

BEFORE AN INDEPENDENT HEARING PANEL

IN THE MATTER of the Resource Management Act 1991 (RMA)

AND

IN THE MATTER of hearing submissions and further submissions in respect
of Matamata-Piako District Council - Plan Change 58 -
Avenue Business Park

**STATEMENT OF JEREMY BRYCE HUNT ON BEHALF OF WARWICK AND
MARION STEFFERT**

**SOIL RESOURCES AND NATIONAL POLICY STATEMENT FOR HIGHLY
PRODUCTIVE LAND**

14 February 2024

Introduction

- 1 My full name is Jeremy Bryce Hunt.
- 2 I am an agribusiness and environmental consultant at AgFirst Waikato (2016) Limited (**AgFirst**), which is an agribusiness consultancy business located in Hamilton.
- 3 I have been employed as an agribusiness consultant for 5.5 years.
- 4 I hold a bachelor's degree in environmental science obtained in 2004 from the University of Canterbury. I have completed the intermediate and advanced sustainable nutrient management and advanced soil conservation papers at Massey University. I also have a Land Use Capability Mapping Workshop Certificate. I am a member of the New Zealand Institute of Primary Industry Management (**MNZIPIM**).
- 5 I have been engaged in the field of environmental science for 18 years. The majority of my experience has been based in agribusiness, ecological and air quality consultancy work, with the past 5.5 years as an expert in nutrient management and soil versatility and productivity assessments.
- 6 My previous experience has been as a dairy farmer between 2016-2018. I worked for URS and AECOM as a senior environmental consultant and project manager from 2010-2016. I contracted to Halcrow Group in London, United Kingdom as an environmental site engineer for the development of the London Olympic Park from 2008-2009. From 2006-2008 I worked for the National Institute of Water and Atmosphere (NIWA) as an environmental technician in the air quality, ecology and hydrology fields.
- 7 My agribusiness consultancy experience has included expert witness statements for council hearings and environment court in relation to the National Policy Statement for Highly Productive Land (**NPS-HPL**).
- 8 In relation to this hearing, I am authorised to give evidence on behalf of Warwick and Marion Steffert (**Steffert**).

Code of Conduct

- 9 I have read the Environment Court's 'Code of Conduct for Expert Witnesses' as contained in the Environment Court's Consolidated Practice Note 2023 and agree to comply with it. I have complied with it when preparing my written statement of evidence and I have not omitted

to consider material facts known to me that might alter or detract from the opinions expressed.

Executive Summary

- 10 The proposed Plan Change 58 (**PC58**) for land near the western edge of Morrinsville would provide for approximately 10.1 hectares (**ha**) of developable land to the industrial land supply for Morrinsville once expected non-developable areas such as roads, stormwater and wastewater infrastructure are excluded.
- 11 Below is a summary of the position reached in this evidence on the significant matters:
 - (a) I have assessed the PC58 site (approximately 13.4 ha) against relevant provisions of the NPS-HPL to inform an assessment of whether PC58 meets the circumstances in which urban rezoning may be undertaken as set out in Clause 3.6 of the NPS-HPL.
 - (b) From my assessment, I consider that approximately 7.9 ha of the Site is Highly Productive Land (**HPL**) under the NPS-HPL, being rural zoned land within the Matamata-Piako District and Land Use Capability (**LUC**) classification 1-3.
 - (c) Areas that do not account for HPL across the PC58 Site include:
 - (i) Land that is not classified as LUC 1-3 under the New Zealand Land Resource Inventory (**NZLRI**);
 - (ii) Unproductive and modified soils including the construction earthworks area, stock yards, buildings, ancillary sheds and farm tracks.
 - (d) Key limitations for land based primary production and versatility on the PC58 Site include:
 - (i) Lack of size and scale,
 - (ii) Poor draining gley soils on the lower terrace, which makes up the majority of the HPL area;
 - (iii) Sloping land and modified soils from earthworks to the north;
 - (iv) Inability to achieve scale through neighbouring farms, due to land use change restrictions;

- (v) Neighbouring land to the east and south-east zoned industrial and business;
 - (vi) Non-reversible land fragmentation to the south and west.
- (e) I have assessed alternative options for expansion of other existing industrial areas in Morrinsville to meet the growth requirements.
- These sites include:
- (i) The Fonterra and Greenlea industrial sites;
 - (ii) The Morrinsville-Walton Road industrial area.
- (f) My comparison against other reasonably practicable and feasible options demonstrates that the loss of HPL overall is minimised by rezoning the PC58 Site. Rezoning the PC58 Site comparatively results in less of a loss of productive capacity and avoids fragmentation of larger and geographically cohesive areas of HPL.
- (g) I have assessed the PC58 Site for its economic benefit from land-based primary production, so this can be used by economists to consider whether the economic benefits of the rezoning outweigh the costs associated with the loss of HPL.
- (h) I do not consider that the loss of the well below average productivity from the PC58 Site will have a significant loss on the district's production, and the conversion of the land into General Industrial Zone (**GIZ**) would not cause any fragmentation or further disruption of additional HPL.

Background

- 12 I have been engaged by the Stefferts to prepare evidence for PC58. I was the author of the Versatile Soils Assessment for the Avenue Business Park.¹
- 13 I have visited the Site and the locality on multiple occasions since I was engaged in 2022.

¹ Refer to the report dated November 2023 which supersedes an earlier report dated September 2022.

