITE BOUNDARY (TO BE CONFIRMED BY SITE SURVEY)

SITE BOUNDARY

SITE BOUNDARY

SITE BOUNDARY

SITE BOUNDARY

SITE BOUNDARY

SITE BOUNDARY

2ND RESERVE LINE

1ST RESERVE LINE

RAILWAY SHORING WALL

ROCK BERM

RAILWAY CORRIDOR

NORTHERN

NORTH

NORTH

NORTH SHORE

WILSON STREET

O'BRIEN STREET

EXISTING SEWER MAIN LINE (TO BE DISUSED)

BH-1

BH-2

BH-3

BH-4

BH-5

BH-6

INCM-1

INCM-2

INCM-3

INCM-4

SHORING SW1
S10010

SHORING SW2
S10010

S10012
SHORING SW6

S10012
SHORING SW7
S10012

S10012
SHORING SW8

S10012
SHORING SW9

S10012
SHORING SW5
S10012

S10011
SHORING SW3

S10011
SHORING SW4

TEMPORARY PROPPING
(BY TEMPORARY WORK ENGINEER)

TEMPORARY PROPPING
(BY TEMPORARY WORK ENGINEER)

SW4a
SW4b
SW4c
SW4d
SW4e
SW4f

BOTTOM WALL RL 99.41

BOTTOM WALL RL 99.44

BOTTOM WALL RL 99.47

BOTTOM WALL RL 99.54

TOP OF RAIL RL 100.22

TOP OF RAIL RL 100.19

RL 100.04

RL 100.07

RL 402.88

RL 105.19

RL 105.29

RL 105.41

RL 105.63

RL 105.79

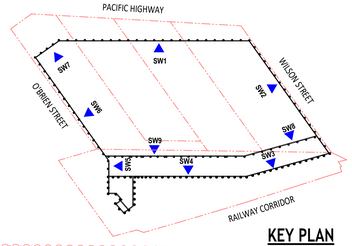
RL 105.92

RL 105.34

RL 105.24

RL 105.94

KEY PLAN



CAPPING BEAM SCHEDULE

MARK	WIDTH	DEPTH	TOP BARS	BTM BARS	TIES	CONCRETE GRADE (f'c)
CB1	700	600	5N20	5N20	N12-300 (2 Legs)	40 MPa
CB2	1000	600	5N20	5N20	N12-200 (4 Legs)	40 MPa
CB3	(TBC)	2000	REFER PILE CAP SCHEDULE (TBC)			
CB4	1000	1250	5N32 (SIDE BAR 8N32)	5N32 (SIDE BAR 8N32)	N16-200 (4 Legs) REFER DWG.S10004 FOR ADDITIONAL HORZ. LGS	40 MPa

NOTE: CB1a, CB2a CAPPING BEAM WILL CONSIST OF RETAINING WALLS. CB1 AND CB1a WILL HAVE SIMILAR TOP AND BOTTOM REO. CB2 AND CB2a WILL HAVE SIMILAR TOP AND BOTTOM REO. THE TIES SHALL BE MIN N12-200 (4 LEGS) FOR CB1a AND CB2a (REFER TO DWG.S10004)
* DIMENSIONS OF SB (STEEL BEAMS) USED AS WALERS SHALL BE PROVIDED IN A SEPARATE DRAWING.

SHORING PILE SCHEDULE

MARK	DIAMETER	VER. REO	TIES	CONCRETE GRADE	COVER (mm)	SOCKET LENGTH (mm) (TERMINATION BELOW BEL) BULK EXCAVATION IS AT B-6 LEVEL
P1	600 DIA	8N32	N12-90 HELIX FROM CAPPING BEAM TO BASEMENT 4 N16-120 HELIX AFTER BASEMENT 4 TO 6	50 MPa	60	1200mm (FOR DIFFERED LENGTHS REFER SW4a-SW4f)
P2	900 DIA	8N32	N12-150 HELIX	50 MPa	60	1200mm
P3	900 DIA	8N32+4N24 FROM CAPPING BEAM TO BASEMENT 3 8N36+4N24 AFTER BASEMENT 3 TO 6	N12-125 HELIX FROM CAPPING BEAM TO BASEMENT 3 N16-120 HELIX AFTER BASEMENT 3 TO 6	50 MPa	60	1200mm
P4	900 DIA	8N32+4N24 FROM CAPPING BEAM TO BASEMENT 3 8N36+4N24 AFTER BASEMENT 3 TO 6	N12-125 HELIX FROM CAPPING BEAM TO BASEMENT 3 N16-120 HELIX AFTER BASEMENT 3 TO 6	50 MPa	60	6000mm
P5	600 DIA	8N24	N16-90 HELIX	50 MPa	60	900mm

NOTES:

1. ANCHOR LENGTHS ARE SHOWN INDICATIVELY ONLY, THIS IS DETERMINED BY OTHERS.
2. THE SHORING DESIGN IS PERFORMED BASED ON THE GEOTECHNICAL REPORT PROVIDED BY THE FORTIFY GEOTECH.
   i - GEOTECHNICAL INVESTIGATION REPORT ISSUED ON 14/12/2023 (REF - JS/S1998 Rev 2)
   iii- MN/S2207-2: (REV1) DATED 13.05.2024 RESPONSES TO CADIGAL GROUP'S CONSULTANT ADVICE NOTICE DATED 22/04/2024
3. FOR THE PIPE IL AND THE NATURAL GROUND LEVEL (NGL) SURVEY DRAWINGS PREPARED BY SDG PTY LTD .
4. DIAL BEFORE YOU DIG INFORMATION WAS CONSIDERED FOR THE PIPE DIMENSION. THIS REQUIRES SITE SURVEY AND VERIFICATION.
5. THE PROVIDED INFORMATION IS ONLY FOR APPROVAL. SITE VERIFICATION IS REQUIRED PRIOR TO CONSTRUCTION COMMENCEMENT.
6. DRAWING MUST BE READ IN CONJUNCTION WITH ARCHITECTURAL DRAWINGS.
7. REFER TO ARCHITECTURAL DRAWINGS FOR ALL SETOUT AND LEVELS.
8. FOOTINGS / PILES SHALL BE LOCATED CENTRALLY UNDER WALLS AND COLUMNS UNLESS NOTED OTHERWISE.

ADDITIONAL NOTES

* SERVICE PIPES TO BE RELOCATED TO AVOID CLASHES WITH THE SHORING WALL.
* ALL TOB (TOP OF CAPPING BEAM) RL LEVELS TO BE VERIFIED AND REVIEWED BY THE ARCHITECTURAL AND RELATED SERVICE ENGINEERING TEAMS
* REFER TO DRAWING S 0003 FOR THE TRIGGER CRITERIA.

LEGEND

- INCLINOMETER LOCATION
- BOUNDARY LINE
- ZONE OF INFLUENCE
- POTABLE WATER MAIN
- EXISTING SEWER MAIN LINE
- EXISTING SEWER MAIN LINE (TO BE REMOVED)
- PROPOSED SEWER DEVIATION
- RESERVATION LINE

DIAL 1100 BEFORE DIG

BUILDER TO DETERMINE THE EXACT LOCATIONS OF EXISTING SERVICES PRIOR TO THE START OF ANY CONSTRUCTION WORK. BUILDER TO CONTACT DIAL BEFORE YOU DIG AND THE AUTHORITIES CONCERNED TO CONFIRM THE ACTUAL LOCATIONS OF EXISTING SERVICES. IN THE EVENT THAT ANY OF THE SERVICES MIGHT BE AFFECTED BY STRUCTURAL WORK, STRUCTURAL ENGINEER IS TO BE NOTIFIED AND CONSULTED IMMEDIATELY TO REVIEW THE STRUCTURAL DETAILS AFFECTING THE SERVICES.
www.dialbeforeyoudig.com.au

SITE RETENTION PLAN

SCALE @ 1 : 100

0 10 20 30 50 100

WORK IN PROGRESS
NOT SUITABLE FOR CONSTRUCTION

Rev	Description	Date	By	App
H	ISSUED FOR INFORMATION ONLY	25.05.09	RT	NAA
G	ISSUED FOR INFORMATION ONLY	25.04.03	RT	NAA
F	ISSUED FOR INFORMATION ONLY	25.03.25	RT	NAA
E	ISSUED FOR INFORMATION ONLY	25.03.11	RT	NAA
D	ISSUED FOR INFORMATION ONLY (PRELIMINARY DD 70%)	25.02.18	RM	JT

COPYRIGHT All rights reserved.

These drawings, plans and specifications and the copyright therein are the property of the Cadigal Group Engineers PTY LTD and must not be used, reproduced or copied wholly or in part without the written permission of Cadigal Group Engineers PTY LTD.

Project: **849-859 PACIFIC HIGHWAY & 2-8 WILSON STREET, CHATSWOOD.**

Developer: Billbergia creating communities®

Contractor:

Architect : pbd architects

Design Consultant: CADIGAL GROUP
1002, 22-24 Market Street, Sydney , NSW 2000
Australia
T: +61 2 8630 8559
info@cadigalgroup.com.au

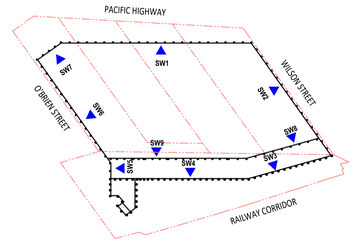
© Copyright

Drawing Title: **SITE RETENTION PLAN**

STRUCTURAL DRAWINGS

Designed:	NAA	Project Director Approved	Date	North
Modelled:	RT	JT	05/09/25	
Scale:	1:100	Project Ref.	Drawing No.	Rev
Sheet:	A0	01-100084	S10001	H

NON-REGULATED DESIGN RECORD				
PROJECT ADDRESS:	849-859 PACIFIC HIGHWAY & 2-8 WILSON STEET, CHATSWOOD.			
PROJECT TITLE:	CHATSWOOD GRAND RESIDENCES			
CONSENT No.:	DRAWING TITLE:	BODY CORP REG TAG:		
SPLAYED GROUND ANCHOR LAYOUT	DA No:			
	DRAWING No: S10002			
REV	DATE	DESCRIPTION	DP FULL NAME	REG NO



KEY PLAN

NOTES:

1. ANCHOR LENGTHS ARE SHOWN INDICATIVELY ONLY, THIS IS DETERMINED BY OTHERS.
2. THE SHORING DESIGN IS PERFORMED BASED ON THE GEOTECHNICAL REPORT PROVIDED BY THE FORTIFY GEOTECH.
   i - GEOTECHNICAL INVESTIGATION REPORT ISSUED ON 14/12/2023 (REF - JS/S1998 Rev 2)
   iii- MN/S2207-2: (REV1) DATED 13.05.2024 RESPONSES TO CADIGAL GROUP'S CONSULTANT ADVICE NOTICE DATED 22/04/2024
3. FOR THE PIPE IL AND THE NATURAL GROUND LEVEL (NGL) SURVEY DRAWINGS PREPARED BY SDG PTY LTD .
4. DIAL BEFORE YOU DIG INFORMATION WAS CONSIDERED FOR THE PIPE DIMENSION. THIS REQUIRES SITE SURVEY AND VERIFICATION.
5. THE PROVIDED INFORMATION IS ONLY FOR APPROVAL SITE VERIFICATION IS REQUIRED PRIOR TO CONSTRUCTION COMMENCEMENT.
6. DRAWING MUST BE READ IN CONJUNCTION WITH ARCHITECTURAL DRAWINGS.
7. REFER TO ARCHITECTURAL DRAWINGS FOR ALL SETOUT AND LEVELS.
8. FOOTINGS / PILES SHALL BE LOCATED CENTRALLY UNDER WALLS AND COLUMNS UNLESS NOTED OTHERWISE.

ADDITIONAL NOTES

* SERVICE PIPES TO BE RELOCATED TO AVOID CLASHES WITH THE SHORING WALL.
* ALL TOB (TOP OF CAPPING BEAM) RL LEVELS TO BE VERIFIED AND REVIEWED BY THE ARCHITECTURAL AND RELATED SERVICE ENGINEERING TEAMS
* REFER TO DRAWING S 0003 FOR THE TRIGGER CRITERIA.

LEGEND

- INCLINOMETER LOCATION
- BOUNDARY LINE
- ZONE OF INFLUENCE
- POTABLE WATER MAIN
- EXISTING SEWER MAIN LINE
- EXISTING SEWER MAIN LINE (TO BE REMOVED)
- PROPOSED SEWER DEVIATION
- RESERVATION LINE

DIAL 1100 BEFORE DIG

BUILDER TO DETERMINE THE EXACT LOCATIONS OF EXISTING SERVICES PRIOR TO THE START OF ANY CONSTRUCTION WORK. BUILDER TO CONTACT DIAL BEFORE YOU DIG AND THE AUTHORITIES CONCERNED TO CONFIRM THE ACTUAL LOCATIONS OF EXISTING SERVICES. IN THE EVENT THAT ANY OF THE SERVICES MIGHT BE AFFECTED BY STRUCTURAL WORK, STRUCTURAL ENGINEER IS TO BE NOTIFIED AND CONSULTED IMMEDIATELY TO REVIEW THE STRUCTURAL DETAILS AFFECTING THE SERVICES.
www.dialbeforeyoudig.com.au

SPLAYED GROUND ANCHOR LAYOUT

SCALE @ 1 : 125

0 10 20 30 50 100

WORK IN PROGRESS
NOT SUITABLE FOR CONSTRUCTION

Rev	Description	Date	By	App
H	ISSUED FOR INFORMATION ONLY	25.05.09	RT	NAA
G	ISSUED FOR INFORMATION ONLY	25.04.03	RT	NAA
F	ISSUED FOR INFORMATION ONLY	25.03.25	RT	NAA
E	ISSUED FOR INFORMATION ONLY	25.03.11	RT	NAA
D	ISSUED FOR INFORMATION ONLY (PRELIMINARY DD 70%)	25.02.18	RM	JT

COPYRIGHT All rights reserved.
These drawings, plans and specifications and the copyright therein are the property of the Cadigal Group Engineers PTY LTD and must not be used, reproduced or copied wholly or in part without the written permission of Cadigal Group Engineers PTY LTD.

Project: **849-859 PACIFIC HIGHWAY & 2-8 WILSON STREET, CHATSWOOD.**

Developer: Billbergia creating communities®

Contractor:

Architect : pbd architects

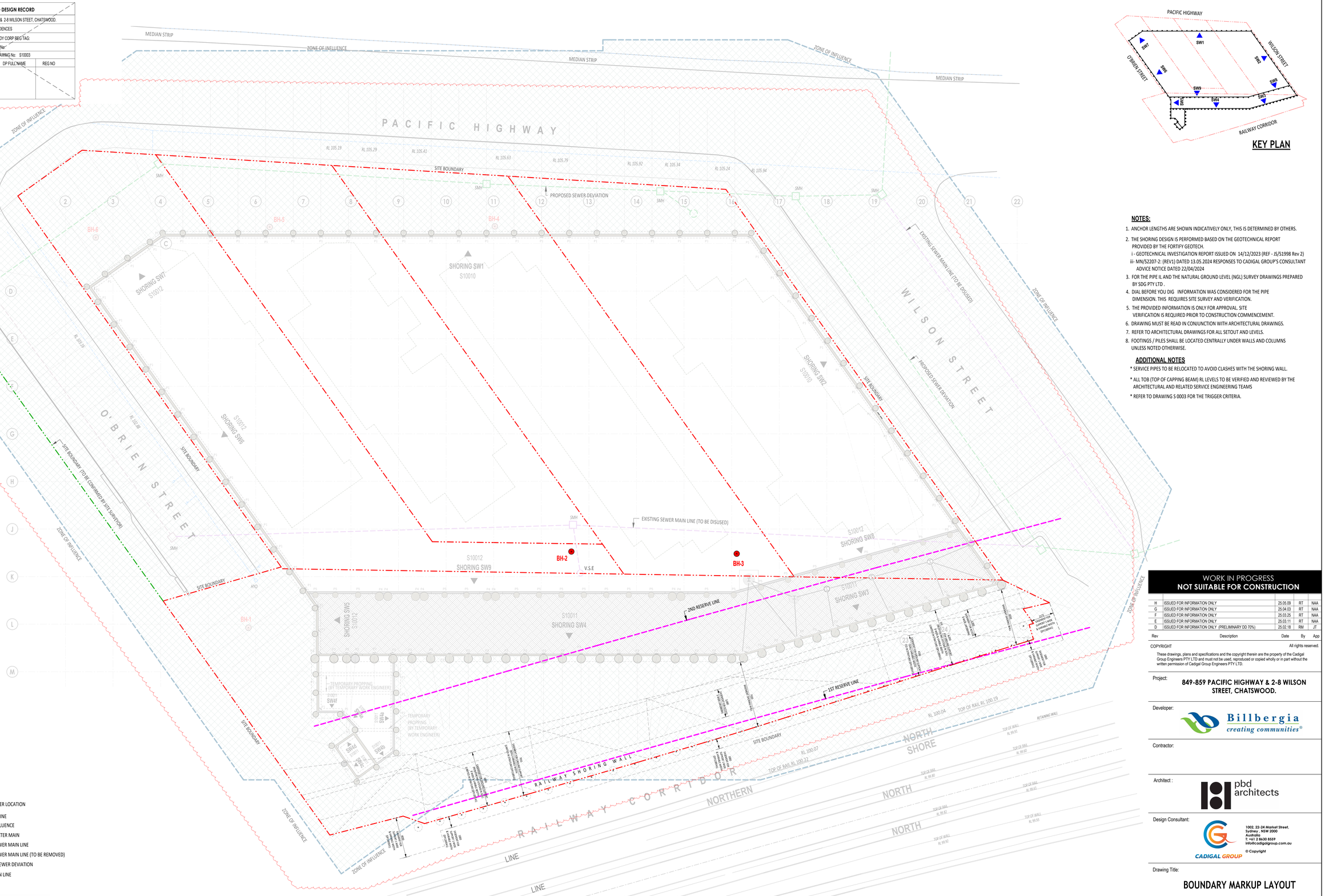
Design Consultant: CADIGAL GROUP
1002, 22-24 Market Street, Sydney , NSW 2000 Australia
T: +61 2 8630 8559
info@cadigalgroup-com.au
© Copyright

Drawing Title: **SPLAYED GROUND ANCHOR LAYOUT**

STRUCTURAL DRAWINGS

Designed:	NAA	Project Director Approved	Date	North
Modelled:	RT	JT	05/09/25	
Scale:	1:125	Project Ref.	Drawing No.	Rev
Sheet:	A0	01-100084	S10002	H

NON-REGULATED DESIGN RECORD				
PROJECT ADDRESS:	849-859 PACIFIC HIGHWAY & 2-8 WILSON STEET, CHATSWOOD.			
PROJECT TITLE:	CHATSWOOD GRAND RESIDENCES			
CONSENT No.:	DRAWING TITLE:	BODY CORP REG TAG:		
SPLAYED GROUND ANCHOR LAYOUT		DA No:		
		DRAWING No: S10003		
REV	DATE	DESCRIPTION	DP FULL NAME	REG NO



KEY PLAN

NOTES:

1. ANCHOR LENGTHS ARE SHOWN INDICATIVELY ONLY, THIS IS DETERMINED BY OTHERS.
2. THE SHORING DESIGN IS PERFORMED BASED ON THE GEOTECHNICAL REPORT PROVIDED BY THE FORTIFY GEOTECH.
   i - GEOTECHNICAL INVESTIGATION REPORT ISSUED ON 14/12/2023 (REF - JS/S1998 Rev 2)
   iii- MN/S2207-2: (REV1) DATED 13.05.2024 RESPONSES TO CADIGAL GROUP'S CONSULTANT ADVICE NOTICE DATED 22/04/2024
3. FOR THE PIPE IL AND THE NATURAL GROUND LEVEL (NGL) SURVEY DRAWINGS PREPARED BY SDG PTY LTD .
4. DIAL BEFORE YOU DIG INFORMATION WAS CONSIDERED FOR THE PIPE DIMENSION. THIS REQUIRES SITE SURVEY AND VERIFICATION.
5. THE PROVIDED INFORMATION IS ONLY FOR APPROVAL. SITE VERIFICATION IS REQUIRED PRIOR TO CONSTRUCTION COMMENCEMENT.
6. DRAWING MUST BE READ IN CONJUNCTION WITH ARCHITECTURAL DRAWINGS.
7. REFER TO ARCHITECTURAL DRAWINGS FOR ALL SETOUT AND LEVELS.
8. FOOTINGS / PILES SHALL BE LOCATED CENTRALLY UNDER WALLS AND COLUMNS UNLESS NOTED OTHERWISE.

ADDITIONAL NOTES

* SERVICE PIPES TO BE RELOCATED TO AVOID CLASHES WITH THE SHORING WALL.
* ALL TOB (TOP OF CAPPING BEAM) RL LEVELS TO BE VERIFIED AND REVIEWED BY THE ARCHITECTURAL AND RELATED SERVICE ENGINEERING TEAMS
* REFER TO DRAWING S 0003 FOR THE TRIGGER CRITERIA.

LEGEND

- INCLINOMETER LOCATION
- BOUNDARY LINE
- ZONE OF INFLUENCE
- POTABLE WATER MAIN
- EXISTING SEWER MAIN LINE
- EXISTING SEWER MAIN LINE (TO BE REMOVED)
- PROPOSED SEWER DEVIATION
- RESERVATION LINE

DIAL 1100 BEFORE DIG

BUILDER TO DETERMINE THE EXACT LOCATIONS OF EXISTING SERVICES PRIOR TO THE START OF ANY CONSTRUCTION WORK. BUILDER TO CONTACT 'DIAL BEFORE YOU DIG AND THE AUTHORITIES CONCERNED TO CONFIRM THE ACTUAL LOCATIONS OF EXISTING SERVICES. IN THE EVENT THAT ANY OF THE SERVICES MIGHT BE AFFECTED BY STRUCTURAL WORK, STRUCTURAL ENGINEER IS TO BE NOTIFIED AND CONSULTED IMMEDIATELY TO REVIEW THE STRUCTURAL DETAILS AFFECTING THE SERVICES.
www.dialbeforeyoudig.com.au

BOUNDARY MARKUP LAYOUT

SCALE @ 1 : 130

0 10 20 50 100

WORK IN PROGRESS
NOT SUITABLE FOR CONSTRUCTION

Rev	Description	Date	By	App
H	ISSUED FOR INFORMATION ONLY	25.05.09	RT	NAA
G	ISSUED FOR INFORMATION ONLY	25.04.03	RT	NAA
F	ISSUED FOR INFORMATION ONLY	25.03.25	RT	NAA
E	ISSUED FOR INFORMATION ONLY	25.03.11	RT	NAA
D	ISSUED FOR INFORMATION ONLY (PRELIMINARY DD 70%)	25.02.18	RM	JT

COPYRIGHT All rights reserved.
These drawings, plans and specifications and the copyright therein are the property of the Cadigal Group Engineers PTY LTD and must not be used, reproduced or copied wholly or in part without the written permission of Cadigal Group Engineers PTY LTD.

Project: **849-859 PACIFIC HIGHWAY & 2-8 WILSON STREET, CHATSWOOD.**

Developer: Billbergia creating communities®

Contractor:

Architect : pbd architects

Design Consultant: CADIGAL GROUP
1002, 22-24 Market Street, Sydney , NSW 2000 Australia
T: +61 2 8630 8559
info@cadigalgroup.com.au

© Copyright

Drawing Title: **BOUNDARY MARKUP LAYOUT**

STRUCTURAL DRAWINGS

Designed:	NAA	Project Director Approved	Date	North
Modelled:	RT	JT	05/09/25	
Scale:	1:100	Project Ref.	Drawing No.	Rev
Sheet:	A0	01-100084	S10003	H

NON DECLARED DESIGN

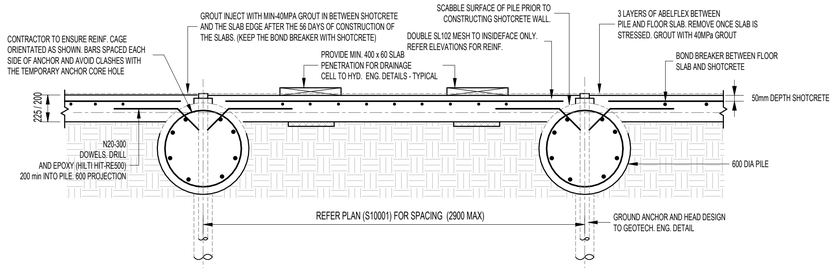
PROJECT ADDRESS: 849-859 PACIFIC HIGHWAY & 2-8 WILSON STREET, CHATSWOOD.

PROJECT TITLE: CHADSWOOD

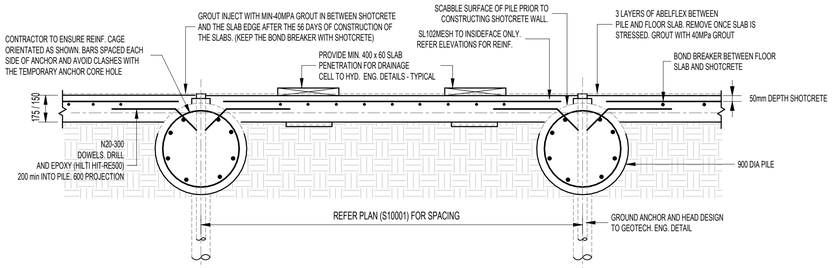
CONSENT No.: BODY CORP REG TAG:

DRAWING TITLE: SPECIFICATION NOTES - SH3 DA-No: S00012

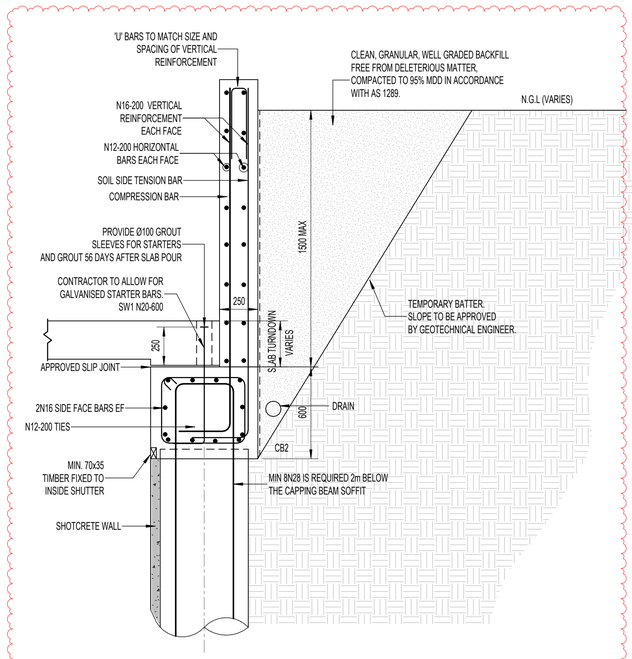
REV	DATE	DESCRIPTION	DP FULL NAME	REG NO



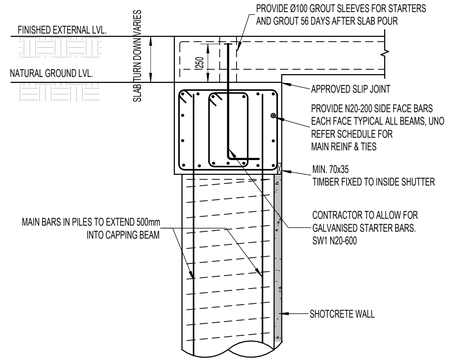
TYPICAL 600 DIA SHORING PILE FOR 200/225 THK SHOTCRETE WALL PLAN - 32MPa



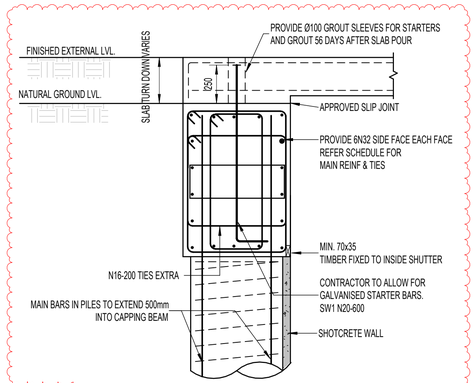
TYPICAL 900 DIA SHORING PILE FOR 175/150 THK SHOTCRETE WALL PLAN - 32MPa



TYPICAL CB1a/CB2a CAPPING BEAM DETAIL

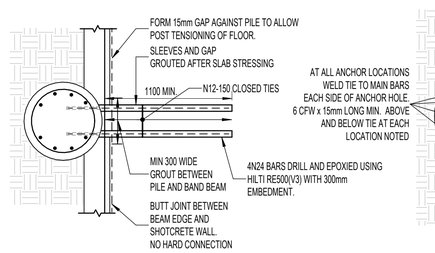


TYPICAL CAPPING BEAM SECTION

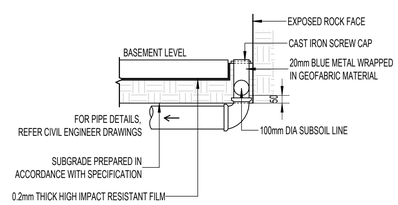


CAPPING BEAM SECTION CB4

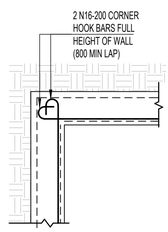
NOTE: SHOTCRETE WALL OMITTED FOR CLARITY



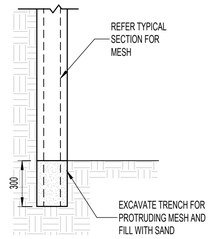
TYPICAL SHORING PILE TO BAND BEAM CONNECTION DETAIL



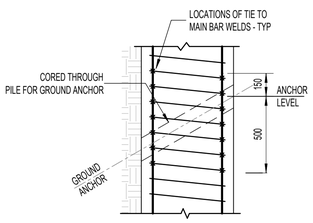
WALL DRAINAGE DETAIL - EXPOSED ROCKFACE (TYP)



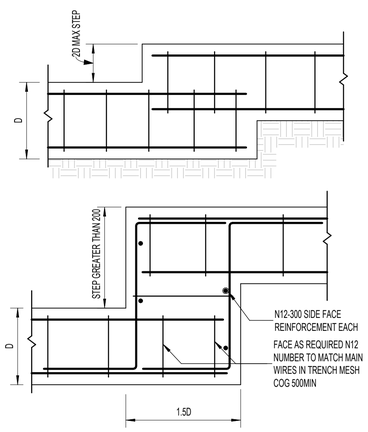
TYPICAL SHOTCRETE WALL CORNER



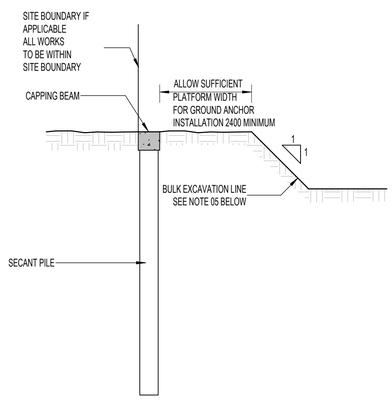
HORIZONTAL SHOTCRETE CONST. JOINT



TYPICAL PILE REINFORCEMENT

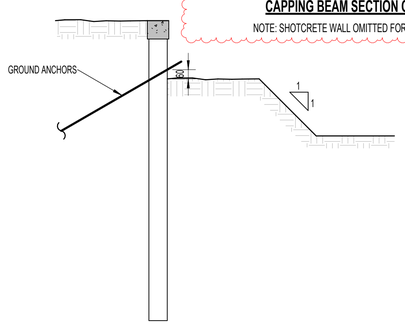


TYPICAL STEP IN CAPPING BEAM DETAILS U.N.O



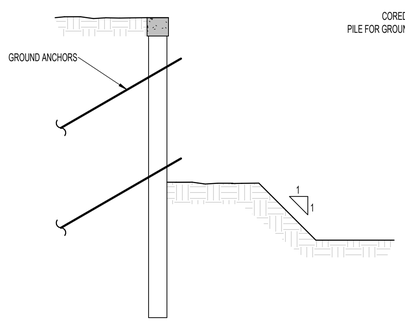
STAGE 1

01. BORE PILE TO THE SET-OUT AND DEPTH AS SHOWN ON PLAN AND ELEVATIONS. SOCKETS SHALL BE DE-WATERED AND INSPECTED BY A GEOTECHNICAL ENGINEER TO VERIFY THAT THE FOUNDATION CONDITIONS COMPLY WITH THE DESIGN ASSUMPTIONS. SOCKETS SHALL BE CLEANED OF DEBRIS.
02. PLACE THE REINFORCEMENT CAGES INTO THE HOLES ENSURING THAT SPECIFIED COVER AND ORIENTATION IS ACHIEVED.
03. POUR CONCRETE FOR SOLDIERS.
04. CONSTRUCT THE CAPPING BEAM ALONG TOP OF SOLDIER WHERE INDICATED ON ELEVATIONS AND SECTIONS.
05. BULK EXCAVATION MAY PROCEED AS INDICATED ABOVE WHILST SOLDIERS ARE BEING CONSTRUCTED.



STAGE 2

01. EXCAVATE LOCALLY ADJACENT TO SOLDIERS TO A LEVEL 300 BELOW THE FIRST ROW OF ANCHORS.
02. DRILL, INSTALL, PROOF TEST AND LOCK OFF GROUND ANCHORS.



STAGE 3

01. REPEAT STAGE 2 300 BELOW NEXT ANCHOR.
02. COMPLETE EXCAVATION TO FINAL LEVEL IN SUITABLE DROPS.
03. INSTALL ANY SUBSEQUENT ROWS OF GROUND ANCHORS SHOWN ON WALL ELEVATIONS.

CONSTRUCTION PROCEDURE FOR SECANT PILES RETENTION

WORK IN PROGRESS
NOT SUITABLE FOR CONSTRUCTION

Rev	Description	Date	By	App
G	ISSUED FOR INFORMATION ONLY	25.05.09	RT	NAA
F	ISSUED FOR INFORMATION ONLY	25.03.25	RT	NAA
E	ISSUED FOR INFORMATION ONLY	25.03.11	RT	NAA
D	ISSUED FOR INFORMATION ONLY (PRELIMINARY DD 70%)	25.02.18	RM	JT
C	ISSUED FOR INFORMATION ONLY (DD 30%)	25.01.17	RM	JT

COPYRIGHT All rights reserved.
These drawings, plans and specifications and the copyright therein are the property of the Cadigal Group Engineers PTY LTD and must not be used, reproduced or copied wholly or in part without the written permission of Cadigal Group Engineers PTY LTD.

Project:

849-859 PACIFIC HIGHWAY & 2-8 WILSON STREET, CHATSWOOD.

Developer: Billbergia creating communities®

Contractor:

Architect : pbd architects

Design Consultant: CADIGAL GROUP

1002, 22-24 Market Street, Sydney , NSW 2000 Australia
T: +61 2 8630 8559
info@cadigalgroup.com.au

© Copyright

Drawing Title:

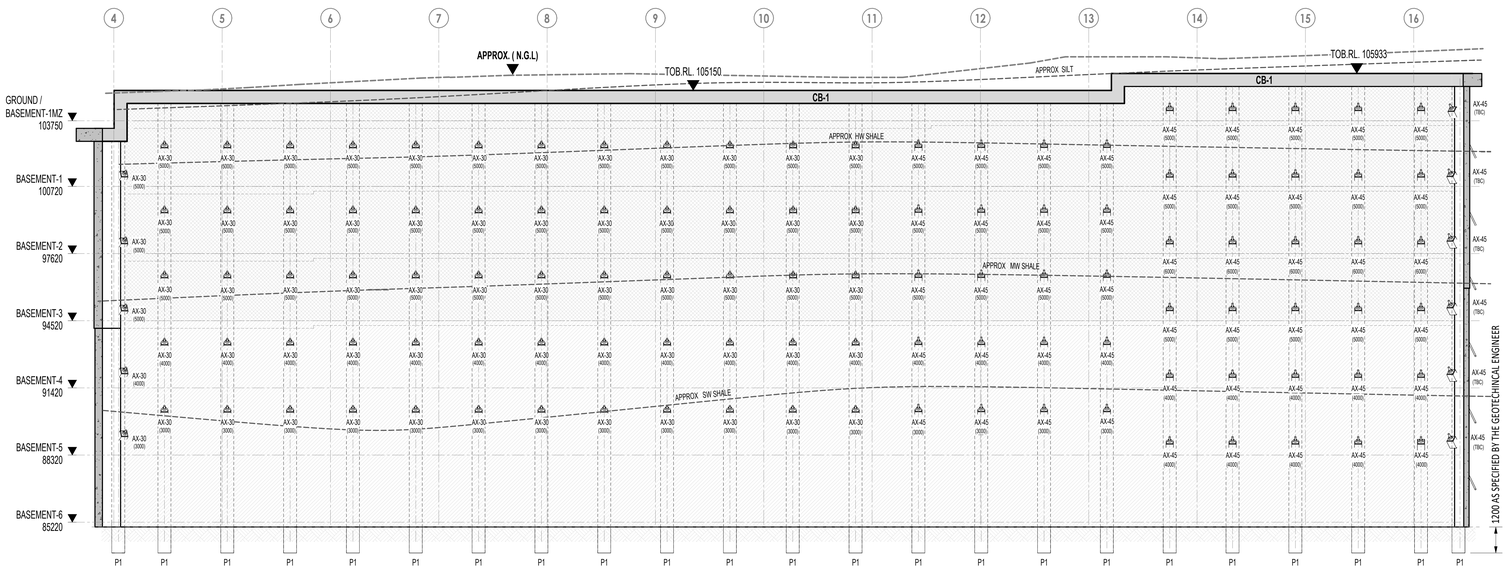
TYPICAL SHORING WALL DETAIL

STRUCTURAL DRAWINGS

Designed:	NAA	Project Director Approved	Date	North
Drawn:	RT	JT	05/09/25	
Scale		Project Ref.	Drawing No.	Rev
Sheet	A1	01-100084	S10004	G

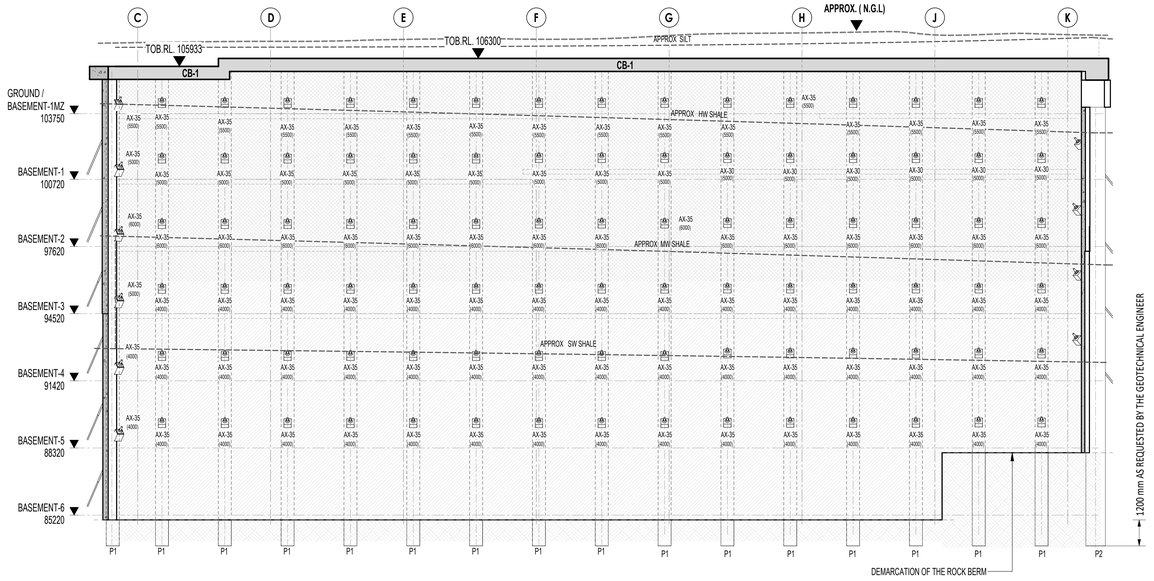
0 10 20 30 50 100

NON-REGULATED DESIGN RECORD				
PROJECT ADDRESS: 849-859 PACIFIC HIGHWAY & 2-8 WILSON STEET, CHATSWOOD.				
PROJECT TITLE: CHATSWOOD GRAND RESIDENCES				
CONSENT No.:	DRAWING TITLE:	BODY CORP REG TAG:		
SHORING ELEVATION SW1	DA No:			
	DRAWING No: S10010			
REV	DATE	DESCRIPTION	DP FULL NAME	REG NO



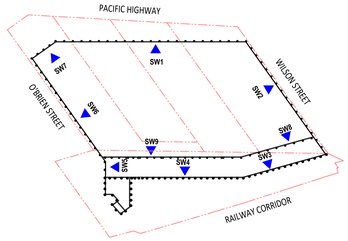
01 S10001 **SHORING WALL ELEVATION -SW1**

SCALE @ 1:100



02 S10001 **SHORING WALL ELEVATION -SW2**

SCALE @ 1:100



KEY PLAN

NOTES:

THIS DRAWING SHOULD BE READ IN CONJUNCTION WITH DRG S-0006 -SITE RETENTION PLAN

SHORING ELEVATION NOTES:

1. DRAWING MUST BE READ IN CONJUNCTION WITH ARCHITECTS DRAWINGS.
2. REFER TO ARCHITECTURAL DRAWINGS FOR ALL SETOUT U.N.O.
3. DO NOT SCALE ANY DIMENSIONS FROM THIS STRUCTURAL DRAWING.
4. FLOOR LEVELS (RL) SHOWN IN THIS DRAWING ARE FOR THE STRUCTURAL ENGINEERS USE ONLY. REFER TO ARCHITECTS DRAWINGS FOR LEVELS AND OTHER GEOMETRY RELATED DIMENSIONS.
5. THESE DRAWINGS ARE TO BE READ IN CONJUNCTION WITH SERVICES DRAWINGS. THE CONTRACTOR MUST CONTACT THE STRUCTURAL ENGINEER SHOULD ANY DISCREPANCIES OCCUR.
7. SOIL TYPES AND GROUND WATER LEVEL (IF ENCOUNTERED) SHOWN ARE INDICATIVE ONLY AND ARE AN EXTRAPOLATION BASED ON THE GEOTECHNICAL REPORT

GROUND ANCHOR TAGS

AX-45 (0000)

- DENOTES NUMBER OF STRANDS (DESIGN BY OTHERS)
- DENOTES ANCHOR BOND LENGTH IN (MM)
- DENOTES DECLINATION ANGLE

SHORING WALL SW1

- DENOTES EXPOSED ROCK / SHALE FACE TO BE RETAINED WITH SHOTCRETE AND ROCK BOLTS TO GEOTECHNICAL ENGINEERS' DETAILS
- DENOTES 175 THK. SHOTCRETE WALL WITH REO. SL102MESH
- DENOTES 150 THK. SHOTCRETE WALL WITH REO. SL102MESH
- DENOTES 200 THK. SHOTCRETE WALL WITH REO. DOUBLE SL102MESH
- DENOTES 225 THK. SHOTCRETE WALL WITH REO. DOUBLE SL102MESH

NOTE :
EXTENT OF SHOTCRETE WALLS TO BE CONFIRMED BY GEOTECHNICAL ENGINEER

WORK IN PROGRESS
NOT SUITABLE FOR CONSTRUCTION

Rev	Description	Date	By	App
H	ISSUED FOR INFORMATION ONLY	25.05.09	RT	NAA
G	ISSUED FOR INFORMATION ONLY	25.04.03	RT	NAA
F	ISSUED FOR INFORMATION ONLY	25.03.25	RT	NAA
E	ISSUED FOR INFORMATION ONLY	25.03.11	RT	NAA
D	ISSUED FOR INFORMATION ONLY (PRELIMINARY DD 70%)	25.02.18	RM	JT

COPYRIGHT All rights reserved.
These drawings, plans and specifications and the copyright therein are the property of the Cadigal Group Engineers PTY LTD and must not be used, reproduced or copied wholly or in part without the written permission of Cadigal Group Engineers PTY LTD.

Project: **849-859 PACIFIC HIGHWAY & 2-8 WILSON STREET, CHATSWOOD.**

Developer: Billbergia creating communities®

Contractor:

Architect : pbd architects

Design Consultant: CADIGAL GROUP

1002, 22-24 Market Street,
Sydney , NSW 2000
Australia
T: +61 2 8430 8559
info@cadigalgroup.com.au

© Copyright

Drawing Title:

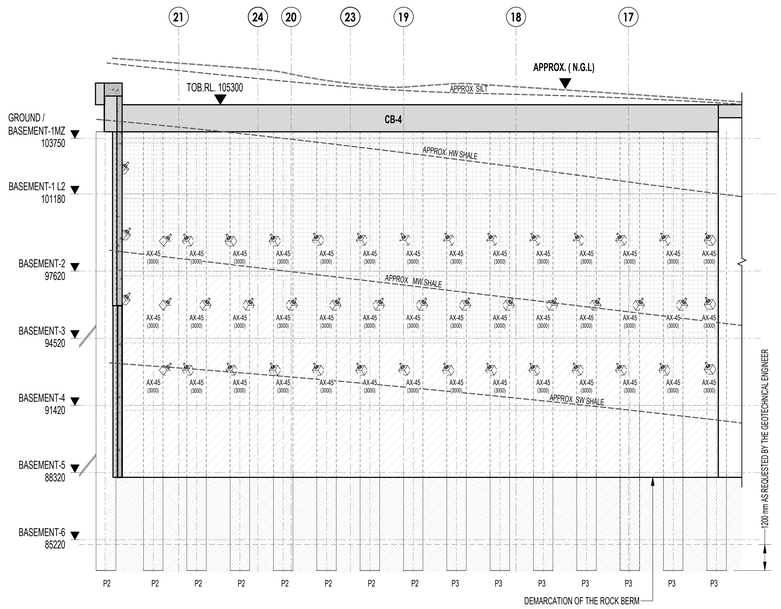
SHORING WALL ELEVATIONS - SHEET 1

STRUCTURAL DRAWINGS

Designed:	NAA	Project Director Approved	Date	North
Modelled:	RT	JT	05/09/25	
Scale:	1:100	Project Ref.	Drawing No.	Rev
Sheet:	A0	01-100084	S10010	H

0 10 20 30 50 100

NON-REGULATED DESIGN RECORD				
PROJECT ADDRESS: 849-859 PACIFIC HIGHWAY & 2-8 WILSON STEET, CHATSWOOD.				
PROJECT TITLE: CHATSWOOD GRAND RESIDENCES				
CONSENT No.:	DRAWING TITLE:	BODY CORP BEG TAG:		
SHORING ELEVATION SW2	DA No:			
	DRAWING No: S10011			
REV	DATE	DESCRIPTION	DP FULL NAME	REG NO

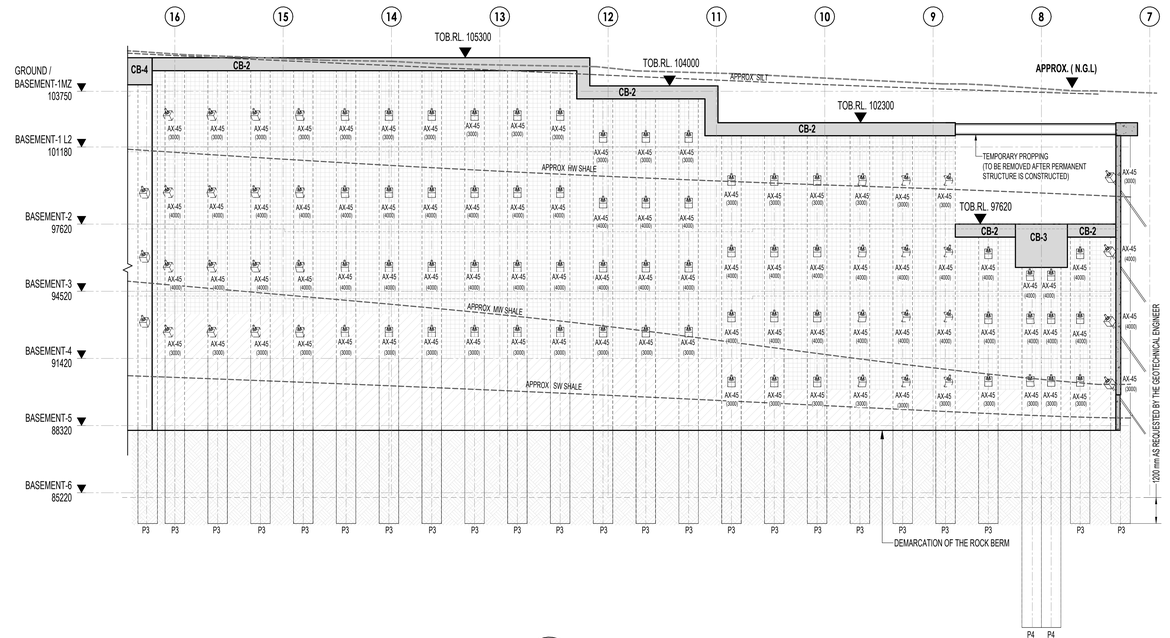


03 / S10001 **SHORING WALL ELEVATION -SW3**

SCALE @ 1:100

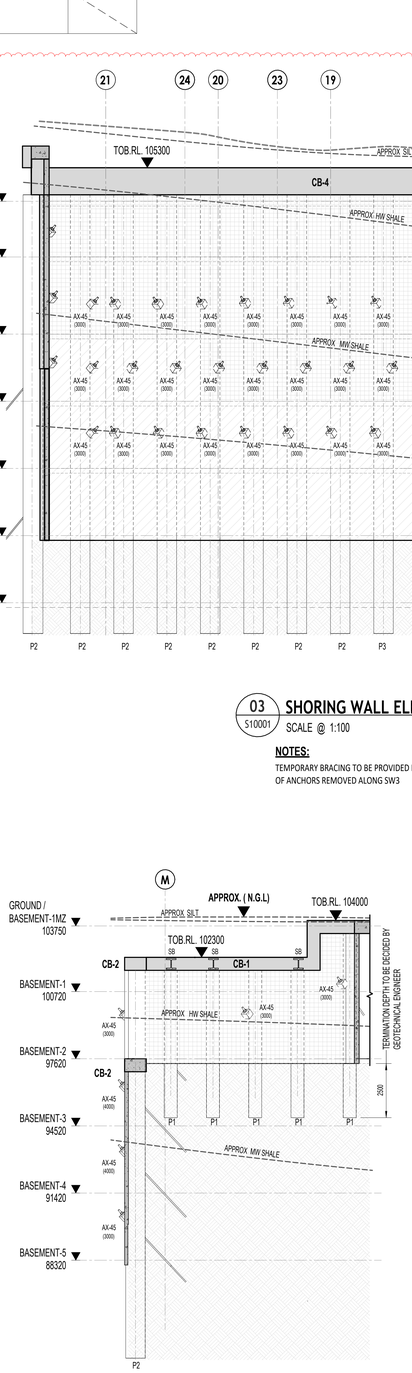
NOTES:

TEMPORARY BRACING TO BE PROVIDED IN LIEU OF THE 1ST LAYER OF ANCHORS REMOVED ALONG SW3



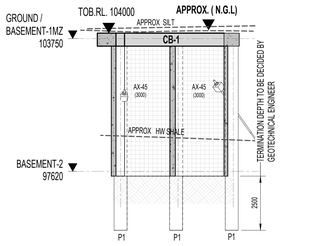
04 / S10001 **SHORING WALL ELEVATION -SW4**

SCALE @ 1:100



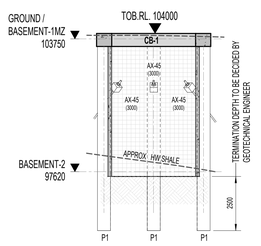
4a / S10001 **SHORING WALL ELEVATION -SW4a**

SCALE @ 1:100



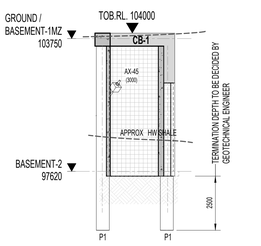
4b / S10001 **SHORING WALL ELEVATION -SW4b**

SCALE @ 1:100



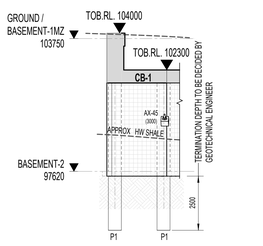
4c / S10001 **SHORING WALL ELEVATION -SW4c**

SCALE @ 1:100



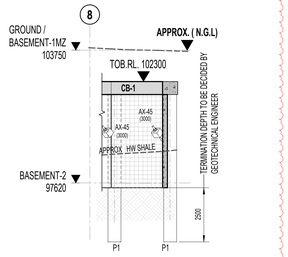
4d / S10001 **SHORING WALL ELEVATION -SW4d**

SCALE @ 1:100



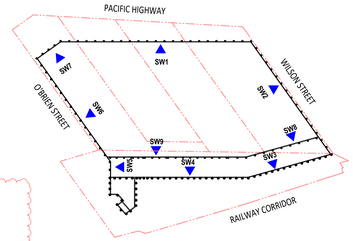
4e / S10001 **SHORING WALL ELEVATION -SW4e**

SCALE @ 1:100



4f / S10001 **SHORING WALL ELEVATION -SW4f**

SCALE @ 1:100



KEY PLAN

NOTES:

THIS DRAWING SHOULD BE READ IN CONJUNCTION WITH DRG S-0006 -SITE RETENTION PLAN

SHORING ELEVATION NOTES:

1. DRAWING MUST BE READ IN CONJUNCTION WITH ARCHITECTS DRAWINGS.
2. REFER TO ARCHITECTURAL DRAWINGS FOR ALL SETOUT U.N.O.
3. DO NOT SCALE ANY DIMENSIONS FROM THIS STRUCTURAL DRAWING.
4. FLOOR LEVELS (RL) SHOWN IN THIS DRAWING ARE FOR THE STRUCTURAL ENGINEERS USE ONLY. REFER TO ARCHITECTS DRAWINGS FOR LEVELS AND OTHER GEOMETRY RELATED DIMENSIONS.
5. THESE DRAWINGS ARE TO BE READ IN CONJUNCTION WITH SERVICES DRAWINGS. THE CONTRACTOR MUST CONTACT THE STRUCTURAL ENGINEER SHOULD ANY DISCREPANCIES OCCUR.
7. SOIL TYPES AND GROUND WATER LEVEL (IF ENCOUNTERED) SHOWN ARE INDICATIVE ONLY AND ARE AN EXTRAPOLATION BASED ON THE GEOTECHNICAL REPORT

GROUND ANCHOR TAGS

AX-45 (0000)

- DENOTES NUMBER OF STRANDS (DESIGN BY OTHERS)
- DENOTES ANCHOR BOND LENGTH IN (MM)
- DENOTES DECLINATION ANGLE

SHORING WALL SW1

- DENOTES EXPOSED ROCK / SHALE FACE TO BE RETAINED WITH SHOTCRETE AND ROCK BOLTS TO GEOTECHNICAL ENGINEERS' DETAILS
- DENOTES 175 THK. SHOTCRETE WALL WITH REO. SL102MESH
- DENOTES 150 THK. SHOTCRETE WALL WITH REO. SL102MESH
- DENOTES 200 THK. SHOTCRETE WALL WITH REO. DOUBLE SL102MESH
- DENOTES 225 THK. SHOTCRETE WALL WITH REO. DOUBLE SL102MESH

NOTE :

EXTENT OF SHOTCRETE WALLS TO BE CONFIRMED BY GEOTECHNICAL ENGINEER

WORK IN PROGRESS
NOT SUITABLE FOR CONSTRUCTION

Rev	Description	Date	By	App
H	ISSUED FOR INFORMATION ONLY	25.05.09	RT	NAA
G	ISSUED FOR INFORMATION ONLY	25.04.03	RT	NAA
F	ISSUED FOR INFORMATION ONLY	25.03.25	RT	NAA
E	ISSUED FOR INFORMATION ONLY	25.03.11	RT	NAA
D	ISSUED FOR INFORMATION ONLY (PRELIMINARY DD 70%)	25.02.18	RM	JT

COPYRIGHT All rights reserved.

These drawings, plans and specifications and the copyright therein are the property of the Cadigal Group Engineers PTY LTD and must not be used, reproduced or copied wholly or in part without the written permission of Cadigal Group Engineers PTY LTD.

Project: **849-859 PACIFIC HIGHWAY & 2-8 WILSON STREET, CHATSWOOD.**

Developer: Billbergia creating communities®

Contractor:

Architect : pbd architects

Design Consultant:

CADIGAL GROUP
1002, 22-24 Market Street,
Sydney , NSW 2000
Australia
T: +61 2 8630 8559
info@cadigalgroup.com.au

© Copyright

Drawing Title:

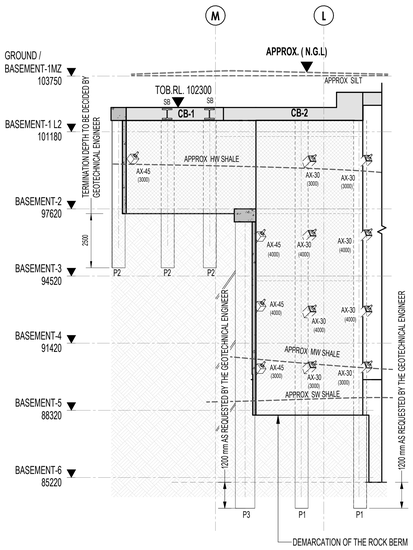
SHORING WALL ELEVATIONS - SHEET 2

STRUCTURAL DRAWINGS

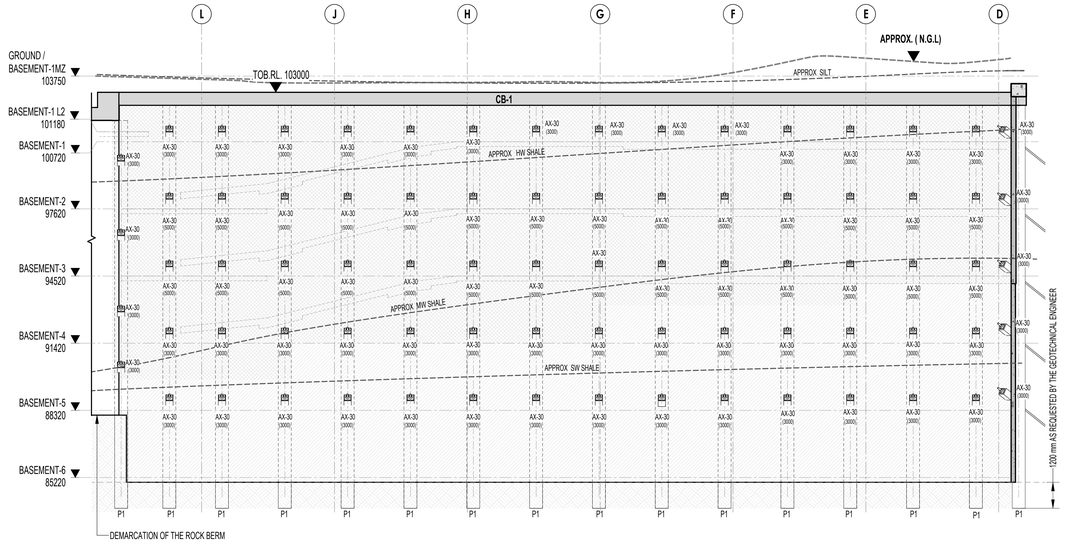
Designed:	NAA	Project Director Approved	Date	North
Modelled:	RT	JT	05/09/25	
Scale:	1:100	Project Ref.	Drawing No.	Rev
Sheet:	A0	01-100084	S10011	H

0 10 20 30 50 100

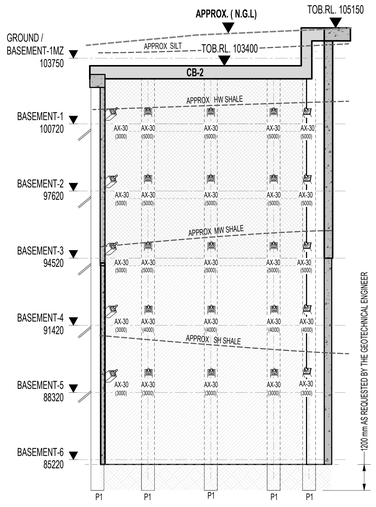
NON-REGULATED DESIGN RECORD				
PROJECT ADDRESS:	849-859 PACIFIC HIGHWAY & 2-8 WILSON STEET, CHATSWOOD.			
PROJECT TITLE:	CHATSWOOD GRAND RESIDENCES			
CONSENT No.:	DRAWING TITLE:	BODY CORP REG TAG:		
SHORING ELEVATION SW3	DA No:			
	DRAWING No: S10012			
REV	DATE	DESCRIPTION	DP FULL NAME	REG NO



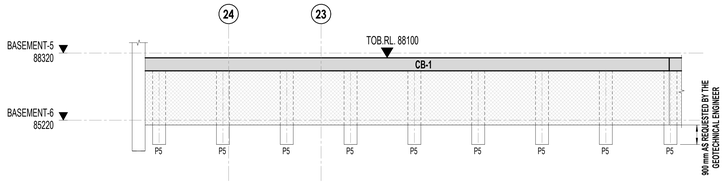
05 S10001 **SHORING WALL ELEVATION -SW5**
SCALE @ 1:100



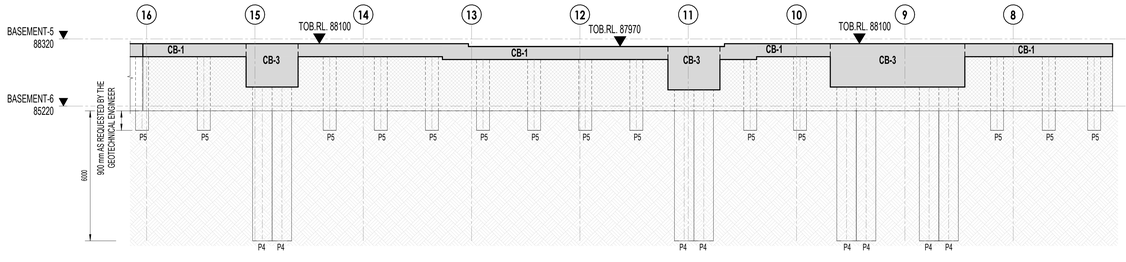
06 S10001 **SHORING WALL ELEVATION -SW6**
SCALE @ 1:100



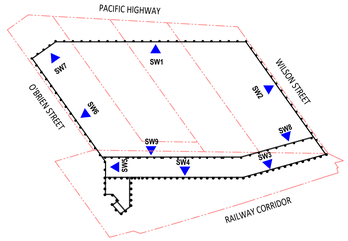
07 S10001 **SHORING WALL ELEVATION -SW7**
SCALE @ 1:100



08 S10001 **SHORING WALL ELEVATION -SW8**
SCALE @ 1:100



09 S10001 **SHORING WALL ELEVATION -SW9**
SCALE @ 1:100



KEY PLAN

NOTES:

THIS DRAWING SHOULD BE READ IN CONJUNCTION WITH DRG S-0006 -SITE RETENTION PLAN

SHORING ELEVATION NOTES:

1. DRAWING MUST BE READ IN CONJUNCTION WITH ARCHITECTS DRAWINGS.
2. REFER TO ARCHITECTURAL DRAWINGS FOR ALL SETOUT U.N.O.
3. DO NOT SCALE ANY DIMENSIONS FROM THIS STRUCTURAL DRAWING.
4. FLOOR LEVELS (RL) SHOWN IN THIS DRAWING ARE FOR THE STRUCTURAL ENGINEERS USE ONLY. REFER TO ARCHITECTS DRAWINGS FOR LEVELS AND OTHER GEOMETRY RELATED DIMENSIONS.
5. THESE DRAWINGS ARE TO BE READ IN CONJUNCTION WITH SERVICES DRAWINGS. THE CONTRACTOR MUST CONTACT THE STRUCTURAL ENGINEER SHOULD ANY DISCREPANCIES OCCUR.
7. SOIL TYPES AND GROUND WATER LEVEL (IF ENCOUNTERED) SHOWN ARE INDICATIVE ONLY AND ARE AN EXTRAPOLATION BASED ON THE GEOTECHNICAL REPORT

GROUND ANCHOR TAGS

AX-45 (0000)

- AX-45: DENOTES NUMBER OF STRANDS (DESIGN BY OTHERS)
- (0000): DENOTES ANCHOR BOND LENGTH IN (MM)
- DENOTES DECLINATION ANGLE

SHORING WALL SW1

- DENOTES EXPOSED ROCK / SHALE FACE TO BE RETAINED WITH SHOTCRETE AND ROCK BOLTS TO GEOTECHNICAL ENGINEERS' DETAILS
- DENOTES 175 THK. SHOTCRETE WALL WITH REO. SL102MESH
- DENOTES 150 THK. SHOTCRETE WALL WITH REO. SL102MESH
- DENOTES 200 THK. SHOTCRETE WALL WITH REO. DOUBLE SL102MESH
- DENOTES 225 THK. SHOTCRETE WALL WITH REO. DOUBLE SL102MESH

NOTE :
EXTENT OF SHOTCRETE WALLS TO BE CONFIRMED BY GEOTECHNICAL ENGINEER

WORK IN PROGRESS
NOT SUITABLE FOR CONSTRUCTION

Rev	Description	Date	By	App
H	ISSUED FOR INFORMATION ONLY	25.05.09	RT	NAA
G	ISSUED FOR INFORMATION ONLY	25.04.03	RT	NAA
F	ISSUED FOR INFORMATION ONLY	25.03.25	RT	NAA
E	ISSUED FOR INFORMATION ONLY	25.03.11	RT	NAA
D	ISSUED FOR INFORMATION ONLY (PRELIMINARY DD 70%)	25.02.18	RM	JT

COPYRIGHT All rights reserved.
These drawings, plans and specifications and the copyright therein are the property of the Cadigal Group Engineers PTY LTD and must not be used, reproduced or copied wholly or in part without the written permission of Cadigal Group Engineers PTY LTD.

Project:
849-859 PACIFIC HIGHWAY & 2-8 WILSON STREET, CHATSWOOD.

Developer:
Billbergia creating communities®

Contractor:

Architect :
pbd architects

Design Consultant:

1002, 22-24 Market Street, Sydney , NSW 2000 Australia
T: +61 2 9430 8559
info@cadigalgroup.com.au

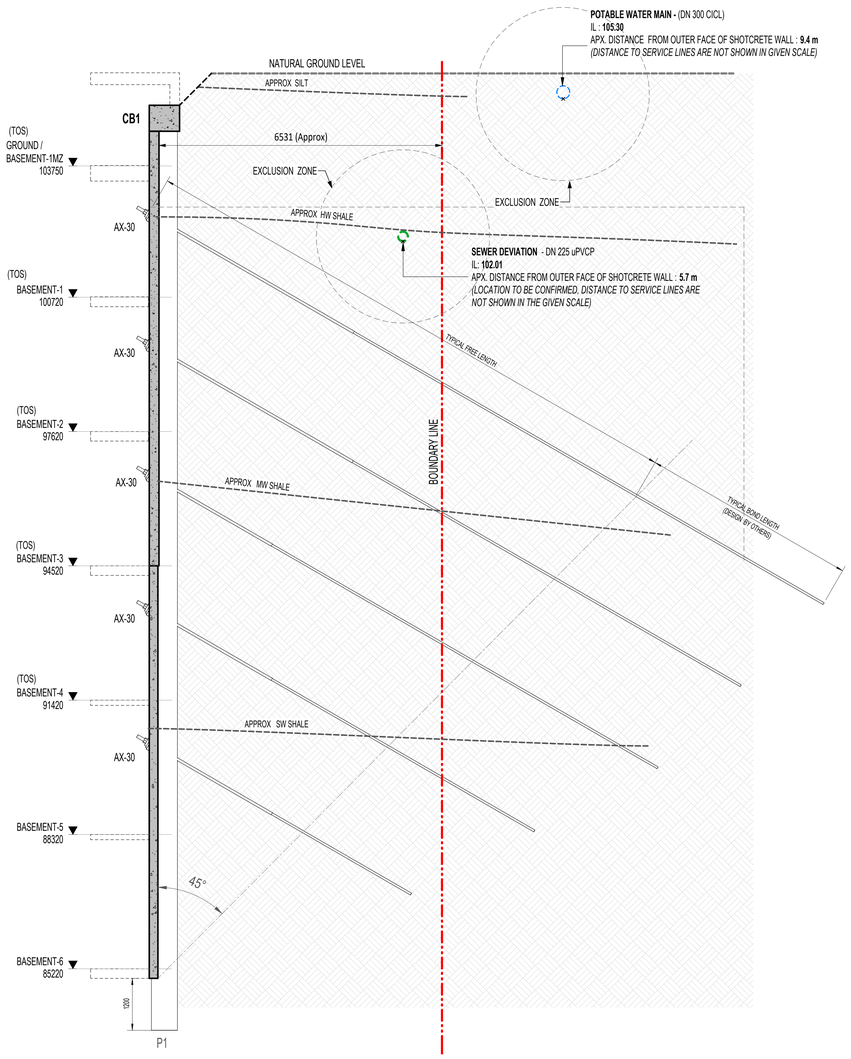
© Copyright
CADIGAL GROUP

Drawing Title:
SHORING WALL ELEVATIONS - SHEET 3

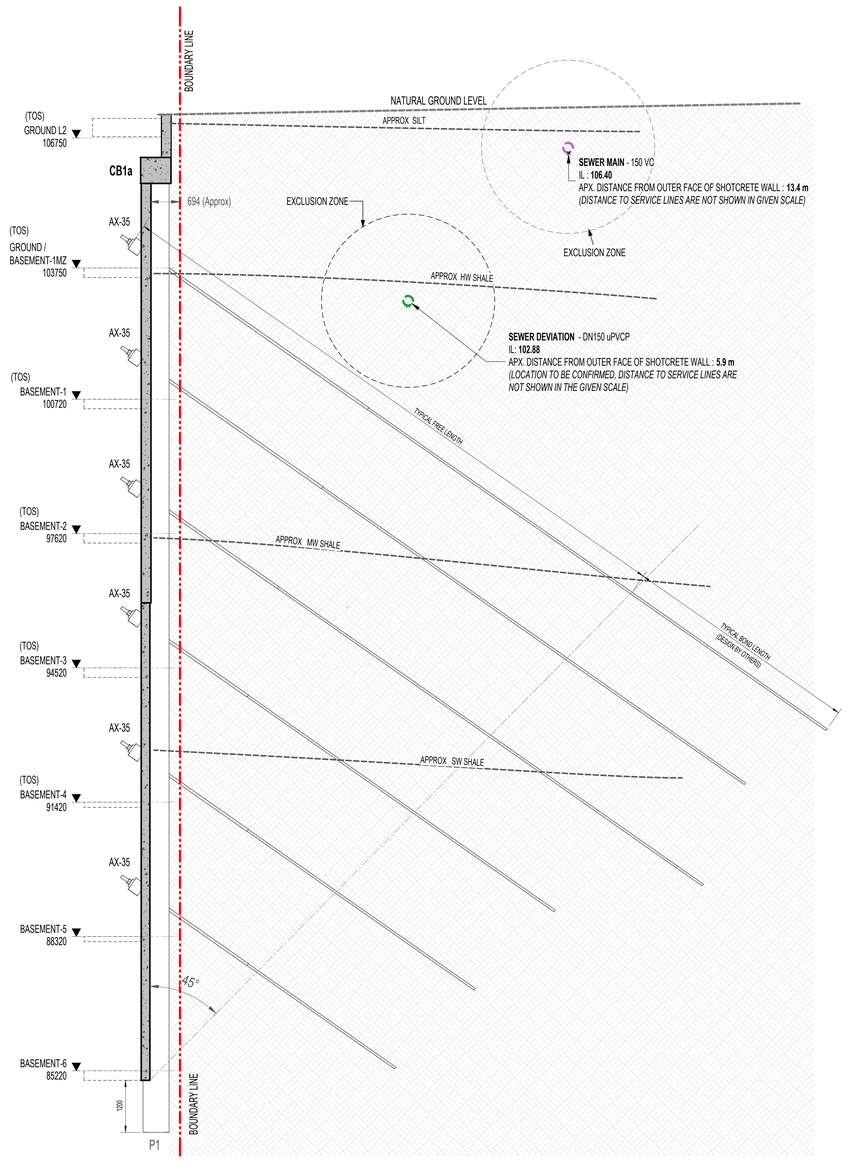
STRUCTURAL DRAWINGS

Designed:	NAA	Project Director Approved	Date	North
Modelled:	RT	JT	05/09/25	
Scale:	1:100	Project Ref.	Drawing No.	Rev
Sheet:	A0	01-100084	S10012	H

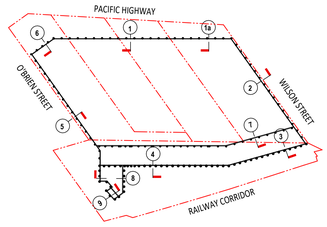
NON-REGULATED DESIGN RECORD				
PROJECT ADDRESS: 849-859 PACIFIC HIGHWAY & 2-8 WILSON STEET, CHATSWOOD.				
PROJECT TITLE: CHATSWOOD GRAND RESIDENCES				
CONSENT No.:	DRAWING TITLE:	BODY CORP BEG TAG:		
SHORING SECTIONS SH1	DA No:			
	DRAWING No: S10016			
REV	DATE	DESCRIPTION	DP FULL NAME	REG NO



01 S10001 **SECTION -1**
SCALE @ 1:50



02 S10001 **SECTION -2**
SCALE @ 1:50



KEY PLAN

NOTES:

1. BOUNDARY DIMENSIONS ARE SHOWN INDICATIVELY ONLY. PLEASE FOLLOW ARCHITECT DRAWINGS FOR THE DETAILS.
2. THE POTABLE WATER PIPE DIAMETER IS TENTATIVELY ASSUMED TO BE 110mm
3. THIS DRAWING SHOULD BE READ IN CONJUNCTION WITH DRG S-0006 -SITE RETENTION PLAN

SHORING WALL SW1

- DENOTES EXPOSED ROCK / SHALE FACE TO BE RETAINED WITH SHOTCRETE AND ROCK BOLTS TO GEOTECHNICAL ENGINEERS' DETAILS
- DENOTES 175 THK. SHOTCRETE WALL WITH REO. SL102MESH
- DENOTES 150 THK. SHOTCRETE WALL WITH REO. SL102MESH
- DENOTES 200 THK. SHOTCRETE WALL WITH REO. DOUBLE SL102MESH
- DENOTES 225 THK. SHOTCRETE WALL WITH REO. DOUBLE SL102MESH

NOTE :
EXTENT OF SHOTCRETE WALLS TO BE CONFIRMED BY GEOTECHNICAL ENGINEER

WORK IN PROGRESS
NOT SUITABLE FOR CONSTRUCTION

Rev	Description	Date	By	App
H	ISSUED FOR INFORMATION ONLY	25.05.09	RT	NAA
G	ISSUED FOR INFORMATION ONLY	25.04.03	RT	NAA
F	ISSUED FOR INFORMATION ONLY	25.03.25	RT	NAA
E	ISSUED FOR INFORMATION ONLY	25.03.11	RT	NAA
D	ISSUED FOR INFORMATION ONLY (PRELIMINARY DD 70%)	25.02.18	RM	JT

COPYRIGHT All rights reserved.
These drawings, plans and specifications and the copyright therein are the property of the Cadigal Group Engineers PTY LTD and must not be used, reproduced or copied wholly or in part without the written permission of Cadigal Group Engineers PTY LTD.

Project:
849-859 PACIFIC HIGHWAY & 2-8 WILSON STREET, CHATSWOOD.

Developer:
Billbergia creating communities®

Contractor:

Architect :
pbd architects

Design Consultant:

1002, 22-24 Market Street,
Sydney , NSW 2000
Australia
T: +61 2 8630 8559
info@cadigalgroup.com.au

CADIGAL GROUP
© Copyright

Drawing Title:
SHORING WALL SECTIONS - SHEET 1

STRUCTURAL DRAWINGS

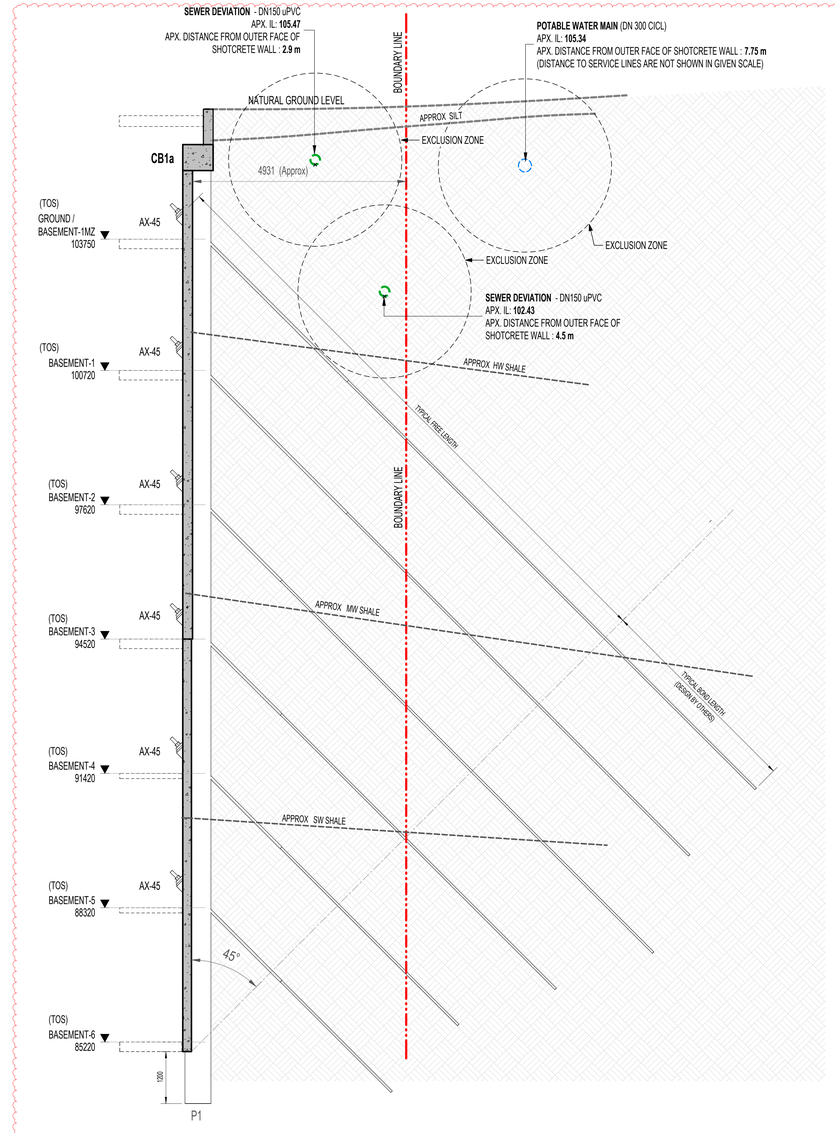
Designed: NAA	Project Director Approved: JT	Date: 05/09/25	North
Modelled: RT			
Scale: 1:100	Project Ref.: 01-100084	Drawing No.: S10016	Rev: H
Sheet: A0			

0 10 20 50 100

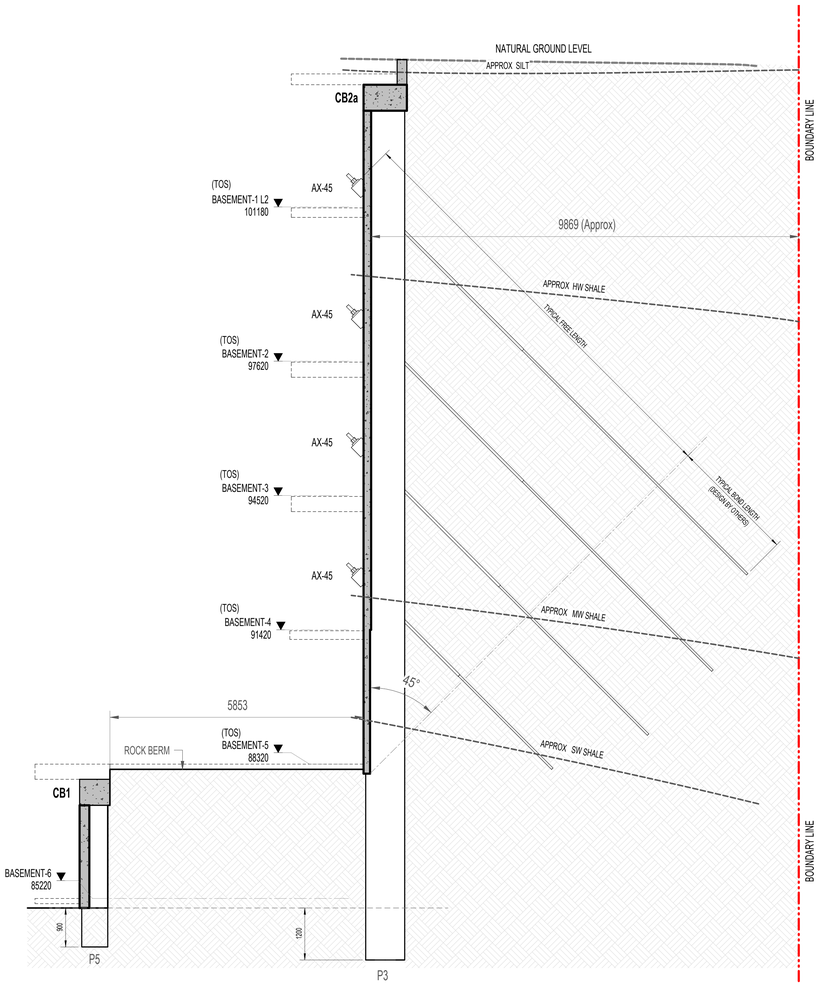
NON-REGULATED DESIGN RECORD				
PROJECT ADDRESS: 849-859 PACIFIC HIGHWAY & 2-8 WILSON STEET, CHATSWOOD.				
PROJECT TITLE: CHATSWOOD GRAND RESIDENCES				
CONSENT No.:	DRAWING TITLE:	BODY CORP REG TAG:		
SHORING SECTIONS SH2	DA No: DRAWING No: S10017			
REV	DATE	DESCRIPTION	DP FULL NAME	REG NO

NOTES:

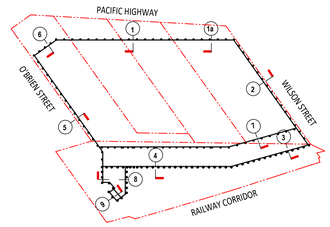
1. BOUNDARY DIMENSIONS ARE SHOWN INDICATIVELY ONLY. PLEASE FOLLOW ARCHITECT DRAWINGS FOR THE DETAILS.
2. THE POTABLE WATER PIPE DIAMETER IS TENTATIVELY ASSUMED TO BE 110mm



07 S10001 **SECTION -1a**
SCALE @ 1:50



04 S10001 **SECTION-4**
SCALE @ 1:50



KEY PLAN

NOTES:

1. BOUNDARY DIMENSIONS ARE SHOWN INDICATIVELY ONLY. PLEASE FOLLOW ARCHITECT DRAWINGS FOR THE DETAILS.
2. THE POTABLE WATER PIPE DIAMETER IS TENTATIVELY ASSUMED TO BE 110mm
3. THIS DRAWING SHOULD BE READ IN CONJUNCTION WITH DRG S-0006 -SITE RETENTION PLAN

SHORING WALL SW1

- DENOTES EXPOSED ROCK / SHALE FACE TO BE RETAINED WITH SHOTCRETE AND ROCK BOLTS TO GEOTECHNICAL ENGINEERS' DETAILS
- DENOTES 175 THK. SHOTCRETE WALL WITH REO. SL102MESH
- DENOTES 150 THK. SHOTCRETE WALL WITH REO. SL102MESH
- DENOTES 200 THK. SHOTCRETE WALL WITH REO. DOUBLE SL102MESH
- DENOTES 225 THK. SHOTCRETE WALL WITH REO. DOUBLE SL102MESH

NOTE :
EXTENT OF SHOTCRETE WALLS TO BE CONFIRMED BY GEOTECHNICAL ENGINEER

WORK IN PROGRESS
NOT SUITABLE FOR CONSTRUCTION

Rev	Description	Date	By	App
H	ISSUED FOR INFORMATION ONLY	25.05.09	RT	NAA
G	ISSUED FOR INFORMATION ONLY	25.04.03	RT	NAA
F	ISSUED FOR INFORMATION ONLY	25.03.25	RT	NAA
E	ISSUED FOR INFORMATION ONLY	25.03.11	RT	NAA
D	ISSUED FOR INFORMATION ONLY (PRELIMINARY DD 70%)	25.02.18	RM	JT

COPYRIGHT All rights reserved.
These drawings, plans and specifications and the copyright therein are the property of the Cadigal Group Engineers PTY LTD and must not be used, reproduced or copied wholly or in part without the written permission of Cadigal Group Engineers PTY LTD.

Project: **849-859 PACIFIC HIGHWAY & 2-8 WILSON STREET, CHATSWOOD.**

Developer: Billbergia creating communities®

Contractor:

Architect : pbd architects

Design Consultant:
1002, 22-24 Market Street, Sydney , NSW 2000 Australia
T: +61 2 8630 8559
info@cadigalgroup.com.au
CADIGAL GROUP
© Copyright

Drawing Title:

SHORING WALL SECTIONS - SHEET 2

STRUCTURAL DRAWINGS

Designed:	NAA	Project Director Approved	Date	North
Modelled:	RT	JT	05/09/25	
Scale:	1:100	Project Ref.	Drawing No.	Rev
Sheet:	A0	01-100084	S10017	H

100 50 30 20 10 0

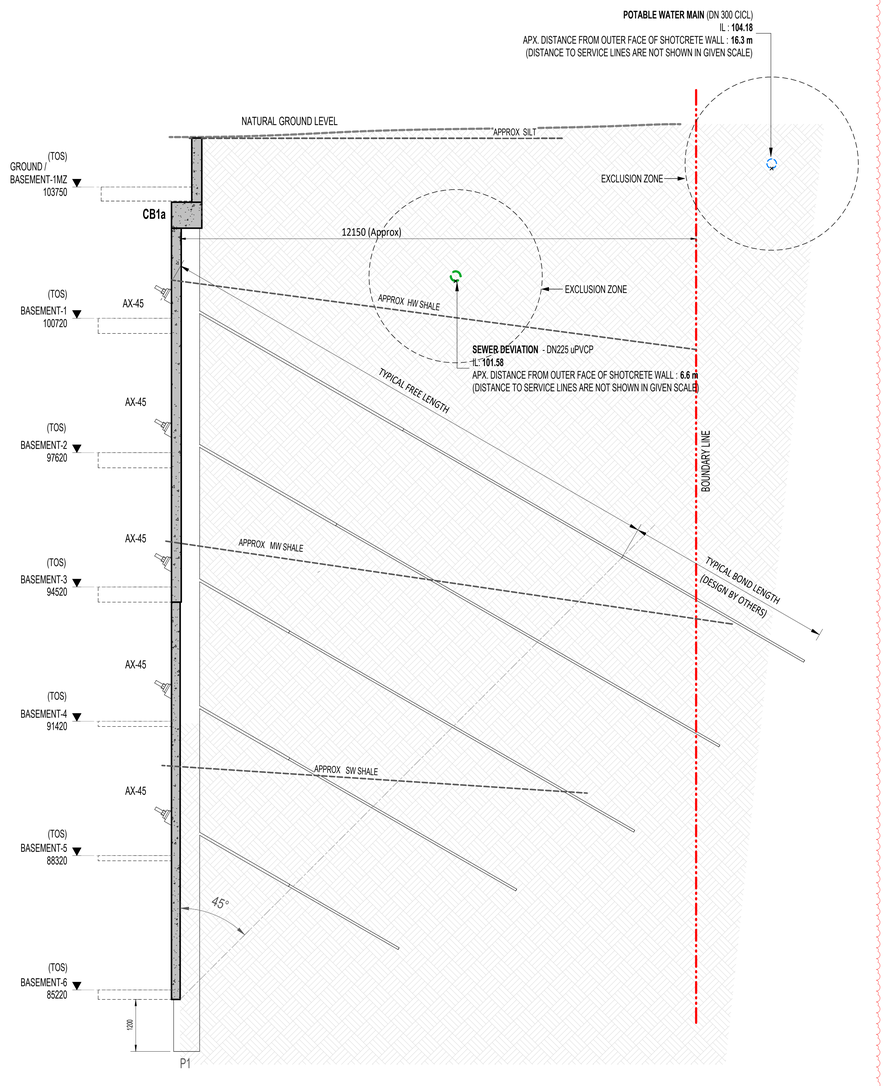
NON-REGULATED DESIGN RECORD				
PROJECT ADDRESS: 849-859 PACIFIC HIGHWAY & 2-8 WILSON STEET, CHATSWOOD.				
PROJECT TITLE: CHATSWOOD GRAND RESIDENCES				
CONSENT No.:	DRAWING TITLE:	BODY CORP BEG TAG:		
SHORING SECTIONS SH2	DA No:			
	DRAWING No: S10018			
REV	DATE	DESCRIPTION	DP FULL NAME	REG NO

NOTES:

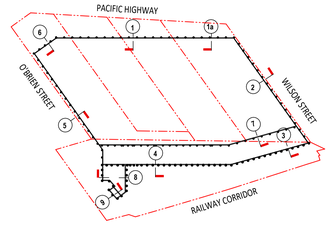
1. BOUNDARY DIMENSIONS ARE SHOWN INDICATIVELY ONLY. PLEASE FOLLOW ARCHITECT DRAWINGS FOR THE DETAILS.
2. THE POTABLE WATER PIPE DIAMETER IS TENTATIVELY ASSUMED TO BE 110mm



05 S10001 **SECTION -5**
SCALE @ 1:50



06 S10001 **SECTION -6**
SCALE @ 1:50



KEY PLAN

NOTES:

1. BOUNDARY DIMENSIONS ARE SHOWN INDICATIVELY ONLY. PLEASE FOLLOW ARCHITECT DRAWINGS FOR THE DETAILS.
2. THE POTABLE WATER PIPE DIAMETER IS TENTATIVELY ASSUMED TO BE 110mm
3. THIS DRAWING SHOULD BE READ IN CONJUNCTION WITH DRG S-0006 -SITE RETENTION PLAN

SHORING WALL SW1

- DENOTES EXPOSED ROCK / SHALE FACE TO BE RETAINED WITH SHOTCRETE AND ROCK BOLTS TO GEOTECHNICAL ENGINEERS' DETAILS
- DENOTES 175 THK. SHOTCRETE WALL WITH REO. SL102MESH
- DENOTES 150 THK. SHOTCRETE WALL WITH REO. SL102MESH
- DENOTES 200 THK. SHOTCRETE WALL WITH REO. DOUBLE SL102MESH
- DENOTES 225 THK. SHOTCRETE WALL WITH REO. DOUBLE SL102MESH

NOTE :
EXTENT OF SHOTCRETE WALLS TO BE CONFIRMED BY GEOTECHNICAL ENGINEER

WORK IN PROGRESS
NOT SUITABLE FOR CONSTRUCTION

Rev	Description	Date	By	App
H	ISSUED FOR INFORMATION ONLY	25.05.09	RT	NAA
G	ISSUED FOR INFORMATION ONLY	25.04.03	RT	NAA
F	ISSUED FOR INFORMATION ONLY	25.03.25	RT	NAA
E	ISSUED FOR INFORMATION ONLY	25.03.11	RT	NAA
D	ISSUED FOR INFORMATION ONLY (PRELIMINARY DD 70%)	25.02.18	RM	JT

COPYRIGHT All rights reserved.

