

# Land Use Capability Report

## For Meridian 37, 400 Raynes Road

### Hamilton

## 1. INTRODUCTION

The northern half of this property has been the subject of a LUC report, for Perry Aggregates, in February 1999. Sand mining operations since that time has seen much of that portion of the site grossly modified. Soil restoration over the mined area has been relatively good though a couple of areas were identified where the restoration could have been better carried out.

## 2. SOILS BACKGROUND

Grange and Taylor (*Soils and Agriculture of Part of Waipa County. D.S.I.R. Bulletin No. 76 1939*) originally mapped the area as mainly Horotiu sandy loam, but including some Te Kowhai and "Maori" soils (now known as Tamahere soils), on the upper terrace, with Waikato gravelly sand and sandy loam on the lower land alongside the river. The steep scarp separating the two area was indicated on the map as a terrace edge and the Horotiu soils were shown to have a number of sub-parallel terraces across the land. Grange and Taylor define Horotiu soils as well drained soils but including several phases (not mapped separately) that have 'cream coloured subsoils' indicating poorer drainage than is usual for the Horotiu soils. In 'General Survey of Soils of the North Island New Zealand' (*Soil Bureau Bulletin 5 1954*) the area is shown as part of a generalised area of Horotiu - Te Kowhai complex. The published Land Inventory Worksheet of the area (*Water and Soil Division of Ministry of Works and Development 1977*) indicates the upper terrace land to be Class Is1 with soils belonging to the Horotiu - Te Kowhai complex, and the lower land is included with Class IIIs1. Because of the scale limitations of these surveys it is not possible to detect the more detailed pattern of the land.

## 3. LAND USE CAPABILITY MAPPING

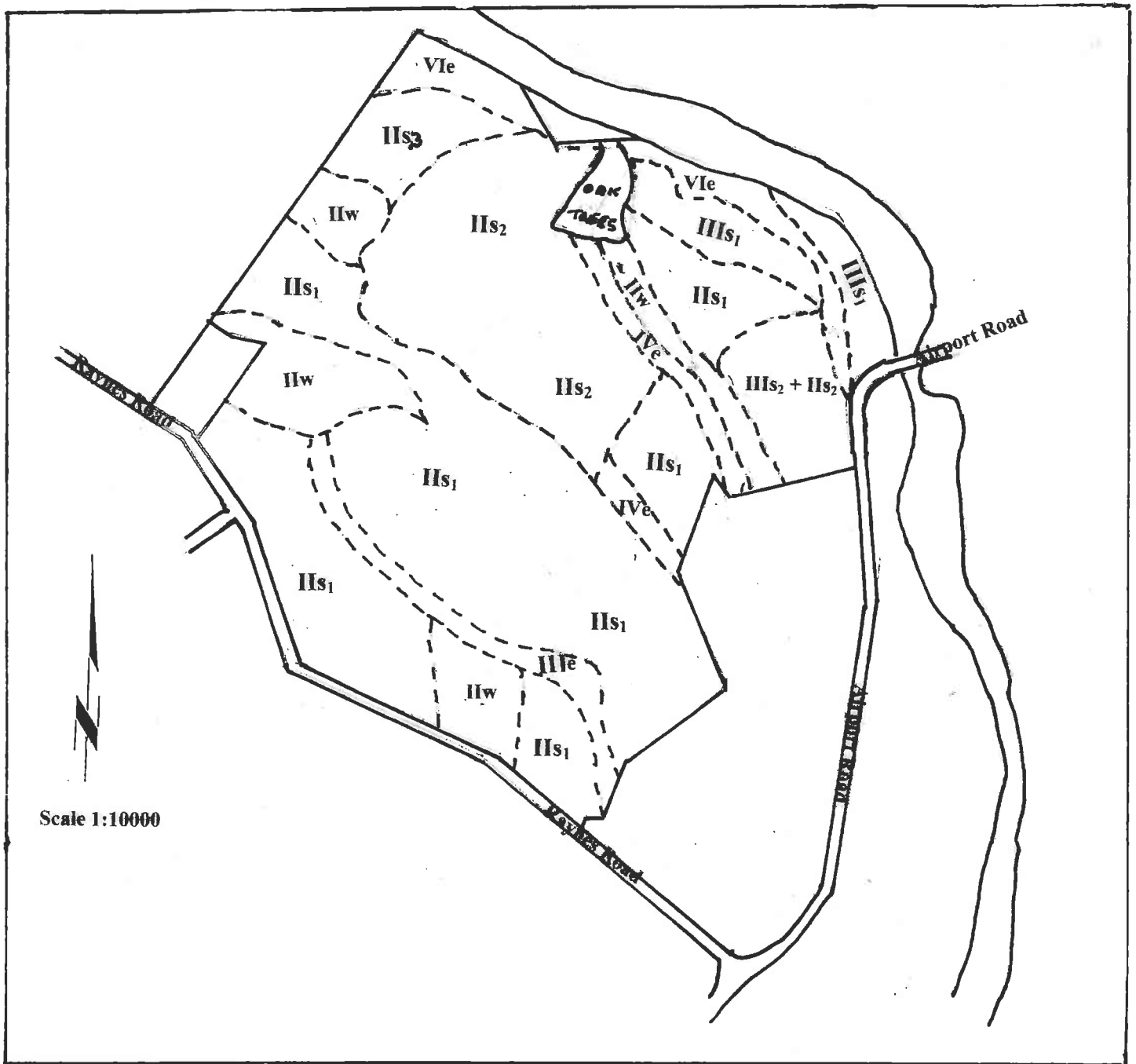
- 3.1 The accompanying LUC map of the property has been compiled by field mapping using the principles of the Land Use Capability Survey Handbook (*Water and Soil Division, Ministry of Works 1969*).
- 3.2 This system takes into account the physical qualities of a soil and its particular site, without reference or relation to surrounding land. For this particular map the LUC survey has been conducted to the LUC unit level and the units numbered according to the conventions of the formal system. These Arabic numbered LUC units are NOT the same as the published LRI units.

