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18 November 2025

ASHBOURNE DEVELOPMENT

STATION ROAD, MATAMATA

GEOTECHNICAL INVESTIGATION REPORT

Matamata Development Limited C/O Maven Associates

HAM2023-0124AI Rev 3

HAM2023-0124AI		
Date	**Revision**	**Comments**
29 April 2025	A	Initial draft for internal review
6 May 2025	0	Report Issue
22 May 2025	1	Report revised based on latest hydrology assessment and related input
9 October 2025	2A	Internal draft for review following MPDC feedback
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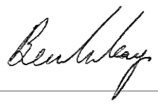
14 November 2025	3A	Internal draft for review following Fast-track Panel feedback
18 November 2025	3	Report revised based on Fast-track Panel feedback

	Name	Signature	Position
Prepared by	Ben McKay		Project Geotechnical Engineer
Reviewed by	Harshad Phadnis		Associate Geotechnical Engineer CMEngNZ, CPEng
Authorised by	Dave Sullivan		Principal Geotechnical Engineer CMEngNZ, CPEng

EXECUTIVE SUMMARY

This report presents the results of geotechnical investigations and geohazards assessment for the proposed Ashbourne Development, which comprises a proposed residential subdivision, retirement living area, 2 solar farms and a future development block located along Station Road, Matamata.

The site is underlain by interbedded sands/silts/clays of the Hinuera Formation, with Pakahi Supergroup/Peria Formation deposits (typically fine grained near upper unit boundary) underlying the Hinuera Formation soils. Two surface exposures of the Pakahi Supergroup/Peria Formation soils were identified on site.

Geotechnical analysis and recommendations for the proposed development are summarised as follows:

- Liquefaction analyses for the proposed development (excluding balance lots) indicate the following liquefaction-induced settlement during a ULS event:
    - Between 10mm to 65mm for IL1 structures.
    - Between <5mm to 120mm IL2 structures.
    - Between 55mm to 150mm for IL3 structures.
- There is low to moderate potential for lateral spreading near the Waitoa River bank under IL1 seismic conditions. There is low to moderate potential for lateral spreading for the Residential and Retirement Living areas under IL2 seismic conditions.

  There is high potential for lateral spreading near the riverbank under IL2 seismic conditions for the Balance Lot/Future Development Block and that will have to be assessed when that block is developed.
- Load induced settlements based on cut and fill levels indicate the following:
    - Single Storey Structures:
        - 10mm to 70mm primary settlement
        - 10mm to 90mm total settlement
    - Aged Care Centre:
        - 40mm primary settlement
        - 55mm total settlement
    - Settlement at the solar farms was negligible.
- The predominantly stiff and non-sensitive silt and clay ashes across the rolling hills (to depths of nominally 2m to 3m) should be suitable for re-use as engineered fills with appropriate moisture conditioning and compaction. Excavation of these materials will be readily achieved with normal earthworks plant, such as scrapers and bulldozers with scoops. Some sensitive silts may be encountered in cuts across the site, which may be susceptible to rapid strength loss when disturbed. These sensitive soils may require significantly more conditioning to remove and compact effectively.

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1 INTRODUCTION

CMW Geosciences (CMW) was engaged by Matamata Development Limited C/O Maven Associates to prepare a Geotechnical Investigation Report for a site located at Station Road, Matamata, which is being considered for the development of a residential subdivision, a retirement village and two solar farms.

The scope of work and associated terms and conditions of our engagement were detailed in our services contracts referenced HAM2023-0124AH VO1 Rev 0 dated 29 April 2025, & HAM2023-0124AM Rev 1 dated 25 September 2025.

This report presents factual data, presents geotechnical assessments, and recommendations for managing geotechnical risks, including possible mitigation measures, to support a Resource Consent application to Matamata-Piako District Council.

2 SITE DESCRIPTION

2.1 Site Location

The site covers multiple legal lots (detailed below), with a combined development area of approximately 113.5Ha. The overall site location is shown in Figure 1:

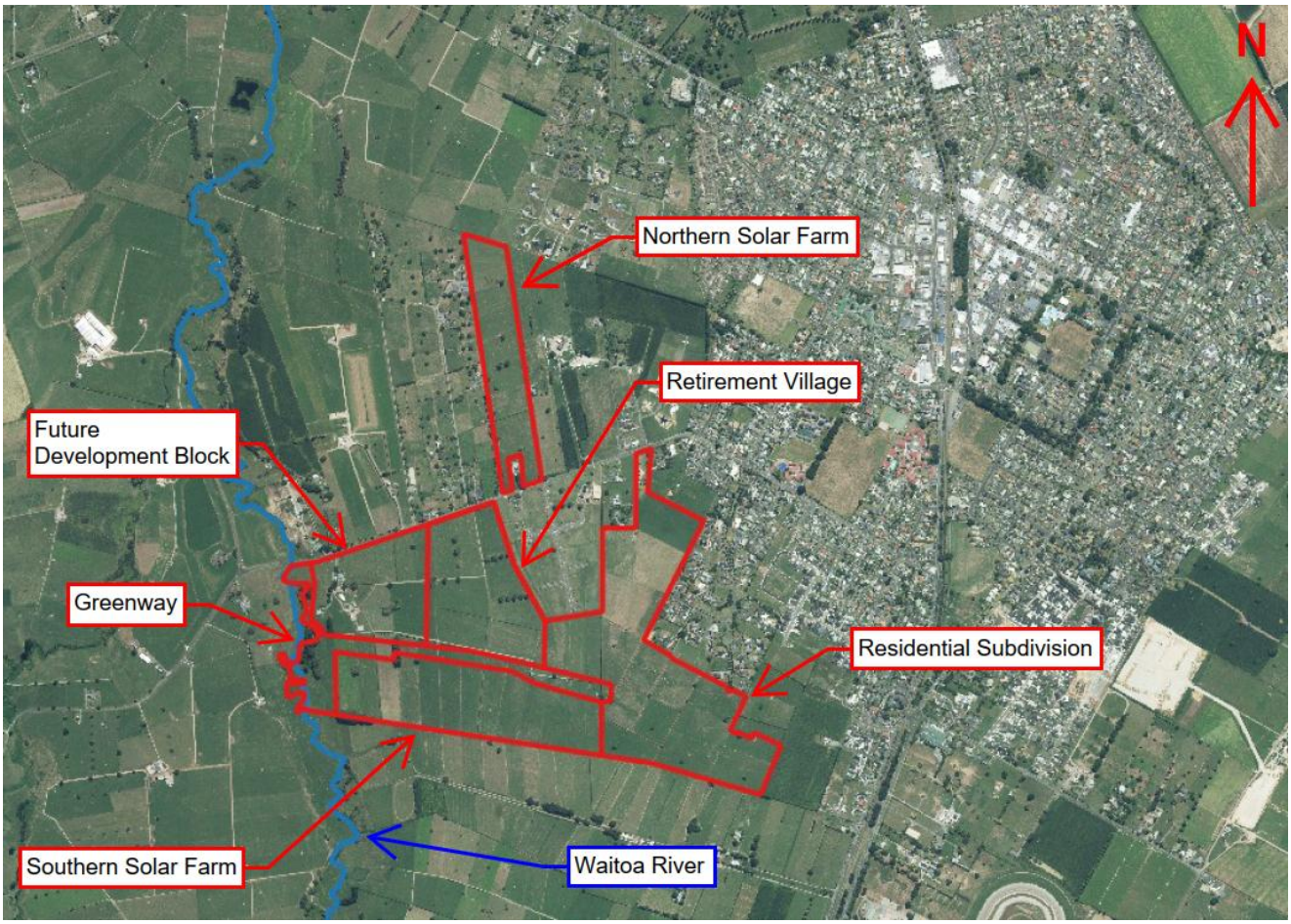

FIGURE 01 Site location and development block layout in relation to the existing Matamata township to the east of site, and the Waitoa River to the west of the site (Background imagery source: LINZ 2025).

- Northern Solar Farm – legally described as LOT 2 DP 567678, with an area of approximately 12.7Ha.
- Southern Solar Farm – legally described as Lot 1 DP 21055, Lot 2 DP 21055 and Lot 3 DPS 14362, with an area of approximately 24Ha.
- Residential Subdivision – legally described as Lot 1 DPS 65481, Lot 5 DP 384886, Lot 204 DP 535395, Lot 4 DP 384886 and Lot 3 DPS 14362. With an area of approximately 42Ha
- Retirement Village – legally described Lot 1 DP 21055, Lot 2 DP 21055 and Lot 3 DPS 14362, with an area of approximately 19.8Ha.
- Balance Lot/Future Development Block - legally described as PT Lot 1 DP 21055 and Lot 2 DP 21055, with an area of approximately 14Ha.

2.2 Landform

The current general landform, together with associated features located within and adjacent to the site is presented on the attached Site Plans as ***Drawing 09.***

The site is dominated by three landform types:

- Low Undulating Hills – Two localised low undulating hill areas appear in the eastern and western parts of the development area, with gentle to moderately steep slopes (10° to 20°) and existing ground levels for the hills between RL72m down to RL60m (at the toe of the western low hill area, Moturiki Datum).
- Upper Terraces – cover the northern, eastern and central parts of the development, with gently undulating landscapes (typically <10°) and existing ground levels ranging from RL69m to RL64m (Moturiki Datum).
- Lower Terraces – located at the toe of the western low undulating hills, the lower terraces cover the western extent of the site near the existing Waitoa River. Site levels are essentially flat (<5°) from the toe of the existing slopes to the banks of the river, with existing ground levels ranging from RL61m to RL59m (Moturiki Datum).

Existing residential developments are located near the centre and the eastern extents of the proposed development area.

Most of the development area is currently utilised as pastoral land, and is predominantly grass covered with sporadic mature trees. Grazing stock was present during previous CMW site visits.

The Waitoa River is located along the western boundary of the development area, adjacent to the lower terraces. The free face of the bank above the river is approximately 1m high, with the river being approximately 2m deep.

Swale drains are currently located within most of the Upper Alluvial Terrace and Lower Terrace.

Historical aerial photographs[1] show that from the beginning of aerial image records in 1943 to present day (2025), the site has been used for agricultural purposes. The levels over the site do not appear to be significantly altered over the photographic record of the site. The following changes can be observed in aerial photography:

- Before 1943, widescale removal of trees and bush has been undertaken over the site, and replacement with pasture has been undertaken. Two dwellings and a farm shed are present near the western end of the site near Station Road and the Waitoa River (in present day locations).
- Between 1943 and 1963, the main farm cattle race through the centre of the site was constructed. Further development of the farm into hedged paddocks has been completed.

[1] http://retrolens.nz licensed by LINZ CC-BY 3.0

- Between 1963 and 1971, the Waitoa River along the western boundary of the site has been altered to create a straighter run of water, with sign of extensive earthworks carried out on the Lower Terrace area.
- No significant changes over the site are apparent from 1971 onwards, with the exception of crop and stock rotations over the range of seasons. From 2007 to present day, adjacent blocks begin to be developed into residential developments.

Refer to ***Appendix B*** for selected aerial photos of the site.

3 PROPOSED DEVELOPMENT

The drawings provided by Barkers and Associated Ltd (B&A) (ref. Ashbourne Substantive Application – Fast Track Approvals Act, dated 6 June 2025) detail the layout for the proposed development at the site. We understand the development will be across several areas as presented in ***Figure 02*** and ***Appendix A,*** and detailed below:

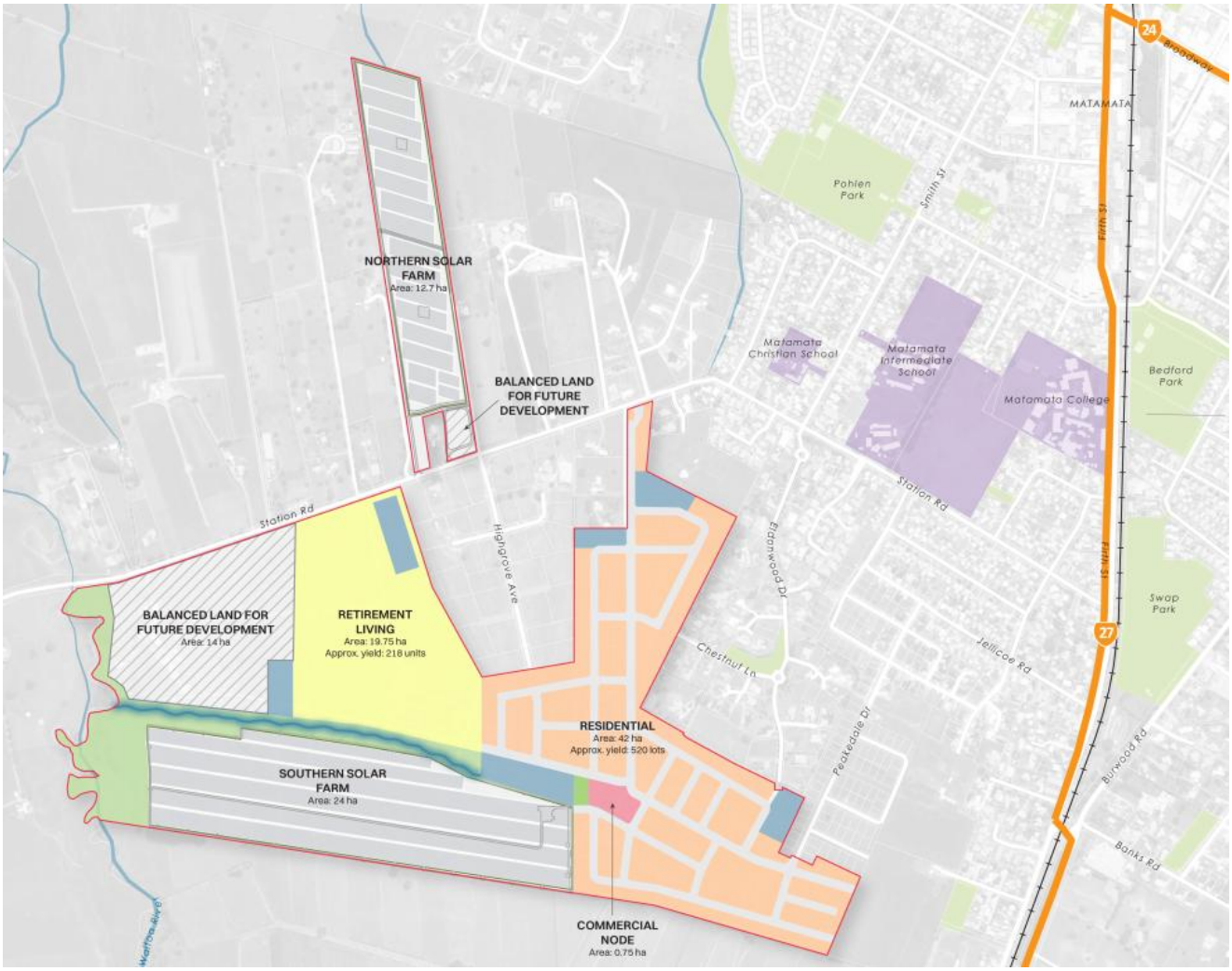

FIGURE 02 Overall masterplan for the Ashbourne Development Area at time of preparing report (Source: Barkers and Associated)

- The Residential Area will have lots that range from 350m^2 to 800m^2, and will have a commercial area, and associated roads and infrastructure. Cuts up to 3.6m deep and fills up to 2.6m thick are proposed in the Residential Subdivision.

- The Retirement Living Area will consist of 218 single storey villas and health care facilities. A green way is proposed to collect stormwater runoff from the residential subdivision and the retirement village. The greenway is oriented in a general east to west direction along the southern boundary and flows towards the Waitoa River to the west. Two stormwater ponds are proposed for this development block - one in the northeastern corner, and another in the southwestern corner. A maximum cut of 3.4m and fill of 2.8m is proposed at the retirement village.
- The Northern Solar Farm comprises of 156 solar panel strings, with 3 transformers placed throughout the site. Fill thicknesses are generally <0.5m with maximum fill thickness of 1.5m, and cut depth down to 0.5m.
- The Southern Solar Farm comprises of 110 solar panel strings, with 2 transformers placed throughout the site. A water treatment plant servicing the nearby Residential/Retirement Living Areas is located near the eastern boundary. Fill thicknesses are generally <0.5m with maximum fill thickness of 1.5m, and cut depth down to 0.5m.

4 INVESTIGATION SCOPE

4.1 Previous Investigations

CMW have previously conducted investigations and issued the following reports below:

- Geotechnical Investigation Report. 35-39 Peakedale Road, Station Road, Matamata. CMW Ref HAM2023-0124AB Rev 1. Dated 12 December 2023.
- Preliminary Geotechnical Investigation Report. Proposed Residential Subdivision and Solar Farm. Station Road, Matamata. CMW Ref. HAM2023-0124AE Rev 0. Dated 5 July 2024.

Fieldwork was carried out under the direction of CMW Geosciences in general accordance with the NZGS specifications[2] and logged in accordance with NZGS guidance[3]. The scope of fieldwork to support Fast Track Consent Application completed was as follows:

- Undertook a walkover survey of the site to assess the general landform, site conditions and adjacent structures / infrastructure;
- An on-site services search was carried out by a specialist contractor to identify the presence of any underground obstructions or hazards prior to the field investigation program commencing;
- 33 hand auger boreholes, denoted HA23-01 to HA23-08, HA24-09 to HA24-25 and HA24-26 to HA24-33, were drilled using a 50mm diameter auger to target depths of up to 5.0m below existing ground levels to visually observe the near surface soil profile and to facilitate in-situ permeability / vane shear strength testing. Engineering logs of the hand auger boreholes, together with peak and remoulded vane shear strengths are presented in ***Appendix C***;
- Dynamic cone (Scala) penetrometer (DCP) tests were carried out adjacent to the hand auger borehole to depths of up to 5m to provide soil density profiles, for use as a comparison with the CPT data and to provide a subgrade CBR value for pavement design purposes. These were not completed for SOA24-13 to SOA24-24. Graphical results of the DCP testing are presented on the borehole logs in ***Appendix C***;
- 24 in-situ falling head permeability tests were completed in the open standpipe piezometers denotated SOA23-01 SOA23-04, SOA24-05 to SOA24-12 and SOA24-13 to SOA24-24. Results of the permeability tests are presented in ***Appendix C***;

[2] NZ Geotechnical Society (2017) NZ Ground Investigation Specification, Volume 1 – Master Specification.
[3] NZ Geotechnical Society (2005), Field Description of Soil and Rock, Guideline for the field classification and description of soil and rock for engineering purposes.

- 12 Cone Penetrometer Tests (CPT) and four seismic CPTs denoted CPT23-01 to CPT23-03b, CPT24-04 to CPT24-10 and SCPT24-01 to SCPT-04 respectively, were pushed to depths ranging between 4.06m to 30m to define the ground model at depths. Results of the tests are presented as traces of tip resistance (q_c), friction resistance (f_s) and friction ratio are presented in ***Appendix C***;

The approximate locations of the respective investigation sites referred to above are shown on ***Drawing 09***. Test locations were recorded using handheld GPS.

4.2 Latest Investigations (Late 2025)

Additional investigations were performed in late 2025 to support the Fast Track resource consent application.

