

**MAUNGAREI: EXOTIC TREE
REMOVAL**

ARCHAEOLOGICAL ASSESSMENT

Prepared for
**Ngā Tūpuna Maunga
Authority**

Russell Foster and Associates
18 Rarawa Street
Mt Eden
Auckland 3

September 2017

CONTENTS

1.0	Introduction	1
1.1	Statutory background	1
1.2	Archaeological background	2
1.3	Registration and scheduling	5
2.0	Proposed development	6
3.0	Assessment	6
3.1	Method	6
3.2	Results	6
3.3	Assessment of values and significance	10
3.4	Assessment of effects	13
4.0	Recommendations	14
5.0	References	14

Appendices

- Tree removal methodology
- Maungarei: trees for removal

FIGURES

1.	Location of Maungarei/Mt Wellington Domain	1
2.	Plan of terracing, Maungarei	3
3.	Plan of archaeological features on the upper slopes of Maungarei	4
4.	AUP historic heritage schedule, Mt Wellington Domain	5
5.	Proposed tree removals	7
6.	Reservoir construction, October 1960	9

TABLE

1.	Archaeological values and significance	12
----	--	----

MAUNGAREI: EXOTIC TREE REMOVAL

ARCHAEOLOGICAL ASSESSMENT

1.0 INTRODUCTION

Ngā Tūpuna Maunga Authority is proposing to remove exotic trees from the Auckland volcanic cones in the ownership of the Tupuna Taonga o Tamaki Makaurau Trust Ltd, including Maungarei (Mt Wellington Domain). The mountain is an archaeological site and this report was commissioned to assess the likely impact of the programme on the archaeology of the maunga.



FIG. 1. LOCATION OF MAUNGAREI/MT WELLINGTON DOMAIN

1.1 Statutory background

There are two main pieces of legislation that control work affecting archaeological sites in New Zealand. These are the *Heritage New Zealand Pouhere Taonga Act 2014* (HNZPTA) and the *Resource Management Act*

1991 (RMA). The HNZPTA is administered by Heritage New Zealand Pouhere Taonga (HNZPT) and requires a consent (Authority) for any works that affect archaeological sites. In terms of the area under discussion the definition of an archaeological site in this Act is defined as: any place in New Zealand that was associated with human activity that occurred before 1900 and which may be able, through investigation by archaeological methods to provide evidence relating to the history of New Zealand.

Any person who intends to carry out work that may damage, modify or destroy an archaeological site must first obtain an authority from the HNZPT. The authority process applies to all sites that fit the criteria of the HNZPTA, regardless of whether the site is recorded in the New Zealand Archaeological Association (NZAA) site recording scheme or if the site only becomes known of as a result of ground disturbance or if the activity undertaken is permitted under a district or regional plan or if a building consent has been granted.

The RMA requires City, District or Regional Councils to manage the use, development and protection of natural and historic resources in a way that provides for the wellbeing of today's communities whilst safeguarding the options for future generations. The protection of historic heritage from inappropriate development is identified as a matter of national importance (section 6f).

Historic heritage is defined as those natural and physical resources that contribute to an understanding and appreciation of New Zealand's history and cultures, derived from archaeological, architectural, cultural, historic, scientific or technological qualities. Historic heritage includes: historic sites, structures, places and areas; archaeological sites; sites of significance to Maori, including wahi tapu, and surroundings associated with natural and physical resources. These criteria are not mutually exclusive.

1.2 Archaeological background

Maungarei, recorded in the NZAA site files as R11/12, is one of the four largest of the Auckland volcanic cones that were once sites of Maori settlement. It is also one of the better preserved cone pa of the isthmus. In its

position and rising to a height of 135 m above the Tamaki River (Te Wai o Taikahu), it is a dominant feature in the landscape of eastern Auckland.

The pa was principally occupied in the 16th and 17th centuries, but with occupation extending into the 18th and early 19th centuries. The whole of the summit is covered with archaeological terraces and other features. Various defensive ditches are present around the crater rim and there is extensive terracing on the outer slopes, particularly on the maunga's western side. A quarry has destroyed part of the southern flanks of the mountain and part of the crater was destroyed to build a reservoir in the early 1960s. Fig 2 shows an overall plan showing the Maori terracing on the cone and Fig.3 provides a more detailed plan of visible archaeological features of the upper slopes.

