ENGEO Limited
8 Greydene Place, Takapuna
Auckland 0622
PO Box 33-1527, Takapuna, Auckland 0740
T: +64 9 972 2205
www.engeo.co.nz

Project Number #19375.000.001

Geotechnical Investigation

182-184 Kepa Road, 8 Kurahaupo Street, Orakei, Auckland

Submitted to:
Sanctum Projects Ltd
186 Kepa Road
Orakei
Auckland 1071

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1 Introduction

ENGEO Ltd was requested by Sanctum Projects Ltd to undertake a geotechnical investigation of the property at 182-184 Kepa Road, 8 Kurahaupo Street, Orakei, Auckland (herein referred to as 'the site').

The purpose of this investigation is to prepare a geological model for the site and outline potential geotechnical constraints to the development as well as to support an application for resource consent for a new five- to eight-storey residential development at the site.

Our scope of work for this investigation is detailed in our proposal dated 16 September 2021 (reference: P2020.002.697_04).

2 Site Description

The site at 182-184 Kepa Road, 8 Kurahaupo Street is located on a total area 2,250 m^2 and comprises three lots in Orakei, Auckland. The legal descriptions of these lots are Lot 169A DP 50580, SEC 744 Town Orakei, and SEC 745 Town Orakei.

The site currently contains two single-storey dwellings (at 184 Kepa Road and 8 Kurahaupo Street), and a two-storey dwelling at 182 Kepa Road, as well as a standalone garage and sleep-out building at 8 Kurahaupo Street. The site is located in a mixed urban housing area, with residential lots to the north and west of the site. Further west there is a small commercial shopping centre. To the south of the site is Kepa Road (urban route 6), while Kurahaupo Street lies directly to the east.

The majority of the site slopes gently to moderately toward the north at angles of between 5 to 20 degrees, with a fall across the site of approximately 6.5 m from the south-western corner to the northern boundary.

A 150 mm concrete wastewater line passes from east to west through the northern part of the site within 8 Kurahaupo Street. No other service lines are shown on council GIS maps within the site.

3 Proposed Development

ENGEO has been provided with the Monk Mackenzie draft concept architectural plans dated 21October 2021 (unreferenced), which depict the proposed development as consisting of an eight-storey building in the south and a five-storey building in the north, each to be linked by a two-level basement extending across the majority of the site (the ground floor of the eight-storey building will also be below ground along the southern boundary). Due to the slope of the landform, the basement levels day lighted at the northern end of the site.

Based on these plans it is understood that the basement levels will be predominantly utilised for carparking with two residential units in the northern part of the B1 level. The remaining floors will generally consist of residential apartments.

Based on the proposed development plans it is understood that cuts of up to approximately 10.2 m will be required for the basement (including 0.5 m for slab preparation), with maximum cuts expected along the southern site boundary.

The provided concept plans are included in Appendix 1.

4 Desktop Study

4.1 Regional Geology

The site is mapped by GNS Science as being underlain by Auckland Volcanic Field (AVF) basaltic tuff of the Kerikeri Volcanic Group, further underlain by the East Coast Bays Formation material (ECBF) of the Waitemata Group.

Tuff generally consists of an airfall bedded, pulverised mixture of both volcanic and country rock (basaltic sand and scoria, alluvium and Waitemata Group sandstones and siltstones). These range from mud and silt sized particles through to medium to coarse grained sands and occasional gravels and boulders. Material properties reflect considerable variation due to mixed rock types, variable weathering and energy / temperature of emplacement.

East Coast Bays Formation (ECBF) soils are mapped as being located at the ground surface approximately 350 m to the east of the site.

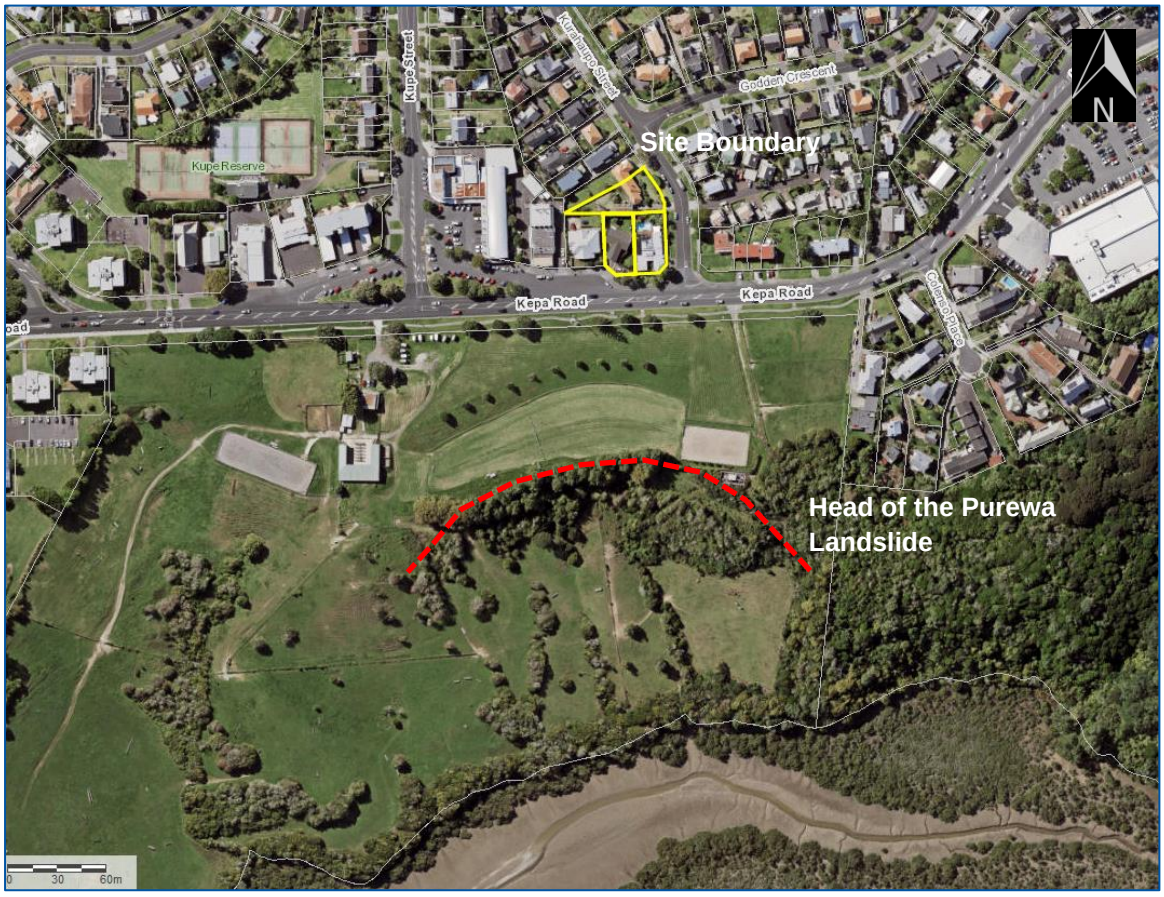
The East Coast Bays Formation was formed in a deep marine setting by turbidity (density) currents during the Miocene Epoch (20 million years ago), resulting in alternating sequences of sandstone and siltstone (termed flysch deposits) which have been measured up to 500 m thick across the wider Auckland region.

In situ weathering of the usually dark grey bedrock material has created, in most locations, an overburden comprising mixtures of silts, clays and sands, being predominantly orange, brown and grey in colour and often containing hard, dark orange-brown iron oxide (limonitic) concentrations which are indicative of long-term fluctuations in groundwater levels. Underlying the East Coast Bays Formation soil there is typically a layer of dark grey, hard, silts and sands, indicative of the transition zone into rock.

4.2 Kepa Road Slip

The Kepa Road Landslide Zone is located on the north-eastern bank of the Orakei Basin. Holocene landslide deposits associated with the Purewa Landslide are mapped approximately 120 m to the south of the site (Figure 1). This material is described as landslide and rockfall detritus, derived from more than one geological unit, and likely contains volcanic, alluvial and ECBF materials.

Figure 1: Kepa Road Landslide Location



Note: Image sourced from Geomaps. Not to scale.

Historical instability has occurred within AVF tuff material overlying ECBF sediments on the steep north-eastern side of the Orakei Basin. This is primarily seen within four landslides (Ngapipi Road Landslide, Kepa Road Landslide, St Josephs Landslide, and Pourewa Landslide).

4.3 Seismicity

The Auckland area is one of the lowest earthquake activity regions in New Zealand. Over the last 150 years, only two earthquakes with magnitudes greater than M5 have been recorded in the region.

We have reviewed the GNS New Zealand Active Fault Database, which indicates there are no known active faults on-site. The nearest active fault is the Waikopua Fault located approximately 21 km southeast of the site.

The Kerepehi Fault located in the Hauraki rift zone is considered to pose a significant seismic risk to buildings without specific seismic design across the whole Auckland region.

4.4 Historical Aerial Photography

We have reviewed historic aerial photographs from Auckland Council GIS, Retrolens and Google Earth for years including 1940 to 2017. These photographs were viewed under the context of identifying areas of potential instability and changes to landforms.

- The 1940 photograph showed the site as undeveloped, though Kepa Road and Kurahaupo Street had already been constructed. Neighbouring sites are also undeveloped at this point in time (including the small commercial centre to the west). The scarp of the Kepa Road Landslide to the south of the site was visible in this photo.
- The 1959 photograph showed residential densification in the surrounding area. 182 Kepa Road remains undeveloped. 184 Kepa Road can be seen to be in the early stages of site works, while 8 Kurahaupo is fully developed at this point in time. The commercial centre at 176 Kepa Road has also been constructed.
- The 1968 photograph showed that the dwelling at 184 Kepa Road had been constructed.
- The 1975 photograph showed that the dwelling at 182 Kepa Road had been constructed.
- The site remains generally unchanged from the 1987 photograph.

Aside from the above changes to the site and surrounding area, no obvious signs of changes to landform were observed in the aerial photograph review.

4.5 Existing Geotechnical Information

We have reviewed the New Zealand Geotechnical Database (NZGD) for relevant deep testing data in close proximity to the site.

A machine borehole is located approximately 238 m to the southeast of the site. This borehole encountered AVF and colluvium (silt and clay) to 5 m depth, underlain by extremely weak rock of the ECBF which transitions into very weak rock at 7.7 m depth.

Nine machine boreholes have been uploaded to the NZGD located approximately 430 m southwest of the site on Brenton Place. Material encountered in these boreholes generally consisted of up to approximately 14 m of Auckland Volcanic silts, clays and sands further underlain by very weak to weak Tauranga Group and Waitemata Group weathered soils and rock. Waitemata Group rocks were encountered from between approximately 32.5 mRL to 29.5 mRL within the boreholes.

A singular hand auger that was completed approximately 100 m to the northwest of the site encountered 4 m of Auckland Volcanic field tuff soils.

5 Geotechnical Site Investigation

ENGEO attended site on 20 and 21 October 2021 and completed a geotechnical ground investigation including two machine boreholes (MBH01 and MBH02 in Appendix 2), drilled to 18.05 and 19.65 m below ground level (bgl) respectively. These machine boreholes were drilled using the mud-rotary technique with Standard Penetration Tests (SPT) completed at 1.5 m intervals to assess the *in situ* strength properties of the soil and rock profile. Where possible handheld shear vane measurements were recorded in the end of the core barrel prior to extrusion of the recovered soil.

Standpipe piezometers and continuous groundwater data loggers were installed within both machine boreholes to measure standing groundwater levels beneath the site over a monitoring period that extended from 21 October to 18 November 2021. The standpipe piezometers were slotted between 1.5 and 4.5 m depth and extended from the ground surface to 11.0 m depth, with a bentonite plug at the ground surface and the base of the piezometer.

In addition to the machine boreholes, ENGEO drilled five hand augured boreholes (HA01 through HA05), to 5 meters depth across the site with shear vane readings taken in 30 cm intervals.

Five Scala penetrometer tests (SP01 through SP05) were completed to 1.0 meter depth across the site to gather data to inform California Bearing Ratio assessments for pavement design.

The location of the investigations is presented on the investigation location plan in Appendix 2. Machine borehole and hand auger logs have been prepared in general accordance with the New Zealand Geotechnical Society field classification guidelines (NZGS, 2005) and are presented in Appendix 3, along with borehole core photos. An interpretive ground model based on the findings of the on-site investigation is included in Appendix 4.

5.1 Summary of Subsoil Conditions

Material encountered in the on-site testing generally consisted of the following:

Topsoil was encountered within four of the hand auger boreholes to between 0.1 m and 0.4 m depth.

Near surface fill was encountered in one hand auger borehole to a depth of 0.8 m. The fill was described as intermixed brown and dark brown clay with variable sand content. Fill was also encountered in both of the machine boreholes (which were drilled through paved driveways) to between 0.3 m and 0.8 depth.

Underlying the shallow surface layer of fill and topsoil, native AVF soils comprising layers of clay and silt with variable sand content were encountered across the site to between 54.5 and 49.25 mRL. These soils were typically brown, grey and orange, with measured shear strengths ranging from approximately 50 kPa to in excess of 200 kPa, indicating a stiff to hard soil profile. Average shear strengths were in excess of 140 kPa.

The AVF soils were found to directly overlay up to alluvial silts, clays and sands of the Puketoka Formation which extend to depths of between 51.55 mRL in MBH01 and 46.25 mRL in MBH02. These alluvial soils returned firm to stiff calibrated share vane readings of between 30 and 60 kPa.

Underlying the alluvial soils was ECNF residual soils extending to 48.25 mRL in MBH01 in the southern part of the site and 44.75 mRL in MBH02 in the north.

A thin layer of extremely weak ECBF bedrock was encountered between 44.75 mRL and 44.4 mRL in MBH02.

Very weak ECBF bedrock was encountered from 48.25 mRL in MBH01 in the southern part of the site and from 44.4 mRL in the north. The rock generally comprised of interbedded siltstone and sandstone. The rock was encountered to beyond our maximum testing depth of 19.65 m bgl and was generally found to increase in strength with depth.

5.2 Groundwater Conditions

Groundwater was continuously measured from 21 October to 18 November 2021. During this time groundwater was found to fluctuate between approximately 55.4 mRL (3.6 m depth) and 53.2 mRL (4.8 m depth) in MBH01, and between approximately 53.2 mRL (0.55 m depth) and 51.5 mRL (2.25 m depth) in MBH02 – results of continuous monitoring are included in Appendix 5.

6 Geohazards and Geological Assessment

6.1 Seismic Site Class

For the purposes of seismic design, the site soils have been categorised as Class C, 'Shallow Soil Sites' as described in AS/NZS 1170.5, based on the on-site machine borehole testing.

Based on our understanding of the proposed building, we consider the proposed development to be classified as an Importance Level 2 building. On this basis, we have calculated peak horizontal ground accelerations of 0.19 g and 0.05 g for ULS and SLS conditions, respectively in accordance with MBIE / NZGS Module 1 (2016). The effective earthquake magnitude can be taken as 6.5.

6.2 Seismic Hazard

Soil liquefaction results from loss of strength during cyclic loading, such as imposed by earthquakes. Soils most susceptible to liquefaction are clean, loose, saturated, uniformly graded fine-grained sands. Empirical evidence indicates that loose to medium dense gravels, silty sands, low-plasticity silts, and some low-plasticity clays are also potentially liquefiable.

Based on the material encountered on-site, depth to groundwater and regional setting liquefaction risk at the site is considered to be low.

6.3 Slope Stability

Based on the proposed development plans, it is understood that the majority of slopes at the site will be retained by specifically designed retaining walls. Slope batters formed as part of the development (such as those in the south-eastern part of the site), are expected to be less than 2 m in height and formed to angles of 1V:4H or shallower. If the proposed development concept alters from this, slopes may need to be analysed for stability at the detailed design stage.

7 Groundwater Drawdown

Auckland Council requires an assessment against the Auckland Unitary Plan (AUP): Operative in Part (Table 1), where excavation of materials extends below the groundwater table within the site.

This assessment was based on a proposed basement cut depth of up to approximately 10.2 m which represents the depth below existing ground levels to the finished floor level of level B2 and a 0.5 m allowance for slab thickness and under slab preparations. This equates to a maximum cut depth of approximately 48.4 mRL.

Groundwater levels were measured at levels of between 55.4 mRL and 51.5 mRL (continuously measured within the machine boreholes located in both the north and south of the site).

ENGEO has completed the AUP groundwater assessment for both tanked and drained cases as we have not been advised at this stage whether or not the basement will be drained.

The following tables present an assessment against Standards E7.6.1.6 and E7.6.1.10:

Table 1: E7.6.1.6 Dewatering or Groundwater Level Control Assessment Summary

E7.6.1.6. Dewatering or groundwater level control associated with a groundwater diversion permitted under Standard E7.6.1.10 of the Auckland Unitary Plan		
Criteria	**Discussion**	**Assessment Findings**
(1) The water take must not be geothermal water.	Under D1. High-use Aquifer Management Areas Overlay (Auckland Unitary Plan Operative in part) the site is not located in an area marked as a geothermal aquifer.	Criteria Met ✓
(2) The water take must not be for a period of more than ten days where it occurs in peat soils, or 30 days in other types of soil or rock.	The detailed retaining wall designs have not been completed at this stage. It is likely that the proposed retaining wall design will comprise drained solution and thus will take water for a period greater than 30 days.	Criteria Not Met for Both Cases X
(3) The water take must only occur during construction.	Groundwater was measured at shallower depths than the proposed basement cuts. It is considered that the basement wall will be drained, therefore we understand that water take will occur following construction.	Criteria Not Met for Drained Case X

Table 2: E7.6.1.10. Diversion of Groundwater Assessment Summary

E7.6.1.10. Diversion of groundwater caused by any excavation (including trench) or tunnel		
Criteria	**Discussion**	**Assessment Findings**
(1) All of the following activities are exempt from the Standards E7.6.1.10 (2) – (6): (a) Pipes cables or tunnels including associated structures which are drilled or thrust and are less than 1.2 m in external diameter. (b) Pipes including associated structures up to 1.5 m in external diameter where a closed faced or earth pressure balanced machine is used. (c) Piles up to 1.5 m in external diameter are exempt from these standards. (d) Diversions for no longer than ten days. (e) Diversions for network utilities and road network linear trenching activities that are progressively opened, closed and stabilised where the part of the trench that is open at any given time is no longer than ten days.	Not Applicable	Not Applicable
(2) Any excavation that extends below natural groundwater level, must not exceed: a) 1 ha in total area, and b) 6 m depth below the natural ground level.	The proposed cut area is less than 1 ha. However, it is likely to be more than 6 m below ground level in places.	Criteria Not Met for Both Cases X
(3) The natural groundwater level must not be reduced by more than 2 m on the boundary of any adjoining site.	The proposed boundary cut level associated with the basement (48.4 mRL) is approximately 3.1 m deeper than the deepest groundwater measurement (51.5 mRL), therefore it is considered that groundwater may be drawn down by more than 2 m on the boundaries of adjoining sites if the walls are drained.	Criteria Not Met for Drained Case X

E7.6.1.10. Diversion of groundwater caused by any excavation (including trench) or tunnel		
(4) Any structure, excluding sheet piling, that remains in place for more than 30 days, that physically impedes the flow of groundwater through the site must not: (a) Impede the flow of groundwater over a length of more than 20 m. (b) Extend more than 2 m below the natural groundwater level.	(a & b) If the proposed basement retaining walls are drained, they are not expected to impede the flow of groundwater. If the walls are tanked they are expected to impede the flow of groundwater over a length of more than 20 m and extend more than 2 m below the natural groundwater level.	Criteria Not Met for Tanked Case X
(5) The distance to any existing building or structure (excluding timber fences and small structures on the boundary) on an adjoining site from the edge of any: (a) Trench or open excavation that extends below natural groundwater level must be at least equal to the depth of the excavation. (b) Tunnel or pipe with an external diameter of 0.2 - 1.5 m that extends below natural groundwater level must be 2 m or greater. (c) A tunnel or pipe with an external diameter of up to 0.2 m that extends below natural groundwater level has no separation requirement.	(a) The proposed basement excavation will be closer to neighbouring structures than the depth of the cut (up to 10.2 m deep). (b) Not applicable. (c) Not applicable.	Criteria Not Met for Both Cases X
(6) The distance from the edge of any excavation that extends below natural groundwater level, must not be less than: (a) 50 m from the Wetland Management Areas Overlay. (b) 10 m from a scheduled Historic Heritage Overlay. (c) 10 m from a lawful groundwater take.	(a) No historic wetland management areas from overlay. (b) No historic heritage overlay identified. (c) Not identified.	Criteria Met ✓

As outlined in the tables above, assessment against E7.6.1.6 and E7.6.1.10 of the Auckland Unitary Plan indicates that the proposed development does not meet the criteria to be assessed as a permitted activity.

Resource consent will be required to take and divert groundwater for the proposed development. An assessment of effects report and a draft ground settlement monitoring and contingency plan will be required to support this application.

8 Geotechnical Recommendations

Based on site investigation results, the site is considered to be suitable for the proposed residential development subject to the following recommendations.

8.1 Foundation Recommendations

Due to the likely magnitude of loads generated by the proposed eight-storey building, foundations extending in to or bearing on top of very weak ECBF rock are considered the most appropriate foundation solution for the proposed building.

The proposed basement floor level is set at 48.9 mRL. Very weak sandstone and siltstone bedrock (N≥50) was encountered from approximately 48.25 mRL in MBH01 in the southern part of the site, with very weak rock encountered at 44.4 mRL in MBH02 in the northern part of the site. This rock is considered a suitable bearing stratum for both shallow foundations and bored and concreted piles.

Based on the findings of the geotechnical investigation it is considered that a shallow foundation option may be suitable for the southern extend of the building, while the central and northern parts of the building would likely require a shallow piled foundation bearing on the very weak rock.

An unfactored geotechnical ultimate bearing capacity of 1 MPa is considered to be suitable for shallow foundations bearing on the very weak rock.

For straight-shafted bored and concreted piles drilled into very weak rock, we consider a geotechnical Ultimate End Bearing Capacity of 6 MPa to be suitable at a minimum penetration of four pile diameters.

Geotechnical ultimate side adhesion within the bedrock is assessed to be 450 kPa.

If it is intended to use side friction in conjunction with end bearing capacity, it should be noted that the frictional capacity may fully mobilise before the end bearing capacity and accordingly, it is considered prudent to factor the geotechnical ultimate value by 0.85 prior to applying the appropriate strength reduction factor to allow for the development of residual side adhesion.

If tension piles are required, the contribution of the top metre of bedrock should be ignored in the application of side adhesion.

8.2 Strength Reduction Factor

As required by Section B1/VM4 of the New Zealand Building Code Handbook, a strength reduction factor of 0.50 must be applied to all recommended geotechnical ultimate soil capacities in conjunction with their use in factored design load cases for static and earthquake conditions.

8.3 Basement Excavations

The provided concept plans indicate that the proposed basement encompasses the majority of the site area. Given the close proximity of the basement footprint to existing structures, roads and public services, it is considered that basement retaining will be required along the full southern boundary and the majority of the western and eastern boundaries. This retaining will likely require significant anchoring / propping or be carried out using top-down construction to limit deflections.

At this stage, we have not discussed the preferred wall system with the client and design consultant team. However, an assessment of the Auckland Unitary Plan has been completed in Section 7 of this report. Both drained and tanked basements have their benefits and difficulties and the choice of whether to drain or tank the basement will require consideration of potential effects on neighbouring structures and infrastructure of settlement induced by deflection of the basement retaining wall and settlement caused by groundwater drawdown. A tanked basement will need to include a B2 slab that is double reinforced and thick enough to resist significant uplift pressures within the southern portion of the site.

Groundwater was found to fluctuate between approximately 77.5 mRL (5.1 m depth) and 79 mRL (3.6 m depth) within our monitoring well in the southeast of the site (MBH02).

Considering the proposed basement plans require an excavation of up to 10.2 m depth (including 0.5 m of slab preparation), the excavation depth will likely extend below the groundwater level by several metres. Accordingly, dewatering will be required to facilitate construction of the basement. Consideration should be given to the proximity of the neighboring structures when designing for construction of the basement walls.

A wastewater service line is mapped within the proposed basement excavation area (north). Consideration should be given to the diversion of services to facilitate the excavation of the basement. All services within close proximity of the basement boundary will need to be taken into account during the design of the perimeter retaining wall, and the associated ground settlements that dewatering may cause.

The potential effects of settlements on neighboring structures from groundwater drawdown induced settlements as well as mechanical settlement of the proposed basement retention system will need to be addressed once scheme plans have been finalised. It should involve detailed analysis of a concept wall design to ensure that effects on neighboring structures and infrastructure are less than minor.

8.4 Earthworks Operations

Pre-existing, undocumented fill was encountered to depths between 0.25 m to 0.8 m within the on-site boreholes. At present, ENGEO is not aware of certification or engineering documents detailing the placement and compaction of this fill, and therefore this fill is considered to be non-engineered.

At this stage we have not received earthworks drawings for this development. However, from the plans provided it is anticipated that the earthworks will involve deep cuts of up to approximately 10.2 m below existing ground levels. Given this, it is anticipated that all undocumented fill present on-site will be removed as part of bulk excavations.

Where any fill is required, it should comprise approved clean, hardfill placed in 200 mm lifts and be compacted to a minimum of 95% of maximum dry density, at no less than optimum moisture content.

9 Further Work

As noted in the preceding sections we have yet to receive final development plans and so have not carried out a detailed assessment of effects of the basement excavations on the neighboring properties. Once final levels and layout are confirmed, a concept wall and construction methodology will need to be determined and a concept design of these completed to support an assessment of effects report.