Scope of Evidence

- 14 This evidence has been prepared on behalf of the applicants, the Stefferts, who have requested a private plan change to the Matamata-Piako District Plan to rezone approximately 13.4 ha of rural land from Rural Zone to General Industrial Zone on the western side of Morrinsville, between Avenue Road North and SH26.
- 15 My evidence addresses the productive capacity of the PC58 Site and provides information relevant to an assessment against the NPS-HPL Clause 3.6(4) and 3.6(5). My evidence also responds to submissions made on the PC58 application and relevant parts of the s42A Report.
- 16 My evidence covers:
- (a) Property summary and existing land use assessment
 - (b) The regulatory framework for the NPS-HPL
 - (c) Land and soil assessment I have undertaken across the PC58 Site
 - (d) Land use potential for the PC58 Site
 - (e) A comparison of the PC58 Site against other reasonably practicable and feasible options for industrial expansion in Morrinsville.
- 17 In the course of preparing this evidence I have considered:
- (a) The application lodged with Council on 22 December 2022 and further information provided on 1 May 2023 and 24 November 2023;
 - (b) The 14 submissions received and 1 further submission; and
 - (c) The s42A report dated 7 February 2024.
- 18 My evidence is to be read in conjunction with the PC58 application and further information referred to above, and the evidence presented by the other experts on behalf of the Stefferts.

Property summary and existing land use

- 19 The PC58 Site is a 13.4 ha block which is across two titles, both owned by the Stefferts. The northern title consists of a 12.65 ha block. The southern title includes a house with a surrounding lifestyle section. The total title size of the southern property is 1.61 ha however, only the northern extent (approximately 0.8 ha) is proposed to be rezoned under PC58. This area is run in conjunction with the rear property.

- 20 Adjoining sites to the east are zoned Industrial, to the south-east Business Zone and adjoining sites to the north, south and west are zoned Rural. There are also Business and Rural Residential zoned properties in the wider area.
- 21 Presented in **Annexure A** is the Site showing the outline in Red in relation to Stage 1 of the adjacent Avenue Business Park and other land use zoning at the western end of Morrinsville.
- 22 At the time of the initial AgFirst site visit (21 July 2022), the PC58 Site was run as an extensive, small scale, low input pastoral grazing operation (more akin to a hobby farm), with approximately 20 rising two-year old (**R2**) beef cattle, 7 rising one-year old (**R1**) beef cattle, 6 calves and 1 mixed age cow.
- 23 Located across the PC58 Site are ancillary sheds, stock yards, a farm track that extends the entire length of the block and a network of farm drains. The property is fully subdivided with paddocks, good quality fences and reticulated stock drinking water with troughs located in each paddock. The northern part of the PC58 Site has been consented for construction earthworks which have recently been completed as part of the development of Stage 1 of the Avenue Business Park. Land to the north is part of a borrow site, with a tip site and sediment retention pond and haul road all part of the earthworks. This impacts approximately 4.2 ha of the PC58 Site. This is presented in **Annexure B**. Once the earthworks area, farm track, stock yards and ancillary sheds are deducted, the effective area of HPL remaining is 7.9 ha.
- 24 To understand the economic viability of the property, I have used the Beef and Lamb New Zealand (**B+LNZ**) data for a Northern North Island Class 5 finishing farm. The forecast farm profit before tax is estimated as being \$868 per ha². Under the current land use as a small-scale livestock grazing operation across a conservative grazable area of 13 ha, an indicative budget is provided:
- (a) Total current revenue using the B+LNZ data is estimated at \$11,287.

² Note that this economic figure is based on a North Island intensive finishing operation with a scale of 251 ha

- (b) Property information for rates and land valuation (not capital value) has been used as total annual liabilities for the property, with \$50,837 required to service the property each year.
 - (c) A long-term (30 year) average interest rate of 7%³ and a nominal 40% debt loading has been assumed, which is a typical level for farm lending.
 - (d) This provides an annualised net economic deficit of -\$39,550.
- 25 Changing the type of livestock run or management thereof will not sufficiently lift profitability because the property is not an economic size for pastoral grazing and the land is much too expensive to be considered as a reasonably practicable option for amalgamation with neighbouring properties.

Overview of Plan Change Proposal with regards to the NPS-HPL

The regulatory framework for the NPS-HPL

- 26 In September 2022, the Ministry for the Environment (MfE) and the Ministry for Primary Industries (MPI) released the NPS-HPL. The single objective of the NPS-HPL is *“Highly productive land is protected for use in land-based primary production, both now and for future generations.”*
- 27 Land-based primary production means *“production, from agricultural, pastoral, horticultural, or forestry activities, that is reliant on the soil resource of the land”*.
- 28 Productive capacity, in relation to land, means *“the ability of the land to support land-based primary production over the long term, based on an assessment of:*
- (a) *physical characteristics (such as soil type, properties, and versatility); and*
 - (b) *legal constraints (such as consent notices, local authority covenants, and easements); and*
 - (c) *the size and shape of existing and proposed land parcels”*.