These drawings, plans and specifications and the copyright therein are the property of the Cadigal Group Engineers PTY LTD and must not be used, reproduced or copied wholly or in part without the written permission of Cadigal Group Engineers PTY LTD.

Project: **849-859 PACIFIC HIGHWAY & 2-8 WILSON STREET, CHATSWOOD.**

Developer: Billbergia creating communities®

Contractor:

Architect : pbd architects

Design Consultant:

CADIGAL GROUP
1002, 22-24 Market Street,
Sydney , NSW 2000
Australia
T: +61 2 8630 8559
info@cadigalgroup.com.au

© Copyright

Drawing Title:

SHORING WALL SECTIONS - SHEET 3

STRUCTURAL DRAWINGS

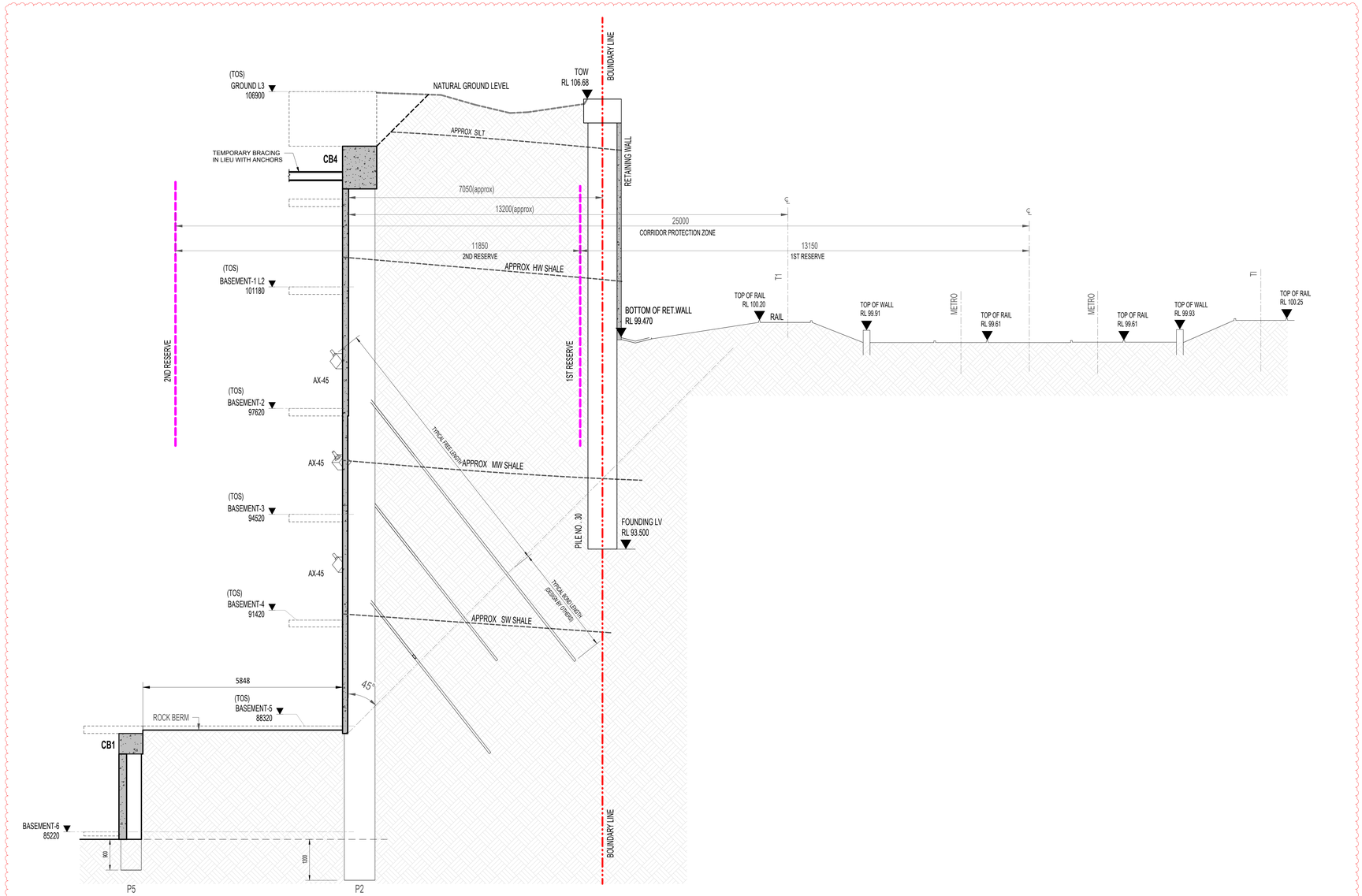
Designed:	NAA	Project Director Approved	Date	North
Modelled:	RT	JT	05/09/25	
Scale:	1:100	Project Ref.	Drawing No.	Rev
Sheet:	A0	01-100084	S10018	H

100 50 30 20 10 0

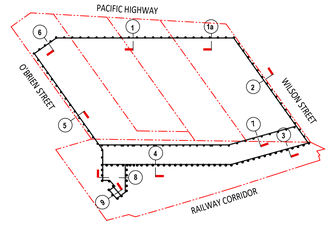
NON-REGULATED DESIGN RECORD				
PROJECT ADDRESS: 849-859 PACIFIC HIGHWAY & 2-8 WILSON STEET, CHATSWOOD.				
PROJECT TITLE: CHATSWOOD GRAND RESIDENCES				
CONSENT No.:	DRAWING TITLE:	BODY CORP BEG TAG:		
SHORING SECTIONS SH4	DA No:			
	DRAWING No: S10019			
REV	DATE	DESCRIPTION	DP FULL NAME	REG NO

NOTES:

1. BOUNDARY DIMENSIONS ARE SHOWN INDICATIVELY ONLY. PLEASE FOLLOW ARCHITECT DRAWINGS FOR THE DETAILS.
2. THE POTABLE WATER PIPE DIAMETER IS TENTATIVELY ASSUMED TO BE 110mm



03 S10001 **SECTION -3**
SCALE @ 1:50



KEY PLAN

NOTES:

1. BOUNDARY DIMENSIONS ARE SHOWN INDICATIVELY ONLY. PLEASE FOLLOW ARCHITECT DRAWINGS FOR THE DETAILS.
2. THE POTABLE WATER PIPE DIAMETER IS TENTATIVELY ASSUMED TO BE 110mm
3. THIS DRAWING SHOULD BE READ IN CONJUNCTION WITH DRG S-0006 -SITE RETENTION PLAN

SHORING WALL SW1

- DENOTES EXPOSED ROCK / SHALE FACE TO BE RETAINED WITH SHOTCRETE AND ROCK BOLTS TO GEOTECHNICAL ENGINEERS' DETAILS
- DENOTES 175 THK. SHOTCRETE WALL WITH REO. SL102MESH
- DENOTES 150 THK. SHOTCRETE WALL WITH REO. SL102MESH
- DENOTES 200 THK. SHOTCRETE WALL WITH REO. DOUBLE SL102MESH
- DENOTES 225 THK. SHOTCRETE WALL WITH REO. DOUBLE SL102MESH

NOTE :
EXTENT OF SHOTCRETE WALLS TO BE CONFIRMED BY GEOTECHNICAL ENGINEER

WORK IN PROGRESS
NOT SUITABLE FOR CONSTRUCTION

Rev	Description	Date	By	App
H	ISSUED FOR INFORMATION ONLY	25.05.09	RT	NAA
G	ISSUED FOR INFORMATION ONLY	25.04.03	RT	NAA
F	ISSUED FOR INFORMATION ONLY	25.03.25	RT	NAA
E	ISSUED FOR INFORMATION ONLY	25.03.11	RT	NAA
D	ISSUED FOR INFORMATION ONLY (PRELIMINARY DD 70%)	25.02.18	RM	JT

COPYRIGHT All rights reserved.

These drawings, plans and specifications and the copyright therein are the property of the Cadigal Group Engineers PTY LTD and must not be used, reproduced or copied wholly or in part without the written permission of Cadigal Group Engineers PTY LTD.

Project: **849-859 PACIFIC HIGHWAY & 2-8 WILSON STREET, CHATSWOOD.**

Developer: Billbergia creating communities®

Contractor:

Architect : pbd architects

Design Consultant: CADIGAL GROUP

1002, 22-24 Market Street,
Sydney, NSW 2000
Australia
T: +61 2 8630 8559
info@cadigalgroup.com.au

© Copyright

Drawing Title:

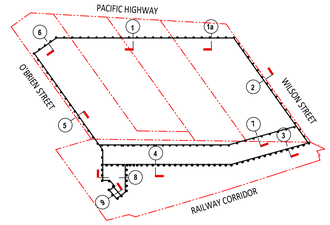
SHORING WALL SECTIONS - SHEET 4

STRUCTURAL DRAWINGS

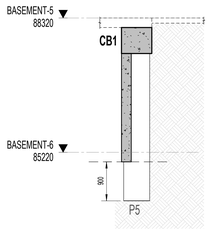
Designed:	NAA	Project Director Approved	Date	North
Modelled:	RT	JT	05/09/25	
Scale:	1:100	Project Ref.	Drawing No.	Rev
Sheet:	A0	01-100084	S10019	H

0 10 20 30 50 100

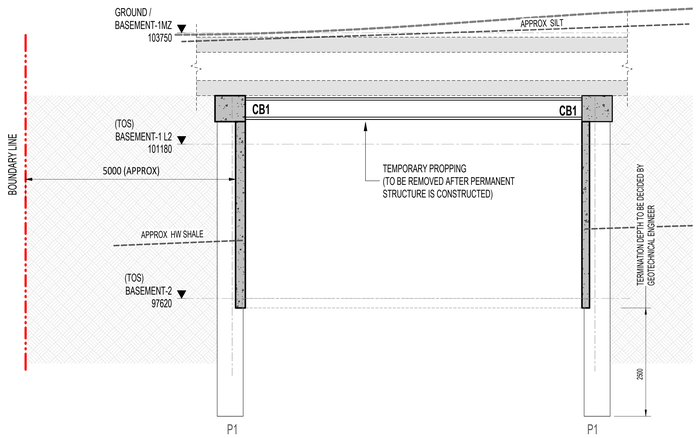
NON-REGULATED DESIGN RECORD				
PROJECT ADDRESS: 849-859 PACIFIC HIGHWAY & 2-8 WILSON STEET, CHATSWOOD.				
PROJECT TITLE: CHATSWOOD GRAND RESIDENCES				
CONSENT No.:	DRAWING TITLE:	BODY CORP REG TAG:		
SHORING ELEVATION SW6	DA No:			
	DRAWING No: S10020			
REV	DATE	DESCRIPTION	DP FULL NAME	REG NO



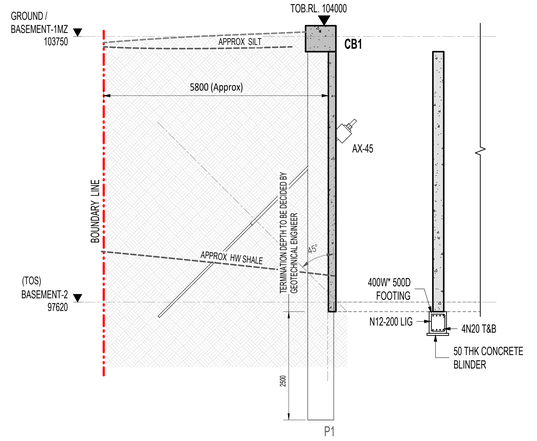
KEY PLAN



07 S10001 **SECTION -7**
SCALE @ 1:50



08 S10001 **SECTION-8**
SCALE @ 1:50



09 S10001 **SECTION-9**
SCALE @ 1:50

NOTES:

1. BOUNDARY DIMENSIONS ARE SHOWN INDICATIVELY ONLY. PLEASE FOLLOW ARCHITECT DRAWINGS FOR THE DETAILS.
2. THE POTABLE WATER PIPE DIAMETER IS TENTATIVELY ASSUMED TO BE 110mm
3. THIS DRAWING SHOULD BE READ IN CONJUNCTION WITH DRG S-0006 -SITE RETENTION PLAN

SHORING WALL SW1

- DENOTES EXPOSED ROCK / SHALE FACE TO BE RETAINED WITH SHOTCRETE AND ROCK BOLTS TO GEOTECHNICAL ENGINEERS' DETAILS
- DENOTES 175 THK. SHOTCRETE WALL WITH REO. SL102MESH
- DENOTES 150 THK. SHOTCRETE WALL WITH REO. SL102MESH
- DENOTES 200 THK. SHOTCRETE WALL WITH REO. DOUBLE SL102MESH
- DENOTES 225 THK. SHOTCRETE WALL WITH REO. DOUBLE SL102MESH

NOTE :
EXTENT OF SHOTCRETE WALLS TO BE CONFIRMED BY GEOTECHNICAL ENGINEER

WORK IN PROGRESS
NOT SUITABLE FOR CONSTRUCTION

Rev	Description	Date	By	App
H	ISSUED FOR INFORMATION ONLY	25.05.09	RT	NAA
G	ISSUED FOR INFORMATION ONLY	25.04.03	RT	NAA
F	ISSUED FOR INFORMATION ONLY	25.03.25	RT	NAA
E	ISSUED FOR INFORMATION ONLY	25.03.11	RT	NAA
D	ISSUED FOR INFORMATION ONLY (PRELIMINARY DD 70%)	25.02.18	RM	JT

COPYRIGHT All rights reserved.
These drawings, plans and specifications and the copyright therein are the property of the Cadigal Group Engineers PTY LTD and must not be used, reproduced or copied wholly or in part without the written permission of Cadigal Group Engineers PTY LTD.

Project:
849-859 PACIFIC HIGHWAY & 2-8 WILSON STREET, CHATSWOOD.

Developer:
Billbergia creating communities®

Contractor:

Architect :
pbd architects

Design Consultant:
CADIGAL GROUP
1002, 22-24 Market Street,
Sydney , NSW 2000
Australia
T: +61 2 8630 8559
info@cadigalgroup.com.au
© Copyright

Drawing Title:
SHORING WALL SECTIONS - SHEET 5

STRUCTURAL DRAWINGS

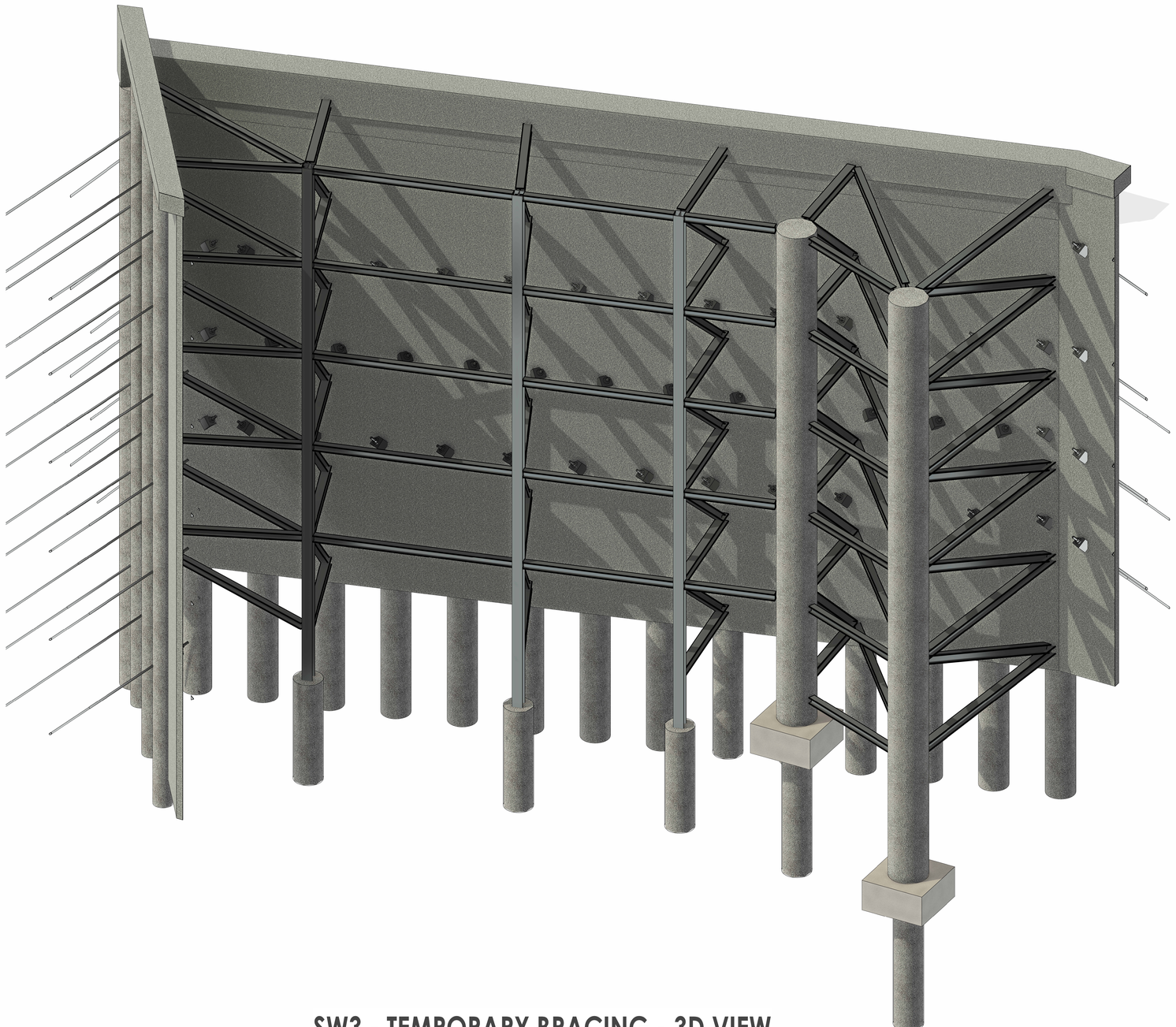
Designed:	NAA	Project Director Approved	Date / North
Modelled:	RT	JT	05/09/25
Scale:	1:100	Project Ref.	Drawing No. / Rev
Sheet:	A0	01-100084	S10020 / H

0 10 20 30 50 100

NON-REGULATED DESIGN RECORD

PROJECT ADDRESS:	849-859 PACIFIC HIGHWAY & 2-8 WILSON STEET, CHATSWOOD.
PROJECT TITLE:	CHADSWOOD
CONSENT No.:	DRAWING TITLE: BODY CORP REG TAG:
SW3 TEMPORARY BRACING -3D VIEW	DA No:
	DRAWING No: S10100

REV	DATE	DESCRIPTION	DP FULL NAME	REG NO



SW3 - TEMPORARY BRACING - 3D VIEW

0 10 20 30 50 100

WORK IN PROGRESS
NOT SUITABLE FOR CONSTRUCTION

Rev	Description	Date	By	App
A	ISSUED FOR INFORMATION ONLY	25.03.18	RT	NAA

COPYRIGHT All rights reserved.

These drawings, plans and specifications and the copyright therein are the property of the Cadigal Group Engineers PTY LTD and must not be used, reproduced or copied wholly or in part without the written permission of Cadigal Group Engineers PTY LTD.

Project:
849-859 PACIFIC HIGHWAY & 2-8 WILSON STREET, CHATSWOOD.

Developer:
Billbergia creating communities®

Contractor:

Architect :
pbd architects

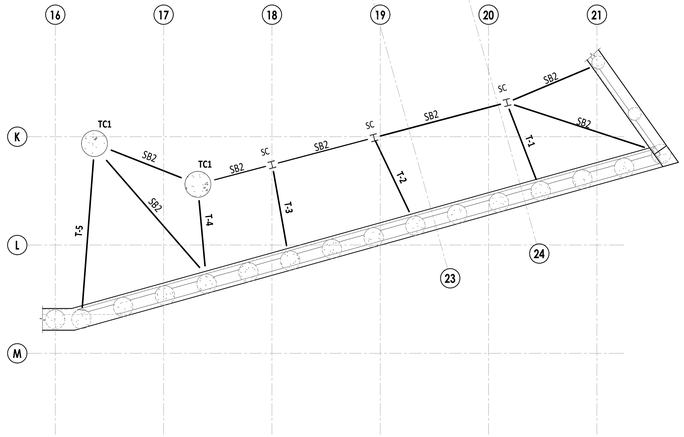
Design Consultant:
CADIGAL GROUP
1002, 22-24 Market Street,
Sydney , NSW 2000
Australia
T: +61 2 8630 8559
info@cadigalgroup.com.au
© Copyright

Drawing Title:
TEMPORARY BRACING-3D VIEW

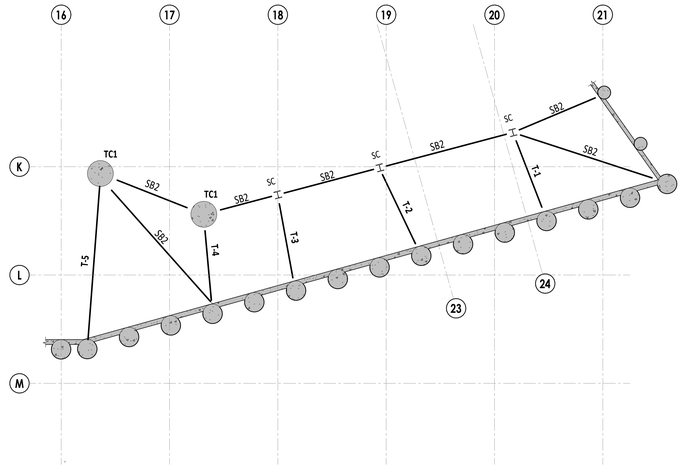
STRUCTURAL DRAWINGS

Designed:	NAA	Project Director Approved	Date	North
Modelled:	RT	JT	03/18/25	
Scale:		Project Ref.	Drawing No.	Rev
Sheet:	A0	01-100084	S10100	A

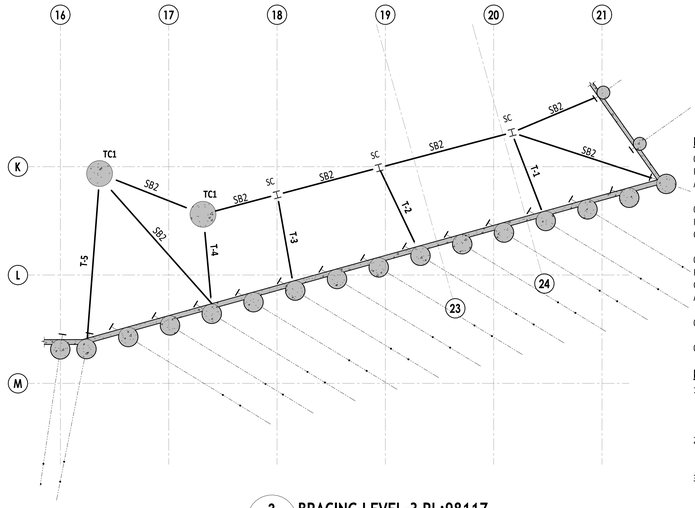
NON-REGULATED DESIGN RECORD				
PROJECT ADDRESS: 849-859 PACIFIC HIGHWAY & 2-8 WILSON STEET, CHATSWOOD.				
PROJECT TITLE: CHATSWOOD				
CONSENT No.:	DRAWING TITLE:		BODY CORP REG TAG:	
TEMPORARY BRACING -PLANS		DA No: DRAWING No: S10101		
REV	DATE	DESCRIPTION	DP FULL NAME	REG NO



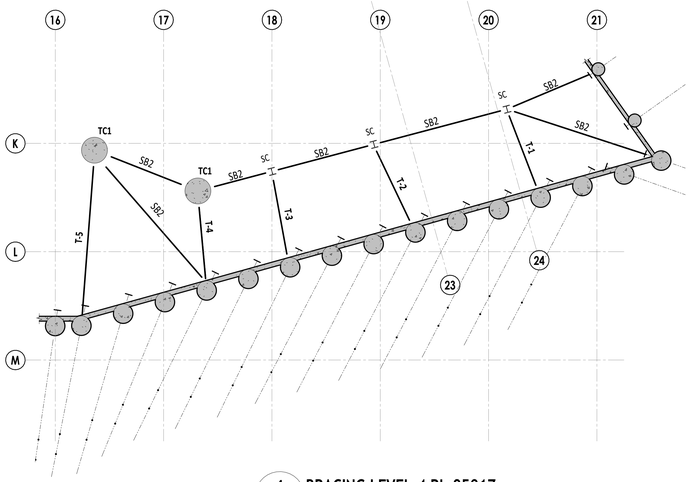
1 BRACING LEVEL-1 RL:104500
SCALE @ 1 : 100



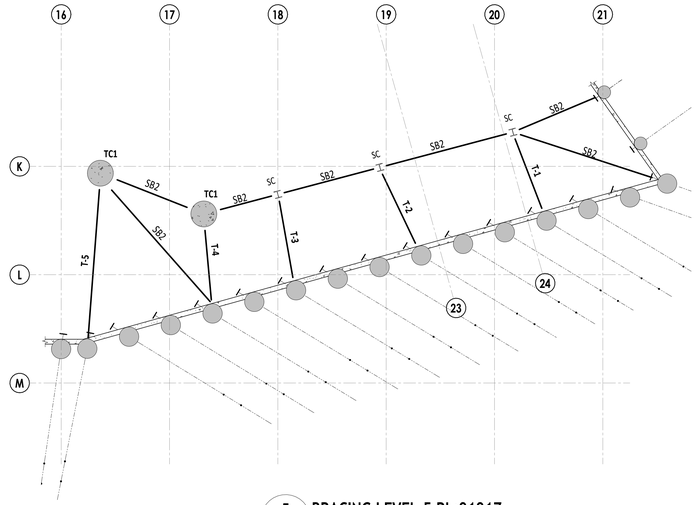
2 BRACING LEVEL-2 RL:101217
SCALE @ 1 : 100



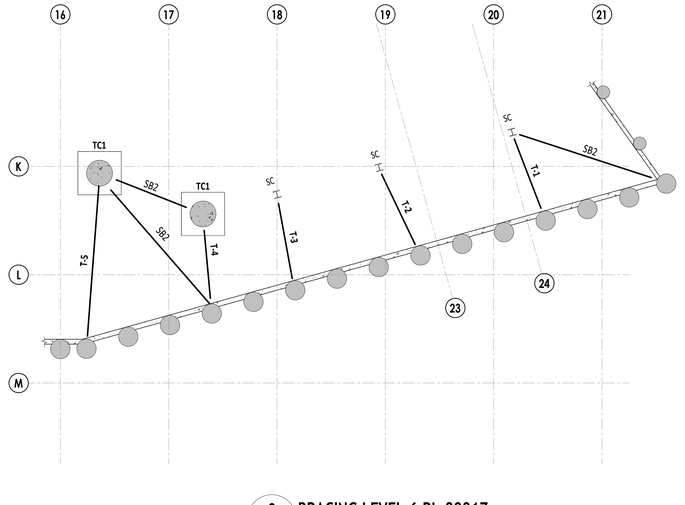
3 BRACING LEVEL-3 RL:98117
SCALE @ 1 : 100



4 BRACING LEVEL-4 RL:95017
SCALE @ 1 : 100



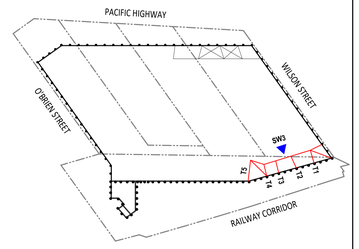
5 BRACING LEVEL-5 RL:91917
SCALE @ 1 : 100



6 BRACING LEVEL-6 RL:88817
SCALE @ 1 : 100

TEMPORARY BRACING -PLANS

SCALE @ 1:100



KEY PLAN

NOTES:

01.UNLESS NOTED OTHERWISE, ALL STEELWORK SHALL BE PREPARED, PRIMED AND PAINTED IN ACCORDANE WITH THE SPECIFICATION. ALL EXTERNAL EXPOSED STEELWORK TO BE HOT DIP GALVANISED.

02.UNLESS NOTED OTHERWISE, ALL EXTERNAL EXPOSED STEELWORK IN SOIL SHALL BE COATED WITH EPOXY PROTECTIVE COATINGS CONFORMING TO AS/NZS 2312.

03.UNLESS NOTED OTHERWISE, ALL WELDS TO BE 8mm CONTINUOUS FILLETS, LAID DOWN WITH APPROVED COVERED ELECTRODES. ALL WELDS SHALL BE CATEGORY SP. WELDS SHALL CONFORM TO AS/NZS 1554 AND ELECTRODES TO AS/NZS 1553.

04.REFER TO CORRESPONDING ARCHITECTURAL DRAWINGS FOR RL VALUES.

05.ALL DIMENSIONS ARE IN MILLIMETERS.

NOTES:

1. GEOTECHNICAL ENGINEER TO INSPECT EXPOSED SHALE FACE REGULARY DURING EXCAVATION AND NOMINATED APPROPRIATE SOIL ANCHORS AND SHOTCRETE AS REQUIRED TO ENSURE STABILITY AT ALL TIMES.

2. ANCHOR LENGTH ARE SHOWN INDICATIVELY ONLY, THIS IS DETERMINED BY OTHERS.

3. THE SHORING DESIGN IS PERFORMED BASED ON THE GEOTECHNICAL REPORT PROVIDED BY THE FORTIFY GEOTECH.

i - GEOTECHNICAL INVESTIGATION REPORT ISSUED ON 14/12/2023 (REF - JS/51998 Rev 2)

iii - MN/S2207-2: (REV1) DATED 13.05.2024 RESPONSES TO CADIGAL GROUP'S CONSULTANT ADVICE NOTICE DATED 22/04/2024

STEEL FRAMING SCHEDULE	
MARK	SIZE
SB1	250UC89.5 (GR 300)
SB2	200UC52.2 (GR 300)
SB3	250UC72.9 (GR 300)
SB4	200UC46.2 (GR 300)
SC	310UC158 (GR 300)

COLUMN SCHEDULE		
MARK	SIZE	GRADE
TC1	1200 DIA	N80

WORK IN PROGRESS
NOT SUITABLE FOR CONSTRUCTION

Rev	Description	Date	By	App
A	ISSUED FOR INFORMATION ONLY	25.03.18	RT	NAA

COPYRIGHT All rights reserved.

These drawings, plans and specifications and the copyright therein are the property of the Cadigal Group Engineers PTY LTD and must not be used, reproduced or copied wholly or in part without the written permission of Cadigal Group Engineers PTY LTD.

Project: **849-859 PACIFIC HIGHWAY & 2-8 WILSON STREET, CHATSWOOD.**

Developer: Billbergia creating communities®

Contractor:

Architect : pbd architects

Design Consultant:

CADIGAL GROUP
1002, 22-24 Market Street,
Sydney , NSW 2000
Australia
T: +61 2 8650 8559
info@cadigalgroup.com.au

© Copyright

Drawing Title: **TEMPORARY BRACING -PLANS**

STRUCTURAL DRAWINGS

Designed:	NAA	Project Director Approved	Date	North
Modelled:	RT	JT	03/18/25	
Scale:	1:100	Project Ref.	Drawing No.	Rev
Sheet:	A0	01-100084	S10101	A

DIAL 1100 BEFORE DIG

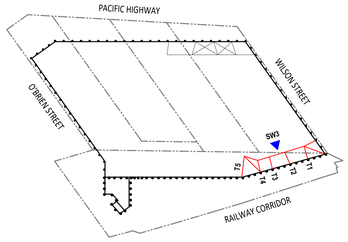
BUILDER TO DETERMINE THE EXACT LOCATIONS OF EXISTING SERVICES PRIOR TO THE START OF ANY CONSTRUCTION WORK.
BUILDER TO CONTACT DIAL BEFORE YOU DIG AND THE AUTHORITIES CONCERNED TO CONFIRM THE ACTUAL LOCATIONS OF EXISTING SERVICES. IN THE EVENT THAT ANY OF THE SERVICES MIGHT BE AFFECTED BY STRUCTURAL WORK, STRUCTURAL ENGINEER IS TO BE NOTIFIED AND CONSULTED IMMEDIATELY TO REVIEW THE STRUCTURAL DETAILS AFFECTING THE SERVICES.
www.dialbeforeyoudig.com.au

0 10 20 50 100

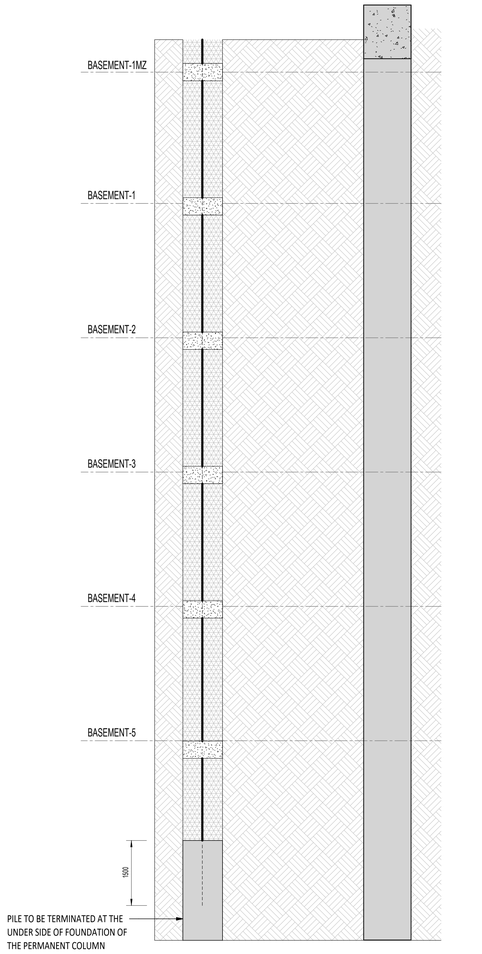
NON-REGULATED DESIGN RECORD

PROJECT ADDRESS:	849-859 PACIFIC HIGHWAY & 2-8 WILSON STEET, CHATSWOOD.
PROJECT TITLE:	CHADSWOOD
CONSENT No.:	DRAWING TITLE: BODY CORP REG TAG:
CONNECTION DETAILS OF TRUSS T-4	DA No:
	DRAWING No: S10105

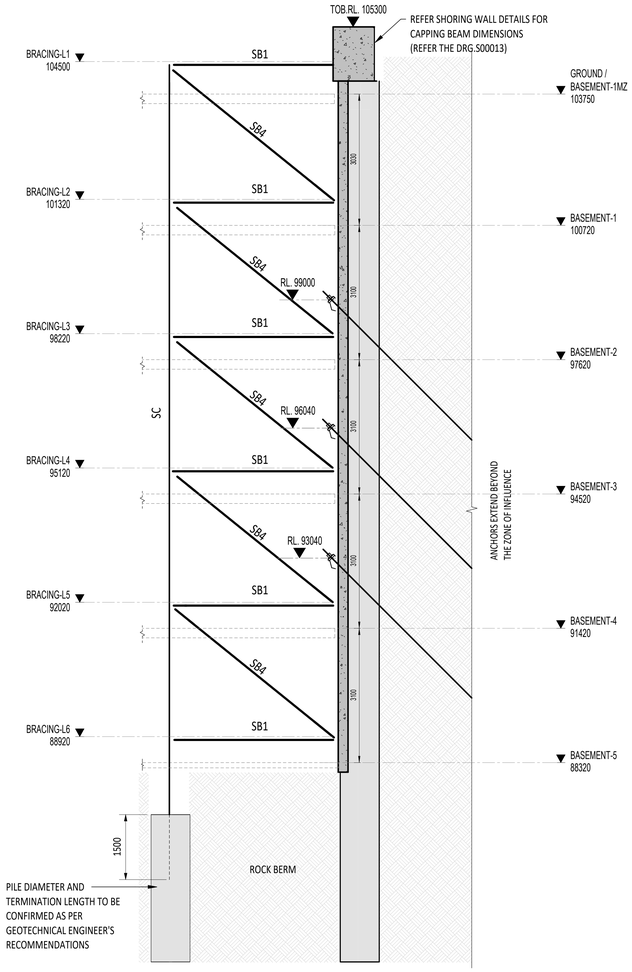
REV	DATE	DESCRIPTION	DP FULL NAME	REG NO



KEY PLAN



TYPICAL STEEL COLUMN INSTALLATION DETAIL



TRUSS T-1

SCALE @ 1 : 50

NOTE:

ALL STEEL COLUMNS SHALL BE INSTALLED IN ACCORDANCE WITH THE 'TYPICAL COLUMN INSTALLATION DETAIL.' THIS DETAIL MUST BE FOLLOWED FOR ALL LOCATIONS AS APPLICABLE.

STEEL FRAMING SCHEDULE	
MARK	SIZE
SB1	250UC89.5 (GR 300)
SB2	200UC52.2 (GR 300)
SB3	250UC72.9 (GR 300)
SB4	200UC46.2 (GR 300)
SC	310UC158 (GR 300)

SHORING WALL SW1

DENOTES SOIL FILL

DENOTES MASS CONCRETE FILL

DENOTES ROCK BERM

DIAL 1100 BEFORE DIG

BUILDER TO DETERMINE THE EXACT LOCATIONS OF EXISTING SERVICES PRIOR TO THE START OF ANY CONSTRUCTION WORK. BUILDER TO CONTACT DIAL BEFORE YOU DIG AND THE AUTHORITIES CONCERNED TO CONFIRM THE ACTUAL LOCATIONS OF EXISTING SERVICES. IN THE EVENT THAT ANY OF THE SERVICES MIGHT BE AFFECTED BY STRUCTURAL WORK, STRUCTURAL ENGINEER IS TO BE NOTIFIED AND CONSULTED IMMEDIATELY TO REVIEW THE STRUCTURAL DETAILS AFFECTING THE SERVICES.

www.dialbeforeyoudig.com.au

0 10 20 30 50 100

WORK IN PROGRESS
NOT SUITABLE FOR CONSTRUCTION

Rev	Description	Date	By	App
A	ISSUED FOR INFORMATION ONLY	25.03.18	RT	NAA

COPYRIGHT All rights reserved.

These drawings, plans and specifications and the copyright therein are the property of the Cadigal Group Engineers PTY LTD and must not be used, reproduced or copied wholly or in part without the written permission of Cadigal Group Engineers PTY LTD.

Project:

849-859 PACIFIC HIGHWAY & 2-8 WILSON STREET, CHATSWOOD.

Developer: Billbergia creating communities®

Contractor:

Architect : pbd architects

Design Consultant:

CADIGAL GROUP
1002, 22-24 Market Street,
Sydney , NSW 2000
Australia
T: +61 2 8630 8559
info@cadigalgroup.com.au

© Copyright

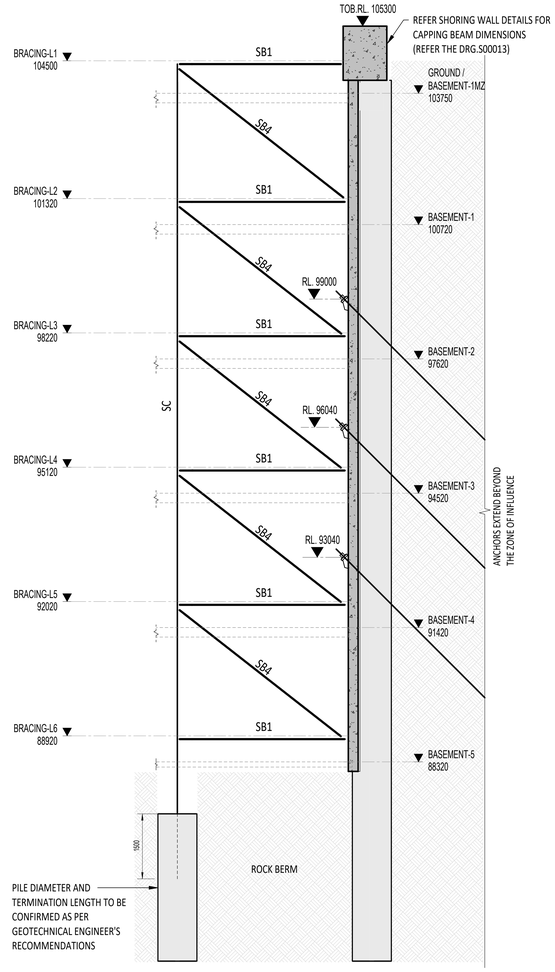
Drawing Title:

BRACING DETAIL-SH1

STRUCTURAL DRAWINGS

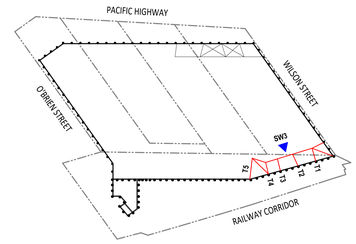
Designed:	NAA	Project Director Approved	Date	North
Modelled:	RT	JT	03/18/25	
Scale:	1:50	Project Ref.	Drawing No.	Rev
Sheet:	A0	01-100084	S10102	A

NON-REGULATED DESIGN RECORD				
PROJECT ADDRESS: 849-859 PACIFIC HIGHWAY & 2-8 WILSON STEET, CHATSWOOD.				
PROJECT TITLE: CHADSWOOD				
CONSENT No.: DRAWING TITLE: BODY CORP REG TAG: DA No:				
REV	DATE	DESCRIPTION	DP FULL NAME	REG NO



TRUSS T-2

SCALE @ 1 : 50



KEY PLAN

NOTE:

ALL STEEL COLUMNS SHALL BE INSTALLED IN ACCORDANCE WITH THE 'TYPICAL COLUMN INSTALLATION DETAIL.' THIS DETAIL MUST BE FOLLOWED FOR ALL LOCATIONS AS APPLICABLE.

STEEL FRAMING SCHEDULE	
MARK	SIZE
SB1	250UC89.5 (GR 300)
SB2	200UC52.2 (GR 300)
SB3	250UC72.9 (GR 300)
SB4	200UC46.2 (GR 300)
SC	310UC158 (GR 300)

SHORING WALL SW1

DENOTES SOIL FILL

DENOTES MASS CONCRETE FILL

DENOTES ROCK BERM

DIAL 1100 BEFORE DIG

BUILDER TO DETERMINE THE EXACT LOCATIONS OF EXISTING SERVICES PRIOR TO THE START OF ANY CONSTRUCTION WORK. BUILDER TO CONTACT DIAL BEFORE YOU DIG AND THE AUTHORITIES CONCERNED TO CONFIRM THE ACTUAL LOCATIONS OF EXISTING SERVICES. IN THE EVENT THAT ANY OF THE SERVICES MIGHT BE AFFECTED BY STRUCTURAL WORK, STRUCTURAL ENGINEER IS TO BE NOTIFIED AND CONSULTED IMMEDIATELY TO REVIEW THE STRUCTURAL DETAILS AFFECTING THE SERVICES.

www.dialbeforeyoudig.com.au

WORK IN PROGRESS
NOT SUITABLE FOR CONSTRUCTION

Rev	Description	Date	By	App
A	ISSUED FOR INFORMATION ONLY	25.03.18	RT	NAA

COPYRIGHT All rights reserved.

These drawings, plans and specifications and the copyright therein are the property of the Cadigal Group Engineers PTY LTD and must not be used, reproduced or copied wholly or in part without the written permission of Cadigal Group Engineers PTY LTD.

Project: **849-859 PACIFIC HIGHWAY & 2-8 WILSON STREET, CHATSWOOD.**

Developer: Billbergia creating communities®

Contractor:

Architect : pbd architects

Design Consultant:

CADIGAL GROUP
1002, 22-24 Market Street, Sydney , NSW 2000 Australia
T: +61 2 8630 8559
info@cadigalgroup.com.au

© Copyright

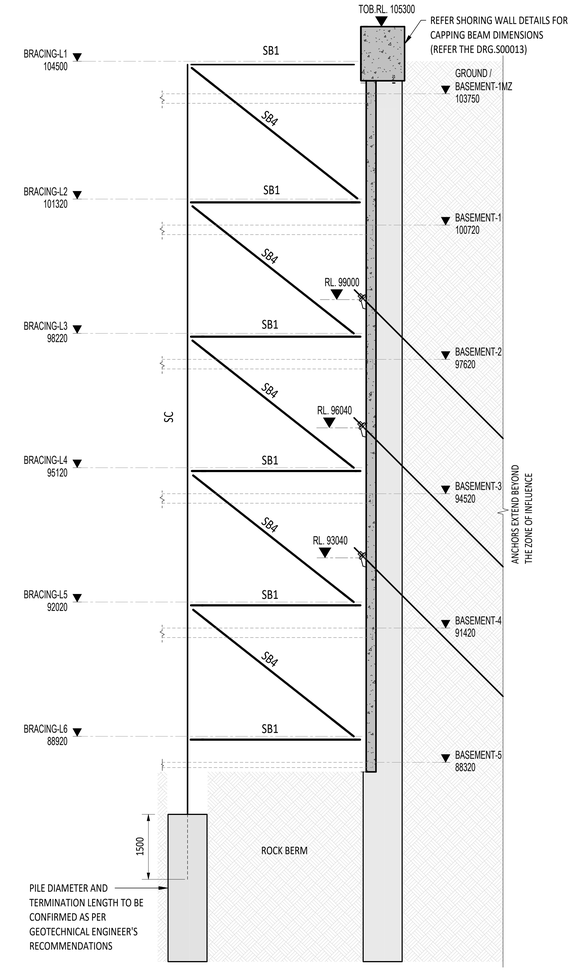
Drawing Title:

BRACING DETAIL-SH2

STRUCTURAL DRAWINGS

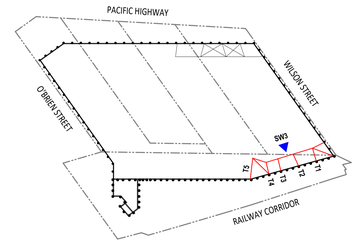
Designed:	NAA	Project Director Approved	Date	North
Modelled:	RT	JT	03/18/25	
Scale:	1:50	Project Ref.	Drawing No.	Rev
Sheet:	A0	01-100084	S10103	A

NON-REGULATED DESIGN RECORD				
PROJECT ADDRESS: 849-859 PACIFIC HIGHWAY & 2-8 WILSON STEET, CHATSWOOD.				
PROJECT TITLE: CHADSWOOD				
CONSENT No.: DRAWING TITLE: BODY CORP BEG TAG:				
CONNECTION DETAILS OF TRUSS T-1 DA No: DRAWING No: S10102				
REV	DATE	DESCRIPTION	DP FULL NAME	REG NO



TRUSS T-3

SCALE @ 1 : 50



KEY PLAN

NOTE:

ALL STEEL COLUMNS SHALL BE INSTALLED IN ACCORDANCE WITH THE 'TYPICAL COLUMN INSTALLATION DETAIL.' THIS DETAIL MUST BE FOLLOWED FOR ALL LOCATIONS AS APPLICABLE.

STEEL FRAMING SCHEDULE	
MARK	SIZE
SB1	250UC89.5 (GR 300)
SB2	200UC52.2 (GR 300)
SB3	250UC72.9 (GR 300)
SB4	200UC46.2 (GR 300)
SC	310UC158 (GR 300)

SHORING WALL SW1

DENOTES SOIL FILL

DENOTES MASS CONCRETE FILL

DENOTES ROCK BERM

DIAL 1100 BEFORE DIG

BUILDER TO DETERMINE THE EXACT LOCATIONS OF EXISTING SERVICES PRIOR TO THE START OF ANY CONSTRUCTION WORK. BUILDER TO CONTACT DIAL BEFORE YOU DIG AND THE AUTHORITIES CONCERNED TO CONFIRM THE ACTUAL LOCATIONS OF EXISTING SERVICES. IN THE EVENT THAT ANY OF THE SERVICES MIGHT BE AFFECTED BY STRUCTURAL WORK, STRUCTURAL ENGINEER IS TO BE NOTIFIED AND CONSULTED IMMEDIATELY TO REVIEW THE STRUCTURAL DETAILS AFFECTING THE SERVICES.

www.dialbeforeyoudig.com.au

0 10 20 30 50 100

WORK IN PROGRESS
NOT SUITABLE FOR CONSTRUCTION

Rev	Description	Date	By	App
A	ISSUED FOR INFORMATION ONLY	25.03.18	RT	NAA

COPYRIGHT All rights reserved.

These drawings, plans and specifications and the copyright therein are the property of the Cadigal Group Engineers PTY LTD and must not be used, reproduced or copied wholly or in part without the written permission of Cadigal Group Engineers PTY LTD.

Project: **849-859 PACIFIC HIGHWAY & 2-8 WILSON STREET, CHATSWOOD.**

Developer: Billbergia creating communities®

Contractor:

Architect : pbd architects

Design Consultant:

CADIGAL GROUP
1002, 22-24 Market Street,
Sydney , NSW 2000
Australia
T: +61 2 8630 8559
info@cadigalgroup.com.au

© Copyright

Drawing Title:

BRACING DETAIL-SH3

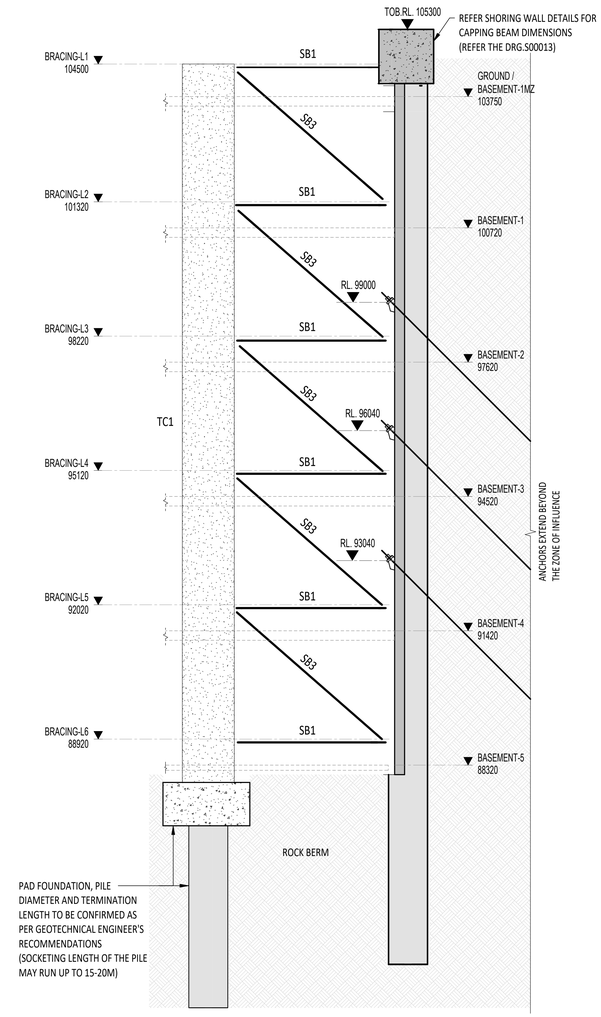
STRUCTURAL DRAWINGS

Designed:	NAA	Project Director Approved	Date	North
Modelled:	RT	JT	03/18/25	
Scale:	1:50	Project Ref.	Drawing No.	Rev
Sheet:	A0	01-100084	S10104	A

NON-REGULATED DESIGN RECORD

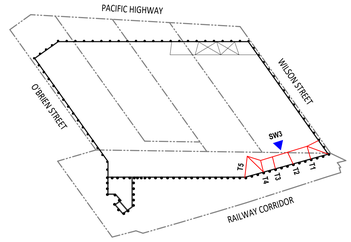
PROJECT ADDRESS:	849-859 PACIFIC HIGHWAY & 2-8 WILSON STEET, CHATSWOOD.
PROJECT TITLE:	CHADSWOOD
CONSENT No.:	DRAWING TITLE: BODY CORP REG TAG:
CONNECTION DETAILS OF TRUSS T-2	DA No: DRAWING No: S10103

REV	DATE	DESCRIPTION	DP FULL NAME	REG NO



TRUSS T-4

SCALE @ 1 : 50



KEY PLAN

COLUMN SCHEDULE		
MARK	SIZE	GRADE
TC1	1200 DIA	N80

STEEL FRAMING SCHEDULE	
MARK	SIZE
SB1	250UC89.5 (GR 300)
SB2	200UC52.2 (GR 300)
SB3	250UC72.9 (GR 300)
SB4	200UC46.2 (GR 300)
SC	310UC158 (GR 300)

SHORING WALL SW1

DENOTES SOIL FILL

DENOTES MASS CONCRETE FILL

DENOTES ROCK BERM

DIAL 1100 BEFORE DIG

BUILDER TO DETERMINE THE EXACT LOCATIONS OF EXISTING SERVICES PRIOR TO THE START OF ANY CONSTRUCTION WORK. BUILDER TO CONTACT DIAL BEFORE YOU DIG AND THE AUTHORITIES CONCERNED TO CONFIRM THE ACTUAL LOCATIONS OF EXISTING SERVICES. IN THE EVENT THAT ANY OF THE SERVICES MIGHT BE AFFECTED BY STRUCTURAL WORK, STRUCTURAL ENGINEER IS TO BE NOTIFIED AND CONSULTED IMMEDIATELY TO REVIEW THE STRUCTURAL DETAILS AFFECTING THE SERVICES.

www.dialbeforeyoudig.com.au

WORK IN PROGRESS
NOT SUITABLE FOR CONSTRUCTION

Rev	Description	Date	By	App
A	ISSUED FOR INFORMATION ONLY	25.03.18	RT	NAA

COPYRIGHT All rights reserved.

These drawings, plans and specifications and the copyright therein are the property of the Cadigal Group Engineers PTY LTD and must not be used, reproduced or copied wholly or in part without the written permission of Cadigal Group Engineers PTY LTD.

Project: **849-859 PACIFIC HIGHWAY & 2-8 WILSON STREET, CHATSWOOD.**

Developer: Billbergia creating communities®

Contractor:

Architect : pbd architects

Design Consultant:

CADIGAL GROUP
1002, 22-24 Market Street,
Sydney , NSW 2000
Australia
T: +61 2 8630 8559
info@cadigalgroup.com.au

© Copyright

Drawing Title:

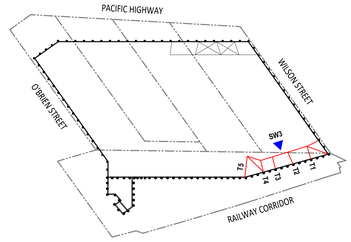
BRACING DETAIL-SH4

STRUCTURAL DRAWINGS

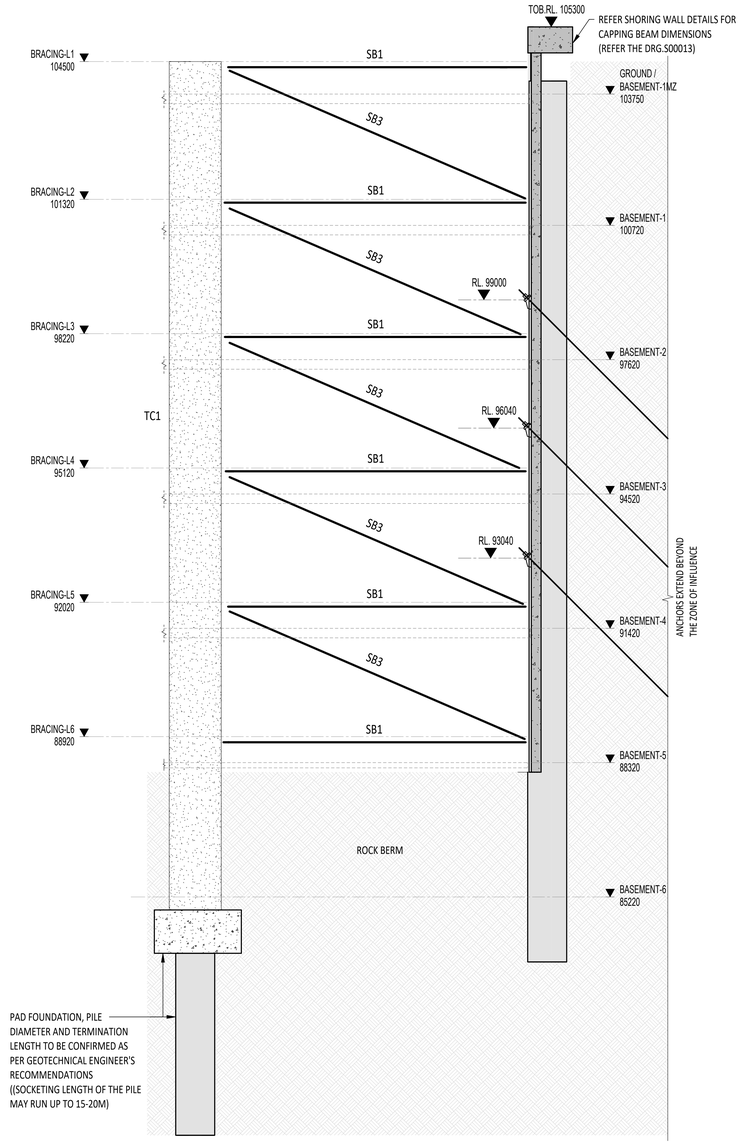
Designed:	NAA	Project Director Approved	Date	North
Modelled:	RT	JT	03/18/25	
Scale:	1:50	Project Ref.	Drawing No.	Rev
Sheet:	A0	01-100084	S10105	A

0 10 20 30 50 100

NON-REGULATED DESIGN RECORD				
PROJECT ADDRESS: 849-859 PACIFIC HIGHWAY & 2-8 WILSON STEET, CHATSWOOD.				
PROJECT TITLE: CHATSWOOD				
CONSENT No.: DRAWING TITLE:		BODY CORP REG TAG:		
CONNECTION DETAILS OF TRUSS T-3		DA No: DRAWING No: S10104		
REV	DATE	DESCRIPTION	DP FULL NAME	REG NO



KEY PLAN



TRUSS T-5

SCALE @ 1 : 50

COLUMN SCHEDULE		
MARK	SIZE	GRADE
TC1	1200 DIA	N80

STEEL FRAMING SCHEDULE	
MARK	SIZE
SB1	250UC89.5 (GR 300)
SB2	200UC52.2 (GR 300)
SB3	250UC72.9 (GR 300)
SB4	200UC46.2 (GR 300)
SC	310UC158 (GR 300)

SHORING WALL SW1

DENOTES SOIL FILL

DENOTES MASS CONCRETE FILL

DENOTES ROCK BERM

DIAL 1100 BEFORE DIG

BUILDER TO DETERMINE THE EXACT LOCATIONS OF EXISTING SERVICES PRIOR TO THE START OF ANY CONSTRUCTION WORK. BUILDER TO CONTACT DIAL BEFORE YOU DIG AND THE AUTHORITIES CONCERNED TO CONFIRM THE ACTUAL LOCATIONS OF EXISTING SERVICES. IN THE EVENT THAT ANY OF THE SERVICES MIGHT BE AFFECTED BY STRUCTURAL WORK, STRUCTURAL ENGINEER IS TO BE NOTIFIED AND CONSULTED IMMEDIATELY TO REVIEW THE STRUCTURAL DETAILS AFFECTING THE SERVICES.

www.dialbeforeyoudig.com.au

0 10 20 30 50 100

WORK IN PROGRESS
NOT SUITABLE FOR CONSTRUCTION

Rev	Description	Date	By	App
A	ISSUED FOR INFORMATION ONLY	25.03.18	RT	NAA

COPYRIGHT All rights reserved.

These drawings, plans and specifications and the copyright therein are the property of the Cadigal Group Engineers PTY LTD and must not be used, reproduced or copied wholly or in part without the written permission of Cadigal Group Engineers PTY LTD.

Project: **849-859 PACIFIC HIGHWAY & 2-8 WILSON STREET, CHATSWOOD.**

Developer: Billbergia creating communities®

Contractor:

Architect : pbd architects

Design Consultant:

CADIGAL GROUP
1002, 22-24 Market Street,
Sydney , NSW 2000
Australia
T: +61 2 8630 8559
info@cadigalgroup.com.au

© Copyright

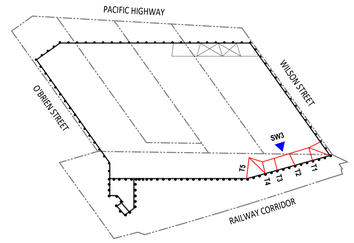
Drawing Title:

BRACING DETAIL-SH5

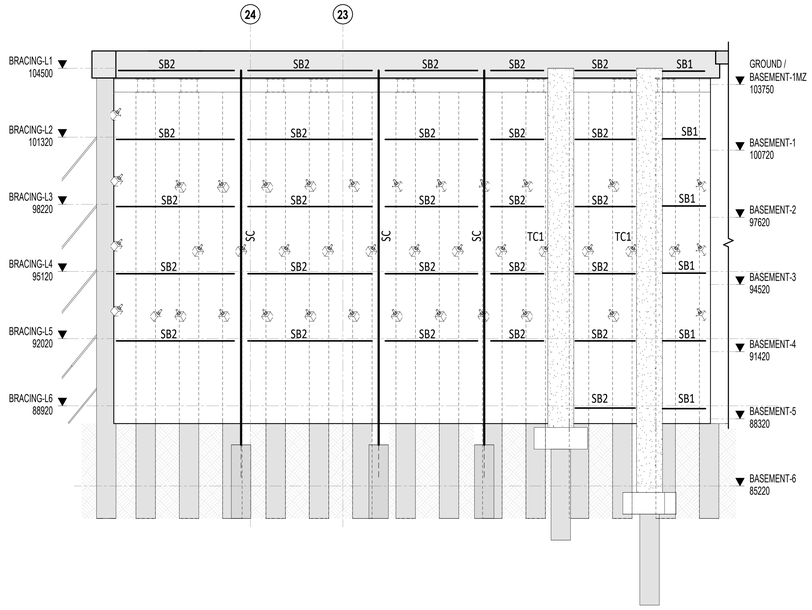
STRUCTURAL DRAWINGS

Designed:	NAA	Project Director Approved	Date	North
Modelled:	RT	JT	03/18/25	
Scale:	1:50	Project Ref.	Drawing No.	Rev
Sheet:	A0	01-100084	S10106	A

NON-REGULATED DESIGN RECORD				
PROJECT ADDRESS: 849-859 PACIFIC HIGHWAY & 2-8 WILSON STEET, CHATSWOOD.				
PROJECT TITLE: CHADSWOOD				
CONSENT No.:	DRAWING TITLE:	BODY CORP REG TAG:		
TEMP. BRACING FRONT ELEVATION		DA No:		
		DRAWING No: S10106		
REV	DATE	DESCRIPTION	DP FULL NAME	REG NO



KEY PLAN



TEMPORARY BRACING - FRONT ELEVATION

SCALE @ 1 : 100

COLUMN SCHEDULE		
MARK	SIZE	GRADE
TC1	1200 DIA	N80

STEEL FRAMING SCHEDULE	
MARK	SIZE
SB1	250UC89.5 (GR 300)
SB2	200UC52.2 (GR 300)
SB3	250UC72.9 (GR 300)
SB4	200UC46.2 (GR 300)
SC	310UC158 (GR 300)

SHORING WALL SW1

DENOTES SOIL FILL

DENOTES MASS CONCRETE FILL

DENOTES ROCK BERM

DIAL 1100 BEFORE DIG

BUILDER TO DETERMINE THE EXACT LOCATIONS OF EXISTING SERVICES PRIOR TO THE START OF ANY CONSTRUCTION WORK. BUILDER TO CONTACT DIAL BEFORE YOU DIG AND THE AUTHORITIES CONCERNED TO CONFIRM THE ACTUAL LOCATIONS OF EXISTING SERVICES. IN THE EVENT THAT ANY OF THE SERVICES MIGHT BE AFFECTED BY STRUCTURAL WORK, STRUCTURAL ENGINEER IS TO BE NOTIFIED AND CONSULTED IMMEDIATELY TO REVIEW THE STRUCTURAL DETAILS AFFECTING THE SERVICES.

www.dialbeforeyoudig.com.au

WORK IN PROGRESS
NOT SUITABLE FOR CONSTRUCTION

Rev	Description	Date	By	App
A	ISSUED FOR INFORMATION ONLY	25.03.18	RT	NAA

COPYRIGHT All rights reserved.

These drawings, plans and specifications and the copyright therein are the property of the Cadigal Group Engineers PTY LTD and must not be used, reproduced or copied wholly or in part without the written permission of Cadigal Group Engineers PTY LTD.

Project: **849-859 PACIFIC HIGHWAY & 2-8 WILSON STREET, CHATSWOOD.**

Developer: Billbergia creating communities®

Contractor:

Architect : pbd architects

Design Consultant: CADIGAL GROUP

1002, 22-24 Market Street,
Sydney , NSW 2000
Australia
T: +61 2 8630 8559
info@c-adigalgroup.com.au

© Copyright

Drawing Title:

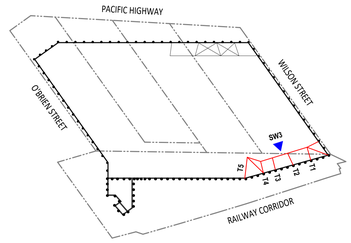
BRACING - FRONT ELEVATION

STRUCTURAL DRAWINGS

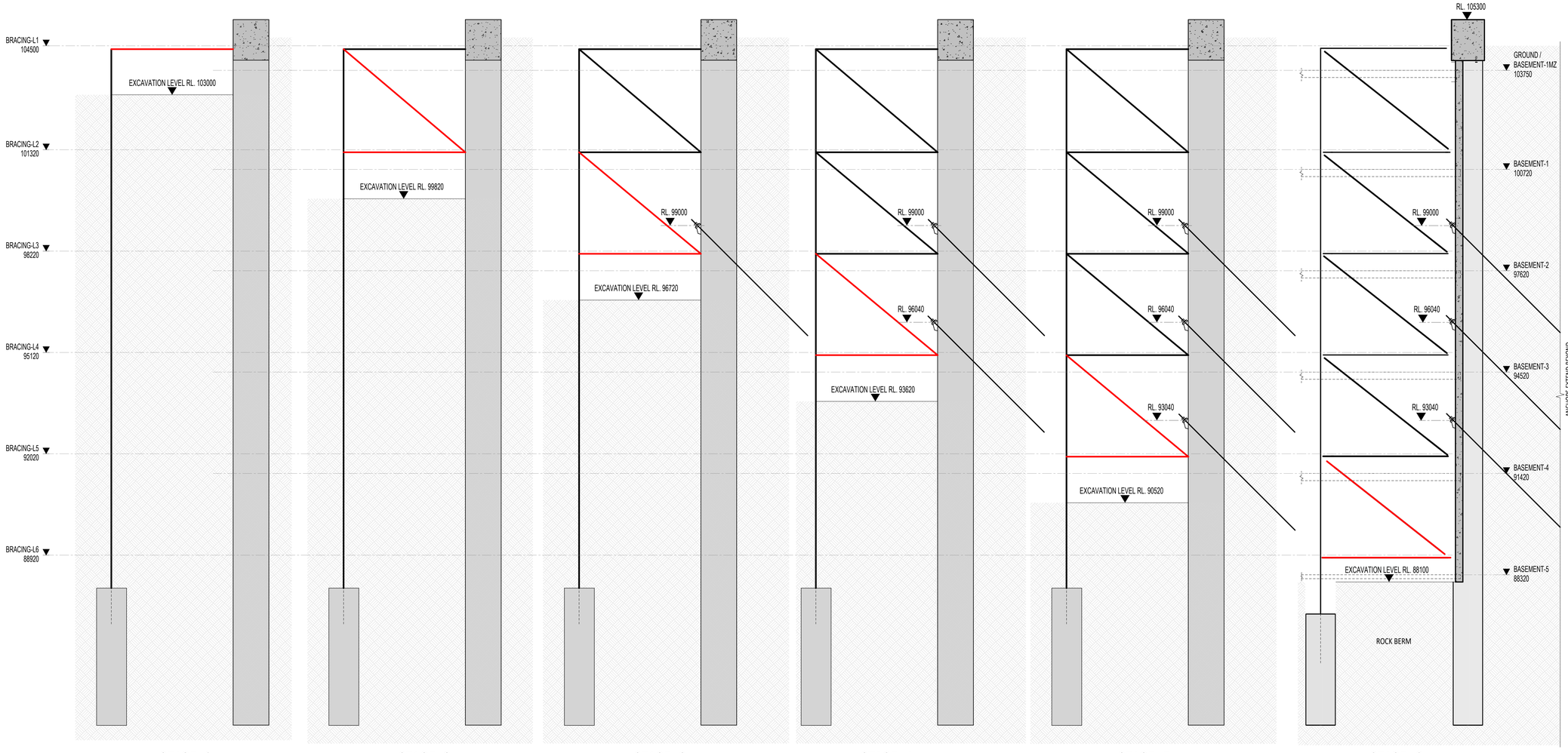
Designed:	NAA	Project Director Approved	Date	North
Modelled:	RT	JT	03/18/25	
Scale:	1:100	Project Ref.	Drawing No.	Rev
Sheet:	A0	01-100084	S10107	A

100
50
30
20
10
0

NON-REGULATED DESIGN RECORD				
PROJECT ADDRESS: 849-859 PACIFIC HIGHWAY & 2-8 WILSON STEET, CHATSWOOD.				
PROJECT TITLE: CHADSWOOD				
CONSENT No.: DRAWING TITLE: BODY CORP REG TAG: DA No:				
REV	DATE	DESCRIPTION	DP FULL NAME	REG NO



KEY PLAN



STAGE- 1

SCALE@ 1:50

AT THIS STAGE, THE MAXIMUM EXCAVATION DEPTH SHALL BE LIMITED TO 1.5M BELOW BRACING LEVEL 1. STEEL INSTALLATION AT THIS LEVEL MUST BE COMPLETED BEFORE PROCEEDING TO THE NEXT STAGE.

STAGE- 2

SCALE@ 1:50

AT THIS STAGE, THE MAXIMUM EXCAVATION DEPTH SHALL BE LIMITED TO 1.5M BELOW BRACING LEVEL 2. STEEL INSTALLATION AT THIS LEVEL MUST BE COMPLETED BEFORE PROCEEDING TO THE NEXT STAGE.

STAGE- 3

SCALE@ 1:50

AT THIS STAGE, THE MAXIMUM EXCAVATION DEPTH SHALL BE LIMITED TO 1.5M BELOW BRACING LEVEL 3. STEEL INSTALLATION AT THIS LEVEL MUST BE COMPLETED BEFORE PROCEEDING TO THE NEXT STAGE.

INSTALLATION OF THE FIRST ANCHOR MUST BE COMPLETED PRIOR TO INSTALLATION OF STEEL

STAGE- 4

SCALE@ 1:50

AT THIS STAGE, THE MAXIMUM EXCAVATION DEPTH SHALL BE LIMITED TO 1.5M BELOW BRACING LEVEL 4. STEEL INSTALLATION AT THIS LEVEL MUST BE COMPLETED BEFORE PROCEEDING TO THE NEXT STAGE.

INSTALLATION OF THE SECOND ANCHOR MUST BE COMPLETED PRIOR TO INSTALLATION OF STEEL

STAGE- 5

SCALE@ 1:50

AT THIS STAGE, THE MAXIMUM EXCAVATION DEPTH SHALL BE LIMITED TO 1.5M BELOW BRACING LEVEL 5. STEEL INSTALLATION AT THIS LEVEL MUST BE COMPLETED BEFORE PROCEEDING TO THE NEXT STAGE.

INSTALLATION OF THE THIRD ANCHOR MUST BE COMPLETED PRIOR TO INSTALLATION OF STEEL

STAGE- 6

SCALE@ 1:50

AT THIS STAGE, EXCAVATION SHOULD BE COMPLETED TO THE TOP OF THE ROCK BERM AT BASEMENT LEVEL 5. PRIOR TO STEEL INSTALLATION.

STEEL FRAMING SCHEDULE	
MARK	SIZE
SB1	250UC89.5 (GR 300)
SB2	200UC52.2 (GR 300)
SB3	250UC72.9 (GR 300)
SB4	200UC46.2 (GR 300)
SC	310UC158 (GR 300)

SHORING WALL SW1

DENOTES SOIL FILL

DENOTES MASS CONCRETE FILL

DENOTES ROCK BERM

WORK IN PROGRESS
NOT SUITABLE FOR CONSTRUCTION

Rev	Description	Date	By	App
A	ISSUED FOR INFORMATION ONLY	25.03.18	RT	NAA

COPYRIGHT All rights reserved.

These drawings, plans and specifications and the copyright therein are the property of the Cadigal Group Engineers PTY LTD and must not be used, reproduced or copied wholly or in part without the written permission of Cadigal Group Engineers PTY LTD.

Project: **849-859 PACIFIC HIGHWAY & 2-8 WILSON STREET, CHATSWOOD.**

Developer: Billbergia creating communities®

Contractor:

Architect : pbd architects

Design Consultant:

CADIGAL GROUP
1002, 22-24 Market Street,
Sydney , NSW 2000
Australia
T: +61 2 8630 8559
info@c-adigalgroup-com.au

© Copyright

Drawing Title:

CONSTRUCTION SEQUENCE

STRUCTURAL DRAWINGS

Designed:	NAA	Project Director Approved	Date	North
Modelled:	RT	JT	03/18/25	
Scale:	1:50	Project Ref.	Drawing No.	Rev
Sheet:	A0	01-100084	S10108	A

0 10 20 30 50 100

4 Hydrogeological Setting

The site is located within the Sydney Basin Central Groundwater Source, which is managed under the WMA 2000 through the Water Sharing Plan for the Greater Metropolitan Region Groundwater Sources 2023.

A review of Hydrogeology map of Australia (Geoscience Australia) indicates the aquifer type beneath the site are porous, extensive with low-moderate productivity.

4.1 Groundwater Monitoring Wells

Three (3) groundwater monitoring wells have been installed and monitored by Reditus Consulting at the site. The groundwater monitoring well locations are provided in **Figure 2**, **Appendix A**, and the borehole logs are provided in **Appendix C**.

Groundwater monitoring wells installed at the site are summarised as follows:

- MW01 to MW03 were installed by Reditus (2023).
- The monitoring wells have been installed to RL depths ranging from 98.451 to 93.418 mAHD.
- All monitoring wells have been installed above the lowest proposed basement finished floor level (FFL) (RL 91.42 mAHD) and the lowest assumed basement bulk excavation level (BEL) (RL 90.92 mAHD).

The ground level is 106.75 mAHD, with a FFL of 91.42 mAHD for Basement 4. This is an approximate 15.33 m excavation depth, and it is assumed that the excavation will extend 0.5 m below the lowest proposed FFL. The Basement 1 Mezzanine is proposed on the Wilson St side overlying 4 levels of basement carparking.

Reditus note the wells installed at the site have not been installed to a depth below the basement excavation level, and reinstallation of wells below the full basement depth for monitoring during dewatering may be required.

4.2 Site Groundwater Elevations and Inferred Flow Direction

4.2.1 MANUAL MEASUREMENTS

A summary of the groundwater monitoring wells, and manual measurements recorded is provided in **Table 4** below.

Table 4. Manual Groundwater Elevation Measurements

WELL ID	DATE	TOC (RL mAHD)	DEPTH OF WELL (mbTOC/ mAHD)	DEPTH TO WATER (mbTOC)	DEPTH TO WATER (RL mAHD)
MW01	10 November 2023	106.168	12.75 / 93.418	9.105	97.063
MW02	10 November 2023	111.331	12.88 / 98.451	11.85	99.481
MW03	10 November 2023	111.041	12.675 / 98.366	7.75	103.291
			Minimum:	7.75	97.063
			Maximum:	9.105	103.291
			Mean:	9.568	99.945
			Median:	9.105	99.481

TOC – top of casing

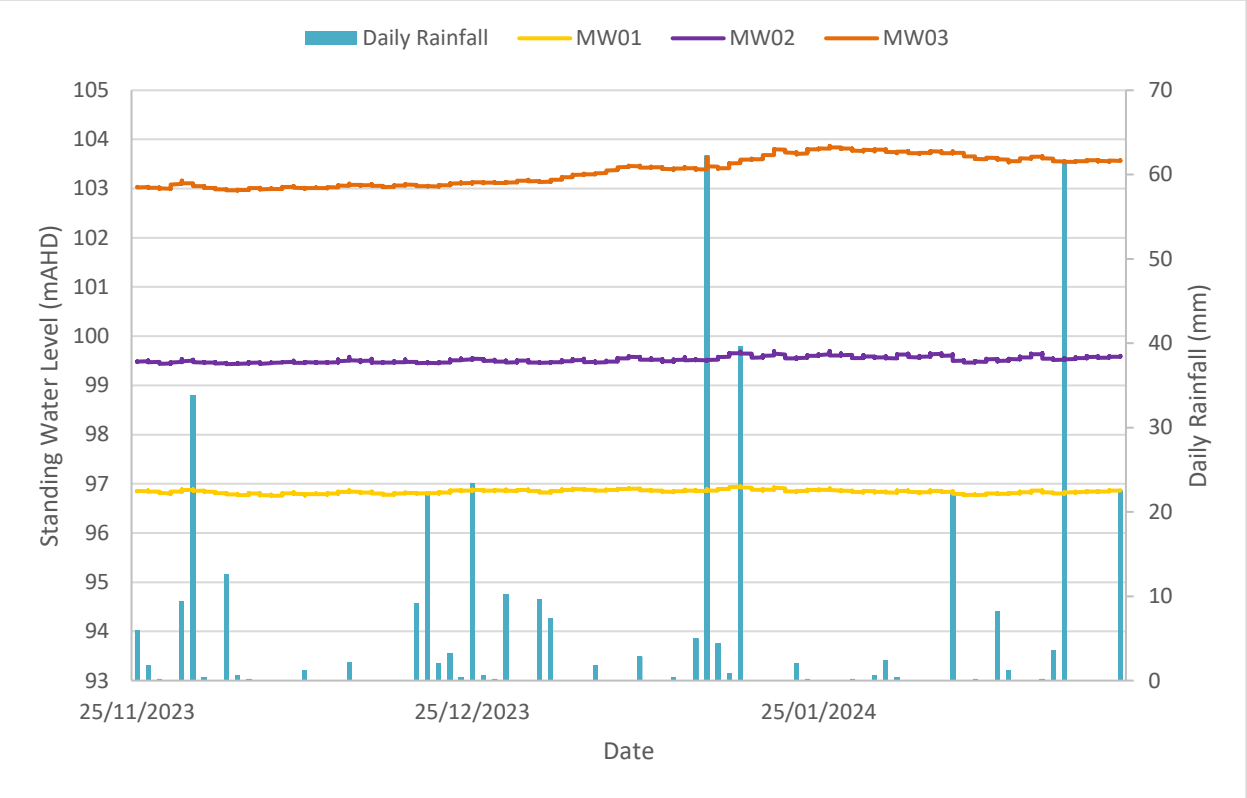
RL mAHD – Reduced level metres Australian Height Datum

mbTOC – metres below top of casing
mbgl – metres below ground level

An average annual rainfall of 1211.1 mm of rain was registered at the nearest weather station (Sydney Observatory Hill AWS 066062) over the period of 1994 to 2020. These statistics have been used as the average annual rainfall for inflow calculations.

4.2.2 DATA LOGGERS

The data loggers recorded hourly groundwater elevation measurements over 89 days (approximately 3 months), between 25 November 2023 to 21 February 2024. Standing groundwater levels (SWL, mAHD), overlain with the recorded rainfall during this period (Sydney Observatory Hill AWS 066062) have been plotted in **Graph 1** below.



Graph 1. Long-term Groundwater Elevation Measurements and Rainfall over 86 day period (approximately 3 months).

The following key findings were reported from the long-term groundwater elevation monitoring:

- Standing water levels fluctuated between a highest logged level of 7.17m BGL (MW03) to a lowest logged level of 11.9 mBGL (MW02) across the three monitoring wells during the 3-month monitoring period at the site.
- The maximum standing water levels (RL mAHD) were recorded over the three month monitoring period as follows (refer to Graph 1 above):
  - MW01: 96.94 mAHD
  - MW02: 99.70 mAHD
  - MW03: 103.87 mAHD
  - The average of the maximum levels is 100.171 mAHD
  - The average of the average standing water levels is 99.910 mAHD
- Standing groundwater levels at the site do not generally respond to local rainfall events, with the standing water level not rising or dropping significantly. A gradual rise was observed in MW03 following rainfall on 15 January 2024 (62.2 mm).
- The maximum and minimum RLs are considered to be the most representative of the site conditions and relative to the excavation and therefore have been used in the dewatering models.

Table 12. 'Most Likely' Predicted Groundwater Take

DEWATERING AREA	PREDICTED MATRIX TAKE (ML)	PREDICTED ANNUAL GROUNDWATER INFLOW TAKE (ML/YR)	TOTAL GROUNDWATER TAKE DURING CONSTRUCTION (ML)
Basement carpark	0.289	2.19	**2.478**

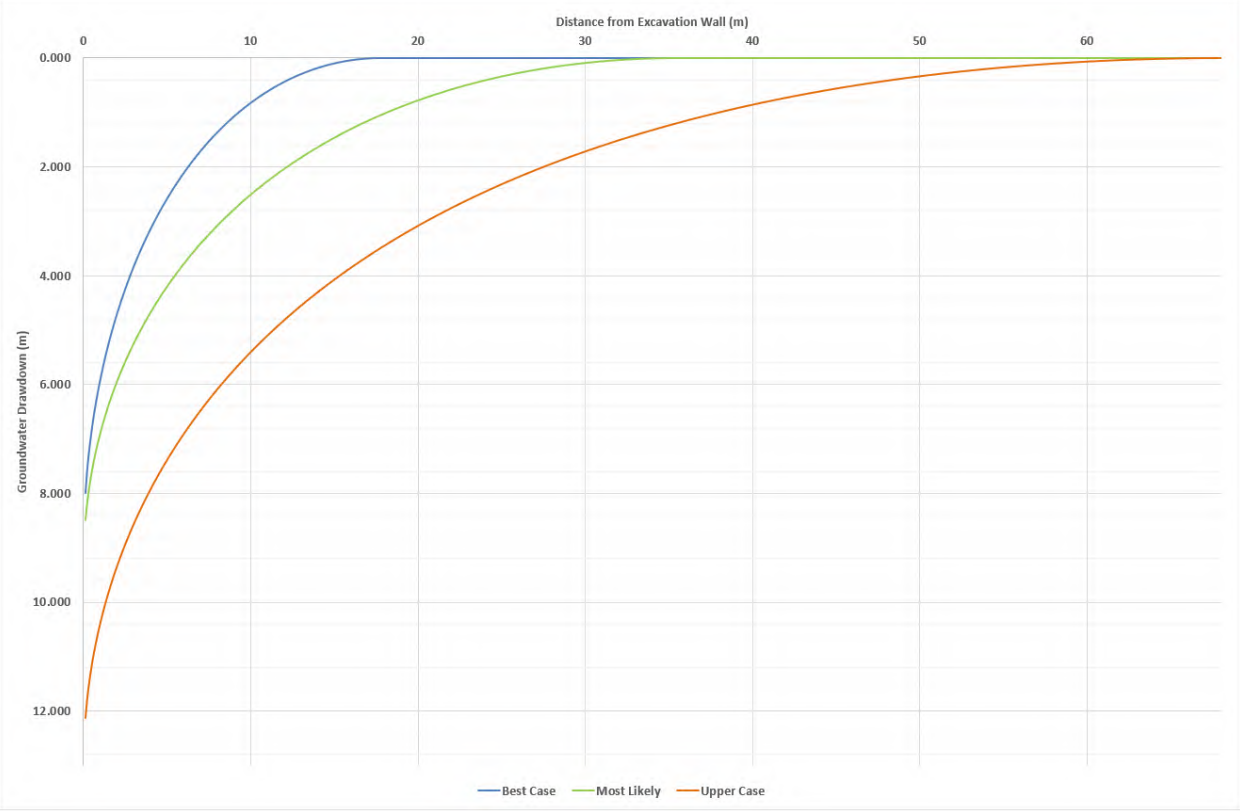
Based on the predicted groundwater extraction volumes, it is the opinion of Reditus that the proposed basement could be effectively constructed and managed under a drained based design.

6.7.4 PREDICTION OF DRAWDOWN DISTANCE

As part of the dewatering assessment, the extent of groundwater drawdown was estimated at regular distance intervals from the edge of the circular disk sinks (approximate excavation edge) and at the nearest neighbouring building. Maps indicates the nearest existing building to the south is approximately 18 m from the excavation boundary. Drawdown reaches 0 m at the following radial distance from the edge:

- Best Case: 17.75m
- Most Likely: 35.25m
- Upper Case: 67.50m

The estimated drawdown at distance from the excavation/basement walls have been provided in **Graph 2** below.



Graph 2. Extent of Drawdown from Basement/Excavation Wall – Basement carpark

It is the professional experience of Reditus that the groundwater levels in fractured rock can vary naturally by several metres or more during prolonged periods of dry or wet weather. Accordingly, a temporary drop in the water table of 1 m or less is considered unlikely to result in off-site geotechnical settlement impacts, particularly within rock.

There is potential that drawdown outside the site may be sufficient to induce settlement in overlying buildings unless an appropriate DMP is implemented. A suitability qualified geotechnical consultant will be required to determine the potential settlement impacts caused by the potential drawdown as a result of the proposed dewatering activities. Detailed geotechnical considerations are beyond the scope of this assessment.

If drawdown approaching 1.0 m is identified in the monitoring points outside the excavation shoring walls, consideration should be given to control of the off-site water table depression, in consultation with a geotechnical and structural engineer. This is likely to have in implication on the costs of the project but is recommended in order to reduce the risk of damage to adjacent buildings and roadways.

The closest bore is located 500 m north of the site. Thirteen bores are located north of the site, and five are located southeast of the site. There are no registered bores used for water supply within a 1 km radius of the site, and therefore dewatering works are not expected to impact any nearby groundwater supply works.

A search of the BoM Australian Groundwater Explorer indicated there are no GDEs located within a 2 km radius of the site. Given the predicted drawdowns in the basement carpark, the dewatering works, and ongoing drained basement are unlikely to cause a detrimental impact to receptors.

