



Ōtāhuhu / Mt Richmond Tree Removal Methodology

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Client: Tūpuna Maunga Authority

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This assessment and report have been prepared by Treescape Ltd (Treescape) and reviewed by Arborlab, for the Tūpuna Maunga Authority.

This report should be accepted and read in its entirety. No single statement or part of this report should be used individually in a manner that is outside the context of the whole report.

This assessment and report does not address the matter of environmental effects relating to arboriculture works as it was outside the scope of works.

Acknowledge that information from relevant reports and/or plans supplied by others may have been used in the formulation of this report, to support the information provided and authorised.

Treescape Ltd cannot accept responsibility for any use of or reliance upon the contents of this report by a third party.

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Introduction

The Tūpuna Maunga Authority has engaged Treescape Ltd to prepare a Tree Removal Methodology (Methodology) for the removal of 443 exotic trees on Ōtahuhu (5 trees have been identified to be retained with the possibility of removal of 4 and these are included in the 443).

This Methodology includes an inventory of all exotic trees over 3m in height and their locations. The Methodology has been formed with advice from acoustics, archaeological, cultural and historical specialists in order to prevent damage of features or disturbance of the maunga.

This Methodology has been prepared by and/or overseen by appropriately qualified Arboriculture Consultants familiar with large scale tree removal. Treescape Limited undertook the recent removal works at Maungarei.

This Methodology does not give consideration to the environmental effects of the proposed tree removals. Reports by other specialists will assess ecological and landscape visual matters relevant to the wider restoration project.

Arborlab Consultancy Services Ltd has been engaged to assess and amend the tree removal methodologies where required, and to survey and identify native trees. No amendments on the reporting have been undertaken, except where clarification has been required.

Scope

Treescape Limited has been engaged by Tūpuna Maunga Authority to prepare a methodology for the removal of exotic species from Ōtahuhu. This has involved:

- Identifying each exotic tree, its location and a removal method
- Determining operating methodologies for their removal that are cost effective, safe and best protect the archaeological, cultural and historical features of the maunga from damage or disturbance; and
- Defining the operations management system and practices required to minimise implementation risks

This Methodology will be used to inform a detailed Arboriculture Works Specification from which potential tree removal contractors can sufficiently complete and provide an accurate service solution proposals and pricing estimates.

Scope Exclusions

- An assessment of the environmental effects of planned arboriculture works
- Detailed review and refinement of work specifications at an individual tree level

Operational Management Requirements and Protocols

The operational management requirements focus on compliance with health and safety and regulation compliance. Appendix D sets out operational management requirements for carrying out the works.

These requirements form part of a delivery plan and its purpose to achieve the desired outcomes within the various requirements and constraints of the project, as well as providing reassurance to the Authority. It is recommended that the contractor be required to adequately demonstrate appropriate operations management system controls.

Operating Methods Assessment & Selection

Assessment & Selection Factors

The factors relevant to, and considered in, developing the Methodology are detailed below in Table 1 below. Assessment & evaluation of these factors, and their interconnection, has determined the specific operating methods selected for given areas and trees.

The section in the table on Overlays has been informed by advice from the project archaeologist and planner. The remaining sections are informed by the arboricultural expertise of the Treescape consultants.

Table 1: Assessment Factors

Category	Factor	Relevance
Overlays	Natural Features	Ground disturbance is not permitted in a natural / unmodified area of the maunga unless approved by the Archaeologist.
	Archaeological sensitivity	Archaeologically sensitive areas must be protected from damage or alteration. The default position is that no ground disturbance, regardless of how minor, is permitted. This eliminates all removal methods that involve tree / tree sections being lowered to the ground at its original location. Crane assisted dismantling can be used to remove trees located less than 40m - 70m (crane size dependent) from a suitable operating area. Any increased tolerance for ground disturbance would give rise to the possible use of crash mats to lessen the impact when lowering tree sections on to sensitive ground. Used in conjunction with rigging techniques that offer maximum control may be a solution that meet acceptable risk thresholds.
Physical Factors	Topography	As the land gradient becomes steeper so to does the level of complexity and risk associated with tree removal. Manually assisted felling and dismantling methods can be used but, for larger trees especially, controlling the direction and resting place of the fall and the feasibility of processing in situ and moving tree rings or logs are important considerations. Crane or helicopter assisted dismantling is highly likely a more cost effective, as well as lower risk, method for removing large trees from sloped areas.
	Built features / Land Modifications	Modifications such as roading and pathways provide potential work areas, or access ways to work areas, for large machinery. In modified areas ground disturbance is permitted as the archaeological effect has already occurred and the risk significantly reduced. The size, gradient and stability of the modified area(s) will determine the size and type of machinery that can be used.
Tree Factors	Provenance	Provenance refers to a tree's place of origin. An objective of this project is remove any species not originating in NZ (exotics) from the maunga. Identifying exotics is a key function of the tree survey.
	Species	Tree species can define tree handling and removal requirements. E.g. species susceptible to diseases posing high biosecurity risk e.g. Dutch Elm, Myrtle and Kauri are subject to specific controls. Some, but not all species will require ringbarking or injecting with herbicides in advance of removal if stumps are to be left to rot and decay.
	Size	Size is a key determinant of the tree removal method. Felling methods require a clear area to land the tree and is only feasible in non-sensitive areas. Cutting large trees into sufficiently small sections to be loaded into trucks is generally not cost effective when compared to dismantling into large sections that can be loaded by crane or helicopter.
	Quantity	When all but a few trees require crane or helicopter assisted removal it is highly likely utilising these tools for the few will be more cost effective.
Regulatory Factors	Noise Disturbance	Noise restrictions will impact when and where helicopters and loud machinery can be operated.
	Traffic Management	Operating on or around roads will require either traffic management plans to be implemented or potentially temporary road closures.
	Health & Safety	An assessment of H&S risk relating to all aspects of planned operations for each site is mandatory and should be viewed as informing the evaluation and selection of tree removal methods.
Cost Factors	Method Cost	The cost to remove an individual tree depends upon the removal method, the scale and complexity of the removal, the required outcome and the processing location. Least expensive is manual felling (method one) of a small tree located in an area that is easily accessible, with few constraints and in-situ processing is permitted. Most expensive is helicopter assisted dismantling of a large tree located in area with significant constraints including the need to move tree sections to a remote processing site. Put in context, the former could take a crew of two, using small hand tools (e.g. chain saw), approx. 2 hours at a cost of \$300 - \$500 where as the later could take 6+ hours of helicopter time along at a cost of approx. \$3500 per hour.
	Overall Cost Efficiency	In some instances, such as when a small minority of trees in a particular location fit the criteria for a cheaper removal method, it is more cost effective to employ a method that, on a stand alone basis, would be more expensive. These opportunities are best identified once the operating methodologies are refined at an individual tree level.

Survey Area

The survey area is shown on Figure 1. A survey of the subject-site and all trees >3m in height was undertaken by Treescape Limited.

