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Effects of the Bupa retirement complex on the soil resources at 25 & 35 Ulyatt Road, Napier

Prepared for
Napier City Council

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1.0 INTRODUCTION

This report was commissioned by Shane Lambert, Senior Resource Consents Planner, Napier City Council on 18 December 2017.

2.0 SITE DESCRIPTION

The land in question is adjacent to the Napier urban area and lies between Ulyatt Road and the Napier/Hastings expressway. It is flat and currently used as a turf farm. This involves repeated crops of high quality lawn grass in roughly an annual rotation.

When mature, the turf is harvested by slicing it off in rolls with a thin layer of soil and root mass. A seed bed is then prepared with appropriate cultivation and fertiliser, followed by sowing grass seed again.

To ensure that a high quality turf is established, the crop relies on regular nitrogen fertiliser inputs and regular irrigation. The grass crop is regularly mown. This returns large volumes of organic material to the soil, as well as leaving behind a large amount of grass roots after the turf is harvested.

The return of all this organic material enables a site to be used for turf production for many years.

3.0 SOIL TYPE

The soil map of the Heretaunga Plains, sheet 3, identifies the soil as 27, Meeanee Clay loam. "Soils from the Heretaunga Plains, a guide to their management" by E Griffiths describes the soil as follows.

Natural drainage and depth to gley and hence to water table after wet periods

- Very poor to poor 0-30cm

Potential rooting depth, texture and limiting layer

- 30-45cm clay loam on shelly silt loam

Available water capacity

- 35-50mm

Infiltration rate

- Slow

Permeability rate

- Slow

Susceptibility to pugging and compaction when wet

- Extremely high

Unfavourable soil characteristics

- Slowly permeable lagoon sediments, free lime, high pH, saline, heavy topsoil easily compacted, difficult to manage in wet conditions, slow infiltration, shallow clay loam on shelly sediment.

Soil management

- Artificial drain spacing 10-20cm
- Irrigation is required frequently at 15-25mm a time to prevent water logging.

4.0 LAND USE CAPABILITY

Land use capability 3S4 – source Ministry for Primary Industries.
Class 3 with soil the limiting factor.

Class 3 has moderate limitations, shallow soils, low fertility not easily corrected, low moisture holding capacity, wetness or continued water logging after drainage, moderate salinity.

The present occupier has used the site for turf production since 2005. He reported that at the time he began to grow turf on this site that it was relatively unimproved. To enable it to be used, intensive drainage was necessary then large amounts of irrigation to leach the salt from the upper profiles.

Among the Heretaunga Plains soils, the soil type on this site is one of the least versatile. Apart from its present use for turf harvest, it would be best suited to summer cropping. As the soil is very difficult to manage when wet and can suffer from pugging and compaction, trying to farm it through the wet winter period would present problems, even in regard to using it for winter grazing as it would not stand high stocking rates due to pugging and soil compaction.

To the best of my knowledge, there are no vineyards or tree fruit orchards planted on soil type 27, Meeanee clay loam. Incidentally, there are a number of high performing orchards in Meeanee. These are planted on the Farndon soil series, not the Meeanee soil series.

5.0 EFFECTS OF TURF HARVESTING ON ORCHARD PERFORMANCE

Turf harvesting is sustainable for many years due to grass clippings and root mass increasing and maintaining near surface organic matter levels in the grass rooting zone. When deeper rooting crops such as apples have been planted on land retired from turf harvesting, marked differences in tree performance has been found between the ex-turf farming site and nearby margin areas outside of where the turf was harvested as the data below shows.

Apple	Ex-turf area	Non turf area
TCA (5 years from planting)	12.04cm ²	22.93cm ²

TCA is trunk cross sectional area. In young trees yet to fill their allotted space, TCA is a good indicator of tree size and productive capacity. Where the land was used for turf harvesting, yield potential is only around half that of normal. The soil type here was Twyford silt loam, a very superior and much more versatile soil than Meeanee clay loam.

6.0 REVERSE SENSITIVITY

When urban development encroaches on rural zone land, this is an important factor to consider because the presence of residential developments can limit the ability of nearby land owners to farm efficiently.

Essential crop husbandry practices such as noise from use of machinery, odour, pest and disease control, often lead to friction between farmers and their urban neighbours.

For this particular site, reverse sensitivity issues will be low due to its location adjacent to the Napier City urban zone to the north and the expressway to the west. The east and south sides are adjacent to the rural zone at present but properties in these areas, due to the limitations of the soil type are not intensively used for purposes so unlikely to be severely impacted by reverse sensitivity issues.

I note that the site has been identified in HPU DS as a potential reserve for urban growth suggesting that the nearby remaining rural zone may become urban before long.

7.0 SUMMARY

In conclusion, it is my opinion that loss of this site to urban development will have minimal impact on the life supporting capacity of the wider plains soil resource.

8.0 PICTURES



The prosed Bupa retirement village site looking north from the western boundary. The houses in the background are in Napier City urban zone.



A view along the northern boundary looking east.



A view looking north along the eastern boundary.



Turf harvesting. A thin layer of soil is shaved off the soil surface with the grass.



5th leaf apple trees growing in the turf harvested area. These trees had an average TCA of 12.04cm². Note irregular tree size and tree height relative to the top trellis wire.



5th leaf apple trees growing outside of the turf harvesting zone. These trees had an average TCA of 22.93cm². Note uniformity and height relative to top trellis wire.

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