Fieldwork was carried out under the direction of CMW Geosciences in general accordance with the NZGS specifications[4] and logged in accordance with NZGS guidance[5]. The fieldwork completed was as follows:

- Undertook a walkover survey of the site to assess the general landform, site conditions and adjacent structures / infrastructure;
- An on-site services search was carried out by a specialist contractor to identify the presence of any underground obstructions or hazards prior to the field investigation program commencing;
- 10 hand auger boreholes, denoted HA25-01 to HA25-10, were drilled using a 50mm diameter auger to target depths of up to 4.5m below existing ground levels to visually observe the near surface soil profile and to facilitate in-situ vane shear strength testing. Engineering logs of the hand auger boreholes, together with peak and remoulded vane shear strengths are presented in ***Appendix D***;
- Dynamic cone (Scala) penetrometer (DCP) tests were carried out adjacent to the hand auger borehole to depths of up to 5m to provide soil density profiles, to provide a subgrade CBR value for pavement design purposes. Graphical results of the DCP testing are presented on the borehole logs in ***Appendix D***;
- 2 machine auger boreholes, denoted BH25-01 and BH25-02, were drilled using a 90mm diameter HQ drill string to target depths of up to 20m below existing ground levels to visually observe the near surface soil profile and to facilitate in-situ SPT strength testing. Engineering logs of the machine auger boreholes, together with standard penetration test results, are presented in ***Appendix E***;
- 10 Cone Penetrometer Tests (CPT) denoted CPT25-01 to CPT25-10, were pushed to depths ranging between 9.9m to 15m to define the ground model. Results of the tests are presented as traces of tip resistance (q_c), sleeve friction resistance (f_s) and porewater pressure are presented in ***Appendix F***.

The approximate locations of the respective investigation sites referred to above are shown on ***Figure 09***. Test locations were recorded using handheld GPS.

5 GROUND MODEL

5.1 Published Geology

Published geological maps[6] for the wider area depict the regional geology of the site to comprise of soils belonging to five different units, as shown in Figure 03, which comprise:

[4] NZ Geotechnical Society (2017) NZ Ground Investigation Specification, Volume 1 – Master Specification.
[5] NZ Geotechnical Society (2005), Field Description of Soil and Rock, Guideline for the field classification and description of soil and rock for engineering purposes.

[6] 1:250 000 Geological Map of New Zealand (QMAP), GNS Science

- Pakihi Supergroup Early and Middle Plesitocene River Deposits which comprises poorly to moderately sorted gravel with minor boulders, sand and silt underlying terraces; includes minor fan deposits and loess.
- Peria Formation Middle Pleistocene River Deposits which comprises poorly to moderately sorted gravel with minor boulders, sand and silt underlying terraces; includes minor fan deposits and loess.
- Hinuera Formation Late Pleistocene River Deposits which comprises cross-bedded pumice sand, silt and gravel with interbedded peat.
- Pakihi Formation Holocene River Deposits which comprises alluvial gravel, sand, silt, mud and clay with local peat, includes modern river beds.

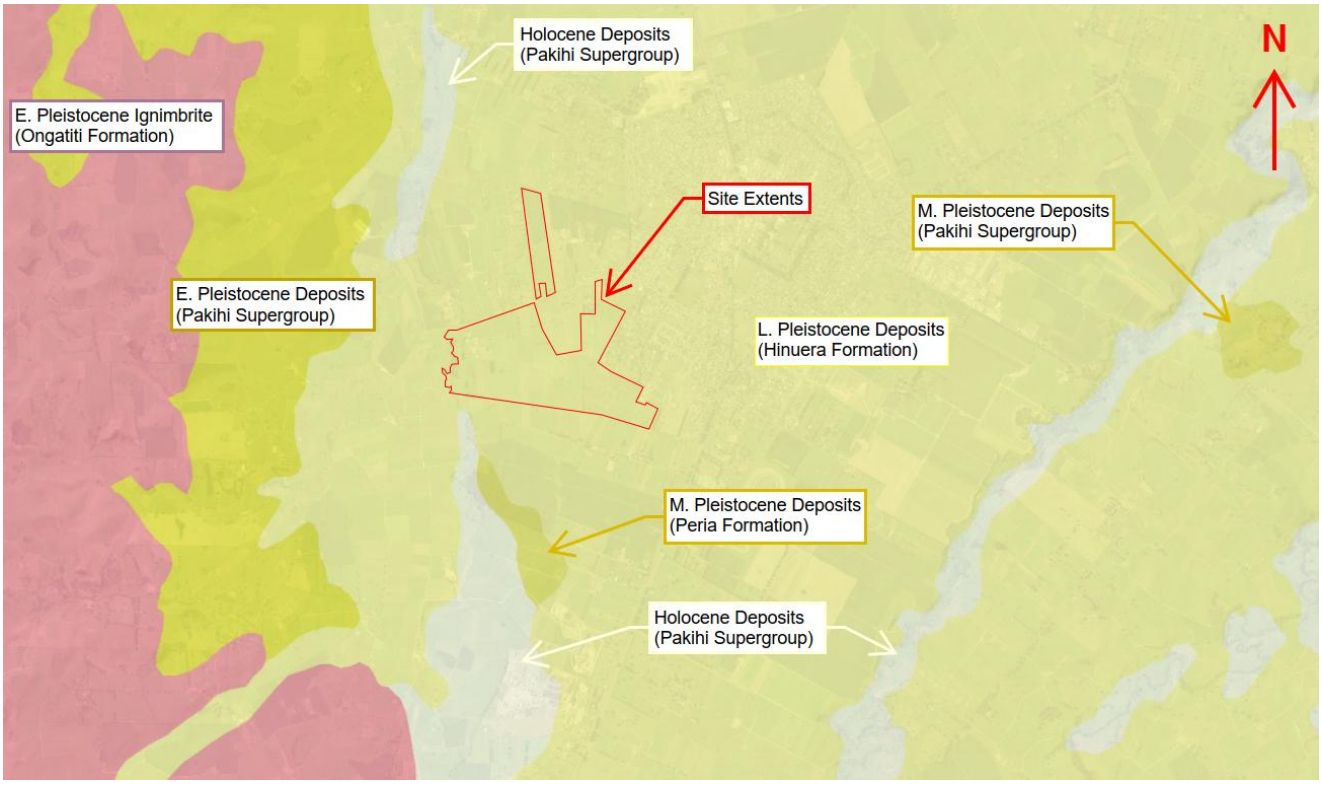

FIGURE 03 Regional geology (Source: B QMAP GNS Science[7])

5.2 Stratigraphic Units

The ground conditions encountered and inferred from the investigations were generally consistent with the published geology for the area and can be generalised according to the following subsurface sequences.

- Low Hills Geomorphology – comprise a surficial layer of recent alluvial/colluvial silt/clay mixtures that are typically <1.5m thick, underlain by Pakihi Supergroup/Peria Subgroup Middle Pleistocene River Deposits (upper boundary at a range of levels between RL66.3m and RL71m) to the extent of testing (<30m depth).
- Upper Terrace Geomorphology – comprise a surficial layer of recent alluvial/colluvial silt/clay mixtures that are typically <1.5m thick, underlain by interbedded Hinuera Formation silts/sands with minor clay. The upper boundary of the Pakihi Supergroup/Peria Subgroup Middle Pleistocene River Deposits was encountered underlying the Hinuera Formation across the site at a range of levels between RL40.8m and RL57.8m during investigations and was not picked up in all test locations.

[7] 1:250 000 Geological Map of New Zealand (QMAP), GNS Science

- Lower Terrace Geomorphology – comprise recent Holocene deposits of the Pakihi Supergroup with silt and sand mixtures with interbedded clay beds down to a depth of 6.5m bgl (RL57m), before transitioning into the older Pakihi Supergroup/Peria Subgroup Middle Pleistocene River Deposits.

The distribution of the various units encountered is presented in the appended Geological Features Plan and Section presented in ***Drawings 10 and 11***.

5.3 Groundwater

Groundwater data was obtained from borehole logs with levels reported on investigation logs when encountered at the time of testing.

Willbridge Gilbert Aztec Ltd (WGA) performed a hydrogeological assessment, including identifying the groundwater regimefor the site. The maximum winter piezometric surface projected across the site has been presented in ***Appendix G***.

5.4 Paleochannels

Up until approximately 20,000 years ago, the Waikato River ran through the Hauraki Plains area. The river exhibited significant fluvial reworking, and the area has been known to have abandoned river courses infilled with a sequence of alluvial sediments, including fine to coarse sands, silts, and gravels derived from high-energy fluvial processes, as well as localised buried organic soil deposits.

Stratigraphic and geomorphological evidence across the site indicates repeated channel avulsion and lateral migration, influenced by variations in sediment supply, discharge, and base level.

6 GEOHAZARDS ASSESSMENT

6.1 Context

Section 106 of the Resource Management Act (RMA) requires an assessment of the risk from natural hazards to be carried out when considering the granting of a subdivision consent. S106 RMA specifically states that the assessment must consider the combined effect of the natural hazard likelihood and material damage to land or structures (consequence).

The following sections of this report provide an assessment of the geohazards relevant to this site and provide the basis for the Natural Hazards Risk Assessment presented in ***Appendix H.***

6.2 Seismicity

Reference to NZGS Guidance[8] was made to determine peak horizontal ground acceleration or PGA (a_{max}) values based on the following design life and importance levels of structures in accordance with the New Zealand Building Code:

- Residential/retirement dwellings: 50-year design life, importance level IL2
- Aged Care Facility Buildings: 50-year design life, importance level IL3
- Solar panel frames/transformers: 50-year design life, importance level IL1
- Balance lot/Future development area: 50-year design life, importance level IL2

The PGA values for the serviceability limit state (SLS1) and ultimate limit state (ULS) earthquake scenarios are as follows:

[8] NZ Geotechnical Society publication "Earthquake geotechnical engineering practice, Module 1: Overview of the standards", (March 2016).

TABLE 2 Design Peak Ground Acceleration (PGA) for Various Limit States

Limit State	AEP	PGA(g)	$Magnitude_{eff}$
IL1 Structures, 50-year Design Life			
SLS1	-	-	-
ULS	1/100	0.14	5.9
IL2 Structures, 50-year Design Life			
SLS1	1/25	0.07	5.9
ULS	1/500	0.28	5.9
IL3 Structures, 50-year Design Life			
SLS1	1/25	0.07	5.9
ULS	1/1,000	0.36	5.9

6.3 Fault Rupture

Published active fault mapping by GNS indicates the nearest active fault to the site is the Kerepehi Fault. This fault is approximately 5km east of the site. The Kerepehi Fault has a recurrence interval of between 2,000 years to 3,500 years. See Figure 04 below illustrating the location of the site in relation to the nearest fault traces.

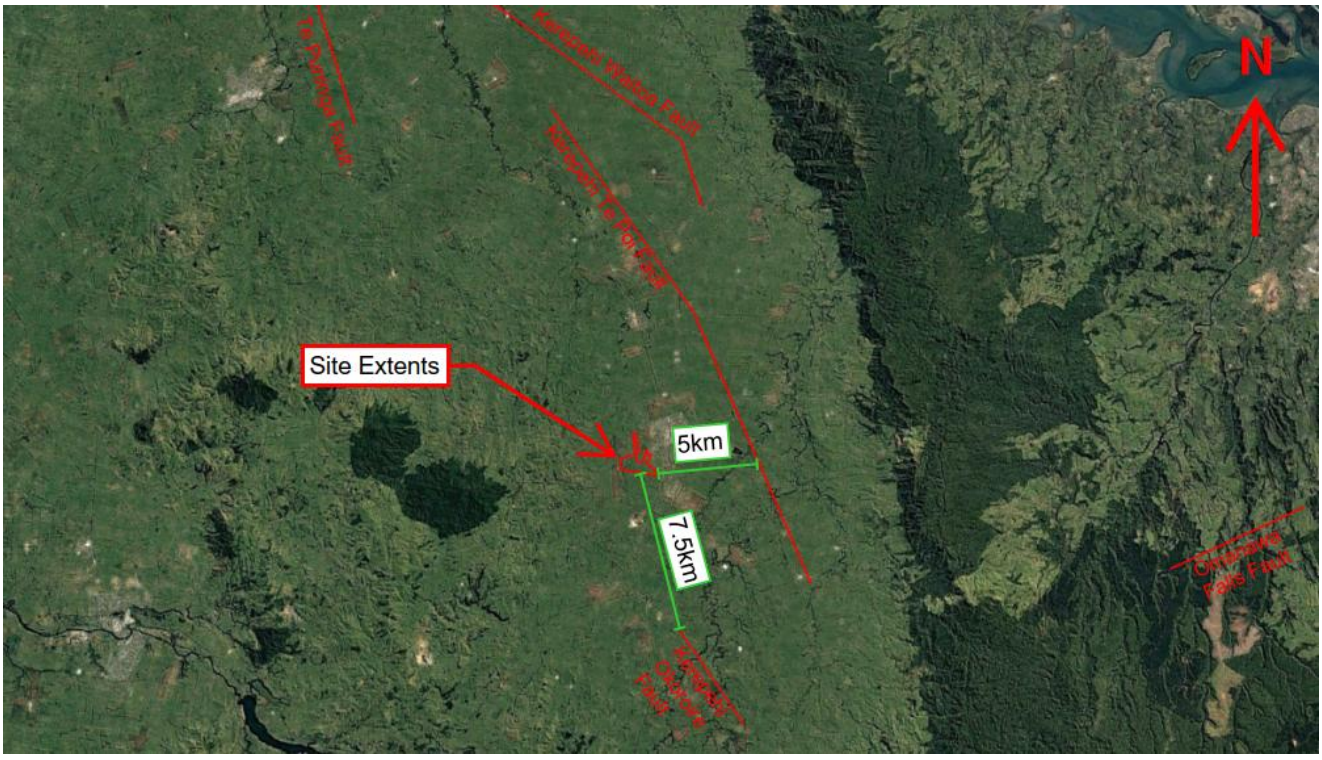

FIGURE 04 Active fault mapping near the site (Source: Community Fault Database API for Google Earth Pro, GNS Science[9])

[9] 1:250 000 Geological Map of New Zealand (QMAP), GNS Science

A recent study[10] indicated that "scarps across the Hinuera surface range from 1m to 8m". Fault scarps were not observed at the site.

Digital elevation models (DEMs) of the wider Matamata area were also assessed. Observing the DEMs under variable light angles, we can make the following observations:

- The existing Kerepehi Fault stands out as a prominent feature over the eastern side of the output data, on an approximate NNW strike angle.
- Older alluvial deposits occur throughout the plain area, with terraces having little relief compared to the Kerepehi Fault, and running in a range of orientations (some parallel to the Kerepehi Fault).
- Present day rivers/streams have been deeply incised into the alluvial plains immediately adjacent to the western boundary of the site, and approximately 2.5km to the south-east of the site. Stream banks are formed on variable grades which are typically gently to moderately sloped.
- The Kerepehi Fault is shown crossing older alluvial deposits. However, the fault trace has been eroded away by the present day river/stream gullies.

Based on these observations, we cannot infer any fault traces across the proposed development site, unless they exist buried under the alluvial deposits (deposited up to 0.523Ma before present day). This means that if fault traces are below the alluvial deposits at the site, they would be older than Holocene age and therefore would not be active faults.

Annotated copies of the digital elevation model are included in ***Appendix I***.

6.4 Liquefaction

6.4.1 Methodology

In accordance with MBIE/NZGS guidance[11] the liquefaction susceptibility of the soils at this site was assessed with respect to geological age and compositional (soil fabric and density) criteria, based on the following assumptions:

- Saturated soils below the winter groundwater table interpreted by WGA (refer Section 5.3) were modelled as being susceptible to liquefaction.
- A site-specific assessment was carried out using the seismic CPTs to account for soil microstructure in accordance with Robertson[12]. Results in ***Appendix J*** suggest that "no soil microstructure can be justified" and therefore no strength gain factor has been applied.
- Soils are also classified with respect to their grain size and plasticity to assess liquefaction susceptibility. For this project, a cut-off threshold soil behaviour type index value (I_c) of 2.6 was used to distinguish between liquefiable (I_c<2.6) and non-liquefiable (I_c>2.6) soils.
- Specific liquefaction analyses were undertaken for IL1 and IL2 structures, using the software package CLiq using the Boulanger and Idriss (2014) method. The cyclic stress ratio (CSR), being a function of the earthquake magnitude for the design return period event, was compared to the cyclic resistance ratio (CRR), being a function of the CPT cone resistance (q_c) and friction ratio (F_r).
- Free-field liquefaction induced settlements were determined in accordance with Zhang et al. (2002). With respect to liquefaction response, consideration was given to a 10m cut-off depth to estimate index

[10] Persaud, M. et al. (2016). The Kerepehi Fault, Hauraki Rift, North Island, New Zealand: active fault characterisation and hazard. New Zealand Journal of Geology and Geophysics.

[11] Earthquake Geotechnical Engineering Practice, Module 3: Identification, assessment and mitigation of liquefaction hazards", (November 2021)

[12] P.K. Robertson (2015). Comparing CPT and Vs Liquefaction Triggering Methods, Journal of Geotechnical and Geoenvironmental Engineering.

settlements as per MBIE[13] guidance. These were compared to liquefaction settlement estimates over the full depth range of the CPT's with a depth weighting factor ranging from 1 at the ground surface to 0 at 18m depth applied to the volumetric strains (e_v) in accordance with Cetin et al (2009)[14].

- Liquefaction damage indices namely liquefaction potential index and liquefaction severity number were calculated in accordance with Iwasaki[15] and van Ballegooy[16]. General site performance in relation to ground deformation was then categorised in accordance with Module 3[17].
- Proposed fill and cut levels have been considered at each CPT location. This is based on the cut and fill drawings supplied by Maven Associates.

6.4.2 Results

Results are presented in ***Appendix J*** and can be summarised as in Tables 3 & 4. Liquefaction is triggered between 0.08g and 0.18g, with approximately 90% of tests showing minor liquefaction-induced settlement (<25mm) up until a PGA of 015g. An AEP of 1:100 years is considered appropriate as the intermediate limit state (ILS) for the IL2 structures and results from the ULS case for IL1 structures can be used as results for the ILS case for the IL2 structures.

TABLE 3 Liquefaction-Induced Vertical Settlement Analysis Results

Development Area	SLS1 Settlement (mm)	IL1 Structures	IL2 Structures		IL3 Structures	
		Total Settlement (mm)	Total Settlement (mm)	Index Settlement (mm)	Total Settlement (mm)	Index Settlement (mm)
Residential	<5	-	0-120	0-110	-	-
Retirement Living/Aged Care Facility	<5	-	45-115	60-120	55-130	80-150
Northern Solar Farm	<5	10-30	-	-	-	-
Southern Solar Farm	<5	50-65	-	-	-	-
Balance Lot/Future Development	<5	-	35-140	10-170	-	-

Note: All settlements and depths based on proposed ground profile.
Index settlements are calculated based on the upper 10m of the soil profile using no depth weighting factor.
Total ULS settlements are based on the full depth of the CPT trace with a depth weighting factor applied.
Index settlements are not comparable to the total ULS settlements.

[13] Repairing and Rebuilding House affected by the Canterbury Earthquakes", (December 2012)

[14] Cetin, K., Bilge, H., Wu, J., Kammerer, A., and Seed, R. (2009). Probabilistic Model for the Assessment of Cyclically Induced Reconsolidation (Volumetric) Settlements, Journal of Geotechnical and Geoenvironmental Engineering, Vol. 135(3), pp. 387-398.

[15] Iwasaki, T., Tokida, K., Tatsuko, F., and Yasuda, S. (1978). 'A Practical Method for Assessing Soil Liquefaction Potential Based on Case Studies at Various Sites in Japan,' Proceedings of 2nd International Conference on Microzonation, San Francisco, 885–896, 1978.

[16] van Ballegooy, S., Malan, P., Lacrosse, V., Jacka, M., Cubrinovski, M., Bray, J. D., O'Rourke, T.D., Crawford, S.A., Cowan, H. (2014). 'Assessment of Liquefaction-induced Land Damage for Residential Christchurch,' Earthquake Spectra, February 2014, 30 (1), 31–55.

[17] Ministry of Business, Innovation & Employment. (2021) Earthquake geotechnical engineering practise: Module 3: Identification, assessment and mitigation of liquefaction hazards.

