

Hastings & Napier Future Development Strategy

Where are we
growing to?

Future Development Strategy survey

PERSONAL DETAILS

Name: Vermont Street Partners No. 4 Limited - Att: Edward Sundstrum

Email: s 9(2)(a) & s 9(2)(a)

Address: Level 1, 10 Te Mata Road, Havelock North, 4130

Please indicate if you wish to be heard in support of your submission

Yes No

PLEASE TICK YOUR ANSWERS

1. Residential intensification

The strategy aims for 60 per cent residential growth through intensification within/near our larger urban areas. Do you agree with this target?

Yes No

Why or why not?

Refer to submission attached

2. Rural settlements and coastal areas

In this strategy, some rural settlement and coastal growth areas have been removed, favouring development around larger urban centres. If you don't agree with this proposal, in what areas specifically would you like to see this growth?

Refer to submission attached

3. Greenfield areas

Do you support the greenfield locations identified for future residential growth?
(Refer to page 4-5 for details)

Yes No

Why or why not?

Refer to submission attached

If you do not support the proposed greenfield residential areas, where would you suggest these be located instead?

Refer to submission attached

4. Rural residential

Should the strategy identify locations that allow for rural residential (larger lot) development?

Yes No

Why or why not?

Refer to submission attached

5. Business growth locations

Do you agree with the locations identified for industrial/commercial growth? (Refer to page 4-5 for details)

Yes No

Why or why not?

Refer to submission attached

If you do not support the proposed greenfield residential areas, where would you suggest these be located instead?

Refer to submission attached

6. Mana whenua considerations

Do you feel mana whenua issues have been adequately considered in this strategy?

Yes No

Why or why not?

Refer to submission attached

Do you think papakāinga and/or marae-based development appropriately contribute to the goals of the strategy?

Yes No

Why or why not?

Refer to submission attached

7. Constraints and criteria

In your opinion, does the strategy adequately consider constraints such as natural hazards, highly productive land, and infrastructure capacity?

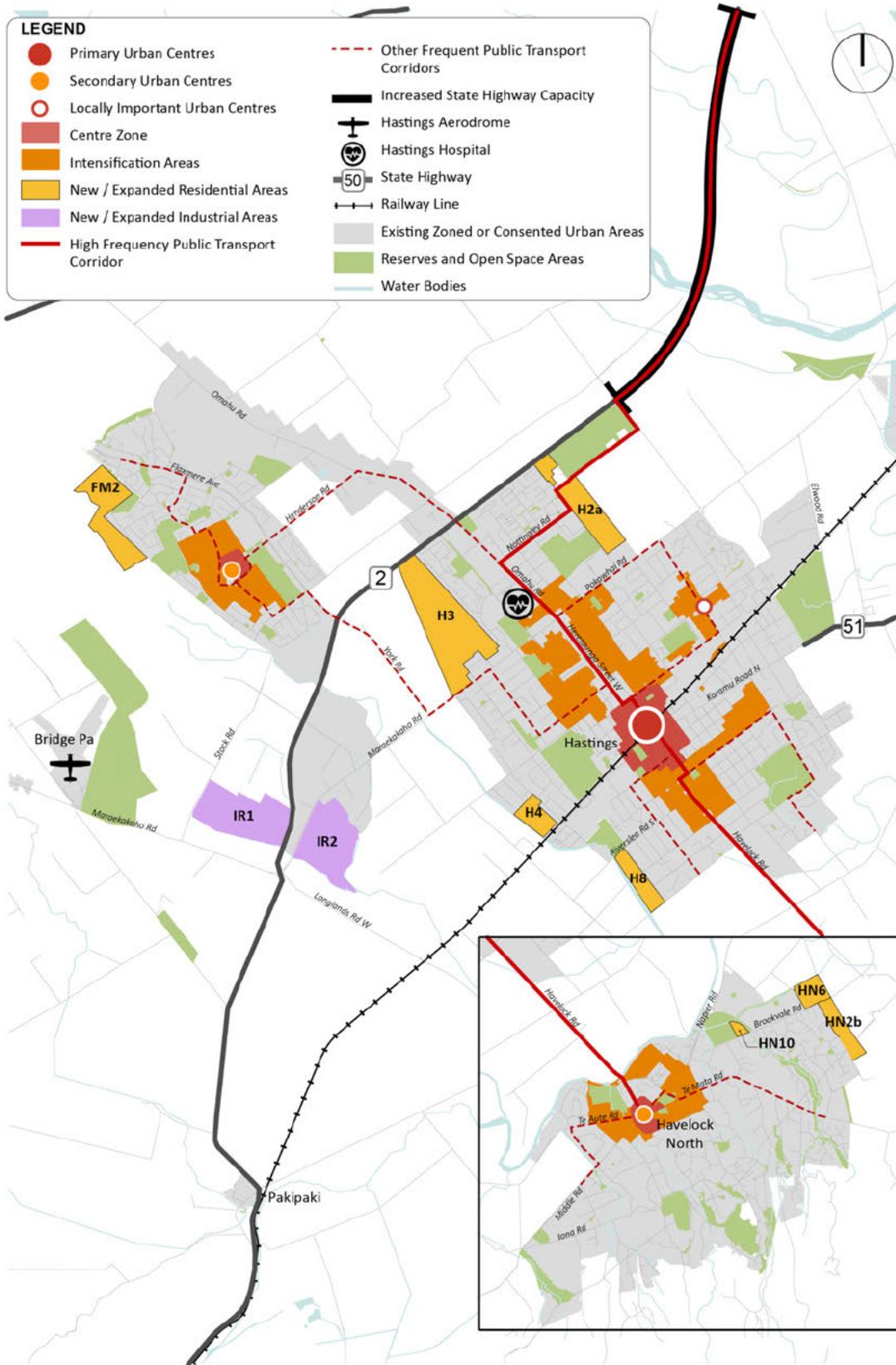
Yes No

Why or why not?

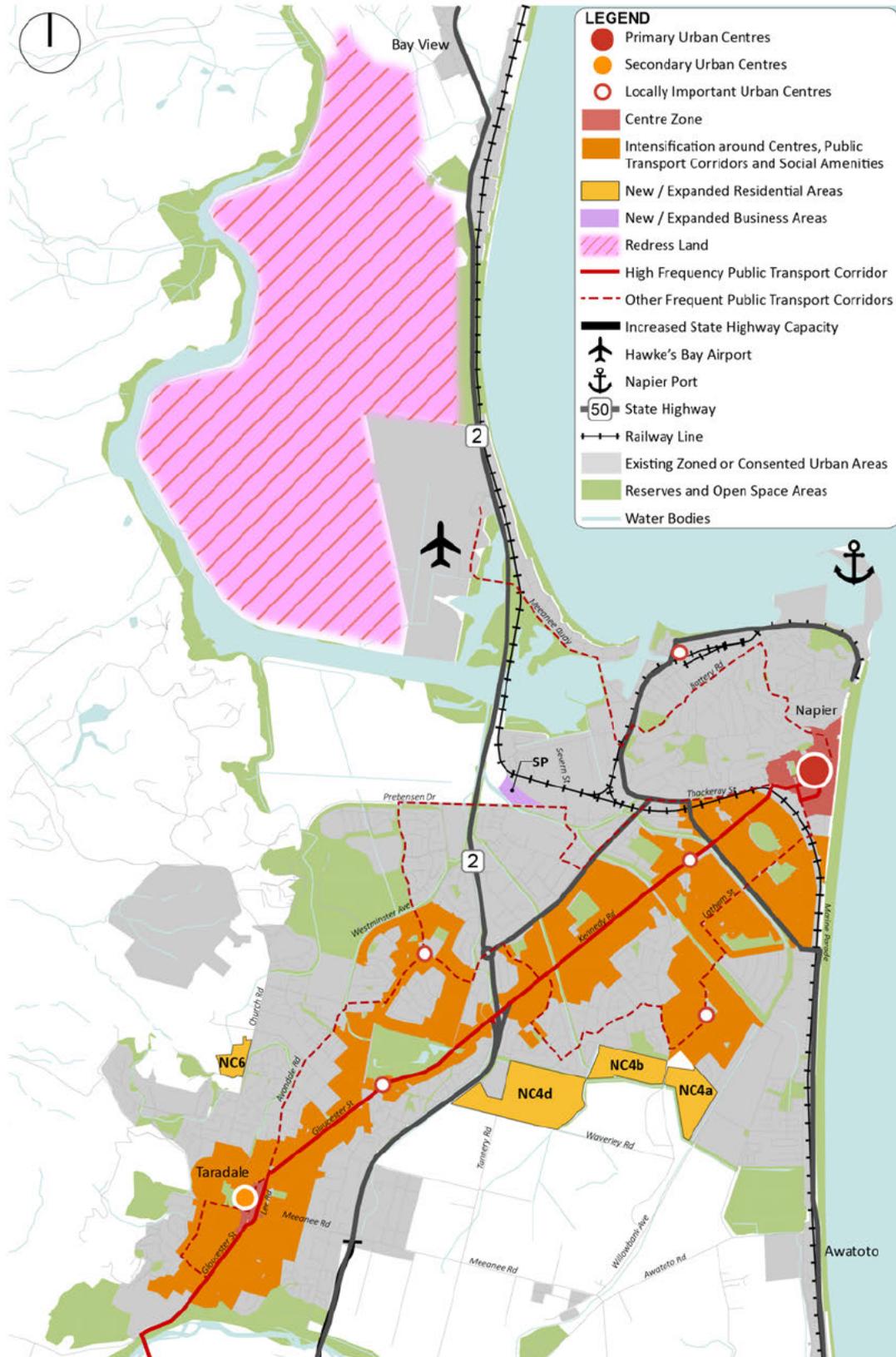
Refer to submission attached

Thank you for your feedback

Hastings strategy map



Napier strategy map



To: *Napier Hastings Future Development Strategy Independent Hearing Panel*

Re: *Draft Napier Hastings Future Development Strategy – Submission re
Inclusion of land at 174 & 176 Brookvale Road, Havelock North*

Name of Submitter: *Vermont Street Partners No. 4 Limited*
Attn: Edward Sundstrum

Address for Service: *Edward Sundstrum s 9(2)(a) &*
Chris Timbs s 9(2)(a)

Contact Phone #: *Edward Sundstrum – s 9(2)(a)*
Chris Timbs – s 9(2)(a)

Date: *18 December 2024*

Submission Details:

This is a submission by Vermont Street Partners No. 4 Limited (**VSP**) on the Draft Napier Hastings Future Development Strategy (**draft FDS**).

VSP **opposes** the draft FDS as it relates to the exclusion from the FDS of land at 174 & 176 Brookvale Road, Havelock North, which VSP considers should be included within the FDS, as an area for future urban / residential expansion.

The specific provisions of the draft FDS that VSP’s submission relates to and reasons for VSP’s position are set out in the body of this submission.

VSP **wishes to be heard** in support of this submission.

Edward Sundstrum and Chris Timbs on behalf of

Vermont Street Partners No. 4 Limited

1. Introduction to VSP

VSP specialises in delivering unique housing environments that champion environmentally sustainable practices, achieving timeless architectural and urban design outcomes that limit wholesale urban sprawl.

2. The subject site – 174 & 176 Brookvale Road

174 & 176 Brookvale Road (**subject site**) comprise three titles containing approximately 22.26 hectares of land, on a prime location on the north eastern edge of Havelock North, approximately 6km from Hastings Central, and 2.8km from the Havelock North commercial centre – see image below in **Figure 1**.

