Archaeological assessment:
Orchard Grove - Flagstaff, Hamilton

Report prepared for Gordon Litt Farms Ltd

RedOx Cultural Heritage Services

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Summary

Gordon Litt Farms Ltd (GLF) through B&A Urban & Environmental have commissioned Redox Cultural Heritage Services Ltd (RCHS) to compile the following Archaeological Assessment of Effects for a proposed subdivision for Lot 4 DP 440812, Lot 3 DP 353756, Lot 2 DP 537963, Lot 2 DP 356758, Lot 2 DP 353756 & Lot 15 DP 327052. Parcels are referred to in this assessment collectively as the Site; total area for the proposed development is approximately 72 hectares.

The Site has been subject to background desktop research, including review of any/relevant historic documents, aerial imagery, historic maps, archaeological reports and archaeological site data held in the New Zealand Archaeological Association database, ArchSite. Following the desktop study a site visit conducted over two days. Desktop research and the site visit did not identify evidence of archaeology within the Site. Therefore, no changes are recommended to the proposed Site with respect to archaeological values. Since there are no recorded archaeological sites within the Site and the potential for unrecorded archaeology is very low to nil and an Authority from Heritage New Zealand Pouhere Taonga is not recommended.

Mana Whenua should however be consulted at an early stage regarding this assessment, the conclusions reached and the cultural effects of the proposed development.

Introduction

Gordon Litt Farms propose to undertake a subdivision called Orchard Grove (Site) within Gordon Litt Farms (Lot 4 DP 440812, Lot 3 DP 353756, Lot 2 DP 537963, Lot 2 DP 356758, Lot 2 DP 353756 & Lot 15 DP 327052) (Figures 1–2). The proposed Site is approximately 72 hectares and constitutes, currently, both farmland and an orchard. A site visit across the entire Site was undertaken on the 4–5th September 2025. It included a visual pedestrian survey and auger soil testing. Within the Site are no recorded archaeological sites, and results from the site visit did not identify any unrecorded archaeology within it. For ease the Site was divided up into two areas for the survey: the orchard and the farm.

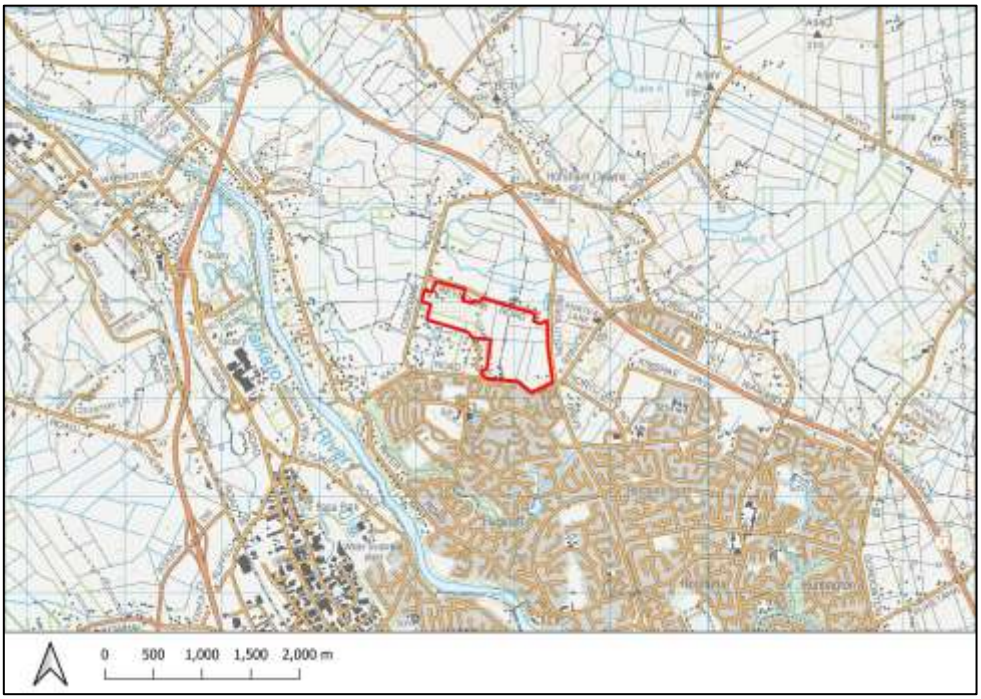

Figure 1. Location for the proposed Orchard Grove subdivision in the wider landscape (Source: LINZ).