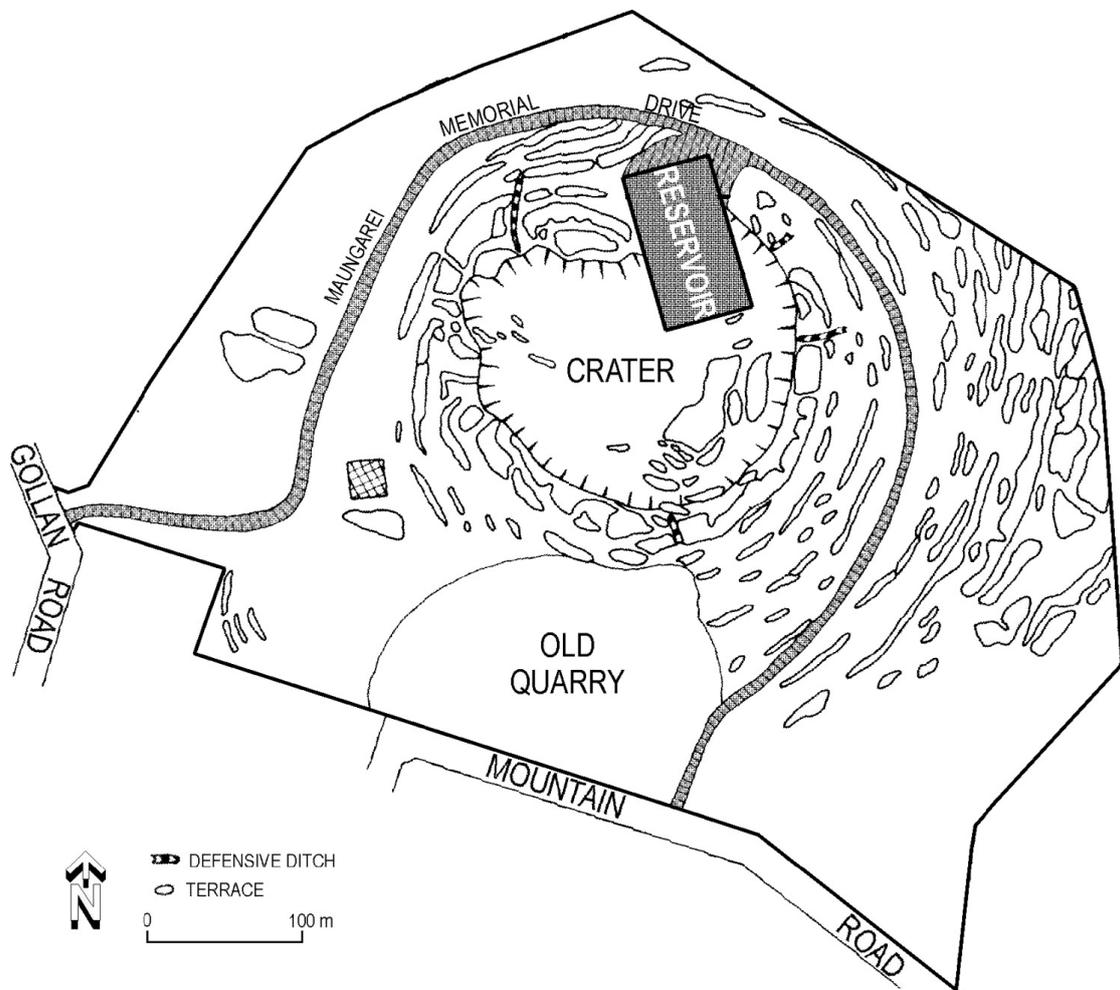


FIG. 2. PLAN SHOWING TERRACING AT MAUNGAREI. Note there is also a small reservoir on the lower slopes to the south west on the crater (rectangular, cross-hatched).