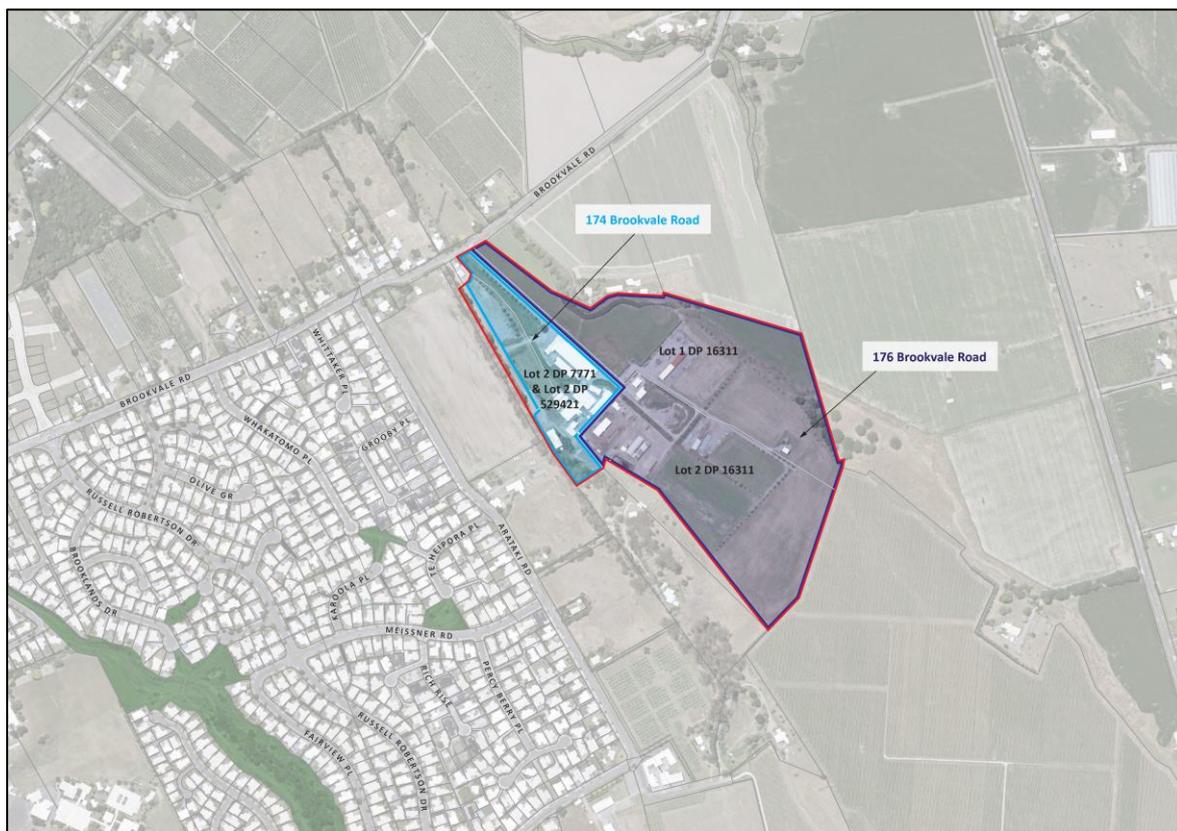


Figure 1 – 174 and 176 Brookvale Road, Havelock North

The subject site is known as the Te Mata Mushrooms subject site, as it contains the Te Mata Mushrooms factory on the southwestern portion of the subject site. The factory was initially established in 1967, at a time when the subject site was previously surrounded by pastoral land uses. The facilities on the subject site were progressively developed over the following five decades as production levels grew. However, mushroom production and composting operations ceased in 2022.

On 23 February 2024, resource consent RMA20230222 was granted for specified industrial and commercial activities undertaken by listed tenants within the existing buildings and yard areas of

the former Te Mata Mushrooms facility. This resource consent has enabled the reuse of the existing buildings but significantly, resource consent has only been granted for a limited term of 4 years (expiring on 23 February 2028).

The subject site contains approximately 8,800m² of existing buildings, in the form of disused spawning and picking sheds, warehousing, packhouses, compost bunkers, implement shedding, office space and staff amenities. Approximately 13,300m² of yard space is also located throughout the subject site in support of the previous activity for storage, vehicle manoeuvring, loading and parking, and compost making purposes. Access to the facilities is provided from Brookvale Road by a commercial standard vehicle crossing and sealed driveway which was recently upgraded.

The land is currently situated within the Plains Production Zone and is subject to Scheduled Activity 37 within the Hastings District Plan. This Scheduled Activity essentially allows the mushroom production and composting operations that were previously undertaken on the subject site.

The subject site is ideally located for urban / residential expansion on the northeastern extent of existing urban fringe of Havelock North. Urban expansion on the subject site, would represent a logical expansion of the urban edge in this area, and would provide a more compatible land use to neighbouring residential activities (and future residential activities within the Arataki Extension), than the ongoing light industrial use of the former mushroom production facilities.

3. The draft FDS – HN2a Te Mata Mushrooms subject site summary

The subject site is currently excluded from the draft FDS, despite a request by the previous owner, Te Mata Mushrooms Brookvale Road Ltd, for it to be included in the “call for opportunities” process. The subject site is identified as “HN2a Te Mata Mushrooms (Residential)” in Appendix 4 – Refined Spatial Scenarios Site Summaries within the draft FDS.

This summary lists the following infrastructure triggers and/or considerations to support urbanisation of the subject site:

- *“Relatively straight forward ability to expand existing reticulated water and wastewater networks. The Infrastructure Constraint Report did not signal wastewater to be an issue to accommodate growth, with localised improvements to optimise the provision of growth capacity in Brookvale needed.*
- *Stormwater is relatively more challenging compared to Hastings and Flaxmere areas. A potential solution would be consolidated stormwater detention and/or wetland treatment with other sites. This area is also subject to the TANK drinking water source protection zone and will require careful design and treatment for water quality.*
- *Existing capacity in the local primary, intermediate and secondary school networks.*
- *Currently limited access to the existing or proposed bus network and cycle facilities. Along with neighbouring sites, may require extension of these networks to support any growth.*
- *Requires investment in capital assets for electricity infrastructure.”*

In addition to this, the summary lists the following subject site advantages:

- *“Existing programme in place for the extension of the reticulated wastewater network in this area.*
- *The site has less value for productive uses when compared with other greenfield options.*
- *Less fragmented land ownership means easier to get all or most of the land owners motivated for redevelopment over a shorter period.*
- *Existing ridgeline and stream provides a defensible boundary along the eastern and northern boundaries.*
- *Located proximate to other growth areas, which allows for more comprehensive development to support infrastructure investment.”*

The summary also lists the following subject site disadvantages:

- *“The entire site is subject to LUC 3.*
- *Less accessible and proximate to existing and/or future bus routes as identified under RLTP, as well as to the existing cycling networks.*
- *Proximity to productive horticultural uses may give rise to some reverse sensitivity effects (e.g. from spray drift). Sufficient buffer to residential development required.*
- *No clear defensible urban boundary around the south.*
- *A large portion of the site has not been subject to any flood modelling so some uncertainty as to natural hazard risks.*
- *Current landowner may not be motivated to deliver residential uses and capacity may not be realised.”*

Overall, the subject site scores a high 56/76 in the Multi Criteria Analysis (**MCA**) in the draft FDS, with a ranking of 9 = 28 on the shortlist. Despite this high score and ranking, it has still been excluded from the draft FDS.

4. Productive land

The key constraint for the subject site as outlined in the summary, is that it has LUC 3 land located on it – see **Figure 2** below. This means it is considered as “highly productive land” under the National Policy Statement for Highly Productive Land (**NPS-HPL**). The NPS-HPL applies to “highly productive land” with the objective that it is protected for use in land-based-primary production, both for now and for future generations. “Highly productive land” is defined by reference to land that is mapped by a regional council and is included in an operative regional policy statement per clauses 3.4 and 3.5. Those clauses further reference “LUC 1, 2, or 3 land” which is defined as follows:

“...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.”

The NPS-HPL is still relatively new national direction, and the more detailed mapping of “highly productive land” prescribed under it, has not been undertaken by Hawkes Bay Regional Council or included within the regional policy statement. The application of the NPS-HPL therefore defaults

to the generic use of the NZLRI mapping of LUC 1 – 3 soils.

VSP has commissioned expert soil scientist, Ian Hanmore from Hanmore Land Management¹ to prepare subject site specific reports for 174 and 176 Brookvale Road. The reports are included as **Attachment 1**.

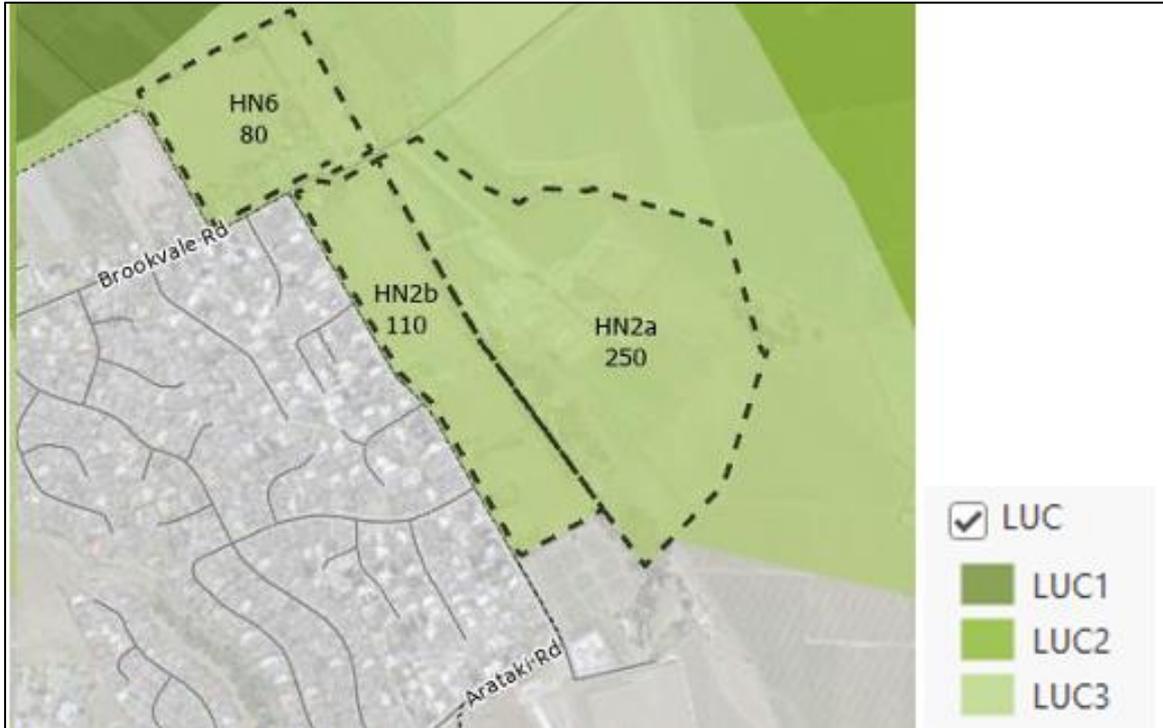


Figure 2 – NZLRI LUC3 mapping as it applies to the subject site / HN2a

Mr Hanmore is critical of the accuracy of the NZLRI mapping, stating:

“The NZLRI is based on an LUC assessment of the whole of New Zealand and has been carried out at a scale of 1:50,000. It is intended for regional use and planning and is not meant to be used at a farm scale. The 3rd Edition of The Land Use Capability Survey Handbook (Lynn et al 2009) cautions against enlarging LUC data beyond the scale at which it was gathered as it can produce unreliable and misleading results and at time results that are nonsense.

At a scale of 1:50,000, on average one mapping observation is made every 25ha but could be a little as one every 100ha (Hewitt and Lilburne 2003, Grealish 2019). As such, it is quite possible that no information has been gathered on the proposed site. For the purpose of this report, with a site covering 13.6ha the appropriate scale of mapping is approximately 1:5,000 or one to four observations per hectare (Lynn et al 2009).

Using the NZLRI for site specific information is outside of its intended purpose and outside of its parameters of reliability. At best it can only provide an indication of the possible LUC units present.

¹ Hanmore Land Management Limited is a company specialising in land management and environmental consultancy. Mr Hanmore has a Master of Applied Science majoring in Natural Resource Management from Massey University, an Advanced Nutrient Management Certificate from Massey University and is a member of the New Zealand Association of Resource Managers, the New Zealand Institute of Primary Industry Management and the New Zealand Society of Soil Science.

The correct process for mapping soil types and LUC at a site of this size is to carry out a site survey at the correct scale by a suitably qualified person as has been done for this report.”

Noting the issues with the NZLRI mapping outlined above, Mr Hanmore has undertaken a comprehensive subject site-specific analysis of the soils at both 174 and 176 Brookvale Road.

