REPORT TO

PARA-ERE HOLDINGS

ON

GEOTECHNICAL ASSESSMENT

FOR

PROPOSED SHOP TOP HOUSING DEVELOPMENT

AT

22-24 RAGLAN STREET, MANLY, NSW

Date: 27 October 2025
Ref: 35612SFrptRev3

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DOCUMENT REVISION RECORD

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35612SFrptRev3	Revised Report	27 October 2025

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ATTACHMENTS

1 INTRODUCTION

This report presents the results of a geotechnical desktop assessment for a proposed residential development at 22-24 Raglan Street, Manly, NSW. A site location plan is presented as Figure 1. The assessment was commissioned by Mr Lachlan Paramor of Leftfield Group by signed 'Acceptance of Proposal' form dated 5 August 2025. The assessment was carried out in accordance with our proposal, Ref: P72385YF, dated 23 July 2025.

From review of the architectural drawings prepared by Carlisle Architects (Job No. 25-02, Relevant Drawing Nos. DA-02 and DA-03, Revision B, dated 24 October 2025), we understand the development includes the following:

- Demolition of all existing site structures,
- Construction of an eight-storey mixed use building above a single basement level.
- The basement level will have a finished floor level at approximately RL2.75m and assuming an approximately 0.5m thick basement slab, it will result in a Bulk Excavation Level (BEL) of about RL2.2m. Based on existing ground levels, this will result in excavation to depths of about 3.5m to 3.9m. The basement footprint will extend to the eastern, southern and western boundaries, however will be set back about 1.9m to 2.4m from the northern boundary.

The purpose of the assessment was to obtain geotechnical information on likely subsurface conditions as a basis for comments and recommendations on excavation, retention, groundwater, footings, slabs on grade and site specific geotechnical investigation which will be required for detailed design following the DA stage.

We understand the proposed works form part of an amendment to a Development Application (DA) [DA2022/2256], with the proposed works detailed above and includes the provision of affordable housing.

2 ASSESSMENT PROCEDURE

The assessment involved the following procedure:

- A desk top study of our nearby geotechnical investigations,
- Review of the published information including geological maps,
- A walkover of the site and surrounds by our Associate Geotechnical Engineer on 11 November 2022 and Senior Geotechnical Engineer on 19 August 2025.

No subsurface investigations were carried out as part of this assessment.

3 RESULTS OF INVESTIGATION

3.1 Site Description

The site is situated within a relatively flat low lying coastal area about 200m to the west of Manly Beach and about 100m to the east of the toe of an east sloping hillside. The site is bound to the south by Raglan Street, and by commercial and residential properties on its remaining sides. The site is approximately rectangular shaped (in plan), with dimensions of about 23m (east to west) by 30m (north to south). Existing ground levels range between RL5.7m to RL6.1m.

The site contains a three-storey brick and rendered hostel building. The existing structure generally appears to be in good external condition. The existing structure covers the majority of the site except for narrow strips about 1.5m wide on the northern and southern sides of the site. A concrete driveway extends from Raglan Street to a car parking area on the ground floor within the south-eastern corner of the site. The concrete driveway contains a crack about 5mm wide.

The neighbouring property to the east, No.18 Raglan Street, contains a two to three storey concrete rendered mixed use building which abuts the common boundary along the full boundary length. The building generally appears to be in good condition based upon a cursory external inspection from the street frontage. Based on provided historical structural drawings, which were prepared by Northwood Pty Ltd (Job No.14007, Relevant Drawing Nos. S1.00^{RevH} and S1.02^{RevB} dated 9 November 2011), a below ground 'car-stacker' level exists below the ground floor over the northern half of the property. The level of the car stacker is not specifically shown on the drawings (and therefore unknown), however it appears that it is about 2.7m below the ground floor level, which is assumed to be at about street level.

The neighbouring property to the west, No.2-14 Pittwater Road, contains a two to three storey brick and concrete structure which contains five retail shops. The structure abuts the common boundary along the full length of the western site boundary, and a short length of the western end of the northern boundary. The building appeared in good condition based upon a cursory external inspection from the street frontage. It appears that a basement level is not present.

The neighbouring property to the north, No.23-31 Whistler Street, contains a three storey brick unit building that is set back about 4m from the common boundary. The external areas in proximity to the subject site appear to be paved and comprise landscaped patios and veranda areas. However, based on the structural drawings referenced above for building at No.18 Raglan Street, Section 1 (S1.00) shows a basement level extending up to the site boundary with No.18 Raglan Street. However, further details are not known on the depth and extent of the basement level in relation to the site.

3.2 Likely Subsurface Conditions

The 1:100,000 Sydney geological map indicates the site to be underlain by a channel of Quaternary period medium to fine marine sand. The hillside to the west of the site is mapped to be underlain by Hawkesbury Sandstone, and sandstone is outcropping on the western side of Raglan Street on the hillside.

We have completed several deep geotechnical investigations at sites within the same geology and within an area stretching about 500m to the north and 150m west and south-west of the site. Investigation techniques included Cone Penetrometer Tests (CPTs), dilatometer testing, boreholes with Standard Penetration Tests (SPTs) and coring of bedrock, and long term groundwater level monitoring. Of particular relevance, we have completed a detailed investigation opposite the site at 35-43 Belgrave Street.

Based on the above, we anticipate the site to be underlain by a deep marine soil profile, with bedrock anticipated to be at depths of about 30m to 35m, though it may be shallower towards the western end. The soil profile is anticipated to predominantly comprise sands and silty sands, however some clay bands are likely. The relative density of the sands may be variable, ranging from very loose to medium dense within the upper profile (near surface to about 15m depth), generally improving with depth to medium dense to very dense. The clay bands are expected to be of stiff to very stiff strength. Residual clays may be encountered above the bedrock and are anticipated to be of very stiff to hard strength. Although the sandstone to the west of the site is Hawkesbury Sandstone, where rock is deeper it may be the underlying Newport Formation, which is weaker and comprises interbedded sandstone and shale. Based on nearby investigations which proved the underlying bedrock, the bedrock comprised highly variable sandstone ranging from soil strength to low and medium strength or interbedded sandstone and siltstone.

Groundwater is anticipated to range between about RL0.9m to RL1.1m based on nearby groundwater monitoring.

