Archaeological Assessment of Self Farm / Crater Hill Papatoetoe, Auckland

1 September 2015

Prepared for:

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1.0 INTRODUCTION

John Self commissioned Geometria Ltd. to undertake an archaeological assessment of the Self Farm, otherwise known as Crater Hill[1]. Papatoetoe. The purpose of this assessment is to review the current knowledge of the archaeology within the farm and address this in light of a potential rezoning application for the property as part of an Auckland Council Development Committee Hearing. The Self Farm is outside the current Metropolitan Urban Limits set out in the Auckland Regional Policy Statement.[2] The current zoning for the farm is Rural Production with the crater lake on the farm zoned Public Open Space – Conservation.

Crater Hill is a volcanic explosion crater with a large embayed tuff ring approximately 600m in diameter. It has a history of Maori occupation as evidenced in the numerous archaeological sites recorded at the site, as well as a long European history of farming, market gardening and quarrying dating back to the 1850s.

Under the Heritage New Zealand Pouhere Taonga Act 2014 (HNZPTA 2014; previously the Historic Places Act 1993, HPA 1993), all archaeological sites are protected from any modification, damage or destruction except by the authority of Heritage New Zealand Pouhere Taonga.

This survey and assessment uses archaeological techniques to assess archaeological values and does not seek to locate or identify wahi tapu or other places of cultural or spiritual significance to Maori. Such assessments may only be made by Tangata Whenua, who may be approached independently of this report for advice.

1.1 Location

The Self Farm is located at 1 Tidal Road and is bounded by Portage Road, the South-western Motorway, and western and eastern arms of the Waokauri Creek (Figure 1). The farm is comprised of a number of cadastral parcels including: Part Allotment 52 Parish of Manurewa, Part Allotment 51 Parish of Manurewa, Part Lot 1 DP 87112, Lot 2 DP 34893, Part Lot 3 DP 34892, Part Lot 1 DP 43571, Section 1 SO 64558, Lot 1 DP 171059, Section 6 SO 470928 and Part Allotment 48 Parish of Manurewa. Allotment 51a Parish of Manurewa is an Auckland Council Local Purpose Water Reserve. The total area of the farm including the water reserve is approximately 300 acres (Figure 2).

[1] In general, the Self Farm is known as Crater Hill, Self's Farm or Self's Crater has always been known by the Self Family as Beachlea Downs, an historical name given to the farm in the early 20th Century. For clarity in this report the term 'Crater Hill' is used when discussing the wider extent of the crater site; that is the land bounded by the western and eastern arms of the Waokauri Creek and the South Western Motorway, and land owned by the Self's, Tam's, New Zealand Transport Association (NZTA), and the Auckland Council Water Reserve.

[2] http://www.aucklandcouncil.govt.nz/EN/planspoliciesprojects/plansstrategies/DistrictRegionalPlans/regionalplans/aucklandcouncilregionalpolicystatement/Pages/change7mulshift-nowoperative.aspx

[3] Mataaho is also known as Mataoho.

[4] The Fairburn Purchase is discussed in more detail in the next section.

[5] In 1851 the Surveyor General Charles Ligar provided a more accurate estimate of the size of Fairburn's

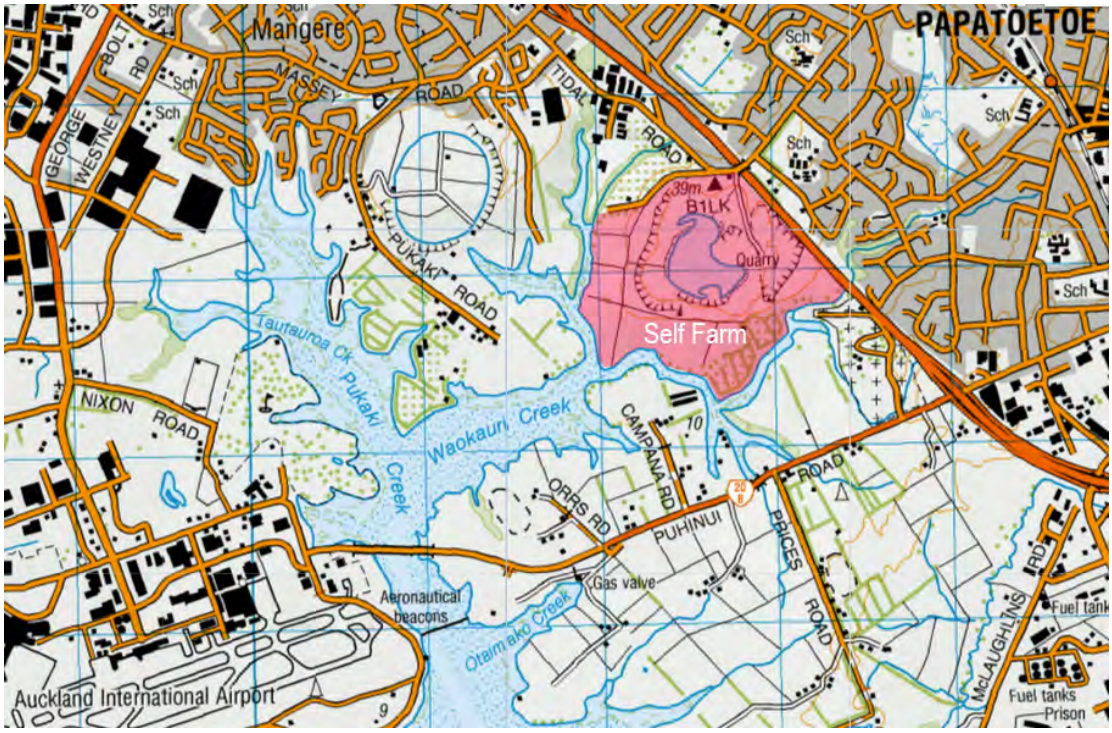

Figure 1: Location and extent of the Self Farm, Crater Hill, Papatoetoe.

Figure 2: Titles comprising the Self Farm.

1.2 Statutory Requirements

There are two main pieces of legislation in New Zealand that control work affecting archaeological sites. These are the *Heritage New Zealand Pouhere Taonga* Act 2014 (HNZPTA) and the *Resource* Management Act 1991 (RMA). Sites within the Auckland District are also protected by rules in the Proposed Auckland Unitary Plan (Paup), specifically rules relating to Manu Whenua - Cultural Heritage.

Any person who intends carrying out work that may modify or destroy an archaeological site, must first obtain an authority from Heritage New Zealand. The process applies to sites on land of all tenure including public, private and designated land. The HNZPTA contains penalties for unauthorised site damage or destruction. The archaeological authority process applies to all archaeological sites, regardless of whether:

- *The site is recorded in the NZ Archaeological Association Site Recording Scheme or included in the Heritage New Zealand List,*
- *The site only becomes known about as a result of ground disturbance, and/ or,*
- *The activity is permitted under a district or regional plan, or a resource or building consent has been granted.*

1.2.1 The Heritage New Zealand Pouhere Taonga Act 2014

Under the HNZPTA all archaeological sites are protected from any modification, damage or destruction. Section 6 of the HNZPTA defines an archaeological site as:

> *" 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 the 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)"*

To be protected under the HNZPTA an archaeological site must have physical remains that pre-date 1900 and that can be investigated by scientific archaeological techniques. Sites from 1900 or post-1900 can be declared archaeological under section 43(1) of the Act.

If a development is likely to impact on an archaeological site, an authority to modify or destroy this site can be sought from the local Heritage New Zealand Pouhere Taonga office under section 44 of the Act. Where damage or destruction of archaeological sites is to occur, Heritage New Zealand usually requires mitigation. Penalties for modifying a site without an authority include fines of up to $300,000 for destruction of a site.

Most archaeological evidence consists of sub-surface remains and is often not visible on the ground. Indications of an archaeological site are often very subtle and hard to distinguish on the ground surface. Sub-surface excavations on a suspected archaeological site can only take place with an authority issued under Section 56 of the HNZPTA issued by the Heritage New Zealand.

1.2.1 The Resource Management Act 1991

Archaeological sites and other historic heritage may also be considered under the Resource Management Act 1991 (RMA). The RMA establishes (under Part 2) in the Act's purpose (Section 5) the matters of national importance (Section 6), and other matters (Section 7) and all decisions by a Council are subject to these provisions. Sections 6e and 6f identify historic heritage (which includes archaeological sites) and Maori heritage as matters of national importance.

Councils have a responsibility to recognise and provide for the relationship of Maori and their culture and traditions with their ancestral lands, water, sites, wahi tapu, and other taonga (Section 6e). Councils' also have the statutory responsibility to recognise and provide for the protection of historic heritage from inappropriate subdivision, use and development within the context of sustainable management (Section 6f). Responsibilities for managing adverse effects on heritage arise as part of policy and plan preparation and the resource consent processes.

1.3 Methodology

The methods used to assess the presence and state of archaeological remains on the property included both a desktop review and field survey. The desktop survey involved an investigation of written records relating to the history of the property. These included regional archaeological publications and unpublished reports, New Zealand Archaeological Association Site Record Files (NZAA SRF) downloaded via the ArchSite website (www.archsite.org.nz), local histories, aerial photography, local authority heritage lists, the Heritage New Zealand List, and land plans held by Land Information New Zealand.

The field assessment was undertaken on 19th May by Russell Gibb and landowner John Self, and again on 3rd July by Russell Gibb and Andi Crown from Geometria and was conducted on foot, examining the surface area of the property. Eroded and/or exposed surfaces were inspected for the possible exposure of subsurface remains. Probing but no test pitting was undertaken. Russell Gibb undertook recording of the archaeological features located along the western crater rim on the 25th August.

2.0 BACKGROUND

2.1 Physical Environment

Crater Hill is a large volcanic explosion crater with a large embayed tuff ring approximately 600m in diameter, and a minor explosion crater. It erupted approximately 32,000 years ago and is part of the Auckland Volcanic Field, an area of monogenetic volcanoes underlying much of the metropolitan area of Auckland. During its eruptive phase a lava lake formed within the crater. This lake cooled on the surface and around the edge creating a solid basalt crust, which later collapsed when the molten lava withdrew, and a freshwater lake formed. This lake has been drained in the past but is currently full. A small lava outcrop formed of basalt blocks and scoria is located in the crater lake. Two circumferentially oriented lava caves are located within the circumferential remnants of the crater lake. A larger scoria cone that formed in the crater was quarried away during the late 19th and early 20th century with quarrying progressively extended from the cone to the northeast crater rim throughout the later part of the 20th century (Figures 3-6) (https://en.wikipedia.org/wiki/Crater_Hill).

Crater Hill is bounded on the west, south and east by the headwaters of the Waokauri Creek and the South-western Motorway (SH 20) to the north. The Waokauri Creek feeds into Pukaki Creek, a tidal inlet that flows from the Manukau Harbour. Both arms of the Waokauri were traditional portages utilised in prehistoric times that provided an essential link from Pukaki Creek to the Tamaki River and the East Coast (Taylor 1983, Foster 1995). Over the years these waterways have been progressively inundated with mangroves and invasive weeds and in some area have had riparian plantings (Figure 7).

The soils of Crater Hill are a combination of well-drained loams and moderate soils. The outer slopes soils are characterised as imperfectly drained loams composed of mottled-acidic orthic brown soils (Puketutu*f*) and mottled orthic brown soils (Hamlin*f*), which are both silty loams over clay (Appendix 1).

An Unformed Legal Road (paper road), being an extension of Portage Road is laid out on the property, extending south from the existing Portage Road.

Quarrying of the scoria cone and crater rim and the development of SH20 has significantly altered the north-eastern extent of the tuff ring. Outside the crater rim the landscape has undergone relatively little obvious transformation. Here the slopes are weathered tuff and relatively stone free and fall gradually from the crater rim to the Waokauri Creek margins. The rich friable volcanic loams have previously been utilised for market gardening and are currently in pasture. The outer slopes have been subjected to repeated ploughing, especially during the period of active market gardening at the site but it is less likely that the steep inner slopes with in situ undisturbed stone features have been ploughed (Foster 1995). The lower south-eastern slopes of Crater Hill are predominantly covered in kiwifruit orchard.

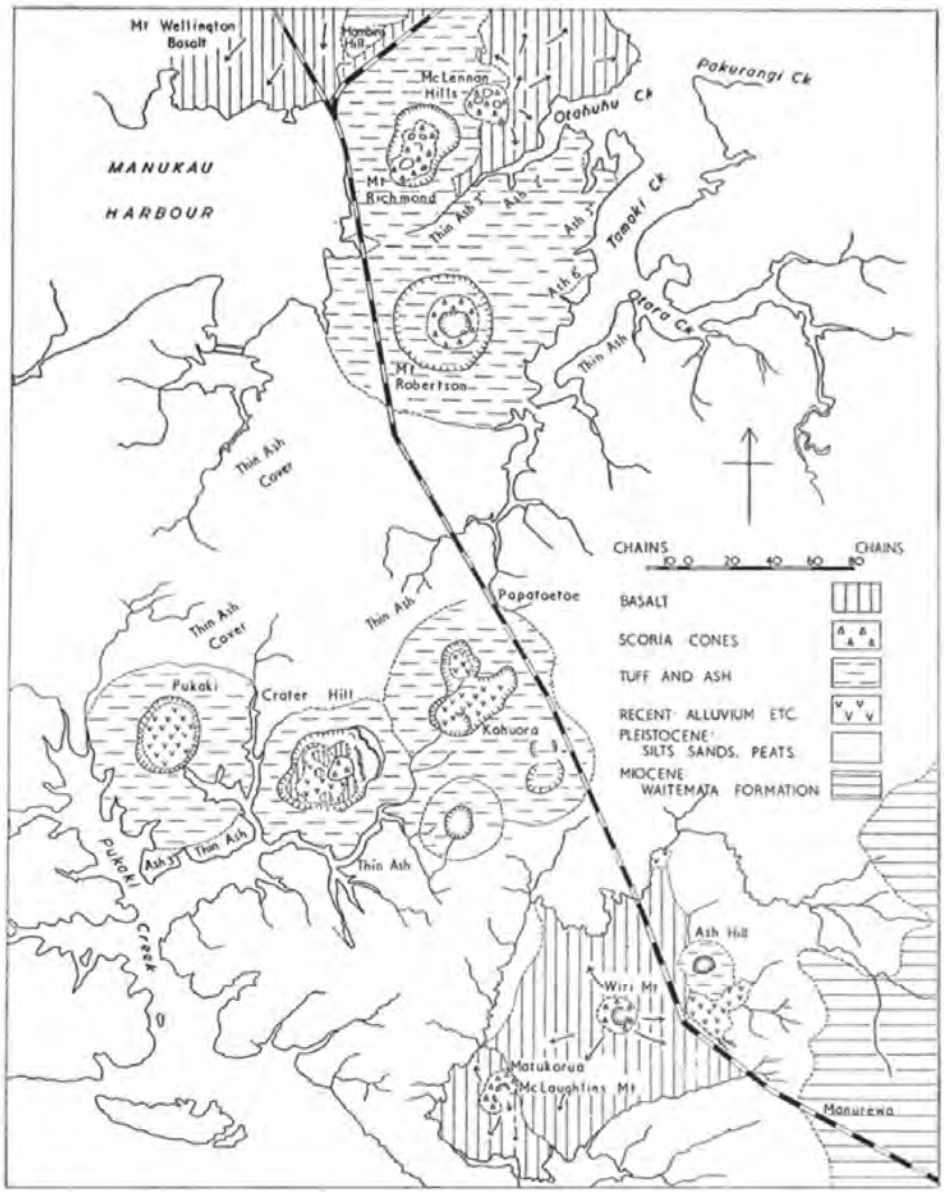

Figure 3: Geological sketch map of the Otahuhu-Manurewa district of the Auckland volcanic field. Source: Searle 1961:240.

Figure 4: The crater lake looking towards the west.

Figure 5: Looking northeast across the remnant base of the scoria cone.

Figure 6: The Self Farm ca. 1986 looking southwest towards Pukaki Creek and Auckland International Airport.

Figure 7: Progressive siltation and inundation of flora into the upper reaches of the western arm of the Waokauri Creek: 1939 left, 1959 centre and 2012 right.

2.2 Maori History

Te Ãkitai Waiohua are the mana whenua of the Pukaki area, whose rohe includes the Self Farm. Crater Hill is known to Te Ãkitai Waiohua as Nga Tapuwae o Mataaho[3] (the footprints of Mataaho), which derives from a tradition known as 'Te Riri a Mataoho' (the wrath of Mataoho) where the deity Mataoho created a number of volcanic features across the Tamaki (Auckland) landscape, including Lake Pupuke, Pukaki Crater, Mangere Lagoon, Kohoura, Sturgess Park and Waitomakia. The South Auckland explosion craters were given the name Nga Tapuwae o Mataaho (Mackintosh 2009, Campbell et al. 2013).

Te Ãkatai Waiohua trace their descent from the Tainui and Te Arawa canoes. The Tainui canoe was thought to have arrived in New Zealand about 800 years ago commanded by the chief Hoturoa establishing landfall at Whangaparaoa before continuing on to the Coromandel Peninsula, Tauranga and returning to the Waitemata Harbour. From the Waitemata the canoe travelled up the Tamaki River and was carried across the Otahuhu Portage to the Manukau Harbour before continuing on its journey to various ports of call along the west coast. Some of the Tainui crew disembarked and remained in the Tamaki area and intermarried with existing groups in the region. These people eventually became known as Te Waiohua, the early descendants of Te Ãkitai Waiohua (Mackintosh 2009, https://en.wikipedia.org/wiki/Tainui_(canoe).

The Manukau landscape was an area well suited to settlement. The broad harbour and estuaries were plentiful with kai moana and rich volcanic loams were found throughout the coast and adjacent to many inland waterways which provided ideal conditions for growing tropical crops transported from Polynesia. The Manukau provided a veritable food basket for the early occupants. Easy access to the hinterland by way of coastal navigation and portages allowed the occupants to travel and engage in trade, and settlements and later pa were established in a number of areas as evidenced by the plethora of archaeological sites in the area.

In the early 1600s, following the exodus of Kawerau a Maki from the district, the descendants of Te Waihoua reoccupied the area and under Hua Kaiwaka Te Waiohua emerged as a confederation of tribes. By the mid 1600s Te Waiohua controlled the whole of the Tamaki isthmus and areas further afield. Between the mid 1600s and 1750 Te Waiohua had their main base firstly at Maungawhau (Mt Eden) before moving to Maungakiekie (One Tree Hill) but during this time maintained gardens and settlements throughout the isthmus including around Pukaki and Nga Tapuwae o Mataaho (Crater Hill) (Te Ãkitai Waiohua 2012, Mackintosh 2009).

By the mid 1700s Te Waiohua came under increased pressure from a combined force of Te Taou – Ngãti Whãtua from the north, and Tainui from the south and east. During the intervening years of political unrest a number of Te Waiohua hapu were defeated with the last pa taken in 1755, and by 1760 Ngãti Whãtua had settled in Tamaki resulting in many Te Waiohua hapu leaving the area, retreating south to Papakura, Ramarama and surrounding areas. Following peace agreements and inter marriages with Ngãti Whãtua and Te Taou, Te Waiohua began to re-establish themselves in Tamaki during the later part of the 18th century and early 20th century, including at Pukaki, and this group became known as Te Ãkitai whose main settlement was said to be at Papahinau (ibid).

In the early 1820s the settlements of Te Ãkitai, along with many of the other iwi and hapu living in Tamaki at the time, were greatly affected by raids from musket armed NgãPuhi war parties who caused considerable carnage throughout the district and

[3] Mataaho is also known as Mataoho.

beyond, forcing most of the inhabitants of the region into exile. At this time Tamaki was all but abandoned with intermittent occupation occurring during periods of calm, but it was not until 1835 that Te Ãkitai and Ngãti Whãtua returned permanently to Tamaki under the protection of Potatau Te Wherowhero, the paramount chief of Waikato, with Te Ãkitai re-establishing a main settlement at Papahinu and satellite occupations throughout the rohe (ibid).

A large area of the Te Ãkitai rohe, including Crater Hill was included in the 1936 Fairburn Purchase[4], but following the signing of the Treaty of Waitangi all land purchases prior to 1840 were investigated and as a result the area of the Fairburn Purchase was considerably reduced. Most of the land, including that around Pukaki and Crater Hill was deemed 'surplus land' and retained by the Crown based on presumptive rights (Moore et al. 1997). Shortly thereafter, the Crown issued Crown Grants and began selling of much of the land in the area. Plan SO 307 dated 1851 (Figure 8) shows the area on the west bank of the Waokauri Creek (west of Crater Hill) as 'Native Settlement'. This is also drawn on a plan by Marmaduke Dixon (Figure 9) and dated to ca. 1853, which annotates the area as 'Pukaki, - Native Land' and shows what appears to be a number of structures – probably whare in a kainga.

Figure 8: Section of SO 307 (1851). The 'Native Settlement' is shown in the top left corner.

[4] The Fairburn Purchase is discussed in more detail in the next section.

Figure 9: Section of *Map showing sections and Native land on Manukau Harbour* showing Maori settlement southwest of Pukaki Crater. Nixon, Marmaduke George. MapColl-832.12gbbd/[186-]/Acc.427. Alexander Turnbull Library, Wellington, New Zealand.

Te Ākitai continued to live alongside the European settlers until the outbreak of the New Zealand Wars in 1863 when, following a proclamation of war by Governor Grey, all Maori living in Tamaki were ordered to take an oath of allegiance to the Queen or surrender their arms, Te Ākitai and other hapu in Mangere proceeded to leave Tamaki and moved south to a settlement at Kirikiri, Papakura before intending to join up with relatives in the Waikato (*Daily Southern Cross* 16 July 1863:3). However, Te Ākitai and their Ngati Tamaoho relations were ordered to leave Kirikiri and moved to a nearby pa where chief Ihaka Takaanini and some family members were arrested, with the remaining hapu members then travelling south to Waikato. The now vacated Te Ākitai land around Mangere and Pukaki was confiscated by the Crown by proclamation - gazetted on the 16 May 1865, and divided into the Pukaki and Papahinau Blocks. Some of this land was returned to the individual Maori owners during the Compensation Court hearings of 1866 if they could prove their traditional ownership rights, and that they had not been in rebellion during the New Zealand Wars (Mackintosh 2009). The names of Maori owners or claimants to land are shown on SO 235 (1866) (Figure 10). Also of note on this plan are an urupa annotated as 'Burial Ground' and a 'Church', which is the site of the former Pukaki Chapel, which burnt to the ground in May 1869 (Campbell et al. 2013). On survey plan SO 238 (1866) the allotments south of Waokauri Creek are shown and the block of land north of the Waokauri Creek is annotated as reserved for native purposes (Figure 11).

Te Ākitai returned to the area in 1866 with some hapu members settling on allotments 155-158 whilst others went to Ihumatao (Mackintosh 2009). A new marae was built in the 1890s and remained in active use until the 1950s and the development of Auckland International Airport. Following the airport development a new marae was built at Pukaki and opened in 2004 (Te Ākitai Waiohua 2012).

Both Mackintosh (2009) and Te Ākitai Waiohua (2012) provide more detailed histories of the area and Te Ākitai Waiohua.

Figure 10: SO 235 (1866). The urupa is located on the eastern tip of allotment 160 and the Pukaki Chapel site is on the western peninsula of allotment 154.

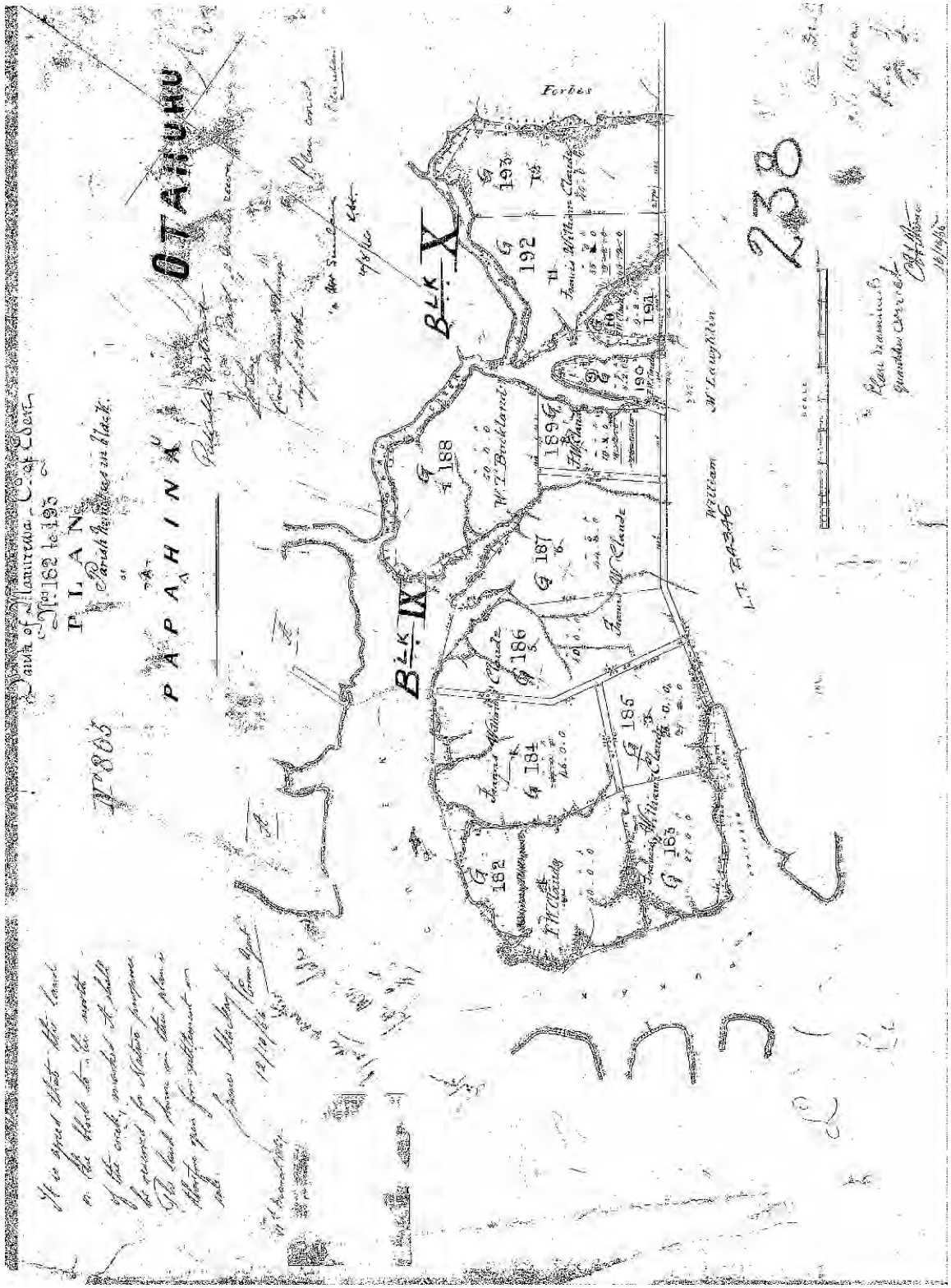

Figure 11: SO 238 (1866) showing the Papahinau Block.