Whilst every effort has been made to make accurate predictions in the dewatering volumes and off-site effects, it is strongly recommended that water levels be monitored regularly in the dewatered area and in surrounding properties to ensure that local variations in hydraulic properties in the aquifer do not result in unacceptable groundwater table depression.

FORTIFY
GEOTECH

Appendix B

2024 Fortify Geotech’s Geotechnical Investigation Report

GEOTECHNICAL INVESTIGATION REPORT

FORTIFY
GEOTECH

Proposed Mixed Use Apartment Development - 849, 853 & 859 Pacific Highway and 2 & 8 Wilson Street, Chatswood

CLIENT

Billbergia
(BB WILSON PROPERTY PTY LTD)

ADDRESS

849, 853 & 859 Pacific Highway, 2 & 8 Wilson Street, Chatswood, NSW

DATE

November 2024



39 Sydenham Road, Marrickville, NSW 2204
PO Box 9225, Deakin ACT 2600

Consulting Engineers

(02) 9188 4033
FortifyGeotech.com.au

6 November 2024
Our ref: S2207_SGI_01 Rev2

Billbergia (BB WILSON PROPERTY PTY LTD)

Via email: oscar.brady@billbergia.com.au

Attention: Mr Oscar Brady

Proposed Mixed Use Apartment Development – 849, 853 & 859 Pacific Highway and 2 & 8 Wilson Street, Chatswood, NSW

Geotechnical Investigation Report

We are pleased to present our geotechnical investigation report for the proposed mixed use apartment development, located at 849, 853 & 859 Pacific Highway, and 2 & 8 Wilson Street, Chatswood, NSW, which includes the historical site investigation carried out by Fortify Geotech in 2023 and supplementary site investigation work carried out in September 2024.

The report outlines the methods and results of exploration, describes site subsurface conditions, and provides recommendations for building footing design, excavation conditions, preparation of subgrades, stability of cut and fill batters, design parameters for temporary and permanent excavation support, provides aggressivity test results and exposure classification, point load rock strength index test results, indicative design CBR values, and site drainage advice.

Should you require any further information regarding this report, please do not hesitate to contact our office.

Yours faithfully
Fortify Geotech

Written by;

Joe Stuart
Graduate Geotechnical Engineer

Reviewed by;

Manuel Neves
Senior Geotechnical Engineer
MICE CEng RPEQ RPEV PhD
Registered PE of Queensland (RPEQ) # 32190
VIC PE Registration # PE0006524
NSW PE Registration # PRE0002314

About us

We work with our clients to provide practical advice and solutions tailored to each project. Our professional services are reliable, responsive and efficient.

Our highly capable Geotechnical Engineers and Geologists have a comprehensive understanding of the industry. We provide the best engineering solution for complicated geotechnical engineering issues. This has earned us a solid reputation with our Construction Industry, Municipal and Government clients

INDUSTRIES WE WORK IN

- Residential
- Commercial
- Transport Infrastructure
- Industrial Developments of all sizes.

SERVICES

- Geotechnical Site Investigations and Reporting;
- Engineering Geology;
- Mining/Rock Geotechnics;
- Foundation Engineering;
- Dam Engineering; Embankment Design and Specification;
- Geotechnical Design Recommendations;
- Pavement Engineering and Design;
- Pavement Condition Surveys;
- Slope Stability and Risk Assessments;
- Geotechnical and Hydrological Instrumentation and Monitoring;
- Footing and Excavation Supervision and Certifications;
- Excavated soil/rock assessments and VENM assessments;
- Supervision and Certification of Earthworks and Controlled Fill, including Level 1 supervision;
- Geotechnical Construction Specifications;
- Deep Excavation Support; and
- Slope/Retaining Structure Analysis and Design

Table of Contents

1 INTRODUCTION 1
2 SITE DESCRIPTION & GEOLOGY 2
3 INVESTIGATION METHODS 2
4 INVESTIGATION RESULTS 3
4.1 Subsurface Conditions 3
4.2 Point-Load Strength Index Testing 5
4.3 Groundwater 7
5 LABORATORY TESTING 9
5.1 Aggressivity Suite Test Results 9
5.2 Atterberg Limit Test Results 9
6 DISCUSSION & RECOMMENDATIONS 10
6.1 Site Classification 10
6.2 Geotechnical Design Parameters 10
6.3 Building Footings 12
6.4 Excavation Conditions & Use of Excavated Material 13
6.4.1 Excavation Vibrations 14
6.5 Stable Excavation Batters 15
6.6 Basement Excavation Temporary Support 16
6.6.1 Lateral Pressure on Temporary Support Systems 16
6.6.2 Resistance Parameters for Temporary Support Systems 17
6.7 Basement Excavation Permanent Support 19
6.8 Low Retaining Walls 19
6.9 Controlled Fill Construction 20
6.10 Pavement Subgrades 20
6.11 Aggressivity Test Results & Exposure Classification 21
6.12 Earthquake Site Factor 21
6.13 Stress Relief 21
6.14 Site Drainage 22
REFERENCES 23

Tables

TABLE 4.1: SUBSURFACE CONDITIONS 3
TABLE 4.2: BOREHOLE SUMMARY WITH DEPTH TO TOP OF LAYER 3
TABLE 4.3: SPT RESULT SUMMARY 4
TABLE 4.4: BOREHOLE SUMMARY WITH APPROXIMATE RL'S 5
TABLE 4.5: ESTIMATED ROCK COMPRESSIVE STRENGTHS 6
TABLE 5.1: AGGRESSIVITY SUITE LABORATORY TEST RESULTS SUMMARY 9
TABLE 5.2: ATTERBERG LIMIT LABORATORY TEST RESULTS SUMMARY 10
TABLE 6.1: KEY GEOTECHNICAL DESIGN PARAMETERS 11
TABLE 6.2: PRELIMINARY COEFFICIENTS OF LATERAL EARTH PRESSURE 12
TABLE 6.3: RECOMMENDED ALLOWABLE BEARING PRESSURE FOR FOOTINGS 13
TABLE 6.4: RECOMMENDED PEAK PARTICLE VELOCITY 15
TABLE 6.5: RECOMMENDED BATTER SLOPES (TEMPORARY) 16

Plates

PLATE 4-1: EQUIVALENT UCS VALUES BASED ON POINT LOAD TESTING 6
PLATE 4-2: EXTRACT FROM REDITUS' DMP (REFERENCE 10) 7
PLATE 4-3: EXTRACT FROM REDITUS' DMP (REFERENCE 10) 8

Figures

FIGURE 1: SITE LOCALITY 24
FIGURE 2: AERIAL PHOTOGRAPH AND 2023 FORTIFY BOREHOLE LOCATIONS 25
FIGURE 3: GROUNDWATER MONITORING WELL LOCATIONS (PROVIDED BY REDITUS CONSULTING) 26
FIGURE 4: EXCAVATION CONDITIONS 27

Appendices

Appendix A: Borehole Logs BH01 to BH09
Appendix B: Rock Core Photos
Appendix C: Point Load Test Results
Appendix D: Aggressivity Laboratory Test Results
Appendix E: Atterberg Limit Test Results
Appendix F: Definitions of Geotechnical Engineering Terms
Appendix G: Limitations of this Report

FORTIFY
GEOTECH

Proposed Mixed Use Apartment Development – 849, 853 & 859 Pacific Highway Chatswood

Geotechnical Investigation Report

QUALITY INFORMATION

Revision history

Reference/ Revision	Description	Date	Author	Reviewer
S2207_SGI_01_Rev0	For Issue	31/10/2024	JOE	MN
S2207_SGI_01_Rev1	Inclusion of outstanding laboratory results	6/11/2024	JOE	MN
S2207_SGI_01_Rev2	Revision incorporating Client's commentary	6/11/2024	JOE	MN

Billbergia (BB WILSON PROPERTY PTY LTD)

Proposed Mixed Use Apartment Development – 849, 853 & 859 Pacific Highway, Chatswood, NSW

Geotechnical Investigation Report

1 INTRODUCTION

At the request of Billbergia (BB WILSON PROPERTY PTY LTD), Fortify Geotech Pty Ltd carried out a geotechnical investigation for the proposed mixed use apartment development at 849, 853 & 859 Pacific Highway and 2 & 8 Wilson Street, Chatswood, NSW.

Fortify Geotech Pty Ltd (Fortify) has previously been engaged by Reditus Consulting (Reditus) to carry out a geotechnical investigation to investigate the subsurface conditions at the site for the initial development proposals. The investigation comprised six (6) boreholes to a target depth of circa 20 m with laboratory geotechnical testing of selected samples. The findings of the investigation are summarised in our report JS/S1998 Rev 2, dated 14 December 2023.

It is understood the proposed development will now feature 36 stories and 6 levels of basement, instead of the previous configuration with 27 storeys residential towers and a 4-level basement carparking. As such, a supplementary geotechnical investigation, consisting of three (3) boreholes to a target depth of circa 27.5m was carried out to inform the design of the additional basement levels.

The aim of the investigation was to:

i. Provide response to item 13 of the Planning Secretary's Environmental Assessment Requirements, to assess potential impacts on soil resources and related infrastructure and riparian lands on and near the site.

ii. Assess the subsurface conditions at the site, including the extent, nature and depth of any fill materials, underlying natural soils and bedrock type, as well as depth to groundwater (including 1 measurement of groundwater monitoring wells).

iii. Provide relevant soil and rock geotechnical parameters to inform the design.

iv. Provide site classification to AS2870-2011 "Residential Slabs & Footings".

v. Advise on suitable footings systems, founding depths, allowable bearing pressures and design parameters for piles, including likely strength reduction factor and exposure classification.

vi. Advise on excavation conditions, suitability of excavated material for use in controlled fill platforms and advice for construction of building platforms.

vii. Provide design parameters for temporary and permanent excavation support.

viii. Advise on pavement subgrade preparation and provide indicative design CBR values.

ix. Provide aggressivity test results and exposure classification.

x. Provide point load rock strength index test results.

xi. Assess the earthquake risk classification with accordance with AS 1170.4-2007.

xii. Provide drainage and other geotechnical advice.

2 SITE DESCRIPTION & GEOLOGY

The site is located at 849, 853 & 859 Pacific Highway, 2 & 8 Wilson Street, Chatswood, NSW. The site has an irregular shaped configuration and an area of 4,292 sqm. The site is bounded by Wilson Street to the north, O'Brien Street to the south, Pacific Highway to the west, and the T1 North Shore and Western Line, T9 Northern Line, and Metro North-West Line to the east. The site is presently occupied by a mixture of 3-5 storey multi-residential buildings and a commercial building at 8 Wilson Street. The groundsurface is mostly concrete covered where not developed and is relatively flat, with a vertical cut at the eastern boundary of the site adjacent to the railway corridor. Figure 1 shows the site locality.

The geological information provided by the Department of Regional NSW (Reference 1) indicates the area to be underlain by Middle Triassic age Ashfield Shale. Ashfield Shale consists of black to light grey shale and laminite. Ashfield Shale is a Middle Triassic marine shale and mudstone unit with minor siltstone and sandstone that outcrops in eastern Australia. A layer of residual soils is expected to overlay the existing bedrock, which will in turn be underlying fill materials associated with the urban development.

3 INVESTIGATION METHODS

The initial site investigation was conducted between the 13th-17th and 20th-21st of November 2023, comprising six augered and cored boreholes, designated BH1 to BH6, drilled to target depths of ~18.96m/20.88m.

The supplementary site investigation was conducted between the 19-20th and 23rd-27th of September 2024, comprising three augered and coreholes to a target depth of 27.5m designated BH7 to BH9, and three augered boreholes to the top of bedrock adjacent to the deep boreholes for the purpose of installing dual groundwater monitoring wells at each location. The boreholes were drilled using a Hanjin 8D track mounted drill rig fitted with solid flight augers and a tungsten carbide (TC) bit. The overburden soils were augered using a 110mm continuous flighted helix auger equipped with a tungsten tipped "V" bit. A NMLC triple-tube core barrel (~52mm internal diameter), with diamond impregnated drill-bit, was used to core the bedrock. Water was used as the recirculating fluid. SPT (Standard Penetration Testing) was conducted in boreholes BH1 to BH3 and BH7 to BH9, with testing intervals at 1.5-meter depths until refusal, aiming to ascertain the in-situ consistency and inferred density of the soil profiles.

Core retrieved from the boreholes was placed in metal core trays. Following drilling, the core was photographed, and selected core was tested for point load strength index testing. Borehole logs are presented in Appendix A, while core photographs are shown in Appendix B for boreholes BH1 to BH9 following their respective cored borehole logs.

The auger profiles were visually logged in accordance with AS1726-2017 and, where appropriate, the Unified Soil Classification System (USCS). Definitions of geotechnical engineering terms used on the logs and in this report, including a copy of the USCS chart, are provided in Appendix F.

Deep groundwater monitoring wells were installed in boreholes BH7 to BH9, with shallow monitoring wells installed to the top of bedrock on the adjacent augered boreholes, as shown on Figure 2. As part of the 2023 investigation, groundwater monitoring wells were installed near boreholes BH1, BH4 and BH5.

4 INVESTIGATION RESULTS

4.1 SUBSURFACE CONDITIONS

The subsurface conditions of the proposed mixed use apartment development were investigated by a total of nine boreholes, designated BH1 to BH9. The subsurface profile found in the investigation boreholes is summarised in Table 4.1 and Table 4.2. The SPT results are summarised in Table 4.3.

Table 4.1: Subsurface Conditions

Geological Profile	Unit	Description
TOPSOIL /FILL	Unit 1	CONCRETE, Sandy GRAVEL; Sandy CLAY, SAND; fine to coarse gravel, fine to coarse sand, low plasticity clay. pale brown, black trace red, brown with orange, trace cobbles, trace fine gravels, with low plasticity clay
RESIDUAL SOIL	Unit 2	Sandy CLAY. CLAY, Gravelly CLAY; low to high plasticity, fine to coarse sand, fine to coarse gravel, red and orange, pale red mottled grey, pale grey and purple mottled and red, orange to brown mottled orange, orange, red and pink mottles, dark grey, trace fine to coarse gravel, with fine sand
WEATHERED SHALE BEDROCK	Unit 3a	(Class V) SHALE; extremely weathered (XW), excavates as Gravelly Silty CLAY, Gravelly CLAY; low to medium plasticity, fine to coarse gravel, grey trace red and orange, pale brown-red with grey, trace iron stone.
	Unit 3b	(Class IV) SHALE; highly weathered (HW), fine grained, dark grey, some iron staining, low strength
	Unit 3c	(Class III) SHALE; highly/moderately weathered (HW/HW), fine grained, dark grey, some iron staining, medium strength
	Unit 3d	(Class III/II) SHALE; moderately weathered (MW), dark grey, grey, some iron staining, high strength.
	Unit 3e	(Class II) SHALE; slightly weathered (MW), dark grey, grey, high strength.
WEATHERED SANDSTONE BEDROCK	Unit 4	(Class II) SANDSTONE; slightly weathered (SW), medium grained, grey, very high strength.

Table 4.2: Borehole Summary with Depth to Top of Layer

Borehole ID.	Depth from existing groundsurface level to top of unit (m)						
	Unit 2	Unit 3a	Unit 3b	Unit 3c	Unit 3d	Unit 3e	Unit 4
	Residual Soil	Class V Shale	Class IV Shale	Class III Shale	Class III/II Shale	Class II Shale	Class II Sandstone
BH1	0.3	4.8	7.8	10.8	13.4	15	N.E
BH2	0.6	4.5	7.6	9.4	10.9	16.5	N.E
BH3	0.5	4.5	7.5	8.1	9.1	15.1	N.E
BH4	0.2	2.8	6.4	7.5	8.9	14.2	N.E
BH5	0.6	3.2	6	8.4	9.5	16	N.E
BH6	0.4	3	6.5	8	9.2	14.3	N.E
BH7	1	5.5	5.8	13	N.C	17	N.E
BH8	0.2	6.9	7.3	10.6	N.C	21	27
BH9	0.5	5.5	5.7	9	N.C	21	27

N.E – Not encountered, N.C – Not considered

Table 4.3: SPT Result Summary

Depth from existing groundsurface levels (m)	Average N-Value	Geological Profile	Relative Density
1.5	16	RESIDUAL	Stiff
3	35	RESIDUAL	Very Stiff to Hard
4.5	52	RESIDUAL	Hard
6	Refusal (BH7/BH9) 60 (BH8)	XW SHALE /RESIDUAL	Hard
7	Refusal (BH8)	XW SHALE	Hard

Table 4.4: Borehole Summary with Approximate RL's

Borehole ID.	Approximate ground surface RL[1]	Top of Residual soils [Unit 2] (RL)[2]	Top of Shale Bedrock (RL)[2]					Top of Sandstone Bedrock (RL)[2]
			Class V Shale [Unit 3a]	Class IV Shale [Unit 3b]	Class III Shale [Unit 3c]	Class III/II Shale [Unit 3d]	Class II Shale [Unit 3e]	Class II Sandstone [Unit 4a]
BH1	103.6	103.3	98.8	95.8	92.8	90.2	88.6	N.E.
BH2	104.9	104.3	100.4	97.3	95.5	94.0	88.4	N.E.
BH3	105.8	105.3	101.3	98.3	97.7	96.7	90.7	N.E.
BH4	105.9	105.7	103.1	99.5	98.4	97.0	91.7	N.E.
BH5	105.7	105.1	102.5	99.7	97.3	96.2	89.7	N.E.
BH6	105.0	104.6	102.0	98.5	97.0	95.8	90.7	N.E.
BH7	104.8	103.8	99.3	99.0	91.8	N.C	87.8	N.E.
BH8	105.8	105.6	98.9	98.5	95.2	N.C	84.8	78.8
BH9	105.7	105.2	100.2	100.0	96.7	N.C	84.7	78.7

N.E. – Not encountered, N.C – Not considered

[1] RL's have been interpolated between survey points off the detailed the survey and therefore may have an error margin of +/-0.5 m.
[2] RL's have been calculated based on the interpolated RL at the top of each borehole.

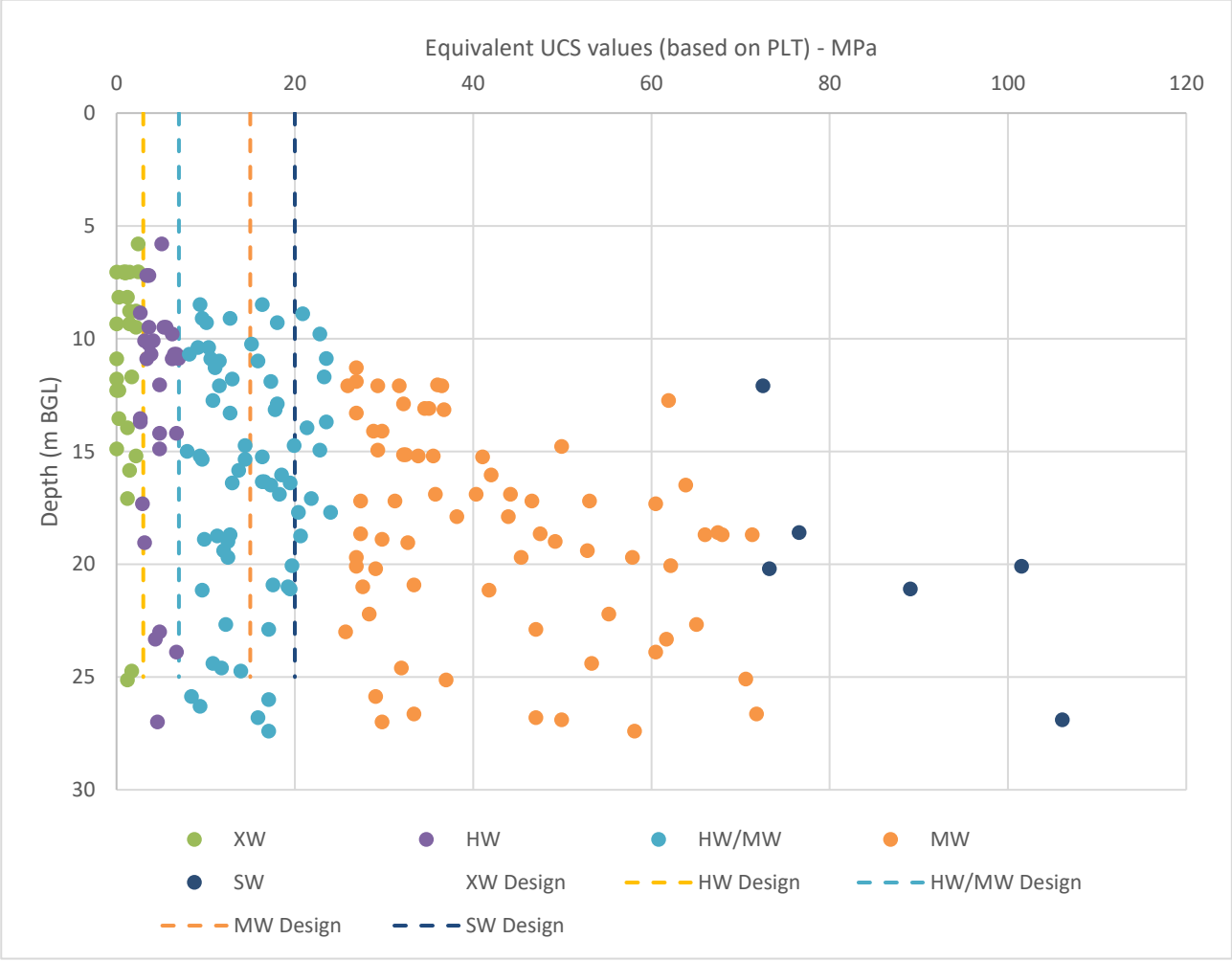
4.2 POINT-LOAD STRENGTH INDEX TESTING

A total of two hundred and two (202) point-load strength index tests were carried out on selected rock core specimens. The index values were used to derive the approximate compressive strength of the rock by applying the empirical relationship $q_u = 24 \times I_s(50)$ (Broch, E. & Franklin, J. A. (1972), "The Point-Load Strength Test", trans., Inst. Min. Metall.), where q_u is the ultimate compressive strength. The test method and calculation of point-load strength index $I_s(50)$ is in accordance with the test methods outlined by the International Society for Rock Mechanics (ISRM (1972), "Suggested Methods for Determining the Uniaxial Compressive Strength of Rock Materials and the Point-Load Strength Index", Committee on Laboratory Tests - Document No.1, Int. Soc. Rock Mechanics.). Testing was conducted both diametrially, with force applied parallel to the direction of lamination, and axially, with force applied perpendicular to the direction of lamination. Results of the point-load testing are presented in Appendix C. Estimated values of compressive strengths of the site bedrock are summarized in Table 4.5.

Table 4.5: Estimated Rock Compressive Strengths

Test Method	Estimated Compressive Strength		Number of Point Load Tests
	Range (MPa)	**Average (MPa)**	
Diametrial	0 – 70.56	14.64	202
Uniaxial	0.24 – 174	33.10	

Plate 4-1: Equivalent UCS values based on Point Load testing



4.3 GROUNDWATER

As part of the 2023 site investigation three (3) groundwater wells (MW01 to MW03) were installed and monitored by Reditus Consulting between 25th November 2023 and 21st February 2024 (approximately 3 months). The monitoring campaign of reported groundwater levels (GWL) to vary between 96.94 m AHD to 103.87 m AHD as illustrated in the extracts from the Dewatering Management Plan (DMP) for the site (reference 10 presented in Plates 4-2 and 4-3).

Plate 4-2: Extract from Reditus' DMP (reference 10)

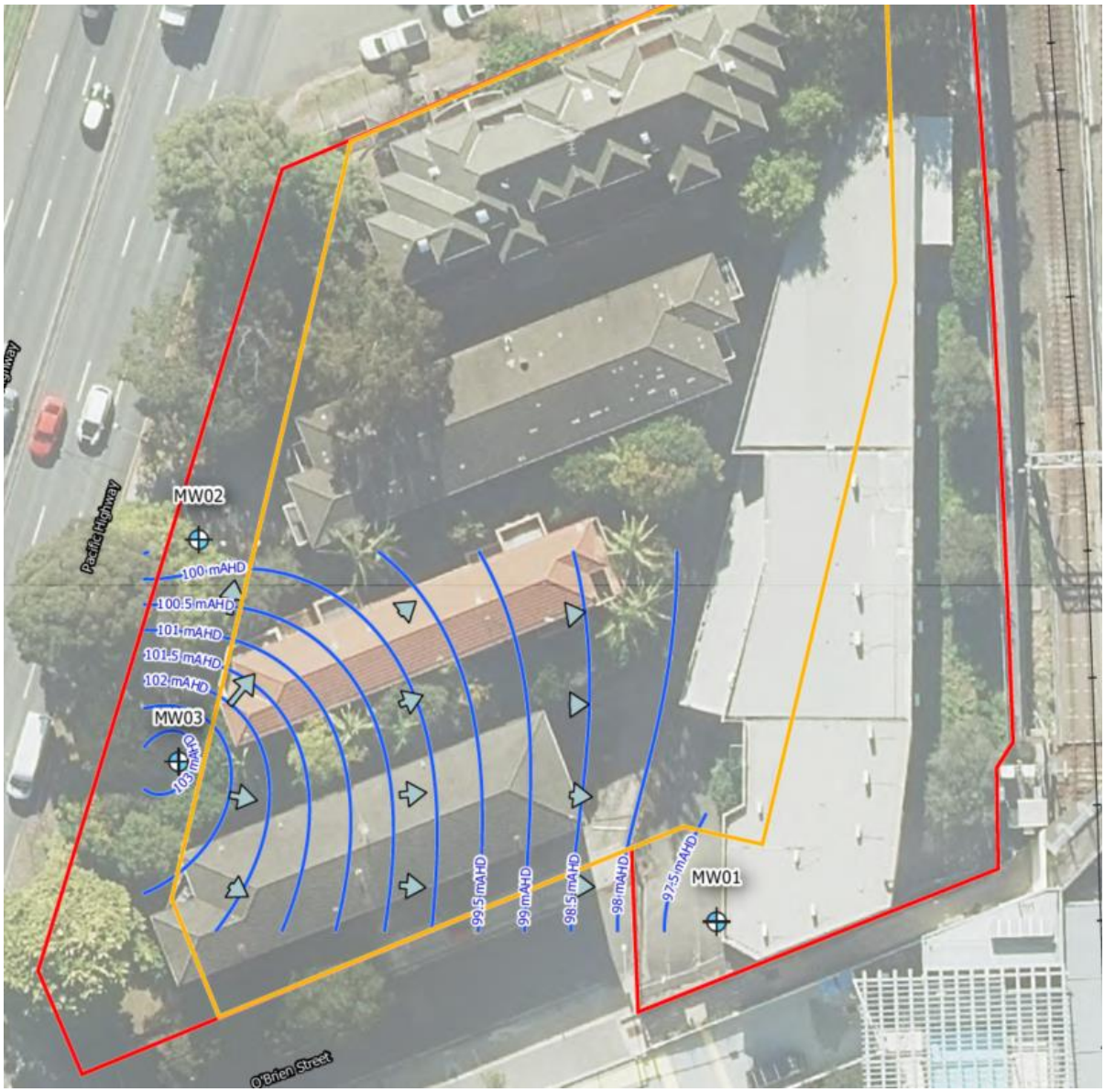
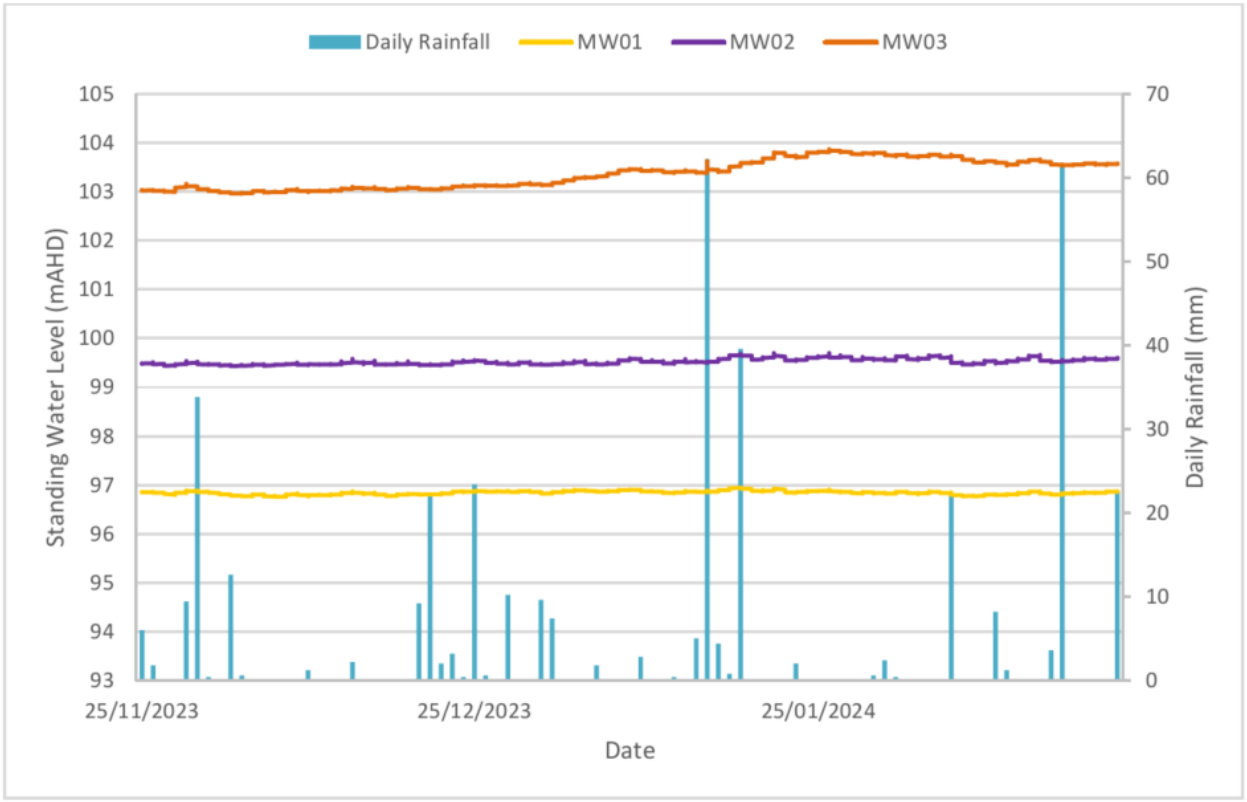


Plate 4-3: Extract from Reditus' DMP (reference 10)



Graph 1. Long-term Groundwater Elevation Measurements and Rainfall over 86 day period (approximately 3 months).

Dual groundwater monitoring wells were installed in boreholes BH7-BH9, with Reditus Consulting responsible for the installation and ongoing monitoring of data loggers.

Note that temporary, perched seepages could be encountered at shallower depths following rainfall within the more pervious soils. We understand that estimates of groundwater inflow have bene provided by Reditus Consulting in their DMP (reference 10).

We expect that any seepage should be able to be controlled by a conventional sump and pump system. We recommend that a sump-and-pump system be used both during construction and for permanent groundwater control below the basement floor slab. In the long term, drainage should be provided behind all basement retaining walls, around the perimeter of the basement and below the basement slab. The completed excavation should be inspected by a hydraulic engineer to confirm that adequate drainage has been allowed for. Drainage should be connected to the sump- and-pump system and discharged into the stormwater system. The permanent groundwater control system should take into account any possible soluble substances in the groundwater which may dictate whether or not groundwater can be pumped into the stormwater system. We recommend that pump-out tests be undertaken during construction of the basement to confirm the predicted groundwater seepage volumes into the excavation. The design of drainage and pump systems should take the above issues into account along with careful ongoing inspections and maintenance programs.

4.4 CONTAMINATED SOILS

Fill material was encountered up to 1.0m depth, however, no noticeable signs of contamination, e.g. traces of asbestos or petroleum/diesel odours, were encountered during the sitework.

5 LABORATORY TESTING

5.1 AGGRESSIVITY SUITE TEST RESULTS

Eight representative samples of the soil from auger holes, designated BH1 – BH6, sampled between 14th November 2023 to 21st November 2023, and two samples, namely BH7/1 and BH7/2, sampled on the 19th of September 2024, were and have been tested in a NATA laboratory for aggressivity (Cl, SO4, pH & EC).

Results of the laboratory tests performed on the soil samples are summarised in Table 5.1. The NATA certificates are attached in Appendix D.

Table 5.1: Aggressivity Suite Laboratory Test Results Summary

Sample No.	BH1	BH2	BH3	BH4	BH5	BH6	BH7/1	BH7/2
Depth of sample	**4.8m**	**4.0m**	**2.5m**	**1.2m**	**1.7m**	**2.0m**	**23.7m**	**26.8m**
Material Description	RESIDUAL; Silty Clay	RESIDUAL; Silty Clay	RESIDUAL; Silty Clay	RESIDUAL; Silty Clay	ALLUVIUM; Clay	RESIDUAL; Silty Clay	HW Shale	HW Shale
pH	5.2	4.5	5.1	4.5	4.7	4.9	9	9.3
Electrical Conductivity (µS/cm)	80	44	72	65	67	180	40	67
Chloride, Cl (mg/kg)	<10	<10	<10	10	10	130	<10	<10
Sulphate, SO4 (mg/kg)	83	34	63	63	70	100	10	20

5.2 ATTERBERG LIMIT TEST RESULTS

Four representative sample of the soils from the auger holes, designated BH3-BH6 were sampled between 14th November 2023 to 21st November 2023 and have been tested in a NATA laboratory for Atterberg limits and linear shrinkage.

Results of the laboratory tests performed on the soil sample are summarised in Table 5.2. The NATA certificates are attached in Appendix E.

Table 5.2: Atterberg Limit Laboratory Test Results Summary

Sample No.	BH3	BH4	BH5	BH6
Depth of sample	**1-1.5m**	**1.8m**	**1.5-1.8m**	**0.5-0.8m**
Material Description	**ALLUVIAL;** CLAY (CH); medium to high plasticity clay	**RESIDUAL;** Silty Clay (CI); medium plasticity clay	**ALLUVIAL;** CLAY with SAND (CH); medium to high plasticity clay, fine grained sand	**ALLUVIAL;** Sandy Clay (CH); medium to high plasticity clay, fine grained sand
Liquid Limit (%)	68	59	57	59.0
Linear Shrinkage (%)	15.5	14	13.5	14.5

6 DISCUSSION & RECOMMENDATIONS

6.1 SITE CLASSIFICATION

Due to the presence of uncontrolled fill material up to 1.0m depth, the site is designated as Class “P” (problem) site in accordance with AS2870-2011 “Residential Slabs & Footings”. If the fill is removed, and replaced with controlled fill, or if footings are founded in the natural soil or bedrock below the fill, a Class “H1” (highly reactive) category can be used in design of new footings. The characteristic ground surface movement “Y_s”, as defined by AS2870-2011 for the range of extreme dry to extreme wet moisture conditions is estimated to be between 40mm and 60mm.

Deemed-to-comply footing designs provided by AS2870-2011 are applicable specifically to residential-style one and two-storey structures, or buildings with similar loads and superstructure stiffness, and shall not apply when any of the provisions in Clause 3.1.1 of AS2870-2011 is met.

6.2 GEOTECHNICAL DESIGN PARAMETERS

The key geotechnical parameters of the soil units relevant for the proposed development are summarised in Table 6.1. These have been based on the in-situ testing carried out during the intrusive investigation, in combination with a visual assessment observation of these materials and previous experience with these materials.

Table 6.1: Key Geotechnical Design Parameters

Unit	Typical description	Bulk Density γ_b (kN/m^3)	Effective Cohesion c' (kPa)	Friction Angle φ' (°)	Undrained Shear Strength s_u (kPa)	Design UCS (MPa)	Drained Young's Modulus E' (MPa)	Poisson's Ratio ν
Unit 1: Fill	Fine to coarse-grained Sandy GRAVEL and Gravelly SAND	18	0	30	N/A	N/A	10	0.3
Unit 2: Residual Soil	Sandy Silty CLAY, stiff to hard	19	5	28	120	N/A	30	0.3
Unit 3a: (Class V) Shale Bedrock		22	10	21	N/R	1	65	0.25
Unit 3b: (Class IV) Shale Bedrock		23	50	23	N/R	2	130	0.25
Unit 3c: (Class III) Shale Bedrock		23	100	28	N/R	7	300	0.2
Unit 3d: (Class II / III) Shale Bedrock		23	150	30	N/R	15	600	0.2
Unit 3e: (Class II) Shale Bedrock		24	400	32	N/R	20	700	0.2
Unit 4: (Class II) Sandstone Bedrock		24	500	40	N/R	25	900	0.2

N/A – Not applicable N/R – Not relevant

Table 6.2 provides preliminary coefficients of lateral earth pressure for the soils and rock encountered during the geotechnical investigation. The coefficients provided are based on a horizontal ground surface.

Table 6.2: Preliminary Coefficients of Lateral Earth Pressure

Unit : Typical description	Coefficient of Earth Pressure at Rest (K_0)	Coefficient of Active Earth Pressure (K_a)	Coefficient of Passive Earth Pressure (K_p)
Unit 1: Fill	0.5	0.33	3.00
Unit 2: Residual Soil	0.53	0.36	2.77
Unit 3a: (Class V) Shale Bedrock	0.64	0.47	2.12
Unit 3b: (Class IV) Shale Bedrock	0.61	0.44	2.28
Unit 3c: (Class III) Shale Bedrock	0.53	0.36	2.77
Unit 3d: (Class III/II) Shale Bedrock	0.50	0.33	3.00
Unit 3e: (Class II) Shale Bedrock	0.47	0.31	3.25
Unit 4a: (Class II) Sandstone Bedrock	0.36	0.22	4.60

6.3 BUILDING FOOTINGS

The foundations of structures founded at existing grade, footings and thickened sections of slabs forming footings, should be founded below any topsoil or fill material, and founded in the underlying stiff residual soils or weathered bedrock. A depth of ~0.5/1.5m from existing levels may be required to reach a suitable founding stratum. Alternatively, bored piers founded in Class V or better bedrock below ~2/3m depth could be used. We understand that shallow footing are also likely to be adopted for the building columns within the footprint of the proposed basement and likely to be founded in Class IV or better rock.

If designing footings based on engineering principles, recommended allowable end-bearing pressures for various footing systems and likely foundation materials are provided in Table 6.3.

Table 6.3: Recommended Allowable Bearing Pressure for Footings

Foundation Material Type	Depth Below Existing Surface Level (m)	Allowable End-Bearing Pressure			Allowable Shaft Adhesion on Bored Piers and Anchors	
		Strips	Pads	Bored Piles	Downward Loading	Uplift
Newly Placed Controlled Fill	-	100kPa	125kPa	N/A	N/A	N/A
Unit 2: Residual Soil	~0.2/1.0	100kPa	125kPa	150kPa	15kPa	7kPa
Unit 3a: (Class V) Shale Bedrock	~2.8/6.9	150kPa	175kPa	500kPa	20kPa	10kPa
Unit 3b: (Class IV) Shale Bedrock	~5.7/7.8	500kPa	750kPa	1,000kPa	100kPa	50kPa
Unit 3c: (Class III) Shale Bedrock	~7.5/13.0	875kPa	1,000kPa	2,000kPa	200kPa	100kPa
Unit 3d: (Class III/II) Shale Bedrock	~8.9/13.4	1,400kPa	1,700kPa	4,000kPa	350kPa	175kPa
Unit 3e: (Class II) Shale Bedrock	~14.2/21.0	2,700kPa	3,200kPa	6,000kPa	450kPa	350kPa
Unit 4a: (Class II) Sandstone Bedrock	>~27.0	5,900kPa	7,000kPa	12,000kPa	500kPa	400kPa

All footings should be inspected and approved by an experienced geotechnical engineer to confirm the foundation material and design values, and to ensure the excavations are clean and stable.

Ground slabs can be constructed on the natural soils or newly placed controlled fill. Following excavation to the required level, slab areas on soil should be proof rolled by a pad foot roller to check for any weak, wet or deforming soils that may require replacement.

6.4 EXCAVATION CONDITIONS & USE OF EXCAVATED MATERIAL

It is understood that deep excavations to ~22m depth will be required for this project. Excavations to ~5.7m/7.8m will be through fill, residual soils and weak weathered bedrock. The fill, residual soils and weak weathered bedrock are readily diggable by backhoe and medium sized excavator to at least 5.7m/7.8m depth. Excavations below ~5.7m/7.8m depth are expected to encounter strong bedrock which will require rock hammering or use of a larger excavator with a ripper.

The measure of the excavatability of bedrock is dependent on two important factors - (1) the compressive strength of the rock, and (2) the nature and spacing of the defects in the rock. Pettifer and Fookes (1994) (Reference 5) have developed a chart to assist in providing a guide to what plant is required for given rock conditions. A copy of the chart is provided in Figure 4. The green zone on the chart in Figure 4 shows the area corresponding to the expected rock and excavations conditions at this site.

Unsupported excavation slopes should be no steeper than 1H:1V as shale can be prone to slab failures. Temporary shoring or bracing may be required for worker safety within the excavation. Due to the clay-rich nature of the shale, the excavated material is not recommended for use as structural fill under load bearing elements. The excavated shale material, once crushed and screened, can potentially be utilized as general non-structural backfill, subbase material for pavements, or aggregate for concrete mixes after testing confirms the material has suitable engineering properties that meet required specifications. Any surplus excavated shale may be disposed of off-site at an approved facility.

Any low/medium plasticity alluvial and residual soils can be used in controlled fill construction of building platforms, provided any rock particles are broken down to <75mm size and the fill is environmentally suitable for re-use on site. Topsoil and existing uncontrolled fill material and any medium to high and high plasticity, clayey soils should not be used in controlled fill construction.

If imported fill is required, a suitable select fill material would include a low or medium plasticity soil such as clayey sand or gravelly clayey sand, containing less than 35% fines less than 0.075mm size (silt and clay), and no particles greater than 75mm size.

All materials unearthed during excavation processes shall be managed and disposed of in strict adherence to the stipulations set forth in the prevailing legislation and guidelines, encompassed by the Waste Classification Guidelines as delineated by the Environmental Protection Agency (EPA, 2014). This encompasses fill and natural materials that may be extracted from the site.

6.4.1 Excavation Vibrations

Use of heavy vibrational plant/equipment for ripping and hammering of the in-situ bedrock requires particular care to ensure that structures in the surrounding vicinity are not damaged/affected by vibrations. It is expected that the excavation operations may be at a distance ≤ 10m from some surrounding structures. The geology of the surrounding area is expected to have shale bedrock in its subsurface profile. This is of particular concern, as vibrations are readily transmitted through competent bedrock, potentially resulting in damage to footings founded in the bedrock.

It is required that ground vibrations in proximity of the adjacent structure's foundations do not exceed 10mm/s. To ensure this value is not exceeded, it is highly recommended that vibration monitoring using specialised sensors is conducted. Fortify Geotech has the capability to undertake this monitoring.

The monitoring devices should be functioning prior to conducting any excavation operations and will notify the appropriate individual if ground vibrations exceed a critical value (10mm/s). If this value is exceeded, all excavation should be ceased immediately, and an experienced geotechnical engineer must be contacted for reassessment of the site; this is necessary to ensure the stability of the excavation and surrounding structures, and to modify the current excavation methods to ensure that ground vibrations are reduced below the critical value thereafter.

Whilst it is required that ground vibrations do not exceed 10mm/s, it is prudent to design all excavation methods such that ground vibrations do not exceed 5mm/s. Excavation methods and equipment may be designed in accordance with the values provided below in Table 6.4, which outlines recommendations for excavation equipment such that maximum peak particle velocities (ground vibrations) are not exceeded.

Table 6.4: Recommended Peak Particle Velocity

Distance from nearby building / Structures [m]	Maximum peak particle velocity [5mm/s]		Maximum Peak Particle Velocity [10mm/s]	
	Equipment Type	Operating Limit (% of Maximum Capacity)	Equipment Type	Operating Limit (% of maximum Capacity)
1.5 to 2.5	Hand operated Jack Hammer	100	300kg Rock Hammer	50
2.5 to 5.0	300kg Rock Hammer	50	300kg Rock Hammer 600kg Rock Hammer	100 50
5.0 to 10.0	300kg Rock Hammer 600kg Rock Hammer	100 50	600kg Rock Hammer 900kg Rock Hammer	100 50

NOTE: It is recommended that vibration monitoring is employed if excavation operations are expected to exceed ground vibrations of 5mm/s. Fortify Geotech Pty Ltd are in possession of vibration monitoring equipment and may be consulted to install the sensors and monitor vibrational data thereafter.

Use of other techniques such as rock sawing may be utilised in certain circumstances if it is expected that, or if ground vibrations of > 10mm/s are to be produced/are produced by rock hammering. Saw cutting, although less productive, may eliminate risks of damage to property through vibration effects transmitted via the ground. Saw cutting in runs of at least 1m depth should be conducted prior to hammering, to minimise vibrations propagating through the rock face. However, it is recommended that hammering along the perimeter of the excavation should be conducted under geotechnical supervision in the vicinity of adjacent structures (≤ ~10m).

All excavation plant/equipment must always be used by experienced operators, who should remain diligent to ensure that vibrations resulting from excavations are minimised, and the excavations remain stable and safe. Should any potential safety concerns be identified by an operator, the site foreman and a geotechnical engineer should be informed immediately, and work in the vicinity ceased until it is deemed to be safe by the appropriate personnel.

6.5 STABLE EXCAVATION BATTERS

Temporary site excavations to 1.5m depth can be formed near vertical, although loose fill and any moisture affected soils should be cut back at 1(H):1(V). Deeper temporary cuts can be formed at 1(H):1(V) in soil and Class V shale bedrock and 0.5(H):1(V) in Class III or better shale bedrock. A geotechnical engineer should inspect all cut batters during construction to confirm stability. Exposed temporary batters should be protected from the weather by black plastic pinned to the face with link-wire mesh, or similar. Recommended maximum slopes for temporary batters are provided in Table 6.5 below.

Table 6.5: Recommended Batter Slopes (Temporary)

Material	Max. Batter Slope (H:V)
Fill	1.5:1
Residual Soil / Extremely Weathered Material	1:1
Very Low to Low Strength Shale	0.5:1
Low to Medium Strength Shale or Better	Vertical[1]

[1]*NOTE:* Subject to inspection by an Experienced Geotechnical Engineer and carry out any remedial works as recommended (e.g., shotcrete, rock bolting).

Permanent cut & fill batter slopes should be formed at no steeper than 2(H):1(V) in soil and be protected against erosion by shotcreting, stone pitching or other suitable methods. Alternatively, permanent excavations can be supported by structural retaining walls.

6.6 BASEMENT EXCAVATION TEMPORARY SUPPORT

Temporary basement excavations to 1.5m depth can be formed near vertical, although loose fill and any moisture affected soils should be cut back at 1(H):1(V). Deeper temporary cuts should be formed no steeper than the slopes given in Table 6.5. A geotechnical engineer should inspect all cut batters during construction to confirm stability. The soil batter surfaces should be temporarily protected against deterioration due to the weather by covering in plastic, held by pinned chain-link mesh.

Where space limitations preclude battering back to stable slopes, temporary support options include soldier piers with tie-back anchors, and horizontal lagging or reinforced shotcrete supporting the spaces between piers. Soldier piers, spaced at about three to five pier diameters, socketed below basement level, and secured by tensioned anchors, may be a suitable option. Soldier pier holes would typically be drilled from existing surface levels prior to bulk excavation. The excavation could then proceed in maximum 3m depth stages, with tie-back anchors installed and tensioned prior to excavation of the next level. Lateral support would also be provided by the passive and cantilever resistance of pier-sections socketing below final excavation level. Horizontal lagging or structural facing shotcrete between piers should be installed in sequence with deepening of the excavation.

6.6.1 Lateral Pressure on Temporary Support Systems

The loads in anchors or struts for tied-back walls used in the temporary support of vertical excavations, such as soldier piers tied back by tensioned ground anchors or internally strutted to the basement floor, can be calculated using a trapezoidal pressure distribution given by:

$$\sigma_h = (5H \times \frac{4z}{H}) + 0.4q \qquad \text{For } z < 0.25H$$

$$\sigma_h = (5H) + 0.4q \qquad \text{For } z > 0.25H$$

where,

σ_h	is the apparent horizontal earth/rock pressure acting on the back of the wall, in kPa
H	is the total height of the full excavation to be supported, in metres
z	is the distance from the top of the excavation, in metres
q	is any uniformly distributed vertical surcharge acting on the ground surface at the top of the excavation, in kPa

The above expression takes no account of groundwater pressure, as it is assumed the temporary walls will be fully drained. Where the walls are to be covered by shotcrete and/or where these will be incorporated into a permanent basement wall, synthetic drainage strips should be installed vertically against the excavated face, draining to collector pipes at the base of the excavation, taken to a basement pump-out sump.

6.6.2 Resistance Parameters for Temporary Support Systems

The allowable horizontal passive resistance provided by socketed sections of sheet piles and soldier piers or other retaining systems in hard soils below the basement excavation floor level can be calculated as:

$\sigma_p = 50z$	(Hard soil socket only)
$\sigma_p = 100z$	(Class IV or better bedrock socket only)
$\sigma_p = 150z$	(Class III or better bedrock socket only)
$\sigma_p = 200z$	(Class II or better bedrock socket only)

where,

σ_p	is the allowable passive pressure acting on the front of the pier/footing at depth z, in kPa
z	is the pier socket length below excavation level in weathered bedrock, in metres

In light of the geotechnical investigation at the specified site, the ensuing parameters are suggested for the design of temporary shoring walls:

- The effective width of a socketed pier for calculation of allowable passive resistance can be assumed to be equivalent to twice its actual width, except where the centre-to-centre distance between the piers is two diameters or less, in which case the soldier piers can be considered to act as one continuous wall.

- If internal struts are used, propped to anchor blocks in the basement floor, the allowable passive resistance provided by the anchor blocks can be calculated using the same pressure distribution given above, although the effective width of the footing or block can be taken as 1.5 times its actual width. In addition, an allowable base friction factor (tanδ) of 0.35, and allowable base adhesion (c) of 5kPa can be used for calculation of sliding resistance of concrete anchor blocks in the hard soil and 50kPa in Class III Shale or better.

- An average ultimate bond value of 50kPa can be assumed for cement-grouted ground anchors in the Class V bedrock, 180kPa for Class IV bedrock, 300kPa for Class III bedrock, and 600kPa for Class II bedrock. It is important that at least a few of the anchors should be proof tested by pull-out tests to confirm or adjust bond values. It is recommended that ground anchors be inclined downward at between 30^{o} and 45^{o}, and that the "fixed" (anchored) section be assumed to extend beyond a line inclined upward from the batter toe at 45^{o}. Tensioned multi-strand cable anchors are recommended rather than using passive (non-tensioned) anchors and bond lengths of at least 3m behind the 'active' zone of the excavation are recommended. Proof loading of all anchors to at least 1.33 times the design working load is also recommended and should be witnessed by a suitably qualified geotechnical independent engineer.

- For scenarios encompassing progressively anchored or propped walls where minor movements are permissible (given the absence of movement-sensitive structures, infrastructures, and buried services), a trapezoidal earth pressure distribution of 5H kPa is recommended for the soils/extremely weathered material and bedrock, with H denoting the retained height in meters. The pressures should be considered uniform over the central 50% of the support system, diminishing to zero at the top and bottom.

- Conversely, in instances where progressively anchored or propped walls are supporting areas highly susceptible to movement (such as proximity to movement-sensitive structures, infrastructures, or buried services), a trapezoidal earth pressure distribution of 8H kPa is advocated.

- For piles entrenched into at least Class III (MW) Shale bedrock beyond the bulk excavation level, an allowable lateral toe resistance value of 200 kPa may be adopted, presuming the excavation doesn't encroach upon the zone of influence of the wall toe and the rock is devoid of adverse defects. The upper 0.3 m depth of the socket should be excluded to account for tolerance and disturbance effects during excavation.

- An alternative approach entails a detailed design of anchored or propped retaining walls utilizing computer-based soil structure interaction analysis software like Plaxis 2D. This methodology could potentially offer cost savings relative to designs predicated on simplified pressure assumptions. Our team is equipped to conduct such analysis upon request.

- In circumstances where piled retaining walls are envisioned to provide permanent support to proposed structures, extended pile sockets in rock may be requisite to accommodate additional lateral and axial loads.

- All surcharge loading impacting the walls, inclusive of construction equipment, loads, adjacent high-level footings, etc., should be factored into the retaining wall design employing an 'at rest' earth pressure coefficient, K_0 of 0.55. This excludes any locked-in tectonic stresses within the rock that should also be incorporated into the design.

- In scenarios where temporary anchors span beyond site boundaries, acquiring permission from adjacent properties is mandatory prior to installation. Furthermore, verification of neighbouring basements and/or services and their levels is crucial before finalizing anchor design.

- Suitability tests should be executed on a minimum of 10% of all anchors and lift-off tests on a minimum of 25% of all anchors should also be carried out, approximately 4 days post-locking off to ascertain load maintenance. For permanent anchors, appropriate corrosion provisions are essential to ensure longevity.

This comprehensive elucidation intends to guide the design process, ensuring structural integrity and safety in line with the geotechnical conditions revealed at the subject site.

6.7 BASEMENT EXCAVATION PERMANENT SUPPORT

Permanent unsupported batters in soil would need to be formed no steeper than 2(H):1(V). Permanent batters should be protected against erosion by stone pitching, shotcreting, or other suitable means. Permanent basement walls can be integrated into the temporary excavation support systems, or constructed separately from these, but with the space between backfilled or spanned by horizontal struts.

The walls and floor slabs for basement walls incorporated with or strutted to the temporary excavation supports should be designed to cater for the pressures given in Section 6.6.1.

Where basement walls are constructed in open excavation and backfilled later, the wall and floor slabs can be designed to resist lateral pressure using a distribution given by:

$$\sigma_h = (8d) + 0.4q$$

$$\sigma_h = (7d) + 0.4q \leftarrow \text{[for MW and less weathered rock]}$$

where,

d is the depth below the top of the backfill or retained ground, in metres

q is any uniformly distributed surcharge acting on the surface of the backfill, in kPa

The first term of the expression is a triangular pressure distribution, the second a uniform pressure distribution. The design pressure takes no account of hydrostatic pressure, as it is assumed that the walls will be provided with permanent backfill drainage, and that any groundwater is drawn below the level of the lower basement. Backfill materials for walls constructed in open excavation should be clean, granular and free-draining, and preferably the upper backfill can be a clayey soil to reduce infiltration of surface water.

6.8 LOW RETAINING WALLS

Retaining walls constructed in open excavation, with the gap between the excavation face and the wall backfilled later, can be designed for an earth pressure distribution given by:

$$\sigma_h = (K\gamma'h) + Kq$$

where,

σ_h is the horizontal earth pressure acting on the back of the wall, in kPa

K is the dimensionless coefficient of earth pressure; this can be assumed to be 0.4 when the top of the wall is unrestrained horizontally, and 0.5 when the top of the wall is restrained (i.e. by building slabs etc.)

γ' is the effective unit weight of the backfill, and can be assumed to be 20kN/m3 for a lightly compacted soil backfill

h is the height of the backfill, in metres

q is any uniform distributed vertical surcharge acting on the top of the backfill, in kPa

Apart from structural restraints such as floor slabs, resistance to overturning and sliding of retaining walls is provided by frictional and adhesive resistance on the base, and by passive resistance at the toe of the wall. For a natural soil or controlled fill foundation, an ultimate base friction factor (tanδ) of 0.5, base adhesion (c) of 50kPa, and allowable passive earth pressure coefficient Kp=2.5 can be used for calculation of sliding resistance.

Free-draining granular backfill or synthetic fabric drains should be installed behind all walls. These should connect to weep holes and/or a collector drain, and ultimately to the stormwater system. Granular backfill should be wrapped in a suitable filter fabric to minimise infiltration of silt/clay fines.

It is recommended that the initial design of any retaining system, or shoring with a single row of anchors or propping, be predicated on a triangular earth pressure distribution, utilizing the earth pressure coefficients delineated in Table 8. The 'Active' earth pressure coefficient (Ka) values may be employed in scenarios where a certain degree of wall movement is deemed acceptable. Conversely, the 'at rest' earth pressure (K_0) values should be utilized in circumstances necessitating minimized wall movement, such as adjacent to existing structures or utilities.

The design parameters adopted and tabulated in Table 6.1 were formulated based on the information available pertaining to the subject site, coupled with our accrued experience concerning analogous rock and soil types.

6.9 CONTROLLED FILL CONSTRUCTION

For construction of any new fill foundation platforms and road subgrades, it is recommended that:

- Areas be fully stripped of all existing uncontrolled fill and any moisture affected, soft or firm soils. A general stripping depth of 0.4m/2m is expected. Stripped foundations should be proof-rolled by a vibratory pad-foot roller of not less than 10 tonne static mass to check for any weak or wet areas that would require replacement. No fill should be placed until a geotechnical engineer has confirmed the suitability of the foundation.

- Controlled fill comprising suitable site excavated or imported materials of not greater than 75mm maximum particle size, be compacted in not greater than 150mm layers to not less than 98%StdMDD at about OMC. If clean sand is used as fill material, it must be compacted to a Density Index of not less than 70%. Any unsuitable existing fill (e.g. silty soils) is not to be used as controlled fill.

- Fill placement and control testing be overviewed and certified by a geotechnical engineer at Level 1 or 2 involvement of AS3798 – 2007 “Guidelines on Earthworks for Commercial & Residential Developments” (Reference 6).

6.10 PAVEMENT SUBGRADES

Natural soil or controlled fill subgrades can be designed using a design CBR value of 3%. Prepared subgrades should be inspected by a geotechnical engineer to confirm whether these are structurally sound, and to confirm a suitable design CBR value.

It is recommended that after removing any unsuitable material at the proposed driveway location, a thorough inspection by an experienced geotechnical engineer is conducted to confirm the appropriate CBR value for design.

Before constructing the proposed pavements/driveways, site preparation will be necessary. The earthworks recommendations provided in this report should be supplemented with reference to AS 3798 - 2007 Guidelines on

earthworks for commercial and residential developments. The following approach is suggested for preparing the subgrade for pavements and adjusting site levels using engineered filling:

- Remove any existing uncontrolled fill until you reach the level of the underlying alluvial or residual soils/rock.
- When natural soil is exposed, a process called proof rolling of the subgrade will be necessary. This should be done before adding any more fill or constructing slabs. Proof rolling involves six passes of a smooth drum roller, weighing at least 10 tonnes. The final pass should be overseen by a geotechnical engineer to identify any soft or saturated areas. If such areas are found, they should be excavated to a maximum depth of 600 mm and replaced with compacted durable granular material.
- If additional fill is needed to raise surface levels, it should be placed in layers no thicker than 200 mm when loose and compacted to achieve a density between 98% and 100% of the standard dry density. The moisture content should be within ±2% of the optimum moisture content.
- The existing natural, alluvial and residual soil, and rock present on the site can be used as engineered filling as long as their maximum particle size does not exceed 100 mm. Any contamination present in the existing soils should be considered by an environmental consultant prior to its reuse.

6.11 AGGRESSIVITY TEST RESULTS & EXPOSURE CLASSIFICATION

The exposure classification for concrete piles can be determined in accordance with AS2159-2009, Table 6.4.2(C). Soil Conditions B can be used as the tested soils were clayey and mostly above the groundwater table. As the pH value are all within 4.5-5.5, the exposure classification for **concrete piles is mild**.

The exposure classification for steel piles can be determined in accordance with AS2159-2009, Table 6.5.2(C). All the test results are consistent with an exposure classification of **non-aggressive for steel piles**.

The exposure classification for steel piles can be determined in accordance with AS2870-2011, Table 5.1 and Table 5.2. The test results are consistent with an exposure classification for concrete **in saline soils of A1 and in sulfate soils of A2**.

6.12 EARTHQUAKE SITE FACTOR

The Geoscience Australia Earthquake Hazard Map (Reference 8) indicates the earthquake acceleration coefficients (with an annual probability of exceedance of 1/500) for Australia to be used in structural design. These values are equivalent to hazard factor, Z. The Chatswood area has an acceleration coefficient of 0.05g. AS1170.4 – 2007 – Minimum Design Loads on Structures – Part 4 Earthquake Loads (Reference 9) allows a minimum value of 0.08 to be used for the hazard factor, Z.

Section 4.2 of AS1170.4 “Minimum Design Loads on Structures – Part 4: Earthquake Loads” lists the site sub-soil classes to be considered in structural design. The site is classified as a “Class C_e – Shallow Soil Site”.

6.13 STRESS RELIEF

Given the relative young geological age of the rock formation and lack of stress relieving geological conditions, stress relief is expected to occur upon excavation of the bedrock. Such stress relief will result in horizontal movements into the excavation. Within the Ashfield Shale geological formation, such horizontal movements are typically a maximum of 0.15%

of the excavation height, and as low as 0.05% of the excavation height. Based on a maximum basement excavation depth of 22m, a horizontal deflection of between 10mm and 33mm is expected. The maximum deflections will occur where there is the least restraint (i.e. in the mid-point along the longest excavated side of the site).

Active anchoring or propping of the excavation is unlikely to be sufficient to resist the relatively high in-situ horizontal stresses associated with stress relief movements. Therefore, it is recommended that appropriate allowance be made for movements of this order in construction and planning.

It is recommended that monitoring of excavation faces should be carried out to assess vertical and horizontal movements during excavation. Inclinometers could also be installed into soldier pile shoring walls to measure actual horizontal deflections. The geotechnical engineer must be supplied with the monitoring data to check for any unsual or large deflections that may require remediation.

6.14 SITE DRAINAGE

The ~22m deep basement excavation is expected to intercept groundwater, below about 7.75m/11.85m depth. The groundwater inflows will be through joints and bedding planes in the shale bedrock, with inflows rates expected to increase after periods of rainfall.

Basements founded below the expected groundwater table could be designed as fully tanked structures. The basement ground slab will also need to be designed to resist uplift pressure from groundwater, which is equivalent to 10kPa per metre depth of the slab below groundwater level. Allowable uplift resistance provided by piers or piles embedded below basement level can be calculated using the values listed in Table 6.3.

However, as the groundwater inflow rates are expected to be through the joints in the bedrock, which will be consistent but slow, a drained basement design could be adopted. In this instance, the retaining walls do not need to be designed to withstand hydrostatic pressures, but must be fully drained, and the basement must have a permanent pump and sump. Some sub-floor drainage lines may have to be installed to direct groundwater to flow to the sump, but this can be established during construction. This option may require permission from Water NSW and may require a full hydrogeological assessment. For further details regarding seepage flow rates please refer to the DMP for the site produced by Reditus Consulting (reference 10).

As the basement excavation is expected to extend below the groundwater level, some dewatering during construction will be required. It is recommended that a sump is excavated to about 1m depth below the proposed maximum basement excavation depth to collect groundwater, which can then be pumped to the stormwater system.

Suitable surface drainage should be provided to ensure rainfall run-off or other surface water cannot pond against buildings or pavements. Drainage should be provided behind all retaining walls, and subsoil drains should be installed along the upslope sides of access roads and carparks.

Shoring walls must be designed to withstand complete hydrostatic pressures unless there's an option to install drainage for the area behind impermeable walls. This drainage system might involve 150 mm wide strip drains securely attached to the surface at intervals of 1 m to 2 m, positioned behind shotcrete infill panels. The lower part of these strip drains should protrude from the shoring wall, enabling any seepage to move into a surrounding toe drain, which is linked to the stormwater drainage system.

Fortify Geotech Pty Ltd

REFERENCES

Reference 1 MinView – geological map - https://minview.geoscience.nsw.gov.au - Accessed 30/10/2024

Reference 2 Standards Australia, “AS2870 – Residential Slabs & Footings”, 2011.

Reference 3 Standards Australia, “AS2159-2009 – Piling – Design and installation”.

Reference 4 Elson, W. K., 1984, ‘‘Design of laterally-loaded piles.’’ CIRIA Rep. No. 103, Construction Industry Research and Information Association, London, 86.

Reference 5 Pettifer, G. S. and Fookes, P. G, 1994, A revision of the graphical method for assessing the excavatability of rock, Quart, Journal of Engineering Geology, 27: 145-164.

Reference 6 AS3798 - 2007, “Guidelines on earthworks for commercial and residential developments”.

Reference 7 Department of Planning, Industry and Environment of NSW, NSW Soil and Land Information eSPADE - https://www.environment.nsw.gov.au/eSpade2Webapp/#

Reference 8 Geoscience Australia – earthquake hazards map - http://www.ga.gov.au/darwin-view/hazards.xhtml# - Accessed 04/12/2023

Reference 9 Standards Australia, “AS1170.4 – 2007 – Minimum Design Loads on Structures – Part 4 Earthquake Loads”.

Reference 10 Dewatering Management Plan for “*849, 853 & 859 Pacific Highway and 2 and 8 Wilson Street, Chatswood NSW 2067*”, produced by Reditus Consulting, Project No. 23210, version 1, dated 01/05/2024

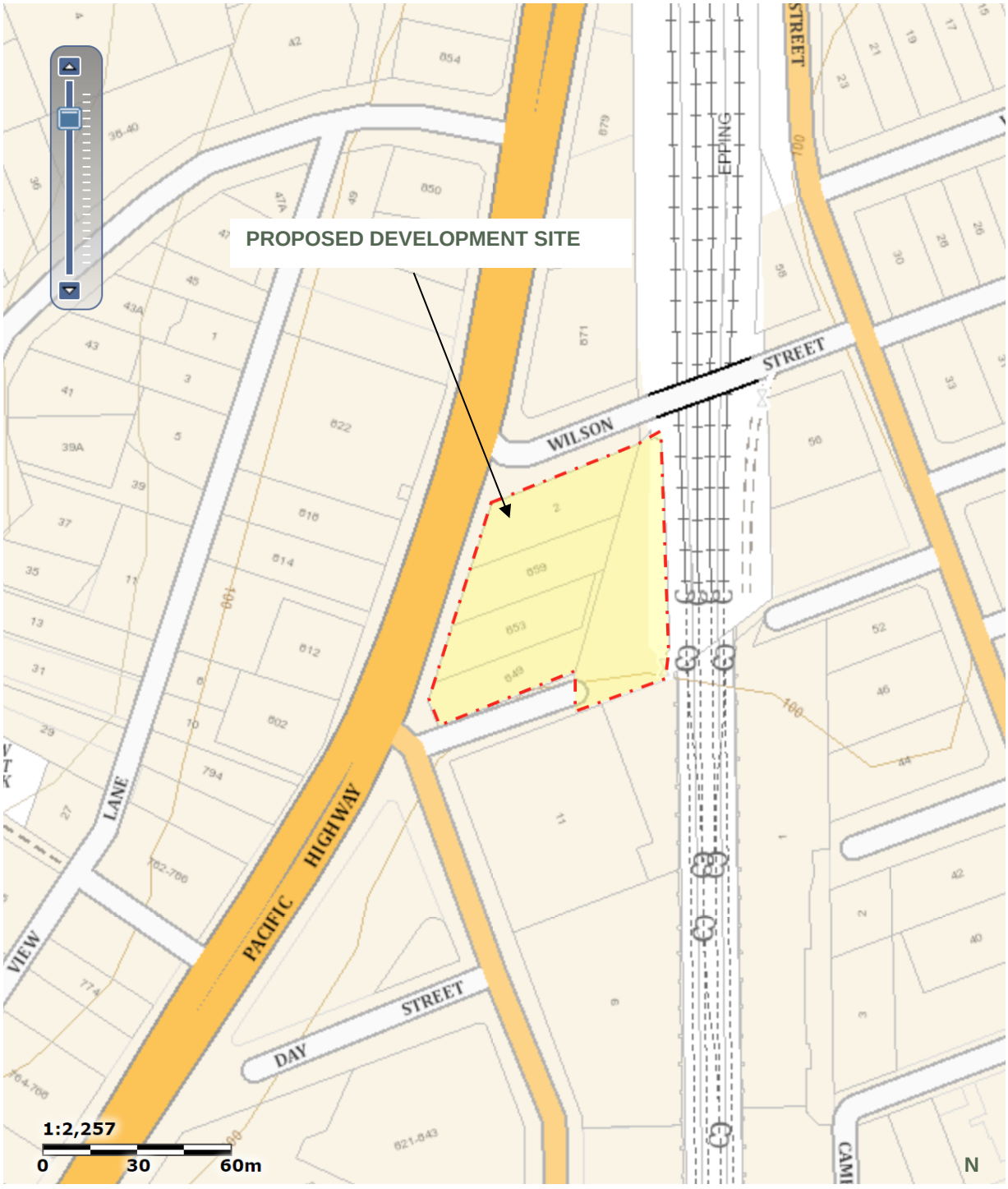


Figure 1: Site Locality

S2207



Figure 2: Aerial Photograph and 2023 Fortify Borehole Locations | S2207



FIGURE 3: GROUNDWATER MONITORING WELL LOCATIONS (PROVIDED BY REDITUS CONSULTING)

S2207

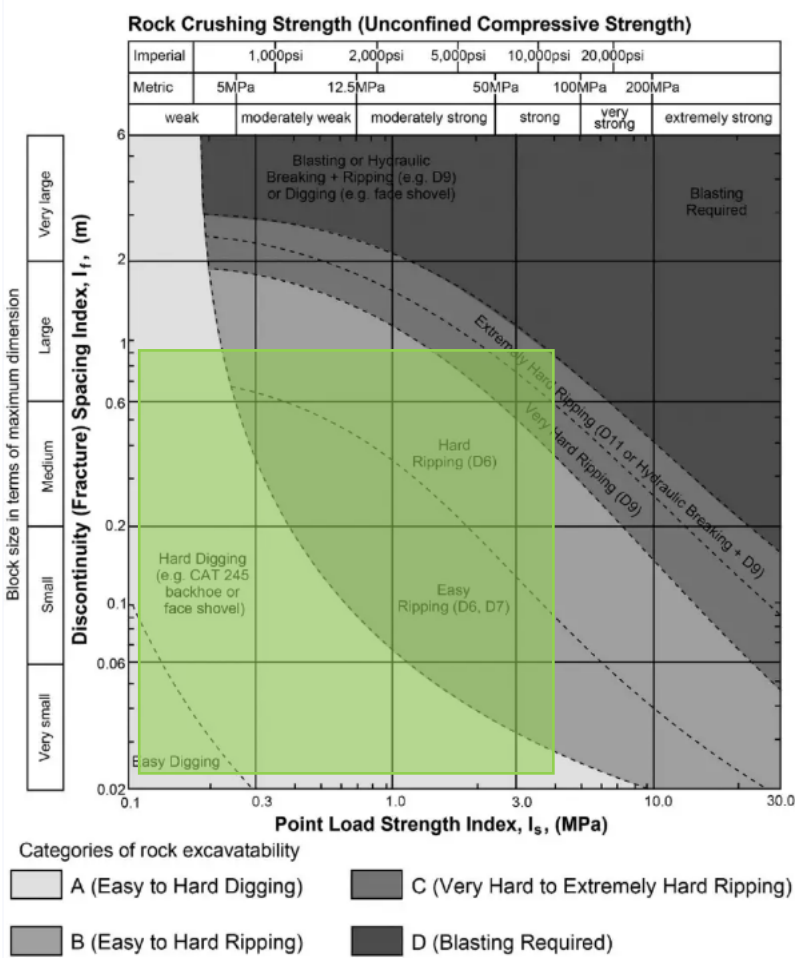


FIGURE 4: EXCAVATION CONDITIONS	S2207

FORTIFY
GEOTECH

Appendix A

Borehole Logs BH1 to BH9

FORTIFY GEOTECH

Borehole Log

Borehole No.	**BH1**
Sheet	1 of 5
Job No.	S1998

CLIENT: Reditus Consulting

PROJECT: Proposed Mixed Use Development
849, 853, 859 Pacific Hwy, & 2 & 8 Wilson St, Chatswood

Location : See Report

Collar Level : Not Known
Angle From Vertical : 0°
Bearing : N.A.

Equipment Type : BG Drilling CE180 Drill Rig
Hole Diameter : 100mm

Sample No.	Water	Method/ Casing	RL (m)	Depth (m)	Graphic Log	U.S.C.S.	Material Description, Structure Soil Type: Plasticity or Particle Characteristics, Colour, Secondary and Minor Components, Moisture, Structure	Moisture Condition	Consistency or Relative Density	Field Test Results	Geological Profile
	None Encountered	AUGERING	0.05			GW	ASPHALT	D	MD		FILL
			0.3				**SANDY GRAVEL**; fine to coarse gravels, fine to coarse grained, grey to brown				
						CH	**SANDY CLAY**; medium to high plasticity, fine to medium grained, brown with red, grey, and orange	*w*~PL	F		
			0.8			CH	**SILTY CLAY**; medium to high plasticity, brown				ALLUVIAL SOIL
				1.0							
			1.2			CI	**SILTY CLAY**; medium plasticity, orange to brown mottled orange, trace fine gravels				
			1.5			CH	**SANDY CLAY**; medium to high plasticity, pale orange-brown mottled red, trace fine to medium gravels		F-St	SPT 3, 5, 5 N=10	
				2.0		CI	**SANDY CLAY**; medium plasticity, fine to medium grained, pale grey and red-brown, trace fine gravels,		St		
			2.5			CI	**SILTY CLAY**; medium plasticity, pale grey mottled red to brown	*w*<PL	St-VSt		RESIDUAL SOIL
				3.0			pale grey, trace red, trace fine grained sand		VSt	SPT 4, 8, 12 N=20	
				4.0		CL	**SILTY CLAY**; low to medium plasticity, pale grey trace red and orange, trace iron stone		VSt-H		
			4.8							SPT 12, 18, 24 N=42	
			5.0						H		XW BEDROCK

Logged By : JS Date : 20/11/23 | Checked By : Date :

BOREHOLE/EXCAVATION LOG S1998.GPJ EXC.GDT 5/12/23

FORTIFY GEOTECH

Borehole Log

Borehole No.	**BH1**
Sheet	2 of 5
Job No.	S1998

CLIENT: Reditus Consulting

PROJECT: Proposed Mixed Use Development
849, 853, 859 Pacific Hwy, & 2 & 8 Wilson St, Chatswood

Location : See Report

Collar Level : Not Known
Angle From Vertical : 0°
Bearing : N.A.

Equipment Type : BG Drilling CE180 Drill Rig
Hole Diameter : 100mm

Sample No.	Water	Method/ Casing	RL (m)	Depth (m)	Graphic Log	U.S.C.S.	Material Description, Structure Soil Type: Plasticity or Particle Characteristics, Colour, Secondary and Minor Components, Moisture, Structure	Moisture Condition	Consistency or Relative Density	Field Test Results	Geological Profile
	None Encountered	AUGERING		6.0			**SILTSTONE**; extremely weathered (XW), excavates as GRAVELLY SILTY CLAY, low to medium plasticity, fine to medium gravels, pale grey with red and orange, trace ironstone				XW BEDROCK
				7.0							
			7.8				**SHALE**; highly weathered (HW), fine grained, dark grey and black trace orange				WEATHERED BEDROCK
		NMLC CORING		8.0							
			9	9.0			**SHALE**; highly weathered (HW) with clay seams, dark grey trace brown				
			9.25				**SHALE** moderately weathered (MW), very fine grained, dark grey				
			9.6				**Clay Seam**				
			9.9								
			10.0								

Logged By : JS Date : 20/11/23 Checked By : Date :

BOREHOLE/EXCAVATION LOG S1998.GPJ EXC.GDT 5/12/23

FORTIFY GEOTECH

Borehole Log

Borehole No.	**BH1**
Sheet	3 of 5
Job No.	S1998

CLIENT: Reditus Consulting

PROJECT: Proposed Mixed Use Development
849, 853, 859 Pacific Hwy, & 2 & 8 Wilson St, Chatswood

Location : See Report

Collar Level : Not Known
Angle From Vertical : 0°
Bearing : N.A.

Equipment Type : BG Drilling CE180 Drill Rig
Hole Diameter : 100mm

Sample No.	Water	Method/ Casing	RL (m)	Depth (m)	Graphic Log	U.S.C.S.	Material Description, Structure Soil Type: Plasticity or Particle Characteristics, Colour, Secondary and Minor Components, Moisture, Structure	Moisture Condition	Consistency or Relative Density	Field Test Results	Geological Profile
	None Encountered	NMLC CORING	10.2				**SHALE**; highly to moderately weathered (HW/MW), very fine grained, dark grey				
							SHALE; moderately weathered (MW), very fine grained, dark grey				
			10.75				**Clay Seam**				
			10.8				**SHALE**; highly weathered (HW), very fine grained, dark grey				
				11.0			**SHALE**; extremely to highly weathered (XW/HW), excavates as SILTY GRAVELLY CLAY, low plasticity, fine to coarse gravels, dark grey				
			11.3				**SHALE**; highly weathered (HW), very fine grained, dark grey				
			11.45				**SHALE**; highly to moderately weathered (HW/MW), very fine grained, dark grey				
			11.65				**SHALE**; highly weathered (HW), very fine grained, dark grey				
			12.05	12.0			**SHALE**; highly to moderately weathered (HW/MW), very fine grained, dark grey				
			12.65				**SHALE**; highly weathered (HW), very fine grained, dark grey				
			12.85				CORE LOSS				CORE LOSS
			13.4	13.0							
			13.45				**Clay Seam**				WEATHERED BEDROCK
							SHALE; moderately weathered (MW), very fine grained, dark grey				
				14.0							
			15.05								

Logged By : JS Date : 20/11/23 | Checked By : Date :

BOREHOLE/EXCAVATION LOG S1998.GPJ EXC.GDT 5/12/23

FORTIFY GEOTECH

Borehole Log

Borehole No.	**BH1**
Sheet	4 of 5
Job No.	S1998

CLIENT: Reditus Consulting

PROJECT: Proposed Mixed Use Development
849, 853, 859 Pacific Hwy, & 2 & 8 Wilson St, Chatswood

Location : See Report

Collar Level : Not Known
Angle From Vertical : 0°
Bearing : N.A.

Equipment Type : BG Drilling CE180 Drill Rig
Hole Diameter : 100mm

Sample No.	Water	Method/ Casing	RL (m)	Depth (m)	Graphic Log	U.S.C.S.	Material Description, Structure Soil Type: Plasticity or Particle Characteristics, Colour, Secondary and Minor Components, Moisture, Structure	Moisture Condition	Consistency or Relative Density	Field Test Results	Geological Profile
	None Encountered	NMLC CORING		16.0			**SHALE**; slightly weathered (SW), very fine grained, dark grey				
				17.0							
			17.6				**SHALE**; slightly weathered to fresh (SW/FR), very fine grained, dark grey				
				18.0							
				19.0							
			20.0								

Logged By : JS Date : 20/11/23 | Checked By : Date :

BOREHOLE/EXCAVATION LOG S1998.GPJ EXC.GDT 5/12/23

FORTIFY GEOTECH

Borehole Log

Borehole No.	**BH1**
Sheet	5 of 5
Job No.	S1998

CLIENT: Reditus Consulting

PROJECT: Proposed Mixed Use Development
849, 853, 859 Pacific Hwy, & 2 & 8 Wilson St, Chatswood

Location : See Report

Collar Level : Not Known
Angle From Vertical : 0°
Bearing : N.A.

Equipment Type : BG Drilling CE180 Drill Rig
Hole Diameter : 100mm

Sample No.	Water	Method/ Casing	RL (m)	Depth (m)	Graphic Log	U.S.C.S.	Material Description, Structure Soil Type: Plasticity or Particle Characteristics, Colour, Secondary and Minor Components, Moisture, Structure	Moisture Condition	Consistency or Relative Density	Field Test Results	Geological Profile
			20.27				**SHALE**; slightly weathered to fresh (SW/FR), very fine grained, dark grey				
							BOREHOLE TERMINATED AT 20.27m At Target				
				21.0							
				22.0							
				23.0							
				24.0							
			25.0								

Logged By : JS Date : 20/11/23 | Checked By : Date :

BOREHOLE/EXCAVATION LOG S1998.GPJ EXC.GDT 5/12/23

FORTIFY GEOTECH

Borehole Log

Borehole No.	**BH2**
Sheet	1 of 5
Job No.	S1998

CLIENT: Reditus Consulting

PROJECT: Proposed Mixed Use Development
849, 853, 859 Pacific Hwy, & 2 & 8 Wilson St, Chatswood

Location : See Report

Collar Level : Not Known
Angle From Vertical : 0°
Bearing : N.A.

Equipment Type : BG Drilling CE180 Drill Rig
Hole Diameter : 100mm

Sample No.	Water	Method/ Casing	RL (m)	Depth (m)	Graphic Log	U.S.C.S.	Material Description, Structure Soil Type: Plasticity or Particle Characteristics, Colour, Secondary and Minor Components, Moisture, Structure	Moisture Condition	Consistency or Relative Density	Field Test Results	Geological Profile
	None Encountered	AUGERING		0.17			Concrete				FILL
						SW	**GRAVELLY SAND**; fine to coarse gravels, fine to coarse grained sand, dark brown to dark grey, trace low plasticity clay	D	MD		
				0.6		CH	**CLAY with sand**; medium to high plasticity, fine grained, orange to brown mottled pale orange, trace fine gravels	*w*~PL	F-St		ALLUVIAL SOIL
				1.0			orange to brown mottled red				
				1.5		CL	**SANDY CLAY**; low to medium plasticity, fine to medium grained, red to brown mottled pale grey and orange, trace fine to coarse gravels	*w*<PL	St	SPT 3, 4, 7 N=11	
				2.0		CI	**SILTY CLAY**; medium plasticity, pale grey mottled red, trace fine grained sand		St-VSt		RESIDUAL SOIL
							low to medium plasticity, trace fine gravels (some ironstone gravels)		VSt		
				3.0			medium plasticity		VSt-H	SPT 7, 12, 17 N=29	
				4.0		CL	low to medium plasticity		H		
				4.5		CL	**SHALE**; extremely weathered (XW), excavales as SILTY CLAY; low to medium plasticity, grey, trace fine to medium gravels			SPT 10, 20, 26 N=46	XW BEDROCK
				5.0							

Logged By : JOR Date : 14/11/23 | Checked By : Date :

BOREHOLE/EXCAVATION LOG S1998.GPJ EXC.GDT 5/12/23

FORTIFY GEOTECH

Borehole Log

Borehole No.	**BH2**
Sheet	2 of 5
Job No.	S1998

CLIENT: Reditus Consulting

PROJECT: Proposed Mixed Use Development
849, 853, 859 Pacific Hwy, & 2 & 8 Wilson St, Chatswood

Location : See Report

Collar Level : Not Known
Angle From Vertical : 0°
Bearing : N.A.

Equipment Type : BG Drilling CE180 Drill Rig
Hole Diameter : 100mm

Sample No.	Water	Method/ Casing	RL (m)	Depth (m)	Graphic Log	U.S.C.S.	Material Description, Structure Soil Type: Plasticity or Particle Characteristics, Colour, Secondary and Minor Components, Moisture, Structure	Moisture Condition	Consistency or Relative Density	Field Test Results	Geological Profile
	None Encountered	AUGERING		6.0		CL	**SHALE**; extremely weathered (XW), excavales as SILTY CLAY; low to medium plasticity, grey, trace fine to medium gravels				XW BEDROCK
			6.5				**SHALE**; extremely weathered (XW), excavales as SILTY CLAY, medium plasticity, pale grey to grey, trace fine to medium gravels				
				7.0							
			7.6				**SHALE**; highly weathered (HW), fine grained, dark grey and black trace orange				WEATHERED BEDROCK
				8.0							
		NMLC CORING	9	9.0			**SHALE**; highly weathered (HW), fine grained, dark grey and black trace orange				
			9.4				**SHALE**; highly to moderately weathered (HW/MW), dark grey trace orange, some iron staining				
			10.0								

Logged By : JOR Date : 14/11/23 | Checked By : Date :

BOREHOLE/EXCAVATION LOG S1998.GPJ EXC.GDT 5/12/23

FORTIFY GEOTECH

Borehole Log

Borehole No.	**BH2**
Sheet	3 of 5
Job No.	S1998

CLIENT: Reditus Consulting

PROJECT: Proposed Mixed Use Development
849, 853, 859 Pacific Hwy, & 2 & 8 Wilson St, Chatswood

Location : See Report

Collar Level : Not Known
Angle From Vertical : 0°
Bearing : N.A.

Equipment Type : BG Drilling CE180 Drill Rig
Hole Diameter : 100mm

Sample No.	Water	Method/ Casing	RL (m)	Depth (m)	Graphic Log	U.S.C.S.	Material Description, Structure Soil Type: Plasticity or Particle Characteristics, Colour, Secondary and Minor Components, Moisture, Structure	Moisture Condition	Consistency or Relative Density	Field Test Results	Geological Profile
	None Encountered	NMLC CORING	10.29				**SHALE**; highly weathered (HW), fine grained, dark grey				
			10.88	11.0			**SHALE**; moderately weathered (MW), fine grained, dark grey				
				12.0							
			12.95	13.0			**SHALE**; moderately to slightly weathered (MW/SW), very fine grained, dark grey				
				14.0							
			15.0								

Logged By : JOR Date : 14/11/23 | Checked By : Date :

BOREHOLE/EXCAVATION LOG S1998.GPJ EXC.GDT 5/12/23

FORTIFY GEOTECH

Borehole Log

Borehole No.	**BH2**
Sheet	4 of 5
Job No.	S1998

CLIENT: Reditus Consulting

PROJECT: Proposed Mixed Use Development
849, 853, 859 Pacific Hwy, & 2 & 8 Wilson St, Chatswood

Location : See Report

Collar Level : Not Known
Angle From Vertical : 0°
Bearing : N.A.

Equipment Type : BG Drilling CE180 Drill Rig
Hole Diameter : 100mm

Sample No.	Water	Method/ Casing	RL (m)	Depth (m)	Graphic Log	U.S.C.S.	Material Description, Structure Soil Type: Plasticity or Particle Characteristics, Colour, Secondary and Minor Components, Moisture, Structure	Moisture Condition	Consistency or Relative Density	Field Test Results	Geological Profile
	None Encountered	NMLC CORING		16.0			**SHALE**; moderately to slightly weathered (MW/SW), very fine grained, dark grey				
			16.55				**SHALE**; slightly weathered (SW), very fine grained, dark grey				
				17.0							
				18.0							
				19.0							
			20.0								

Logged By : JOR Date : 14/11/23 | Checked By : Date :

BOREHOLE/EXCAVATION LOG S1998.GPJ EXC.GDT 5/12/23

FORTIFY GEOTECH

Borehole Log

Borehole No.	**BH2**
Sheet	5 of 5
Job No.	S1998

CLIENT: Reditus Consulting

PROJECT: Proposed Mixed Use Development
849, 853, 859 Pacific Hwy, & 2 & 8 Wilson St, Chatswood

Location : See Report

Collar Level : Not Known
Angle From Vertical : 0°
Bearing : N.A.

Equipment Type : BG Drilling CE180 Drill Rig
Hole Diameter : 100mm

Sample No.	Water	Method/ Casing	RL (m)	Depth (m)	Graphic Log	U.S.C.S.	Material Description, Structure Soil Type: Plasticity or Particle Characteristics, Colour, Secondary and Minor Components, Moisture, Structure	Moisture Condition	Consistency or Relative Density	Field Test Results	Geological Profile
	None Encountered		20.9				**SHALE**; slightly weathered (SW), very fine grained, dark grey				
				21.0			BOREHOLE TERMINATED AT 20.9m At Target				
				22.0							
				23.0							
				24.0							
			25.0								

Logged By : JOR Date : 14/11/23 | Checked By : Date :

BOREHOLE/EXCAVATION LOG S1998.GPJ EXC.GDT 5/12/23

Fortify Geotech Pty Ltd

FORTIFY GEOTECH

Borehole Log

Borehole No.	**BH3**
Sheet	1 of 4
Job No.	S1998

CLIENT: Reditus Consulting

PROJECT: Proposed Mixed Use Development
849, 853, 859 Pacific Hwy, & 2 & 8 Wilson St, Chatswood

Location : See Report

Collar Level : Not Known
Angle From Vertical : 0°
Bearing : N.A.