4 COMMENTS AND RECOMMENDATIONS

4.1 Principal Geotechnical Considerations

All comments and recommendations are based on an assumed subsurface profile from information beyond the site. Therefore, the following comments and recommendations are preliminary only and must be reviewed, and revised as necessary, following the completion of a site specific geotechnical and hydrogeological investigations to inform the detailed structural design. Further details on the recommended geotechnical investigation for detailed design are discussed below.

We expect about 3.5m to 3.9m of excavation is required for the proposed basement which is within the zone of influence of existing buildings of various scale, construction type and period. Some of these structures may be founded in very loose sands, and their footings may protrude onto the existing site. The principal geotechnical considerations will be how to maintain stability to neighbouring structures and infrastructure during demolition of existing structures and excavation. Careful demolition, completion of dilapidation surveys, surveying of adjacent basement levels, consideration to underpinning or grouting and installation of suitable shoring systems prior to excavation will be required.

Groundwater is expected to be at between about RL0.9m to RL1.1m, or about 1.1m to 1.3m below the proposed BEL of RL2.2m. Long term groundwater monitoring is advised from an early stage to determine the magnitude of fluctuations with changes of rainfall and to determine design groundwater levels.

Groundwater monitoring will also likely be required to satisfy WaterNSW to prove that the basement will not intersect the groundwater table. Localised deeper excavations may intersect the groundwater table and will require detailed seepage analysis to determine the likely water intake during construction and possible drawdown effects, and is likely to require a deep shoring system to control drawdown effects. In this regard, we recommend that following groundwater monitoring, the design of all locally deeper excavations are adjusted so that they do not extend below groundwater given the scale of works required.

Given the expected very deep sandy profile, the assumed high column loads will have to be transferred to a suitable bearing stratum by grout injected continuous flight auger (CFA) piles or perhaps CSM barrette footings. Detailed geotechnical investigation will be required to identify such a stratum which is likely to be a medium dense or dense unit of sand or bedrock. The suitability of a raft or piled raft footing system may be considered following the site specific investigation, though we note that the upper profile is anticipated to contain very loose sands which may be problematic for this system.

4.2 Dilapidation Surveys

Dilapidation surveys should be completed on the adjacent properties, and perhaps infrastructure, prior to commencement of demolition and excavation.

Dilapidation surveys should comprise a detailed inspection of the adjoining properties, both externally and internally, with all defects rigorously described, i.e. defect location, defect type, crack width, crack length, orientation etc. The owners of the adjoining properties should be asked to confirm that the reports represent a fair record of actual conditions. The dilapidation reports may then be used as a benchmark against which to assess possible future claims for damage arising from the works.

4.3 Demolition and Working Platforms

Site preparation works will include demolition of the existing building and possibly construction of a working platform. Care should be taken during site preparation works and subsequent bulk excavation not to undermine or remove support from neighbouring buildings or site boundaries. This work will need to be completed using suitably experienced (and insured) contractors.

Demolition should be carefully planned and executed in accordance with a sequenced methodology prepared by the structural engineer and builder, and with consideration to keeping the concrete pavement which may provide a good base for a working platform (or perhaps prevent the need for one being constructed at all). A working platform assessment should be completed once the preferred tracked plant for footings and shoring are known.

Working platforms for large tracked plant are required where the subgrade is of insufficient bearing capacity. Very loose upper sands such often have insufficient bearing capacity. Contractors often assume (in their contracts) that working platforms will be provided for them and this can be a significant cost and time item for developers. Geotechnical investigation for a working platform assessment will often require a number of

DCP tests and shallow boreholes. Any test pits, holes from removal of pad footings, or trenches should be backfilled with cement stabilised sand or well compacted granular material to avoid soft spots which would present a serious instability hazard.

There is potential for transmission of vibrations from demolition works to impact on the neighbouring structures, some of which may be on shallow footings on very loose to loose sand. Vibrations emitted during demolition should be minimised to prevent potential settlement beneath footings. We therefore recommend that existing site building footings and floor slabs are saw cut or otherwise broken into smaller manageable pieces rather than to be demolished by use of rock breakers, particularly where in close proximity to buildings on shallow footings.

Monitoring should be completed on the neighbouring buildings targeting 'as low as reasonably practical' vibrations, say not greater than 3mm/s peak particle velocity (PPV). If this vibration limit is repeatedly reached, lower impact techniques should be adopted. The impact of large masonry or concrete having been dropped to the ground, or even into trucks, can cause damaging vibrations.

4.4 Underpinning/Soil Improvement

As discussed above, structures on shallow footings founded on very loose to loose sands are susceptible to settlement from vibrations during some demolition activities, movement of large plant and trucks, and soil decompression from shoring and pile installation. Prior to bulk excavation commencing, the footing and basement (if any) details for all adjacent buildings should be confirmed by reviewing available 'as-built' structural drawings. The purpose of the review is to confirm whether any strengthening or underpinning of adjacent footings is required. If the drawings are not available, several test pits should be excavated to investigate the footing system and determine the depth and geometry of the footings. Test pits should be inspected by the structural and geotechnical engineers. If such shallow footing conditions are confirmed then consideration should be given to monitoring and 'underpinning'. Monitoring could be in the form of high accuracy surveying of prisms etc. Underpinning could be in the form of permeation grouting or chemical grouting to control settlement. Conventional underpinning is not recommended on this site due to the inability of the sands to stand unsupported to allow underpinning excavation. Collapse of the sands will result in the existing footing needing to span across excessive lengths, or below neighbouring floor slabs. Further advice should be sought in this regard once founding conditions are determined.

4.5 Shoring

Prior to the commencement of the detailed design, details of all neighbouring basements should be sought, as these will have implications on the shoring system.

Excavation to a maximum depth of 3.9m is required for the proposed basement, and will either abut the site boundaries, or extend close to the site boundaries and therefore prior to excavation, a shoring system must be installed to retain the soils and support the adjacent buildings.

Assuming a sandy profile with groundwater about 1m below the proposed BEL, the following shoring systems could be considered:

- A contiguous shoring pile wall installed using double rotary cased grout injected Continuous Flight Auger (CFA). Without the casing, there is a greater risk of soil decompression occurring thus potentially damaging neighbouring buildings. To prevent soil loss between the piles, gaps would need to be progressively packed with grout, or shotcreted.
- A Cutter Soil Mix (CSM) wall. This system mixes cement with the existing sand and water to form 'concrete' panels insitu, into which steel reinforcement (usually 'I' beams) is added. The site is relatively small compared to the space normally required for this equipment so contractors should be consulted regarding the feasibility prior to committing to design. This technique also has the potential for soil decompression so further consideration should be given to underpinning the adjacent structures, prior to shoring works. CSM walls may not necessarily have the same lifespans as CFA piled walls. Internal reinforced shotcrete finishes can be added, or perhaps since the basement is expected to be above the groundwater level, contractors may provide sufficient design life warranties.

