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Soil and Land Use Capability classification field assessment 96 & 136 Boshier Road, Wellsford 0974.

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1. Introduction

A soil and Land Use Capability (LUC) classification assessment of a 16 ha area at 96 & 136 Boshers Road, Wellsford 0974 (**Figure 1**) was undertaken to comply with Rules of the AUP for land containing elite and prime soil and the National Policy Statement for Highly Productive Land (NPS-HPL).

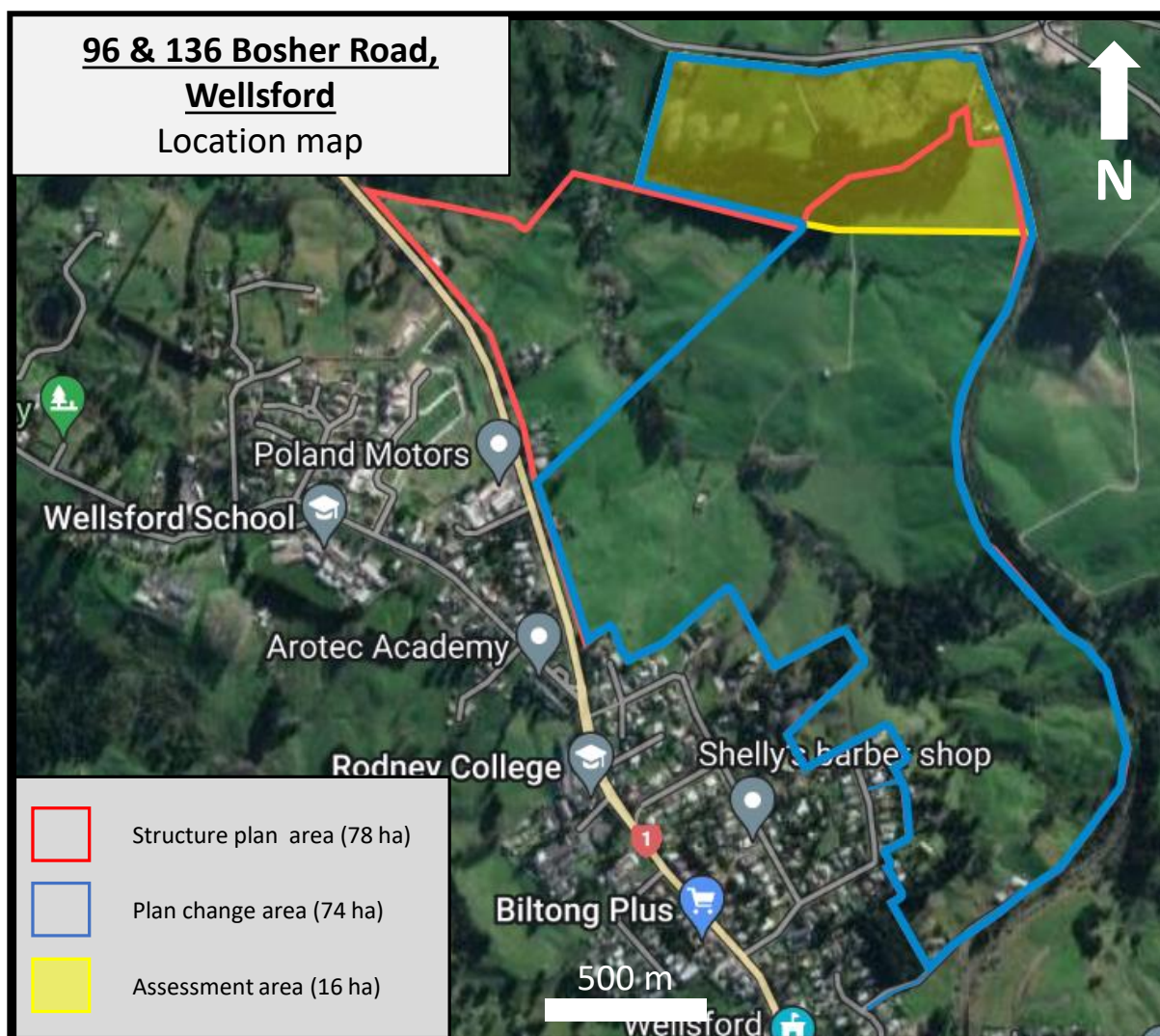


Figure 1. Soil and LUC assessment area for 96 & 136 Boshers Road, Wellsford 0974.