For 174 Brookvale Road, Mr Hanmore concludes:

- *“The entire site is technically classified as HPL under the NPS-HPL but in reality the majority has been highly modified and developed with buildings and hard surface areas. As such, that area of the site is in no way able to be used for primary production let alone in a highly productive capacity.*
- *Rehabilitation of the developed areas of the site for primary production is unviable.*
- *There is limited area for productive use and as such is unlikely to be able to support a commercially viable enterprise.*
- *Impeded soil drainage and stony soil profiles on the productive area of the site limit the productive potential and make it more suited to intensive grazing than cropping.*
- *Productive soils at the site have been degraded due to compaction and loss of soil structure and require remedial action to return them to their natural level of productivity.*
- *The current land use appears to be unsustainable due to the soil profile degradation observed.*
- *The lack of land use options or site versatility mean this site would not be classified as a highly productive site.”*

For 176 Brookvale Road, Mr Hanmore concludes:

- *“The entire site is technically classified as HPL under the NPS-HPL but in reality significant areas of the site have been developed and have no productive potential.*
- *The site is currently operated in conjunction with 174 Brookvale Road but needs to be considered separately in its productive capacity rather than as one block.*
- *Impeded soil drainage and stony soil profiles limit the productive potential of the site making it more suited to intensive grazing than cropping.*
- *Soils at the site have been degraded due to compaction and loss of soil structure and require remedial action to return them to their natural level of productivity.*
- *The current land use appears to be unsustainable due to the soil profile degradation observed.*
- *The lack of land use options or site versatility mean this site would not be classified as a highly productive site.”*

VSP relies on the expert assessment of Mr Hanmore. Based on that assessment, the actual extent of any potential LUC3 soils on the subject site is relatively insignificant, and generally located in the northern portion of the subject site as per the maps attached to Mr Hanmore’s reports. Furthermore, the size of 174 and 176 Brookvale Road alongside the area of potentially productive soils is constrained, such that the actual productive capacity is severely compromised.

This is clearly acknowledged in the subject site summary which highlights that “The site has less value for productive uses when compared with other greenfield options.” Ultimately excluding the subject site from the draft FDS based on the NZLRI LUC3 extent overstates and inflates the subject sites highly productive capacity and the relevance of the NPS-HPL. This does not align with the subject site specific assessments for 174 and 176 Brookvale Road, nor stands up to any real world analysis.

In addition to Mr Hanmore’s findings, a report was prepared by Ian Milner of Land Vision identifying that the 8.4ha of the subject site utilised as part of the former mushroom operation is not LUC3 and has no primary production value - see **Attachment 2** in support of the building reuse application (RMA20230222). The Land Vision report was also peer reviewed on behalf of Hastings District Council by Dr Ian Clothier of Crown Research Institute, and resulted in the Council decision recording that “a more detailed examination of the subject site indicates that it has no productive capacity at present.” Therefore, the productive land values of the subject site have now been reviewed by three different independent experts who all agree that the extent of LUC3 on the NZLRI mapping of the subject site is incorrect.

VSP also highlights that conversion of the subject site to urban development would enable the transfer of water rights to contribute to the irrigation and more effective use of highly productive land nearby.

These factors coupled with the well signalled review of national direction in the NPS-HPL by the current government, highlight that the NZLRI mapping of LUC3 on the subject site, should not be viewed as a key constraint to inclusion within the FDS.

5. Water and wastewater

Water supply is available at the front of the subject site – see **Figure 3** below. This is supported by existing 225mm and 300mm lines. It is anticipated that water supply and pressure should not be an issue if expansion of the subject site were to occur.

In terms of wastewater supply, a 375mm gravity trunk main terminates in a manhole at the Brookvale Road / Arataki Road intersection to the west of the subject site, with a 150mm line coming down Arataki Road – see **Figure 4** below. Therefore, extension of wastewater infrastructure to service urban expansion on the subject site should not be an issue, noting that there is already a programme in place to enable this to occur as signalled in the FDS documentation.

VSP understand that it will be straight forward to expand existing reticulated water and wastewater networks to service urban development on the subject site. This is consistent with the findings of the Draft FDS MCA Matrix for the Te Mata Mushroom site which does not identify any constraints for reticulated water supply and wastewater services.



Figure 3: image showing existing water infrastructure in proximity to the subject site

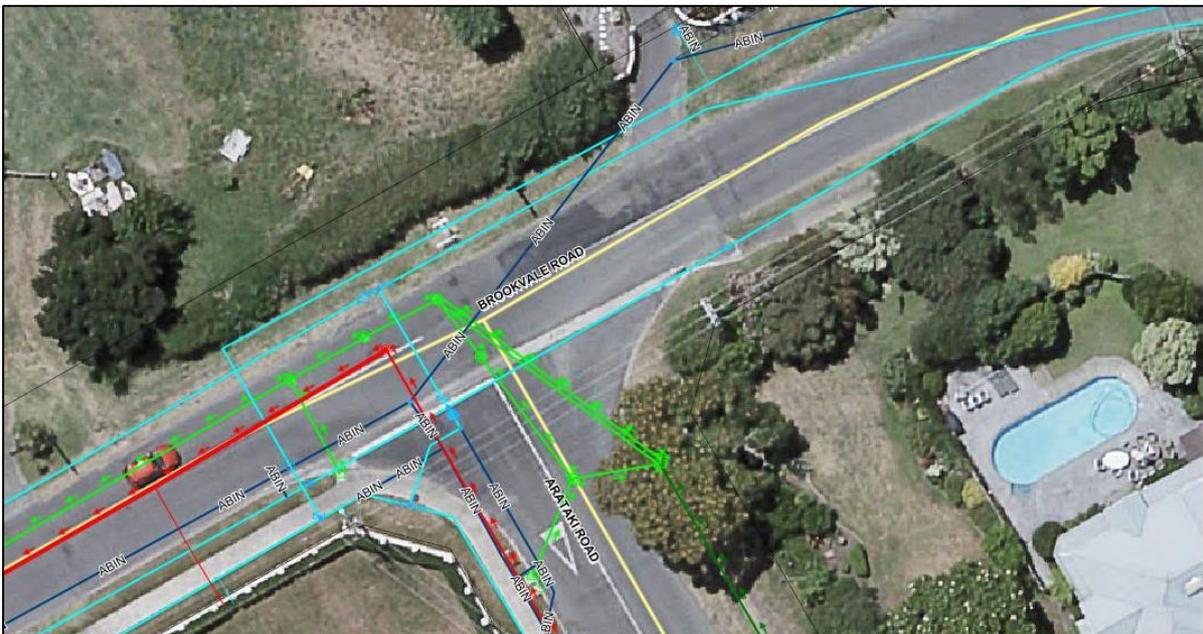


Figure 4: Image showing existing wastewater infrastructure in proximity to the subject site

6. Stormwater

There are two drains/open channels which run on the eastern and western side of the subject site. This provides a possible opportunity for discharge, noting the favourable levels in that area. It is acknowledged that attenuation will likely be needed on subject site, combined with treatment.

Identification of the subject site alongside the Arataki Road Extension as greenfield residential development areas would provide opportunity for the development of connections between the two sites and potentially more efficient stormwater solutions.

Noting the size of the land available at 174 and 176 Brookvale Road, VSP consider that there is ample space and opportunity on site to appropriately attenuate, treat and discharge stormwater.

7. Natural hazards

With reference to the relevant sections of the draft FDS²:

- No coastal hazards or tsunamis are relevant due to the distance of the subject site and Havelock North from the coast;
- The subject site is within an area where flood modelling has been undertaken, no flood risks have been identified; and
- The subject site is not located within a Cyclone Gabrielle Affected area

VSP is unaware of any historical flooding occurring on the subject site. There are no known natural hazards mapped on the subject site that would preclude development. More detailed assessments would be undertaken as part of any future plan change or resource consent to enable development of the subject site.

8. Access

The subject site is currently accessed to the northern extent of the subject site by an existing recently upgraded accessway that services the existing factory buildings. VSP considers that this could be readily converted to a public road to service future residential development with ample space in the landholding to expand the legal and physical formation to service the development. A more detailed transportation assessment would be provided as part of any future plan change or resource consent to enable development of the subject site.

The Draft FDS lists lesser accessibility to bus routes and cycling pathways as a subject site disadvantage. It is however noted that the subject site is immediately adjoining the Arataki Road Extension (HN2b) and there would be opportunity for cycling and walking pathway linkages between the two sites to connect to the existing pathway networks through the recent development to the south-west of Arataki Road.

9. Defendable boundary

VSP submit that creating a defendable boundary for urban expansion on the subject site is feasible in any future development. In particular the area near the northern and eastern boundaries of the subject site, including the existing watercourse, provides a clear area that could incorporate a reserve buffer between the subject site and productive uses adjoining the subject site in that area. Furthermore, to the south, VSP highlight that the extent of landholding in the subject site, would represent a continuation of the southern boundary of Arataki, which would provide a clear defendable boundary for urban expansion. This issue can be addressed in the detail of a future Masterplan for the subject site with a perimeter reserve buffer and greater level of green space next to the adjoining Plains Production Zone land via allotment sizing.

² See section 9.3 of the FDS and the associated maps.

10. Other Matters

VSP submit that the intention of the current owners of the subject site is largely irrelevant in the context of the FDS, which has a 30+ year horizon, and will cover current and future potential owners of the subject site. The obvious strategic strength of the subject site, as comprehensively detailed in this submission, clearly outweighs any perceived issues with the current owner's intentions, including that the "current landowner may not be motivated to deliver residential uses and capacity may not be realised". Regardless, VSP is motivated to deliver the residential use of the subject site as soon as possible.

11. A unique opportunity

The inclusion of the subject site within the FDS for urban / residential expansion provides a unique opportunity for the growth of Havelock North. In terms of options for growth in Havelock North, the northern edge, including the subject site, is the only real option for greenfield growth, noting the various other constraints that apply on other edges of the settlement. VSP will develop a high-level draft Masterplan for the subject site to communicate its future aspirations for the potential development of the site. Relevantly:

- There is an exceptional opportunity to take an innovative approach to urban design, with the promotion of a comprehensive master planned community, breaking the mould of the traditional 'cookie cutter' style subdivisions that are the norm in Hastings and Havelock North gaining efficiencies in land use that have not been enjoyed to date;
- The subject site is ideally situated for intensification, with between 150 - 300 residential units estimated of being capable for inclusion on the subject site, on a variety of allotment sizes with different typologies catering to a diverse range of occupants who have a diverse range of needs, providing the highest levels of utility;
- A comprehensive recreational green network can be incorporated into the design of future development of the subject site, providing a high level of amenity for residents, and a reserve buffer between productive land uses to the north to help avoid reverse sensitivity effects; and
- VSP is eager to work collaboratively with the Council to ensure that the development is well integrated into the locality.

12. Summary and conclusion

In summary, VSP considers that the subject site should be included in the FDS. It has clear strategic advantages in terms of promoting exemplar urban expansion for residential use, including:

- The subject site location on the immediate urban fringe of Havelock North and provides a logical expansion of that edge to enable comprehensive residential development of a large landholding in single ownership;
- The subject site is clearly constrained for productive uses, given the extent of the existing buildings and hardstand and the actual extent of residual LUC3 land based on the expert assessment of Mr Hanmore;

- The urban development of the subject site would enable the transfer of water rights to contribute to the irrigation and more effective use of highly productive land nearby;
- There is existing water and wastewater infrastructure available in proximity to the subject site, with no immediate issues identified with expanding them to cater for development of the subject site;
- Through comprehensive engineering design, there is ample room on the subject site for the provision of stormwater attenuation, treatment and discharge;
- There are no known natural hazard constraints that would preclude future residential development;
- There is an existing recently upgraded accessway available to the subject site that could be readily converted to a public road to service future residential development; and
- Reserve development on the northern, eastern and southern edges of the subject site adjacent to the Plains Production Zone can provide for the implementation of a defensible urban boundary and buffer to adjacent productive activities to manage reverse sensitivity effects;.
- Future residential use of this subject site is more compatible with nearby residents and the identified Arataki Road Extension greenfield residential area than the existing and potential future industrial use of the existing building infrastructure on the subject site;
- With the previously identified Iona Middle Road areas HN3a & HN3b with a combined residential capacity for 660 dwellings, being removed from the Draft FDS as new greenfield residential development areas, the subject site provides additional residential capacity for Havelock North on land of low productive value, and immediately adjacent to the Arataki Road Extension area; and
- Identification of the subject site alongside the Arataki Road Extension as greenfield residential development areas would provide opportunity for the development of connections between the two sites and potentially more efficient stormwater solutions.