Equipment Type : BG Drilling CE180 Drill Rig
Hole Diameter : 100mm

Sample No.	Water	Method/ Casing	RL (m)	Depth (m)	Graphic Log	U.S.C.S.	Material Description, Structure Soil Type: Plasticity or Particle Characteristics, Colour, Secondary and Minor Components, Moisture, Structure	Moisture Condition	Consistency or Relative Density	Field Test Results	Geological Profile
	None Encountered	AUGERING		0.11			CONCRETE				FILL
						CL	**SANDY CLAY**; medium plasticity, fine to coarse grained, brown trace orange, grey, and red	*w*~PL	F-St		
				0.5		CH	**CLAY**; medium to high plasticity, pale red-brown with grey	*w*<PL	St		ALLUVIAL SOIL
				1.0		CH	**CLAY**; medium to high plasticity, pale grey and pale red		St-VSt		
				1.5		CI	**SILTY CLAY**; medium plasticity, pale grey with pale red		VSt		RESIDUAL SOIL
				2.0							
				3.0		CL	**SANDY SILTY CLAY**; fine grained, low plasticity, pale grey-brown, with fine to medium gravels		VSt-H		
				4.0							
				4.5			**SILTSTONE**; extremely weathered (XW), excavates as GRAVELLY SILTY CLAY, low to medium plasticity, fine to medium gravels, pale grey with red and orange, trace ironstone				XW BEDROCK
				5.0							

Logged By : JS Date : 21/11/23 | Checked By : Date :

BOREHOLE/EXCAVATION LOG S1998.GPJ EXC.GDT 5/12/23

FORTIFY GEOTECH

Borehole Log

Borehole No.	**BH3**
Sheet	2 of 4
Job No.	S1998

CLIENT: Reditus Consulting

PROJECT: Proposed Mixed Use Development
849, 853, 859 Pacific Hwy, & 2 & 8 Wilson St, Chatswood

Location : See Report

Collar Level : Not Known
Angle From Vertical : 0°
Bearing : N.A.

Equipment Type : BG Drilling CE180 Drill Rig
Hole Diameter : 100mm

Sample No.	Water	Method/ Casing	RL (m)	Depth (m)	Graphic Log	U.S.C.S.	Material Description, Structure Soil Type: Plasticity or Particle Characteristics, Colour, Secondary and Minor Components, Moisture, Structure	Moisture Condition	Consistency or Relative Density	Field Test Results	Geological Profile
	None Encountered	AUGERING		6.0			**SILTSTONE**; extremely weathered (XW), excavates as GRAVELLY SILTY CLAY, low to medium plasticity, fine to medium gravels, pale grey with red and orange, trace ironstone				XW BEDROCK
			7.5	7.0			**SHALE**; highly weathered (HW), fine grained, dark grey and black trace orange				WEATHERED BEDROCK
			8.1	8.0			**SHALE**; highly to moderately weathered (HW/MW), very fine grained, dark grey				
		NMLC CORING	9	9.0			**SHALE**; highly to moderately weathered (HW/MW), very fine grained, dark grey				
			9.15				**SHALE**; moderately to slighly weathered (MW/SW), very fine grained, dark grey				
			10.0								

Logged By : JS Date : 21/11/23 Checked By : Date :

BOREHOLE/EXCAVATION LOG S1998.GPJ EXC.GDT 5/12/23

FORTIFY GEOTECH

Borehole Log

Borehole No.	**BH3**
Sheet	3 of 4
Job No.	S1998

CLIENT: Reditus Consulting

PROJECT: Proposed Mixed Use Development
849, 853, 859 Pacific Hwy, & 2 & 8 Wilson St, Chatswood

Location : See Report

Collar Level : Not Known
Angle From Vertical : 0°
Bearing : N.A.

Equipment Type : BG Drilling CE180 Drill Rig
Hole Diameter : 100mm

Sample No.	Water	Method/ Casing	RL (m)	Depth (m)	Graphic Log	U.S.C.S.	Material Description, Structure Soil Type: Plasticity or Particle Characteristics, Colour, Secondary and Minor Components, Moisture, Structure	Moisture Condition	Consistency or Relative Density	Field Test Results	Geological Profile
	None Encountered	NMLC CORING	10.5				**SHALE**; moderately to slighly weathered (MW/SW), very fine grained, dark grey				
				11.0			**SHALE**; moderately weathered (MW), very fine grained, dark grey				
			11.8				**SHALE**; moderately to slightly weathered (MW/SW), very fine grained, dark grey				
				12.0							
			12.65				**SHALE**; moderately weathered (MW), very fine grained, dark grey				
				13.0							
			13.9				**SHALE**; moderately to slightly weathered (MW/SW), very fine grained, dark grey				
				14.0							
			15.0								

Logged By : JS Date : 21/11/23 | Checked By : Date :

BOREHOLE/EXCAVATION LOG S1998.GPJ EXC.GDT 5/12/23

FORTIFY GEOTECH

Borehole Log

Borehole No.	**BH3**
Sheet	4 of 4
Job No.	S1998

CLIENT: Reditus Consulting

PROJECT: Proposed Mixed Use Development
849, 853, 859 Pacific Hwy, & 2 & 8 Wilson St, Chatswood

Location : See Report

Collar Level : Not Known
Angle From Vertical : 0°
Bearing : N.A.

Equipment Type : BG Drilling CE180 Drill Rig
Hole Diameter : 100mm

Sample No.	Water	Method/ Casing	RL (m)	Depth (m)	Graphic Log	U.S.C.S.	Material Description, Structure Soil Type: Plasticity or Particle Characteristics, Colour, Secondary and Minor Components, Moisture, Structure	Moisture Condition	Consistency or Relative Density	Field Test Results	Geological Profile
	None Encountered	NMLC CORING	15.15								
							SHALE; slightly weathered (SW), very fine grained, dark grey				
				16.0							
				17.0							
			17.75				CORE LOSS				CORE LOSS
			18.08	18.0			**SHALE**; slightly weathered (SW), very fine grained, dark grey				WEATHERED BEDROCK
			18.29				**SHALE**; slightly weathered to fresh (SW/FR), very fine grained, dark grey				
				19.0							
			19.8				BOREHOLE TERMINATED AT 19.8m At Target				
			20.0								

Logged By : JS Date : 21/11/23 Checked By : Date :

BOREHOLE/EXCAVATION LOG S1998.GPJ EXC.GDT 5/12/23

FORTIFY GEOTECH

Borehole Log

Borehole No.	**BH4**
Sheet	1 of 5
Job No.	S1998

CLIENT: Reditus Consulting

PROJECT: Proposed Mixed Use Development
849, 853, 859 Pacific Hwy, & 2 & 8 Wilson St, Chatswood

Location : See Report

Collar Level : Not Known
Angle From Vertical : 0°
Bearing : N.A.

Equipment Type : BG Drilling CE180 Drill Rig
Hole Diameter : 100mm

Sample No.	Water	Method/ Casing	RL (m)	Depth (m)	Graphic Log	U.S.C.S.	Material Description, Structure Soil Type: Plasticity or Particle Characteristics, Colour, Secondary and Minor Components, Moisture, Structure	Moisture Condition	Consistency or Relative Density	Field Test Results	Geological Profile
	None Encountered	AUGERING	0.11	0.1			**CONCRETE**				FILL
				0.2		CL	**SANDY CLAY**; fine to medium grained sand, brown with orange, trace fine sized gravels	*w*~PL	F-St		
						CH	**CLAY**; medium to high plasticity, orange to brown mottled orange, with fine grained sand, trace fine sized gravels	*w*<PL	F		ALLUVIAL SOIL
				0.8		CL	**CLAY**; medium plasticity, orange to brown mottled orange, with fine grained sand, trace fine sized gravels		St		
				1.0		CL	**SILTY CLAY**; low to medium plasticity, pale grey mottled red, trace fine gravels		St-VSt		RESIDUAL SOIL
				1.5		CL	**SILTY CLAY**; medium plasticity, pale grey mottled red, with fine grained sand, trace fine iron stone gravels		VSt	SPT 5, 9, 12 N=21	
				2.0			low to medium plasticity		St-VSt		
							hard		VSt-H		
				2.8		CL	**SILTSTONE**; extremely weathered (XW), excavates as GRAVELLY SILTY CLAY; low to medium plasticity, fine to medium gravel, grey trace red and orange, trace iron stone			SPT 15, 29	XW BEDROCK
				3.0							
				4.0			**SILTSTONE**; extremely to highly weathered (XW/HW), very fine grained, dark grey and grey trace orange, with clay seams		H		
				4.5							

Logged By : JS Date : 15/11/23 | Checked By : Date :

BOREHOLE/EXCAVATION LOG S1998.GPJ EXC.GDT 5/12/23

FORTIFY GEOTECH

Borehole Log

Borehole No.	**BH4**
Sheet	2 of 5
Job No.	S1998

CLIENT: Reditus Consulting

PROJECT: Proposed Mixed Use Development
849, 853, 859 Pacific Hwy, & 2 & 8 Wilson St, Chatswood

Location : See Report

Collar Level : Not Known
Angle From Vertical : 0°
Bearing : N.A.

Equipment Type : BG Drilling CE180 Drill Rig
Hole Diameter : 100mm

Sample No.	Water	Method/ Casing	RL (m)	Depth (m)	Graphic Log	U.S.C.S.	Material Description, Structure Soil Type: Plasticity or Particle Characteristics, Colour, Secondary and Minor Components, Moisture, Structure	Moisture Condition	Consistency or Relative Density	Field Test Results	Geological Profile
	None Encountered	AUGERING		5.0			**SILTSTONE**; extremely to highly weathered (XW/HW), very fine grained, dark grey and grey trace orange, with clay seams				
			5.5			CL	**GRAVELLY SILTY CLAY**; medium plasticity, grey with brown and orange-brown, with siltstone and ironstone bands		VSt-H		RESIDUAL SOIL
		NMLC CORING		6.0							
			6.4			CL	**SILTY CLAY & SHALE**; highly weathered (HW), medium plasticity, grey with brown and orange-brown, alternating bands of clay and shale		H		RESIDUAL SOIL/XW BEDROCK
				7.0							
			7.3				CORE LOSS				CORE LOSS
			7.55				**SHALE**; highly to moderately weathered (HW/MW), very fine grained, dark grey trace orange, trace iron stain				WEATHERED BEDROCK
			8	8.0		CL	**SILTY CLAY**; medium plasticity, grey				
			8.14				**SHALE**; highly to moderately weathered (HW/MW), very fine grained, dark grey trace orange, trace iron stain				
			8.28			CL					
			8.32				**SILTY CLAY**; medium plasticity, grey				
			8.55				**SHALE**; highly weathered (HW), very fine grained, dark grey, some iron stains				
			8.72				**SHALE**; extremely to highly weathered (XW/HW), excavates as GRAVELLY SILTY CLAY, low plasticity, dark grey with orange				
			8.9								
				9.0							

Logged By : JS Date : 15/11/23 | Checked By : Date :

BOREHOLE/EXCAVATION LOG S1998.GPJ EXC.GDT 5/12/23

FORTIFY GEOTECH

Borehole Log

Borehole No.	**BH4**
Sheet	3 of 5
Job No.	S1998

CLIENT: Reditus Consulting

PROJECT: Proposed Mixed Use Development
849, 853, 859 Pacific Hwy, & 2 & 8 Wilson St, Chatswood

Location : See Report

Collar Level : Not Known
Angle From Vertical : 0°
Bearing : N.A.

Equipment Type : BG Drilling CE180 Drill Rig
Hole Diameter : 100mm

Sample No.	Water	Method/ Casing	RL (m)	Depth (m)	Graphic Log	U.S.C.S.	Material Description, Structure Soil Type: Plasticity or Particle Characteristics, Colour, Secondary and Minor Components, Moisture, Structure	Moisture Condition	Consistency or Relative Density	Field Test Results	Geological Profile
	None Encountered	NMLC CORING					**SHALE**; highly to moderately weathered (HW/MW), dark grey trace orange, some iron staining **SHALE**; moderately weathered (MW), very fine grained, dark grey, trace iron staining				
				10.0							
			10.68				CORE LOSS				CORE LOSS
			10.8				**SHALE**; moderately to slightly weathered (MW/SW), very fine grained, dark grey				WEATHERED BEDROCK
				11.0							
				12.0							
				13.0							
			13.5								

Logged By : JS Date : 15/11/23 | Checked By : Date :

BOREHOLE/EXCAVATION LOG S1998.GPJ EXC.GDT 5/12/23

FORTIFY GEOTECH

Borehole Log

Borehole No.	**BH4**
Sheet	4 of 5
Job No.	S1998

CLIENT: Reditus Consulting

PROJECT: Proposed Mixed Use Development
849, 853, 859 Pacific Hwy, & 2 & 8 Wilson St, Chatswood

Location : See Report

Collar Level : Not Known
Angle From Vertical : 0°
Bearing : N.A.

Equipment Type : BG Drilling CE180 Drill Rig
Hole Diameter : 100mm

Sample No.	Water	Method/ Casing	RL (m)	Depth (m)	Graphic Log	U.S.C.S.	Material Description, Structure Soil Type: Plasticity or Particle Characteristics, Colour, Secondary and Minor Components, Moisture, Structure	Moisture Condition	Consistency or Relative Density	Field Test Results	Geological Profile
	None Encountered	NMLC CORING		14.0			**SHALE**; moderately to slightly weathered (MW/SW), very fine grained, dark grey				WEATHERED BEDROCK
			14.25				**SHALE**; slightly weathered to fresh (SW/FR), very fine grained, dark grey				
				15.0							
				16.0							
			16.4				**SHALE**; slightly weathered (SW), very fine grained, dark grey				
				17.0							
			17.55				**SHALE**; slightly weathered to fresh (SW/FR), very fine grained, dark grey				
				18.0							

Logged By : JS Date : 15/11/23 | Checked By : Date :

BOREHOLE/EXCAVATION LOG S1998.GPJ EXC.GDT 5/12/23

FORTIFY GEOTECH

Borehole Log

Borehole No.	**BH4**
Sheet	5 of 5
Job No.	S1998

CLIENT: Reditus Consulting

PROJECT: Proposed Mixed Use Development
849, 853, 859 Pacific Hwy, & 2 & 8 Wilson St, Chatswood

Location : See Report

Collar Level : Not Known
Angle From Vertical : 0°
Bearing : N.A.

Equipment Type : BG Drilling CE180 Drill Rig
Hole Diameter : 100mm

Sample No.	Water	Method/ Casing	RL (m)	Depth (m)	Graphic Log	U.S.C.S.	Material Description, Structure Soil Type: Plasticity or Particle Characteristics, Colour, Secondary and Minor Components, Moisture, Structure	Moisture Condition	Consistency or Relative Density	Field Test Results	Geological Profile
	None Encountered	NMLC CORING		19.0			**SHALE**; slightly weathered to fresh (SW/FR), very fine grained, dark grey				
			19.98	20.0			BOREHOLE TERMINATED AT 19.98m At Target				
				21.0							
				22.0							
			22.5								

Logged By : JS Date : 15/11/23 Checked By : Date :

BOREHOLE/EXCAVATION LOG S1998.GPJ EXC.GDT 5/12/23

FORTIFY GEOTECH

Borehole Log

Borehole No.	**BH5**
Sheet	1 of 4
Job No.	S1998

CLIENT: Reditus Consulting

PROJECT: Proposed Mixed Use Development
849, 853, 859 Pacific Hwy, & 2 & 8 Wilson St, Chatswood

Location : See Report

Collar Level : Not Known
Angle From Vertical : 0°
Bearing : N.A.

Equipment Type : BG Drilling CE180 Drill Rig
Hole Diameter : 100mm

Sample No.	Water	Method/ Casing	RL (m)	Depth (m)	Graphic Log	U.S.C.S.	Material Description, Structure Soil Type: Plasticity or Particle Characteristics, Colour, Secondary and Minor Components, Moisture, Structure	Moisture Condition	Consistency or Relative Density	Field Test Results	Geological Profile
	None Encountered	AUGERING		0.2		OL	**SILTY SAND/ SANDY SILT**; fine to medium grained, dark brown, trace fine to coarse gravels, grass roots at surface	D	L-MD		TOPSOIL
				0.6		CL-ML	**CLAYEY SILTY SAND**; fine to medium grained, low plasticity, brown trace orange and grey, trace fine gravels				FILL
				1.0		CH	**SANDY CLAY**; medium to high plasticity, fine grained, red to brown mottled pale orange	*w*<PL	St-VSt		ALLUVIAL SOIL
				1.2		CH	**CLAY with SAND**; medium to high plasticity, fine grained, pale grey mottled red and orange, trace fine to medium gravels		VSt	SPT 7, 10, 11 N=21	
				2.0		CL	**SILTY CLAY trace SAND**; medium plasticity, fine grained, pale grey mottled red, trace orange, trace fine gravels		VSt-H		RESIDUAL SOIL
				2.8		CL	**SILTY CLAY trace SAND**; low plasticity, fine grained, pale grey trace orange and red, trace ironstone gravels		H		
				3.0						SPT 25, 15+ for 30mm N>15	
				3.2			**SILTSTONE**; extremely weathered (XW), excavates as GRAVELLY SILTY CLAY; low plasticity, fine to medium gravels, pale grey with red and orange				XW BEDROCK
				4.0							
				5.0							

Logged By : JS Date : 16/11/23 | Checked By : Date :

BOREHOLE/EXCAVATION LOG S1998.GPJ EXC.GDT 5/12/23

FORTIFY GEOTECH

Borehole Log

Borehole No.	**BH5**
Sheet	2 of 4
Job No.	S1998

CLIENT: Reditus Consulting

PROJECT: Proposed Mixed Use Development
849, 853, 859 Pacific Hwy, & 2 & 8 Wilson St, Chatswood

Location : See Report

Collar Level : Not Known
Angle From Vertical : 0°
Bearing : N.A.

Equipment Type : BG Drilling CE180 Drill Rig
Hole Diameter : 100mm

Sample No.	Water	Method/ Casing	RL (m)	Depth (m)	Graphic Log	U.S.C.S.	Material Description, Structure Soil Type: Plasticity or Particle Characteristics, Colour, Secondary and Minor Components, Moisture, Structure	Moisture Condition	Consistency or Relative Density	Field Test Results	Geological Profile
	None Encountered	AUGERING		6			**SILTSTONE**; extremely weathered (XW), excavates as GRAVELLY SILTY CLAY; low plasticity, fine to medium gravels, pale grey with red and orange				XW BEDROCK
				6.0			**SILTY CLAY & SHALE**; highly weathered (HW), medium plasticity, grey with brown and orange-brown, alternating bands of clay and shale				RESIDUAL/XW BEDROCK
				7.0							
			7.5				**SHALE**; highly weathered (HW), very fine grained, dark grey	D			WEATHERED BEDROCK
				8.0							
			8.4				**SHALE** highly to moderately weathered (HW/MW), very fine grained, dark grey				
		NMLC CORING	8.85				**SILTY CLAY**; dark grey,		VSt-H		
				9							
				9.0			**SHALE**; moderately weathered (MW), very fine grained, dark grey, trace iron staining		H		
			9.33								
			9.4				**SHALE**; highly weathered (HW), very fine grained, dark grey, trace iron staining				
			9.44				**SILTY CLAY**; dark grey,				
			9.6				**SHALE**; moderately weathered (MW), very fine grained, dark grey, trace iron staining				
				10.0							

Logged By : JS Date : 16/11/23 | Checked By : Date :

BOREHOLE/EXCAVATION LOG S1998.GPJ EXC.GDT 5/12/23

FORTIFY GEOTECH

Borehole Log

Borehole No.	**BH5**
Sheet	3 of 4
Job No.	S1998

CLIENT: Reditus Consulting

PROJECT: Proposed Mixed Use Development
849, 853, 859 Pacific Hwy, & 2 & 8 Wilson St, Chatswood

Location : See Report

Collar Level : Not Known
Angle From Vertical : 0°
Bearing : N.A.

Equipment Type : BG Drilling CE180 Drill Rig
Hole Diameter : 100mm

Sample No.	Water	Method/ Casing	RL (m)	Depth (m)	Graphic Log	U.S.C.S.	Material Description, Structure Soil Type: Plasticity or Particle Characteristics, Colour, Secondary and Minor Components, Moisture, Structure	Moisture Condition	Consistency or Relative Density	Field Test Results	Geological Profile
	None Encountered	NMLC CORING	10.05				**SHALE**; moderately to slightly weathered (MW/SW), very fine grained, dark grey, trace iron staining				
							SHALE; slightly weathered (SW), very fine grained, dark grey, trace iron staining				
				11.0							
				12.0							
			13	13.0			**SHALE**; moderately to slightly weathered (MW/SW), very fine grained, dark grey, trace iron staining				
			13.48				CORE LOSS				CORE LOSS
			13.74				**SHALE**; moderately to slightly weathered (MW/SW), very fine grained, dark grey, trace iron staining				WEATHERED BEDROCK
				14.0							
			14.37								
			14.44				**SILTY CLAY**; dark grey,				
							SHALE; moderately weathered (MW), very fine grained, dark grey, trace iron staining				
			14.75								
			15.0								

Logged By : JS Date : 16/11/23 | Checked By : Date :

BOREHOLE/EXCAVATION LOG S1998.GPJ EXC.GDT 5/12/23

FORTIFY GEOTECH

Borehole Log

Borehole No.	**BH5**
Sheet	4 of 4
Job No.	S1998

CLIENT: Reditus Consulting

PROJECT: Proposed Mixed Use Development
849, 853, 859 Pacific Hwy, & 2 & 8 Wilson St, Chatswood

Location : See Report

Collar Level : Not Known
Angle From Vertical : 0°
Bearing : N.A.

Equipment Type : BG Drilling CE180 Drill Rig
Hole Diameter : 100mm

Sample No.	Water	Method/ Casing	RL (m)	Depth (m)	Graphic Log	U.S.C.S.	Material Description, Structure Soil Type: Plasticity or Particle Characteristics, Colour, Secondary and Minor Components, Moisture, Structure	Moisture Condition	Consistency or Relative Density	Field Test Results	Geological Profile
	None Encountered	NMLC CORING	15.1				**SHALE**; highly to moderately weathered (HW/MW), very fine grained, dark grey, trace iron staining				
							SHALE; moderately to slightly weathered (MW/SW), very fine grained, dark grey, trace iron staining				
			16	16.0			**SHALE**; slightly weathered (SW), very fine grained, dark grey, trace iron staining				
				17.0							
				18.0							
			18.96	19.0			BOREHOLE TERMINATED AT 18.96m At Target				
				20.0							

Logged By : JS Date : 16/11/23 Checked By : Date :

BOREHOLE/EXCAVATION LOG S1998.GPJ EXC.GDT 5/12/23

Fortify Geotech Pty Ltd

FORTIFY GEOTECH

Borehole Log

Borehole No.	**BH6**
Sheet	1 of 5
Job No.	S1998

CLIENT: Reditus Consulting

PROJECT: Proposed Mixed Use Development
849, 853, 859 Pacific Hwy, & 2 & 8 Wilson St, Chatswood

Location : See Report

Collar Level : Not Known
Angle From Vertical : 0°
Bearing : N.A.

Equipment Type : BG Drilling CE180 Drill Rig
Hole Diameter : 100mm

Sample No.	Water	Method/ Casing	RL (m)	Depth (m)	Graphic Log	U.S.C.S.	Material Description, Structure Soil Type: Plasticity or Particle Characteristics, Colour, Secondary and Minor Components, Moisture, Structure	Moisture Condition	Consistency or Relative Density	Field Test Results	Geological Profile
	None Encountered	AUGERING		0.2		OL	**SANDY SILT/ SILTY SAND**; fine to medium grained, dark brown, trace fine to medium gravels, grass roots at surface	D-M	L-MD		TOPSOIL
						CL	**SANDY CLAY/ CLAYEY SAND**; fine to coarse grained, low to medium plasticity, brown trace grey, trace anthropogenic material (bricks),	*w*~PL	MD		FILL
				0.4		CH	**SANDY CLAY**; medium to high plasticity, fine grained, orange to brown mottled orange, trace fine gravels	*w*<PL	St		ALLUVIAL SOIL
				0.8		CH	**SANDY CLAY**; medium to high plasticity, fine to medium grained, pale grey mottled red trace orange, trace fine gravels				
				1.0							
				1.2		CI	**SILTY CLAY trace SAND**; medium plasticity, fine grained, pale grey mottled red trace orange, some iron staining		St-VSt		RESIDUAL SOIL
										SPT 4, 8, 14 N=22	
						CL	pale grey trace red and orange		VSt		
				2.0					VSt-H		
				3.0			**SILTSTONE**; extremely weathered (XW), excavates as GRAVELLY SILTY CLAY; low plasticity, fine to medium gravels, pale grey with red and orange		H	SPT 17, 15+ for 60mm N>15	XW BEDROCK
				4.0							
				4.5							

Logged By : JS Date : 17/11/23 | Checked By : Date :

BOREHOLE/EXCAVATION LOG S1998.GPJ EXC.GDT 5/12/23

FORTIFY GEOTECH

Borehole Log

Borehole No.	**BH6**
Sheet	2 of 5
Job No.	S1998

CLIENT: Reditus Consulting

PROJECT: Proposed Mixed Use Development
849, 853, 859 Pacific Hwy, & 2 & 8 Wilson St, Chatswood

Location : See Report

Collar Level : Not Known
Angle From Vertical : 0°
Bearing : N.A.

Equipment Type : BG Drilling CE180 Drill Rig
Hole Diameter : 100mm

Sample No.	Water	Method/ Casing	RL (m)	Depth (m)	Graphic Log	U.S.C.S.	Material Description, Structure Soil Type: Plasticity or Particle Characteristics, Colour, Secondary and Minor Components, Moisture, Structure	Moisture Condition	Consistency or Relative Density	Field Test Results	Geological Profile
	None Encountered	AUGERING		5.0			**SILTSTONE**; extremely weathered (XW), excavates as GRAVELLY SILTY CLAY; low plasticity, fine to medium gravels, pale grey with red and orange				XW BEDROCK
				6.0							
			6.5				**SILTY CLAY & SHALE**; highly weathered (HW), medium plasticity, grey with brown and orange-brown, alternating bands of clay and shale				RESIDUAL/XW BEDROCK
				7.0							
			7.5				**SHALE**; highly weathered (HW), very fine grained, dark grey to black				WEATHERED BEDROCK
				8.0			**SHALE**; highly to moderately weathered (HW/MW), very fine grained, dark grey to black				
			8.6				CORE LOSS				
			9.0								

Logged By : JS Date : 17/11/23 Checked By : Date :

BOREHOLE/EXCAVATION LOG S1998.GPJ EXC.GDT 5/12/23

FORTIFY GEOTECH

Borehole Log

Borehole No.	**BH6**
Sheet	3 of 5
Job No.	S1998

CLIENT: Reditus Consulting

PROJECT: Proposed Mixed Use Development
849, 853, 859 Pacific Hwy, & 2 & 8 Wilson St, Chatswood

Location : See Report

Collar Level : Not Known
Angle From Vertical : 0°
Bearing : N.A.

Equipment Type : BG Drilling CE180 Drill Rig
Hole Diameter : 100mm

Sample No.	Water	Method/ Casing	RL (m)	Depth (m)	Graphic Log	U.S.C.S.	Material Description, Structure Soil Type: Plasticity or Particle Characteristics, Colour, Secondary and Minor Components, Moisture, Structure	Moisture Condition	Consistency or Relative Density	Field Test Results	Geological Profile
	None Encountered	NMLC CORING	9.2				CORE LOSS				
				10.0			**SHALE**; moderately weathered shale (MW), dark grey, very fine grained				
				11.0							
			11.2				**SHALE**; moderately to slightly weathered shale (MW/SW), dark grey, very fine grained				
			11.65				**SHALE**; slightly weathered shale (SW), dark grey, very fine grained				
				12.0							
			12.75				**SHALE**; moderately to slightly weathered shale (MW/SW), dark grey, very fine grained				
				13.0							
			13.5								

Logged By : JS Date : 17/11/23 | Checked By : Date :

BOREHOLE/EXCAVATION LOG S1998.GPJ EXC.GDT 5/12/23

FORTIFY GEOTECH

Borehole Log

Borehole No.	**BH6**
Sheet	4 of 5
Job No.	S1998

CLIENT: Reditus Consulting

PROJECT: Proposed Mixed Use Development
849, 853, 859 Pacific Hwy, & 2 & 8 Wilson St, Chatswood

Location : See Report

Collar Level : Not Known
Angle From Vertical : 0°
Bearing : N.A.

Equipment Type : BG Drilling CE180 Drill Rig
Hole Diameter : 100mm

Sample No.	Water	Method/ Casing	RL (m)	Depth (m)	Graphic Log	U.S.C.S.	Material Description, Structure Soil Type: Plasticity or Particle Characteristics, Colour, Secondary and Minor Components, Moisture, Structure	Moisture Condition	Consistency or Relative Density	Field Test Results	Geological Profile
	None Encountered	NMLC CORING		14.0			**SHALE**; moderately to slightly weathered shale (MW/SW), dark grey, very fine grained				
			14.3				**SHALE**; slightly weathered shale (SW), dark grey, very fine grained				
				15.0							
				16.0							
				17.0							
			17.5				**SHALE**; moderately to slightly weathered shale (MW/SW), dark grey, very fine grained				
			17.8				**SHALE**; slightly weathered shale (SW), dark grey, very fine grained				
			18.0								

Logged By : JS Date : 17/11/23 Checked By : Date :

BOREHOLE/EXCAVATION LOG S1998.GPJ EXC.GDT 5/12/23

FORTIFY GEOTECH

Borehole Log

Borehole No.	**BH6**
Sheet	5 of 5
Job No.	S1998

CLIENT: Reditus Consulting

PROJECT: Proposed Mixed Use Development
849, 853, 859 Pacific Hwy, & 2 & 8 Wilson St, Chatswood

Location : See Report

Collar Level : Not Known
Angle From Vertical : 0°
Bearing : N.A.

Equipment Type : BG Drilling CE180 Drill Rig
Hole Diameter : 100mm

Sample No.	Water	Method/ Casing	RL (m)	Depth (m)	Graphic Log	U.S.C.S.	Material Description, Structure Soil Type: Plasticity or Particle Characteristics, Colour, Secondary and Minor Components, Moisture, Structure	Moisture Condition	Consistency or Relative Density	Field Test Results	Geological Profile
	None Encountered	NMLC CORING		19.0			**SHALE**; slightly weathered shale (SW), dark grey, very fine grained				
			19.85				BOREHOLE TERMINATED AT 19.85m At Target				
				20.0							
				21.0							
				22.0							
			22.5								

Logged By : JS Date : 17/11/23 Checked By : Date :

BOREHOLE/EXCAVATION LOG S1998.GPJ EXC.GDT 5/12/23

FORTIFY GEOTECH

Borehole Log

Borehole No.	**BH7**
Sheet	1 of 3
Job No.	S2207

CLIENT: BB Wilson Property Pty Ltd

PROJECT: Proposed Mixed-Use Development
849, 853 & 859 Pacific Highway, 2 & 8 Wilson Street, Chatswood

Location : See Report
Collar Level : Not Known
Angle From Vertical : 0°
Bearing : N.A.

Equipment Type : Drill Rig
Hole Diameter : 100mm

Sample No.	Water	Method/ Casing	RL (m)	Depth (m)	Graphic Log	U.S.C.S.	Material Description, Structure (Soil Type: Plasticity or Particle Characteristics, Colour, Secondary and Minor Components, Moisture, Structure)	Moisture Condition	Consistency or Relative Density	Field Test Results	Geological Profile
			0.2				**CONCRETE**				FILL
			0.6			GW	**Sandy GRAVEL;** Fine to coarse gravel, fine to coarse sand, pale brown trace cobbles with low plasticity clay	W	D		
			1	1.0		CL		*w*<PL	St		
BH7/1						CH	**Sandy CLAY;** Low plasticity clay, black trace red, fine to coarse sand			SPT 3, 6, 8 N=14	RESIDUAL
							CLAY; Medium plasticity, red and orange trace fine gravels				
			2	2.0		CH	**CLAY;** Medium plasticity, pale red mottles grey, trace fine gravels		H		
BH7/2		AUGERING								SPT 8, 18, 24 N=42	
			3	3.0		CL	**Gravelly CLAY;** Low plasticity clay, pale grey and purple mottled and red, fine gravel				
BH7/3				4.0						SPT 7, 32, 44 N=76	
	None Encountered			5.0			becoming pale grey with purple and red				
			5.5			CL	**SHALE**; extremely weathered (XW), fine grained, iron staining				
BH7/4			5.82							SPT 8, 21, REF	
				6.0			**SHALE**; highly to moderately weathered (HW/MW), very fine grained, dark grey				WEATHERED BEDROCK
		NMLC CORING		7.0							
				8.0							
			8.19				**SHALE**; moderately weathered (MW), very fine grained, dark grey				
			9.02	9.0			**SHALE**; moderately to slightly weathered (MW/SW), very fine grained, dark grey				
			10.0								

Logged By : JOR Date : 19/9/24 | Checked By : JOE Date : 15/10/24

BOREHOLE/EXCAVATION LOG S2207.GPJ EXC.GDT 30/10/24

FORTIFY GEOTECH

Borehole Log

Borehole No.	**BH7**
Sheet	2 of 3
Job No.	S2207

CLIENT: BB Wilson Property Pty Ltd

PROJECT: Proposed Mixed-Use Development
849, 853 & 859 Pacific Highway, 2 & 8 Wilson Street, Chatswood

Location : See Report
Collar Level : Not Known
Angle From Vertical : 0°
Bearing : N.A.

Equipment Type : Drill Rig
Hole Diameter : 100mm

Sample No.	Water	Method/ Casing	RL (m)	Depth (m)	Graphic Log	U.S.C.S.	Material Description, Structure Soil Type: Plasticity or Particle Characteristics, Colour, Secondary and Minor Components, Moisture, Structure	Moisture Condition	Consistency or Relative Density	Field Test Results	Geological Profile
	None Encountered	NMLC CORING		11.0			**SHALE**; moderately to slightly weathered (MW/SW), very fine grained, dark grey				
			12.02	12.0			**SHALE**; slight weathered (SW), fine grained, dark grey				
				13.0							
				14.0							
				15.0							
			16.14	16.0			**SHALE**; moderately to slightly weathered (MW/SW), very fine grained, dark grey				
			17	17.0			**SHALE**; highly weathered (HW), fine grained, dark grey				
				18.0							
				19.0							
				20.0							

Logged By : JOR Date : 19/9/24 | Checked By : JOE Date : 15/10/24

BOREHOLE/EXCAVATION LOG S2207.GPJ EXC.GDT 30/10/24

FORTIFY GEOTECH

Borehole Log

Borehole No.	**BH7**
Sheet	3 of 3
Job No.	S2207

CLIENT: BB Wilson Property Pty Ltd

PROJECT: Proposed Mixed-Use Development
849, 853 & 859 Pacific Highway, 2 & 8 Wilson Street, Chatswood

Location : See Report
Collar Level : Not Known
Angle From Vertical : 0°
Bearing : N.A.

Equipment Type : Drill Rig
Hole Diameter : 100mm

Sample No.	Water	Method/ Casing	RL (m)	Depth (m)	Graphic Log	U.S.C.S.	Material Description, Structure Soil Type: Plasticity or Particle Characteristics, Colour, Secondary and Minor Components, Moisture, Structure	Moisture Condition	Consistency or Relative Density	Field Test Results	Geological Profile
	None Encountered	NMLC CORING		21.0 22.0 23.0 24.0 25.0 26.0 27.0			**SHALE**; highly weathered (HW), fine grained, dark grey				
			27.1	28.0 29.0 30.0			BOREHOLE TERMINATED AT 27.1m at Target				

Logged By : JOR Date : 19/9/24 | Checked By : JOE Date : 15/10/24

BOREHOLE/EXCAVATION LOG S2207.GPJ EXC.GDT 30/10/24

FORTIFY GEOTECH

Borehole Log

Borehole No.	**BH8**
Sheet	1 of 3
Job No.	S2207

CLIENT: BB Wilson Property Pty Ltd

PROJECT: Proposed Mixed-Use Development
849, 853 & 859 Pacific Highway, 2 & 8 Wilson Street, Chatswood

Location : See Report
Collar Level : Not Known
Angle From Vertical : 0°
Bearing : N.A.

Equipment Type : Drill Rig
Hole Diameter : 100mm

Sample No.	Water	Method/ Casing	RL (m)	Depth (m)	Graphic Log	U.S.C.S.	Material Description, Structure Soil Type: Plasticity or Particle Characteristics, Colour, Secondary and Minor Components, Moisture, Structure	Moisture Condition	Consistency or Relative Density	Field Test Results	Geological Profile
	None Encountered	AUGERING	0.2	0.2		CL CH	**SANDY CLAY**; fine to medium grained sand, brown with orange, trace fine sized gravels	*w*~PL	F		FILL RESIDUAL
			0.8	0.8			**CLAY**; medium to high plasticity, orange to brown mottled orange, with fine grained sand, trace fine sized gravels		St		
			1	1.0		CL CL	**CLAY**; medium plasticity, orange to brown mottled orange, with fine grained sand, trace fine sized gravels			SPT 5, 10, 13 N=23	
				2.0			**Sandy CLAY**; low to medium plasticity, pale grey mottled red, fine to medium grained sand, trace coarse gravels		VSt		
				3.0			orange, red and pink mottles			SPT 3, 12, 20 N=32	
				4.0						SPT 25, 50	
				5.0							
				6.0			dark grey			SPT 24, 25, 35 N=60	
			6.87								
		NMLC CORING		7.0		CL	**SILTSTONE**; extremely weathered (XW), excavates as GRAVELLY SILTY CLAY; low to medium plasticity, fine to medium gravel, grey trace red and orange, trace iron stone			SPT 22, 50	XW BEDROCK
			7.24				**SHALE**; highly weathered (HW), very fine grained, dark grey, some iron stains				WEATHERED BEDROCK
				8.0							
				9.0							
			10.0								

Logged By : CB/JOE Date : 24/9/24 | Checked By : JOE Date : 15/10/24

BOREHOLE/EXCAVATION LOG S2207.GPJ EXC.GDT 30/10/24

FORTIFY GEOTECH

Borehole Log

Borehole No.	**BH8**
Sheet	2 of 3
Job No.	S2207

CLIENT: BB Wilson Property Pty Ltd

PROJECT: Proposed Mixed-Use Development
849, 853 & 859 Pacific Highway, 2 & 8 Wilson Street, Chatswood

Location : See Report
Collar Level : Not Known
Angle From Vertical : 0°
Bearing : N.A.

Equipment Type : Drill Rig
Hole Diameter : 100mm

Sample No.	Water	Method/ Casing	RL (m)	Depth (m)	Graphic Log	U.S.C.S.	Material Description, Structure Soil Type: Plasticity or Particle Characteristics, Colour, Secondary and Minor Components, Moisture, Structure	Moisture Condition	Consistency or Relative Density	Field Test Results	Geological Profile
	None Encountered	NMLC CORING	10.6	10.6			**SHALE**; highly weathered (HW), very fine grained, dark grey, some iron stains				WEATHERED BEDROCK
				11.0			**SHALE**; highly to moderately weathered (HW/MW), dark grey trace orange, some iron staining				
				12.0							
				13.0							
				14.0							
				15.0							
			15.3				**SHALE**; moderately weathered (MW), very fine grained, dark grey, trace iron staining				
				16.0							
				17.0							
				18.0							
				19.0							
			20.0								

Logged By : CB/JOE Date : 24/9/24 | Checked By : JOE Date : 15/10/24

BOREHOLE/EXCAVATION LOG S2207.GPJ EXC.GDT 30/10/24

FORTIFY GEOTECH

Borehole Log

Borehole No.	**BH8**
Sheet	3 of 3
Job No.	S2207

CLIENT: BB Wilson Property Pty Ltd

PROJECT: Proposed Mixed-Use Development
849, 853 & 859 Pacific Highway, 2 & 8 Wilson Street, Chatswood

Location : See Report
Collar Level : Not Known
Angle From Vertical : 0°
Bearing : N.A.

Equipment Type : Drill Rig
Hole Diameter : 100mm

Sample No.	Water	Method/ Casing	RL (m)	Depth (m)	Graphic Log	U.S.C.S.	Material Description, Structure Soil Type: Plasticity or Particle Characteristics, Colour, Secondary and Minor Components, Moisture, Structure	Moisture Condition	Consistency or Relative Density	Field Test Results	Geological Profile
	None Encountered	NMLC CORING		21.0 22.0 23.0 24.0 25.0 26.0			**SHALE**; moderately weathered (MW), very fine grained, dark grey, trace iron staining				
			27.1	27.0			**SANDSTONE**; slight weathered (SW), medium grained, grey BOREHOLE TERMINATED AT 27.1m at Target				
				28.0 29.0 30.0							

Logged By : CB/JOE Date : 24/9/24 | Checked By : JOE Date : 15/10/24

BOREHOLE/EXCAVATION LOG S2207.GPJ EXC.GDT 30/10/24

FORTIFY GEOTECH

Borehole Log

Borehole No.	**BH9**
Sheet	1 of 3
Job No.	S2207

CLIENT: BB Wilson Property Pty Ltd

PROJECT: Proposed Mixed-Use Development
849, 853 & 859 Pacific Highway, 2 & 8 Wilson Street, Chatswood

Location : See Report
Collar Level : Not Known
Angle From Vertical : 0°
Bearing : N.A.

Equipment Type : Drill Rig
Hole Diameter : 100mm

Sample No.	Water	Method/ Casing	RL (m)	Depth (m)	Graphic Log	U.S.C.S.	Material Description, Structure Soil Type: Plasticity or Particle Characteristics, Colour, Secondary and Minor Components, Moisture, Structure	Moisture Condition	Consistency or Relative Density	Field Test Results	Geological Profile
	None Encountered	AUGERING		0.5		SP	**SAND;** fine to medium grained, brown	D	L		TOPSOIL FILL
				1.0		CH	**CLAY;** medium plasticity, orange brown	*w*<PL	St		RESIDUAL
							mottled pale brown, red, grey, trace fine to medium gravel, trace fine sand		VSt	SPT 1, 6, 7 N=13	
				2.0		CH	**CLAY;** medium plasticity, mottled pale grey, red, orange, trace fine to medium ironstone gravels, trace fine to medium sand		VSt-H	SPT 6, 18, 24 N=42	
				4.0						SPT 10, 19, 25 N=44	
			4.5	5.0		CL	**Silty CLAY;** low to medium plasticity, grey trace red		H		
			5.7			CL	**SHALE**; extremely weathered (XW), excavates as GRAVELLY CLAY; low to medium plasticity, pale brown-red w/ grey, fine to coarse gravel			SPT 20, 15+ for 10mm N>15	XW BEDROCK
		NMLC CORING	6.21	6.0		CL	CORE LOSS				WEATHERED BEDROCK
			6.4	7.0			**SHALE**; extremely weathered (XW), excavates as GRAVELLY CLAY; low to medium plasticity, pale brown-red w/ grey, fine to coarse gravel				
				8.0			**SHALE**; highly weathered (HW), very fine grained, dark grey, some iron stains				
			8.2				**SHALE**; moderately weathered (MW), very fine grained, dark grey, trace iron staining				
				9.0							
				10.0							

Logged By : JOR Date : 25/9/24 | Checked By : JOE Date : 15/10/24

BOREHOLE/EXCAVATION LOG S2207.GPJ EXC.GDT 30/10/24

FORTIFY GEOTECH

Borehole Log

Borehole No.	**BH9**
Sheet	2 of 3
Job No.	S2207

CLIENT: BB Wilson Property Pty Ltd

PROJECT: Proposed Mixed-Use Development
849, 853 & 859 Pacific Highway, 2 & 8 Wilson Street, Chatswood

Location : See Report
Collar Level : Not Known
Angle From Vertical : 0°
Bearing : N.A.

Equipment Type : Drill Rig
Hole Diameter : 100mm

Sample No.	Water	Method/ Casing	RL (m)	Depth (m)	Graphic Log	U.S.C.S.	Material Description, Structure Soil Type: Plasticity or Particle Characteristics, Colour, Secondary and Minor Components, Moisture, Structure	Moisture Condition	Consistency or Relative Density	Field Test Results	Geological Profile
	None Encountered	NMLC CORING		11.0			**SHALE**; moderately to slightly weathered (MW/SW), very fine grained, dark grey				
				12.0							
			13.1	13.0							
							SHALE; highly to moderately weathered (HW/MW), dark grey trace orange, some iron staining				
				14.0							
				15.0							
			16	16.0			**SHALE**; moderately weathered (MW), very fine grained, dark grey				
				17.0							
				18.0							
				19.0							
				20.0							

Logged By : JOR Date : 25/9/24 | Checked By : JOE Date : 15/10/24

BOREHOLE/EXCAVATION LOG S2207.GPJ EXC.GDT 30/10/24

FORTIFY GEOTECH

Borehole Log

Borehole No.	**BH9**
Sheet	3 of 3
Job No.	S2207

CLIENT: BB Wilson Property Pty Ltd

PROJECT: Proposed Mixed-Use Development
849, 853 & 859 Pacific Highway, 2 & 8 Wilson Street, Chatswood

Location : See Report
Collar Level : Not Known
Angle From Vertical : 0°
Bearing : N.A.

Equipment Type : Drill Rig
Hole Diameter : 100mm

Sample No.	Water	Method/ Casing	RL (m)	Depth (m)	Graphic Log	U.S.C.S.	Material Description, Structure Soil Type: Plasticity or Particle Characteristics, Colour, Secondary and Minor Components, Moisture, Structure	Moisture Condition	Consistency or Relative Density	Field Test Results	Geological Profile
	None Encountered	NMLC CORING	20.3								
			21.1	21.0			**SHALE**; highly to moderately weathered (HW/MW), dark grey trace orange, some iron staining				
				22.0			**SHALE**; slightly weathered (SW), very fine grained, dark grey				
				23.0							
				24.0							
				25.0							
				26.0							
			27.1	27.0							
			27.56				**SANDSTONE**; slightly weathered (SW), medium grained, pale grey				
							BOREHOLE TERMINATED AT 27.56m at Target				
				28.0							
				29.0							
			30.0								

Logged By : JOR Date : 25/9/24 | Checked By : JOE Date : 15/10/24

BOREHOLE/EXCAVATION LOG S2207.GPJ EXC.GDT 30/10/24

FORTIFY GEOTECH

Cored Borehole Log

Borehole No.	**BH1**
	1 of 5
Job No.	S1998

CLIENT: Reditus Consulting

PROJECT: Proposed Mixed Use Development
849, 853, 859 Pacific Hwy, & 2 & 8 Wilson St, Chatswood

Location : See Report

Collar Level : Not Known
Angle From Horizontal : 90°
Bearing : N.A.

Drill Type :
Barrel Type, Length, Drilling fluid :

Method/Casing	R.Q.D./Lift	Water	RL (m)	Depth (m)	Graphic Log	Soil or Rock Substance Description	Degree of Weathering	Estimated Strength Range (VL, L, M, H, VH, EH)	Is(50) MPa (D = diaxial, A = axial)	Core Length (mm) (30, 100, 300, 1000, 3000)	Defects	Defect Description
AUGERING			0.05			ASPHALT						
			0.3			**SANDY GRAVEL**; fine to coarse gravels, fine to coarse grained, grey to brown						
			0.8			**SANDY CLAY**; medium to high plasticity, fine to medium grained, brown with red, grey, and orange						
				1.0		**SILTY CLAY**; medium to high plasticity, brown						
			1.2			**SILTY CLAY**; medium plasticity, orange to brown mottled orange, trace fine gravels						
			1.5			**SANDY CLAY**; medium to high plasticity, pale orange-brown mottled red, trace fine to medium gravels						
			2	2.0		**SANDY CLAY**; medium plasticity, fine to medium grained, pale grey and red-brown, trace fine gravels,						
			2.5			**SILTY CLAY**; medium plasticity, pale grey mottled red to brown						
				3.0		pale grey, trace red, trace fine grained sand						
			4	4.0		**SILTY CLAY**; low to medium plasticity, pale grey trace red and orange, trace iron stone						
			4.8				EW					
			5.0									

Logged By : JS Date : 20/11/23 | Checked By : Date :

CORED BOREHOLE LOG S1998.GPJ EXC.GDT 5/12/23

Fortify Geotech Pty Ltd

FORTIFY GEOTECH

Cored Borehole Log

Borehole No.	**BH1**
	2 of 5
Job No.	S1998

CLIENT: Reditus Consulting

PROJECT: Proposed Mixed Use Development
849, 853, 859 Pacific Hwy, & 2 & 8 Wilson St, Chatswood

Location : See Report

Collar Level : Not Known
Angle From Horizontal : 90°
Bearing : N.A.

Drill Type :
Barrel Type, Length, Drilling fluid :

Method/Casing	R.Q.D./Lift	Water	RL (m)	Depth (m)	Graphic Log	Soil or Rock Substance Description	Degree of Weathering	Estimated Strength Range	Is(50) MPa (D = diaxial, A = axial)	Core Length (mm)	Defects	Defect Description
AUGERING				6.0		**SILTSTONE**; extremely weathered (XW), excavates as GRAVELLY SILTY CLAY, low to medium plasticity, fine to medium gravels, pale grey with red and orange, trace ironstone	EW					
				7.0								
			7.8			**SHALE**; highly weathered (HW), fine grained, dark grey and black trace orange						
				8.0			HW					
NMLC CORING	7% 100%		9	9.0		**SHALE**; highly weathered (HW) with clay seams, dark grey trace brown	HW					joint, joint,90°, planar, rough, , - - joints, infilled seam,-°, -, -, , clay seam joint, joint,0°, planar, rough, , -
			9.25			**SHALE** moderately weathered (MW), very fine grained, dark grey	MW		D = 0.0 A = 1.7			- joints, infilled seam,-°, -, -, , clay seam - joints, infilled seam,-°, -, -, , clay seam - joints, extremely weathered seam,-°, -, -, , - joint, joint,5°, planar, rough, , - joint, joint,5°, planar, rough, , - joint, joint,5,90°, stepped, rough, , - joint, parting,0°, planar, smooth, , -
			9.6			**Clay Seam**						joint, joint,80,0°, planar, rough, , -
			9.9									, infilled seam,°, , , , clay seam
			10.0				MW/HW					Fractured and fragmented, -

Logged By : JS Date : 20/11/23 | Checked By : Date :

CORED BOREHOLE LOG S1998.GPJ EXC.GDT 5/12/23

FORTIFY GEOTECH

Cored Borehole Log

Borehole No. **BH1**

3 of 5

CLIENT: Reditus Consulting

Job No. S1998

PROJECT: Proposed Mixed Use Development
849, 853, 859 Pacific Hwy, & 2 & 8 Wilson St, Chatswood

Location : See Report

Collar Level : Not Known
Angle From Horizontal : 90°
Bearing : N.A.

Drill Type :
Barrel Type, Length, Drilling fluid :

Method/Casing	R.Q.D./Lift	Water	RL (m)	Depth (m)	Graphic Log	Soil or Rock Substance Description	Degree of Weathering	Estimated Strength Range (VL L M H VH EH)	Is(50) MPa (D = diaxial, A = axial)	Core Length (mm) (30 100 300 1000 3000)	Defects	Defect Description
NMLC CORING			10.2			**SHALE**; highly to moderately weathered (HW/MW), very fine grained, dark grey	MW/HW					Fractured and fragmented, -
						SHALE; moderately weathered (MW), very fine grained, dark grey	MW					joint, parting,0°, planar, smooth, , - joint, parting,0°, planar, smooth, , - joint, parting,0°, planar, rough, , - joint, parting,0°, planar, rough, stained, iron stain joint, parting,0°, planar, rough, , - , extremely weathered seam,°, , , , -
			10.75			**Clay Seam**						joint, parting,0°, planar, rough, , - joint, parting,0°, planar, rough, , -
			10.8			**SHALE**; highly weathered (HW), very fine grained, dark grey	HW					joint, joint,90°, planar, rough, , - joint, joint,5°, planar, rough, , - - joints, infilled seam,-°, -, -, , clay seam joint, joint,°, curved, rough, , -
	0% 100%			11.0			EW/HW					joint, joint,10°, planar, smooth, , - joint, joint,10°, planar, smooth, , - - joints, infilled seam,-°, -, -, , clay seam joint, joint,30°, planar, rough, , - - joints, extremely weathered seam,-°, -, -, , -
			11.3			**SHALE**; extremely to highly weathered (XW/HW), excavates as SILTY GRAVELLY CLAY, low plasticity, fine to coarse gravels, dark grey	HW					joint, joint,5°, planar, rough, , - - joints, infilled seam,-°, -, -, , clay seam
			11.45				MW/HW					joint, joint,20°, planar, smooth, , - - joints, infilled seam,-°, -, -, , clay seam
			11.65			**SHALE**; highly weathered (HW), very fine grained, dark grey	HW					joint, joint,20°, planar, rough, , - - joints, infilled seam,-°, -, -, , clay seam 6 joints, joint,0,90,10°, irregular, rough, , - - joints, infilled seam,-°, -, -, , clay seam joint, joint,20°, planar, rough, , - joint, joint,5°, planar, rough, , -
	0% 100%		12.05	12.0		**SHALE**; highly to moderately weathered (HW/MW), very fine grained, dark grey						Fractured and fragmented, - - joints, infilled seam,-°, -, -, , clay seam joint, joint,90,0°, planar, rough, , - joint, parting,0°, planar, rough, , - joint, joint,90°, planar, rough, , - joint, joint,90°, planar, rough, , -
						SHALE; highly weathered (HW), very fine grained, dark grey	MW/HW		D = 0.0 A = 0.2			- joints, crushed seam,-°, -, -, , - - joints, infilled seam,-°, -, -, , clay seam 7 joints, joint,90,0°, planar, rough, , -
			12.65			**SHALE**; highly to moderately weathered (HW/MW), very fine grained, dark grey	HW					joint, parting,5°, planar, smooth, , - joint, joint,90°, planar, smooth, , - joint, parting,5°, planar, smooth, , - joint, joint,0,80°, planar, rough, , -
			12.85									- joints, extremely weathered seam,-°, -, -, , -
				13.0		**SHALE**; highly weathered (HW), very fine grained, dark grey		CORE		LOSS		joint, parting,5°, planar, rough, , - joint, joint,5,90°, planar, rough, , - joint, parting,5°, planar, rough, , - joint, joint,90°, planar, rough, , - joint, parting,5°, planar, rough, , - joint, parting,5°, planar, rough, , - joint, joint,0°, irregular, rough, , -
						CORE LOSS						Fractured and fragmented, - - joints, extremely weathered seam,-°, -, -, , -
			13.4									
			13.45			**Clay Seam**						- joints, infilled seam,-°, -, -, , clay seam
	8% 100%					**SHALE**; moderately weathered (MW), very fine grained, dark grey			D = 0.2 A = 3.1			5 joints, joint,0,90°, planar, rough, , -
												joint, joint,0,20°, irregular, rough, , - joint, joint,80°, irregular, rough, , - 5 joints, joint,0°, planar, rough, , - joint, parting,0°, planar, smooth, , - joint, parting,0°, planar, rough, , - joint, parting,0°, planar, rough, , - , infilled seam,°, , , , clay seam
				14.0			MW					- joints, crushed seam,-°, -, -, , - 3 joints, joint,0,90°, irregular, rough, , - joint, joint,0°, irregular, rough, , - joint, joint,5,80°, irregular, rough, , - joint, parting,5°, planar, smooth, , - joint, joint,0°, planar, rough, , - joint, joint,90°, planar, rough, , -
	0% 100%								D = 19.9 A = 16.6			joint, joint,80°, irregular, rough, , - joint, parting,0°, planar, rough, , - Fractured and fragmented, - joint, joint,90°, irregular, rough, , - 4 joints, joint,20,0,80°, irregular, rough, , - joint, parting,0°, planar, smooth, , - joint, joint,10°, planar, rough, , - joint, joint,20°, planar, rough, , - 3 joints, joint,0°, planar, rough, , -
			15.05									joint, parting,0°, planar, rough, , -

Logged By : JS Date : 20/11/23 | Checked By : Date :

CORED BOREHOLE LOG S1998.GPJ EXC.GDT 5/12/23

FORTIFY GEOTECH

Cored Borehole Log

Borehole No. **BH1**

CLIENT: Reditus Consulting

Job No. S1998

PROJECT: Proposed Mixed Use Development
849, 853, 859 Pacific Hwy, & 2 & 8 Wilson St, Chatswood

Location : See Report

Collar Level : Not Known
Angle From Horizontal : 90°
Bearing : N.A.

Drill Type :
Barrel Type, Length, Drilling fluid :

Method/Casing	R.Q.D./Lift	Water	RL (m)	Depth (m)	Graphic Log	Soil or Rock Substance Description	Degree of Weathering	Estimated Strength Range (VL L M H VH EH)	Is(50) MPa (D = diaxial, A = axial)	Core Length (mm) (30 100 300 1000 3000)	Defects	Defect Description
NMLC CORING	43% 100%			16.0		**SHALE**; slightly weathered (SW), very fine grained, dark grey	SW		D = 9.6 A = 16.6			joint, joint,10,45°, irregular, rough, , - joint, parting,0°, planar, rough, , - joint, parting,0°, planar, rough, , - joint, joint,0,45°, irregular, rough, , - - joints, crushed seam,-°, -, -, , - joint, joint,0,45°, irregular, rough, , - joint, joint,30°, planar, rough, , - joint, parting,0°, planar, rough, , - joint, joint,10°, planar, rough, , - joint, joint,0°, planar, rough, , - joint, joint,0°, planar, rough, , - joint, parting,0°, planar, rough, , - joint, parting,0°, planar, rough, , - joint, parting,0°, planar, smooth, , - joint, parting,5°, planar, rough, , - joint, parting,5°, planar, smooth, , - joint, parting,0°, planar, smooth, , - joint, parting,5°, planar, smooth, , - joint, parting,0°, planar, smooth, , - joint, parting,0°, planar, smooth, , - joint, parting,0°, planar, smooth, , - joint, parting,5°, planar, smooth, , - joint, parting,5°, planar, smooth, , - joint, parting,0°, planar, smooth, , - joint, parting,5°, planar, smooth, , - joint, parting,5°, planar, smooth, , - joint, joint,30°, planar, rough, , - joint, parting,0°, planar, smooth, , - joint, parting,0°, planar, smooth, , - 5 joints, joint,30,90,0°, irregular, rough, , - joint, parting,5°, planar, smooth, , - 2 joints, joint,25,30°, irregular, smooth, , - joint, joint,30°, planar, smooth, , -
			17.6	17.0								
	98% 100%			18.0		**SHALE**; slightly weathered to fresh (SW/FR), very fine grained, dark grey	SW		D = 38.2 A = 50.6			joint, joint,10°, planar, smooth, , - joint, parting,0°, planar, rough, , - joint, parting,0°, planar, rough, , - joint, parting,0°, planar, rough, , - joint, parting,0°, planar, rough, , - joint, parting,0°, planar, rough, , - joint, parting,0°, planar, rough, , - joint, parting,0°, planar, smooth, , - joint, parting,0°, planar, rough, , - joint, parting,0°, planar, smooth, , - joint, parting,0°, planar, rough, , - - joints, extremely weathered seam,-°, -, -, , - joint, parting,0°, planar, rough, , - joint, parting,0°, planar, rough, , - joint, parting,0°, planar, smooth, , - joint, parting,0°, planar, smooth, , - joint, parting,0°, planar, smooth, , -
				19.0					D = 12.0 A = 61.0			joint, parting,0°, planar, rough, , - joint, parting,0°, planar, rough, , - joint, joint,85°, planar, rough, , - joint, parting,0°, planar, rough, , - joint, joint,30°, planar, rough, , -
				20.0								

Logged By : JS Date : 20/11/23 | Checked By : Date :

CORED BOREHOLE LOG S1998.GPJ EXC.GDT 5/12/23

FORTIFY GEOTECH

Cored Borehole Log

Borehole No. **BH1**

5 of 5

CLIENT: Reditus Consulting

Job No. S1998

PROJECT: Proposed Mixed Use Development
849, 853, 859 Pacific Hwy, & 2 & 8 Wilson St, Chatswood

Location : See Report

Collar Level : Not Known
Angle From Horizontal : 90°
Bearing : N.A.

Drill Type :
Barrel Type, Length, Drilling fluid :

Method/Casing	R.Q.D./Lift	Water	RL (m)	Depth (m)	Graphic Log	Soil or Rock Substance Description	Degree of Weathering	Estimated Strength Range (VL L M H VH EH)	Is(50) MPa (D = diaxial, A = axial)	Core Length (mm) (30 100 300 1000 3000)	Defects	Defect Description
	98% 100%		20.27				SW		D = 29.0 A = 84.7			joint, parting,0°, planar, smooth, , -
						BOREHOLE TERMINATED AT 20.27m At Target						joint, parting,0°, planar, smooth, , -
				21.0								
				22.0								
				23.0								
				24.0								
				25.0								

Logged By : JS Date : 20/11/23 | Checked By : Date :

CORED BOREHOLE LOG S1998.GPJ EXC.GDT 5/12/23

Fortify Geotech Pty Ltd

FORTIFY GEOTECH

Cored Borehole Log

Borehole No.	**BH2**
	1 of 5
Job No.	S1998

CLIENT: Reditus Consulting

PROJECT: Proposed Mixed Use Development
849, 853, 859 Pacific Hwy, & 2 & 8 Wilson St, Chatswood

Location : See Report

Collar Level : Not Known
Angle From Horizontal : 90°
Bearing : N.A.

Drill Type :
Barrel Type, Length, Drilling fluid :

Method/Casing	R.Q.D./Lift	Water	RL (m)	Depth (m)	Graphic Log	Soil or Rock Substance Description	Degree of Weathering	Estimated Strength Range (VL L M H VH EH)	Is(50) MPa (D = diaxial, A = axial)	Core Length (mm) (30 100 300 1000 3000)	Defects	Defect Description
AUGERING			0.17	0.0		Concrete						
			0.6			**GRAVELLY SAND**; fine to coarse gravels, fine to coarse grained sand, dark brown to dark grey, trace low plasticity clay						
				1.0		**CLAY with sand**; medium to high plasticity, fine grained, orange to brown mottled pale orange, trace fine gravels orange to brown mottled red						
			1.5			**SANDY CLAY**; low to medium plasticity, fine to medium grained, red to brown mottled pale grey and orange, trace fine to coarse gravels						
				2.0		**SILTY CLAY**; medium plasticity, pale grey mottled red, trace fine grained sand low to medium plasticity, trace fine gravels (some ironstone gravels)						
				3.0		medium plasticity						
				4.0		low to medium plasticity						
			4.5			**SHALE**; extremely weathered (XW), excavales as SILTY CLAY; low to medium plasticity, grey, trace fine to medium gravels						
			5.0									

Logged By : JOR Date : 14/11/23 | Checked By : Date :

CORED BOREHOLE LOG S1998.GPJ EXC.GDT 5/12/23

FORTIFY GEOTECH

Cored Borehole Log

Borehole No.	**BH2**
	2 of 5
Job No.	S1998

CLIENT: Reditus Consulting

PROJECT: Proposed Mixed Use Development
849, 853, 859 Pacific Hwy, & 2 & 8 Wilson St, Chatswood

Location : See Report

Collar Level : Not Known
Angle From Horizontal : 90°
Bearing : N.A.

Drill Type :
Barrel Type, Length, Drilling fluid :

Method/Casing	R.Q.D./Lift	Water	RL (m)	Depth (m)	Graphic Log	Soil or Rock Substance Description	Degree of Weathering	Estimated Strength Range (VL, L, M, H, VH, EH)	Is(50) MPa (D = diaxial, A = axial)	Core Length (mm) (30, 100, 300, 1000, 3000)	Defects	Defect Description
AUGERING				6.0		**SHALE**; extremely weathered (XW), excavales as SILTY CLAY; low to medium plasticity, grey, trace fine to medium gravels						
			6.5			**SHALE**; extremely weathered (XW), excavales as SILTY CLAY, medium plasticity, pale grey to grey, trace fine to medium gravels	EW					
			7.6	7.0		**SHALE**; highly weathered (HW), fine grained, dark grey and black trace orange						
				8.0			HW					
			9	9.0		**SHALE**; highly weathered (HW), fine grained, dark grey and black trace orange	HW					- joints, infilled seam,-°, -, -, -, clay joint, parting,0°, planar, rough, coating, clay joint, parting,0°, planar, rough, -, - joint, joint,0,90,0°, stepped, smooth, -, -
NMLC CORING	42% 100%		9.4			**SHALE**; highly to moderately weathered (HW/MW), dark grey trace orange, some iron staining	HW/MW		D = 2.2 A = 6.0			joint, parting,0°, undulating, smooth, -, - , infilled seam,°, -, -, , clay joint, parting,0°, planar, rough, -, - - joints, extremely weathered seam,-°, -, -, -, - joint, parting,0°, planar, smooth, -, - joint, parting,0°, planar, rough, stained, clay joint, parting,0°, planar, rough, stained, clay joint, parting,0°, planar, smooth, -, -
			10.0									

Logged By : JOR Date : 14/11/23

Checked By : Date :

CORED BOREHOLE LOG S1998.GPJ EXC.GDT 5/12/23

FORTIFY GEOTECH

Cored Borehole Log

Borehole No.	BH2
	3 of 5

CLIENT:	Reditus Consulting
PROJECT	Proposed Mixed Use Development 849, 853, 859 Pacific Hwy, & 2 & 8 Wilson St, Chatswood

Job No. S1998

Location : See Report

Collar Level : Not Known
Angle From Horizontal : 90°
Bearing : N.A.

Drill Type :
Barrel Type, Length, Drilling fluid :

Method/Casing	R.Q.D./Lift	Water	RL (m)	Depth (m)	Graphic Log	Soil or Rock Substance Description	Degree of Weathering	Estimated Strength Range	Is(50) MPa (D = diaxial, A = axial)	Core Length (mm)	Defects	Defect Description
NMLC CORING	42% 100%		10.29	11.0		**SHALE**; highly weathered (HW), fine grained, dark grey	HW/MW		D = 0.0 A = 7.2			joint, parting,0°, planar, smooth, -, - joint, parting,0°, planar, smooth, -, - , infilled seam,0°, planar, , -, clay Fractured and fragmented, - , extremely weathered seam,°, , , -, - joint, parting,0°, planar, smooth, veneer, clay joint, joint,0,80°, irregular, rough, -, - joint, parting,0°, planar, rough, veneer, xw Fractured and fragmented, - - joints, infilled seam,0°, planar, -, -, clay joint, extremely weathered seam,0°, planar, smooth, stained, - joint, parting,0°, planar, rough, -, - joint, parting,0°, planar, rough, -, - joint, parting,0°, planar, smooth, -, - joint, parting,0°, planar, smooth, -, - joint, parting,0°, planar, rough, -, -
			10.83			**SHALE**; moderately weathered (MW), fine grained, dark grey	HW					
							MW		D = 0.0 A = 14.9			, infilled seam,0°, planar, -, -, - joint, parting,0°, planar, smooth, veneer, clay joint, parting,0°, planar, rough, -, - joint, parting,0°, planar, rough, -, - joint, parting,0°, planar, rough, -, -
	48% 100%		12.95	12.0 13.0		**SHALE**; moderately to slightly weathered (MW/SW), very fine grained, dark grey			D = 17.8 A = 42.5			- joints, infilled seam,-°, -, -, -, clay joint, parting,0°, planar, rough, veneer, clay joint, parting,0°, planar, rough, veneer, clay joint, parting,0°, planar, rough, -, - joint, parting,0°, planar, rough, -, - joint, parting,0°, planar, smooth, -, - joint, parting,0°, planar, rough, -, - joint, parting,0°, planar, smooth, -, - joint, parting,0°, planar, smooth, -, - joint, parting,0°, planar, smooth, -, - joint, parting,0°, planar, smooth, -, - joint, parting,0°, planar, smooth, -, - joint, parting,0°, planar, rough, -, - joint, parting,0°, planar, smooth, veneer, clay joint, parting,0°, planar, smooth, veneer, clay joint, parting,0°, planar, smooth, -, - joint, parting,0°, planar, smooth, -, - joint, parting,0°, planar, smooth, -, - joint, parting,0°, planar, smooth, -, - joint, joint,90°, irregular, rough, -, - joint, parting,0°, planar, smooth, -, - joint, parting,0°, planar, smooth, -, - joint, parting,0°, planar, smooth, -, - joint, parting,0°, irregular, smooth, -, - joint, joint,0,30°, planar, smooth, -, - joint, parting,0°, planar, smooth, -, - joint, parting,0°, planar, smooth, -, - joint, parting,0°, planar, smooth, -, - joint, parting,0°, planar, rough, -, - joint, parting,0°, planar, rough, -, - joint, joint,30°, planar, rough, -, - joint, parting,0°, planar, smooth, -, - joint, parting,0°, planar, smooth, -, -
				14.0			MW/SW					4 joints, joint,0,70°, irregular, rough, -, - joint, parting,0°, planar, smooth, -, - - joints, extremely weathered seam,0°, planar, -, -, clay joint, parting,0°, planar, smooth, veneer, clay joint, joint,0,90°, planar, rough, -, - joint, parting,0°, planar, smooth, -, - joint, parting,0°, planar, smooth, -, - joint, parting,0°, planar, smooth, -, - joint, parting,0°, planar, smooth, -, - joint, parting,0°, planar, smooth, -, - joint, parting,0°, planar, smooth, -, - joint, parting,0°, planar, smooth, veneer, clay joint, parting,0°, planar, smooth, veneer, clay - joints, infilled seam,-°, -, -, -, clay
				15.0					D = 0.0 A = 5.5			joint, parting,0°, planar, smooth, veneer, clay

Logged By : JOR Date : 14/11/23 | Checked By : Date :

CORED BOREHOLE LOG S1998.GPJ EXC.GDT 5/12/23

FORTIFY GEOTECH

Cored Borehole Log

Borehole No. **BH2**

CLIENT: Reditus Consulting

Job No. S1998

PROJECT: Proposed Mixed Use Development
849, 853, 859 Pacific Hwy, & 2 & 8 Wilson St, Chatswood

Location : See Report

Collar Level : Not Known
Angle From Horizontal : 90°
Bearing : N.A.

Drill Type :
Barrel Type, Length, Drilling fluid :

Method/Casing	R.Q.D./Lift	Water	RL (m)	Depth (m)	Graphic Log	Soil or Rock Substance Description	Degree of Weathering	Estimated Strength Range (VL L M H VH EH)	Is(50) MPa (D = diaxial, A = axial)	Core Length (mm) (30 100 300 1000 3000)	Defects	Defect Description
NMLC CORING	54% 100%		16.55	16.0		**SHALE**; moderately to slightly weathered (MW/SW), very fine grained, dark grey	MW/SW		D = 17.3 A = 73.7			joint, parting,0°, planar, rough, -, - joint, parting,0°, planar, rough, -, - joint, parting,0°, planar, rough, -, - joint, parting,0°, planar, rough, -, - joint, parting,0°, planar, rough, -, - joint, parting,0°, planar, rough, -, - joint, parting,0°, planar, rough, -, - joint, parting,0°, planar, rough, -, - joint, parting,0°, planar, rough, -, - joint, parting,0°, planar, smooth, -, - joint, parting,0°, planar, smooth, -, - joint, parting,0°, planar, smooth, -, - 4 joints, parting,0°, planar, smooth, -, - - joints, crushed seam,-°, -, -, -, - joint, parting,0°, planar, smooth, -, - joint, parting,0°, planar, rough, -, - joint, parting,0°, planar, rough, -, - joint, parting,0°, planar, smooth, -, - joint, parting,0°, planar, smooth, -, - joint, parting,0°, planar, smooth, -, - joint, parting,0°, planar, smooth, -, - joint, parting,0°, planar, smooth, -, - joint, parting,0°, planar, smooth, CO, xw joint, parting,0°, planar, smooth, -, - joint, parting,0°, planar, smooth, -, - joint, parting,0°, planar, smooth, -, - joint, parting,0°, planar, smooth, -, - joint, parting,0°, planar, smooth, -, - joint, parting,0°, planar, smooth, -, - joint, parting,0°, planar, smooth, -, - joint, parting,0°, planar, smooth, -, - joint, parting,0°, planar, smooth, -, - joint, parting,0°, planar, smooth, -, -
				17.0		**SHALE**; slightly weathered (SW), very fine grained, dark grey						joint, parting,0°, planar, smooth, -, - joint, parting,0°, planar, smooth, -, -
	91% 100%			18.0			SW		D = 67.4 A = 88.6			joint, parting,0°, planar, smooth, -, -
				19.0								joint, parting,2°, planar, smooth, -, - joint, parting,2°, planar, smooth, -, -
				20.0								joint, parting,0°, planar, smooth, -, -

Logged By : JOR Date : 14/11/23 | Checked By : Date :

CORED BOREHOLE LOG S1998.GPJ EXC.GDT 5/12/23

FORTIFY GEOTECH

Cored Borehole Log

Borehole No. **BH2**

5 of 5

CLIENT: Reditus Consulting

Job No. S1998

PROJECT: Proposed Mixed Use Development
849, 853, 859 Pacific Hwy, & 2 & 8 Wilson St, Chatswood

Location : See Report

Collar Level : Not Known
Angle From Horizontal : 90°
Bearing : N.A.

Drill Type :
Barrel Type, Length, Drilling fluid :

Method/Casing	R.Q.D./Lift	Water	RL (m)	Depth (m)	Graphic Log	Soil or Rock Substance Description	Degree of Weathering	Estimated Strength Range (VL L M H VH EH)	Is(50) MPa (D = diaxial, A = axial)	Core Length (mm) (30 100 300 1000 3000)	Defects	Defect Description
	91% 100%					**SHALE**; slightly weathered (SW), very fine grained, dark grey	SW					joint, joint,90°, irregular, rough, -, -
			20.9									
				21.0		BOREHOLE TERMINATED AT 20.9m At Target						
				22.0								
				23.0								
				24.0								
			25.0									

Logged By : JOR Date : 14/11/23 | Checked By : Date :

CORED BOREHOLE LOG S1998.GPJ EXC.GDT 5/12/23

FORTIFY GEOTECH

Cored Borehole Log

Borehole No. **BH3**

1 of 5

CLIENT:	Reditus Consulting
PROJECT	Proposed Mixed Use Development 849, 853, 859 Pacific Hwy, & 2 & 8 Wilson St, Chatswood

Job No. S1998

Location : See Report

Collar Level : Not Known
Angle From Horizontal : 90°
Bearing : N.A.

Drill Type :
Barrel Type, Length, Drilling fluid :

Method/Casing	R.Q.D./Lift	Water	RL (m)	Depth (m)	Graphic Log	Soil or Rock Substance Description	Degree of Weathering	Estimated Strength Range (VL L M H VH EH)	Is(50) MPa (D = diaxial, A = axial)	Core Length (mm) (30 100 300 1000 3000)	Defects	Defect Description
AUGERING			0.11	0.0		CONCRETE						
						SANDY CLAY; medium plasticity, fine to coarse grained, brown trace orange, grey, and red						
			0.5			**CLAY**; medium to high plasticity, pale red-brown with grey						
				1.0		**CLAY**; medium to high plasticity, pale grey and pale red						
			1.5			**SILTY CLAY**; medium plasticity, pale grey with pale red						
				2.0								
				3.0		**SANDY SILTY CLAY**; fine grained, low plasticity, pale grey-brown, with fine to medium gravels						
				4.0								
			4.5				EW					
			5.0									

Logged By : JS Date : 21/11/23 | Checked By : Date :

CORED BOREHOLE LOG S1998.GPJ EXC.GDT 5/12/23

Fortify Geotech Pty Ltd

FORTIFY GEOTECH

Cored Borehole Log

Borehole No.	**BH3**
	2 of 5
Job No.	S1998

CLIENT: Reditus Consulting

PROJECT: Proposed Mixed Use Development
849, 853, 859 Pacific Hwy, & 2 & 8 Wilson St, Chatswood

Location : See Report

Collar Level : Not Known
Angle From Horizontal : 90°
Bearing : N.A.

Drill Type :
Barrel Type, Length, Drilling fluid :

Method/Casing	R.Q.D./Lift	Water	RL (m)	Depth (m)	Graphic Log	Soil or Rock Substance Description	Degree of Weathering	Estimated Strength Range (VL, L, M, H, VH, EH)	Is(50) MPa (D = diaxial, A = axial)	Core Length (mm) (30, 100, 300, 1000, 3000)	Defects	Defect Description
AUGERING				6.0		**SILTSTONE**; extremely weathered (XW), excavates as GRAVELLY SILTY CLAY, low to medium plasticity, fine to medium gravels, pale grey with red and orange, trace ironstone						
				7.0								
			7.5			**SHALE**; highly weathered (HW), fine grained, dark grey and black trace orange	HW					
				8.0								
			8.1			**SHALE**; highly to moderately weathered (HW/MW), very fine grained, dark grey	MW/HW					
NMLC CORING	31% 100%		9	9.0			MW/HW					- joints, infilled seam,-°, -, -, -, clay joint, parting,0°, planar, smooth, -, -
			9.15			**SHALE**; highly to moderately weathered (HW/MW), very fine grained, dark grey	MW/SW					joint, joint,15°, irregular, rough, -, - 2 joints, joint,0°, irregular, rough, -, - joint, joint,0,20°, irregular, rough, -, - joint, parting,0°, planar, rough, -, - joint, parting,0°, planar, rough, -, - joint, parting,0°, planar, smooth, -, -
						SHALE; moderately to slighly weathered (MW/SW), very fine grained, dark grey			D = 10.1 A = 20.6			joint, parting,0°, planar, rough, -, - joint, parting,0°, planar, rough, -, - joint, parting,0°, planar, smooth, -, - joint, parting,0°, planar, rough, -, -
				10.0								

Logged By : JS Date : 21/11/23 | Checked By : Date :

CORED BOREHOLE LOG S1998.GPJ EXC.GDT 5/12/23

FORTIFY GEOTECH

Cored Borehole Log

Borehole No. **BH3**

3 of 5

CLIENT: Reditus Consulting

Job No. S1998

PROJECT Proposed Mixed Use Development
849, 853, 859 Pacific Hwy, & 2 & 8 Wilson St, Chatswood

Location : See Report

Collar Level : Not Known
Angle From Horizontal : 90°
Bearing : N.A.

Drill Type :
Barrel Type, Length, Drilling fluid :

Method/Casing	R.Q.D./Lift	Water	RL (m)	Depth (m)	Graphic Log	Soil or Rock Substance Description	Degree of Weathering	Estimated Strength Range	Is(50) MPa (D = diaxial A = axial)	Core Length (mm)	Defects	Defect Description
NMLC CORING			10.5			**SHALE**; moderately to slighly weathered (MW/SW), very fine grained, dark grey						joint, parting,0°, planar, smooth, -, -
												joint, joint,30,0°, planar, rough, -, -
												joint, joint,0,70,80°, irregular, rough, -, -
												joint, parting,0°, planar, smooth, -, -
						SHALE; moderately weathered (MW), very fine grained, dark grey	MW		D = 8.2 A = 7.9			joint, parting,0°, planar, smooth, -, - joint, parting,0°, planar, smooth, -, - joint, parting,0°, planar, smooth, -, - - joints, extremely weathered seam,-°, -, -, stained, Fe - joints, extremely weathered seam,-°, -, -, stained, Fe
	31% 100%			11.0								joint, parting,0°, planar, rough, -, - joint, parting,0°, planar, rough, -, - joint, parting,0°, planar, rough, -, - joint, parting,0°, planar, rough, -, - joint, joint,0,90°, irregular, rough, -, - joint, parting,0°, planar, rough, -, - 2 joints, parting,0°, planar, rough, -, - - joints, extremely weathered seam,-°, -, -, -, - joint, parting,0°, planar, rough, -, - joint, parting,0°, planar, rough, veneer, clay joint, parting,0°, planar, rough, veneer, clay joint, parting,0°, planar, smooth, -, - joint, parting,0°, planar, rough, -, - joint, parting,0°, planar, rough, -, -
			11.8				MW/SW					joint, parting,0°, planar, smooth, -, - joint, joint,90°, irregular, rough, -, -
				12.0		**SHALE**; moderately to slightly weathered (MW/SW), very fine grained, dark grey			D = 36.5 A = 13.4			joint, parting,0°, planar, rough, -, - joint, parting,0°, planar, rough, -, - joint, parting,0°, planar, smooth, stained, Fe joint, parting,0°, planar, smooth, stained, Fe joint, parting,0°, planar, rough, -, - joint, parting,0°, planar, rough, stained, Fe joint, parting,0°, planar, rough, -, -
			12.65				MW					2 joints, parting,0°, planar, smooth, -, - 2 joints, extremely weathered seam,0°, planar, rough, -, -
						SHALE; moderately weathered (MW), very fine grained, dark grey						- joints, extremely weathered seam,-°, -, -, , - joint, parting,0°, planar, smooth, -, - joint, parting,0°, planar, rough, -, - joint, parting,0°, irregular, rough, -, -
				13.0								joint, parting,0°, planar, slickensided, -, - joint, parting,0°, planar, smooth, -, - joint, parting,0°, planar, rough, -, - joint, parting,0°, planar, rough, -, - joint, parting,0°, planar, smooth, -, - joint, parting,0°, planar, rough, -, - joint, joint,90°, irregular, rough, -, - joint, parting,0°, planar, rough, -, -
	26% 100%											joint, joint,45°, undulating, rough, -, - joint, joint,5°, irregular, rough, -, - joint, joint,0°, irregular, rough, -, - joint, parting,0°, planar, smooth, -, - 2 joints, parting,0°, planar, smooth, -, - - joints, extremely weathered seam,-°, -, -, -, - joints, crushed seam,-°, -, -, -, -
			13.9				MW/SW		D = 1.2 A = 24.7			joint, parting,5°, planar, rough, -, - joint, parting,5°, planar, smooth, -, - - joints, extremely weathered seam,-°, -, -, -, -
				14.0		**SHALE**; moderately to slightly weathered (MW/SW), very fine grained, dark grey						joint, parting,0°, planar, smooth, -, - joint, parting,0°, planar, smooth, -, - joint, parting,0°, planar, smooth, -, - joint, parting,0°, planar, smooth, -, - - joints, extremely weathered seam,-°, -, -, -, -
												joint, parting,0°, planar, rough, -, - joint, parting,0°, planar, smooth, -, - joint, parting,0°, planar, smooth, -, - joint, parting,0°, planar, smooth, -, - joint, parting,0°, planar, smooth, -, - joint, parting,0°, planar, rough, -, - joint, parting,0°, planar, smooth, -, - 2 joints, parting,0°, planar, rough, -, - joint, parting,0°, planar, rough, -, - joint, joint,90°, irregular, rough, -, - joint, parting,0°, planar, rough, -, - - joints, infilled seam,-°, -, -, -, clay joint, parting,0°, planar, smooth, -, - joint, parting,0°, planar, smooth, -, -
	38% 100%			15.0								- joints, extremely weathered seam,-°, -, -, -, - joint, parting,0°, planar, rough, -, -

Logged By : JS Date : 21/11/23 | Checked By : Date :

CORED BOREHOLE LOG S1998.GPJ EXC.GDT 5/12/23

FORTIFY GEOTECH

Cored Borehole Log

Borehole No. **BH3**

4 of 5

CLIENT:	Reditus Consulting
PROJECT	Proposed Mixed Use Development 849, 853, 859 Pacific Hwy, & 2 & 8 Wilson St, Chatswood

Job No. S1998

Location : See Report

Collar Level : Not Known
Angle From Horizontal : 90°
Bearing : N.A.

Drill Type :
Barrel Type, Length, Drilling fluid :

Method/Casing	R.Q.D./Lift	Water	RL (m)	Depth (m)	Graphic Log	Soil or Rock Substance Description	Degree of Weathering	Estimated Strength Range (VL L M H VH EH)	Is(50) MPa (D = diaxial, A = axial)	Core Length (mm) (30 100 300 1000 3000)	Defects	Defect Description
NMLC CORING	38% 100%		15.15	16.0		**SHALE**; slightly weathered (SW), very fine grained, dark grey	SW		D = 2.2 A = 39.1 D = 27.4 A = 36.0			joint, parting,0°, planar, rough, -, - 2 joints, parting,0°, planar, rough, -, - joint, parting,0°, planar, smooth, -, - 2 joints, parting,0°, planar, rough, -, - joint, joint,90°, irregular, rough, -, - joint, parting,0°, planar, rough, -, - - joints, crushed seam,-°, -, -, -, - joint, parting,0°, planar, smooth, -, - joint, parting,0°, planar, smooth, -, - joint, parting,0°, planar, rough, -, - joint, parting,0°, planar, smooth, -, - joint, joint,90°, irregular, rough, -, - joint, parting,0°, planar, rough, -, - joint, parting,0°, planar, smooth, -, - joint, parting,0°, planar, smooth, -, - joint, parting,0°, planar, smooth, -, - joint, crushed seam,0°, planar, smooth, -, - joint, parting,0°, planar, smooth, -, - joint, parting,0°, planar, rough, -, - joint, parting,0°, planar, smooth, -, - joint, parting,0°, planar, rough, -, - joint, parting,0°, planar, rough, -, - joint, parting,0°, planar, smooth, -, - joint, parting,0°, planar, rough, -, - joint, parting,0°, planar, rough, -, - joint, parting,0°, planar, smooth, -, - joint, parting,0°, planar, smooth, -, - joint, parting,0°, planar, smooth, -, - joint, parting,0°, planar, smooth, -, - 2 joints, joint,5,0°, planar, rough, -, - joint, joint,0,5°, irregular, rough, -, - Fractured and fragmented, - joint, parting,0°, planar, smooth, -, - joint, joint,0,45°, irregular, smooth, -, - joint, parting,0°, planar, smooth, -, - 2 joints, parting,0°, planar, smooth, -, - joint, parting,0°, planar, smooth, -, - 3 joints, parting,0°, planar, smooth, -, - joint, parting,0°, planar, smooth, -, - joint, parting,0°, planar, rough, -, - joint, parting,0°, planar, smooth, -, - joint, parting,0°, planar, smooth, -, - joint, parting,0°, planar, smooth, -, - joint, parting,0°, planar, rough, -, - joint, parting,0°, planar, rough, -, - joint, parting,0°, planar, smooth, -, -
			17.75	17.0		CORE LOSS		CORE		LOSS		joint, joint,0,80°, stepped, rough, -, - joint, parting,5°, planar, smooth, -, - joint, parting,0°, planar, rough, -, - joint, parting,0°, planar, smooth, -, -
			18.05	18.0		**SHALE**; slightly weathered (SW), very fine grained, dark grey	SW					2 joints, parting,0°, planar, rough, -, - joint, parting,5°, planar, smooth, -, - joint, parting,0°, planar, rough, -, - 2 joints, parting,0°, planar, rough, -, - joint, parting,0°, planar, smooth, -, -
	74% 85%		18.29			**SHALE**; slightly weathered to fresh (SW/FR), very fine grained, dark grey	SW/FR		D = 12.7 A = 82.1			joint, parting,0°, planar, slickensided, -, - joint, parting,0°, planar, slickensided, -, - joint, parting,0°, planar, slickensided, -, - joint, parting,0°, planar, slickensided, -, - joint, parting,0°, planar, smooth, -, - joint, parting,0°, planar, smooth, -, - joint, parting,0°, planar, rough, -, - joint, parting,0°, planar, smooth, -, - joint, parting,0°, planar, smooth, -, - joint, joint,70,0°, irregular, smooth, -, - joint, parting,0°, planar, smooth, -, - joint, parting,0°, planar, smooth, -, - joint, parting,0°, planar, smooth, -, - joint, parting,0°, planar, smooth, -, - joint, parting,0°, planar, smooth, -, - -, - joint, parting,0°, planar, rough, -, - joint, parting,0°, planar, rough, -, - joint, parting,0°, planar, smooth, -, - joint, joint,45°, irregular, rough, -, - 3 joints, joint,0,45°, irregular, rough, -, - 2 joints, joint,0,30°, irregular, rough, -, - Fractured and fragmented, - joint, joint,10°, planar, rough, -, - joint, joint,5,10°, irregular, rough, veneer, clay Fractured and fragmented, -
			19.8	20.0		BOREHOLE TERMINATED AT 19.8m At Target						joint, joint,20°, planar, smooth, -, - joint, joint,10,60°, planar, rough, -, - joint, joint,-°, curved, rough, -, -

Logged By : JS Date : 21/11/23 Checked By : Date :

CORED BOREHOLE LOG S1998.GPJ EXC.GDT 5/12/23

FORTIFY GEOTECH

Cored Borehole Log

Borehole No. **BH3**

5 of 5

CLIENT:	Reditus Consulting
PROJECT	Proposed Mixed Use Development 849, 853, 859 Pacific Hwy, & 2 & 8 Wilson St, Chatswood

Job No. S1998

Location : See Report

Collar Level : Not Known
Angle From Horizontal : 90°
Bearing : N.A.

Drill Type :
Barrel Type, Length, Drilling fluid :

Method/Casing	R.Q.D./Lift	Water	RL (m)	Depth (m)	Graphic Log	Soil or Rock Substance Description	Degree of Weathering	Estimated Strength Range (VL, L, M, H, VH, EH)	Is(50) MPa (D = diaxial, A = axial)	Core Length (mm) (50, 100, 300, 1000, 3000)	Defects	Defect Description
				21.0								joint, parting,0°, planar, rough, -, - joint, joint,40°, planar, smooth, -, - joint, parting,0°, planar, smooth, -, - joint, joint,40°, irregular, rough, -, - joint, joint,0,30°, irregular, rough, -, - joint, parting,0°, planar, smooth, -, -
				22.0								
				23.0								
				24.0								
				25.0								

Logged By : JS Date : 21/11/23 | Checked By : Date :

CORED BOREHOLE LOG S1998.GPJ EXC.GDT 5/12/23

FORTIFY GEOTECH

Cored Borehole Log

Borehole No. **BH4**

1 of 5

CLIENT:	Reditus Consulting
PROJECT	Proposed Mixed Use Development 849, 853, 859 Pacific Hwy, & 2 & 8 Wilson St, Chatswood

Job No. S1998

Location : See Report

Collar Level : Not Known
Angle From Horizontal : 90°
Bearing : N.A.