2. Classification definitions

AUP land containing elite and prime soil

The Auckland Unitary Plan (Updated 24 October 2019) defines elite land as: -

Land containing elite soil:

Land classified as Land Use Capability Class 1 (LUC1). This land is the most highly versatile and productive land in Auckland. It is:

- well-drained, friable, and has well-structured soils;
- flat or gently undulating; and
- capable of continuous cultivation.

Includes:

- *LUC1 land as mapped by the New Zealand Land Resource Inventory (NZLRI);*
- *other lands identified as LUC1 by more detailed site mapping;*
- *land with other unique location or climatic features, such as the frost-free slopes of Bombay Hill;*
- *Bombay clay loam;*
- *Patumahoe clay loam;*
- *Patumahoe sandy clay loam; and*
- *Whatitiri soils.*

Prime land is also very good land but with some minor limitations compared to elite land. The Auckland Unitary Plan defines prime land as:-

Land containing prime soil:

Land identified as Land Use Capability classes two and three (LUC2, LUC3) with slight to moderate physical limitations for arable use. Factors contributing to this classification are:

- *readily available water;*
- *favourable climate;*
- *favourable topography;*
- *good drainage; and*
- *versatile soils easily adapted to a wide range of agricultural uses.*

Figure 2 provides a flow chart of the method used to determine AUP land containing elite and prime soil.