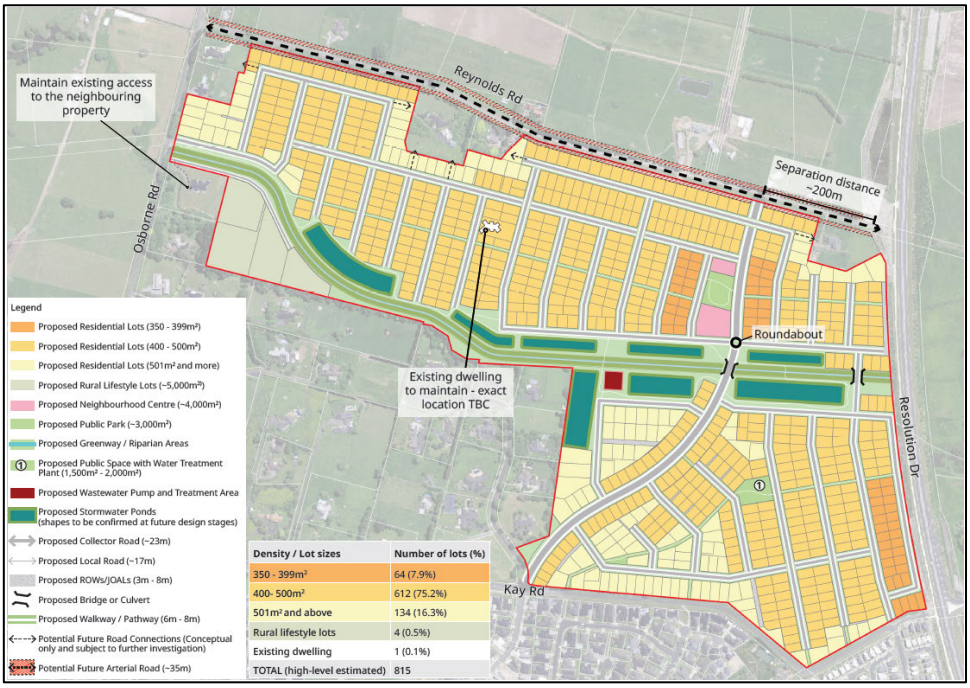

Figure 2. Proposed subdivision Masterplan.

Statutory requirements

The management of archaeological historical and cultural sites and landscapes are controlled by the Resource Management Act (RMA) and its associated District Plans and Regional Policy Statements. Archaeological sites are also explicitly protected through the archaeological provisions of the Heritage New Zealand/Pouhere Taonga Act (NZHPTA 2014). This Act prevents archaeological sites from being modified or destroyed without an Authority from Heritage New Zealand (HNZ).

Waikato District Plan

The Waikato District Plan (fully operative April 2013) outlines operative objectives and policies relating to Historic heritage and archaeology in Part 1, Section 12. Historic heritage items and archaeological sites are listed in Part 3 Appendices, in C: Historic Heritage. Archaeological sites S14/374 and S14/468 were recorded subsequent to the formation of the District Plan and are not listed.

Policy clause 12.2.7 states that '*archaeological sites and areas, sites of significance to Māori (including wahi tapu sites and wahi tapu areas), and places of historic significance should be protected from adverse effects of development or activities on those sites*.' Clause 12.3.6 clarifies that any work that may modify, damage or destroy an archaeological site associated with pre-1900 human activity will require an authority from the Historic Places Trust (now HNZPT).

Heritage New Zealand Pouhere Taonga Act (HNZPTA) 2014

The HNZPTA provides blanket protection to all archaeological sites meeting the definition in the Act, whether they are recorded or not. Protection and management of sites is managed by the archaeological authority process, administered by HNZPT. It is illegal to destroy, or modify archaeological sites without an authority to do so from HNZPT.

The HNZPTA 2014 (s6) defines an archaeological site as:

> (a) Any place in New Zealand including any building or structure (or part of a building or structure) that:
>
> > (i) was associated with human activity that occurred before 1900 or is the site of the wreck of any vessel where that wreck occurred before 1900; and
> >
> > (ii) provides, or may provide through investigation by archaeological methods, evidence relating to the history of New Zealand; and
>
> (b) Includes a site for which a declaration is made under Section 43(1) of the Act[1].

Any person who intends carrying out work that may modify or destroy an archaeological site, or to investigate an archaeological site using invasive archaeological techniques, must first obtain an authority from HNZPT. The process applies to sites on land of all tenure including private, public and designated land. The HNZPTA contains penalties for unauthorised site damage.

[1] Such declarations usually pertain to important post-1900 remains with archaeological values.

The Resource Management Act (RMA) 1991

The *Resource Management Act 1991* (RMA) requires City, District and Regional Councils to manage the use, development, and protection of natural and physical resources in a way that provides for the wellbeing of today's communities while sustaining the potential of natural and physical resources for future generations. The protection of historic heritage from inappropriate subdivision, use, and development is identified as a matter of national importance (section 6f).

Historic heritage is defined as those natural and physical resources that contribute to an understanding and appreciation of New Zealand's history and cultures, derived from archaeological, architectural, cultural, historic, scientific, or technological qualities.

Historic heritage includes:

- historic sites, structures, places, and areas;
- archaeological sites;
- sites of significance to Māori, including wahi tapu;
- surroundings associated with the natural and physical resources (RMA section 2).

These categories are not mutually exclusive, and some archaeological sites may include above ground structures or may also be places that are of significance to Māori.