Only experienced contractors with appropriate experience and insurances should be engaged.

Cantilevered walls are typically used where the retained height is less than about 3m, and therefore, we anticipate that the shoring system will need to be anchored or propped. Anchors may not be feasible where there are adjacent basements. Permission will be needed from property owners where anchors extend onto their property. It can be a lengthy process to achieve the permission so we encourage this be started without delay, if required. Top down construction is also feasible, given the assumed sandy material will be easily excavated. Obviously footing piles would have to be drilled from the surface prior to the slab being constructed. Top down construction has the advantages of reducing the risk of shoring wall deflection and therefore reduces the risk of damaging neighbouring buildings, but also allows construction of above ground levels to commence at an earlier stage.

Any surcharge loads affecting the walls (e.g. buildings, traffic loading, construction loads etc) should be taken into account in the wall design, and these are additional to the earth pressures. We assume that permanent lateral support of the retaining walls will be provided by the new structure.

Design parameters can be provided following detailed geotechnical investigation, but for preliminary concept design a 'worst case' of the typical conditions could be assumed and would comprise very loose sands and a groundwater level say just below bulk excavation level.

Localised shoring may also be required for construction of the lift pit which near the south-western corner of the site and depending on its depth may protrude below the groundwater level requiring dewatering. The lift pit will be offset from the western and southern site boundaries by about 6m and 8m, respectively. Driven sheet piles may generate potentially damaging vibrations to neighbouring structures, particularly near the western site boundary where the neighbouring building abuts the boundary. Ideally, if sheet piles are adopted then they would need be installed using 'vibrationless' techniques by an experienced contractor who is aware of the risks. Nevertheless, where sheet piles of any technique are adopted, we recommend

vibration monitoring be carried out during the installation. If vibrations are notable then lower vibration emitting shoring systems should be installed such as CFA secant pile walls.

If the lift pit excavation is anticipated to extend below groundwater, then the localised shoring wall toe level must be designed following detailed seepage analysis to avoid a broader draw down profile which potentially may affect neighbouring structures.

4.6 Excavation Techniques

Excavation to about 3.9m in an assumed very loose to loose sandy profile should be readily achieved using buckets of hydraulic excavators and bobcats. Groundwater may be within about 1m of the proposed BEL.

Locally deeper excavations, such as for lift pits, are likely to encounter groundwater which would require localised dewatering. Any dewatering should be carried out in accordance with a detailed methodology designed by an engineer to prevent 'boiling', and other issues (discussed in Section 4.5) and approved by a geotechnical engineer independent of the contractor.

4.7 Footings

Detailed geotechnical investigation is critical to the design for the footings. We expect that there may be a medium dense or dense layer within the expected deep soil profile that may be suitable for embedment of piles. We recommend a minimum of five Cone Penetration Tests be carried out within the site to reduce the risk of unidentified soil conditions. Dilatometer testing may assist in optimising soil parameters and therefore the pile and shoring design. Dilatometer testing is particularly important where a raft or piled raft footing system is preferred.

Footings will need to be cement grout injected CFA piles or perhaps, if CSM is used for shoring, then a CSM panel could be constructed (also known as a barrette) to save establishing a second large rig. One advantage of CSM over CFA piles is that minimal spoil is generated for disposal, particularly if acid sulphate soils are present. CFA piles should be constructed using similar techniques as discussed above, which comprises double rotary techniques to minimise the risk of soil decompression.

If loose soils are present and rock is not excessively deep (i.e. less than say 15m), then piled footings on rock could be an option, however we do not expect this to be the case as rock is anticipated to be at depths of say 30m.

4.8 Groundwater and Permeability

Based on groundwater monitoring on the southern side of Raglan Street opposite the site, groundwater levels ranged between RL0.9m and RL1.1m. Assuming a BEL of about RL2.2m, we therefore expect groundwater levels will be about 1.1m to 1.3m below the BEL.

Continuous groundwater level monitoring should be carried out to determine the groundwater levels on site, and also fluctuations following long periods of rainfall. Piezometers with electronic data loggers should be installed without delay to confirm these assumptions. As discussed above, JK Geotechnics have previously installed two groundwater monitoring wells on the southern side of Raglan Street which could be used to monitor groundwater levels given their proximity to the site. A third groundwater monitoring well will be required to assess groundwater levels across the site, and given the existing site structure, this will require the drilling of boreholes outside of the site boundaries, such as the grassed area present north-east from the site along Whistler Street near the electricity substation. The aim is to achieve a piezometer layout to allow for a triangulation of the groundwater levels that also covers the site as best as possible.

Until infiltration testing within piezometers can be carried out, preliminary design of stormwater infiltration systems could be based on the typical hydraulic conductivity (permeability), K, for the expected natural soils. Based on past experience and published literature, permeability of sand to silty sands would typically be in the order of 10^{-4}m/s to 10^{-5}m/s but could range by a further one to two orders of magnitude depending on the silt fines content. Infiltration may also be affected by possible layers of clay and a varying groundwater level. Infiltration systems should also consider possible effects on adjacent basements. We recommend preliminary design values be revised following site specific testing when site access becomes available.

Following groundwater monitoring, the feasibility of adopting a 'drained' basement may be considered. We note that it would be typical for the design to adopt a groundwater level higher than the measured level to account for a potential rise in the groundwater table over the design life of the building (i.e during flood/high rainfall events, sea level rises, etc.). Following review of the results of the groundwater monitoring it may be necessary to tank any structures which extend below the basement BEL to resist relevant hydrostatic pressures unless a drainage/dewatering system is capable of managing the potential inflows.

4.9 Subgrade Preparation and Slabs-on-Grade

We assume sandy soils will be present but layers of silt and clay may be present within the marine soil profile.