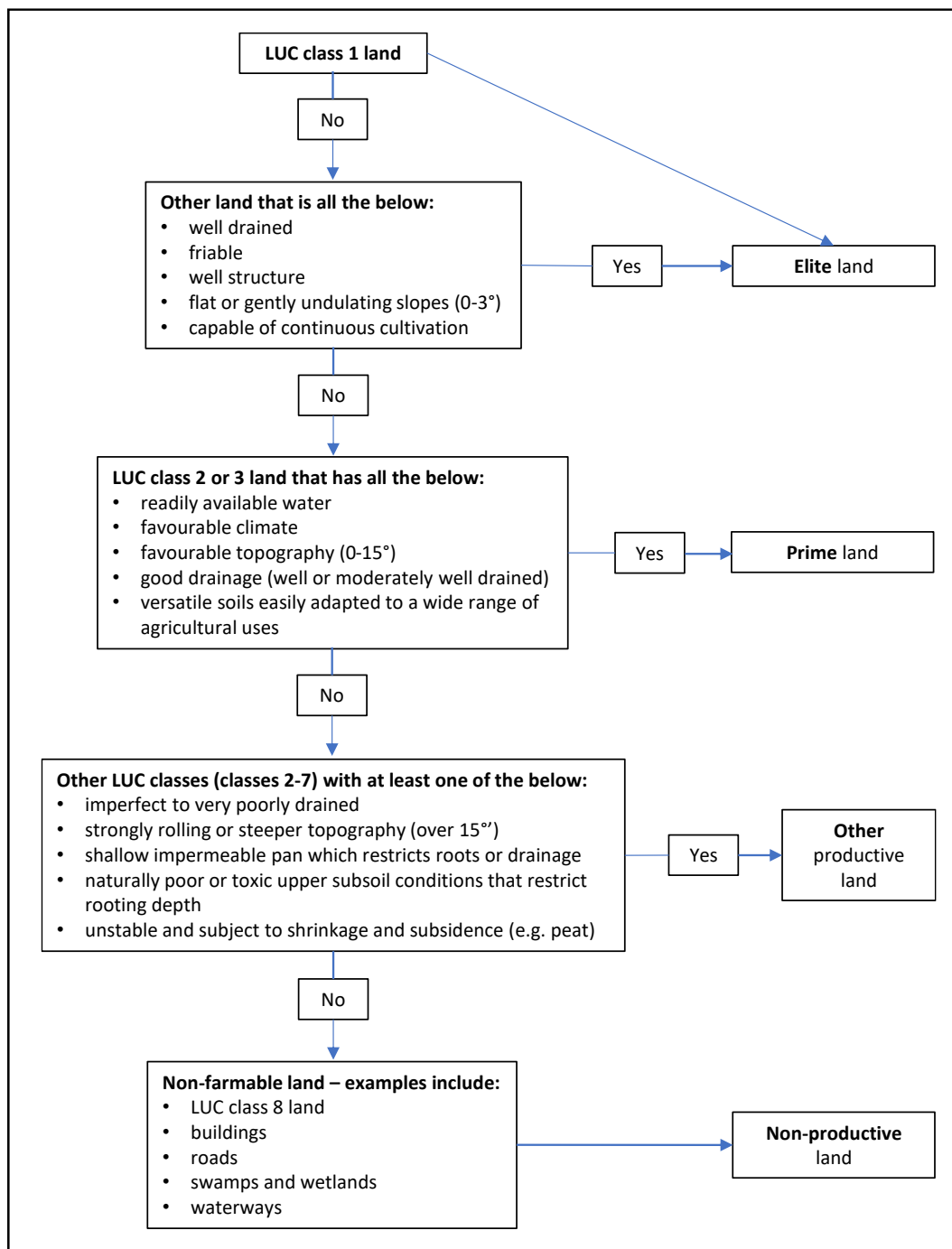


Figure 2. Flow chart for determining AUP land containing Elite, Prime and Other productive land.

An alternative interpretation of the definition for AUP land containing elite and prime soil was presented by Auckland Council as part of a legal submission for Plan Change 55. The alternative interpretation classifies land containing elite soil as being all LUC 1 land, and land containing prime soil as being all LUC 2 and 3 land, irrespective of the listed criteria.

All non-productive land was excluded from the classification of AUP elite and Prime land.

AUP land containing elite or prime soil, and other productive land was classified based on the flow chart shown in **Figure 2** and the alternative (PC55) interpretation of the definition.

Maps for both interpretations are provided in this report.

National Policy Statement for Highly Productive Land

The National Policy Statement for Highly Productive Land (NPS-HPL)¹ came into force on the 17th of October 2022 (clause 1.2(1)).

“Highly productive land” is defined as:

means land that has been mapped in accordance with clause 3.4 and is included in an operative regional policy statement as required by clause 3.5 (but see clause 3.5(7) for what is treated as highly productive land before the maps are included in an operative regional policy statement and clause 3.5(6) for when land is rezoned and therefore ceases to be highly productive land).

My understanding is that NPS-HPL clause 3.5(7) applies because maps produced in accordance with clause 3.4 have not yet been included in an operative regional policy statement as required by clause 3.5. Clause 3.5(7) says:

(7) Until a regional policy statement containing maps of highly productive land in the region is operative, each relevant territorial authority and consent authority must apply this National Policy Statement as if references to highly productive land were references to land that, at the commencement date:

(a) is

(i) zoned general rural or rural production; and

(ii) LUC 1, 2, or 3 land; but

(b) is not:

(i) identified for future urban development; or

(ii) subject to a Council initiated, or an adopted, notified plan change to rezone it from general rural or rural production to urban or rural lifestyle.

The NPS-HPL includes the following guidance in clause 3.4(5):

(5) For the purpose of identifying land referred to in subclause (1):

(a) mapping based on the New Zealand Land Resource Inventory is conclusive of LUC status, unless a regional council accepts any more detailed mapping that uses the Land Use Capability classification in the New Zealand Land Resource Inventory; and

(b) where possible, the boundaries of large and geographically cohesive areas must be identified by reference to natural boundaries (such as the margins of waterbodies), or legal or non-natural boundaries (such as roads, property boundaries, and fence-lines); and

(c) small, discrete areas of land that are not LUC 1, 2, or 3 land, but are within a large and geographically cohesive area of LUC 1, 2, or 3 land, may be included; and

(d) small, discrete areas of LUC 1, 2, or 3 land need not be included if they are separated from any large and geographically cohesive area of LUC 1, 2, or 3 land.

Other NPS-HPL clauses that could be considered relevant to this assessment include clause 3.6(2)(b) and 3.6(2)(c).

All non-productive land was excluded from the classification of NPS-HPL highly productive land.