Where resource consent is required for any activity the assessment of effects is required to address cultural and historic heritage matters (RMA 4th Schedule).

Background

Site description

The below is an excerpt from B&A Urban & Environmental masterplan for Orchard Grove:

> *Orchard Grove (formerly HT1) is a strategically identified growth cell located in Flagstaff, within the Waikato District, immediately north of Hamilton City. The area is earmarked for residential development and subject to a strategic boundary agreement to support Hamiltons' long-term urban growth. Medium-density residential development is anticipated across the site.*
>
> *The subject site is located in the Waikato District, approximately 25km from Huntly, 13km from Ngāruawāhia, 50km to Tuakau and 44km from Te Kauwahta. Despite being in the Waikato District, the subject site adjoins the Hamilton City boundary and is only 10km from the centre of Hamilton.*
>
> *The site is accessible via Reynolds Road to the north, Resolution Drive to the east, Kay Road to the south, and Osborne Road to the west. Kay Road lies within the shared jurisdiction of Waikato District and Hamilton City Councils, while Resolution Drive has been identified as an arterial route extending from Hamilton City.*

Landform and soils

The local landscape has been dominated by the meandering Waikato River, which now entrenched in its current alignment, flows southwest of the Site. Landform within the Site, for the majority, comprises flat slightly undulating land with smaller paleochannels and levees across the surface. Around the margins to the south and north are low hills. Soils within the Site were identified as Gley and Organic across most of the lower flatter areas; Allophanic on slightly higher mid-elevation levees and dense clayey hillsoils on the rolling hills at the edges

of the Site. Soil testing with handheld auger identified that most of the Site is covered in poorly draining semi-waterlogged soils of various qualities (Figure 3).

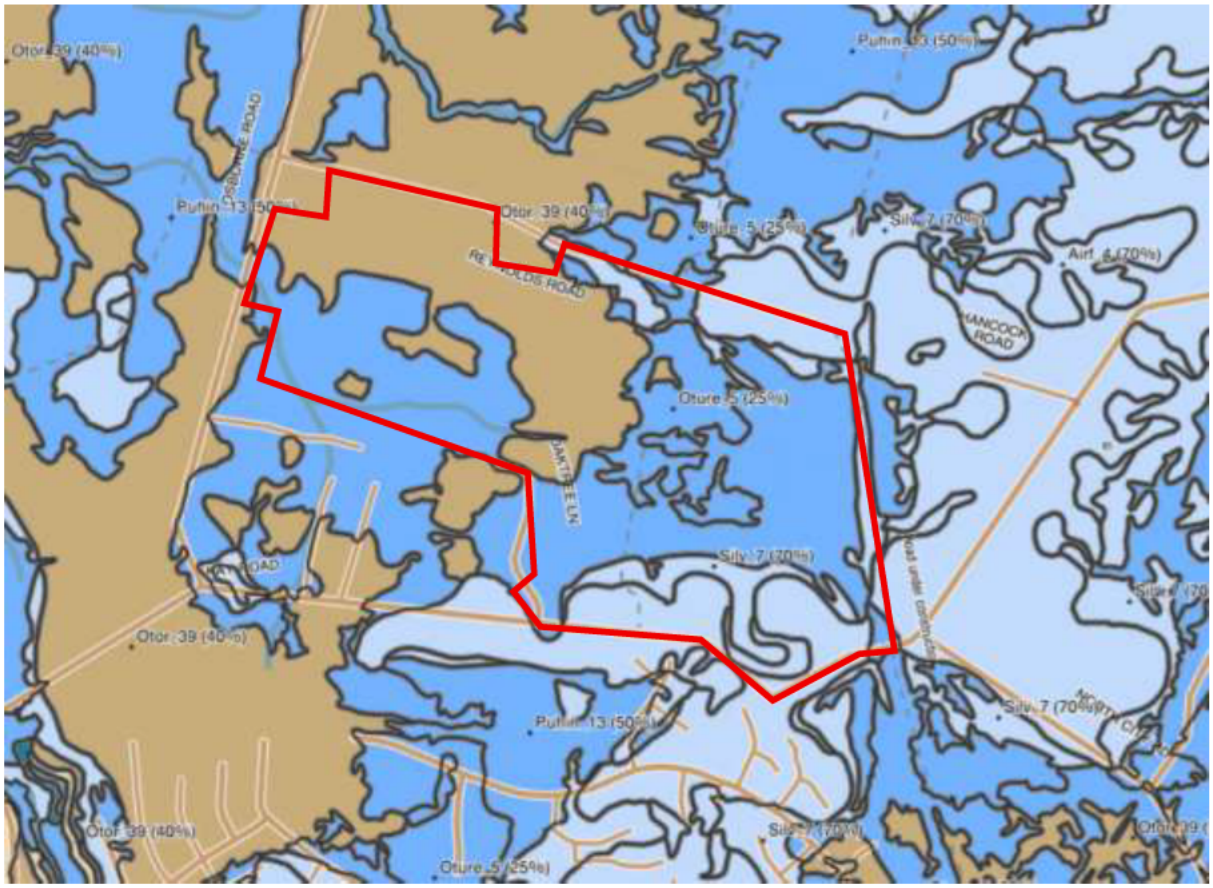

Figure 3. Excerpt from S-MapOnline showing approximate drainage within the Site. Soils overlays are considered approximate since they approximate soil types based on identifying factors and not always specific soil testing. Brown=Moderately well drained, Light blue=Imperfectly drained & Darker blue=poorly drained (Source: LRIS).