TABLE 4 Liquefaction-Induced Ground Deformation Analysis Results

Development Area	LPI	LSN	Ground Deformation Effects (MBIE Module 3)
Residential	0.0 – 12.2	0.0 – 26.8	L0 - L3
Retirement Living (IL2)	3.8 – 18.4	11.1 – 29.1	L2 - L4
Aged Care Facility (IL3)	7.1 – 26.7	11.6 – 49.8	L2 - L4
Northern Solar Farm	0.0 – 0.7	0.8 – 5.6	L0 - L2
Southern Solar Farm	0.9 – 4.2	8.6 – 12.1	L2
Balance Lot/Future Development	0.4 – 23.1	1.6 – 53.1	L2 - L4
Note: All settlements and depths based on proposed ground profiles.			

The calculations indicate that in the ULS cases, there is a high risk of liquefaction-induced effects occurring at the site. Recommendations to mitigate effects of liquefaction settlements on the proposed development are provided below in Section 7.

6.5 Lateral Spread

Following the onset of liquefaction, the liquefied soils behave as a very weak undrained material, which can give rise to lateral spreading where a free face is present within the vicinity of the site or where proposed cut and fill batters are proposed over or within liquefied soils.

The existing open farm drains (assumed to be ~2m deep) at the Residential Area, the Retirement Living Area, Northern Solar Farm, Southern Solar Farm, Balance Lot/Future Development Area will be infilled as per drawings provided by Maven Associates. Hence, lateral spreading is not considered to be an issue for the existing farm drains.

The riverbank along the western boundary of the Southern Solar Farm is approximately 8m high. Based on the existing slope gradients (<10°), free face height, and discontinuous liquefiable layers, there is low to moderate potential for lateral spreading under IL1 design seismic conditions.

The riverbank along the western boundary of the Balance Lot/Future Development Block is approximately 8m high. Based on the proposed landform, free face height and continuity of liquefiable layers, there is high potential for lateral spreading under IL2 design seismic conditions. The degree of lateral spread will need to be further investigated and analysed at Resource Consent application stage once the proposed land use is known.

The proposed Greenway Area (adjacent to the Residential & Retirement Living Areas has a maximum proposed height from crest of batter to base of greenway of 3.5m, with a maximum batter gradient of 18°. The potential for and estimated magnitude of lateral spread has been assessed with respect to liquefied shear strengths and post-cyclic softening strengths using a Newmark Sliding Block approach as discussed in Section 6.6 below.

6.6 Slope Stability

6.6.1 Design Criteria

The stability of cut batters and fill embankments under a range of design conditions is expressed in terms of a factor of safety (FoS), which is defined as the ratio of forces resisting failure to the forces causing failure. The following performance standards are recommended for slope stability assessment:

TABLE 5 Slope Stability Factor of Safety Criteria

Condition	Required Factor of Safety (FoS)
Static long-term conditions (drained soil conditions, normal groundwater)	1.5
Transient short-term conditions (elevated groundwater)	1.2
Ultimate Limit State (ULS) seismic condition	1.0*
Note: *Factor of safety < 1.0 acceptable where displacement-based approach is adopted.	

6.6.2 Shear Strength Parameters

6.6.2.1 Effective Stress Parameters

Drained shear strength parameters for the various geological units that support the existing natural escarpments below the site were inferred from the field investigation and our experience with similar soils.

6.6.2.2 Total Stress Parameters

The soils include cohesive silts and clays that will behave in an undrained state during short term seismic loading. Undrained soil shear strengths (S_u), used for assessing the stability of slopes during seismic loading, were taken from the hand held shear vane results and inferred from the CPT data based on the following relationship:

$$Su = \frac{qc - \sigma}{Nk}$$

Where: q_c = CPT cone resistance (kPa)

σ = total overburden pressure (kPa)

Nk = cone factor, typically between 10 and 20, 20 was conservatively adopted for this site

Undrained shear strength correlations from the CPT and other data gave a range of values across the site. Lower bound values have been used.

The selected effective stress and undrained shear strength parameters used in our analyses are presented in Table 6 below:

TABLE 6 Summary of Geotechnical Design Parameters

Geological Unit	Unit Weight (kN/m³)	Effective Stress Parameters		Undrained Shear Strength, S_u (kPa)	Vertical Stress Ratio, Minimum Shear Strength (kPa)
		Friction Angle, Ø´ (°)	Cohesion, c´ (kPa)		
Stiff SILT/CLAY with some sands (Recent Deposits)	16	30	2	80	-
Medium Dense SAND (Hinuera Formation)	17	32	-	-	0.15, 5
Stiff to Very Stiff CLAY/SILT (Hinuera Formation)	17	28	4	100	-
Interbedded Loose to Medium SAND/Stiff to Very Stiff SILT (Hinuera Formation)	17	30	1	-	0.08, 5
Medium Dense to Dense SAND (Hinuera Formation)	17	35	-	-	0.15, 5
Note: All settlements and depths based on proposed ground profile.					

6.6.3 Slope Stability Analyses

Slope stability analyses were undertaken using the Morgenstern-Price method of slices under both circular and translational failure mechanisms using the proprietary software SLIDE Version 9. Seismic displacements were estimated based on a Newmark Sliding Block approach using 50th percentile correlations published in Bray (2007)[18], Bray et al (2018)[19] and Bray & Macedo (2019) [20]for liquefied soil conditions. For the Newmark Sliding Block calculation, depth of 8.5m for the critical slip surface and average shear wave of sliding mass of 150m/s was adopted. Based on the available plans at the time of reporting, the proposed dwellings at the Retirement Living area have been placed a minimum of 3m from the crest of the greenway slope, and have been modelled as such.

Selected stability printouts are attached in ***Appendix K*** and summarised as follows:

TABLE 7 Slope Stability Analyses Results

Section	Slope Stability Factor of Safety			Seismic Yield Ac	ULS Displacement (mm)
	Prevailing	Transient	Seismic		
Geological Section B-B' (Greenway)	1.8	3.1	0.4	0.12	30

Results show that for the proposed landform and ground model for the greenway escarpments exhibit adequate factors of safety can be achieved under static and transient conditions, while inadequate slope stability factors of safety have been calculated for IL2 seismic conditions and recommendations have been provided in Section 7 below.

6.7 Load Induced Settlement

Static settlements were estimated based on the CPT data using the methodology outlined below. Calculations were undertaken using the commercially available software CPeT-IT.

$$S = \sum \frac{\Delta\sigma_v}{M_{CPT}} \Delta z$$

Where $\Delta\sigma_v$ = change in total vertical stress, Δz = layer thickness, M_{CPT} = constrained modulus estimated from the CPT data as follows:

$$M = \alpha_M (q_t - \sigma_{vo})$$

Where: α_M = factor, derived according to Robertson (2009)[21]; q_t = cone resistance; σ_{vo} = total vertical stress.

Table 5 below shows estimated foundation settlements. The dwellings and villas for the residential subdivision and retirement village are assumed to be light weight single story structures, as is the medical centre proposed at the retirement village. Fill load has been added to the CPTs based on the cut and fill drawings for each development. Out has been presented in ***Appendix L***.

[18] Bray, J. D. (2007). Simplified seismic slope displacement procedures. In *Earthquake geotechnical engineering* (pp. 327-353). Springer, Dordrecht.

[19] Bray, J.D., Macedo, J., and Travasarou, T. (2018) "Simplified Procedure for Estimating Seismic Slope Displacements for Subduction Zone Earthquakes," J. of Geotechnical and Geoenvironmental Engineering, ASCE, V. 144(3): 04017124, DOI: 10.1061/(ASCE)GT.1943-5606.0001833.

[20] Bray, J.D., and Macedo, J. (2019) "Procedure for Estimating Shear-Induced Seismic Slope Displacement for Shallow Crustal Earthquakes," J. of Geotechnical and Geoenvironmental Engineering, ASCE, V. 145(12), doi: 10.1061/(ASCE)GT.1943-5606.0002143.

[21] Robertson, P.K., 2009. Interpretation of cone penetration tests – a unified approach. Canadian Geotechnical Journal, 46:1337-1355.

Table 5: Load Induced Settlement Results.

Development	Cut/Fill	Applied Working Pressure (kPa)	Foundation Dimensions	Primary Settlement (mm)	Post Construction Settlement (mm)
Residential Area	4.0m cut to 2.0m fill	10	15m x 15m	<5-25	<5-35
Retirement Living Area	<1.5m fill	10	15m x 15m	<5-65	<5-35
Aged Care Facility	1.5m Fill	10	100m x 150m	40	15
Northern Solar Farm	-	1	1m x 1m*	<5	20-60
Southern Solar Farm	-	1	1m x 1m*	<5	<5-60
Notes: Fill weight = 18kN/m^3. Assumed 0.5m embedment depth for foundations. * Piled foundations are likely to be used at the solar farms.					

Settlement estimates are based on CPTs at discrete locations and should be updated as part of the detailed design.

New Zealand Building Code, Clause B.1.0.2 of B1/VM4 provides the following differential settlement criteria for design of shallow foundations 'Foundation design should limit the probable maximum differential settlement over a horizontal distance of 6m to no more than 25mm under serviceability limit state load combinations of AS/NZS 1170 Part 0, unless the structure is specifically designed to prevent damage under a greater settlement.'

For the foundation size and working load combinations considered in Table 5, settlement across the site is expected to be variable. Differential settlement will need to be accounted for in the design of future structures.

6.8 Sensitive Soils

The Hinuera Formation silt unit present across the site and encountered within the upper 1m is typically considered moderately sensitive to sensitive. These characteristics may make the silt unit challenging to earthwork and will require special consideration to plant movements during the construction period where exposed. Further recommendations are provided in Section 7.7 below.

7 RECOMMENDATIONS

7.1 Seismic Site Subsoil Category

The geological units encountered beneath the development areas comprise soil strength materials, which with respect to the seismic site subsoil category defined in Section 3.1.3 of NZS1170.5, is defined as having a UCS < 1MPa. Therefore, the seismic site subsoil category is assessed as being Class D (deep soil site).

7.2 Liquefaction Mitigation

Based on the analysis results presented in Section 6.4, we consider the risk of liquefaction and liquefaction induced settlements to be insignificant to moderate for the IL1 structures, insignificant to severe for the IL2 structures in the ULS case, and moderate to severe for the IL3 structures in the ULS case.

Liquefaction effects can be mitigated readily with specific engineered design options such as:

- Foundation options such as (but not limited to) waffle slab foundations designed to sustain the calculated liquefaction induced ground deformation and lateral spreading;
- Structural design of the proposed superstructures to sustain the calculated amount of liquefaction induced ground deformation and lateral spreading.

Calculated liquefaction effects can possibly be reduced by performing further laboratory testing to assess the fines content and plastic nature of the fine-grained soils at the site, and to account for the pumice content of the coarse-grained soils at the site.

7.3 Lateral Spread Mitigation

7.3.1 Residential Area

Based on the analysis results presented in Sections 6.5 and 6.6, we consider the risk of lateral spreading to be negligible under IL2 seismic conditions for the Residential Area. Therefore, no geotechnical mitigation measures are required against the effects of liquefaction here.

7.3.2 Retirement Living Area

Based on the analysis results presented in Sections 6.5 and 6.6, we consider the risk of lateral spreading to generally be minimal under IL2 seismic conditions for the Retirement Living Area.

However, ground deformation as a result of lateral spreading near the proposed Greenway is calculated to be in the order of 30mm under ULS seismic conditions. This assumes that the houses will be setback by a minimum distance of 3m from the crest of the proposed greenway.

Foundation options such as (but not limited to) waffle slab foundations, designed to take the calculated amount of liquefaction induced ground deformation into account under the ULS design conditions will be required. Structural design of the proposed superstructures to take the calculated amount of liquefaction induced ground deformation into account under the ULS design conditions will be required.

Calculated lateral spread effects can possibly be reduced by performing further laboratory testing to assess the fines content and plastic nature of the fine-grained soils at the site, and pumice content testing of the coarse-grained soils at the site.

7.3.3 Northern Solar Farm

Based on the analysis results presented in Sections 6.5 and 6.6 (liquefiable layers being discontinuous), we consider the risk of lateral spreading to be negligible under IL1 seismic conditions for the Northern Solar Farm. Therefore, no geotechnical mitigation measures are required against the effects of liquefaction here.

7.3.4 Southern Solar Farm

Based on the analysis results presented in Sections 6.5 and 6.6, we consider the risk of lateral spreading to be low to moderate under IL1 seismic conditions for the Southern Solar Farm.

Design of foundations to fully mitigate liquefaction-induced lateral spread would be substantial and likely impractical, and require extending rigid inclusions to depths in excess of 11m. We recommend that some allowance is made to relevel/replace panels were lateral spreading to occur during the design life.

7.3.5 Balance Lot/Future Development Area

Based on the analysis results presented in Sections 6.5 and 6.6, we consider the risk of lateral spreading to be high under IL2 seismic conditions for the Balance Lot/Future Development Area.

Further study of the area is recommended once the land use is determined to refine the lateral spread model/calculations.

7.4 Static Settlement

In our experience, preliminary settlement estimates from CPT testing can be conservative and reviewing settlement monitoring data may assist in optimising the calculated static settlement values. Hence, we recommend an instrumented fill-induced settlement monitoring during bulk earthworks. Adequate time must be available to enable a full assessment of settlement trends. Settlement plates will be required to monitor settlement during the placement of temporary surcharge or pre-load fill. Settlement will be considered adequately mitigated once T_{90} settlements are achieved, and the resulting creep settlements are predicted to be below 25mm over the design life of the proposed structures (residential dwelling loads).

Refinement of the settlement analysis may be carried out at a later stage.

Alternatively, the foundations and superstructures may be designed to accommodate up to 40mm of total post construction settlements and 20mm differential settlements.

7.5 Stormwater Soakage

24 falling head permeability tests were undertaken across the development area to provide soakage rates. Results indicated that the permeability of soils ranged between 2×10^{-6} and 5×10^{-6} m/sec for the silt-dominated soils and between 7×10^{-6} to 6×10^{-7} m/sec for the sand-dominated soils. HAS24-12 has not been considered based on low soakage rate for the in-situ sandy soil.

Results of testing are presented as ***Appendix C***. Stormwater mitigation will have to be designed based on soakage rates, the groundwater table, extent of soil units etc.

7.6 Foundations

On this site, our provisional expectation is that provided earthworks are completed in accordance with the standards, the following will apply:

- A preliminary geotechnical ultimate bearing pressure of 300kPa should be available in the static case for shallow strip and pad foundations constructed within both the natural cut ground and engineered fill areas. Geotechnical ultimate bearing pressure in the ULS seismic case will be >150kPa based on the shallow liquefiable layers.
- There may be areas where localised variations in shear strength within the natural cut ground occur, particularly where the depth of cut varies across the building platforms. Further confirmation of available bearing pressures will be addressed at the time of post earthworks soil testing and will be presented in the Geotechnical Completion Report.
- To accommodate the liquefaction potential, foundations at the residential block and for the retirement block will need to be designed to accommodate liquefaction-induced vertical settlements up to 120mm (as presented in Section 6.4). This correlates to a technical category of hybrid TC2/TC3 when considering the MBIE Canterbury Guidance Part C.
- If building within 5m of the crest of the greenway batter, foundations should be designed to sustain lateral spreading effects as detailed in Section 7.3.
- Based on our experience with previous solar farm developments, solar panels are typically supported by 100-150mm UC driven steel piles embedded 2-3m into the ground. Based on the ground conditions observed at this site, driven piles will be suitable at this site. The ground conditions at the solar farms are stiff to very stiff silt within the first 1m then followed by a medium dense to dense sand with interbedded silt.

- As required by section B1/VM4[22] of the New Zealand Building Code Handbook, the following strength reduction factors must be applied to all recommended geotechnical ultimate soil capacities in conjunction with their use in factored design load cases:
  - 0.8 for load combinations involving earthquake overstrength;
  - 0.5 for all other load combinations.

7.7 Earthworks

7.7.1 Excavatability

All earthwork activities must be carried out in general accordance with the requirements of NZS 4431[23] and the requirements of the Matamata Piako District Council Infrastructure Development Code under the guidance of a Chartered Professional Geotechnical Engineer.

The Hinuera Formation silts are sensitive to remoulding during earthworks. These soils rapidly loose strength if overworked, over trafficked or allowed to get excessively wet. Mitigation options can include avoiding directly trafficking over these soils, limiting the area exposed to water infiltration at any one time, shaping and compacting the cut surface to allow water to runoff rather than pond. Disturbed soils may regain strength if left to settle for a period of days in fine weather, or they may need to be undercut and replaced with appropriately conditioned materials.

Given the consistency of the soil units that will be encountered within the proposed earthworks cuts, it is expected that excavation of these materials will be readily achieved with normal earthworks plant, such as scrapers and bulldozers with scoops.

A shallow perched groundwater table was present between 1m to 4.2m below ground level. Should excavations encounter groundwater, underfill subsoil drains or granular drainage blanket layers may be required.

7.7.2 Stockpiles

Careful consideration must be given to the location of temporary topsoil / unsuitables stockpiles to ensure that they are not located immediately above steep or unstable slopes or immediately above proposed stormwater pond excavations.

The location of all temporary stockpiles must be approved by the Geotechnical Engineer prior to placement. Where stockpiles cannot be avoided above sloping ground, they should be placed over a wide area with the height restricted under the direction of the Geotechnical Engineer.

7.7.3 Compaction

Earthfill must be placed, spread and compacted in controlled 200mm thick (loose) lifts under the direction of a geotechnical engineer. The fill may comprise either granular or cohesive material subject to being free of any organic material and having no particles greater than 150mm diameter.

Most of the proposed cut material, including the natural and existing fill materials should be suitable for reuse as Engineer Certified Fill. Soil textures and moisture contents will however vary widely, and careful management, conditioning and compaction control will be required.

All earthfill must be placed to ensure adequate knitting of successive fill lifts by ripping any natural subgrade or fill surfaces that have become dry prior to placing the following fill lift.

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[22] Ministry of Business, Innovation and Employment (2019) *Acceptable Solutions and Verification Methods for NZ Building Code Clause B1 Structure,* B1/VM4, Amendment 19.

[23] NZS 4431:2022 Engineered fill construction for lightweight structures, New Zealand Standard.

7.8 Civil Works

7.8.1 Subgrade CBR

The proposed roading is shown to being in a combination of both cut and fill areas. Based on DCP results in insitu soils, a lower bound value of 3% is recommended for preliminary design. Higher CBR will be available for areas with fill.

8 FUTURE WORKS

No further geotechnical work is required for Resource Consent Application for the proposed development. However, the following points need to be considered:

- Preparation of an earthworks specification, followed by observations, testing, certification and preparation of a Geotechnical Completion Report will be required for the proposed development.
- DCP testing, CBR testing, pavement design will be required to support design of roading infrastructure at the site.
- Additional investigations and laboratory testing to assess fines content and plastic nature of the fine-grained soils, and to account for the pumice content of the coarse-grained soils, may assist in reducing predicted liquefaction and lateral spreading.
- A trial embankment may assist in providing better estimates of static settlements.
- Geotechnical analysis and reporting suitable to support building consent applications will be required.
- Investigations, analysis and reporting will be required for the Balance Lot/Future Development block.
- Check with GNS about high-resolution active fault maps within the vicinity of the development area that might not be available publicly.

9 SUITABILITY STATEMENT

Existing site investigations carried out are considered suitable for the assessment of geotechnical constraints and associated requirements in support of a Resource Consent application.

The post-development qualitative assessment of natural risk hazard for the site is low to medium for all hazards considered.

Based on the findings of the geotechnical investigations, we consider that the site is suitable for the proposed development providing our recommendations are followed.

10 SAFETY IN DESIGN

The design landform requires site excavations that may include geotechnical works such as undercuts, temporary excavations, fill batters. Exposure to these works forms a significant safety risk for contractors and inspectors / testers.