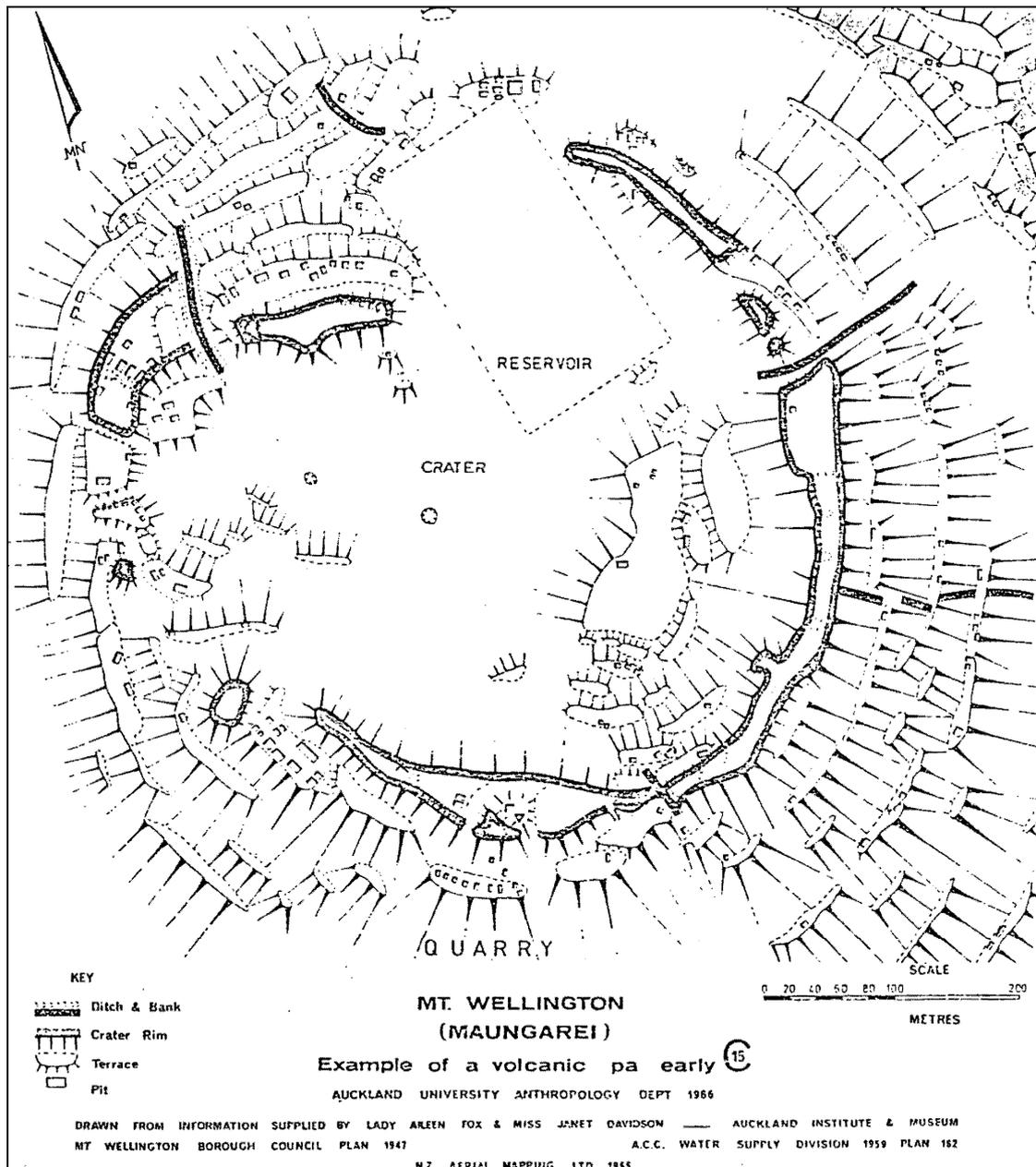


FIG. 3. ARCHAEOLOGICAL FEATURES ON THE UPPER SLOPES OF MAUNGAREI

At the time the crater reservoir was built excavations were undertaken on the mountain by Jack Golson (Golson 1960). Further excavations on the crater rim were undertaken by Wilfred Shawcross of Auckland University in the later 1960s when there was a proposal to construct a road, a revolving restaurant and an artificial ski slope down the mountain side. This proposal never proceeded, but further investigations were again undertaken by Shawcross in 1971-2 when the proposal to construct the road to the summit was revived. In 1993 Davidson (1993), using information from the excavations prepared a summary paper on the excavations and established a

dating sequence for Maori occupation on the cone. More recently Davidson (2011) has published a detailed analysis of all the previous archaeological investigations on the mountain and produced a revised chronology of occupation and a reconstruction of the pa's likely appearance when occupied.

1.2 Registration and scheduling

Maungarei is recorded in the archaeological site record files of the NZAA as site R11/12. However, it is not included in HNZPT's List/Rārangi Kōrero.

The Auckland Unitary Plan, operative in part (AUP) schedules almost the whole of the Mt Wellington Domain and part of the adjacent property at 6-10 Homestead Drive as an historic heritage site (AUP Schedule 14: 01582). The scheduled area is shown in Fig. 4.



FIG. 4. AUP HISTORIC HERITAGE SCHEDULE, MT WELLINGTON DOMAIN (HATCHED)

2.0 PROPOSED WORKS

The proposal is to remove exotic trees from the maunga, with a number of trees, some individual trees and other in groups, identified for eventual removal. The methodology provided by Treescape Ltd (Treescape 2017) lists a variety of felling methods that are available (*see* Appendix I). Of these it is proposed to use the following for the proposed work at Maungarei: machine assisted felling; manual dismantling; Mobile Elevated Work Platform (MEWP) assisted dismantling; crane-assisted dismantling; and helicopter-assisted dismantling.¹ A list of all trees or groups of trees that are proposed to be removed is presented in Appendix II.

Fig. 5 shows locations of the trees or groups of trees where felling is proposed.

3.0 ASSESSMENT

3.1 Methodology

The potential archaeological impact of the various methods of felling was examined and the areas where tree removal is proposed were inspected to assess whether the proposed methodology was appropriate with regard to the archaeology of that part of the maunga.

3.2 Results

3.2.1 Proposed methodologies²

Machine assisted felling: there is a high potential for ground disturbance by the machine being used. This method could only be used where there is an existing hard surface for the machine to operate from or where it has been determined that no archaeological evidence is present.

In this project it is only suggested as one of the methods for the old quarry at the south of the maunga. There should be no archaeological risk from machinery within the quarried area (Fig. 5: 2). No *in situ* archaeological evidence will have survived here. Although shell is scattered amongst the debris eroding into the quarry area at its upper north western corner, it will have eroded from the quarry edges where archaeological terraces have been cut by the quarry. Whilst it is