Figure 1: Aerial image of the subject site and surrounding area



Tree Population

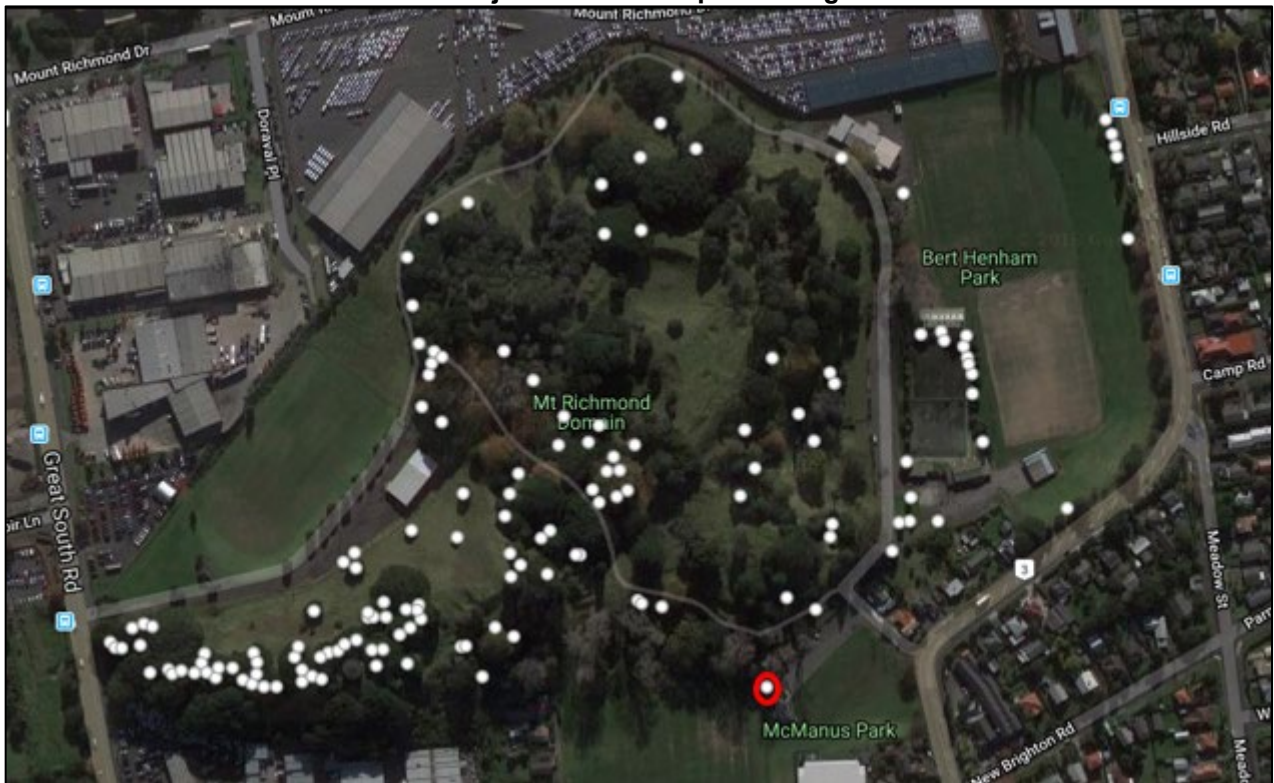
Native Tree Species

All native trees have been surveyed within the site. The following table outlines the species list and the number of native trees and Figure 2 on the following page provides a location of the trees.

Table 2: Native Tree List

Species	Total trees
<i>Metrosideros excelsa</i>	57
<i>Griselinia littoralis</i>	2
<i>Pittosporum crassifolium</i>	5
<i>Pittosporum eugenioides</i>	1
<i>Pittosporum tenuifolium</i>	3
<i>Kunzea ericoides</i>	1
<i>Cordyline australis</i>	1
<i>Vitex lucens</i>	36
<i>Podocarpus totara</i>	16
<i>Alectryon excelsus</i>	3
<i>Corynocarpus laevigatus</i>	25
Total	150

Figure 2: Native tree locations – tree highlighted in red will require trimming to allow access into the adjacent fields for processing.



Exotic Tree Species

In total 444 exotic trees (woody vegetation >3m in height) representing 45 species were identified within the survey area. One London Plane near the sports clubroom is to be retained and not included as part of this methodology. As noted above a further four trees located in the south western corner may possibly removed. A breakdown of exotic trees to be removed by species is given in Table 2 on the following page.

The greatest concentrations of exotics are contained within the peripheral track/roadway with a linear belt of trees along the eastern boundary of the sports field.

The species composition is dominated by Olive (*Olea europaea*) with 101 trees representing 22% of the exotic stock. Morton Bay fig (*Ficus macrophylla*), London plane (*Platanus x acerifolia*) and elm (*Ulmus sp.*) each represent 6% of the exotic population.

A number of large figs are present, particularly upon the terracing on the western side and the presence of so many elms dictate full compliance with Dutch Elm Disease protocols (although no infected elms were detected at the time of inspection).

Three (3) species identified on site are listed as pests in the Regional Pest Management Strategy (RPMS): Acmena/monkey apple (*Syzygium smithii*); Hawthorn (*Crataegus laevigata*); Phoenix palm (*Phoenix canariensis*); are classified as 'Surveillance – Whole region'. It is notable that two of the most numerous species, Olive (*Olea sp.*) and Morton Bay fig (*Ficus macrophylla*) are classified under the RPMS as 'Species to be researched (not a Pest Plant) - Whole Region'.

Table 3: Species and tree removal method

Crane Assisted Dismantling	178
Acmena smithii, Syzyium - lilly pilly, monkey apple	6
Cedrus atlantica - Atlas cedar, blue	1

Table 3: Species and tree removal method

Fraxinus excelsior - european ash, common ash	2
Populus nigra - Lombardy poplar, black poplar	8
Tilia sp. - lime, linden, basswood	1
Araucaria heterophylla- Norfolk Island pine	1
Betula pendula- silver birch	1
Castanea sativa - European chestnut	1
Casuarina sp. - she oak	1
Cinnamomum camphora- camphor laurel	4
Crataegus laevigata - English hawthorn	3
Cryptomeria japonica - Japanese cedar	2
Cupressus macrocarpa - Monterey cypress	8
Cupressus sempervirens- Italian cypress	2
Cupressus x leylandii - Leyland cypress	1
Eucalyptus sp.	4
Fagus sylvatica-european beech	3
Ficus macrophylla-Morton Bay fig	16
Ginkgo biloba	1
Grevillea robusta - silky oak	3
Ilex sp. - holly	3
Liriodendron tulipifera - tulip tree	1
Magnolia soulangeana x - Asian magnolia	2
Olea sp. - olive	17
Phoenix canariensis -phoenix palm	2
Pinus radiata - Monterey pine	16
Pinus sp.	2
Platanus x acerifolia - London Plane tree	21
Populus deltoides - cottonwood	10
Populus x euramericana - hybrid poplar P. nigra x P. deltoides	4
Prunus sp.-flowering cherry	1
Quercus ilex - holm oak	6
Quercus palustris- pin oak	5
Quercus robur - English oak	1
Schinus mole - Peruvian pepper tree	1
Sequoia sempervirens	1
Ulmus glabra - Scots wych elm	4
Ulmus sp.	2
Washingtonia filifera - fan palm	10
Helicopter assisted dismantling	163
Acmena smithii, Syzyium - lilly pilly, monkey apple	7
Castanea sativa - European chestnut	1
Crataegus laevigata - English hawthorn	10
Cryptomeria japonica - Japanese cedar	1
Cupressus macrocarpa - Monterey cypress	8
Fagus sylvatica-european beech	2