¹ National Policy Statement for Highly Productive Land 2022. September 2022.

Land identified and mapped as LUC classes 1, 2 and 3 was classified as NPS-HPL highly productive land according to NPS-HPL clause 3.5(7).

3. LUC and soil classification from available map sources

The available NZLRI sources of soil and LUC map information² maps the soils and LUC units in the assessment area as Waikare silt loam with a LUC classification of LUC 4e8, and Te Aponga clay with a LUC classification of LUC 4e4.

Applying the AUP definition for land containing elite and prime soils, LUC 4e8 and 4e4 are not classed as land containing elite and prime soils.

Applying the NPS-HPL, LUC 4e8 and 4e4 are not highly productive land.

4. Field assessment method

Landsystems undertook an on-site soil and LUC assessment of the 16 ha site at 96 & 136 Boshier Road, Wellsford 0974 according to standard methods (Milne et al., 1993³ and Lynn et al., 2009⁴).

The field assessment was undertaken on the 9th of November 2022.

Observations of slope angle, topography and soil parent material were made over the relevant area. Soil augering up to 80 cm depth was used to assess soil properties such as soil horizons, drainage, plant root depths, texture, structure, and colour. This information was used to determine soil type and soil boundaries, from which the necessary LUC classification was assigned. The soils were assessed in current condition and areas with modified soils were identified and mapped as non-productive land. The LUC units were applied according to current condition.

5. On-site soil and LUC classification

A summary of the soils and LUC units identified for the assessment area are provided in **Table 1**. **Figure 3** shows the distribution of soil and LUC map units at property scale for the 16 ha site at 96 & 136 Boshier Road.

² <https://iris.scinfo.org.nz/layer/48134-nzlri-north-island-edition-2-all-attributes/>

³ Milne JDG, Clayden B, Singleton P.L, Wilson AD. 1995. Soil Description Handbook. Lincoln, New Zealand, Manaaki Whenua Press. 157p.

⁴ Lynn IH, Manderson AK, Page MJ, Harmsworth GR, Eyles GO, Douglas GB, Mackay AD, Newsome PJF. 2009. Land Use Capability survey handbook – a New Zealand handbook for the classification of land. AgResearch Hamilton; Manaaki Whenua Lincoln; GNS Science Lower Hutt, New Zealand.

Table 1. Soils and LUC units for the assessment area, 96 & 136 Boshier Road.

Soil type (dominant)	Parent material	Soil drainage	Slope class	LUC unit
Aponga clay loam	Sheared mixed lithologies	Imperfectly drained	Undulating to rolling B+C (4 - 15°)	3e8*
Waikare clay loam and silt loam	Soft sandstone	Imperfectly drained	Undulating to strongly rolling B to D (4 - 20°)	4e8
Aponga clay loam	Sheared mixed lithologies	Imperfectly drained	Rolling to strongly rolling C+D (8 - 20°)	4e4
Aponga hill soil (previously unstable)	Sheared mixed lithologies	Imperfectly to poorly drained	Rolling to strongly rolling D+C (8 - 20°)	5e12*
Non-productive land (modified soil and non-productive land)	Retired riparian areas, buildings and curtilage and tracks.	-	-	Non-productive land (NPL)

*LUC unit from Hicks and Vujcich (2017)⁵

Soil observations and discussion with the landowner also identified that the areas classified LUC 4e4 and LUC 3e8 in the south of the assessment area had undergone extensive recontouring with the infilling of gullies to provided more gentle topography. The soil auger observations indicated that in places the soils had shallow topsoil, were shallow in depth or had mixed subsoil.

⁵ Hicks, DL and Vujcich V. (2017). Farm-scale land use capability classification for Auckland. Auckland Council Technical Report TR2017/016.



Figure 3. Distribution of soil and LUC map units for the assessment area, 96 & 136 Boshier Road.

6. On-site AUP elite and prime land classification

The LUC map units for the site are further classified according to the AUP definition for land containing elite or prime soil, other productive land and non-productive land for both interpretations of the AUP definition (**Table 2**).

Table 2. Field assessed AUP land containing elite, prime and other productive land for the assessment area, 96 & 136 Boshier Road.