Slabs-on-grade are feasible above the groundwater level and would effectively be 'floating' independent of the superstructure. To confine the assumed sandy soils, a 100mm layer of crushed rock to RMS QA Specification 3051 (2013) unbound base material (or similar good quality and durable fine crushed rock) should be placed. The subgrade should then be prepared by rolling with a minimum 8 passes of a static smooth drum roller of not less than 7 tonnes to densify the near surface soils. No vibrations should be used due to the potential damage that could be caused to nearby structures. The final pass should be completed in the presence of a geotechnical engineer to check for the presence of any soft spots which usually indicates unsuitable soils. Should any soft spots be identified, they should be excavated and replaced with good quality granular material compacted in thin layers until no noticeable deflection is observed.

The subbase layer should be compacted to at least 100% of its Standard Maximum Dry Density.

Trafficable concrete pavements should be designed with effective shear transmission at all joints by way of either dowelled or keyed joints.

All excavations, such as for service trenches, footings (if feasible), lift pits, etc. must be backfilled using engineered fill where an on-grade floor slab is adopted.

4.10 Sydney Water Assets

We noted the presence of a Sydney Water asset along Raglan Street and also at the northern end of the site. Our understanding is that if the development falls within 10m of any Sydney Water assets or the asset is within the proposed excavation zone of influence, then Sydney Water will likely request a Specialist Engineering Assessment (SEA) in accordance with Sydney Water Specialist Engineering Assessment document (Doc No. D0001870, Version 1 dated 19 February 2021). Reference should also be made to the Sydney Water Technical Guideline, Building Over and Adjacent (BOA) to Pipe Assets, which provides further guidance on the requirements that developments must comply with.

The SEA will require varying amounts of input from geotechnical, structural and civil engineers. The preparation of an SEA and obtaining approval from Sydney Water can be a lengthy process and therefore, if required, we recommend the process commences as soon as possible to avoid potential project delays. The engagement of a Water Services Coordinator will also be required to facilitate the process.

4.11 Detailed Geotechnical Investigation and Other Geotechnical Input

The following is a summary of the further geotechnical input required and has been detailed in the preceding sections of this report:

- Drilling of boreholes, installation of piezometers, groundwater level monitoring and infiltration testing.
- CPT testing of the site soils and perhaps subsequent dilatometer testing (should a raft or piled raft be adopted).
- Cored boreholes to prove the rock if the soil profile is of insufficient strength for piles, or if rock is shallower than anticipated.
- Investigation/survey of adjacent basements (by others).
- Test pits for adjacent building footings.
- Dilapidation surveys.
- Sydney Water Specialist Engineer Assessment, if required.
- Working platform assessment.
- Consideration of underpinning or completing ‘ground improvement’ under any adjacent shallow footings, prior to shoring works.
- Review of shoring and footing design.
- Inspection of initial shoring and footings.
- Proof roll inspection of subgrade.

5 GENERAL COMMENTS

The recommendations presented in this report include specific issues to be addressed during the construction phase of the project. In the event that any of the construction phase recommendations presented in this report are not implemented, the general recommendations may become inapplicable and JK Geotechnics accept no responsibility whatsoever for the performance of the structure where recommendations are not implemented in full and properly tested, inspected and documented.

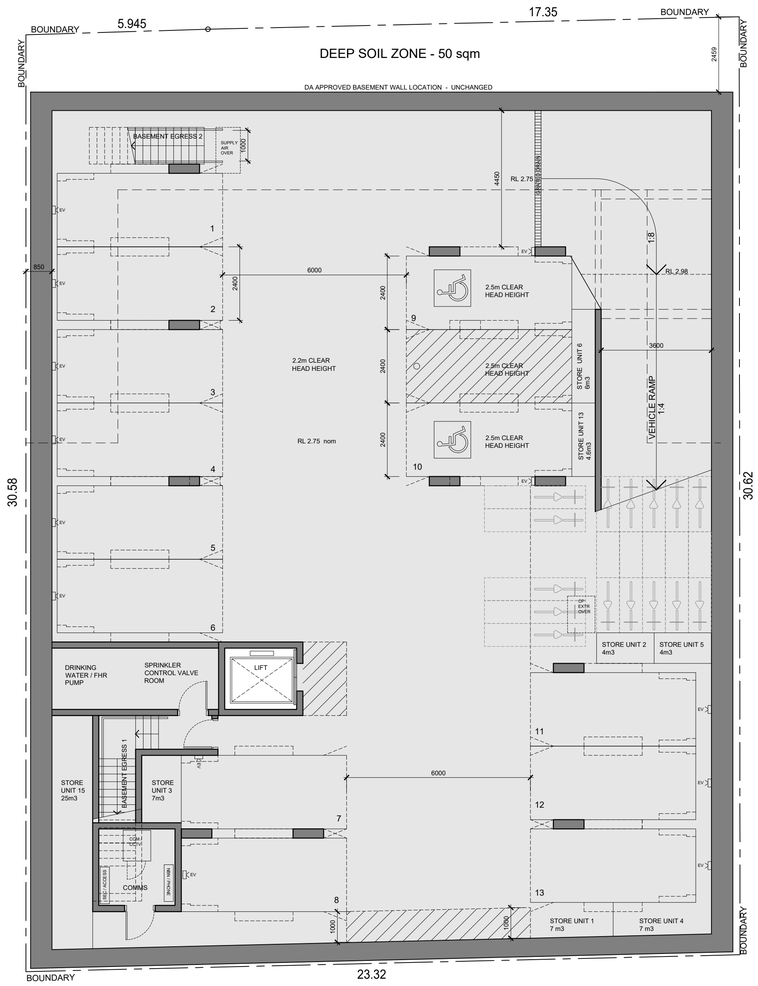
This report provides advice on geotechnical aspects for the proposed civil and structural design. As part of the documentation stage of this project, Contract Documents and Specifications may be prepared based on our report. However, there may be design features we are not aware of or have not commented on for a variety of reasons. The designers should satisfy themselves that all the necessary advice has been obtained. If required, we could be commissioned to review the geotechnical aspects of contract documents to confirm the intent of our recommendations has been correctly implemented.

A waste classification is required for any soil and/or bedrock excavated from the site prior to offsite disposal. Subject to the appropriate testing, material can be classified as Virgin Excavated Natural Material (VENM), Excavated Natural Material (ENM), General Solid, Restricted Solid or Hazardous Waste. Analysis can take up to seven to ten working days to complete, therefore, an adequate allowance should be included in the construction program unless testing is completed prior to construction. If contamination is encountered, then substantial further testing (and associated delays) could be expected. We strongly recommend that this requirement is addressed prior to the commencement of excavation on site.