Table 3: Species and tree removal method

Ficus macrophylla-Morton Bay fig	9
Grevillea robusta - silky oak	3
Ilex sp. - holly	1
Magnolia grandiflora - N Am evergreen magnolia	1
Olea sp. - olive	81
Phoenix canariensis -phoenix palm	3
Pinus radiata - Monterey pine	7
Pinus sp.	2
Platanus x acerifolia - London Plane tree	3
Populus deltoides - cottonwood	4
Quercus ilex - holm oak	5
Quercus palustris- pin oak	1
Quercus robur - English oak	3
Ulmus glabra - Scots wych elm	10
Unknown species	1
Manual dismantling	38
Acmena smithii, Syzyium - lilly pilly, monkey apple	1
Cedrus atlantica - Atlas cedar, blue	2
Fraxinus excelsior - european ash, common ash	5
Populus nigra - Lombardy poplar, black poplar	13
Betula pendula- silver birch	1
Camellia sp.	1
Casuarina sp. - she oak	2
Cryptomeria japonica - Japanese cedar	2
Cupressus sempervirens- Italian cypress	1
Liquidambar styraciflua - sweetgum	2
Platanus x acerifolia - London Plane tree	1
Quercus palustris- pin oak	2
Quercus robur - English oak	5
Manual Felling	51
Cedrus atlantica - Atlas cedar, blue	1
Chamaecyparis lawsoniana - Port Orford cedar, Lawson cypress	2
Fraxinus excelsior - european ash, common ash	1
Betula pendula- silver birch	3
Camellia sp.	23
Crataegus laevigata - English hawthorn	11
Eriobotrya japonica - loquat	2
Hymenosporum flavum -Australian frangipani	1
Laurus nobilis - Bay laurel	1
Olea sp. - olive	3
Quercus ilex - holm oak	2
Ulmus glabra - Scots wych elm	1
MEWP assisted dismantling	9
Castanea sativa - European chestnut	1

Table 3: Species and tree removal method

Ficus macrophylla-Morton Bay fig	1
Ulmus glabra - Scots wych elm	7
Retained / Possible Manual dismantling	5
Acmena smithii, Syzyium - lilly pilly, monkey apple	1
Ulmus glabra - Scots wych elm	3
Grand Total	443

Operations Plan

Operating Methods

The operating methods are the various tree removal and processing techniques.

Please note: the Tūpuna Maunga Authority preference is that with the exception of specific logs that may be suitable for carving, processing is mulch on site. Where surplus to requirements, the mulch will be removed off site.

Tree Removal

A suite of tree removal method options appropriate for the range of works required has been developed. These have been selected for inclusion on the basis of feasible, effectiveness and cost. Selected methods are listed below and described in Appendix A.

- Manual felling
- Machine assisted manual felling
- Manual dismantling
- Manual dismantling using rigging techniques
- MEWP assisted dismantling
- Crane assisted dismantling
- Helicopter assisted dismantling

Debris Processing

A suite of processing method options appropriate for the range of works required has been developed. These have been selected for inclusion on the basis of feasibility, effectiveness and cost. Selected methods are listed below and described in Appendix B.

- Cut and leave
- Mulch on-site
- Mulch off-site
- Cut logs on-site
- Cut logs off-site

Tree Removal Standard Method

The tree removal standard method includes:

- Felling a tree (as one section) or dismantling a standing tree by cutting and removing it in sections

- Leaving the remnant stump in place (approx. <1m in height) – N.B. mandatory in archaeologically sensitive areas.
- Any pre-treatment of the tree.

The following variations to the standard method are identified for consideration by the relevant other experts.

Stumps In general, stumps will be left as close as practical to ground level, however, in some cases this will be problematic to achieve – for example large trees with prominent buttress roots. Where this is the case, the stumps may be left up to one metre above ground level.

Use of Crash Mats Crash mats will be used to minimise ground disturbance impact when lowering tree sections on to sensitive ground where it is determined that a part of the tree could cause damage.

Used in conjunction with rigging techniques that offer maximum control may be a solution that meet acceptable risk thresholds.

Operating Zones

Four areas (1-4) have been identified as processing sites for helicopter drop zones and large crane operations. The processing zones have been identified to have negligible effects on the maunga.

Areas 1 and 3 will be the drop zones for helicopter operations. Areas 2 and 4 are for crane operations. Area 4 will utilise an existing sports field that is accessed through the carpark and Area 2. Approximately 30 metres of the northern edge of the sports field will be required for this processing site. The crane, likely to be in excess of 200 tonnes, will access approximately 20 large, mature trees growing adjacent to the sports field. One Pohutukawa (highlighted in Figure 2) growing within the reserve carpark will need to be trimmed for the access of the cranes and vehicles into this site.

The maunga has generally been divided into two zones – East Tihi and West Tihi and within this are two further sectors divided at the tihi. The use of zones and sectors have been created to allow the staging of the tree removals in regards to helicopter fly times and assessment of noise effects. In general, the western Tihi zone will utilise the processing area identified as Area 3 and the eastern zone will utilise processing Area 1.

The formed roads in part of the maunga provides the option of additional minor processing areas. These are small, mobile working sites that include a crane, truck, chipper and excavator (with rubber tracks). These minor processing sites will be operated on top of existing roadways for short-lived operating periods.

Work Durations

Treescape Limited has provided an estimated works duration for tree removals on the maunga. This is based on the current tree removal methodologies proposed. Alterations to the methodologies may alter the hours/days to complete the works. The estimated durations below exclude the set-up and 'pack-down' times required for the task as it is understood this does not impact on the consideration of noise beyond the works area, however, it can affect the costs and hours/days spent on site. In addition to the hours listed in the below table, which outlined the removal methodologies, it is expected that the total project operation will be 86 days in total, this allows for truck and chipper operations.

Table 4: Tree Removal Operational Times

Otago / Mt Richmond	Helicopter Removals	All Removals	Total
Northwest (NW) tihi, Sector 1	7 days	6 Days	13 Days
Southwest (SW) tihi, Sector 2	6 Days	14 Days	20 Days
Northeast (NE) tihi, Sector 3	8 Days	13 Days	21 Days
Southeast (SE) tihi, Sector 4	6 Days	9 Days	15 days
Total Days	27	42	69

Discussion

Due to the significant number of trees being removed and the limitations on acceptable flying times in a concentrated area, the removals will be undertaken in two stages, divided into West and East tihi. These will be separated by no less than 6 months and no greater than 18 months.