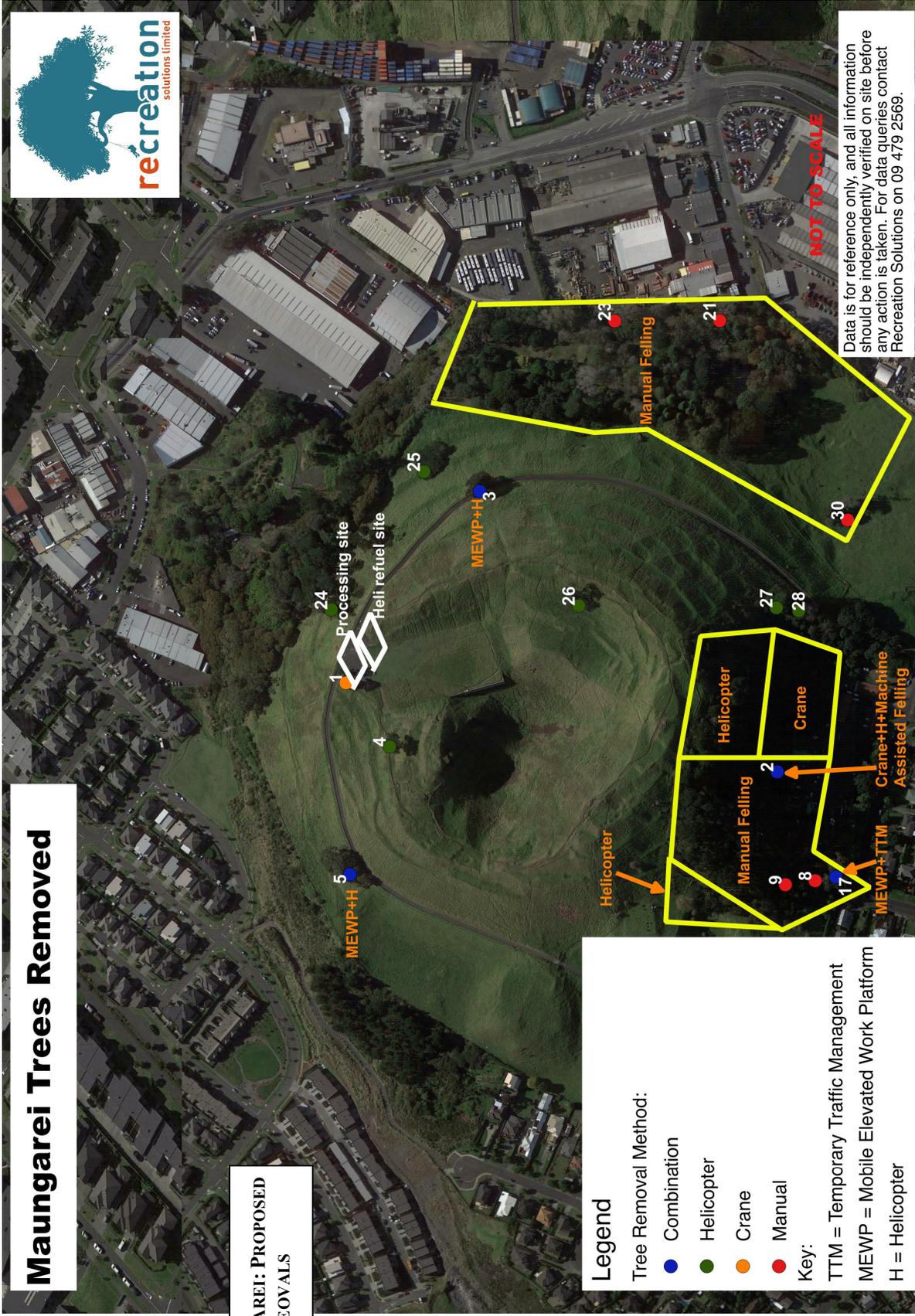
¹ A Mobile Elevated Work Platform is commonly referred to as a “cherry picker”.

² For some trees/groups multiple methodologies are identified.

Maungarei Trees Removed



FIG. 5. MAUNGAREI: PROPOSED TREE REMOVALS



NOT TO SCALE
Data is for reference only, and all information should be independently verified on site before any action is taken. For data queries contact Recreation Solutions on 09 479 2569.

Legend

Tree Removal Method:

- Combination
- Helicopter
- Crane
- Manual

Key:

- TTM = Temporary Traffic Management
- MEWP = Mobile Elevated Work Platform
- H = Helicopter

virtually certain that the shell is derived from the terraces of the pa, it no longer has a secure context and has little, if any, archaeological value. It is noted, however, that the upper part of the quarry does cut through terraces and it will be important to ensure that these edges are not further damaged during the tree-felling operations. These edges will also need some form of protection, such as appropriate planting after the felling operation in that area is completed to minimise any potential increased risk of erosion with the tree cover removed and/or significantly reduced.

Manual dismantling: this is only appropriate where there is no significant risk to any surrounding visible surface or suspected subsurface archaeological evidence. Large branches could impact the ground with sufficient force to damage archaeological evidence and/or “spear” into the ground. In some cases mitigation might be possible by providing adequate ground protection, although the use of rigging to lower limbs to the ground is generally seen as preferable.

The method is proposed at several sites around the maunga (Fig. 5: 8, 9, 21, 23 and 30). 8 and 9 are within the former quarry and present no difficulties. Locations 21 and 23 are within the Winifred Huggins Reserve. This contains considerable archaeological evidence, both visible and subsurface. However, the trees targeted for removal are generally small and manual dismantling, perhaps with some use of rigging to lower some of the larger branches, would be appropriate provided that adequate ground protection is provided.