Drill Type :
Barrel Type, Length, Drilling fluid :

Method/Casing	R.Q.D./Lift	Water	RL (m)	Depth (m)	Graphic Log	Soil or Rock Substance Description	Degree of Weathering	Estimated Strength Range (VL L M H VH EH)	Is(50) MPa (D = diaxial, A = axial)	Core Length (mm) (30 100 300 1000 3000)	Defects	Defect Description
AUGERING			0.11	0		**CONCRETE**						
			0.2			**SANDY CLAY**; fine to medium grained sand, brown with orange, trace fine sized gravels						
						CLAY; medium to high plasticity, orange to brown mottled orange, with fine grained sand, trace fine sized gravels						
			0.8			**CLAY**; medium plasticity, orange to brown mottled orange, with fine grained sand, trace fine sized gravels						
			1	1.0		**SILTY CLAY**; low to medium plasticity, pale grey mottled red, trace fine gravels						
			1.5			**SILTY CLAY**; medium plasticity, pale grey mottled red, with fine grained sand, trace fine iron stone gravels						
				2.0		low to medium plasticity						
						hard						
			2.8			**SILTSTONE**; extremely weathered (XW), excavates as GRAVELLY SILTY CLAY; low to medium plasticity, fine to medium gravel, grey trace red and orange, trace iron stone	EW					
				3.0								
			4	4.0		**SILTSTONE**; extremely to highly weathered (XW/HW), very fine grained, dark grey and grey trace orange, with clay seams	HW/EW					
			4.5									

Logged By : JS Date : 15/11/23 | Checked By : Date :

CORED BOREHOLE LOG S1998.GPJ EXC.GDT 5/12/23

Fortify Geotech Pty Ltd

FORTIFY GEOTECH

Cored Borehole Log

Borehole No. **BH4**

2 of 5

CLIENT: Reditus Consulting

Job No. S1998

PROJECT: Proposed Mixed Use Development
849, 853, 859 Pacific Hwy, & 2 & 8 Wilson St, Chatswood

Location : See Report

Collar Level : Not Known
Angle From Horizontal : 90°
Bearing : N.A.

Drill Type :
Barrel Type, Length, Drilling fluid :

Method/Casing	R.Q.D./Lift	Water	RL (m)	Depth (m)	Graphic Log	Soil or Rock Substance Description	Degree of Weathering	Estimated Strength Range (VL L M H VH EH)	Is(50) MPa (D = diaxial, A = axial)	Core Length (mm) (30 100 300 1000 3000)	Defects	Defect Description
AUGERING						**SILTSTONE**; extremely to highly weathered (XW/HW), very fine grained, dark grey and grey trace orange, with clay seams						
				5.0			HW/EW					
			5.5			**GRAVELLY SILTY CLAY**; medium plasticity, grey with brown and orange-brown, with siltstone and ironstone bands						
NMLC CORING	0% 100%			**6.0**								
			6.4			**SILTY CLAY & SHALE**; highly weathered (HW), medium plasticity, grey with brown and orange-brown, alternating bands of clay and shale						
	0% 73%			**7.0**					D = 0.0 A = 1.4			
			7.3			CORE LOSS		CORE		LOSS		
			7.55			**SHALE**; highly to moderately weathered (HW/MW), very fine grained, dark grey trace orange, trace iron stain	MW/HW					joint, parting,0°, planar, rough, stained, trace iron staining joint, parting,0°, planar, rough, stained, trace iron staining joint, parting,0°, planar, rough, stained, trace iron staining joint, parting,0°, planar, rough, stained, trace iron staining joint, joint,30,10°, irregular, rough, , -
	0% 79%		8	**8.0**		**SILTY CLAY**; medium plasticity, grey						joint, parting,0°, planar, rough, stained, trace iron staining joint, parting,5°, planar, rough, stained, trace iron staining
			8.14			**SHALE**; highly to moderately weathered (HW/MW), very fine grained, dark grey trace orange, trace iron stain	MW/HW		D = 0.2 A = 1.2			joint, joint,0°, planar, rough, ,
			8.23									joint, parting,0°, planar, rough, veneer, trace clay
			8.32				HW					joint, parting,0°, planar, smooth, , -
												joint, parting,0°, planar, rough, veneer, trace clay joint, parting,0°, planar, rough, veneer, trace clay - joints, infilled seam,-°, -, -, clay seam joint, parting,0°, planar, smooth, ,
			8.55			**SILTY CLAY**; medium plasticity, grey	HW/EW					joint, joint,90,40°, irregular, rough, ,
			8.72									- joints, infilled seam,-°, -, -, clay seam joint, joint,5°, planar, smooth, ,
	29% 95%					**SHALE**; highly weathered (HW), very fine grained, dark grey, some iron stains	MW/HW					- joints, infilled seam,-°, -, -, clay seam joint, joint,80°, planar, rough, , -
			8.9				MW					- joints, extremely weathered seam,-°, -, -, - joint, parting,0°, planar, smooth, ,
				9.0								

Logged By : JS Date : 15/11/23 | Checked By : Date :

CORED BOREHOLE LOG S1998.GPJ EXC.GDT 5/12/23

FORTIFY GEOTECH

Cored Borehole Log

Borehole No. **BH4**

3 of 5

CLIENT: Reditus Consulting

Job No. S1998

PROJECT Proposed Mixed Use Development
849, 853, 859 Pacific Hwy, & 2 & 8 Wilson St, Chatswood

Location : See Report

Collar Level : Not Known
Angle From Horizontal : 90°
Bearing : N.A.

Drill Type :
Barrel Type, Length, Drilling fluid :

Method/Casing	R.Q.D./Lift	Water	RL (m)	Depth (m)	Graphic Log	Soil or Rock Substance Description	Degree of Weathering	Estimated Strength Range	Is(50) MPa (D = diaxial A = axial)	Core Length (mm)	Defects	Defect Description
NMLC CORING	29% 95%			10.0		**SHALE**; extremely to highly weathered (XW/HW), excavates as GRAVELLY SILTY CLAY, low plasticity, dark grey with orange **SHALE**; highly to moderately weathered (HW/MW), dark grey trace orange, some iron staining **SHALE**; moderately weathered (MW), very fine grained, dark grey, trace iron staining	MW		D = 5.5 A = 3.6 D = 15.1 A = 3.6			joint, parting,0°, planar, smooth, , - joint, parting,0°, planar, smooth, , - joint, parting,0°, planar, smooth, , - joint, parting,0°, planar, smooth, , - joint, parting,0°, planar, smooth, stained, trace iron staining joint, joint,50°, planar, smooth, stained, iron staining joint, joint,0°, planar, rough, , - joint, parting,0°, planar, smooth, , - joint, joint,80°, planar, smooth, , - joint, joint,0°, planar, rough, , - 3 joints, joint,70,0,5°, irregular, rough, , - joint, parting,0°, planar, smooth, , - joint, parting,0°, planar, smooth, , - joint, joint,0°, curved, smooth, , - 3 joints, joint,0°, irregular, rough, , - joint, joint,0,45,20°, irregular, rough, , - joint, joint,0°, planar, rough, , - Fractured and fragmented, - Fractured, - joint, joint,90°, planar, rough, , -
			10.68			CORE LOSS						Fractured and fragmented, - Fractured, - - joints, ,-°, -, -, , CORE LOSS
	28% 100%		10.8	11.0		**SHALE**; moderately to slightly weathered (MW/SW), very fine grained, dark grey	MW/SW		D = 11.0 A = 26.9 D = 25.9 A = 31.7			Fractured and fragmented, - joint, joint,70°, planar, rough, , - joint, joint,0°, curved, rough, , - joint, joint,5°, planar, smooth, , - joint, joint,80,5°, irregular, rough, , - joint, joint,0°, planar, smooth, , - joint, joint,5,45°, irregular, smooth, , - 3 joints, joint,45,20,30°, irregular, rough, , - joint, joint,0°, planar, rough, , - joint, parting,0°, planar, smooth, , - joint, parting,0°, planar, smooth, , - joint, joint,0°, planar, rough, , - Fractured, - joint, joint,0,40°, irregular, smooth, , - joint, joint,0,10°, irregular, rough, , - joint, joint,0°, planar, rough, , - joint, joint,20°, planar, smooth, , - joint, joint,10°, planar, smooth, , - joint, joint,30,0°, irregular, rough, , - Fractured and fragmented, - joint, parting,0°, planar, smooth, , - joint, joint,0,45°, irregular, smooth, , - joint, joint,45°, planar, smooth, , - joint, joint,10,20°, irregular, rough, , -
	57% 100%			12.0 13.0								joint, parting,0°, planar, slickensided, , - joint, parting,0°, planar, slickensided, , - joint, parting,0°, planar, slickensided, , - joint, parting,0°, planar, slickensided, , - joint, parting,0°, planar, slickensided, , - joint, parting,0°, planar, slickensided, , - joint, parting,0°, planar, slickensided, , - joint, parting,0°, planar, slickensided, , - joint, parting,0°, planar, slickensided, , - joint, joint,5°, planar, slickensided, , - joint, parting,0°, planar, slickensided, , - joint, parting,0°, planar, slickensided, , - joint, parting,0°, planar, slickensided, , - joint, parting,0°, planar, slickensided, , - joint, joint,5°, planar, slickensided, , - joint, parting,0°, planar, rough, , - joint, joint,5°, planar, slickensided, , -
			13.5									joint, joint,5°, planar, slickensided, -

Logged By : JS Date : 15/11/23 Checked By : Date :

CORED BOREHOLE LOG S1998.GPJ EXC.GDT 5/12/23

FORTIFY GEOTECH

Cored Borehole Log

Borehole No. **BH4**

CLIENT: Reditus Consulting

Job No. S1998

PROJECT: Proposed Mixed Use Development
849, 853, 859 Pacific Hwy, & 2 & 8 Wilson St, Chatswood

Location : See Report

Collar Level : Not Known
Angle From Horizontal : 90°
Bearing : N.A.

Drill Type :
Barrel Type, Length, Drilling fluid :

Method/Casing	R.Q.D./Lift	Water	RL (m)	Depth (m)	Graphic Log	Soil or Rock Substance Description	Degree of Weathering	Estimated Strength Range	Is(50) MPa (D = diaxial, A = axial)	Core Length (mm)	Defects	Defect Description
NMLC CORING	57% 100%		14.25	14.0		**SHALE**; moderately to slightly weathered (MW/SW), very fine grained, dark grey	MW/SW		D = 2.6 A = 23.5			2 joints, parting,0°, planar, slickensided, , - joint, parting,5°, planar, slickensided, , - joint, joint,5°, stepped, slickensided, , - joint, parting,5°, planar, slickensided, , -
						SHALE; slightly weathered to fresh (SW/FR), very fine grained, dark grey						joint, joint,5°, planar, slickensided, , - joint, joint,5°, planar, slickensided, , -
	71% 100%			15.0			FR/SW		D = 22.8 A = 33.8			joint, parting,0°, planar, slickensided, , -
												joint, parting,0°, planar, slickensided, , -
				16.0					D = 18.5 A = 48.5			joint, parting,0°, planar, slickensided, , - joint, joint,30°, planar, smooth, , -
			16.4			**SHALE**; slightly weathered (SW), very fine grained, dark grey	SW					2 joints, joint,0,40°, irregular, smooth, , - joint, parting,0°, planar, smooth, , - joint, joint,0,30°, planar, smooth, , - joint, joint,0,20°, planar, rough, , - joint, joint,60°, irregular, rough, , - joint, parting,0°, planar, rough, , - joint, joint,60°, irregular, rough, , - joint, joint,10°, planar, rough, , - joint, joint,20,0°, planar, rough, , - joint, joint,10,20°, irregular, rough, , - joint, parting,10°, planar, -, , CLOSED joint, parting,10°, planar, -, , CLOSED joint, parting,5°, planar, smooth, , - joint, parting,5°, planar, smooth, , - Fractured and fragmented, -
				17.0								joint, joint,10,0°, irregular, rough, , -
	79% 100%		17.55			**SHALE**; slightly weathered to fresh (SW/FR), very fine grained, dark grey	FR/SW		D = 53.0 A = 53.8			joint, parting,0°, planar, slickensided, , - joint, joint,45,10°, planar, rough, , - joint, joint,0°, planar, slickensided, , -
				18.0								joint, joint,0°, planar, slickensided, , -

Logged By : JS Date : 15/11/23 | Checked By : Date :

CORED BOREHOLE LOG S1998.GPJ EXC.GDT 5/12/23

FORTIFY GEOTECH

Cored Borehole Log

Borehole No. **BH4**

5 of 5

Job No. S1998

CLIENT: Reditus Consulting

PROJECT: Proposed Mixed Use Development
849, 853, 859 Pacific Hwy, & 2 & 8 Wilson St, Chatswood

Location : See Report

Collar Level : Not Known
Angle From Horizontal : 90°
Bearing : N.A.

Drill Type :
Barrel Type, Length, Drilling fluid :

Method/Casing	R.Q.D./Lift	Water	RL (m)	Depth (m)	Graphic Log	Soil or Rock Substance Description	Degree of Weathering	Estimated Strength Range (VL L M H VH EH)	Is(50) MPa (D = diaxial, A = axial)	Core Length (mm) (30 100 300 1000 3000)	Defects	Defect Description
NMLC CORING	79% 100%			19.0		**SHALE**; slightly weathered to fresh (SW/FR), very fine grained, dark grey	FR/SW		D = 27.4 A = 54.7 D = 12.5 A = 66.5			joint, joint,0°, planar, slickensided, , - joint, joint,0°, planar, slickensided, , - joint, joint,0°, planar, slickensided, , - joint, joint,0,40°, irregular, rough, , - joint, parting,0°, planar, slickensided, , - joint, joint,0,15°, planar, smooth, , - joint, parting,0°, planar, slickensided, , - joint, parting,0°, planar, slickensided, , - joint, parting,0°, planar, slickensided, , - joint, joint,0,25°, planar, smooth, , - joint, parting,0,25°, planar, smooth, , - joint, parting,0,25°, planar, smooth, , - 3 joints, joint,0,70°, planar, rough, , -
			19.98	20.0		BOREHOLE TERMINATED AT 19.98m At Target						
				21.0								
				22.0								
			22.5									

Logged By : JS Date : 15/11/23 | Checked By : Date :

CORED BOREHOLE LOG S1998.GPJ EXC.GDT 5/12/23

Fortify Geotech Pty Ltd

FORTIFY GEOTECH

Cored Borehole Log

Borehole No.	BH5
	1 of 4

CLIENT:	Reditus Consulting	Job No.	S1998
PROJECT	Proposed Mixed Use Development 849, 853, 859 Pacific Hwy, & 2 & 8 Wilson St, Chatswood	Location : See Report	
Drill Type : Barrel Type, Length, Drilling fluid :		Collar Level : Not Known Angle From Horizontal : 90° Bearing : N.A.	

Method/Casing	R.Q.D./Lift	Water	RL (m)	Depth (m)	Graphic Log	Soil or Rock Substance Description	Degree of Weathering	Estimated Strength Range (VL L M H VH EH)	Is(50) MPa (D = diaxial, A = axial)	Core Length (mm) (30 100 300 1000 3000)	Defects	Defect Description
AUGERING			0.2			**SILTY SAND/ SANDY SILT**; fine to medium grained, dark brown, trace fine to coarse gravels, grass roots at surface						
			0.6			**CLAYEY SILTY SAND**; fine to medium grained, low plasticity, brown trace orange and grey, trace fine gravels						
				1.0		**SANDY CLAY**; medium to high plasticity, fine grained, red to brown mottled pale orange						
			1.2			**CLAY with SAND**; medium to high plasticity, fine grained, pale grey mottled red and orange, trace fine to medium gravels						
				2.0		**SILTY CLAY trace SAND**; medium plasticity, fine grained, pale grey mottled red, trace orange, trace fine gravels						
			2.8			**SILTY CLAY trace SAND**; low plasticity, fine grained, pale grey trace orange and red, trace ironstone gravels						
				3.0								
			3.2			**SILTSTONE**; extremely weathered (XW), excavates as GRAVELLY SILTY CLAY; low plasticity, fine to medium gravels, pale grey with red and orange						
				4.0			EW					
			5.0									

Logged By : JS	Date : 16/11/23	Checked By :	Date :

CORED BOREHOLE LOG S1998.GPJ EXC.GDT 5/12/23

FORTIFY GEOTECH

Cored Borehole Log

Borehole No.	**BH5**
	2 of 4
Job No.	S1998

CLIENT: Reditus Consulting

PROJECT: Proposed Mixed Use Development
849, 853, 859 Pacific Hwy, & 2 & 8 Wilson St, Chatswood

Location : See Report

Collar Level : Not Known
Angle From Horizontal : 90°
Bearing : N.A.

Drill Type :
Barrel Type, Length, Drilling fluid :

Method/Casing	R.Q.D./Lift	Water	RL (m)	Depth (m)	Graphic Log	Soil or Rock Substance Description	Degree of Weathering	Estimated Strength Range (VL, L, M, H, VH, EH)	Is(50) MPa (D = diaxial, A = axial)	Core Length (mm) (30, 100, 300, 1000, 3000)	Defects	Defect Description
AUGERING			6	6.0		**SILTSTONE**; extremely weathered (XW), excavates as GRAVELLY SILTY CLAY; low plasticity, fine to medium gravels, pale grey with red and orange	EW					
				7.0		**SILTY CLAY & SHALE**; highly weathered (HW), medium plasticity, grey with brown and orange-brown, alternating bands of clay and shale	HW					
			7.5	8.0		**SHALE**; highly weathered (HW), very fine grained, dark grey	HW					
			8.4			**SHALE** highly to moderately weathered (HW/MW), very fine grained, dark grey	HW/MW					
NMLC CORING			8.85			**SILTY CLAY**; dark grey,	EW					, extremely weathered seam,-°, -, -, -, -
	54% 100%		9	9.0		**SHALE**; moderately weathered (MW), very fine grained, dark grey, trace iron staining	MW		D = 12.7 A = 11.0			joint, joint,0°, irregular, rough, , -
			9.33									joint, joint,0°, planar, rough, , -
			9.4				HW					joint, joint,0°, planar, rough, , -
			9.44			**SHALE**; highly weathered (HW), very fine grained, dark grey, trace iron staining	EW					Fractured and fragmented, -
							MW					- joints, extremely weathered seam,-°, -, -, , -
	76% 100%		9.6			**SILTY CLAY**; dark grey,						5 joints, joint,0,80°, irregular, rough, , -
						SHALE; moderately weathered (MW), very fine grained, dark	MW/SW					Fractured and fragmented, -
			10.0									joint, joint,-°, curved, -, , CLOSED
												joint, parting,0°, planar, smooth, , -

Logged By : JS Date : 16/11/23 | Checked By : Date :

CORED BOREHOLE LOG S1998.GPJ EXC.GDT 5/12/23

FORTIFY GEOTECH

Cored Borehole Log

Borehole No. **BH5**

3 of 4

Job No. S1998

CLIENT: Reditus Consulting

PROJECT: Proposed Mixed Use Development
849, 853, 859 Pacific Hwy, & 2 & 8 Wilson St, Chatswood

Location : See Report

Collar Level : Not Known
Angle From Horizontal : 90°
Bearing : N.A.

Drill Type :
Barrel Type, Length, Drilling fluid :

Method/Casing	R.Q.D./Lift	Water	RL (m)	Depth (m)	Graphic Log	Soil or Rock Substance Description	Degree of Weathering	Estimated Strength Range	Is(50) MPa (D = diaxial, A = axial)	Core Length (mm)	Defects	Defect Description
NMLC CORING	76% 100%		10.05	11.0		grey, trace iron staining **SHALE**; moderately to slightly weathered (MW/SW), very fine grained, dark grey, trace iron staining **SHALE**; slightly weathered (SW), very fine grained, dark grey, trace iron staining	SW		D = 4.1 A = 3.6 D = 3.4 A = 12.2			joint, joint,70,0°, irregular, smooth, , - joint, parting,0°, planar, slickensided, , - joint, parting,0°, planar, slickensided, , - joint, parting,0°, planar, slickensided, , - joint, parting,0°, planar, slickensided, , - joint, parting,0°, planar, smooth, , - joint, parting,0°, planar, smooth, veneer, CLAY VENEER joint, parting,0°, planar, smooth, veneer, CLAY VENEER joint, parting,0°, planar, rough, , - joint, parting,0°, planar, rough, veneer, CLAY VENEER joint, parting,0°, planar, smooth, , -
				12.0			MW/SW		D = 1.7 A = 26.9			joint, parting,0°, planar, smooth, , - joint, parting,0°, planar, smooth, , - joint, parting,0°, planar, smooth, , - joint, parting,0°, planar, smooth, , - joint, parting,0°, planar, rough, , - joint, parting,0°, planar, rough, , - joint, parting,0°, planar, smooth, , - joint, parting,0°, planar, smooth, , - Fractured and fragmented, -
	38% 89%		13	13.0		**SHALE**; moderately to slightly weathered (MW/SW), very fine grained, dark grey, trace iron staining	MW/SW		D = 18.0 A = 37.0			joint, parting,0°, planar, smooth, , - joint, parting,0°, planar, slickensided, , - joint, parting,0°, planar, smooth, , - joint, parting,0°, planar, smooth, , - joint, joint,0°, irregular, rough, , - joint, joint,80°, irregular, rough, , - joint, parting,0°, planar, smooth, , -
			13.48			CORE LOSS						joint, parting,0°, planar, slickensided, , - - joints, ,-°, -, -, , CORE LOSS
			13.74	14.0		**SHALE**; moderately to slightly weathered (MW/SW), very fine grained, dark grey, trace iron staining	EW					Fractured and fragmented, - joint, parting,0°, planar, rough, , - joint, joint,90°, irregular, -, , CORE LOSS Fractured and fragmented, -
									D = 4.8 A = 7.7			joint, joint,0°, irregular, rough, , -
			14.37									6 joints, joint,0,70,30°, irregular, rough, , -
	0% 100%		14.44			**SILTY CLAY**; dark grey, **SHALE**; moderately weathered (MW), very fine grained, dark grey, trace iron staining	MW					Fractured and fragmented, - joint, joint,30,45°, irregular, rough, , - Fractured and fragmented, -
	32% 100%		14.75				HW/MW					Fractured, -
			15.0									

Logged By : JS Date : 16/11/23 | Checked By : Date :

CORED BOREHOLE LOG S1998.GPJ EXC.GDT 5/12/23

FORTIFY GEOTECH

Cored Borehole Log

Borehole No. **BH5**

4 of 4

Job No. S1998

CLIENT: Reditus Consulting

PROJECT: Proposed Mixed Use Development
849, 853, 859 Pacific Hwy, & 2 & 8 Wilson St, Chatswood

Location : See Report

Collar Level : Not Known
Angle From Horizontal : 90°
Bearing : N.A.

Drill Type :
Barrel Type, Length, Drilling fluid :

Method/Casing	R.Q.D./Lift	Water	RL (m)	Depth (m)	Graphic Log	Soil or Rock Substance Description	Degree of Weathering	Estimated Strength Range (VL L M H VH EH)	Is(50) MPa (D = diaxial, A = axial)	Core Length (mm) (30 100 300 1000 3000)	Defects	Defect Description
NMLC CORING	32% 100%		15.1			**SHALE**; highly to moderately weathered (HW/MW), very fine grained, dark grey, trace iron staining	HW/MW		D = 32.2 A = 37.4			
						SHALE; moderately to slightly weathered (MW/SW), very fine grained, dark grey, trace iron staining	MW/SW					
			16	16.0		**SHALE**; slightly weathered (SW), very fine grained, dark grey, trace iron staining			D = 16.3 A = 19.0			
	42% 100%			17.0			SW		D = 24.0 A = 23.5			Fractured and fragmented, - Fractured and fragmented, - Fractured and fragmented, - joint, joint,0°, planar, rough, , - joint, joint,0°, planar, smooth, , - joint, joint,0°, planar, smooth, , - joint, joint,30°, planar, rough, , - - joints, extremely weathered seam,-°, -, -, -, - joint, joint,0°, planar, rough, veneer, CLAY VENEER joint, joint,0,80°, irregular, rough, , - joint, parting,0°, planar, slickensided, , - - joints, extremely weathered seam,-°, -, -, -, - joint, parting,0°, planar, smooth, , -
				18.0					D = 11.3 A = 23.8			Fractured and fragmented, - joint, joint,60°, planar, rough, , - joint, parting,0°, planar, rough, , - joint, joint,70°, planar, rough, , - joint, parting,0°, planar, smooth, , - joint, parting,0°, planar, smooth, , - joint, parting,0°, planar, slickensided, , - joint, parting,0°, planar, smooth, , - joint, parting,0°, planar, slickensided, , - joint, parting,0°, planar, slickensided, , - joint, parting,0°, planar, slickensided, , - joint, parting,0°, planar, slickensided, , - joint, parting,0°, planar, slickensided, , - joint, parting,0°, planar, rough, , - joint, parting,0°, planar, slickensided, , - joint, parting,0°, planar, slickensided, , - joint, parting,0°, planar, slickensided, , - joint, parting,0°, planar, slickensided, , -
			18.96	19.0		BOREHOLE TERMINATED AT 18.96m At Target						joint, parting,0°, planar, smooth, , - joint, parting,0°, planar, rough, , - 5 joints, parting,80,0°, irregular, rough, , - joint, joint,45,90°, irregular, rough, , - joint, joint,0,45°, irregular, rough, , - joint, joint,0°, planar, rough, , - joint, joint,0,45°, irregular, rough, , - joint, parting,0°, planar, rough, , - joint, parting,0°, planar, rough, , - joint, parting,0°, planar, smooth, , - joint, parting,0°, planar, smooth, , - joint, parting,0°, planar, smooth, , - joint, parting,0°, planar, slickensided, , - joint, parting,0°, planar, slickensided, , - joint, parting,0°, planar, slickensided, , - joint, parting,0°, planar, slickensided, , - joint, parting,0°, planar, slickensided, , -
				20.0								

CORED BOREHOLE LOG S1998.GPJ EXC.GDT 5/12/23

Logged By : JS Date : 16/11/23 | Checked By : Date :

Fortify Geotech Pty Ltd

FORTIFY GEOTECH

Cored Borehole Log

Borehole No. **BH6**

1 of 5

CLIENT:	Reditus Consulting
PROJECT	Proposed Mixed Use Development 849, 853, 859 Pacific Hwy, & 2 & 8 Wilson St, Chatswood

Job No. S1998

Location : See Report

Collar Level : Not Known
Angle From Horizontal : 90°
Bearing : N.A.

Drill Type :
Barrel Type, Length, Drilling fluid :

Method/Casing	R.Q.D./Lift	Water	RL (m)	Depth (m)	Graphic Log	Soil or Rock Substance Description	Degree of Weathering	Estimated Strength Range (VL, L, M, H, VH, EH)	Is(50) MPa (D = diaxial, A = axial)	Core Length (mm) (30, 100, 300, 1000, 3000)	Defects	Defect Description
AUGERING			0.2			**SANDY SILT/ SILTY SAND**; fine to medium grained, dark brown, trace fine to medium gravels, grass roots at surface						
			0.4			**SANDY CLAY/ CLAYEY SAND**; fine to coarse grained, low to medium plasticity, brown trace grey, trace anthropogenic material (bricks),						
			0.8			**SANDY CLAY**; medium to high plasticity, fine grained, orange to brown mottled orange, trace fine gravels						
			1.2	1.0		**SANDY CLAY**; medium to high plasticity, fine to medium grained, pale grey mottled red trace orange, trace fine gravels						
						SILTY CLAY trace SAND; medium plasticity, fine grained, pale grey mottled red trace orange, some iron staining pale grey trace red and orange						
				2.0								
				3.0		**SILTSTONE**; extremely weathered (XW), excavates as GRAVELLY SILTY CLAY; low plasticity, fine to medium gravels, pale grey with red and orange	EW					
				4.0								
			4.5									

Logged By : JS Date : 17/11/23 | Checked By : Date :

CORED BOREHOLE LOG S1998.GPJ EXC.GDT 5/12/23

Fortify Geotech Pty Ltd

FORTIFY GEOTECH

Cored Borehole Log

Borehole No. **BH6**

2 of 5

Job No. S1998

CLIENT: Reditus Consulting

PROJECT: Proposed Mixed Use Development
849, 853, 859 Pacific Hwy, & 2 & 8 Wilson St, Chatswood

Location : See Report

Collar Level : Not Known
Angle From Horizontal : 90°
Bearing : N.A.

Drill Type :
Barrel Type, Length, Drilling fluid :

Method/Casing	R.Q.D./Lift	Water	RL (m)	Depth (m)	Graphic Log	Soil or Rock Substance Description	Degree of Weathering	Estimated Strength Range (VL L M H VH EH)	Is(50) MPa (D = diaxial, A = axial)	Core Length (mm) (30 100 300 1000 3000)	Defects	Defect Description
AUGERING				5.0		**SILTSTONE**; extremely weathered (XW), excavates as GRAVELLY SILTY CLAY; low plasticity, fine to medium gravels, pale grey with red and orange	EW					
				6.0								
			6.5			**SILTY CLAY & SHALE**; highly weathered (HW), medium plasticity, grey with brown and orange-brown, alternating bands of clay and shale	HW					
				7.0								
			7.5			**SHALE**; highly weathered (HW), very fine grained, dark grey to black						
			8	8.0		**SHALE**; highly to moderately weathered (HW/MW), very fine grained, dark grey to black	MW/HW					
			8.6			CORE LOSS		CORE		LOSS		
			9.0									

Logged By : JS Date : 17/11/23 | Checked By : Date :

CORED BOREHOLE LOG S1998.GPJ EXC.GDT 5/12/23

FORTIFY GEOTECH

Cored Borehole Log

Borehole No. **BH6**

3 of 5

Job No. S1998

CLIENT: Reditus Consulting

PROJECT: Proposed Mixed Use Development
849, 853, 859 Pacific Hwy, & 2 & 8 Wilson St, Chatswood

Location : See Report

Collar Level : Not Known
Angle From Horizontal : 90°
Bearing : N.A.

Drill Type :
Barrel Type, Length, Drilling fluid :

Method/Casing	R.Q.D./Lift	Water	RL (m)	Depth (m)	Graphic Log	Soil or Rock Substance Description	Degree of Weathering	Estimated Strength Range (VL L M H VH EH)	Is(50) MPa (D = diaxial, A = axial)	Core Length (mm) (30 100 300 1000 3000)	Defects	Defect Description
						CORE LOSS		CORE		LOSS		
NMLC CORING			9.2			**SHALE**; moderately weathered shale (MW), dark grey, very fine grained						3 joints, joint,80,0°, irregular, rough, , -
												joint, parting,80°, planar, rough, , -
												joint, joint,0°, planar, rough, , -
												joint, joint,90,80°, irregular, rough, , -
												joint, parting,0°, planar, smooth, , -
												joint, parting,0°, planar, smooth, , -
												joint, parting,0°, planar, smooth, , -
												joint, parting,0°, planar, smooth, , -
												joint, parting,0°, planar, -, CO, XW infill
									D = 6.2			joint, parting,0°, planar, rough, , -
									A = 26.4			joint, joint,90,80°, undulating, rough, , -
												joint, parting,0°, planar, smooth, , -
				10.0								joint, parting,0°, planar, rough, , -
												joint, joint,70,90,45°, irregular, rough, , -
	47% 100%						MW/SW					joint, parting,0°, planar, rough, , -
												joint, parting,0°, planar, smooth, , -
									D = 3.8			joint, parting,0°, planar, smooth, , -
									A = 7.4			joint, parting,0°, planar, rough, , -
				11.0								Fractured and fragmented, -
			11.2			**SHALE**; moderately to slightly weathered shale (MW/SW), dark grey, very fine grained	MW					joint, parting,0°, planar, rough, , -
												7 joints, parting,0°, planar, rough, , -
												2 joints, parting,0°, planar, rough, , -
												joint, parting,0°, planar, smooth, , -
												joint, parting,0°, planar, smooth, , -
												joint, parting,0°, planar, rough, , -
												5 joints, parting,0°, planar, smooth, , -
												3 joints, parting,0°, planar, smooth, , -
			11.65			**SHALE**; slightly weathered shale (SW), dark grey, very fine grained						joint, parting,0°, planar, smooth, , -
												joint, parting,0°, planar, smooth, , -
												joint, parting,0°, planar, smooth, , -
												joint, parting,0°, planar, smooth, , -
									D = 17.3			joint, joint,0,45°, planar, rough, , -
									A = 31.0			joint, parting,0°, planar, rough, , -
				12.0								joint, joint,45°, planar, smooth, , -
							SW					joint, parting,0°, planar, smooth, , -
	24% 100%											joint, parting,0°, planar, rough, , -
			12.75									2 joints, parting,0°, planar, smooth, , -
												- joints, extremely weathered seam,-°, -, -, -, -
						SHALE; moderately to slightly weathered shale (MW/SW), dark grey, very fine grained						joint, parting,0°, planar, smooth, , -
												- joints, extremely weathered seam,-°, -, -, -, -
												- joints, extremely weathered seam,-°, -, -, -, -
				13.0								2 joints, parting,0°, planar, rough, , -
												- joints, extremely weathered seam,-°, -, -, -, -
							MW/SW		D = 34.6			joint, parting,0°, planar, smooth, , -
									A = 40.3			joint, parting,0°, planar, rough, , -
												joint, parting,0°, planar, rough, , -
												joint, parting,80°, planar, rough, , -
												joint, parting,0°, planar, smooth, , -
												joint, parting,0°, planar, smooth, , -
			13.5									4 joints, joint,0,90°, irregular, rough, , -

Logged By : JS Date : 17/11/23 | Checked By : Date :

CORED BOREHOLE LOG S1998.GPJ EXC.GDT 5/12/23

FORTIFY GEOTECH

Cored Borehole Log

Borehole No. **BH6**

4 of 5

CLIENT: Reditus Consulting

Job No. S1998

PROJECT Proposed Mixed Use Development
849, 853, 859 Pacific Hwy, & 2 & 8 Wilson St, Chatswood

Location : See Report

Collar Level : Not Known
Angle From Horizontal : 90°
Bearing : N.A.

Drill Type :
Barrel Type, Length, Drilling fluid :

Method/Casing	R.Q.D./Lift	Water	RL (m)	Depth (m)	Graphic Log	Soil or Rock Substance Description	Degree of Weathering	Estimated Strength Range	Is(50) MPa (D = diaxial A = axial)	Core Length (mm)	Defects	Defect Description
NMLC CORING	24% 100%					**SHALE**; moderately to slightly weathered shale (MW/SW), dark grey, very fine grained	MW/SW					5 joints, joint,90,0°, irregular, rough, , - joint, parting,0°, planar, smooth, , - - joints, extremely weathered seam,-°, -, -, , - 2 joints, parting,0°, planar, rough, , - joint, parting,0°, planar, smooth, , - joint, parting,0°, planar, rough, , - joint, parting,0°, planar, smooth, , - joint, parting,0°, planar, smooth, , - joint, parting,0°, planar, smooth, , - joint, parting,0°, planar, smooth, , - joint, parting,0°, planar, rough, , - - joints, extremely weathered seam,-°, -, -, , -
				14.0					D = 29.8 A = 33.4			
			14.3			**SHALE**; slightly weathered shale (SW), dark grey, very fine grained						joint, parting,0°, planar, smooth, , - Fractured and fragmented, - joint, joint,0,60°, irregular, rough, , - joint, parting,0°, planar, rough, , - joint, parting,0°, planar, smooth, , - joint, parting,0°, planar, rough, , - joint, parting,0°, planar, rough, , - joint, parting,0°, planar, rough, , - joint, parting,0°, planar, rough, , - - joints, extremely weathered seam,-°, -, -, , - joint, parting,0°, planar, smooth, , - joint, parting,0°, planar, smooth, , - joint, parting,0°, planar, smooth, , -
	22% 100%			15.0								joint, parting,0°, planar, smooth, , - joint, parting,0°, planar, smooth, , -
												joint, joint,80,90,0°, irregular, rough, , - joint, parting,0°, planar, rough, , - joint, parting,0°, planar, smooth, , - joint, parting,0°, planar, rough, , - joint, parting,0°, planar, rough, , - joint, parting,0°, planar, rough, , - joint, parting,0°, planar, smooth, , - joint, parting,0°, planar, rough, , - joint, parting,0°, planar, rough, , - joint, parting,0°, planar, smooth, , -
									D = 1.4 A = 15.8			joint, parting,0°, planar, rough, , - joint, parting,0°, planar, rough, , - joint, joint,0,80°, irregular, rough, , -
				16.0								joint, parting,0°, planar, smooth, , - joint, joint,90°, planar, rough, , - joint, parting,0°, planar, smooth, , - joint, parting,0°, planar, smooth, , - joint, parting,0°, planar, rough, , - joint, parting,0°, planar, rough, , - joint, parting,0°, planar, smooth, , - joint, parting,0°, planar, smooth, , - joint, parting,0°, planar, smooth, , - joint, parting,0°, planar, smooth, , -
	21% 100%			17.0					D = 1.2 A = 25.2			joint, parting,0°, planar, smooth, , - joint, parting,0°, planar, rough, , - joint, parting,0°, planar, rough, , - joint, parting,0°, planar, smooth, , - joint, joint,60°, planar, smooth, , - 4 joints, joint,0,30,80°, irregular, rough, , - joint, parting,0°, planar, rough, , - joint, joint,45°, planar, rough, , - joint, parting,0°, planar, smooth, , - joint, parting,0°, planar, smooth, veneer, clay veneer joint, parting,0°, planar, smooth, , - joint, parting,0°, planar, rough, , - joint, parting,0°, planar, smooth, , - joint, parting,0°, planar, smooth, , - joint, parting,0°, planar, slickensided, , - joint, parting,0°, planar, slickensided, , -
			17.5			**SHALE**; moderately to slightly weathered shale (MW/SW), dark grey, very fine grained	MW/SW					Fractured and fragmented, -
	51% 100%		17.8				SW					joint, joint,60,10,0°, irregular, rough, , - Fractured and fragmented, - joint, joint,20,0°, irregular, rough, , - 3 joints, joint,30,0°, irregular, rough, , - joint, parting,0°, planar, smooth, , - joint, parting,0°, planar, smooth, , -
			18.0									

Logged By : JS Date : 17/11/23 Checked By : Date :

CORED BOREHOLE LOG S1998.GPJ EXC.GDT 5/12/23

FORTIFY GEOTECH

Cored Borehole Log

Borehole No. **BH6**

5 of 5

Job No. S1998

CLIENT: Reditus Consulting

PROJECT: Proposed Mixed Use Development
849, 853, 859 Pacific Hwy, & 2 & 8 Wilson St, Chatswood

Location : See Report

Collar Level : Not Known
Angle From Horizontal : 90°
Bearing : N.A.

Drill Type :
Barrel Type, Length, Drilling fluid :

Method/Casing	R.Q.D./Lift	Water	RL (m)	Depth (m)	Graphic Log	Soil or Rock Substance Description	Degree of Weathering	Estimated Strength Range (VL L M H VH EH)	Is(50) MPa (D = diaxial, A = axial)	Core Length (mm) (30 100 300 1000 3000)	Defects	Defect Description
NMLC CORING	51% 100%			19.0		**SHALE**; slightly weathered shale (SW), dark grey, very fine grained	SW		D = 9.8 A = 34.3			joint, parting,0°, planar, smooth, , - 2 joints, parting,5°, planar, rough, , - joint, joint,45,0°, planar, rough, , - joint, parting,0°, planar, smooth, , - joint, parting,0°, planar, smooth, , - joint, parting,0°, planar, rough, , - joint, parting,0°, planar, smooth, , - joint, joint,60°, planar, rough, , - joint, parting,0°, planar, smooth, , - joint, parting,0°, planar, rough, , - joint, parting,5°, planar, smooth, , - joint, parting,5°, planar, rough, , - joint, parting,0°, planar, rough, , - 2 joints, joint,30°, planar, rough, , - joint, joint,0,60°, planar, rough, , - joint, joint,0,85°, stepped, smooth, , - joint, joint,60°, planar, rough, , - joint, parting,0°, planar, rough, , - joint, joint,45°, planar, rough, , - joint, parting,5°, planar, smooth, , - joint, parting,5°, planar, smooth, , -
			19.85									
				20.0		BOREHOLE TERMINATED AT 19.85m At Target			D = 26.9 A = 52.3			
				21.0								
				22.0								
			22.5									

Logged By : JS Date : 17/11/23 | Checked By : Date :

CORED BOREHOLE LOG S1998.GPJ EXC.GDT 5/12/23

FORTIFY GEOTECH

Cored Borehole Log

Borehole No.	**BH7**
	1 of 3
CLIENT:	BB Wilson Property Pty Ltd
Job No.	S2207
PROJECT	Proposed Mixed-Use Development 849, 853 & 859 Pacific Highway, 2 & 8 Wilson Street, Chatswood
Location :	See Report
Collar Level :	Not Known
Angle From Horizontal :	90°
Bearing :	N.A.
Drill Type :	BG Drilling Hanjin 8D
Barrel Type, Length, Drilling fluid :	

Method/Casing	R.Q.D./Lift	Water	RL (m)	Depth	Graphic Log	Soil or Rock Substance Description	Degree of Weathering	Estimated Strength Range (VL L M H VH EH)	Is(50) MPa (D = diaxial, A = axial)	Core Length (mm) (30 100 300 1000 3000)	Defects	Defect Description
AUGERING			0.2			**CONCRETE**						
			0.6	1		**Sandy GRAVEL;** Fine to coarse gravel, fine to coarse sand, pale brown trace cobbles with low plasticity clay						
			1.0			**Sandy CLAY;** Low plasticity clay, black trace red, fine to coarse sand						
				2		**CLAY;** Medium plasticity, red and orange trace fine gravels						
			2.0			**CLAY;** Medium plasticity, pale red mottles grey, trace fine gravels						
				3								
			3.0			**Gravelly CLAY;** Low plasticity clay, pale grey and purple mottled and red, fine gravel						
				4								
			4.0			becoming pale grey with purple and red						
				5								
			5.0									
			5.5									
NMLC CORING	47% 100%		5.82	6		**SHALE**; extremely weathered (XW), fine grained, iron staining	EW		D = 0.4 A = 0.7			- joints, PT,0°, PL, RO, -, -
			6.0			**SHALE**; highly to moderately weathered (HW/MW), very fine grained, dark grey						- joints, PT,2°, PL, RO, -, - - joints, PT,2°, PL, RO, -, - - joints, PT,0°, PL, SO, -, - - joints, PT,0°, PL, SO, , - - joints, JT,45°, CU, SO, veneer, - - joints, PT,0°, PL, SO, -, - - joints, PT,0°, PL, SO, -, - - joints, JT,5°, IR, VR, -, - - joints, PT,0°, PL, SO, -, - - joints, PT,0°, PL, SO, -, - 3 joints, JT,90°, PL, SO, -, - Fractured and fragmented, - Fragmented, - - joints, PT,0°, PL, SO, -, - - joints, JT,2°, IR, VR, -, - - joints, JT,0, 45, 10°, ST, SO, -, - - joints, PT,0°, PL, SO, stained, - - joints, PT,3°, PL, SO, -, -
				7			HW/MW		D = 0.5 A = 0.5			
	49% 100%		7.0									
				8								
			8.0									
			8.19			**SHALE**; moderately weathered (MW), very fine grained, dark grey	MW		D = 1.4 A = 1.8			Fragmented, - - joints, PT,0°, PL, RO, stained, - - joints, PT,2°, PL, RO, stained, - - joints, PT,0°, PL, SO, veneer, - , PT,2°, PL, SO, veneer, - - joints, PT,0°, PL, SO, -, -
			9.02	9		**SHALE**; moderately to slightly weathered (MW/SW), very fine grained, dark grey	SW					- joints, JT,90,45,45°, UN, RO, -, - - joints, PT,0°, PL, SO, -, - - joints, PT,0°, PL, SO, -, - - joints, JT,90/45°, IR, SO, -, - - joints, PT,0°, PL, RO, -, - - joints, PT,0°, PL, RO, -, - - joints, JT,0°, PL, RO, -, - - joints, PT,0°, PL, SO, -, - - joints, JT,0°, PL, RO, -, - - joints, JT,90,45°, IR, RO, -, -
	68% 100%											
			10.0									

Logged By : JOR Date : 19/9/24 | Checked By : JOE Date : 15/10/24

CORED BOREHOLE LOG S2207.GPJ EXC.GDT 30/10/24

FORTIFY GEOTECH

Cored Borehole Log

Borehole No. **BH7**

2 of 3

Job No. S2207

CLIENT: BB Wilson Property Pty Ltd

PROJECT: Proposed Mixed-Use Development
849, 853 & 859 Pacific Highway, 2 & 8 Wilson Street, Chatswood

Location : See Report

Collar Level : Not Known
Angle From Horizontal : 90°
Bearing : N.A.

Drill Type : BG Drilling Hanjin 8D
Barrel Type, Length, Drilling fluid :

Method/Casing	R.Q.D./Lift	Water	RL (m)	Depth	Graphic Log	Soil or Rock Substance Description	Degree of Weathering	Estimated Strength Range	Is(50) MPa (D = diaxial, A = axial)	Core Length (mm)	Defects	Defect Description
NMLC CORING	68% 100%			11.0		**SHALE**; moderately to slightly weathered (MW/SW), very fine grained, dark grey	SW		D = 1.4 A = 1.1			- joints, PT,0°, PL, RO, -, - - joints, JT,0,5°, UN, RO, -, - - joints, JT,0,5°, UN, RO, -, - - joints, JT,0°, UN, RO, -, - - joints, JT,0,60°, ST, RO, -, - - joints, JT,35°, IR, RO, -, - - joints, JT,0,5°, UN, RO, -, - - joints, PT,0°, PL, RO, -, - - joints, JT,0-5°, IR, RO, -, - - joints, JT,0,5°, IR, RO, -, - - joints, PT,0°, PL, RO, -, -
			12.00	12.0		**SHALE**; slight weathered (SW), fine grained, dark grey			D = 4.4 A = 10.0			- joints, PT,0°, PL, RO, -, - - joints, JT,80°, IR, RO, -, - - joints, JT,45°, IR, RO, -, - - joints, PT,0°, PL, RO, -, - - joints, JT,35°, IR, RO, -, - - joints, JT,35°, IR, RO, -, - - joints, JT,0°, PL, RO, -, - - joints, JT,0°, PL, RO, -, - - joints, JT,0-5°, UN, RO, -, - - joints, JT,0-5°, UN, RO, -, -
	68% 100%			13.0			SW		D = 1.9 A = 3.7			- joints, PT,0°, PL, RO, -, - - joints, PT,0°, PL, RO, -, - - joints, PT,0°, PL, RO, -, - - joints, JT,5°, PL, SO, -, - - joints, PT,0°, PL, SO, -, - - joints, JT,5°, PL, RO, -, - - joints, PT,0°, PL, RO, -, - - joints, PT,0°, PL, RO, -, - - joints, PT,0°, PL, RO, -, - - joints, PT,0°, PL, RO, -, - - joints, PT,0°, PL, RO, -, -
				14.0								- joints, PT,0°, PL, SO, -, - - joints, PT,0°, PL, SO, -, - - joints, PT,0°, PL, RO, -, - - joints, PT,0°, PL, SO, -, - - joints, PT,0°, PL, SO, -, - - joints, PT,0°, PL, SO, -, - - joints, PT,0°, PL, SO, -, - - joints, JT,70°, IR, RO, -, - - joints, PT,0°, PL, SO, -, -
				15.0					D = 1.4 A = 4.1			- joints, JT,0°, ST, RO, -, - - joints, PT,0°, PL, SO, -, - - joints, PT,0°, PL, SO, -, - - joints, PT,0°, PL, SO, -, - - joints, PT,0°, PL, RO, -, - - joints, PT,0°, PL, SO, -, - - joints, PT,0°, PL, SO, -, - - joints, PT,0°, PL, RO, -, - - joints, PT,0°, PL, RO, -, - - joints, PT,0°, PL, RO, -, -
			16.14	16.0		**SHALE**; moderately to slightly weathered (MW/SW), very fine grained, dark grey	MW/SW					- joints, PT,0°, PL, SO, -, - - joints, PT,0°, PL, SO, -, - - joints, PT,0°, PL, SO, -, - - joints, PT,0°, PL, SO, -, - - joints, PT,0°, PL, SO, -, - - joints, PT,0°, PL, SO, -, - - joints, JT,0°, PL, SO, -, - - joints, JT,50°, IR, RO, -, -
	49% 100%		17	17.0		**SHALE**; highly weathered (HW), fine grained, dark grey			D = 5.4 A = 5.4			- joints, PT,0°, PL, RO, -, - - joints, PT,0°, PL, SO, -, - - joints, PT,0°, PL, RO, -, - - joints, PT,0°, PL, SO, -, - - joints, PT,0°, PL, RO, -, - - joints, PT,0°, PL, SO, -, - - joints, JT,0°, ST, RO, -, - - joints, JT,0°, PL, RO, -, -
				18.0			HW		D = 10.2 A = 9.5			- joints, JT,0°, PL, RO, -, - - joints, PT,0°, PL, RO, -, - - joints, PT,0°, PL, RO, -, - - joints, JT,0°, PL, RO, -, - - joints, JT,0°, PL, RO, -, - - joints, PT,0°, PL, RO, -, - - joints, PT,0°, PL, RO, -, - - joints, JT,0°, PL, RO, -, - - joints, JT,85°, IR, RO, -, -
	94% 100%			19.0								- joints, JT,0°, PL, RO, -, - - joints, JT,0°, PL, RO, -, - - joints, JT,0°, IR, RO, -, - - joints, JT,0°, IR, RO, -, - - joints, PT,0°, PL, RO, -, - - joints, PT,0°, PL, RO, -, - - joints, PT,0°, PL, SO, -, - - joints, PT,0°, IR, RO, -, -
				20.0					D = 4.0			- joints, PT,30°, ST, RO, -, - - joints, PT,0°, PL, SO, -, -

Logged By : JOR Date : 19/9/24

Checked By : JOE Date : 15/10/24

CORED BOREHOLE LOG S2207.GPJ EXC.GDT 30/10/24

FORTIFY GEOTECH

Cored Borehole Log

Borehole No.	**BH7**
	3 of 3
Job No.	S2207

CLIENT: BB Wilson Property Pty Ltd

PROJECT: Proposed Mixed-Use Development
849, 853 & 859 Pacific Highway, 2 & 8 Wilson Street, Chatswood

Location : See Report
Collar Level : Not Known
Angle From Horizontal : 90°
Bearing : N.A.

Drill Type : BG Drilling Hanjin 8D
Barrel Type, Length, Drilling fluid :

Method/Casing	R.Q.D./Lift	Water	RL (m)	Depth	Graphic Log	Soil or Rock Substance Description	Degree of Weathering	Estimated Strength Range (VL L M H VH EH)	Is(50) MPa (D = diaxial, A = axial)	Core Length (mm) (30 100 300 1000 3000)	Defects	Defect Description
NMLC CORING	94% 100%			21.0		**SHALE**; highly weathered (HW), fine grained, dark grey	HW		A = 14.0 D = 2.9 A = 10.3 D = 2.6 A = 6.1 D = 1.0 A = 8.7 D = 1.8 A = 4.4 D = 10.6 A = 26.0 D = 5.0 A = 10.1 D = 7.5 A = 16.1			- joints, JT,5°, IR, RO, -, - - joints, PT,0°, PL, SO, -, - - joints, PT,0°, PL, SO, -, - - joints, PT,0°, PL, RO, -, - - joints, JT,0°, IR, RO, -, - - joints, JT,90/45°, PL, RO, -, - - joints, PT,0°, PL, SO, -, - - joints, PT,0°, PL, SO, -, - - joints, JT,0°, IR, SO, -, - - joints, PT,0°, PL, SO, -, - - joints, JT,10°, IR, RO, -, - - joints, JT,10°, IR, SO, -, - - joints, PT,0°, PL, SO, -, - - joints, JT,0-5°, IR, RO, -, - - joints, JT,0°, PL, RO, -, - - joints, JT,0°, PL, SO, -, - - joints, PT,0°, PL, SO, -, - - joints, JT,0°, IR, RO, -, - - joints, PT,0°, PL, RO, -, - - joints, JT,10°, IR, RO, -, -
	97% 100%			22.0								
				23.0								
	97% 100%			24.0								
				25.0								
				26.0								
			27.1	27.0								
				28.0		BOREHOLE TERMINATED AT 27.1m at Target						
				29.0								
				30.0								

Logged By : JOR Date : 19/9/24

Checked By : JOE Date : 15/10/24

CORED BOREHOLE LOG S2207.GPJ EXC.GDT 30/10/24

FORTIFY GEOTECH

Cored Borehole Log

Borehole No. **BH8**

1 of 3

CLIENT: BB Wilson Property Pty Ltd

Job No. S2207

PROJECT: Proposed Mixed-Use Development
849, 853 & 859 Pacific Highway, 2 & 8 Wilson Street, Chatswood

Location : See Report

Collar Level : Not Known
Angle From Horizontal : 90°
Bearing : N.A.

Drill Type : BG Drilling Hanjin 8D
Barrel Type, Length, Drilling fluid :

Method/Casing	R.Q.D./Lift	Water	RL (m)	Depth	Graphic Log	Soil or Rock Substance Description	Degree of Weathering	Estimated Strength Range (VL L M H VH EH)	Is(50) MPa (D = diaxial, A = axial)	Core Length (mm) (30 100 300 1000 3000)	Defects	Defect Description
AUGERING			0.2			**SANDY CLAY**; fine to medium grained sand, brown with orange, trace fine sized gravels						
			0.8			**CLAY**; medium to high plasticity, orange to brown mottled orange, with fine grained sand, trace fine sized gravels						
			1	1.0		**CLAY**; medium plasticity, orange to brown mottled orange, with fine grained sand, trace fine sized gravels						
				2.0		**Sandy CLAY**; low to medium plasticity, pale grey mottled red, fine to medium grained sand, trace coarse gravels orange, red and pink mottles						
				3.0								
				4.0								
				5.0		dark grey						
				6.0								
			6.87									
				7.0		**SILTSTONE**; extremely weathered (XW), excavates as GRAVELLY SILTY CLAY; low to medium plasticity, fine to medium gravel, grey trace red and orange, trace iron stone	EW		D = 0.1 A = 0.3			, JT,0-5°, IR, RO, -, -
			7.24									- joints, JT,0-10°, ST, SO, -, -
NMLC CORING	80% 100%											- joints, PT,0°, PL, SO, -, -
												- joints, PT,0°, PL, SO, -, -
												- joints, JT,0-5°, CU, RO, -, -
												- joints, JT,0-5°, PL, RO, -, -
				8.0		**SHALE**; highly weathered (HW), very fine grained, dark grey, some iron stains						- joints, JT,80,45°, ST, RO, -, -
												- joints, JT,80,45°, ST, RO, -, -
												- joints, JT,5°, PL, RO, -, -
												- joints, JT,15°, IR, RO, -, -
							HW		D = 0.2 A = 0.3			- joints, JT,5°, IR, RO, -, -
												- joints, JT,0°, PL, RO, -, -
												- joints, JT,0°, IR, RO, -, -
												- joints, JT,5-30°, IR, RO, -, -
												- joints, JT,45°, IR, RO, -, -
	62% 100%			9.0								- joints, JT,30°, PL, RO, -, -
												- joints, JT,50°, IR, RO, -, -
												- joints, JT,20°, IR, RO, -, -
												- joints, JT,45°, PL, RO, -, -
				10.0								- joints, JT,45°, PL, RO, -, -

Logged By : CB/JOE Date : 24/9/24

Checked By : JOE Date : 15/10/24

CORED BOREHOLE LOG S2207.GPJ EXC.GDT 30/10/24

FORTIFY GEOTECH

Cored Borehole Log

Borehole No. **BH8**

2 of 3

Job No. S2207

CLIENT: BB Wilson Property Pty Ltd

PROJECT: Proposed Mixed-Use Development
849, 853 & 859 Pacific Highway, 2 & 8 Wilson Street, Chatswood

Location : See Report

Collar Level : Not Known

Angle From Horizontal : 90°

Bearing : N.A.

Drill Type : BG Drilling Hanjin 8D

Barrel Type, Length, Drilling fluid :

Method/Casing	R.Q.D./Lift	Water	RL (m)	Depth	Graphic Log	Soil or Rock Substance Description	Degree of Weathering	Estimated Strength Range	Is(50) MPa (D = diaxial, A = axial)	Core Length (mm)	Defects	Defect Description
NMLC CORING	62% 100%		10.6	11.0		**SHALE**; highly weathered (HW), very fine grained, dark grey, some iron stains	HW		D = 1.0 A = 2.9			- joints, JT,20°, PL, RO, -, - - joints, JT,30°, PL, RO, -, -
						SHALE; highly to moderately weathered (HW/MW), dark grey trace orange, some iron staining						- joints, JT,10-30°, IR, RO, -, - - joints, JT,5-30°, IR, RO, -, - - joints, JT,5°, PL, RO, -, - - joints, JT,0°, IR, RO, -, - - joints, JT,0-5°, IR, RO, -, - - joints, JT,30-90°, ST, RO, -, - - joints, JT,45°, IR, RO, -, - - joints, JT,15°, CU, RO, -, - - joints, JT,30°, IR, RO, -, - - joints, JT,90-45°, IR, RO, -, - - joints, JT,5°, PL, RO, -, - - joints, JT,5°, IR, RO, -, - - joints, JT,0-45°, IR, RO, -, -
				12.0					D = 0.7 A = 5.0			- joints, JT,0°, IR, RO, -, - - joints, PT,-°, -, -, -, - - joints, JT,5°, PL, RO, -, -
	38% 100%			13.0			HW/MW					- joints, JT,10°, IR, RO, -, - - joints, JT,5°, IR, RO, -, -
				14.0								- joints, JT,5°, IR, RO, -, - - joints, JT,5°, PL, RO, -, - - joints, JT,10°, PL, RO, -, - - joints, JT,5°, PL, RO, -, - - joints, JT,5°, PL, RO, -, - - joints, PT,10°, PL, SO, -, - - joints, PT,5°, PL, RO, -, - - joints, PT,5°, PL, SO, -, - - joints, PT,10°, PL, SO, -, - Fractured and fragmented, - - joints, JT,5°, UN, SO, -, - - joints, PT,5°, PL, SO, -, - - joints, JT,50°, PL, RO, -, - - joints, PT,0°, PL, SO, -, - - joints, PT,5°, UN, RO, -, - - joints, JT,50°, PL, RO, -, -
			15.3	15.0					D = 2.5 A = 4.5			Fractured and fragmented, - - joints, PT,5°, PL, RO, -, - 3 joints, PT,5°, PL, SO, -, - , PT,5°, PL, RO, -, -
	67% 100%			16.0		**SHALE**; moderately weathered (MW), very fine grained, dark grey, trace iron staining	MW					- joints, PT,5°, PL, RO, -, - - joints, PT,5°, PL, RO, -, - - joints, PT,5°, PL, SO, -, - - joints, JT,5,30°, IR, RO, -, - - joints, PT,5°, PL, RO, -, - - joints, PT,0°, PL, SO, veneer, clay - joints, PT,0°, PL, SO, -, - 9 joints, PT,0°, PL, SO, -, - - joints, JT,80°, IR, RO, -, - - joints, PT,0°, PL, RO, -, - - joints, PT,0°, PL, RO, -, - - joints, PT,0°, PL, SO, -, - - joints, PT,0°, PL, SO, -, - - joints, PT,0°, PL, SO, -, - - joints, PT,0°, PL, RO, -, - - joints, PT,5°, PL, SO, -, - - joints, PT,0°, PL, SO, -, - - joints, PT,0°, PL, SO, -, - - joints, PT,5°, PL, SO, -, - - joints, JT,10°, PL, SO, -, - - joints, PT,5°, PL, SO, -, - - joints, PT,5°, PL, SO, -, - - joints, PT,5°, PL, SO, -, - 4 joints, JT,60,45,0,5°, PL, RO, -, - - joints, PT,5°, PL, RO, -, -
	75% 100%			18.0					D = 0.4 A = 6.7			Fractured and fragmented, - Fractured and fragmented, - Fractured and fragmented, - - joints, JT,0,10°, IR, RO, -, - -, -
				19.0					D = 0.5 A = 4.9			- joints, PT,15°, PL, SO, -, - - joints, PT,0°, ST, SO, -, - - joints, JT,0,10°, UN, RO, -, - - joints, PT,0°, PL, SO, -, - - joints, JT,60°, PL, RO, -, - - joints, PT,5°, PL, SO, -, - - joints, JT,5°, IR, RO, -, - - joints, JT,0,10°, ST, RO, -, -
				20.0								

CORED BOREHOLE LOG S2207.GPJ EXC.GDT 30/10/24

Logged By : CB/JOE Date : 24/9/24

Checked By : JOE Date : 15/10/24

FORTIFY GEOTECH

Cored Borehole Log

Borehole No. **BH8**

3 of 3

Job No. S2207

CLIENT: BB Wilson Property Pty Ltd

PROJECT: Proposed Mixed-Use Development
849, 853 & 859 Pacific Highway, 2 & 8 Wilson Street, Chatswood

Location : See Report
Collar Level : Not Known
Angle From Horizontal : 90°
Bearing : N.A.

Drill Type : BG Drilling Hanjin 8D
Barrel Type, Length, Drilling fluid :

Method/Casing	R.Q.D./Lift	Water	RL (m)	Depth	Graphic Log	Soil or Rock Substance Description	Degree of Weathering	Estimated Strength Range	Is(50) MPa (D = diaxial, A = axial)	Core Length (mm)	Defects	Defect Description
NMLC CORING	75% 100%			21.0		**SHALE**; moderately weathered (MW), very fine grained, dark grey, trace iron staining	MW		D = 4.6 A = 4.0 D = 2.9 A = 4.3			- joints, PT,0°, PL, SO, -, - - joints, PT,0°, PL, SO, -, - - joints, JT,0°, ST, RO, -, - - joints, PT,0°, PL, SO, -, - - joints, JT,60°, PL, RO, -, - - joints, JT,60°, IR, RO, -, -
	87% 100%			22.0					D = 4.3 A = 7.6			- joints, JT,60°, PL, RO, -, - - joints, PT,0°, PL, SO, -, - - joints, JT,30°, PL, SO, -, - - joints, JT,60-80°, IR, RO, -, - - joints, JT,60°, PL, RO, -, - - joints, PT,0°, PL, SO, -, - 4 joints, JT,0,60°, PL, RO, -, -
				23.0					D = 0.7 A = 3.2			4 joints, JT,0-30°, PL, RO, -, - - joints, JT,0-10°, ST, RO, -, - - joints, JT,0°, UN, RO, -, -
	71% 100%			24.0					D = 0.2 A = 1.7			- joints, JT,5°, PL, RO, veneer, clay - joints, PT,0°, PL, SO, -, - - joints, JT,50°, PL, RO, -, - - joints, JT,10°, PL, RO, -, - 2 joints, JT,50°, PL, SO, -, - - joints, PT,5°, PL, SO, -, - - joints, JT,-°, -, -, -, - - joints, JT,40°, PL, SO, -, - - joints, JT,40°, PL, SO, -, - - joints, PT,0°, PL, SO, -, - - joints, PT,0°, PL, SO, -, - - joints, PT,0°, PL, SO, -, - - joints, JT,20°, PL, RO, -, - - joints, JT,10°, PL, SL, -, - - joints, JT,10°, PL, SL, -, - Fractured and fragmented, - 3 joints, JT,30-50°, IR, VR, -, - - joints, PT,0°, PL, SO, -, - - joints, JT,0-10°, UN, SO, -, -
				25.0					D = 1.2 A = 4.8 D = 1.4 A = 2.9			- joints, JT,0°, PL, RO, -, - - joints, JT,0°, PL, RO, -, - - joints, JT,10°, PL, RO, -, - - joints, JT,0°, IR, RO, -, - - joints, JT,0°, PL, RO, -, - - joints, JT,10°, PL, RO, -, -
				26.0								- joints, JT,5°, PL, RO, -, - - joints, JT,5°, PL, RO, -, - - joints, JT,5°, PL, RO, -, - - joints, JT,5°, PL, RO, -, -
			27.1	27.0		**SANDSTONE**; slight weathered (SW), medium grained, grey	SW		D = 0.7 A = 4.1			
				28.0		BOREHOLE TERMINATED AT 27.1m at Target						
				29.0								
				30.0								

Logged By : CB/JOE Date : 24/9/24

Checked By : JOE Date : 15/10/24

CORED BOREHOLE LOG S2207.GPJ EXC.GDT 30/10/24

FORTIFY GEOTECH

Cored Borehole Log

Borehole No. **BH9**

1 of 3

CLIENT: BB Wilson Property Pty Ltd

Job No. S2207

PROJECT: Proposed Mixed-Use Development
849, 853 & 859 Pacific Highway, 2 & 8 Wilson Street, Chatswood

Location : See Report

Collar Level : Not Known
Angle From Horizontal : 90°
Bearing : N.A.

Drill Type : BG Drilling Hanjin 8D
Barrel Type, Length, Drilling fluid :

Method/Casing	R.Q.D./Lift	Water	RL (m)	Depth	Graphic Log	Soil or Rock Substance Description	Degree of Weathering	Estimated Strength Range (VL L M H VH EH)	Is(50) MPa (D = diaxial, A = axial)	Core Length (mm) (30 100 300 1000 3000)	Defects	Defect Description
AUGERING			0.5			**SAND;** fine to medium grained, brown						
				1.0		**CLAY;** medium plasticity, orange brown mottled pale brown, red, grey, trace fine to medium gravel, trace fine sand						
			2	2.0		**CLAY;** medium plasticity, mottled pale grey, red, orange, trace fine to medium ironstone gravels, trace fine to medium sand						
				3.0								
				4.0								
			4.5			**Silty CLAY;** low to medium plasticity, grey trace red						
				5.0								
			5.7			**SHALE**; extremely weathered (XW), excavates as GRAVELLY CLAY; low to medium plasticity, pale brown-red w/ grey, fine to coarse gravel						Fractured and fragmented, -
NMLC CORING	0% 100%		6	6.0				CORE		LOSS		
			6.21			CORE LOSS						
			6.4			**SHALE**; extremely weathered (XW), excavates as GRAVELLY CLAY; low to medium plasticity, pale brown-red w/ grey, fine to coarse gravel						Fractured and fragmented, - Fractured and fragmented, - Fractured and fragmented, - , JT,0,45°, IR, RO, -, - - joints, JT,0,90°, IR, RO, -, - Fractured and fragmented, -
				7.0					D = 0.1 A = 0.1			
	33% 93%											2 joints, JT,15/15°, PL, RO, -, - - joints, JT,5°, PL, RO, -, - - joints, JT,5°, PL, RO, -, - - joints, JT,0,30°, PL, RO, -, - - joints, JT,5°, PL, VR, -, - - joints, JT,90°, PL, VR, -, -
				8.0								Fragmented, - - joints, JT,0°, PL, RO, -, - - joints, JT,10°, PL, RO, -, - - joints, JT,0°, PL, RO, -, - - joints, JT,0°, PL, RO, -, -
			8.2			**SHALE**; highly weathered (HW), very fine grained, dark grey, some iron stains						Fractured and fragmented, -
				9.0		**SHALE**; moderately weathered (MW), very fine grained, dark grey, trace iron staining			D = 0.4 A = 2.6			- joints, JT,0°, PL, RO, -, - - joints, PT,0°, PL, RO, -, - - joints, JT,3°, PL, RO, -, - - joints, PT,0°, PL, RO, -, - - joints, PT,0°, PL, RO, coating, - - joints, JT,10°, PL, RO, stained, -
	93% 100%											- joints, JT,10°, PL, SO, -, - - joints, JT,10°, PL, SO, -, - - joints, PT,0°, PL, SO, -, - - joints, JT,0/90/0°, ST, RO, -, - - joints, PT,0°, PL, SO, -, - - joints, JT,0/90/0°, ST, SO, -, -
			10.0									

CORED BOREHOLE LOG S2207.GPJ EXC.GDT 30/10/24

Logged By : JOR Date : 25/9/24

Checked By : JOE Date : 15/10/24

FORTIFY GEOTECH

Cored Borehole Log

Borehole No.	**BH9**
	2 of 3
Job No.	S2207

CLIENT: BB Wilson Property Pty Ltd

PROJECT: Proposed Mixed-Use Development
849, 853 & 859 Pacific Highway, 2 & 8 Wilson Street, Chatswood

Location : See Report
Collar Level : Not Known
Angle From Horizontal : 90°
Bearing : N.A.

Drill Type : BG Drilling Hanjin 8D
Barrel Type, Length, Drilling fluid :

Method/Casing	R.Q.D./Lift	Water	RL (m)	Depth	Graphic Log	Soil or Rock Substance Description	Degree of Weathering	Estimated Strength Range (VL L M H VH EH)	Is(50) MPa (D = diaxial, A = axial)	Core Length (mm) (30 100 300 1000 3000)	Defects	Defect Description
NMLC CORING	93% 100%			11.0		**SHALE**; moderately to slightly weathered (MW/SW), very fine grained, dark grey			D = 1.7 A = 7.2			- joints, JT,45°, PL, VR, -, - - joints, PT,0°, PL, SO, -, - - joints, JT,0/90/0°, ST, SO, -, - - joints, PT,0°, PL, VR, -, - - joints, PT,0°, PL, SO, -, - - joints, PT,0°, PL, SO, -, - - joints, PT,0°, PL, SO, -, - - joints, PT,0°, PL, SO, -, - Fractured and fragmented, - - joints, PT,0°, PL, SO, -, - - joints, PT,0°, PL, SO, -, -
	50% 100%		13.1	12.0 13.0		**SHALE**; highly to moderately weathered (HW/MW), dark grey trace orange, some iron staining			D = 1.6 A = 7.7			- joints, PT,3°, PL, SO, -, - - joints, PT,0°, PL, SO, -, - - joints, PT,0°, PL, SO, -, - - joints, PT,0°, PL, SO, -, - - joints, PT,0°, PL, SO, -, - - joints, PT,0°, PL, SO, -, - - joints, PT,0°, PL, SO, -, - - joints, PT,0°, PL, SO, -, - - joints, JT,10/10°, IR, RO, -, - - joints, PT,0°, PL, SO, -, - - joints, JT,45°, IR, VR, -, - Fractured and fragmented, - - joints, PT,0°, PL, SO, -, -
	0% 100%			14.0 15.0					D = 1.2 A = 6.9			- joints, JT,45/0°, IR, SO, -, - - joints, PT,0°, PL, SO, -, - - joints, PT,0°, PL, SO, -, - - joints, JT,60/20°, PL, SO, -, - - joints, PT,0°, PL, SO, -, - - joints, PT,0°, PL, SO, -, - - joints, JT,0°, IR, SO, -, - Fractured and fragmented, - - joints, crushed seam,0°, PL, SO, -, - - joints, PT,5°, PL, SO, -, -
	31% 100%		16	16.0 17.0		**SHALE**; moderately weathered (MW), very fine grained, dark grey			D = 2.7 A = 4.8			- joints, PT,0°, PL, SO, -, - - joints, PT,0°, PL, SO, -, - - joints, PT,0°, PL, SO, -, - - joints, PT,0°, PL, SO, -, - Fractured and fragmented, - - joints, PT,0°, PL, SO, -, - Fractured and fragmented, - - joints, PT,0°, PL, SO, -, - - joints, PT,0°, PL, SO, -, - - joints, PT,0°, PL, SO, -, - - joints, PT,0°, PL, SO, -, - - joints, PT,45°, PL, RO, -, - - joints, PT,0°, PL, SO, -, - - joints, PT,0°, PL, SO, -, - - joints, PT,0°, PL, RO, -, - - joints, JT,55°, PL, RO, -, -
	55% 100%			18.0 19.0					D = 1.9 A = 6.8			- joints, PT,0°, PL, SO, -, - - joints, PT,0°, PL, RO, -, - - joints, PT,0°, PL, SO, -, - - joints, PT,0°, PL, SO, -, - - joints, PT,0°, PL, SO, -, - - joints, PT,0°, PL, RO, -, - - joints, PT,0°, PL, SO, -, - - joints, PT,0°, PL, SO, -, - - joints, PT,0°, PL, RO, -, - - joints, PT,0°, PL, SO, -, - - joints, PT,0°, PL, SO, -, - - joints, PT,0°, PL, RO, -, - - joints, PT,0°, IR, RO, -, - - joints, PT,0°, PL, SO, -, - - joints, PT,0°, PL, RO, -, - - joints, PT,70°, PL, SO, -, - - joints, PT,0°, PL, SO, -, - - joints, JT,60°, PL, SO, -, - - joints, PT,0°, PL, SO, -, - - joints, JT,70°, PL, SO, -, - - joints, PT,65°, PL, SO, -, - - joints, JT,25°, IR, RO, -, - - joints, JT,30°, PL, SO, -, - - joints, JT,25°, IR, RO, -, - - joints, JT,0,45°, IR, RO, -, - - joints, JT,55,0°, IR, SO, -, -
				20.0								

Logged By : JOR Date : 25/9/24

Checked By : JOE Date : 15/10/24

CORED BOREHOLE LOG S2207.GPJ EXC.GDT 30/10/24

FORTIFY GEOTECH

Cored Borehole Log

Borehole No.	**BH9**
	3 of 3
Job No.	S2207

CLIENT: BB Wilson Property Pty Ltd

PROJECT: Proposed Mixed-Use Development
849, 853 & 859 Pacific Highway, 2 & 8 Wilson Street, Chatswood

Location : See Report
Collar Level : Not Known
Angle From Horizontal : 90°
Bearing : N.A.

Drill Type : BG Drilling Hanjin 8D
Barrel Type, Length, Drilling fluid :

Method/Casing	R.Q.D./Lift	Water	RL (m)	Depth	Graphic Log	Soil or Rock Substance Description	Degree of Weathering	Estimated Strength Range	Is(50) MPa (D = diaxial, A = axial)	Core Length (mm)	Defects	Defect Description
NMLC CORING	55% 100%		20.8						D = 3.0 A = 6.9			- joints, PT,0°, PL, SO, -, -
						SHALE; highly to moderately weathered (HW/MW), dark grey trace orange, some iron staining						- joints, PT,0°, PL, SO, -, -
			21.1	21.0					D = 1.4 A = 4.6			- joints, PT,0°, PL, SO, -, -
						SHALE; slightly weathered (SW), very fine grained, dark grey						- joints, PT,0°, PL, SO, -, -
	70% 100%			22.0					D = 1.8 A = 7.2			- joints, PT,0°, PL, SO, -, -
				23.0					D = 0.6 A = 8.0			- joints, PT,0°, PL, RO, -, -
				24.0					D = 1.6 A = 6.6			- joints, PT,0°, IR, RO, -, -
	85% 100%			25.0					D = 0.2 A = 0.1			- joints, JT,15°, PL, RO, -, -
				26.0					D = 2.4 A = 6.5			- joints, PT,0°, PL, SO, -, -
	100% 100%		27.1	27.0		**SANDSTONE**; slightly weathered (SW), medium grained, pale grey			D = 2.6 A = 7.7			- joints, PT,0°, PL, SO, -, -
			27.56			BOREHOLE TERMINATED AT 27.56m at Target						- joints, JT,40°, IR, RO, -, -
				28.0								Fractured, -
				29.0								- joints, JT,50°, CU, SO, -, -
				30.0								- joints, JT,80°, PL, SO, -, -
												- joints, JT,80°, IR, SO, -, -
												- joints, JT,60,0°, IR, SO, -, -
												-, -
												Fractured, -
												- joints, PT,0°, PL, SO, -, -
												Fractured and fragmented, -
												Fractured and fragmented, -
												- joints, PT,0°, IR, RO, -, -
												- joints, PT,0°, IR, RO, -, -
												- joints, JT,15°, IR, RO, -, -
												- joints, JT,30°, PL, SO, -, -
												- joints, PT,0°, PL, SO, -, -
												- joints, JT,20°, UN, SO, -, -
												- joints, JT,40,0°, IR, SO, -, -
												- joints, JT,50,0°, IR, SO, -, -
												- joints, JT,40°, PL, SO, -, -
												- joints, JT,40°, PL, SO, -, -
												- joints, PT,0°, PL, SO, -, -
												- joints, JT,60°, PL, SO, -, -
												- joints, JT,50,0°, PL, SO, -, -
												- joints, PT,0°, PL, SO, , -
												, PT,0°, IR, SO, -, -
												, JT,65°, IR, SO, -, -
												, PT,40°, IR, SO, -, -
												, PT,0°, PL, SO, -, -
												, PT,0°, PL, SO, -, -
												- joints, PT,0°, PL, SO, -, -
												, JT,80°, PL, SO, -, -
												, PT,0°, PL, SO, -, -
												, PT,0°, PL, SO, ,
												, PT,0°, PL, SO, -, -
												, PT,0°, PL, SO, -, -
												, PT,0°, PL, SO, -, -
												, PT,0°, PL, SO, -, -
												, PT,0°, PL, SO, -, -
												, JT,0°, UN, SO, -, -
												, PT,0°, PL, RO, -, -
												, PT,10°, PL, SO, -, -
												, PT,0°, PL, RO, -, -

Logged By : JOR Date : 25/9/24

Checked By : JOE Date : 15/10/24

CORED BOREHOLE LOG S2207.GPJ EXC.GDT 30/10/24

FORTIFY
GEOTECH

Appendix B

Rock Core Photos

BOREHOLE BH1
9m to 20.27m depth



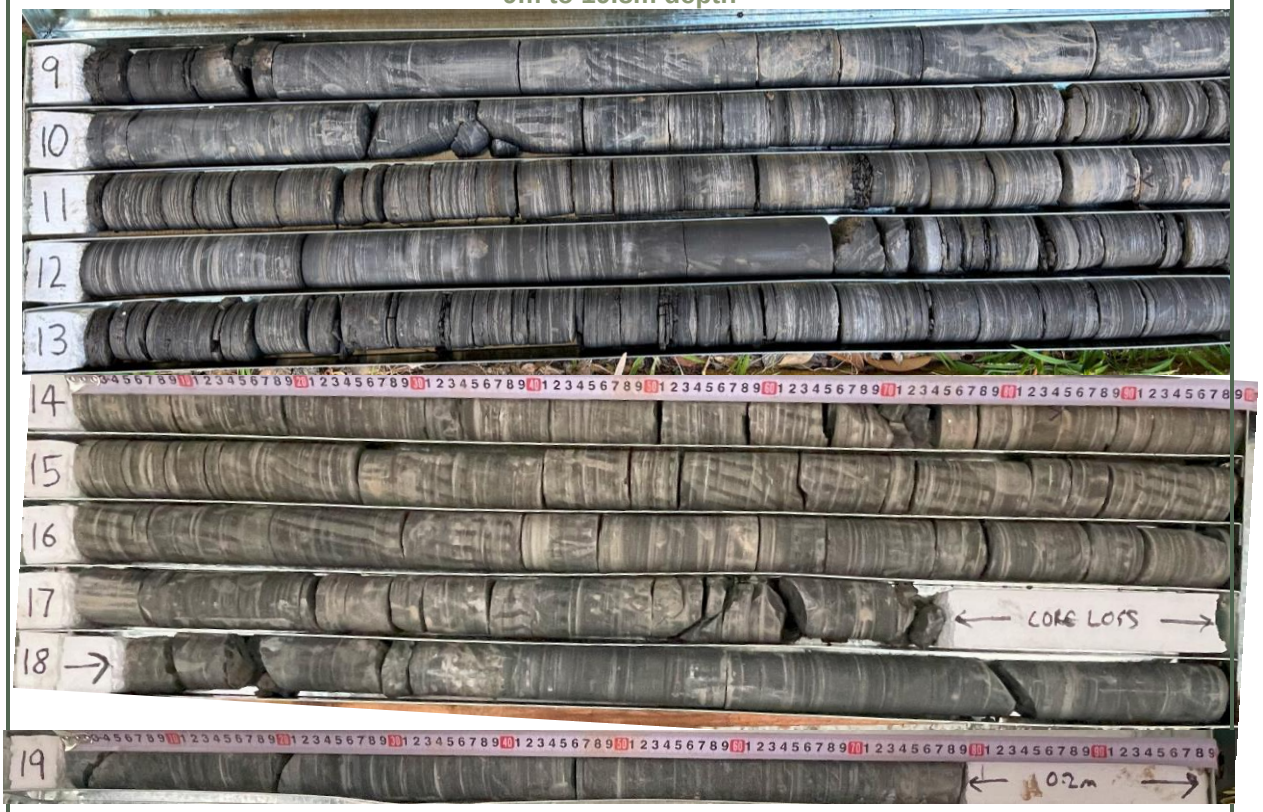
ROCK CORE PHOTOS	S2207

BOREHOLE BH2
9m to 20.88m depth



ROCK CORE PHOTOS	S2207

BOREHOLE BH3
9m to 19.8m depth



ROCK CORE PHOTOS	S2207

BOREHOLE BH4
6m to 19.98m depth



ROCK CORE PHOTOS	S2207

BOREHOLE BH5
8.85m to 18.96m depth



ROCK CORE PHOTOS	S2207

BOREHOLE BH6
9.2m to 19.85m depth



ROCK CORE PHOTOS	S2207

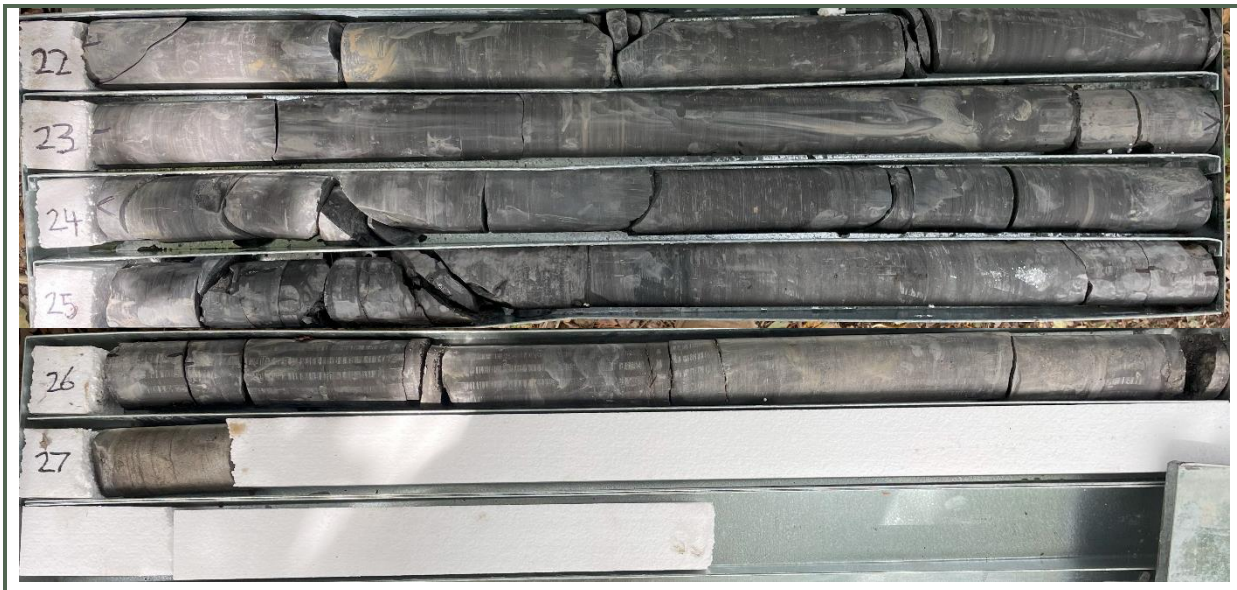
Date Taken:	19/9/2024
Client:	BB Wilson Property Pty Ltd
Project:	849, 853 & 859 Pacific Highway, 2 & 8 Wilson Street, Chatswood
Project No.:	S2207
Borehole No.:	BH7
Depth:	5.5m – 27.1m




21
22
23
24
25
26
27
28

Date Taken:	24/9/2024
Client:	BB Wilson Property Pty Ltd
Project:	849, 853 & 859 Pacific Highway, 2 & 8 Wilson Street, Chatswood
Project No.:	S2207
Borehole No.:	BH8
Depth:	6.87m – 27.1m




22
23
24
25
26
27

Date Taken:	25/9/2024
Client:	BB Wilson Property Pty Ltd
Project:	849, 853 & 859 Pacific Highway, 2 & 8 Wilson Street, Chatswood
Project No.:	S2207
Borehole No.:	BH9
Depth:	5.7m – 27.56m





FORTIFY
GEOTECH

Appendix C

Point Load Test Results

Diametral								
Minimum	0		UCS Conversion Factor	24				
Maximum	70.56							
Average	14.64							
BH Number	Test No.	Depth	Diameter (cm)	Gauge Reading (kN)	(Is)50	UCS (Mpa)	Weathering	Strength
1	1	9.35	5.2	0.01	0	0	EW	EL
1	2	12.3	5.2	0.01	0	0	EW	EL
1	3	13.55	5.2	0.02	0.01	0.24	EW	EL
1	4	14.75	5.2	2.24	0.83	19.92	HW/MW	M
1	5	15.35	5.2	1.09	0.4	9.6	HW/MW	M
1	6	16.4	5.2	1.45	0.54	12.96	HW/MW	M
1	7	17.9	5.2	4.31	1.59	38.16	MW	H
1	8	19.4	5.2	1.35	0.5	12	HW/MW	M
1	9	20.2	5.2	3.26	1.21	29.04	MW	H
2	10	9.5	5.2	0.23	0.09	2.16	EW	VL
2	11	10.9	5.2	0.01	0	0	EW	EL
2	12	11.8	5.2	0.01	0	0	EW	EL
2	13	13.15	5.2	1.99	0.74	17.76	HW/MW	M
2	14	14.9	5.2	0.01	0	0	EW	EL
2	15	16.5	5.2	1.95	0.72	17.28	HW/MW	M
2	16	18.6	5.2	7.61	2.81	67.44	MW	H
3	17	9.3	5.2	1.13	0.42	10.08	HW/MW	M
3	18	10.7	5.2	0.93	0.34	8.16	HW/MW	M
3	19	12.1	5.2	4.1	1.52	36.48	MW	H
3	20	13.95	5.2	0.13	0.05	1.2	EW	VL
3	21	15.2	5.2	0.25	0.09	2.16	EW	VL
3	22	17.2	5.2	3.09	1.14	27.36	MW	H
3	23	18.7	5.2	1.42	0.53	12.72	HW/MW	M
4	24	7.05	5.2	0.01	0	0	EW	EL
4	25	8.17	5.2	0.03	0.01	0.24	EW	EL
4	26	9.5	5.2	0.62	0.23	5.52	HW	L
4	27	10.25	5.2	1.69	0.63	15.12	HW/MW	M
4	28	11.3	5.2	1.25	0.46	11.04	HW/MW	M
4	29	12.1	5.2	2.92	1.08	25.92	MW	H
4	30	13.7	5.2	0.31	0.11	2.64	HW	L
4	31	14.95	5.2	2.58	0.95	22.8	HW/MW	M
4	32	16.05	5.2	2.07	0.77	18.48	HW/MW	M
4	33	17.2	5.2	5.98	2.21	53.04	MW	H
4	34	18.65	5.2	3.08	1.14	27.36	MW	H
4	35	19.7	5.2	1.41	0.52	12.48	HW/MW	M
5	36	9.1	5.2	1.44	0.53	12.72	HW/MW	M
5	37	10.1	5.2	0.45	0.17	4.08	HW	L
5	38	10.9	5.2	0.38	0.14	3.36	HW	L
5	39	11.7	5.2	0.18	0.07	1.68	EW	VL
5	40	12.9	5.2	2.03	0.75	18	HW/MW	M
5	41	14.2	5.2	0.53	0.2	4.8	HW	L
5	42	15.15	5.2	3.61	1.34	32.16	MW	H
5	43	16.35	5.2	1.84	0.68	16.32	HW/MW	M
5	44	17.7	5.2	2.7	1	24	HW/MW	M
5	45	18.75	5.2	1.27	0.47	11.28	HW/MW	M
6	46	9.8	5.2	0.69	0.26	6.24	HW	L
6	47	10.7	5.2	0.44	0.16	3.84	HW	L
6	48	11.9	5.2	1.96	0.72	17.28	HW/MW	M
6	49	13.1	5.2	3.89	1.44	34.56	MW	H
6	50	14.1	5.2	3.36	1.24	29.76	MW	H
6	51	15.85	5.2	0.17	0.06	1.44	EW	VL
6	52	17.1	5.2	0.13	0.05	1.2	EW	VL
6	53	18.9	5.2	1.12	0.41	9.84	HW/MW	M
6	54	19.7	5.2	3.02	1.12	26.88	MW	H
7	55	5.8	6	0.37	0.1	2.4	FALSE	VL
7	56	7.2	6	0.5	0.14	3.36	HW	L
7	57	8.5	6	1.4	0.39	9.36	HW/MW	M
7	58	10.4	6	1.38	0.38	9.12	HW/MW	M
7	59	12.1	6	4.4	1.22	29.28	MW	H
7	60	13.3	6	1.92	0.53	12.72	HW/MW	M
7	61	15.2	6	1.4	0.39	9.36	HW/MW	M
7	62	16.9	6	5.36	1.49	35.76	MW	H
7	63	18.7	6	10.17	2.83	67.92	MW	H
7	64	20.1	6	4.04	1.12	26.88	MW	H
7	65	21.1	6	2.9	0.81	19.44	HW/MW	M
7	66	22.9	6	2.56	0.71	17.04	HW/MW	M
7	67	23.9	6	1	0.28	6.72	HW	L
7	68	24.6	6	1.78	0.49	11.76	HW/MW	M
7	69	25.1	6	10.6	2.94	70.56	MW	H
7	70	26.65	6	5	1.39	33.36	MW	H
7	71	26.9	6	7.5	2.08	49.92	MW	H
8	72	7.04	6	0.128	0.04	0.96	EW	VL
8	73	8.78	6	0.204	0.06	1.44	EW	VL
8	74	10.89	6	1.042	0.29	6.96	HW	L
8	75	12.06	6	0.732	0.2	4.8	HW	L

8	76	15.25	6	2.456	0.68	16.32	HW/MW	M
8	77	17.33	6	0.428	0.12	2.88	HW	L
8	78	19.05	6	0.482	0.13	3.12	HW	L
8	79	20.93	6	2.642	0.73	17.52	HW/MW	M
8	80	21	6	2.888	0.8	19.2	HW/MW	M
8	81	22.21	6	4.252	1.18	28.32	MW	H
8	82	23	6	0.728	0.2	4.8	HW	L
8	83	24.74	6	0.234	0.07	1.68	EW	VL
8	84	25.87	6	1.246	0.35	8.4	HW/MW	M
8	85	26.3	6	1.398	0.39	9.36	HW/MW	M
8	86	27	6	0.668	0.19	4.56	HW	L
9	87	7.05	6	0.092	0.03	0.72	EW	FALSE
9	88	8.86	6	0.402	0.11	2.64	HW	L
9	89	11	6	1.736	0.48	11.52	HW/MW	M
9	90	12.75	6	1.632	0.45	10.8	HW/MW	M
9	91	15	6	1.2	0.33	7.92	HW/MW	M
9	92	16.9	6	2.728	0.76	18.24	HW/MW	M
9	93	19	6	1.886	0.52	12.48	HW/MW	M
9	94	20.07	6	2.95	0.82	19.68	HW/MW	M
9	95	21.15	6	1.434	0.4	9.6	HW/MW	M
9	96	22.68	6	1.836	0.51	12.24	HW/MW	M
9	97	23.33	6	0.642	0.18	4.32	HW	L
9	98	24.4	6	1.634	0.45	10.8	HW/MW	M
9	99	25.13	6	0.194	0.05	1.2	EW	VL
9	100	26.81	6	2.388	0.66	15.84	HW/MW	M
9	101	27.4	6	2.568	0.71	17.04	HW/MW	M

UNIAXIAL									
Minimum	0.24								
Maximum	200.4								
Average	33.94								
BH Number	Test No.	Depth	Diameter (cm)	Equivalent Diameter (cm)	Gauge Reading (kN)	(Is)50	UCS (Mpa)	Weathering	Strength
1	1	9.35	5.2	6.3	0.24	0.06	1.44	EW/HW	VL
1	2	12.3	5.2	6.3	0.04	0.01	0.24	EW	EL
1	3	13.55	4.5	5.86	0.39	0.11	2.64	HW	L
1	4	14.75	3.4	5.1	1.55	0.6	14.4	HW/MW	M
1	5	15.35	3.8	5.39	1.74	0.6	14.4	HW/MW	M
1	6	16.4	3.8	5.39	2.35	0.81	19.44	HW/MW	M
1	7	17.9	4.7	5.99	6.58	1.83	43.92	MW	H
1	8	19.4	3.4	5.1	5.71	2.2	52.8	MW	H
1	9	20.2	3.4	5.1	7.94	3.05	73.2	SW	VH
2	10	9.5	3.7	5.32	0.62	0.22	5.28	HW	L
2	11	10.9	4.3	5.73	0.85	0.26	6.24	HW	L
2	12	11.8	3.8	5.39	1.57	0.54	12.96	HW/MW	M
2	13	13.15	4.6	5.93	5.39	1.53	36.72	MW	H
2	14	14.9	3.7	5.32	0.57	0.2	4.8	HW	L
2	15	16.5	3.5	5.17	7.11	2.66	63.84	MW	H
2	16	18.6	4.8	6.06	11.73	3.19	76.56	SW	VH
3	17	9.3	3.2	4.94	1.83	0.75	18	HW/MW	M
3	18	10.7	5	6.18	1.08	0.28	6.72	HW	L
3	19	12.1	3.8	5.39	1.4	0.48	11.52	HW/MW	M
3	20	13.95	3.7	5.32	2.52	0.89	21.36	HW/MW	M
3	21	15.2	4.5	5.86	4.85	1.41	33.84	MW	H
3	22	17.2	4	5.53	3.98	1.3	31.2	MW	H
3	23	18.7	4	5.53	9.07	2.97	71.28	MW	H
4	24	7.05	3.6	4.88	0.15	0.06	1.44	EW/HW	VL
4	25	8.17	4.5	5.46	0.14	0.05	1.2	EW/HW	VL
4	26	9.5	4	5.15	0.41	0.15	3.6	HW	L
4	27	10.25	4.6	5.52	0.45	0.15	3.6	HW	L
4	28	11.3	4	5.15	2.96	1.12	26.88	MW	H
4	29	12.1	5	5.75	4.36	1.32	31.68	MW	H
4	30	13.7	4.5	5.46	2.93	0.98	23.52	HW/MW	M
4	31	14.95	3.6	5.24	3.35	1.22	29.28	MW	H
4	32	16.05	4.6	5.93	6.15	1.75	42	MW	H
4	33	17.2	4.1	5.6	6.08	1.94	46.56	MW	H
4	34	18.65	4	5.53	6.05	1.98	47.52	MW	H
4	35	19.7	4.5	5.86	8.26	2.41	57.84	MW	H
5	36	9.1	4.2	5.66	1.27	0.4	9.6	HW/MW	M
5	45	10.1	5	6.18	0.5	0.13	3.12	HW	L
5	37	10.9	4	5.53	1.35	0.44	10.56	HW/MW	M
5	38	11.7	4	5.53	2.98	0.97	23.28	HW/MW	M
5	39	12.9	3.6	5.24	3.67	1.34	32.16	MW	H
5	40	14.2	4.2	5.66	0.9	0.28	6.72	HW	L
5	41	15.15	3.8	5.39	3.93	1.35	32.4	MW	H
5	42	16.35	3.8	5.39	2	0.69	16.56	HW/MW	M
5	43	17.7	3.2	4.94	2.07	0.85	20.4	HW/MW	M
5	44	18.75	3.9	5.46	2.55	0.86	20.64	HW/MW	M
6	46	9.8	4	5.53	2.92	0.95	22.8	HW/MW	M
6	47	10.7	4	5.53	0.83	0.27	6.48	HW	L
6	48	11.9	4	5.53	3.42	1.12	26.88	MW	H
6	49	13.1	4	5.53	4.46	1.46	35.04	MW	H
6	50	14.1	5	6.18	4.6	1.2	28.8	MW	H
6	51	15.85	3.7	5.32	1.61	0.57	13.68	HW/MW	M
6	52	17.1	4.2	5.66	2.92	0.91	21.84	HW/MW	M
6	53	18.9	4	5.53	3.8	1.24	29.76	MW	H
6	54	19.7	4.5	5.86	6.49	1.89	45.36	MW	H
7	55	5.8	5	5.75	0.7	0.21	5.04	HW	L
7	56	7.2	5	5.75	0.5	0.15	3.6	HW	L
7	57	8.5	4	5.15	1.8	0.68	16.32	HW/MW	M
7	61	10.4	4	5.15	1.14	0.43	10.32	HW/MW	M
7	62	12.1	5	5.75	10	3.02	72.48	SW	VH
7	58	13.3	5	5.75	3.7	1.12	26.88	MW	H
7	59	15.2	4.2	5.27	4.1	1.48	35.52	MW	H
7	60	16.9	4.4	5.4	5.36	1.84	44.16	MW	H
7	63	18.7	5.2	5.87	9.48	2.75	66	MW	H
7	64	20.1	5	5.75	14	4.23	101.52	SW	VH
7	65	21.1	4.2	5.27	10.3	3.71	89.04	SW	VH
7	66	22.9	4.7	5.58	6.1	1.96	47.04	MW	H
7	67	23.9	5.2	5.87	8.7	2.52	60.48	MW	H
7	68	24.6	5	5.75	4.4	1.33	31.92	MW	H
7	69	25.1	4.7	5.58	26	8.35	200.4	SW	VH

7	70	26.65	5.1	5.81	10.1	2.99	71.76	MW	H
7	71	26.9	5.5	6.03	16.08	4.42	106.08	SW	VH
8	72	7.04	4.5	5.46	0.292	0.1	2.4	EW/HW	VL
8	73	8.78	5	5.75	0.292	0.09	2.16	EW/HW	VL
8	74	10.89	4.5	5.46	2.916	0.98	23.52	HW/MW	M
8	75	12.06	5	5.75	4.964	1.5	36	MW	H
8	76	15.25	4	5.15	4.528	1.71	41.04	MW	H
8	77	17.33	4	5.15	6.696	2.52	60.48	MW	H
8	78	19.05	5.5	6.03	4.944	1.36	32.64	MW	H
8	79	20.93	4.3	5.34	3.97	1.39	33.36	MW	H
8	80	21	5.7	6.14	4.318	1.15	27.6	MW	H
8	81	22.21	5	5.75	7.6	2.3	55.2	MW	H
8	82	23	4.5	5.46	3.19	1.07	25.68	MW	H
8	83	24.74	4.5	5.46	1.72	0.58	13.92	HW/MW	M
8	84	25.87	6	6.3	4.814	1.21	29.04	MW	H
8	85	26	6	6.3	2.828	0.71	17.04	HW/MW	M
8	86	27	5	5.75	4.086	1.24	29.76	MW	H
9	87	7.1	5	5.75	0.13	0.04	0.96	EW/HW	VL
9	88	8.9	4.5	5.46	2.584	0.87	20.88	HW/MW	M
9	89	11	11	8.53	4.8	0.66	15.84	HW/MW	M
9	90	12.75	4.5	5.46	7.688	2.58	61.92	MW	H
9	91	14.78	5	5.75	6.868	2.08	49.92	MW	H
9	92	16.9	4.3	5.34	4.778	1.68	40.32	MW	H
9	93	19	5	5.75	6.788	2.05	49.2	MW	H
9	94	20.07	4	5.15	6.864	2.59	62.16	MW	H
9	95	21.15	4	5.15	4.606	1.74	41.76	MW	H
9	96	22.68	4	5.15	7.188	2.71	65.04	MW	H
9	97	23.33	4.7	5.58	7.994	2.57	61.68	MW	H
9	98	24.4	4.5	5.46	6.61	2.22	53.28	MW	H
9	99	25.13	4	5.15	4.086	1.54	36.96	MW	H
9	100	26.81	5	5.75	6.482	1.96	47.04	MW	H
9	101	27.4	4.8	5.64	7.71	2.42	58.08	MW	H

FORTIFY
GEOTECH

Appendix D

Aggressivity & sPOCAS Laboratory Test Results

Envirolab Services Pty Ltd
ABN 37 112 535 645
12 Ashley St Chatswood NSW 2067
ph 02 9910 6200 fax 02 9910 6201
customerservice@envirolab.com.au
www.envirolab.com.au

CERTIFICATE OF ANALYSIS 338265

Client Details

Client	Fortify Geotech
Attention	Jerome Sami
Address	Unit 2 / 538 Gardneners Rd, ALEXANDRIA, NSW, 2015

Sample Details

Your Reference	**Chatswood - 51998**
Number of Samples	6 Soil
Date samples received	21/11/2023
Date completed instructions received	21/11/2023

Analysis Details

Please refer to the following pages for results, methodology summary and quality control data.