³ Exchange rates and Wholesale interest rates - Reserve Bank of New Zealand - Te Pūtea Matua (rbnz.govt.nz) 1993-2023 years with a 2.2% bank margin applied to the 90 bank bill monthly average yield

- 29 Land which is zoned rural and which is LUC 1, 2 and 3 must be treated as HPL under Clause 3.5(7) of the NPS-HPL prior to regional mapping of HPL being undertaken, unless the land was identified for future urban development or was subject to a Council initiated or adopted plan change at the commencement date of the NPS-HPL. Those exclusions do not apply for the PC58 site.
- 30 LUC, 1, 2, or 3 land means *“land identified as Land Use Capability Class 1, 2, or 3, as mapped by the New Zealand Land Resource Inventory or by any more detailed mapping that uses the Land Use Capability classification”*.
- 31 Policy 5 of the NPS-HPL has relevance and reads: *“The urban rezoning of highly productive land is avoided, except as provided in this National Policy Statement”*. Clause 3.6(4) is the relevant clause as it provides that territorial authorities that are not Tier 1 or 2 (MPDC is Tier 3) may allow urban rezoning of highly productive land only in accordance with the matters contained within it. Clause 3.6(5) is also relevant. Those clauses are detailed below:
- 4) *Territorial authorities that are not Tier 1 or 2 may allow urban rezoning of highly productive land only if:*
 - a) *the urban zoning is required to provide sufficient development capacity to meet expected demand for housing or business land in the district; and*
 - b) *there are no other reasonably practicable and feasible options for providing the required development capacity; and*
 - c) *the environmental, social, cultural and economic benefits of rezoning outweigh the environmental, social, cultural and economic costs associated with the loss of highly productive land for land-based primary production, taking into account both tangible and intangible values.*
 - 5) *Territorial authorities must take measures to ensure that the spatial extent of any urban zone covering highly productive land is the minimum necessary to provide the required development capacity while achieving a well-functioning urban environment.*
- 32 I have addressed (in part) Clause 3.6(4)(b) in my evidence by assessing the productive capacity of the PC58 Site and comparing this with additional localities surrounding Morrinsville that would be deemed to be ‘other reasonably practicable and feasible options’. I have also addressed

(in part) Clause 3.6(4)(c) in relation to the costs of allowing the proposed urban rezoning of the PC58 site from Rural to GIZ in terms of the loss of HPL for land-based primary production.

Soil and land assessment

- 33 Determining the presence of high-class soils and HPL, as defined under the LUC classification, requires consideration of a range of characteristics, in accordance with the methods described in the third edition of the LUC Survey Handbook to assess the suitability of the land for primary production. These include such characteristics as erosion, susceptibility to flooding, wetness, land aspect and topography. Therefore, this assessment has taken the following steps to identify soils present within the Site:
- (a) Desktop assessment of LUC from the NZLRI portal.
 - (b) Visual soil analysis (**VSA**), soil augers, and soil chemistry sampling.
 - (c) Contours derived from the Waikato Regional Council (**WRC**) LIDAR database.
 - (d) Landcare Research S-Map online, New Zealand Soils Classification (**NZSC**) and NZLRI national soil database.
 - (e) Identification of modified and anthropic soils.
- 34 I have reviewed the NZLRI LUC map, which classify the soils across the PC58 Site as:
- (a) 13.1 ha of LUC 2, gently undulating and undulating slopes, free draining, typic orthic allophanic soils.
 - (b) 0.3 ha of LUC 4, strongly rolling slopes, free draining, typic orthic granular soils.
- 35 The NZLRI database is based on a regional scale LUC rating of the ability of each polygon to sustain agricultural production. These have been produced at a 1:63,000 scale for the Waikato and are suitable for guidance, but are not specifically designed to be interpreted at a farm or paddock scale. The NZLRI LUC representation is presented in **Annexure C**.

- 36 While the NZLRI LUC map shows the majority of the soils to be HPL, I do not agree that the soils on the lower terrace are free draining, typic orthic allophanic soils. My observations are based on the following:
- (a) The VSA and soil auger analysis showing moderate soil mottling and dominance of low-chroma colours. This indicates water damage and poor draining gley soils (See **Annexure D**).
 - (b) S-Map database shows the soils to be a poor draining gley soil. While not sufficient to reclassify the soils as per the NPS-HPL, the S-Maps, while designed for use at a 1:50,000 scale, has a finer resolution achieved by incorporating the best available spatial information from soil surveys or new mapping, and has a much wider range of soil properties⁴. Therefore, I consider this to be more representative than the NZLRI LUC mapping. The S-Maps for the PC58 Site are presented in **Annexure E**.
 - (c) Surface conditions showed continuous days of water inundation indicating 3w or 4w drainage class⁵.
- 37 The soil chemistry results showed a mixture of fertility across the PC58 Site. This can be overcome with capital fertiliser and is not considered a constraint or limitation with regard to suitable land-based primary production.
- 38 The NZLRI LUC does not take into account unproductive areas and modified soils. Specific to the PC58 Site is a farm track that extends the length of property, farm drains, stock yards, ancillary sheds, driveway and the recently completed construction earthworks.
- 39 The earthworks which have occurred in the northern part of the PC58 Site will have a significant impact on the versatility of the soils due to the topsoil being removed, replaced, buried and compacted. The soils are now heavily modified and are classified as anthropic soils⁶. These areas are appropriately considered non-highly productive land and may not be suitable for cultivation and arable use due to the soil limitations.

⁴ S-map Online FAQ | S-Map Online | Manaaki Whenua - Landcare Research

⁵ LUC Handbook, 34d edition - Table 14 – The relationship between LUC classes with a 'w' limitation

⁶ Hewitt AE (2010) New Zealand Soil Classification. 3rd ed. Landcare Research Science Series No. 1. Lincoln, Manaaki Whenua Press

- 40 While the earthworks area will be re-established back into pasture in the short-term, the modification of the soil structure means a LUC class and unit cannot be assigned. Therefore, they will not be classified as LUC 1 – 3 soils or HPL. While still suitable for pastoral grazing, these areas will have limited versatility and productive capacity.
- 41 Once unproductive and modified areas have been accounted for, the HPL area remaining is approximately 7.9 ha across the PC58 Site. This is presented in **Annexure F**.