LUC class	AUP Elite/Prime/Other (Flow chart - Figure 2)	AUP Elite/Prime/Other (PC55 interpretation)	Area (ha)	Area (%)
3e8*	Other	Prime	0.4	3%
4e4	Other	Other	2.8	18%
4e8	Other	Other	3.6	23%
5e12*	Other	Other	2.8	18%
Non-productive land	-	-	6.4	40%

*LUC unit from Hicks and Vujcich (2017)⁶

⁶ Hicks, DL and Vujcich V. (2017). Farm-scale land use capability classification for Auckland. Auckland Council Technical Report TR2017/016.

Based on the interpretation of the AUP definition for land containing elite or prime soil presented in **Figure 2** and the PC55 interpretation there is no land containing elite soil on the site.

Based on the interpretation of the AUP definition for land containing elite or prime soil presented in **Figure 2**, there is no land containing elite or prime soil on the site.

Based on the PC55 interpretation of the AUP definition for land containing elite or prime soil, the site has 0.4 ha (3%) of land containing prime soil, and there is no land containing elite soil on the site.

From a food production perspective, the area of land containing prime soil is small in size with limited extensive production potential. The site is surrounded by less productive land, non-productive land, or land that is not zoned rural, isolating it from other areas of productive land and removing the possibility for it to be amalgamated with adjoining productive land.

Figure 4 and **Figure 5** show the distribution of soils, LUC units, and land containing elite and prime soil for the site.



Figure 4. Distribution of soils and LUC units for the assessment area, 96 & 136 Boshier Road. (based on Figure 2 interpretation of AUP definition).

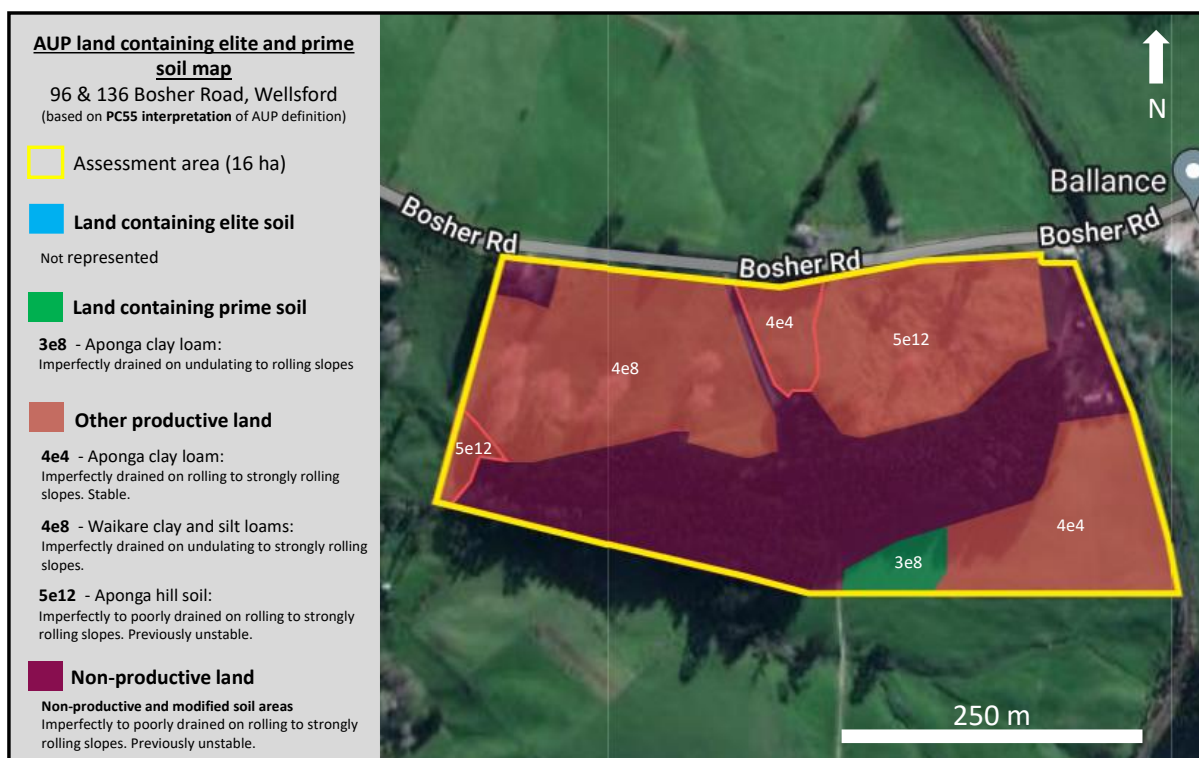


Figure 5. Distribution of soils and LUC units for the assessment area, 96 & 136 Boshier Road (based on PC55 interpretation of AUP definition).