VSP considers the subject site provides a unique opportunity for comprehensive residential development with a high level of amenity and a point of difference compared to traditional patterns of development in Hastings and Havelock North.

The development of this subject site should be a short term priority, recognising that a high degree of integration can be achieved with adjoining properties at Arataki and Brookvale that have been identified for urban expansion within the draft FDS.

13. Relief sought

VSP seek the following relief:

- (a) That the subject site at 174 and 176 Brookvale Road is included in the FDS; and
- (b) Any other necessary consequential amendments required to achieve the relief sought.

VSP is excited and looks forward to working collaboratively with the Independent Panel to address the above relief and is happy to meet with the project team staff or consultants to work through these matters.



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Attachment 1 - 174 and 176 Brookvale Road Soil and Resource Reports – Combined



Soil and Resource Report for 174 Brookvale Road, Havelock North.

Prepared By: Ian Hanmore

Prepared For: Vermont Street Partners No. 4 Ltd

20th November 2024

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Disclaimer:

The content of this report is based upon current available information and is only intended for the use of the party named. All due care was exercised by Hanmore Land Management Ltd in the preparation of this report. Any action in reliance on the accuracy of the information contained in this report is the sole commercial decision of the user of the information and is taken at their own risk. Accordingly, Hanmore Land Management Ltd disclaims any liability whatsoever in respect of any losses or damages arising out of the use of this information or in respect of any actions taken in reliance upon the validity of the information contained within this report.

1.0 INTRODUCTION

This report has been prepared at the request of the client to assess the Land Use Capability (LUC) classifications and productivity potential at 174 Brookvale Road, Havelock North. The New Zealand Land Resource Inventory (NZLRI) maps have classified the site as LUC class 3. As such, this area could potentially fall under the National Policy Statement for Highly Productive Land (NPS-HPL).

The purpose of the report is to map the site and identify any Highly Productive Land as defined by the National Policy Statement for Highly Productive Land (NPS-HPL) and assess its productivity potential. To achieve this, a site visit was carried out to map the soils and land use classes present and assess them in relation to the NPS-HPL and their productive uses.

This report presents the description of each of the soil types identified on the survey area as well as descriptions of each of the LUC units mapped. This information is then used to determine and quantify any HPL and assess its production potential. This information is accompanied by a site description map showing LUC, soil and soil classifications along with the relevant LUC unit and soil profile descriptions.

2.0 MAPPING METHOD

A site visit was carried out on the 6th of November 2024 to evaluate and describe the soil types and the LUC units present. The survey area was mapped at a scale of 1:5,000.

LUC mapping was carried out in accordance with the methods described in the 3rd Edition of the Land Use Capability Survey Handbook (Lynn et al 2009). This process involves making a land resource inventory (LRI) of the property in which soil types, soil parent materials, land slopes, erosion type and severity and land cover are recorded. Whenever any of these land features changes a new unit is made.

Specific field work activities include digging and describing soil profiles on each landform with supporting holes dug or profiles observed on bank/drain cuttings to establish soil boundaries, measuring slopes with a clinometer, and gathering any other data that may be of assistance in assessing the suitability of the land for primary production such as erosion, susceptibility of the land to flooding, winter wetness and/or cold, high temperatures, exposure to salt winds, aspect, and accessibility. This information is then used to determine the specific LUC units, as described in the Land Use Capability Classification of the Southern Hawke's Bay-Wairarapa Region for the area.

3.0 SITE DESCRIPTION

The site is located at 174 Brookvale Road and covers a total of 13.6ha made up of two legal titles, legal title number 858136 - 4.1ha (Title 1) and HBJ1/57 – 9.5ha (Title 2). The site is mostly flat with over half developed with buildings and hard stand areas. Minimal area is left on title 1 for any primary production with approximately 2/3 of title 2 currently used in a productive capacity.

Soils at the site are imperfectly drained alluvial soils with varying degrees of stone and gravel content. The southern end of Title 2 is currently used as part of a fruit tree nursery by a local Hawke's Bay company with the remaining area of both titles being used for a number of commercial enterprises located in various buildings and hardstand parking and accessways.

3.1 Soil Profiles and Descriptions

On Title 1 there are only two notable flat grassed areas. These are shown on the soil map in Section 7 of this report as anthropic or manmade soil and mottled fluvial recent soil (recorded as Hinds_25a.1 in S-map). A third area has not been highlighted as it covers only 400m² adjacent to a building and as such a negligible production potential.

The area of anthropic soil is located on an excavated area of the site where the slope from the terrace above has been removed to create a flat area. The soil at this site consists of very stony subsoil a number of metres below the surface of the original soil profile. Figure 1 below shows the area including the bank cutting on the right while figure 2 shows the shallow, stony soil surface that exists below the grass cover.



Figure 1. Excavated site with anthropic soil



Figure 2. Very shallow soil over gravel at the excavated site.

The soil at this site cannot be dug manually with a spade due to the degree of stoniness and only has a very thin layer of soil material overlaying the stony profile.

The area of natural soil is located next to the accessway to the site. It is approximately 150m long and varies in width from 6m to 28m. This area includes imperfectly drained, mottled fluvial recent soil. In this particular location the profile has a high degree of stoniness in the subsoil which prevented a profile hole from being dug. Below is a representative description of the profile.

The soils across Title 2 vary from mottled to gleyed alluvial soils with gravel present at a depth of between 200-500mm that prevented manual digging or soil auger penetration. Hard pans were also encountered in three instances that prevented auger penetration past 400mm. Stoniness was at the soil surface in a number of locations.

In general, the condition of the soil on Title 2 was found to be slightly to significantly degraded due to compaction and a loss of soil structure. Figure 3 below shows the degraded topsoil of a recently cultivated area of the site with structure almost total lost leaving a powdery texture topsoil containing small, compacted clods of subsoil



Figure 3. Soil degradation at the site from a loss of structure likely due to over cultivation.

Soil Profile	Soil Profile Description
	<p>Soil Name: Hinds_25a.1.</p> <p>Soil classification: Mottled fluvial recent soil.</p> <p>Parent material: Alluvium</p> <p>Soil description:</p> <p>0-200 Loss of soil structure and organic matter, becoming powdery with compacted lumps</p> <p>200-400mm: Firm, massive, sticky plastic, light yellowish brown (2.5y6/3) to light brownish grey (2.5y6/2) sandy clay with black (10yr 2/1) iron staining and yellowish red (5yr 5/8) mottling.</p> <p>400mm+ – clay to firm to auger</p> <p>Overall drainage: Imperfectly drained</p>

3.2 Land Use Capability Descriptions

LUC classifications categorize land into eight classes according to its long-term capability to sustain one or more productive uses.

- Classes 1-4 have arable potential with limitations to this land use moving from class 1 being the most versatile, multi-use land with minimal physical limitations for arable use and increasing to severe limitations under class 4 land. These classes are also suitable to viticulture, berry production, pastoralism, tree crops and production forestry.
- Classes 5-7 are suitable for pastoral farming and production forestry.
- Class 8 land has no productive use and is rather managed for catchment protection and conservation purposes.

The LUC units mapped on the proposed site are presented in the table below. An LUC map showing the distribution of the mapped units is contained in Section 7.

Resource information	Luc unit	Total area (ha)	Parent material	Dominant soil type	Slope (degree)	Land Cover	Erosion degree & severity		Landuse suitability	Stock carrying capacity (su/ha)
							Actual	Potential		
<p>3w 2</p> <p>Flat terraces and depressions which have poor internal drainage, or in areas where natural drainage outfalls are restricted. The gley and organic soils mapped on this unit are more difficult to drain effectively than soils on LUC unit Illwl.</p>		6.4	Alluvium	Central yellow-brown loams	0-3°	Pasture	Nil	Nil	Grazing. Some cereals Root and green fodder crops Grass seed	Average: 17 Top: 20 Potential: 24 FSI: 20-23
<p>7s 2*</p> <p>Manmade soil from the levelling of stony alluvial soils where the A and B soil horizons have been removed, leaving a stoney C horizon at the soil surface.</p>		0.35	Alluvium	Anthropic	0-3°	Unimproved pasture	Nil	Nil	Very limited grazing	Data not available

Land use capability unit descriptions are taken from the author's field work and the Land use capability classification of the Southern Hawke's Bay – Wairarapa Region (National water and soil conservation authority).

4.0 SOIL CLASSIFICATIONS

4.1 Highly Productive Land

The NPS-HPL came into effect on 17th October 2022 and was updated in August 2024 with the amendments taking effect from 14th September 2024. This policy seeks to protect highly productive land for use in land-based primary production, both now and for future generations. The policy statement defines highly productive land as land that has been mapped in accordance with clause 3.4 of the NPS-HPL and is included in an operative regional policy statement as required by clause 3.5. There is an interim regime for identifying highly productive land prior to a regional policy statement containing maps of highly productive land in the region is operative. Under clause 3.5(7) of the NPS-HPL, highly productive land in the interim period includes land that is: (i) zoned general rural or rural production; and (ii) LUC 1, 2, or 3 land; but 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 following definition of LUC 1, 2, or 3 land is taken from section 1.3, page 5 of the NPS-HPL:

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.

4.2 NZLRI Mapping

The NZLRI is based on an LUC assessment of the whole of New Zealand and has been carried out at a scale of 1:50,000. It is intended for regional use and planning and is not meant to be used at a farm scale. The 3rd Edition of The Land Use Capability Survey Handbook (Lynn et al 2009) cautions against enlarging LUC data beyond the scale at which it was gathered as it can produce unreliable and misleading results and at time results that are nonsense.

At a scale of 1:50,000, on average one mapping observation is made every 25ha but could be a little as one every 100ha (Hewitt and Lilburne 2003, Grealish 2019). As such, it is quite possible that no information has been gathered on the proposed site. For the purpose of this report, with a site covering 13.6ha the appropriate scale of mapping is approximately 1:5,000 or one to four observations per hectare (Lynn et al 2009).

Using the NZLRI for site specific information is outside of its intended purpose and outside of its parameters of reliability. At best it can only provide an indication of the possible LUC units present. The correct process for mapping soil types and LUC at a site of this size is to carry out a site survey at the correct scale by a suitably qualified person as has been done for this report.

5.0 OVERALL SITE ASSESSMENT

Area and percentage of LUC units and HPL on the two legal titles at the site.

LUC Unit - 858136	Area (ha)	HPL Classification	% of total Area
3w 2	0.2	HPL	4.9
7s 2*	0.3	Not HPL	7.3
Unproductive	3.6	Not HPL	87.8
Total area	4.1		
Area HPL	0.2	Total % HPL	4.9
Total area non-HPL	3.9	Total % non-HPL	95.1

LUC Unit - HBJ1/57	Area (ha)	HPL Classification	% of total Area
3w 2	6.2	HPL	65.3
Unproductive	3.3	Not HPL	34.7
Total area	9.5		
Area HPL	6.2	Total % HPL	65.3
Total area non-HPL	3.3	Total % non-HPL	34.7

5.1 NPS-HPL Classification

It is acknowledged that as this site is classified as LUC class 3 by the NZLRI it is also classified as HPL under the NPS-HPL. This classification is relevant in relation to the HPL legislation, but it does not supersede the site survey in relation to the actual LUC classifications at the site and its primary productivity potential.

5.2 Site Assessment and Productivity

Due to the unreliability of the NZLRI data at a farm scale it cannot be used to accurately assess either site LUC classifications or site productivity potential. Weight therefore needs to be given to the information gained from the site survey and provided in this report as it has been obtained by following the correct mapping protocols, at the correct scale, by a suitably qualified person.