2.3 European History

Crater Hill was originally part of the 1836 Fairburn Claim. William Fairburn was an Anglican lay catechist who purchased a block of land stretching from the portage at Otahuhu to Clevedon and Papakura (Figure 12). The claim covered 62 ½ square miles (40,000 acres[5]) of land and was bought for £16 and goods worth £320.12.6. Following the signing of the Treaty of Waitangi claims for land purchased prior to 1840 were investigated and Fairburn's claims was subsequently reduced from 40,000 acres to 5,500 and then incurred a further reduction to 2,560 acres, the maximum allowable claim at the time. The land that was included in the disallowed part of the claim (including Crater Hill) reverted to the Crown and was divided into allotments and sold as Crown Grants (MCNZ 2003).

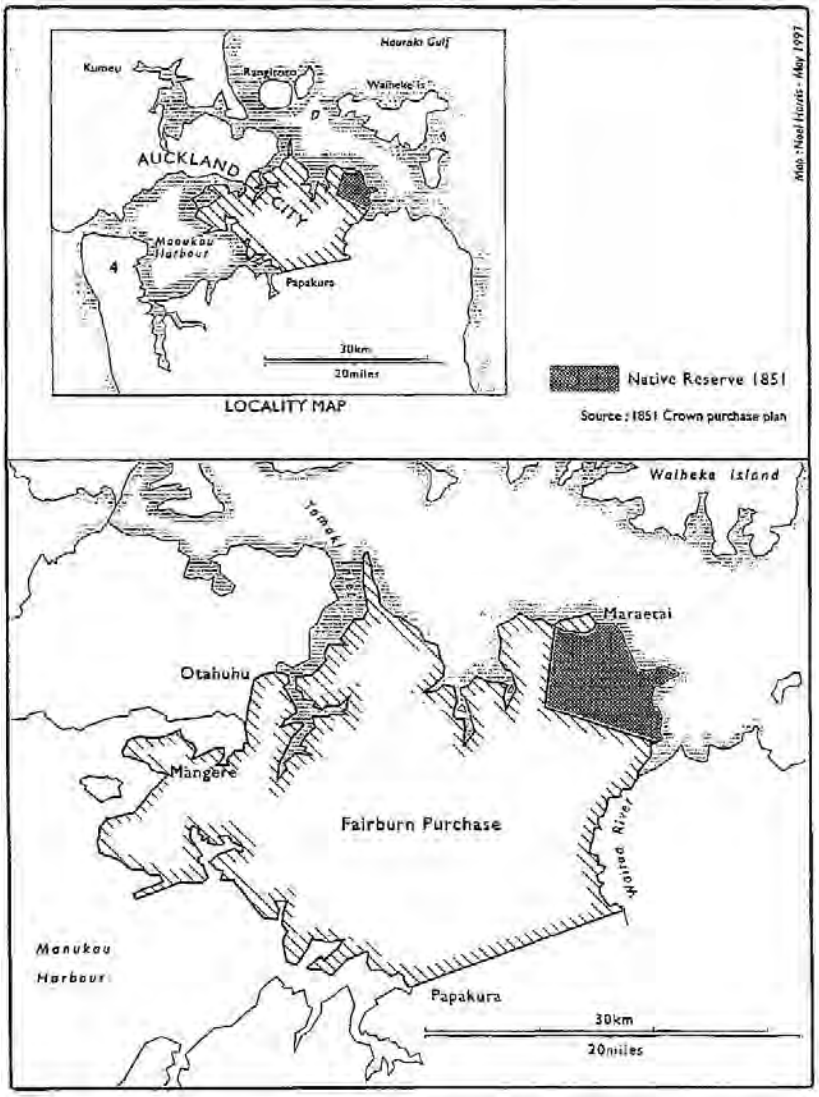

Figure 12: The Fairburn purchase. Source: Moore et al. 1997.

William Lewis

In 1848 William Lewis purchased a Crown Grant that included Allotment 48, the eastern perimeter of Crater Hill, and land to the north and east of the site. Lewis held the land for a short period before putting some of it up for resale.

[5] In 1851 the Surveyor General Charles Ligar provided a more accurate estimate of the size of Fairburn's Claim putting it closer to 75,00 acres (Moore et al. 1997).

William Buckland

In March 1850 William Thorne Buckland (Figure 13) purchased Allotment 48 from William Lewis for £24 and later that year, on the 8th October 1850, finalised the purchase from the Crown of the rest of the Crater Hill area, comprising allotments 51, 52, 53 and 54. Buckland also purchased allotment 29 (1858) and by 1862 Buckland had finalised the purchase of one more contiguous property (Allotment 16) from Joseph Badkin, giving Buckland a continuous tract of land from Pukaki Creek in the west to what is now Station Road in the east (Figure 14).

Figure 13: Portrait of William Thorne Buckland (https://en.wikipedia.org/wiki/William_Thorne_Buckland).

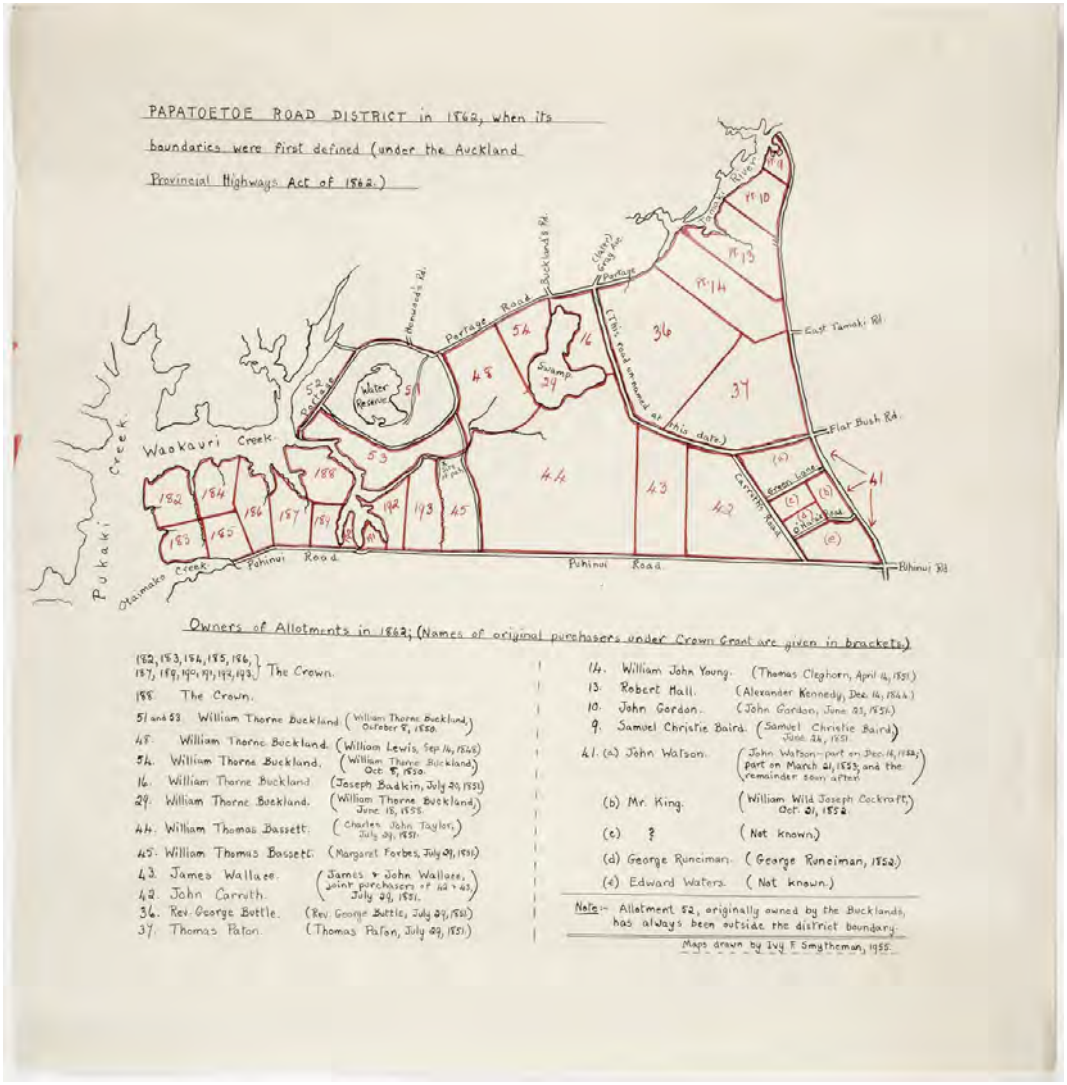

Figure 14: Plan titled *Map of the Papatoetoe Road District as it was in 1885, when the south boundary was extended*, drawn by Ivy Smytheman in 1955 (Manukau Research Library, Auckland Libraries, SARC0000134901685).

William Buckland (1819–1876) had emigrated from South Australia in 1841 and operated a butchery business in Auckland for several years, mainly supplying the military. He then established himself as a farmer eventually controlling tracts of land in Auckland and south of Cambridge and also had interests in a Coromandel gold prospecting company. Buckland was elected to the Auckland Provincial Council and General Assembly for the electorate of Franklin. In 1867 William Buckland transferred ownership of his land to J. C. Buckland. He died on the 17th January 1876 at his Remuera residence, aged 56 (*Auckland Star* 1876:2).

Plan SO 307 (refer Figure 8) shows a well, stable and an outline representing either a house or animal stockade on Buckland's land. Buckland's house is also annotated on the Clendon's Grant sketch map dated 30 December 1862 (Turton 1877). It appears that this house was destroyed by fire sometime before 1866 as a chimney is shown and annotated 'Mr Buckland's chimney' on survey plan SO 238a (ca.1866). This plan also shows an animal stockade in the vicinity of Crater Hill indicating the area was being farmed by that time (Figure 15). Buckland's house was located in the approximate position of the current Self farmhouse at 240 Portage Road (Figure 16).

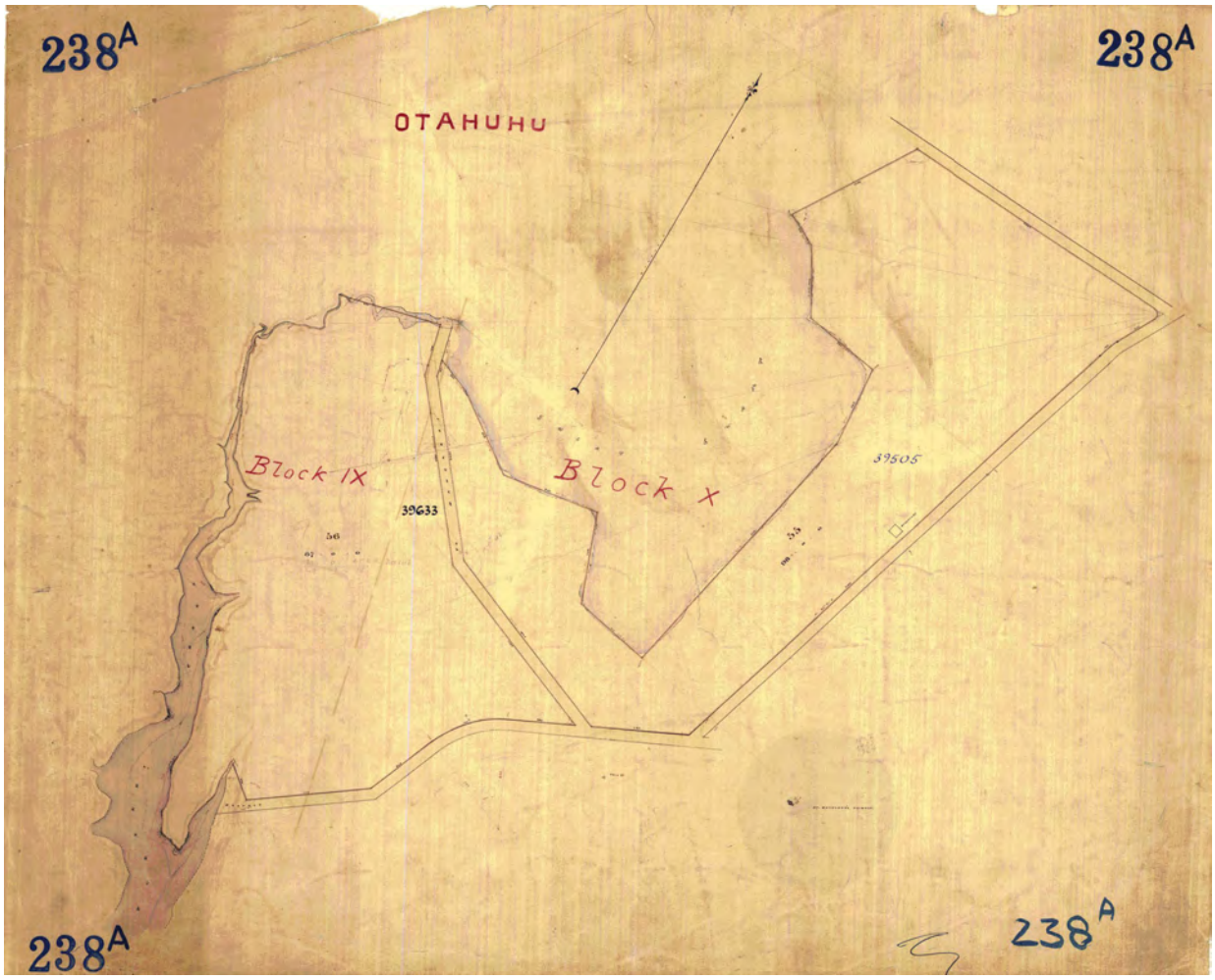

Figure 15: Plan SO 238a (ca 1866) showing the location of 'Mr Buckland's Chimney' - indicated by the shaded circle, lower right. Source: Quickmap 2015.

Figure 16: Overlay of plan SO 238a and 2015 aerial showing the location of Buckland's chimney in relation to Crater Hill and the Self farmhouse.

Isaac Gray

The land around Crater Hill eventually came into the ownership of Isaac Gray (ca. 1881[6]). Gray was a farmer and president of the Auckland Agricultural and Pastoral Association and was active in the local hunt and steeplechase clubs, whose events were often held on his property.

In March 1917 Gray advertised 50 sections of his landholding around Crater Hill for sale, ranging in size from 2 ½ to 15 acres (*New Zealand Herald* 2 March 1917). Gray sold the rest of his landholding at Crater Hill sometime before the end of September as on the 27 September 1919 an auction was advertised in the *New Zealand Herald* for the sale of stock from Isaac Gray, noting that Gray has sold his farm (Figure 17).

Wilfred Johnstone

Gray's farm at Crater Hill was purchased by Wilfred Johnstone, a well-known landowner, horse breeder and farmer who at that time owned blocks of land at Clendon Park, south of Crater Hill. Johnstone named the farm 'Beachlea Downs' and became well known through the district for producing champion cattle and horses, and sheep for the bourgeoning Auckland market.

In 1921 steps were taken to have the crater-lake declared a game sanctuary (*New Zealand Herald* 13 August 1921:2). It is unclear when this happened, and if so under what legislation, but in 1930 two men were charged with killing grey ducks in the lagoon at Beachlea Downs (*New Zealand Herald* 13 May 1930).

[6] In 1881 J.C Buckland purchased the Taieri Lake Station in Otago (*Nelson Evening Mail* 5 November 1881) and is presumed to have moved there shortly thereafter.

Throughout the 1920s Wilfred Johnstone started selling down his remaining Auckland holdings including Beachlea Downs, which was sold to J. R Self around February 1926 (*Auckland Star* 25 August 1927), and he also offloaded his large estate and all the farm stock at Clendon in 1926 (*New Zealand Herald* 20 November 1926:2). The impetus for these sales was possibly an impending divorce that was granted in late 1927 (*New Zealand Herald* 18 November 1930:2).

Sales by Auction.

WESTFIELD SALEYARDS.

THURSDAY, OCTOBER 2,
AT 11.30 A.M.

ALFRED BUCKLAND & SONS, LTD.,
Will Sell
On Account of Mr. R. HENWOOD, Manawatu.

7 CHOICE DAIRY COWS AND HEIFERS, milking and due to calve
1 PEDIGREE SHORTHORN BULL, milking strain
30 YEARLING SHORTHORN HEIFERS
On Account of MR. ISAAC GRAY, Papatoetoe, who has sold his farm,
50 WELL-BRED TWO AND THREE-YEAR-OLD SHORTHORN STEERS, almost beef
30 EMPTY COWS AND HEIFERS
9 YEARLINGS mixed sexes
10 TWO - YEAR - OLD SHORTHORN HEIFERS

ALFRED BUCKLAND & SONS, LTD.

Figure 17: Auction notice for stock from Isaac Gray's farm at Crater Hill (*New Zealand Herald* 27 September 1919).

Self Family

According to the Self Family history the purchase of Beachlea Downs was the result of a land swap between John R. Self and his son Owen R. Self who held 3000 acres at Puketutu in the King Country, and the 300 acres at Beachlea Downs owned by Wilfred Johnstone (J. Self pers. comm. July 2015). Following the purchase Owen moved into the farmhouse located on the north-western crater rim while John Self, who was a clothier, resided in Ponsonby. Shortly after Owen moved into the farmhouse tragedy struck when the house was destroyed by fire. The fire started at around 7pm and by 8pm the recently renovated 8-bedroom house was completely destroyed with little salvaged despite the efforts of the Otahuhu Fire Brigade, who it appears, had inadvertently failed to notice two nearby water sources that they desperately required. Fortunately the house was unoccupied at the time as Owen and his wife had travelled to the theatre in the city that afternoon (*Auckland Star* 25 August 1927, *New Zealand Herald* 25 August 1927). A new farmhouse was eventually rebuilt in the same location.

Over the generations the Self's have bred pedigree Angus cattle, Southdown sheep and Polled Dorset sheep, carrying on the traditions of successful breeding established

by Wilfred Johnstone. More recently the farm has been used to finish off steers for export markets (J. Self pers. comm. July 2015).

Horticulture has also played an important role during the Self's tenure with market gardens established over most of the southern and western slopes at various times since the 1930s including crops grown on land leased to Turners and Growers (Figure 18). During WWII produce from the market gardens was used to supply United States military camps such as the large Cambria Park base located off Puhinui Road. A number of houses, ablution blocks and storehouses were built along the south-eastern slopes to house the workers and process and store the produce, and these were removed prior to the establishment of kiwifruit and avocado orchards in this area in the 1970s.

By 1940 a bore was established on the farm with a reservoir built on top of the southwest crater rim and this supplied water for the WWII market garden development and then later the farm. Between the mid 1940s and 1993 water from the lake was pumped from another bore located in the quarry via a 9-inch pipe to the Dominion Breweries factory in Otahuhu. A reservoir was built for this supply on a high point on the north part of the crater rim. Earthworks for the construction of this reservoir resulted in this area being levelled by bulldozer. Land that had been sold to Dominion Breweries for the reservoir was recently sold back to the Self Family.

In the 1960s land from Beachlea Downs was taken under the Public Works Act for the construction of Aorere College resulting on the loss of all the paddocks to the north of the crater, and then in the 1980s the Public Works Act was again enacted to forcibly take land designated for the development of the South-western Motorway (SH20), effectively cutting off the farmhouse from the rest of the farm (ibid).

Figure 18: Ploughing the fields, March 1996. Photo: Self Family Trust.

Quarrying

The potential of the Crater Hill area as a source of scoria and road material was realised early. Survey plan SO 307 (refer Figure 8), dated 1851, shows a small cone adjacent and east of the crater-lake with the annotation 'Reserved for Road Metal' and the lake gazetted as a Water Reserve (Gaz/90 Page 585). By 1889 quarrying of the scoria cone at Crater Hill had commenced as shown on survey plan SO 5210 where the cone is now noted as a quarry (Figure 19). Quarrying began with the removal of the small scoria cone and gradually extended eastwards towards the volcanic deposits throughout the eastern crater rim area (Figures 20-21).

The complete history of the early quarrying operations is not yet known. It is likely that scoria was taken during the late 1800s for road construction, either tendered for by the local Road Board, or supplied directly by a council controlled entity. Up until 1923 the Papatoetoe Scoria Company was extracting and selling scoria from Beachlea Downs but by May of 1923 the company had advertised its contracting plant to be sold in whole, without reserve (Figure 22), possibly signalling the end of readily available scoria from the scoria cone or perhaps indicating a downturn in profitability in the quarrying sector. Since that time the Self Family, Bitumix Ltd and Vuksich and Borich have run operations at the quarry (J. Self pers. comm. July 2015).

By 2002, approximately 2 million cubic metres of material had been removed (EC A91/2002:15). Filling of areas of the quarry has been underway for a number of years, with consents in place to receive fill until 2020 (Figure 23).

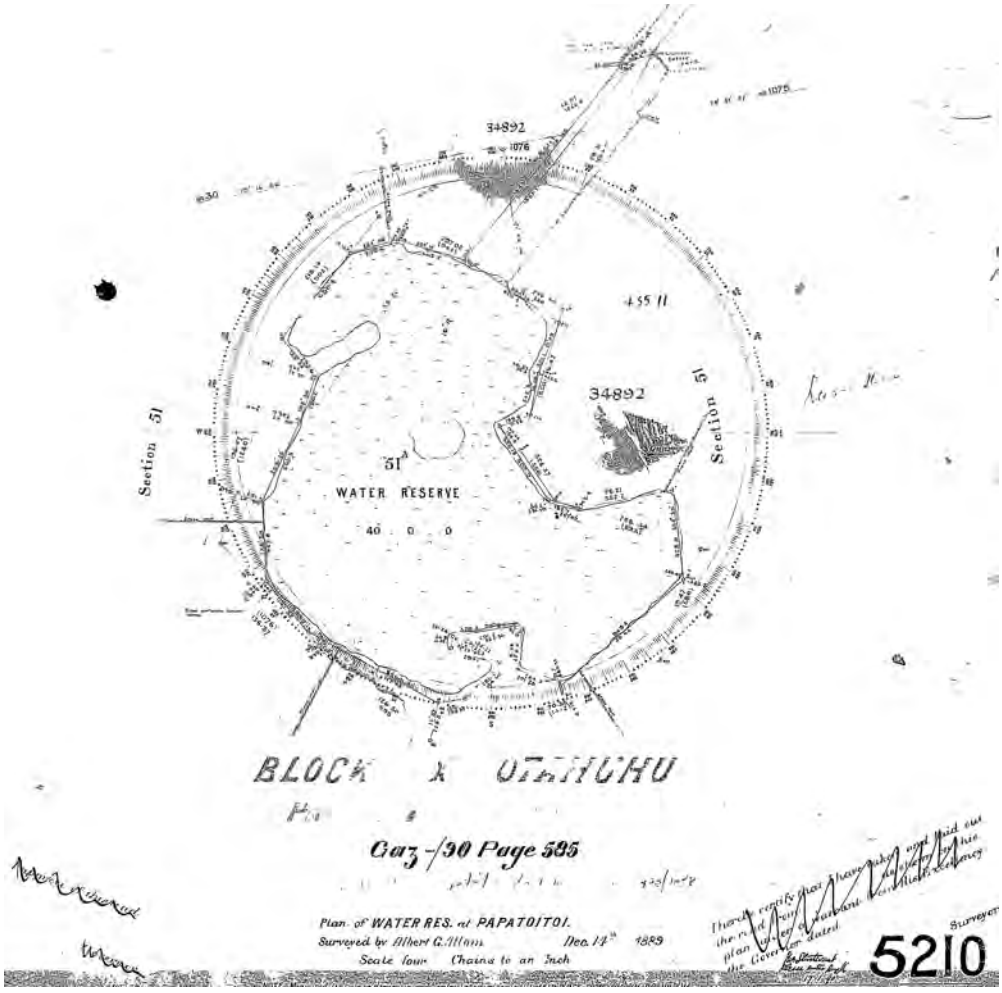

Figure 19: Plan SO 5210 (1889) with the scoria cone now shown as a quarry.