We should then be involved throughout the detailed design process to provide additional geotechnical inputs as required. However, as a minimum we should be given the opportunity to review the final drawings prior to submission for building consent to ensure the assumptions underlying this report are still valid and that our recommendations have been incorporated as intended.

It is also essential that we are given every opportunity to attend a pre-start meeting on site prior to works commencing and then to observe site works, including earthworks operations and ground conditions in foundation and retaining wall excavations (prior to pouring concrete) to confirm works are carried out in accordance with the recommendations of this report and that ground conditions are as assumed.

Upon successful completion of the works we would then be in a position to provide a Producer Statement – Construction Review (PS4).

10 Limitations

i. We have prepared this report in accordance with the brief as provided. This report has been prepared for the use of our client, Sanctum Projects Ltd, their professional advisers and the relevant Territorial Authorities in relation to the specified project brief described in this report. No liability is accepted for the use of any part of the report for any other purpose or by any other person or entity.

ii. The recommendations in this report are based on the ground conditions indicated from published sources, site assessments and subsurface investigations described in this report based on accepted normal methods of site investigations. Only a limited amount of information has been collected to meet the specific financial and technical requirements of the client's brief and this report does not purport to completely describe all the site characteristics and properties. The nature and continuity of the ground between test locations has been inferred using experience and judgement and it should be appreciated that actual conditions could vary from the assumed model.

iii. Subsurface conditions relevant to construction works should be assessed by contractors who can make their own interpretation of the factual data provided. They should perform any additional tests as necessary for their own purposes.

iv. This Limitation should be read in conjunction with the Engineering NZ / ACENZ Standard Terms of Engagement.

v. This report is not to be reproduced either wholly or in part without our prior written permission.

We trust that this information meets your current requirements. Please do not hesitate to contact the undersigned on (09) 972 2205 if you require any further information.

Report prepared by

Jacob Cornall

Engineering Geologist

Karl Wright

Engineering Geologist

Report reviewed by

Paul Fletcher, CMEngNZ (CPEng)

Associate Geotechnical Engineer

APPENDIX 1:

Proposed Development Plans

ARCHITECT

—

MONK MACKENZIE.

LEVEL 3, 23 O'CONNELL STREET
PO BOX 3457, SHORTLAND STREET
AUCKLAND 1010
AOTEAROA NEW ZEALAND
T +64 9 600 3335

DRAFT

KEPA ROAD APARTMENTS

CONCEPT DESIGN

16.11.21

ARCHITECT

—

MONK MACKENZIE.

LEVEL 3, 23 O'CONNELL STREET
PO BOX 3457, SHORTLAND STREET
AUCKLAND 1010
AOTEAROA NEW ZEALAND
T +64 9 600 3335

PROJECT INFORMATION

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KEPA ROAD APARTMENTS

182 & 184 KEPA ROAD , 8 KURAHAUPO STREET, AUCKLAND

CLIENT INFORMATION

—

CLIENT NAME

FILE INFORMATION

—

FILE LOCATION C:\Users\User\Documents\211020 Kepa Road_Resource Consent_HIRB SET BACK_benny.suen.rvt

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ISSUE NOTES

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DOCUMENT REVISION INFORMATION

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REVISION SCHEDULE

ID	DATE	DESCRIPTION

CONSULTANT INFORMATION + DOCUMENTATION

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SHEET INDEX

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SHEET INDEX

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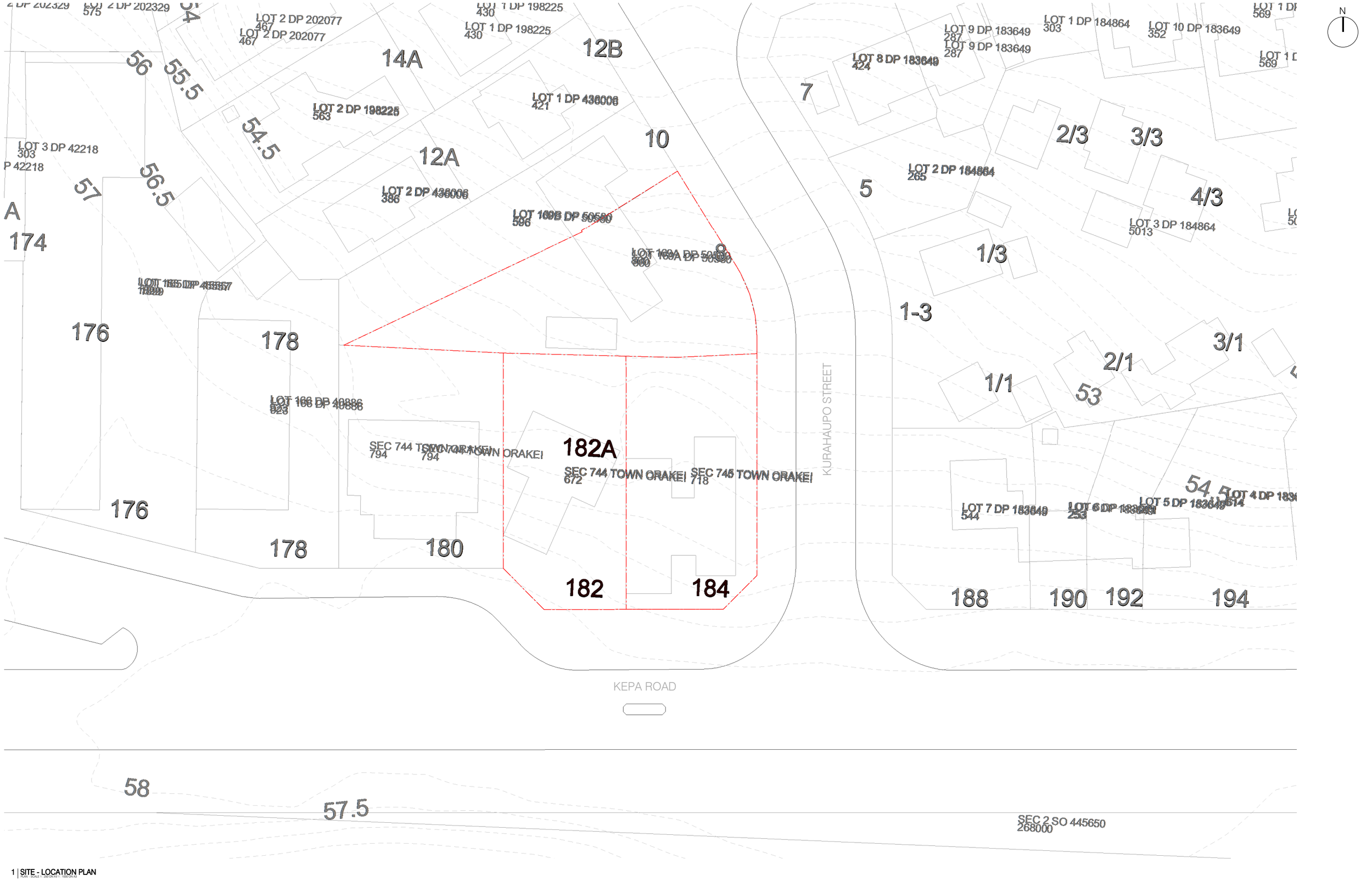


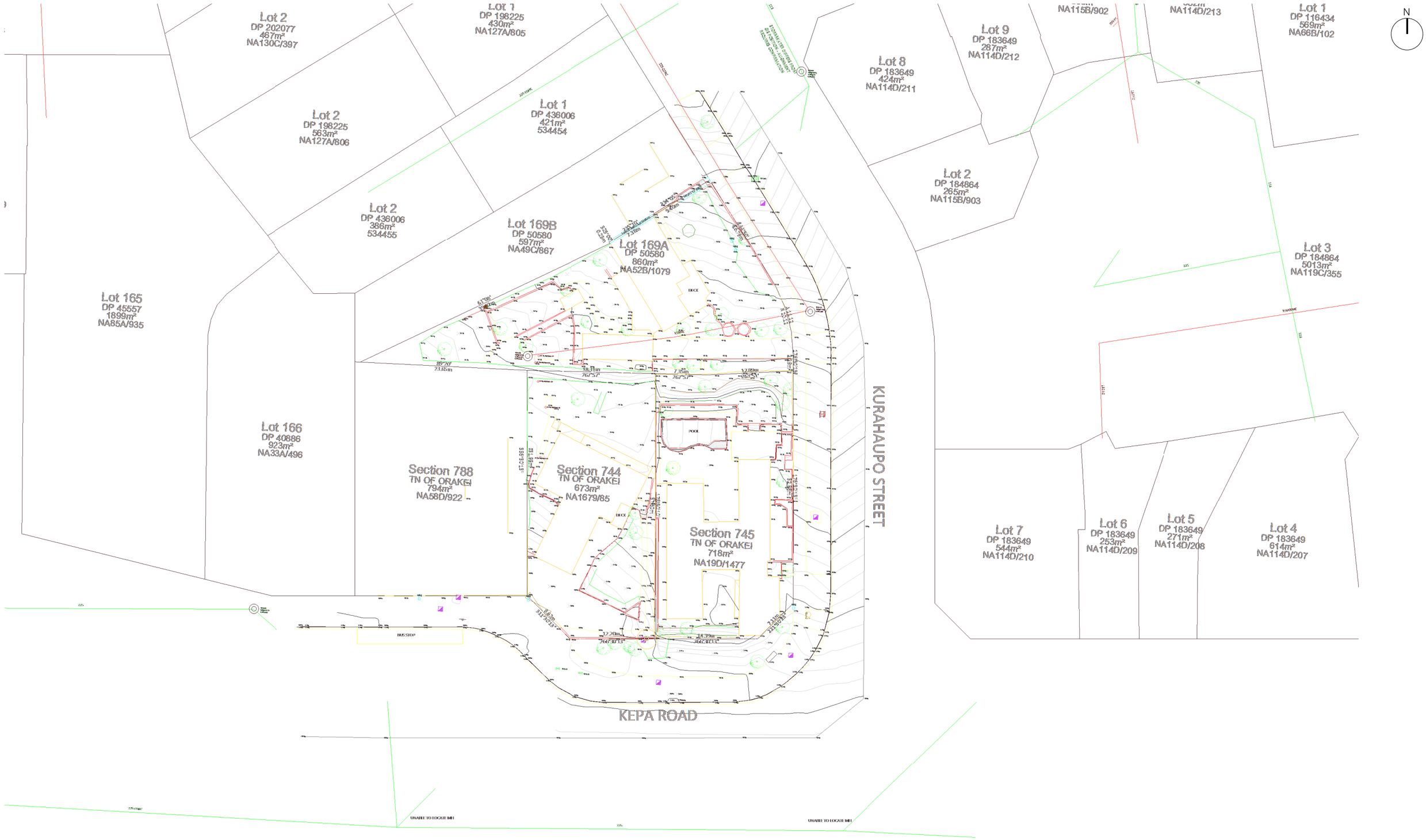
1 | SITE - LOCATION PLAN
PLAN - SCALE 1" 200 ON A3 1 : 1000 ON A3

DRAFT

MONK MACKENZIE.

LEVEL 3, 23 O'CONNELL STREET
AUCKLAND, NEW ZEALAND
MONKMACKENZIE.COM
+ 649 600 3335

CLIENT NAME CLIENT:	KEPA ROAD APARTMENTS PROJECT:	182 & 184 KEPA ROAD , 8 KURAHAUPO STREET, AUCKLAND LOCATION:	CONCEPT DESIGN ALL CONSULTANTS AND CONTRACTORS TO VERIFY ALL DIMENSIONS, ANGLES, SITE MEASUREMENTS AND CONDITIONS BEFORE ANY FABRICATION OR CONSTRUCTION BEGINS. SHEET TITLE:	LOCATION PLAN SHEET TITLE:	ID / REVISION DESCRIPTION / DATE 16.11.21 DATE: SHEET SIZE: A1 REVISION: RC100 SHEET NUMBER:



NOTE:
PLEASE REFER TO THE TOPOGRAPHIC SURVEY DONE BY CIVIX.

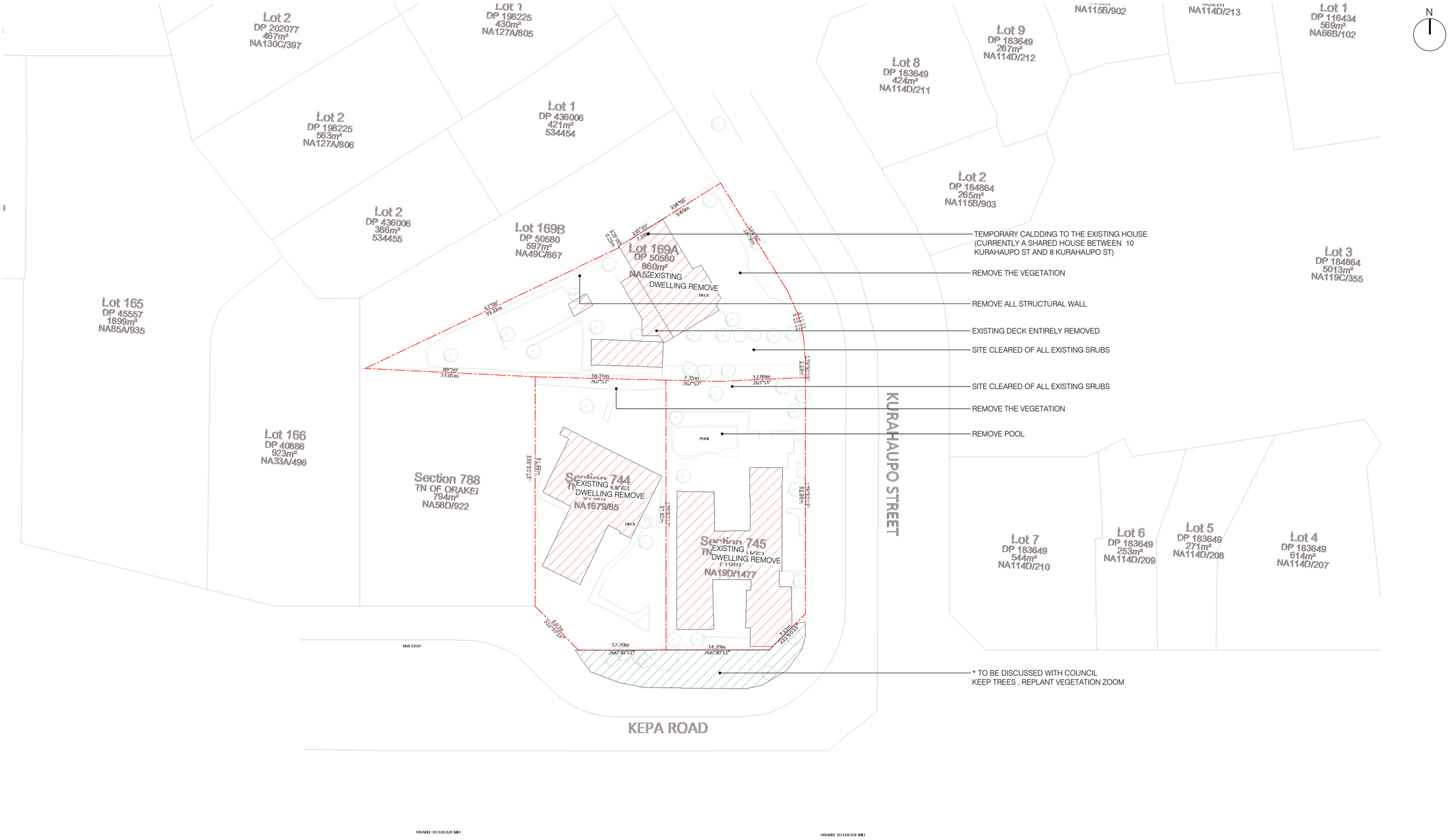
1 | SITE - SURVEY PLAN
SCALE - 1:200

DRAFT

MONK MACKENZIE.

LEVEL 3, 23 O'CONNELL STREET
AUCKLAND, NEW ZEALAND
MONKMACKENZIE.COM
+ 649 600 3335

CLIENT NAME CLIENT:	KEPA ROAD APARTMENTS PROJECT:	182 & 184 KEPA ROAD , 8 KURAHAUPO STREET, AUCKLAND LOCATION:	CONCEPT DESIGN ALL CONSULTANTS AND CONTRACTORS TO VERIFY ALL DIMENSIONS, ANGLES, SITE MEASUREMENTS AND CONDITIONS BEFORE ANY FABRICATION OR CONSTRUCTION BEGINS. COPYRIGHT OF THESE DRAWINGS IS THE PROPERTY OF MONK MACKENZIE ARCHITECTS LTD.	SITE SURVEY SHEET TITLE:	ID / REVISION DESCRIPTION / DATE 16.11.21 DATE: SHEET SIZE: A1 REVISION:
					RC101 SHEET NUMBER:



1 | SITE - DEMOLITION EXCAVATION PLAN
PLAN - SCALE 1 : 200 ON A3 1 : 1000 ON A0

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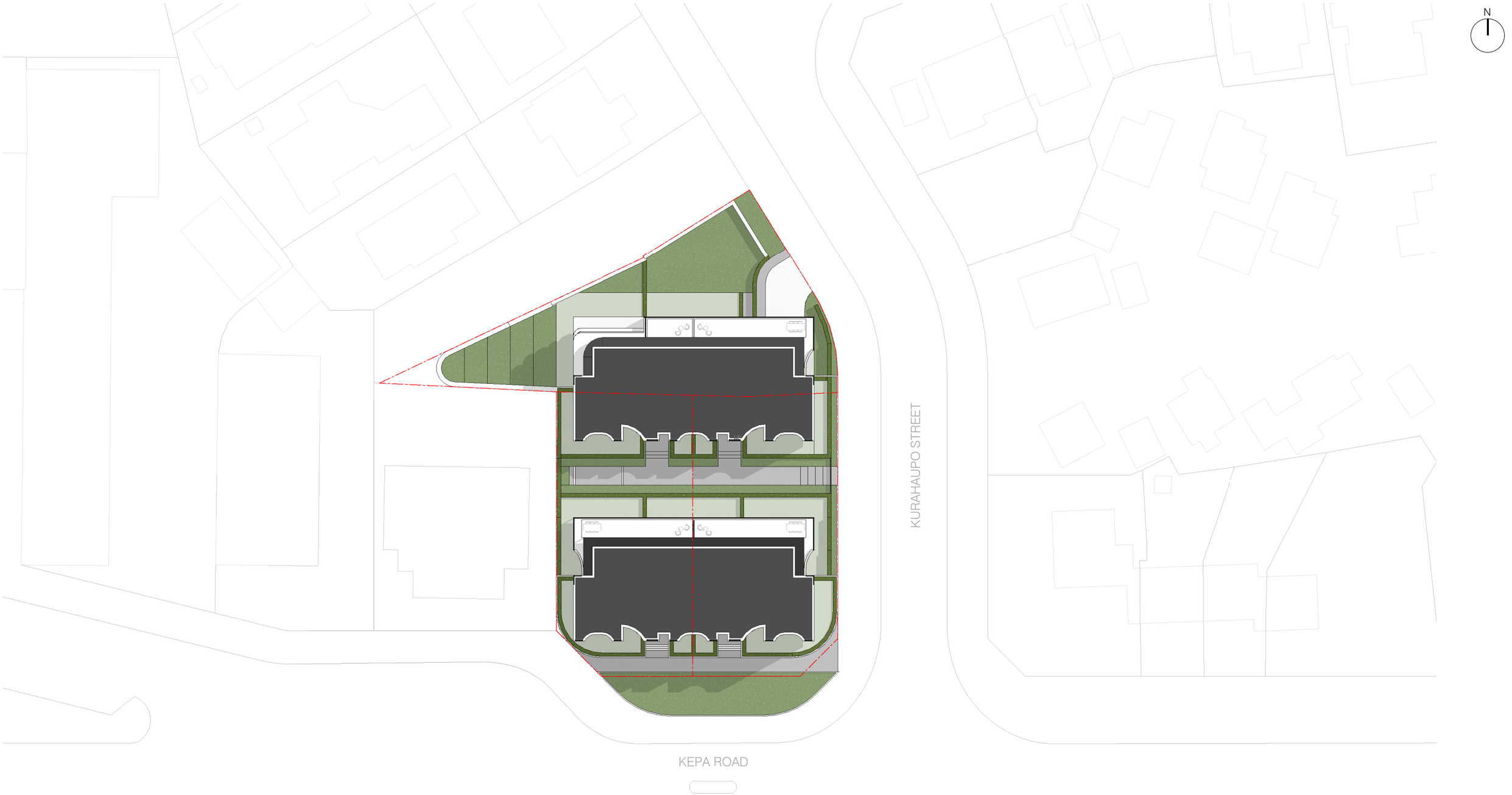
ID REVISION DESCRIPTION DATE



1 | SITE - SITE PLAN
1:500 - SCALE 1 : 200 ON A1 / 1 : 500 ON A3

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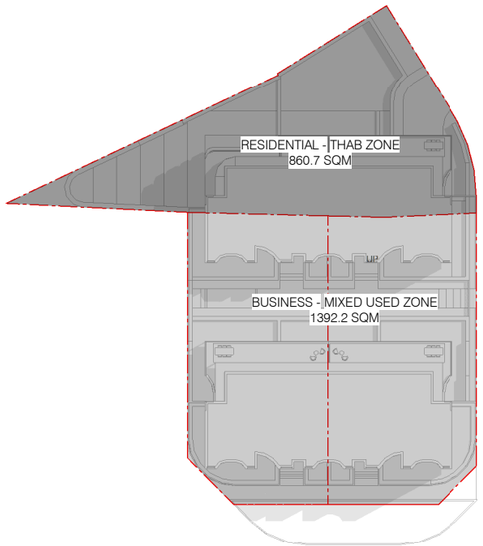
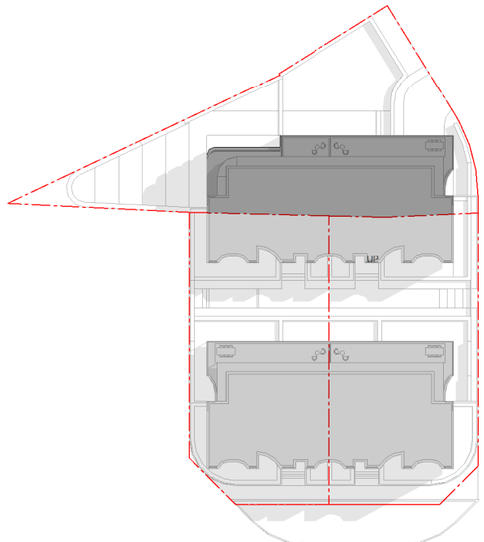


1 | METRIC - SITE AREA
PLAN - SCALE 1 : 400 ON A1 | 1000 ON A3

RESIDENTIAL - THAB ZONE AREA | 860.7 SQM

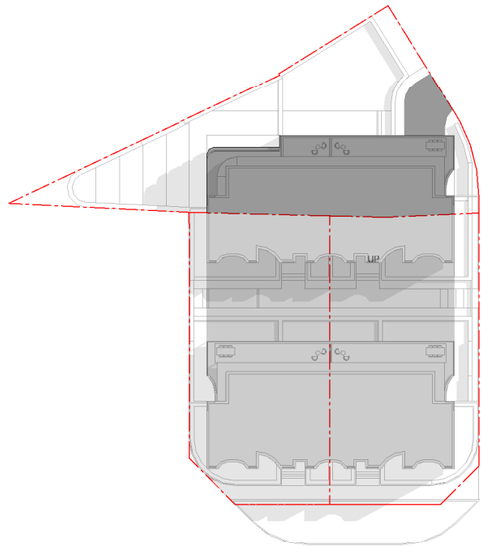
BUSINESS - MIXED USED ZONE AREA | 1392.2 SQM



2 | METRIC - BUILDING COVERAGE
PLAN - SCALE 1 : 400 ON A1 | 1000 ON A3

RESIDENTIAL - THAB ZONE BUILDING COVERAGE AREA | 317.9 SQM
THAB ZONE AREA % | 36.9% (MAX 50% | COMPLY)

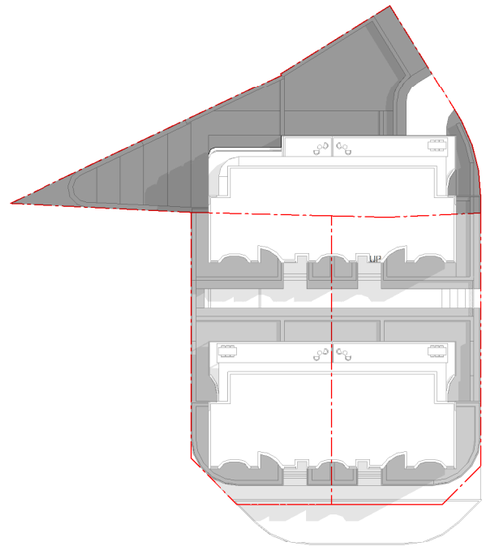
BUSINESS - MIXED USED ZONE BUILDING COVERAGE AREA | 694.7 SQM
MIXED USED ZONE % | 49.9% (N/A)



3 | METRIC - IMPERVIOUS AREA
PLAN - SCALE 1 : 400 ON A1 | 1000 ON A3

RESIDENTIAL - THAB ZONE IMPERVIOUS AREA | 355.3QM
THAB ZONE AREA % | 41.3% (MAX 70% | COMPLY)

BUSINESS - MIXED USED ZONE IMPERVIOUS AREA | 1040.9 SQM
MIXED USED ZONE % | 74.7% (N/A)



4 | METRIC - LANDSCAPE AREA
PLAN - SCALE 1 : 400 ON A1 | 1000 ON A3

RESIDENTIAL - THAB ZONE LANDSCAPE AREA | 505.4 SQM
THAB ZONE AREA % | 58.7% (MIN 30% | COMPLY)