This report has been prepared for the particular project described and no responsibility is accepted for the use of any part of this report in any other context or for any other purpose. If there is any change in the proposed development described in this report then all recommendations should be reviewed. Copyright in this report is the property of JK Geotechnics. We have used a degree of care, skill and diligence normally exercised by consulting engineers in similar circumstances and locality. No other warranty expressed or implied is made or intended. Subject to payment of all fees due for the investigation, the client alone shall have a licence to use this report. The report shall not be reproduced except in full.

APPENDIX A

Architectural drawings prepared by Carlisle Architects (Job No. 25-02, Relevant Drawing Nos. DA-02 and **DA-03, Revision** B**, dated** 24 October **2025)**



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REV	DATE	NOTES
A	29-09-2025	CONSULTANT ISSUE
B	24-10-2025	DA ISSUE

NOT FOR CONSTRUCTION

PROJECT:
ALTERATIONS & ADDITIONS TO DA APPROVED SHOP-TOP HOUSING

ADDRESS:
22-24 RAGLAN STREET
MANLY, NSW, 2095

CLIENT:
PARA-ERE HOLDINGS

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- ALL CONSTRUCTION WORK TO COMPLY WITH CURRENT RELEVANT AUSTRALIAN STANDARDS AND THE NCC / BUILDING CODE OF AUSTRALIA
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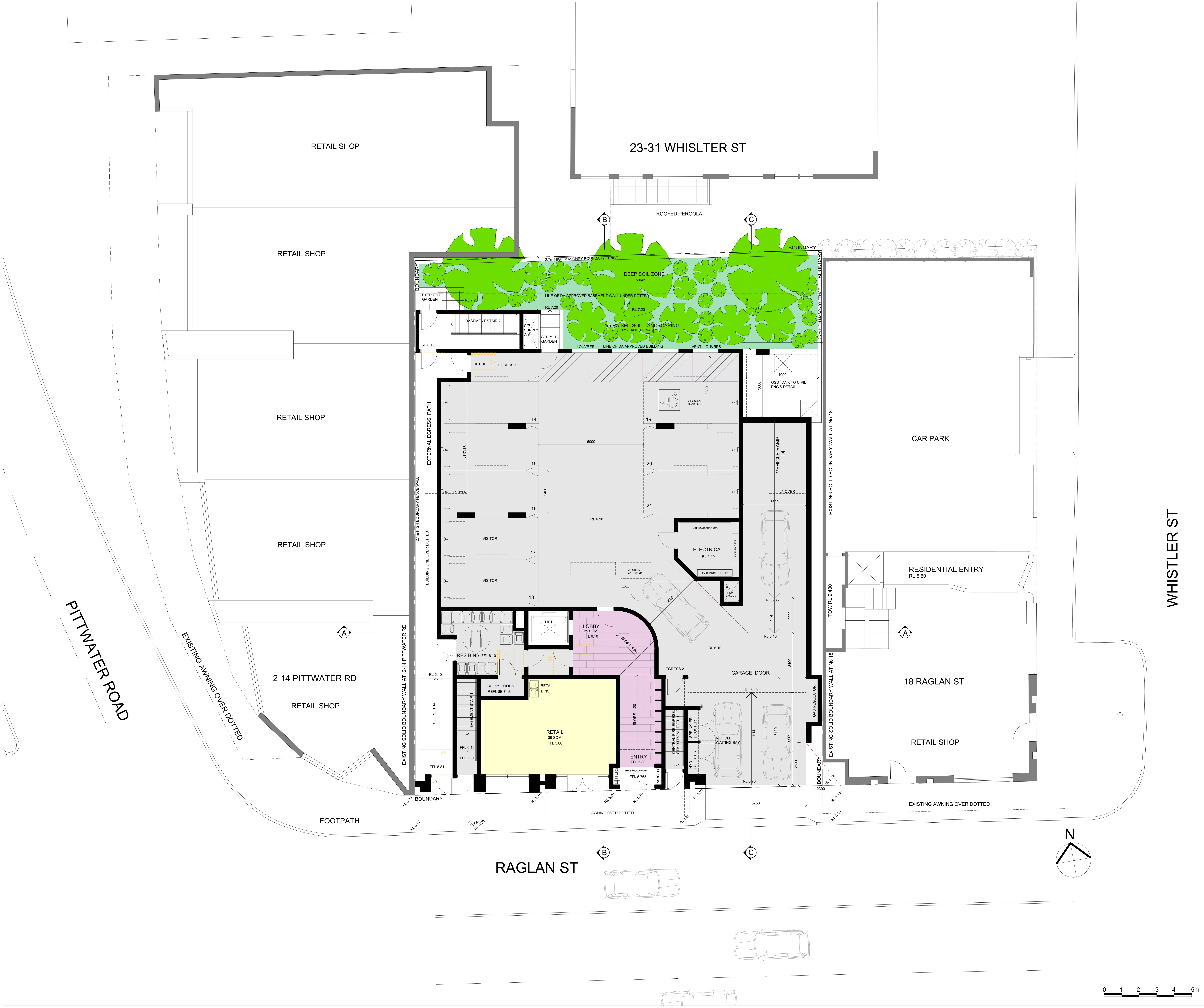
- USE LABELLED DIMENSIONS. DO NOT SCALE FROM DRAWINGS