Land use potential

- 42 I consider the following limitations for the PC58 Site regarding land-based primary production and productive capacity:
- (a) The lack of size and scale will remove any likelihood of investing into infrastructure or machinery if there was a desire to intensify or change the production type within the PC58 Site.
 - (b) The poorly drained soils across the majority of the PC58 Site do not lend themselves to high value horticultural, commercial vegetable production or arable land uses. The wetness limitations will impact some crops' yield and survival, with pugging vulnerability for heavier stock classes.
 - (c) The steeper areas may not be suitable for cultivation, with elevated soil erosion risks and not being tractor navigable.
 - (d) The earthworks area, while planned to be re-instated back into pasture in the short-term, will no longer have the same soil structure and plant rooting depth potential. Therefore, this area will be limited in land use versatility, with production types only suited to pastoral grazing systems.
 - (e) Inability to achieve scale through neighbouring farms, due to land use change restrictions, including National Environmental Standards for Freshwater (**NES-FW**) restricting intensification into dairy and dairy support. This removes the ability to use the PC58 Site for dairy or dairy support.
 - (f) Neighbouring land to the east and south-east zoned industrial and business
 - (g) Non-reversible land fragmentation to the south and west

43 I have considered the following alternative land based primary production options:

(a) Arable: While maize silage cropping could be an option as part of a pasture rotation/renewal, repeated long-term (30 years) cropping would have a detrimental impact on this soil type due to its proneness to compaction. Heavy machinery is required for cultivation, fertilising, sowing and harvesting. While these events occur over Spring, Summer and Autumn, late planting dates and early harvests due to wet Spring and Autumns will reduce yields. The winter rotation also needs to be considered, with further cultivation, fertilising and harvesting between late Autumn, Winter and early Spring. Therefore, I do not consider that this would be an attractive block for arable contractors, which would be treated as third tier and given the limitations due to poor drainage, the proximity to multiple lifestyle blocks and offsite dust and noise effects and the relatively small size.

(b) Horticulture: I do not consider that horticulture is a reasonably practicable option for the Site. With the soils on the lower terrace being poor draining gley soils, this will have an impact with some crops not surviving, while others will have reduced yields. There is also the issue of sensitive receptors, given the development immediately surrounding the Site. With horticultural activities, there are issues with spray drift and noise from frost protection, while dust can be an issue for arable operations following cultivation and harvest events. Investment into intensive agricultural operations with adjoining business and residential zones and activities is a risk.

44 While I view that approximately 7.9 ha of the PC58 Site is HPL, which identifies it as being versatile for a range of productive uses, in my opinion, due to the limitations and restrictions identified above, the highest and best long-term use for this land would be a lowly stocked pastoral grazing block.

Assessment of alternative Industrial Zones in Morrinsville

45 There is an estimated 114,658 ha of HPL within the Matamata-Piako district, which is 65% of the total area. This represents a significant proportion of the district, which inherently surrounds many of the rural satellite towns such as Morrinsville. This makes any development, land

use change or rezoning a challenge, where consideration of the NPS-HPL will be required. Therefore, it is important to balance out the demand and need for urban rezoning and selection of appropriate areas that will have less impact and preferably consists of areas with lower productive capacity or constraints for future land-based primary production.

- 46 I have assessed land surrounding other Industrial zoned areas in Morrinsville with regards to productive capacity to determine whether there are any other reasonably practicable and feasible options for providing additional development capacity (i.e. are there already areas surrounding industrial zones that are not on highly productive land or with a lower productive capacity than the assessment Site).
- 47 Other than the Industrial zoned area surrounding Avenue Road North, there are two existing industrial zones within and surrounding Morrinsville where expansion could be considered. These areas are shown on **Annexure G**. I have taken into account the following characteristics for potential expansion of these alternative industrial zones:
- (a) Size of growth cell and expansion opportunity
 - (b) Current and surrounding land use
 - (c) NZLRI LUC classification, soil characteristics and drainage
 - (d) Environmental constraints and risk
 - (e) Economic limitations arising from small, fragmented portions of land
 - (f) The productive potential
- 48 The Fonterra and Greenlea Industrial sites are located on the southern boundary of Morrinsville town. Due to the zoning and surrounding areas, there is very limited potential for expansion of industrial activity in this area, as the effective area is already developed. The Rural Zoned land in the vicinity of the Fonterra and Greenlea Industrial Sites has a much higher productive capacity compared to the PC58 Site. This is due to:
- (a) Both the NZLRI and S-Map representation shows the soils to be of a higher class (LUC 1, 2, and 3), and majority being free draining allophanic soils, therefore greater versatility.
 - (b) Larger geographically cohesive areas, less non-reversible land fragmentation and established arable, horticulture and dairy farms.

49 The Morrinsville-Walton Road industrial area is approximately 50 ha, located on the Morrinsville-Walton Road, approximately 1.5 km to the southeast of Morrinsville town. This industrial area is surrounded in its entirety by rural zoning, with limited physical constraints for potential expansion. The Rural Zoned land in the vicinity of the Morrinsville-Walton Road Industrial area has a higher productive capacity compared to the PC58 Site. This is due to:

- (a) While the NZLRI LUC maps for the surrounding land show a similar classification to the PC58 Site (LUC 2 and 3), the S-Map representation shows better drainage, with mostly poorly and imperfectly drained soils. Additionally, the poor draining soils around the Walton-Morrinsville Industrial site have less rooting barriers. When you include the soil modifications from earthworks on the PC58 Site, the areas surrounding the Morrinsville-Walton site have greater versatility.
- (b) Larger geographically cohesive areas, less non-reversible land fragmentation and established arable, horticulture and dairy farms.
- (c) There are more alternative production systems available at the Morrinsville-Walton area, which would have fewer consent restrictions.