BUSINESS - MIXED USED ZONE LANDSCAPE AREA | 489.9 SQM
MIXED USED ZONE % | 35.2% (N/A)

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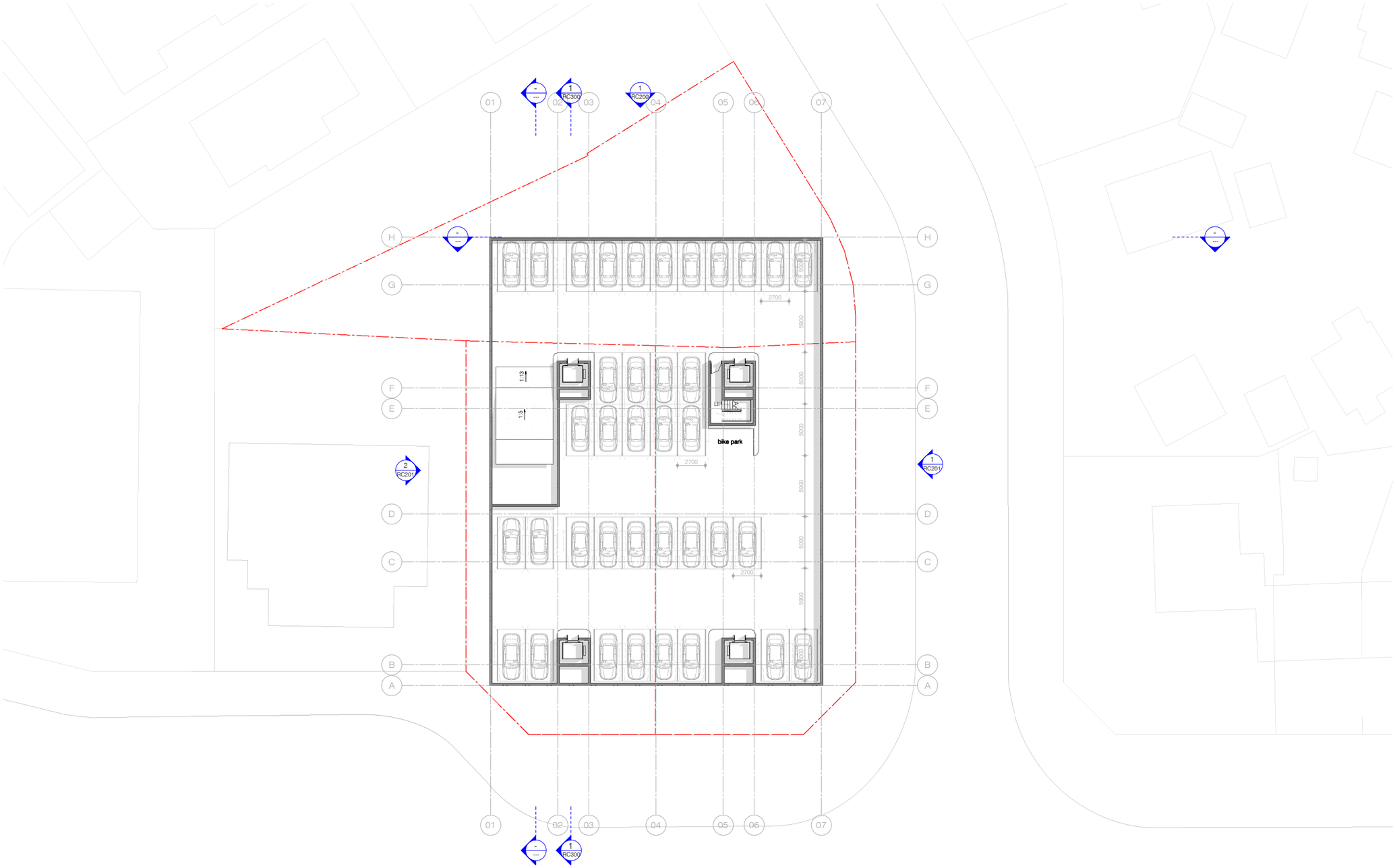
AREA SCHEDULE (GFA) _ BASEMENT B2	
UNIT ID	**Area**
BASEMENT B2	
BASEMENT	
CARPARK	1244.25 m²
CIRC.	
CIRCULATION	10.50 m²
CIRCULATION	25.95 m²
CIRCULATION	13.50 m²
CIRCULATION	13.50 m²



1 | BASEMENT B2
PLAN - SCALE: 1 : 200 ON A1 - 1:400 ON A3

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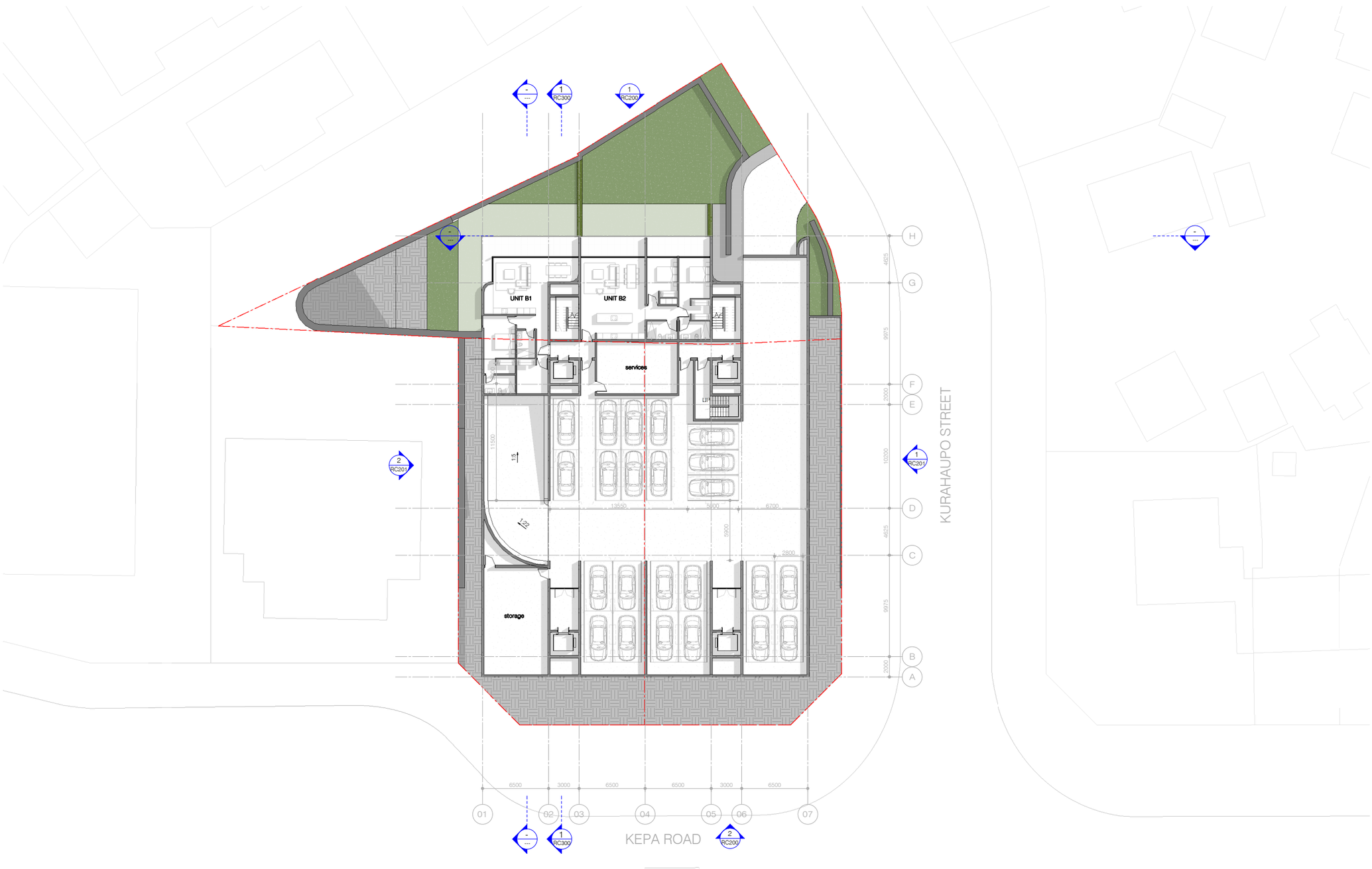

AREA SCHEDULE (GFA) _ BASEMENT B1	
UNIT ID	**Area**
BASEMENT B1	
BASEMENT	
CARPARK	854.52 m²
CIRC.	
CIRCULATION	26.06 m²
CIRCULATION	26.06 m²
CIRCULATION	35.80 m²
CIRCULATION	57.23 m²
SERVICE	
SERVICE	82.11 m²
SERVICE	43.17 m²
UNIT B1	
APARTMENT	95.78 m²
GARDEN	214.10 m²
PATIO	21.45 m²
UNIT B2	
APARTMENT	109.87 m²
PATIO	12.25 m²
PATIO	12.25 m²
GARDEN	195.53 m²

N

1 | BASEMENT B1
PLAN - SCALE: 1 : 100 ON A1 / 1 : 200 ON A3

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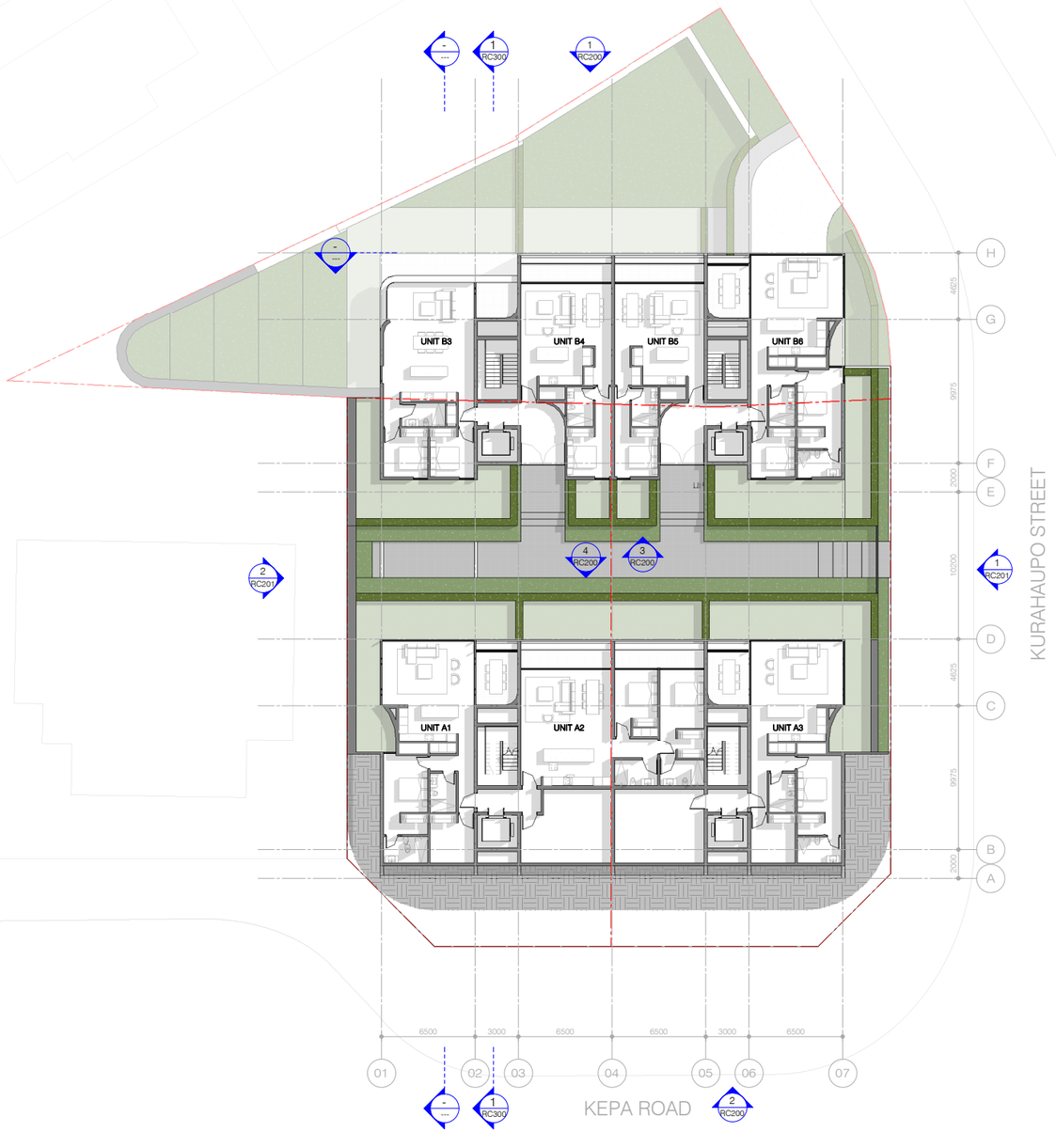

1 | LEVEL 1
PLAN - SCALE 1 : 200 ON A1 - 200 ON A3

AREA SCHEDULE (GFA) _ LEVEL 1

UNIT ID	Area
LEVEL 1	
CIRC.	
CIRCULATION	44.68 m²
CIRCULATION	44.59 m²
CIRCULATION	36.35 m²
CIRCULATION	33.47 m²
SERVICE	
SERVICE	67.64 m²
UNIT A1	
APARTMENT	101.09 m²
GARDEN	59.53 m²
PATIO	11.80 m²
UNIT A2	
APARTMENT	109.40 m²
PATIO	8.00 m²
PATIO	8.00 m²
GARDEN	41.60 m²
UNIT A3	
APARTMENT	101.09 m²
GARDEN	59.36 m²
PATIO	11.80 m²
UNIT B3	
APARTMENT	90.72 m²
GARDEN	53.49 m²
PATIO	8.42 m²
UNIT B4	
APARTMENT	72.41 m²
PATIO	8.00 m²
GARDEN	9.76 m²
UNIT B5	
APARTMENT	72.49 m²
PATIO	8.00 m²
GARDEN	9.78 m²
UNIT B6	
APARTMENT	101.19 m²
GARDEN	58.05 m²
PATIO	11.80 m²

N

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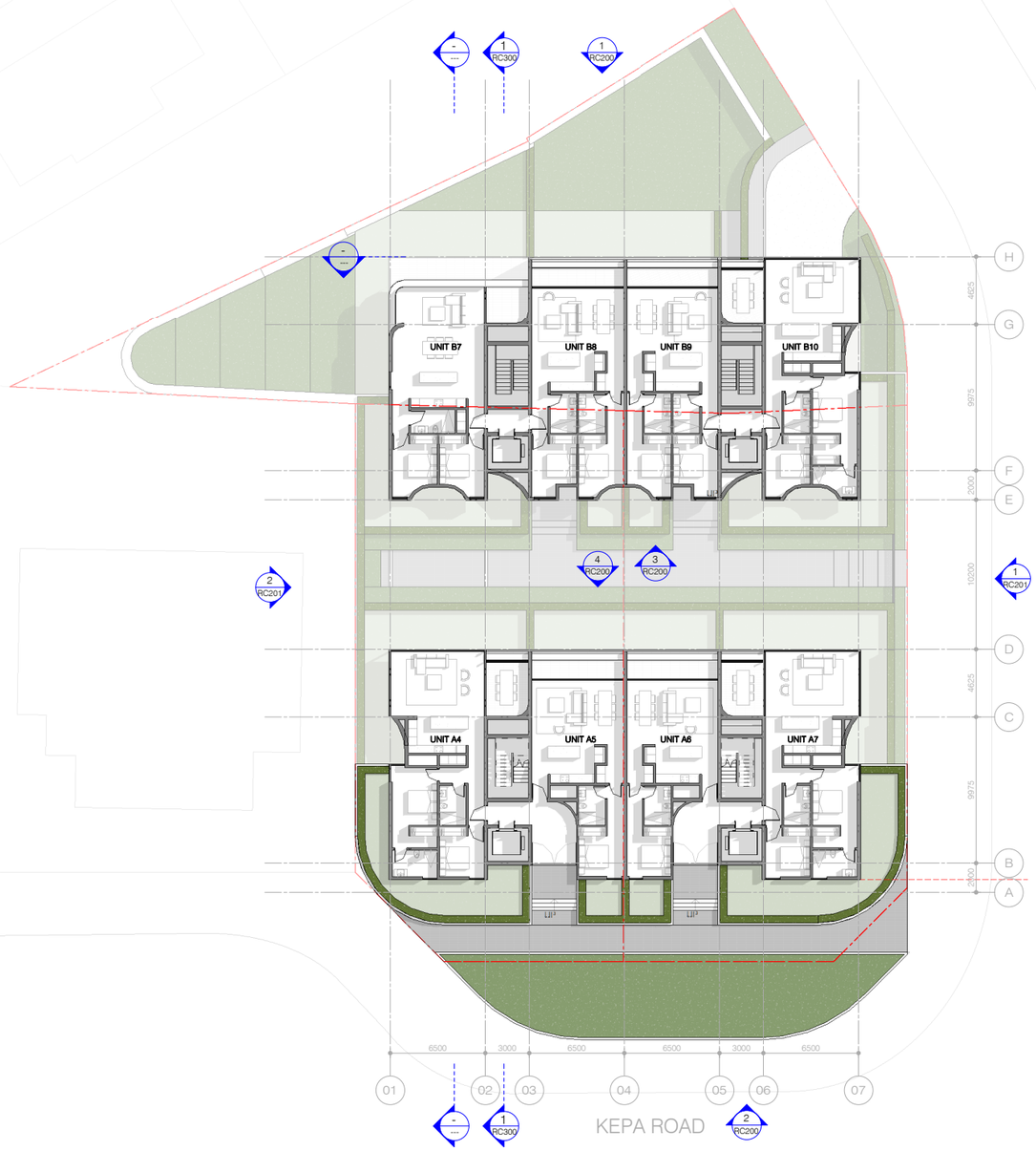

1 | LEVEL 2
PLAN - SCALE: 1 : 200 ON A1 | 200 ON A3

AREA SCHEDULE (GFA) _ LEVEL 2	
UNIT ID	**Area**
LEVEL 2	
CIRC.	
CIRCULATION	44.68 m²
CIRCULATION	44.59 m²
CIRCULATION	32.17 m²
CIRCULATION	32.17 m²
UNIT A4	
APARTMENT	101.21 m²
GARDEN	46.35 m²
PATIO	11.80 m²
UNIT A5	
APARTMENT	72.41 m²
PATIO	8.00 m²
GARDEN	9.29 m²
UNIT A6	
APARTMENT	72.49 m²
PATIO	8.00 m²
GARDEN	9.29 m²
UNIT A7	
APARTMENT	101.19 m²
GARDEN	55.80 m²
PATIO	11.80 m²
UNIT B7	
APARTMENT	94.04 m²
PATIO	8.42 m²
UNIT B8	
APARTMENT	93.17 m²
PATIO	8.00 m²
UNIT B9	
APARTMENT	93.17 m²
PATIO	8.00 m²
UNIT B10	
APARTMENT	104.43 m²
PATIO	11.80 m²

N

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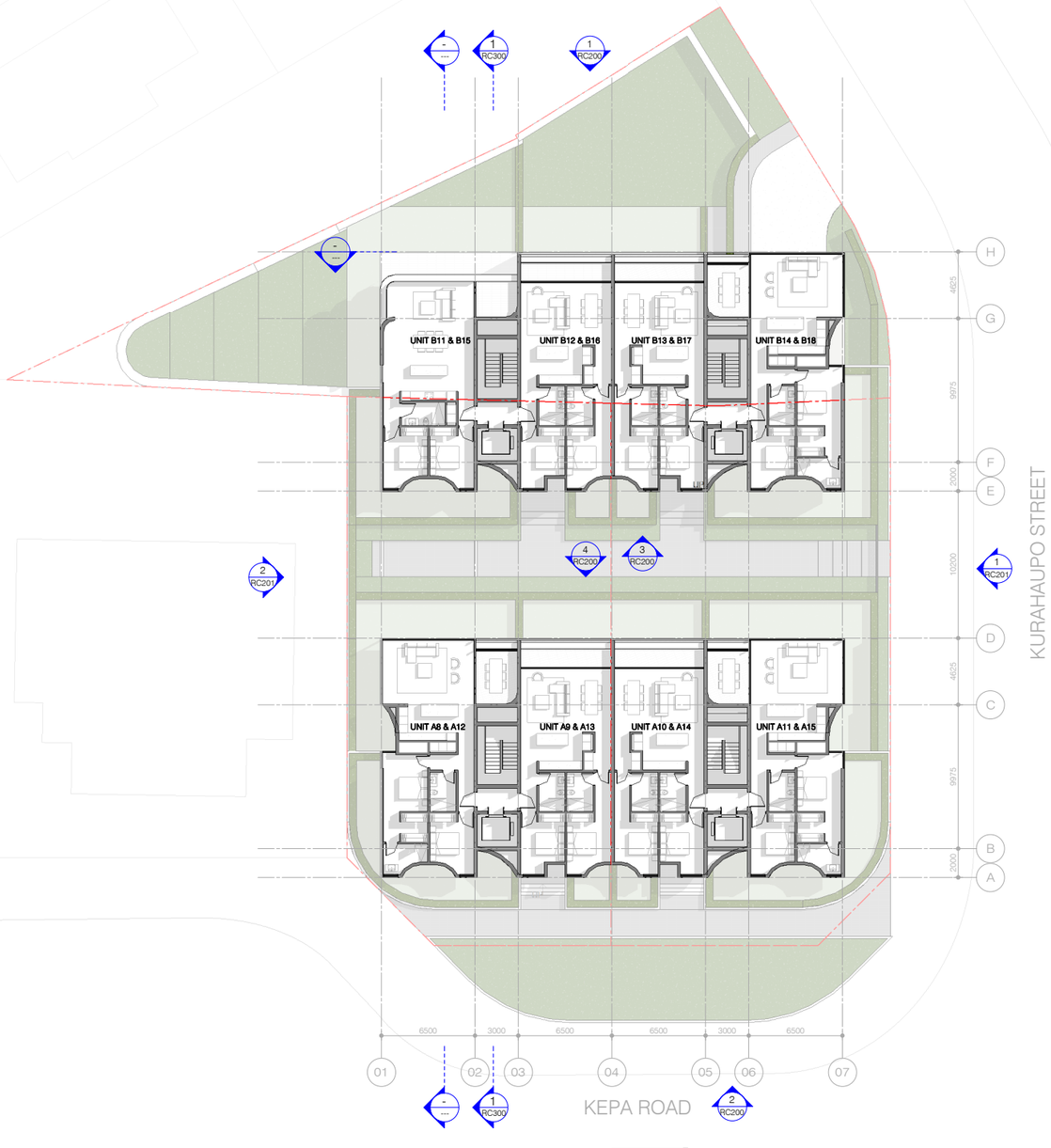
CLIENT:	PROJECT:	LOCATION:		SHEET TITLE:	ID	REVISION DESCRIPTION	DATE
CLIENT NAME	KEPA ROAD APARTMENTS	182 & 184 KEPA ROAD , 8 KURAHAUPO STREET, AUCKLAND	CONCEPT DESIGN ALL CONSULTANTS AND CONTRACTORS TO VERIFY ALL DIMENSIONS, ANGLES, SITE MEASUREMENTS AND CONDITIONS BEFORE ANY FABRICATION OR CONSTRUCTION BEGINS. COPYRIGHT OF THESE DRAWINGS IS THE PROPERTY OF MONK MACKENZIE ARCHITECTS LTD.	MASTERPLAN - L2	DATE: 16.11.21 SHEET SIZE: A1	REVISION:	SHEET NUMBER: RC112



1 | LEVEL 3 & LEVEL 4
PLAN - SCALE 1 : 200 ON A1 | 200 ON A3

N

AREA SCHEDULE (GFA) _ LEVEL 3

UNIT ID	Area
LEVEL 3	
CIRC.	
CIRCULATION	32.17 m²
CIRCULATION	32.17 m²
CIRCULATION	32.17 m²
CIRCULATION	32.17 m²
UNIT A8	
APARTMENT	104.52 m²
PATIO	11.80 m²
UNIT A9	
APARTMENT	93.17 m²
PATIO	8.00 m²
UNIT A10	
APARTMENT	93.17 m²
PATIO	8.00 m²
UNIT A11	
APARTMENT	104.49 m²
PATIO	11.80 m²
UNIT B11	
APARTMENT	94.04 m²
PATIO	8.42 m²
UNIT B12	
APARTMENT	93.17 m²
PATIO	8.00 m²
UNIT B13	
APARTMENT	93.17 m²
PATIO	8.00 m²
UNIT B14	
APARTMENT	104.49 m²
PATIO	11.80 m²

AREA SCHEDULE (GFA) _ LEVEL 4

UNIT ID	Area
LEVEL 4	
CIRC.	
CIRCULATION	32.17 m²
CIRCULATION	32.17 m²
CIRCULATION	32.17 m²
CIRCULATION	32.17 m²
UNIT A12	
APARTMENT	104.52 m²
PATIO	11.80 m²
UNIT A13	
APARTMENT	93.17 m²
PATIO	8.00 m²
UNIT A14	
APARTMENT	93.17 m²
PATIO	8.00 m²
UNIT A15	
APARTMENT	104.49 m²
PATIO	11.80 m²
UNIT B15	
APARTMENT	78.48 m²
PATIO	22.69 m²
UNIT B16	
APARTMENT	93.17 m²
PATIO	8.00 m²
UNIT B17	
APARTMENT	93.17 m²
PATIO	8.00 m²
UNIT B18	
APARTMENT	104.49 m²
PATIO	11.80 m²