7. On-site NPS-HPL highly productive land

The LUC map units for the site are further classified according to the NPS-HPL highly productive land (**Table 3**).

Table 3. Field assessed NPS-HPL highly productive land for the assessment area, 96 & 136 Boshier Road.

LUC class	NPS-HPL highly productive land (HPL)	Area [#] (ha)	Area [#] (%)
3e8	HPL	0.4	3%
Total		0.4	3%
4e4	Not HPL	2.8	18%
4e8	Not HPL	3.6	23%
5e12	Not HPL	2.8	18%
Non-productive land	Not HPL	6.4	40%
Total		15.6	97%

Area rounded up to 1 DP or whole number.

Based on the interpretation of NPS-HPL clause 3.5(7), the site has 0.4 ha (3%) of highly productive land and 15.6 ha (97%) of land that is not classed as highly productive land, including 6.4 ha (40%) of non-productive land. The estimated distribution of NPS-HPL highly productive land is shown in **Figure 6**.

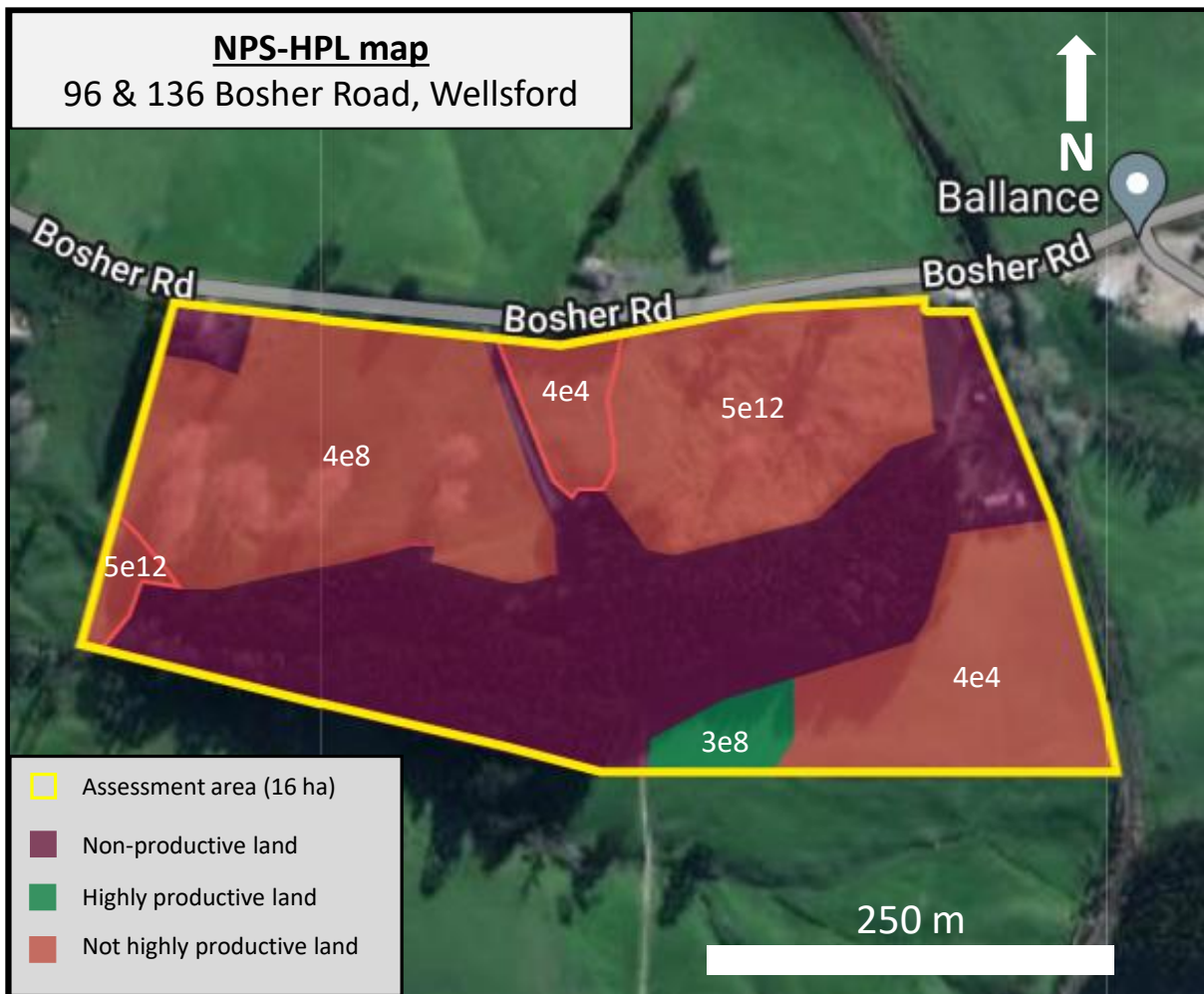


Figure 6. The distribution of NPS-HPL highly productive land identified for the assessment area, 96 & 136 Boshers Road.

8. NPS-HPL comments

Although the land on the 96 & 136 Boshers Road site does contain 0.4 ha (3%) of NPS-HPL highly productive land when mapped at property scale, the majority of the site (97%) is not NPS-HPL highly productive land (i.e. is not LUC 1, 2 or 3). Although not applicable while NPS-HPL Clause 3.5 is in place, NPS-HPL clause 3.4(5)(d) notes that these small, discrete areas of LUC 1, 2, or 3 land need not be included if they are separated from any large and geographically cohesive area of LUC 1, 2, or 3 land. Following completion of regional mapping and the implementation of Clause 3.4, the site as a whole could be considered as not being NPS-HPL highly productive land.