Geology of the Middle Waikato Basin

Both the Waikato River, Oranui eruption and Taupo pumice alluvium (Hatepe Eruption) have caused significant changes to the landscape of the middle Waikato basin, shaping the modern environment (Figure 4). During the last one hundred millennia a meandering braided Waikato River has both eroded and deposited sediment across the landscape. This has transformed the landscape into a rolling somewhat flattened environment made up of gently rolling hills composed of raised levees and depressed swales and lower swamps and lakes. After the Oranui eruption the Waikato was forced to change course being redirected away from the Firth of Thames into the Waikato basin, and finally through to its current outlet at Port Waikato. The Waikato's high energy braided river system distributed sediment across the Hamilton Basin in various thicknesses and consistencies. This landscape, represented as a braided fan, has now been classified as the Hinuera surface (Lowe 2010: 5; McLeod 1984:2). After the rivers final course had settled into the current alignment an eruption at Hatepe (c. 1800 BP) directed a lahar flow down the river (Taupo pumice alluvium-TPA). This created, through erosion and deposition, a series of new river terraces along the banks of the river, which are still visible today (Lowe 2010: 3–8). Aside from natural modification humans have also significantly modified this landscape.

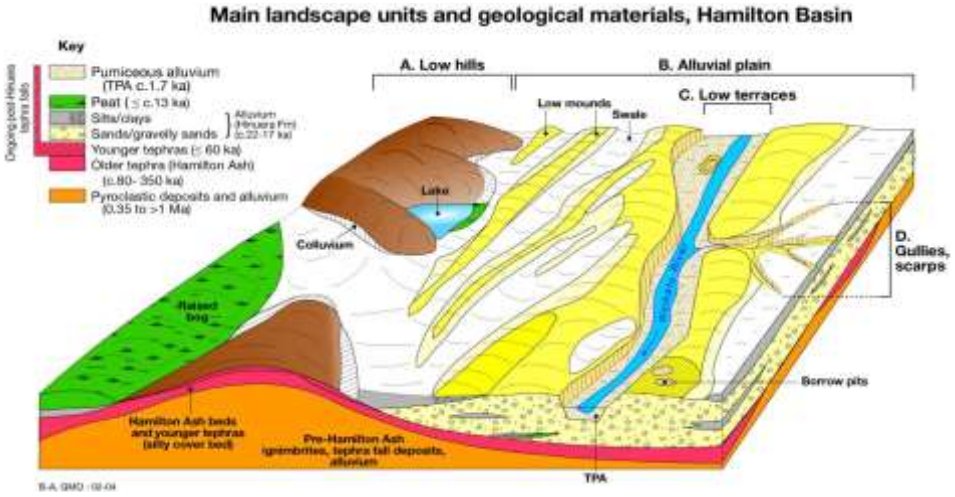

Figure 4. Block diagram showing the principal landform units of the Hamilton Basin (Lowe 2010:4).

Archaeology within the Site and in the immediate vicinity

The closest recorded archaeology to the Site is part of an extensive pre-European Māori horticultural landscape following the Waikato River. However, recorded sites lie more than 500 metres from the Site. Even if this is true, there is, identified in soil maps, Tamahere silt loam used for Māori horticulture close to the western end of the Site. Along the river corridor soil maps from the late 1930s onwards (Grange 1939) combined with more modern research by Gumbley and Hutchinson in 2012–3 have identified multiple archaeological sites in the landscape. These were recorded from aerial images from the late 1930s and early 1940s and were identified due to the presence of borrow pits (Gumbley & Hutchinson 2013). Neither the soil maps nor work by Gumbley and Hutchinson identified horticultural soils or archaeological sites within the Site (Figure 5).