5.2.1 Title 1

As can be seen in the soil and LUC maps there is very little in the way of undeveloped ground that has any potential primary productive use on Title 1. The soils on this title have been discussed in Section 3.1 of this report and have highlighted only three flat, undeveloped areas that could be considered to have any production potential. The smallest of these is discounted as it is the size of a small residential lawn – approximately 400m². Of the remaining two areas the largest - 0.35ha, has anthropic or a manmade soil profile due to site levelling. This process

has resulted in the removal of a significant depth of the original soil profile leaving only a very stony subsoil material. Due to these alterations this area no longer has the productivity potential of the original site and as such has a new LUC classification of 7s 2* reflecting that.

The area of 3w 2 on this title is unaltered and in general land of this classification is capable of supporting grazing, production of some cereal crops, root and green fodder crops and grass seed. However, due to its very small size – 0.2ha - and its long narrow shape it is of no practical use in primary production beyond a family vegetable garden.

5.2.2 Title 2

As can be seen in the soil and LUC maps a significant area of this title is also occupied by buildings, accessways and hardstand areas. These areas have no productive potential and therefore cannot be given a LUC classification. The balance of the site is classified as LUC unit 3w 2 includes and productive land but with degraded soil structure likely due to over cultivation.

5.3 Productivity Potential

5.3.1 Title 1

Some sites where development has occurred can undergo rehabilitation and be restored for primary production uses at minimal expense. This title however, has undergone development to such a degree that such an undertaking would be totally impractical, unjustifiable and likely unattainable. As such there is virtually no production potential on this title due to development and the very small area of natural soil.

5.3.2 Title 2

In the description of the 3w 2 LUC unit Noble (1985) states that the heavy textured subsoils of this title give rise to slow internal drainage and poor soil aeration. The impeded drainage and long periods of high water tables make this unit more suited to intensive grazing than cropping, although some maize, barley, grass seed, and summer forage cropping may be carried out.

The gleying and mottling observed in the soil profiles confirm the impeded drainage and prolonged soil wetness. The impeded drainage along with the stony soil profile limit the productive uses available for this site to grazing and shallow rooted or wet tolerant plant/tree species and short rotation cropping options. Continuous cropping is not sustainable on these soils and results in soil structural degradation.

Further adding to the limited production opportunities is the small area available for productive use. Currently the tree nursery that operates at the site uses the productive area of both 174 and 176 Brookvale Road, however, these areas need to be considered as operating as separate sites. In this capacity the productive area remaining on Title 2 is 6.2ha. At this size

and on a site that is best suited to grazing commercial viability is unlikely with the title most likely to be used as a lifestyle block.

It should be noted that though the title is currently used as a tree nursery this land use appears to be unsustainable based on the degraded soil profiles found at the site.

6.0 CONCLUSIONS

- The entire site is technically classified as HPL under the NPS-HPL but in reality the majority has been highly modified and developed with buildings and hard surface areas. As such, that area of the site is in no way able to be used for primary production let alone in a highly productive capacity.
- Rehabilitation of the developed areas of the site for primary production is unviable.
- There is limited area for productive use and as such is unlikely to be able to support a commercially viable enterprise.
- Impeded soil drainage and stony soil profiles on the productive area of the site limit the productive potential and make it more suited to intensive grazing than cropping.
- Productive soils at the site have been degraded due to compaction and loss of soil structure and require remedial action to return them to their natural level of productivity.
- The current land use appears to be unsustainable due to the soil profile degradation observed.
- The lack of land use options or site versatility mean this site would not be classified as a highly productive site.

174 Brooksdale Road Soil Map



174 Brooksdale Road Land Use Capability Classifications



174 Brooksdale Road Highly Productive Land Classifications



8.0 APPENDIX

8.1 S-Map soil description



SOIL REPORT

Hawkes Bay Regional Council

Hinds_25a.1

Report generated: 5-Nov-2024 from <https://smap.landcareresearch.co.nz>

Hind_25a.1 (100% of the mapunit at location (1935109, 5602872), Confidence: Medium)

This information sheet describes the typical average properties of the specified soil to a depth of 1 metre, and should not be the primary source of data when making land use decisions on individual farms and paddocks. S-map correlates soils across New Zealand. Both the old soil name and the new correlated (soil family) name are listed below.

Capture of the base soil information in this region was funded by Hawkes Bay Regional Council and Manaaki Whenua.

Soil Classification

Soil Classification:

Mottled Fluvial Recent Soils (RFM)

Family Name:

Hinds (Hind)

Sibling Name:

Hinds_25a.1 (Hind_25a.1)

Soil profile material

Soil with stones (non contra:

Depth class (diggability)

Deep (> 1 m)

Profile texture

loam

Parent Material

Stones/rocks

hard sandstone rock

Soil material

hard sandstone rock

Origin

Alluvium

Soil Sibling Concept

This soil belongs to the Recent soil order of the New Zealand soil classification. Recent Soils are weakly developed, showing limited signs of soil-forming processes although a distinct topsoil is present, a B horizon is either absent or only weakly expressed. It is formed in alluvial sand silt or gravel deposited by running water, from hard sandstone parent material.

The topsoil typically has loam texture and is stoneless. The subsoil has dominantly loam textures, with gravel content of more than 3% but below 35% for most part of the soil. The plant rooting depth extends beyond 1m.

Generally the soil is imperfectly drained with low vulnerability of water logging in non-irrigated conditions, and has high soil water holding capacity. Inherently these soils have a high structural vulnerability and a low N leaching potential, which should be accounted for when making land management decisions.



About this publication

- This information sheet describes the *typical average properties* of the specified soil.
- For further information on individual soils, contact Landcare Research New Zealand Ltd: www.landcareresearch.co.nz
- Advice should be sought from soil and land use experts before making decisions on individual farms and paddocks.
- The information has been derived from numerous sources. It may not be complete, correct or up to date.
- This information sheet is licensed by Landcare Research on an "as is" and "as available" basis and without any warranty of any kind, either express or implied.
- Landcare Research shall not be liable on any legal basis (including without limitation negligence) and expressly excludes all liability for loss or damage howsoever and whenever caused to a user of this factsheet.



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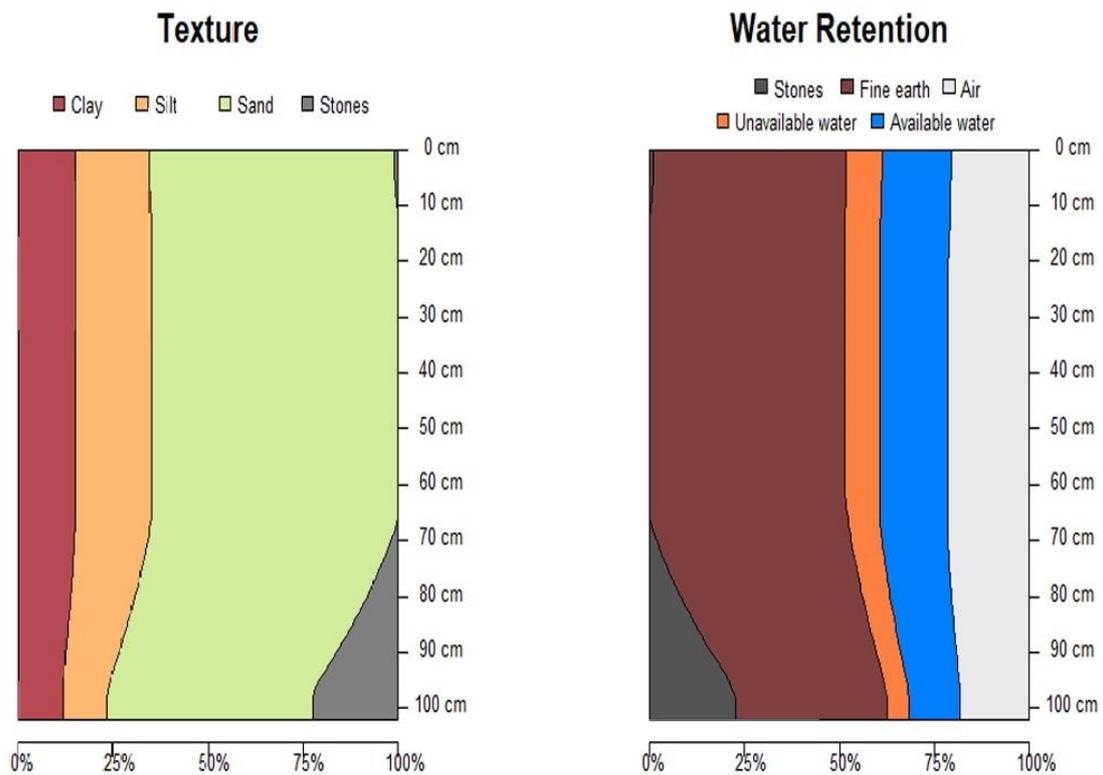
Hinds_25a.1

Soil horizons

Characteristics of functional horizons in order from top to base of profile:

Functional Horizon	Thickness	Stones	Clay*	Sand*	Permeability
Loamy Weak	15 - 25 cm	0 %	10 - 20 %	50 - 80 %	rapid
Loamy Weak	65 - 80 cm	0 %	10 - 20 %	50 - 80 %	moderate
Stony Loamy Weak	0 - 20 cm	15 - 30 %	10 - 20 %	60 - 80 %	moderate

* clay and sand percent values are for the mineral fines (excludes stones). Silt = 100 - (clay + sand)



The values for the graphs above have been generated from horizon and pedotransfer data. These values have then been splined to create continuous estimates of soil water holding capacity and particle size distribution the soil profile. These curves express the particle size distribution and water retention of the soil however there may be barriers to rooting depth that are not necessarily represented in these properties directly. It is advisable to check the potential rooting depth and rooting barrier fields in the soil physical properties section on page three of this factsheet.

Hinds_25a.1

Soil physical properties

Depth class (diggability)

Deep (> 1 m)

Potential rooting depth

Unlimited

Rooting barrier

No significant barrier within 1 m

Depth to hard rock

No hard rock within 1 m

Depth to soft rock

No soft rock within 1 m

Depth to stony layer class

Moderately deep

Texture profile

Loam

Topsoil stoniness

Stoneless

Topsoil clay range

10 - 20 %

Drainage class

Imperfectly drained

Permeability profile

Moderate over rapid

Depth to slowly permeable horizon

No slowly permeable horizon

Permeability of slowest horizon

Moderate (4 - 72 mm/h)

Aeration in root zone

Moderately limited

Profile available water

(0 - 30cm or root barrier)

High (54 mm)

(0 - 60cm or root barrier)

High (108 mm)

(0 - 100cm or root barrier)

High (177 mm)

Dry bulk density

topsoil

1.00 g/cm³

subsoil

1.30 g/cm³

Soil chemical properties

Topsoil P retention

Medium (33%)

Soil management factors

Vulnerability classes relate to soil properties only and do not take into account climate or management

Soil structure integrity

Structural vulnerability

High (0.69)

Pugging vulnerability

not available yet

Septic tank installation category

A1 if slope > 15 deg otherwise B3

Contaminant management

N leaching vulnerability

Low

P leaching vulnerability

not available yet

Dairy effluent (FDE) risk category

B

Water management

Water logging vulnerability

Moderate

Drought vulnerability - if not irrigated

Low

Bypass flow

Low

Hydrological soil group

C

Relative Runoff Potential

Slope	0-3°	4-7°	8-15°	16-25°	>25°
Risk	VL	VL	L	L	M

SINDI - Soil quality Indicators

SINDI - Soil Quality Indicators

A suite of soil quality indicators is available from <http://sindi.landcareresearch.co.nz/>

- Compare your soil with information from our soils databases.
- Assess the intrinsic resources and biological, chemical and physical quality of your soil
- See how your soil measures up against current understanding of optimal values.
- Learn about the effect each indicator has on soil quality and some general management practices that could be implemented to improve soil quality.

9.0 REFERENCES

[2024] NZEnvC 083 Blue Glass Limited v Dunedin City Council

Grealish G. 2019. New Zealand soil mapping protocols and guidelines. Manaaki Whenua – Landcare Research.

Hewitt A, Lilburne L 2003. Effects of scale on the information content of soil maps. NZ Soil News 51: 78-81

Lynn IH, Manderson AK, Page MJ, Harmsworth GR, Eyles GO, Douglas GB, Mackay AD, Newsome PJF 2009. NZ Land Use Capability Survey Handbook – a New Zealand handbook for the classification of land 3rd Edition. Hamilton, AgResearch; Lincoln, Landcare Research; Lower Hutt, GNS Science.