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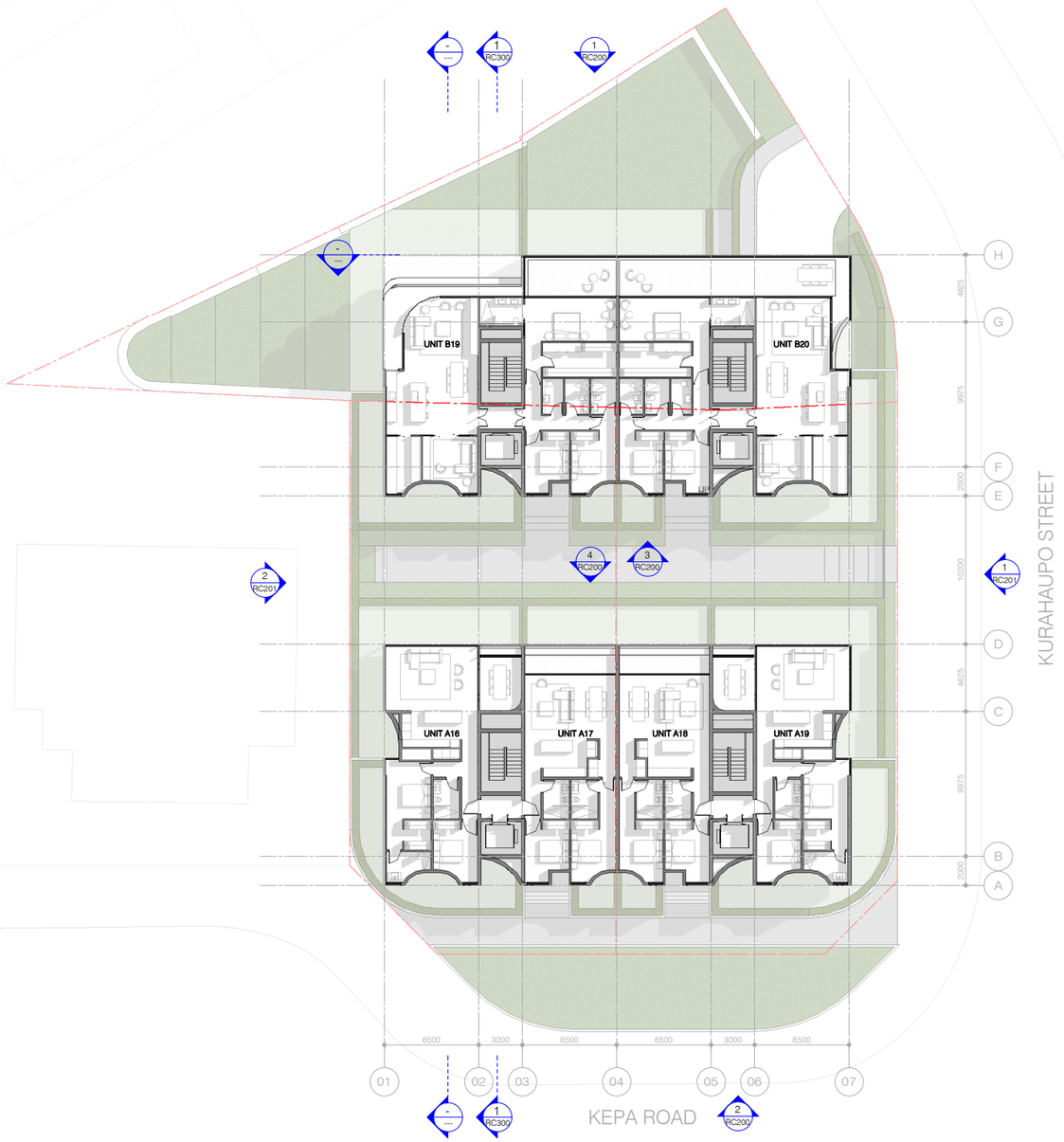

1 | LEVEL 5
PLAN - SCALE - 1 : 200 ON A1 | 1 : 200 ON A3

AREA SCHEDULE (GFA) _ LEVEL 5

UNIT ID	Area
LEVEL 5	
CIRC.	
CIRCULATION	32.17 m²
CIRCULATION	32.17 m²
CIRCULATION	30.97 m²
CIRCULATION	30.97 m²
UNIT A16	
APARTMENT	104.52 m²
PATIO	11.80 m²
UNIT A17	
APARTMENT	93.17 m²
PATIO	8.00 m²
UNIT A18	
APARTMENT	93.17 m²
PATIO	8.00 m²
UNIT A19	
APARTMENT	104.49 m²
PATIO	11.80 m²
UNIT B19	
APARTMENT	175.06 m²
PATIO	17.96 m²
UNIT B20	
APARTMENT	176.48 m²
PATIO	48.50 m²

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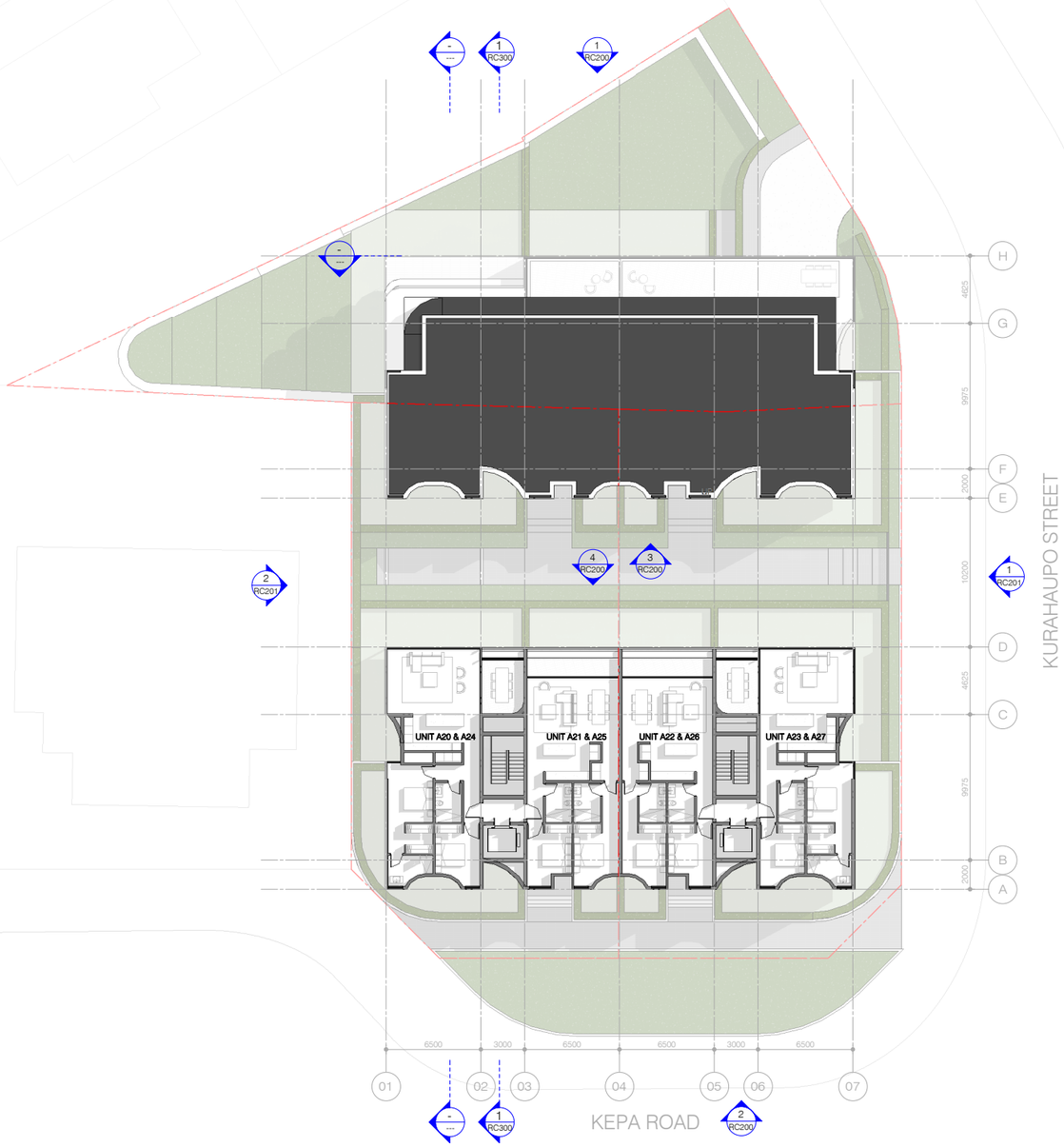

1 | LEVEL 6 & LEVEL 7
PLAN - SCALE 1 : 100 ON A1 / 200 ON A3

AREA SCHEDULE (GFA) _ LEVEL 6	
UNIT ID	**Area**
LEVEL 6	
CIRC.	
CIRCULATION	32.17 m²
CIRCULATION	32.17 m²
UNIT A20	
APARTMENT	104.52 m²
PATIO	11.80 m²
UNIT A21	
APARTMENT	93.17 m²
PATIO	8.00 m²
UNIT A22	
APARTMENT	93.17 m²
PATIO	8.00 m²
UNIT A23	
APARTMENT	104.49 m²
PATIO	11.80 m²

AREA SCHEDULE (GFA) _ LEVEL 7	
UNIT ID	**Area**
LEVEL 7	
CIRC.	
CIRCULATION	32.17 m²
CIRCULATION	32.17 m²
UNIT A24	
APARTMENT	104.52 m²
PATIO	11.80 m²
UNIT A25	
APARTMENT	93.17 m²
PATIO	8.00 m²
UNIT A26	
APARTMENT	93.17 m²
PATIO	8.00 m²
UNIT A27	
APARTMENT	104.49 m²
PATIO	11.80 m²

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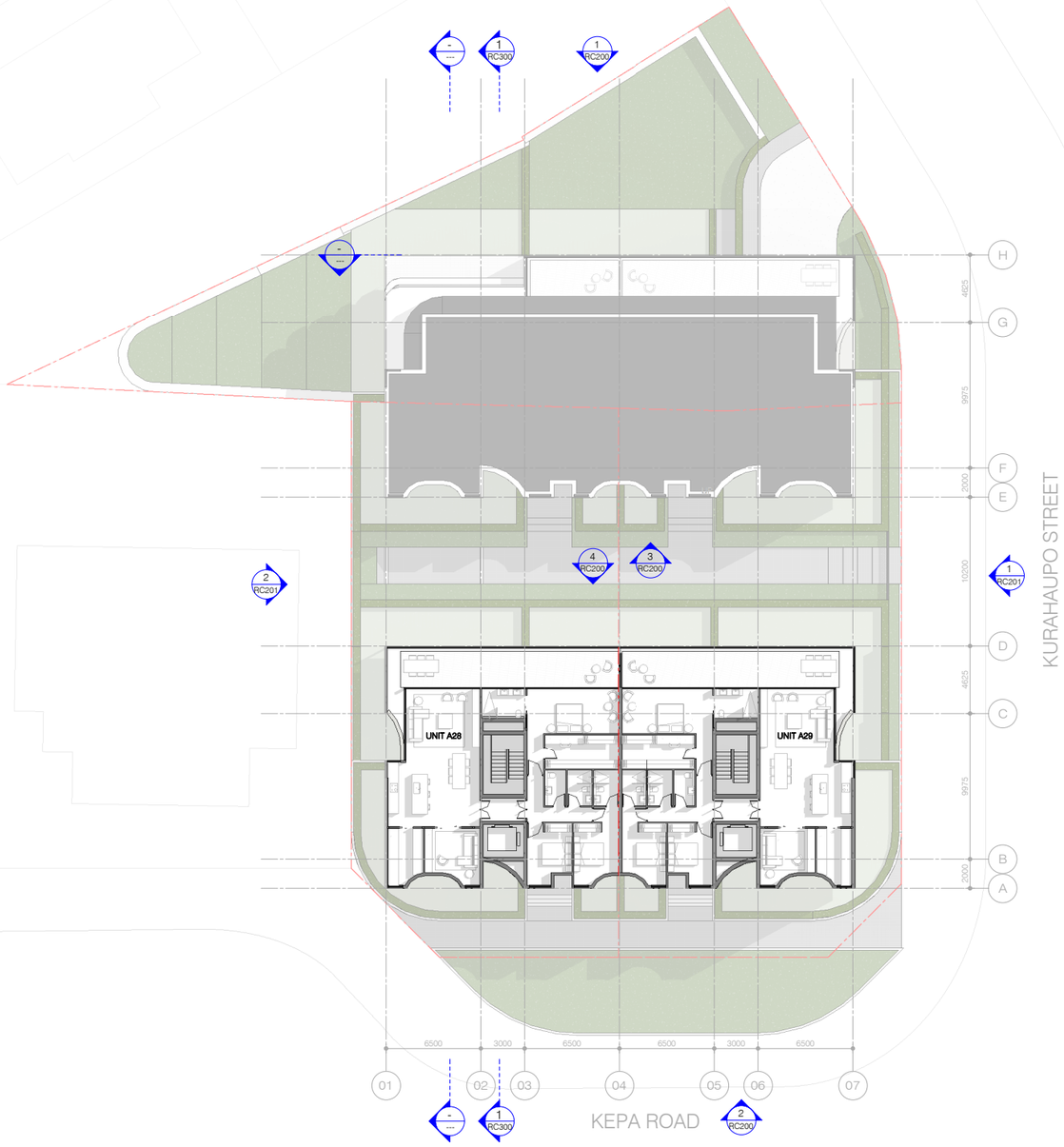

1 | LEVEL 8
PLAN - SCALE - 1 : 100 ON A1 | 200 ON A3

AREA SCHEDULE (GFA) _ LEVEL 8

UNIT ID	Area
LEVEL 8	
CIRC.	
CIRCULATION	30.97 m²
CIRCULATION	30.97 m²
UNIT A28	
APARTMENT	176.53 m²
PATIO	48.49 m²
UNIT A29	
APARTMENT	176.48 m²
PATIO	48.50 m²

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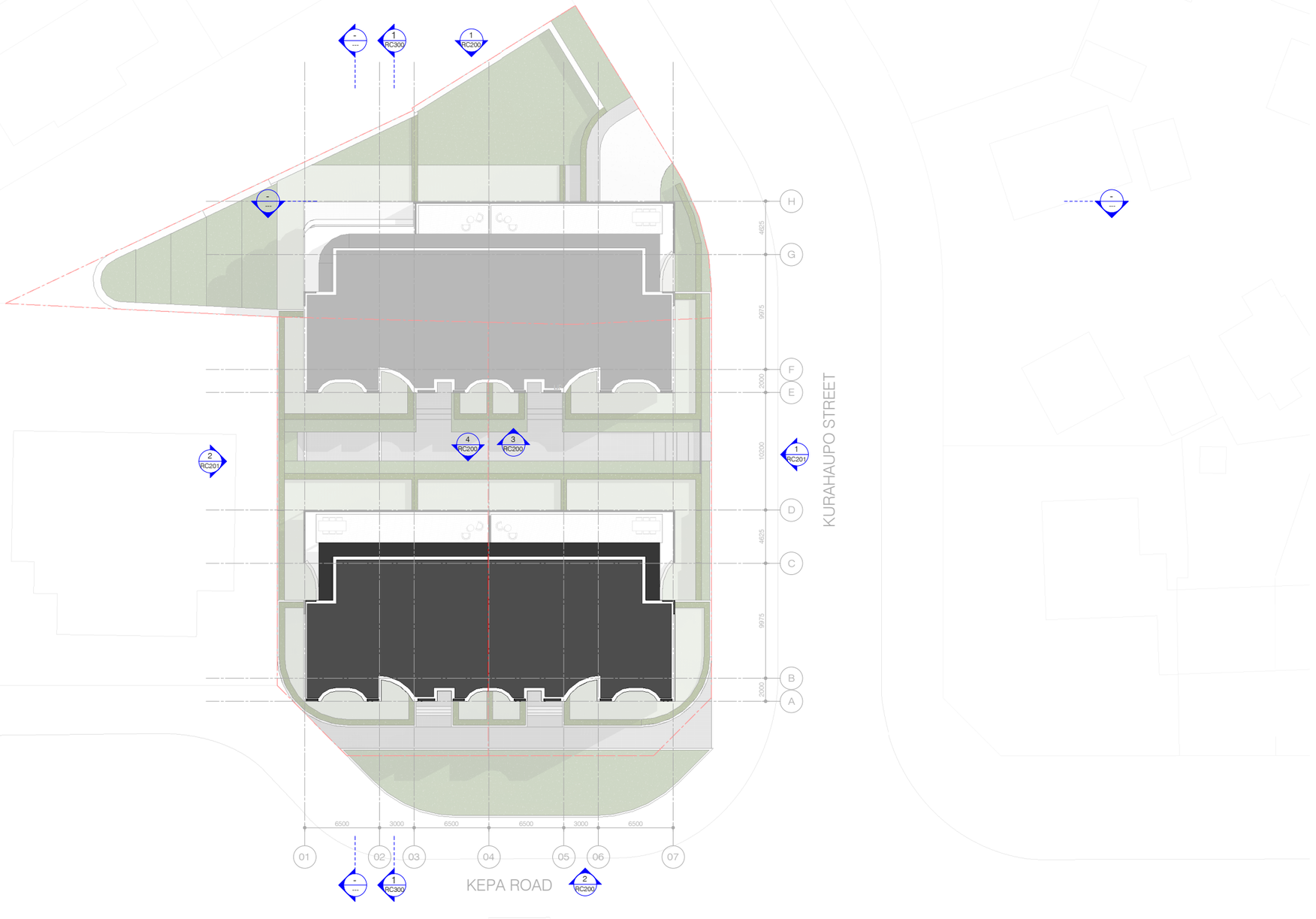

1 | LEVEL ROOF
PLAN - SCALE: 1 : 200 ON A1 : 200 ON A3

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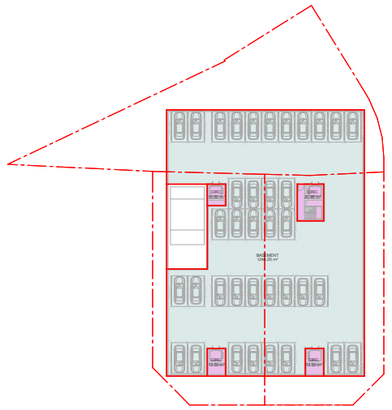
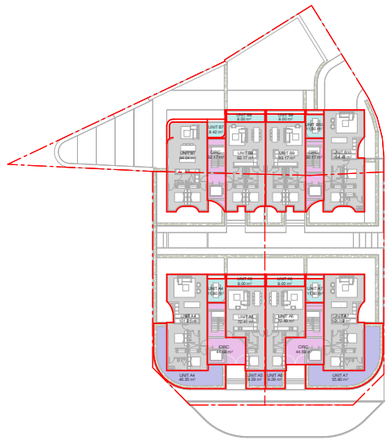
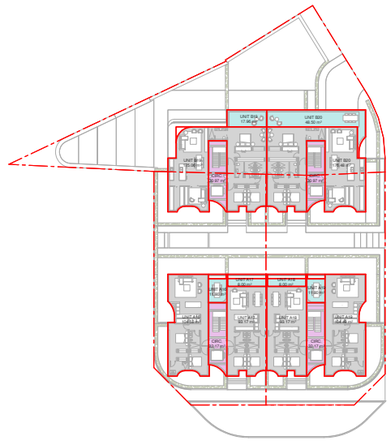


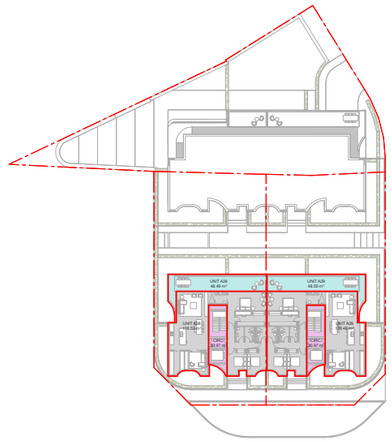
10 | BASEMENT B2
PLAN - SCALE 1 : 500 ON A1 | 1000 ON A3



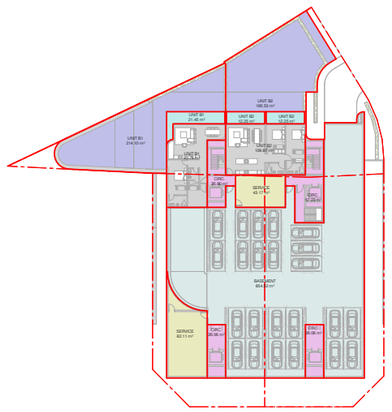
3 | LEVEL 2
PLAN - SCALE 1 : 500 ON A1 | 1000 ON A3



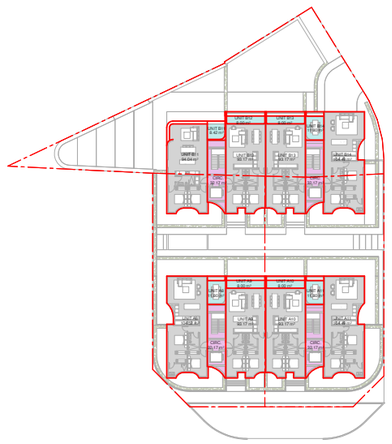
5 | LEVEL 5
PLAN - SCALE 1 : 500 ON A1 | 1000 ON A3



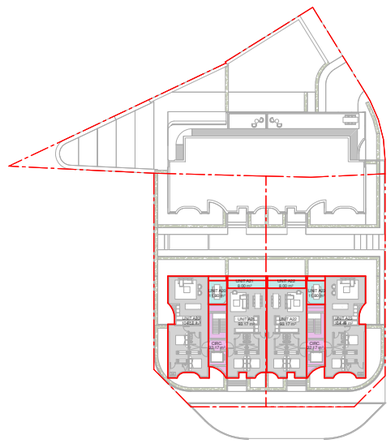
7 | LEVEL 8
PLAN - SCALE 1 : 500 ON A1 | 1000 ON A3



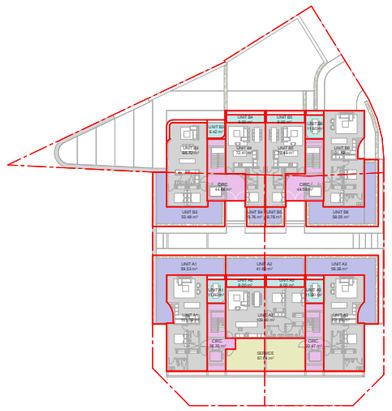
1 | BASEMENT B1
PLAN - SCALE 1 : 500 ON A1 | 1000 ON A3



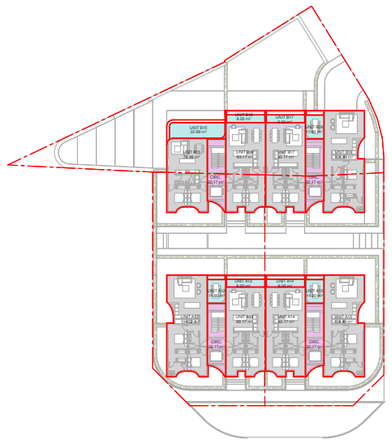
4 | LEVEL 3
PLAN - SCALE 1 : 500 ON A1 | 1000 ON A3



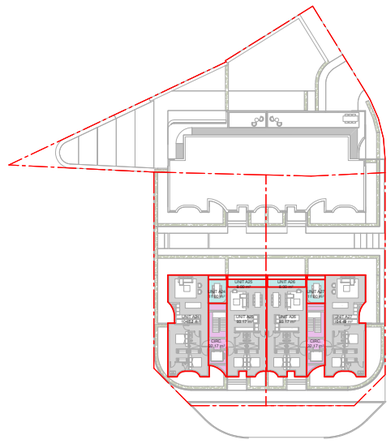
6 | LEVEL 6
PLAN - SCALE 1 : 500 ON A1 | 1000 ON A3



2 | LEVEL 1
PLAN - SCALE 1 : 500 ON A1 | 1000 ON A3



8 | LEVEL 4
PLAN - SCALE 1 : 500 ON A1 | 1000 ON A3



9 | LEVEL 7
PLAN - SCALE 1 : 500 ON A1 | 1000 ON A3

AREA SCHEDULE (GFA)

UNIT ID	Area
BASEMENT B2	
BASEMENT	
CARPARK	1244.25 m²
CIRC.	
CIRCULATION	10.50 m²
CIRCULATION	25.95 m²
CIRCULATION	13.50 m²
CIRCULATION	13.50 m²
BASEMENT B1	
BASEMENT	
CARPARK	854.52 m²
CIRC.	
CIRCULATION	26.06 m²
CIRCULATION	26.06 m²
CIRCULATION	35.80 m²
CIRCULATION	57.23 m²
SERVICE	
SERVICE	82.11 m²
SERVICE	43.17 m²
UNIT B1	
APARTMENT	95.78 m²
GARDEN	214.10 m²
PATIO	21.45 m²
UNIT B2	
APARTMENT	109.87 m²
PATIO	12.25 m²
PATIO	12.25 m²
GARDEN	195.53 m²
LEVEL 1	
CIRC.	
CIRCULATION	44.68 m²
CIRCULATION	44.59 m²
CIRCULATION	36.35 m²
CIRCULATION	33.47 m²
SERVICE	
SERVICE	67.64 m²
UNIT A1	
APARTMENT	101.09 m²
GARDEN	59.53 m²
PATIO	11.80 m²
UNIT A2	
APARTMENT	109.40 m²
PATIO	8.00 m²
PATIO	8.00 m²
GARDEN	41.60 m²
UNIT A3	
APARTMENT	101.09 m²
GARDEN	59.36 m²
PATIO	11.80 m²
UNIT B3	
APARTMENT	90.72 m²
GARDEN	53.49 m²
PATIO	8.42 m²
UNIT B4	
APARTMENT	72.41 m²
PATIO	8.00 m²
GARDEN	9.76 m²
UNIT B5	
APARTMENT	72.49 m²
PATIO	8.00 m²
GARDEN	9.78 m²
UNIT B6	
APARTMENT	101.19 m²
GARDEN	58.05 m²
PATIO	11.80 m²
LEVEL 2	
CIRC.	
CIRCULATION	44.68 m²
CIRCULATION	44.59 m²
CIRCULATION	32.17 m²
CIRCULATION	32.17 m²
UNIT A4	
APARTMENT	101.21 m²
GARDEN	46.35 m²
PATIO	11.80 m²
UNIT A5	
APARTMENT	72.41 m²
PATIO	8.00 m²
GARDEN	9.29 m²
UNIT A6	
APARTMENT	72.49 m²
PATIO	8.00 m²
GARDEN	9.29 m²
UNIT A7	
APARTMENT	101.19 m²
GARDEN	55.80 m²
PATIO	11.80 m²
UNIT B7	
APARTMENT	94.04 m²
PATIO	8.42 m²
UNIT B8	
APARTMENT	93.17 m²
PATIO	8.00 m²