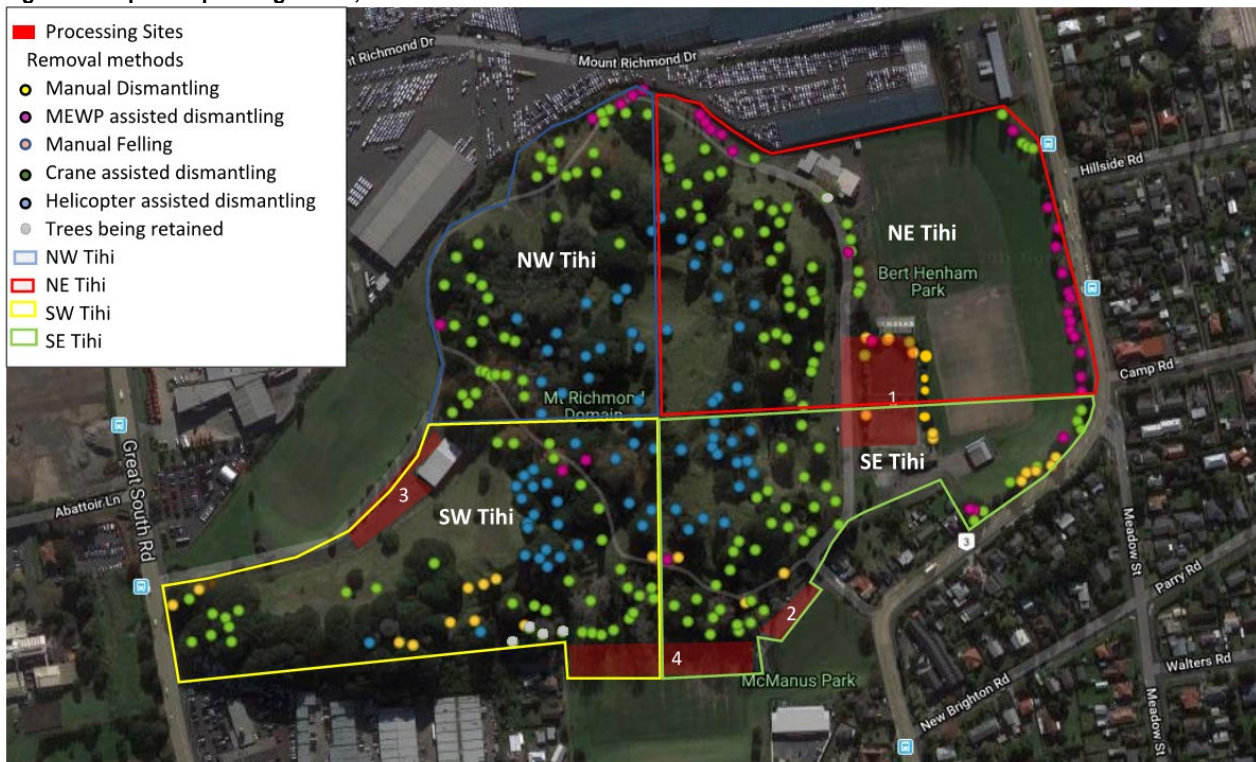
Generally, the method of removal has been identified using expert operators' advice, subject to experience and calculations, with consideration to the availability of archaeological, cultural and historical advice. Where there has been the need to avoid damage to archaeological values or uncertainty in the method achievable, the default method selected, as set out in Appendix C, is helicopter removal. It is understood this is a 'worst case' scenario from a noise perspective. However, during the operation, it could be determined that some trees may be removed by crane. Where this is achievable, crane removal methods will be preferential. Four trees growing to the northwest of Processing site 4 are being retained and will be removed in a separate application. If it is determined during the operation that without compromising archaeological values, the trees may be removed manually.

Where practical, crane assisted tree dismantling will occur throughout the maunga. These crane operations will only occur where damage to the archaeological aspects of the maunga can be avoided, for example where the crane can operate from paved roads. The crane size and operational limitations have been considered in the tree removal methodology. Where the crane operations occur outside the identified processing sites, the 'minor' processing sites will occur. These will involve a truck, excavator and chipper to be set up in conjunction with the crane operations.

Removal of trees from near the western and eastern boundary of the maunga will require temporary traffic management of Great South Road and Mt Wellington Highway.

Figure 2 below outlines the processing sites, Tihi zones and the tree removal locations and recommended removal methods. Please refer to Appendix E for a larger version of Figure 2.

Figure 2: Maps of Operating Zones, Tree Locations & Removal Methods



Trees for Removal

Tree Inventory

For purposes of the survey, the maunga has been divided into operating zones as outlined in the following overhead photograph (Figure 3). The trees have been summarised in Table 3 on the following page and itemised in full in Appendix C.

Figure 3: Operating Zones for survey purposes.



Table 5: Summary of Exotic Trees

Tree Species	A - Ring Road	B - Motor Club	C - West Slope / Entrance	D - Water Tower	E - Tihi	F - Sports Field Area	Total
"Acmena smithii, Syzyium - lilly pilly, monkey apple"	5	0	1	6	3	0	15
"Cedrus atlantica - Atlas cedar, blue"	0	0	0	0	0	4	4
"Chamaecyparis lawsoniana - Port Orford cedar, Lawson cypress"	0	0	0	2	0	0	2
"Fraxinus excelsior - european ash, common ash"	0	0	0	0	0	8	8
"Tilia sp. - lime, linden, basswood"	0	0	0	1	0	0	1
Araucaria heterophylla- Norfolk Island pine	0	0	0	0	1	0	1
Betula pendula- silver birch	0	0	0	0	0	5	5
Camellia sp.	0	0	0	0	0	24	24
Castanea sativa - European chestnut	1	0	0	1	1	0	3
Casuarina sp. - she oak	2	0	0	0	0	1	3
Cinnamomum camphora- camphor laurel	2	0	0	0	0	2	4
Crataegus laevigata - English hawthorn	2	0	0	8	14	0	24
Cryptomeria japonica - Japanese cedar	1	0	0	1	1	2	5
Cupressus sp.	4	1	0	2	10	3	20
Eriobotrya japonica - loquat	0	0	0	0	0	2	2
Eucalyptus sp.	3	0	0	1	0	0	4
Fagus sylvatica-european beech	0	0	0	3	2	0	5
Ficus macrophylla-Morton Bay fig	4	1	1	9	10	1	26
Ginkgo biloba	0	0	0	1	0	0	1
Grevillea robusta - silky oak	0	0	0	1	5	0	6
Hymenosporum flavum -Australian frangipani	0	0	0	0	0	1	1
Ilex sp. - holly	2	0	0	0	2	0	4
Laurus nobilis - Bay laurel	1	0	0	0	0	0	1
Liquidambar styraciflua - sweetgum	1	0	0	0	0	1	2
Liriodendron tulipifera - tulip tree	0	0	0	0	0	1	1
Magnolia sp.	1	0	0	1	1	0	3
Olea sp. - olive	5	40	0	9	46	1	101
Phoenix canariensis -phoenix palm	1	0	0	2	2	0	5
Pinus sp.	8	5	0	2	12	0	27
Platanus x acerifolia - London Plane tree	4	0	0	8	13	1	26
Populus sp.	22	0	0	13	1	3	39
Prunus sp.-flowering cherry	1	0	0	0	0	0	1
Quercus sp. (Oak)	3	1	3	9	4	10	30
Schinus molle- Peruvian pepper tree	0	0	0	0	0	1	1
Sequoia sempervirens	0	0	0	1	0	0	1
Ulmus sp. (Elm)	11	0	8	8	0	0	27
Unknown species	0	0	0	0	1	0	1
Washingtonia filifera - fan palm	0	0	0	0	0	10	10
Total	84	48	13	89	129	81	444

Appendix A: Description of Tree Removal Methods

Method	Description
Manual felling	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.
Machine assisted manual felling	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.
Manual dismantling	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.
Manual dismantling using rigging techniques	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. 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.
MEWP assisted dismantling	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>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>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>

Appendix B: Description of Tree Processing Methods

Method	Description
Cut and Leave	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.
Mulch On Site	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.
Mulch Off Site	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. Two 10t trucks will operate in rotation to remove mulch from site when processing higher volumes with an excavator. Truck movements can be up to 8-10 movements to and from site per day.
Log On Site	Logs can be left in length or cut into manageable sizes for the public to remove for firewood.
Log Off Site	Larger logs can be cut up and loaded into a truck manually, or loaded in larger lengths with a loader, crane, hiab or excavator. Logs can be transported from site in up to 5m lengths using a 10t tip truck or hiab truck with of 5m deck which can tow a trailer with additional 5m deck. Truck movements are estimated to be up to 4-5 movements to and from site per day.