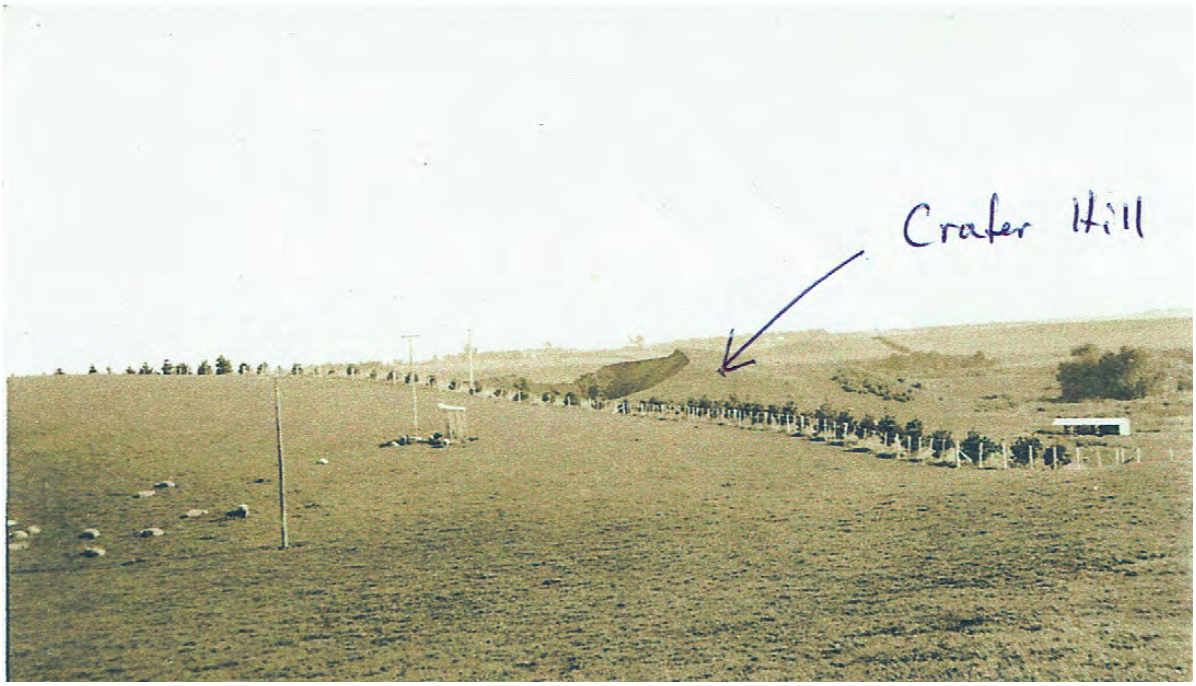

Figure 20: Crater Hill in 1930 looking east with the crater-lake behind the farm shed. Photo: Self Family Trust.

Figure 21: Looking northeast over Crater Hill showing the advance of the quarry northwards towards the crater rim ca. 1965. By this date the scoria cone had been completely quarried away. Photo: Self Family Trust.

PAPATOETOE.

MONDAY, MAY 14,

AT 11 A.M.

ALFRED BUCKLAND AND SONS, LTD., Have received instructions from the Papatoetoe Scoria Company to Sell on Mr. Wilfred Johnstone's property, Beachlea Downs, Papatoetoe, without reserve,

THE WHOLE OF THEIR CONTRACTING PLANT.

21 HEAVY AND MEDIUM DRAUGHTS, 4 to 7 years old, straight out of work

1 2½-YEAR-OLD COLT
8 2-YARD DRAYS, regulation tyres
1 FLAT TOP LORRY, 3½ tons
1 TIMBER WAGGON, 6in. tyres
1 WHEELED SCOOP
8 Sets Dray Harness, 20 Sets Leading Harness, 2 Large Marquees, 42 by 21, 27 by 18; Camp Gear, Jack, Wire Rope and Block, 8 Tons Chaff, 3 Tons Oats, Tools, Sundries, etc.

Luncheon Provided.

The above Plant, which is in first-class order, can be inspected at Beechlea Downs at any time.

On Account of Captain Whitney:
1 BAY GELDING, quiet, saddle and harness

ALFRED BUCKLAND & SONS, LTD.,

Figure 22: Sale advertisement for the Papatoetoe Scoria Company on Wilfred Johnstone's Beachlea Downs farm.

Figure 23: Filling of the quarry in progress in 2000. Photo: Self Family Trust.

2.4 Archaeological Background

2.4.1 Nga Kapua Kohu Ora - Crater Hill

The first recorded site on the Self Property R11/141 was recorded by Bob Brown in 1961 and described at the time as a hill pa with the '…outer area intact except where there is recent quarrying by the Papatoetoe Borough Council which has destroyed less than 5% of the site' (NZAA R11/141). However survey plan SO 5210 (refer Figure 16) shows that quarrying had begun at the site as early as 1889, if not earlier, and by the time of Brown's recording this landform feature had actually been completely destroyed. This is corroborated by historic aerial imagery from 1939 (Figure 24), 1959 (Figure 25) and an oblique aerial photograph ca. 1950s (Figure 26) that show the cone in various states of being quarried away.

Sullivan (1975:7-8), whilst noting that the cone top was being quarried in the 1939 aerial photograph, as well as the small scale of the photography, partial scrub cover and impossibility of ground checks that made it difficult to identify structures on the then extant structure, states that the cone was '…almost certainly [a] terraced cone', basing this on cones of similar scale with terraced summits at Waitomokia (Mt Gabriel). Bulmer (1994:50) also discuses this ambiguity of Brown's site record noting '…it is referred to as a paa in the site records, but no archaeological features were recorded prior to its destruction and aerial photos consulted so far do not show any terracing or other archaeological features.'

In all likelihood Brown's site record description of quarrying that has 'destroyed less than 5% of the site', probably references to the area delineated by the crater rim and the archaeological features contained on and within this area, rather than just the scoria cone.

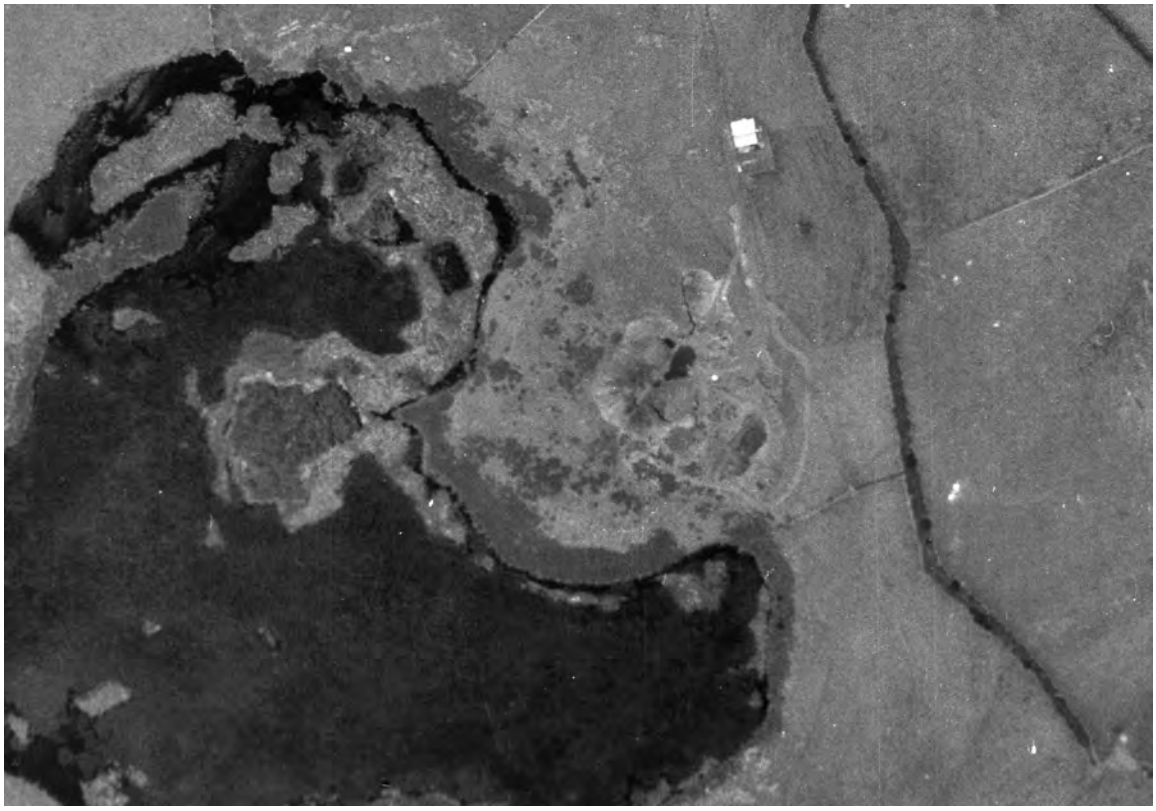

Figure 24: Crater Hill, 1939 (Source: Opus 2015).

Figure 25: Crater Hill, 1959 (Source: Auckland City CHI 2015)

Figure 26: Crater Hill quarry ca. 1958. Source Auckland University Digitool 2015.

It wasn't until the 1970s that a comprehensive survey of the Crater Hill area was undertaken when Agnes Sullivan surveyed the Self Farm and Waokauri Creek margins. An earlier work by Sullivan (Sullivan 1973) focused on the archaeology of Lower Pukaki Creek and included an investigation of the vegetation and geology and cultural history of the area. Although this approach was not followed in her 1975 Crater Hill study, the earlier work does provide a general overview of the history and environment of the area.

Site surveys at Crater Hill were undertaken by Sullivan in 1973 and Sullivan and G. Millyun in 1974 and included the mapping of surface features and exposed sections of archaeological features, most of which were visible in the crater area and in eroding creek banks. This resulted in the recording of 80[7] new sites including middens, terraces, pits, rock shelters, lava caves, burial areas, platforms, open habitation areas and possible garden areas (Table 1). The recorded sites can be separated into two main groupings: the crater rim and interior, and sites along the creek margins (Figure 27). Sullivan originally recorded these sites as a subset of N42/136 (R11/145) but they were subsequently rerecorded as individual sites with new NZAA site numbers following the publication of her report and incorporation of the records in to the NZAA site-recording scheme (Sullivan 1975). Sue Bulmer undertook the NZAA reclassification.

Figure 27: Distribution of sites recorded by Sullivan (1975). Note the numbering system shown here is her original numbering system.

Campbell et al. (2013:46) note that a feature of Sullivan's recording methodology was to record components of what are essentially parts of a single large site as

[7] There appears to be some confusion as to how many sites Sullivan recorded at Crater Hill. Foster et al. (1985:3) report that 77 sites were recorded, while Campbell et al. (2013:46) state 75 sites. However, eighty NZAA site record forms exist for the Sullivan sites - three sites (Sullivan's number 38, 66 and 70) each have two site record forms each as these three sites were separated into A and B areas.

separate entities with arbitrary boundaries. Thus Sullivan grouped features together and delineated them as separate (but contiguous) sites with arbitrary boundaries even though these could have been grouped together and classified as a single continuous site, and as a result the number of recorded sites is higher than possibly a true representation of the actual site density.

Sullivan used aerial photographs to assist her site mapping. The extent and detail of this mapping is shown overlaid on a 2012 aerial photograph and shows a high level of accuracy given the recording methodology and equipment available at the time (Figures 28-36).

Table 1: Archaeological site types recorded by Sullivan (1975).

Sullivan's Site Type	Freq.	NZAA Site Number (all R11)
Midden	32	591, 592, 593, 594, 595, 596, 597, 598, 599, 605, 606, 610, 611, 613, 614, 615, 616, 617, 623, 624, 625, 960, 635, 636, 641, 642, 643, 644, 646, 647, 649, 650
Midden on point	7	600, 601, 602, 603, 604, 608, 619
Fire pit	1	607
Midden on terrace	4	609, 620, 621,629
Midden, terraces, on point	2	612, 618
Old Soil Site	2	622, 626
Midden on scoria faced platforms	1	627
Middens, scoria faced platforms, pits; on lava point	1	628
Rock shelter; midden	3	630, 631, 638
Pit group; midden	1	632
Midden; lava cave	3	633, 645, 648
Midden; pits; rock shelter	1	634
Burial area	1	637
Midden; platforms	2	639, 640
Open habitation (pits, terraces, midden)	1	651
Pits, terraces, midden	1	652
Probable pits; terraces; midden	1	653
Midden (Prob. Former pits, terraces)	1	654
Probable former open habitation	1	655 ,656
Platforms	1	657
Possible garden areas	12	658, 659, 660, 661, 662, 663, 664, 665, 666, 667, 668, 674
Rock shelter	1	
	80	

Figure 28: Upper western arm of the Waokauri Creek, western perimeter sites (Figure 7, Sullivan 1995)

Figure 29: Western arm of the Waokauri Creek, south-western perimeter sites (Figure 6, Sullivan 1995)

Figure 30: R11/604 (N42/636) (Figure 8, Sullivan 1995).

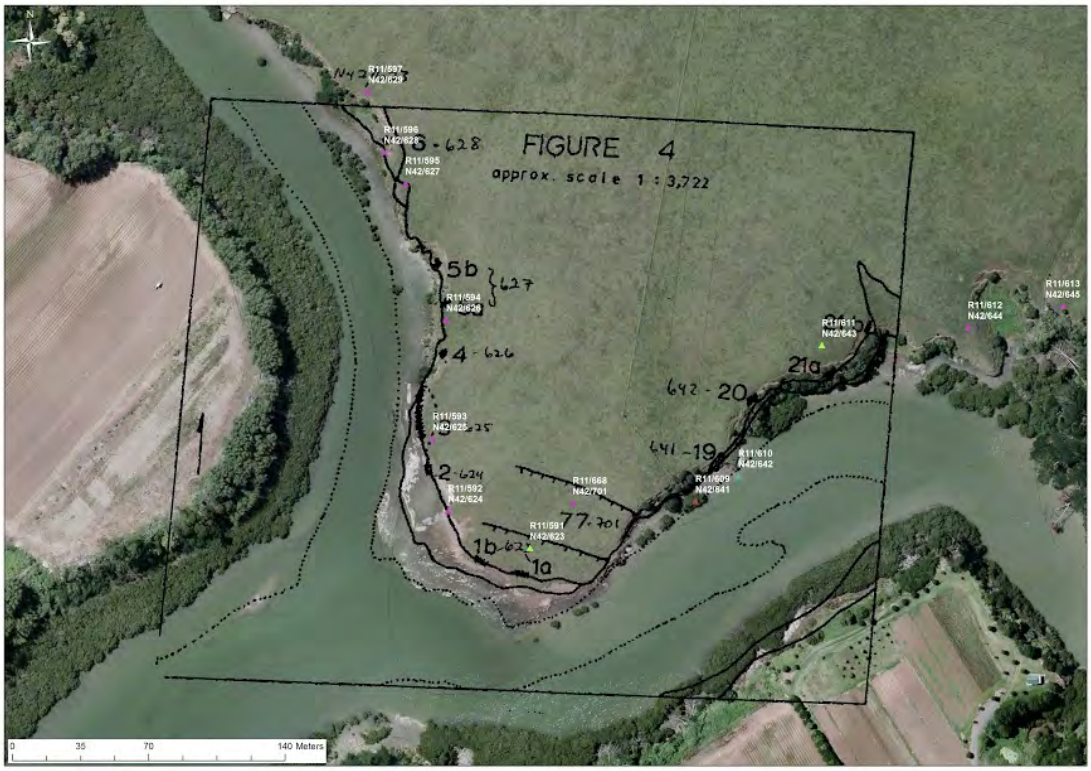

Figure 31: Waokauri Creek junction, southern perimeter sites (Figure 4, Sullivan 1995).

Figure 32: Waokauri Creek, southern perimeter sites (Figure 9, Sullivan 1995).

Figure 33: Waokauri Creek, south-eastern perimeter sites (Figure 10, Sullivan 1995).

Figure 34: Northern crater rim sites (Figure 13, Sullivan 1995).

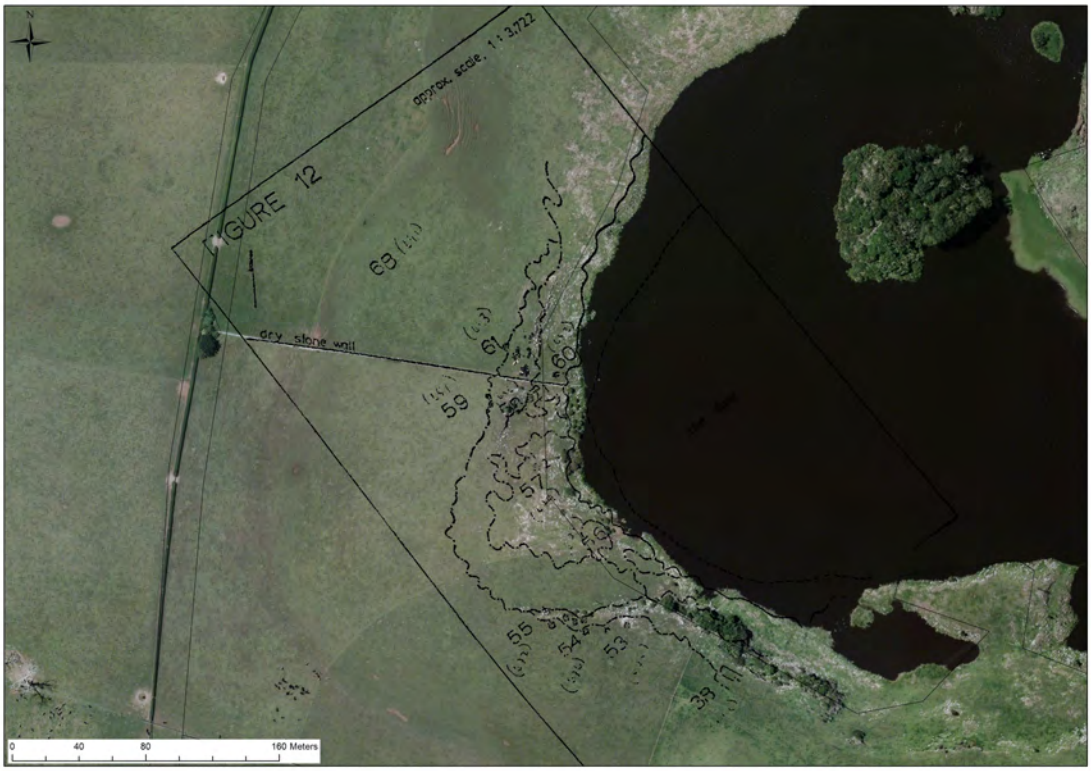

Figure 35: Western crater rim sites (Figure 12, Sullivan 1995).

Figure 36: Southern crater rim sites (Figure 14, Sullivan 1995).

In 1981 an area of the Self Farm was archaeologically investigated when a survey for the Marsden Point to Wiri oil products pipeline was undertaken on an easement granted across the southern slope of the farm. Two previously recorded sites, R11/609 (N42/641) and R11/602 (N42/634), were identified as being substantially affected by the pipeline construction (Crammond and Nevin 1981). Recommendations were made for archaeological mitigation to allow investigation of these sites prior to construction of the pipeline, but despite an authority being issued for these works, the pipeline construction proceeded before the archaeological investigation had commenced (Taylor 1983:1). Subsequently in 1982 an investigation was undertaken of the two sites and the area between them, which revealed a number of archaeological features (Taylor 1983).

Site R11/602 (Figure 37), located on the western arm of the Waokauri Creek, was originally recorded by Sullivan as a slumped midden deposit exposed around the bank edge on a small creek promontory, being a broad flat protrusion 42 meters across and 21 meters wide. No surface features were recorded on the promontory above the midden exposure (Sullivan 1975:13-14). The excavation however revealed a complex array of pits and fire features, which extended inland beyond a terrace, which was artificially built up above the stream. In total 14 pits were identified with 7 excavated (Figure 38) and the other 7 identified in the baulk of narrow trenches dug to investigate the extent of the site (Taylor 1983:1).

The results, Taylor concluded, provided considerable evidence of prehistoric occupation, and the site (which he noted was located on an important strategic route for trade and communication) with its evidence of food storage, habitation terraces, and abundant evidence of cooking and food preparation, indicated sustained and repeated occupation. Taylor finished by suggesting that it is highly probable that adjacent stream-bank sites would also conceal similarly complex occupation evidence (Taylor 1983:14).

Figure 37: View looking southwest from R11/603 to R11/602 (shaded), the site of Taylor's excavation.

Figure 38: Features excavated at R11/602 (Unnumbered figure, Taylor 1982:9) overlaid on a 2012 aerial photograph.

The excavation of R11/609 (N42/641), located on the eastern arm of the Waokauri creek, was less informative due to damage inflicted on the site during trenching and earthworks for the pipeline. Sullivan (1975:17) described this site as a 'midden on a creek side terrace, being a small midden exposure below a small artificial terrace', whereas Crammond and Nevin (1981:26) described it as a 'terraced house site'. Taylor noted the only archaeological feature that was visible on the ground or in the pipeline cutting was a small exposure of blackened soil with burnt stones, which he interpreted as probably being the remains of a hangi (Taylor 1983:6). Taylor did not observe Sullivan's earlier recorded features as the site was mostly destroyed by the time of his investigation.

Taylor (1983:7) also investigated the land between the two sites noting that '…no evidence of garden boundaries, drain systems, prehistoric soils or any other archaeological remains were detected in the pipeline trench wall or in the easement excavation' between the two sites. The soil profile along the pipeline easement consisted of three of the seven soils types interpreted by Taylor at the two excavated sites: Layer 1 – brown/black top soil and/or pipeline construction fill; Layer 5b – Orange clay/loam (natural); and, Layer 7 – Grey Pleistocene mudstone deposits. Taylor concluded that no prehistoric gardening was observed along the transect between the two sites (Figure 39), noting that features that may have been present are likely to have been eradicated by market gardening and farming (Taylor 1983:14).

Artefacts recovered included 1 adze bevel, 1 small adze/chisel, 2 fishhook points, 52 obsidian flakes, 14 chert pieces, a small sandstone grinder and an anvilstone (Taylor 1983:10). Taylor did not provide any dates from the excavation in his report but Foster (1995:6), citing a personal comment from Bruce McFadgen, reported that radiocarbon estimates date the site as probably being occupied sometime between the late 15th and mid-17th centuries.

Figure 39: Location of pipeline easement and sites R11/602 (N42/634) and R11/609 (N42/641).

A second investigation took place at Crater Hill in November 1984 when a test excavation on an area[8] of the proposed route of the Papatoetoe bypass (SH20 – South-western Motorway) was undertaken to establish whether archaeological deposits remained on the route prior to the motorway construction (Foster et al. 1985). Five areas (A-E) were investigated including possible platforms and terraces, stone mounds, and a terrace where a stone wall terminated (Figures 40-41). Foster et al. interpreted a number of features from the excavation. In Area A, a structure of considerable size, possibly a house, was recorded, based on the diameter and depth of postholes and presence of obsidian and cobbled floor in the same excavation layer. Area B revealed the end of pit with a possible internal drain (Figure 42) with at least two periods of activity represented. A stone mound in Area C was found to relate to horticultural activity and formed part of a garden terrace. Area D revealed two postholes of European origin while Area E showed two periods of construction; the terrace and later a wall whose function (along with similar walls) was interpreted as dividing the inner slopes into strip gardens (ibid). Following the test excavation recommendations were made for a further investigation at the site but this were never undertaken and no artefact analysis or dating was undertaken (Campbell et al. 2013:30).

Figure 40: Looking northwest towards R11/653 (pit/terrace) at top of hill. Show the location of excavation of Foster et al took. Note the stone mounds (light green areas) down the crater slope.

[8] The small parcel of land where this excavation took place was Section 1 and 2 SO 470928, New Zealand Transport Association land.

Figure 41: Location of excavation areas (Figure 5, Foster et al. 2015:14) overlaid on a 2015 aerial photograph.

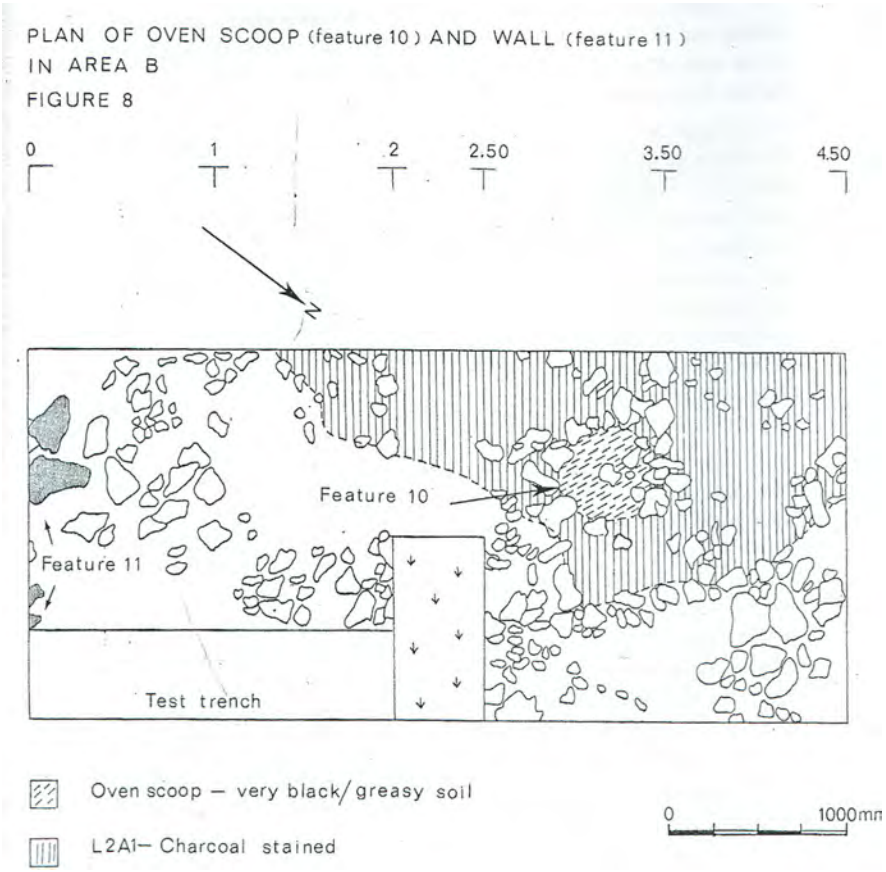

Figure 42: Pit and possible drain features recorded in Area B. Source: Foster et al. 1985:21.

All of the Crater Hill archaeology was revisited in 2013 as part of an archaeological heritage assessment for the Puhinui Master Plan for Auckland Council (Campbell et al. 2013). This was the first time since the excavation by Foster et al. in 1985 that a concerted effort was made to revisit and reassess the Crater Hill sites. During this exercise the investigators checked all the recorded sites, and when they could be relocated, recorded the site locations with a handheld GPS and updated the site descriptions and photographed the sites.

With the exception of the sites previously recorded in the quarry and the motorway corridor, and since destroyed, all of Sullivan's previously recorded sites within the crater and around the rim were relocated and were reported as being in generally good to very good condition (ibid).