DRAWING TITLE:
BASEMENT PLAN

SCALE:	DATE:	N
1:100 @ A1		
STAGE: DEVELOPMENT APPLICATION	JOB No: 25-02	
DRAWING NO: DA-02		REV: B



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A	29-09-2025	CONSULTANT ISSUE
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PROJECT:
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ADDRESS:
22-24 RAGLAN STREET
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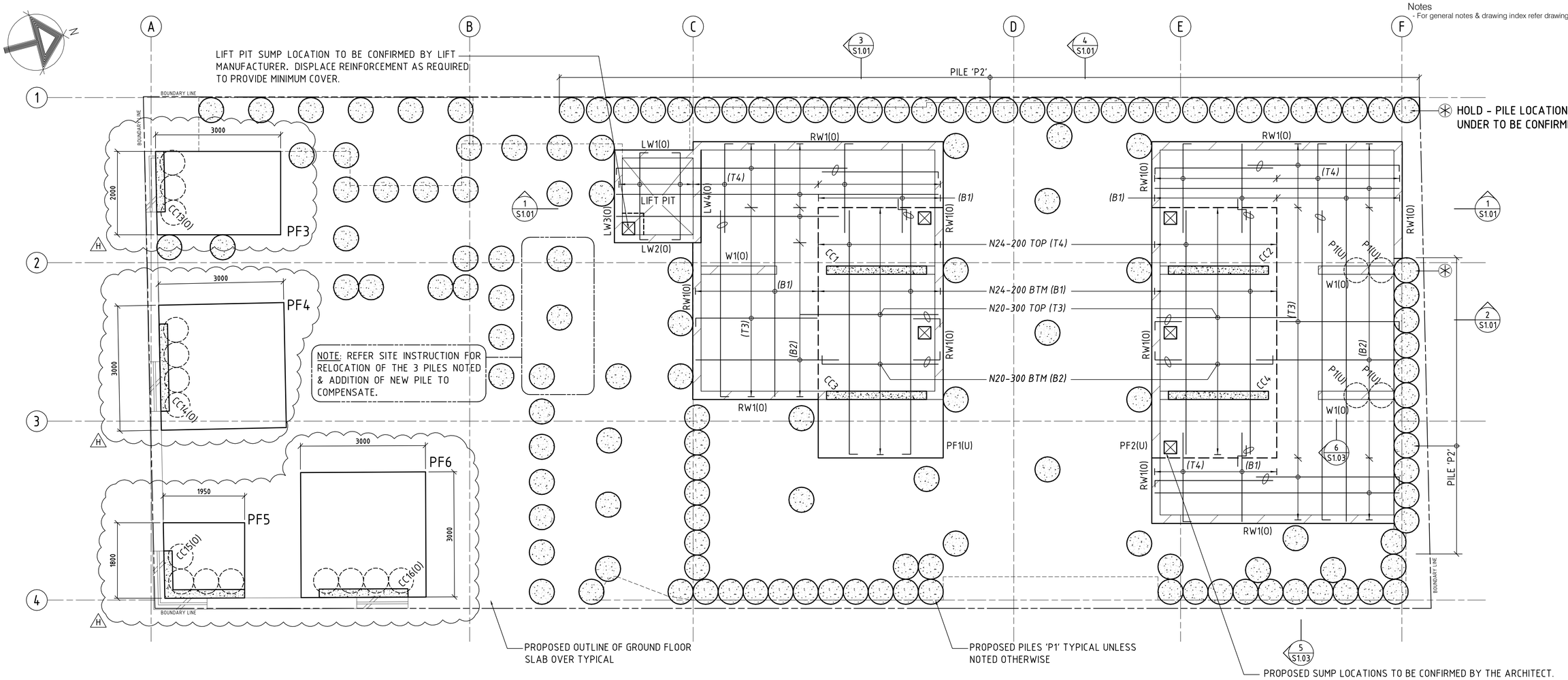
DRAWING TITLE:
GROUND FLOOR PLAN

SCALE: 1:100 @ A1
DATE:
STAGE: DEVELOPMENT APPLICATION
JOB No: 25-02
DRAWING NO: DA-03
REV: B

APPENDIX B

Historical structural drawings for neighbouring property to the east (No.18 Raglan Street) prepared by Northwood Pty Ltd (Job No.14007, Relevant Drawing Nos. S1.00^{RevH} and S1.02^{RevB} dated 9 November 2011)

Notes
- For general notes & drawing index refer drawing number 14007-S0.00



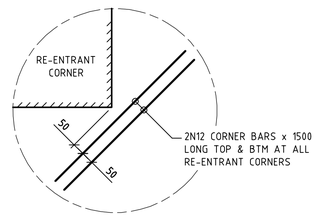
FOOTING/CAR STACKER BASE PLAN

SCALE 1:50

1. STACKER BASE SLAB TO BE 300mm THICK THROUGHOUT, UNLESS NOTED OTHERWISE AND POURED OVER VAPOURPROOF MEMBRANE OVERLYING 20mm NOMINAL SAND BLINDING LAYER.
2. ALL SLABS TO BE REINFORCED WITH N16-200 EACHWAY TOP & BTM THROUGHOUT, UNLESS NOTED OTHERWISE, PLUS EXTRA BARS AS SHOWN ON PLAN & SECTIONS.
3. DENOTES
   - P1 ..... PROPOSED 600mm DIA REINFORCED CONCRETE PILE LOCATIONS. PROVIDE 12N20 VERTICAL BARS, R10-250 HELIX TIES.
   - P2 ..... PROPOSED 600mm DIA REINFORCED CONCRETE PILE LOCATIONS. PROVIDE 12N24 VERTICAL BARS, N12-250 HELIX TIES.
   - PF1 & PF2 ..... PROPOSED 6000mm x 3000mm x 1000mm DEEP REINFORCED PAD FOOTING LOCATIONS
   - RW1 ..... PROPOSED 190mm REINFORCED BLOCK RETAINING WALL LOCATIONS
   - W1 ..... PROPOSED 190mm REINFORCED BLOCK WALL LOCATIONS
   - CC1 to CC4 ..... PROPOSED 2400mm x 200mm REINFORCED CONCRETE COLUMN LOCATIONS
   - (U) ..... SUFFIX DENOTES STRUCTURAL MEMBER UNDER
   - (O) ..... SUFFIX DENOTES STRUCTURAL MEMBER OVER
   - LW1 to LW4 ..... 190mm REINFORCED BLOCK LIFT WALL LOCATIONS.
   - H PF3 to PF6..... PROPOSED 200mm THICK REINFORCED PAD FOOTING LOCATIONS, REINFORCED WITH N16-300 TOP & BOTTOM.

TOP & BOTTOM REINFORCEMENT

1. REINFORCEMENT
   - ALL BARS NOT TAGGED IN LAYER (B1) TO BE N16-200.
   - ALL BARS NOT TAGGED IN LAYER (B2) TO BE N16-200.
   - ALL BARS NOT TAGGED IN LAYER (T3) TO BE N16-200.
   - ALL BARS NOT TAGGED IN LAYER (T4) TO BE N16-200.
2. REINFORCEMENT LAYERS:
   - B1 ..... DENOTES BOTTOM BARS LAID FIRST.
   - B2 ..... DENOTES BOTTOM BARS LAID SECOND.
   - NOTE: 'B2' LAYER OF THE PADS IS 700mm BELOW THAT OF 'B2' LAYER FOR THE STACKER BASE.
   - T3 ..... DENOTES TOP BARS LAID THIRD.
   - T4 ..... DENOTES TOP BARS LAID LAST.