In conducting our scope of work, we have considered and addressed Safety in Design (SiD) aspects relevant to our understanding of the proposed design and construction work. SiD must consider the construction, operation, maintenance, and ultimate demolition phases of the relevant works.

It is noted that CMW are focussed on design aspects, and whilst we have attempted to be comprehensive in our assessment, it is the Contractors responsibility to cover construction related risks in a more comprehensive manner (being the competent party in that respect).

Our SiD risk assessment is presented in ***Appendix M***. This risk assessment must be communicated with all affected parties involved with the project and dealt with through specific on-site risk assessment plans.

11 CLOSURE

Additional important information regarding the use of your CMW report is provided in the '*Using your CMW Report*' document attached to this report.

This report has been prepared for use by Matamata Development Limited C/O Maven Associates in relation to the ASHBOURNE DEVELOPMENT Station Road, Matamata project in accordance with the scope, proposed uses and limitations described in the report. Should you have further questions relating to the use of your report please do not hesitate to contact us.

Where a party other than Matamata Development Limited C/O Maven Associates seeks to rely upon or otherwise use this report, the consent of CMW should be sought prior to any such use. CMW can then advise whether the report and its contents are suitable for the intended use by the other party.

USING YOUR CMW GEOTECHNICAL REPORT

Geotechnical reporting relies on interpretation of facts and collected information using experience, professional judgement, and opinion. As such it generally has a level of uncertainty attached to it, which is often far less exact than other engineering design disciplines. The notes below provide general advice on what can be reasonably expected from your report and the inherent limitations of a geotechnical report.

Preparation of your report

Your geotechnical report has been written for your use on your project. The contents of your report may not meet the needs of others who may have different objectives or requirements. The report has been prepared using generally accepted Geotechnical Engineering and Engineering Geology practices and procedures. The opinions and conclusions reached in your report are made in accordance with these accepted principles. Specific items of geotechnical or geological importance are highlighted in the report.

In producing your report, we have relied on the information which is referenced or summarised in the report. If further information becomes available or the nature of your project changes, then the findings in this report may no longer be appropriate. In such cases the report must be reviewed, and any necessary changes must be made by us.

Your geotechnical report is based on your project's requirements

Your geotechnical report has been developed based on your specific project requirements and only applies to the site in this report. Project requirements could include the type of works being undertaken; project locality, size and configuration; the location of any structures on or around the site; the presence of underground utilities; proposed design methodology; the duration or design life of the works; and construction method and/or sequencing.

The information or advice in your geotechnical report should not be applied to any other project given the intrinsic differences between different projects and site locations. Similarly geotechnical information, data and conclusions from other sites and projects may not be relevant or appropriate for your project.

Interpretation of geotechnical data

Site investigations identify subsurface conditions at discrete locations. Additional geotechnical information (e.g. literature and external data source review, laboratory testing etc) are interpreted by Geologists or Engineers to provide an opinion about a site specific ground models, their likely impact on the proposed development and recommended actions. Actual conditions may differ from those inferred to exist due to the variability of geological environments. The actual interface between materials may be far more gradual or abrupt than assumed based on the facts obtained. Nothing can be done to change the actual site conditions which exist, but steps can be taken to reduce the impact of unexpected conditions. Interpretation of factual data can be influenced by design and/or construction methods. Where these methods change review of the interpretation in the report may be required.

Subsurface conditions can change

Subsurface conditions are created by natural processes and then can be altered anthropically or over time. For example, groundwater levels can vary with time or activities adjacent to your site, fill may be placed on a site, or the consistency of near surface conditions might be susceptible to seasonal changes. The report is based on conditions which existed at the time of investigation. It is important to confirm whether conditions may have changed, particularly when large periods of time have elapsed since the investigations were performed.

Interpretation and use by other design professionals

Costly problems can occur when other design professionals develop their plans based on misinterpretations of a geotechnical report. To help avoid misinterpretations, it is important to retain the assistance of CMW to work with other project design professionals who are affected by the contents of your report. CMW staff can explain the report implications to design professionals and then review design plans and specifications to see that they have correctly incorporated the findings of this report.

Your report's recommendations require confirmation during construction

Your report is based on site conditions as revealed through selective point sampling. Engineering judgement is then applied to assess how indicative of actual conditions throughout an area the point sampling might be. Any assumptions made cannot be substantiated until construction is complete. For this reason, you should retain geotechnical services throughout the construction stage, to identify variances from previous assumption, conduct additional tests if required and recommend solutions to problems encountered on site.

A Geotechnical Engineer, who is fully familiar with the site and the background information, can assess whether the report's recommendations remain valid and whether changes should be considered as the project develops. An unfamiliar party using this report increases the risk that the report will be misinterpreted.

Environmental Matters Are Not Covered

Unless specifically discussed in your report environmental matters are not covered by a CMW Geotechnical Report. Environmental matters might include the level of contaminants present of the site covered by this report, potential uses or treatment of contaminated materials or the disposal of contaminated materials. These matters can be complex and are often governed by specific legislation.

The personnel, equipment, and techniques used to perform an environmental study can differ significantly from those used in this report. For that reason, our report does not provide environmental recommendations. Unanticipated subsurface environmental problems can have large consequences for your site. If you have not obtained your own environmental information about the project site, ask your CMW contact about how to find environmental risk-management guidance.

LEGEND:

- SITE BOUNDARY
- EXISTING GROUND CONTOUR (MAJOR)
- EXISTING GROUND CONTOUR (MINOR)
- PROPOSED RESIDENTIAL EXTENT
- PROPOSED RETIREMENT LIVING EXTENT
- FUTURE DEVELOPMENT EXTENT
- PROPOSED NORTHERN SOLAR FARM EXTENT
- PROPOSED SOUTHERN SOLAR FARM EXTENT
- HAND AUGER LOCATION (2025)
- CONE PENETROMETER TEST LOCATION (2025)
- MACHINE BOREHOLE LOCATION (2025)
- PIEZOMETER LOCATION (2025)
- HAND AUGER LOCATION (2023-2024)
- CONE PENETROMETER TEST LOCATION (2023-2024)
- SEISMIC CONE PENETROMETER TEST LOCATION (2023-2024)
- TEST PIT LOCATION (2023-2024)
- MACHINE BOREHOLE LOCATION (2023-2024)
- SOAKAGE TEST LOCATION (2023-2024)

SOA24-05, HA24-09, CPT24-04, HA24-10, CPT24-05, SOA24-06, HA24-11, HA24-12, HA24-33, TP06, SOA24-15, SOA24-07, SOA24-16, SOA24-13, HA24-32A, HA24-32B, TP02, HA24-13, TP01, CPT24-06, SOA24-14, SOA23-01, BH25-01, CPT23-01, CPT25-10, HA23-01, HA23-02, HA25-07, CPT25-06, HA23-03, CPT25-07, CPT24-08, SOA24-12, SOA24-17, HA24-28, SOA23-02, 25-P2, HA24-29, HA24-25, TP04, HA23-04, SOA24-23, CPT23-02, SOA23-03, HA23-05, HA24-30, 25-P3, HA24-31, SOA24-24, HA23-06, CPT23-03, HA25-09, CPT25-08, HA25-08, HA24-24, SOA23-04, HA23-07, HA23-08, CPT25-09, SOA24-11, SOA24-19, SOA24-18, SCPT24-04, CPT24-10, SOA24-10, HA24-23, HA24-22, HA24-21, SOA24-08, CPT25-03, HA25-02, CPT25-04, HA25-03, SOA24-09, CPT24-09, HA24-20, SCPT24-03, HA24-19, HA25-01, HA25-05, HA25-06, CPT24-07, B 13, CPT25-02, SCPT24-02, HA24-15, HA24-16, HA24-17, HA25-04, CPT25-05, HA24-18, SOA24-22, HA24-26, HA24-14, TP05, SOA24-21, 25-P1, HA24-27, CPT25-01, SCPT24-01, BH25-02, Bore 72_12812, SOA24-20, 25-P4, TP03, A 10-12, HIGHGROVE AVE, STATION ROAD, STATE HIGHWAY 27, FIFTH STREET, WAITOA RIVER

PRINT IN COLOUR

NOTES:

1. AERIAL IMAGE COURTESY OF LINZ - WAIKATO 0.3m RURAL AERIAL PHOTOS (2023-2024).
2. SCHEME/BASE OUTLINE OBTAINED FROM B&A UDA REPORT, 2.1 OVERALL MASTERPLAN, REPORT DATED: 6 JUNE 2025.
3. EXISTING GROUND CONTOURS CREATED FROM LINZ - NEW ZEALAND LIDAR 1m DEM, CONTOURS SHOWN IN 1m INTERVALS.
4. CRS: NZTM. VERTICAL DATUM IN TERMS OF NZVD2016.
5. TEST LOCATIONS ARE INDICATIVE ONLY.

1:10 000 — 0 100 200 300 400 500 m

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CLIENT: MAVEN ASSOCIATES LTD		DRAWN: HV	PROJECT: HAM2023-0124
PROJECT: ASHBOURNE DEVELOPMENT MATAMATA		CHECKED: BM	DRAWING: 09
		REVISION: 0	SCALE: 1:10,000
TITLE: GEOTECHNICAL SITE PLAN		DATE: 16/10/2025	SHEET: A3 L

C:\Users\HarshVegad\Downloads\HAM2023-0124 PLANS & SECTIONS_15.10.25.dwg

LEGEND:

- SITE BOUNDARY
- EXISTING GROUND CONTOUR (MAJOR)
- EXISTING GROUND CONTOUR (MINOR)
- LOW HILLS GEOMORPHOLOGY
- UPPER TERRACE GEOMORPHOLOGY
- LOWER TERRACE GEOMORPHOLOGY
- BUILDING SETBACK ZONE 3m (GREENWAY LATERAL SPREAD)

PRINT IN COLOUR

NOTES:

1. AERIAL IMAGE COURTESY OF LINZ - WAIKATO 0.3m RURAL AERIAL PHOTOS (2023-2024).
2. EXISTING GROUND CONTOURS CREATED FROM LINZ - NEW ZEALAND LIDAR 1m DEM, CONTOURS SHOWN IN 1m INTERVALS.
3. CRS: NZTM. VERTICAL DATUM IN TERMS OF NZVD2016.

1:10 000 — 0 100 200 300 400 500 m

CMW Geosciences
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CLIENT: MAVEN ASSOCIATES LTD	DRAWN: HV	PROJECT: HAM2023-0124
PROJECT: ASHBOURNE DEVELOPMENT MATAMATA	CHECKED: BM	DRAWING: 10
	REVISION: 0	SCALE: 1:10,000
TITLE: GEOLOGICAL FEATURES & DISTRIBUTION PLAN	DATE: 16/10/2025	SHEET: A3 L

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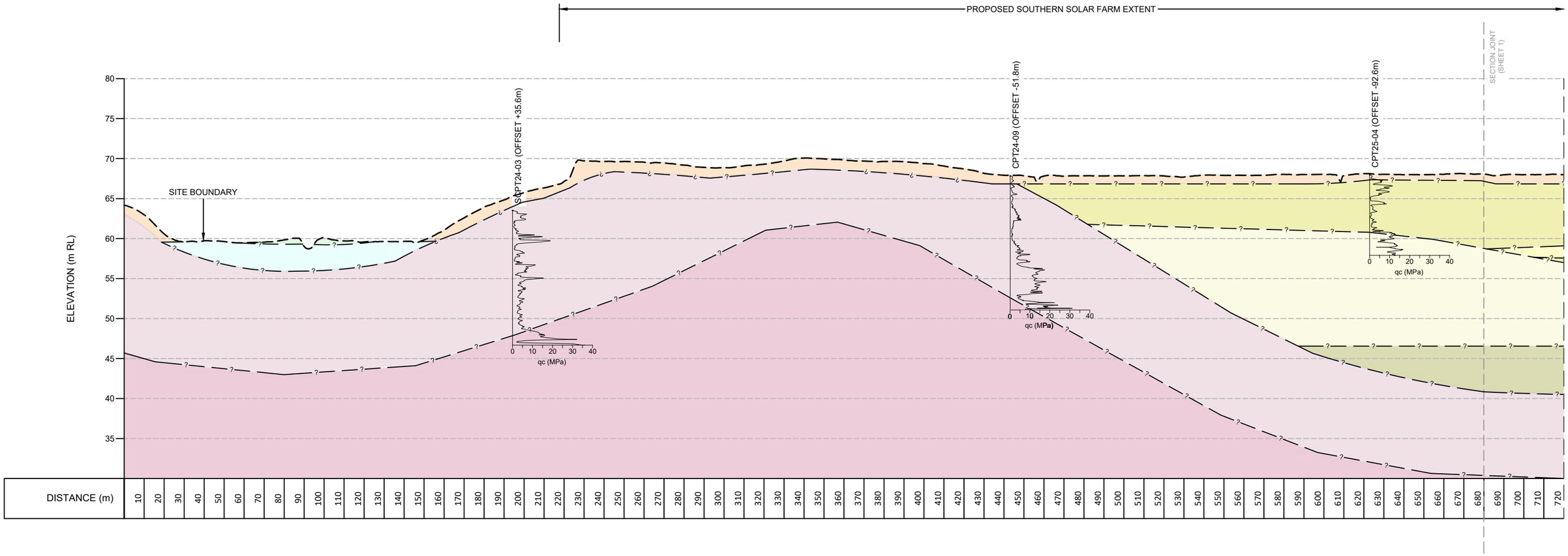

SECTION A-A'

SCALE- H:1000 V:250

LEGEND:

- EXISTING GROUND PROFILE
- INFERRED GEOLOGY BOUNDARY
- SILT/CLAY/SAND (UNCONTROLLED FILL)
- LOOSE TO MEDIUM DENSE INTERBEDDED SILT/SAND (RECENT ALLUVIUM)
- STIFF SILT/CLAY (RECENT DEPOSITS)
- MEDIUM DENSE SAND (HINUERA FORMATION)
- STIFF TO VERY STIFF CLAY/SILT (HINUERA FORMATION)
- INTERBEDDED LOOSE TO MEDIUM DENSE SAND/STIFF SILT (HINUERA FORMATION)
- MEDIUM DENSE TO DENSE SAND (HINUERA FORMATION)
- STIFF TO VERY STIFF CLAY/SILT (PAKAHI SUPERGROUP/PERIA FORMATION)
- VERY STIFF TO HARD CLAY/SILT WITH SOME SAND (PAKAHI SUPERGROUP/PERIA FORMATION)

NOTES:

1. EXISTING GROUND PROFILE CREATED USING LIDAR CONTOURS OBTAINED FROM LINZ DATA SERVICE.
2. VERTICAL DATUM IN TERMS OF NZVD2016.
3. TEST LOCATIONS ARE INDICATIVE ONLY.
4. PROPOSED SUBDIVISION BOUNDARIES ARE INDICATIVE ONLY.

1:2000 0 20 40 60 80 100 m

PRINT IN COLOUR

CMW Geosciences
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CLIENT: MAVEN ASSOCIATES LTD		DRAWN: HV	PROJECT: HAM2023-0124
PROJECT: ASHBOURNE DEVELOPMENT MATAMATA		CHECKED: BM	DRAWING: 11
		REVISION: 0	SCALE: 1:2000
TITLE: CROSS SECTION A-A' (SHEET 1 OF 3)		DATE: 16/10/2025	SHEET: A3 L

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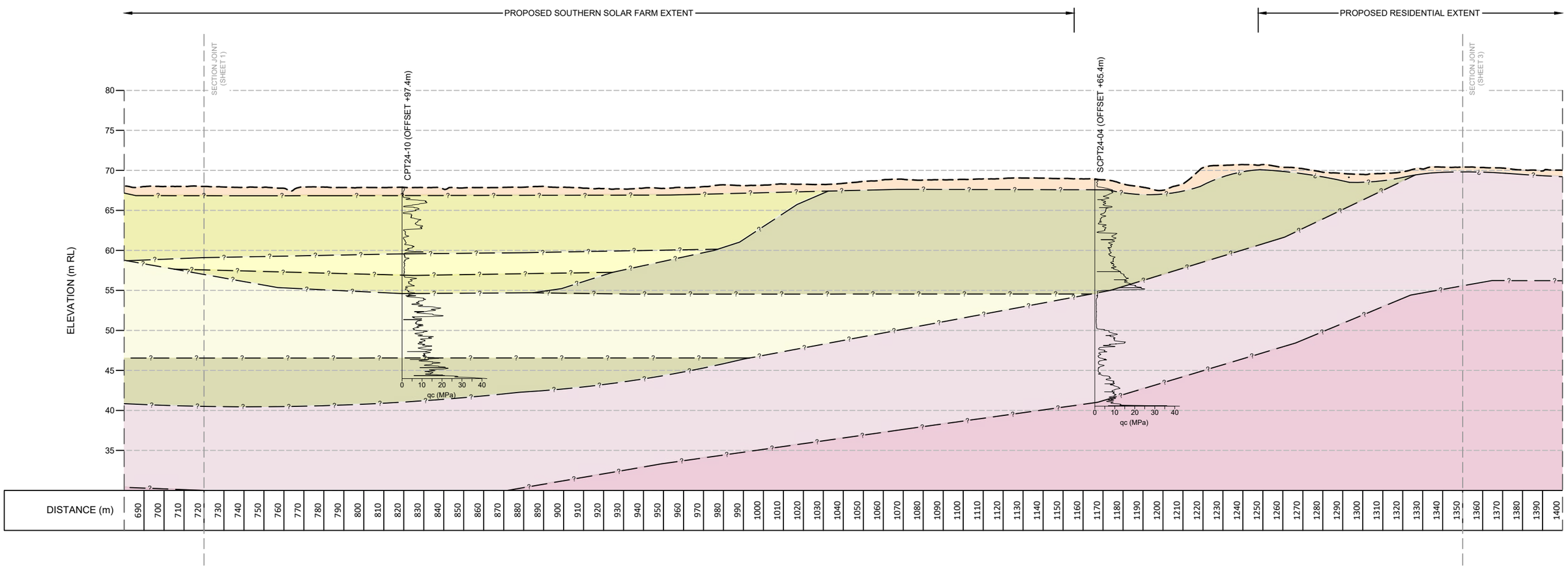

SECTION A-A'

SCALE- H:1000 V:250

LEGEND:

- EXISTING GROUND PROFILE
- INFERRED GEOLOGY BOUNDARY
- SILT/CLAY/SAND (UNCONTROLLED FILL)
- LOOSE TO MEDIUM DENSE INTERBEDDED SILT/SAND (RECENT ALLUVIUM)
- STIFF SILT/CLAY (RECENT DEPOSITS)
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- STIFF TO VERY STIFF CLAY/SILT (HINUERA FORMATION)
- INTERBEDDED LOOSE TO MEDIUM DENSE SAND/STIFF SILT (HINUERA FORMATION)
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NOTES:

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3. TEST LOCATIONS ARE INDICATIVE ONLY.
4. PROPOSED SUBDIVISION BOUNDARIES ARE INDICATIVE ONLY.