On the outer slopes and creek margins Campbell et al. relocated 21 sites but could not relocate 17 sites. Along the western arm of the Waokauri Creek, with the exception of R11/596 (midden), R11/607 (midden/oven) and R11/608 (midden)[9], all of the sites were relocated. Along the eastern arm of the Waokauri Creek 14 sites were not relocated; R11/609, 610, 614, 615, 616, 617, 620, 621, 622, 623, 624, 625, 626 and 960. The majority of these had been recorded along the creek margin where the kiwifruit blocks have been established and in the paddock west of these. Quarrying had destroyed sites R11/141, 655 and 656 and site R11/654 was a small midden located by the Self farmhouse and was not relocated (Figure 43) (Campbell et al. 1993:45).

Campbell et al. (1993:41) also merged the records of 11 sites with the records of related sites to better reflect the '…unbroken nature of the archaeological evidence'[10]. As a result Campbell et al. state that the number of sites within the crater and around the rim dropped from 49 to 39 but they do not provide a list of the merged or final site groupings and the New Zealand Archaeological Association records (Archsite 2015) still show all of the original sites as recorded by Sullivan, so it is not completely clear what sites have been merged together.

Campbell et al. do give an example of this merging of sites using R11/651 as an example, contending that R11/651 is a pit/terrace site that was originally recorded as three separate pit and terrace sites by Sullivan, being R11/651, 652 and 657 (Figure 44). However, the merging of sites is not reflected in all the relevant site record forms. For example, the site record form for R11/651 (erroneously) states that 651 is the southernmost part of a continuous array of pits and terraces along the north-western part of the crater rim and notes R11/652, 657 and 658 as associated sites. However site 658 is recorded as a Maori horticulture site on the inner crater slope. This site was originally recorded as a possible garden area by Sullivan (1875:37) and during the revisit by Campbell et al. this site was described as; '…in long pasture, and all that could be seen was a large area suitable for gardening' (NZAA SRF R11/658). Furthermore, the site record for R11/657 (correctly) states that this site is '…the southern end, and part of, the long pit and terrace complex R11/651. This is further complicated by the site record for R11/652 which describes this site as the '…northernmost part of a continuous array of pits and terraces along the north western part of the crater rim; the continuous array was arbitrarily split into two sites when first recorded' (NZAA SRF R11/652), and makes no mention of R11/657, the actual southern extent, and third of Sullivan's sites that comprise this group of crater

[9] R11/607 and R11/608 are not on the Self Farm. These sites are located on the neighboring property belonging to the Tam's.

[10] Campbell et al (2013:46) discuss the issue of delineating site boundaries from what are often contiguous archaeological features noting that "…there is an on-going and essentially unresolvable debate in New Zealand Archaeology regarding how to differentiate where one site ends and another begins."

rim occupation features. The site record for R11/652 also lists R11/651, 660 and 661 as associated sites but does not mention R11/657. Sites 660 and 661 are recorded as a Maori horticulture sites on the inner slopes of the crater.

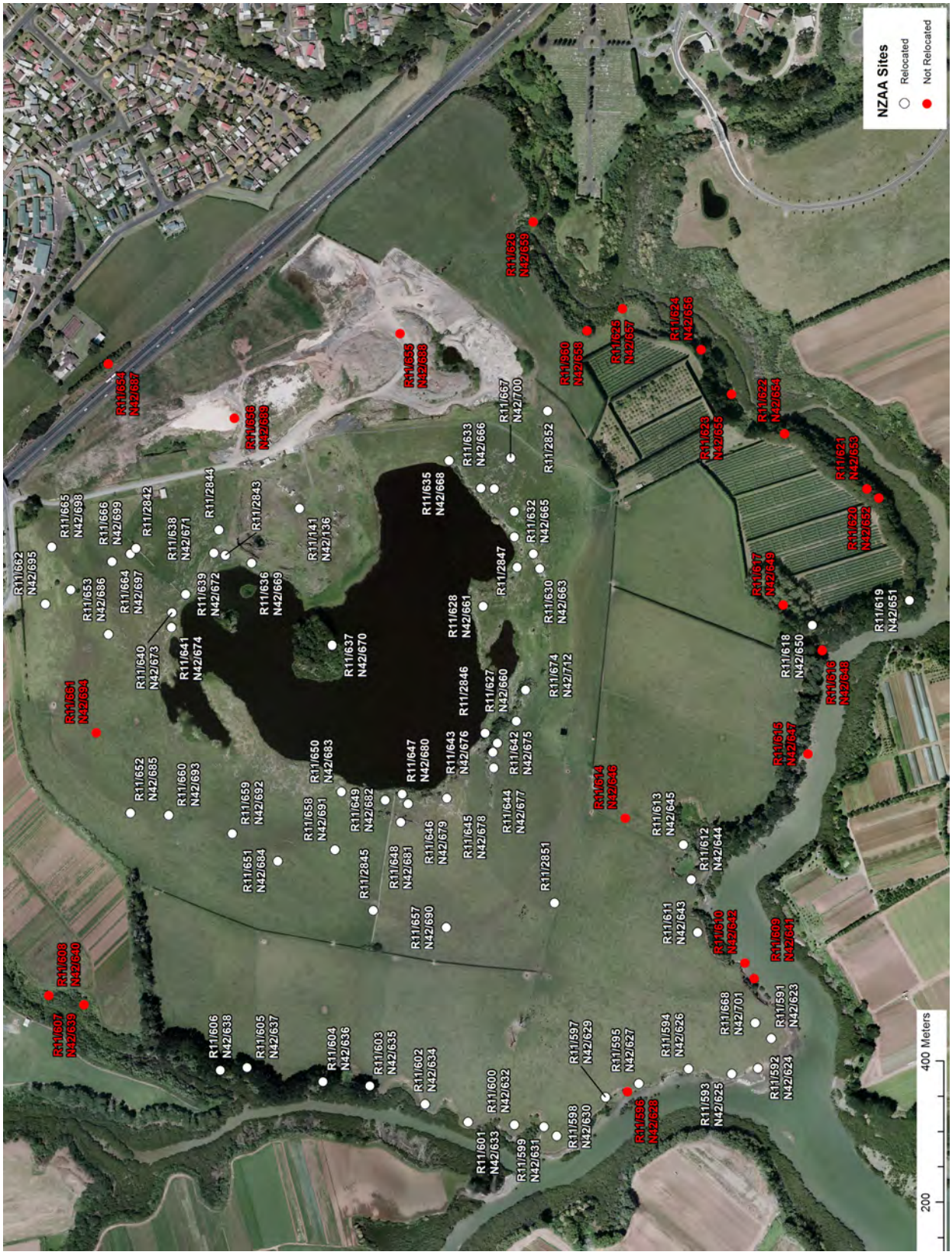

Figure 43: Results of Campbell et al. 2013 Self Farm survey.

Figure 44: Pit/terrace sites recorded along the western crater rim. The outlined features are pit/whare depressions and terraces. Image: Google Earth 2015.

A review of the site records updated by Campbell et al. show the following sites have been described together as singles sites: R11/639 together with 640 and 641; R11/646 with 647 and 649; R11/627 with 642, 643 and 644; R11/632 with 633, 634 and 635; R11/646 with 647 and 649; R11/627 with 627, 642, 643, 644 and 674; and R11/598 with 599.

The investigators also added 8 new sites; 5 dry stone walls of European origin (R11/2842, 2843, 2845, 2846, 2847), 1 site consisting of a series of small cave openings R11/2844), and 2 pit sites (R11/2851 and 2852) (Campbell et al. 1993:42). Following the Campbell et al. surveys a total of 87 archaeological sites are now recorded on the Self Farm. These are shown in Figure 45 and summarised in Table 2.

Campbell et al. (2013) recommended that Crater Hill be considered for scheduling as a cultural landscape of exceptional significance in the Auckland Council Unitary Plan, providing a map of the area to be scheduled. The quarry area is included in their proposed scheduling area (Figure 46). They also suggested the use of viewshafts from Crater Hill to Mangere Mountain and Matukutureia McLaughlins Mountain as another means of protecting the landscape (Figure 47). Pukaki Crater was excluded from this proposed viewshaft because '…there is currently no clear view to Pukaki Lagoon, but his may be because Pukaki is low lying and obscured by trees [and] such a viewshaft would be impractical to protect.' Campbell et al. also note that the viewshaft north towards Mangere Mountain 'covers areas of low lying suburban housing that do not currently obscure it', while south '…the view to Matukutureia McLaughlins Mounatin (sic) runs primarily over agricultural land although there is land zoned Quarry in the draft Unitary Plan on the other side of the Puhinui Creek – presumably this will eventually be rezoned for heavy or light industry.' (Campbell et al. 2013:47-48).

None of the Self Farm archaeological sites are registered as a waahi tapu and none of the burial caves are gazetted as urupa.

Figure 45: Self Farm archaeological sites ca. 2015 classified by site type (Archsite, 2015).

Table 2: Overview of Self Farm archaeological sites, 2015 (Archsite, 2015).

Map Ref.	NZAA	NZAA Site Type	First Recorded	Recorded By	Last Revisited	Brief Description	Accurate Location
R11	141	Pa	1961	B. Brown	CFG Heritage 2013	Pa on volcanic crater destroyed by quarrying. Completely destroyed by 1974.	Yes
R11	591	Midden/oven	1978	A. Sullivan	CFG Heritage 2013	Small exposure of midden eroding from top of bank down into creek. Small pieces of chert, obsidian and adze flakes scattered along base of scarp. Originally described as an open flat, about 80m x 30m stretching across SW tip of outer slope of crater.	Yes
R11	592	Midden/oven	1978	A. Sullivan	CFG Heritage 2013	Midden and flakes eroding from the estuary edge. CFG Heritage 2013 report site is continuous with R11/591 (east) and R11/668 (northeast).	Yes
R11	593	Midden/oven	1978	A. Sullivan	CFG Heritage 2013	Sparse shell midden eroding from the top of the bank in front of a large flat area.	Yes
R11	594	Midden/oven	1978	A. Sullivan	CFG Heritage 2013	Recorded as two patches of midden. At the northern end - 10cm thick lens of mainly cockle 1m long in section, but slumping down the bank. South - a sparse scatter of shell is visible in a ~20m long slumped section of bank.	Yes
R11	595	Midden/oven	1978	A. Sullivan	CFG Heritage 2013	Recorded as two patches of midden. At the northern end - exposure is a 10-15cm thick section of midden. South - a sparse scatter of shell spread over a distance of 5-6m in a section of slumping.	Yes
R11	596	Midden/oven	1978	A. Sullivan	CFG Heritage 2013	Originally described as trace only of cockleshell. Not relocated 2013 - probably eroded away.	No
R11	597	Midden/oven	1978	A. Sullivan	CFG Heritage	2m exposure of cockle shell midden	Yes

Map Ref.	NZAA	NZAA Site Type	First Recorded	Recorded By	Last Revisited	Brief Description	Accurate Location
R11	600	Midden/oven	1978	A. Sullivan	CFG Heritage 2013	Shell midden exposed around north side and edge of promontory.	Yes
R11	601	Midden/oven	1978	A. Sullivan	CFG Heritage 2013	Two areas of cockleshell midden eroded from near top of bank.	Yes
R11	602	Midden/oven	1978	A. Sullivan	CFG Heritage 2013	Midden visible eroding down north face of sloping promontory with in situ lens at top of bank.	Yes
R11	603	Midden/oven	1978	A. Sullivan	CFG Heritage 2013	Cockleshell middens eroding from near the top of scarp.	Yes
R11	604	Midden/oven	1978	A. Sullivan	CFG Heritage 2013	Possible terrace with shell midden eroding down bank (north).	Yes
R11	605	Midden/oven	1978	A. Sullivan	CFG Heritage 2013	Small patch of cockleshell midden that has eroded from the top of the scarp.	Yes
R11	606	Midden/oven	1978	A. Sullivan	CFG Heritage 2013	Small 0.5m long midden lens of cockle eroding from top of the bank.	Yes
R11	607	Midden/oven	1978	A. Sullivan	CFG Heritage 2013	Originally described as a fire pit. Not relocated 2013 - bank very overgrown.	No
R11	608	Midden/oven	1978	A. Sullivan	CFG Heritage 2013	Originally recorded as a midden but not relocated in 2013.	No
R11	609	Pit/terrace	1978	A. Sullivan	CFG Heritage 2013	Originally recorded as a midden/terrace and noted as destroyed by Taylor (1983) during oil pipeline construction. Not relocated 2013.	No
R11	610	Midden/oven	1978	A. Sullivan	CFG Heritage 2013	Originally recorded as midden on creek edge bank. Not relocated 2013. May have been disturbed by pipeline works.	No
R11	611	Midden/oven	1978	A. Sullivan	CFG Heritage 2013	Cockleshell midden eroding from near top of scarp.	Yes

Map Ref.	NZAA	NZAA Site Type	First Recorded	Recorded By	Last Revisited	Brief Description	Accurate Location
R11	612	Midden/oven	1978	A. Sullivan	CFG Heritage 2013	Originally recorded as platforms/middens. Site consists of two clear terraces with a depression in the top terrace and another possible terrace to the northeast. Midden visible all around the bank below the terraces.	Yes
R11	613	Midden/oven	1978	A. Sullivan	CFG Heritage 2013	Cockleshell midden exposed on the west corner of promontory.	Yes
R11	614	Midden/oven	1978	A. Sullivan	CFG Heritage 2013	Originally recorded as a midden but not relocated in 2013.	No
R11	615	Midden/oven	1978	A. Sullivan	CFG Heritage 2013	Originally described as exposure of cockle and rock oyster but not relocated in 2013.	No
R11	616	Midden/oven	1978	A. Sullivan	CFG Heritage 2013	Originally recorded as midden on bank top. Not relocated 2013.	No
R11	617	Midden/oven	1978	A. Sullivan	CFG Heritage 2013	Originally recorded as midden on bank top. Not relocated 2013.	No
R11	618	Pit/terrace	1978	A. Sullivan	CFG Heritage 2013	Originally described as midden and creek side terrace. Only possible terrace recorded in 2013.	Yes
R11	619	Midden/oven	1978	A. Sullivan	CFG Heritage 2013	Originally described as midden on small promontory. No midden located at site in2013.	Yes
R11	620	Pit/terrace	1978	A. Sullivan	CFG Heritage 2013	Originally described as a creek side platform with midden. Not relocated in 2013.	No
R11	621	Pit/terrace	1978	A. Sullivan	CFG Heritage 2013	Originally described as a creek side platform with midden. Not relocated in 2013.	No
R11	622	Maori Horticulture	1978	A. Sullivan	CFG Heritage 2013	Originally described as old soil site. Not relocated in 2013. Bank is now heavily overgrown.	No
R11	623	Midden/oven	1978	A. Sullivan	CFG Heritage 2013	Originally recorded as midden on bank top. Not relocated 2013.	No
R11	624	Midden/oven	1978	A. Sullivan	CFG Heritage 2013	Originally recorded as midden on bank top. Not relocated 2013.	No

Map Ref.	NZAA	NZAA Site Type	First Recorded	Recorded By	Last Revisited	Brief Description	Accurate Location
R11	625	Midden/oven	1978	A. Sullivan	CFG Heritage 2013	Originally recorded as midden on bank top. Not relocated 2013.	No
R11	626	Maori Horticulture	1978	A. Sullivan	CFG Heritage 2013	Originally described as old soil site. Not relocated in 2013. Bank is now heavily overgrown in long grass and scrub.	No
R11	627	Pit/terrace	1978	A. Sullivan	CFG Heritage 2013	Midden and terrace site located along a near vertical rock and boulder scarp	Yes
R11	628	Pit/terrace	1978	A. Sullivan	CFG Heritage 2013	Terraces and pits with a thin scatter of midden	Yes
R11	629	Pit/terrace	1978	A. Sullivan	CFG Heritage 2013	Indistinct terracing with cockleshell midden down scarp.	Yes
R11	630	Cave/rock shelter	1978	A. Sullivan	CFG Heritage 2013	Consists of cockleshell midden amongst crevices of a rock and boulder scarp forming a rock shelter.	Yes
R11	631	Cave/rock shelter	1978	A. Sullivan	CFG Heritage 2013	Consists of cockleshell midden amongst crevices of a rock and boulder scarp forming a rock shelter.	Yes
R11	632	Pit/terrace	1978	A. Sullivan	CFG Heritage 2013	A small group of rectangular pits on flat ground behind a 4m high rock and boulder scarp down to the lake. Small scatter of shell and midden near the top of the scarp.	Yes
R11	633	Burial/cemetery	1978	A. Sullivan	CFG Heritage 2013	Four bubble lava caves along with cockleshell midden scatter on the surface. Koiwi visible inside southernmost cave.	Yes
R11	634	Pit/terrace	1978	A. Sullivan	CFG Heritage 2013	A small group of rectangular pits on flat ground behind a 4m high rock and boulder scarp down to the lake. Small scatter of shell and midden near the top of the scarp.	Yes
R11	635	Midden/oven	1978	A. Sullivan	CFG Heritage 2013	Small scatter of cockle shell midden near the base of the scarp to the lake.	Yes
R11	636	Midden/oven	1978	A. Sullivan	CFG Heritage 2013	Shell fragments in farm track cutting.	Yes
R11	637	Burial/cemetery	1978	A. Sullivan	CFG Heritage 2013	Originally recorded as probable burial area. Islet not accessible in 2013.	Yes

Map Ref.	NZAA	NZAA Site Type	First Recorded	Recorded By	Last Revisited	Brief Description	Accurate Location
R11	638	Cave/rock shelter	1978	A. Sullivan	CFG Heritage 2013	Originally recorded as midden and a possible rock shelter. Midden consisting of cockle, scallop and oyster strewn through rocks. Disturbance from bulldozed tracks and possible quarrying.	Yes
R11	639	Pit/terrace	1978	A. Sullivan	CFG Heritage 2013	Three indistinct terraces above the crater lake.	Yes
R11	640	Pit/terrace	1978	A. Sullivan	CFG Heritage 2013	Midden and two terraces above crater lake.	Yes
R11	641	Midden/oven	1978	A. Sullivan	CFG Heritage 2013	A small amount of midden on a flat outcrop.	Yes
R11	642	Midden/oven	1979	J. MacDonald	CFG Heritage 2013	Originally recorded as midden near lake edge. Extensive shell midden along rock scarp - part of R11/627 (2013).	Yes
R11	643	Midden/oven	1979	J. MacDonald	CFG Heritage 2013	Originally recorded as midden near lake edge. Extensive shell midden along rock scarp - part of R11/627 (2013).	Yes
R11	644	Midden/oven	1979	J. MacDonald	CFG Heritage 2013	Originally recorded as midden near lake edge. Extensive shell midden along rock scarp - part of R11/627 (2013).	Yes
R11	645	Cave/rock shelter	1979	J. MacDonald	CFG Heritage 2013	Originally described as lava cave with midden. Annotated as Cave - Maori Cemetery on SO 5219 (1889). Animal bone and historic rubbish strewn among rocks.	Yes
R11	646	Midden/oven	1979	J. MacDonald	CFG Heritage 2013	Extensive shell midden scattered over a flat area behind and down a scarp.	Yes
R11	647	Midden/oven	1979	J. MacDonald	CFG Heritage 2013	Originally recorded as midden near lake edge. Extensive shell midden along rock scarp - part of R11/646 (2013).	Yes

Map Ref.	NZAA	NZAA Site Type	First Recorded	Recorded By	Last Revisited	Brief Description	Accurate Location
R11	648	Cave/rock shelter	1979	J. MacDonald	CFG Heritage 2013	Originally described as lava cave with midden. Stone rubble around cave entrance and midden throughout.	Yes
R11	649	Midden/oven	1979	J. MacDonald	CFG Heritage 2013	Originally recorded as midden near lake edge. Extensive shell midden along rock scarp - part of R11/646 (2013).	Yes
R11	650	Midden/oven	1979	J. MacDonald	CFG Heritage 2013	Extensive shell midden scattered down a scarp throughout the rocks.	Yes
R11	651	Pit/terrace	1979	J. MacDonald	CFG Heritage 2013	Complex of well defined terraces and pits. Shell midden scattered around site.	Yes
R11	652	Pit/terrace	1979	J. MacDonald	CFG Heritage 2013	Complex of well defined terraces and pits. Shell midden scattered around site.	Yes
R11	653	Pit/terrace	1979	J. MacDonald	CFG Heritage 2013	Originally recorded as an open occupation area the site has been levelled after 1939 and a water tank and trig station are now located there. Several pits located on rim edge below high point.	Yes
R11	654	Midden/oven	1979	J. MacDonald	CFG Heritage 2013	Originally recorded as an open occupation area but modified by old farm homestead and buildings and only evidence two small midden exposures on crater rim (1978). Destroyed by quarrying?	no
R11	655	Unclassified	1979	J. MacDonald	CFG Heritage 2013	Destroyed by quarrying and originally interpreted as an open occupation area based on 1939 aerial photograph.	no

Map Ref.	NZAA	NZAA Site Type	First Recorded	Recorded By	Last Revisited	Brief Description	Accurate Location
R11	656	Unclassified	1979	J. MacDonald	CFG Heritage 2013	Destroyed by quarrying and originally interpreted as a possible site for an open occupation area based on 1939 aerial photograph.	no
R11	657	Pit/terrace	1979	J. MacDonald	CFG Heritage 2013	Originally described as two slightly depressed flat areas (1978) but interpreted as part of R11/651 (2013).	Yes
R11	658	Maori Horticulture	1979	J. MacDonald	CFG Heritage 2013	Originally described as a possible garden area based on 1939 aerial photography.	Yes
R11	659	Maori Horticulture	1979	J. MacDonald	CFG Heritage 2013	Originally described as a possible garden area based on 1939 aerial photography.	Yes
R11	660	Maori Horticulture	1979	J. MacDonald	CFG Heritage 2013	Originally described as a possible garden area based on 1939 aerial photography.	Yes
R11	661	Maori Horticulture	1979	J. MacDonald	CFG Heritage 2013	Originally described as a possible garden area based on 1939 aerial photography.	Yes
R11	662	Maori Horticulture	1979	J. MacDonald	CFG Heritage 2013	Originally described as a possible garden area based on 1939 aerial photography. Faint rock mounds described in 2013.	Yes
R11	663	Maori Horticulture	1979	J. MacDonald	CFG Heritage 2013	Originally described as a possible garden area based on 1939 aerial photography. Faint possible rock alignments described in 2013.	Yes
R11	664	Maori Horticulture	1979	J. MacDonald	CFG Heritage 2013	Originally described as a possible garden with terraces, rock alignments and stone facings based on 1939 aerial photography. Not relocated in 2013 but natural rock outcrops noted.	Yes

Map Ref.	NZAA	NZAA Site Type	First Recorded	Recorded By	Last Revisited	Brief Description	Accurate Location
R11	665	Maori Horticulture	1979	J. MacDonald	CFG Heritage 2013	Originally described as an area with scoria walls. Platforms and midden on inner rim. In 2013 several of these features were relocated including a wall alignment running downslope, and several stone mounds.	Yes
R11	666	Maori Horticulture	1979	J. MacDonald	CFG Heritage 2013	Originally described as a possible garden area based on 1939 aerial photography. Features indistinct but possible masked by long grass in 2013.	Yes
R11	667	Maori Horticulture	1979	J. MacDonald	CFG Heritage 2013	Originally described as possible wall line. Described as natural lava fingers and outcrops, which may have had stones stacked on the ends to clear areas for gardening.	Yes
R11	668	Maori Horticulture	1979	J. MacDonald	CFG Heritage 2013	Originally described as a possible garden area with cross slope scarps interpreted from 1939 and 1973 aerial photography. Scarps not visible in 201.	Yes
R11	674	Cave/rock shelter	1978	A. Sullivan	CFG Heritage 2013	Rock shelter described in 1978 not relocated in 2013.	Yes
R11	960	Midden/oven	1978	A. Sullivan	CFG Heritage 2013	Originally described as a 1m exposure of cockle and pipi midden but not relocated in 2013.	No
R11	2842	Agricultural /pastoral	2013	J. Harris	CFG Heritage 2013	European dry stone wall running on a northeast/southwest alignment.	Yes
R11	2843	Agricultural /pastoral	2013	J. Harris	CFG Heritage 2013	Section of dry stone wall.	Yes
R11	2844	Cave/rock shelter	2013	J. Harris	CFG Heritage 2013	Cave with visible historic artefacts	Yes
R11	2845	Agricultural /pastoral	2013	J. Harris	CFG Heritage 2013	Dry stone wall	Yes
R11	2846	Agricultural /pastoral	2013	J. Harris	CFG Heritage 2013	Dry stone wall	Yes

Map Ref.	NZAA	NZAA Site Type	First Recorded	Recorded By	Last Revisited	Brief Description	Accurate Location
R11	2847	Agricultural /pastoral	2013	J. Harris	CFG Heritage 2013	Dry stone wall	Yes
R11	2851	Pit/terrace	2013	J. Harris	CFG Heritage 2013	Four rectangular pits on the crater rim	Yes
R11	2852	Pit/terrace	2013	J. Harris	CFG Heritage 2013	Three rectangular pits on the crater rim	Yes

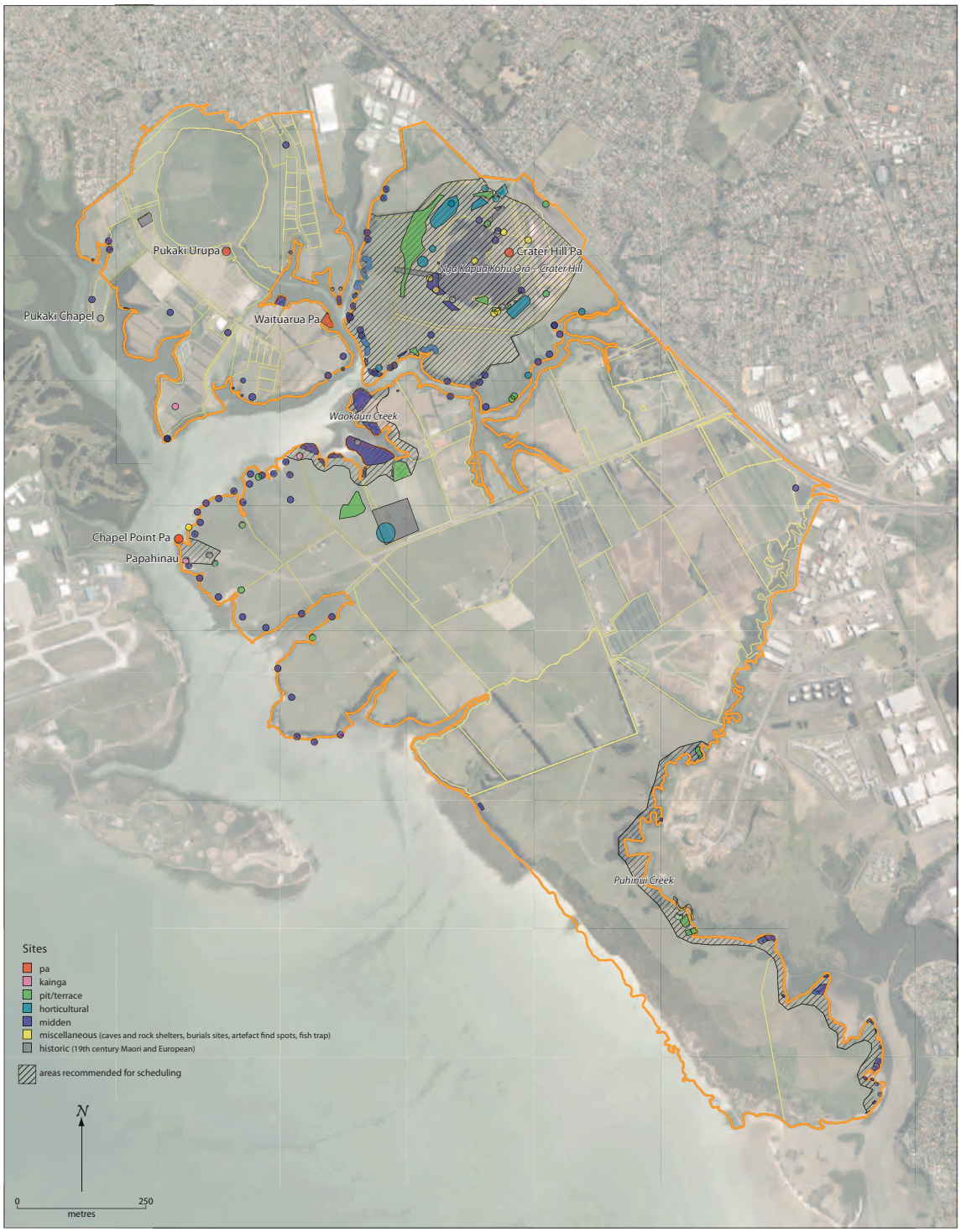

Figure 46: The area recommended for scheduling (hatched) by Campbell et al. 2013. Source: Campbell et al 2013:73.