AREA SCHEDULE (GFA)

UNIT ID	Area
UNIT B9	
APARTMENT	93.17 m²
PATIO	8.00 m²
UNIT B10	
APARTMENT	104.43 m²
PATIO	11.80 m²
LEVEL 3	
CIRC.	
CIRCULATION	32.17 m²
CIRCULATION	32.17 m²
CIRCULATION	32.17 m²
CIRCULATION	32.17 m²
UNIT A8	
APARTMENT	104.52 m²
PATIO	11.80 m²
UNIT A9	
APARTMENT	93.17 m²
PATIO	8.00 m²
UNIT A10	
APARTMENT	93.17 m²
PATIO	8.00 m²
UNIT A11	
APARTMENT	104.49 m²
PATIO	11.80 m²
UNIT B11	
APARTMENT	94.04 m²
PATIO	8.42 m²
UNIT B12	
APARTMENT	93.17 m²
PATIO	8.00 m²
UNIT B13	
APARTMENT	93.17 m²
PATIO	8.00 m²
UNIT B14	
APARTMENT	104.49 m²
PATIO	11.80 m²
LEVEL 4	
CIRC.	
CIRCULATION	32.17 m²
CIRCULATION	32.17 m²
CIRCULATION	32.17 m²
CIRCULATION	32.17 m²
UNIT A12	
APARTMENT	104.52 m²
PATIO	11.80 m²
UNIT A13	
APARTMENT	93.17 m²
PATIO	8.00 m²
UNIT A14	
APARTMENT	93.17 m²
PATIO	8.00 m²
UNIT A15	
APARTMENT	104.49 m²
PATIO	11.80 m²
UNIT B15	
APARTMENT	78.48 m²
PATIO	22.69 m²
UNIT B16	
APARTMENT	93.17 m²
PATIO	8.00 m²
UNIT B17	
APARTMENT	93.17 m²
PATIO	8.00 m²
UNIT B18	
APARTMENT	104.49 m²
PATIO	11.80 m²
LEVEL 5	
CIRC.	
CIRCULATION	32.17 m²
CIRCULATION	32.17 m²
CIRCULATION	30.97 m²
CIRCULATION	30.97 m²
UNIT A16	
APARTMENT	104.52 m²
PATIO	11.80 m²
UNIT A17	
APARTMENT	93.17 m²
PATIO	8.00 m²
UNIT A18	
APARTMENT	93.17 m²
PATIO	8.00 m²
UNIT A19	
APARTMENT	104.49 m²
PATIO	11.80 m²

AREA SCHEDULE (GFA)

UNIT ID	Area
UNIT B19	
APARTMENT	175.06 m²
PATIO	17.96 m²
UNIT B20	
APARTMENT	176.48 m²
PATIO	48.50 m²
LEVEL 6	
CIRC.	
CIRCULATION	32.17 m²
CIRCULATION	32.17 m²
UNIT A20	
APARTMENT	104.52 m²
PATIO	11.80 m²
UNIT A21	
APARTMENT	93.17 m²
PATIO	8.00 m²
UNIT A22	
APARTMENT	93.17 m²
PATIO	8.00 m²
UNIT A23	
APARTMENT	104.49 m²
PATIO	11.80 m²
LEVEL 7	
CIRC.	
CIRCULATION	32.17 m²
CIRCULATION	32.17 m²
UNIT A24	
APARTMENT	104.52 m²
PATIO	11.80 m²
UNIT A25	
APARTMENT	93.17 m²
PATIO	8.00 m²
UNIT A26	
APARTMENT	93.17 m²
PATIO	8.00 m²
UNIT A27	
APARTMENT	104.49 m²
PATIO	11.80 m²
LEVEL 8	
CIRC.	
CIRCULATION	30.97 m²
CIRCULATION	30.97 m²
UNIT A28	
APARTMENT	176.53 m²
PATIO	48.49 m²
UNIT A29	
APARTMENT	176.48 m²
PATIO	48.50 m²

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AUCKLAND, NEW ZEALAND
MONKMACKENZIE.COM
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CLIENT: CLIENT NAME

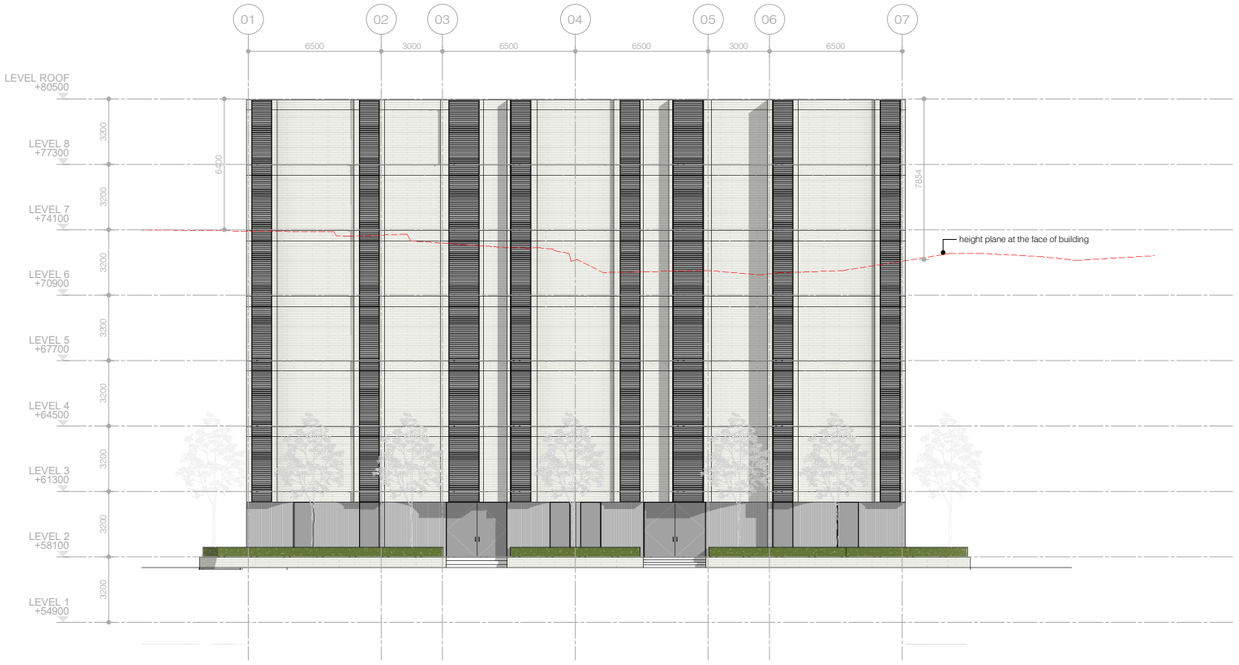
PROJECT: KEPA ROAD APARTMENTS

LOCATION: 182 & 184 KEPA ROAD , 8 KURAHAUPO STREET, AUCKLAND

CONCEPT DESIGN

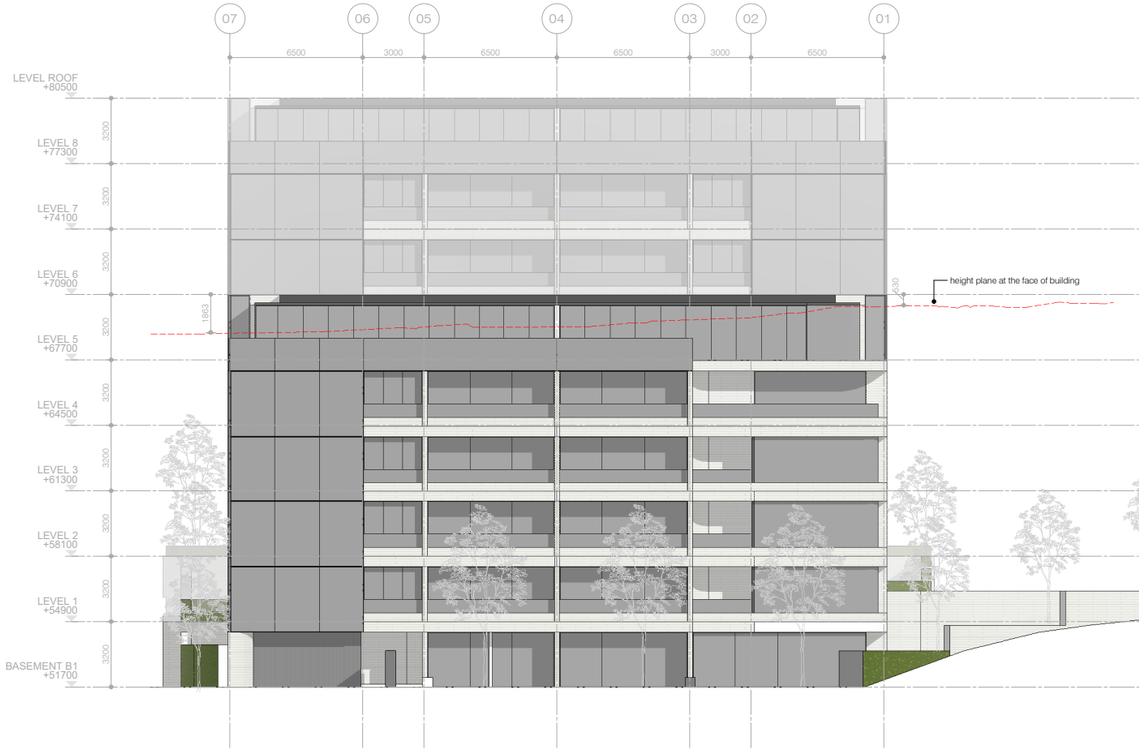
SHEET TITLE: MASTERPLAN - METRIC

ID	REVISION DESCRIPTION	DATE
DATE: 16.11.21		
SHEET SIZE: A1	REVISION:	SHEET NUMBER: RC118

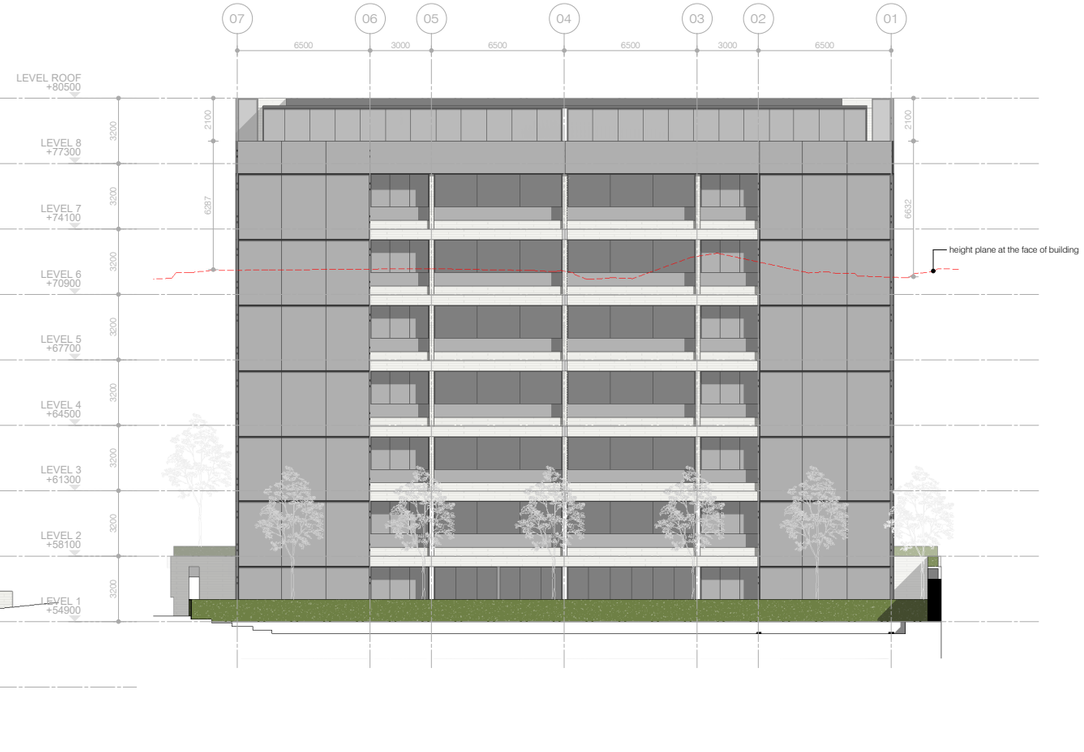


2 | ELEVATION - SOUTH 01
PLAN - SCALE 1 : 150 ON A1 | 1 : 1000 ON A3

3 | ELEVATION - SOUTH 02
PLAN - SCALE 1 : 150 ON A1 | 1 : 1000 ON A3



1 | ELEVATION - NORTH 01
PLAN - SCALE 1 : 150 ON A1 | 1 : 1000 ON A3



4 | ELEVATION - NORTH 02
PLAN - SCALE 1 : 150 ON A1 | 1 : 1000 ON A3

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MONK MACKENZIE.

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AUCKLAND, NEW ZEALAND
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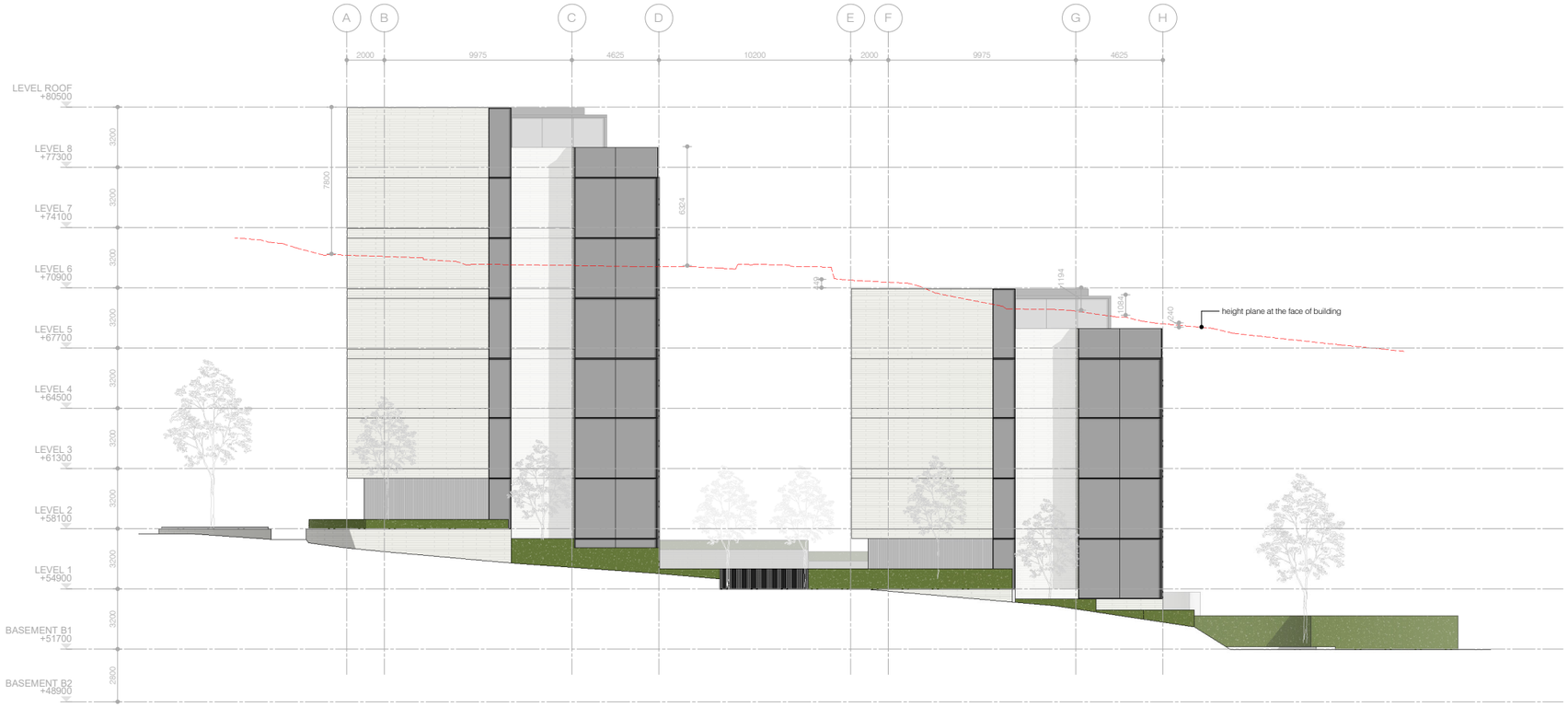
CLIENT NAME CLIENT:	KEPA ROAD APARTMENTS PROJECT:	182 & 184 KEPA ROAD , 8 KURAHAUPO STREET, AUCKLAND LOCATION:	CONCEPT DESIGN ALL CONSULTANTS AND CONTRACTORS TO VERIFY ALL DIMENSIONS, ANGLES, SITE MEASUREMENTS AND CONDITIONS BEFORE ANY FABRICATION OR CONSTRUCTION BEGINS. 	ELEVATIONS - NORTH & SOUTH SHEET TITLE:	ID / REVISION DESCRIPTION / DATE 16.11.21 DATE: SHEET SIZE: A1 REVISION: RC200 SHEET NUMBER:



1 | ELEVATION - EAST

PLAN - SCALE 1 : 150 ON A1 = 1000 ON A3

2 | ELEVATION - WEST

PLAN - SCALE 1 : 150 ON A1 = 1000 ON A3

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LEVEL 3, 23 O'CONNELL STREET
AUCKLAND, NEW ZEALAND
MONKMACKENZIE.COM
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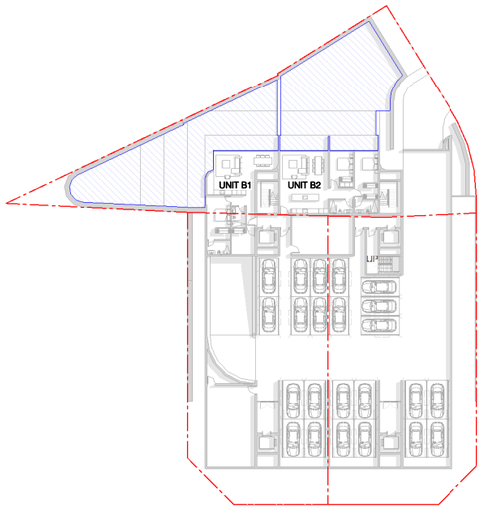
CLIENT NAME CLIENT:	KEPA ROAD APARTMENTS PROJECT:	182 & 184 KEPA ROAD , 8 KURAHAUPO STREET, AUCKLAND LOCATION:	CONCEPT DESIGN ALL CONSULTANTS AND CONTRACTORS TO VERIFY ALL DIMENSIONS, ANGLES, SITE MEASUREMENTS AND CONDITIONS BEFORE ANY FABRICATION OR CONSTRUCTION BEGINS. 	ELEVATIONS - EAST & WEST SHEET TITLE:	ID / REVISION DESCRIPTION / DATE 16.11.21 DATE: SHEET SIZE: A1 REVISION: RC201 SHEET NUMBER:

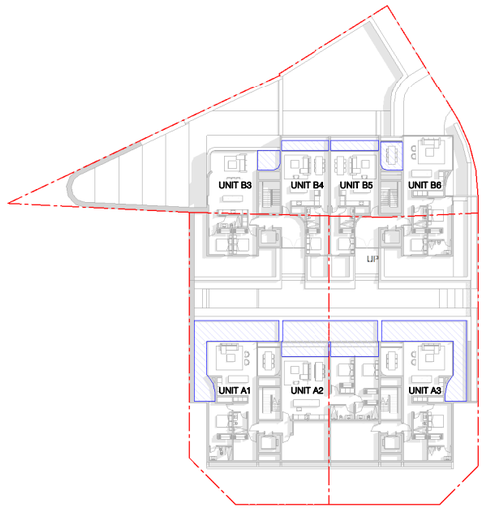


1 | OUTDOOR - BASEMENT
PLAN - SCALE 1 : 400 ON A1 | 1 : 1000 ON A3

DIAGRAMS DEPICTING ACTUAL
AREA AND DIMENSION OF OUTDOOR
LIVING SPACE PROOVIDED AT BASEMENT LEVEL

UNIT B1 | 202.7 SQM

UNIT B2 | 188.6 SQM



2 | OUTDOOR - LEVEL 1
PLAN - SCALE 1 : 400 ON A1 | 1 : 1000 ON A3

DIAGRAMS DEPICTING ACTUAL
AREA AND DIMENSION OF OUTDOOR
LIVING SPACE PROOVIDED AT LEVEL 1

UNIT A1 | 45.7 SQM

UNIT A2 | 58.3 SQM

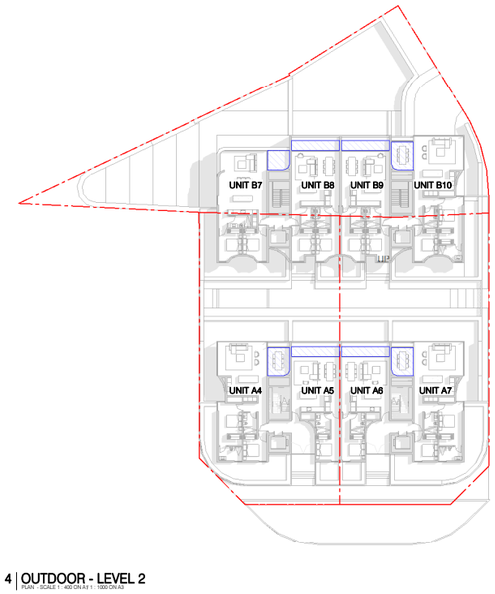
UNIT A3 | 45.7 SQM

UNIT B3 | 7.1 SQM

UNIT B4 | 8 SQM

UNIT B5 | 8 SQM

UNIT B6 | 10.4 SQM



4 | OUTDOOR - LEVEL 2
PLAN - SCALE 1 : 400 ON A1 | 1 : 1000 ON A3

DIAGRAMS DEPICTING ACTUAL
AREA AND DIMENSION OF OUTDOOR
LIVING SPACE PROOVIDED AT LEVEL 2

UNIT A4 | 10.4 SQM

UNIT A5 | 8 SQM

UNIT A6 | 8 SQM

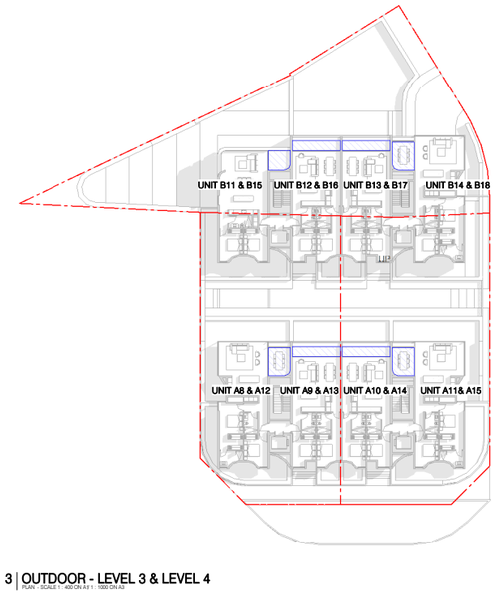
UNIT A7 | 10.4 SQM

UNIT B7 | 7.1 SQM

UNIT B8 | 8 SQM

UNIT B9 | 8 SQM

UNIT B10 | 10.4 SQM



3 | OUTDOOR - LEVEL 3 & LEVEL 4
PLAN - SCALE 1 : 400 ON A1 | 1 : 1000 ON A3

DIAGRAMS DEPICTING ACTUAL
AREA AND DIMENSION OF OUTDOOR
LIVING SPACE PROOVIDED AT LEVEL 3 & 4

UNIT A8 & A12 | 10.4 SQM

UNIT A9 & A13 | 8 SQM

UNIT A10 & A14 | 8 SQM

UNIT A11 & A15 | 10.4 SQM

UNIT B11 & B15 | 7.1 SQM

UNIT B12 & B16 | 8 SQM

UNIT B13 & B17 | 8 SQM

UNIT B14 & B18 | 10.4 SQM

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LEVEL 3, 23 O'CONNELL STREET
AUCKLAND, NEW ZEALAND
MONKMACKENZIE.COM
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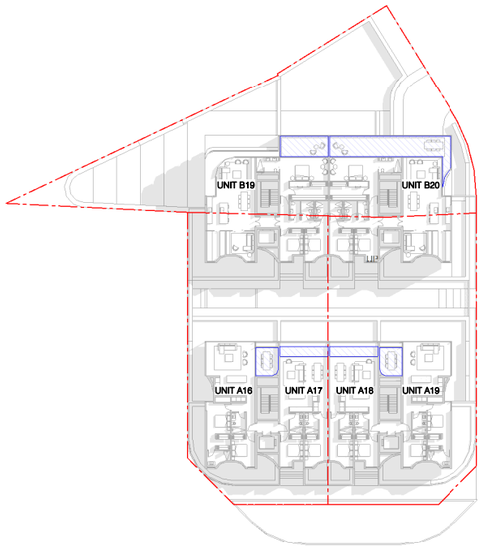
CLIENT NAME CLIENT:	KEPA ROAD APARTMENTS PROJECT:	182 & 184 KEPA ROAD , 8 KURAHAUPO STREET, AUCKLAND LOCATION:	CONCEPT DESIGN ALL CONSULTANTS AND CONTRACTORS TO VERIFY ALL DIMENSIONS, ANGLES, SITE MEASUREMENTS AND CONDITIONS BEFORE ANY FABRICATION OR CONSTRUCTION BEGINS. 	PLANNING - OUTDOOR LIVING SHEET TITLE:	ID / REVISION DESCRIPTION / DATE 16.11.21 DATE: SHEET SIZE: A1 REVISION: RC700 SHEET NUMBER:



3 | OUTDOOR - LEVEL 5
PLAN - SCALE 1 : 400 ON A3 1 : 1000 ON A3

DIAGRAMS DEPICTING ACTUAL
AREA AND DIMENSION OF OUTDOOR
LIVING SPACE PROOVIDED AT LEVEL 5

UNIT A16 | 10.4 SQM

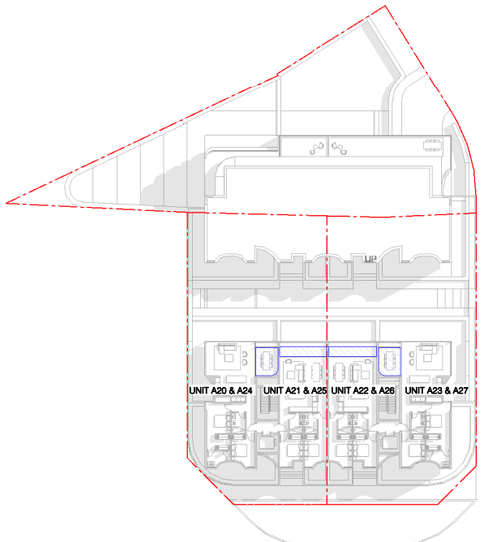
UNIT A17 | 8 SQM

UNIT A18 | 8 SQM

UNIT A19 | 10.4 SQM

UNIT B19 | 16.5 SQM

UNIT B20 | 44.7 SQM



1 | OUTDOOR - LEVEL 6 & LEVEL 7
PLAN - SCALE 1 : 400 ON A3 1 : 1000 ON A3

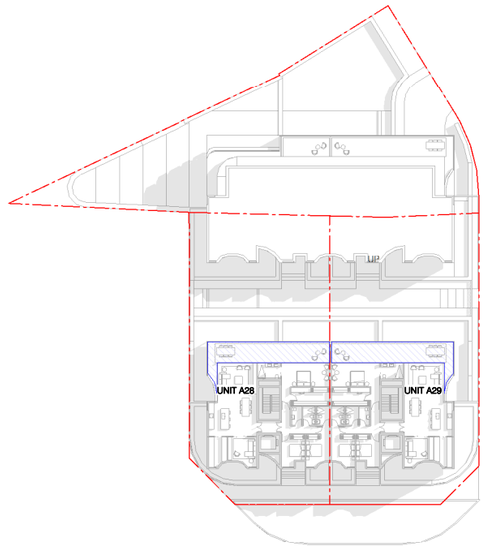
DIAGRAMS DEPICTING ACTUAL
AREA AND DIMENSION OF OUTDOOR
LIVING SPACE PROOVIDED AT LEVEL 6 & 7

UNIT A20 & A24 | 10.4 SQM

UNIT A21 & A25 | 8 SQM

UNIT A22 & A26 | 8 SQM

UNIT A23 & A27 | 10.4 SQM



2 | OUTDOOR - LEVEL 8
PLAN - SCALE 1 : 400 ON A3 1 : 1000 ON A3

DIAGRAMS DEPICTING ACTUAL
AREA AND DIMENSION OF OUTDOOR
LIVING SPACE PROOVIDED AT LEVEL 8

UNIT A28 | 44.7 SQM

UNIT A29 | 44.7 SQM

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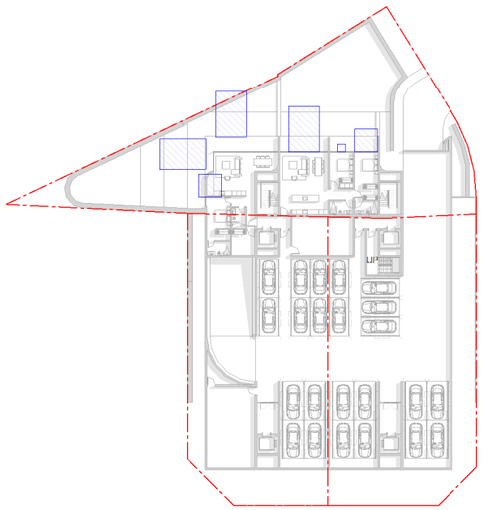
MONK MACKENZIE.

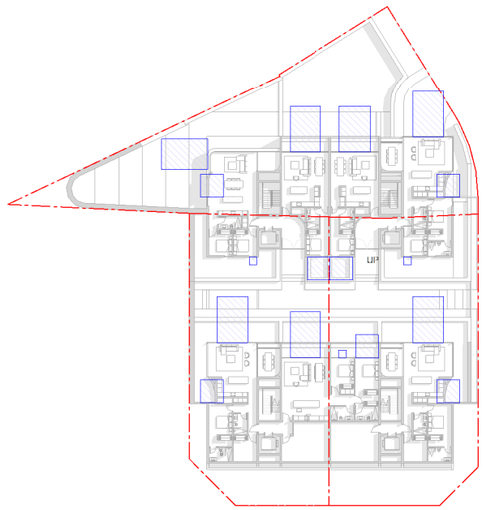
LEVEL 3, 23 O'CONNELL STREET
AUCKLAND, NEW ZEALAND
MONKMACKENZIE.COM
+ 649 600 3335

CLIENT: CLIENT NAME	PROJECT: KEPA ROAD APARTMENTS	LOCATION: 182 & 184 KEPA ROAD , 8 KURAHAUPO STREET, AUCKLAND	CONCEPT DESIGN	SHEET TITLE: PLANNING - OUTDOOR LIVING	ID: 16.11.21 / DATE: / SHEET SIZE: A1 / REVISION: / SHEET NUMBER: RC701

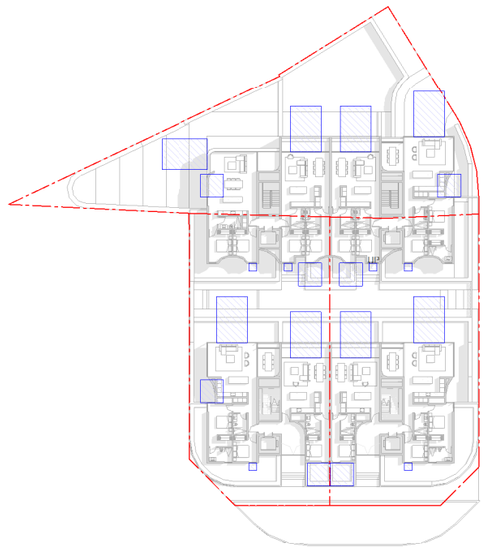
ID REVISION DESCRIPTION DATE



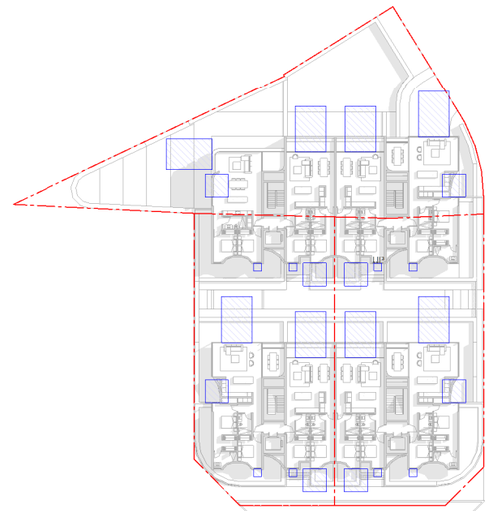
1 | OUTLOOK - BASEMENT
PLAN - SCALE 1 : 400 ON A1 | 1 : 1000 ON A3



2 | OUTLOOK - LEVEL 1
PLAN - SCALE 1 : 400 ON A1 | 1 : 1000 ON A3



5 | OUTLOOK - LEVEL 2
PLAN - SCALE 1 : 400 ON A1 | 1 : 1000 ON A3

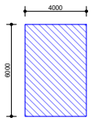


3 | OUTLOOK - LEVEL 3 & LEVEL 4
PLAN - SCALE 1 : 400 ON A1 | 1 : 1000 ON A3

DIAGRAMS DEPICTING PRINCIPAL
DIMENSION OF ROOM OUTLOOK REQUIRED

PRINCIPAL LIVING
ROOM

6 x 4m



PRINCIPAL BEDROOM

3 x 3m

PRINCIPAL HABITABLE
ROOM

3 x 3m

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AUCKLAND, NEW ZEALAND
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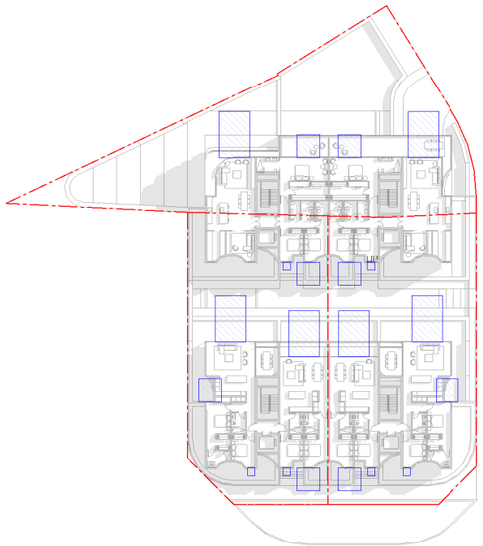
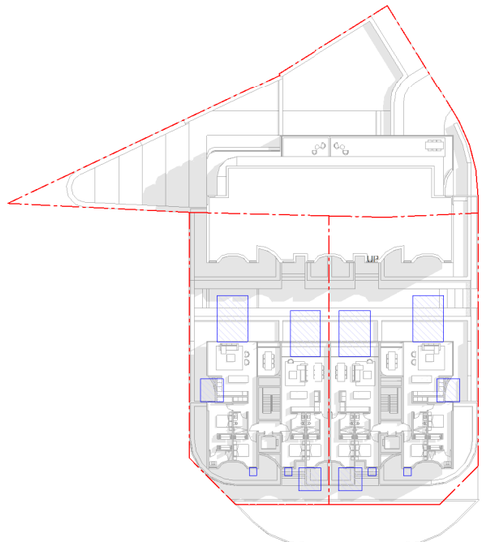
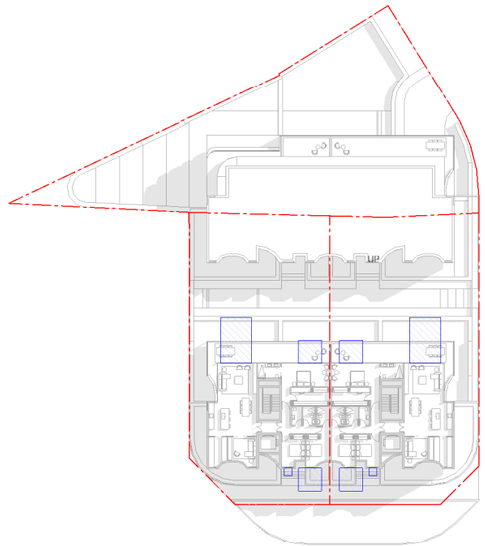
CLIENT NAME CLIENT:	KEPA ROAD APARTMENTS PROJECT:	182 & 184 KEPA ROAD , 8 KURAHAUPO STREET, AUCKLAND LOCATION:	CONCEPT DESIGN ALL CONSULTANTS AND CONTRACTORS TO VERIFY ALL DIMENSIONS, ANGLES, SITE MEASUREMENTS AND CONDITIONS BEFORE ANY FABRICATION OR CONSTRUCTION BEGINS. 	PLANNING - OUTLOOK SHEET TITLE:	ID / REVISION DESCRIPTION / DATE 16.11.21 DATE: SHEET SIZE: A1 REVISION: RC702 SHEET NUMBER:



3 | OUTLOOK - LEVEL 5
PLAN - SCALE 1 : 400 ON A1 1 : 1000 ON A3



1 | OUTLOOK - LEVEL 6 & LEVEL 7
PLAN - SCALE 1 : 400 ON A1 1 : 1000 ON A3

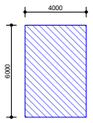


2 | OUTLOOK - LEVEL 8
PLAN - SCALE 1 : 400 ON A1 1 : 1000 ON A3

DIAGRAMS DEPICTING PRINCIPAL
DIMENSION OF ROOM OUTLOOK REQUIRED

PRINCIPAL LIVING ROOM

6 x 4m



PRINCIPAL BEDROOM

3 x 3m

PRINCIPAL HABITABLE ROOM

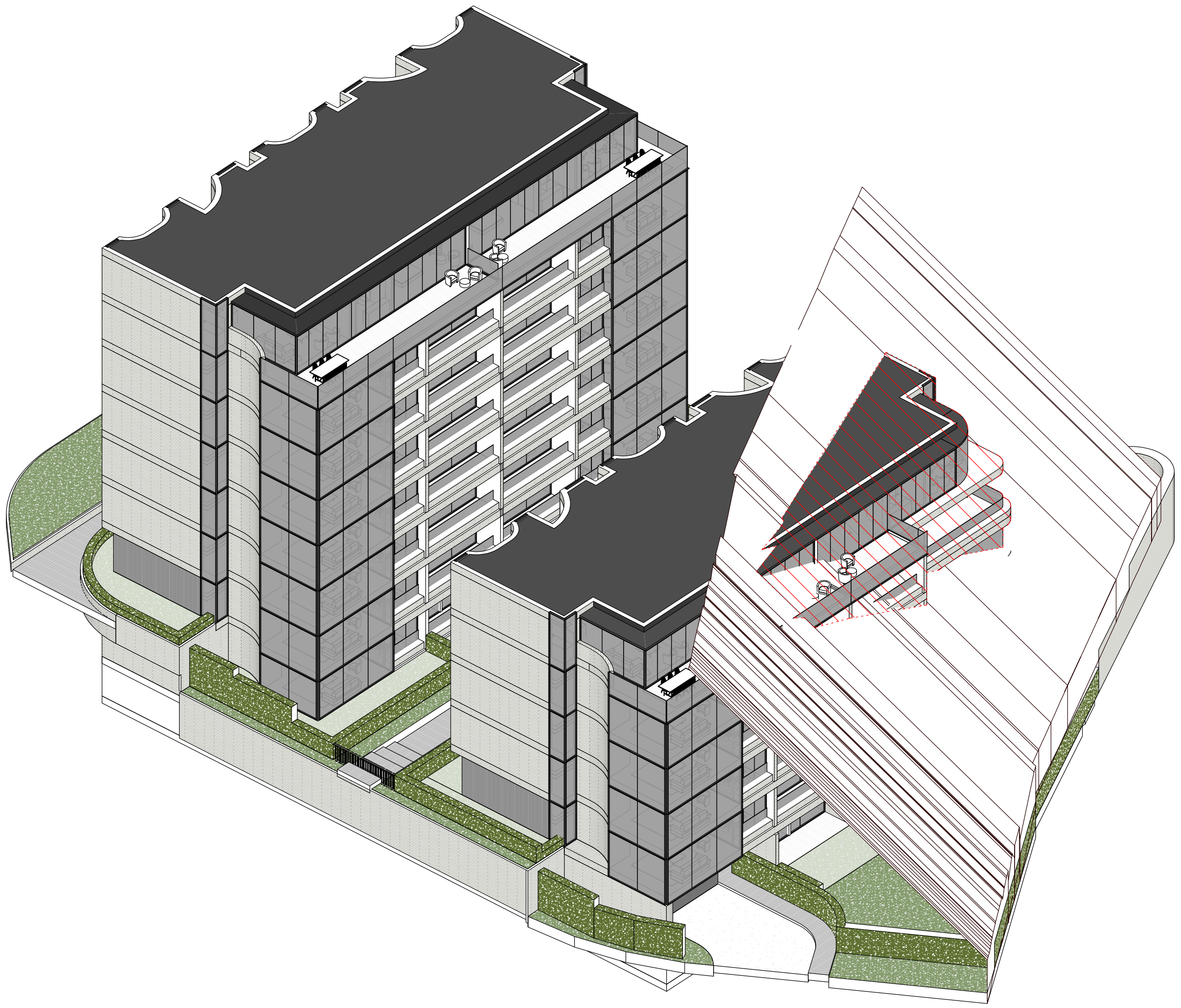
3 x 3m

DRAFT

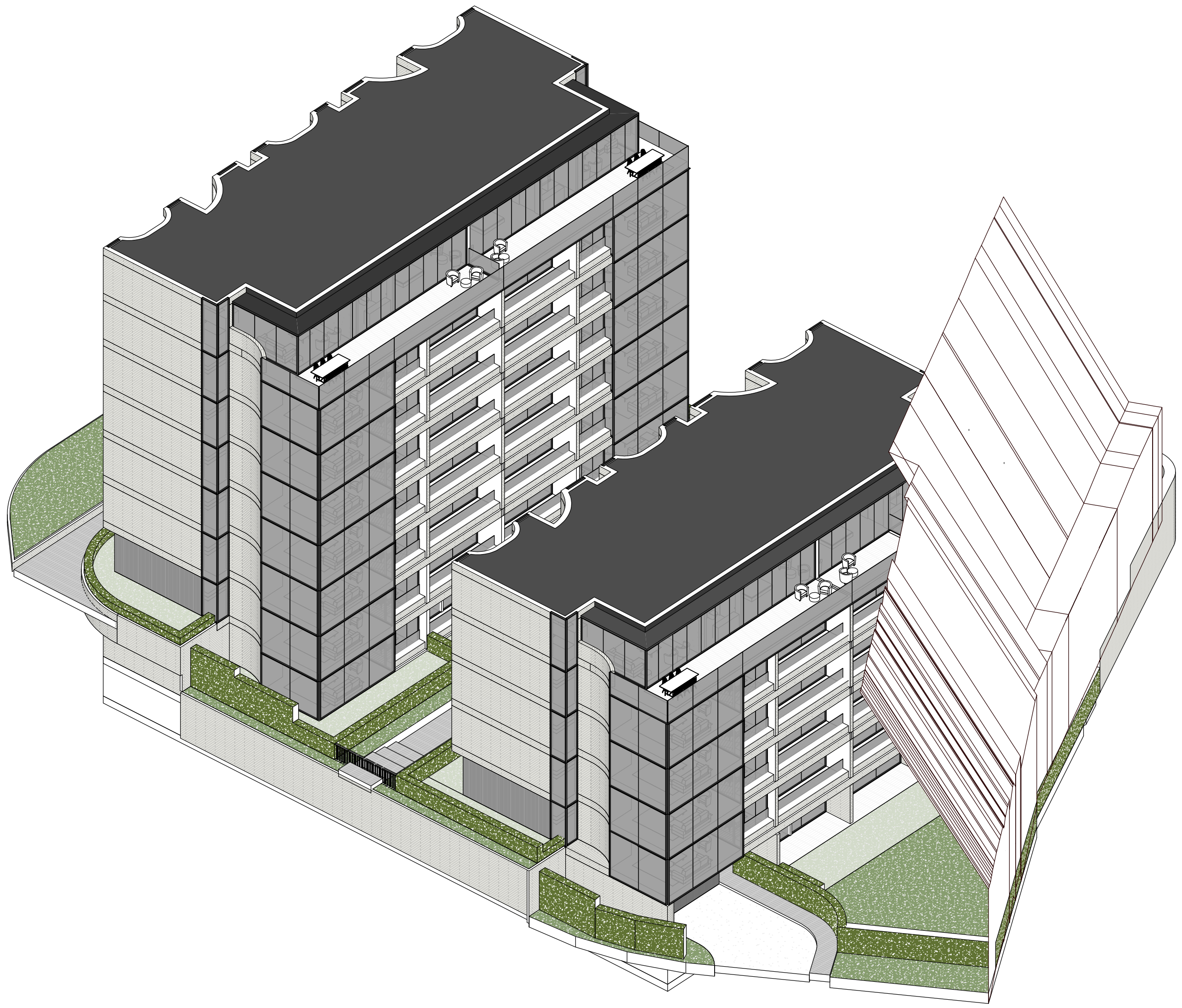
MONK MACKENZIE.

LEVEL 3, 23 O'CONNELL STREET
AUCKLAND, NEW ZEALAND
MONKMACKENZIE.COM
+ 649 600 3335

CLIENT NAME CLIENT:	KEPA ROAD APARTMENTS PROJECT:	182 & 184 KEPA ROAD , 8 KURAHAUPO STREET, AUCKLAND LOCATION:	CONCEPT DESIGN ALL CONSULTANTS AND CONTRACTORS TO VERIFY ALL DIMENSIONS, ANGLES, SITE MEASUREMENTS AND CONDITIONS BEFORE ANY FABRICATION OR CONSTRUCTION BEGINS. 	PLANNING - OUTLOOK SHEET TITLE:	ID / REVISION DESCRIPTION / DATE 16.11.21 DATE: SHEET SIZE: A1 REVISION: RC703 SHEET NUMBER:



2 | PLANNING - STANDARD HIRB
PLAN - SCALE ON A1 / 1 : 1000 ON A3



1 | PLANNING - ALTERNATE HIRB
PLAN - SCALE ON A1 / 1 : 1000 ON A3

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MONK MACKENZIE.

LEVEL 3, 23 O'CONNELL STREET
AUCKLAND, NEW ZEALAND
MONKMACKENZIE.COM
+ 649 600 3335

CLIENT NAME CLIENT:	KEPA ROAD APARTMENTS PROJECT:	182 & 184 KEPA ROAD , 8 KURAHAUPO STREET, AUCKLAND LOCATION:	CONCEPT DESIGN ALL CONSULTANTS AND CONTRACTORS TO VERIFY ALL DIMENSIONS, ANGLES, SITE MEASUREMENTS AND CONDITIONS BEFORE ANY FABRICATION OR CONSTRUCTION BEGINS. COPYRIGHT OF THESE DRAWINGS IS THE PROPERTY OF MONK MACKENZIE ARCHITECTS LTD.	PLANNING - HIRB SHEET TITLE:	16.11.21 DATE: SHEET SIZE: A1	REVISION:	RC705 SHEET NUMBER:

ID REVISION DESCRIPTION DATE

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LEVEL 3, 23 O'CONNELL STREET
AUCKLAND, NEW ZEALAND
MONKMACKENZIE.COM
+ 649 600 3335

CLIENT NAME CLIENT:	KEPA ROAD APARTMENTS PROJECT:	182 & 184 KEPA ROAD , 8 KURAHAUPO STREET, AUCKLAND LOCATION:	CONCEPT DESIGN ALL CONSULTANTS AND CONTRACTORS TO VERIFY ALL DIMENSIONS, ANGLES, SITE MEASUREMENTS AND CONDITIONS BEFORE ANY FABRICATION OR CONSTRUCTION BEGINS. 	VISUALIZATION - 3D MODEL SHOT SHEET TITLE:	ID / REVISION DESCRIPTION / DATE 16.11.21 DATE: SHEET SIZE: A1	REVISION:	RC900 SHEET NUMBER:

DRAFT

MONK MACKENZIE.