The highly productive land on the site (LUC 3e8) is only 0.4 ha in size. The soil is imperfectly drained and has undergone extensive recontouring resulting in areas of shallow soils and thin topsoils. These factors limit the range of primary production land uses that would be viable. Cultivation during wetter periods on this class of land is not sustainable and the soils are not suitable for deeper rooting horticultural crops requiring deep, friable, well drained soils (i.e. the range of sustainable land uses is restricted).

The 96 & 136 Boshers Road site does not contain any LUC class 1 land and could be considered for rural residential subdivision in preference to other land in the Auckland

region with predominantly LUC classes 1 and 2 land which have higher productive capacity [mentioned in NPS-HPL clause 3.6(2)(c)].

9. Conclusions

Based on the field assessment, the soils and LUC units in the assessment area include Waikare soils with a LUC classification of LUC 4e8, and Aponga soils with a LUC classification of LUC 3e8, 4e4, and 5e12. The balance of the area is non-productive land.

Based on the interpretation of the AUP definition for land containing elite or prime soil presented in **Figure 2** and the PC55 interpretation there is no land containing elite soil on the site.

Based on the interpretation of the AUP definition for land containing elite or prime soil presented in **Figure 2**, the productive land on the site is classed as Other productive land.

Based on the PC55 interpretation of the AUP definition for land containing elite or prime soil, the site has 0.4 ha (3%) of land containing prime soil.

From a food production perspective, the area of land containing prime soil is small in size with limited extensive production potential. The site is surrounded by less productive land, non-productive land, or land that is not zoned rural, isolating it from other areas of productive land and removing the possibility for it to be amalgamated with adjoining productive land.