Response to matters raised in Submissions

50 I have reviewed the Plan Change 58 submissions, with two that relate the NPS-HPL. Both the Waikato Regional Council and Matamata-Piako District Council submissions sought additional information and consistency of the assessment of the application with the NPS-HPL guidelines. I have covered these off through my updated report (dated November 2023) and within this evidence.

Response to matters raised in s42A Report

51 I have reviewed the s42A Report with regard to the NPS-HPL. The summary from the s42A Report is:

“Detailed assessment of the land use capability of the plan change site has been provided by the Applicant which shows that it is defined as highly productive land. In my opinion, the location and size of the proposed industrial area is appropriate and will help to achieve a well-functioning urban environment. On this basis, I consider that the loss of productive

land is acceptable and that the plan change request satisfies the criteria for rezoning as set out in the NPS-HPL”.

52 Within paragraph 73 of the s42A Report, there is a reference to the consented earthworks area within the northern part of the PC58 site. Information relating to the consented earthworks has been provided to me by the applicant. Mr Inger will provide a response regarding the background of the consented earthworks within his evidence.

Conclusion

53 I have assessed the PC58 site (approximately 13.4 ha) against the relevant provisions in the NPS-HPL to inform an assessment on whether it is considered PC58 meets the circumstances in which urban rezoning may be undertaken as set out in Clause 3.6 of the NPS-HPL.

54 From my assessment, I consider that there is approximately 7.9 ha of the Site that is identified as HPL, being rural zoned land within the Matamata-Piako District and Land Use Capability (**LUC**) classification 1-3. Areas that do not account for HPL across the PC58 Site include:

- (a) Land that is not classified as LUC 1-3 under the New Zealand Land Resource Inventory (**NZLRI**);
- (b) Unproductive and modified soils including the construction earthworks area, stock yards, buildings, ancillary sheds and farm tracks.

55 In my opinion, the PC58 Site has significant constraints for its continued and viable use as land-based primary production. Due to these limitations, it is my opinion that the highest and best use of the PC58 Site is as a low input beef grazing block, akin to a hobby farm. That use is not profitable in rural production terms as outlined in paragraph 24.

56 Having assessed alternative industrial areas within Morrinsville, I consider that the PC58 Site has more significant constraints, which means rezoning would lead to a smaller loss of productive capacity and would avoid fragmentation of other large and geographically cohesive HPL sites. There are no other reasonably practicable and feasible options for providing the required development capacity.