Samples were analysed as received from the client. Results relate specifically to the samples as received.

Results are reported on a dry weight basis for solids and on an as received basis for other matrices.

Report Details

Date results requested by	28/11/2023
Date of Issue	28/11/2023

NATA Accreditation Number 2901. This document shall not be reproduced except in full.

Accredited for compliance with ISO/IEC 17025 - Testing. **Tests not covered by NATA are denoted with ***

Results Approved By
Diego Bigolin, Inorganics Supervisor
Priya Samarawickrama, Senior Chemist

Authorised By
Nancy Zhang, Laboratory Manager

Soil Aggressivity						
Our Reference		338265-1	338265-2	338265-3	338265-4	338265-5
Your Reference	UNITS	Chatswood- BH1	Chatswood- BH4	Chatswood- BH3	Chatswood- BH6	Chatswood- BH2
Depth		4.8m	1.2m	2.5m	2.0m	4.0m
Date Sampled		20/11/2023	15/11/2023	21/11/2023	17/11/2023	14/11/2023
Type of sample		Soil	Soil	Soil	Soil	Soil
pH 1:5 soil:water	pH Units	5.2	4.5	5.1	4.9	4.5
Electrical Conductivity 1:5 soil:water	µS/cm	80	65	72	180	44
Chloride, Cl 1:5 soil:water	mg/kg	<10	10	<10	130	<10
Sulphate, SO4 1:5 soil:water	mg/kg	83	63	63	100	34

Soil Aggressivity		
Our Reference		338265-6
Your Reference	UNITS	Chatswood- BH5
Depth		1.7m
Date Sampled		16/11/2023
Type of sample		Soil
pH 1:5 soil:water	pH Units	4.7
Electrical Conductivity 1:5 soil:water	µS/cm	67
Chloride, Cl 1:5 soil:water	mg/kg	10
Sulphate, SO4 1:5 soil:water	mg/kg	70

sPOCAS + %S w/w						
Our Reference		338265-1	338265-2	338265-3	338265-4	338265-5
Your Reference	UNITS	Chatswood- BH1	Chatswood- BH4	Chatswood- BH3	Chatswood- BH6	Chatswood- BH2
Depth		4.8m	1.2m	2.5m	2.0m	4.0m
Date Sampled		20/11/2023	15/11/2023	21/11/2023	17/11/2023	14/11/2023
Type of sample		Soil	Soil	Soil	Soil	Soil
Date prepared	-	21/11/2023	21/11/2023	21/11/2023	21/11/2023	21/11/2023
Date analysed	-	22/11/2023	22/11/2023	22/11/2023	22/11/2023	22/11/2023
pH $_{kcl}$	pH units	4.1	3.8	3.9	4.0	3.9
TAA pH 6.5	moles H^+ /t	45	86	74	57	86
s-TAA pH 6.5	%w/w S	0.07	0.14	0.12	0.09	0.14
pH $_{Ox}$	pH units	4.2	4.0	4.4	4.2	4.1
TPA pH 6.5	moles H^+ /t	47	160	93	78	100
s-TPA pH 6.5	%w/w S	0.08	0.25	0.15	0.13	0.16
TSA pH 6.5	moles H^+ /t	<5	70	19	22	16
s-TSA pH 6.5	%w/w S	<0.01	0.11	0.03	0.04	0.03
ANC_E	% $CaCO_3$	[NT]	[NT]	[NT]	[NT]	[NT]
a-ANC_E	moles H^+ /t	[NT]	[NT]	[NT]	[NT]	[NT]
s-ANC_E	%w/w S	[NT]	[NT]	[NT]	[NT]	[NT]
S_{KCl}	%w/w S	0.02	0.02	0.01	0.02	0.02
S_P	%w/w	0.03	0.02	0.02	0.02	0.02
S_{POS}	%w/w	0.01	<0.005	0.007	<0.005	0.008
a-S_{POS}	moles H^+ /t	8	<5	<5	<5	<5
Ca_{KCl}	%w/w	0.01	0.01	<0.005	0.02	<0.005
Ca_P	%w/w	0.01	0.009	0.006	0.02	<0.005
Ca_A	%w/w	<0.005	<0.005	<0.005	<0.005	<0.005
Mg_{KCl}	%w/w	0.029	0.013	0.032	0.029	0.010
Mg_P	%w/w	0.030	0.013	0.030	0.025	0.011
Mg_A	%w/w	<0.005	<0.005	<0.005	<0.005	<0.005
S_{HCl}	%w/w S	0.021	0.022	0.018	0.021	0.022
S_{NAS}	%w/w S	<0.005	<0.005	0.008	0.007	0.012
a-S_{NAS}	moles H^+ /t	<5	<5	<5	<5	6
s-S_{NAS}	%w/w S	<0.01	<0.01	<0.01	<0.01	<0.01
Fineness Factor	-	1.5	1.5	1.5	1.5	1.5
a-Net Acidity	moles H^+ /t	55	89	82	62	97
s-Net Acidity	%w/w S	0.09	0.14	0.13	0.10	0.16
Liming rate	kg $CaCO_3$ /t	4.1	6.7	6.2	4.7	7.3
s-Net Acidity without -ANCE	%w/w S	0.09	0.14	0.13	0.10	0.16
a-Net Acidity without ANCE	moles H^+ /t	55	89	82	62	97
Liming rate without ANCE	kg $CaCO_3$ /t	4.1	6.7	6.2	4.7	7.3

sPOCAS + %S w/w		
Our Reference		338265-6
Your Reference	UNITS	Chatswood- BH5
Depth		1.7m
Date Sampled		16/11/2023
Type of sample		Soil
Date prepared	-	21/11/2023
Date analysed	-	22/11/2023
pH $_{kcl}$	pH units	3.8
TAA pH 6.5	moles H^+ /t	99
s-TAA pH 6.5	%w/w S	0.16
pH $_{Ox}$	pH units	3.9
TPA pH 6.5	moles H^+ /t	150
s-TPA pH 6.5	%w/w S	0.24
TSA pH 6.5	moles H^+ /t	52
s-TSA pH 6.5	%w/w S	0.08
ANC_E	% $CaCO_3$	[NT]
a-ANC_E	moles H^+ /t	[NT]
s-ANC_E	%w/w S	[NT]
S_{KCl}	%w/w S	0.03
S_P	%w/w	0.03
S_{POS}	%w/w	<0.005
a-S_{POS}	moles H^+ /t	<5
Ca_{KCl}	%w/w	<0.005
Ca_P	%w/w	<0.005
Ca_A	%w/w	<0.005
Mg_{KCl}	%w/w	0.017
Mg_P	%w/w	0.017
Mg_A	%w/w	<0.005
S_{HCl}	%w/w S	0.034
S_{NAS}	%w/w S	0.014
a-S_{NAS}	moles H^+ /t	7
s-S_{NAS}	%w/w S	0.01
Fineness Factor	-	1.5
a-Net Acidity	moles H^+ /t	110
s-Net Acidity	%w/w S	0.17
Liming rate	kg $CaCO_3$ /t	8.0
s-Net Acidity without -ANCE	%w/w S	0.17
a-Net Acidity without ANCE	moles H^+ /t	110
Liming rate without ANCE	kg $CaCO_3$ /t	8.0

Method ID	Methodology Summary
Inorg-001	pH - Measured using pH meter and electrode in accordance with APHA latest edition, 4500-H+. Please note that the results for water analyses are indicative only, as analysis outside of the APHA storage times.
Inorg-002	Conductivity and Salinity - measured using a conductivity cell at 25°C in accordance with APHA latest edition 2510 and Rayment & Lyons.
Inorg-064	sPOCAS determined using titrimetric and ICP-AES techniques. Ideally samples should be received in the laboratory at <6oC. Please refer to SRA for sample temperature on receipt. Net acidity including ANC has a safety factor of 1.5 applied. Neutralising value (NV) of 100% is assumed for liming rate The recommendation that the SHCL concentration be multiplied by a factor of 2 to ensure retained acidity is not underestimated, has not been applied in the SHCL result. However, it has been applied in the SNAS calculation: SNAS % = (SHCL-SKCL)x2
Inorg-081	Anions - a range of Anions are determined by Ion Chromatography, in accordance with APHA latest edition, 4110-B. Waters samples are filtered on receipt prior to analysis. Alternatively determined by colourimetry/turbidity using Discrete Analyser.

QUALITY CONTROL: Soil Aggressivity						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-1	338265-2
pH 1:5 soil:water	pH Units		Inorg-001	[NT]	1	5.2	5.1	2	101	[NT]
Electrical Conductivity 1:5 soil:water	µS/cm	1	Inorg-002	<1	1	80	77	4	104	[NT]
Chloride, Cl 1:5 soil:water	mg/kg	10	Inorg-081	<10	1	<10	<10	0	111	102
Sulphate, SO4 1:5 soil:water	mg/kg	10	Inorg-081	<10	1	83	75	10	111	105

QUALITY CONTROL: sPOCAS + %S w/w						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-1	[NT]
Date prepared	-			21/11/2023	1	21/11/2023	21/11/2023		21/11/2023	[NT]
Date analysed	-			22/11/2023	1	22/11/2023	22/11/2023		22/11/2023	[NT]
pH $_{kcl}$	pH units		Inorg-064	[NT]	1	4.1	4.1	0	98	[NT]
TAA pH 6.5	moles H^+ /t	5	Inorg-064	<5	1	45	45	0	100	[NT]
s-TAA pH 6.5	%w/w S	0.01	Inorg-064	<0.01	1	0.07	0.07	0	[NT]	[NT]
pH $_{Ox}$	pH units		Inorg-064	[NT]	1	4.2	4.2	0	100	[NT]
TPA pH 6.5	moles H^+ /t	5	Inorg-064	<5	1	47	47	0	75	[NT]
s-TPA pH 6.5	%w/w S	0.01	Inorg-064	<0.01	1	0.08	0.08	0	[NT]	[NT]
TSA pH 6.5	moles H^+ /t	5	Inorg-064	<5	1	<5	<5	0	[NT]	[NT]
s-TSA pH 6.5	%w/w S	0.01	Inorg-064	<0.01	1	<0.01	<0.01	0	[NT]	[NT]
ANC_E	% $CaCO_3$	0.05	Inorg-064	<0.05	1	[NT]	[NT]		[NT]	[NT]
a-ANC_E	moles H^+ /t	5	Inorg-064	<5	1	[NT]	[NT]		[NT]	[NT]
s-ANC_E	%w/w S	0.05	Inorg-064	<0.05	1	[NT]	[NT]		[NT]	[NT]
S_{KCl}	%w/w S	0.005	Inorg-064	<0.005	1	0.02	0.02	0	[NT]	[NT]
S_P	%w/w	0.005	Inorg-064	<0.005	1	0.03	0.03	0	[NT]	[NT]
S_{POS}	%w/w	0.005	Inorg-064	<0.005	1	0.01	0.01	0	[NT]	[NT]
a-S_{POS}	moles H^+ /t	5	Inorg-064	<5	1	8	8	0	[NT]	[NT]
Ca_{KCl}	%w/w	0.005	Inorg-064	<0.005	1	0.01	0.01	0	[NT]	[NT]
Ca_P	%w/w	0.005	Inorg-064	<0.005	1	0.01	0.01	0	[NT]	[NT]
Ca_A	%w/w	0.005	Inorg-064	<0.005	1	<0.005	<0.005	0	[NT]	[NT]
Mg_{KCl}	%w/w	0.005	Inorg-064	<0.005	1	0.029	0.027	7	[NT]	[NT]
Mg_P	%w/w	0.005	Inorg-064	<0.005	1	0.030	0.029	3	[NT]	[NT]
Mg_A	%w/w	0.005	Inorg-064	<0.005	1	<0.005	<0.005	0	[NT]	[NT]
S_{HCl}	%w/w S	0.005	Inorg-064	<0.005	1	0.021	0.020	5	[NT]	[NT]
S_{NAS}	%w/w S	0.005	Inorg-064	<0.005	1	<0.005	0.005	0	[NT]	[NT]
a-S_{NAS}	moles H^+ /t	5	Inorg-064	<5	1	<5	<5	0	[NT]	[NT]
s-S_{NAS}	%w/w S	0.01	Inorg-064	<0.01	1	<0.01	<0.01	0	[NT]	[NT]
Fineness Factor	-	1.5	Inorg-064	<1.5	1	1.5	1.5	0	[NT]	[NT]
a-Net Acidity	moles H^+ /t	5	Inorg-064	<5	1	55	56	2	[NT]	[NT]
s-Net Acidity	%w/w S	0.01	Inorg-064	<0.01	1	0.09	0.09	0	[NT]	[NT]
Liming rate	kg $CaCO_3$ /t	0.75	Inorg-064	<0.75	1	4.1	4.2	2	[NT]	[NT]
s-Net Acidity without -ANCE	%w/w S	0.01	Inorg-064	<0.01	1	0.09	0.09	0	[NT]	[NT]

QUALITY CONTROL: sPOCAS + %S w/w						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-1	[NT]
a-Net Acidity without ANCE	moles H^+ /t	5	Inorg-064	<5	1	55	56	2	[NT]	[NT]
Liming rate without ANCE	kg $CaCO_3$ /t	0.75	Inorg-064	<0.75	1	4.1	4.2	2	[NT]	[NT]

Result Definitions

NT	Not tested
NA	Test not required
INS	Insufficient sample for this test
PQL	Practical Quantitation Limit
<	Less than
>	Greater than
RPD	Relative Percent Difference
LCS	Laboratory Control Sample
NS	Not specified
NEPM	National Environmental Protection Measure
NR	Not Reported

Quality Control Definitions

Blank	This is the component of the analytical signal which is not derived from the sample but from reagents, glassware etc, can be determined by processing solvents and reagents in exactly the same manner as for samples.
Duplicate	This is the complete duplicate analysis of a sample from the process batch. If possible, the sample selected should be one where the analyte concentration is easily measurable.
Matrix Spike	A portion of the sample is spiked with a known concentration of target analyte. The purpose of the matrix spike is to monitor the performance of the analytical method used and to determine whether matrix interferences exist.
LCS (Laboratory Control Sample)	This comprises either a standard reference material or a control matrix (such as a blank sand or water) fortified with analytes representative of the analyte class. It is simply a check sample.
Surrogate Spike	Surrogates are known additions to each sample, blank, matrix spike and LCS in a batch, of compounds which are similar to the analyte of interest, however are not expected to be found in real samples.

Australian Drinking Water Guidelines recommend that Thermotolerant Coliform, Faecal Enterococci, & E.Coli levels are less than 1cfu/100mL. The recommended maximums are taken from "Australian Drinking Water Guidelines", published by NHMRC & ARMC 2011.

The recommended maximums for analytes in urine are taken from “2018 TLVs and BEIs”, as published by ACGIH (where available). Limit provided for Nickel is a precautionary guideline as per Position Paper prepared by AIOH Exposure Standards Committee, 2016.

Guideline limits for Rinse Water Quality reported as per analytical requirements and specifications of AS 4187, Amdt 2 2019, Table 7.2

Laboratory Acceptance Criteria

Duplicate sample and matrix spike recoveries may not be reported on smaller jobs, however, were analysed at a frequency to meet or exceed NEPM requirements. All samples are tested in batches of 20. The duplicate sample RPD and matrix spike recoveries for the batch were within the laboratory acceptance criteria.

Filters, swabs, wipes, tubes and badges will not have duplicate data as the whole sample is generally extracted during sample extraction.

Spikes for Physical and Aggregate Tests are not applicable.

For VOCs in water samples, three vials are required for duplicate or spike analysis.

Duplicates: >10xPQL - RPD acceptance criteria will vary depending on the analytes and the analytical techniques but is typically in the range 20%-50% – see ELN-P05 QA/QC tables for details; <10xPQL - RPD are higher as the results approach PQL and the estimated measurement uncertainty will statistically increase.

Matrix Spikes, LCS and Surrogate recoveries: Generally 70-130% for inorganics/metals (not SPOCAS); 60-140% for organics/SPOCAS (+/-50% surrogates) and 10-140% for labile SVOCs (including labile surrogates), ultra trace organics and speciated phenols is acceptable.

In circumstances where no duplicate and/or sample spike has been reported at 1 in 10 and/or 1 in 20 samples respectively, the sample volume submitted was insufficient in order to satisfy laboratory QA/QC protocols.

When samples are received where certain analytes are outside of recommended technical holding times (THTs), the analysis has proceeded. Where analytes are on the verge of breaching THTs, every effort will be made to analyse within the THT or as soon as practicable.

Where sampling dates are not provided, Envirolab are not in a position to comment on the validity of the analysis where recommended technical holding times may have been breached.

Where matrix spike recoveries fall below the lower limit of the acceptance criteria (e.g. for non-labile or standard Organics <60%), positive result(s) in the parent sample will subsequently have a higher than typical estimated uncertainty (MU estimates supplied on request) and in these circumstances the sample result is likely biased significantly low.

Measurement Uncertainty estimates are available for most tests upon request.

Analysis of aqueous samples typically involves the extraction/digestion and/or analysis of the liquid phase only (i.e. NOT any settled sediment phase but inclusive of suspended particles if present), unless stipulated on the Envirolab COC and/or by correspondence. Notable exceptions include certain Physical Tests (pH/EC/BOD/COD/Apparent Colour etc.), Solids testing, total recoverable metals and PFAS where solids are included by default.

Samples for Microbiological analysis (not Amoeba forms) received outside of the 2-8°C temperature range do not meet the ideal cooling conditions as stated in AS2031-2012.

Envirolab Services Pty Ltd
ABN 37 112 535 645
12 Ashley St Chatswood NSW 2067
ph 02 9910 6200 fax 02 9910 6201
customerservice@envirolab.com.au
www.envirolab.com.au

CERTIFICATE OF ANALYSIS 365002

Client Details

Client	Fortify Geotech
Attention	Joe Stuart
Address	Unit 2 / 538 Gardneners Rd, ALEXANDRIA, NSW, 2015

Sample Details

Your Reference	**S2207 - Chatswood**
Number of Samples	2 Rock
Date samples received	29/10/2024
Date completed instructions received	29/10/2024

Analysis Details

Please refer to the following pages for results, methodology summary and quality control data.

Samples were analysed as received from the client. Results relate specifically to the samples as received.

Results are reported on a dry weight basis for solids and on an as received basis for other matrices.

Please refer to the last page of this report for any comments relating to the results.

Report Details

Date results requested by	05/11/2024
Date of Issue	05/11/2024

NATA Accreditation Number 2901. This document shall not be reproduced except in full.

Accredited for compliance with ISO/IEC 17025 - Testing. **Tests not covered by NATA are denoted with ***

Results Approved By
Jenny He, Senior Chemist

Authorised By
Nancy Zhang, Laboratory Manager

Misc Inorg - Soil			
Our Reference		365002-1	365002-2
Your Reference	UNITS	BH1/1	BH1/2
Depth		23.7	26.8
Date Sampled		19/09/2024	19/09/2024
Type of sample		Rock	Rock
Date prepared	-	29/10/2024	29/10/2024
Date analysed	-	05/11/2024	05/11/2024
pH 1:5 soil:water	pH Units	9.0	9.3
Electrical Conductivity 1:5 soil:water	µS/cm	40	67
Chloride, Cl 1:5 soil:water	mg/kg	<10	<10
Sulphate, SO4 1:5 soil:water	mg/kg	10	20

Method ID	Methodology Summary
Inorg-001	pH - Measured using pH meter and electrode. Please note that the results for water analyses are indicative only, as analysis outside of the APHA storage times.
Inorg-002	Conductivity and Salinity - measured using a conductivity cell.
Inorg-081	Anions - a range of Anions are determined by Ion Chromatography, in accordance with APHA latest edition, 4110-B. Waters samples are filtered on receipt prior to analysis. Alternatively determined by colourimetry/turbidity using Discrete Analyser.

QUALITY CONTROL: Misc Inorg - Soil						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-1	[NT]
Date prepared	-			29/10/2024	[NT]	[NT]	[NT]	[NT]	29/10/2024	[NT]
Date analysed	-			05/11/2024	[NT]	[NT]	[NT]	[NT]	05/11/2024	[NT]
pH 1:5 soil:water	pH Units		Inorg-001	[NT]	[NT]	[NT]	[NT]	[NT]	100	[NT]
Electrical Conductivity 1:5 soil:water	µS/cm	1	Inorg-002	<1	[NT]	[NT]	[NT]	[NT]	100	[NT]
Chloride, Cl 1:5 soil:water	mg/kg	10	Inorg-081	<10	[NT]	[NT]	[NT]	[NT]	107	[NT]
Sulphate, SO4 1:5 soil:water	mg/kg	10	Inorg-081	<10	[NT]	[NT]	[NT]	[NT]	110	[NT]

Result Definitions

NT	Not tested
NA	Test not required
INS	Insufficient sample for this test
PQL	Practical Quantitation Limit
<	Less than
>	Greater than
RPD	Relative Percent Difference
LCS	Laboratory Control Sample
NS	Not specified
NEPM	National Environmental Protection Measure
NR	Not Reported

Quality Control Definitions

Blank	This is the component of the analytical signal which is not derived from the sample but from reagents, glassware etc, can be determined by processing solvents and reagents in exactly the same manner as for samples.
Duplicate	This is the complete duplicate analysis of a sample from the process batch. If possible, the sample selected should be one where the analyte concentration is easily measurable.
Matrix Spike	A portion of the sample is spiked with a known concentration of target analyte. The purpose of the matrix spike is to monitor the performance of the analytical method used and to determine whether matrix interferences exist.
LCS (Laboratory Control Sample)	This comprises either a standard reference material or a control matrix (such as a blank sand or water) fortified with analytes representative of the analyte class. It is simply a check sample.
Surrogate Spike	Surrogates are known additions to each sample, blank, matrix spike and LCS in a batch, of compounds which are similar to the analyte of interest, however are not expected to be found in real samples.

Australian Drinking Water Guidelines recommend that Thermotolerant Coliform, Faecal Enterococci, & E.Coli levels are less than 1cfu/100mL. The recommended maximums are taken from "Australian Drinking Water Guidelines", published by NHMRC & ARMC 2011.

The recommended maximums for analytes in urine are taken from “2018 TLVs and BEIs”, as published by ACGIH (where available). Limit provided for Nickel is a precautionary guideline as per Position Paper prepared by AIOH Exposure Standards Committee, 2016.

Guideline limits for Rinse Water Quality reported as per analytical requirements and specifications of AS 4187, Amdt 2 2019, Table 7.2

Laboratory Acceptance Criteria

Duplicate sample and matrix spike recoveries may not be reported on smaller jobs, however, were analysed at a frequency to meet or exceed NEPM requirements. All samples are tested in batches of 20. The duplicate sample RPD and matrix spike recoveries for the batch were within the laboratory acceptance criteria.

Filters, swabs, wipes, tubes and badges will not have duplicate data as the whole sample is generally extracted during sample extraction.

Spikes for Physical and Aggregate Tests are not applicable.

For VOCs in water samples, three vials are required for duplicate or spike analysis.

Duplicates: >10xPQL - RPD acceptance criteria will vary depending on the analytes and the analytical techniques but is typically in the range 20%-50% – see ELN-P05 QA/QC tables for details; <10xPQL - RPD are higher as the results approach PQL and the estimated measurement uncertainty will statistically increase.

Matrix Spikes, LCS and Surrogate recoveries: Generally 70-130% for inorganics/metals (not SPOCAS); 60-140% for organics/SPOCAS (+/-50% surrogates) and 10-140% for labile SVOCs (including labile surrogates), ultra trace organics and speciated phenols is acceptable.

In circumstances where no duplicate and/or sample spike has been reported at 1 in 10 and/or 1 in 20 samples respectively, the sample volume submitted was insufficient in order to satisfy laboratory QA/QC protocols.

When samples are received where certain analytes are outside of recommended technical holding times (THTs), the analysis has proceeded. Where analytes are on the verge of breaching THTs, every effort will be made to analyse within the THT or as soon as practicable.

Where sampling dates are not provided, Envirolab are not in a position to comment on the validity of the analysis where recommended technical holding times may have been breached.

Where matrix spike recoveries fall below the lower limit of the acceptance criteria (e.g. for non-labile or standard Organics <60%), positive result(s) in the parent sample will subsequently have a higher than typical estimated uncertainty (MU estimates supplied on request) and in these circumstances the sample result is likely biased significantly low.

Measurement Uncertainty estimates are available for most tests upon request.

Analysis of aqueous samples typically involves the extraction/digestion and/or analysis of the liquid phase only (i.e. NOT any settled sediment phase but inclusive of suspended particles if present), unless stipulated on the Envirolab COC and/or by correspondence. Notable exceptions include certain Physical Tests (pH/EC/BOD/COD/Apparent Colour etc.), Solids testing, total recoverable metals and PFAS where solids are included by default.

Samples for Microbiological analysis (not Amoeba forms) received outside of the 2-8°C temperature range do not meet the ideal cooling conditions as stated in AS2031-2012.

Report Comments

Samples received in good order: Holding time exceedance

FORTIFY
GEOTECH

Appendix E

Atterberg Limit Test Results

IdealCorp Pty Ltd t/as
Ideal Geotech
16-18 Sammut Street Smithfield NSW 2164
PO Box 2270 Smithfield NSW 2164
Ph: (02) 9725 5522 Fax: (02) 87866300

Liquid Limit and Linear Shrinkage Test Results

Customer:	**Fortify Geotech Pty Ltd**	Ideal Job No:	**67317**
Address:	**Chatswood Project, CHATSWOOD, NSW, 2067**	Test Date:	**29/11/23**

BH No	Sample No	Depth (m)	Material Description (visual)	Codes	Liquid Limit %	Linear Shrinkage %
3	L1	1-1.5	Light brown CLAY	1,6,**	68	15.5
4	L1	1.8	Light brown CLAY	1,6,**	59	14
5	L1	1.5-1.8	Light brown CLAY	1,6,**	57	13.5
6	L1	0.5-0.8	Light brown CLAY	1,6,**	59.0	14.5

CODES/LEGEND

NO - Not Obtainable

1 - Air Dried 2 - Low Temperatures (<50C) Oven Dried 3 - Oven (105C) Dried 4 - Unknown 5 - Natural

Method of Preparation

6 - Dry Sieved 7 - Wet Sieved

Shrinkage sample

(CR) - Crumbled (CU) - Curled

** Mould Length is 125mm *** Mould Length is 150mm

Test Methods

Linear Shrinkage AS1289.3.4.1 & Liquid Limit AS1289.3.1.2

NATA ACCREDITED FOR TECHNICAL COMPETENCE

Accredited for compliance with ISO/IEC 17025
Accreditation No 19226

Checked By M. Opacic
Dated 30-Nov-23

Approved Signatory M. Opacic

FORTIFY
GEOTECH

Appendix F

Definitions of Geotechnical Engineering Terms

DESCRIPTION AND CLASSIFICATION OF SOIL

The methods of description and classification of soils used in this report are based on the Australian Standard 1726 – 2017, Geotechnical site investigations. In general, soils are described along the following characteristics: soil name, plasticity or behavioural or particle characteristics of the primary soil component, colour, secondary soil components' plasticity or behavioural or particle characteristics, condition, structure, inclusions, strength or density and origin.

GENERAL DEFINITION - SOIL

SOIL In engineering usage, soil is a natural aggregate of mineral grains which can be separated by such gentle mechanical means as agitation in water, can be remoulded and can be classified according to the Unified Soil Classification System.

SOIL ORIGIN

Soil origins fall into the following categories:

Residual soil: Soils which have been formed in-situ by the chemical weathering of parent rock. These soils no longer retain any visible structure or fabric of the parent soil or rock material.

Extremely weathered material: Formed directly from in situ weathering of geological formations. Although this material of soil strength it retains the structure and/or fabric of the parent rock material.

Alluvial soil: Deposited by streams and rivers.

Estuarine soil: Deposited in coastal estuaries, and including sediments carried by inflowing rivers and streams, and tidal currents.

Marine soil: Deposited in a marine environment.

Lacustrine soil: Deposited in freshwater lakes.

Aeolian soil: Carried and deposited by wind.

Colluvial soil: Soil and rock debris transported down slopes by gravity, with or without the assistance of flowing water.

Topsoil: Mantle of surface and/or near-surface soil often but not always defined by high levels of organic material, both dead and living.

Fill: Any material which has been placed by anthropogenic processes.

SOIL CLASSIFICATION

PARTICLE SIZE DEFINITIONS

Soil components are described according to the predominating particle size, qualified by the grading of other particles present (e.g. sandy clay) on the following basis:

Classification	Components	Subdivision	Particle Size (mm)
Oversize	Boulders		>200
	Cobbles		63 to 200
Coarse grained soil	Gravel	Coarse	19 to 63
		Medium	6.7 to 19
		Fine	2.36 to 6.7
	Sand	Coarse	0.6 to 2.36
		Medium	0.21 to 0.6
		Fine	0.075 to 0.21
Fine grained soil	Silt		0.002 to 0.075
	Clay		<0.002

MOISTURE CONDITION

Coarse Grained Soil		Fine Grained Soil	
Dry (D)	Non-cohesive and free-running.	Moist, dry of plastic limit (w<W_P)	Hard and friable or powdery.
Moist (M)	Soil feels cool, darkened in colour. Soil tends to stick together.	Moist, near plastic limit (w≈W_P)	Soils can be moulded at a moisture content approximately equal to the plastic limit.
Wet (W)	As for moist, with free water forming when handled.	Moist, wet of plastic limit (w>W_P)	Soils usually weakened and free water forms on hands when handling.
		Wet, near liquid limit (w≈W_L)	Near liquid limit.
		Wet, wet of liquid limit (w>W_L)	Wet of liquid limit.

CONSISTENCY/RELATIVE DENSITY

Cohesive soils are classified on the ease by which the soil can be remoulded and can be either assessed in the field by tactile means, by laboratory testing or through mechanical determination methods. Non-cohesive soils are classified on the basis of relative density, generally from the results of in-situ penetration tests and terms for both are defined as below:

Cohesive Soils			Non-cohesive Soils	
Consistency	**Indicative Undrained Shear Strength s_u(kPa)**	**Field Guide to Consistency**	**Term**	**Relative Density (%)**
Very soft (VS)	≤12	Exudes between the fingers when squeezed in hand.	Very Loose (VL)	≤15
Soft (S)	>12 - ≤25	Can be moulded by light finger pressure.	Loose (L)	>15 - ≤35
Firm (F)	>25 - ≤50	Can be moulded by strong finger pressure.	Medium Dense (MD)	>35 - ≤65
Stiff (St)	>50 - ≤100	Cannot be moulded by fingers.	Dense (D)	>65 - ≤85
Very Stiff (VSt)	>100 - ≤200	Can be indented by thumb nail.	Very Dense (VD)	>85
Hard (H)	>200	Can be indented with difficulty by thumb nail.		
Friable (Fr)	-	Can be easily crumbled or broken into small pieces by hand.		

MINOR COMPONENTS

Descriptive Term	Assessment Guide	Proportion of minor component in:
With	Easily detectable by visual or tactile means and little difference between general properties and properties of primary component.	Coarse grained soils: Fines – 5 to 12% Accessory coarse component – 15 to 30% Fine grained soils: Coarse component - 15 to 30%
Trace	Detectable by visual or tactile means but little or no difference between general properties and properties of primary component.	Coarse grained soils: Fines – <5% Accessory coarse component – <15% Fine grained soils: Coarse component - <15%

CEMENTATION

Where cementation is present in soils, they can be either weakly cemented where they are easily disaggregated by hand in air or water or moderately cemented where effort is required to disaggregate the soil by hand in air or water.

SAMPLING

Sampling is carried out during drilling to allow engineering examination (and laboratory testing where required) of soil or rock.

Disturbed samples taken during drilling provide information on colour, type, inclusions and depending upon the degree of disturbance, some information on strength and structure.

Undisturbed samples are generally taken by one of two methods:

1. Driving or pushing a thin walled sample tube into the soil and withdrawing with a sample of soil in a relatively undisturbed state.
2. Core drilling using a retractable inner tube (R.I.T.) core barrel.

Such samples yield information on structure and strength in additions to that obtained from disturbed samples and are necessary for laboratory determination of shear strength and compressibility. Undisturbed sampling is generally effective only in cohesive soils.

Details of the type and method of sampling are given in the report.

PENETRATION TESTING

The relative density of non-cohesive soils is generally assessed by in-situ penetration tests, the most common of which is the standard penetration test. The test procedure is described in Australian Standard 1289 “Testing Soils for Engineering Purposes” – Test No. F3.1.

The standard penetration test is carried out by driving a 50mm diameter split tube penetrometer of standard dimensions under the impact of a 63kg hammer having a free fall of 750mm.

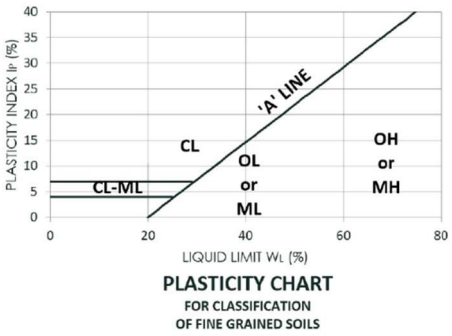
The “N” value is determined as the number of blows to achieve 300mm of penetration (generally after disregarding the first 150mm penetration through possibly disturbed material). The results of these tests can be related empirically to the engineering properties of the soil.

The test is also used to provide useful information in cohesive soils under certain conditions, a good quality disturbed sample being recovered with each test. Other forms of in situ testing are used under certain conditions and where this occurs, details are given in the report.

FORTIFY GEOTECH

Unified Soil Classification System (Metricated)
Data for Description Identification and Classification of Soils

MAJOR DIVISIONS			DESCRPTION				FIELD IDENTIFICATION						LABORATORY CLASSIFICATION				
			Group Symbol	Graphic Symbol	TYPICAL NAME	DESCRIPTIVE DATA		GRAVELS AND SANDS				Group Symbol	% < 0.075 mm	PLASTICITY OF FINE FRACTION	Coefficient of Uniformity C_u	Coefficient of Curvature C_c	Notes
								GRADATIONS		NATURE OF FINES	DRY STRENGTH						
COARSE GRAINED SOILS	More than 65% by dry mass, less than 63mm is greater than 0.075mm.	GRAVELS More than 50% of coarse grains are greater than 2.36mm.	GW		Well graded gravels and gravel-sand mixtures, little or no fines	Give soil name, indicate approximate percentages of sand and gravel, particle characteristics including particle size subdivision, particle shape, colour, secondary component characteristics and other pertinent descriptive information, symbols in parenthesis. For undisturbed soil add information on structure including zoning, defects and cementing, moisture condition, and relative density. Example: (SP) SAND, trace silt, grey, medium grained, medium dense; dry; Tomago Sand Beds.	COARSE GRAINED SOILS More than 65% of material less than 63mm is greater than 0.075mm. A 0.075mm particle is about the smallest particle visible to the naked eye.	GOOD	Wide range in grain size	"Clean" materials (not enough fines to bond coarse grains)	None	GW	Use the gradation curve of material passing 63mm for classification of fractions according to criteria for major component.	0-5	-	>4	Between 1 and 3	1. Identify fines by the method given for fine grained soils. 2. For fines contents between 5% and 12%, the soil shall be given a dual classification comprising the two group symbols separated by a dash, e.g. for a gravel with between 5% and 12% silt fines, the classification is GP-GM. 3. Soils that are dominated by boulders, cobbles or peat (Pt) are described separately and are not classified.
			GP		Poorly graded gravels and gravel-sand mixtures, little or no fines			POOR	Predominantly one size or range of sizes			GP		0-5	-	Fails to comply with above		
		GRAVELLY SOILS	GM		Silty gravels, gravel-sand-silt mixtures			GOOD TO FAIR	"Dirty" materials (Excess of fines)	Fines are silty (1)	None to medium	GM		12-50	Below 'A' line and I_P >7	-	-	
			GC		Clayey gravels gravel-sand-clay mixtures					Fines are clayey (1)	Medium to high	GC		12-50	Above 'A' line and I_P >7	-	-	
		SANDS More than 50% of coarse grains are less than 2.36mm.	SW		Well graded sands and gravelly sands, little or no fines			GOOD	Wide range in grain size	"Clean" materials (not enough fines to bond coarse grains)	None	SW		0-5	-	>6	Between 1 and 3	
			SP		Poorly graded sands, little or no fines			POOR	Predominantly one size or range of sizes			SP		0-5	-	Fails to comply with above		
		SANDY SOILS	SM		Silty sand, sand-silt mixtures			GOOD TO FAIR	"Dirty" materials (Excess of fines)	Fines are silty (1)	None to medium	SM		12-50	Below 'A' line or I_P <4	-	-	
			SC		Clayey sands, sand-clay mixtures					Fines are clayey (1)	Medium to high	SC		12-50	Above 'A' line and I_P >7	-	-	
FINE GRAINED SOILS	More than 35% by dry mass, less than 63mm is less than 0.075mm.	Liquid Limit less than 50%.	ML		Inorganic silts, very fine sands, rock flour, silty or clayey fine sands.	Give soil name, indicate degree and character of plasticity, colour, secondary component characteristics other pertinent descriptive information, symbols in parenthesis. For undisturbed soil add information on structure including zoning, defects and cementing, moisture condition, and consistency. Example: (Cl) CLAY, with gravel, red-brown, medium plasticity, very stiff; gravel 20%, fine to medium, sub-rounded; moist, with desiccation cracks; residual.	FINE GRAINED SOILS More than 35% of material less than 63mm is smaller than 0.075mm.	SILT AND CLAY FRACTION Fraction smaller than 0.2 mm AS sieve size												
			CL		Inorganic clays of low to medium plasticity, gravelly clays, sandy clays, silty clays, lean clays			DRY STRENGTH	DILANTANCY	TOUGHNESS		ML		More than 35% of material is less than 63mm passing 0.075mm.	Below 'A' line			
			OL		Organic silts and organic silty clays of low plasticity			None to low	Slow to rapid	Low		CL, CI			Above 'A' line			
		Liquid Limit more than 50%.	MH		Inorganic silts, micaceous or diatomaceous fine sands or silts, elastic silts			Medium to high	None to slow	Medium		OL			Below 'A' line			
			CH		Inorganic clays of high plasticity, fat clays			Low to medium	Slow	Low		MH			Below 'A' line			
			OH		Organic clays of medium to high plasticity			Low to medium	None to slow	Low to medium		CH			Above 'A' line			
			Pt		Peat muck and other highly organic soils			High to very high	None	High		OH			Below 'A' line			
								High to high	None to very slow	Low to medium								
							Readily identified by colour, odour, spongy feel and generally fibrous texture					PT		* Effervescence with H_2O_2				



PLASTICITY CHART
FOR CLASSIFICATION
OF FINE GRAINED SOILS

DESCRIPTION AND CLASSIFICATION OF ROCK

The methods of description and classification of rock used in this report are based on the Australian Standard 1726 – 2017, Geotechnical site investigations. In general, descriptions cover the following properties for rock – rock name, grain size, colour, fabric and texture, inclusions or minor components, moisture content, durability, rock material condition including strength and weathering and/or alteration, defects and geological description.

GENERAL DEFINITIONS – ROCK

ROCK In engineering usage, rock is a natural aggregate of minerals connected by strong and permanent cohesive forces. Since "strong" and "permanent" are subject to different interpretations, the boundary between rock and soil is necessarily an arbitrary one. Rock material is intact rock that is bounded by defects.

DEFECT Discontinuity, fracture, break or void in the material or materials across which there is little or no tensile strength.

STRUCTURE The nature and configuration of the different defects within the rock mass and their relationship to each other.

ROCK MASS The entirety of the system formed by all of the rock material and all the defects that are present.

DESCRIPTIVE TERMS

ROCK NAME Simple rock names are used rather than precise geological classification. Rock names fall into category types of sedimentary rocks, igneous rocks, metamorphic rocks and duricrust rocks.

PARTICLE SIZE

Grain size terms for sedimentary rocks with predominantly sand sized grains are:

Coarse grained – mainly 0.6mm to 2mm.

Medium grained – mainly 0.2mm to 0.6mm.

Fine grained – mainly 0.06mm (just visible) to 0.2mm.

In igneous and metamorphic rock types, where significant, the following terms are used to describe the dominant or average grain size and/or the grain size may be recorded in millimetres:

Coarse grained – mainly greater than 2mm.

Medium grained – mainly 0.06mm to 2mm.

Fine grained – mainly less than 0.06mm (just visible).

If readily identifiable, the minerals should be described.

FABRIC

When the arrangement of grains shows an alignment, a preferred orientation or a layering that is visible, descriptive terms for sedimentary rocks are bedding and lamination. Bedding is layering produced by changes in sedimentation. Lamination is similar to bedding but developed in layer thicknesses of less than 20mm. Fabric descriptive terms for metamorphic rocks are foliation, which is the parallel arrangement of minerals due to metamorphic processes and cleavage, which is a type of foliation developed in fine grained metamorphic rocks such as slates. For igneous rocks, flow banding is a layering produced during flow of a partially solidified igneous rock that causes crystals to become oriented.

INDISTINCT FABRIC

Where layering or fabric is just visible. There is little effect on strength properties.

DISTINCT FABRIC

Where layering or fabric is easily visible. The rock may break more easily parallel to the fabric.

ROCK WEATHERING DEFINITIONS

Extremely Weathered (XW)	Rock substance affected by weathering to the extent that the rock exhibits soil properties, i.e. it can be remoulded and can be classified according to the Unified Soil Classification System, but the texture of the original rock is still evident.
Highly Weathered (HW)	Rock substance affected by weathering to the extent that limonite staining or bleaching affects the whole of the rock substance and other signs of the chemical or physical decomposition are evident. Porosity and strength may be increased or decreased compared to the fresh rock usually as a result of iron leaching or deposition. The colour and strength of the original fresh rock substance is no longer recognisable.
Moderately Weathered (MW)	Rock substance affected by weathering to the extent that staining extends throughout the whole of the rock substance and the original colour of the fresh rock is no longer recognisable.
Slightly Weathered (SW)	Rock substance affected by weathering to the extent that partial staining or discolouration of the rock substance, usually limonite, has taken place. The colour and texture of fresh rock is recognisable.
Fresh (FR)	Rock substance unaffected by weathering.

The degrees of rock weathering may be gradational. Intermediate stages are described by dual symbols with the prominent degree of weathering first (e.g. EW-HW).

The various degrees of weathering do not necessarily define strength parameters as some rocks are of low strength, even when fresh, to the extent that they can be broken by hand across the fabric, and some rocks may increase in strength during the weathering process.

ROCK STRENGTH

Rock strength is defined by the Point Load Strength Index (Is 50) and refers to the strength of the rock substance in the direction normal to the bedding. The test procedure is described by the International Society of Rock Mechanics.

Term	**Point Load Strength Index $I_{s(50)}$ MPa**	**Field Guide**	**Approx Unconfined Compressive Strength MPa***
Very Low Strength (VL)	0.03 to 0.1	Material crumbles under firm blows with sharp end of pick; can be peeled with knife; too hard to cut a triaxial sample by hand. Pieces up to 30mm thick can be broken by finger pressure.	0.6 to 2
Low Strength (L)	0.1 to 0.3	Easily scored with a knife; indentations 1mm to 3mm show in the specimen with firm blows of the pick point; has dull sound under hammer. A piece of core 150 mm long by 50 mm diameter may be broken by hand. Sharp edges of core may be friable and break during handling.	2 to 6
Medium Strength (M)	0.3 to 1	Readily scored with a knife; a piece of core 150mm long x 50mm dia. can be broken by hand with difficulty.	6 to 20
High Strength (H)	1 to 3	A piece of core 150mm long x 50mm dia. cannot be broken by hand but can be broken by a pick with a single firm blow, rock rings under hammer.	20 to 60
Very High Strength (VH)	3 to 10	Hand specimen breaks with pick after more than one blow; rock rings under hammer.	60 to 200
Extremely High Strength (EH)	more than 10	Specimen requires many blows with geological pick to break through intact material; rock rings under hammer.	more than 200

ROCK DEFECT TYPES

This classification applies to the range of possible rock defect types that are types of natural fractures along which the core is discontinuous. These include bedding plane partings, joints and other rock defects, but exclude known artificial fractures such as drilling breaks.

Term		Description	Diagram
Parting		A surface or crack across which the rock has little or no tensile strength. Parallel or sub-parallel to layering (e.g. bedding) or a planar anisotropy in the rock material (e.g. cleavage). May be open or closed.	
Joint		A surface or crack with no apparent shear displacement an across which the rock has little or no tensile strength, but which is not parallel to layering or to planar anisotropy in the rock material. May be open or closed.	
Sheared Surface		A near planar, curved or undulating surface which is usually smooth, polished or slickensided and which shows evidence of shear displacement.	
Sheared Zone		Zone of rock material with roughly parallel near planar, curved or undulating boundaries cut by closely spaced joints, sheared surfaces or other defects. Some of the defects are usually curved and intersect to divide the mass into lenticular or wedge-shaped blocks.	
Seams	Sheared Seam	Seam of soil material with roughly parallel almost planar boundaries, composed of soil materials with roughly parallel near planar, cuved or undulating boundaries cut by closely spaced joints, sheared surfaces or other defects. Some of the defects are usually curved and intersect to divide the mass into lenticular or wedge-shaped blocks.	
	Crushed Seam	Seam of soil material with roughly parallel almost planar boundaries, composed of disoriented, usually angular fragments of the host rock material which may be more weathered than the host rock. The seam has soil properties.	
	Infilled Seam	Seam of soil material usually with distinct roughly parallel boundaries formed by the migration of soil into an open cavity or joint, infilled seams less than 1mm thick may be described as a veneer or coating on a joint surface.	
	Extremely Weathered Seam	Seam of soil material, often with gradational boundaries. Formed by weathering of the rock material in place.	

The spacing, length (sometimes called persistence), aperture (openness), and seam thickness should generally be described directly in millimetres or metres.

ROCK DEFECT DESCRIPTIONS

DEFECT ROUGHNESS TERMS		DEFECT SHAPE TERMS		DEFECT COATING TERMS	
Term	**Description**	**Term**	**Description**	**Term**	**Description**
Very Rough	Many large surface irregularities (amplitude generally more than 1mm). Feels like, or coarser than very coarse sand paper.	Planar	The defect does not vary in orientation.	Clean	No visible coating.
Rough	Many small surface irregularities (amplitude generally less than 1mm). Feels like fine to coarse sand paper.	Curved	The defect has a gradual change in orientation.	Stained	No visible coating but surfaces are discoloured.
Smooth	Smooth to touch. Few or no surface irregularities.	Undulating	The defect has a wavy surface.	Veneer	A visible coating or soil or mineral, too thin to measure; may be patchy.
Polished	Shiny smooth surface.	Stepped	The defect has one or more well defined steps.	Coating	A visible coating up to 1mm thick. Thicker soil material should be described using appropriate defect terms (e.g. infilled seam). Thicker rock strength material should be described as a vein.
Slickensided	Grooved or striated surface, usually polished.	Irregular	The defect has many sharp changes of orientation.		

FORTIFY
GEOTECH

Appendix G

Limitations of this Report

Limitations in the Use and Interpretation of this Geotechnical Report

Our Professional services were performed, our findings obtained, and our recommendations prepared in accordance with generally accepted engineering principles and practices. This warranty is in lieu of all other warranties, either expressed or implied.

The geotechnical report was prepared for the use of the Owner in the design of the subject facility and should be made available to potential contractors/purchasers of the site and/or for information on factual data only. This report should not be used for contractual purposes as a warranty of interpreted subsurface conditions such as those indicated by the interpretive boring and test pit logs, cross- sections, or discussion of subsurface conditions contained herein.

The analyses, conclusions and recommendations contained in the report are based on site conditions as they presently exist and assume that the exploratory borings, test pits, and/or probes are representative of the subsurface conditions of the site. If, during construction, subsurface conditions are found which are significantly different from those observes in the exploratory borings and test pits, or assumed to exist in the excavations, we should be advised at once so that we can review these conditions and reconsider our recommendations where necessary. If there is a substantial lapse of time between the submission of this report and the start of work at the site, or if conditions have changed due to natural causes or construction operations at or adjacent to the site, this report should be reviewed to determine the applicability of the conclusions and the recommendations considering the changed conditions and time lapse.

The Summary Boring Logs are our opinion of the subsurface conditions revealed by periodic sampling of the ground as the borings progressed. The soil descriptions and interfaces between strata are interpretive and actual changes may be gradual. Groundwater levels often vary seasonally. Groundwater levels reported on the boring logs or in the body of the report are factual data only for the dates shown.

The boring logs and related information depict subsurface conditions only at the specific locations and at the particular time designated on the logs. Soil conditions at the other locations may differ from conditions occurring at these boring locations. Also, the passage of time may result in a change in the soil conditions at these boring locations. In making an assessment of a site from a limited number of boreholes or test pits there is the possibility that variations may occur between test locations.

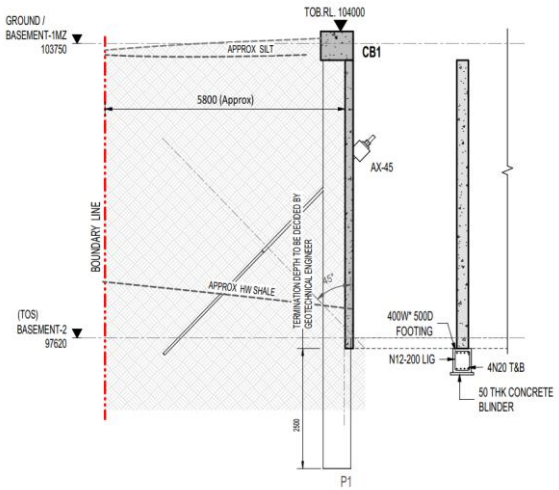
The data derived from the site investigation program and subsequent laboratory testing are extrapolated across the site to form an inferred geological model and an engineering opinion is rendered about overall subsurface conditions and their likely behaviour with regard to the proposed development. Despite investigation the actual conditions at the site might differ from those inferred to exist, since no subsurface exploration program, no matter how comprehensive, can reveal all subsurface details and anomalies. It is recommended that the Owner consider providing a contingency fund to accommodate such potential extra costs.

This firm cannot be responsible for any deviation from the intent of this report including, but not restricted to, any changes to the scheduled time of construction, the nature of the project or the specific construction methods or means indicated in this report: nor can our firm be responsible for any construction activity on sites other than the specific site referred to in this report.

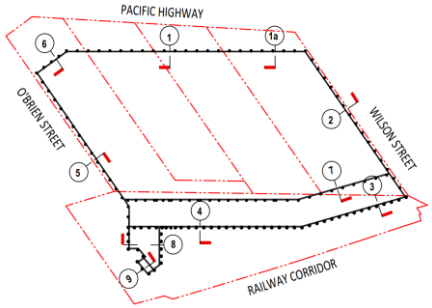
FORTIFY
GEOTECH

Appendix C

Summary of soil-structure analysis for design sections 1 to 3

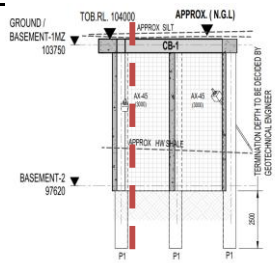


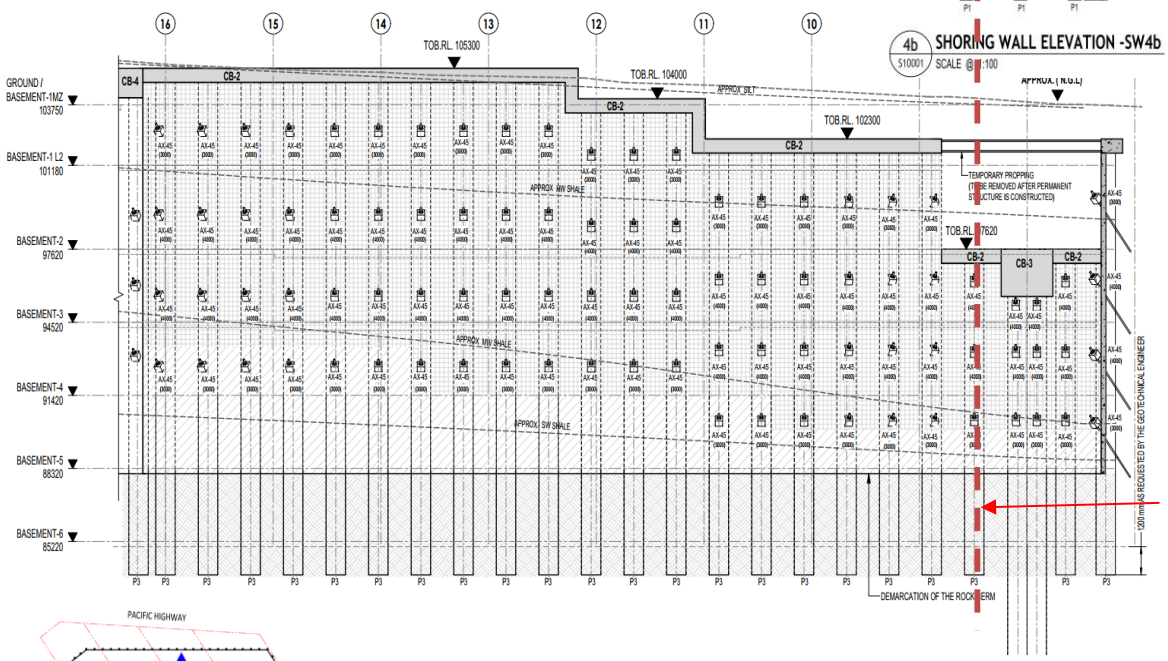
09 S10001 **SECTION-9** SCALE @ 1:50



Typical cross-section view of upper shoring wall

(extract of Cardigal Group Drawing S10020 Rev H, dated 09/05/25, Project Ref. 01-100084)

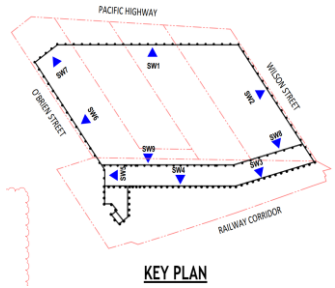




4b S10001 **SHORING WALL ELEVATION -SW4b** SCALE @ 1:100

Location of design cross section

DESIGN SECTION 1



KEY PLAN

04 S10001 **SHORING WALL ELEVATION -SW4** SCALE @ 1:100

Elevation view showing indicative location of design cross-section

(extract of Cardigal Group Drawing S10011 Rev H, dated 09/05/25, Project Ref. 01-100084)

CLIENT
BB Wilson

PROJECT
849, 853 & 859 Pacific Highway, Chatswood

FORTIFY GEOTECH

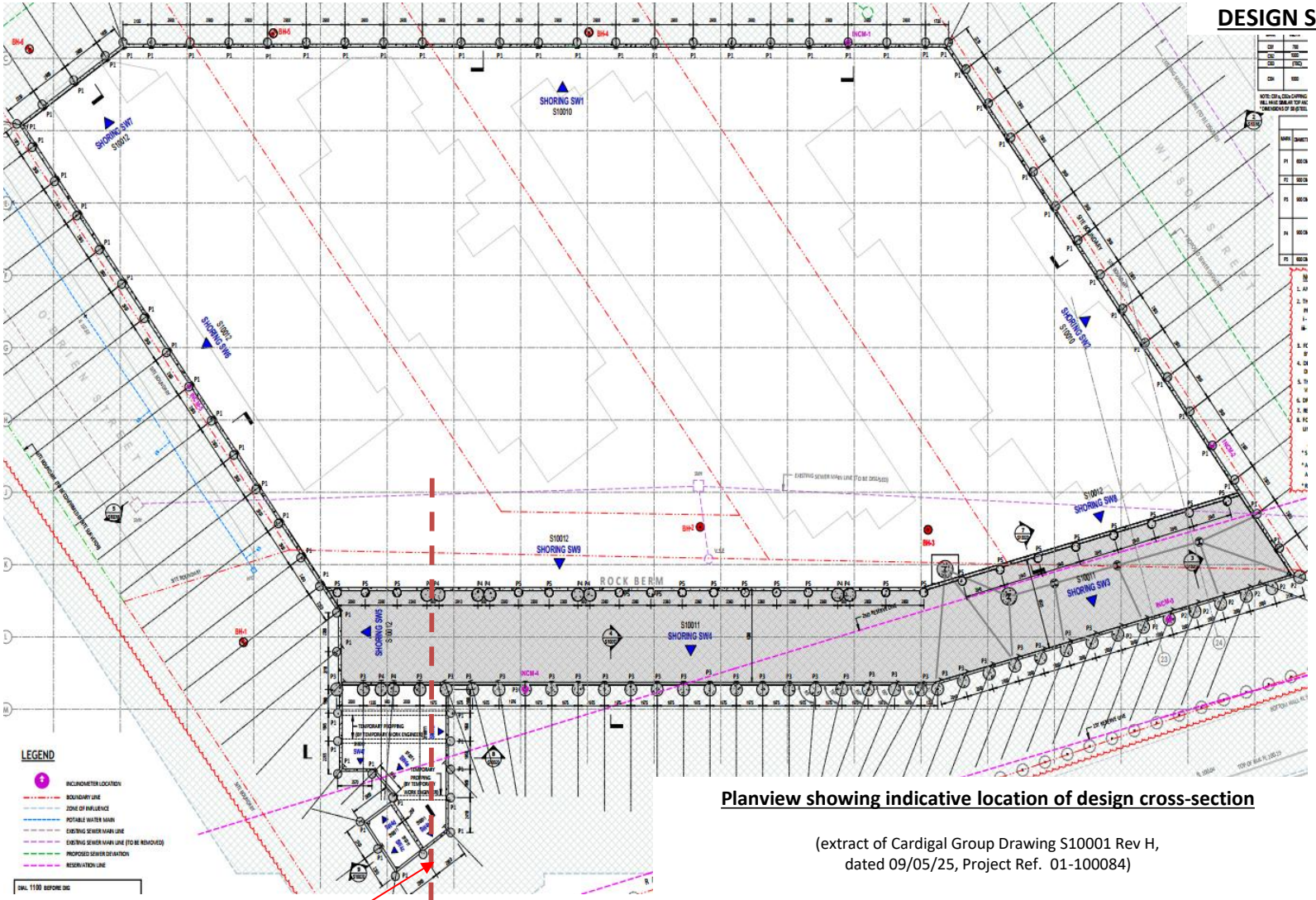
DATE	30/05/2025
PREPARED	MN
DESIGN	MN
REVIEW	JM
APPROVED	JM

TITLE
Proposed shoring system - structural input

PROJECT No.	DOC. No	Rev.	FIG. No
S2207	S2207_GIA_01	1	XS1-1

https://fortifygeotech.sharepoint.com/sites/FortifyGeotech2/Shared Documents/01. Jobs/S2207 - 849, 853 & 859 Pacific Highway, Chatsw

DESIGN SECTION 1



Planview showing indicative location of design cross-section

(extract of Cardigal Group Drawing S10001 Rev H, dated 09/05/25, Project Ref. 01-100084)

Location of design cross section

CLIENT
BB Wilson

PROJECT
849, 853 & 859 Pacific Highway, Chatswood

FORTIFY GEOTECH

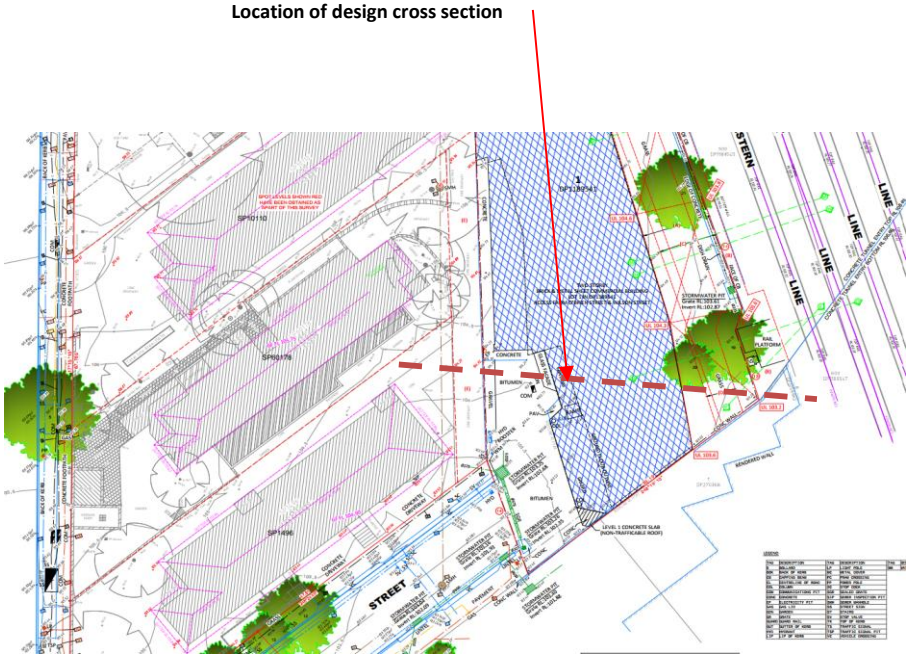
DATE	30/05/2025
PREPARED	MN
DESIGN	MN
REVIEW	JM
APPROVED	JM

TITLE
Proposed shoring system - plan view

PROJECT No.	DOC. No	Rev.	FIG. No
S2207	S2207_GIA_01	1	XS1-2

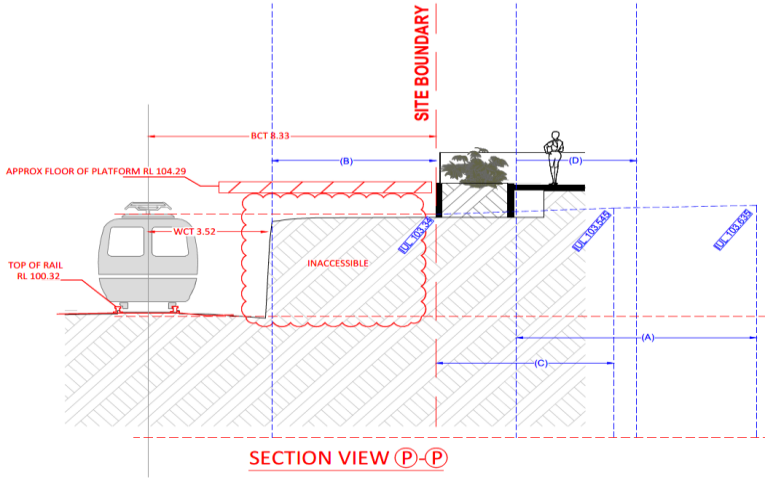
https://fortifygeotech.sharepoint.com/sites/FortifyGeotech2/Shared Documents/01. Jobs/S2207 - 849, 853 & 859 Pacific Highway, Chatsv

DESIGN SECTION 1



Survey plan of the site and surroudings, showing location of design cross-section

(extract of SDS Pty Ltd Drawing 6 of 9, REF: 9062 Rev C, dated 20/03/24)



Cross-section P-P showing proposed development in relation to railway assets

(extract of SDS Pty Ltd Drawing 5 of 9, REF: 9062 Rev C, dated 20/03/24)

CLIENT
BB Wilson

PROJECT
849, 853 & 859 Pacific Highway, Chatswood

FORTIFY GEOTECH

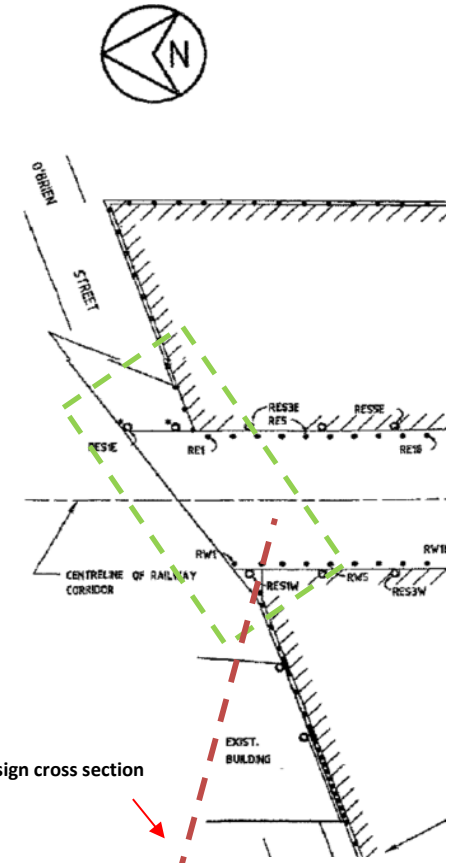
DATE	30/05/2025
PREPARED	MN
DESIGN	MN
REVIEW	JM
APPROVED	JM

TITLE
Survey/architectural drawings - geometric input

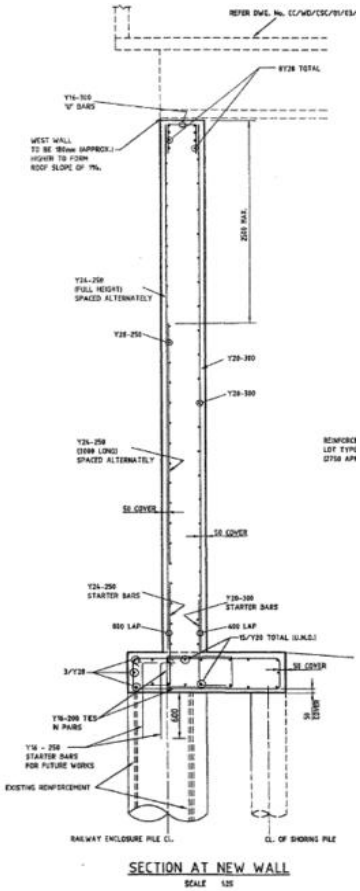
PROJECT No.	DOC. No	Rev.	FIG. No
S2207	S2207_GIA_01	1	XS1-3

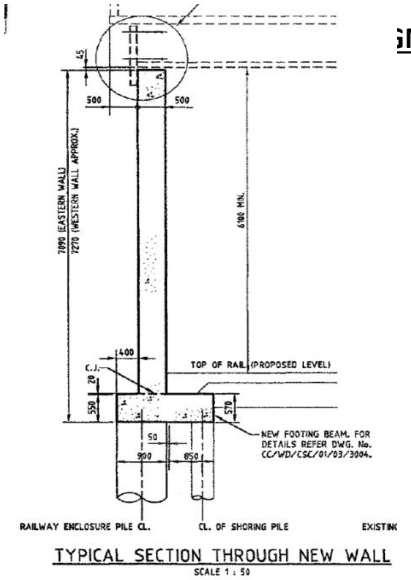
https://fortifygeotech.sharepoint.com/sites/FortifyGeotech2/Shared Documents/01. Jobs/S2207 - 849, 853 & 859 Pacific Highway, Chatsv

GN SECTION 1

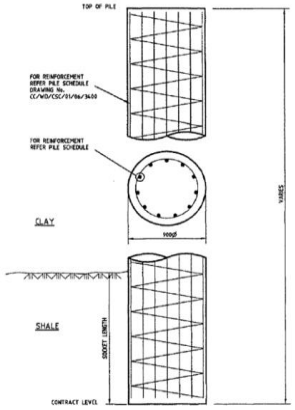


Location of design cross section

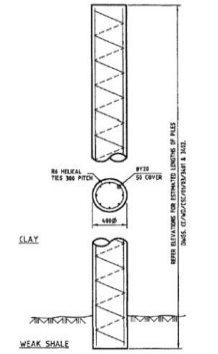




TYPICAL SECTION THROUGH NEW WALL
SCALE 1 : 50



TYPICAL RES PILE REINFORCEMENT DETAIL



TYPICAL RAILWAY CORRIDOR SHORING PILE REINFORCEMENT DETAIL

As-built records

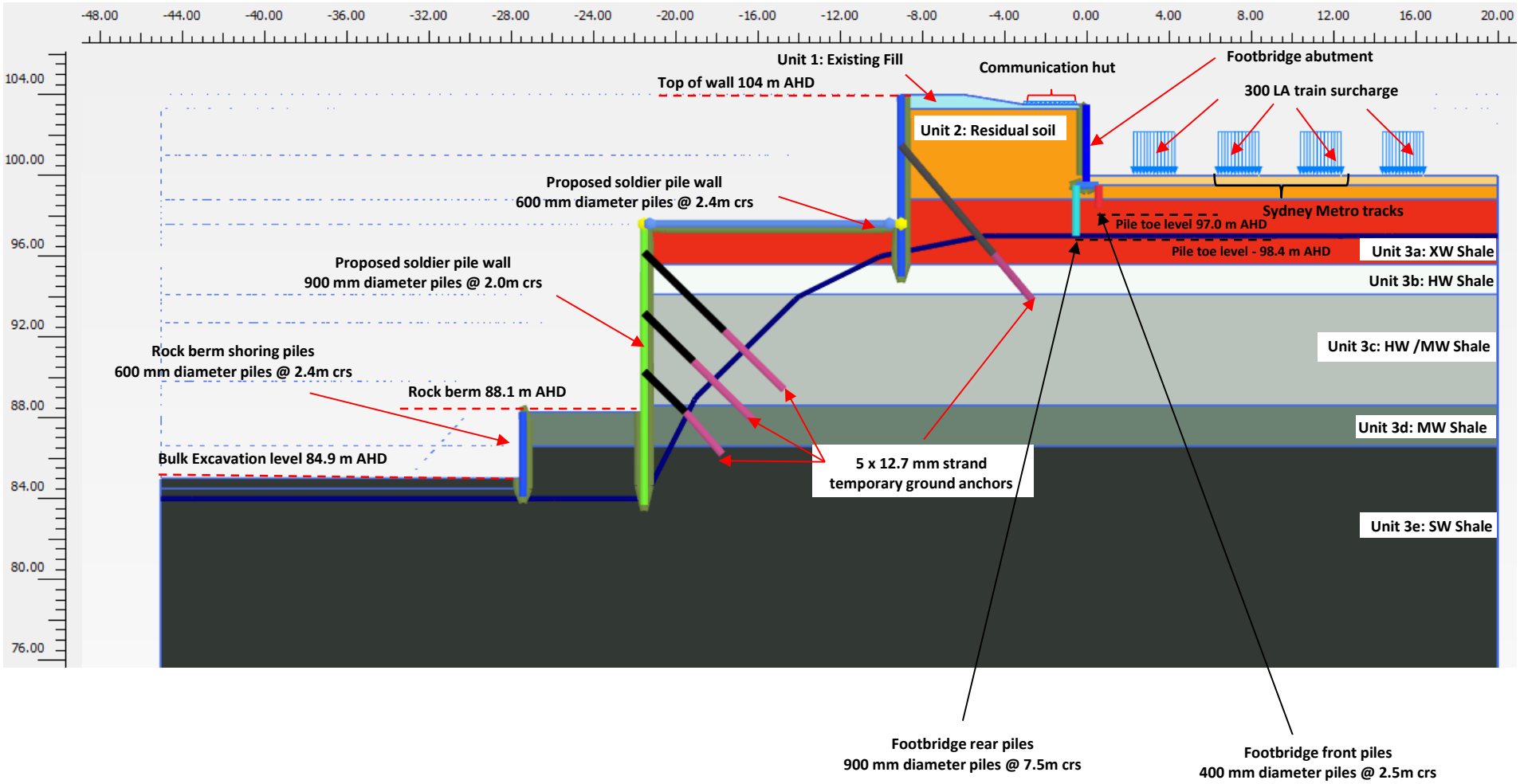
(extracts of Railway Enclosure Structure - Pacific Place, Railway Street Chastwood C, dated October 2001)

CLIENT	BB Wilson
PROJECT	849, 853 & 859 Pacific Highway, Chatswood
DATE	30/05/2025
PREPARED	MN
DESIGN	MN
REVIEW	JM
APPROVED	JM
TITLE	**Existing railway assets as-builts**

PROJECT No.	DOC. No	Rev.	FIG. No
S2207	S2207_GIA_01	1	XS1-4

https://fortifygeotech.sharepoint.com/sites/FortifyGeotech2/Shared Documents/01. Jobs/S2207 - 849, 853 & 859 Pacific Highway, Chatsv

DESIGN SECTION 1



CLIENT
BB Wilson

PROJECT
849, 853 & 859 Pacific Highway, Chatswood

FORTIFY GEOTECH

DATE	30/05/2025
PREPARED	MN
DESIGN	MN
REVIEW	JM
APPROVED	JM

TITLE
PLAXIS 2D - Model overview

PROJECT No.	DOC. No	Rev.	FIG. No
S2207	S2207_GIA_01	1	XS1-5

https://fortifygeotech.sharepoint.com/sites/FortifyGeotech2/Shared Documents/01. Jobs/S2207 - 849, 853 & 859 Pacific Highway, Chatsv

DESIGN SECTION 1

Stage no:		Construction stage	Surcharge/Loading	Structural EI stiffness of new piled wall
1		Establish initial conditions	/	N/A
2		Current housing development	Dwelling (20 kPa) & pedestrian (5 kPa) surcharge	
3		Railway trench excavation	As above	
4		Railway operation	Dwelling (20 kPa), pedestrian (5 kPa) surcharges & LA300 train surcharge	
5		Demolition of current housing development	LA300 train surcharge	
6		Install outer soldier pile wall	As above	0.9 EI
7		1st level of excavation	As above	
8		Installation of 1st level of ground anchors	As above	
9		2nd level of excavation	As above	
10		Install inner solder pile wall	As above	
11		3rd level of excavation	As above	
12		Installation of 2nd level of ground anchors	As above	
13		4th level of excavation	As above	
14		Installation of 3rd level of ground anchors	As above	
15		5th level of excavation	As above	
16		Installation of 4th level of ground anchors	As above	
17		6th level of excavation (Top of rock berm)	As above	
18		Install rock berm shoring wall	As above	
19		Excavation to bulk excavation level	As above	
	19.1	Over-excavation scenario	As above	
20		Change to long-term structural properties	As above	0.6 EI
21		Install Basement -5 slab	As above	
22		Install Basement -4 slab	As above	
23		Deactivate 4th level of ground anchors	As above	
24		Install Basement -3 slab	As above	
25		Deactivate 3rd level of ground anchors	As above	
26		Install Basement -2 slab	As above	
27		Deactivate 2nd level of ground anchors	As above	
28		Install Basement -1MZ slab	As above	
29		Deactivate 1st level of ground anchors	As above	
30		Application of 20kPa surcharge for future railway operations	Railway (20 kPa) surcharge & LA300 train surcharge	

CLIENT
BB Wilson

PROJECT
849, 853 & 859 Pacific Highway, Chatswood

FORTIFY GEOTECH

DATE	30/05/2025
PREPARED	MN
DESIGN	MN
REVIEW	JM
APPROVED	JM

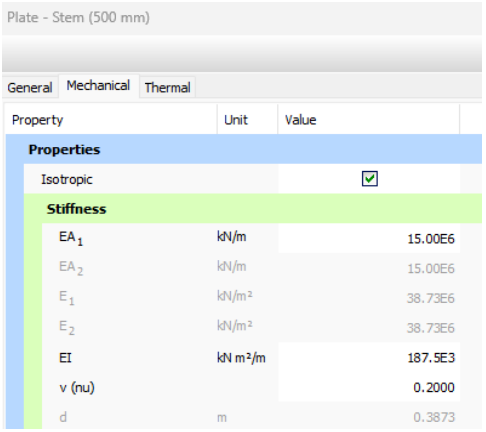
TITLE
PLAXIS 2D - Construction staging

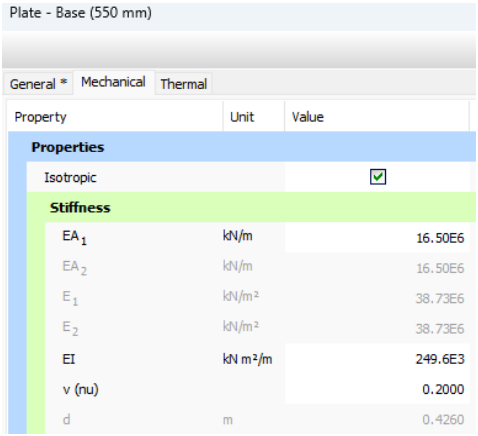
PROJECT No.	DOC. No	Rev.	FIG. No
S2207	S2207_GIA_01	1	XS1-6