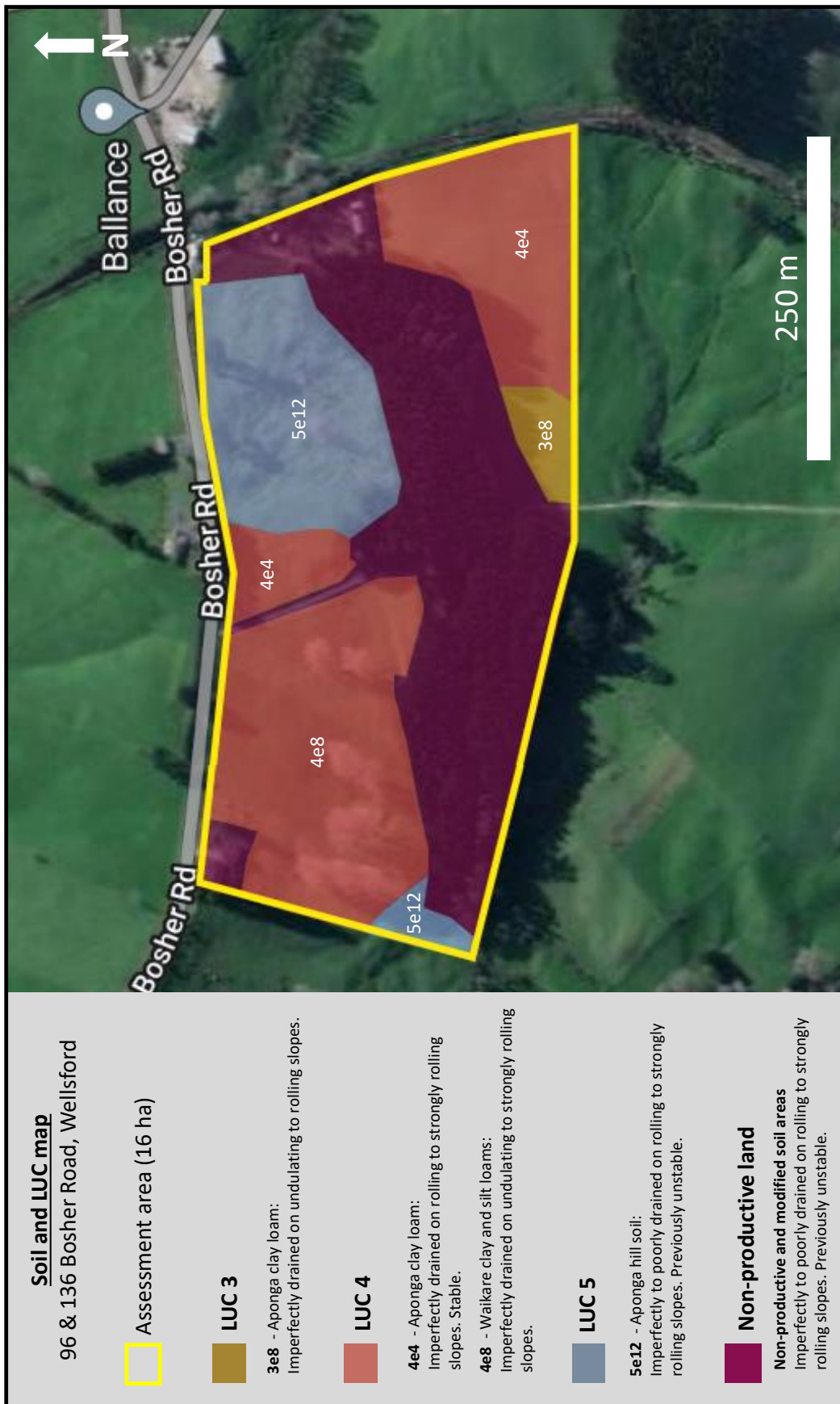
Given the size and non-contiguous distribution of the small area of land containing prime soils on the site, this loss is not significant with regard to the region's productive soils and food production.

The 96 & 136 Boshier Road site is predominantly (97%) not highly productive land when applying the NPS-HPL.

The site contains a 0.4 ha area of LUC class 3 highly productive land that is isolated, and cannot easily be amalgamated with any surrounding highly productive land.

The 96 & 136 Boshier Road site does not contain any LUC class 1 or 2 land and could be considered for subdivision in preference to other land in the Auckland region with predominantly LUC class 1 land and well drained LUC class 2 land which have higher productive capacity.

10. Enlarged map from Figure 3.



11. Enlarged map from Figure 4.



12. Enlarged map from Figure 5.



13. Enlarged map from Figure 6.