1:2000 0 20 40 60 80 100 m

PRINT IN COLOUR

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CLIENT: MAVEN ASSOCIATES LTD		DRAWN: HV	PROJECT: HAM2023-0124
PROJECT: ASHBOURNE DEVELOPMENT MATAMATA		CHECKED: BM	DRAWING: 12
		REVISION: 0	SCALE: 1:2000
TITLE: CROSS SECTION A-A' (SHEET 2 OF 3)		DATE: 16/10/2025	SHEET: A3 L

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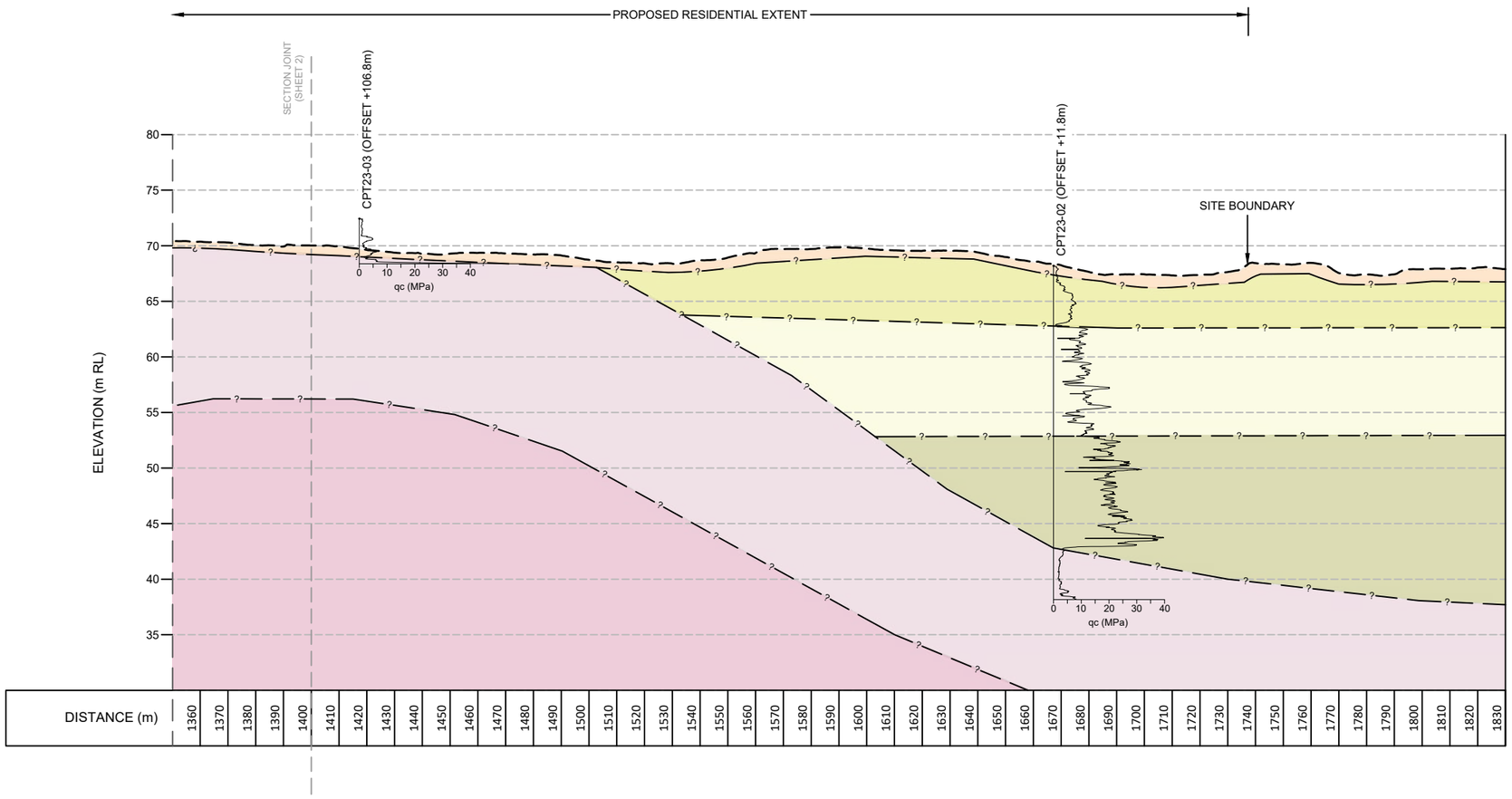

SECTION A-A'

SCALE- H:1000 V:250

LEGEND:

- EXISTING GROUND PROFILE
- INFERRED GEOLOGY BOUNDARY
- SILT/CLAY/SAND (UNCONTROLLED FILL)
- LOOSE TO MEDIUM DENSE INTERBEDDED SILT/SAND (RECENT ALLUVIUM)
- STIFF SILT/CLAY (RECENT DEPOSITS)
- MEDIUM DENSE SAND (HINUERA FORMATION)
- STIFF TO VERY STIFF CLAY/SILT (HINUERA FORMATION)
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NOTES:

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3. TEST LOCATIONS ARE INDICATIVE ONLY.
4. PROPOSED SUBDIVISION BOUNDARIES ARE INDICATIVE ONLY.

1:2000 0 20 40 60 80 100 m

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CLIENT: MAVEN ASSOCIATES LTD		DRAWN: HV	PROJECT: HAM2023-0124
PROJECT: ASHBOURNE DEVELOPMENT MATAMATA		CHECKED: BM	DRAWING: 13
		REVISION: 0	SCALE: 1:2000
TITLE: CROSS SECTION A-A' (SHEET 3 OF 3)		DATE: 16/10/2025	SHEET: A3 L

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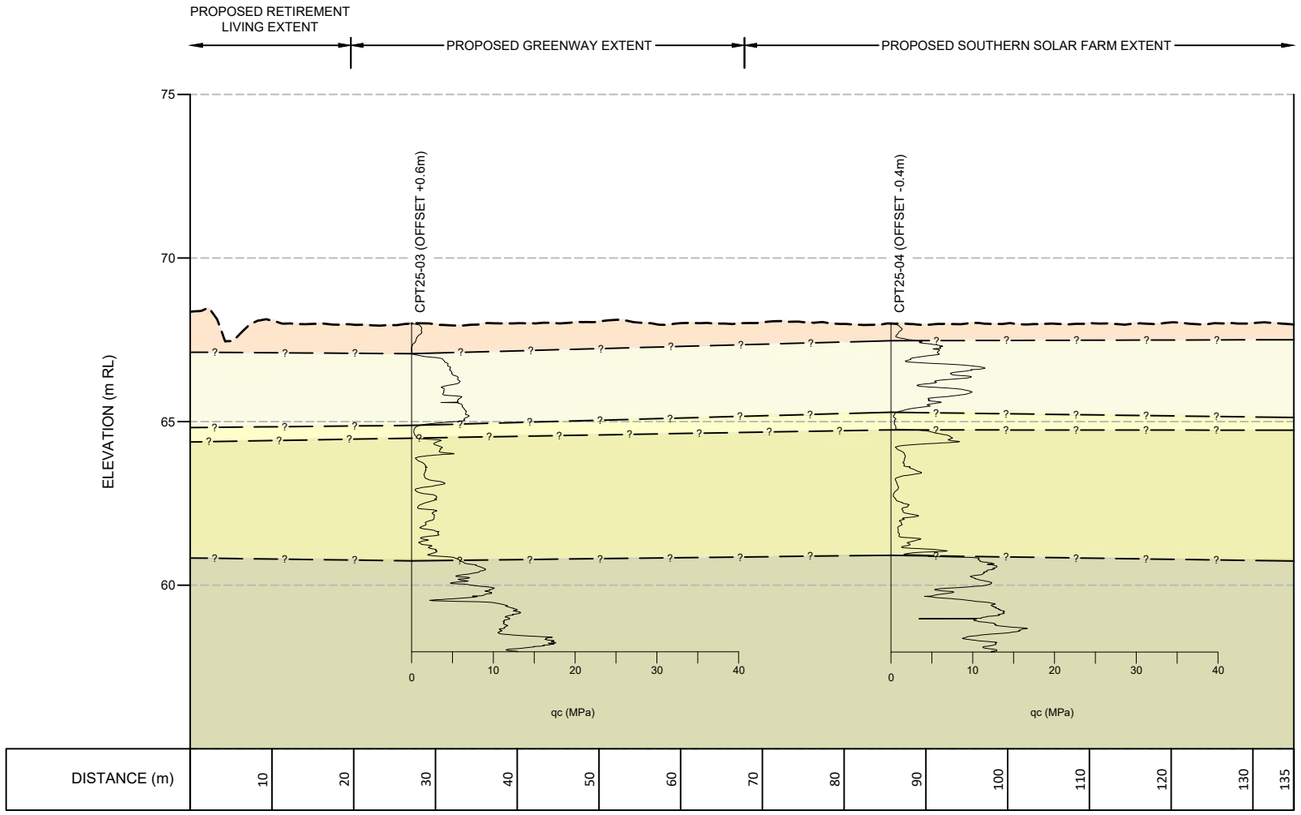

SECTION B-B'

SCALE- H:1000 V:250

LEGEND:

- EXISTING GROUND PROFILE
- INFERRED GEOLOGY BOUNDARY
- SILT/CLAY/SAND (UNCONTROLLED FILL)
- LOOSE TO MEDIUM DENSE INTERBEDDED SILT/SAND (RECENT ALLUVIUM)
- STIFF SILT/CLAY (RECENT DEPOSITS)
- MEDIUM DENSE SAND (HINUERA FORMATION)
- STIFF TO VERY STIFF CLAY/SILT (HINUERA FORMATION)
- INTERBEDDED LOOSE TO MEDIUM DENSE SAND/STIFF SILT (HINUERA FORMATION)
- MEDIUM DENSE TO DENSE SAND (HINUERA FORMATION)
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NOTES:

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4. PROPOSED SUBDIVISION BOUNDARIES ARE INDICATIVE ONLY.

1:750 0 7.5 15 22.5 30 37.5 m

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CLIENT: MAVEN ASSOCIATES LTD		DRAWN: HV	PROJECT: HAM2023-0124
PROJECT: ASHBOURNE DEVELOPMENT MATAMATA		CHECKED: BM	DRAWING: 14
		REVISION: 0	SCALE: 1:750
TITLE: CROSS SECTION B-B'		DATE: 16/10/2025	SHEET: A3 L

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APPENDIX A: SCHEME PLANS

N

STATION ROAD

STATION ROAD

C120-1

C120-2

C120-3

C120-4

C120-5

C120-6

C120-7

C120-8

C120-9

C120-10

ELDONWOOD DRIVE

BALANCE LOT

PROPOSED
RETIREMENT VILLAGE

RESOURCE CONSENT

DATE: 4/2025 FILEPATH: F:\MAVEN HAMILTON\6 PROJECTS\289001 - STATION ROAD\7 DRAWING\1 ASHBOURNE\RESIDENTIAL\C120 MASTER PLAN.DWG

NOTES

1. All works to be in accordance with Matamata-Piako District Council standards.
2. Co-ordinates in terms of NZ Geodetic Datum MT Eden 2000.
3. Levels in terms of the New Zealand Vertical Datum 2016.
4. Benchmark: IT I DPS 29877 RL: 65.19.
5. Boundaries are subject to final survey.

LEGEND

- EX BDY
- PR BDY
- AVERAGE LOT SIZE 350m²
- AVERAGE LOT SIZE 500m²
- AVERAGE LOT SIZE 800m²
- RETIREMENT VILLAGE
- COMMERCIAL ZONE
- GREEN SPACE
- SW RESERVE
- WW RESERVE

Rev	Description	By	Date
B	FAST TRACK APP	MKS	04/2025
A	FAST TRACK APP	MKS	04/2025

	By	Date
Survey	MAVEN	05/2024
Design	MKS	11/2024
Drawn	MKS	11/2024
Checked	DJM	04/2025

Maven Waikato
07 242 0601
info@maven.co.nz
www.maven.co.nz
Level 1 286 Victoria Street, Hamilton
New Zealand

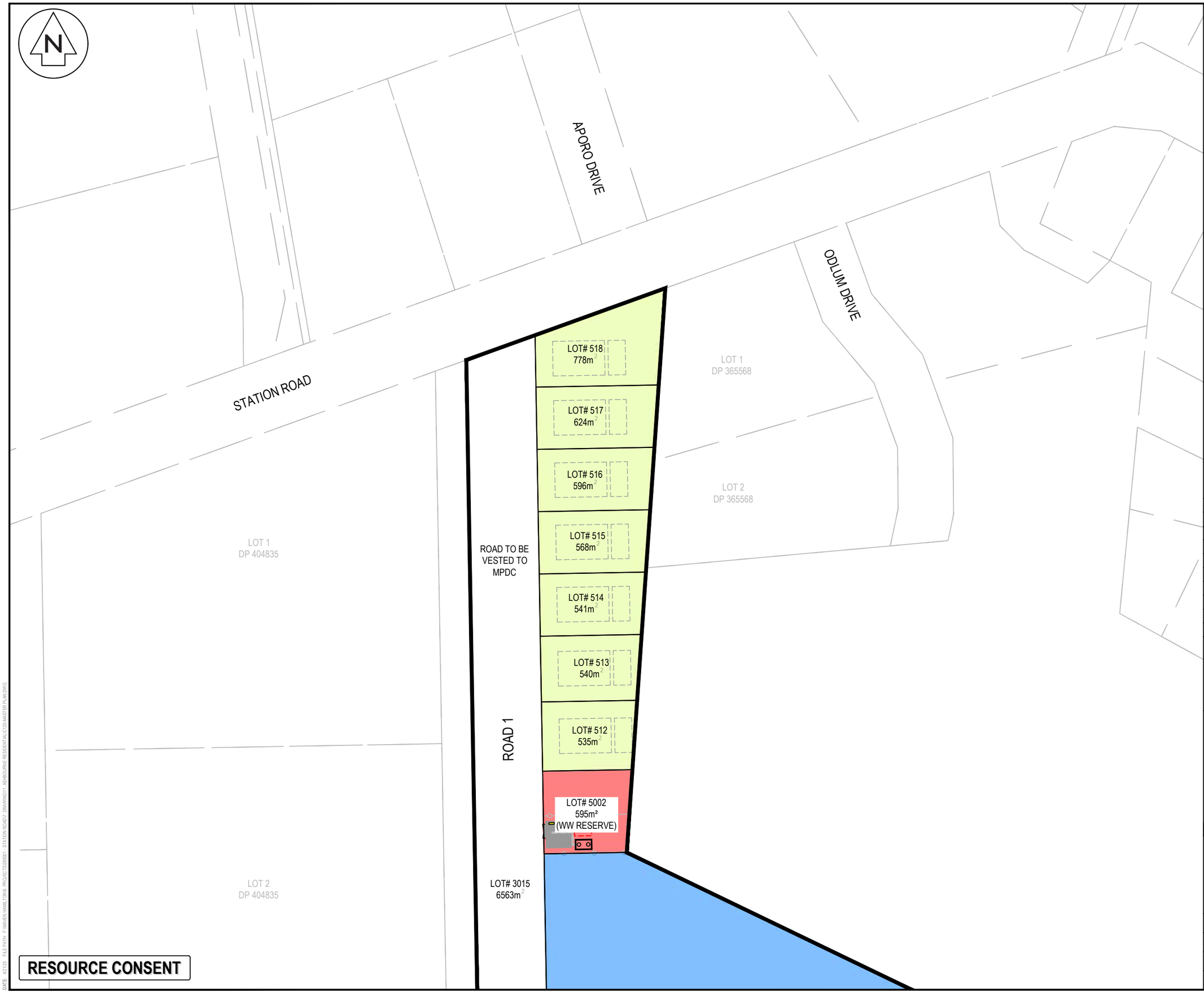
Project

ASHBOURNE RESIDENTIAL FOR MATAMATA DEVELOPMENTS LTD

Title

PROPOSED OVERVIEW MASTERPLAN

Project no.	289001		
Scale	1:6000 @ A3		
Cad file	C120-MASTER PLAN.DWG		
Drawing no.	C120	Rev	B



RESOURCE CONSENT

NOTES

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2. Co-ordinates in terms of NZ Geodetic Datum MT Eden 2000.
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- PR BDY
- AVERAGE LOT SIZE 350m²
- AVERAGE LOT SIZE 500m²
- AVERAGE LOT SIZE 800m²
- RETIREMENT VILLAGE
- COMMERCIAL ZONE
- GREEN SPACE
- SW RESERVE
- WW RESERVE

Rev	Description	By	Date
B	FAST TRACK APP	MKS	04/2025
A	FAST TRACK APP	MKS	04/2025

	By	Date
Survey	MAVEN	05/2024
Design	MKS	11/2024
Drawn	MKS	11/2024
Checked	DJM	04/2025

Maven Waikato
07 242 0601
info@maven.co.nz
www.maven.co.nz
Level 1 286 Victoria Street, Hamilton
New Zealand

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Title

PROPOSED MASTERPLAN

Project no.	289001		
Scale	1:1000 @ A3		
Cad file	C120-MASTER PLAN.DWG		
Drawing no.	C120-1	Rev	B

N

OLIVE PLACE

LOT 3
DP 404835

LOT 9
DP 562902

LOT 13
DP 562902

LOT 14
DP 562902

LOT# 4004
5080m²
(SW RESERVE)

LOT# 403
800m²

LOT# 402
800m²

LOT# 401
800m²

LOT# 400
800m²

LOT# 399
800m²

LOT# 398
800m²

LOT# 397
799m²

LOT#3013
7068m²

ROAD 4

ROAD TO BE
VESTED TO
MPDC

LOT# 440
594m²

LOT# 441
590m²

LOT# 439
496m²

LOT# 442
494m²

LOT# 438
496m²

LOT# 443
494m²

LOT# 437
496m²

LOT# 444
494m²

LOT# 436
496m²

LOT# 445
494m²

LOT# 435
495m²

LOT# 446
494m²

LOT# 434
495m²

LOT# 447
494m²

LOT# 433
500m²

LOT# 432
479m²

LOT# 431
472m²

RESOURCE CONSENT

NOTES
1. All works to be in accordance with Matamata-Piako District Council standards.
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4. Benchmark: IT I DPS 29877 RL: 65.19.
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LEGEND
- EX BDY
- PR BDY
- AVERAGE LOT SIZE 350m²
- AVERAGE LOT SIZE 500m²
- AVERAGE LOT SIZE 800m²
- RETIREMENT VILLAGE
- COMMERCIAL ZONE
- GREEN SPACE
- SW RESERVE
- WW RESERVE

Rev	Description	By	Date
B	FAST TRACK APP	MKS	04/2025
A	FAST TRACK APP	MKS	04/2025

	By	Date
Survey	MAVEN	05/2024
Design	MKS	11/2024
Drawn	MKS	11/2024
Checked	DJM	04/2025

Maven Waikato
07 242 0601
info@maven.co.nz
www.maven.co.nz
Level 1 286 Victoria Street, Hamilton
New Zealand

Project
ASHBOURNE RESIDENTIAL FOR MATAMATA DEVELOPMENTS LTD

Title
PROPOSED MASTERPLAN

Project no.	289001
Scale	1:1000 @ A3
Cad file	C120-MASTER PLAN.DWG
Drawing no.	C120-2 Rev B

N

LOT# 4005
8329m²
(SW RESERVE)

ROAD 2

ROAD 1

ROAD 3

ROAD 2

ROAD TO BE VESTED TO MPDC

LOT 5
DP 365568

LOT 18
DP 386534

LOT 20
DP 386534

LOT 24
DP 386534

LOT 26
DP 386534

LOT 28
DP 386534

ELDONWOOD DRIVE

LOT# 508 504m²
LOT# 507 488m²
Ⓜ JOAL LOT# 3028 222m²
LOT# 500 484m²
LOT# 499 413m²
LOT# 509 500m²
LOT# 506 489m²
LOT# 501 502m²
LOT# 498 480m²
JOAL LOT# 3027 - 109m² Ⓒ
LOT# 493 553m²
LOT# 510 500m²
LOT# 505 539m²
LOT# 502 551m²
LOT# 497 490m²
LOT# 494 526m²
LOT# 511 492m²
LOT# 504 507m²
LOT# 503 504m²
LOT# 496 504m²
LOT# 495 496m²

LOT# 492 839m²
LOT# 491 840m²
LOT# 490 826m²
LOT# 489 769m²
LOT# 488 782m²
Ⓚ JOAL LOT# 3026 - 125m²
LOT# 487 737m²
LOT# 486 803m²
LOT# 485 801m²
LOT# 484 801m²
LOT# 483 801m²
LOT# 482 801m²
LOT# 481 799m²
LOT# 480 800m²
LOT# 479 799m²
LOT# 478 796m²
LOT# 477 794m²