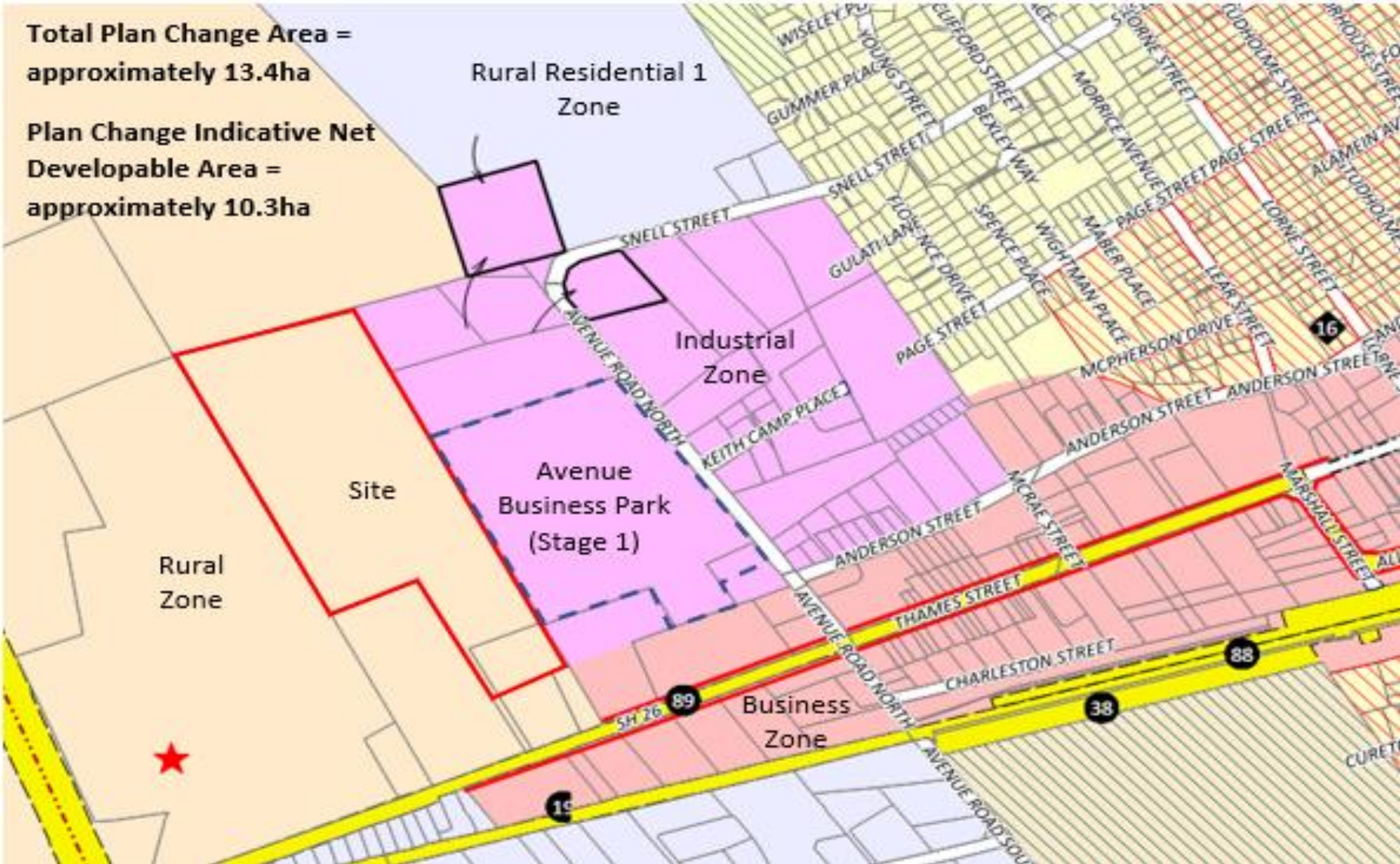
Jeremy Hunt

AgFirst Waikato

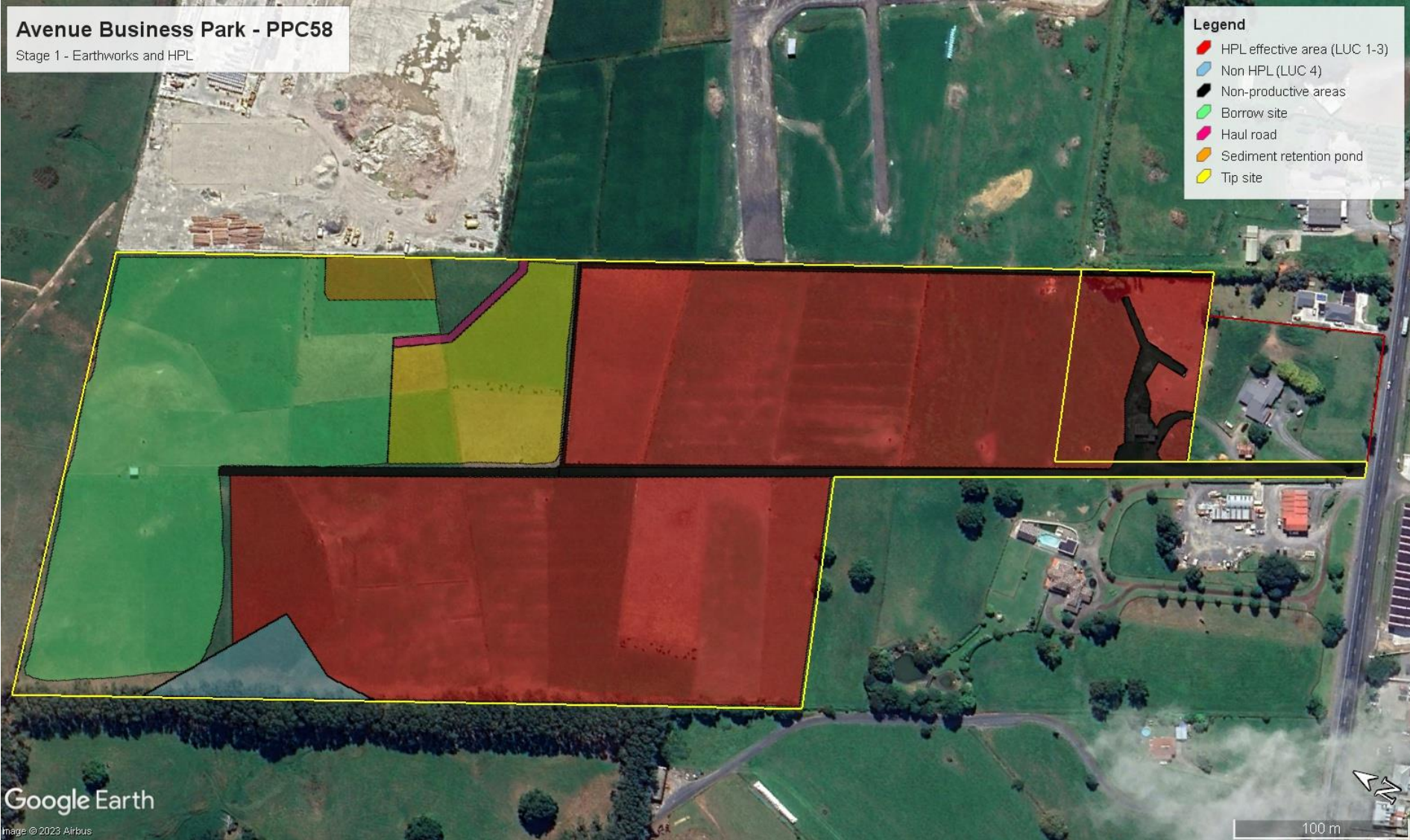
A handwritten signature in black ink, appearing to be 'JH', written over a faint, illegible background.