Figure 47: Viewshafts proposed by Campbell et al. from Crater Hill tuff ring to Mangere Mountain and Matukutureia McLaughlins Mountain. Source Campbell et al. 2013:48,

2.4.2 Archaeological Sites Proximate to the Self Farm

The previously mentioned excavations by Taylor (1982) and Foster et al (1985) are the only archaeological investigations to have taken place on the Self Farm although a full report is yet to be published for the excavation undertaken by Taylor in 1982. Russell Foster undertook no further investigation of the proposed South-western Motorway route despite recommendations and an authority from the Historic Places Trust to do so.

In general, the majority of the archaeological sites recorded proximate to the Self Farm are located around the margins of the Pukaki, Waokauri and Tautauroa Creeks and their tributaries (Figure 48). Agnes Sullivan recorded 62 sites in the lower Pukaki Creek area as part of her 1973 Site Survey of Lower Pukaki Creek study (Figure 49) while most of the sites in the upper Pukaki Creek area have been added as industrial and residential development extends into this area; identified during archaeological surveys, monitoring and accidental discoveries. The sites identified around the creek margins comprise mainly midden deposits but there are also pits, terraces, rock shelters, lava/burial caves, urupa and pa in the vicinity.

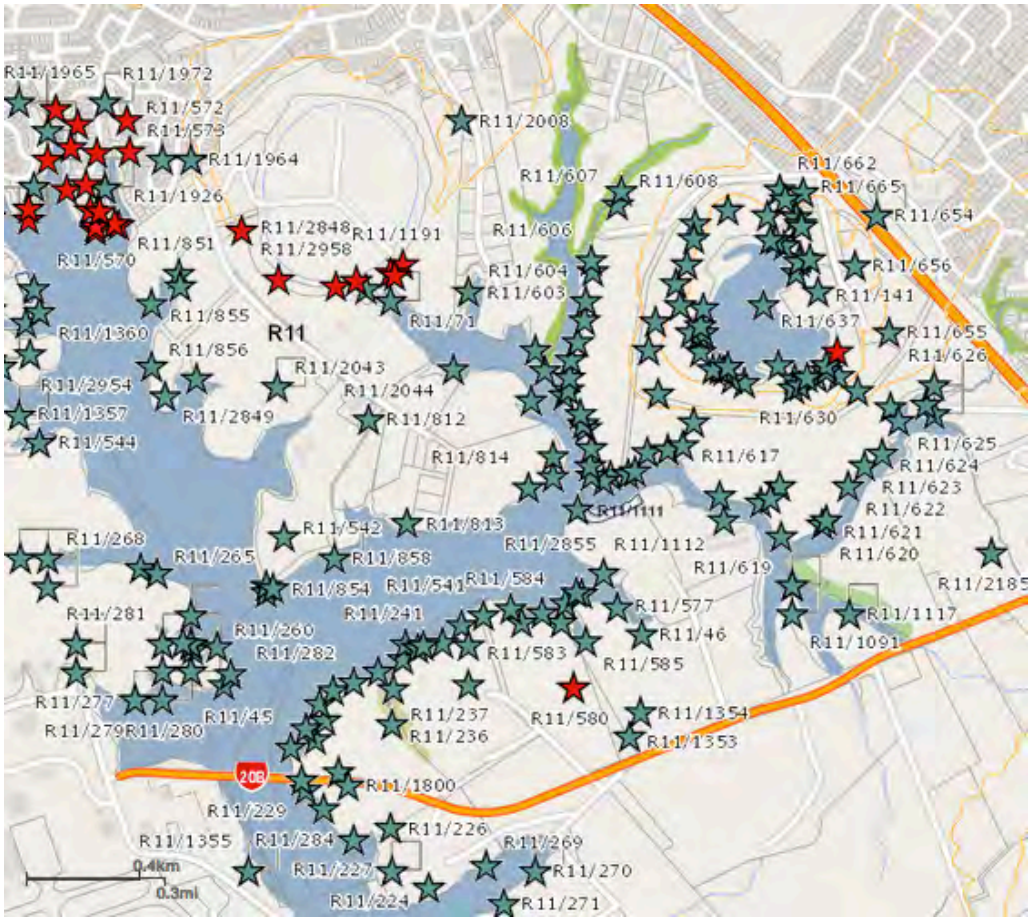

Figure 48: Archaeological site proximate to the Self Farm. Source NZAA Archsite 2015.

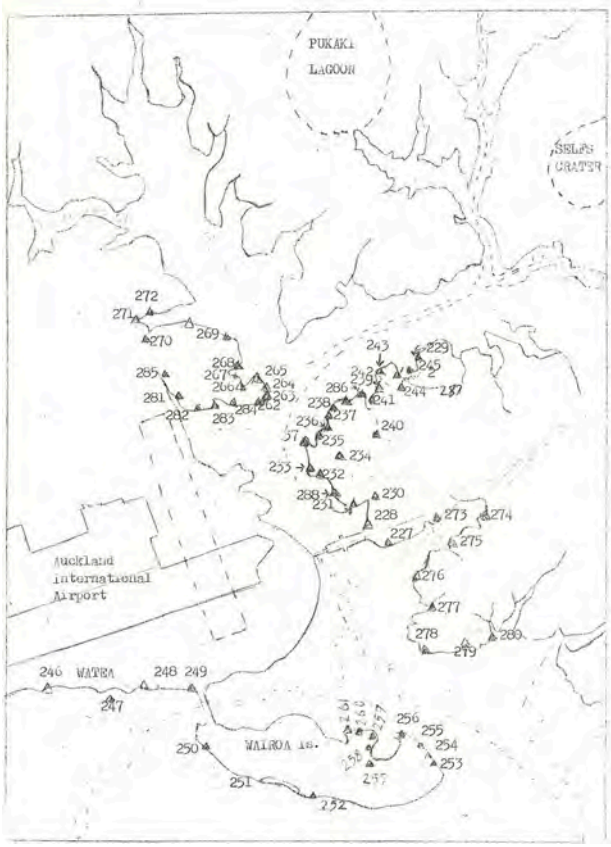

Figure 49: Lower Pukaki Creek Sites recorded by Sullivan (1973). Source Sullivan 1973:126.

Adjacent Pa Sites
To the west of the Crater Hill, and on the headland overlooking the outlet to Pukaki Crater is site R11/548, the location of a Pre-European pa that has been in use since at least the mid-19th century to the present as an urupa. The site is annotated on plan SO 235, surveyed in 1866, as 'Burial Ground', and on plan SO 11370, surveyed in 1898, as 'Wahi Tapu, Burial Ground'. The urupa was in use prior to the land wars of the 1860s and is the present Pukaki Urupa (Campbell et al. 2013).

R11/2041 (Waituarua Pa) on the south bank of the old Pukaki Lagoon creek (shown on plan SO 15069) rests on a small promontory cut by a ditch and bank. Covered in dense vegetation it is surrounded by well-established market gardens. The original NZAA site record form submitted by Barry Baquié in 1999 describes the pa as measuring c.50m long x c.23m wide with a 2m wide transverse ditch and internal bank. Midden deposits consisting of whole and crushed cockle (*Austrovenus stutchburyi*) and pipi (*Paphies australis*) occur around the margins of the pa and slump down the sides. According to Baquié, concentrated midden deposits were also visible under the leaf litter in several places across the surface of the pa, but owing to the dense nature of the vegetation over the whole site, it was impossible at the time of initial survey to gauge accurate descriptions and measurements. There were no pits recorded, and the occasional piece of historical material (black bottle base) was observed. Jaden Harris and Greg Gedson carried out a further site inspection in 2013 as part of the Puhinui Master Plan surveys. The general condition of the site during the visit was found to be good with little change over the past decade and was assessed by the authors as having moderately high significance in terms of its values (Campbell et al. 2013).

Further up the eastern arm of the Waokauri Creek and at its terminating end are the remains of a small headland pa listed on the original site record form as being named 'Papatoetoe' (R11/59). Notes on the NZAA site record form by Agnes Sullivan in 1974 describe a transverse ditch and bank at the narrowest point of the headland and also describe a small, terraced platform and midden exposures including cockle (*Austrovenus stutchburyi*), periwinkle (*Littorina littorea*), scallop (*Pecten novaezealandiae*) and obsidian. Sullivan also makes mention of an associated burial cave (R11/140 - now destroyed) that was nearby and to the south of the pa. Jaden Harris and Greg Gedson revisited Papatoetoe Pa in 2013 and their notes list the site as being no longer visible (NZAA R11/59).

2.4.3 Archaeological Investigations in the Wider Mangere area

Previous summaries by Sullivan (1973), Foster et al. (1985), Foster and Sewell (1995) and Campbell et al. (2013) have provided progressive syntheses of the archaeological investigations undertaken in the Mangere area since the first scientific studies were initiated in the mid twentieth century. The Department of Conservation Science and Technical series of online reference material relating to previous research conducted on the stonefields in the Mangere region was also a starting point for much of the background information in this section of the report (http://www.doc.govt.nz/documents/science-and-technical/S&R63a.pdf).

A condensed précis of these historic archaeological investigations is compartmentalised into geographical volcanic zones and is included below. The locations of the sites mentioned in the following discussion are shown in Figure 50.

Mangere Mountain

Mangere Mountain is one of the four largest cone pa on the Tamaki Isthmus, and is also the cone pa in the best general state of preservation in the area, with only serious damage to the site having been caused by the formation of the road to the summit and construction of the (now removed) reservoir on the summit. The pa has three divisions; the southern section of the rim, and the northwest-northern section, both of which are defended by ditches and banks; and the third, a small crater to the northeast. The site is extensively terraced down to the base on the north and western sides, and on the upper slopes to the south. No detailed archaeological excavations have taken place at this site although the removal of the reservoir was monitored. Student mapping projects were carried out in 1984 and 1987 by the Department of Anthropology, University of Auckland, and R. Cassels and C. Phillips conducted mapping of the small northeastern crater in 1978, The complete site was mapped for the Auckland Regional Council by Russell Gibb and Daniel McCurdy from Geometria using aerial LIDAR and terrestrial survey in 2007.

Ambury Regional Park

Ambury Regional Park, a publically owned operational farm located to the east and at the base of Mangere Mountain is regionally significant for its recorded undefended settlements, defended sites and horticultural areas. The large majority of the archaeology in the park was first recorded in 1981 (Bulmer 1981), with stone features and concentrations of midden constituting the bulk of the sites. Like other stonefields sites in the area, stone mounds and stone-walled fields dominated the landscape, but caves and four pit and terrace features were also recorded. Sites R11/1123 and R11/1129 were excavated in 1982 (Lilburn 1982) and further detailed mapping of the garden areas was undertaken by Rickard et al. in 1983. Also in the same year excavations were undertaken at R11/736 which revealed that stone features previously considered to be domestic dwellings were in fact natural, and several of the recorded middens were actually modern. Pre-European middens beneath the surface were excavated, one of which was associated with a lithics working floor containing 760 flakes of obsidian. The midden itself was comprised almost entirely of cockle with some oyster and a few other mollusc and gastropod species. There were no fauna noted. Occupation at the site was suggested to be short term (Brassey and Adds 1983).

Puketutu (Weeks Island)

The large basaltic island of Puketutu has a central scoria cone that once had multiple peaks and craters. Extensive walled field systems and a large number of features in the fields were previously recorded, but historic quarrying for construction of the Auckland Airport, and farm development, destroyed many of these. With the decision by the regional government to locate Auckland's sewerage and wastewater treatment plant at Mangere in the 1950s, the coastal strip fronting the Otuataua stonefields was taken for public works and machinery was brought in to quarry scoria rock and build the pond retaining walls from the mainland across to the shores of Puketutu Island. All bore and spring water access was stopped because of the possible contamination from wastewater treatment and the coastal dry-stone boundary walls were deconstructed and used as an easy source of scoria.

Recently, successful negotiations between Waikato-Tainui, local iwi, Watercare Services Limited and the Kelliher Charitable Trust have resulted in an agreement to eventually develop Puketutu Island as a public open space. The proposal, which has approval from the Environment Court, will see the quarry area of the island rehabilitated with clean fill and treated biosolids from the adjacent Mangere Wastewater Treatment Plant to create a new regional park

(https://www.watercare.co.nz/about-watercare/projects/puketutu-island/Pages/default.aspx).

Maungataketake (Ellett's Mountain)
Two major excavations were carried out on the western and southern sides of R11/31 - Maungataketake (Ellett's Mountain) in the early 1970s. This work was conducted in anticipation of quarrying activity on the pa site, but a final report was never issued. Preliminary documents (McKinlay 1974; 1975) suggest that there were at least two phases of occupation on the site, and a series of radiocarbon dates were returned with some early results. Bulmer conducted a field survey of the eastern section of the mountain in 1981.

Otuataua Stonefields Historic Reserve
Archaeological sites across the Otuataua Stonefields Historic Reserve (OSHR) are recognised as one of the most complex and best preserved stonefield landscapes in the Manukau region. These were first recorded in the 1950s as part of a Tamaki Isthmus-wide geography Master of Arts thesis study undertaken by Bob Brown. The first sites entered into the NZAA SRF in the early 1960s were the two large and obvious volcanic cone pa of Puketapapa (Pukeiti – site R11/29) and Otuataua (R11/30); unlike other Isthmus pa, these were protected by terraced earthworks rather than ditch and bank earthworks. Most of the early detailed recording was subsequently completed by Alan Taylor who lived locally and worked closely with the residents of the Makaurau Marae from the nearby Ihumatao village on the banks of the Oruarangi Creek. Up until 2012 Otuataua had been well mapped but no excavations had taken place. Visible features included stone rows and mounds, stonelined pits, house outlines, terraces and pits.

Over the course of two field seasons, which took place during the latter half of 2012 (August/September and November/December) Geometria Ltd (final report forthcoming), on behalf of the Auckland Council (formerly Manukau City Council), carried out archaeological mitigation investigations in an area of the OSHR designated for the construction of a proposed visitor centre. Existing sites R11/73, R11/1300 and R11/1395 were recorded on the Area 1 (intended Visitor Centre) footprint and immediate surrounds. Of a 1230m^2 area demarcated for the visitor centre works, approximately 7.7% (94.6m^2) of this site was excavated. The earliest date obtained was 1494-1691 cal AD with wood charcoal evidence indicating that the region had already undergone widespread deforestation due to anthropogenic burning (which occurred predominantly in the 13th and 14th centuries, throughout the country). No evidence of European-introduced flora phytoliths was present in the earliest layers, suggesting that the initial occupation event occurred prior to widespread European settlement in the region.

Although the lithic evidence from the site was limited, analysis suggested that during the earliest period of occupation Mayor Island obsidian was sourced, either through trade, direct access or re-use of earlier stone tools. However, this access was likely restricted, as evidenced by the presence of an exhausted obsidian core, pointing to a relative poverty of quality lithics beyond the locally sourced chert. A single type 2B adze, sourced from Tahanga basalt in the Coromandel further points to this scarcity through its extensive re-use and re-working. From 1250-1500 obsidian, along with other lithic material, was widely and directly available throughout New Zealand and is found in great frequency in archaeological sites through the county, but it has been suggested that after 1500 access to obsidian became more tightly restricted due to inter-tribal warfare and the development of the pa Maori (Seelenfreund and Bollong, 1989).

Auckland Airport Northern Runway Development
In 1983 Russell Foster and Dilys Johns undertook a survey of Stage 3 of the proposed future development area for the Auckland International Airport revisiting four previously recorded sites and recording five additional sites (Foster and Johns 1983). Foster also recorded a number of sites at the end of Peninsula Road in 1997.

Over a period of two field seasons, from 4th March – 2nd April 2008 and 28th September – 9th February 2009, CFG Heritage undertook excavations at site R11/859 located at the western end of the Auckland Airport Northern Runway Development (NRD) in advance of development on the site. During preliminary earthworks human remains were unearthed by heavy machinery and further excavation revealed several bodies of Maori origin interred on the site. The site was compartmentalised into several working areas (A-G) with excavation during the first season concentrated on establishing the nature and extent of the burials, and the second field season devoted to completing unfinished areas and disinterring the previously discovered burials to preapre the site for development. Subsurface discoveries in two phases included: pits (rectangular and specifically Rua Kopiha), post/stakeholes, drains, earth ovens, house floors and burial features which were distributed across the excavated areas (Campbell 2011a and 2011b, Campbell and Harris 2011).

The large majority of the artefactual material in all classes came from Areas A and B due to the 100% clearance strategy, and in total there was a count of 189 formal artefacts, or taonga, recovered from the site. These artefacts, typical of a mid-late period North Island style included: bone two-piece fishhook points, an unusual pounamu fishhook point, bone needles and toggles, a tattoo chisel, flaked obsidian, ground stone adzes, and ear and breast ornaments made from shell and human teeth.

The obsidian from the NRD excavations numbered around 6523 pieces with the large majority sourced from Great Barrier Island and Mayor Island. Material from Northland and various sources on the Coromandel was also present in small quantities. Chert was also present in the lithics assemblage (270 pieces) and most of it was traced to local sources. Adzes were typically manufactured from Tahanga Basalt and Nelson/Marlborough argillite.

Midden analysis conducted on the NRD material found that dog and bird as both a food source and source of raw bone material for tool manufacture was common on the site. Of the bird species, southern black-backed gulls (*Larus dominicanus*), banded rails (*Gallirallus philippensis*) and the New Zealand quail (*Coturnix novaezelandiae*) were the most abundant with the presence of the migratory bartailed godwit confirming a summer occupation. Shellfish was the most common form of food remains across all of the areas excavated with cockle (*Austrovenus stutchburyi*) and catseye (*Turbo smaragdus*) being the most frequently occurring species. There were also lesser amounts of scallop (*Pecten novaezealandiae*) , whelk (*Penion sulcatus)* and oyster (*Saccostrea cucullata*) observed, (Ibid).

By the completion of the excavation the NRD site was found to contain a large number of burials, numbering 88 in total, with scattered human remains in non-burial contexts also recovered. At the time of the report's publication in 2011, the site contained the largest assemblage of koiwi (human remains) to be excavated and analysed in New Zealand, with two areas in particular (A and B) appearing to be demarcated as specific burial zones (urupa).

Radiocarbon dates returned for the NRD site range from 1430-1630 (the earliest date from Phase 1 pit in Area B) with comparable dates returned from Area E (1440-1630), Area F (1440-1650) and Area I (1460-1640). Aggregated dates for Area A (1620-1690)

and for Area B (1650-1870) overlap, but Campbell notes that, '…it is probable that there was an interval between the two occupations, perhaps a generation or two. The archaeology supports this and it seems likely that the occupants of Area B knowingly avoided the burials in Area A.' (Campbell 2011b:153)

More recently Clough and Associates have added sites related to the airport development (NZAA SRFs).

Papahinau
In 1993, Foster and Sewell investigated the Paphinu sites (R11/229 and 1800) on the eastern bank of Pukaki Creek. R11/229 was originally recorded as a midden around the edges of the cliff top and a depression, which was interpreted as a possible structure. Foster and Sewell's 1995 report outlined the excavations at R11/229 and it was reported to be a significant transitional Maori village site with what appeared to be at least three phases of domestic activity: a kainga (village) was first dated to AD1450-1690 with a subsequent occupation from the early twentieth century to 1823, and then a final settlement there from 1835-1863. Features included the footprints of fourteen house floors, some intercut, and numerous postholes. Artefacts ranged from the pre-European (flaked imported lithics, abraders, stone tools, and bone fishhook points) to European objects recovered from several of the houses that were constructed in the late phase; typically these were structures characteried by square postholes (Foster and Sewell 1995).

Pukaki
In 1997 Clough and Associates investigated a series of midden sites at the north end of the Pukaki Peninsula (Clough and Prince 1997) and in 2000 and 2002 investigated a pit/terrace/midden site (R11/2039) at the Manukau Memorial Gardens (Baquié and Clough 2001, Prince and Clough 2002).

Wiri - Matukurua
The pa on Matukutururu (Wiri Mountain - R11/32) was built on a large scoria cone (now largely quarried away), with terracing concentrated on its upper slopes, and with scattered terraces on its lower northern slopes. One part of the site still remains on the northern side, a strip measuring 350 m X 120 m. An area of upper terraces above the remaining strip was surveyed and excavated by Sullivan in 1974 who found that the earliest terraces were the highest, with sloped gardens below. As the settlement grew, terraces were built over the 53 former slope gardens (Sullivan 1975b). Three of the radiocarbon dates (NZ-1887, 1889 and 1909) have dating ranges too large to be helpful, but the two with smaller dating ranges are of interest: NZ-1888 dates the slope garden underneath the terrace to between AD1001 and AD1490, and NZ-1890 dates occupation on the terrace to between AD1404 and AD1672 (Sullivan 1975c). The northern section of the cone was surveyed and mapped by R. Foster in 1988.

Matukutureia (R11/25) (also McLaughlin's Mountain) and Matukutururu (Wiri Mountain) are collectively referred to as Matukurua. Matukutureia has a peak approximately 73 metres above sea level, and was once the site of a pa. The scoria cone was originally crescent-shaped and featured terraces and kumara pits before extensive quarrying from the 1960s onwards reduced it to a pyramid-shaped mound big enough to support the summit water reservoir for Papatoetoe – this tank was removed by Watercare in 2010. A small part of the summit and the eastern side of the cone were not quarried, as well as a large area of lava flow to the south of the cone. Recent work was undertaken in 2014 as part of HNZ Authority 2011/216 related to the construction of the new men's prison on the site (NZAA SRF R11/25). No new archaeological features were identified during monitoring for the prison earthworks.

R11/1187 Wiri Oil Terminal Site
The area proposed for the tank storage terminal for the Whangarei-Wiri products pipeline comprised approximately 30 ha of stonefield sites. These were mapped in detail and surveyed using both ground reconnaissance and aerial photography. A total of 985 anthropogenic features, including stone alignments, mounds, heaps and possible house sites were recorded, and selected features were excavated prior to their destruction. Cramond *et al.* (1982) suggested that the large majority of the stone features were horticultural in function, and that the areas free of stone were possible marae or garden areas. Radiocarbon dates obtained from shell associated with two of the possible stone walled houses (NZ-6818, 6819, and 6830) indicated that they were occupied between the late 1400s and the 1600s (Bulmer 1983).

R11/1188 Wiri Railway Site
The Wiri Railway site was a 16 ha industrial allotment to the east of the Wiri Oil Terminal Site and immediately north of Wiri Mountain. In the 1980s the area was scheduled for destruction by quarrying activity and during initial survey it was found to contain certain forms of stonefield archaeology not found at other associated sites, as well as well-preserved mound gardens. S. Bulmer, D. Veart and R. Foster (1984) mapped the field evidence of nearly 1000 features in detail, and selected features were archaeologically excavated in 1985. Investigations focused on mound gardens and a large settlement site on a flat plateau. Representative mounds in a sink area were excavated and an experimental mound garden built, to be monitored for temperature, moisture, and physical change in order to better understand the functions of stone and earth garden mounds. The plateau settlement contained a variety of features, including a group of buildings, one of which was a very large house. There was also an extensive earth oven cooking area. No radiocarbon dates have been published for the site and it is noted that none were obtained because of an absence of shell or suitable charcoal. According to Foster and Sewell (1995:4) however, the Wiri Railway site had a fifteenth to seventeenth-century occupation.