LOT# 3014
10110m²

LOT# 455 520m²
LOT# 473 468m²
LOT# 472 479m²
LOT# 471 494m²
LOT# 470 448m²
LOT# 454 517m²
LOT# 465 471m²
LOT# 466 433m²
LOT# 469 452m²
LOT# 467 452m²
LOT# 453 517m²
LOT# 468 462m²
JOAL LOT# 3025- 297m² Ⓙ
LOT# 464 464m²
LOT# 463 460m²
LOT# 452 517m²
LOT# 462 460m²
LOT# 451 517m²
LOT# 460 623m²
LOT# 461 423m²
LOT# 450 517m²
LOT# 449 517m²
LOT# 459 702m²
LOT# 458 402m²
LOT# 3013
7072m²
LOT# 456

RESOURCE CONSENT

NOTES
1. All works to be in accordance with Matamata-Piako District Council standards.
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3. Levels in terms of the New Zealand Vertical Datum 2016.
4. Benchmark: IT I DPS 29877 RL: 65.19.
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- EX BDY
- PR BDY
- AVERAGE LOT SIZE 350m²
- AVERAGE LOT SIZE 500m²
- AVERAGE LOT SIZE 800m²
- RETIREMENT VILLAGE
- COMMERCIAL ZONE
- GREEN SPACE
- SW RESERVE
- WW RESERVE

Rev	Description	By	Date
B	FAST TRACK APP	MKS	04/2025
A	FAST TRACK APP	MKS	04/2025

	By	Date
Survey	MAVEN	05/2024
Design	MKS	11/2024
Drawn	MKS	11/2024
Checked	DJM	04/2025

Maven Waikato
07 242 0601
info@maven.co.nz
www.maven.co.nz
Level 1 286 Victoria Street, Hamilton
New Zealand

Project
ASHBOURNE RESIDENTIAL FOR MATAMATA DEVELOPMENTS LTD

Title
PROPOSED MASTERPLAN

Project no.	289001		
Scale	1:1000 @ A3		
Cad file	C120-MASTER PLAN.DWG		
Drawing no.	C120-3	Rev	B

DATE: 6/05/25 FILEPATH: F:\MAVEN HAMILTON\PROJECTS\289001 - STATION ROAD\7 DRAWINGS\1 ASHBOURNE RESIDENTIAL\C120-MASTER PLAN.DWG

N

LOT 14
DP 562902

LOT 16
DP 562902

LOT 17
DP 562902

LOT 18
DP 562902

HIGHGROVE AVENUE

LOT# 396
800m²

LOT# 395
799m²

LOT# 394
799m²

LOT# 393
800m²

LOT# 392
800m²

LOT# 391
800m²

LOT# 390
800m²

LOT# 389
944m²

LOT# 388
800m²

LOT# 387
800m²

LOT# 386
800m²

LOT# 385
800m²

LOT# 384
800m²

LOT# 383
800m²

LOT# 382
800m²

LOT# 381
800m²

LOT# 380
800m²

LOT# 379
800m²

LOT# 378
1005m²

LOT# 377
782m²

LOT# 376
554m²

LOT# 375
554m²

LOT# 374
555m²

LOT 2
DP 21055

RESERVE LOT#3031 - 123m²

ROAD 5

LOT# 3011
9686m²

LOT# 370
488m²

LOT# 355
738m²

LOT# 369
495m²

LOT# 356
501m²

LOT# 368
495m²

LOT# 357
499m²

LOT# 367
495m²

LOT# 358
495m²

LOT# 366
495m²

LOT# 359
491m²

LOT# 354
503m²

LOT# 347
500m²

LOT# 346
509m²

LOT# 338
526m²

LOT# 353
476m²

LOT# 348
503m²

LOT# 345
514m²

LOT# 339
503m²

LOT# 352
502m²

LOT# 349
516m²

LOT# 344
511m²

LOT# 340
503m²

LOT# 351
496m²

LOT# 350
516m²

LOT# 343
512m²

LOT# 341
504m²

LOT# 342
539m²

JOAL LOT# 3022 - 264m²

ROAD TO BE VESTED TO MPDC

ROAD 9

LOT# 3009
6975m²

ROAD 2

LOT# 410
486m²

LOT# 411
481m²

LOT# 409
494m²

LOT# 408
493m²

LOT# 407
493m²

LOT# 406
493m²

LOT# 405
492m²

LOT# 404
446m²

LOT# 337
426m²

LOT# 336
436m²

LOT# 335
443m²

ROAD TO BE VESTED TO MPDC

ROAD 5

LOT# 328
484m²

LOT# 329
494m²

LOT# 330
495m²

LOT# 331
496m²

LOT# 333
496m²

LOT# 332
492m²

LOT# 323
498m²

RESOURCE CONSENT

NOTES

1. All works to be in accordance with Matamata-Piako District Council standards.
2. Co-ordinates in terms of NZ Geodetic Datum MT Eden 2000.
3. Levels in terms of the New Zealand Vertical Datum 2016.
4. Benchmark: IT I DPS 29877 RL: 65.19.
5. Boundaries are subject to final survey.

LEGEND

- EX BDY
- PR BDY
- AVERAGE LOT SIZE 350m²
- AVERAGE LOT SIZE 500m²
- AVERAGE LOT SIZE 800m²
- RETIREMENT VILLAGE
- COMMERCIAL ZONE
- GREEN SPACE
- SW RESERVE
- WW RESERVE

Rev	Description	By	Date
B	FAST TRACK APP	MKS	04/2025
A	FAST TRACK APP	MKS	04/2025

	By	Date
Survey	MAVEN	05/2024
Design	MKS	11/2024
Drawn	MKS	11/2024
Checked	DJM	04/2025

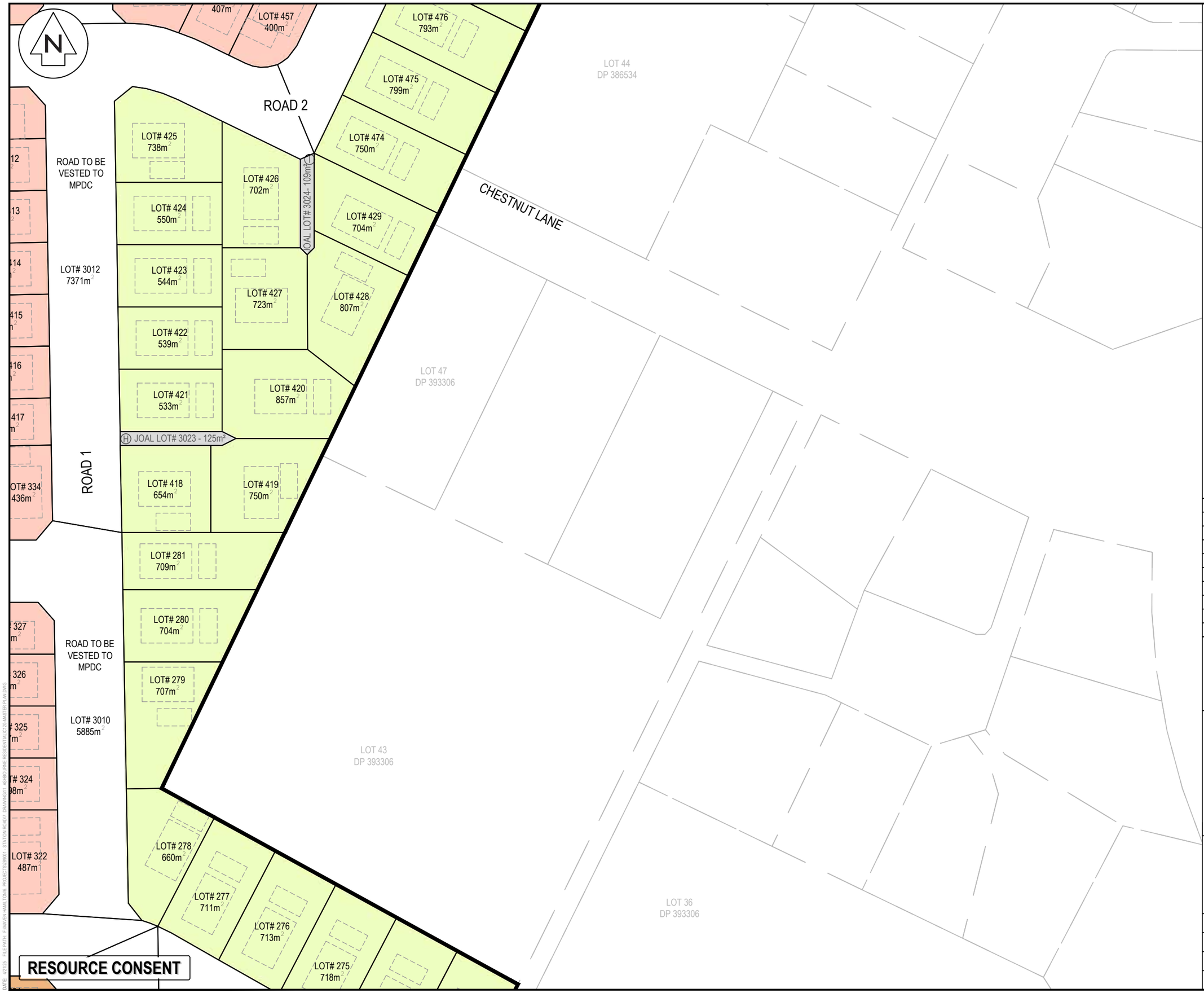
Maven Waikato
07 242 0601
info@maven.co.nz
www.maven.co.nz
Level 1 286 Victoria Street, Hamilton
New Zealand

Project
ASHBOURNE RESIDENTIAL FOR MATAMATA DEVELOPMENTS LTD

Title
PROPOSED MASTERPLAN

Project no.	289001		
Scale	1:1000 @ A3		
Cad file	C120-MASTER PLAN.DWG		
Drawing no.	C120-4	Rev	B

DATE 4/2025 FILE PATH F:\MAVEN\HAUL TOWN PROJECTS\2800\ STATION ROAD\ DRAWING\1 ASHBOURNE RESIDENTIAL\C120-MASTER PLAN.DWG



NOTES

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3. Levels in terms of the New Zealand Vertical Datum 2016.
4. Benchmark: IT I DPS 29877 RL: 65.19.
5. Boundaries are subject to final survey.

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- PR BDY
- AVERAGE LOT SIZE 350m²
- AVERAGE LOT SIZE 500m²
- AVERAGE LOT SIZE 800m²
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- COMMERCIAL ZONE
- GREEN SPACE
- SW RESERVE
- WW RESERVE

Rev	Description	By	Date
B	FAST TRACK APP	MKS	04/2025
A	FAST TRACK APP	MKS	04/2025

	By	Date
Survey	MAVEN	05/2024
Design	MKS	11/2024
Drawn	MKS	11/2024
Checked	DJM	04/2025

Maven Waikato
07 242 0601
info@maven.co.nz
www.maven.co.nz
Level 1 286 Victoria Street, Hamilton
New Zealand

Project

ASHBOURNE RESIDENTIAL FOR MATAMATA DEVELOPMENTS LTD

Title

PROPOSED MASTERPLAN

Project no.	289001		
Scale	1:1000 @ A3		
Cad file	C120-MASTER PLAN.DWG		
Drawing no.	C120-5	Rev	B

N

LOT# 374 555m²
LOT# 373 555m²
LOT# 372 554m²
LOT# 371 578m²
ROAD 5
LOT# 367 495m²
LOT# 366 495m²
LOT# 365 495m²
LOT# 364 618m²
LOT# 358 495m²
LOT# 359 491m²
LOT# 360 487m²
LOT# 361 580m²
LOT# 363 424m²
LOT# 362 545m²
ROAD TO BE VESTED TO MPDC
ROAD 9
ROAD 6
LOT# 321 450m²
LOT# 320 450m²
LOT# 319 450m²
LOT# 318 454m²
LOT# 313 435m²
LOT# 314 439m²
LOT# 315 390m²
LOT# 316 393m²
LOT# 317 375m²
JOAL LOT# 3021 - 298m²
LOT# 312 430m²
LOT# 311 435m²
LOT# 310 452m²
LOT# 309 430m²
LOT# 308 471m²
LOT# 301 397m²
LOT# 302 351m²
LOT# 303 351m²
LOT# 304 351m²
LOT# 305 351m²
LOT# 306 351m²
LOT# 307 483m²
LOT# 3009 6855m²
ROAD 4
LOT# 292 406m²
LOT# 293 352m²
LOT# 294 353m²
LOT# 295 354m²
LOT# 296 355m²
LOT# 297 356m²
LOT# 298 357m²
LOT# 300 429m²
LOT# 299 404m²
LOT# 283 354m²
ROAD 7
LOT# 3008 4647m²
LOT# 4003 36615m² (SW RESERVE)
LOT# 1001 2345m²
GREEN SPACE
LOT# 1002 7668m²
COMMERCIAL HUB
LOT# 5001 1117m² (WW RESERVE)
PLEASE REFER TO ASHBOURNE SOLAR FARM ENGINEERING DRAWINGS
ROAD 14
LOT# 190 672m²
LOT# 189 603m²
LOT# 188 603m²
LOT# 187 603m²
ROAD TO BE VESTED TO MPDC
LOT# 191 485m²
LOT# 192 424m²
LOT# 193 425m²
LOT# 205 494m²
LOT# 194

RESOURCE CONSENT

NOTES
1. All works to be in accordance with Matamata-Piako District Council standards.
2. Co-ordinates in terms of NZ Geodetic Datum MT Eden 2000.
3. Levels in terms of the New Zealand Vertical Datum 2016.
4. Benchmark: IT I DPS 29877 RL: 65.19.
5. Boundaries are subject to final survey.

LEGEND
- EX BDY
- PR BDY
- AVERAGE LOT SIZE 350m²
- AVERAGE LOT SIZE 500m²
- AVERAGE LOT SIZE 800m²
- RETIREMENT VILLAGE
- COMMERCIAL ZONE
- GREEN SPACE
- SW RESERVE
- WW RESERVE

Rev	Description	By	Date
B	FAST TRACK APP	MKS	04/2025
A	FAST TRACK APP	MKS	04/2025

	By	Date
Survey	MAVEN	05/2024
Design	MKS	11/2024
Drawn	MKS	11/2024
Checked	DJM	04/2025

Maven Waikato
07 242 0601
info@maven.co.nz
www.maven.co.nz
Level 1 286 Victoria Street, Hamilton New Zealand

Project
ASHBOURNE RESIDENTIAL FOR MATAMATA DEVELOPMENTS LTD

Title
PROPOSED MASTERPLAN

Project no.	289001
Scale	1:1000 @ A3
Cad file	C120-MASTER PLAN.DWG
Drawing no.	C120-6
Rev	B

N

LOT 36
DP 393306

LOT 40
DP 393306

LOT# 277
711m²

LOT# 276
713m²

LOT# 275
718m²

LOT# 274
723m²

LOT# 273
729m²

LOT# 272
738m²

LOT# 271
790m²

LOT# 270
780m²

LOT# 269
771m²

LOT# 268
774m²

LOT# 137
774m²

LOT# 136
787m²

LOT# 135
769m²

LOT# 134
851m²

LOT# 133
853m²

LOT# 256
557m²

LOT# 255
350m²

LOT# 254
350m²

LOT# 253
350m²

LOT# 252
450m²

LOT# 251
441m²

LOT# 257
503m²

LOT# 258
427m²

LOT# 259
350m²

LOT# 260
395m²

LOT# 261
385m²

LOT# 262
519m²

LOT# 267
350m²

LOT# 266
350m²

LOT# 265
350m²

LOT# 264
396m²

LOT# 263
385m²

LOT# 282
351m²

LOT# 250
415m²

LOT# 249
352m²

LOT# 248
352m²

LOT# 247
352m²

LOT# 246
352m²

LOT# 245
352m²

LOT# 244
352m²

LOT# 243
383m²

LOT# 242
383m²

LOT# 235
398m²

LOT# 236
352m²

LOT# 237
352m²

LOT# 238
352m²

LOT# 239
352m²

LOT# 241
352m²

LOT# 240
352m²

LOT# 234
391m²

LOT# 233
352m²

LOT# 232
352m²

LOT# 231
352m²

LOT# 230
352m²

LOT# 229
352m²

LOT# 228
352m²

LOT# 227
357m²

LOT# 138
372m²

LOT# 139
352m²

LOT# 140
352m²

LOT# 141
352m²

LOT# 142
352m²

LOT# 143
352m²

LOT# 144
352m²

LOT# 145
357m²

LOT# 119
466m²

LOT# 120
464m²

LOT# 121
454m²

LOT# 122
449m²

LOT# 123
466m²

LOT# 118
447m²

LOT# 117
447m²

LOT# 116
448m²

LOT# 115
447m²

LOT# 114
431m²

LOT# 127
526m²

LOT# 126
481m²

LOT# 125
481m²

LOT# 124
481m²

LOT# 128
526m²

LOT# 129
481m²

LOT# 130
481m²

LOT# 131
481m²

LOT# 113
447m²

LOT# 112
447m²

LOT# 111
431m²

LOT# 110
479m²

LOT# 220
367m²

LOT# 219
355m²

LOT# 218
355m²

LOT# 217
371m²

LOT# 221
449m²

LOT# 222
449m²

LOT# 223
449m²

LOT# 224
450m²

LOT# 225
450m²

LOT# 226
450m²

LOT# 216
360m²

LOT# 215
359m²

LOT# 214
359m²

LOT# 213
360m²

LOT# 212
360m²

LOT# 211
360m²

LOT# 106
449m²

LOT# 105
450m²

LOT# 104
374m²

LOT# 206
452m²

ROAD 1

ROAD 9

ROAD 10

ROAD 11

ROAD 12

ROAD 14

PARK RESERVE
LOT#3030 - 159m²

LOT# 3007
3796m²

ROAD TO BE
VESTED TO
MPDC

LOT# 3006
11318m²

ROAD TO BE
VESTED TO
MPDC

LOT# 3003
6482m²

PARK RESERVE
LOT#3029 - 374m²

JOAL LOT# 3018 - 307m²

LOT# 3002
9106m²

RESOURCE CONSENT

DATE 4/2025 FILEPATH: D:\MAVEN WAIKATO\06 PROJECTS\289001 - STATION ROAD\1 DRAWINGS\1 ASHBOURNE RESIDENTIAL\C120-MASTER PLAN.DWG

NOTES

1. All works to be in accordance with Matamata-Piako District Council standards.
2. Co-ordinates in terms of NZ Geodetic Datum MT Eden 2000.
3. Levels in terms of the New Zealand Vertical Datum 2016.
4. Benchmark: IT I DPS 29877 RL: 65.19.
5. Boundaries are subject to final survey.