14 February 2024

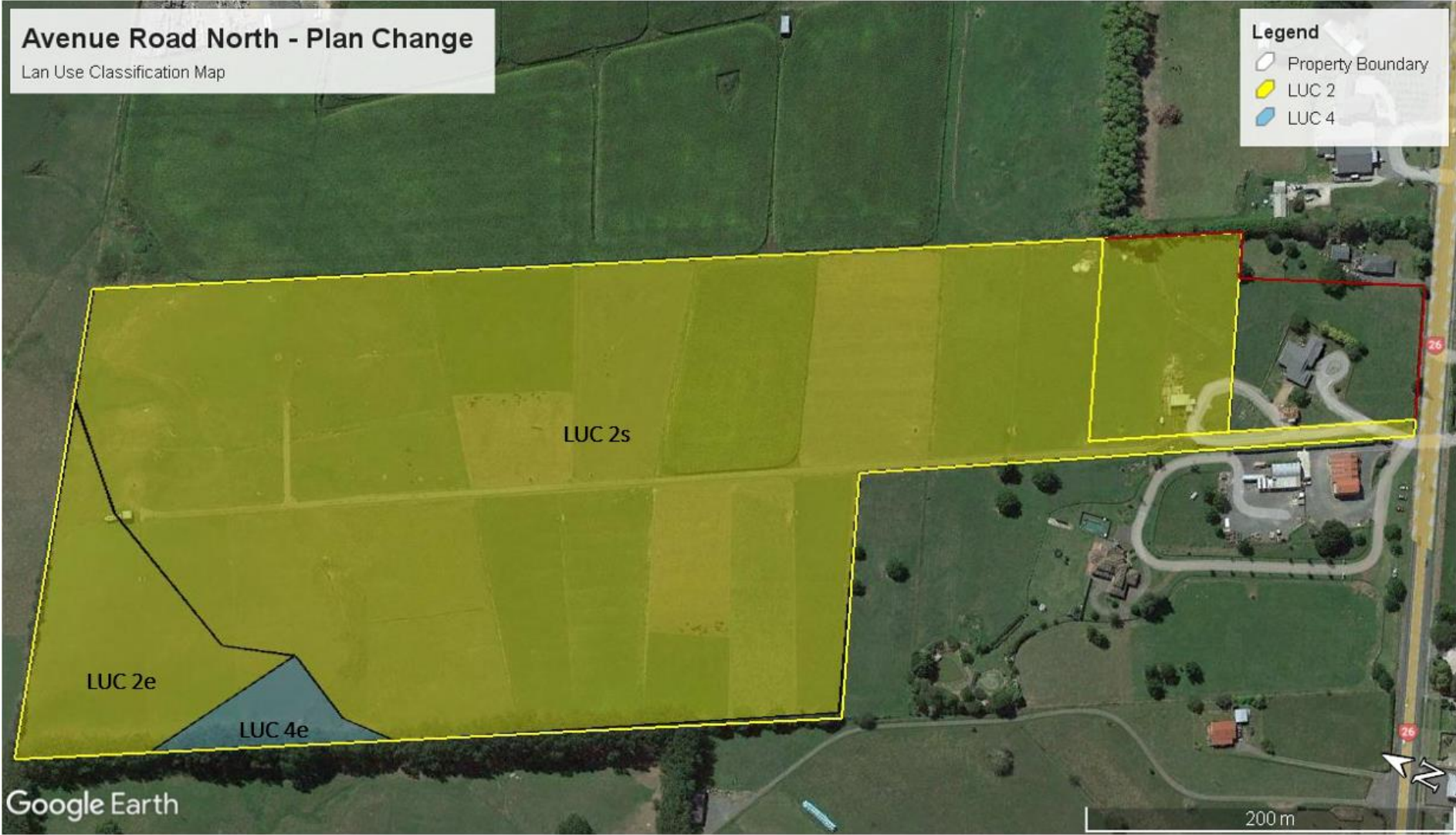
Annexure A: Plan Change 58 Site location



Annexure B: Stage1 consented earthworks on PC58 Site



Annexure C: NZLRI LUC classification map for the PC58 Site



Annexure D: VSA and soil auger samples at PC58 Site

Soil # 1 - VSA	Soil # 1 Soil Auger
 A vertical photograph showing a soil profile from a Vertical Sounding Auger (VSA). The soil is layered, with a dark brown top layer containing many roots, followed by a lighter brown, more granular layer. The soil is resting on a white, rectangular metal plate. The background consists of green grass.	 A vertical photograph of a soil auger sample. The auger is a long, light-colored metal rod with a pointed tip. It is placed next to a white metal plate that has a depth scale in centimeters, ranging from 10 to 110. The soil is layered, with a dark brown top layer containing many roots, followed by a lighter brown, more granular layer. The soil is resting on the white plate. The background consists of green grass.