Appendix C: Itemised Tree Inventory

Item No:	Tree Species	Operating Area	latitude	longitude	RPMS status	DBH (mm)	Approx. height (m)	Crown spread (m)	Removal Method
1	Olea sp. - olive	D - Water Tower	-36.934183	174.837021	Not Pest Species	350	7	7	Crane Assisted Dismantling
2	Ulmus glabra - Scots wych elm	C - West Slope / Entrance	-36.934119	174.835846	Not Pest Species	550	18	8	MEWP assisted dismantling
3	Ulmus glabra - Scots wych elm	C - West Slope / Entrance	-36.934119	174.835846	Not Pest Species	550	18	8	MEWP assisted dismantling
4	Ulmus glabra - Scots wych elm	C - West Slope / Entrance	-36.934119	174.835846	Not Pest Species	550	18	8	MEWP assisted dismantling
5	Ulmus glabra - Scots wych elm	C - West Slope / Entrance	-36.934119	174.835846	Not Pest Species	550	18	8	MEWP assisted dismantling
6	Ulmus glabra - Scots wych elm	C - West Slope / Entrance	-36.934119	174.835846	Not Pest Species	550	18	8	MEWP assisted dismantling
7	Ulmus glabra - Scots wych elm	C - West Slope / Entrance	-36.934119	174.835846	Not Pest Species	550	18	8	MEWP assisted dismantling
8	Ulmus glabra - Scots wych elm	C - West Slope / Entrance	-36.934119	174.835846	Not Pest Species	550	18	8	MEWP assisted dismantling
9	"Acmena smithii, Syzygium - lilly pilly, monkey apple"	D - Water Tower	- 36.93369847	174.8386125	Surveillance Pest Plant	800	6	5	Helicopter assisted dismantling
10	Magnolia grandiflora - N Am evergreen magnolia	D - Water Tower	- 36.93370758	174.8388817	Not Pest Species	1500	12	10	Helicopter assisted dismantling
11	Olea sp. - olive	D - Water Tower	- 36.93384988	174.839058	Not Pest Species	300	6	4	Helicopter assisted dismantling
12	Olea sp. - olive	D - Water Tower	- 36.93384988	174.839058	Not Pest Species	300	6	4	Helicopter assisted dismantling
13	Olea sp. - olive	D - Water Tower	- 36.93384988	174.839058	Not Pest Species	300	6	4	Helicopter assisted dismantling
14	Olea sp. - olive	D - Water Tower	- 36.93415593	174.8372868	Not Pest Species	350	7	7	Crane Assisted Dismantling
15	Ficus macrophylla-Morton Bay fig	D - Water Tower	- 36.93394517	174.8387195	Not Pest Species	1300	22	30	Helicopter assisted dismantling
16	Pinus sp.	D - Water Tower	- 36.93388472	174.8387781	Not Pest Species	2100	24	18	Helicopter assisted dismantling
17	Pinus sp.	D - Water Tower	- 36.93400493	174.8387896	Not Pest Species	1500	24	18	Helicopter assisted dismantling
18	Cupressus macrocarpa - Monterey cypress	D - Water Tower	- 36.93393796	174.8389007	Not Pest Species	1850	22	15	Helicopter assisted dismantling
19	"Chamaecyparis lawsoniana - Port Orford cedar, Lawson cypress"	D - Water Tower	- 36.93381692	174.8392683	Not Pest Species	700	17	6	Manual Felling

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Item No:	Tree Species	Operating Area	latitude	longitude	RPMS status	DBH (mm)	Approx. height (m)	Crown spread (m)	Removal Method
20	Olea sp. - olive	D - Water Tower	- 36.93364024	174.8386706	Not Pest Species	500	6	6	Helicopter assisted dismantling
21	"Acmena smithii, Syzygium - lilly pilly, monkey apple"	D - Water Tower	- 36.93373116	174.8386168	Surveillance Pest Plant	700	6	6	Helicopter assisted dismantling
22	Olea sp. - olive	D - Water Tower	- 36.93344012	174.8385152	Not Pest Species	500	7	7	Helicopter assisted dismantling
23	"Acmena smithii, Syzygium - lilly pilly, monkey apple"	D - Water Tower	- 36.93352748	174.8385622	Surveillance Pest Plant	900	8	8	Helicopter assisted dismantling
24	Ficus macrophylla-Morton Bay fig	D - Water Tower	- 36.93341868	174.8387878	Not Pest Species	2500	25	25	Helicopter assisted dismantling
25	Grevillea robusta - silky oak	D - Water Tower	- 36.93336615	174.8385833	Not Pest Species	900	20	12	Helicopter assisted dismantling
26	"Acmena smithii, Syzygium - lilly pilly, monkey apple"	D - Water Tower	- 36.93332488	174.8386681	Surveillance Pest Plant	1000	9	6	Helicopter assisted dismantling
27	Platanus x acerifolia - London Plane tree	D - Water Tower	- 36.93324367	174.8388451	Not Pest Species	1200	25	15	Helicopter assisted dismantling
28	Phoenix canariensis - phoenix palm	D - Water Tower	- 36.93333104	174.8389212	Surveillance Pest Plant	650	12	4	Helicopter assisted dismantling
29	Ficus macrophylla-Morton Bay fig	D - Water Tower	- 36.93359609	174.8392421	Not Pest Species	2500	250	25	MEWP assisted dismantling
30	Castanea sativa - European chestnut	D - Water Tower	-36.9334302	174.8390832	Not Pest Species	1700	20	20	MEWP assisted dismantling
31	Ficus macrophylla-Morton Bay fig	D - Water Tower	- 36.93354731	174.838876	Not Pest Species	1500	10	25	Helicopter assisted dismantling
32	Ficus macrophylla-Morton Bay fig	D - Water Tower	- 36.93344387	174.8386627	Not Pest Species	1500	7	8	Helicopter assisted dismantling
33	Cupressus macrocarpa - Monterey cypress	D - Water Tower	- 36.93392439	174.8385933	Not Pest Species	2300	22	12	Helicopter assisted dismantling
34	"Acmena smithii, Syzygium - lilly pilly, monkey apple"	D - Water Tower	- 36.93313406	174.8383519	Surveillance Pest Plant	1500	13	10	Crane Assisted Dismantling
35	Platanus x acerifolia - London Plane tree	D - Water Tower	- 36.93313862	174.8384924	Not Pest Species	1250	22	30	Crane Assisted Dismantling
36	Platanus x acerifolia - London Plane tree	D - Water Tower	- 36.93278915	174.8381605	Not Pest Species	1200	19	18	Crane Assisted Dismantling
37	Platanus x acerifolia - London Plane tree	D - Water Tower	- 36.93278915	174.8381605	Not Pest Species	1200	19	18	Crane Assisted Dismantling
38	Platanus x acerifolia - London Plane tree	D - Water Tower	- 36.93278915	174.8381605	Not Pest Species	1200	19	18	Crane Assisted Dismantling
39	Platanus x acerifolia - London Plane tree	D - Water Tower	- 36.93278915	174.8381605	Not Pest Species	1200	19	18	Crane Assisted Dismantling