LEGEND

- EX BDY
- PR BDY
- AVERAGE LOT SIZE 350m²
- AVERAGE LOT SIZE 500m²
- AVERAGE LOT SIZE 800m²
- RETIREMENT VILLAGE
- COMMERCIAL ZONE
- GREEN SPACE
- SW RESERVE
- WW RESERVE

Rev	Description	By	Date
B	FAST TRACK APP	MKS	04/2025
A	FAST TRACK APP	MKS	04/2025

	By	Date
Survey	MAVEN	05/2024
Design	MKS	11/2024
Drawn	MKS	11/2024
Checked	DJM	04/2025

Maven Waikato
07 242 0601
info@maven.co.nz
www.maven.co.nz
Level 1 286 Victoria Street, Hamilton
New Zealand

Project
ASHBOURNE RESIDENTIAL FOR MATAMATA DEVELOPMENTS LTD

Title
PROPOSED MASTERPLAN

Project no.	289001		
Scale	1:1000 @ A3		
Cad file	C120-MASTER PLAN.DWG		
Drawing no.	C120-7	Rev	B

N

ELDONWOOD DRIVE

LOT 40
DP 393306

LOT# 268
774m²

LOT# 137
774m²

LOT# 136
787m²

LOT# 135
769m²

LOT# 134
851m²

LOT# 133
853m²

LOT# 132
852m²

ROAD TO BE
VESTED TO
MPDC

LOT# 119
466m²

LOT# 120
464m²

LOT# 121
454m²

LOT# 122
449m²

LOT# 123
466m²

LOT# 118
447m²

LOT# 117
447m²

LOT# 127
526m²

LOT# 126
481m²

LOT# 125
481m²

LOT# 124
481m²

LOT# 116
448m²

LOT# 128
526m²

JOAL LOT# 3018 - 307m²

LOT# 129
481m²

LOT# 130
481m²

LOT# 131
481m²

LOT# 113
447m²

LOT# 112
447m²

PARK RESERVE
LOT#3029 - 374m²

LOT# 4001
7118m²
(SW RESERVE)

ROAD 9

LOT# 110
479m²

LOT# 109
609m²

LOT 106
DP 393306

LOT 14
DP 584421

LOT 15
DP 584421

LOT 16
DP 584421

LOT 17
DP 584421

LOT 18
DP 584421

LOT 19
DP 584421

PEAKEDALE DRIVE

RESOURCE CONSENT

NOTES

1. All works to be in accordance with Matamata-Piako District Council standards.
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4. Benchmark: IT I DPS 29877 RL: 65.19.
5. Boundaries are subject to final survey.

LEGEND

- EX BDY
- PR BDY
- AVERAGE LOT SIZE 350m²
- AVERAGE LOT SIZE 500m²
- AVERAGE LOT SIZE 800m²
- RETIREMENT VILLAGE
- COMMERCIAL ZONE
- GREEN SPACE
- SW RESERVE
- WW RESERVE

Rev	Description	By	Date
B	FAST TRACK APP	MKS	04/2025
A	FAST TRACK APP	MKS	04/2025

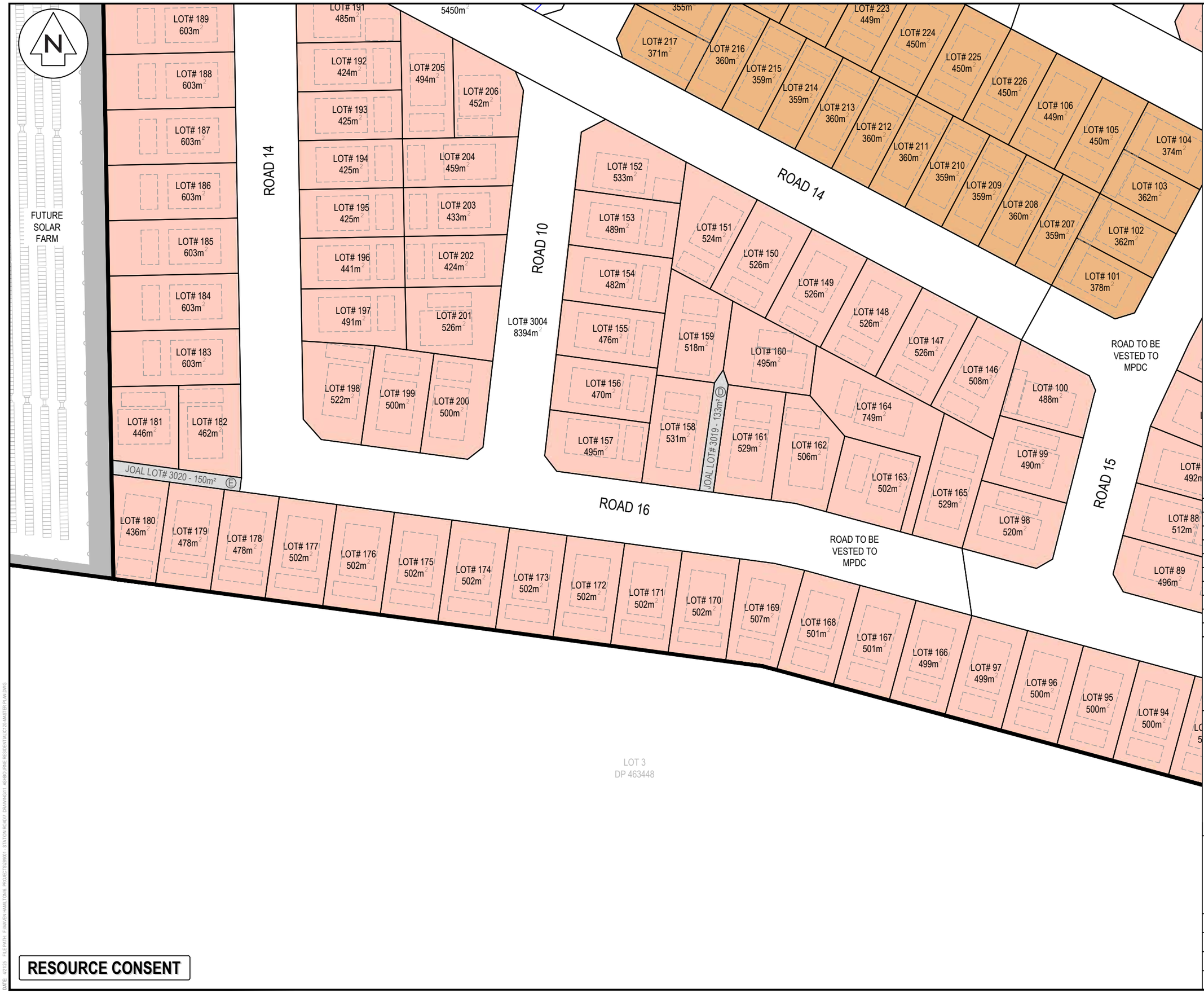
	By	Date
Survey	MAVEN	05/2024
Design	MKS	11/2024
Drawn	MKS	11/2024
Checked	DJM	04/2025

Maven Waikato
07 242 0601
info@maven.co.nz
www.maven.co.nz
Level 1 286 Victoria Street, Hamilton
New Zealand

Project
ASHBOURNE RESIDENTIAL FOR MATAMATA DEVELOPMENTS LTD

Title
PROPOSED MASTERPLAN

Project no.	289001		
Scale	1:1000 @ A3		
Cad file	C120-MASTER PLAN.DWG		
Drawing no.	C120-8	Rev	B



NOTES

1. All works to be in accordance with Matamata-Piako District Council standards.
2. Co-ordinates in terms of NZ Geodetic Datum MT Eden 2000.
3. Levels in terms of the New Zealand Vertical Datum 2016.
4. Benchmark: IT I DPS 29877 RL: 65.19.
5. Boundaries are subject to final survey.

LEGEND

- EX BDY
- PR BDY
- AVERAGE LOT SIZE 350m²
- AVERAGE LOT SIZE 500m²
- AVERAGE LOT SIZE 800m²
- RETIREMENT VILLAGE
- COMMERCIAL ZONE
- GREEN SPACE
- SW RESERVE
- WW RESERVE

Rev	Description	By	Date
B	FAST TRACK APP	MKS	04/2025
A	FAST TRACK APP	MKS	04/2025

	By	Date
Survey	MAVEN	05/2024
Design	MKS	11/2024
Drawn	MKS	11/2024
Checked	DJM	04/2025

Maven Waikato
07 242 0601
info@maven.co.nz
www.maven.co.nz
Level 1 286 Victoria Street, Hamilton
New Zealand

Project

ASHBOURNE RESIDENTIAL FOR MATAMATA DEVELOPMENTS LTD

Title

PROPOSED MASTERPLAN

Project no.	289001		
Scale	1:1000 @ A3		
Cad file	C120-MASTER PLAN.DWG		
Drawing no.	C120-9	Rev	B

RESOURCE CONSENT

DATE: 4/2025 FILEPATH: P:\MAVEN HAMILTON\PROJECTS\289001 - STATION ROAD\7. DRAWINGS\1. ASHBOURNE RESIDENTIAL\C120-MASTER PLAN.DWG

N

LOT# 129 481m²
LOT# 130 481m²
LOT# 131 481m²
LOT# 113 447m²
LOT# 112 447m²
LOT# 111 431m²
LOT# 3002 9106m²
ROAD 9
LOT# 110 479m²
LOT# 109 609m²
LOT# 107 506m²
LOT# 108 456m²
LOT# 4002 1073m² (SW RESERVE)
LOT# 52 601m²
LOT 17 DP 584421
LOT 18 DP 584421
LOT 19 DP 584421
LOT 20 DP 584421
LOT 21 DP 584421
PEAKEDALE DRIVE
LOT 71 DP 584421
LOT 72 DP 584421
LOT 73 DP 584421
ROAD TO BE VESTED TO MPDC
ROAD 1
LOT# 8 663m²
LOT# 7 614m²
LOT# 6 566m²
LOT# 5 534m²
LOT# 4 501m²
LOT# 3 502m²
LOT# 2 500m²
LOT# 1 500m²
LOT# 3001 13830m²
LOT# 82 484m²
LOT# 83 483m²
LOT# 81 476m²
LOT# 84 613m²
LOT# 80 460m²
LOT# 69 501m²
LOT# 85 570m²
LOT# 68 561m²
LOT# 70 509m²
LOT# 58 546m²
LOT# 53 518m²
LOT# 86 564m²
LOT# 79 501m²
LOT# 71 519m²
LOT# 67 520m²
LOT# 78 531m²
LOT# 59 520m²
LOT# 54 513m²
LOT# 72 510m²
LOT# 66 519m²
LOT# 77 585m²
LOT# 60 520m²
LOT# 55 513m²
LOT# 73 577m²
LOT# 65 501m²
LOT# 76 499m²
LOT# 61 501m²
LOT# 56 513m²
LOT# 75 500m²
LOT# 74 500m²
LOT# 64 500m²
LOT# 63 500m²
LOT# 62 500m²
LOT# 57 505m²
JOAL LOT# 3017 - 617m²
JOAL LOT# 3016 - 402m²
Ⓑ
Ⓐ
Ⓒ
LOT# 15 437m²
LOT# 14 434m²
LOT# 13 432m²
LOT# 12 433m²
LOT# 11 434m²
LOT# 10 448m²
LOT# 9 441m²
LOT# 16 438m²
LOT# 17 437m²
LOT# 18 434m²
LOT# 19 435m²
LOT# 20 436m²
LOT# 21 439m²
LOT# 22 437m²
ROAD 13
ROAD 8
ROAD TO BE VESTED TO MPDC
LOT# 30 437m²
LOT# 29 432m²
LOT# 28 432m²
LOT# 27 432m²
LOT# 26 432m²
LOT# 25 435m²
LOT# 24 428m²
LOT# 23 439m²
LOT# 31 446m²
LOT# 32 439m²
LOT# 33 439m²
LOT# 34 439m²
LOT# 35 439m²
LOT# 36 431m²
LOT# 37 433m²
ROAD 16
LOT# 93 500m²
LOT# 92 500m²
LOT# 91 500m²
LOT# 90 500m²
LOT# 51 500m²
LOT# 50 500m²
LOT# 49 500m²
LOT# 48 500m²
LOT# 47 500m²
LOT# 46 500m²
LOT# 45 500m²
LOT# 44 500m²
LOT# 43 500m²
LOT# 42 500m²
LOT# 41 500m²
LOT# 40 500m²
LOT# 39 500m²
LOT# 38
LOT 3 DP 463448

RESOURCE CONSENT

NOTES
1. All works to be in accordance with Matamata-Piako District Council standards.
2. Co-ordinates in terms of NZ Geodetic Datum MT Eden 2000.
3. Levels in terms of the New Zealand Vertical Datum 2016.
4. Benchmark: IT I DPS 29877 RL: 65.19.
5. Boundaries are subject to final survey.

LEGEND
- EX BDY
- PR BDY
- AVERAGE LOT SIZE 350m²
- AVERAGE LOT SIZE 500m²
- AVERAGE LOT SIZE 800m²
- RETIREMENT VILLAGE
- COMMERCIAL ZONE
- GREEN SPACE
- SW RESERVE
- WW RESERVE

Rev	Description	By	Date
B	FAST TRACK APP	MKS	04/2025
A	FAST TRACK APP	MKS	04/2025

	By	Date
Survey	MAVEN	05/2024
Design	MKS	11/2024
Drawn	MKS	11/2024
Checked	DJM	04/2025

Maven Waikato
07 242 0601
info@maven.co.nz
www.maven.co.nz
Level 1 286 Victoria Street, Hamilton New Zealand

Project
ASHBOURNE RESIDENTIAL FOR MATAMATA DEVELOPMENTS LTD

Title
PROPOSED MASTERPLAN

Project no.	289001
Scale	1:1000 @ A3
Cad file	C120-MASTER PLAN.DWG
Drawing no.	C120-10 Rev B

DATE: 4/21/25 FILEPATH: T:\MAVEN HAMILTON\PROJECTS\289001 - STATION ROAD\7. DRAWINGS\01 ASHBOURNE RESIDENTIAL\C120-MASTER PLAN.DWG

NOTES

1. All works to be in accordance with Matamata-Piako District Council standards.
2. Co-ordinates in terms of NZ Geodetic Datum MT Eden 2000.
3. Levels in terms of the New Zealand Vertical Datum 2016.
4. Benchmark: IT I DPS 29877 RL: 65.19.
5. Boundaries are subject to final survey.

LEGEND

EX BDY

STAGE BDY

Rev	Description	By	Date
B	FAST TRACK APP	MKS	04/2025
A	FAST TRACK APP	MKS	04/2025

	By	Date
Survey	MAVEN	05/2024
Design	MKS	04/2025
Drawn	MKS	04/2025
Checked	DJM	04/2025

Maven Waikato
07 242 0601
info@maven.co.nz
www.maven.co.nz
Level 1 286 Victoria Street, Hamilton
New Zealand

Project

ASHBOURNE RESIDENTIAL FOR MATAMATA DEVELOPMENTS LTD

Title

PROPOSED STAGING OVERVIEW PLAN

Project no.	289001		
Scale	1:6000 @ A3		
Cad file	C130-STAGING PLAN.DWG		
Drawing no.	C130	Rev	B

RESOURCE CONSENT

DATE 4/7/25 FILEPATH: P:\MAVEN HAMILTON\6 PROJECTS\289001 - STATION ROAD\7 DRAWINGS\1 ASHBOURNE RESIDENTIAL\C130-STAGING PLAN.DWG

EARTHWORKS CUT/FILL
(FROM FINISHED SUBGRADE
TO EXISTING SUBGRADE I.E EXCLUDES TOPSOIL)

CUT VOLUME (IN-SITU)	238,361m³
FILL VOLUME (IN-SITU)	217,935m³
REQ. CUT VOLUME (FACTOR 1.1)	239,729m³
SURPLUS OF CUT	1,368m³
TOPSOIL STRIPPED (300mm) =	136,156m³
EARTHWORKS AREA =	45.39ha

NOTE: NO ALLOWANCE FOR SERVICES
TRENCHES OR DRAINAGE SURPLUS

RESOURCE CONSENT

Notes
1. All works to be in accordance with Waikato Regional Council Erosion and Sediment Control: guidelines for soil disturbing activities TR 2009/02.
2. Co-ordinates in terms of NZ Geodetic Datum NZTM 2000.
3. Levels in terms of New Zealand Vertical Datum 2016.
4. Benchmark: IT I DPS 29877 RL: 65.19.
5. Boundaries are subject to final survey.
6. It is the Contractors responsibility to locate all services that may be affected by his operations.
7. The Contractors shall obtain all necessary approval from utility operators before commencing work under or near their services.
8. Contours are shown at 0.5m minor and 2.5m major.

Cut/Fill Table

Number #	Minimum Elevation	Maximum Elevation	Color
1	-4.000	-2.000	
2	-2.000	0.000	
3	0.000	2.000	
4	2.000	4.000	

Rev	Description	By	Date
A	FAST TRACK APP	MKS	04/2025

	By	Date
Survey	MAVEN	05/2024
Design	MKS	04/2025
Drawn	MKS	04/2025
Checked	DJM	04/2025

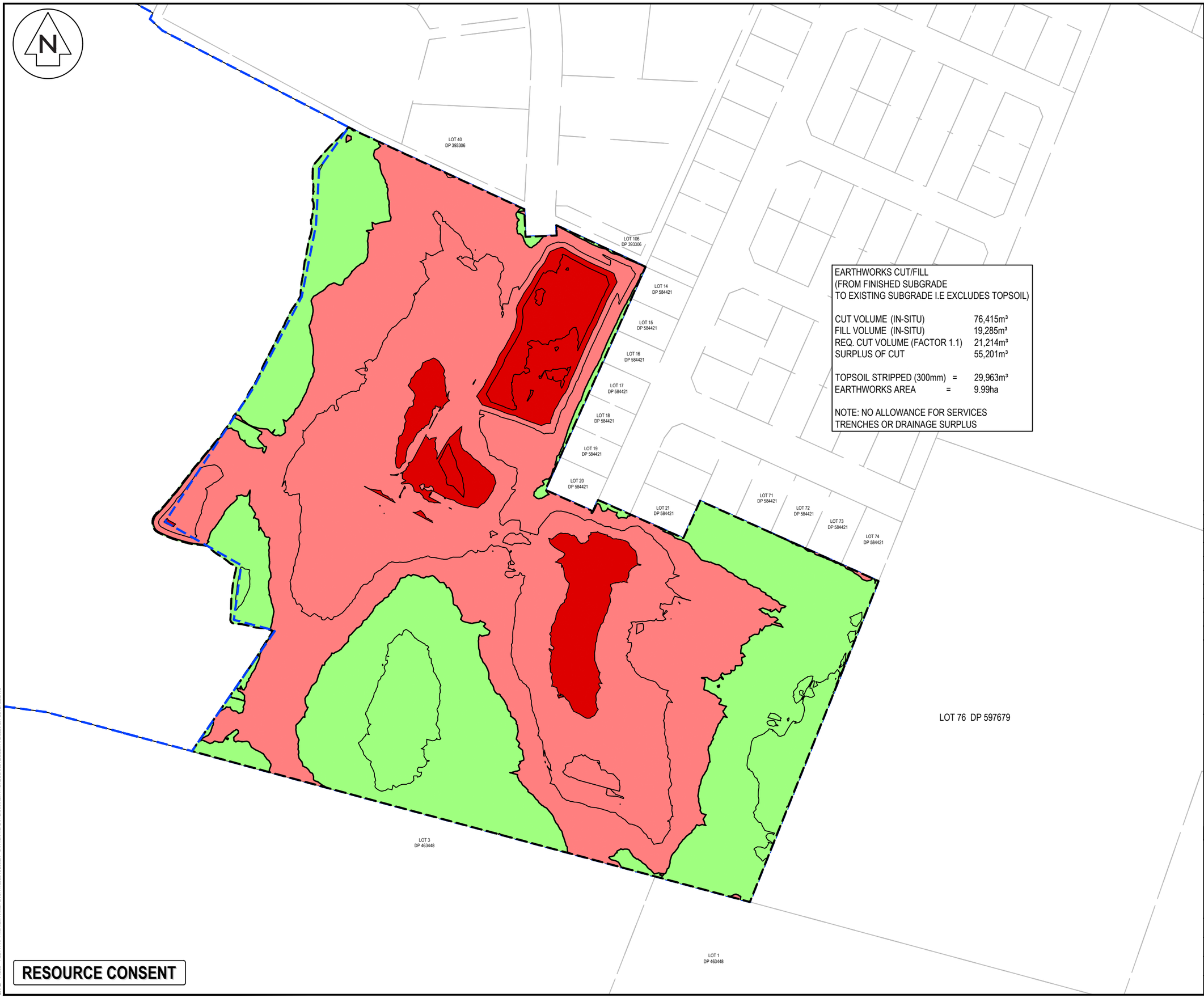
Maven Associates
09 571 0050
info@maven.co.nz
www.maven.co.nz
5 Owens Road, Epsom
Auckland 1023

Project
ASHBOURNE RESIDENTIAL FOR MATAMATA DEVELOPMENTS LTD

Title
PROPOSED CUT/FILL OVERVIEW PLAN

Project no.	289001		
Scale	1:6000 @ A3		
Cad file	C220-EW CUT&FILL.DWG		
Drawing no.	C220	Rev	A

DATE 4/9/25 FILEPATH P:\MAVEN HAMILTON\6 PROJECTS\289001 STATION ROAD\7 DRAWING\1 ASHBOURNE RESIDENTIAL\C220-EW CUT&FILL.DWG



EARTHWORKS CUT/FILL
(FROM FINISHED SUBGRADE
TO EXISTING SUBGRADE I.E EXCLUDES TOPSOIL)

CUT VOLUME (IN-SITU)	76,415m³
FILL VOLUME (IN-SITU)	19,285m³
REQ. CUT VOLUME (FACTOR 1.1)	21,214m³
SURPLUS OF CUT	55,201m³
TOPSOIL STRIPPED (300mm) =	29,963m³
EARTHWORKS AREA =	9.99ha

NOTE: NO ALLOWANCE FOR SERVICES
TRENCHES OR DRAINAGE SURPLUS

RESOURCE CONSENT

Notes

1. All works to be in accordance with Waikato Regional Council Erosion and Sediment Control: guidelines for soil disturbing activities TR 2009/02.
2. Co-ordinates in terms of NZ Geodetic Datum NZTM 2000.
3. Levels in terms of New Zealand Vertical Datum 2016.
4. Benchmark: IT I DPS 29877 RL: 65.19.
5. Boundaries are subject to final survey.
6. It is the Contractors responsibility to locate all services that may be affected by his operations.
7. The Contractors shall obtain all necessary approval from utility operators before commencing work under or near their services.
8. Contours are shown at 0.5m minor and 2.5m major.