Noble, K. E. 1985. Land use capability classification of the Southern Hawke’s Bay – Wairarapa Region. National water and soil conservation authority.



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Soil and Resource Report for 176 Brookvale Road, Havelock North.

Prepared By: Ian Hanmore

Prepared For: Vermont Street Partners No. 4 Ltd

20th November 2024

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1.0 INTRODUCTION

This report has been prepared at the request of the client to assess the Land Use Capability (LUC) classifications and productivity potential at 176 Brookvale Road, Havelock North. The New Zealand Land Resource Inventory (NZLRI) maps have classified the site as LUC class 3. As such, this area could potentially fall under the National Policy Statement for Highly Productive Land (NPS-HPL).

The purpose of the report is to map the site and identify any Highly Productive Land as defined by the National Policy Statement for Highly Productive Land (NPS-HPL) and assess its productivity potential. To achieve this, a site visit was carried out to map the soils and land use classes present and assess them in relation to the NPS-HPL and their productive uses.

This report presents the description of each of the soil types identified on the survey area as well as descriptions of each of the LUC units mapped. This information is then used to determine and quantify any HPL and assess its production potential. This information is accompanied by a site description map showing LUC, soil and soil classifications along with the relevant LUC unit and soil profile descriptions.

2.0 MAPPING METHOD

A site visit was carried out on the 6th of November 2024 to evaluate and describe the soil types and the LUC units present. The survey area was mapped at a scale of 1:5,000.

LUC mapping was carried out in accordance with the methods described in the 3rd Edition of the Land Use Capability Survey Handbook (Lynn et al 2009). This process involves making a land resource inventory (LRI) of the property in which soil types, soil parent materials, land slopes, erosion type and severity and land cover are recorded. Whenever any of these land features changes a new unit is made.

Specific field work activities include digging and describing soil profiles on each landform with supporting holes dug or profiles observed on bank/drain cuttings to establish soil boundaries, measuring slopes with a clinometer, and gathering any other data that may be of assistance in assessing the suitability of the land for primary production such as erosion, susceptibility of the land to flooding, winter wetness and/or cold, high temperatures, exposure to salt winds, aspect, and accessibility. This information is then used to determine the specific LUC units, as described in the Land Use Capability Classification of the Southern Hawke's Bay-Wairarapa Region for the area.

3.0 SITE DESCRIPTION

The property is located at 176 Brookdale Road and covers a total of 8.9ha. The site is flat with a number of commercial buildings and hard stand areas. The soils are imperfectly drained alluvial soils with varying degrees of stone and gravel content. The site is currently used as a fruit tree nursery by a local Hawke's Bay company.

3.1 Soil Profiles and Descriptions

The soils across the site vary from mottled to gleyed alluvial soils with gravel present at a depth of between 200-500mm that prevented manual digging or soil auger penetration. A hard pan was also encountered that prevented auger penetration past 400mm with stones at the soil surface in a number of locations.

Some areas of the site were not accessible at the time of the site visit due to horticultural spraying having just been completed or being carried out.

In general, the condition of the soil at the site was found to be slightly to significantly degraded due to compaction and a loss of soil structure from repeated machinery movement and likely over cultivation.

Also of note at the site is an old settlement pond that has been filled in. The area of the site has Anthropogenic or a manmade soil profile. Based on the report by the Land and Water People in which trenches were dug and soil auger samples taken this area was found to be a mix of topsoil and subsoil along with sand, gravel and rubbish.

Two typical soil profiles are described below with the descriptions from the S-Map soils identified at the site included in the appendix.

Soil Profile	Soil Profile Description
	<p>Soil Name: Hinds_25a.1.</p> <p>Soil classification: Mottled fluvial recent soil.</p> <p>Parent material: Alluvium</p> <p>Soil description:</p> <p>0-260mm: Friable, weakly developed, 2-3mm nut, some compaction evident, very dark greyish brown (10yr 3/2), sticky, plastic, silt loam.</p> <p>260-400mm Very firm, massive, breaks to weakly developed 2-3mm nut, light brownish grey (10yr 6/2), sticky, plastic, gravelly clay with dark yellowish brown (5yr 4/6) iron deposits.</p> <p>Overall drainage: Imperfectly drained</p>



Soil Name: Hinds_25a.1.

Soil classification: Mottled fluvial recent soil.

Parent material: Alluvium

Soil description:

0-400mm: Friable, strongly to moderately developed, 2-8mm nut, very dark grayish brown (10yr 3/2), sticky, plastic, sandy clay

400-600mm: Friable, moderately to weakly developed, 2-5mm nut, yellowish brown (10yr 5/4), sticky, plastic, slightly sandy loam with black flecks (10yr 2/1) and faint yellow (2.5y 7/8) mottling.

600-850mm: Firm, massive, sticky plastic, light yellowish brown (2.5y6/3) to light brownish grey (2.5y6/2) sandy clay

Overall drainage: Imperfectly drained

3.2 Land Use Capability Descriptions

LUC classifications categorize land into eight classes according to its long-term capability to sustain one or more productive uses.

- Classes 1-4 have arable potential with limitations to this land use moving from class 1 being the most versatile, multi-use land with minimal physical limitations for arable use and increasing to severe limitations under class 4 land. These classes are also suitable to viticulture, berry production, pastoralism, tree crops and production forestry.
- Classes 5-7 are suitable for pastoral farming and production forestry.
- Class 8 land has no productive use and is rather managed for catchment protection and conservation purposes.

The LUC units mapped on the proposed site are presented in the table below. An LUC map showing the distribution of the mapped units is contained in Section 7.

Resource information	Luc unit	Total area (ha)	Parent material	Dominant soil type	Slope (degree)	Land Cover	Erosion degree & severity		Landuse suitability	Stock carrying capacity (su/ha)
							Actual	Potential		
<p>3w 2</p> <p>Flat terraces and depressions which have poor internal drainage, or in areas where natural drainage outfalls are restricted. The gley and organic soils mapped on this unit are more difficult to drain effectively than soils on LUC unit Illwl.</p>		6.7	Alluvium	Central yellow-brown loams	0-3°	Fruit tree seedlings	Nil	Nil	Grazing. Some cereals Root and green fodder crops Grass seed	Average: 17 Top: 20 Potential: 24 FSI: 20-23
<p>4s 2*</p> <p>Flat area with a soil profile consisting of fill material containing mixed soil horizons, sand, gravels and manmade materials.</p>		0.4	Alluvium, manmade material	Anthropic	0-3°	Fruit tree seedlings	Nil	Nil	Data not available	Data not available

Land use capability unit descriptions are taken from the author's field work and the Land use capability classification of the Southern Hawke's Bay – Wairarapa Region (National water and soil conservation authority).

4.0 SOIL CLASSIFICATIONS

4.1 Highly Productive Land

The NPS-HPL came into effect on 17th October 2022 and was updated in August 2024 with the amendments taking effect from 14th September 2024. This policy seeks to protect highly productive land for use in land-based primary production, both now and for future generations. The policy statement defines highly productive land as land that has been mapped in accordance with clause 3.4 of the NPS-HPL and is included in an operative regional policy statement as required by clause 3.5. There is an interim regime for identifying highly productive land prior to a regional policy statement containing maps of highly productive land in the region is operative. Under clause 3.5(7) of the NPS-HPL, highly productive land in the interim period includes land that is: (i) zoned general rural or rural production; and (ii) LUC 1, 2, or 3 land; but 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 following definition of LUC 1, 2, or 3 land is taken from section 1.3, page 5 of the NPS-HPL:

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.

4.2 NZLRI Mapping

The NZLRI is based on an LUC assessment of the whole of New Zealand and has been carried out at a scale of 1:50,000. It is intended for regional use and planning and is not meant to be used at a farm scale. The 3rd Edition of The Land Use Capability Survey Handbook (Lynn et al 2009) cautions against enlarging LUC data beyond the scale at which it was gathered as it can produce unreliable and misleading results and at time results that are nonsense.

At a scale of 1:50,000, on average one mapping observation is made every 25ha but could be a little as one every 100ha (Hewitt and Lilburne 2003, Grealish 2019). As such, it is quite possible that no information has been gathered on the proposed site. For the purpose of this report, with a site covering 8.9ha the appropriate scale of mapping is between approximately 1:5,000 or one to four observations per hectare (Lynn et al 2009).

Using the NZLRI for site specific information is outside of its intended purpose and outside of its parameters of reliability. At best it can only provide an indication of the possible LUC units present. The correct process for mapping soil types and LUC at a site of this size is to carry out a site survey at the correct scale by a suitably qualified person as has been done for this report.

5.0 OVERALL SITE ASSESSMENT

Area and percentage of LUC units and HPL at the site.

LUC Unit -	Area (ha)	HPL Classification	% of total Area
3w 2	6.7	HPL	75.3
4s 2*	0.4	Not HPL	3.9
Unproductive	1.0	Not HPL	11.0
Riparian/water course	0.9		9.8
Total area	8.8		
Area HPL		Total % HPL	75.3
Total area non-HPL		Total % non-HPL	24.7

5.1 NPS-HPL Classification

It is acknowledged that as this site is classified as LUC class 3 by the NZLRI it is also classified as HPL under the NPS-HPL. This classification is relevant in relation to the HPL legislation, but it does not supersede the site survey in relation to the actual LUC classifications at the site and its primary productivity potential.

5.2 Site Assessment

Due to the unreliability of the NZLRI data at a farm scale it cannot be used to accurately assess either site LUC classifications or site productivity potential. Weight therefore needs to be given to the information gained from the site survey and provided in this report as it has been obtained by following the correct mapping protocols, at the correct scale, by a suitably qualified person.

As can be seen in the LUC map a significant area of the site is occupied by buildings, accessways and hardstand areas. These areas have no productive potential and therefore cannot be given a LUC classification. The balance of the site includes the old filled in settling pond, a riparian zone and productive land.

Due to the alteration of the soil profile at the site of the old settling pond this area has been given a 4s 2* classification reflecting the degradation of the natural soil profile. The remaining area of the site, apart from the riparian zone, retains its 3w 2 classification.

It should be noted that soil degradation due to compaction and loss of soil structure was observed at the site and needs remedial action to return it to its natural level of productivity.

5.3 Productivity

In the description of the 3w 2 LUC unit Noble (1985) states that the heavy textured subsoils of this unit give rise to slow internal drainage and poor soil aeration. The impeded drainage and

long periods of high water tables make this unit more suited to intensive grazing than cropping, although some maize, barley, grass seed, and summer forage cropping may be carried out.

The gleying and mottling observed in the soil profiles at the site confirm the impeded drainage and prolonged soil wetness. The impeded drainage along with the stony soil profile limit the productive uses available for this site to grazing and shallow rooted or wet tolerant plant/tree species and short rotation cropping options. Continuous cropping is not sustainable at the site and would result in soil structural degradation.

Further adding to the limited production opportunities is the small area (6.7ha) of the site available for productive use. Currently the tree nursery that operates at the site uses both 174 and 176 Brookvale Road, however, the sites need to be considered as operating as two separate sites. At this size and on a site that is best suited to grazing, commercial viability is unlikely with the site most likely to be used as a lifestyle block.

It should be noted that though the site is currently used as a tree nursery this land use appears to be unsustainable based on the degraded soil profiles found at the site.

6.0 CONCLUSIONS

- The entire site is technically classified as HPL under the NPS-HPL but in reality significant areas of the site have been developed and have no productive potential.
- The site is currently operated in conjunction with 174 Brookvale Road but needs to be considered separately in its productive capacity rather than as one block.
- Impeded soil drainage and stony soil profiles limit the productive potential of the site making it more suited to intensive grazing than cropping.
- Soils at the site have been degraded due to compaction and loss of soil structure and require remedial action to return them to their natural level of productivity.
- The current land use appears to be unsustainable due to the soil profile degradation observed.
- The lack of land use options or site versatility mean this site would not be classified as a highly productive site.