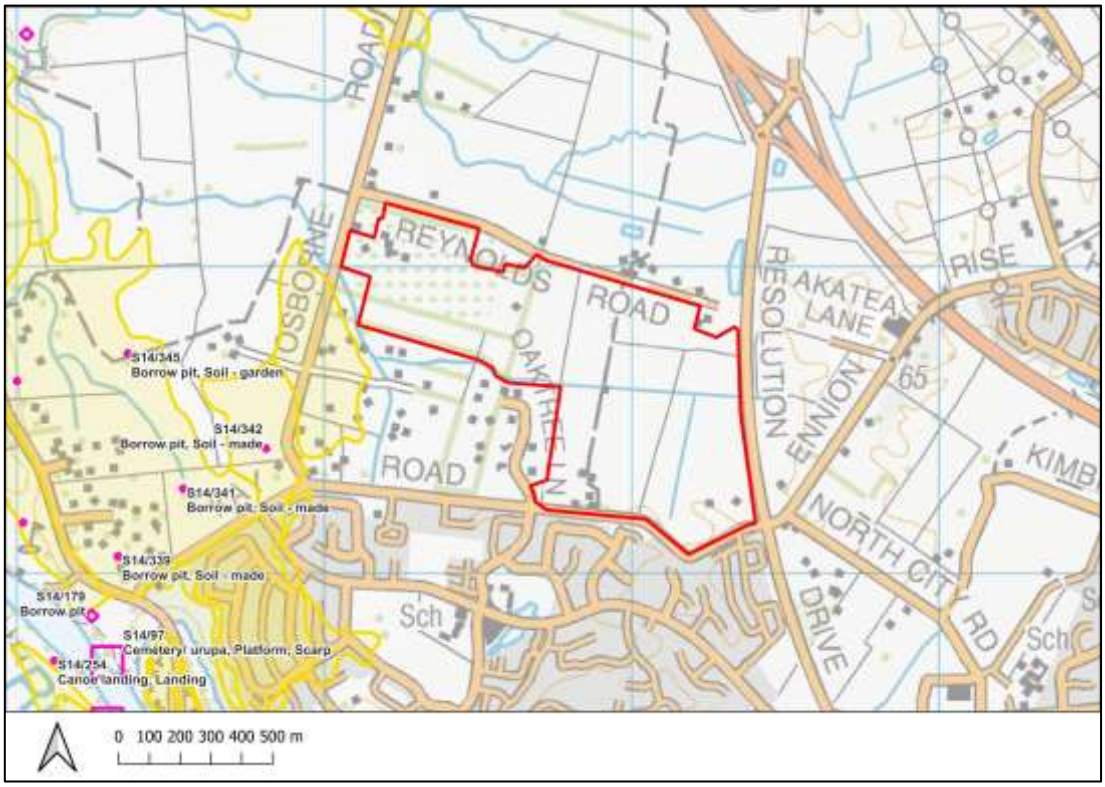

Figure 5. Archaeological sites and Tamahere soils (yellow polygons) in the general landscape. S14/342 is more than 500m from the Site (Source: NZAA ArchSite).

Historical Background

Māori

After the initial occupation of coastal New Zealand, the Māori diaspora led inland towards the Middle Waikato Basin. To access the Waikato, navigable waterways and accessible land were used to locate suitable areas for horticulture and occupation; evidenced by the plethora of recorded archaeological sites along the Waikato River, its tributaries and gully systems. Recorded archaeological sites within this landscape are a combination of defensive structures; established at higher elevations to provide a watershed of the area. Pā are also closely linked with surrounding settlements and gardens, utilising the fertile soils adjacent to the river for the cultivation of kumara and other plant species.

European

During the early influx of European settlers Māori continued as they had since their arrival into the Waikato. Initially the Waikato was not considered favourable by Europeans for farming or cultivation as it was deemed difficult, too swampy and quite inaccessible. Little land changed hands during this period due to its 'unfavourable' nature. However, Māori with newly acquired agricultural skills, tools and modern farming techniques and crop species (introduced often by Missionaries) changed Europeans perceptions. Māori farming and exports became very successful (Phillips 2014). Most likely this success prompted, to a degree, the British invasion of the Waikato (1863) by the Crown. Land acquired was used for European settlers and allotted to militiamen. Following the land wars large tracts of Māori owned land were confiscated and allocated to militiamen. Later this land was often sold by the men since they too thought it too difficult to clear and cultivate. This is the case for the site and the surrounding area around Cambridge whereby land was confiscated to be allotted to militiamen men following service.

Historic plans and aerials

Historic plans

A review of historic survey plans in Quickmap resulted in a single survey plan that was of direct reference to the Site. SO 144 from 1865 shows Militia Farms at East Hamilton. Despite the review of Quickmap no plan identified anything of archaeological interest. SO 144 visualises allotments given to militiamen following the termination of their service. It also shows that most of the Site was covered in scrub and swamp. Roads passing through the Site as well as the Waikato River are shown (Figure 6).