TYPICAL SLAB RE-ENTRANT CORNER DETAIL
N.T.S.

No.	Amendment	Date
H	ISSUED FOR CONSTRUCTION	25.09.2015
G	ISSUED FOR APPROVAL	09.09.2015
F	RE-ISSUED FOR CONSTRUCTION	31.08.2015
E	RE-ISSUED FOR CONSTRUCTION	26.02.2015
D	REVISED FOOTINGS AS REQUESTED FROM SITE	05.02.2015
C	RE-ISSUED FOR CONSTRUCTION CERTIFICATE	09.12.2014
B	RE-ISSUED FOR CONSTRUCTION CERTIFICATE	08.12.2014
A	ISSUED FOR CONSTRUCTION CERTIFICATE	24.11.2014
02	PRELIMINARY - FOR INFORMATION ONLY	14.11.2014
01	PRELIMINARY - FOR INFORMATION ONLY	02.09.2014

Project
PROPOSED MIXED USE BUILDING
at: 18 Raglan Street, Manly, NSW, 2095
for: The Bell Group Pty Ltd

Drawing
FOOTING PLAN

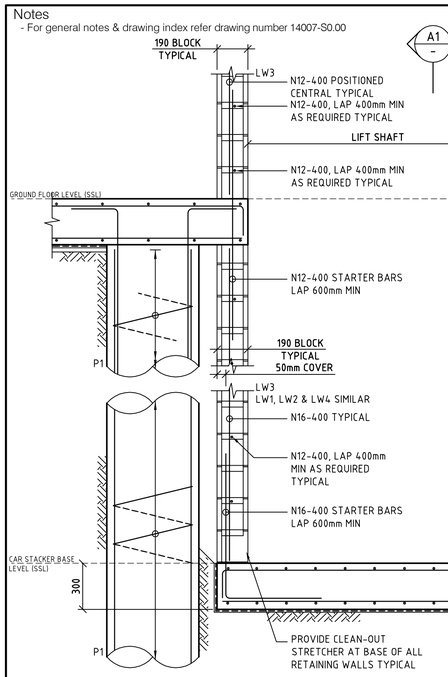
NORTHWOOD Pty Ltd
A.C.N. 62 660 637 961
Level 1, 271 Pacific Highway
North Sydney, NSW 2060
Mobile : 0417 080 363
Email : northwoodptyltd@bigpond.com

FOR CONSTRUCTION
ISSUED FOR CONSTRUCTION

Date	AUG 2014	Job No. : Drawing	Revision
Scale	AS SHOWN	14007 - S1.00	H
Drawn	J.C		
Design	N.W.		