- 3.3 Class IIs1:** This is near flat land with Horotiu gravelly sand soils. These are well to excessively drained soils which will suffer from moderate drought in the summer months. It is possible that this unit includes some Tamahere soils as well.
- 3.4 Class IIs2:** This is gently undulating to near level land with well restored soils after sand mining. Soil profiles are non standard but in general have up to 1 meter of low density material overlying the surface left after mining. It appears that these restored "soils" have properties which indicate moderate limitations to agricultural practices so they have in the main been assigned to Class IIs but some areas, especially around the CTC Pilot Accommodation Facility, have not achieved this level of restitution
- 3.5 Class IIs3:** This is near flat land with Tamahere soils. Tamahere soils were created by Maori gardeners in the past by adding significant amounts of sands and small gravels to the land surface to "lighten the texture of the topsoil". The amount of such additional material differs from site to site. Such soil must be considered as having been rendered suitable for the growing of some crops (especially Kumara) but at the same time the additional material has considerably lowered the water holding capacity of the soil so lowering its overall value for some plants especially shallow rooting plants. Areas where these Tamahere soils occur are therefore somewhat difficult to place within the published LUC legend Units. In general they must be considered to straddle the Class I to Class II boundary. Where the amount of additional material exceeds around 30 cm it is perhaps better to consider this material as similar to the Waikato soils, which occur on the lower river terrace, and place the area into Class IIIs. Also the small borrow pits which dot the landscape where this practice was carried out have moderate to severe limitations to most land uses and have to be considered as Class III or Class IV. Many of the pits have been filled in in the past.
- 3.6 Class IIw:** This is near flat to undulating land with Bruntwood and Te Kowhai soils These are the equivalent of the 'cream coloured subsoil' phase of the Horotiu soils recognized by Grange and Taylor. They are moderately well drained to poorly drained soils but suffer from a slight to moderate limitation of wet subsoils especially following prolonged wet periods. In many areas Bruntwood soils would classify as IIs but in this locality they approach (and include) Te Kowhai soils so the land has been classed as IIw.
- 3.7 Class IIIs1:** This is near flat to gently undulating land with Waikato soils. Waikato soils are developed from pumice alluvium deposited by the Waikato River immediately following the Taupo eruption *ca* 186 AD. They are well to somewhat excessively drained soils and suffer from a moderate limitation of low soil moisture supply (they are droughty soils) so that growing plants suffer from moisture stress after moderate periods without rain, especially during the summer months. Most of these soils are found on the lower terrace immediately associated with the present course of the Waikato River but in this locality some of the Waikato alluvium has spread over part of the adjacent higher terrace usually associated with the Horotiu-Te Kowhai complex of

soils. These Waikato soils have buried the preexisting Horotiu soils which can be found below the modern Waikato soil profile.

- 3.9 Class IIIe1:** This is undulating land on the terrace scarps. Soils belong to the Horotiu-Te Kowhai Complex and suffer from a moderate to slight limitation of liability to rill and sheet erosion if clear cultivated.
- 3.10 Class IVe1:** This is rolling to strongly rolling land on the terrace scarps. Soils are closely associated with the Horotiu-Te Kowhai Complex and there are a number of small springs which arise where buried silt layers outcrop on the edge of the terraces. They are liable to moderate to severe sheet, rill and slip erosion if clear cultivated.
- 3.11 Class VIe:** This is the steep land on the side of the present gorge of the Waikato river. Soils are steepland soils associated with the Horotiu soils and have very severe limitations to land use. Slopes are largely in excess of 35° with some near vertical.

# LUC Map for Meridian 37, 400 Raynes Road Hamilton.



LUC Survey By: G.E. Orbell M.Sc.(Hons), M.N.Z.I.A.H.S., M.R.S.N.Z.

(Base from aerial photo)

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