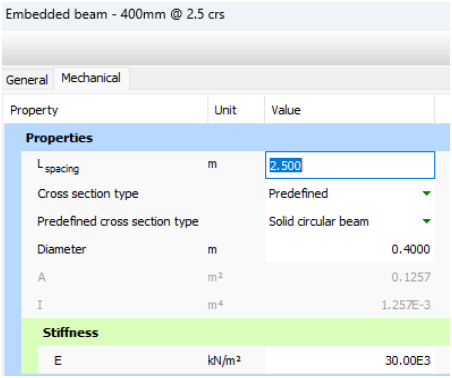
https://fortifygeotech.sharepoint.com/sites/FortifyGeotech2/Shared Documents/01. Jobs/S2207 - 849, 853 & 859 Pacific Highway, Chatsv

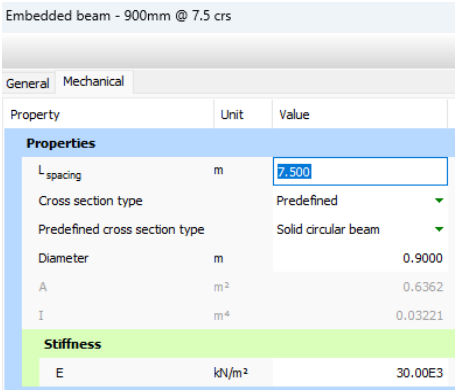
Existing railway asset

DESIGN SECTION 1

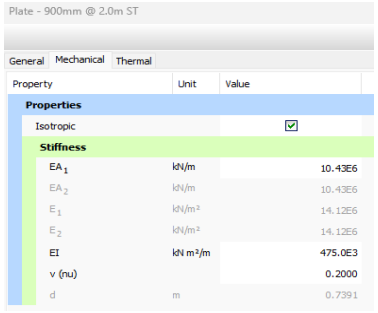


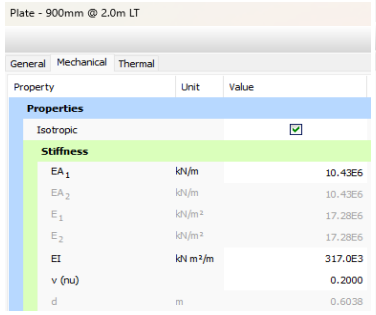


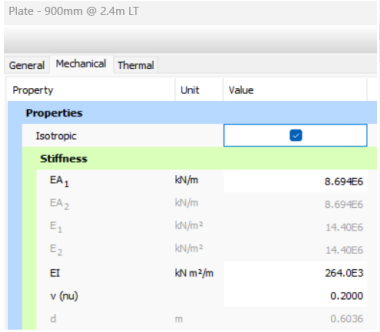


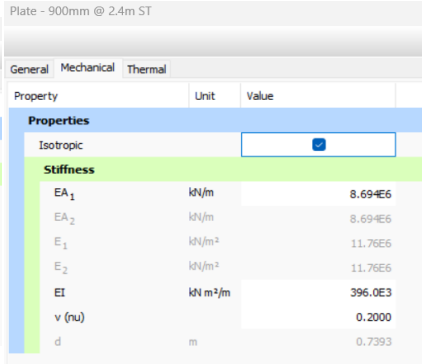


Proposed shoring system









CLIENT
BB Wilson

PROJECT
849, 853 & 859 Pacific Highway, Chatswood

FORTIFY GEOTECH

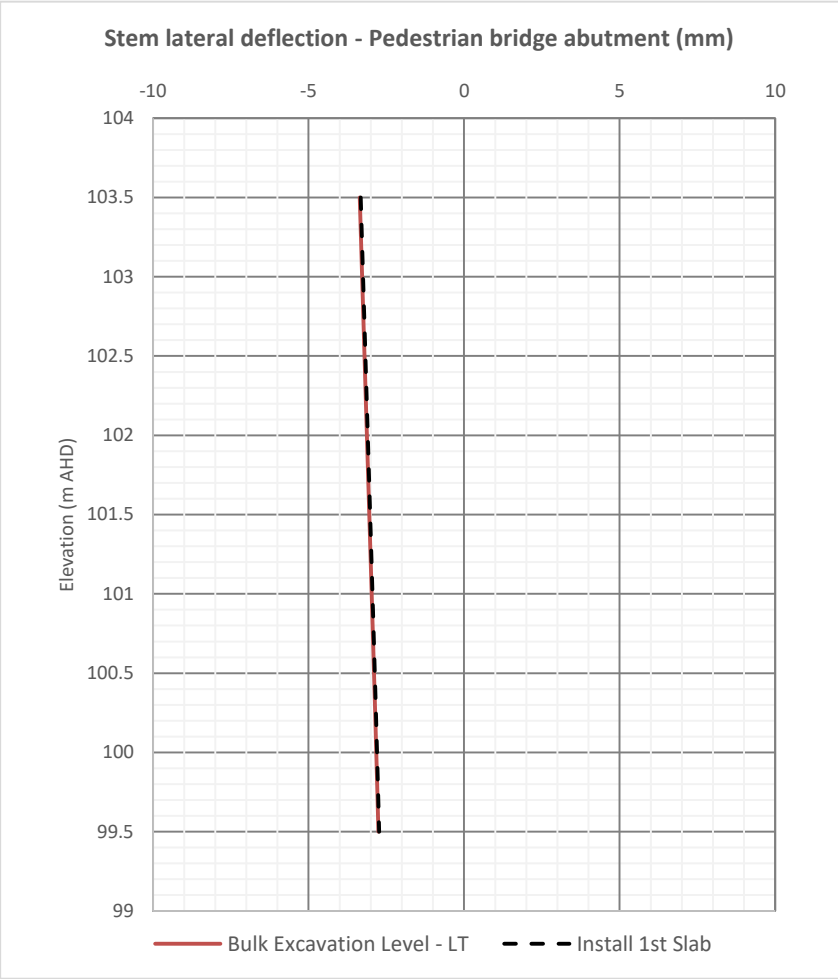
DATE	30/05/2025
PREPARED	MN
DESIGN	MN
REVIEW	JM
APPROVED	JM

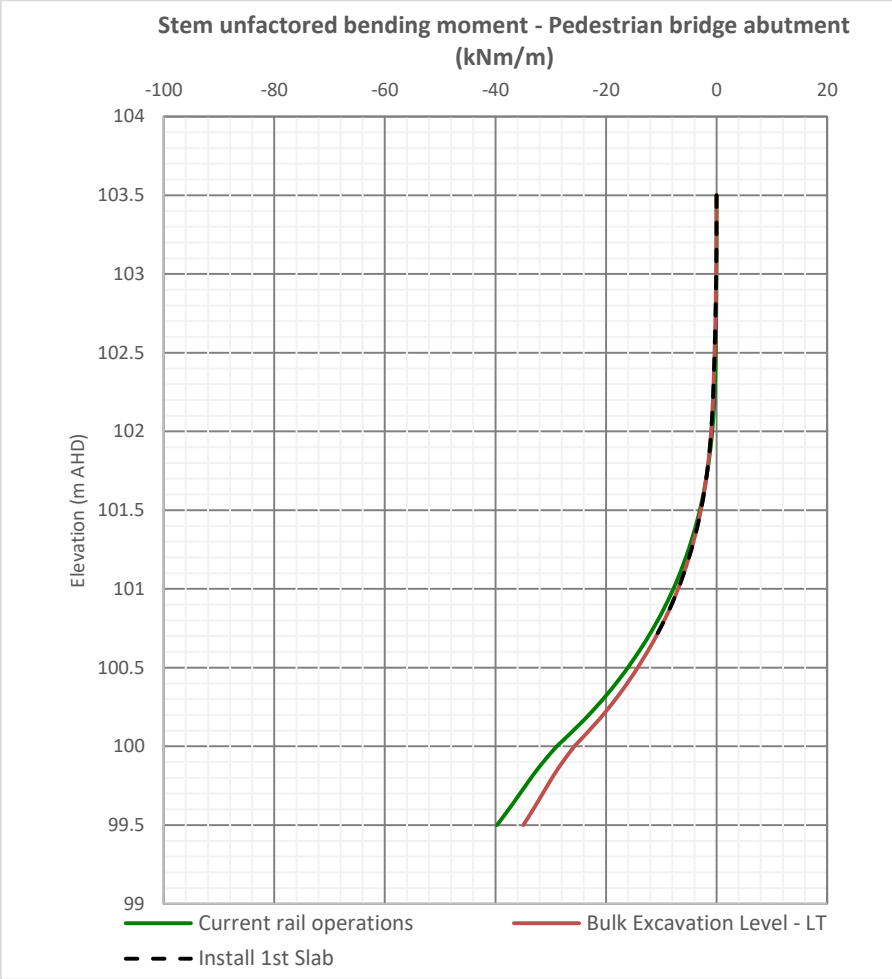
TITLE
PLAXIS 2D - Structural elements properties

PROJECT No.	DOC. No	Rev.	FIG. No
S2207	S2207_GIA_01	1	XS1-7

https://fortifygeotech.sharepoint.com/sites/FortifyGeotech2/Shared Documents/01. Jobs/S2207 - 849, 853 & 859 Pacific Highway, Chatsv

DESIGN SECTION 1





Notes:
1. Structural actions are per pile and unfactored

CLIENT
BB Wilson

PROJECT
849, 853 & 859 Pacific Highway, Chatswood

FORTIFY GEOTECH

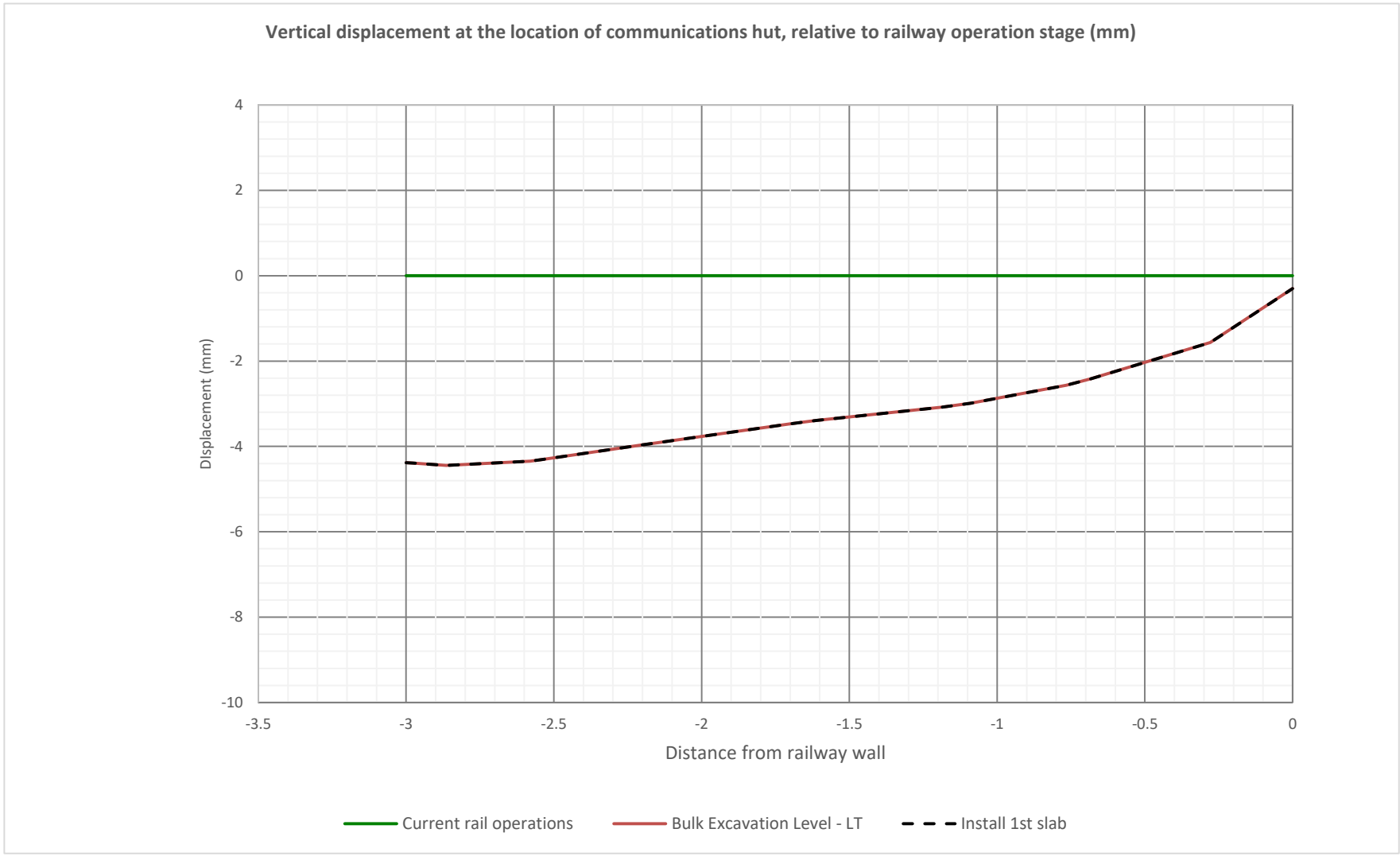
DATE	30/05/2025
PREPARED	MN
DESIGN	MN
REVIEW	JM
APPROVED	JM

TITLE
PLAXIS 2D - Existing railway wall outputs

PROJECT No.	DOC. No	Rev.	FIG. No
S2207	S2207_GIA_01	1	XS1-8

https://fortifygeotech.sharepoint.com/sites/FortifyGeotech2/Shared Documents/01. Jobs/S2207 - 849, 853 & 859 Pacific Highway, Chatsw

DESIGN SECTION 1



Notes:
1. Structural actions are per pile and unfactored

CLIENT
BB Wilson

PROJECT
849, 853 & 859 Pacific Highway, Chatswood

FORTIFY GEOTECH

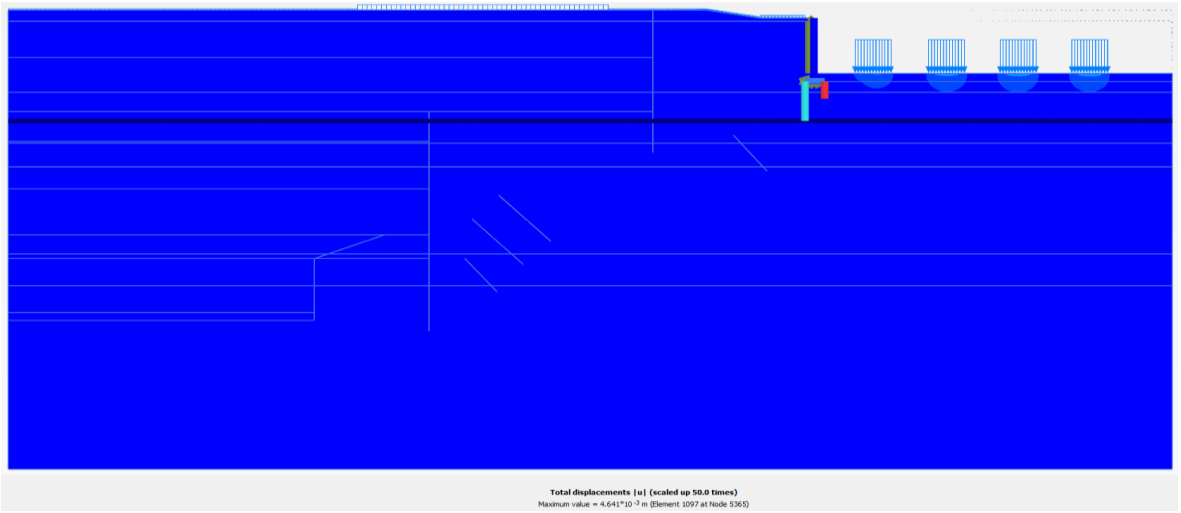
DATE	30/05/2025
PREPARED	MN
DESIGN	MN
REVIEW	JM
APPROVED	JM

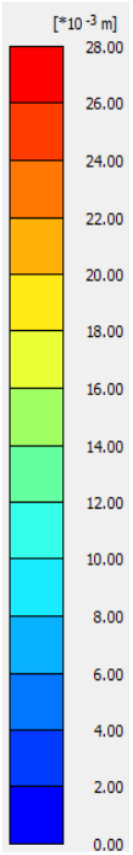
TITLE
PLAXIS 2D - Settlement at existing Sydney Trains communication hut location

PROJECT No.	DOC. No	Rev.	FIG. No
S2207	S2207_GIA_01	1	XS1-9

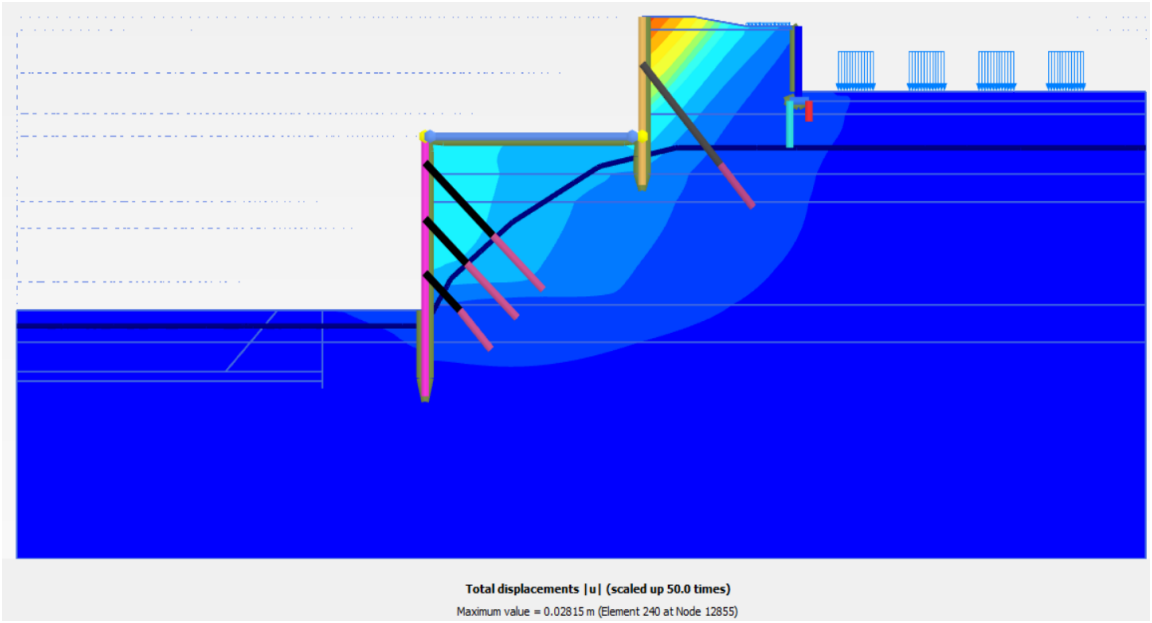
https://fortifygeotech.sharepoint.com/sites/FortifyGeotech2/Shared Documents/01. Jobs/S2207 - 849, 853 & 859 Pacific Highway, Chatsv

DESIGN SECTION 1





Railway operation stage (current)



Impact of proposed works (6th level of excavation)

File Name: #

CLIENT
BB Wilson

PROJECT
849, 853 & 859 Pacific Highway, Chatswood

FORTIFY GEOTECH

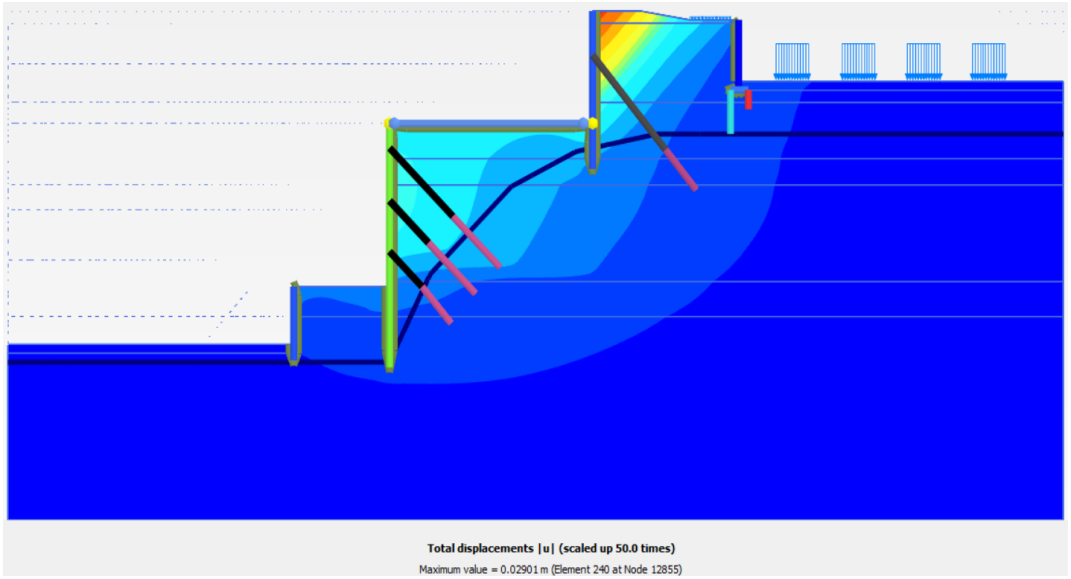
DATE	30/05/2025
PREPARED	MN
DESIGN	MN
REVIEW	JM
APPROVED	JM

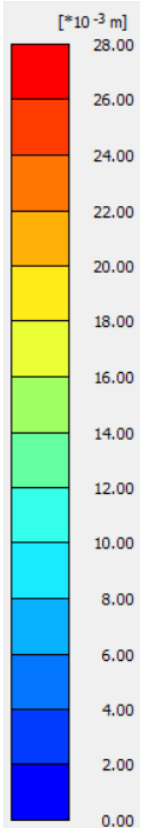
TITLE
PLAXIS 2D - Displacement field XY 1/2

PROJECT No.	DOC. No	Rev.	FIG. No
S2207	S2207_GIA_01	1	S1-10

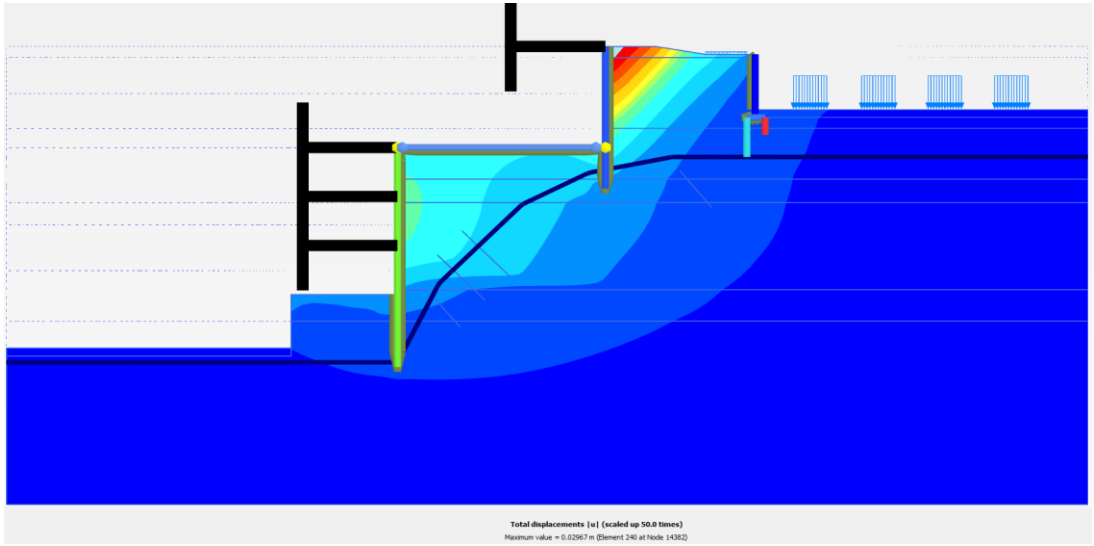
https://fortifygeotech.sharepoint.com/sites/FortifyGeotech2/Shared Documents/01. Jobs/S2207 - 849, 853 & 859 Pacific Highway, Chatsv

DESIGN SECTION 1





Impact of proposed works (end of excavation)



Impact of proposed works (removal of last ground anchor level)

File Name: #

CLIENT
BB Wilson

PROJECT
849, 853 & 859 Pacific Highway, Chatswood

FORTIFY GEOTECH

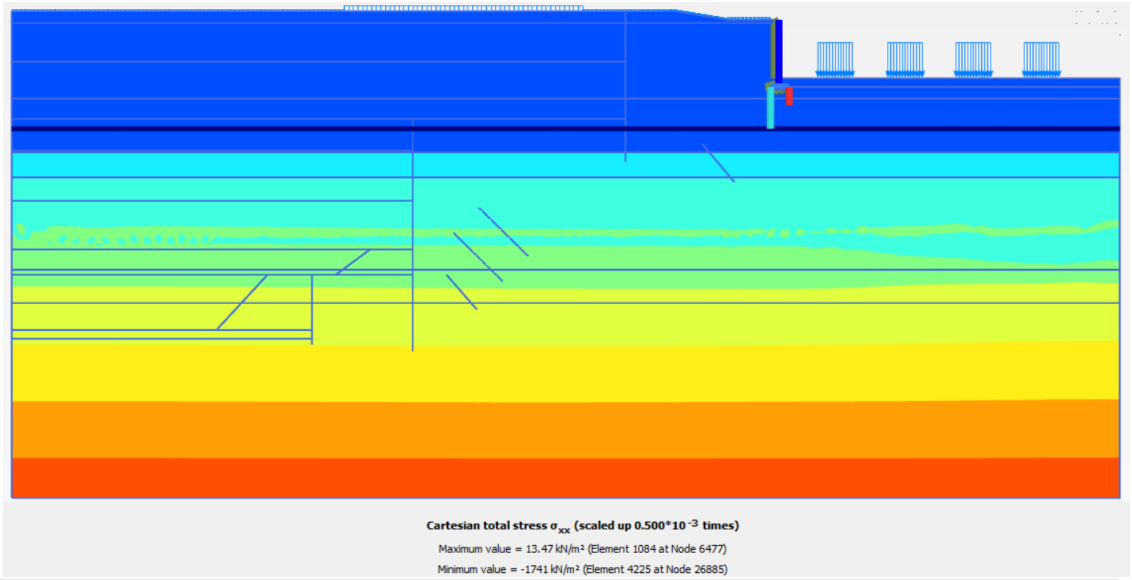
DATE	30/05/2025
PREPARED	MN
DESIGN	MN
REVIEW	JM
APPROVED	JM

TITLE
PLAXIS 2D - Displacement field XY 2/2

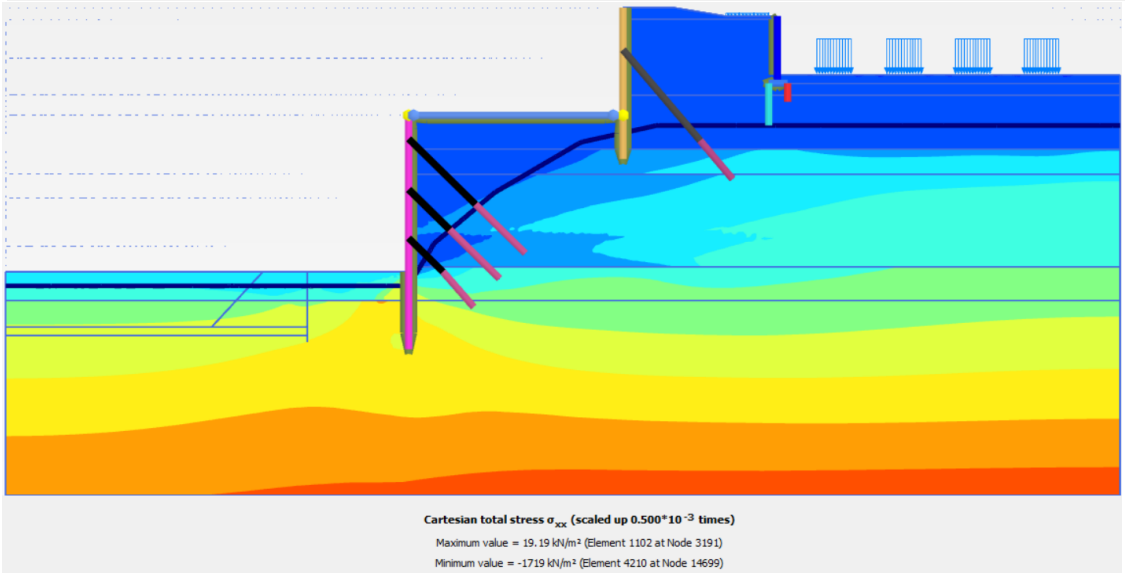
PROJECT No.	DOC. No	Rev.	FIG. No
S2207	S2207_GIA_01	1	S1-11

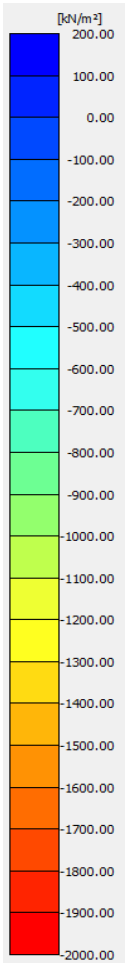
https://fortifygeotech.sharepoint.com/sites/FortifyGeotech2/Shared Documents/01. Jobs/S2207 - 849, 853 & 859 Pacific Highway, Chatsv

DESIGN SECTION 1



Railway operation stage (current)





Impact of proposed works (6th of excavation)

File Name: #

CLIENT
BB Wilson

PROJECT
849, 853 & 859 Pacific Highway, Chatswood

FORTIFY GEOTECH

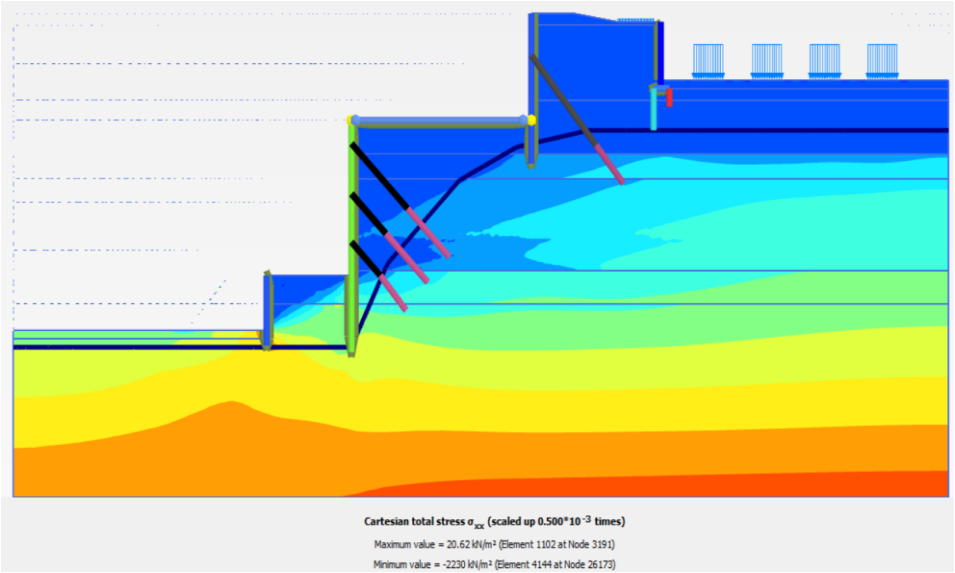
DATE	30/05/2025
PREPARED	MN
DESIGN	MN
REVIEW	JM
APPROVED	JM

TITLE
PLAXIS 2D - Stress field XX 1/2

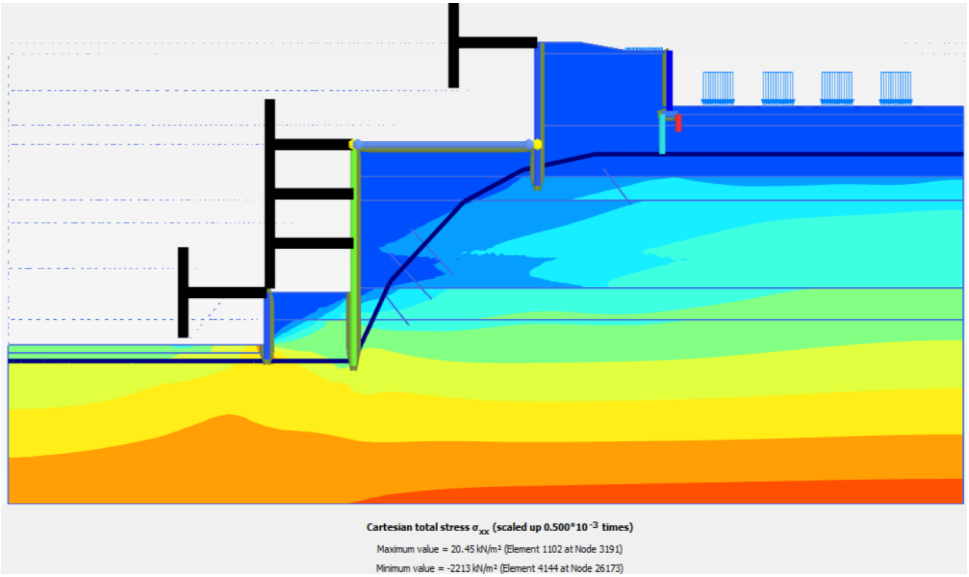
PROJECT No.	DOC. No	Rev.	FIG. No
S2207	S2207_GIA_01	1	S1-12

https://fortifygeotech.sharepoint.com/sites/FortifyGeotech2/Shared Documents/01. Jobs/S2207 - 849, 853 & 859 Pacific Highway, Chatsv

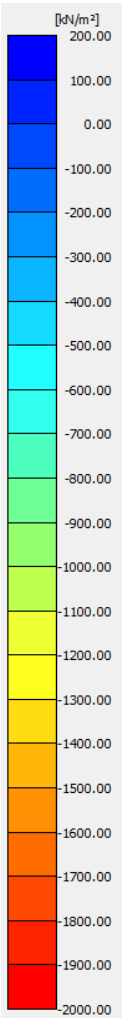
DESIGN SECTION 1



Impact of proposed works (end of excavation)



Impact of proposed works (removal of last level of anchors)



File Name: #

CLIENT
BB Wilson

PROJECT
849, 853 & 859 Pacific Highway, Chatswood

FORTIFY GEOTECH

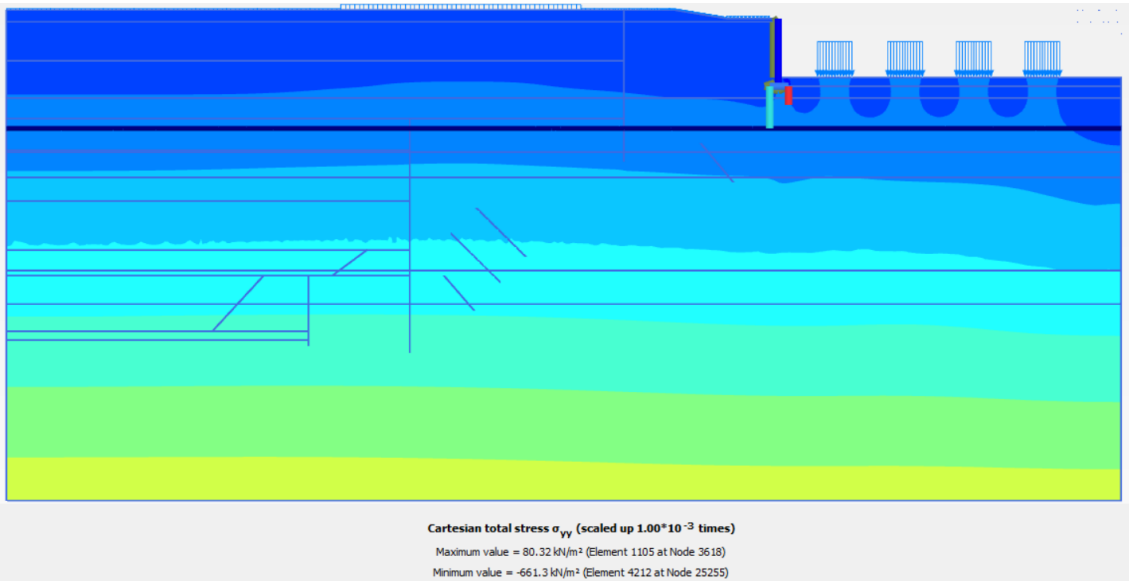
DATE	30/05/2025
PREPARED	MN
DESIGN	MN
REVIEW	JM
APPROVED	JM

TITLE
PLAXIS 2D - Stress field XX 2/2

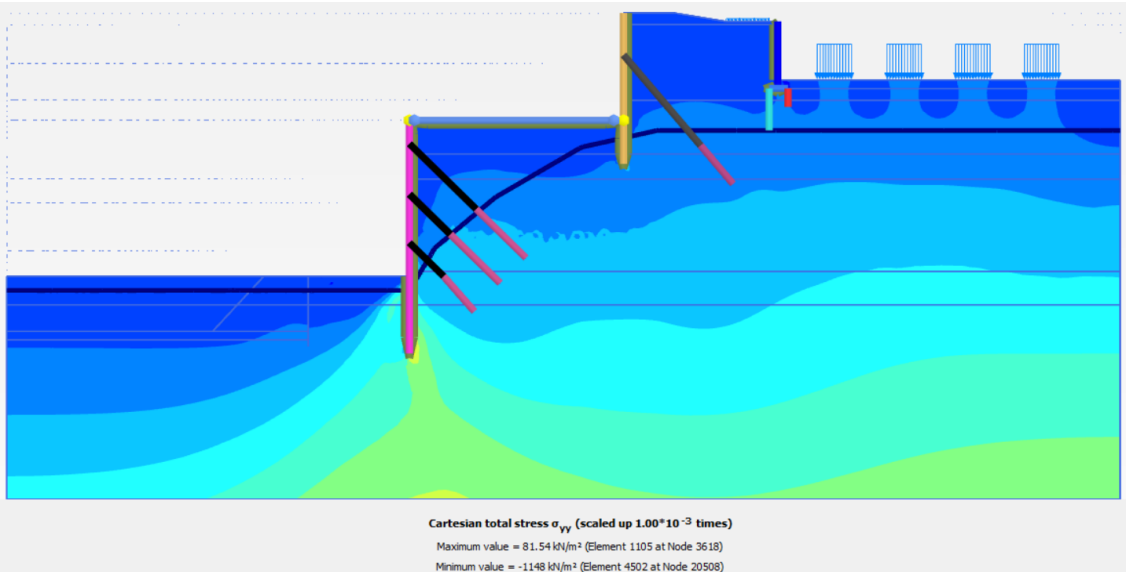
PROJECT No.	DOC. No	Rev.	FIG. No
S2207	S2207_GIA_01	1	S1-13

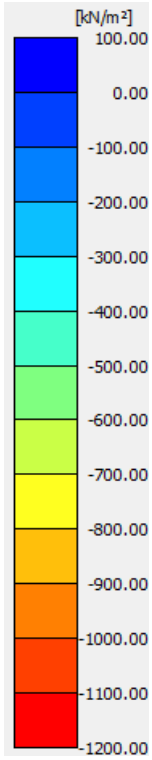
https://fortifygeotech.sharepoint.com/sites/FortifyGeotech2/Shared Documents/01. Jobs/S2207 - 849, 853 & 859 Pacific Highway, Chatsv

DESIGN SECTION 1



Railway operation stage (current)





Impact of proposed works (6th of excavation)

File Name: #

CLIENT
BB Wilson

PROJECT
849, 853 & 859 Pacific Highway, Chatswood

FORTIFY GEOTECH

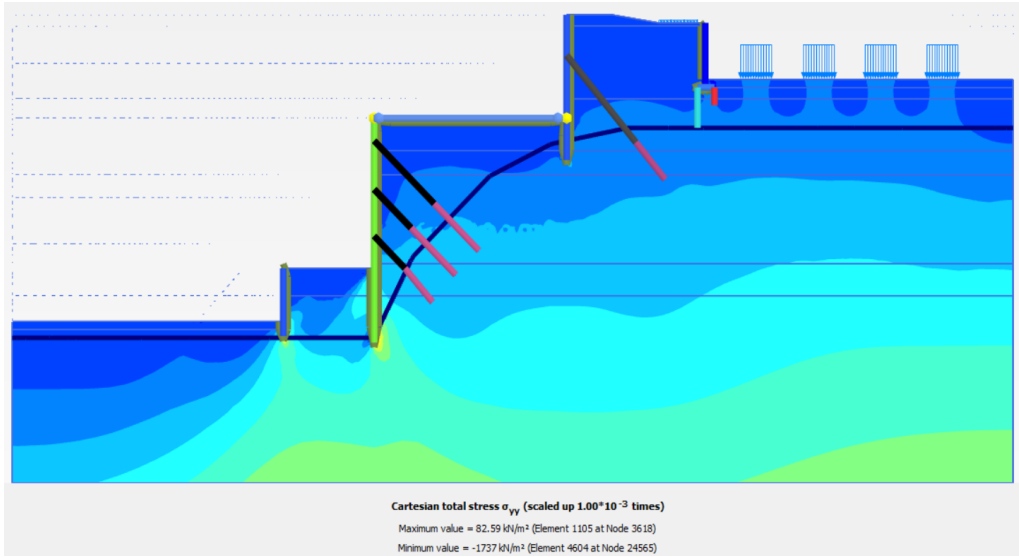
DATE	30/05/2025
PREPARED	MN
DESIGN	MN
REVIEW	JM
APPROVED	JM

TITLE
PLAXIS 2D - Stress field YY 1/2

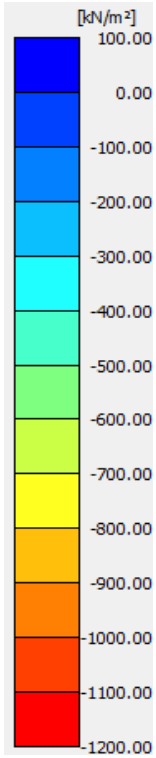
PROJECT No.	DOC. No	Rev.	FIG. No
S2207	S2207_GIA_01	1	S1-14

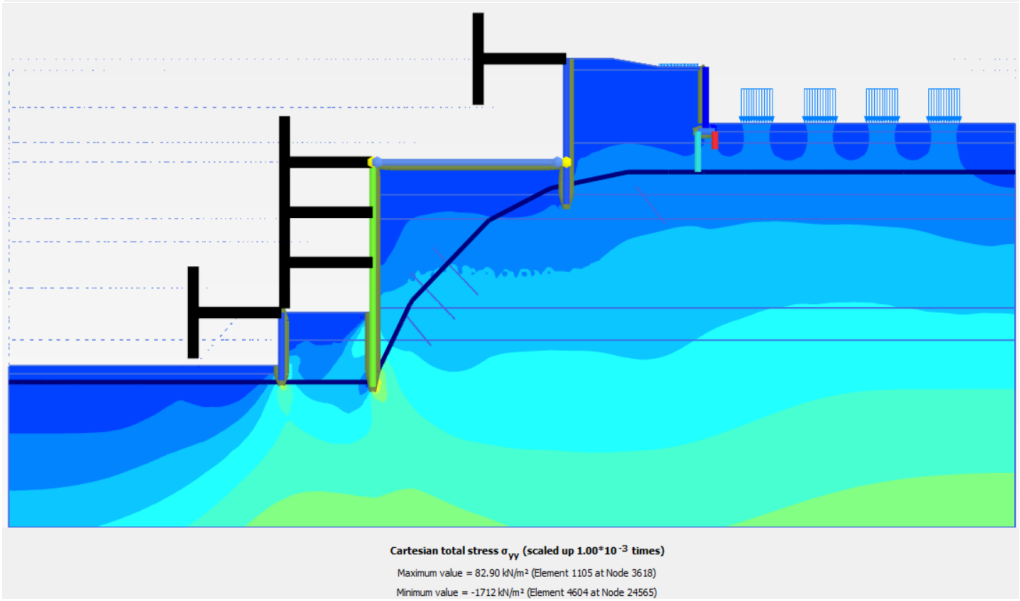
https://fortifygeotech.sharepoint.com/sites/FortifyGeotech2/Shared Documents/01. Jobs/S2207 - 849, 853 & 859 Pacific Highway, Chatsv

DESIGN SECTION 1



Impact of proposed works (end of excavation)





Impact of proposed works (removal of last level of anchors)

File Name: #

CLIENT
BB Wilson

PROJECT
849, 853 & 859 Pacific Highway, Chatswood

FORTIFY GEOTECH

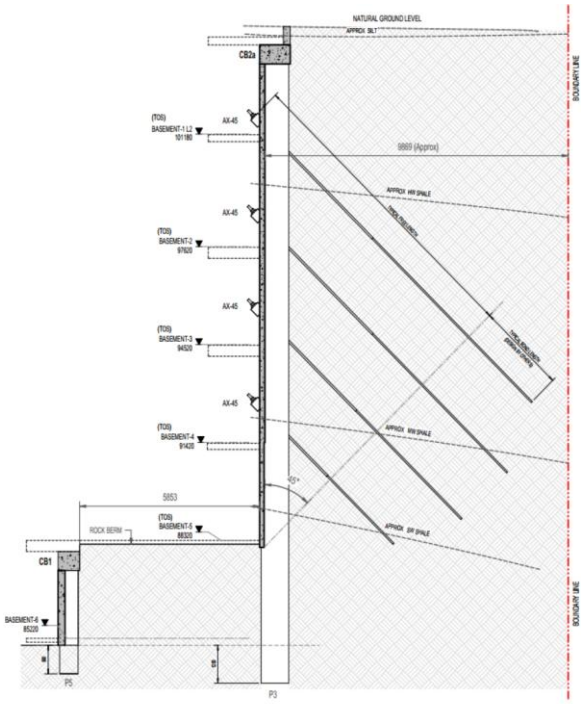
DATE	00/01/1900
PREPARED	0
DESIGN	0
REVIEW	0
APPROVED	00/01/1900

TITLE
PLAXIS 2D - Stress field YY 2/2

PROJECT No.	DOC. No	Rev.	FIG. No
S2207	S2207_GIA_01	1	S1-15

https://fortifygeotech.sharepoint.com/sites/FortifyGeotech2/Shared Documents/01. Jobs/S2207 - 849, 853 & 859 Pacific Highway, Chatsv

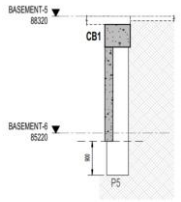
DESIGN SECTION 2



04 SECTION-4 SCALE @ 1:50

Typical cross-section view

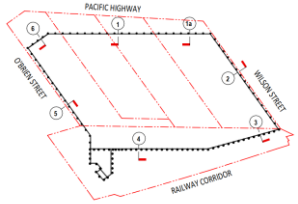
(extract of Cardigal Group Drawing S 10017 Rev H, dated 09/05/25, Project Ref. 01-100084)



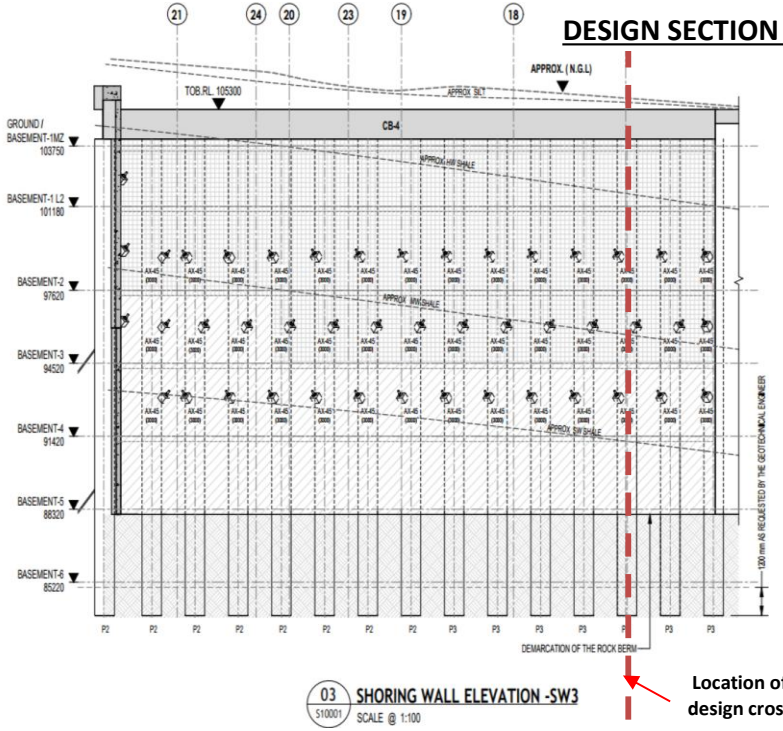
07 SECTION -7 SCALE @ 1:50

Rock berm cross-section view

(extract of Cardigal Group Drawing S 10020 Rev H, dated 09/05/25, Project Ref. 01-100084)

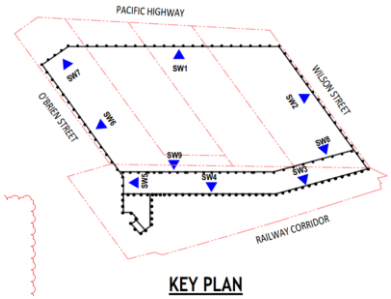


KEY PLAN



03 SHORING WALL ELEVATION -SW3 SCALE @ 1:100

Location of design cross



KEY PLAN

Elevation view showing indicative location of design cross-section

(extract of Cardigal Group Drawing S 10011 Rev H, dated 09/05/25, Project Ref. 01-100084)

CLIENT
BB Wilson

PROJECT
849, 853 & 859 Pacific Highway, Chatswood

FORTIFY GEOTECH

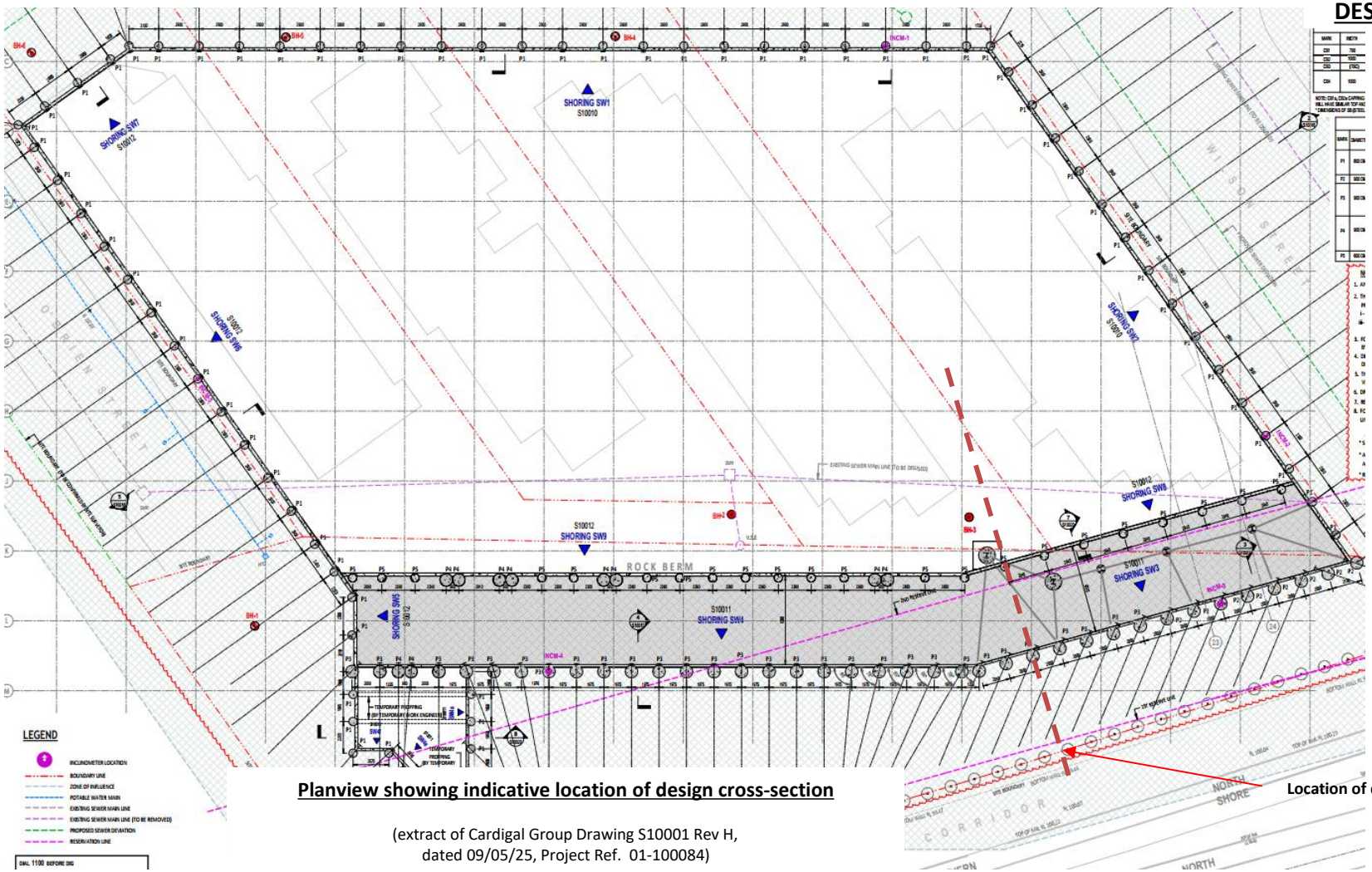
DATE	30/05/2025
PREPARED	MN
DESIGN	MN
REVIEW	JM
APPROVED	JM

TITLE
Proposed shoring system - structural input 1/2

PROJECT No.	DOC. No	Rev.	FIG. No
S2207	S2207_GIA_01	1	XS2-1

https://fortifygeotech.sharepoint.com/sites/FortifyGeotech2/Shared Documents/01. Jobs/S2207 - 849, 853 & 859 Pacific Highway, Chatsv

DESIGN SECTION 2



Planview showing indicative location of design cross-section

(extract of Cardigal Group Drawing S10001 Rev H,
dated 09/05/25, Project Ref. 01-100084)

Location of design cross section

CLIENT
BB Wilson

PROJECT
849, 853 & 859 Pacific Highway, Chatswood

FORTIFY GEOTECH

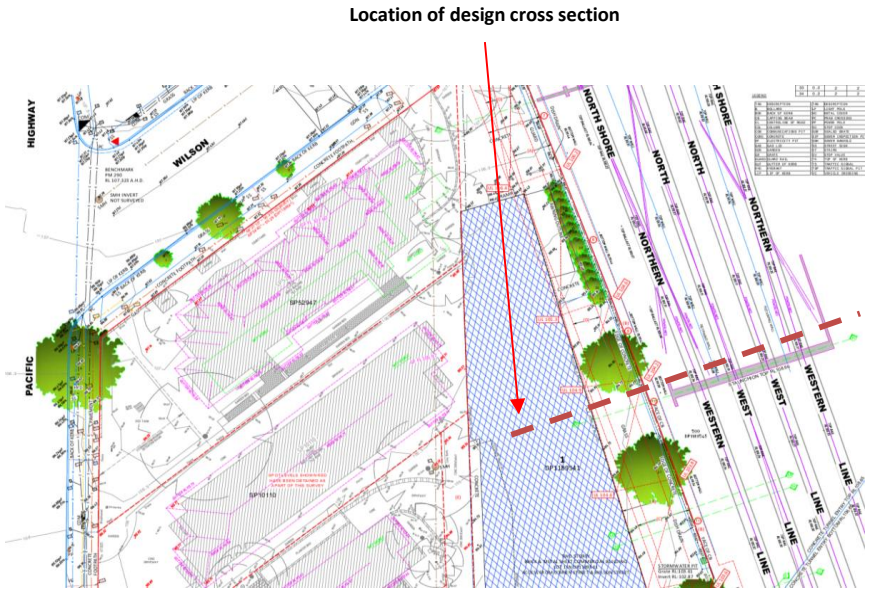
DATE	30/05/2025
PREPARED	MN
DESIGN	MN
REVIEW	JM
APPROVED	JM

TITLE
Proposed shoring system - structural input 2/2

PROJECT No.	DOC. No	Rev.	FIG. No
S2207	S2207_GIA_01	1	XS2-2

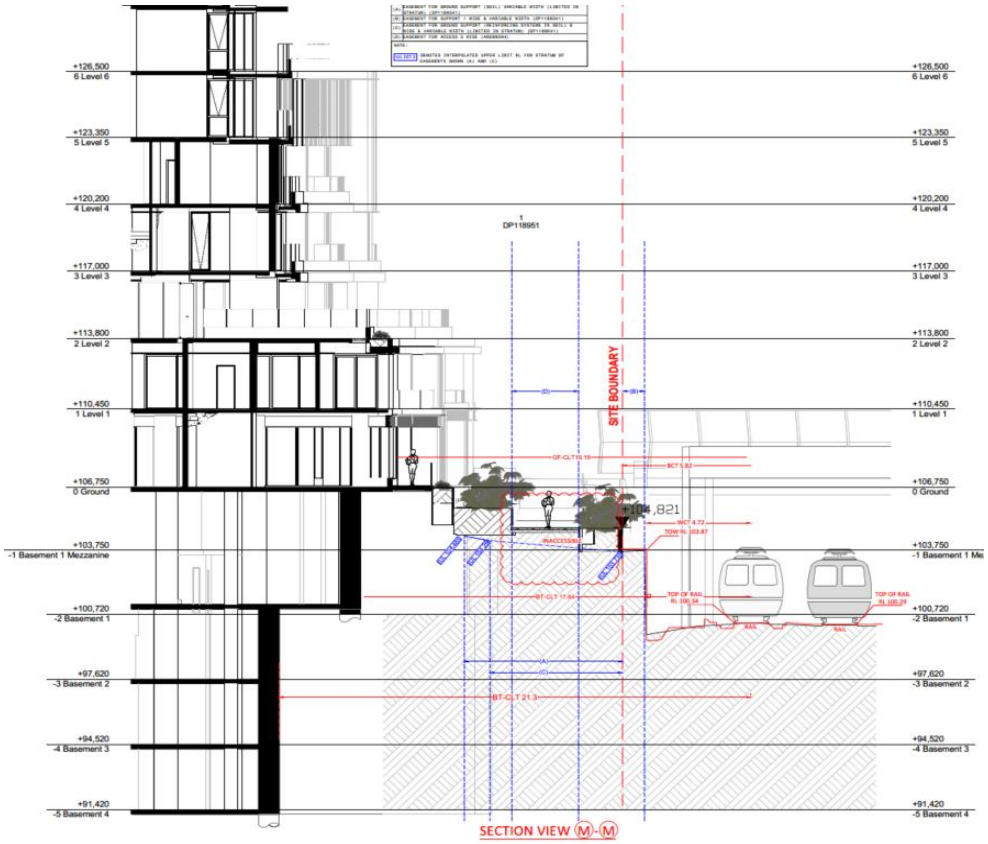
https://fortifygeotech.sharepoint.com/sites/FortifyGeotech2/Shared Documents/01. Jobs/S2207 - 849, 853 & 859 Pacific Highway, Chatsv

DESIGN SECTION 2



Survey plan of the site and surroudings, showing location of design cross-section

(extract of SDS Pty Ltd Drawing 6 of 9, REF: 9062 Rev C, dated 20/03/24)



Cross-section M-M showing proposed development in relation to railway assets

(extract of SDS Pty Ltd Drawing 6 of 9, REF: 9062 Rev C, dated 20/03/24)

CLIENT
BB Wilson

PROJECT
849, 853 & 859 Pacific Highway, Chatswood

FORTIFY GEOTECH

DATE	30/05/2025
PREPARED	MN
DESIGN	MN
REVIEW	JM
APPROVED	JM

TITLE
Survey/architectural drawings - geometric input

PROJECT No.	DOC. No	Rev.	FIG. No
S2207	S2207_GIA_01	1	XS2-3

https://fortifygeotech.sharepoint.com/sites/FortifyGeotech2/Shared Documents/01. Jobs/S2207 - 849, 853 & 859 Pacific Highway, Chatsw

DESIGN SECTION 2

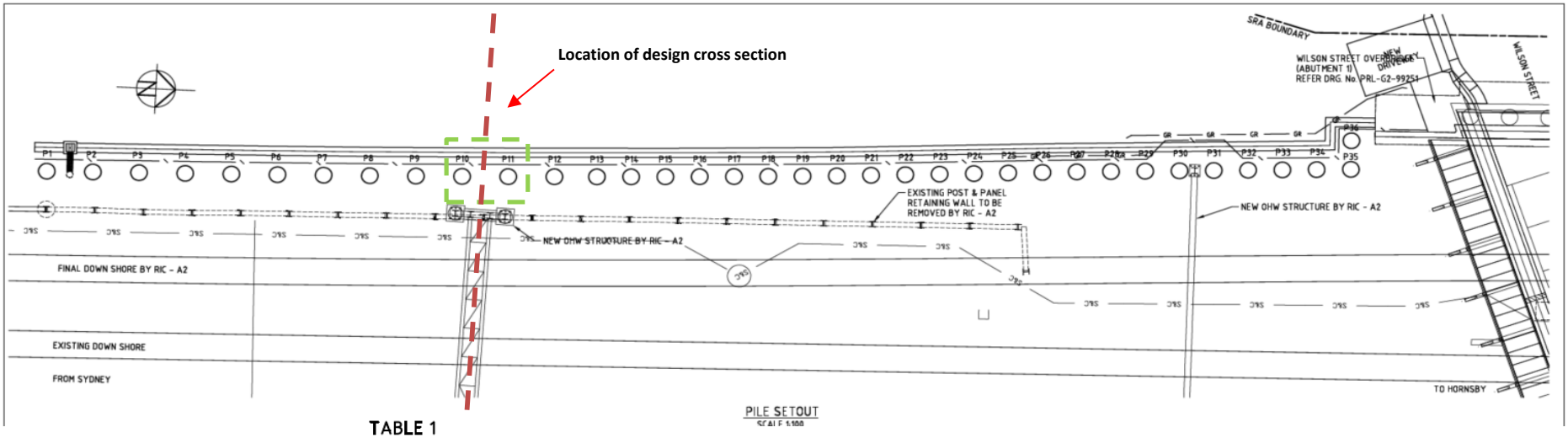


TABLE 1

PILE No	EASTING	NORTHING	DIAMETER	CUT OFF LEVEL	CONTRACT LEVEL	× ACTUAL FOUNDING LEVEL
P1	331 577.167	6 259 284.036	850	102.920	94.50	94.50
P2	331 577.085	6 259 286.405	850	102.995	94.50	94.50
P3	331 577.002	6 259 288.773	850	103.070	94.50	94.50
P4	331 576.917	6 259 291.142	850	103.145	94.50	94.50
P5	331 576.830	6 259 293.510	850	103.225	94.50	94.50
P6	331 576.739	6 259 295.879	850	103.300	94.50	94.50
P7	331 576.645	6 259 298.247	850	103.375	94.50	94.50
P8	331 576.548	6 259 300.615	850	103.450	94.50	94.50
P9	331 576.446	6 259 302.982	850	103.525	94.50	94.50
P10	331 576.339	6 259 305.350	850	103.600	94.50	94.50
P11	331 576.228	6 259 307.717	850	103.675	94.50	94.50
P12	331 576.112	6 259 310.085	850	103.750	94.50	94.50
P13	331 576.002	6 259 312.262	850	103.820	93.50	93.50
P14	331 575.910	6 259 314.020	850	103.875	93.50	93.50
P15	331 575.816	6 259 315.777	850	103.930	93.50	93.50
P16	331 575.719	6 259 317.535	850	103.990	93.50	93.50
P17	331 575.620	6 259 319.292	850	104.060	93.50	93.50
P18	331 575.519	6 259 321.049	850	104.185	93.50	93.50
P19	331 575.416	6 259 322.806	850	104.310	93.50	93.50

As-built pile setout plan & Pile shedule

(extracts of Down Side Outer Pile Retaining Wall GC-3 Works Drawing set, Contract SDS Pty Ltd Drawing 6 of 9, REF: 9062 Rev C, dated 20/03/24)

CLIENT: BB Wilson

PROJECT: 849, 853 & 859 Pacific Highway, Chatswood

FORTIFY GEOTECH

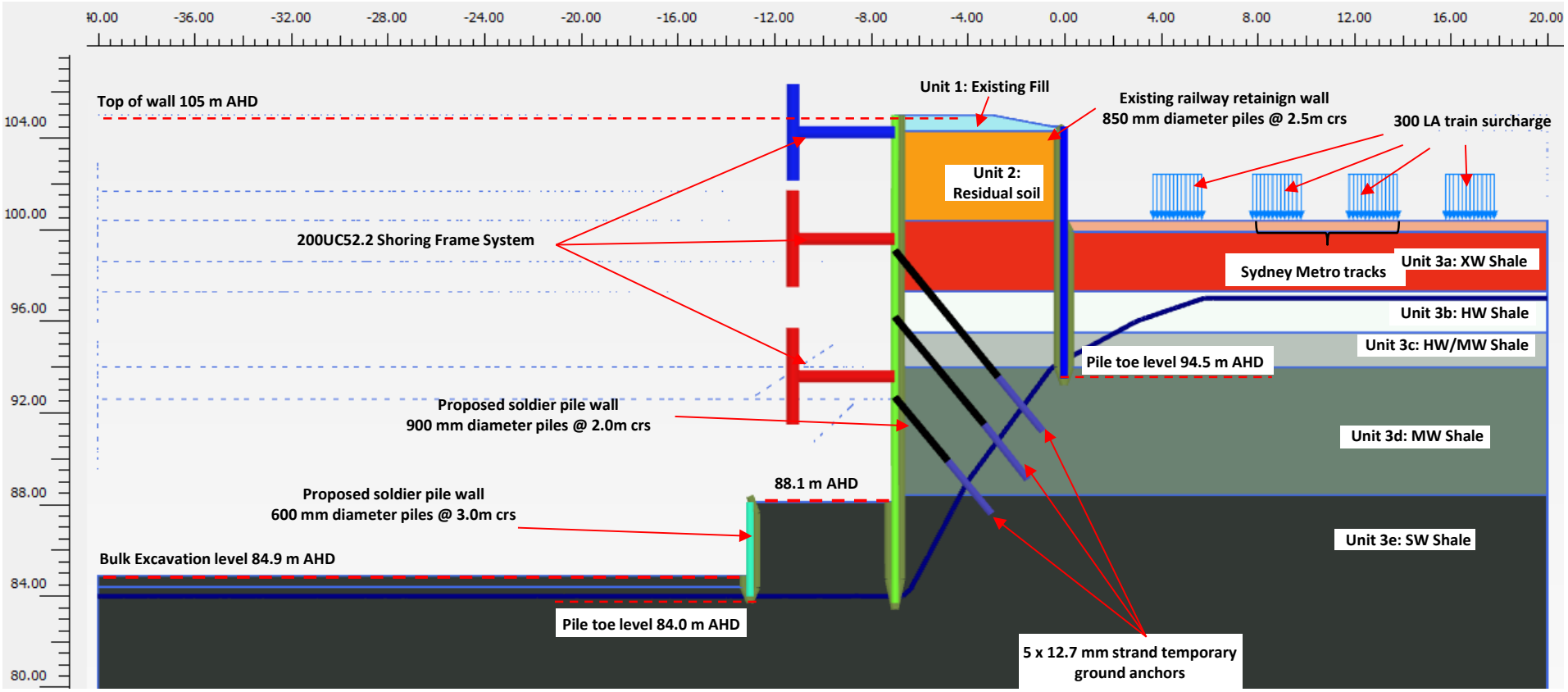
DATE	30/05/2025
PREPARED	MN
DESIGN	MN
REVIEW	JM
APPROVED	JM

TITLE: **Existing railway assets as-builts**

PROJECT No.	DOC. No	Rev.	FIG. No
S2207	S2207_GIA_01	1	XS2-4

https://fortifygeotech.sharepoint.com/sites/FortifyGeotech2/Shared Documents/01. Jobs/S2207 - 849, 853 & 859 Pacific Highway, Chatsw

DESIGN SECTION 2



CLIENT
BB Wilson

PROJECT
849, 853 & 859 Pacific Highway, Chatswood

FORTIFY GEOTECH

DATE	30/05/2025
PREPARED	MN
DESIGN	MN
REVIEW	JM
APPROVED	JM

TITLE
PLAXIS 2D - Model overview

PROJECT No.	DOC. No	Rev.	FIG. No
S2207	S2207_GIA_01	1	XS2-5

https://fortifygeotech.sharepoint.com/sites/FortifyGeotech2/Shared Documents/01. Jobs/S2207 - 849, 853 & 859 Pacific Highway, Chatsv

DESIGN SECTION 2

Stage no:		Construction stage	Surcharge/Loading	Structural EI stiffness of new piled wall
1		Establish initial conditions	/	N/A
2		Current housing development	Dwelling (20 kPa) & pedestrian (5 kPa) surcharge	
3		Railway trench excavation	As above	
4		Railway operation	Dwelling (20 kPa), pedestrian (5 kPa) surcharges & LA300 train surcharge	
5		Demolition of current housing development	LA300 train surcharge	
6		Install soldier pile wall	As above	0.9 EI
7		1st level of excavation	As above	
8		Installation of 1st level of shoring frame	As above	
9		2nd level of excavation	As above	
10		3rd level of excavation	As above	
11		Installation of 1st level of ground anchors and 2nd level of shoring frame	As above	
12		4th level of excavation	As above	
13		Installation of 2nd level of ground anchors and 3rd level of shoring frame	As above	
14		5th level of excavation	As above	
15		Installation of 3rd level of ground anchors	As above	
16		6th level of excavation	As above	
17		Install rock berm shoring wall		
18		Excavation to bulk excavation level	As above	
	18.1	Over-excavation scenario	As above	
19		Change to long-term structural properties	As above	0.6 EI
20		Install Basement -4 slab	As above	
21		Install Basement -3 slab	As above	
22		Deactivate 4th level of ground anchors and 3rd level of shoring frame	As above	
23		Install Basement -2 slab	As above	
24		Deactivate 3rd level of ground anchors	As above	
25		Install Basemend -1 L2	As above	
26		Deactivate 2nd level of ground anchors and 2nd level of shoring frame	As above	
27		Install Basement -1MZ slab	As above	
28		Deactivate 1st level of ground anchors and 1st level of shoring frame	As above	
29		Application of 20kPa surcharge for future railway operations	Railway (20 kPa) surcharge & LA300 train surcharge	

CLIENT
BB Wilson

PROJECT
849, 853 & 859 Pacific Highway, Chatswood

FORTIFY GEOTECH

DATE	30/05/2025
PREPARED	MN
DESIGN	MN
REVIEW	JM
APPROVED	JM

TITLE
PLAXIS 2D - Construction staging

PROJECT No.	DOC. No	Rev.	FIG. No
S2207	S2207_GIA_01	1	XS2-6

https://fortifygeotech.sharepoint.com/sites/FortifyGeotech2/Shared Documents/01. Jobs/S2207 - 849, 853 & 859 Pacific Highway, Chatsv

DESIGN SECTION 2

Existing railway asset

Plate - Rail retaining wall

General | Mechanical | Thermal

Property	Unit	Value
Properties		
Isotropic		☑
Stiffness		
EA_1	kN/m	7.445E6
EA_2	kN/m	7.445E6
E_1	kN/m²	13.05E6
E_2	kN/m²	13.05E6
EI	kN m²/m	202.0E3
v (nu)		0.2000
d	m	0.5706

Proposed shoring frame

Anchor - Mid / Bottom

General | Mechanical | Thermal

Property	Unit	Value
Properties		
$L_{spacing}$	m	4.800
Stiffness		
EA	kN	120.0E3

Anchor - Top

General | Mechanical | Thermal

Property	Unit	Value
Properties		
$L_{spacing}$	m	4.800
Stiffness		
EA	kN	30.00E3

Proposed shoring wall

Plate - 900mm @ 2.0m ST

General | Mechanical | Thermal

Property	Unit	Value
Properties		
Isotropic		☑
Stiffness		
EA_1	kN/m	10.43E6
EA_2	kN/m	10.43E6
E_1	kN/m²	14.12E6
E_2	kN/m²	14.12E6
EI	kN m²/m	475.0E3
v (nu)		0.2000
d	m	0.7391

Plate - 900mm @ 2.0m LT

General | Mechanical | Thermal

Property	Unit	Value
Properties		
Isotropic		☑
Stiffness		
EA_1	kN/m	10.43E6
EA_2	kN/m	10.43E6
E_1	kN/m²	17.28E6
E_2	kN/m²	17.28E6
EI	kN m²/m	317.0E3
v (nu)		0.2000
d	m	0.6038

Proposed rock berm shoring wall

Plate - 600mm @3m ST

General | Mechanical | Thermal

Property	Unit	Value
Properties		
Isotropic		☑
Stiffness		
EA_1	kN/m	3.091E6
EA_2	kN/m	3.091E6
E_1	kN/m²	6.271E6
E_2	kN/m²	6.271E6
EI	kN m²/m	62.60E3
v (nu)		0.2000
d	m	0.4930

Plate - 600mm @3m LT

General | Mechanical | Thermal

Property	Unit	Value
Properties		
Isotropic		☑
Stiffness		
EA_1	kN/m	3.091E6
EA_2	kN/m	3.091E6
E_1	kN/m²	7.683E6
E_2	kN/m²	7.683E6
EI	kN m²/m	41.70E3
v (nu)		0.2000
d	m	0.4023

CLIENT
BB Wilson

PROJECT
849, 853 & 859 Pacific Highway, Chatswood

FORTIFY GEOTECH

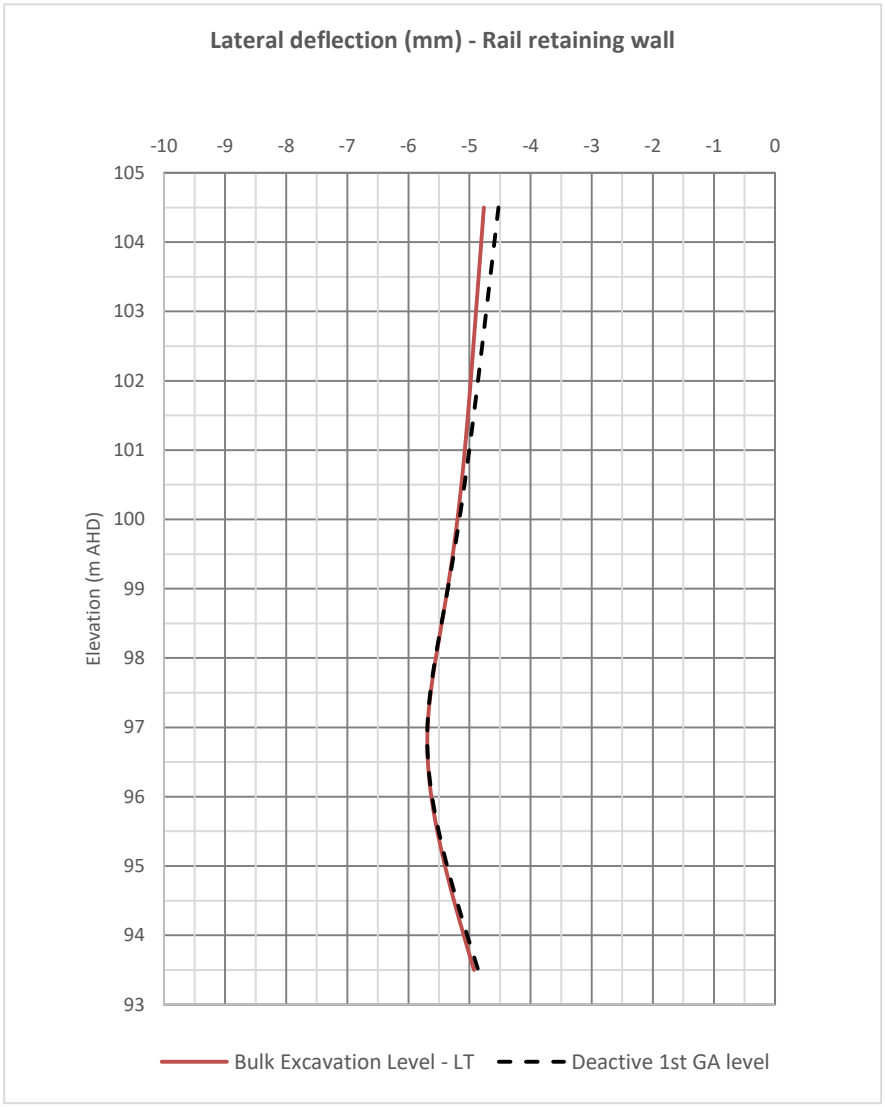
DATE	30/05/2025
PREPARED	MN
DESIGN	MN
REVIEW	JM
APPROVED	JM

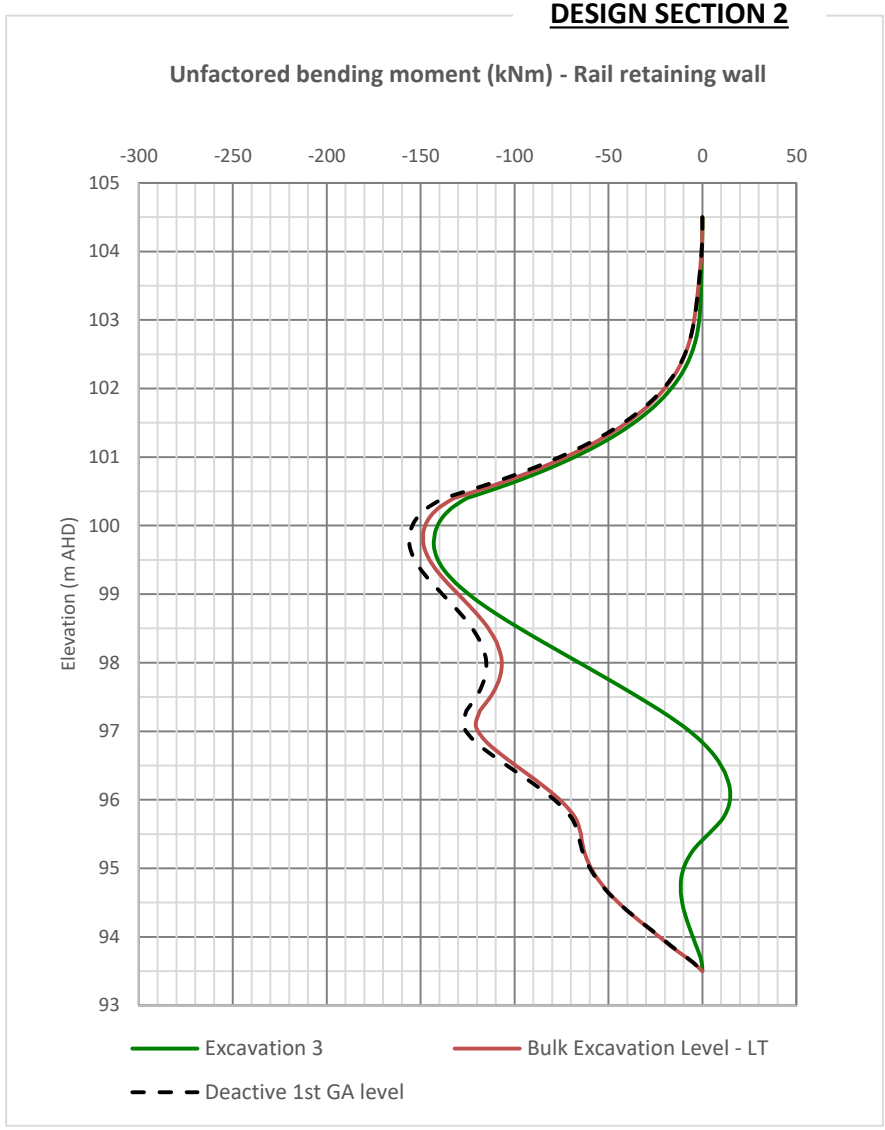
TITLE
PLAXIS 2D - Structural elements properties

PROJECT No.	DOC. No	Rev.	FIG. No
S2207	S2207_GIA_01	1	XS2-7

https://fortifygeotech.sharepoint.com/sites/FortifyGeotech2/Shared Documents/01. Jobs/S2207 - 849, 853 & 859 Pacific Highway, Chatsw

DESIGN SECTION 2





Notes:
1. Structural actions are per pile and unfactored

CLIENT
BB Wilson

PROJECT
849, 853 & 859 Pacific Highway, Chatswood

FORTIFY GEOTECH

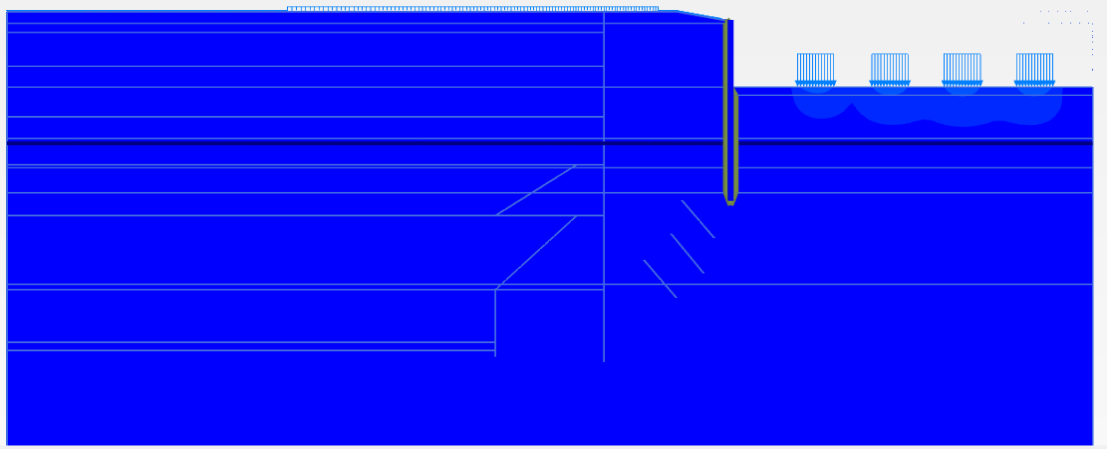
DATE	30/05/2025
PREPARED	MN
DESIGN	MN
REVIEW	JM
APPROVED	JM

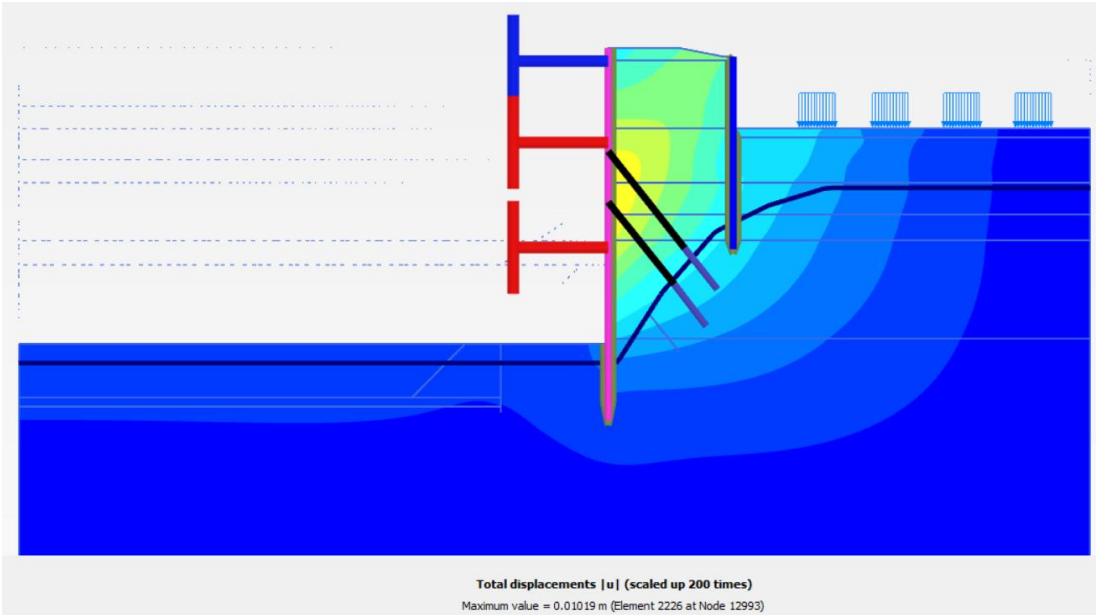
TITLE
PLAXIS 2D - Existing railway wall outputs

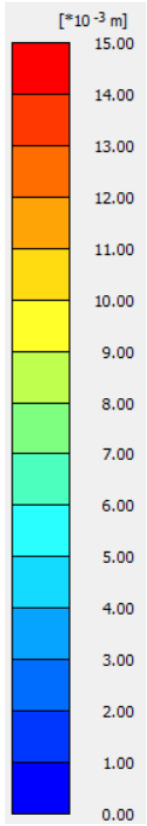
PROJECT No.	DOC. No	Rev.	FIG. No
S2207	S2207_GIA_01	1	XS2-8

https://fortifygeotech.sharepoint.com/sites/FortifyGeotech2/Shared Documents/01. Jobs/S2207 - 849, 853 & 859 Pacific Highway, Chatsv

DESIGN SECTION 2







Railway operation stage (current)

Impact of proposed works (6th level of excavation)

File Name: #

CLIENT
BB Wilson

PROJECT
849, 853 & 859 Pacific Highway, Chatswood

FORTIFY GEOTECH

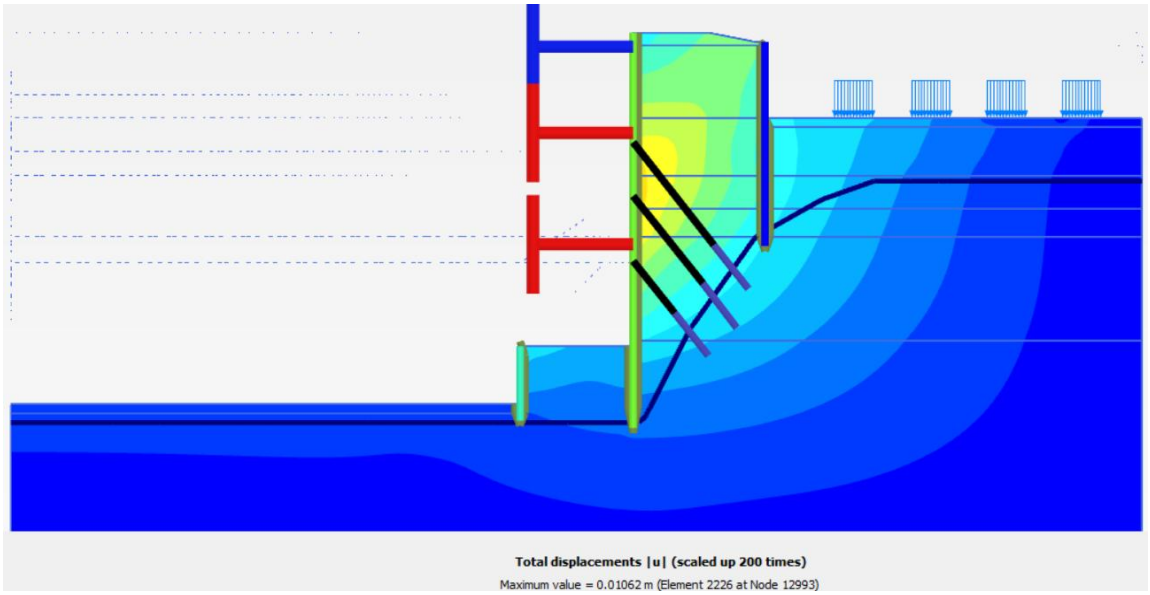
DATE	30/05/2025
PREPARED	MN
DESIGN	MN
REVIEW	JM
APPROVED	JM

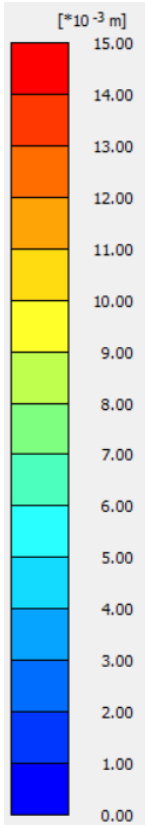
TITLE
PLAXIS 2D - Displacement field XY 1/2