176 Brooksdale Road Soil Map



176 Brooksdale Road Land Use Capability Classifications



176 Brooksdale Road Highly Productive Land Classifications



Hinds_25a.1

Report generated: 5-Nov-2024 from <https://smap.landcareresearch.co.nz>

Hind_25a.1 (100% of the mapunit at location (1935109, 5602872), Confidence: Medium)

This information sheet describes the typical average properties of the specified soil to a depth of 1 metre, and should not be the primary source of data when making land use decisions on individual farms and paddocks. S-map correlates soils across New Zealand. Both the old soil name and the new correlated (soil family) name are listed below.

Capture of the base soil information in this region was funded by Hawkes Bay Regional Council and Manaaki Whenua.

Soil Classification

Soil Classification:

Mottled Fluvial Recent Soils (RFM)

Family Name:

Hinds (Hind)

Sibling Name:

Hinds_25a.1 (Hind_25a.1)

Soil profile material

Soil with stones (non contra:

Depth class (diggability)

Deep (> 1 m)

Profile texture

loam

Parent Material

Stones/rocks

hard sandstone rock

Soil material

hard sandstone rock

Origin

Alluvium

Soil Sibling Concept

This soil belongs to the Recent soil order of the New Zealand soil classification. Recent Soils are weakly developed, showing limited signs of soil-forming processes although a distinct topsoil is present, a B horizon is either absent or only weakly expressed. It is formed in alluvial sand silt or gravel deposited by running water, from hard sandstone parent material.

The topsoil typically has loam texture and is stoneless. The subsoil has dominantly loam textures, with gravel content of more than 3% but below 35% for most part of the soil. The plant rooting depth extends beyond 1m.

Generally the soil is imperfectly drained with low vulnerability of water logging in non-irrigated conditions, and has high soil water holding capacity. Inherently these soils have a high structural vulnerability and a low N leaching potential, which should be accounted for when making land management decisions.



About this publication

- This information sheet describes the *typical average properties* of the specified soil.
- For further information on individual soils, contact Landcare Research New Zealand Ltd: www.landcareresearch.co.nz
- Advice should be sought from soil and land use experts before making decisions on individual farms and paddocks.
- The information has been derived from numerous sources. It may not be complete, correct or up to date.
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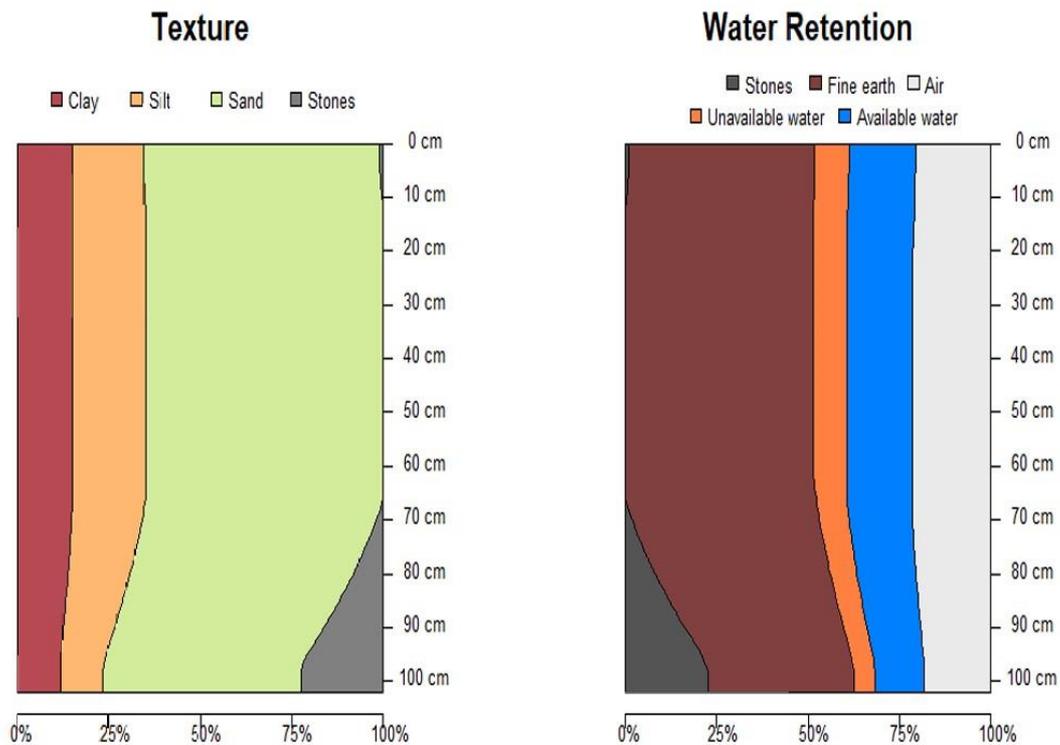
Hinds_25a.1

Soil horizons

Characteristics of functional horizons in order from top to base of profile:

Functional Horizon	Thickness	Stones	Clay*	Sand*	Permeability
Loamy Weak	15 - 25 cm	0 %	10 - 20 %	50 - 80 %	rapid
Loamy Weak	65 - 80 cm	0 %	10 - 20 %	50 - 80 %	moderate
Stony Loamy Weak	0 - 20 cm	15 - 30 %	10 - 20 %	60 - 80 %	moderate

* clay and sand percent values are for the mineral fines (excludes stones). Silt = 100 - (clay + sand)



The values for the graphs above have been generated from horizon and pedotransfer data. These values have then been splined to create continuous estimates of soil water holding capacity and particle size distribution the soil profile. These curves express the particle size distribution and water retention of the soil however there may be barriers to rooting depth that are not necessarily represented in these properties directly. It is advisable to check the potential rooting depth and rooting barrier fields in the soil physical properties section on page three of this factsheet.

Hinds_25a.1

Soil physical properties

Depth class (diggability)

Deep (> 1 m)

Potential rooting depth

Unlimited

Rooting barrier

No significant barrier within 1 m

Depth to hard rock

No hard rock within 1 m

Depth to soft rock

No soft rock within 1 m

Depth to stony layer class

Moderately deep

Texture profile

Loam

Topsoil stoniness

Stoneless

Topsoil clay range

10 - 20 %

Drainage class

Imperfectly drained

Permeability profile

Moderate over rapid

Depth to slowly permeable horizon

No slowly permeable horizon

Permeability of slowest horizon

Moderate (4 - 72 mm/h)

Aeration in root zone

Moderately limited

Profile available water

(0 - 30cm or root barrier)

High (54 mm)

(0 - 60cm or root barrier)

High (108 mm)

(0 - 100cm or root barrier)

High (177 mm)

Dry bulk density

topsoil

1.00 g/cm³

subsoil

1.30 g/cm³

Soil chemical properties

Topsoil P retention

Medium (33%)

Soil management factors

Vulnerability classes relate to soil properties only and do not take into account climate or management

Soil structure integrity

Structural vulnerability

High (0.69)

Pugging vulnerability

not available yet

Septic tank installation category

A1 if slope > 15 deg otherwise B3

Contaminant management

N leaching vulnerability

Low

P leaching vulnerability

not available yet

Dairy effluent (FDE) risk category

B

Water management

Water logging vulnerability

Moderate

Drought vulnerability - if not irrigated

Low

Bypass flow

Low

Hydrological soil group

C

Relative Runoff Potential

Slope	0-3°	4-7°	8-15°	16-25°	>25°
Risk	VL	VL	L	L	M

SINDI - Soil quality Indicators

SINDI - Soil Quality Indicators

A suite of soil quality indicators is available from <http://sindi.landcareresearch.co.nz/>

- Compare your soil with information from our soils databases.
- Assess the intrinsic resources and biological, chemical and physical quality of your soil
- See how your soil measures up against current understanding of optimal values.
- Learn about the effect each indicator has on soil quality and some general management practices that could be implemented to improve soil quality.

9.0 REFERENCES

[2024] NZEnvC 083 Blue Glass Limited v Dunedin City Council

Grealish G. 2019. New Zealand soil mapping protocols and guidelines. Manaaki Whenua – Landcare Research.

Hewitt A, Lilburne L 2003. Effects of scale on the information content of soil maps. NZ Soil News 51: 78-81

Lynn IH, Manderson AK, Page MJ, Harmsworth GR, Eyles GO, Douglas GB, Mackay AD, Newsome PJF 2009. NZ Land Use Capability Survey Handbook – a New Zealand handbook for the classification of land 3rd Edition. Hamilton, AgResearch; Lincoln, Landcare Research; Lower Hutt, GNS Science.

Noble, K. E. 1985. Land use capability classification of the Southern Hawke’s Bay – Wairarapa Region. National water and soil conservation authority.



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Ps 9(2)(a) E.s 9(2)(a)

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Attachment 2 - Te Mata LUC review I Milner - Final

REVIEW OF LAND CLASS:
TE MATA MUSHROOMS
BROOKVALE ROAD SITE



Ian Millner

PRINCIPLE: LANDVISION

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1. Summary

- Te Mata Mushrooms are reevaluating the highest and best use for the Brookvale Road site.
- The NPS HPL has created new obstacles for changes in land use and development.
- The developed section of the Brookvale Road site has been reevaluated for its Land Use Capability.
- The result of this assessment is that the site should be classified as non – productive due to its highly modified state (lacks soil).
- Within the LUC system rectifying limitations relating to soil is not considered feasible.
- A small area of the original terrace rise is still natural but is LUC class 4.
- Further Development of the 8.54 ha developed section of the site will not affect the productive capacity of the residual land area.

2. Purpose

Te Mata Mushrooms have been in operation producing mushrooms for sale from its Brookvale Road site since the 1967. Currently the mushroom operation has ceased operations while the site's owners consider future options for the site. This brief report is intended to provide clarity regarding the Land Use Capability (LUC) under the built portion of the property (including land under buildings, roads, and otherwise modified land).

3. Introduction

The recently introduced National Policy Statement for Highly Productive Land (NPS HPL) has introduced a new set of requirements to be considered before changes to land use can be implemented. In the case of Te Mata Mushroom the NPS HPL requires that an assessment of productive capacity (using LUC as a proxy) be undertaken to ensure that actual highly productive land does not become non-productive.

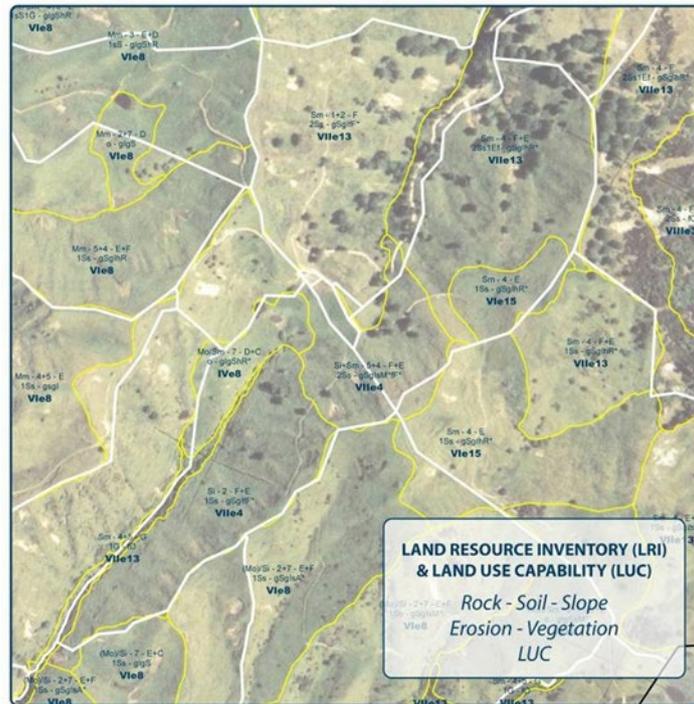
The LUC system (in its current form) has been in place in this country since around 1978. The country was mapped to a 1:50 000 scale between 1978 and 1982. Due to the scale of mapping several non-productive areas were included within the LUC system (e.g., Whakatu freezing works) whereas large areas of non-productive land were mapped as outside of the LUC system (e.g., towns and rivers). The Te Mata site, while clearly being non-productive since 1967, was mapped as class 3 land within the LUC system.

4. LUC

The land resource has been described and evaluated according to the Land Resource Inventory (LRI) and Landuse capability classification system (LUC). The land resources survey was undertaken at a 1:6,000 scale.

The LRI system involves mapping landscape units according to five inventory factors (rock type, soil unit, slope class, erosion type and severity, and vegetation).