Puhinui
In 1992, 27 sites were recorded at the southern end of the Puhinui Peninsula by S. Bulmer (1992). Most of the sites observed in the reserve were middens but there were also pits and terraces, a fish trap and a historic period causeway. As a component of a wider survey of the Puhinui Reserve carried out by Bickler et al (2008), the large majority of these sites were subsequently re-recorded – although a number were unable to be relocated. While ostensibly one large archaeological landscape, comprising a number of extensive and complex deposits, Bickler et al. determined that the sites on the headland of the Puhinui Peninsula and along the Puhinui Creek should be considered as single units for management purposes.

R11/25, a site at inland Puhinui on the Matukutureia McLaughlins Mountain stonefield, was the location of several areas of excavation dug in advance of a sewerage pipeline installation adjacent to the Puhinui Creek (Lawlor 1981). On the basis of surface features that were thought to relate to occupation and gardening activity a total of around 1500m^2 was excavated. Features in Area A – along the bank of the Puhinui Creek – included terraces, postholes, stone heaps, alignments, fire cracked rock, earth ovens and the burial of an adult female. Dates obtained indicated that the occupation at Puhinui was established as early as the sixteenth or seventeenth century. Later excavations were carried out by Clough and Turner (1998) and results were similar to those previously recorded – that the site was mainly in use for cultivation.

In 2013, as part of the Master Plan Process, Auckland Council commissioned CFG Heritage to carry out an archaeological assessment of the Puhinui area designed to investigate the known archaeology in the locality and identify potential constraints on future zoning and development. The project took place in two stages: the first of these was a desktop analysis undertaken to compile background information on the archaeological work carried out in the Master Plan Area; and the second stage involved the survey of selected areas within the Master Plan Area. As a result of the survey for the assessment, three archaeological landscapes and two archaeological sites within the Puhinui area were identified as places that should be considered for scheduling in the Auckland Council Unitary Plan. These included:

- The archaeological landscape at Nga Kapua Kohu Ora (Crater Hill)
- Papahinau
- The landscape of middens and pits on the banks of the Puhinui Creek in the Council owned Puhinui Reserve.
- Pukaki Chapel (R11/2849) – recorded from Historic Plans
- Waituarua Pa (R11/2041) – one of the few remaining pa in the Master Plan area.

Figure 50: Location of archaeological investigation sites mentioned in the above discussion

2.4.4 Site Visit

The Self Farm was visited on 19th May by Russell Gibb and landowner John Self, and again on 3rd July by Russell Gibb and Andi Crown from Geometria. With the exception of the quarry and kiwifruit orchards the property is currently all in pasture. At the time of the visits the pasture was short and definition of surface archaeological features was very good. The weather at the time of the visits was fine and sunny. A complete walkover of the site was undertaken with the site relocation results matching that of Campbell et al. (2013:41-45) - shown in Figure 43 on page 42.

Crater Rim and Interior
All the sites located on and within the crater rim were relocated excepting the sites destroyed by the quarry and site R11/674 (Cave/rock shelter). The crater rim sites are in an excellent state of preservation and have suffered little impact from stock or general farming practices (Figures 51-52). Small areas of erosion can been seen around some terraces and scarps, generally as a result of cattle rutting or natural slumping, and several of these have middens exposed in the profile (Figure 53). Historic damage has previously been noted on R11/653 (the highest point of the crater on the north side) when the plateau was levelled for the construction of a reservoir associated with the Dominion Breweries water pumping. This site was originally recorded by Sullivan as an open occupation area interpreted from 1939 aerial photographs and midden was noted below the bulldozed area at the east end (NZAA SRF R11/653). Immediately west of this site is a possible ditch and bank feature Sullivan (1975) thought was of recent origin, while Foster et al. (1985:7-8) noted that its form was similar to known pre-historic Maori ditch and banks. It was not recorded as a site by Campbell et al. or Geometria during the recent surveys and is not evident on the 1939 aerial photograph.

Figure 51: Looking north from R11/657 with R11/2845 (dry stone wall) in the centre of the image and lava outcrop R11/637 (burial site), centre right.

Figure 52: Looking north across R11/651 (pit/terrace) towards R11/652 (centre).

Figure 53: Midden exposed on edge of crater rim at site R11/651. Scale = 50cm.

Spread around the inner crater lake edge are 7 sites recorded as Cave/rock shelter (R11/630, 631, 638, 645, 648, 674 and 2844). Of these R11/630, 631 and 638 are small crevices or rock shelters and are not accessible. R11/645 is noted on SO 307 (1851) as a 'former Maori cemetery' and on SO 5210 (1889) as a 'cave containing human bones' (Figure 54), but is only recorded as a Cave/rock shelter. No human skeletal

remains were visible and the cave was not explored. The cave entrance is strewn with rocks, and animal bone and historic material is visible just within the cave. This cave is also known as Self's Cave.

Cave R11/648 is a large cave that extends approximately 20m to the southwest. The entrance is littered with large scoria blocks and bone is scattered throughout the entrance; sheep and bovine can be seen but the bone present is predominantly geese dumped by Department of Conservation workers following a cull of geese on the lake (Figures 55-56)(J. Self pers. comm. May 2015). The original SRF reported that the present entry hole had been excavated into the bank, possibly during European times. This cave is also known as the Underground Press cave and was reputedly used as a base for clandestine, subversive communist publishing during World War II[11]

Site R11/2844 is a cave opening with historic artefacts and animal bones inside and was recorded by Campbell et al. in 2013. Site R11/674 was not relocated.

Two sites, R11/633 and R11/637, have been recorded as Burial/cemetery. Site 633 was originally recorded by Sullivan as a Midden/cavern but was reclassified by Campbell et al. following the discovery of koiwi during their 2013 surveys. The site consists of four small bubble cave openings (Figure 57), with koiwi noted in the most southerly opening. Site 637 is the small island lava outcrop in the lake where human skeletal remains had been reported in the past (Figure 58).

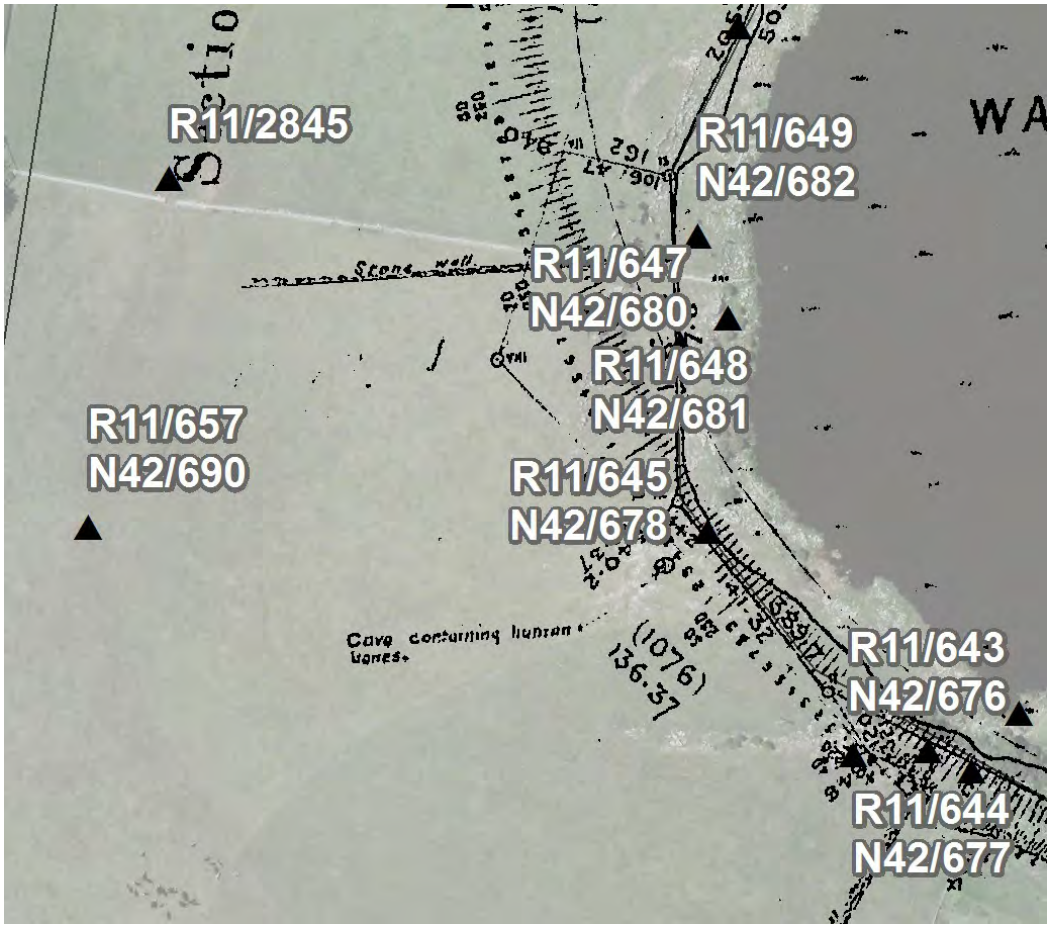

Figure 54: Overlay of plan SO 5210 and corresponding NZAA site numbers.

[11] The newspaper article reporting this event is shown in Appendix 2.

Figure 55: Entrance to R11/648 (Cave/rock shelter), also known as the 'Underground Press Cave'.

Figure 56: View into the entrance of R11/648 showing bone - mainly geese with bovine and sheep.

Figure 57: R11/633 (Burial/cemetery) lava cave entrance. Scale = 50cm.

Figure 58: Looking north towards the island outcrop R11/637.

Outer slopes and creek margins

On the outer crater slopes and along the margins of the Waokauri Creek the condition of the sites is markedly poorer than those of the crater rim and interior. Notably, sites are absent on the outer slopes with only one midden R11/614 - exposed by cattle tracking along a hedge line, and one Maori horticulture site R11/668, located on the outer slopes. Sullivan recorded both these in 1975. R11/614 was not relocated and R11/668 is likely a part of R11/591.

Midden sites dominate (82%) and, with the exception of R11/614, are all located along the bank edge. The relocation of sites along the creek margins matched that of the Campbell et al. 2013 surveys with sites R11/596, 609, 610, 614, 615, 616, 617, 620, 621, 622, 623, 624, 625, 626 and 960 not relocated. The two sites on the Tam property (R11/607 and 608) were excluded from the survey. Damage to the midden sites includes general erosion, stock trampling and slumping (Figures 59-61). This is typical of sites in coastal environs especially where stock has access to waterways. Erosion also helps identify site features; in the eroding creek bank at site R11/593 a posthole feature overlain with midden has been exposed while at another site, R11/596, a small obsidian flake was exposed on an eroding stock track (Figures 62-63).

Figure 59: Midden lens exposed by large section of eroding bank, R11/596.

Figure 60: Midden scatter on scarp of site R11/600. Scale = 50cm.

Figure 61: Eroded midden from R11/600 on the mud flat.

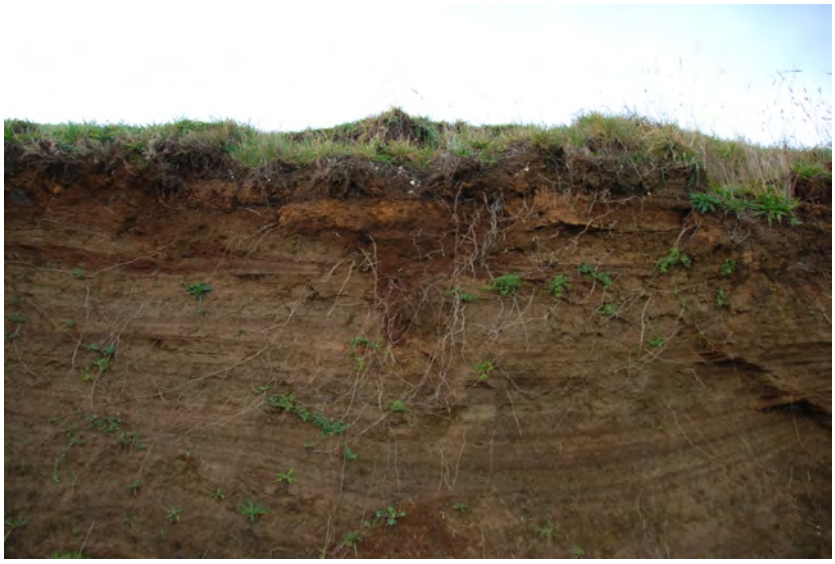

Figure 62: Posthole feature and midden lens exposed in creek bank at site R11/593 (midden/oven).

Figure 63: Obsidian flake exposed on stock track, R11/601. Scale = 50cm.

The midden sites range from small isolated lenses, to larger cultural horizons exposed across the banks of an embayment, or eroded and deflated midden within the foreshore zone. The coastal farmland environment along the western arm of the creek is generally low lying interspersed with small embayments while the eastern arm has steeper banks and low cliffs. With the exception of R11/591 and R11/612, there are no visible surface features associated with the Waokauri midden sites.

Midden site R11/591 is located at the junction of the western and eastern arms and sits on the lowest point of entry from Crater Hill to the Waokauri Creek. On the bank above the mudflats a small midden lens is exposed and faint terracing can be seen on the gentle inland slopes. During the 2013 CFG surveys a culturally rich horizon was recorded as being visible in the entire section along the creek (Campbell et al. 2013:45). At the time of the 2015 visits cattle grazing had destroyed most of this and only the small section of midden was evident (Figures 64-65).

Site R11/612 is recorded as a Midden/oven site but is really a small occupation site consisting of several terraces, a small possible pit depression and several other ephemeral features.

The archaeology east of R11/612 has been significantly affected by modern activity at the site. Sites R11/620–626 and 960 were not relocated during the 2013 or 2015 surveys. This area contains the kiwifruit orchards, coastal windbreaks and riparian planting, and has been modified by bulldozing, tree removal and rubbish dumping. The higher banks in this area are also probably more prone to coastal erosion.

Figure 64: Looking north from creek bed over R11/591 (midden/oven) with midden lens exposed in bank wall and cattle tracking on the mud flat.

Figure 65: View looking south over the faint terraces and site R11/591 to the Waokauri Creek.

Historic Development

The European changes to the crater interior are significant and ongoing. Quarrying covers approximately 173,000 sq. metres of land and the motorway incursion claimed another 31,000 sq. metres. The filling of the quarry is planned to continue for a number of years, slowly reinstating the northwest quarry zone. The main farm sheds established in the 1920s have been removed and replaced with newer sheds on the opposite side of the access road. An old farmhouse was built on the edge of the small explosion crater near the Portage Road quarry entrance. This was located on the NZTA block and removed prior to the motorway construction.

Few European changes are evident on the exterior crater landscape. A bore and pump shed and related reservoir for the farm are located on the southern crater rim and adjacent slope (Figures 66-67). Immediately southwest of this is a small brick lined sump and concrete foundation remnants from the female ablution block of the 1940s and 50s (Figure 68). The market garden accommodation and production buildings from the same period are shown on the 1959 aerial (Figure 69) but were removed prior to the establishment of the kiwifruit orchard (Figure 70-71). The outer slopes of the farm have been repeatedly ploughed since the 1930s and possibly earlier. The main changes to the landscape are shown in Figure 72.

Figure 66: Pump shed on western slope of crater.

Figure 67: Reservoir on western edge of crater rim.

Figure 68: Brick-lined sump feature on south-western outer crater slope.

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Figure 69: Market garden buildings ca. 1959 (lower centre) in the area that later become the kiwifruit orchard. Source: Auckland Council GIS.

Figure 70: Looking southeast at the kiwifruit orchard entrance. The Waokauri Creek is located at the rear of the orchard behind the pine trees.

Figure 71: Extent of the kiwifruit orchards in 2015.

Figure 72: Major European changes to the Self Trust property.

3.0 ARCHAEOLOGICAL AND OTHER VALUES

3.1 Assessment Criteria

The archaeological significance of recorded archaeological sites on Crater Hill have been assessed using two sets of criteria based on Heritage New Zealand guidance for significance assessments of archaeological sites (Table 3). This has been compared to an earlier assessment of the Crater Hill sites undertaken by Campbell et al. 2013:46-47.

The first set of criteria assess the potential of the site to provide a better understanding of New Zealand's past using scientific archaeological methods. These categories are focussed on the intra-site level.

How complete is the site? Are parts of it already damaged or destroyed? A complete, undisturbed site has a high value in this section, a partly destroyed or damaged site has moderate value and a site of which all parts are damaged is of low value.

How diverse are the features to be expected during an archaeological excavation on the site? A site with only one or two known or expected feature types is of low value. A site with some variety in the known or expected features is of moderate value and a site like a defended kainga which can be expected to contain a complete feature set for a given historic/prehistoric period is of high value in this category.

How rare is the site? Rarity can be described in a local, regional and national context. If the site is not rare at all, it has no significance in this category. If the site is rare in a local context only it is of low significance, if the site is rare in a regional context, it has moderate significance and it is of high significance it the site is rare nationwide.

The second set of criteria puts the site into its broader context: inter-site, archaeological landscape and historic/oral traditions.

What is the context of the site within the surrounding archaeological sites? The question here is the part the site plays within the surrounding known archaeological sites. A site, which sits amongst similar surrounding sites without any specific features, is of low value. A site, which occupies a central position within the surrounding sites, is of high value.

What is the context of the site within the landscape? This question is linked to the one above, but focuses onto the position of the site in the landscape. If it is a dominant site with many features still visible it has high value, but if the position in the landscape is ephemeral with little or no features visible it has a low value. This question is also concerned with the amenity value of a site and its potential for on-site education.

What is the context of the site within known historic events or people? This is the question of known cultural association either by tangata whenua or other descendant groups. The closer the site is linked with important historic events or people the higher the significance of the site. This question is also concerned with possible commemorative values of the site.

An overall significance value derives from weighing up the different significance values of each of the six categories. In most cases the significance values across the different categories are similar.

Table 3: Significance assessment table comparing Campbell et al (2013) and Geometria (2015) assessments.

Campbell et al.	Significance Assessment	Geometria	Significance Assessment
Condition	The main Nga Kapua Kohu Ora – Crater Hill pa has been destroyed by quarrying, along with some associated features. Many of the middens on the Waokauri Creek banks are not currently visible – some may have been destroyed by coastal erosion but it seems likely that many will have been covered over by spoil from market gardening and agricultural activities. The remainder of the archaeological features are clearly visible and in very good condition – although cattle trampling has eroded many of them they will remain intact below the ground surface. The Nga Kapua Kohu Ora – Crater Hill landscape has high condition values.	**Integrity and Condition**	Within the crater rim quarrying has destroyed sites on the northeast crater and there is a lack of empirical evidence to confirm the former cone as a pa. The remaining crater rim and interior sites are in excellent condition and have suffered little impact from farming. The creek margin sites have suffered damage from coastal erosion and pastoral and horticultural activity, and most of the sites in the eastern zone have not been relocated. Sites along the creek margin continue to be affected by cattle trampling and accelerated erosion caused by stock damage. Overall, the Crater Hill landscape has high condition values.
Rarity	Intact archaeological landscapes of this complexity and integrity are very rare at a local, Auckland City level. While less rare nationally, such landscapes tend not to be located close to major urban centres. The Nga Kapua Kohu Ora – Crater Hill landscape has exceptional rarity values.	**Rarity and Uniqueness**	Intact, large-scale Maori archaeological sites are found on a number of the Auckland Volcanic Field features but Crater Hill is the best example of extant features located on and within a crater. On a local level, Crater Hill is one of a number of archaeological volcanic landscapes that includes Mangere Mountian, Puketutu, Matukutureia McLaughlins Mountain,Otuataua Stonefields and Pukaki Crater. In addition, quarrying and farming/market gardening on a volcanic landscape, whilst prevalent in the past, are becoming rare activities on the Auckland isthmus. Crater Hill has high rarity values.
Context	The intactness of the Nga Kapua Kohu Ora – Crater Hill landscape provides for very good context. At a wider scale, visual links to Matukutureia McLaughlins Mountain and Mangere Mountain indicate a wider historical and archaeological context. The Nga Kapua Kohu Ora – Crater Hill landscape has exceptional condition (sic) values.	**Archaeological Context**	The remaining features of Crater Hill, and linkages to the Waokauri and Pukaki Creeks, associated portages and wider landscape provides for excellent context. Crater Hill has high context values.
Information	The Nga Kapua Kohu Ora – Crater Hill landscape provides considerable information potential in its current form due to the visibility and accessibility of surface features. Non-invasive techniques such as landscape analysis or	**Information Potential**	The diversity of site types, intactness of features, and intensive utilisation of the volcanic landscape provides for high information potential. Limited archaeological investigation has demonstrated this potential. More in depth research including detailed mapping,

Campbell et al.	Significance Assessment	Geometria	Significance Assessment
	geophysical survey can be used to enhance our understanding of Nga Kapua Kohu Ora – Crater Hill. If archaeological excavation were to be undertaken (none is planned) some very important information regarding the pre-European Maori occupation of South Auckland could be obtained. The Nga Kapua Kohu Ora – Crater Hill landscape has exceptional information values.		GIS analysis, geophysical survey and excavation all have the potential to yield results. That would greatly enhance our understanding of this landscape and the Pukaki and Waokauri Creek environment. Crater Hill has high information values.
Amenity	The Nga Kapua Kohu Ora – Crater Hill landscape is highly visible and easily interpreted to the public. The Nga Kapua Kohu Ora – Crater Hill landscape has exceptional amenity values.	**Landscape Context and Amenity Value**	Crater Hill has close access from the SouthWestern motorway, visual amenity from the air for passengers flying in/out of Auckland and linkages with the creeks. If public access were granted the amenity value would be greatly enhanced. Crater Hill has medium-high landscape context and amenity values.
Cultural	The cultural values of the Nga Kapua Kohu Ora – Crater Hill landscape can only be determined by mana whenua.	**Historical and Community Associations**	The Te Ākitai Waiohua CIA identifies the whole of area B of the Puhinui master plan area as being a site of cultural significance. European values are high with the Self Family having almost a century of association with the site, and it is also associated with Fairburn and Buckland, who were prominent early settlers. Crater Hill has high historical and community associations.

3.2 Other Values

Auckland Council Proposed Auckland Unitary Plan (PAUP)

3.2.1 Private Plan Change 35 and the Puhinui Master Plan

On the 14 March 2013 Auckland Council accepted for public notification a Private Plan Change Request (PPC35) from the Southern Gateway Consortium to rezone 150 hectares of land south of Crater Hill from rural zoning to business zoning.[12] With respect to the shift of the Metropolitan Urban Limits (MUL) to incorporate the PPC35 area, the council deferred its decision to promulgate a change to the Auckland Regional Policy Statement (ARPS) until a master-planning process for the Puhinui study area was undertaken. The aim of this was to ensure an integrated planning approach for the Puhinui area as a whole. Then on the 13 February 2014 the Auckland Development Committee (ADC) approved the preparation of a structure plan for the Puhinui study area to inform the council position on the future land use and development framework for this area. Crater Hill falls within Area B[13] of the Puhinui structure plan area (ADC 2014).

Cultural heritage and geological issues garnered from reports pertaining to Crater Hill, with regards to the Puhinui structure plan, were discussed at a meeting of the ADC on the 16 October 2014 (Auckland Council 2014) and these are summarised below:

- Crater Hill is listed as being of national significance in the New Zealand Geopreservation Inventory. It contains the Self Crater and Underground Press lava caves, which are also of national significance.

- A significant portion of this area is identified as an Outstanding Natural Feature (ONF) in the PAUP Appendix 3.1. However, Area B includes two sub-areas. The first is the most northern block, located immediately east of Tidal Road (Part Allotment 56, Parish of Manurewa) belonging to the Tam's. This area has been excluded from the ONF area (Figure 73, Appendix 3) and the archaeological landscape area identified for Crater Hill[14]. However, it is within the area of cultural sites of significance to Te Ākitai Waiohua.

- The Te Ākitai Waiohua Cultural Heritage Assessment identifies the whole of Area B as being a site of cultural significance.

- The archaeological survey report for the Puhinui structure plan area identifies a significant portion of Crater Hill area as an 'archaeological landscape' of exceptional significance, containing 57[15] individual archaeological sites and there is a high probability of further archaeological sites being present, given the past known occupation.

- While it is acknowledged that Area B is special given the cultural, geological and archaeological values present within this area, it is recommended that

[12] This block of land borders Prices Road to the north and east, the Puhinui Stream to the west, and Puhinui Reserve to the south.

[13] Area B is the land bounded by the western and eastern arms of the Waokauri Creek and SH20 to the north.

[14] It is unclear why this is area is excluded given that it is on the outer slopes of Crater Hill and forms part of the Crater Hill landscape.

[15] This number refers to the site reclassification by Campbell et al 2013, not the sites shown on NZAA Archsite, which still number 80 for Crater Hill.

this area be included within the RUB on the basis that the precinct provisions to be applied to this area will ensure that these important values are not compromised.

- The challenge for the Crater Hill area is to determine the most appropriate land use for this area recognising that the important geological, cultural, archaeological and natural values associated with this area are not compromised. The matter of the detailed precinct plan and the appropriate zoning to be applied to this site is to be further discussed with the key stakeholders and the landowner in the future.

- One of the key issues for consideration for Crater Hill area is how to balance the aspirations of the landowner seeking residential development versus the long term protection of the significant values associated with the Crater for the wider public benefit. As part of the structure plan exercise, Crater Hill was assessed to determine whether any portion of the site could be developed in light of the constraints present on the site. This investigation has identified that the area proposed to be zoned to Quarry under the PAUP should be further investigated to enable some form of residential development (Figure 74). It is noted that while this may be an option for consideration, this is not supported by Te Ākitai Waiohua, or council's own landscape expert Mr Stephen Brown.

- Consultation has been undertaken with Te Ākitai Waiohua to understand their position on the matter of the RUB movement (as it applies to the Puhinui structure plan area), who are strongly opposed to any RUB movement without understanding the impacts of future development on their cultural heritage values.

- Te Ākitai Waiohua has prepared a cultural heritage assessment for the Puhinui peninsula to inform the structure planning process. The report highlights a series of key sites of significance that connect the people of Te Ākitai Waiohua to the Puhinui peninsula. Most of these sites are located either within the structure plan area or in close proximity to it. Sites of significance include: Pukaki Crater; Wiri and McLaughlins Mountains; Crater Hill and Kohuora Park; Wiroa Island; Waokauri, Otaimako, Tautauroa and Puhinui Creeks; headland pa sites; and Pukaki Chapel.