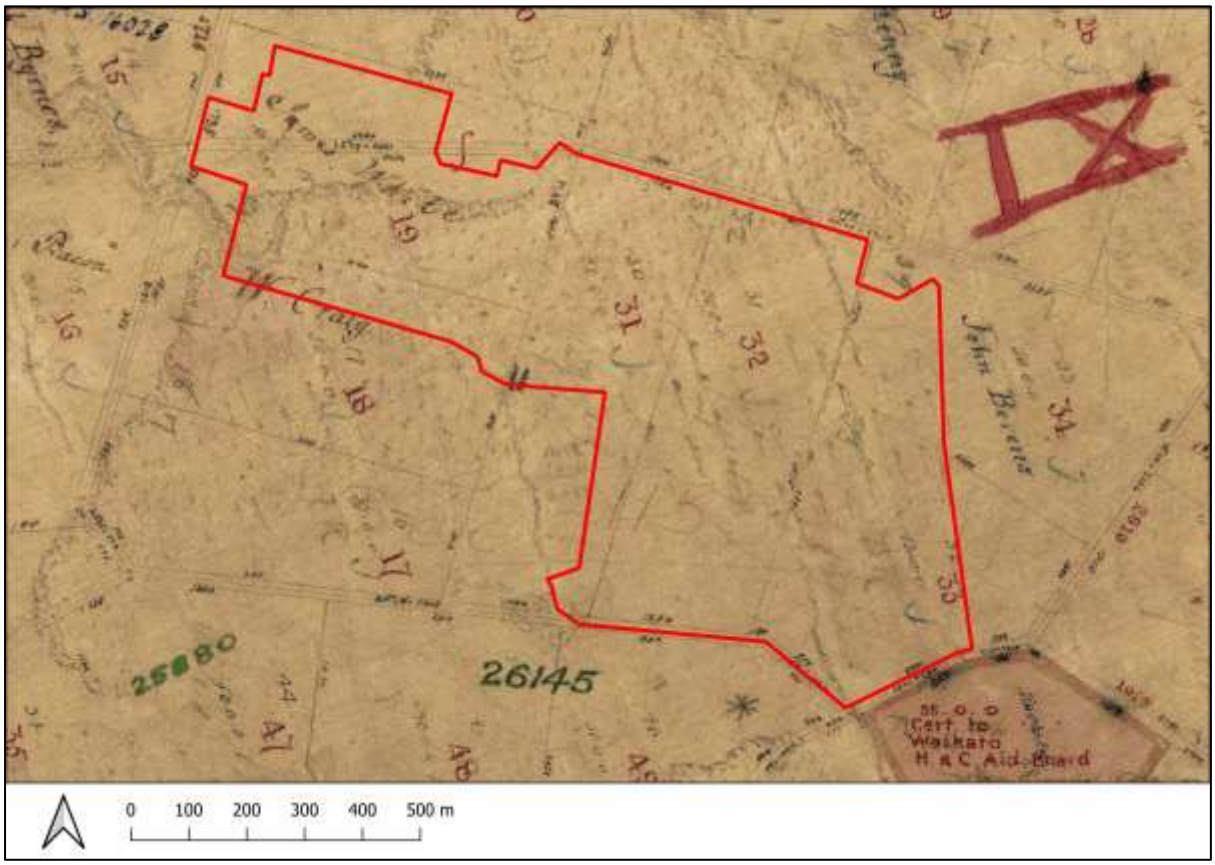

Figure 6. Excerpt from SO144 (1865) showing the land given to the leaving militiamen. Note that a significant proportion of the site is defined as swampy (Source: Quickmap).

Historic aerials

Aerial photographs were reviewed from Retrolens with the earliest available images originating from 1941. They visualise historic land use for the Site, which has primarily been pastoral grazing and crop production. However, more recently there have been developments within the Site including residential land use. The area of the orchard has been significantly modified through tree planting, and ongoing maintenance. The farm has also been modified through the construction of outhouses, race maintenance, drainage ditches and fences etc (Figures 7–8). There were also several paddocks that had been used for maize production within the farm. Landform is quite typical for this area; being composed flat areas and slightly raised levees as well as low hills to the northeast and southeast of the Site.