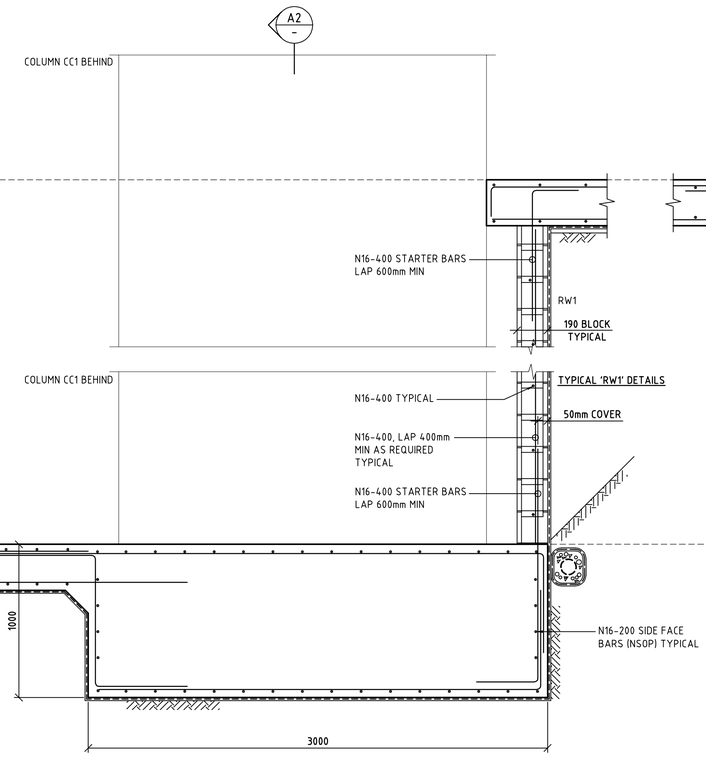
50mm On Original A1

Notes
- For general notes & drawing index refer drawing number 14007-S0.00

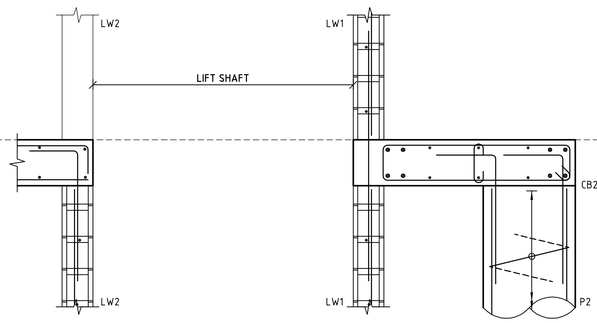


TYPICAL LIFT WALL 'LW1' to 'LW4' DETAILS

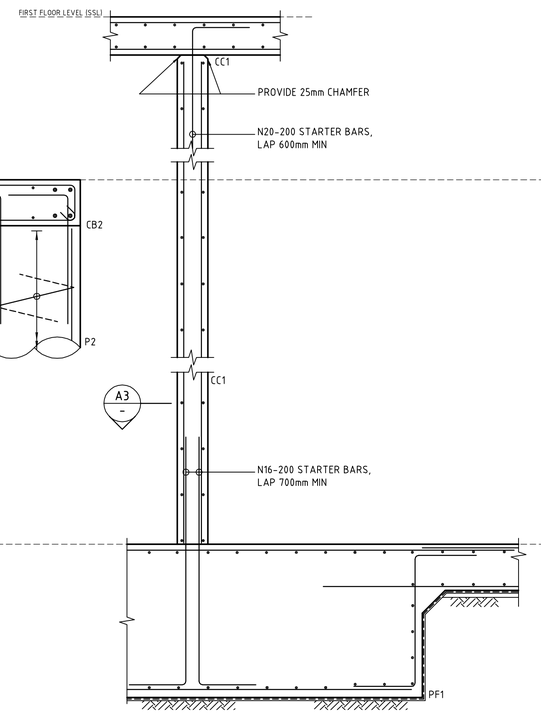
DETAIL A S1.01
SCALE 1 : 20



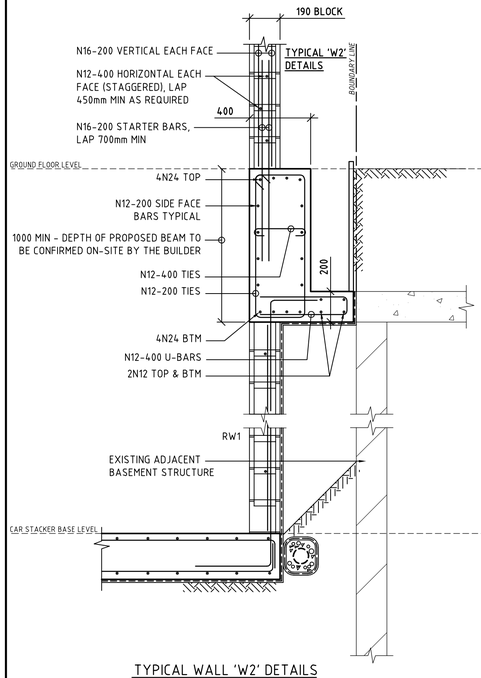
PAD FOOTING 'PF1' DETAILS ('PF2' SIMILAR)



SECTION A1
SCALE 1 : 20

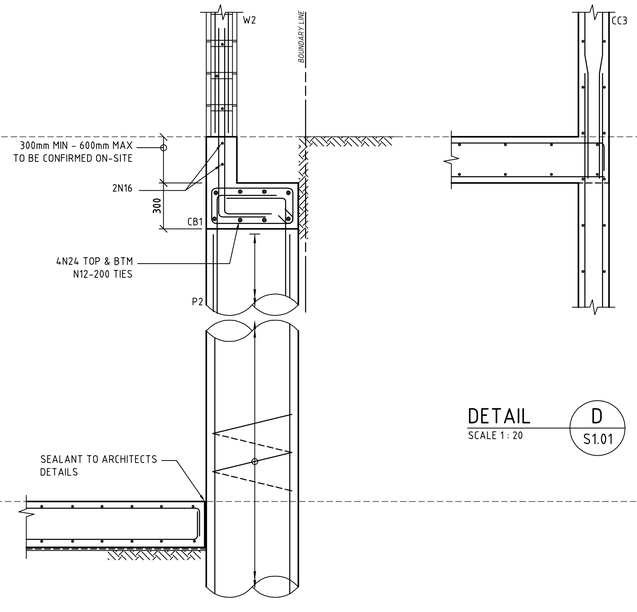


SECTION A2
SCALE 1 : 20



TYPICAL WALL 'W2' DETAILS
TYPICAL GROUND BEAM 'GB1' DETAILS

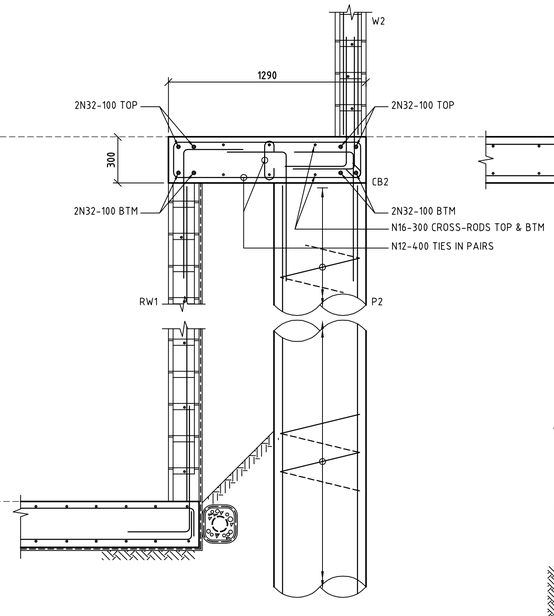
DETAIL B S1.01
SCALE 1 : 20



TYPICAL CAPPING BEAM 'CB1' DETAILS

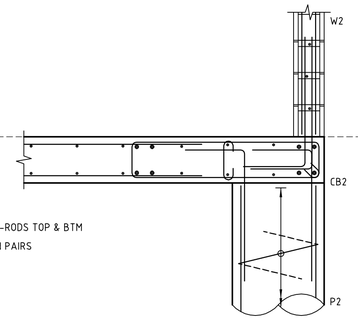
DETAIL C S1.01
SCALE 1 : 20

DETAIL D S1.01
SCALE 1 : 20

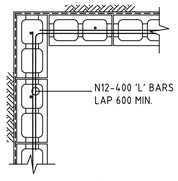


TYPICAL CAPPING BEAM 'CB2' DETAILS

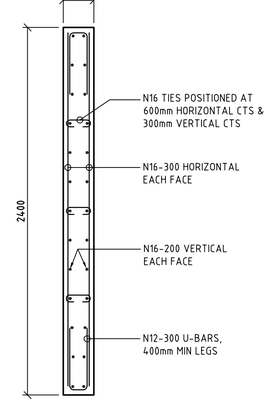
DETAIL E S1.01
SCALE 1 : 20



DETAIL F S1.01
SCALE 1 : 20



TYPICAL BLOCKWORK CORNER DETAIL
SCALE 1 : 20



TYPICAL COLUMN 'CC1' to 'CC4' DETAILS

SECTION A3
SCALE 1 : 20

No.	Amendment	Date
B	RE-ISSUED FOR CONSTRUCTION	26.02.2015
A	ISSUED FOR CONSTRUCTION	05.02.2015

Project
PROPOSED MIXED USE BUILDING
at: 18 Raglan Street, Manly, NSW, 2095
for: The Bell Group Pty Ltd

Drawing
FOOTING DETAILS - SHEET 2 of 3

NORTHWOOD Pty Ltd
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FOR CONSTRUCTION
ISSUED FOR CONSTRUCTION

Date	AUG 2014	Job No. : Drawing	Revision
Scale	AS SHOWN	14007 - S1.02	B
Drawn	J.C		
Design	N.W.		

50mm On Original A1