Item No:	Tree Species	Operating Area	latitude	longitude	RPMS status	DBH (mm)	Approx. height (m)	Crown spread (m)	Removal Method
40	Platanus x acerifolia - London Plane tree	D - Water Tower	- 36.93278915	174.8381605	Not Pest Species	1200	19	18	Crane Assisted Dismantling
41	Platanus x acerifolia - London Plane tree	D - Water Tower	- 36.93278915	174.8381605	Not Pest Species	1200	19	18	Crane Assisted Dismantling
42	Cupressus macrocarpa - Monterey cypress	B - Motor Club	-36.9328004	174.8380438	Not Pest Species	1850	22	16	Crane Assisted Dismantling
43	Pinus sp.	B - Motor Club	- 36.93286001	174.8380923	Not Pest Species	850	18	10	Crane Assisted Dismantling
44	Pinus sp.	B - Motor Club	- 36.93292315	174.837954	Not Pest Species	950	17	14	Crane Assisted Dismantling
45	Cupressus macrocarpa - Monterey cypress	E - Tihi	- 36.93360172	174.8399177	Not Pest Species	1500	15	10	Helicopter assisted dismantling
46	Olea sp. - olive	E - Tihi	- 36.93313996	174.8395506	Not Pest Species	400	6	5	Helicopter assisted dismantling
47	"Acmena smithii, Syzyium - lilly pilly, monkey apple"	E - Tihi	- 36.93299149	174.8395837	Surveillance Pest Plant	700	10	10	Helicopter assisted dismantling
48	Crataegus laevigata - English hawthorn	E - Tihi	- 36.93248872	174.8387885	Surveillance Pest Plant	400	5	4	Helicopter assisted dismantling
49	Crataegus laevigata - English hawthorn	E - Tihi	- 36.93248872	174.8387885	Surveillance Pest Plant	400	5	4	Helicopter assisted dismantling
50	Crataegus laevigata - English hawthorn	E - Tihi	- 36.93248872	174.8387885	Surveillance Pest Plant	400	5	4	Helicopter assisted dismantling
51	Crataegus laevigata - English hawthorn	E - Tihi	- 36.93248872	174.8387885	Surveillance Pest Plant	400	5	4	Helicopter assisted dismantling
52	Crataegus laevigata - English hawthorn	E - Tihi	- 36.93248872	174.8387885	Surveillance Pest Plant	400	5	4	Helicopter assisted dismantling
53	Crataegus laevigata - English hawthorn	E - Tihi	- 36.93248872	174.8387885	Surveillance Pest Plant	400	5	4	Helicopter assisted dismantling
54	Crataegus laevigata - English hawthorn	E - Tihi	- 36.93248872	174.8387885	Surveillance Pest Plant	400	5	4	Helicopter assisted dismantling
55	Crataegus laevigata - English hawthorn	E - Tihi	- 36.93248872	174.8387885	Surveillance Pest Plant	400	5	4	Helicopter assisted dismantling
56	Crataegus laevigata - English hawthorn	E - Tihi	- 36.93248872	174.8387885	Surveillance Pest Plant	400	5	4	Helicopter assisted dismantling
57	Crataegus laevigata - English hawthorn	E - Tihi	- 36.93248872	174.8387885	Surveillance Pest Plant	400	5	4	Helicopter assisted dismantling
58	Olea sp. - olive	E - Tihi	- 36.93236865	174.8388703	Not Pest Species	400	6	7	Helicopter assisted dismantling
59	Olea sp. - olive	E - Tihi	- 36.93246487	174.8395982	Not Pest Species	400	5	7	Helicopter assisted dismantling

Item No:	Tree Species	Operating Area	latitude	longitude	RPMS status	DBH (mm)	Approx. height (m)	Crown spread (m)	Removal Method
60	Pinus radiata - Monterey pine	E - Tihi	- 36.93236437	174.8395358	Not Pest Species	1500		10	Helicopter assisted dismantling
61	Olea sp. - olive	B - Motor Club	- 36.93234239	174.8398389	Not Pest Species	300	5	5	Helicopter assisted dismantling
62	Olea sp. - olive	B - Motor Club	- 36.93234239	174.8398389	Not Pest Species	300	5	5	Helicopter assisted dismantling
63	Olea sp. - olive	B - Motor Club	- 36.93226468	174.8385218	Not Pest Species	100	5	3	Helicopter assisted dismantling
64	Olea sp. - olive	B - Motor Club	- 36.93226468	174.8385218	Not Pest Species	100	5	3	Crane Assisted Dismantling
65	Olea sp. - olive	B - Motor Club	- 36.93183506	174.8379892	Not Pest Species	300	6	5	Helicopter assisted dismantling
66	Olea sp. - olive	B - Motor Club	- 36.93183506	174.8379892	Not Pest Species	300	6	5	Helicopter assisted dismantling
67	Olea sp. - olive	B - Motor Club	- 36.93183506	174.8379892	Not Pest Species	300	6	5	Helicopter assisted dismantling
68	Olea sp. - olive	B - Motor Club	- 36.93183506	174.8379892	Not Pest Species	300	6	5	Helicopter assisted dismantling
69	Olea sp. - olive	B - Motor Club	- 36.93183506	174.8379892	Not Pest Species	300	6	5	Helicopter assisted dismantling
70	Olea sp. - olive	B - Motor Club	- 36.93183506	174.8379892	Not Pest Species	300	6	5	Helicopter assisted dismantling
71	Olea sp. - olive	B - Motor Club	- 36.93183506	174.8379892	Not Pest Species	300	6	5	Helicopter assisted dismantling
72	Olea sp. - olive	B - Motor Club	- 36.93183506	174.8379892	Not Pest Species	300	6	5	Helicopter assisted dismantling
73	Olea sp. - olive	B - Motor Club	- 36.93183506	174.8379892	Not Pest Species	300	6	5	Helicopter assisted dismantling
74	Olea sp. - olive	B - Motor Club	- 36.93183506	174.8379892	Not Pest Species	300	6	5	Helicopter assisted dismantling
75	Olea sp. - olive	B - Motor Club	- 36.93183506	174.8379892	Not Pest Species	300	6	5	Helicopter assisted dismantling
76	Olea sp. - olive	B - Motor Club	- 36.93183506	174.8379892	Not Pest Species	300	6	5	Helicopter assisted dismantling
77	Olea sp. - olive	B - Motor Club	- 36.93183506	174.8379892	Not Pest Species	300	6	5	Helicopter assisted dismantling
78	Olea sp. - olive	B - Motor Club	- 36.93183506	174.8379892	Not Pest Species	300	6	5	Helicopter assisted dismantling
79	Olea sp. - olive	B - Motor Club	- 36.93183506	174.8379892	Not Pest Species	300	6	5	Helicopter assisted dismantling