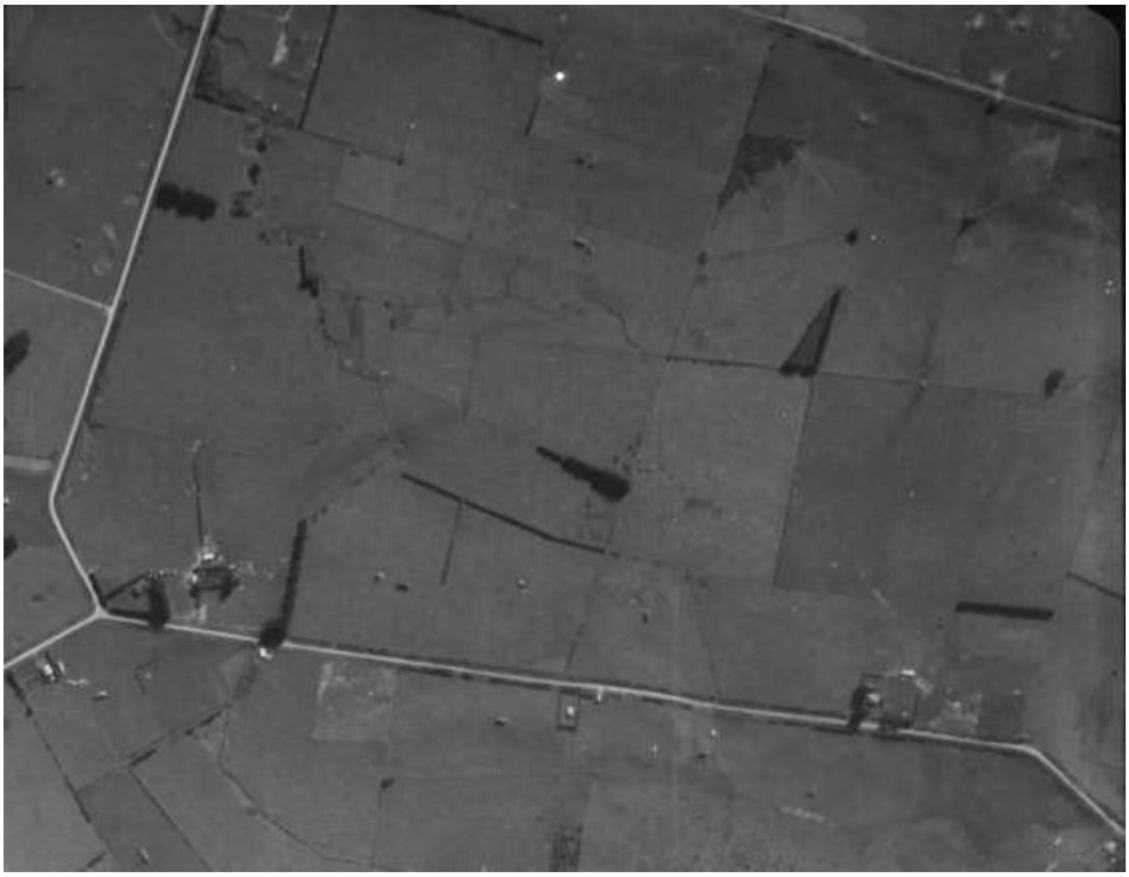

Figure 7. Excerpt from earliest available aerial photography from 1941 (eastern three quarters of the Site) (SN174_302-27) (Source: Retrolens).

Figure 8. Excerpt from aerial photography from 1991 showing the development of the orchard (SN9124_K-28). Site area is approximate. (Source: Retrolens).

Lidar data

Height data shown below provides an elevation model for the landscape and subject area in 2008 & 2023. LiDAR data uses laser points taken from aircraft to create a height elevation model for the landscape and can remove extraneous object such as houses and trees. There is no evidence for archaeology within the Site based on the review of available LiDAR data (Figures 8–9).