LEVEL 3, 23 O'CONNELL STREET
AUCKLAND, NEW ZEALAND
MONKMACKENZIE.COM
+ 649 600 3335

CLIENT NAME CLIENT:	KEPA ROAD APARTMENTS PROJECT:	182 & 184 KEPA ROAD , 8 KURAHAUPO STREET, AUCKLAND LOCATION:	CONCEPT DESIGN ALL CONSULTANTS AND CONTRACTORS TO VERIFY ALL DIMENSIONS, ANGLES, SITE MEASUREMENTS AND CONDITIONS BEFORE ANY FABRICATION OR CONSTRUCTION BEGINS. SHEET TITLE:	VISUALIZATION - 3D MODEL SHOT SHEET TITLE:	ID / REVISION DESCRIPTION / DATE 16.11.21 DATE: SHEET SIZE: A1 REVISION: RC901 SHEET NUMBER:

APPENDIX 2:

Investigation Location Plan

Legend

- Site Boundary
- Hand Auger Boreholes
- Machine Boreholes

Contours

- Contours 025m
- A-A' cross section
- B-B' Cross section

0 5 m 10 m

ENGEO

Produced by **Datanest.earth**

Title: Investigation Location Plan		
Client: Sanctum Projects Ltd		Figure No: 1 Size: A4
Project: 182-184 Kepa Road, Orakei	Drawn: JC	
Date: 18-11-2021	Checked: PF	
Proj No: 19375.000.001	Scale: 1:565	Version: REV0

APPENDIX 3:

Machine Borehole Logs

LOG OF AUGER HA01

Geotechnical Investigation
182-184 Kepa Road
Orakei, Auckland

Client : Sanctum Projects Ltd
Client Ref. : 19375.000.001
Date : 20/10/2021
Hole Depth : 5 m
Hole Diameter : 50 mm

Shear Vane No : 1546
Logged By : JT
Reviewed By : GC
Latitude : -36.86134
Longitude : 174.82568

Depth (m BGL)	Material	USCS Symbol	DESCRIPTION	Elevation (mRL)	Moisture Cond.	Consistency/ Density Index	Shear Vane Undrained Shear Strength (kPa) Peak/Remolded	Scala Penetrometer Blows per 100mm
	TOPSOIL	OL	[TOPSOIL] Clayey SILT with minor rootlets; brown. Low plasticity.	57.0		H	UTP	
0.5	AUCKLAND VOLCANIC FIELD	ML	Clayey SILT with trace sand; orange brown. Low plasticity.	56.5	M	VSt-H	198+	
1.0			0.9 m - Becomes brown with dark brownish orange streaks.				185/49	
			1.1 m - Becomes brown with brownish orange streaks.	56.0			157/68	
1.5							198+	
			1.65 m - Becomes reddish brown with trace medium sand.	55.5			UTP	
2.0		ML	Clayey SILT with trace sand; orange with light grey streaks. Low plasticity.	55.0		VSt-H	175/66	
			2.4 m - Becomes intermixed orange and light grey.				143/54	
2.5		ML	Clayey SILT with minor fine to medium sand; reddish brown. Low plasticity.	54.5		St	68/37	
3.0	PUKETOKA FORAMTION		Clayey SILT; greyish brown. Low plasticity.		W	F	42/28	
			3.3 m - Becomes saturated.	54.0		St	79/37	
3.5		ML					57/34	
				53.5	S		93/42	
4.0							78/41	
		ML	Clayey SILT with trace sand; brown. Low plasticity.	53.0		St		
4.5			Clayey SILT; orange. Low plasticity.		M	H	UTP	
		ML	4.65 m - Becomes grey and saturated.	52.5	S	St	69/35	
5.0			End of Hole Depth: 5 m Termination Condition: Target depth					

Hand auger met target depth at 5 m.
Dip test showed standing groundwater at 3.8 m depth.
N/A = Not Assessed; UTP = Unable to Penetrate.
Elevations obtained from Auckland Council GeoMaps (AUK46).

Coordinates obtained from Arc GIS Collector.

GEOTECH HAND AUGER HA01-05_SP01-05_MBH01-03 - COPY.GPJ NZ DATA TEMPLATE 2.GDT 26/11/21

LOG OF AUGER HA02

Geotechnical Investigation
182-184 Kepa Road
Orakei, Auckland

Client : Sanctum Projects Ltd
Client Ref. : 19375.000.001
Date : 20/10/2021
Hole Depth : 5 m
Hole Diameter : 50 mm

Shear Vane No : 1546
Logged By : JT
Reviewed By : GC
Latitude : -36.86128
Longitude : 174.82567

Depth (m BGL)	Material	USCS Symbol	DESCRIPTION	Elevation (mRL)	Moisture Cond.	Consistency/ Density Index	Shear Vane Undrained Shear Strength (kPa) Peak/Remolded	Scala Penetrometer Blows per 100mm
0	TS	OL	[TOPSOIL] Clayey SILT with minor rootlets; dark brown. Low plasticity.	56.5	M	N/A		
0.5	AUCKLAND VOLCANIC FIELD	ML	Clayey SILT with trace sand; orange brown with trace black streaks. Low plasticity.			St-H	UTP 99/34	
1.0			1.0 m - Becomes intermixed brown and orange brown with black streaks. 1.15 m - Becomes orange brown with trace black streaks.	56.0 55.5		VSt H	110/47 UTP	
1.5			1.75 m - Becomes orange brown with trace light brownish grey streaks.	55.0			UTP UTP	
2.0			Clayey SILT; orange brown with light grey and dark reddish orange streaks. Low plasticity.	54.5		VSt-H	UTP UTP	
2.5			2.6 m - Becomes intermixed light grey and orange.	54.0			198+	
3.0	PUKETOKA FORAMTION		Clayey SILT; greyish brown. Low plasticity. 2.90 m - becomes wet.		W		126/37	
3.5		ML	3.1 m - Becomes greyish brown with black mottles. 3.25 m - Becomes greyish brown.	53.5 53.0		St-VSt	71/21 151/31	
4.0							89/45	
4.5			4.2 m - Becomes saturated.	52.5	S	H	UTP UTP	
5.0			4.85 m - Becomes orange and moist. End of Hole Depth: 5 m Termination Condition: Target depth	52.0	M		UTP	

Hand auger met target depth at 5 m.
Dip test showed standing groundwater at 4.5 m depth.
N/A = Not Assessed; TS = Topsoil; UTP = Unable to Penetrate.
Elevations obtained from Auckland Council GeoMaps (AUK46).

Coordinates obtained from Arc GIS Collector.

LOG OF AUGER HA03

Geotechnical Investigation
182-184 Kepa Road
Orakei, Auckland

Client : Sanctum Projects Ltd
Client Ref. : 19375.000.001
Date : 19/10/2021
Hole Depth : 5 m
Hole Diameter : 50 mm

Shear Vane No : 1546
Logged By : JT
Reviewed By : GC
Latitude : -36.86123
Longitude : 174.82592

Depth (m BGL)	Material	USCS Symbol	DESCRIPTION	Elevation (mRL)	Moisture Cond.	Consistency/ Density Index	Shear Vane Undrained Shear Strength (kPa) Peak/Remolded	Scala Penetrometer Blows per 100mm
0.0	FILL	ML	[FILL] Clayey SILT with minor fine to medium sand; intermixed brown, grey and orange. Low plasticity.			N/A		
0.1	FILL	ML	0.1 m - Becomes brown.				62/30	
0.5	FILL	ML	Clayey SILT with minor fine to medium sand; dark brown with dark grey mottles. Low plasticity.	55.5		St	51/20	
0.4	FILL	ML	0.4 m - Becomes brown.					
1.0	AUCKLAND VOLCANIC FIELD	ML	Clayey SILT; brownish orange. Low plasticity.	55.0	M	H	UTP	
1.1	AUCKLAND VOLCANIC FIELD	ML	1.1 m - Becomes brownish orange with black streaks and trace sand.				UTP	
1.5	AUCKLAND VOLCANIC FIELD	ML		54.5			UTP	
1.8	AUCKLAND VOLCANIC FIELD	ML	1.8 m - Becomes orange.				UTP	
2.0	AUCKLAND VOLCANIC FIELD	ML	Clayey SILT with trace medium sand; reddish brown with orange streaks. Low plasticity.	54.0		H	UTP	
2.1	AUCKLAND VOLCANIC FIELD	ML	Clayey SILT with trace sand; intermixed light grey and orange with black streaks. Low plasticity.			H	UTP	
2.5	AUCKLAND VOLCANIC FIELD	ML		53.5			161/31	
2.6	AUCKLAND VOLCANIC FIELD	ML	2.6 m - Becomes brownish grey and wet.		W	VSt		
2.9	AUCKLAND VOLCANIC FIELD	ML	Clayey SILT with minor fine to medium sand; reddish brown. Low plasticity.					
3.0	PUKETOKA FORAMTION	ML	Clayey SILT; brownish grey. Low plasticity.	53.0		F-St	57/28	
3.5	PUKETOKA FORAMTION	ML		52.5		St-H	47/31	
4.0	PUKETOKA FORAMTION	ML		52.0	S		UTP	
4.4	PUKETOKA FORAMTION	ML	4.4 m - Becomes intermixed grey and orange.				66/34	
4.5	PUKETOKA FORAMTION	ML	4.55 m - Becomes orange.	51.5		H	UTP	
4.9	PUKETOKA FORAMTION	ML	4.9 m - Becomes grey.				UTP	
5.0			End of Hole Depth: 5 m Termination Condition: Target depth	51.0				

Hand auger met target depth at 5 m.
Dip test showed standing groundwater at 3.4 m depth.
N/A = Not Assessed; UTP = Unable to Penetrate.
Elevations obtained from Auckland Council GeoMaps (AUK46).

Coordinates obtained from Arc GIS Collector.

LOG OF AUGER HA04

Geotechnical Investigation
182-184 Kepa Road
Orakei, Auckland

Client : Sanctum Projects Ltd
Client Ref. : 19375.000.001
Date : 19/10/2021
Hole Depth : 5 m
Hole Diameter : 50 mm

Shear Vane No : 1546
Logged By : JT
Reviewed By : GC
Latitude : -36.86102
Longitude : 174.82547

Depth (m BGL)	Material	USCS Symbol	DESCRIPTION	Elevation (mRL)	Moisture Cond.	Consistency/ Density Index	Shear Vane Undrained Shear Strength (kPa) Peak/Remolded
0	T	OL	[TOPSOIL] Clayey SILT with minor rootlets; dark brown. Low plasticity.	54.5	M	N/A	
	AUCKLAND VOLCANIC FIELD	ML	Clayey SILT with trace sand; brown with orange mottles. Low plasticity.				96/34
0.5				54.0			155/35
						St-H	181/78
1.0			0.9 m - Becomes orange brown. 1.0 m - Becomes dark orange brown with trace black streaks.	53.5			UTP
1.5				53.0			UTP
		ML	Clayey SILT with minor fine to medium sand; orange with light grey streaks. Low plasticity.			H	UTP
2.0		ML	Clayey SILT with trace medium sand; brownish red. Low plasticity. 2.15 m - Becomes intermixed orange and light grey.	52.5		VSt-H	
2.5			2.4 m - Becomes brownish red with black streaks,	52.0			
		ML	Clayey SILT; intermixed light grey and orange with trace black streaks. Low plasticity.			H	
		ML	Clayey SILT with minor fine to medium sand; brownish red with red streaks. Low plasticity.			H	
3.0	PUKETOKA FORAMTION		Clayey SILT with trace sand; greyish brown with occasional brownish red laminations. Low plasticity.	51.5	W		54/31
							187/25
3.5				51.0			107/37
			3.7 m - Becomes saturated.				
4.0		ML		50.5		St-H	59/28
							96/31
4.5					S		UTP
			4.6 m - Becomes dark greyish brown with black streaks. 4.7 m - Becomes orange.	50.0			UTP
5.0			End of Hole Depth: 5 m Termination Condition: Target depth				

Scala Penetrometer
Blows per 100mm
2 4 6 8 10 12

Hand auger met target depth at 5 m.
Dip test showed standing groundwater at 3.6 m depth.
N/A = Not Assessed; T = Topsoil; UTP = Unable to Penetrate.
Elevations obtained from Auckland Council GeoMaps (AUK46).

Coordinates obtained from Arc GIS Collector.

LOG OF AUGER HA05

Geotechnical Investigation
182-184 Kepa Road
Orakei, Auckland

Client : Sanctum Projects Ltd
Client Ref. : 19375.000.001
Date : 19/10/2021
Hole Depth : 5 m
Hole Diameter : 50 mm

Shear Vane No : 1546
Logged By : JT
Reviewed By : GC
Latitude : -36.86096
Longitude : 174.82586

Depth (m BGL)	Material	USCS Symbol	DESCRIPTION	Elevation (mRL)	Moisture Cond.	Consistency/ Density Index	Shear Vane Undrained Shear Strength (kPa) Peak/Remolded	Scala Penetrometer Blows per 100mm
0.0	TS	OL	[TOPSOIL] Clayey SILT with minor rootlets; dark brown. Low plasticity.	53.0	M	N/A		
0.5	AUCKLAND VOLCANIC FIELD	ML	Clayey SILT with trace sand; brown with occasional orange mottles. Low plasticity.				102/37	
							UTP	
			0.7 m - Becomes orange brown.	52.5			UTP	
1.0			1.0 m - Becomes intermixed brown and orange brown with black streaks.			VSt-H	UTP	
				52.0			UTP	
1.5							UTP	
				51.5			UTP	
2.0		ML	Clayey SILT with minor fine sand; intermixed reddish brown and orange brown with brownish grey spots. Low plasticity.			H	UTP	
				51.0			UTP	
2.5		ML	Clayey SILT; intermixed light grey and orange. Low plasticity.			St-H	171/68	
				50.5				
3.0			2.85 m to 2.9 m - Encountered layer of clayey SILT with some fine to coarse sand; intermixed black, grey and orange. Low plasticity.		W		123/37	
			2.9 m - Becomes wet.					
			3.0 m - Becomes greyish brown.	50.0			85/34	
3.5	PUKETOKA FORMATION	ML	Clayey SILT with minor fine sand; reddish brown. Low plasticity.		S	F-H	59/30	
			3.5 m - Becomes saturated.	49.5			52/40	
4.0							153/27	
				49.0				
4.5							UTP	
			4.7 m - Becomes orange.	48.5			42/25	
			4.85 m - Becomes grey.					
5.0			End of Hole Depth: 5 m Termination Condition: Target depth					

Hand auger met target depth at 5 m.
Dip test showed standing groundwater at 4.1 m depth.
N/A = Not Assessed; TS = Topsoil; UTP = Unable to Penetrate.
Elevations obtained from Auckland Council GeoMaps (AUK46).

Coordinates obtained from Arc GIS Collector.

LOG OF BORING MBH01

Geotechnical Investigation
182-184 Kepa Road
Orakei, Auckland

19375.000.001

Client : Sanctum Projects Ltd
Date : 19/10/2021
Hole Depth : 19.65 m
Drilling Method : Rotosonic
Drilling Contractor : Prodrill Ltd

Core Diameter : 83 mm
Energy Transfer Ratio : 80.3 %
Logged By/Reviewed By : KW / JC
Latitude : -36.86135
Longitude : 174.82557

Depth (m BGL)	Material	Sample Type	USCS Symbol	DESCRIPTION	Log Symbol	Elevation (mRL)	Water Level	Moisture	Consistency/ Density Index	SPT N-Value	Torvane Shear (kPa)	Total Core Recovery (%)	Notes
0.0	FILL			[ASPHALT]				N/A					
				[CONCRETE]					N/A				
			ML	Clayey SILT with some fine to coarse gravel; brown with orange and black streaks and mottles. Low plasticity.									
0.5			GP	Encountered trace rootlets between 0.25 m and 0.65 m (< 2 mm diameter).									49/25
			ML	Fine to medium GRAVEL; dark brown with red and black clasts. Poorly graded.									
				NO RECOVERY.									
1.0				Clayey SILT with trace fine to medium SAND; intermixed grey and orange. Low plasticity.		57			F				34/17
1.5			ML	Clayey SILT; dark brown. Low plasticity.					H	1/1/2/2/3/4 N=11			
2.0			CH	Silty CLAY with trace fine to medium sand; intermixed grey and orange. High plasticity. Encountered dark brown sand with dark red and black clasts lens' at 2.0 m, 2.05 m, 2.15 m and 2.20 m.		56		M	N/A				UTP
2.5			CH	Silty CLAY; grey and orange. High plasticity. Encountered dark brown sand with dark red and black clasts lens' at 2.37 m, 2.50 m, 2.55 m, 2.60 m and 2.90 m.					St				97/42
3.0	AUCKLAND VOLCANIC FIELD		ML	Clayey SILT; light grey with some light brown streaks. Low plasticity.		55				0/0/0/0/0/0 N=0			N/A
3.5													
4.0						54			S				
4.5								W		0/0/1/0/1/2 N=4			80/11
5.0			ML	4.95 m - encountered sand lens; dark brown with dark red and black clasts.		53			N/A				

Coordinates obtained from Arc GIS Collector.
Dip test showed standing groundwater at 3.95 m depth at 15:30 18/11/2021.
Elevations obtained from Auckland Council GeoMaps (AUK46).

LOG OF BORING MBH01

Geotechnical Investigation
182-184 Kepa Road
Orakei, Auckland

19375.000.001

Client : Sanctum Projects Ltd
Date : 19/10/2021
Hole Depth : 19.65 m
Drilling Method : Rotosonic
Drilling Contractor : Prodrill Ltd

Core Diameter : 83 mm
Energy Transfer Ratio : 80.3 %
Logged By/Reviewed By : KW / JC
Latitude : -36.86135
Longitude : 174.82557

Depth (m BGL)	Material	Sample Type	USCS Symbol	DESCRIPTION	Log Symbol	Elevation (mRL)	Water Level	Moisture	Consistency/ Density Index	SPT N-Value	Torvane Shear (kPa)	Total Core Recovery (%)	Notes
5.5	PUKETOKA FORMATION		CH	Clayey SILT; brownish orange. Low plasticity.									
				Silty CLAY; dark grey. High plasticity. Encountered trace black streaks of amorphous organics between 5.2 m and 5.4 m. 5.4 m - encountered partially decomposed wood fragments (20 mm diameter). 5.55 m - becomes grey with minor orange streaks. Encountered trace black streaks of amorphous organics between 5.65 m and 5.75 m.					S			
6.0						52				0/0/0/0/0/0 N=0			31/14
6.5	EASTCOAST BAYS FORMATION		CH	Silty CLAY; bluish grey with brownish orange streaks. High plasticity.									
7.0						51							
7.5								W		0/0/0/1/2/1 N=4			59/30
8.0				7.85 m - becomes grey.		50			F-St				
8.5													
9.0				8.90 m - encountered 100 mm dark blackish grey layer.		49				2/2/3/4/4/5 N=17			UTP
9.5													
10.0				Highly weathered, intermixed grey and dark grey SILTSTONE; very weak.		48			VW				UTP
				Highly weathered, intermixed grey and dark grey fine SANDSTONE; very weak.					VW				
									VW				

Coordinates obtained from Arc GIS Collector.
Dip test showed standing groundwater at 3.95 m depth at 15:30 18/11/2021.
Elevations obtained from Auckland Council GeoMaps (AUK46).

GEOTECH MACHINE BORING HA01-05_SP01-05_MBH01-03 - COPY.GPJ NZ DATA TEMPLATE 2.GDT 26/11/21

LOG OF BORING MBH01

Geotechnical Investigation
182-184 Kepa Road
Orakei, Auckland

19375.000.001

Client : Sanctum Projects Ltd
Date : 19/10/2021
Hole Depth : 19.65 m
Drilling Method : Rotosonic
Drilling Contractor : Prodrill Ltd

Core Diameter : 83 mm
Energy Transfer Ratio : 80.3 %
Logged By/Reviewed By : KW / JC
Latitude : -36.86135
Longitude : 174.82557

Depth (m BGL)	Material	Sample Type	USCS Symbol	DESCRIPTION	Log Symbol	Elevation (mRL)	Water Level	Moisture	Consistency/ Density Index	SPT N-Value	Torvane Shear (kPa)	Total Core Recovery (%) 25 50 75	Notes
10.5	EASTCOAST BAYS FORMATION			Highly weathered, intermixed grey and dark grey SILTSTONE; very weak.						3/4/5/6/8/11 N=30			
11.0						47			VW				
11.5				Highly weathered, intermixed grey and dark grey fine SANDSTONE; very weak.					VW				
12.0				Highly weathered, intermixed grey and dark grey SILTSTONE; very weak.		46				7/17/50 N=50			
12.5													
13.0						45			VW				
13.5										3/5/25/25 N=50			
14.0				Highly weathered, intermixed grey and dark grey fine SANDSTONE; very weak.		44			VW				
14.5				Highly weathered, intermixed grey and dark grey SILTSTONE; very weak.									
15.0						43			VW	44/6 N=50			
15.5													

Coordinates obtained from Arc GIS Collector.
Dip test showed standing groundwater at 3.95 m depth at 15:30 18/11/2021.
Elevations obtained from Auckland Council GeoMaps (AUK46).

GEOTECH MACHINE BORING HA01-05_SP01-05_MBH01-03 - COPY.GPJ NZ DATA TEMPLATE 2.GDT 26/11/21

LOG OF BORING MBH01

Geotechnical Investigation
182-184 Kepa Road
Orakei, Auckland

19375.000.001

Client : Sanctum Projects Ltd
Date : 19/10/2021
Hole Depth : 19.65 m
Drilling Method : Rotosonic
Drilling Contractor : Prodrill Ltd

Core Diameter : 83 mm
Energy Transfer Ratio : 80.3 %
Logged By/Reviewed By : KW / JC
Latitude : -36.86135
Longitude : 174.82557

Depth (m BGL)	Material	Sample Type	USCS Symbol	DESCRIPTION	Log Symbol	Elevation (mRL)	Water Level	Moisture	Consistency/ Density Index	SPT N-Value	Torvane Shear (kPa)	Total Core Recovery (%)	Notes
16.0	EASTCOAST BAYS FORMATION			Highly weathered, intermixed grey and dark grey fine SANDSTONE; very weak.					VW				
				Highly weathered, intermixed grey and dark grey SILTSTONE; very weak.		42			VW				
				Highly weathered, intermixed grey and dark grey fine SANDSTONE; very weak.					VW				
16.5				Highly weathered, intermixed grey and dark grey SILTSTONE; very weak.					VW	50 N=50			
17.0				Highly weathered, intermixed grey and dark grey fine SANDSTONE; very weak.		41			VW				
17.5				Highly weathered, intermixed grey and dark grey SILTSTONE; very weak.					VW				
18.0						40				40/10 N=50			
18.5				Highly weathered, intermixed grey and dark grey fine SANDSTONE; very weak.					VW				
19.0				Highly weathered, intermixed grey and dark grey SILTSTONE; very weak.		39			VW				
19.5										35/15 N=50			

End of Hole Depth: 19.65 m
Termination: Target depth

Coordinates obtained from Arc GIS Collector.
Dip test showed standing groundwater at 3.95 m depth at 15:30 18/11/2021.
Elevations obtained from Auckland Council GeoMaps (AUK46).

LOG OF BORING MBH02

Geotechnical Investigation
182-184 Kepa Road
Orakei, Auckland

19375.000.001

Client : Sanctum Projects Ltd
Date : 20/10/2021
Hole Depth : 18.05 m
Drilling Method : Rotosonic
Drilling Contractor : Prodrill Ltd

Core Diameter : 83 mm
Energy Transfer Ratio : 80.3 %
Logged By/Reviewed By : KW / JC
Latitude : -36.86102
Longitude : 174.82586

Depth (m BGL)	Material	Sample Type	USCS Symbol	DESCRIPTION	Log Symbol	Elevation (mRL)	Water Level	Moisture	Consistency/ Density Index	SPT N-Value	Torvane Shear (kPa)	Total Core Recovery (%)	Notes
0.0	FILL		GW	Concrete.				N/A	N/A				
				Fine to coarse GRAVEL with some fine to coarse sand; dark brown with orange mottles. Gravel is sub-angular to sub-rounded. Well graded.									
0.5				Core loss. Inferred as above.	NR	53			H				UTP
			ML	Clayey SILT with trace fine to medium sand; orange brown. Low plasticity.									
1.0				Core loss. Inferred as above.	NR			M	N/A				N/A
1.5	AUCKLAND VOLCANIC FIELD		ML	Clayey SILT; intermixed brownish orange and grey with black mottles. Low plasticity.		52				1/1/2/2/2/3 N=9			N/A
2.0									St				N/A
				10 mm sand lens; dark brown, dark red and black. Encountered at 2.1 m, 2.2 m, 2.3 m 2.5 m and 2.55 m.									
2.5			CH	Silty CLAY; grey with brown streaks and black mottles. High plasticity.		51							78/17
3.0									St	0/0/1/0/0/1 N=2			68/7
3.5								W					
4.0			ML	Clayey SILT with trace fine to medium sand and trace fine gravel; brownish grey with black mottles. Low plasticity.		50			St				
4.5			CH	CLAY; grey with minor orange brown streaks. High plasticity.		49			S-St	1/0/0/0/0/0 N=0			N/A
5.0													

Coordinates obtained from Arc GIS Collector.
Dip test showed standing groundwater at 2.2 m depth at 15:30 18/11/2021.
Elevations obtained from Auckland Council GeoMaps (AUK46).

GEOTECH MACHINE BORING HA01-05_SP01-05_MBH01-03 - COPY.GPJ NZ DATA TEMPLATE 2.GDT 26/11/21

LOG OF BORING MBH02

Geotechnical Investigation
182-184 Kepa Road
Orakei, Auckland

19375.000.001

Client : Sanctum Projects Ltd
Date : 20/10/2021
Hole Depth : 18.05 m
Drilling Method : Rotosonic
Drilling Contractor : Prodrill Ltd

Core Diameter : 83 mm
Energy Transfer Ratio : 80.3 %
Logged By/Reviewed By : KW / JC
Latitude : -36.86102
Longitude : 174.82586

Depth (m BGL)	Material	Sample Type	USCS Symbol	DESCRIPTION	Log Symbol	Elevation (mRL)	Water Level	Moisture	Consistency/ Density Index	SPT N-Value	Torvane Shear (kPa)	Total Core Recovery (%)	Notes
5.5			CH	CLAY; grey with minor orange brown streaks. High plasticity.		48							
6.0	PUKETOKA FORMATION									0/0/1/1/1/1 N=4			31/10
6.5						47			S-St				
7.0								W					
7.5			CH	CLAY; grey with some orange brown streaks. High plasticity.		46				1/1/2/2/2/2 N=8			71/11
8.0	EAST COAST BAYS FORMATION								St-H				
8.5						45							82/24
9.0			ML	Clayey SILT: interbedded brown and dark grey. Non-plastic. [Highly weathered, extemely weak SILTSTONE].					H	5/19/17/17/16 N=50			UTP
9.5				Highly weathered interbedded light and dark grey SILTSTONE; very weak.		44			VW				
10.0													

Coordinates obtained from Arc GIS Collector.
Dip test showed standing groundwater at 2.2 m depth at 15:30 18/11/2021.
Elevations obtained from Auckland Council GeoMaps (AUK46).