Item No:	Tree Species	Operating Area	latitude	longitude	RPMS status	DBH (mm)	Approx. height (m)	Crown spread (m)	Removal Method
80	Olea sp. - olive	B - Motor Club	-36.93183506	174.8379892	Not Pest Species	300	6	5	Helicopter assisted dismantling
81	Olea sp. - olive	B - Motor Club	-36.93183506	174.8379892	Not Pest Species	300	6	5	Crane Assisted Dismantling
82	Olea sp. - olive	B - Motor Club	-36.9319828	174.8381191	Not Pest Species	300	6	5	Helicopter assisted dismantling
83	Olea sp. - olive	B - Motor Club	-36.9319828	174.8381191	Not Pest Species	300	6	5	Crane Assisted Dismantling
84	Olea sp. - olive	B - Motor Club	-36.93203259	174.8382126	Not Pest Species	300	6	5	Helicopter assisted dismantling
85	Olea sp. - olive	B - Motor Club	-36.93203259	174.8382126	Not Pest Species	300	6	5	Helicopter assisted dismantling
86	Olea sp. - olive	B - Motor Club	-36.93203259	174.8382126	Not Pest Species	300	6	5	Helicopter assisted dismantling
87	Olea sp. - olive	B - Motor Club	-36.93203259	174.8382126	Not Pest Species	300	6	5	Helicopter assisted dismantling
88	Olea sp. - olive	B - Motor Club	-36.93203259	174.8382126	Not Pest Species	300	6	5	Helicopter assisted dismantling
89	Olea sp. - olive	B - Motor Club	-36.93203259	174.8382126	Not Pest Species	300	6	5	Helicopter assisted dismantling
90	Olea sp. - olive	B - Motor Club	-36.93203259	174.8382126	Not Pest Species	300	6	5	Helicopter assisted dismantling
91	Olea sp. - olive	B - Motor Club	-36.93203259	174.8382126	Not Pest Species	300	6	5	Helicopter assisted dismantling
92	Olea sp. - olive	B - Motor Club	-36.93203259	174.8382126	Not Pest Species	300	6	5	Helicopter assisted dismantling
93	Olea sp. - olive	B - Motor Club	-36.93203259	174.8382126	Not Pest Species	300	6	5	Helicopter assisted dismantling
94	Olea sp. - olive	B - Motor Club	-36.93203259	174.8382126	Not Pest Species	300	6	5	Helicopter assisted dismantling
95	Olea sp. - olive	B - Motor Club	-36.93203259	174.8382126	Not Pest Species	300	6	5	Crane Assisted Dismantling
96	Olea sp. - olive	B - Motor Club	-36.93212206	174.8382657	Not Pest Species	300	6	4	Helicopter assisted dismantling
97	Olea sp. - olive	B - Motor Club	-36.93212206	174.8382657	Not Pest Species	300	6	4	Helicopter assisted dismantling
98	Olea sp. - olive	B - Motor Club	-36.93212206	174.8382657	Not Pest Species	300	6	4	Helicopter assisted dismantling
99	Olea sp. - olive	B - Motor Club	-36.93212206	174.8382657	Not Pest Species	300	6	4	Helicopter assisted dismantling
100	Olea sp. - olive	B - Motor Club	-36.93212206	174.8382657	Not Pest Species	300	6	4	Helicopter assisted dismantling

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Item No:	Tree Species	Operating Area	latitude	longitude	RPMS status	DBH (mm)	Approx. height (m)	Crown spread (m)	Removal Method
101	Olea sp. - olive	B - Motor Club	- 36.93212206	174.8382657	Not Pest Species	300	6	4	Crane Assisted Dismantling
102	Ulmus glabra - Scots wych elm	C - West Slope / Entrance	- 36.93416444	174.8357278	Not Pest Species	110	20	12	Manual Felling
103	Quercus ilex - holm oak	C - West Slope / Entrance	- 36.93427374	174.8354972	Not Pest Species	600	11	12	Manual Felling
104	Quercus ilex - holm oak	C - West Slope / Entrance	- 36.93427374	174.8354972	Not Pest Species	600	11	12	Manual Felling
105	Ficus macrophylla-Morton Bay fig	C - West Slope / Entrance	- 36.93423124	174.8356409	Not Pest Species	2100	16	26	Crane Assisted Dismantling
106	"Acmena smithii, Syzyium - lilly pilly, monkey apple"	C - West Slope / Entrance	- 36.93436137	174.8359606	Surveillance Pest Plant	600	12	9	Crane Assisted Dismantling
107	Quercus ilex - holm oak	C - West Slope / Entrance	-36.9343348	174.8358471	Not Pest Species	700	9	11	Crane Assisted Dismantling
108	Ficus macrophylla-Morton Bay fig	D - Water Tower	- 36.93453166	174.8356637	Not Pest Species	1700	16	20	Crane Assisted Dismantling
109	Quercus ilex - holm oak	D - Water Tower	- 36.93448358	174.8358334	Not Pest Species	1400	17	18	Crane Assisted Dismantling
110	Ficus macrophylla-Morton Bay fig	D - Water Tower	- 36.93453005	174.8360127	Not Pest Species	3300	15	40	Crane Assisted Dismantling
111	Ficus macrophylla-Morton Bay fig	D - Water Tower	- 36.93442554	174.8359913	Not Pest Species	3300	15	40	Crane Assisted Dismantling
112	Ficus macrophylla-Morton Bay fig	E - Tihi	-36.9343103	174.8360754	Not Pest Species	3300	15	40	Crane Assisted Dismantling
113	Olea sp. - olive	D - Water Tower	- 36.93453515	174.8374866	Not Pest Species	500	8	10	Manual Felling
114	Olea sp. - olive	E - Tihi	- 36.93283926	174.8395878	Not Pest Species	800	8	5	Helicopter assisted dismantling
115	Olea sp. - olive	E - Tihi	- 36.93283926	174.8395878	Not Pest Species	800	8	5	Helicopter assisted dismantling
116	Olea sp. - olive	E - Tihi	- 36.93283926	174.8395878	Not Pest Species	800	8	5	Helicopter assisted dismantling
117	Olea sp. - olive	E - Tihi	- 36.93283926	174.8395878	Not Pest Species	800	8	5	Helicopter assisted dismantling
118	Olea sp. - olive	E - Tihi	- 36.93283926	174.8395878	Not Pest Species	800	8	5	Helicopter assisted dismantling
119	Olea sp. - olive	E - Tihi	- 36.93318468	174.839966	Not Pest Species	500	6	5	Helicopter assisted dismantling
120	Olea sp. - olive	E - Tihi	- 36.93318468	174.839966	Not Pest Species	500	6	5	Helicopter assisted dismantling