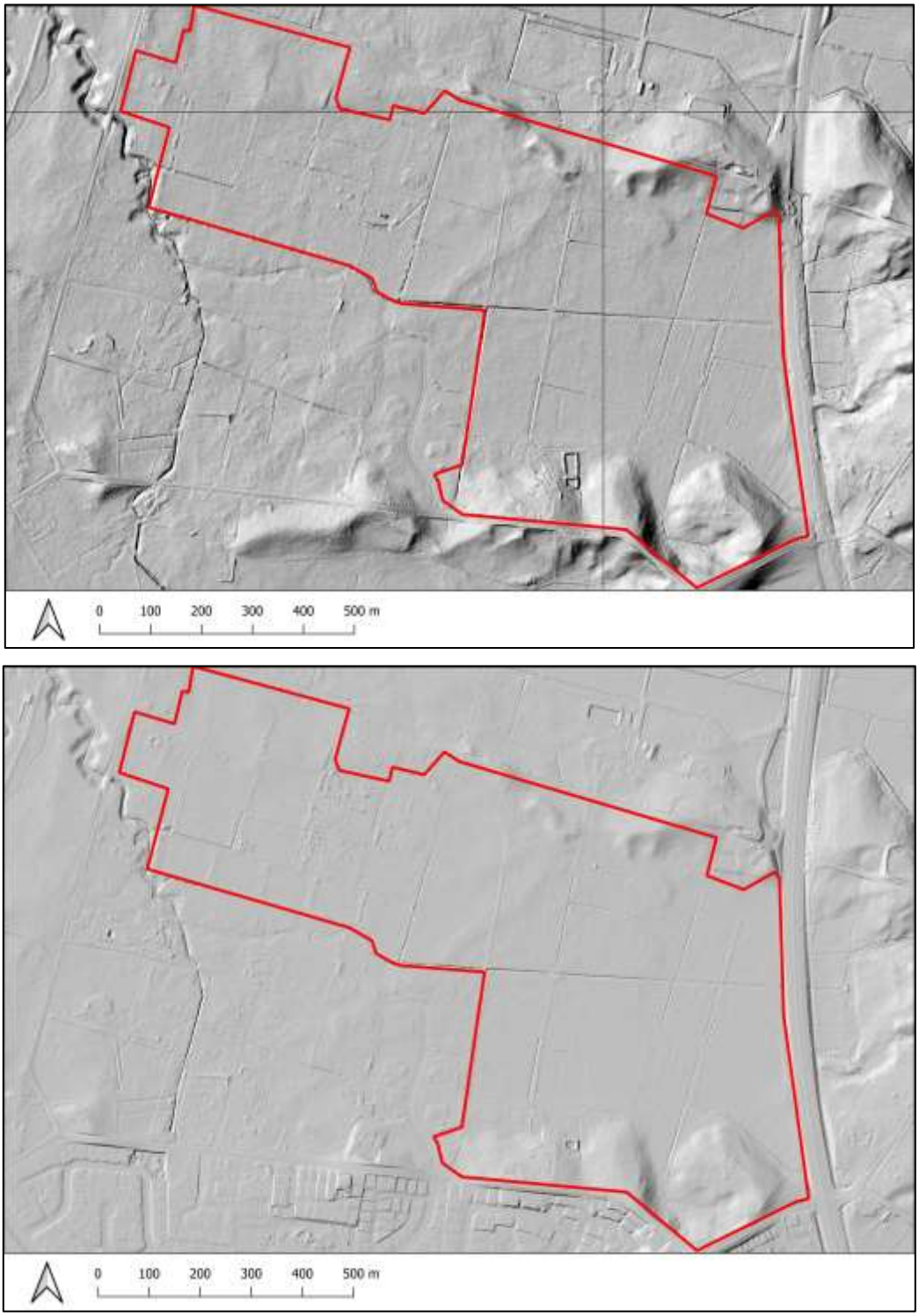

Figure 9. Lidar derived hillshade model from DEM data taken in 2008 (upper) and 2023 (lower) that shows the Site as mostly flat areas and some lower hills. Some of the southern hills have been modified to accommodate new subdivision to the south (Source: LINZ).

Fieldwork – site visit

Method

A site visit was undertaken to identify the potential for any unrecorded archaeological sites. It also assessed landform, soil type and variation. To identify potential archaeology a visual pedestrian survey in conjunction with soil testing was undertaken across the entire Site. Soil testing used a 25mm handheld screw auger. Positions were marked with handheld GPS.

Results

Figure 10. Site showing auger soil testing locations. Blue line broadly separates the Farm (east) and Orchard (west) (Source: LINZ).

Pedestrian visual survey and soil sampling with a 25mm soil auger was undertaken across the entire Site (Figure 10). As shown in the image above, results of the survey did not identify a presence for archaeological soils (auger points represented by the green points). The soil profile varied across the Site. Across most of the Site soils comprised either an organic topsoil followed by a very organic subsoil (eastern) that was both wet and very soft, or a topsoil over a silty Gley soil. At some locations, on small levees to the north, areas of silt loam were identified. Across the lower hills soils was a thin layer of topsoil over a clayey hillsoil. Soils did not show any evidence for archaeological modification and therefore were deemed to be non-archaeological. The orchard has been significantly developed through intensive sequential planting of fruit, strawberries and other crops. It has been, modified (modern) during the last 30 years being ploughed/dug to a minimum depth of 40cm. Below this was mostly a grey silty gley soil like that within the farm (See Figures 11–19). There was no evidence of archaeology within the orchard or farm.

Figure 11. Looking north from Kay Road across the eastern half of the Site.

Figure 12. Looking from north across the eastern half of the Site.

Figure 13. Drone image from south.

Figure 14. Drone image from north.

Figure 15. Drone image of the orchard.

Figure 16. Rows of trees in the orchard.

Figure 17. Taken from the south looking north across the strawberry plantation within the orchard.

Figure 18. One of the many drainage ditches within the lower flat area of the Site.

Figure 19. Soil profile within one of the drainage ditches showing a topsoil over a pale grey silt loam.

Assessment of Archaeological Values

Since there are no recorded archaeological sites nor any areas of identified unrecorded archaeology within the Site there are no values.

Assessments of effects on archaeological values

Due to the absence of identified archaeology there can be no effects.

Conclusions and recommendations

The Site is assessed as having a very low to nil potential for unrecorded archaeology. Since there are no recorded archaeological sites within the Site and the potential for unrecorded archaeology is very low to nil an Authority from Heritage New Zealand Pouhere Taonga is not recommended.

Recorded archaeological sites in the wider landscape relate to Māori Horticulture and are more than 500 metres from the Site. Soil maps identify Māori horticultural soils to the immediate east of the Site across a stream gully. However, these were not identified within the site. Through consultation of historical documentation and a site visit to determine the potential presence of unrecorded archaeology it was determined that the Site does not have any archaeological sites within it. The soil profile and the visual inspection support this since there were no positive indicators of archaeological modification or features.

Recommendations:

1. Even if there is no recorded archaeology or identified potential for unrecorded archaeology there is always the potential to uncover single unexpected finds in the landscape. It is therefore recommended that Accidental Discovery Protocols are used for the duration of the project. Protocols used, should be those recommended by Heritage New Zealand.

2. Consultation be undertaken with Mana Whenua at an early stage of the process. The results of this assessment should be discussed in detail so that Mana Whenua are aware of this report and its results and have opportunity to comment on the findings and the project.

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