This technique, perhaps also with ground protection, would be acceptable at location 30.

MEWP/crane assisted dismantling: generally acceptable where the ground is firm and access is possible without damaging archaeological evidence. They are proposed at locations 1, 3, 5 and 17 on Fig. 5. The sites are adjacent to sealed roads and there should be no complications. A crane is also a proposed method at location 2.

Helicopter assisted dismantling: usually a preferred option when removing trees in close proximity to archaeological evidence, with minimal risk to the archaeological evidence. This is proposed as a further option at location 2 and at locations 4, 5, 10, 24, 25, 27 and 28.

3.2.2 Other considerations

Associated with the felling there are two other aspects of the project that call for comment: helicopter use and the disposal of materials from the felling.

Helicopter use: it is understood that the summit car park and the grassed area next to it have been proposed as the area for helicopter operations, using the sealed car park for processing and the grassed area alongside for refuelling. There are no archaeological considerations from either of these activities. Fig 6 shows the car park area during the construction of the reservoir in the early 1960s. As can be seen, no archaeological evidence will have survived in this area.

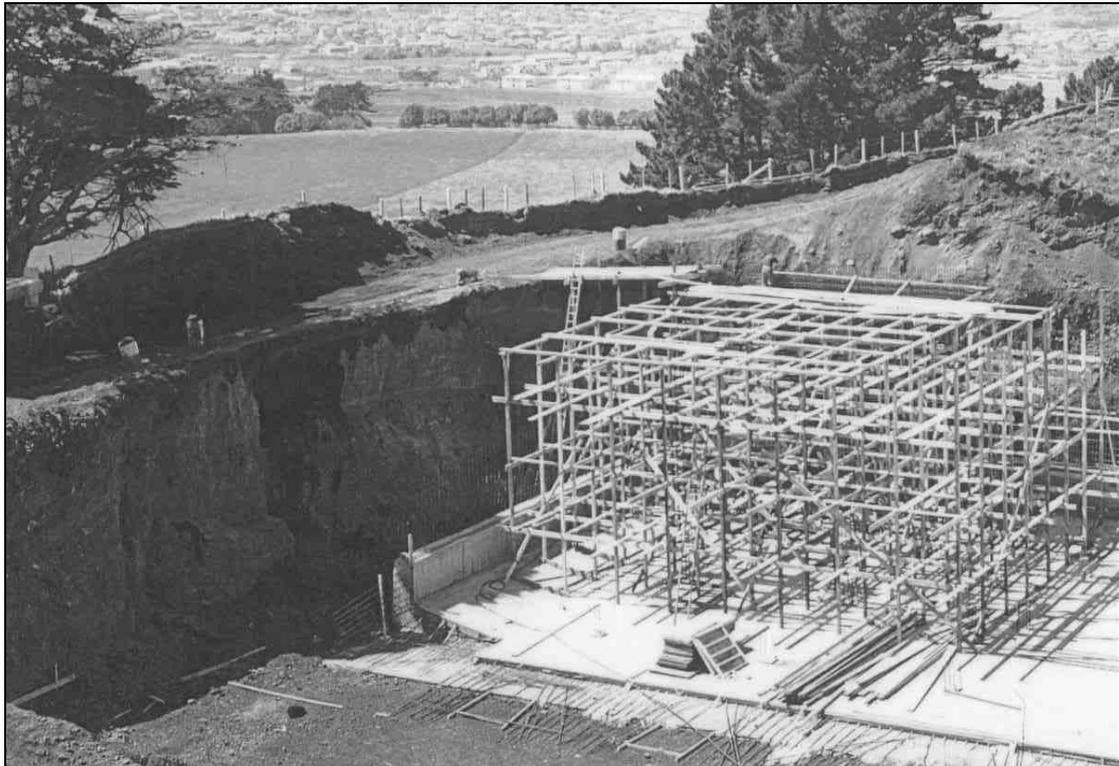


FIG. 6. CONSTRUCTION OF THE NORTH EASTERN CORNER OF THE MAUNGAREI RESERVOIR IN OCTOBER 1960. This image shows the extent of works at the present summit car park.
(Watercare Services Ltd archive: 4145/19)

Disposal of materials: the tree removal methodology (Appendix I) offers several options for disposing of materials after the felling such as Cut and Leave; Mulch on on or off site; or Log on or off site. Details of any preferred option or options has not been provided for this assessment.

Cut and leave would only be an acceptable option in the former quarry area. Elsewhere it would tend to obscure surface form and the underlying archaeology. Similarly on-site mulching will leave material that is likely to obscure archaeological features. Both would be deemed unnecessary modifications to the archaeological site. Removal of materials off site would be preferred either as chipped material or logs.

For most of the areas where trees are to be removed placing a chipper on the existing road/car park would present no difficulties, nor would removal from those locations be truck. However, the Winfred Huggins Reserve contains much fragile archaeological evidence and bringing a large chipper or trucks into the reserve would need very careful consideration.