Cut/Fill Table

Number #	Minimum Elevation	Maximum Elevation	Color
1	-4.000	-2.000	
2	-2.000	0.000	
3	0.000	2.000	
4	2.000	4.000	

Rev	Description	By	Date
A	FAST TRACK APP	MKS	04/2025

	By	Date
Survey	MAVEN	05/2024
Design	MKS	04/2025
Drawn	MKS	04/2025
Checked	DJM	04/2025

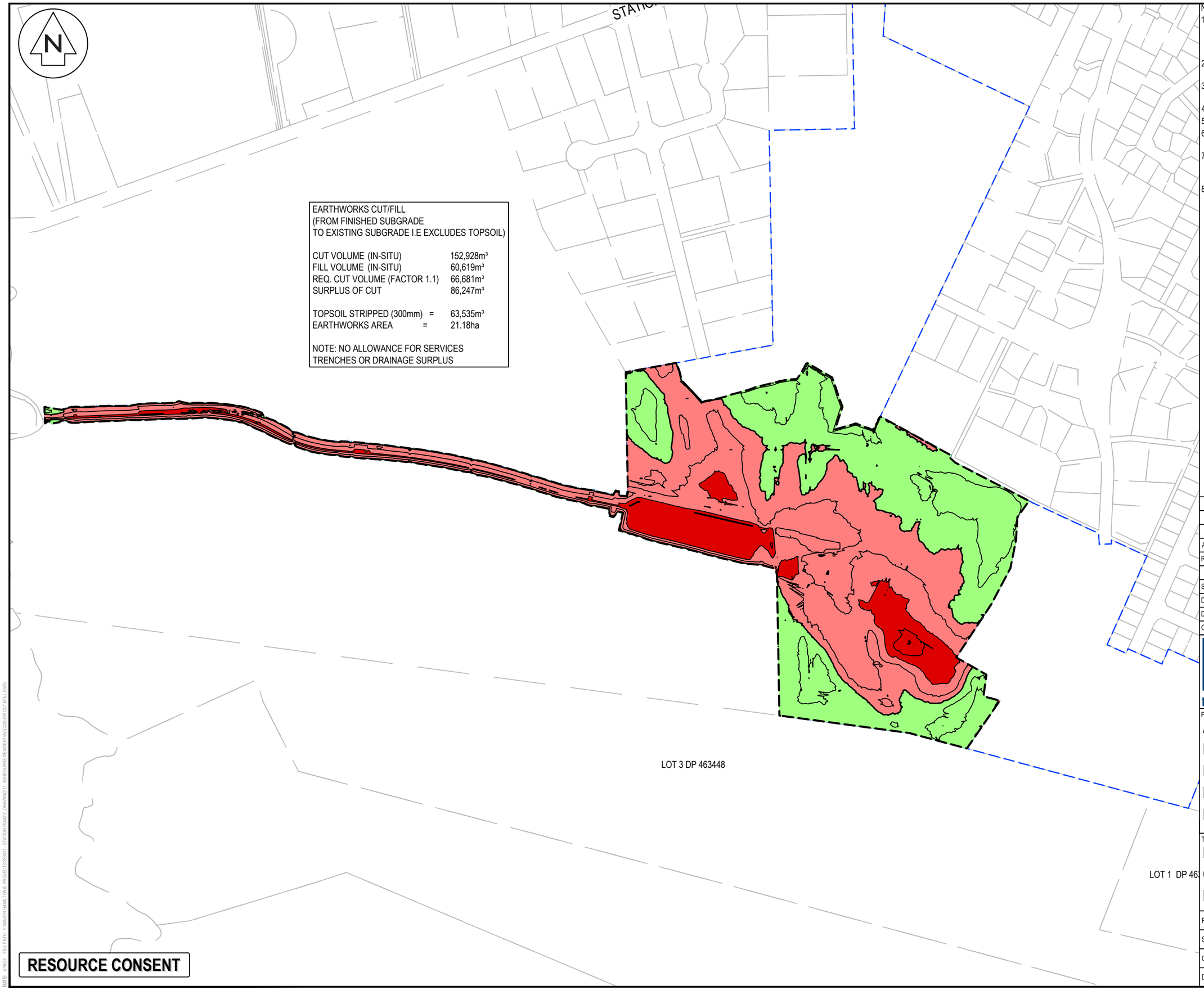
Maven Associates
09 571 0050
info@maven.co.nz
www.maven.co.nz
5 Owens Road, Epsom
Auckland 1023

Project
ASHBOURNE RESIDENTIAL FOR MATAMATA DEVELOPMENTS LTD

Title
PROPOSED CUT/FILL PLAN STAGE 1

Project no.	289001
Scale	1:2000 @ A3
Cad file	C220-EW CUT&FILL.DWG
Drawing no.	C220-1 Rev A

DATE 4/6/25 FILEPATH F:\MAVEN\HAMILTON\6 PROJECTS\289001 - STATION ROAD\7 DRAWING\01 ASHBOURNE RESIDENTIAL\C220-EW CUT&FILL.DWG



Notes

1. All works to be in accordance with Waikato Regional Council Erosion and Sediment Control: guidelines for soil disturbing activities TR 2009/02.
2. Co-ordinates in terms of NZ Geodetic Datum NZTM 2000.
3. Levels in terms of New Zealand Vertical Datum 2016.
4. Benchmark: IT I DPS 29877 RL: 65.19.
5. Boundaries are subject to final survey.
6. It is the Contractors responsibility to locate all services that may be affected by his operations.
7. The Contractors shall obtain all necessary approval from utility operators before commencing work under or near their services.
8. Contours are shown at 0.5m minor and 2.5m major.

Cut/Fill Table

Number #	Minimum Elevation	Maximum Elevation	Color
1	-4.000	-2.000	
2	-2.000	0.000	
3	0.000	2.000	
4	2.000	4.000	

Rev	Description	By	Date
A	FAST TRACK APP	MKS	04/2025

	By	Date
Survey	MAVEN	05/2024
Design	MKS	04/2025
Drawn	MKS	04/2025
Checked	DJM	04/2025

Maven Associates
09 571 0050
info@maven.co.nz
www.maven.co.nz
5 Owens Road, Epsom
Auckland 1023

Project
ASHBOURNE RESIDENTIAL FOR MATAMATA DEVELOPMENTS LTD

Title
PROPOSED CUT/FILL PLAN STAGE 2

Project no.	289001		
Scale	1:5000 @ A3		
Cad file	C220-EW CUT&FILL.DWG		
Drawing no.	C220-2	Rev	A

EARTHWORKS CUT/FILL
(FROM FINISHED SUBGRADE
TO EXISTING SUBGRADE I.E EXCLUDES TOPSOIL)

CUT VOLUME (IN-SITU)		9,018m³
FILL VOLUME (IN-SITU)		138,031m³
REQ. CUT VOLUME (FACTOR 1.1)		151,834m³
SHORTFALL OF FILL		142,816m³
TOPSOIL STRIPPED (300mm)	=	42,658m³
EARTHWORKS AREA	=	14.22ha

NOTE: NO ALLOWANCE FOR SERVICES
TRENCHES OR DRAINAGE SURPLUS

RESOURCE CONSENT

Notes

1. All works to be in accordance with Waikato Regional Council Erosion and Sediment Control: guidelines for soil disturbing activities TR 2009/02.
2. Co-ordinates in terms of NZ Geodetic Datum NZTM 2000.
3. Levels in terms of New Zealand Vertical Datum 2016.
4. Benchmark: IT I DPS 29877 RL: 65.19.
5. Boundaries are subject to final survey.
6. It is the Contractors responsibility to locate all services that may be affected by his operations.
7. The Contractors shall obtain all necessary approval from utility operators before commencing work under or near their services.
8. Contours are shown at 0.5m minor and 2.5m major.

Cut/Fill Table

Number #	Minimum Elevation	Maximum Elevation	Color
1	-4.000	-2.000	
2	-2.000	0.000	
3	0.000	2.000	
4	2.000	4.000	

Rev	Description	By	Date
A	FAST TRACK APP	MKS	04/2025

	By	Date
Survey	MAVEN	05/2024
Design	MKS	04/2025
Drawn	MKS	04/2025
Checked	DJM	04/2025

Maven Associates
09 571 0050
info@maven.co.nz
www.maven.co.nz
5 Owens Road, Epsom
Auckland 1023

Project
ASHBOURNE RESIDENTIAL FOR MATAMATA DEVELOPMENTS LTD

Title
PROPOSED CUT/FILL PLAN STAGE 3

Project no.	289001		
Scale	1:3000 @ A3		
Cad file	C220-EW CUT&FILL.DWG		
Drawing no.	C220-3	Rev	A

ORIGINAL SIZE: A3

N

Lot 5 DPS 74018

Lot 1 DP 491699

STATION ROAD

Lot 1 DPS 29613

Lot 31 DP 562902

Lot 32 DP 562902

Lot 33 DP 562902

Lot 34 DP 562902

Lot 30 DP 562902

Lot 29 DP 562902

Lot 28 DP 562902

ORCHARD PLACE

OLIVE PLACE

Lot 24 DP 562902

Lot 27 DP 562902

Lot 25 DP 562902

HIGHGROVE AVENUE

Lot 26 DP 562902

Lot 23 DP 562902

Lot 22 DP 562902

Lot 21 DP 562902

Lot 19 DP 562902

Lot 20 DP 562902

Lot 18 DP 562902

Part Lot 1 DP 21055

STORMWATER POND 1

STORMWATER POND 2

STAGE 1

STAGE 2

STAGE 3

STAGE 4

STAGE 5

STAGE 6

STAGE 7

STAGE 8

STAGE 9

STAGE 10

STAGE 10

FACILITIES

AGED CARE

ROAD 1

ROAD 2

ROAD 3

ROAD 4

ROAD 5

ROAD 6

ROAD 7

ROAD 8

ROAD 9

ROAD 10

ROAD 11

ROAD 12

ROAD 13

ROAD 14

ROAD 15

FOR CONSENT

DATE: 4/7/25

Notes

1. All works to be in accordance with RITS standardS.
2. Co-ordinates in terms of Moturiki Eden 2000.
3. Reduced Levels are in terms of NZVD 2016.
4. Contour interval Major 1m Minor 0.2m.
5. Roads shown are legal.
6. Areas, Boundaries and Measurements are approximate only and subject to final survey.
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Legend

- SITE BDY
- STAGE BDY
- EX BDY
- PR CARRIAGEWAY
- PR FOOTPATH
- PR HARDSTAND
- PR.VERTICAL K&C
- PR.DISH CHANNEL
- FLUSH NIB KERB
- PR SW CATCHPIT
- RAINGARDENS
- GRAVEL SOAKAGE UNDER ROAD
- STORMWATER POND

Rev	Description	By	Date
A	FOR CONSENT	KQ	04/25

	By	Date
Survey	MAVEN	10/2024
Design	KQ	04/2025
Drawn	KQ	04/2025
Checked	SB	04/2025

Maven Matamata
matamatainfo@maven.co.nz
www.maven.co.nz
8 Tainui Street, Matamata
New Zealand

Project

ASHBOURNE RETIREMENT VILLAGE MATAMATA FOR UNITY DEVELOPMENT LTD

Title

PROPOSED SITE OVERVIEW PLAN

Project no.	J00606
Scale	1:2500@A3
Cad file	C1100 - OVERVIEW.DWG
Drawing no.	C1100 Rev A

ORIGINAL SIZE: A3

N

Lot 1 DP 567678
Lot 1 DP 305244
Lot 5 DPS 74018
Lot 1 DP 348214
Lot 1 DP 491699
Lot 1 DPS 29613
Lot 1 DPS 55490
Lot 2 DP 348214
Lot 31 DP 562902
Lot 32 DP 562902
Lot 33 DP 562902
Lot 34 DP 562902
Lot 30 DP 562902
Lot 29 DP 562902
Lot 28 DP 562902
Lot 24 DP 562902
Lot 25 DP 562902
Lot 27 DP 562902
Lot 26 DP 562902
Lot 23 DP 562902
Lot 22 DP 562902
Lot 21 DP 562902
Lot 20 DP 562902
Part Lot 1 DP 21055

STATION ROAD
OLIVE PLACE
HIGHWAY

STAGE 1
STAGE 2
STAGE 3
STAGE 4
STAGE 5
STAGE 6
STAGE 7
STAGE 8
STAGE 9
STAGE 10

C2201
C2202
C2203
C2204

FOR CONSENT

Notes
1. All works to be in accordance with MPDC and RITS standards.
2. Co-ordinates in terms of NZ Geodetic Datum Mt Eden 2000.
3. Reduced Levels are in terms of NZVD 2016.
4. Contour interval Major 1m Minor 0.2m
5. It is the contractors responsibility to locate all services that may be affected by their operations.
6. The contractor shall comply with all relevant Health and Safety requirements.
7. The contractor shall obtain all necessary approval from utility operators before commencing work under or near their services.
8. Sediment control shall be installed and operational before earthworks start onsite in accordance with council standards.
9. Contractor shall provide asbuilt of working sediment control devices and confirmation of pond/decent volumes to engineer.
10. Sediment control to comply with Waikato Regional Council Erosion and Sediment Control:guidelines for soil disturbing activities TR2009/02.

LEGEND
- EX BDY
- PR BDY
- EX MAJOR CONTOUR
- EX MINOR CONTOUR
- PR MAJOR CONTOUR
- PR MINOR CONTOUR

Rev	Description	By	Date
B	FOR CONSENT	KQ	04/25
A	FOR REVIEW	DP	01/25

	By	Date
Survey	MAVEN	10/2024
Design	KQ	04/2025
Drawn	DP	04/2025
Checked	SB	04/2025

Maven Matamata
matamatainfo@maven.co.nz
www.maven.co.nz
8 Tainui Street, Matamata
New Zealand

Project
ASHBOURNE RETIREMENT VILLAGE MATAMATA FOR UNITY DEVELOPMENT LTD

Title
PROPOSED OVERVIEW CONTOUR PLAN

Project no.	J00606		
Scale	1:2500@A3		
Cad file	C2200 - PGL.DWG		
Drawing no.	C2200	Rev	B

DATE: 4/7/25
FILE PATH: \\MAVEN.MAVENCONSULTING.CO.NZ\SHARE\CURRENT\MAVEN MATAMATA\1. PROJECTS\J00606 MDL - HEMMINGS STATION RD\8. DRAWING\2. CAD\3. DESIGN\C2200 - PGL.DWG

ORIGINAL SIZE: A3

N

STATION ROAD

Lot 1
DPS 29613

Lot 33
DP 562902

Lot 34
DP 562902

Lot 28
DP 562902

STAGE 1

STAGE 2

STAGE 4

STORMWATER
POND 1

ROAD 1
ROAD 2
ROAD 3
ROAD 4
ROAD 5
ROAD 8
ROAD 10

67.00
68.00
66.00

RL 67.30
RL 67.91
RL 67.93
RL 68.55
RL 67.20
RL 67.15
RL 68.33
RL 68.20
RL 67.40
RL 68.50
RL 68.35
RL 67.86
RL 67.50
RL 67.60
RL 67.61
RL 67.76
RL 67.55
RL 67.65
RL 67.70
RL 67.80
RL 67.73
RL 67.24
RL 67.35
RL 67.25
RL 67.45
RL 67.33
RL 67.75
RL 68.01
RL 68.00

FOR CONSENT

DATE: 4/11/25

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Notes

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LEGEND

- EX BDY
- PR BDY
- EX MAJOR CONTOUR
- EX MINOR CONTOUR
- PR MAJOR CONTOUR
- PR MINOR CONTOUR

Rev	Description	By	Date
B	FOR CONSENT	KQ	04/25
A	FOR REVIEW	DP	01/25

	By	Date
Survey	MAVEN	10/2024
Design	KQ	04/2025
Drawn	DP	04/2025
Checked	SB	04/2025

Maven Matamata
matamatainfo@maven.co.nz
www.maven.co.nz
8 Tainui Street, Matamata
New Zealand

Project

ASHBOURNE RETIREMENT VILLAGE MATAMATA FOR UNITY DEVELOPMENT LTD

Title

PROPOSED CONTOUR PLAN (1 OF 4)

Project no.	J00606		
Scale	1:1000@A3		
Cad file	C2200 - PGL.DWG		
Drawing no.	C2201	Rev	B

ORIGINAL SIZE: A3

STAGE 3
STAGE 5
STAGE 6
STAGE 7
STAGE 8
STAGE 10

ROAD 1
ROAD 4
ROAD 5
ROAD 6
ROAD 7
ROAD 10
ROAD 11
ROAD 12
ROAD 13
ROAD 14

FOR CONSENT

Notes
1. All works to be in accordance with MPDC and RITS standards.
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LEGEND
- EX BDY
- PR BDY
- EX MAJOR CONTOUR
- EX MINOR CONTOUR
- PR MAJOR CONTOUR
- PR MINOR CONTOUR

Rev	Description	By	Date
B	FOR CONSENT	KQ	04/25
A	FOR REVIEW	DP	01/25

	By	Date
Survey	MAVEN	10/2024
Design	KQ	04/2025
Drawn	DP	04/2025
Checked	SB	04/2025

Maven Matamata
matamatainfo@maven.co.nz
www.maven.co.nz
8 Tainui Street, Matamata
New Zealand

Project
ASHBOURNE RETIREMENT VILLAGE MATAMATA FOR UNITY DEVELOPMENT LTD

Title
PROPOSED CONTOUR PLAN (2 OF 4)

Project no.	J00606		
Scale	1:1000@A3		
Cad file	C2200 - PGL.DWG		
Drawing no.	C2202	Rev	B

DATE: 4/17/25
FILE PATH: F:\MAVEN MATAMATA\1. PROJECTS\J00606 MDL - HEMMINGS STATION RD\8. DRAWING\2. CAD\3. DESIGN\C2200 - PGL.DWG