PROJECT No.	DOC. No	Rev.	FIG. No
S2207	S2207_GIA_01	1	XS2-9

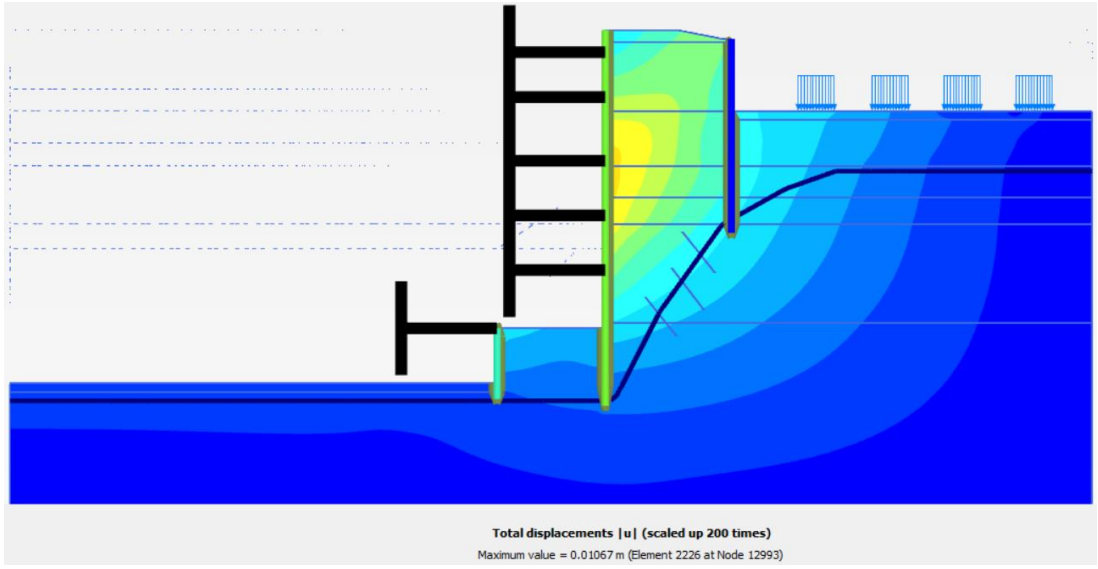
https://fortifygeotech.sharepoint.com/sites/FortifyGeotech2/Shared Documents/01. Jobs/S2207 - 849, 853 & 859 Pacific Highway, Chatsv

DESIGN SECTION 2





Impact of proposed works (end of excavation)



Impact of proposed works (removal of last ground anchor level)

File Name: #

CLIENT
BB Wilson

PROJECT
849, 853 & 859 Pacific Highway, Chatswood

FORTIFY GEOTECH

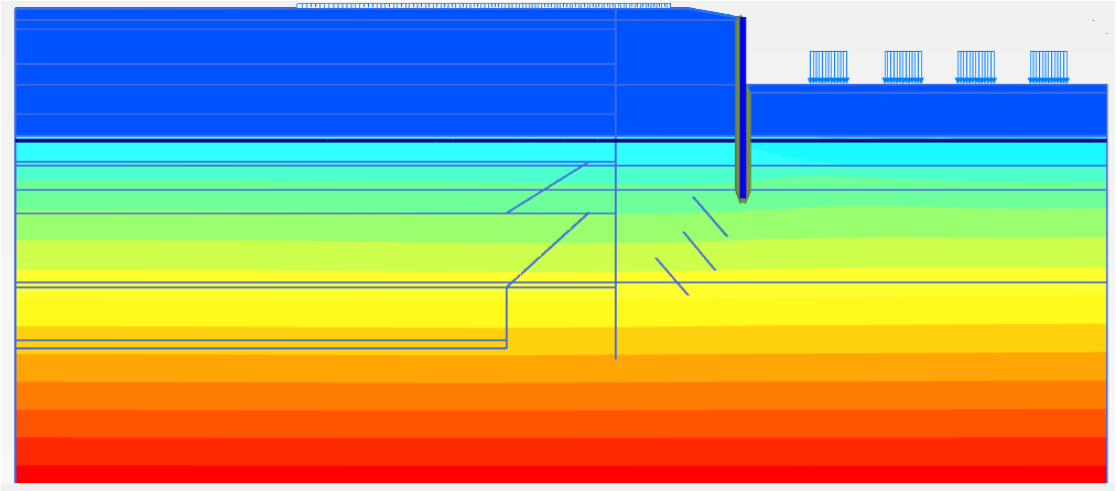
DATE	30/05/2025
PREPARED	MN
DESIGN	MN
REVIEW	JM
APPROVED	JM

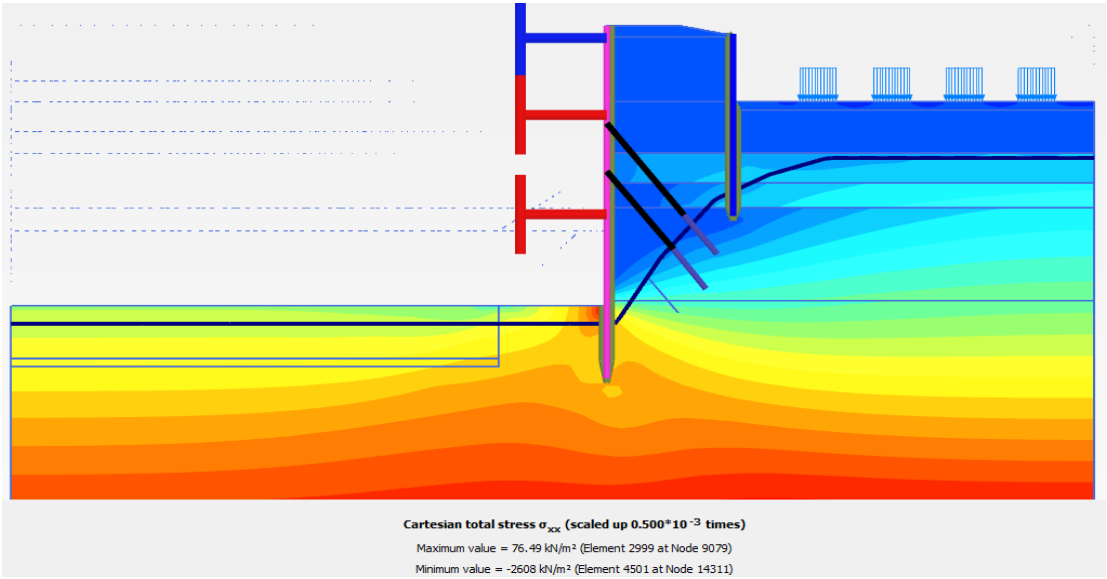
TITLE
PLAXIS 2D - Displacement field XY 2/2

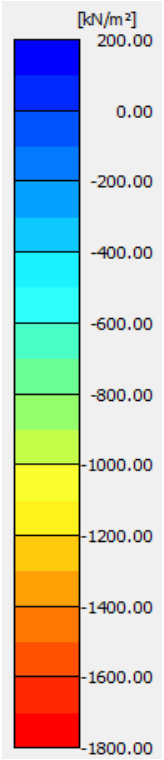
PROJECT No.	DOC. No	Rev.	FIG. No
S2207	S2207_GIA_01	1	S2-10

https://fortifygeotech.sharepoint.com/sites/FortifyGeotech2/Shared Documents/01. Jobs/S2207 - 849, 853 & 859 Pacific Highway, Chatsv

DESIGN SECTION 2







Railway operation stage (current)

Impact of proposed works (6th of excavation)

File Name: #

CLIENT
BB Wilson

PROJECT
849, 853 & 859 Pacific Highway, Chatswood

FORTIFY GEOTECH

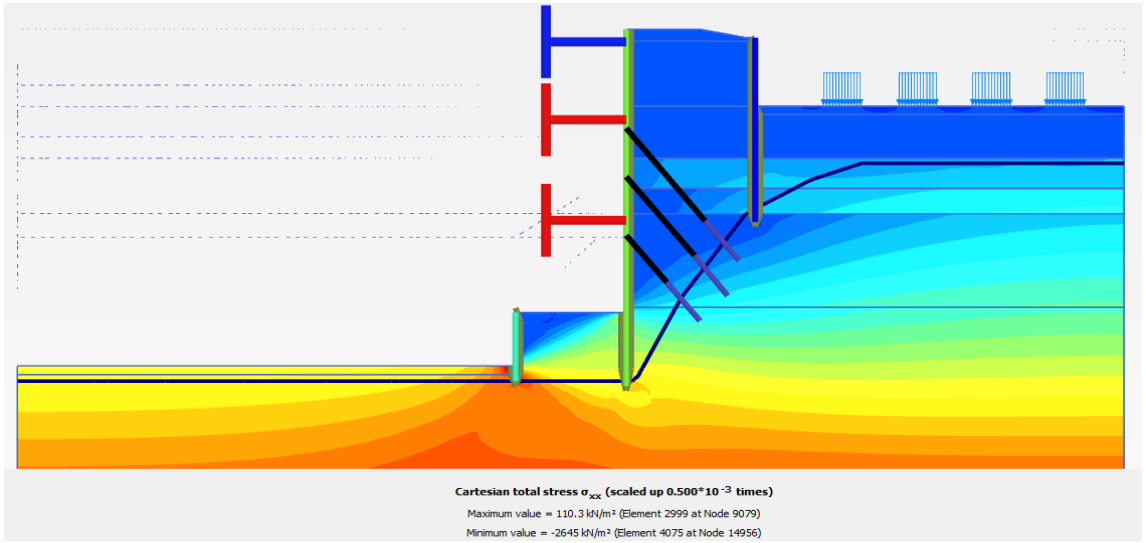
DATE	30/05/2025
PREPARED	MN
DESIGN	MN
REVIEW	JM
APPROVED	JM

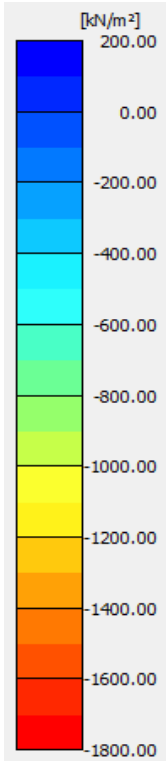
TITLE
PLAXIS 2D - Stress field XX 1/2

PROJECT No.	DOC. No	Rev.	FIG. No
S2207	S2207_GIA_01	1	S2-11

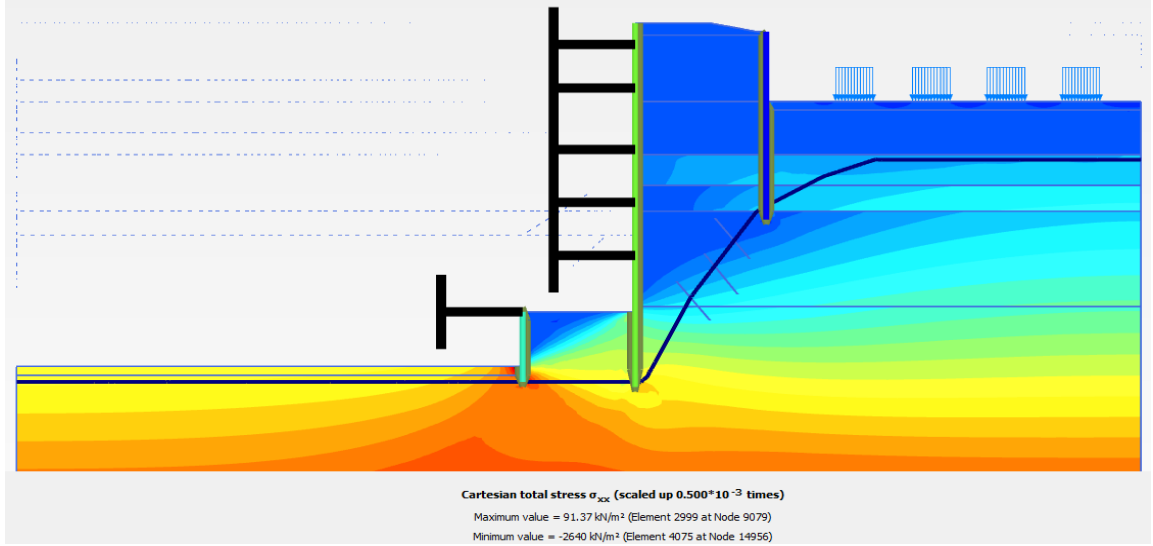
https://fortifygeotech.sharepoint.com/sites/FortifyGeotech2/Shared Documents/01. Jobs/S2207 - 849, 853 & 859 Pacific Highway, Chatsv

DESIGN SECTION 2





Impact of proposed works (end of excavation)



Impact of proposed works (removal of last level of anchors)

File Name: #

CLIENT
BB Wilson

PROJECT
849, 853 & 859 Pacific Highway, Chatswood

FORTIFY GEOTECH

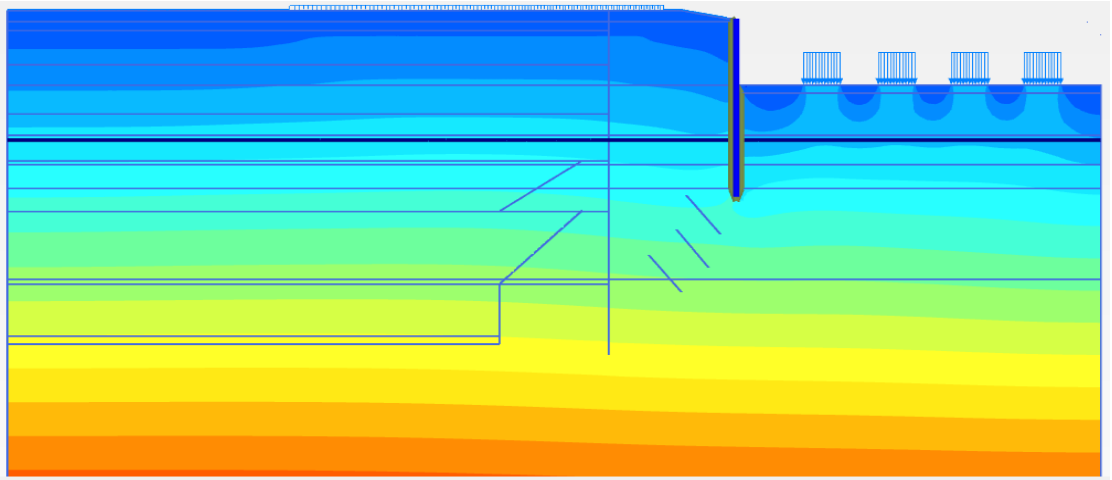
DATE	30/05/2025
PREPARED	MN
DESIGN	MN
REVIEW	JM
APPROVED	JM

TITLE
PLAXIS 2D - Stress field XX 2/2

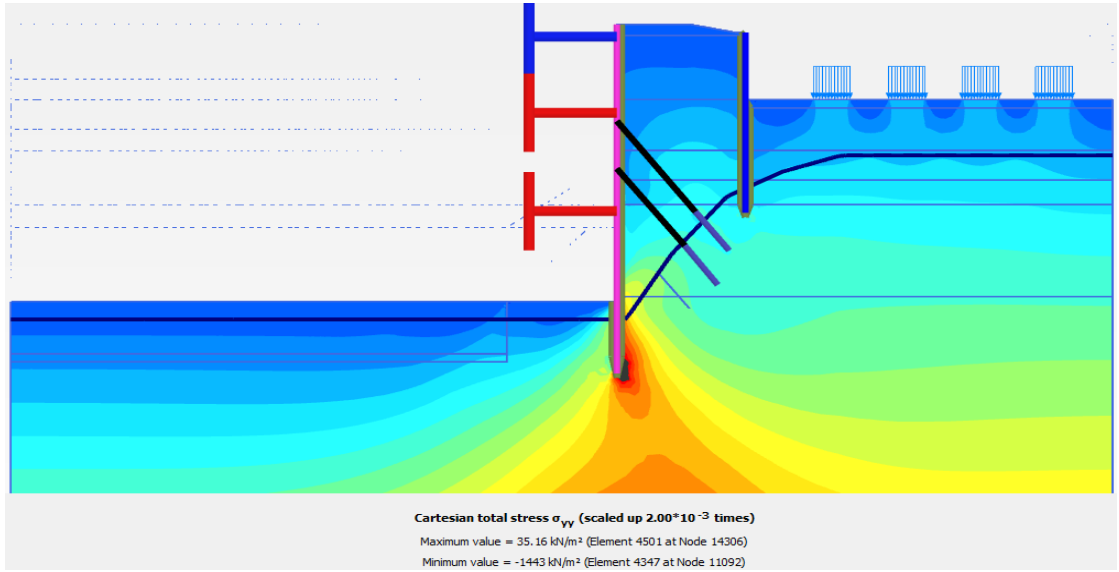
PROJECT No.	DOC. No	Rev.	FIG. No
S2207	S2207_GIA_01	1	S2-12

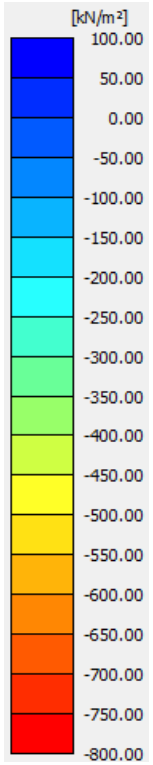
https://fortifygeotech.sharepoint.com/sites/FortifyGeotech2/Shared Documents/01. Jobs/S2207 - 849, 853 & 859 Pacific Highway, Chatsv

DESIGN SECTION 2



Railway operation stage (current)





Impact of proposed works (6th of excavation)

File Name: #

CLIENT
BB Wilson

PROJECT
849, 853 & 859 Pacific Highway, Chatswood

FORTIFY GEOTECH

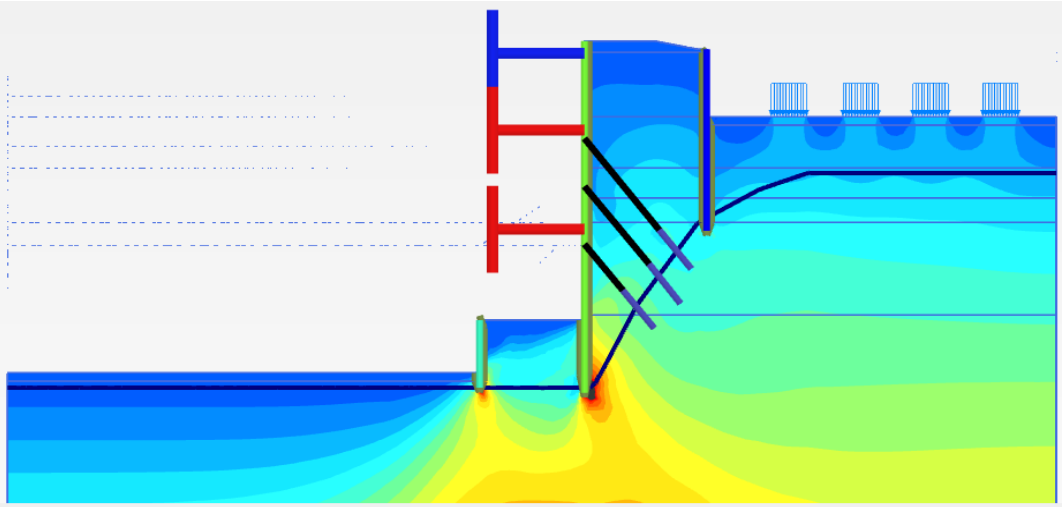
DATE	30/05/2025
PREPARED	MN
DESIGN	MN
REVIEW	JM
APPROVED	JM

TITLE
PLAXIS 2D - Stress field YY 1/2

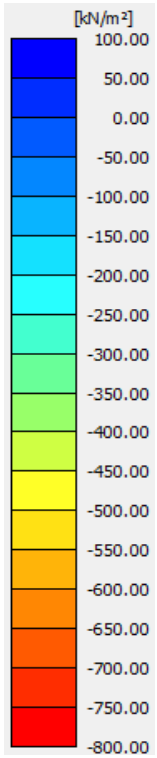
PROJECT No.	DOC. No	Rev.	FIG. No
S2207	S2207_GIA_01	1	S2-13

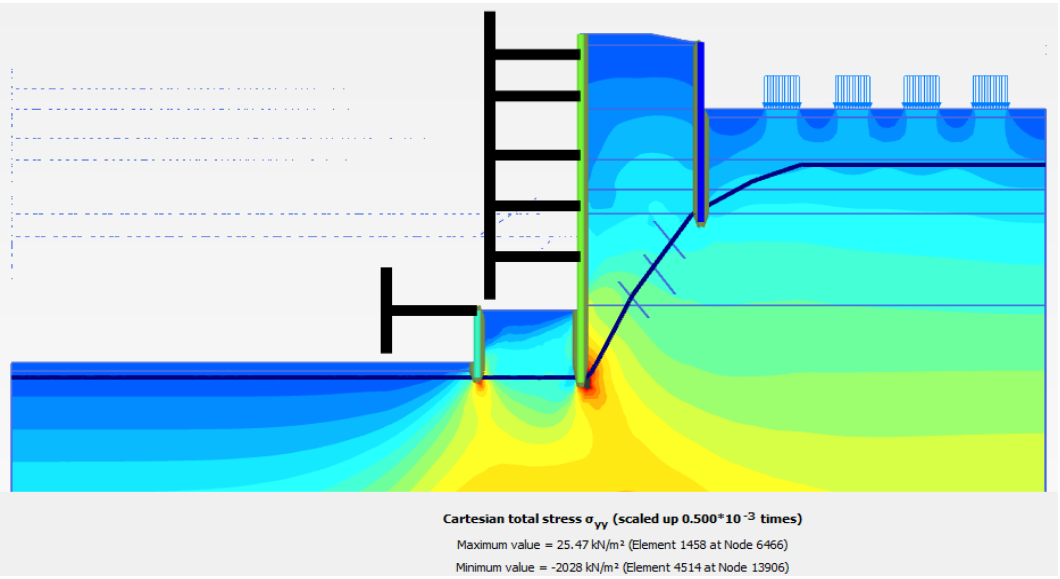
https://fortifygeotech.sharepoint.com/sites/FortifyGeotech2/Shared Documents/01. Jobs/S2207 - 849, 853 & 859 Pacific Highway, Chatsv

DESIGN SECTION 2



Impact of proposed works (end of excavation)





Impact of proposed works (removal of last level of anchors)

File Name: #

CLIENT
BB Wilson

PROJECT
849, 853 & 859 Pacific Highway, Chatswood

FORTIFY GEOTECH

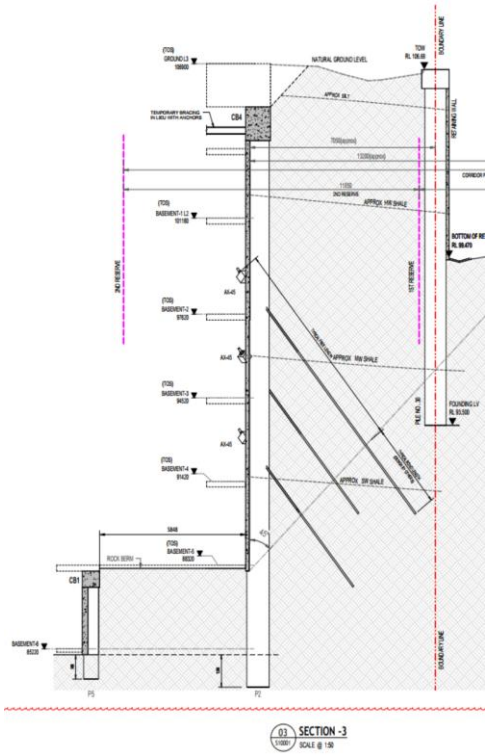
DATE	30/05/2025
PREPARED	MN
DESIGN	MN
REVIEW	JM
APPROVED	JM

TITLE
PLAXIS 2D - Stress field YY 2/2

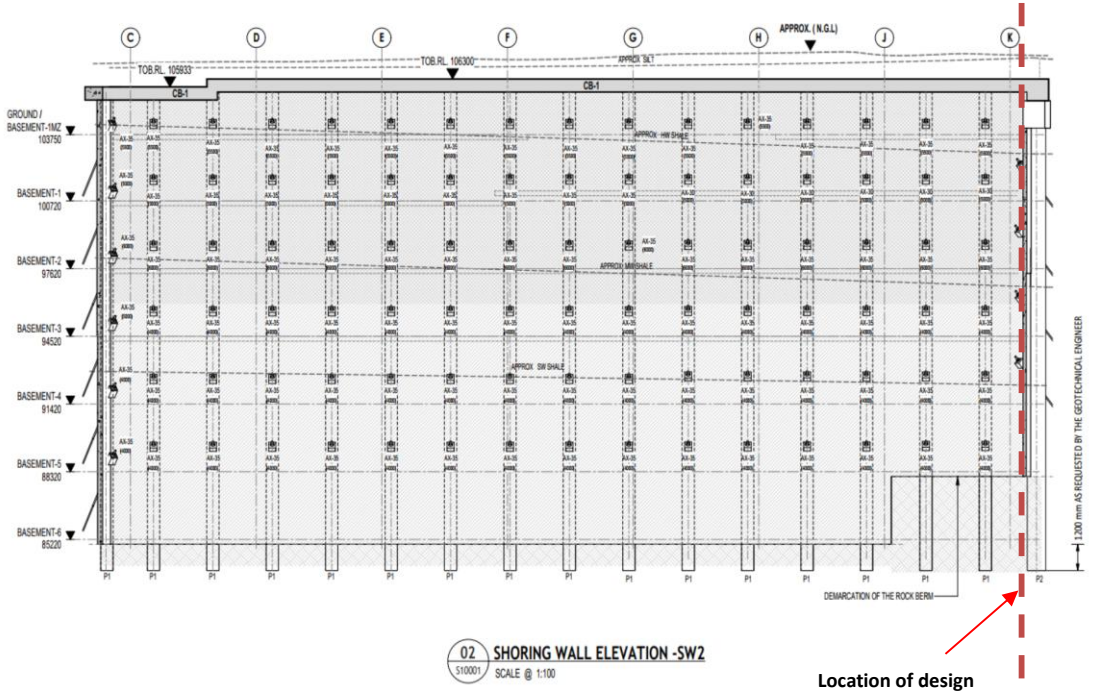
PROJECT No.	DOC. No	Rev.	FIG. No
S2207	S2207_GIA_01	1	S2-14

https://fortifygeotech.sharepoint.com/sites/FortifyGeotech2/Shared Documents/01. Jobs/S2207 - 849, 853 & 859 Pacific Highway, Chatsv

DESIGN SECTION 3



03 SECTION -3
SCALE @ 1:50

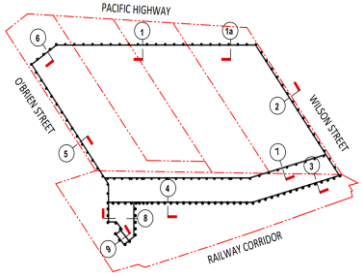


02 SHORING WALL ELEVATION -SW2
510001 SCALE @ 1:100

Location of design cross section

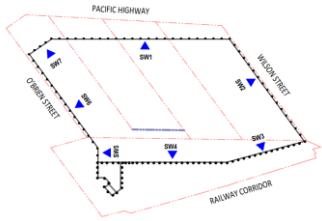
Elevation view showing indicative location of design cross-section

(extract of Cardigal Group Drawing S 10010 Rev H, dated 09/05/25, Project Ref. 01-100084)



Typical cross-section view

(extract of Cardigal Group Drawing S 10020 Rev H, dated 09/05/25, Project Ref. 01-100084)



KEY PLAN

CLIENT
BB Wilson

PROJECT
849, 853 & 859 Pacific Highway, Chatswood

FORTIFY GEOTECH

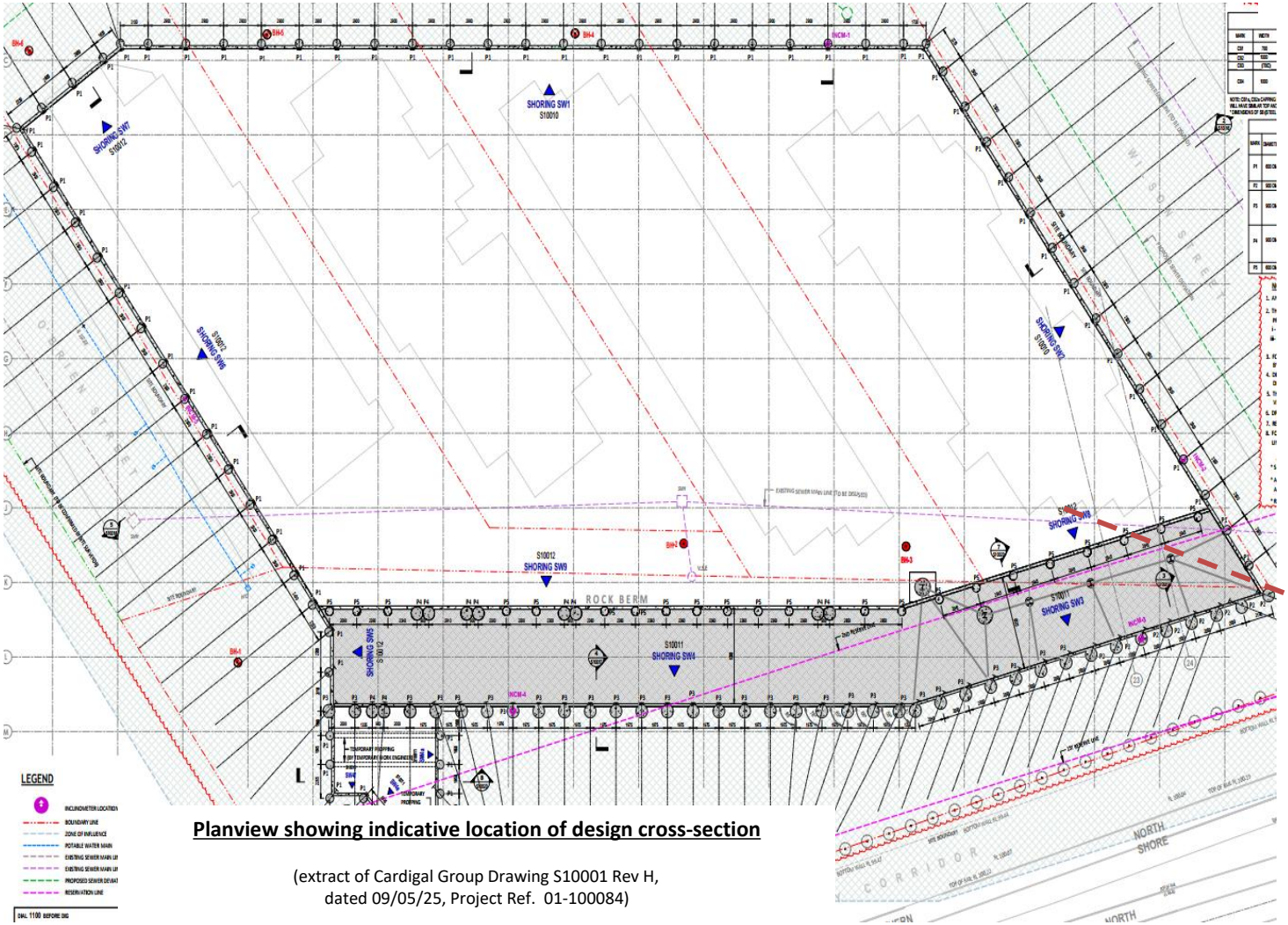
DATE	30/05/2025
PREPARED	JOE
DESIGN	JOE
REVIEW	MN
APPROVED	MN

TITLE
Proposed shoring system - structural input 1/2

PROJECT No.	DOC. No	Rev.	FIG. No
S2207	S2207_GIA_01	1	XS3-1

https://fortifygeotech.sharepoint.com/sites/FortifyGeotech2/Shared Documents/01. Jobs/S2207 - 849, 853 & 859 Pacific Highway, Chatsv

DESIGN SECTION 3



Planview showing indicative location of design cross-section

(extract of Cardigal Group Drawing S10001 Rev H, dated 09/05/25, Project Ref. 01-100084)

Location of design cross section

CLIENT	BB Wilson
PROJECT	849, 853 & 859 Pacific Highway, Chatswood

FORTIFY GEOTECH

DATE	30/05/2025
PREPARED	JOE
DESIGN	JOE
REVIEW	MN
APPROVED	MN

TITLE

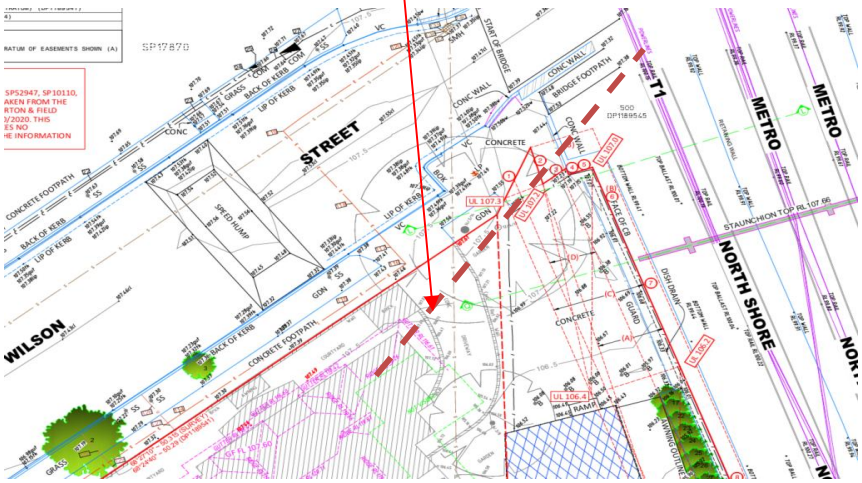
Proposed shoring system - structural input 2/2

PROJECT No.	DOC. No	Rev.	FIG. No
S2207	S2207_GIA_01	1	XS3-2

https://fortifygeotech.sharepoint.com/sites/FortifyGeotech2/Shared Documents/01. Jobs/S2207 - 849, 853 & 859 Pacific Highway, Chatsv

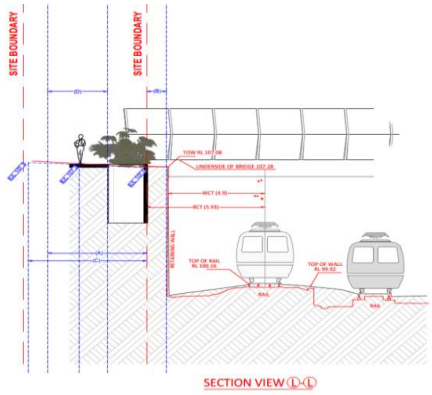
DESIGN SECTION 3

Location of design cross section



Survey plan of the site and surroudings, showing location of design cross-section

(extract of SDS Pty Ltd Drawing 6 of 9, REF: 9062 Rev C, dated 20/03/24)



Cross-section L-L showing proposed development in relation to railway assets

(extract of SDS Pty Ltd Drawing 5 of 9, REF: 9062 Rev C, dated 20/03/24)

CLIENT	BB Wilson
PROJECT	849, 853 & 859 Pacific Highway, Chatswood

FORTIFY GEOTECH

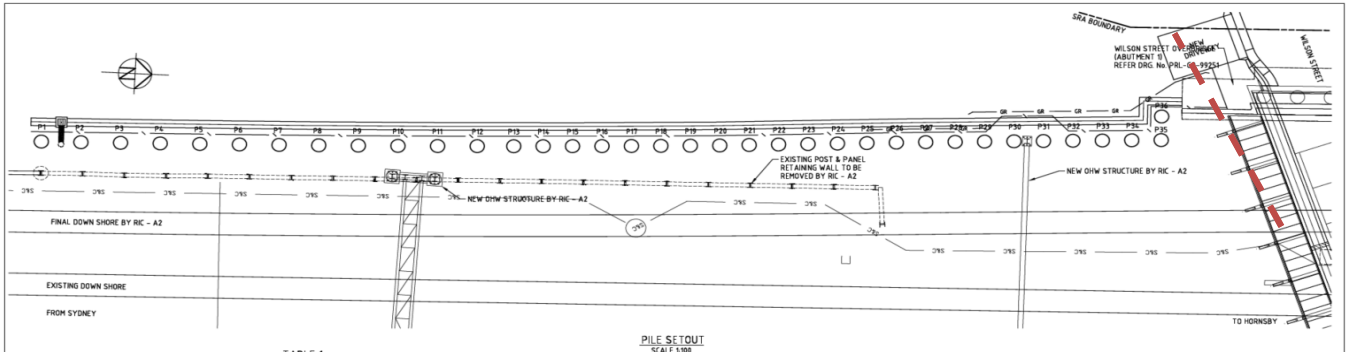
DATE	30/05/2025
PREPARED	JOE
DESIGN	JOE
REVIEW	MN
APPROVED	MN

TITLE
Survey/architectural drawings - geometric input

PROJECT No.	DOC. No	Rev.	FIG. No
S2207	S2207_GIA_01	1	XS3-3

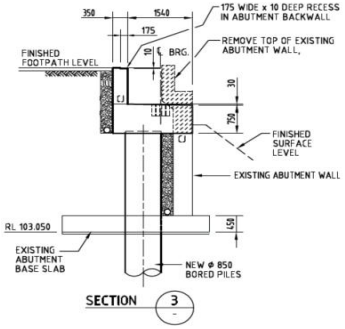
https://fortifygeotech.sharepoint.com/sites/FortifyGeotech2/Shared Documents/01. Jobs/S2207 - 849, 853 & 859 Pacific Highway, Chatsv

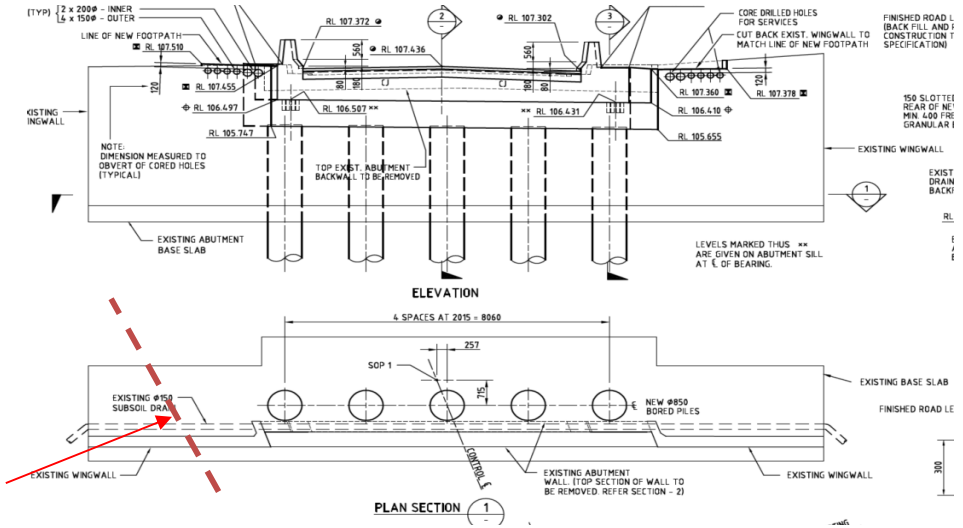
DESIGN SECTION 3



As-built pile setout plan & Pile shedule

(extract of Down Side Outer Pile Retaining Wall GC-3 Works Drawing set, Contract SDS Pty Ltd Drawing 6 of 9, REF: 9062 Rev C, dated 20/03/24)





Location of design cross section

As-built pile setout plan & Pile shedule

(extract of Will Street Overbirgde GC-3 Works Contract Drawing set, unknown date)

CLIENT
BB Wilson

PROJECT
849, 853 & 859 Pacific Highway, Chatswood

FORTIFY GEOTECH

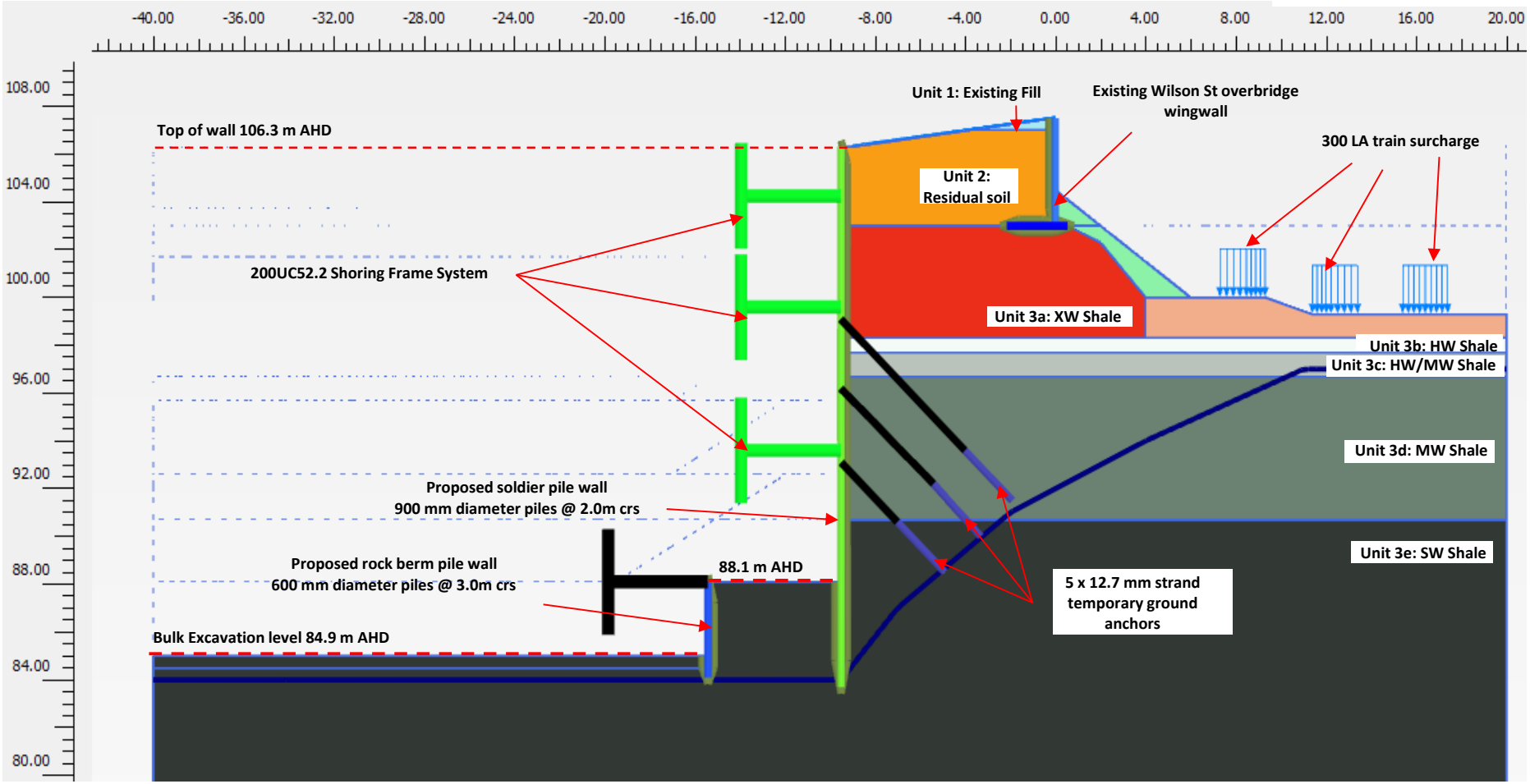
DATE	30/05/2025
PREPARED	JOE
DESIGN	JOE
REVIEW	MN
APPROVED	MN

TITLE
Existing railway assets as-builts

PROJECT No.	DOC. No	Rev.	FIG. No
S2207	S2207_GIA_01	1	XS3-4

https://fortifygeotech.sharepoint.com/sites/FortifyGeotech2/Shared Documents/01. Jobs/S2207 - 849, 853 & 859 Pacific Highway, Chatsv

DESIGN SECTION 3



CLIENT
BB Wilson

PROJECT
849, 853 & 859 Pacific Highway, Chatswood

FORTIFY GEOTECH

DATE	30/05/2025
PREPARED	JOE
DESIGN	JOE
REVIEW	MN
APPROVED	MN

TITLE
PLAXIS 2D - Model overview

PROJECT No.	DOC. No	Rev.	FIG. No
S2207	S2207_GIA_01	1	XS3-5

https://fortifygeotech.sharepoint.com/sites/FortifyGeotech2/Shared Documents/01. Jobs/S2207 - 849, 853 & 859 Pacific Highway, Chatsv

DESIGN SECTION 3

Stage no:		Construction stage	Surcharge/Loading	Structural EI stiffness of new piled wall
1		Establish initial conditions	/	N/A
2		Current housing development	Dwelling (20 kPa) & pedestrian (5 kPa) surcharge	
3		Railway trench excavation	As above	
4		Railway operation	Dwelling (20 kPa), pedestrian (5 kPa) surcharges & LA300 train surcharge	
5		Demolition of current housing development	LA300 train surcharge	
6		Install soldier pile wall	As above	0.9 EI
7		1st level of excavation	As above	
8		Installation of 1st level of shoring frame	As above	
9		2nd level of excavation	As above	
10		3rd level of excavation	As above	
11		Installation of 1st level of ground anchors and 2nd level of shoring frame	As above	
12		4th level of excavation	As above	
13		Installation of 2nd level of ground anchors and 3rd level of shoring frame	As above	
14		5th level of excavation	As above	
15		Installation of 3rd level of ground anchors	As above	
16		6th level of excavation	As above	
17		Installation of rock berm retaining wall	As above	
18		Excavation to bulk excavation level	As above	
	18.1	Over-excavation scenario	As above	
19		Change to long-term structural properties	As above	0.6 EI
20		Install Basement -5 slab		
21		Install Basement -4 slab	As above	
22		Install Basement -3 slab	As above	
23		Deactivate 4th level of ground anchors and 3rd level of shoring frame	As above	
24		Install Basement -2 slab	As above	
25		Deactivate 3rd level of ground anchors	As above	
26		Install Basemend -1 L2	As above	
27		Deactivate 2nd level of ground anchors and 2nd level of shoring frame	As above	
28		Install Basement -1MZ slab	As above	
29		Deactivate 1st level of ground anchors and 1st level of shoring frame	As above	
30		Application of 20kPa surcharge for future railway operations	Railway (20 kPa) surcharge & LA300 train surcharge	

CLIENT
BB Wilson

PROJECT
849, 853 & 859 Pacific Highway, Chatswood

FORTIFY GEOTECH

DATE	30/05/2025
PREPARED	JOE
DESIGN	JOE
REVIEW	MN
APPROVED	MN

TITLE
PLAXIS 2D - Construction staging

PROJECT No.	DOC. No	Rev.	FIG. No
S2207	S2207_GIA_01	1	XS3-6

https://fortifygeotech.sharepoint.com/sites/FortifyGeotech2/Shared Documents/01. Jobs/S2207 - 849, 853 & 859 Pacific Highway, Chatsv

DESIGN SECTION 3

Existing railway asset

Plate - Stem (300 mm)

General | Mechanical | Thermal

Property		Unit	Value
Properties			
Isotropic			☑
Stiffness			
EA_1		kN/m	9.000E6
EA_2		kN/m	9.000E6
E_1		kN/m²	38.73E6
E_2		kN/m²	38.73E6
EI		kN m²/m	40.50E3
ν (nu)			0.2000
d		m	0.2324

Plate - Base (450 mm)

General | Mechanical | Thermal

Property		Unit	Value
Properties			
Isotropic			☑
Stiffness			
EA_1		kN/m	13.50E6
EA_2		kN/m	13.50E6
E_1		kN/m²	38.73E6
E_2		kN/m²	38.73E6
EI		kN m²/m	136.7E3
ν (nu)			0.2000
d		m	0.3486

Proposed shoring frame

Anchor - Mid / Bottom

General | Mechanical | Thermal

Property		Unit	Value
Properties			
$L_{spacing}$		m	4.800
Stiffness			
EA		kN	120.0E3

Anchor - Top

General | Mechanical | Thermal

Property		Unit	Value
Properties			
$L_{spacing}$		m	4.800
Stiffness			
EA		kN	30.00E3

Proposed shoring wall

Plate - 900mm @ 2.0m ST

General | Mechanical | Thermal

Property		Unit	Value
Properties			
Isotropic			☑
Stiffness			
EA_1		kN/m	10.43E6
EA_2		kN/m	10.43E6
E_1		kN/m²	14.12E6
E_2		kN/m²	14.12E6
EI		kN m²/m	475.0E3
ν (nu)			0.2000
d		m	0.7391

Plate - 900mm @ 2.0m LT

General | Mechanical | Thermal

Property		Unit	Value
Properties			
Isotropic			☑
Stiffness			
EA_1		kN/m	10.43E6
EA_2		kN/m	10.43E6
E_1		kN/m²	17.28E6
E_2		kN/m²	17.28E6
EI		kN m²/m	317.0E3
ν (nu)			0.2000
d		m	0.6038

Proposed rock berm shoring wall

Plate - 600mm @ 2.4m ST

General | Mechanical | Thermal

Property		Unit	Value
Properties			
Isotropic			☑
Stiffness			
EA_1		kN/m	3.864E6
EA_2		kN/m	3.864E6
E_1		kN/m²	7.841E6
E_2		kN/m²	7.841E6
EI		kN m²/m	78.20E3
ν (nu)			0.2000
d		m	0.4928

Plate - 600mm @ 2.4m LT

General | Mechanical | Thermal

Property		Unit	Value
Properties			
Isotropic			☑
Stiffness			
EA_1		kN/m	3.864E6
EA_2		kN/m	3.864E6
E_1		kN/m²	9.597E6
E_2		kN/m²	9.597E6
EI		kN m²/m	52.20E3
ν (nu)			0.2000
d		m	0.4026

CLIENT
BB Wilson

PROJECT
849, 853 & 859 Pacific Highway, Chatswood

FORTIFY GEOTECH

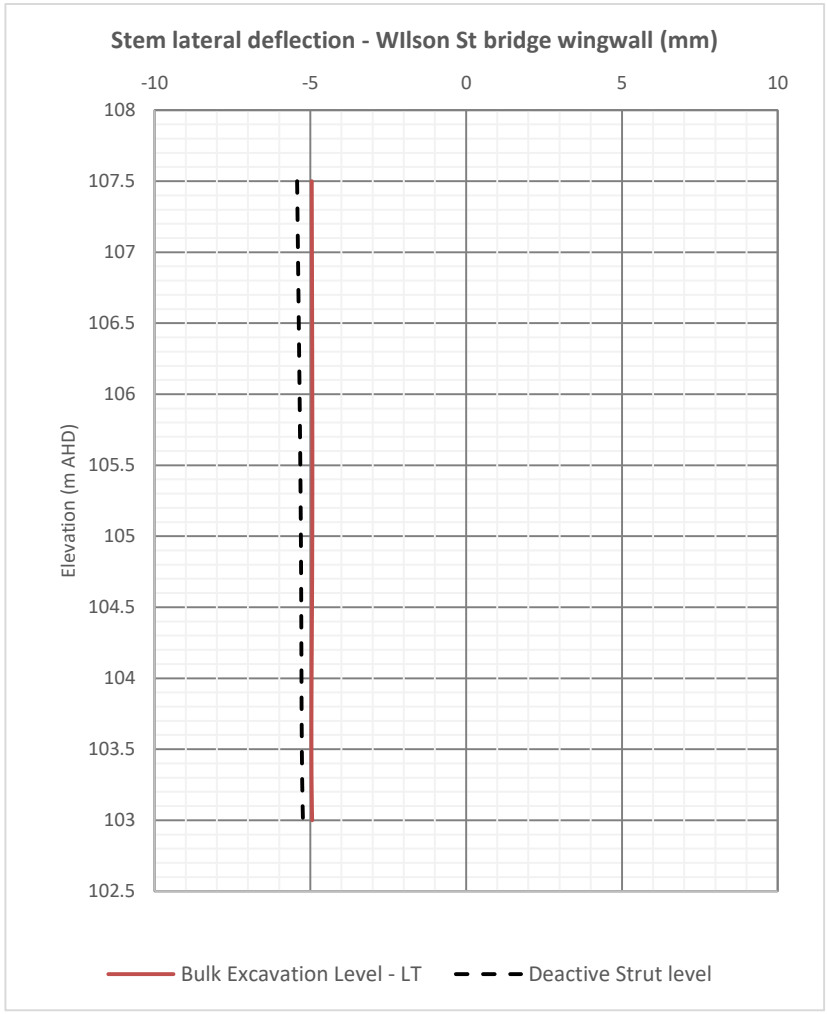
DATE	30/05/2025
PREPARED	JOE
DESIGN	JOE
REVIEW	MN
APPROVED	MN

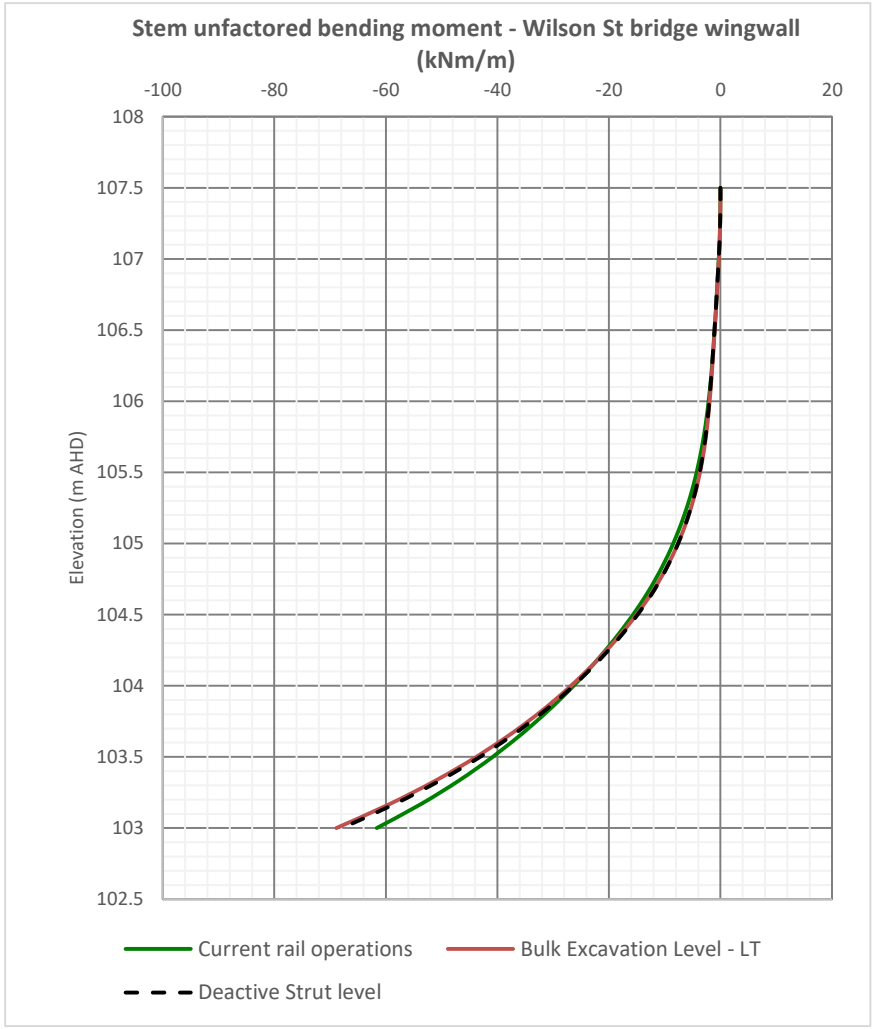
TITLE
PLAXIS 2D - Structural elements properties

PROJECT No.	DOC. No	Rev.	FIG. No
S2207	S2207_GIA_01	1	XS3-7

https://fortifygeotech.sharepoint.com/sites/FortifyGeotech2/Shared Documents/01. Jobs/S2207 - 849, 853 & 859 Pacific Highway, Chatsw

DESIGN SECTION 3





Notes:
1. Structural actions are per pile and unfactored

CLIENT
BB Wilson

PROJECT
849, 853 & 859 Pacific Highway, Chatswood

FORTIFY GEOTECH

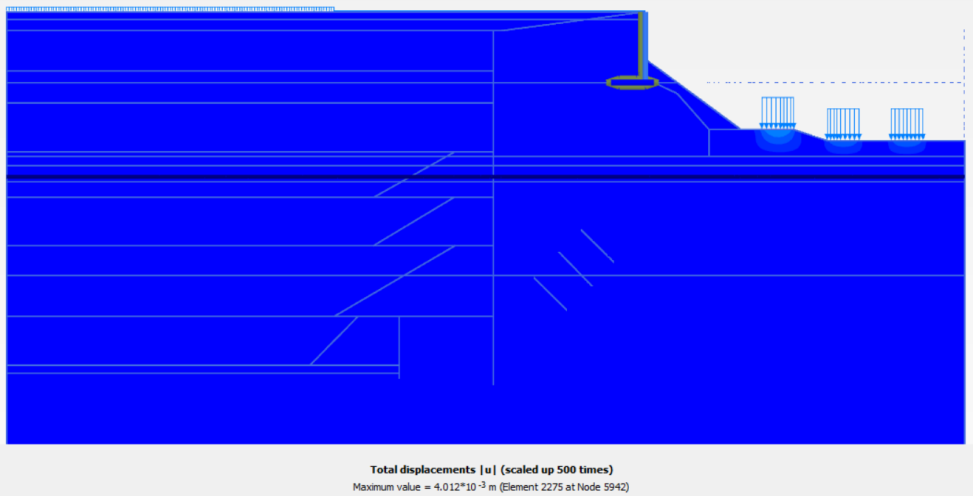
DATE	30/05/2025
PREPARED	JOE
DESIGN	JOE
REVIEW	MN
APPROVED	MN

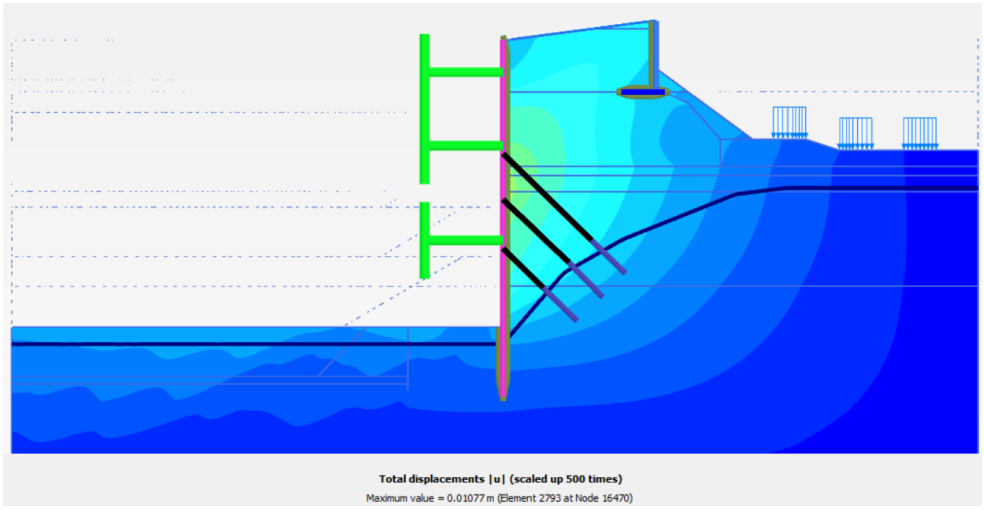
TITLE
PLAXIS 2D - Existing railway wall outputs

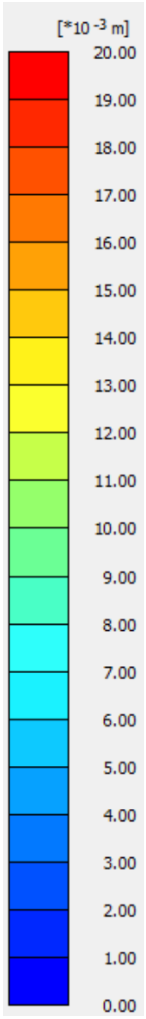
PROJECT No.	DOC. No	Rev.	FIG. No
S2207	S2207_GIA_01	1	XS3-8

https://fortifygeotech.sharepoint.com/sites/FortifyGeotech2/Shared Documents/01. Jobs/S2207 - 849, 853 & 859 Pacific Highway, Chatsv

DESIGN SECTION 3







Railway operation stage (current)

Impact of proposed works (6th level of excavation)

File Name: #

CLIENT
BB Wilson

PROJECT
849, 853 & 859 Pacific Highway, Chatswood

FORTIFY GEOTECH

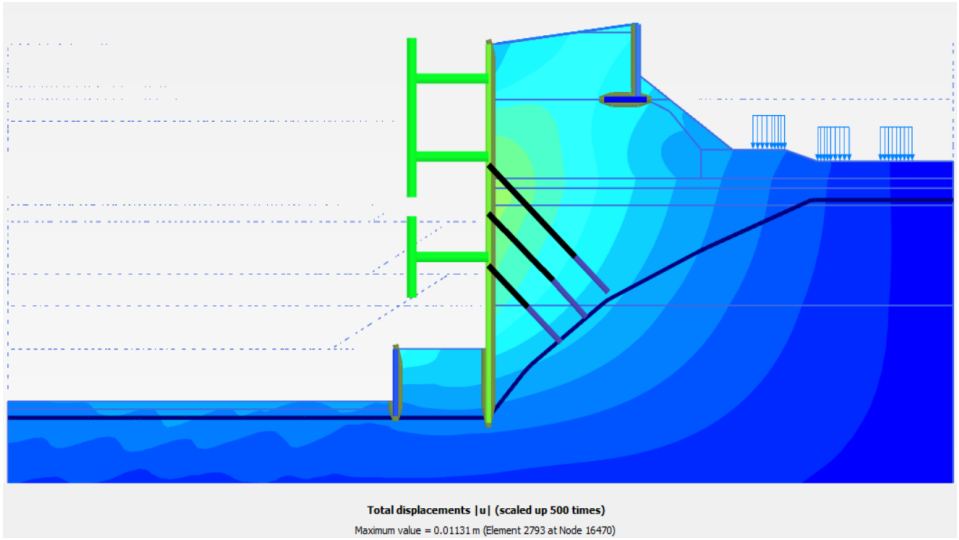
DATE	30/05/2025
PREPARED	JOE
DESIGN	JOE
REVIEW	MN
APPROVED	MN

TITLE
PLAXIS 2D - Displacement field XY 1/2

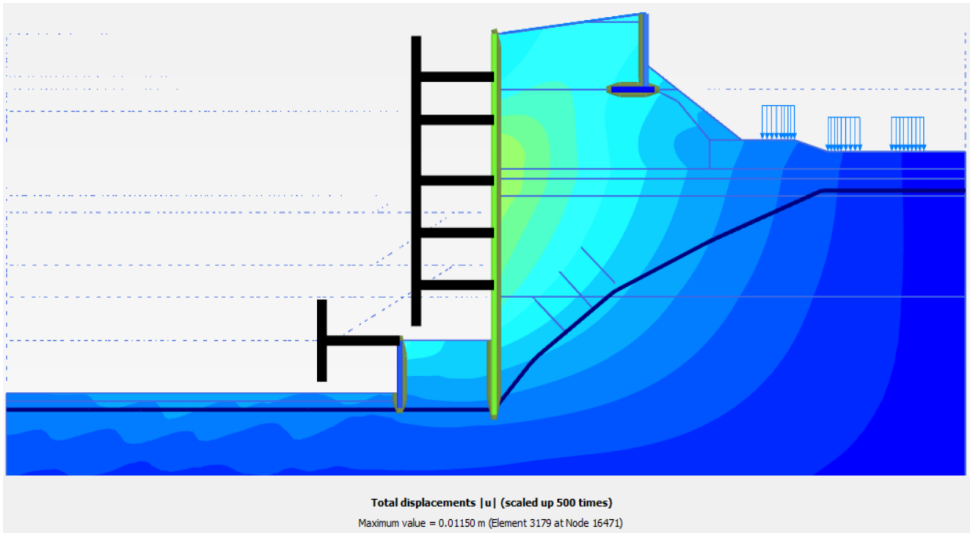
PROJECT No.	DOC. No	Rev.	FIG. No
S2207	S2207_GIA_01	1	XS3-9

https://fortifygeotech.sharepoint.com/sites/FortifyGeotech2/Shared Documents/01. Jobs/S2207 - 849, 853 & 859 Pacific Highway, Chatsv

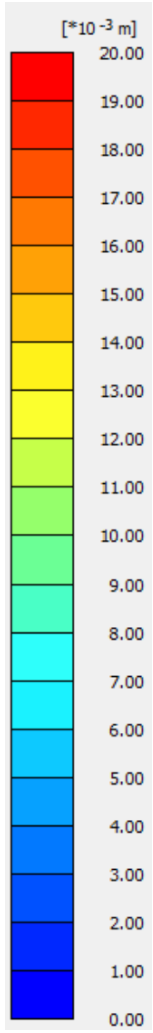
DESIGN SECTION 3



Impact of proposed works
(end of excavation)



Impact of proposed works
(removal of last ground anchor level)



File Name: #

CLIENT
BB Wilson

PROJECT
849, 853 & 859 Pacific Highway, Chatswood

FORTIFY GEOTECH

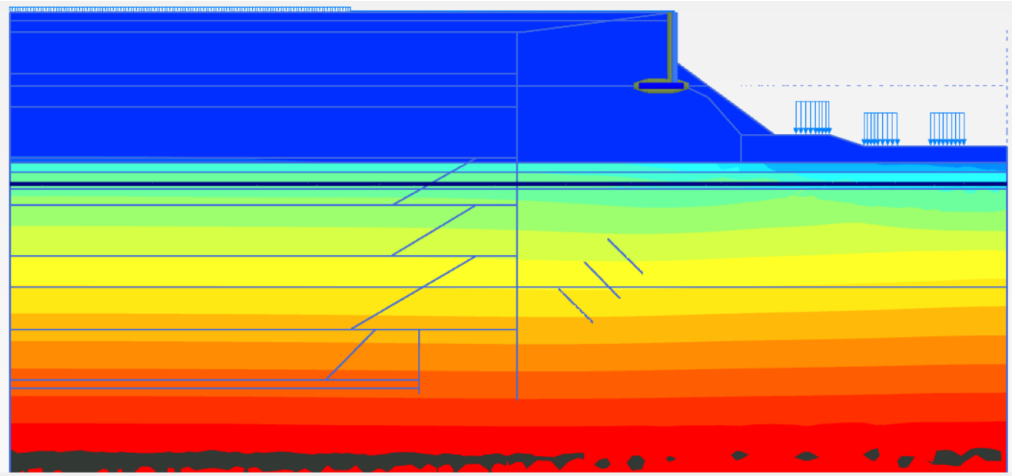
DATE	30/05/2025
PREPARED	JOE
DESIGN	JOE
REVIEW	MN
APPROVED	MN

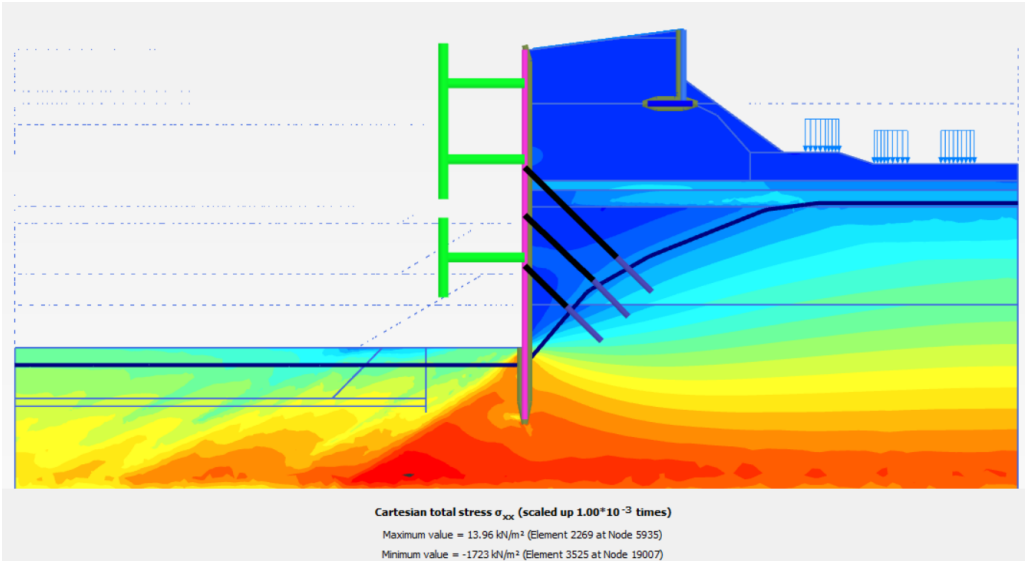
TITLE
PLAXIS 2D - Displacement field XY 2/2

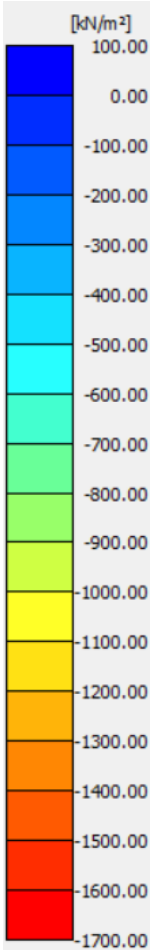
PROJECT No.	DOC. No	Rev.	FIG. No
S2207	S2207_GIA_01	1	S3-10

https://fortifygeotech.sharepoint.com/sites/FortifyGeotech2/Shared Documents/01. Jobs/S2207 - 849, 853 & 859 Pacific Highway, Chatsv

DESIGN SECTION 3







Railway operation stage (current)

Impact of proposed works (6th of excavation)

File Name: #

CLIENT
BB Wilson

PROJECT
849, 853 & 859 Pacific Highway, Chatswood

FORTIFY GEOTECH

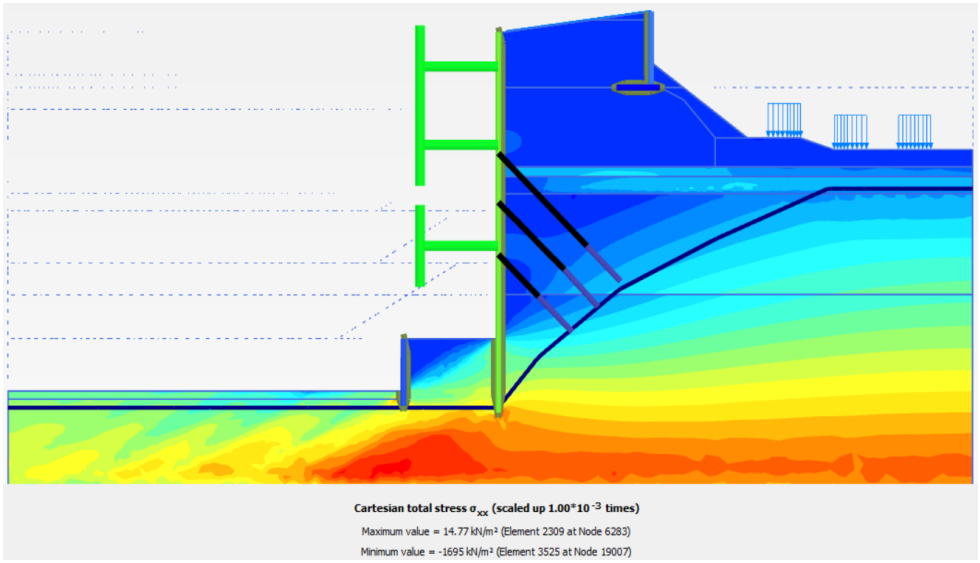
DATE	30/05/2025
PREPARED	JOE
DESIGN	JOE
REVIEW	MN
APPROVED	MN

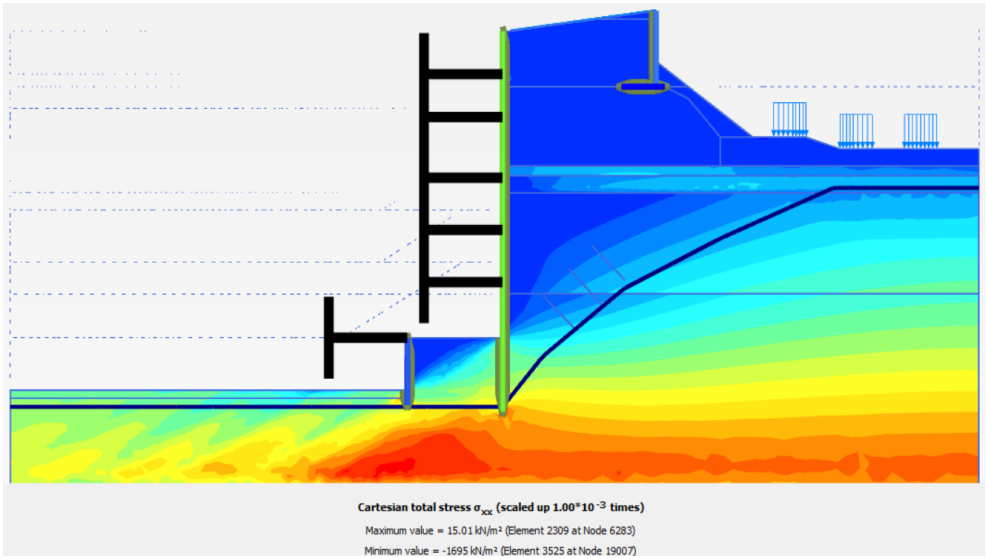
TITLE
PLAXIS 2D - Stress field XX 1/2

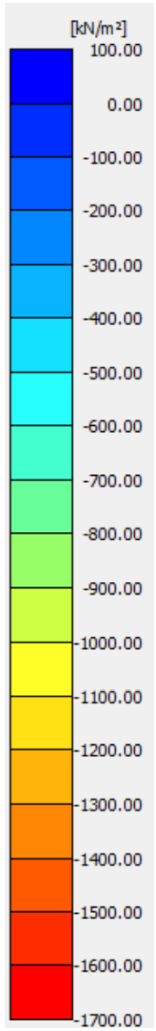
PROJECT No.	DOC. No	Rev.	FIG. No
S2207	S2207_GIA_01	1	S3-11

https://fortifygeotech.sharepoint.com/sites/FortifyGeotech2/Shared Documents/01. Jobs/S2207 - 849, 853 & 859 Pacific Highway, Chatsv

DESIGN SECTION 3







Impact of proposed works (end of excavation)

Impact of proposed works (removal of last level of anchors)

File Name: #

CLIENT
BB Wilson

PROJECT
849, 853 & 859 Pacific Highway, Chatswood

FORTIFY GEOTECH

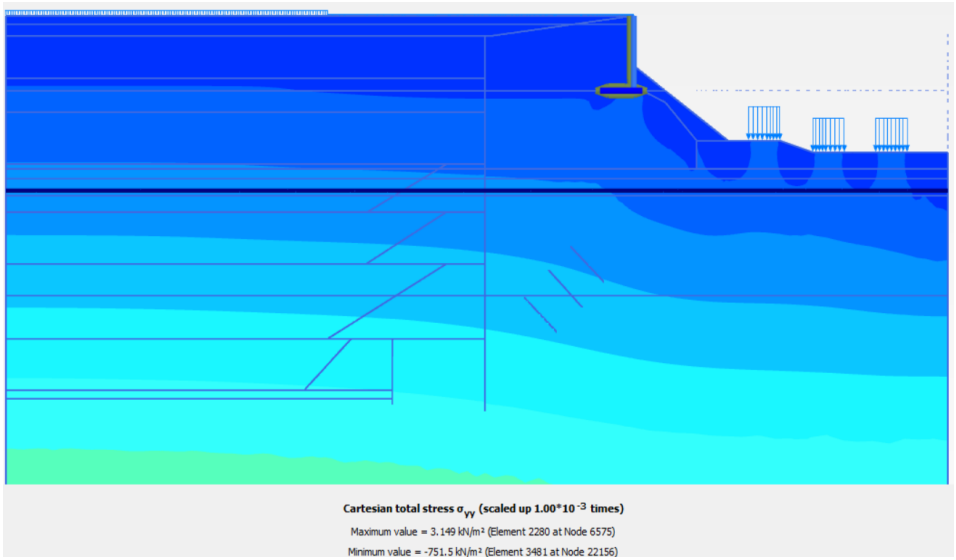
DATE	30/05/2025
PREPARED	JOE
DESIGN	JOE
REVIEW	MN
APPROVED	MN

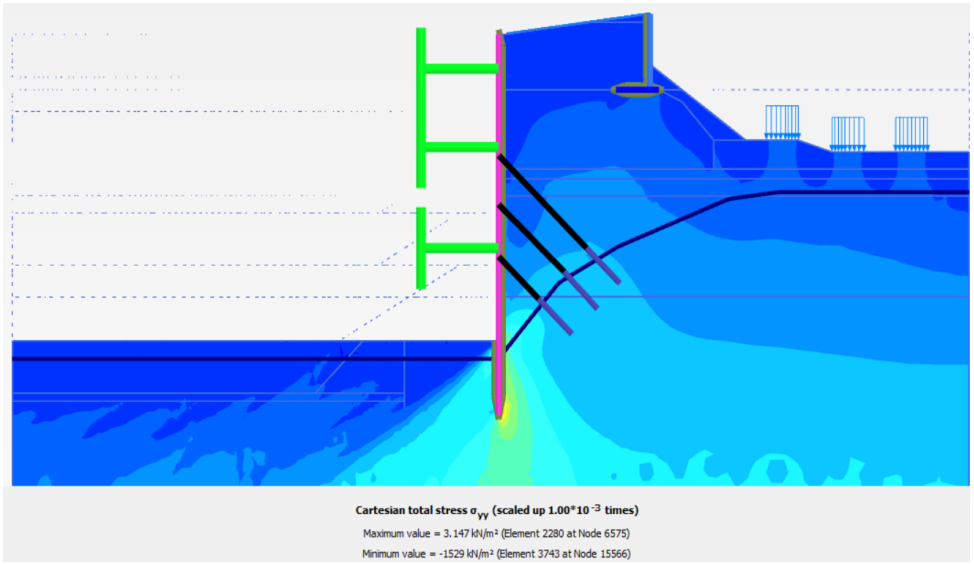
TITLE
PLAXIS 2D - Stress field XX 2/2

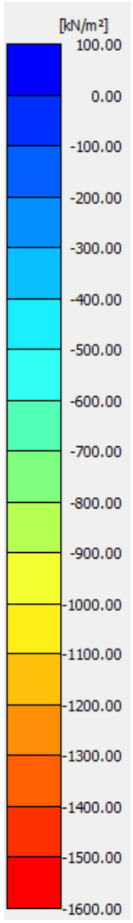
PROJECT No.	DOC. No	Rev.	FIG. No
S2207	S2207_GIA_01	1	S3-12

https://fortifygeotech.sharepoint.com/sites/FortifyGeotech2/Shared Documents/01. Jobs/S2207 - 849, 853 & 859 Pacific Highway, Chatsv

DESIGN SECTION 3







Railway operation stage (current)

Impact of proposed works (6th of excavation)

File Name: #

CLIENT
BB Wilson

PROJECT
849, 853 & 859 Pacific Highway, Chatswood

FORTIFY GEOTECH

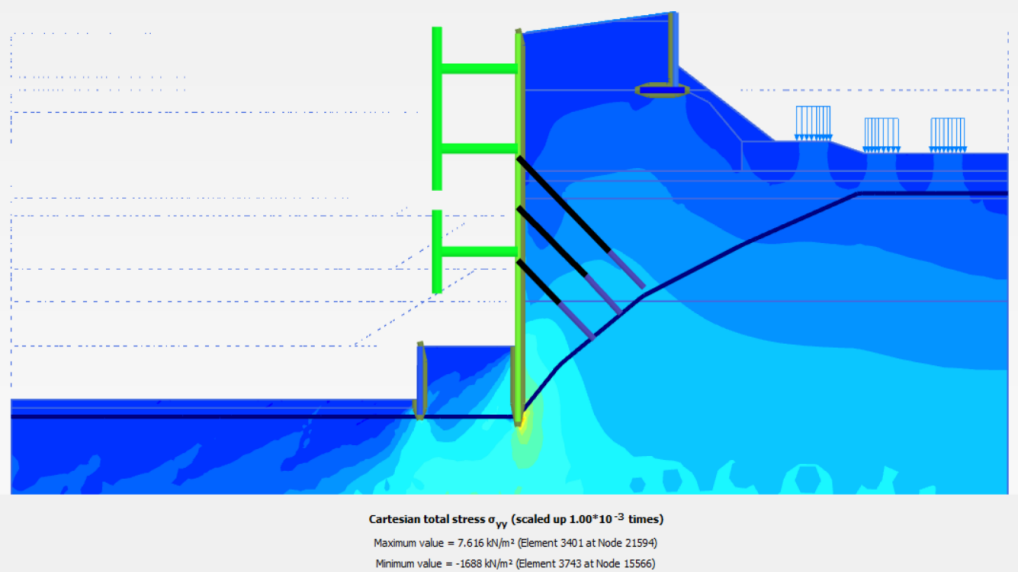
DATE	30/05/2025
PREPARED	JOE
DESIGN	JOE
REVIEW	MN
APPROVED	MN

TITLE
PLAXIS 2D - Stress field YY 1/2

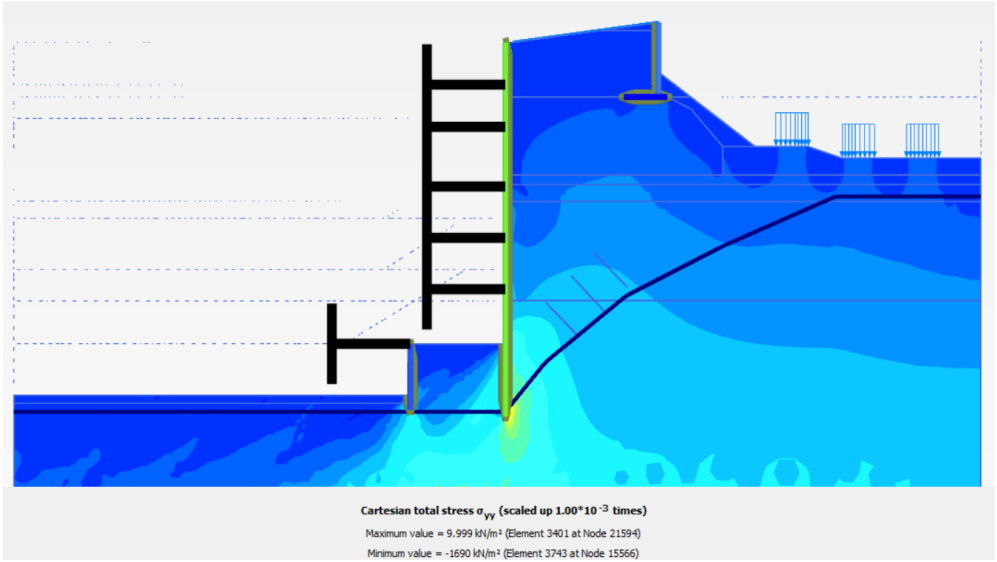
PROJECT No.	DOC. No	Rev.	FIG. No
S2207	S2207_GIA_01	1	S3-13

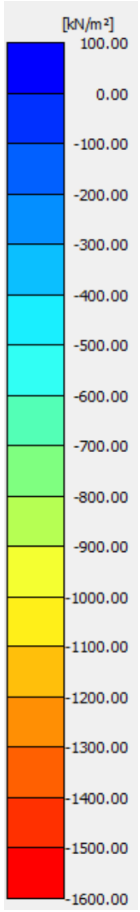
https://fortifygeotech.sharepoint.com/sites/FortifyGeotech2/Shared Documents/01. Jobs/S2207 - 849, 853 & 859 Pacific Highway, Chatsv

DESIGN SECTION 3



Impact of proposed works (end of excavation)





Impact of proposed works (removal of last level of anchors)

File Name: #

CLIENT
BB Wilson

PROJECT
849, 853 & 859 Pacific Highway, Chatswood

FORTIFY GEOTECH

DATE	30/05/2025
PREPARED	JOE
DESIGN	JOE
REVIEW	MN
APPROVED	MN

TITLE
PLAXIS 2D - Stress field YY 2/2

PROJECT No.	DOC. No	Rev.	FIG. No
S2207	S2207_GIA_01	1	S3-14

https://fortifygeotech.sharepoint.com/sites/FortifyGeotech2/Shared Documents/01. Jobs/S2207 - 849, 853 & 859 Pacific Highway, Chatsv

FORTIFY
GEOTECH

Appendix D

TAO/AEO review certificate

Level 27, 680 George Street
Sydney NSW 2000
GPO Box 5394
Sydney NSW 2001

Tel: +61 2 9272 5100
Fax: +61 2 9272 5101
www.wsp.com

Our ref: PS214804-JP-SYD-GEO-LTR-00007 RevA

Your ref: PS214804

By email
manuel@fortifygeotech.com.au

2 June 2025

Public

Manuel Neves
Operations Manager
Fortify Geotech
39 Sydenham Road
Marrickville NSW 2204

Dear Manuel,

849, 853 & 859 Pacific Highway, Chatswood, NSW - Review of Rail Impact Assessment (Sydney Trains & Sydney Metro)

I, Jiping Pan, certify that I have undertaken a TAO review in relation to the geotechnical impact assessment report reference S2207_GIA_01_ Rev1, dated on 2 June 2025, provided by Fortify Geotech in line with Clause 14.3.2 “Impact Assessment Report” (Geotechnical) of Transport for NSW standard “TS 02404– Airspace and External Developments (previous T HR CI 12090 ST)”, issue date 01 June 2021 and in line with the requirements of Sydney Metro At Grade and Elevated Sections Corridor Protection Guidelines, in particular geotechnical requirements of Clauses 5.2 and 6.

In performing the function of reviewer, I have used due skill, care and diligence and from my review and in my opinion as a professional engineer I consider that all relevant requirements within Clause 14.3.2 of TS 02404 and the geotechnical requirements of Sydney Metro At Grade and Elevated Sections Corridor Protection Guidelines (Clauses 5.2 and 6) have been addressed by this geotechnical impact assessment report.

Yours sincerely,



Dr. Jiping Pan
Technical Director
CPEng, IntPE, APEC Engineer, RPEV, FIEAust, NER

WSP | Calibre acknowledges that every project we work on takes place on First Peoples lands.
We recognise Aboriginal and Torres Strait Islander Peoples as the first scientists and engineers and pay our respects to Elders past and present.

WSP Australia Pty Limited ABN 80 078 004 798

FORTIFY
GEOTECH

Appendix E

Limitations in the use and interpretation of this geotechnical report

39 Sydenham Rd, Marrickville NSW 2204
PO Box 9225, Deakin ACT 2600

(02) 9188 4033
FortifyGeotech.com.au

Limitations in the Use and Interpretation of this Geotechnical Report

Our Professional services were performed, our findings obtained, and our recommendations prepared in accordance with generally accepted engineering principles and practices. This warranty is in lieu of all other warranties, either expressed or implied.

This Document has been prepared for the particular purpose outlined in Fortify Geotech's proposal and no responsibility is accepted for the use of this Document, in whole or in part, in other contexts or for any other purpose. The scope and the period of Fortify Geotech's Services are as described in Fortify's proposal and are subject to restrictions and limitations. Fortify Geotech did not perform a complete assessment of all possible conditions or circumstances that may exist at the site referenced in the Document. If a service is not expressly indicated, do not assume it has been provided.

Conditions may exist which were undetectable given the limited nature of the enquiry Fortify Geotech was retained to undertake with respect to the site. Variations in conditions may occur between investigatory locations, and there may be special conditions pertaining to the site which have not been revealed by the investigation and which have not therefore been taken into account in the Document. Accordingly, additional studies and actions may be required. Unanticipated soil conditions are commonly encountered on construction sites and cannot be fully anticipated by merely taking soil samples, borings or test pits. Such unexpected conditions frequently require that additional expenditures be made to attain a properly constructed project. It is recommended that the Owner consider providing a contingency fund to accommodate such potential extra costs.

In addition, it is recognised that the passage of time affects the information and assessment provided in this Document. Fortify Geotech's opinions are based upon information that existed at the time of the production of the Document. It is understood that the Services provided allowed Fortify Geotech to form no more than an opinion of the actual conditions of the site at the time the site was visited and cannot be used to assess the effect of any subsequent changes in the quality of the site, or its surroundings, or any laws or regulations.

Any assessments made in this Document are based on the conditions indicated from published sources and the investigation described. No warranty is included, either express or implied, that the actual conditions will conform exactly to the assessments contained in this Document. Where data supplied by the client or other external sources, including previous site investigation data, have been used, it has been assumed that the information is correct unless otherwise stated. No responsibility is accepted by Fortify Geotech for incomplete or inaccurate data supplied by others.

Fortify may have retained subconsultants affiliated with Fortify Geotech to provide Services for the benefit of Fortify. To the maximum extent allowed by law, the Client acknowledges and agrees it will not have any direct legal recourse to, and waives any claim, demand, or cause of action against, Fortify Geotech's affiliated companies, and their employees, officers and directors.

This Document is provided for sole use by the Client and is confidential to it and its professional advisers. No responsibility whatsoever for the contents of this Document will be accepted to any person other than the Client. Any use which a third party makes of this Document, or any reliance on or decisions to be made based on it, is the responsibility of such third parties. Fortify Geotech accepts no responsibility for damages, if any, suffered by any third party as a result of decisions made or actions based on this Document.

By date, or revision, the Report supersedes any prior report or other document issued by Fortify Geotech in dealing with any matter that is in the Report.

Any uncertainty as to the extent to which this Report can be used or relied upon in any respect should be referred to Fortify Geotech for clarification.