3.3 Assessment of archaeological values and significance

Auckland Council uses a range of categories to evaluate historic heritage for scheduling:

- A. *Historical*: the place reflects important or representative aspects of national, regional or local history, or is associated with an important event, person, group of people or idea or early period of settlement within the nation, region or locality
- B. *Social*: the Place has a strong or special association with, or is held in high esteem by, a particular community or cultural group for its symbolic, spiritual, commemorative or other cultural value.

- C. *Tangata whenua*: the place has a strong or special association with, or is held in high esteem by, tangata whenua for its symbolic, spiritual, commemorative or other cultural value.
- D. *Knowledge*: the place has a potential to provide knowledge through scientific or scholarly study or to contribute to an understanding of the cultural or natural history of the nation, region or locality
- E. *Technology*: the place demonstrates technical accomplishment, innovation or achievement in its structure, construction, components or use of materials.
- F. *Physical attributes*: the place is a notable or representative example of a type, design or style, method of construction, craftsmanship or use of materials or the work of a notable architect, design engineer or builder.
- G. *Aesthetic*: the place is notable or distinctive for its aesthetic, visual or landmark qualities
- H. *Context*: the Place contributes to or is associated with a wider historical and cultural context, streetscape, townscape, landscape or setting.

Maungarei is scheduled in the AUP under categories A (historical), D (Knowledge) and G (aesthetic).

HNZPT uses a set of criteria to assess the values and significance of an archaeological site as set out below.

Condition: how complete is the site? Has the site suffered any modification or damage? If so, to what extent and how much of the site survives?

Rarity / Uniqueness: how common is this site type at a local, regional or national level? Does it display any unique features, associations or artefacts?

Contextual value: how does this site function at both an intra and landscape level? Does this site exist in isolation or form part of an archaeological landscape? How does this site compare to the sites of the same type?

Information Potential: is there information relating to the history of New Zealand that can be recovered through archaeological scientific

methods? What type of information can be recovered and by what methods?

Amenity Value: what public amenity value does this site have? Is it in public or private ownership? Can telling the story of this site provide for a better understanding of heritage that will contribute to the local, regional or national understanding of the place?

Cultural Associations: does this site have any cultural associations for tangata whenua or paheka New Zealand?

An evaluation using these criteria is provided in Table 1.

SITE	CRITERIA	EVALUATION
R11/12: Maungarei pa (Mt Wellington Domain)	Condition	The site is one of the best preserved pa of the Auckland isthmus. Very significant surface and subsurface archaeological evidence is present over much of the maunga Evaluation: high
	Rarity / Uniqueness	Each of the Auckland volcanic cone pa contain unique features that are unlike those present elsewhere. Evaluation: high
	Contextual Value	The overall pa has contextual value as one of the major pa the isthmus. Evaluation: high
	Information Potential	Very significant archaeological information relating to the occupation of the pa and the Maori occupation of the Auckland isthmus remains at this site Evaluation: high
	Amenity Value	The maunga is a highly visible component of the visual environment and also has very many clearly defined archaeological features. Evaluation: high
	Cultural Associations	The maunga will have cultural associations with a number of Auckland iwi. Evaluation: high

TABLE 1: HERITAGE NEW ZEALAND ARCHAEOLOGICAL ASSESSMENT

3.4 Assessment of archaeological effects

A key consideration of the whole proposal to remove exotic trees from the maunga has been to ensure that there is no surface disturbance that might affect the archaeology of the maunga. With this in mind the various tree-felling methods that are proposed for the project have been tailored to ensure this outcome, as far as is possible.

Apart from minimising damage from the actual felling operations, the project is seen as have beneficial effects for the long-term preservation of the archaeology of the maunga. Large trees have two main effects on archaeological evidence. Firstly their roots disturb and destroy archaeological evidence as they grow, although it is also noted that by the time they reach full size the rate of growth is relatively slow. The second significant impact comes from trees either losing major limbs or being completely felling by storm/wind effects or by dying. These uncontrolled events can cause very significant damage to the surrounding archaeological evidence, particularly in situations when the root plate is ripped from the ground. Many of the trees that are proposed to be removed are getting towards the end of their natural life spans and will become progressively more susceptible to storm damage as they weaken and die. Controlled removal is highly beneficial to the long-term preservation of the archaeological features of the maunga.

The visual aspects of the maunga are also significant. The maunga is highly visible and has highly visible archaeological features. The large exotic trees over the maunga tend to disguise and distract from the visual appreciation of the overall maunga and its visual archaeological aspects.

Although the programme is designed to have no significant direct impact on the archaeology of the maunga, accidents do occur and it is possible that there might be damage caused to archaeological features. For this reason it would be appropriate to obtain an archaeological Authority from HNZPT under the archaeological provisions of the HNZPTA. Such an Authority would provide a measure of confidence that any unintentional damage is appropriately mitigated.