- The ADC noted that the cultural heritage assessment report was useful in informing the strategic direction of the Puhinui structure plan, in particular that the cultural values associated with Crater Hill are recognised and the structure plan will seek to ensure that these values are not compromised. However, it is acknowledged that this is a challenging issue given that the crater is in private ownership, and council has to consider alternatives to the holistic protection of the site. Te Ākitai Waiohua's strong objection to this approach is noted.

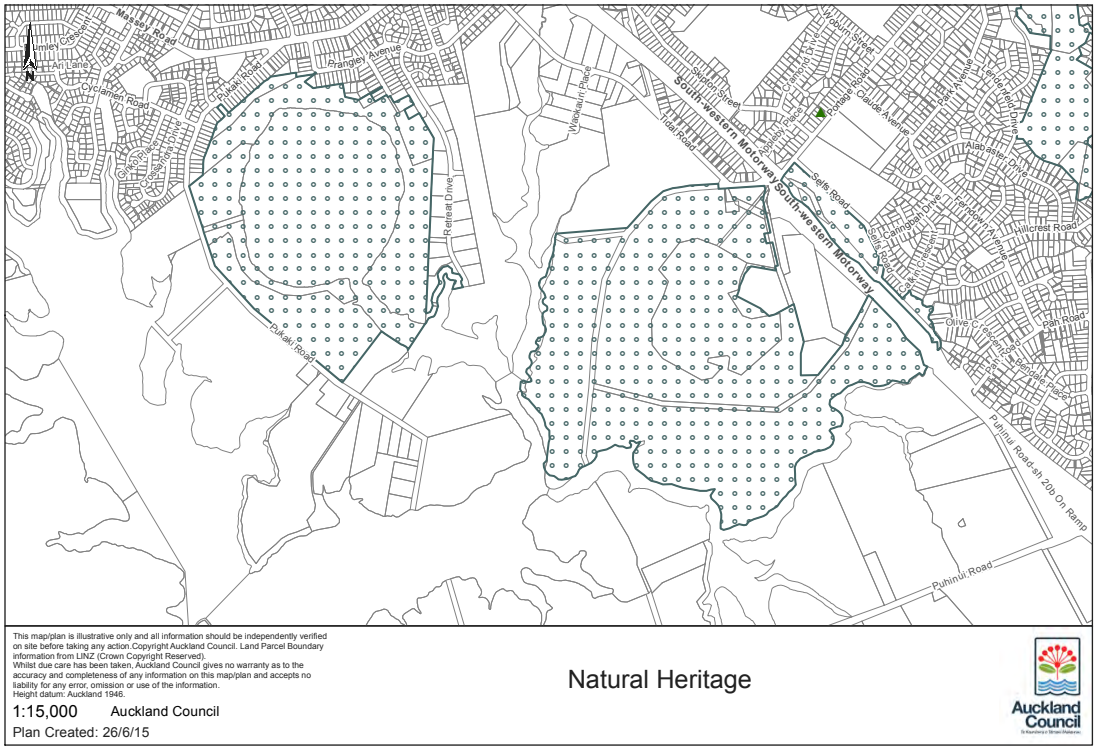

Figure 73: PAUP Natural Heritage area. Appendix 3.1 Schedule for the Outstanding Natural Features. Source: Auckland Council GIS, 2015.

Figure 74: Plan of potential residential development as proposed by Auckland Council to the Self Family Trust.

3.2.2 Manu Whenua Sites

The notified Proposed Auckland Unitary Plan (PAUP) articulates Auckland Council's commitment to Maori by acknowledging the special relationship of mana whenua to Tamaki Makaurau, Auckland, through provisions relating to proposals that may interest or concern mana whenua or mana whenua values. Sites and places of significance to Mana Whenua (SSMW) and Sites and places of value to Mana Whenua (SVMW) are listed in Appendix 4 of the PAUP (Auckland Council 2015).

Appendix 4.1. Sites and Places of Significance to Mana Whenua (SSMW)
These are sites and places of significance to Mana Whenua that have been nominated by Mana Whenua for scheduling and are included within the Sites and Places of Significance to Mana Whenua overlay. These sites and places are significant to Mana Whenua for the tangible and intangible values they hold. The rules in the Sites and Places of Significance to Mana Whenua overlay requires resource consent for physical modification within 50m of a site or place of significance or a change of use. This approach enables the consideration of tangible and intangible values associated with the site or place (ibid).

No Crater Hill archaeological sites are included in the schedule of Sites and Places of Significance to Mana Whenua.

Appendix 4.2. Sites and Places of Value to Mana Whenua (SVMW)
These are sites and places of tangible and intangible value to Mana Whenua. These sites and places are included within the Sites and Places of Value to Mana Whenua overlay and includes archaeology of Maori origin where the locations have been confirmed. The rules in the Sites and Places of Value to Mana Whenua overlay requires resource consent for earthworks within 50m of a site or place of significance. Some exceptions are provided. Mana Whenua are aware of many sites and places that are equally or more significant to those identified in the Sites and Places of Significance to Mana Whenua overlay. Further sites and places nominated by Mana Whenua will be incorporated in the Unitary Plan through future plan changes (Ibid).

Sixty archaeological sites from Crater Hill are listed in Appendix 4.2: Sites and Places of Value to Mana Whenua (SVMW) (Figure 75). Evidence given to the Auckland Unitary Plan Independent Hearings Panel by planner Chloe Trenouth on behalf of Auckland Council recommends a number of changes pertaining to the Crater Hill sites listed in Appendix 4.2. Sites and places of value to Mana Whenua. These include amending the site locations of 43 sites and deleting 16 sites, as these do not fit the criteria for listing due to the location not being confirmed (Figure 76). Trenouth's evidence replicates the results of the Campbell et al. (2013) surveys. It should be noted that the site location data recorded in the Auckland Council Cultural Heritage Index[16] (CHI) has not been updated to add the corrected site locations from the 2013 surveys. However, this information is current in the NZAA Archsite system (Figure 77).

[16] CHI data received from Auckland Council Heritage team member Rachel Ford, 29 May 2015.

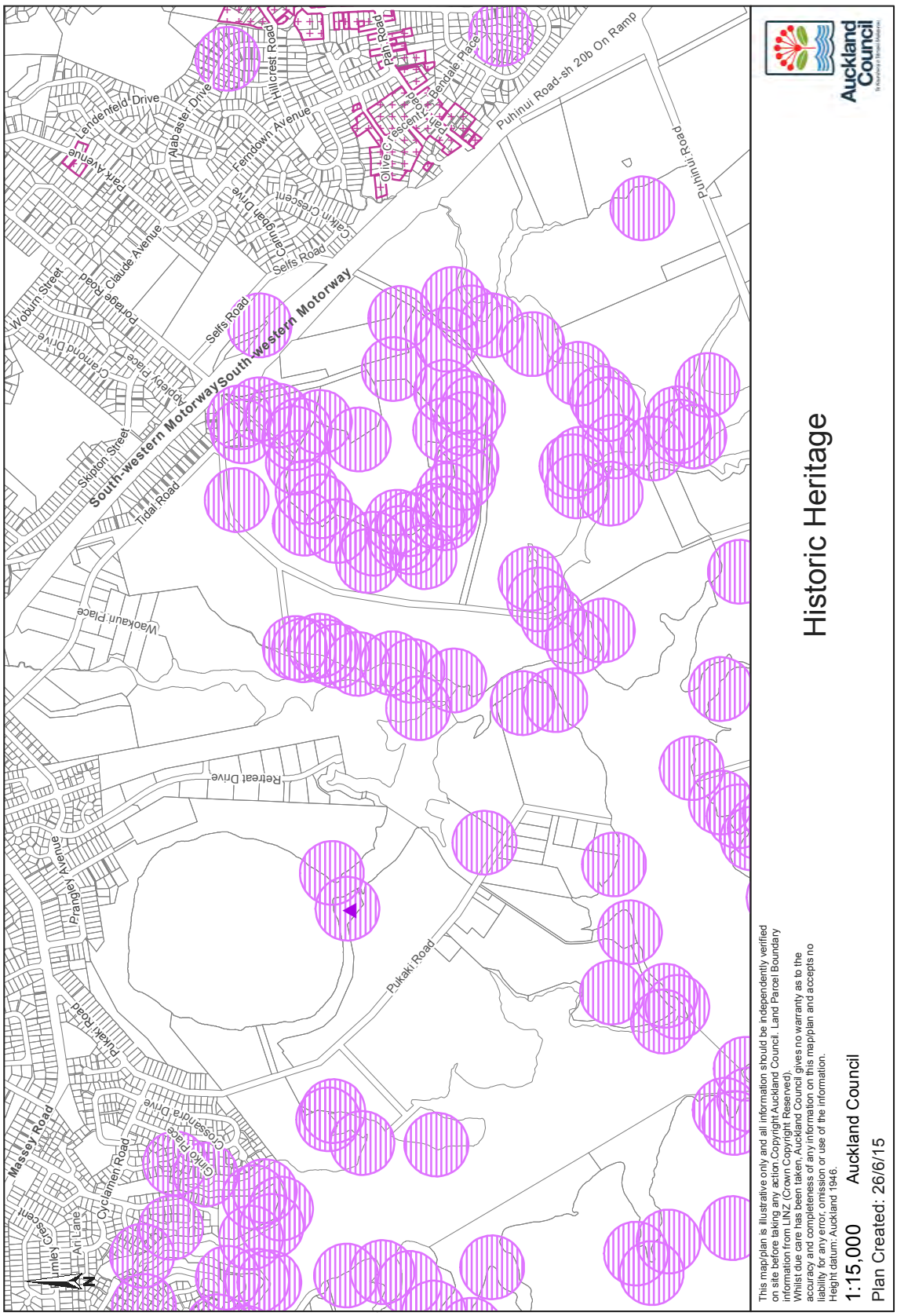

Figure 75: Sites of significance and value to Maori. Auckland Council Proposed Auckland Unitary Plan (PAUP)

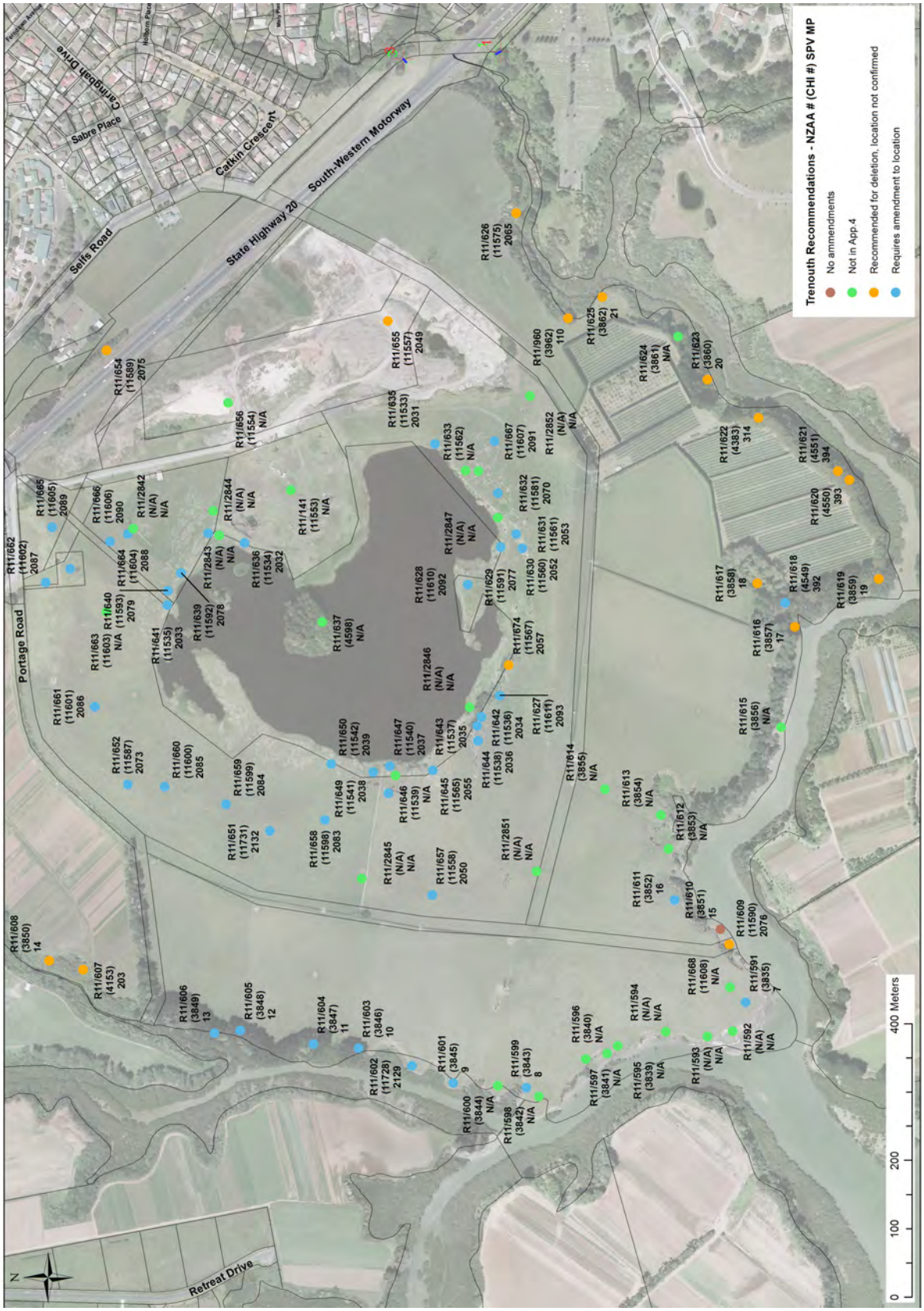

Figure 76: Site recommendations from Chloe Trenouth's evidence.

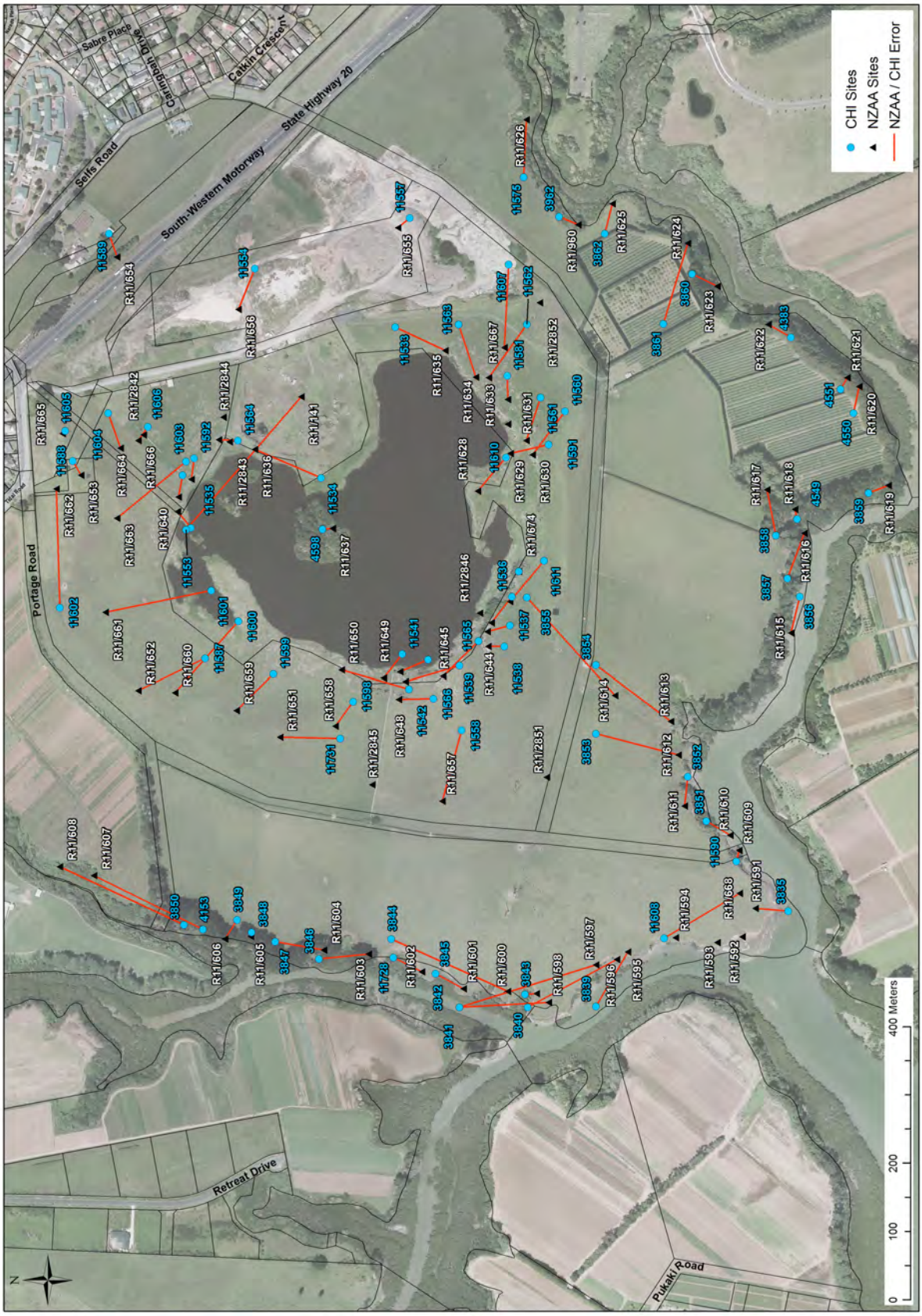

Figure 77: Error vectors between NZAA ARCHSITE locations and those recorded on the Auckland Council CHI.

4.0 ASSESSMENT OF AFFECTS

Any proposed development of the site is dependent on a rezoning for the property being approved by the Auckland Development Committee. Supplementary to this, an archaeological programme would require consultation with Te Ãkitai Waiohua and New Zealand Heritage, and ultimately require the granting of an application by Heritage New Zealand to modify or destroy any archaeological sites that may be affected by any development.

Protection of the recorded archaeology of the Self Farm can largely be achieved by creating two reserve areas that would encompass nearly 100%[17] of the recorded archaeological sites; the first would require a buffer around the crater rim with a down-slope extension on the western rim area to include the pit/terrace sites along this zone, and the second would require an esplanade reserve to capture all the sites along the Waokauri Creek margin (Figure 78). Further investigation of the archaeology would be required on both the crater rim and creek margin sites before any reserve boundaries could be fixed. At the crater rim this would include down-slope investigations from the pit/terrace sites to determine how far these sites extend towards the creek, while the size of the esplanade reserve would largely depend on a better understanding of the nature and extent of the creek margin sites and any potential associated features that reach further inland. Testing on the outer slopes would also be required to investigate the archaeological potential of these areas beyond the depths of the plough zone. An investigation would not necessarily be required within the crater, although if one were to be undertaken it would likely add a considerable body of knowledge to our understanding of the Crater Hill, and stone-field archaeology in general. The archaeological record would benefit from more detailed recording of the crater interior and features found within, such as the accessible caves.

If reserves are created and these areas become public space, it is imperative that protection is afforded some of the archaeological features, especially culturally sensitive sites such as burial caves. Koiwi has been noted as still in situ in at least one cave and on the small island outcrop. A more detailed inspection of the burial caves would need to be undertaken, including recording of the caves, and they would probably need to be secured to prevent public entry for both cultural and health and safety reasons.

Archaeological investigation may include non-invasive geophysical survey, test pitting and areal excavation. Geophysical survey may provide indicative results that guide further in-ground archaeological testing but repeated ploughing and volcanic deposits will likely negatively influence the effectiveness of geophysical surveys, particularly geomagnetic surveys. Test pitting may also provide indicative results of subsurface archaeological features, but to gain a more comprehensive understanding of these areas, large area excavations will be required as part or a planned research programme. Such a programme would include sampling sites to obtain occupation dates and analysis of any artefacts discovered.

A cautious approach towards the archaeology is required. Ploughing is likely to have disturbed some archaeological deposits, particularly if the presence of gardens proves to be correct as has been speculated. But irrespective of repeated ploughing, the potential for further archaeological discovery is high and this potential is probably higher in areas where ploughing hasn't occurred, and in particular in unmodified areas adjacent to the creek margin sites.

[17] Site R11/654 located by the Self Farmhouse would be not be captured by any reserve boundaries as it is located on the northern side of SH20.

Excluding the archaeology, the extent of the crater rim reserve boundary would also be influenced and determined by planning decisions based on the size of an appropriate buffer to protect any Outstanding Natural Feature area designation, if it was approved in the operative Unitary Plan.

Any archaeological investigation would also have benefits for site interpretation, and coupled with the geological and Maori histories of the site could used as a basis for interpretation at Crater Hill.

At present (based on the relevant documentation presented to council during the PAUP process) Te Ākitai Waiohua appear fundamentally opposed to any development of Crater Hill and consultation is required. In the first instance dialogue with Te Ākitai Waiohua should be initiated and a Cultural Impact Assessment (CIA) specific to Crater Hill requested. Following this further consultation would be required with Te Ākitai Waiohua as part of the Heritage New Zealand authority application process. Consultation and any collaboration with Te Ākitai Waiohua should clearly convey how any proposed development would recognise or impact the cultural values of Te Ākitai Waiohua.

Any application to Heritage New Zealand would likely go before the Heritage New Zealand Maori Council for approval, and if approved could be challeged by Te Ākitai Waiohua, Auckland Council, or any other party - any person has fifteen working days after an authority is granted to appeal the decision through the Environment Court.

Figure 78: Indicative reserve boundaries to protect the majority of the archaeology. The hashed areas are based on the archaeological areas as defined by Campbell et al. 2013:73.

5.0 DISCUSSION

The Self Farm sites are spatially differentiated into two clusters; those that are located on the crater rim and interior, and those on the outer slopes and creek margins. This separation also differentiates the condition of the sites where the interior sites are well preserved and less susceptible to erosion, while the outer rim sites, where all but one site are located in close proximity to the creek margin, are in generally less well-preserved condition, suffering from more intensive coastal erosion and stock damage. On the outer slopes, in between these two cluster zones, only one midden (R11/614) and one Maori horticultural site (R11/668) have been recorded.

The paucity of sites on the slopes can be attributed to a number of factors: Garden sites in prime land generally suffer a bias in the survival of evidence as the same soils have been reused, restored and added to, erasing indications of earlier systems (Bulmer 1986:14). Repeat ploughing episodes were commonplace over much of the crater outer slopes especially during periods of intensive agricultural activity when the market gardens were operating. This tends to mask archaeological features and may have contributed to a lack of site visibility by the time of Sullivan's surveys in 1973/74, whereas middens along the coastal margins are usually more visible as they tend to become easily exposed on eroding surfaces. Also, the soils on the outer slopes are rich volcanic soils and do not require modification such as the addition of sands or gravels, and the moderate gradient of the outer slopes would also mean there is less necessity to construct terraces. A lack of stone on the outer slopes may also be attributed to European clearance. It is possible the materials used in the construction of dry-stone walls during the early European period may have reused the stone resources from pre-European garden alignments and plots.

Conversely, the lack of stone could simply be a result of the naturally weathered tuff and soil formation process. The exposed ash profiles in the creek banks showing consolidated tuff tend to support this. This may also account for a complete lack of stone mounds on the outer slopes, but which are only found in the crater interior. Foster (1985:3) citing a personal comment from A. W. Ormiston, describes the northern portion of the crater rim as having scattered air-fall basalt rocks and small cobbles, which Foster determined only occur on that portion of the rim top. This area is where the main concentration of stone mounds is found at Crater Hill, and is also the location of most of Sullivan's gardening soils.

Each of Sullivan's garden soils sites R11/658-668 was originally classified as a 'possible garden area', but were later reclassified by Campbell et al. as 'Maori Horticulture' (the contemporary NZAA nomenclature) who stated that 'these are usually, quite reasonably, interpreted as the result of field clearance and as planting mounds', referencing the work of Coates (1992) and Rickard et al. (1983) as research into garden sites, and noted that '…despite intensive research into these sites [Coates (1992) and Rickard et al.] in the 1970s and 1980s, they are still not well understood' (Campbell et al. 2013.22). R11/668 is the only one of Sullivan's possible garden area sites on the outer slopes. The site was described as '…earth mounded scarps on extreme SW tip of the outer crater' and is located immediately inland of R11/591. This is shown on Figure 65 as two terrace/scarp lines above R11/591 but could also be interpreted as terracing relating to occupation of R11/591. Campbell et al. (2013:45) describe the available evidence at R11/591 as clearly indicating a significant occupation site.

Direct evidence of gardening was recorded by Foster (1995) from his excavation within the crater rim but Taylor found absolutely no evidence at all of gardening or occupation during an inspection of approximately 460m of pipeline trench cut through the outer southern slope above site R11/591. The pipeline trench is located

approximately 100m upslope from R11/668 - Sullivan's possible garden area. Archaeological evidence will survive below the plough line and would be readily identifiable if present. It could also be expected that disturbed midden or artefacts would appear during ploughing as has been evidenced on nearby properties, but none has been recorded on the Self Farm.

Sullivan (1975), Foster (1985) and Campbell et al. (2013) all interpret Crater Hill as an archaeological landscape. Sullivan, by virtue of her recording methodology viewed Crater Hill as one site, while Foster, relying heavily on Sullivan's work, theorised it was likely that many of the features interpreted as separate sites actually formed parts of larger domestic complexes and gardening units. All infer the use of the outer slopes for gardening. Campbell et al. link the cater rim and creek margins through the distribution of middens on both areas. They also note that even where no surface evidence exists it is highly likely that these areas were gardened or utilised by pre-European Maori in some way (Campbell et al. 2013:42). Taylor's excavation demonstrated that the existence of sub-surface archaeological features is not always apparent on the contemporary landscape.

Classification of Crater Hill as an archaeological or cultural landscape has been given much consideration as part of the archaeological and landscape context in the assessment of the overall archaeological significance by Campbell et al 2013, and is a useful term to describe spatial accumulations of sites over large areas. However, there is no provision for the protection of archaeological landscapes under the Heritage New Zealand Pouhere Taonga Act (2014) or Resource Management Act (1993). Archaeological landscapes are a theoretical construct that support a technique for archaeologists to look at the past as the integration of people and their surroundings. And although a lot of emphasis has been placed on the interpretation of Crater Hill as an archaeological landscape, in reality very little is known about the sites contained within the Crater Hill perimeter, their spatial extents, temporal relationships, composition and age; and this applies to both an inter and intra site level.