From the LRI assessment, the area was then classified as LUC, which further groups similar units according to their capacity for sustainable production under arable, pastoral, forestry or conservation uses across the region. The LUC code is broken down into three components, which show the general capability (I-VIII classes), the major limitations (four subclass limitations of wetness, erosion, soil, and climate), and the capability unit to link with regional classifications and known best management practices.



5. NPS Highly Productive land

The NPS-HPL came into force on 17 October 2022 and aims to protect highly productive land for use in land-based primary production, both now and for future generations by requiring councils to map and zone highly productive land and manage subdivision, use and development of that land.

5.1 Definition of highly productive land

From the date that the NPS-HPL comes into force, and until the mapping of highly productive land in the Hawke's Bay Region becomes operative, the NPS-HPL applies to all consent applications involving land that meets the "transitional definition" of HPL i.e., land that as of 17 October 2022:¹

- a. is:
 - i. zoned general rural or rural production; and
 - ii. identified as land use capability class (**LUC**) 1, 2, or 3 land; but
- b. is not:
 - i. identified for future urban development; or

¹ Clause 3.5(7).

- 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 Te Mata site meets clause (a) and is not exempted by clause (b) and as a result needs to meet clause 3.9 and/or 3.10 of the NPS HPL for the proposed land use consent to be granted.

5.2 Definition of Productive Capacity

Productive capacity, in relation to land, is defined in Clause 1.3 of the NPS-HPL as:

...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.*

The relevant factors contributing to the existing productive capacity will vary depending on the local context and will influence the type of land-based primary production suitable for that site.

5.3 Clause 3.9 NPS-HPL

Clause 3.9 requires councils to avoid the inappropriate use or development of highly productive land unless the criteria in subclause(2) and (3) are satisfied.

Clause 3.9 Protecting highly productive land from inappropriate use and development.

(1) Territorial authorities must avoid the inappropriate use or development of highly productive land that is not land-based primary production.

(2) A use or development of highly productive land is inappropriate except where at least one of the following applies to the use or development, and the measures in subclause (3) are applied:

- (a) it provides for supporting activities on the land:
- (b) it addresses a high risk to public health and safety:
- (c) it is, or is for a purpose associated with, a matter of national importance under section 6 of the Act:
- (d) it is on specified Māori land:
- (e) it is for the purpose of protecting, maintaining, restoring, or enhancing indigenous biodiversity:
- (f) it provides for the retirement of land from land-based primary production for the purpose of improving water quality:
- (g) it is a small-scale or temporary land-use activity that has no impact on the productive capacity of the land:
- (h) it is for an activity by a requiring authority in relation to a designation or notice of requirement under the Act:

- (i) it provides for public access:
 - (j) it is associated with one of the following, and there is a functional or operational need for the use or development to be on the highly productive land:
 - (i) the maintenance, operation, upgrade, or expansion of specified infrastructure:
 - (ii) the maintenance, operation, upgrade, or expansion of defence facilities operated by the New Zealand Defence Force to meet its obligations under the Defence Act 1990:
 - (iii) mineral extraction that provides significant national public benefit that could not otherwise be achieved using resources within New Zealand:
 - (iv) aggregate extraction that provides significant national or regional public benefit that could not otherwise be achieved using resources within New Zealand.
- (3) Territorial authorities must take measures to ensure that any use or development on highly productive land:
- (a) minimises or mitigates any actual loss or potential cumulative loss of the availability and productive capacity of highly productive land in their district; and
 - (b) avoids if possible, or otherwise mitigates, any actual or potential reverse sensitivity effects on land-based primary production activities from the use or development.
- (4) Territorial authorities must include objectives, policies, and rules in their district plans to give effect to this clause.

5.4 Clause 3.10 NPS HPL

3.10 Exemption for highly productive land subject to permanent or long-term constraints

- (1) Territorial authorities may only allow highly productive land to be subdivided, used, or developed for activities not otherwise enabled under clauses 3.7, 3.8, or 3.9 if satisfied that:
- (a) there are permanent or long-term constraints on the land that mean the use of the highly productive land for land-based primary production is not able to be economically viable for at least 30 years; and
 - (b) the subdivision, use, or development:
 - (i) avoids any significant loss (either individually or cumulatively) of productive capacity of highly productive land in the district; and
 - (ii) avoids the fragmentation of large and geographically cohesive areas of highly productive land; and
 - (iii) avoids if possible, or otherwise mitigates, any potential reverse sensitivity effects on surrounding land-based primary production from the subdivision, use, or development; and
 - (c) the environmental, social, cultural, and economic benefits of the subdivision, use, or development outweigh the long-term 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.

(2) In order to satisfy a territorial authority as required by subclause (1)(a), an applicant must demonstrate that the permanent or long-term constraints on economic viability cannot be addressed through any reasonably practicable options that would retain the productive capacity of the highly productive land, by evaluating options such as (without limitation):

- (a) alternate forms of land-based primary production:
- (b) improved land-management strategies:
- (c) alternative production strategies:
- (d) water efficiency or storage methods:
- (e) reallocation or transfer of water and nutrient allocations:
- (f) boundary adjustments (including amalgamations):
- (g) lease arrangements.

(3) Any evaluation under subclause (2) of reasonably practicable options:

- (a) must not take into account the potential economic benefit of using the highly productive land for purposes other than land-based primary production; and
- (b) must consider the impact that the loss of the highly productive land would have on the landholding in which the highly productive land occurs; and
- (c) must consider the future productive potential of land-based primary production on the highly productive land, not limited by its past or present uses.

(4) The size of a landholding in which the highly productive land occurs is not of itself a determinant of a permanent or long-term constraint.

(5) In this clause: landholding has the meaning in the Resource Management (National Environmental Standards for Freshwater) Regulations 2020 long-term constraint means a constraint that is likely to last for at least 30 years.

Site investigation

The site was visited twice in June 2023. During these visits the various management blocks on site were identified and investigated.

Investigations involved assessing soil characteristics in order to identify potential LUC and therefore productive potential. Conditions during June were very wet and limited soil inspection. Describing wet soils is generally avoided. In this case the difference between natural and modified soil was substantial but subtle differences in natural soil (as in the paddocks) was difficult to substantiate. In my view there are reasons to be sceptical about the distribution of the currently mapped LUC units on site. A more detailed examination may find that the distribution of unit Ills2 (currently mapped to the south) is more widespread. The significance of this unit is that it does have limitations that are both permanent and unavoidable. It is better to make that assessment when ground water levels are lower.

Results

Results are contained in Table 1 below.



Figure 1: Management blocks on Te Mata site - Management blocks are essentially areas of difference that are separately assessed in Table 1 below. Total area of blocks is 8.54ha

Table 1: Table of respective management blocks and characteristics as they relate to LUC

Management Block	Area (Ha)	Description	LUC
Carpark and drive	1.81	Excavated site (carpark) drain, and drive. No soil within this block apart from a very small area of grass adjacent to drive. The soils on this area are structureless and most likely introduced. Soil on the rest of the block has been removed and replaced with gravel 200-300mm deep. Carpark is excavated from a terrace rise which has	Non-Productive

		<p>also had sub soil removed.</p> 	
Uncovered terraces	0.59	<p>Excavated site. No soil or sub soil present.</p> 	Non-Productive
Covered terraces	0.96	<p>Excavated site. No soil present. Approx. 100mm gravel under 100mm concrete. Small area of original terrace rise included in this block. This area is best mapped as unit IVs2 (Rolling to strongly rolling ridges of loess overlying red metal seams).</p>	Non-Productive apart from very small area (approx. 3000m ²) of IVs2.

			
Effluent pond	0.1		Non-Productive
Gravel Yard	0.78	<p>Topsoil removed and replaced with 2-300mm gravel.</p> 	Non-Productive

			
Gravel Yard and Bunker	0.41	<p>Topsoil removed and replaced with 200-300mm gravel</p> 	Non-Productive
Spoil	0.48	<p>Various spoil material placed on top of soil surface. Very poorly drained and gleyed .</p>	Non-Productive

		<p>Not suitable for production.</p> 	
Buildings - Concrete base	2.06	<p>Oldest part of site where main buildings are situated on a concrete base. No soil present. Concrete over gravel over very gleyed sub soil.</p>  	Non-Productive
Yards and Tracks	1.13	Tracks for access and machinery movements – 200-300mm gravel	Non-Productive
Open Drains	0.22		Non-Productive

Total (Ha)	8.54	Non-Productive
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As a comparison the soil profile in the adjacent paddocks was inspected in three locations. While there were differences in soil characteristics between these three points in general the soils in the adjacent paddocks were as expected.



Figure 2: productive soil in adjacent paddock

Conclusion

The Te Mata Mushroom site has been previously mapped as LUC class 3 under regional scale mapping. Over time (since the 1967) the Te Mata site has been developed in line with production demands and within consenting frameworks. This has resulted in a highly modified landscape that does not align with the attributes found within LUC class 3.

It is clear, that the portion of the Te Mata site assessed within this report has no land based productive value. This is simply because the site is highly modified with no actual soil. The LUC system relies on a set of livestock carrying capacities indices as a proxy for productivity. These indices range from >25 SU²ha (very high) to <1 SU ha (sparse). In this case, I do not consider it cost effective to carry livestock on this site on an annual basis. This is because.

- Concrete does not grow grass.
- Gravel may over time grow some degree of vegetative cover but will only grow when conditions are wet – not all year and will typically be dominated by weed species.
- Site conditions prevent the growing of crops to fill gaps in feed supply.

The limitations on site are in effect a soil limitation. The LUC framework as described in the LUC handbook³ is clear that soil limitations are both permanent and unavoidable. Individual LUC units (where classes are further delineated into subclasses and units e.g., 3s2or 6e4) are developed based on the dominant limitation or where multiple limitations exist the following priority is observed: erodibility (e) > excessive wetness (w) > rooting zone limitations(s) > climate (c).

When allocating different units to blocks of land the following assumptions are made:

- The permanent physical limitations of the land remain.
- **The rectifiable limitations may be removed.**
- An above average level of land management is practiced.
- Appropriate soil conservation measures will be applied and maintained.

Physical limitations have three distinct categories:

- Permanent limitations that cannot be removed – examples of this type of limitation include climate, rock type, slope, and soil attributes where the ability to modify does not exist or is cost prohibitive.
- Removable limitations are those where the limitation can technically be removed but where it requires considerable effort and investment. E.g., soil wetness, flooding, gravel picking.
- Modifiable limitations are those that can be removed via ongoing investment and management. Examples include erosion, soil moisture deficits and nutrient deficiencies.

Therefore: Where LUC units have limitations that are considered removable or modifiable (e.g. wetness, nutrient deficiency, erosion) it is assumed that those limitations have already been removed when the unit is assessed. The handbook is clear that the “difficulty of removing or modifying limitations” depends on their type and severity. The key words ‘reasonable’, ‘feasible’, and ‘economic’ are considered when deciding on the practicality of removing or modifying limitations.”

² SU = stock units, typically expressed as a breeding ewe equivalent or around 550kgs dry mater/Ha/year.

³ Lynn I, Manderson A, Page M, Harmsworth G, Eyles G, Douglas G, Mackay A, Newsome P 2009. Land Use Capability Survey Handbook - a New Zealand handbook for the classification of land. 3rd ed. Hamilton, AgResearch; Lincoln, Landcare Research; Lower Hutt, GNS Science https://www.landcareresearch.co.nz/data/assets/pdf_file/0017/50048/luc_handbook.pdf

In this case, where entire soil profiles (including sub soils) have been removed and replaced with gravel and concrete over 50 years of development it is simply not feasible to rectify. This is because the cost of replacing topsoil would be well above \$1million(assuming \$50m³ to remove and replace) and therefore not economically viable (the opportunity cost of \$1million at 5% is roughly equivalent to the gross income of intensive cropping systems run on larger blocks) and secondly because the subsoil on site also has significant limitations that will prevent the establishment of high value permanent crops.

As the site has no primary productive value, any change of use on this site (8.54ha), including that proposed to reuse the existing buildings and yard areas for different activities, will have no effect on the overall productive capacity of either the area shown in figure 1 or the wider site (subject land including the cropping paddocks).