4.0 RECOMMENDATIONS

1. This report is concerned with archaeological values alone. Tangata whenua should also be consulted about any other traditional or cultural concerns they may have in regard to this project.
2. An application should be made to the NZHPT for an Authority to Modify site R11/12 for the purpose of removal of exotic trees.
3. Works that involve vehicles moving off sealed surfaces should only be undertaken in dry conditions to reduce the risk of pugging of the ground surface from repeated vehicle movements over soft ground.
4. An archaeological works plan should be prepared to accompany any authority application that outlines the methodology for the archaeological supervision/monitoring of the project.
5. Immediately upon completion of works the project archaeologist should undertake an assessment of the areas on the edge of the quarry where there is an on-going risk of erosion. This assessment will provide recommendations for immediate implementation of non-invasive stabilisation methods for any features that might be at imminent risk of de-stabilisation.

5.0 REFERENCES

- Davidson, J. 1993 The chronology of occupation on Maungarei (Mount Wellington): a large volcanic cone pa in Auckland. *New Zealand Journal of Archaeology* 13: 39-55.
- Davidson, J. 2011 Archaeological investigations at Maungarei: a large Maori settlement on a volcanic cone in Auckland, New Zealand. *Tuhinga* 22: 19-100.
- Golson, J. 1960 Excavations at Mt Wellington. *New Zealand Archaeological Association Newsletter* 3(2): 31-34.
- Treescape 2017 Maungarei tree removal methods: arboricultural report. Unpub. report for Auckland Council, Treescape, September 2011.

APPENDIX I

TREE REMOVAL METHODOLOGY

(Treescape 2017: 10-12)

Description of tree removal methods

<p>1. Ringbarking, spraying, drill and fill methods</p>	<p>Where trees can be left to die and decay in situ, various techniques can be employed to kill a standing tree. Removing a complete ring of bark near the base of the tree can effectively kill the upward portion of many types of tree that exhibit secondary growth. Other alternative methods involve the application of herbicide via holes drilled in the base of the stem or direct spraying of the foliage or basal bark. The trees will die after a period and will slowly decay and fall apart in sections or fail at the root plate or base.</p>
<p>2. Manual felling</p>	<p>The tree is cut at the base using approved felling techniques. A pre-installed pull rope can be hand pulled by ground staff or attached to a hand winch to assist with directional felling. The cutting arborist (herein after referred to as the cutter) may use other tools such as hammer and wedges, felling lever, or jack to push open the back cut to assist with directional felling. Once the final cut (the back cut) has been completed, and the tree begins to fall, the cutter retreats from the base of the tree via pre planned escape route. If pull assisted felling is being employed, the cutter may have the opportunity to retreat via the escape route before the tree is pulled over. A felled tree is typically dismantled using approved snedding or delimiting techniques to remove side branches. Logs can be cut to required lengths.</p>
<p>3. Machine assisted manual felling</p>	<p>The excavator operator positions the excavator in an appropriate position to push the tree in the intended direction of fell or is attached to a pull line and positioned to pull the tree in the intended felling direction. The cutter makes felling cuts at the base of the tree. Once the final cut (the back cut) has been completed, the cutting arborist retreats from the base of the tree via pre planned escape route. The excavator then pushes or pulls the tree over. A felled tree is typically dismantled using approved snedding or delimiting techniques to remove side branches. Logs can be cut to required lengths.</p>
<p>4. Manual dismantling</p>	<p>The tree may be accessed using a mobile elevated work platform (MEWP) or by a climber with a rope and harness. Approved cutting techniques can be used to cut the tree in sections. Sections can be cut and allowed to free fall to the ground or can be cut and snapped off by hand and then thrown to the ground. Cut sections can be pushed by the climber or pulled by ground staff using a pull line to assist cut sections to fall in a particular direction.</p>

<p>5. Manual dismantling using rigging techniques</p>	<p>The tree can be accessed using a MEWP or by a climber with a rope and harness. The tree can be dismantled in sections using approved cutting techniques.</p> <p>Where there are targets below and/or debris needs to be lowered or relocated in a controlled manner, rigging techniques can be employed. Rigging typically involves the use of a system of ropes, pulleys/rings, and a ground based friction device, and other hardware. Rigging techniques can be used to lift or lower cut sections, or more advanced techniques such as sky/speed line or compound rigging can be used to transport cut material to another location. Using appropriate rigging techniques can reduce or avoid the impact of falling debris. Additional impact prevention measures can be implemented for sensitive sites such as the use of padding or impact resistant materials for crash pads.</p>
<p>6. MEWP assisted dismantling</p>	<p>The MEWP operator will position the truck and set it up in an appropriate place. The work platform is used to access the tree. From the platform, the tree can be dismantled using proper cutting and rigging procedures. If the work is near overhead power lines, an insulated boom, insulated tools and other specialist equipment can be utilised by competent and suitably qualified staff to clear vegetation from the power lines. Specific procedures need to be followed for work around overhead power lines. The voltage, weather and proximity of vegetation, vehicles, tools, and staff all need to be considered. When working near overhead power lines, a dedicated safety observer is positioned to watch the MEWP operator to ensure no part accidentally comes in contact with the overhead lines. When working on network lines the network operator's control centre needs to be notified about timing and location of work. A MEWP may also be utilised to dismantle trees that are unsafe to climb or difficult for a climber to access. The MEWP operator can cut small sections that can be snapped off by hand. The MEWP can be used to fly the held piece over to an appropriate position where they can be safely dropped.</p>