Soil # 2 - VSA



Soil # 2 Surroundings



Soil # 3 - VSA



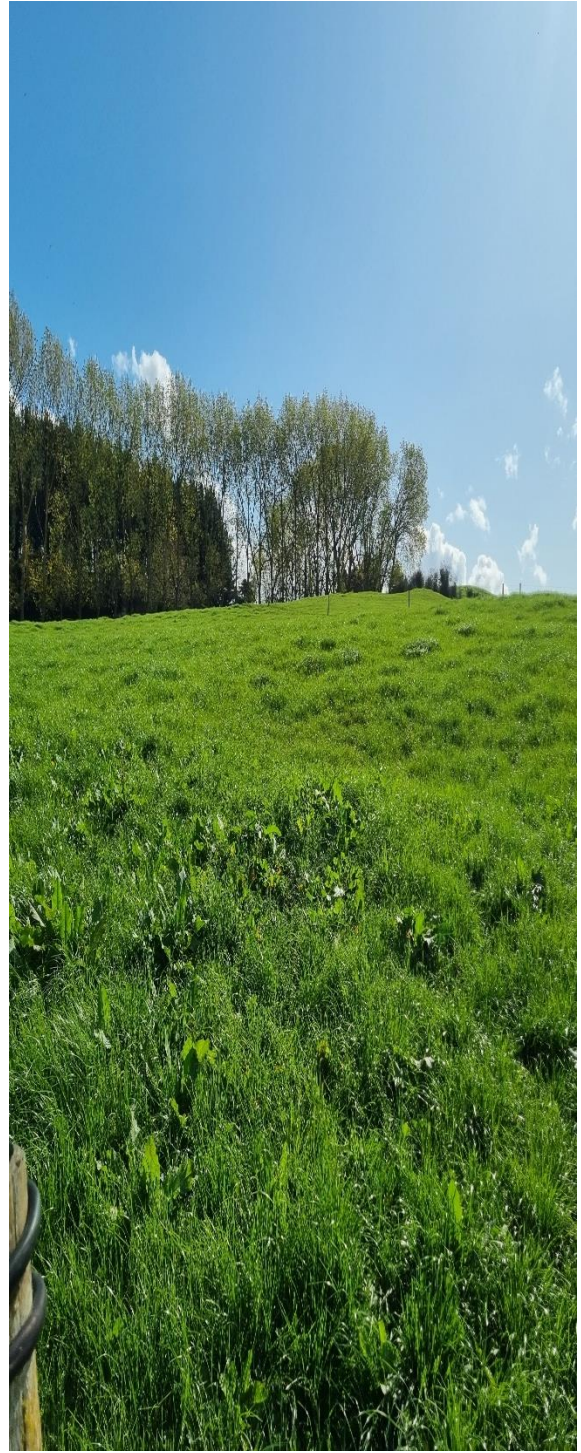
Soil # 3 Soil Auger



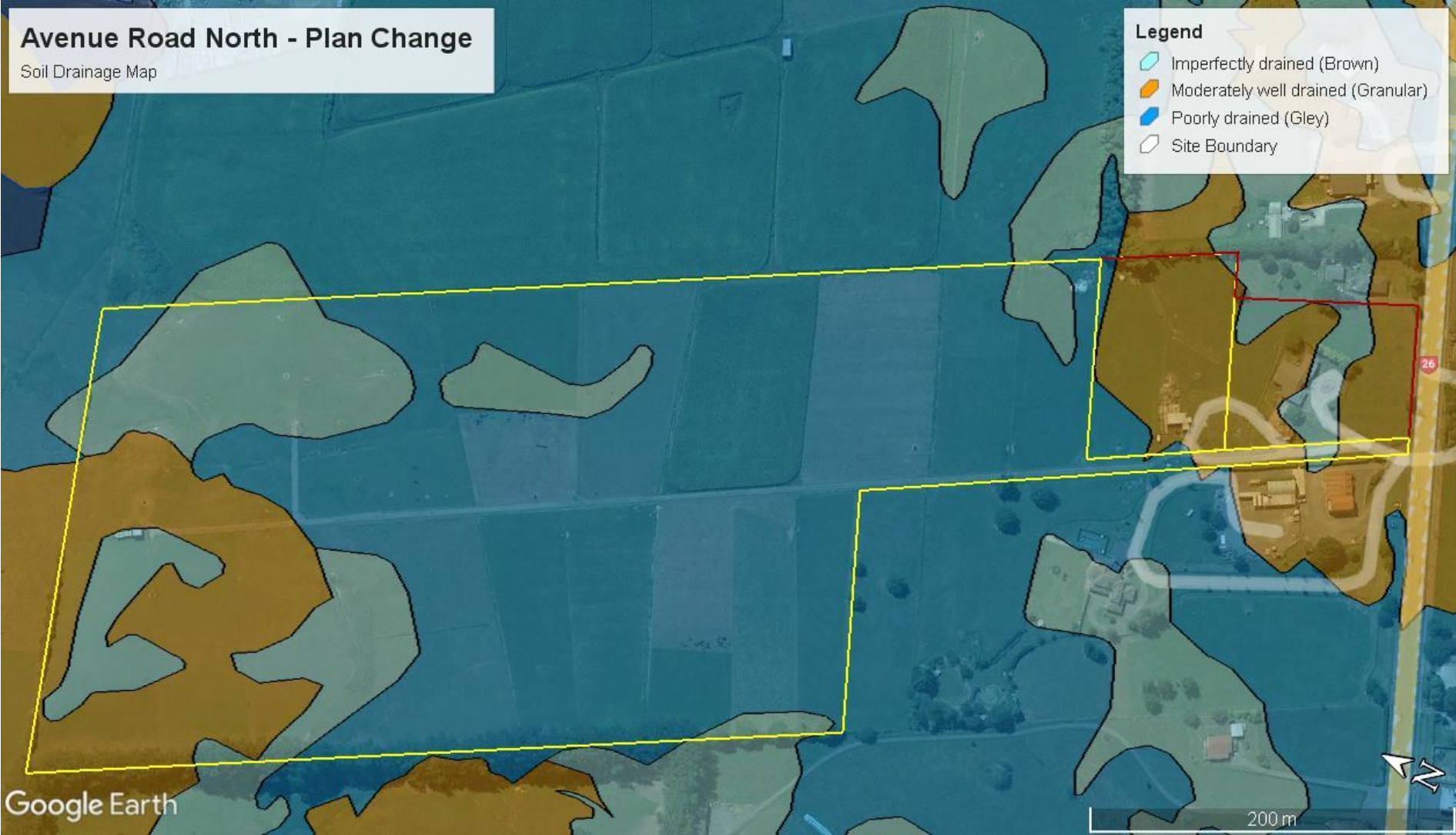
Soil # 4 - VSA



Soil # 4 Surroundings



Annexure E: S-Map soil drainage representation of the PC58 Site



Annexure F: Land use categories of the PC58 Site