LOG OF BORING MBH02

Geotechnical Investigation
182-184 Kepa Road
Orakei, Auckland

19375.000.001

Client : Sanctum Projects Ltd
Date : 20/10/2021
Hole Depth : 18.05 m
Drilling Method : Rotosonic
Drilling Contractor : Prodrill Ltd

Core Diameter : 83 mm
Energy Transfer Ratio : 80.3 %
Logged By/Reviewed By : KW / JC
Latitude : -36.86102
Longitude : 174.82586

Depth (m BGL)	Material	Sample Type	USCS Symbol	DESCRIPTION	Log Symbol	Elevation (mRL)	Water Level	Moisture	Consistency/ Density Index	SPT N-Value	Torvane Shear (kPa)	Total Core Recovery (%)	Notes
10.5	EAST COAST BAYS FORMATION			Core loss from SPT.	NR	43			VW	11/15/31/19 N=50			
11.0				Highly weathered, interbedded light grey and dark grey SILTSTONE; very weak.					VW				
				Highly weathered, grey and dark grey fine SANDSTONE; very weak, laminated.					VW				
11.5				Highly weathered, interbedded light grey and dark grey SILTSTONE; very weak.		42			VW				
				Highly weathered, grey and dark grey fine SANDSTONE; very weak, laminated. Interbedded in c.200 mm layers with highly weathered, interbedded light grey and dark grey SILTSTONE; very weak.						9/18/50 N=50			
12.0													
12.5						41							
13.0													
13.5									VW	35/15 N=50			
14.0						40							
14.5													
15.0						39				23/27 N=50			
15.5													

Coordinates obtained from Arc GIS Collector.
Dip test showed standing groundwater at 2.2 m depth at 15:30 18/11/2021.
Elevations obtained from Auckland Council GeoMaps (AUK46).

LOG OF BORING MBH02

Geotechnical Investigation
182-184 Kepa Road
Orakei, Auckland

19375.000.001

Client : Sanctum Projects Ltd
Date : 20/10/2021
Hole Depth : 18.05 m
Drilling Method : Rotosonic
Drilling Contractor : Prodrill Ltd

Core Diameter : 83 mm
Energy Transfer Ratio : 80.3 %
Logged By/Reviewed By : KW / JC
Latitude : -36.86102
Longitude : 174.82586

Depth (m BGL)	Material	Sample Type	USCS Symbol	DESCRIPTION	Log Symbol	Elevation (mRL)	Water Level	Moisture	Consistency/ Density Index	SPT N-Value	Torvane Shear (kPa)	Total Core Recovery (%)	Notes
16.0	EAST COAST BAYS FORMATION			Highly weathered, grey and dark grey fine SANDSTONE; very weak, laminated. Interbedded in c.200 mm layers with highly weathered, interbedded light grey and dark grey SILTSTONE; very weak.		38						25 50 75	
16.5										13/37 N=50			
17.0						37			VW				
17.5						36							
18.0										26/24 N=50			

End of Hole Depth: 18.05 m
Termination: Target depth

Coordinates obtained from Arc GIS Collector.
Dip test showed standing groundwater at 2.2 m depth at 15:30 18/11/2021.
Elevations obtained from Auckland Council GeoMaps (AUK46).

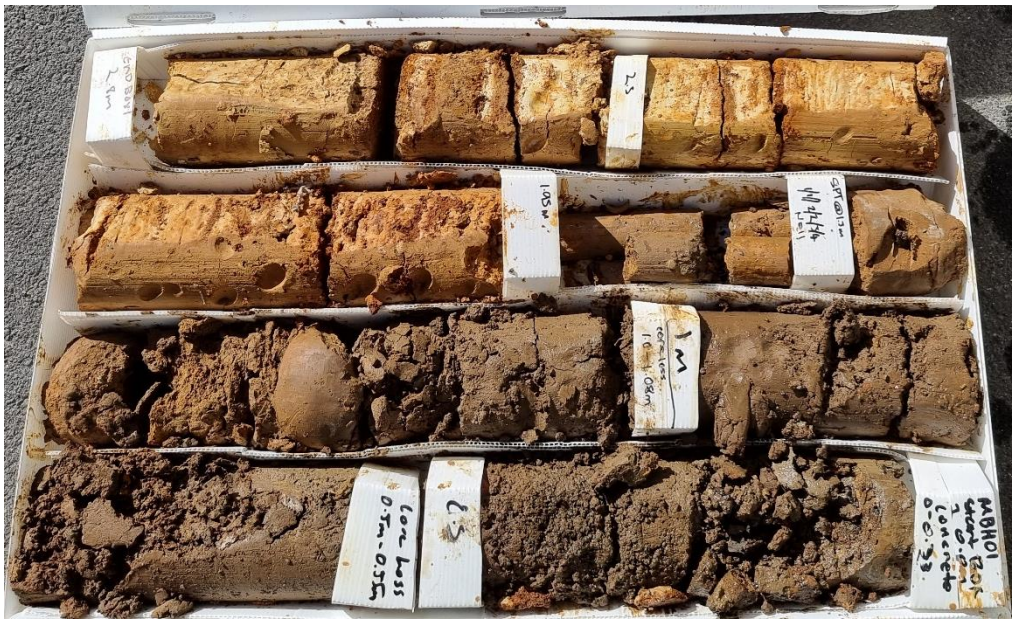


Figure 1: 0.00 m – 2.80 m

Figure 2: 2.80 m – 6.45 m

ENGEO	**MBH01 Core Photos**	**Client:** Sanctum Projects Ltd		
		Project: 182 Kepa Road, Orakei **Date:** 20/10/2021	**Drawn:** JCh **Checked:** KW	**Page No:** 1 **Size:** A4
		Proj No: 19375.000.001	**Scale:** NTS	**Revision:** 01

Figure 3: 6.45 m – 9.75 m

Figure 4: 9.75 m – 13.50 m

ENGEO	**MBH01 Core Photos**	**Client:** Sanctum Projects Ltd		
		Project: 182 Kepa Road, Orakei **Date:** 20/10/2021	**Drawn:** JCh **Checked:** KW	**Page No:** 2 **Size:** A4
		Proj No: 19375.000.001	**Scale:** NTS	**Revision:** 01

Figure 5: 13.50 m – 16.87 m

Figure 6: 16.87 m – 19.50 m

ENGEO	**MBH01 Core Photos**	**Client:** Sanctum Projects Ltd		
		Project: 182 Kepa Road, Orakei **Date:** 20/10/2021	**Drawn:** JCh **Checked:** KW	**Page No:** 3 **Size:** A4
		Proj No: 19375.000.001	**Scale:** NTS	**Revision:** 01

Figure 1: 0.00 m – 3.75 m

Figure 2: 3.75 m – 7.12 m

ENGEO	**MBH02 Core Photos**	**Client:** Sanctum Projects Ltd		
		Project: 182 Kepa Road, Orakei **Date:** 20/10/2021	**Drawn:** JCh **Checked:** KW	**Page No:** 1 **Size:** A4
		Proj No: 19375.000.001	**Scale:** NTS	**Revision:** 01

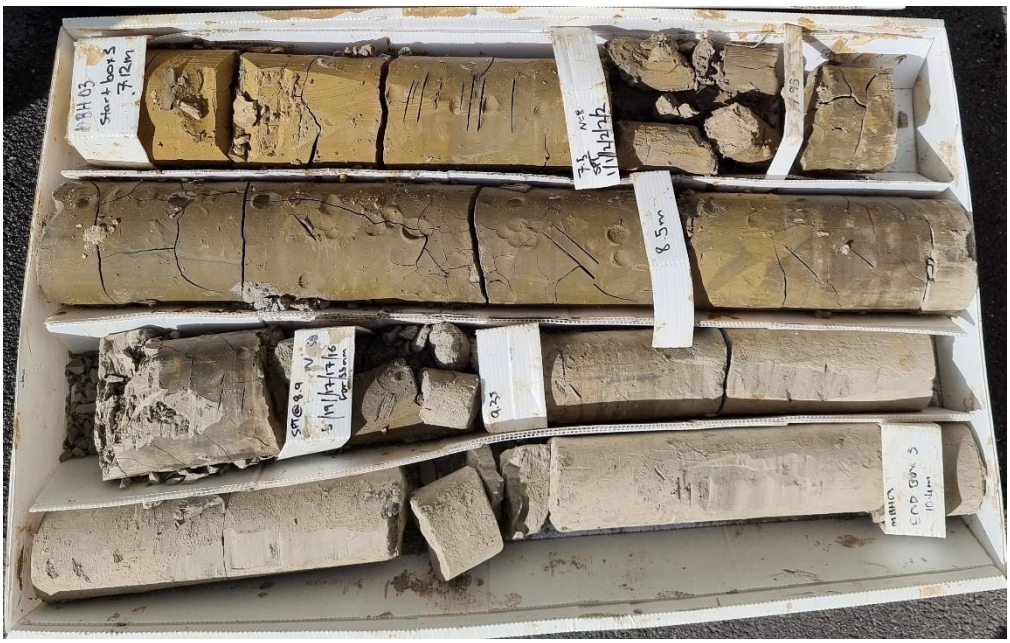


Figure 3: 7.12 m – 10.40 m

Figure 4: 10.40 m – 13.90 m

ENGEO	**MBH02 Core Photos**	**Client:** Sanctum Projects Ltd		
		Project: 182 Kepa Road, Orakei **Date:** 20/10/2021	**Drawn:** JCh **Checked:** KW	**Page No:** 2 **Size:** A4
		Proj No: 19375.000.001	**Scale:** NTS	**Revision:** 01

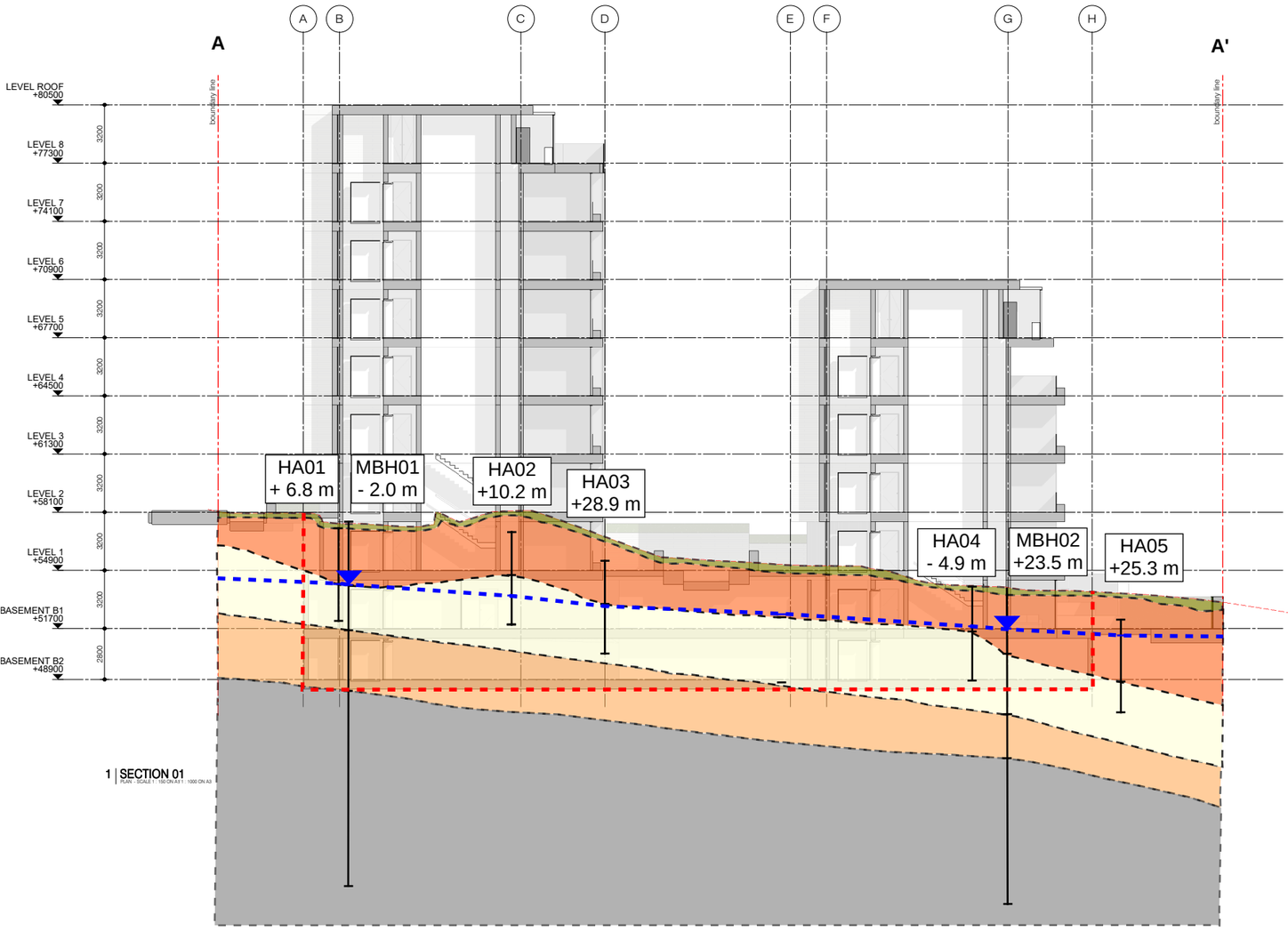
Figure 5: 13.90 m – 17.53 m

Figure 6: 17.53 m – 18.00 m

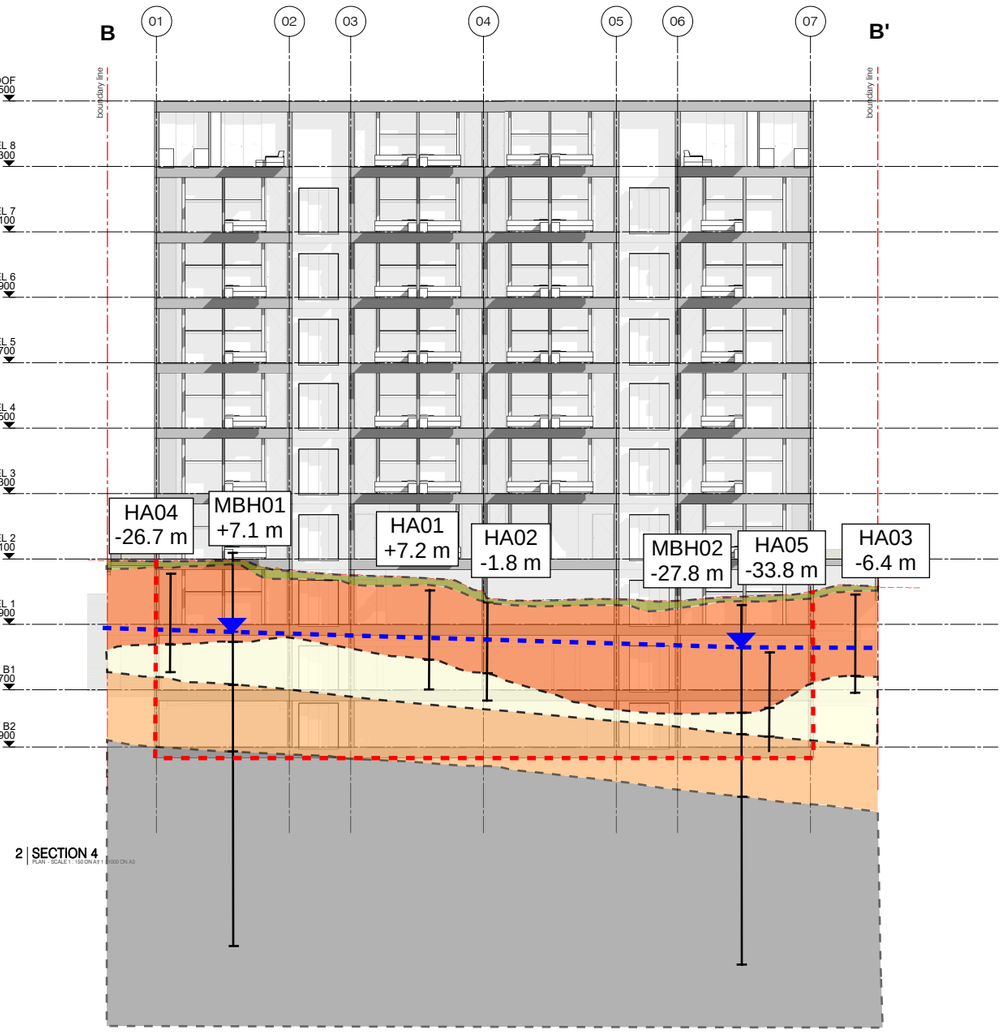
ENGEO	**MBH02 Core Photos**	**Client:** Sanctum Projects Ltd		
		Project: 182 Kepa Road, Orakei **Date:** 20/10/2021	**Drawn:** JCh **Checked:** KW	**Page No:** 3 **Size:** A4
		Proj No: 19375.000.001	**Scale:** NTS	**Revision:** 01

APPENDIX 4:

Interpretive Ground Model



1 | SECTION 01



2 | SECTION 4

Legend:

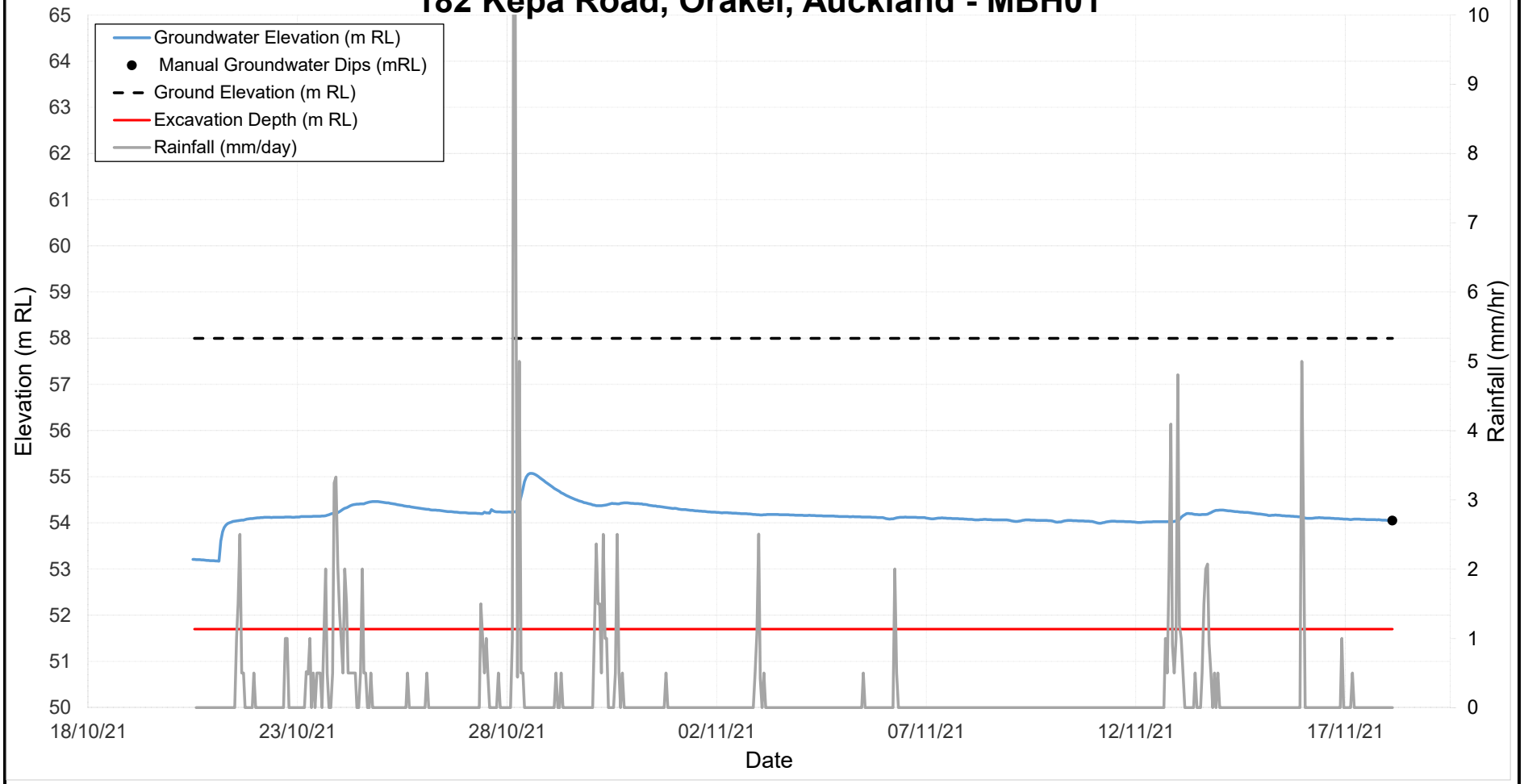
- Topsoil & Undocumented Fill
- Auckland Volcanic Field Tuff
- Puketoka Formation
- East Coast Bays Formation
- Groundwater
- Proposed Cut
- East Coast Bays Formation (Very Weak)
- - out of plane / + in to plane
- 10 m

ENGEO	Geological Cross Sections A-A' (West Facing) B-B' (North Facing)	Client: Sanctum Projects Ltd Project: 182 Kepa Road, Ōrākei Project No: 19375	Figure: **A4**

APPENDIX 5:

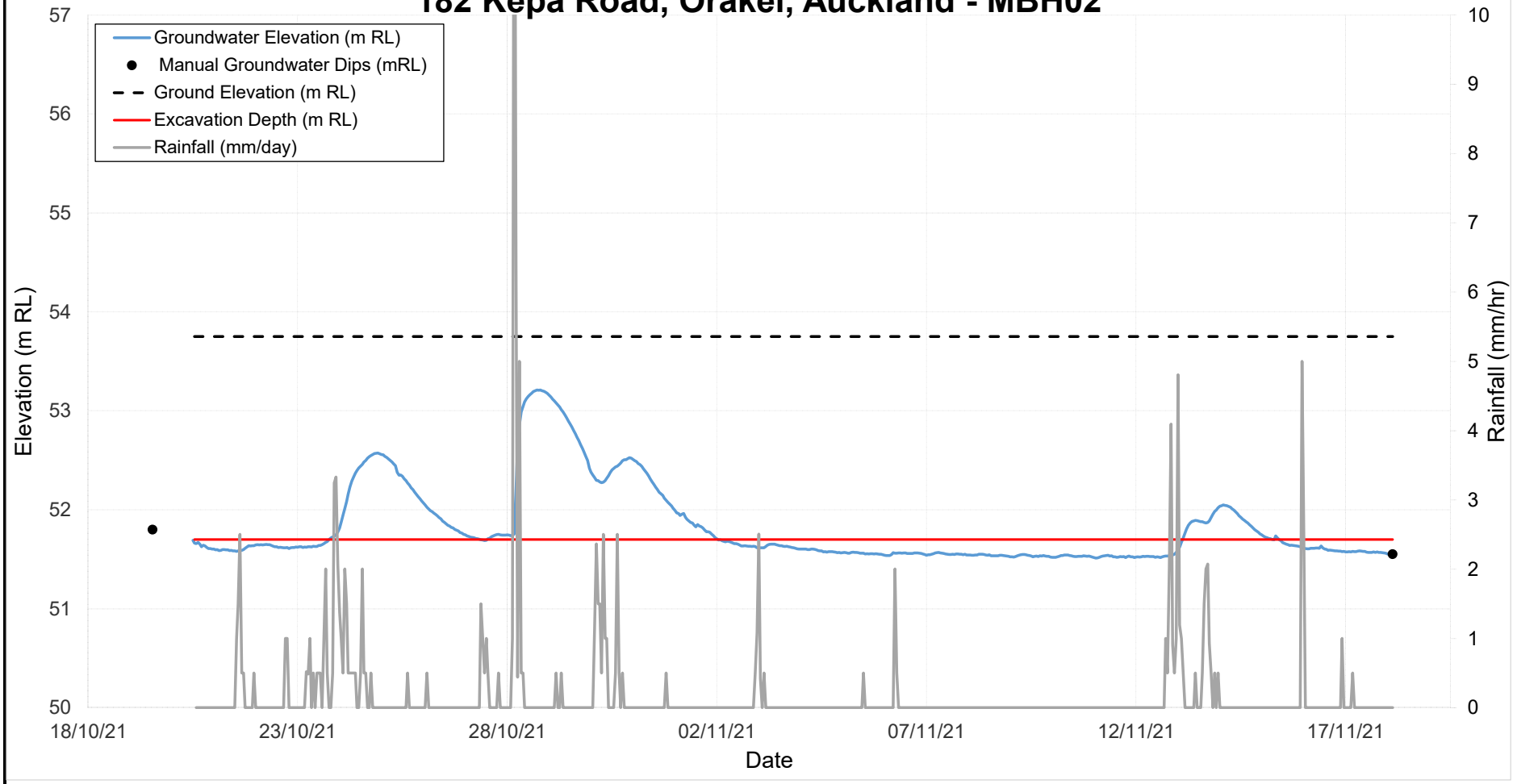
Groundwater Monitoring Data

182 Kepa Road, Orakei, Auckland - MBH01



ENGEO Expect Excellence	**Auckland Office** 8 Greydene Place, Takapuna Auckland 0622 Tel: 09 972 2205	Site Address: **182 Kepa Road** **Orakei, Auckland**	Date: 26/11/2021 Drawn: HP Approved: PF Appendix: 5	Client: Sanctum Projects Ltd Project: Geotechnical Investigation Description: Groundwater Monitoring Oct/Nov 2021 Project No. 19375.000.001	

182 Kepa Road, Orakei, Auckland - MBH02



ENGEO Expect Excellence	**Auckland Office** 8 Greydene Place, Takapuna Auckland 0622 Tel: 09 972 2205	Site Address: **182 Kepa Road** **Orakei, Auckland**	Date: 26/11/2021 Drawn: HP Approved: PF Appendix: 5	Client: Sanctum Projects Ltd Project: Geotechnical Investigation Description: Groundwater Monitoring Oct/Nov 2021 Project No. 19375.000.001	