<p>7. Crane assisted dismantling</p>	<p>The crane will be setup in an appropriate location. A climber will access the tree using a rope and harness or via the crane. The lifting dogman will direct the crane operator to manoeuvre the hook to the climber. The climber will attach the crane hook using chains or sling to the section to be cut. The dogman will direct the crane operator to apply appropriate tension and position the hook over the section's centre of gravity. The climber will descend to a position agreed with the dogman to perform the cut sequence. Once directed by the dogman, the climber will proceed to cut the section to release it in a controlled manner. As the piece is released, the dogman will direct the crane operator to lift the section smoothly up and away from the climber. The crane operator will fly the load to the processing site where he will be directed by the landing dogman to lower and settle the section. Once the section has been stabilised, the sling/chains can be released by ground staff. The crane operator then directs the hook back to the climber for the next lift and the sequence is repeated.</p>
<p>8. Helicopter assisted dismantling</p>	<p>A suitably qualified climbing arborist (herein after referred to as the climber) will access the tree using a rope and harness. The tree may be pre-stropped (long choker slings/strops attached prior, to minimise flying time). The climber will check and adjust if necessary sling. The lifting dogman will direct the helicopter pilot to manoeuvre the helicopter hook to the climber. The hook is attached to the helicopter via a long line. The climber will attach the sling to the hook and signal the dogman. The lifting dogman will direct the pilot to take up the slack and position the helicopter over the load's centre of gravity. The lifting dogman will communicate with the climber to place the cuts at an appropriate point to ensure the load is within the helicopter's lifting capabilities and so the loaded can be lifted smoothly away from the climber.</p> <p>Once the climber has completed the cut procedure, the lifting dogman will direct the pilot to lift the load away from the climber and transport it to the processing site, via planned extraction zones. The landing dogman will direct the pilot to lower and release the load at the processing site. All machinery, vehicles and staff are kept clear of the flight path and suspended load. Once the load has been released, the pilot will return for the next lift, and the procedure will be repeated.</p> <p>During flying operations, only work that is strictly necessary is to be carried out within the landing zone, e.g. releasing slings and safe placement of loads. Loads are only to be approached once they have been safely landed and stabilised.</p>

	<p>Processing and removal of cut materials and debris</p>	<p><i>Cut and leave:</i> material can be left as it lies or stacked into eco piles that will provide habitat and decay over time returning nutrients to the soil.</p> <p><i>Mulch on site:</i> Where mulch can be utilised on site, the chipped material can be chipped directly into a pile or chipped into a truck and tipped at an accessible location. If the cut material is to be chipped directly onto the site, a track mounted chipper can be used for less accessible sites.</p> <p><i>Mulch off site:</i> chip-able material can be fed manually or by an excavator into a wood chipper that sprays the chip into the back of a tipper truck.</p> <p><i>Logs on site:</i> Logs can be left in length or cut into manageable sizes for the public to remove for firewood.</p> <p><i>Logs off site:</i> Larger logs can be cut into manageable sections and left on site for public consumption or can be loaded into a truck manually, or with a loader, crane/hiab or excavator.</p>
--	--	---

APPENDIX II

MAUNGAREI: TREES TO REMOVE

(Treescape 2017: 14)

Tree ID	Species	Group	Priority	Authority	Method type and number
1	Radiata Pine - <i>Pinus radiata</i>	Yes	1	MA	Crane(7)
2	Radiata Pine - <i>Pinus radiata</i>	Yes	1	MA	Crane (7), Helicopter(8), Machine assisted felling(3)
3	Radiata Pine - <i>Pinus radiata</i>	Yes	1	MA	MEWP(6)(6), Helicopter(8)
4	Macrocarpa - <i>Cupressus macrocarpa</i>	No	1	T; MA	Helicopter(8)
5	Gum - <i>Eucalyptus</i> sp.	Yes	2	MA	MEWP(6); Helicopter(8)
8	Gum - <i>Eucalyptus</i> sp.	No	1	T; MA	Manual(4)
9	Radiata Pine - <i>Pinus radiata</i>	Yes	1	MA	Manual(4)
17	Radiata Pine - <i>Pinus radiata</i>	No	1	MA	MEWP(6) + TTM
21	Necklace poplar - <i>Populus deltoides</i>	Yes	1	T; TBC	Manual(4), Rigging (5)
23	European Ash - <i>Fraxinus excelsior</i>	Yes	1	T; TBC	Manual(4)
24	Radiata Pine - <i>Pinus radiata</i>	Yes	2	T; MA	Helicopter(8)
25	Macrocarpa – <i>Cupressus macrocarpa</i>	Yes	2	T; MA	Helicopter(8)
27	Macrocarpa – <i>Cupressus macrocarpa</i>	Yes	2	T; MA	Helicopter(8)
28	Cypress - <i>Chamaecyparis lawsoniana</i>	No	2	T; MA	Helicopter(8)
30	Macrocarpa – <i>Cupressus macrocarpa</i>	Yes	2	T; MA	Manual(4)

Key: MA = Removal recommended by Maunga Authority criteria

T = Removal recommended in initial Treescape assessment

TBC = Removal to be confirmed

MEWP = Mobile Elevated Work Platform

TTM = Temporary Traffic Management