The archaeology of Crater Hill has been addressed in a previous Environment Court case in 2002. During this hearing which debated the rezoning of land around Pukaki Crater and Crater Hill, Dr Stuart Bedford (then the Auckland Regional Archaeologist for the Historic Places Trust) presented written testimony which stated that the archaeological evidence for Crater Hill suggests the area supported a single large community with two main sections; one in the crater and one on the periphery of the cone, with gardens in between and community facilities on the garden rim Bedford's evidence was read by Dr Rick McGovern-Wilson (then the Senior Archaeologist for the Historic Places Trust), who on cross-examination accepted that the Self Farm was not a single archaeological site, and gave his opinion that Crater Hill consists of a number of individual sites that exist in a landscape. On cross-examination it was demonstrated that Dr Rick McGovern-Wilson did not have a detailed understanding of the facts and the Court gave little weight to his evidence (Environment Court A91/2002:32).

The connection between the middens along the creek margins and interior midden sites is not yet clearly understood and requires further investigation. As discussed previously Campbell et al. see the midden sites as an integral and connected part of an archaeological landscape. During evidence given by Dr. Rod Clough (representing Auckland Council for the same Environment Court case as mentioned above), the significance of the Waokauri Creek midden was discussed with Clough offering his opinion that the majority of middens at Crater Hill relate to the more basic level of occupation and cooking debris and do not relate to the earliest occupation (Environment Court A91/2002:31). Sullivan (1973:91) interpreted the middens along

the creek margins as largely being associated with the Waokauri Creek's location along an important portage.

Without further research it is impossible to determine what relationship or significance the middens have within the Crater Hill environment. Individual middens can be representative of a variety of occupation events ranging from single one-off food gathering events/meals to large feasts, and can provide evidence of continued or repeated occupation of a site over a period of time. They may be spatially and temporally related to larger occupation sites, and it may be but these sites are not evident on the landscape. The contents of pre-European middens may contain simple accumulations of shellfish and fish remains, and cultural material such as fishhooks, lithic material and human remains. Therefore, some are more significant than others.

The area recommended by Campbell et al. 2013 for scheduling as a cultural landscape of exceptional significance is largely covered in the listing in the PAUP Appendix 3.1 Schedule for the Outstanding Natural Features. In their area recommended for scheduling, Campbell et al. excluded the Tam property to the west and more importantly excluded the complete south-eastern outer slopes, presumably because this area is covered in kiwifruit orchard and sites were not relocated on this area of the Self Farm, nor the Tam property. However it is inconsistent to exclude the south-eastern slopes (where sites are have been recorded but not relocated) from the proposed cultural landscape of exceptional significance and yet include the rest of the outer slopes where no sites are recorded, and empirical evidence is lacking.

A similar inconsistency exists in the area delineated by the ONF where it includes the south-western outer slopes but not the adjacent and contiguous Tam property to the west. The inclusion of one area, while excluding the other (which can be interpreted as a contiguous and continuous part of the Crater Hill landscape) is inconsistent. The reasoning for excluding the Tam property from the ONF is not clear, but the presence of market gardens on the property is the only distinguishing visual difference. However a large area of the eastern slopes is covered in orchards and the archaeological sites in this area were not relocated; yet this area is included in the ONF. Furthermore, as the majority of the outer slopes have been ploughed and gardened for a number of years and no archaeological sites are present on the slopes, it is unclear how the decision regarding the designation of the ONF boundary was made and how the ONF criteria were applied to reach this decision.

Despite two limited excavations taking place at Crater Hill, little is actually known about the archaeology of these sites. Only one date has been obtained from the excavations (from R11/602) and no final report has been submitted for Taylor's excavation. The completion of the construction of SH20 without the recommended archaeological investigation being undertaken in advance of these works resulted in a lost opportunity to investigate and gain an archaeological understanding of a large area of crater rim.

The difficulty of interpreting and recording a site based on limited or inferred information has been demonstrated by both Brown's recording of the former scoria cone as a pa, and Sullivan's gardening sites and delineation of feature clusters with arbitrary boundaries. The evidence for recording site R11/141 as a pa is scant. This landform no longer existed when Brown recorded it in 1961 having been completed quarried away well before then. The aerial photograph used to interpret the site by Brown and later by Sullivan is a 1:16000 scale black and white aerial and little detail can be extrapolated from it (refer Figure 24, page 28, see also Appendix 4 for the full image). It should also be noted that by the time of the photography that half of the

cone had already been extracted. Bulmer 1994:50 discussed the lack of empirical evidence for the basis of recording this site, noting that the sources consulted to record the pa did not show any terracing or other archaeological features. Figure 20 (page 26) tends to reinforce this with no discernable features such as terraces evident on the cone in this photograph. It is also apparent that Brown's description in the site record form of 5% of the site having already been destroyed actually refers to a greater extent of the Crater Hill archaeology, not just the quarried cone. The cone is not recorded as a pa on any of the early survey maps and plans. Although the associated evidence may be compelling and influences the interpretation of the destroyed cone as a pa, the actual evidence (or complete lack of) does not fit the NZAA criteria for recording (NZAA 2009) and in reality should not have been included as an archaeological site in the NZAA records.[18]

The recording of the 'pa' has influenced and is entrenched in the interpretation of Crater Hill as an archaeological landscape. Foster (1995:1) interprets this landscape as being dissimilar to other volcanic cones in Auckland in that the defended pa on the scoria cone was located within the crater surrounded by a tuff crater and 'consequently the settlement pattern was unlike that found on any other volcanic cones found in the Auckland area.' Campbell et al. (2013:46) suggests that this pa would have originally been the central focus of the Crater Hill archaeological landscape. While it is unproven whether the destroyed cone was ever a pa site, it is apparent that this interpretation in clearly influenced by a correlation between landforms and land-use based on similar use of volcanic landforms by pre-European Maori. The analogy that a certain landform predisposes a modification and utilisation of that landscape is flawed.

At a feature level the interpretation, grouping and delineation of features into 'sites' is subjective. The grouping of pit and terrace features along the western crater rim highlights the complexity in interpreting and determining site extents. These features, while recorded as a series of separate sites, are generally interpreted as a single occupation site. Sullivan noted no clear distinguishing boundaries between them - yet recorded them as a number of separate sires, and Foster referred to this grouping of sites using a single site designation. Campbell et al. (2013) grouped these sites into a single entity, and went so far as to extend the boundary of these sites down the outer slope to the fence line below the crater rim on the basis on some visible midden exposed in this fence line, noting that this boundary '…is somewhat arbitrary' (Campbell et al. 2013:42).

Furthermore, the merging of Sullivan's sites by Campbell et al (2013) is not clearly reflected in the NZAA records – the primary source of archaeological records, nor illustrated in any of the other available literature. This adds to the ongoing confusion over the extent of 'sites' for Crater Hill and this is replicated in the evidence of Chloe Trenouth (who references the merged number of sites from the CFG work), and again in the Auckland Council Cultural Heritage Inventory where the site locations are the original NZAA locations, not the updated CFG locations.

Change to this landscape is constant and has affected the visibility of sites, particularly around the Waokauri Creek margins. As a result, a number of sites were not relocated and a number or reasons can be attributed to this including; coastal erosion, rubbish dumping, ploughing, earthworks and filling, and the development of market gardening and farming infrastructure. Sites that were not relocated have not

[18] This is symptomatic of a number of the NZAA archaeological records where local oversight and detailed verification and vetting has resulted in 'sites' being recorded where, with proper consideration and due diligence, these would be deemed to not fit the criteria and be acceptable for recording in the NZAA site recording scheme.

necessarily been destroyed, and in all likelihood further evidence would be revealed for many of these sites if subsurface investigations were undertaken.

Of the relocated sites, several should be reclassified in the NZAA records: R11/645 should be reclassified from Cave/rock shelter to Burial/cemetery given the documentary evidence of the use of the cave as a burial site; R11/602 from Midden/oven to Pit/terrace based on the excavation evidence; and R11/654 should be updated to include information relating to the historic homestead belonging to William Buckland that burnt down.

The continuity of occupation and use of the landscape from Maori to European tenure is measured through the quarrying of the landscape, pastoral farming and market gardening, and early European period recreational pursuits such as the running of the hunt and equestrian events over the property. That use is ongoing with continued extraction and filling of the quarry, and continued stock grazing now the primary industrial and production activities at the site.

European landscape modification includes the quarrying and the SH20 road alignment that has affected approximately 204,000 square metres or 13.5% of the Crater Hill landscape, with most of this modification taking place within the crater rim. Other modifications include the alteration of the highest point of the crater on the north side, where R11/653 was located - when the plateau was levelled for the construction of a reservoir, planting of orchards on the eastern slopes, the construction of miscellaneous ancillary buildings and farm-related structures, and historic ploughing of the outer slopes, which continued until the early 21st century.

6.0 CONCLUSIONS

The archaeology of Self Farm can be distinguished by two clear demarcations: the well-preserved sites on the crater rim and interior, and the more degraded sites of the creek margins connected by an area of rich volcanic loams on the outer crater slopes. These demarcations indicate pre-European living and gardening was centred on and within the crater rim, and resource gathering and probably more limited occupation was centred on the creek margins. Gardening is likely on the rich alluvial outer slopes but the evidence for this is presently lacking.

The degradation to the creek margin sites is simply a factor of anthropogenic change caused by the development and running of a working farm and to some extent the forces of coastal erosion, whereas the crater rim and interior sites have been less impacted by farming, and in particular by ploughing and market gardening. The present owners have made considerable efforts to protect the archaeology of the site, particularly the crater rim and interior.

Protection of the majority of the archaeological record could be easily achieved through the designation of a reserve that encompasses the crater rim and interior sites, and by an esplanade reserve along the creek margins. The inland extent of this might be required to creep further inland at certain points to capture some site extents. Conversely the esplanade reserve may be a set at constant width and archaeological features outside of this could be archaeologically investigated under authority from Heritage New Zealand. Crater Hill is an archaeologically rich area, but with a significant deficit of knowledge about the archaeology. Disregarding the methodologies used to record the sites and subsequent reinterpretations of site extents or relationships between sites, the archaeology of Crater Hill is widespread and regionally significant. If development were to proceed there is an opportunity for further archaeological research to better understand the complexities of the occupation sequence and inter-site relationships.

Previous investigations have interpreted Crater Hill as an archaeological landscape and placed a great deal of significance on this and used it as a means of attributing some form of designation to promote the protection of almost the entirety of the Crater Hill landscape. While the concept of an archaeological landscape is a useful construct for interpreting and linking sites and their surroundings, archaeological landscapes per se are not specifically recognised within the relevant legislative acts. Given that the outer slopes have been significantly altered, the integrity of this landscape and any archaeological features in these areas is also questionable as this is a highly modified landscape of unknown archaeological potential. Intact archaeological features may be in situ under the plough zone but given that much of the outer slopes are interpreted as gardens, it is anticipated that much of the archaeological evidence of these will have been compromised by later European gardening activity.

Quarrying has and continues to cause major change to the inner crater landscape and has also resulted in the destruction of several archaeological sites in the past. However, detailed landscape analysis and the interpretation of significant natural landscape and geological features fall outside the scope and expertise of this report. The quarried areas have no archaeological potential.

Any development works at Crater Hill would require a significant and costly archaeological component including monitoring of earthworks, large extent areal excavation and reporting. Consultation with Te Ākitai Waiohua and other stakeholders is an important part of the development process.

An archaeological programme for Crater Hill would require two components; a research investigation to investigate the extent and relationship between the crater rim, creek margin sites and land in between; which in turn would guide future significance assessments of sites and assessment of effects to accompany any future archaeological authority application if subdivision or other development works are planned, and archaeological works are thereafter required.

7.0 RECOMMENDATIONS AND MITIGATION

The following recommendations are made. The Self Family Trust:

1. Initiate consultation with Te Ãkitai Waiohua to request a Cultural Impact Assessment for Crater Hill. This report should be given to Te Ãkitai Waiohua as a supporting document.

2. Undertake detailed archaeological survey of the Self Farm landholding to better record the archaeological record as it currently stands.

3. Undertake a test geophysical survey to test the efficacy of this type of survey at the site.

4. Seek an archaeological authority to undertake a detailed research investigation to gain a better understanding of the nature and extent of sites on the western rim and creek margins. As a condition of such an authority, Heritage New Zealand Pouhere Taonga is likely to require a high level of mitigation to be expected to include, but not necessarily be limited to:

    a. Development of an archaeological management plan.

    b. Development of a research strategy to guide any archaeological investigations that may be required.

    c. Archaeological monitoring of all stripping to subsoil level, and the investigation, analysis and reporting of archaeological features which are modified or destroyed by the research, and any future development.

    d. Incorporation of any protocols required by Te Ãkitai Waiohua such as cultural monitoring, the identification of an appropriate location for archaeological/cultural materials to be returned or deposited to, the erection of pou whenus and/or other acknowledgements of their manu whenu and history of the site.

5. The archaeological authority applications will require further consultation with Te Ãkitai Waiohua

6. Undertake detailed recording of the caves and investigate securing these to control public access.

7. Undertake consultation with Te Ãkitai Waiohua specific to koiwi and the future protection of these if the area of the farm where there are interred becomes pubic space.

8. Investigate options for public interpretation of the archaeological, geological and cultural history of Crater Hill if the designation of Self Farm land to public reserve land were to proceed.

8.0 SUMMARY

Geometria Ltd was commissioned by John Self of the Self Family Trust to undertake an archaeological survey and assessment of the Self Farm, Tidal Road, Papatoetoe, with the aim of reviewing the current knowledge of the archaeology within the farm in light of a potential rezoning application to the Auckland Council Development Committee. The Self Farm is currently outside the current Metropolitan Urban Limits and a zoning change would permit residential development of the site.

The assessment confirmed that archaeological sites on the Self Farm are clustered in two main groupings, one on the crater rim and interior and the other around the creek margins. Extensive modification has occurred over most of the farm with quarrying inside the rim and farming and horticulture outside of the rim, and this has impacted upon the archaeology. The significance of the archaeological sites and features is high due to their rarity and context and are suggestive of a dense and/or lengthy prehistoric occupation. It is envisaged that the establishment of public reserves for the crater and creek margins areas as part of any development proposal would protect almost all of the recorded archaeology. Given the dense concentration of archaeological features the potential for further discovery is high.

Any future subdivision would require an archaeological authority to modify or destroy sites/features from Heritage New Zealand Pouhere Taonga. Due to the potential high significance, but largely unexplored nature of the Maori archaeological features, this would best be preceded by an exploratory investigation under a separate archaeological authority to investigate site extents and largely unexplored ploughed areas of the outer slopes. This will help guide any future developments at Self Farm. Consultation with Te Ākitai Waiohua and Heritage New Zealand Pouhere Taonga is essential to progress any planned development.

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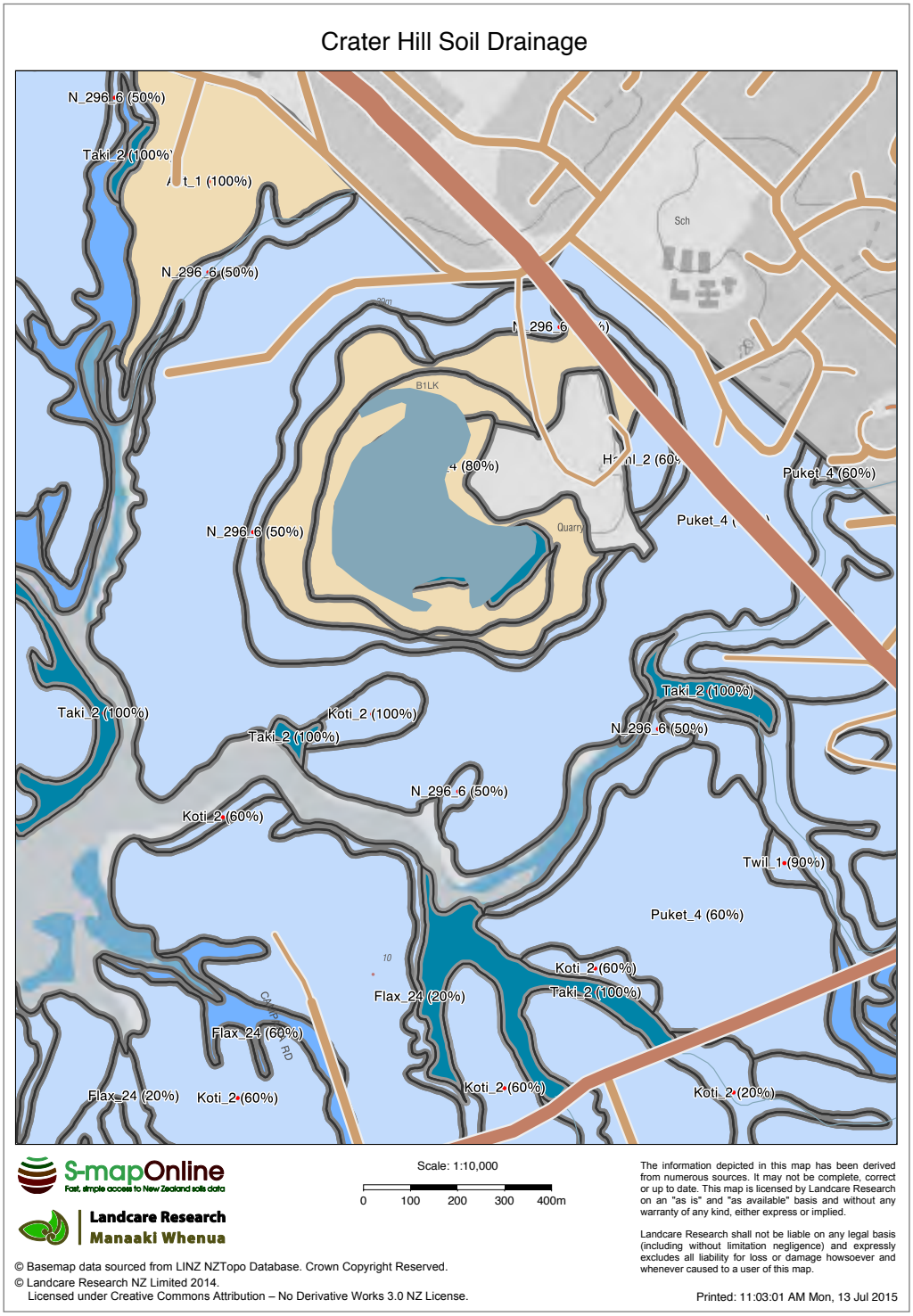
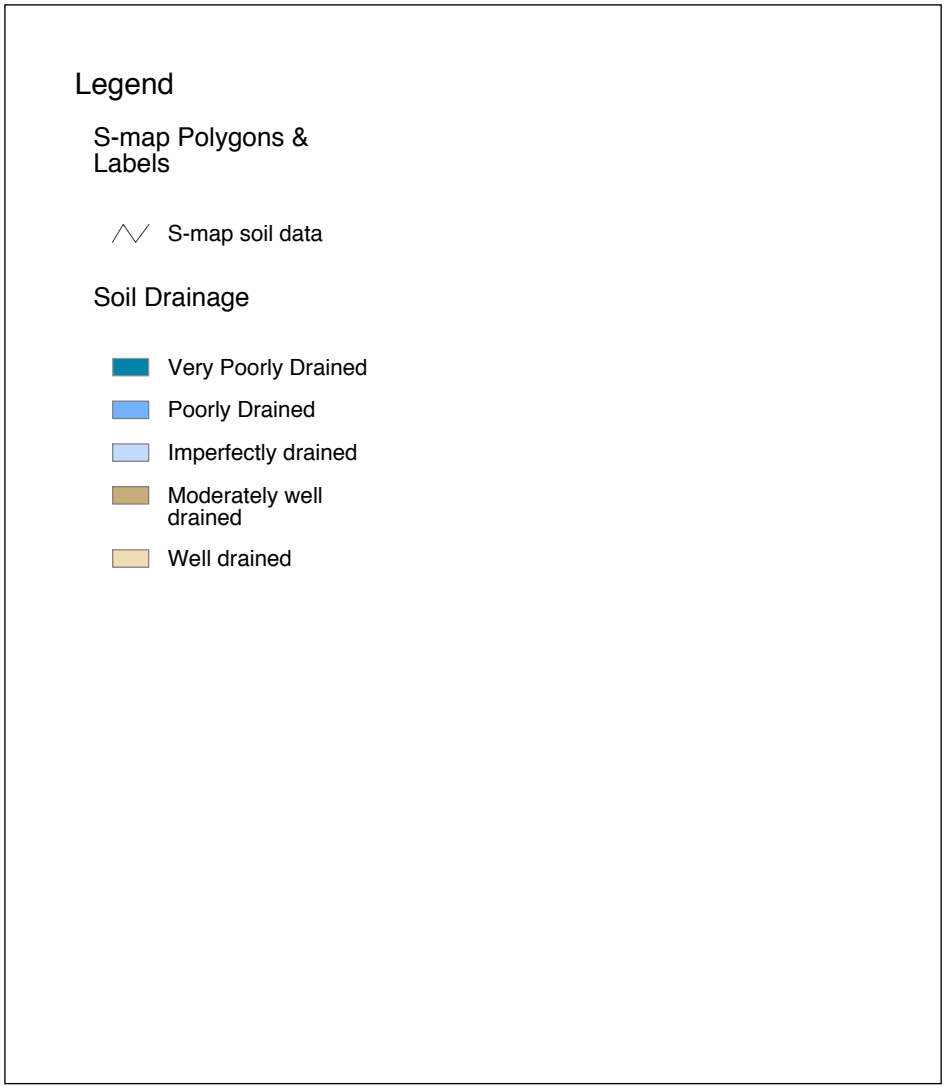
10.0 APPENDICES

Appendix 1: Crater Hill Soil Drainage map. Source: Landcare Research S-map Online 2015.





S-mapOnline
Fast, simple access to New Zealand soils data

Landcare Research
Manaaki Whenua

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Appendix 2: 'Duplicating Plant - Communist Literature -Discovery at Papatoetoe'. *New Zealand Herald* 5 September 1945

DUPLICATING PLANT

COMMUNIST LITERATURE

DISCOVERY AT PAPATOETOE

The chance adventures of three boys on a recent Sunday have led to the discovery of a duplicating plant, a quantity of cyclo-styled pamphlets and Communistic literature in a deep cave on a farm about three miles from Papatoetoe township. When the owner of the farm was informed of the discovery he communicated with the police, who visited the cave and seized the plant and other material.

The contents of the circulars indicated that the plant had been used fairly recently, as much of the subject matter referred to the increased taxation and the Budget which was introduced in the House of Representatives in the last week in June. In addition to the duplicator, which was mounted on rough flooring boards, two boxes were found. One box contained a number of publications on Communism.

Youthful Exploration

The discovery of the cave and its contents was due to a youthful enthusiasm to explore localities remote from the beaten track. The existence of a large cave on this farm, which looks over an inlet of the Manukau Harbour, has been known to the farmer and many boys living in the district, but the inner cavity in which the plant was found had not hitherto been widely known, as access to it is by means of a passage and aperture about 3ft. wide. In roaming through the large cave, which extends for about 40ft. underground, the boys noticed the passage, which runs back sharply from the main entrance and is partly concealed by a projecting rock.

The boys were unable to complete their exploration then, but they returned later armed with a storm-lamp. Later they informed their father, who visited the cave and subsequently called the owner of the property. The lads stated that when they found the duplicator a stencil was fixed to it, and on turning the handle of the machine a copy of the circular was produced. The floor was strewn with many spoiled copies.

Natural Camouflage

The cave is situated almost a mile from the nearest habitation and nearly as far from the nearest public highway. Access can only be made by traversing the intervening paddocks and the entrance to the cave is unsuspected until one is within a few yards of it. A natural camouflage is added by growth and outcropping rock. Only an agile person could negotiate the steep descent to the main cave and the narrow passage to the inner cavity can only be traversed by moving in bear-fashion or on hands and knees. The passage bends sharply in the course of its length of about 15ft., and progress is impeded by projecting scoria boulders. The last few feet of the passage dips steeply and the floor of the chamber is about 15ft. below the ground surface.

No Natural Lighting

The cave has a diameter of about 12ft. and is about 5ft. high in the centre, the roughly-arched roof of rock running into the floor levels at the sides. Movement within the inner radius of the cave can only be made in a stooping posture. Pieces of timber and sacks covered the sodden soil of the floor, and two pieces of asbestos board had been used to protect the duplicator and papers from the moisture dripping from the roof. An empty apple box had also been used. The depth and winding access to the cave prevented any natural light from penetrating, and candles had been employed for illumination.

A photograph of the cave appears on page 11.

Appendix 3: Listing 22 for Crater Hill in the PAUP Appendix 3.1: Schedule for the Outstanding Natural Features.

22	Crater Hill	Mangere	V F - Caves	Crater Hill is one of the two best remaining explosion craters and tuff rings in Manukau City. It is a complex volcanic centre including a large, embayed tuff ring 600 m in diameter, enclosing a (quarried) scoria cone and small lava flow. Crater Hill has a unique example in the Auckland volcanic field of the cooled remnants of a lava lake that filled the crater and later withdrew down the vent. It is also the only remaining explosion crater in the Auckland field where the external slopes of the volcano outside the crater rim are nearly entirely intact and unmodified. Two lava caves are present. Selfs lava cave is about 48 m long and circumferentially oriented within the volcanic crater. Underground Press lava cave is 40 m long lava cave with a large main chamber, reputedly used as a base for clandestine, subversive publishing during World War II. The Crater Hill quarry exposures are a useful educational site with excellent exposures of lithic tuff, basaltic lapilli, crater rim collapse features and a thin layer of rhyolitic tephra from the central North Island.	a, b, c, d, e, g, i

Appendix 4: SN 139 G/9 flown 29/12/39. New Zealand Aerial Mapping 1939.