Item No:	Tree Species	Operating Area	latitude	longitude	RPMS status	DBH (mm)	Approx. height (m)	Crown spread (m)	Removal Method
121	Olea sp. - olive	E - Tihi	- 36.93318468	174.839966	Not Pest Species	500	6	5	Helicopter assisted dismantling
122	Olea sp. - olive	E - Tihi	- 36.93318468	174.839966	Not Pest Species	500	6	5	Helicopter assisted dismantling
123	Olea sp. - olive	E - Tihi	- 36.93318468	174.839966	Not Pest Species	500	6	5	Helicopter assisted dismantling
124	Olea sp. - olive	E - Tihi	- 36.93318468	174.839966	Not Pest Species	500	6	5	Helicopter assisted dismantling
125	Olea sp. - olive	E - Tihi	- 36.93318468	174.839966	Not Pest Species	500	6	5	Helicopter assisted dismantling
126	Olea sp. - olive	E - Tihi	- 36.93318468	174.839966	Not Pest Species	500	6	5	Helicopter assisted dismantling
127	Olea sp. - olive	E - Tihi	- 36.93318468	174.839966	Not Pest Species	500	6	5	Helicopter assisted dismantling
128	Olea sp. - olive	E - Tihi	- 36.93318468	174.839966	Not Pest Species	500	6	5	Helicopter assisted dismantling
129	Olea sp. - olive	E - Tihi	- 36.93318468	174.839966	Not Pest Species	500	6	5	Helicopter assisted dismantling
130	Olea sp. - olive	E - Tihi	- 36.93318468	174.839966	Not Pest Species	500	6	5	Helicopter assisted dismantling
131	Olea sp. - olive	E - Tihi	- 36.93318468	174.839966	Not Pest Species	500	6	5	Helicopter assisted dismantling
132	Cupressus macrocarpa - Monterey cypress	E - Tihi	- 36.93317721	174.8397276	Not Pest Species	1200	12	10	Crane Assisted Dismantling
133	Crataegus laevigata - English hawthorn	A - Ring Road	- 36.93405034	174.8408682	Surveillance Pest Plant	400	6	4	Manual Felling
134	Grevillea robusta - silky oak	E - Tihi	- 36.93359153	174.8408843	Not Pest Species	400	10	5	Crane Assisted Dismantling
135	Prunus sp.-flowering cherry	A - Ring Road	- 36.93344253	174.8412414	Not Pest Species	200	6	5	Crane Assisted Dismantling
136	Olea sp. - olive	A - Ring Road	- 36.93382174	174.8410419	Not Pest Species	300	6	6	Crane Assisted Dismantling
137	Cryptomeria japonica - Japanese cedar	A - Ring Road	- 36.93376091	174.8411099	Not Pest Species	1200	12	10	Crane Assisted Dismantling
138	Ficus macrophylla-Morton Bay fig	A - Ring Road	- 36.93358671	174.8411344	Not Pest Species	600	10	10	Crane Assisted Dismantling
139	Eucalyptus sp.	A - Ring Road	- 36.93371052	174.841351	Not Pest Species	1200	20	10	Crane Assisted Dismantling
140	Eucalyptus sp.	A - Ring Road	- 36.93354597	174.8413201	Not Pest Species	1500	20	15	Crane Assisted Dismantling

Item No:	Tree Species	Operating Area	latitude	longitude	RPMS status	DBH (mm)	Approx. height (m)	Crown spread (m)	Removal Method
141	Magnolia soulangeana x - Asian magnolia	A - Ring Road	-36.93301266	174.8410244	Not Pest Species	500	8	7	Crane Assisted Dismantling
142	Quercus robur - English oak	A - Ring Road	-36.93317185	174.8408504	Not Pest Species	1000	15	8	Crane Assisted Dismantling
143	Eucalyptus sp.	A - Ring Road	-36.93317212	174.8411803	Not Pest Species	2000	12	10	Crane Assisted Dismantling
144	Phoenix canariensis - phoenix palm	E - Tihi	-36.9333758	174.8410452	Surveillance Pest Plant	600	15	4	Crane Assisted Dismantling
145	Grevillea robusta - silky oak	E - Tihi	-36.9334712	174.840726	Not Pest Species	200	7	3	Crane Assisted Dismantling
146	Grevillea robusta - silky oak	E - Tihi	-36.93334792	174.840597	Not Pest Species	600	15	6	Helicopter assisted dismantling
147	Grevillea robusta - silky oak	E - Tihi	-36.93344387	174.8404736	Not Pest Species	600	10	7	Helicopter assisted dismantling
148	Ficus macrophylla-Morton Bay fig	E - Tihi	-36.93374376	174.8400293	Not Pest Species	3500	25	25	Helicopter assisted dismantling
149	Ilex sp. - holly	E - Tihi	-36.93366577	174.8401584	Not Pest Species	500	10	6	Helicopter assisted dismantling
150	Olea sp. - olive	E - Tihi	-36.93369445	174.8403442	Not Pest Species	400	5	5	Helicopter assisted dismantling
151	Olea sp. - olive	E - Tihi	-36.93369445	174.8403442	Not Pest Species	400	5	5	Helicopter assisted dismantling
152	Olea sp. - olive	E - Tihi	-36.93369445	174.8403442	Not Pest Species	400	5	5	Helicopter assisted dismantling
153	Olea sp. - olive	E - Tihi	-36.93351998	174.8406291	Not Pest Species	600	6	5	Helicopter assisted dismantling
154	Olea sp. - olive	E - Tihi	-36.93351998	174.8406291	Not Pest Species	600	6	5	Helicopter assisted dismantling
155	Olea sp. - olive	E - Tihi	-36.93351998	174.8406291	Not Pest Species	600	6	5	Helicopter assisted dismantling
156	Olea sp. - olive	E - Tihi	-36.93351998	174.8406291	Not Pest Species	600	6	5	Helicopter assisted dismantling
157	Olea sp. - olive	E - Tihi	-36.93351998	174.8406291	Not Pest Species	600	6	5	Helicopter assisted dismantling
158	Olea sp. - olive	E - Tihi	-36.93351998	174.8406291	Not Pest Species	600	6	5	Crane Assisted Dismantling
159	Ficus macrophylla-Morton Bay fig	E - Tihi	-36.93369954	174.8407586	Not Pest Species	2500	15	15	Crane Assisted Dismantling
160	Grevillea robusta - silky oak	E - Tihi	-36.9337266	174.8409061	Not Pest Species	400	10	5	Crane Assisted Dismantling
161	Cupressus macrocarpa - Monterey cypress	E - Tihi	-36.9338874	174.8406151	Not Pest Species	1500	20	10	Crane Assisted Dismantling

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Item No:	Tree Species	Operating Area	latitude	longitude	RPMS status	DBH (mm)	Approx. height (m)	Crown spread (m)	Removal Method
162	Olea sp. - olive	E - Tihi	- 36.93382576	174.8404719	Not Pest Species	400	6	5	Helicopter assisted dismantling
163	Olea sp. - olive	E - Tihi	- 36.93382576	174.8404719	Not Pest Species	400	6	5	Crane Assisted Dismantling
164	Cupressus macrocarpa - Monterey cypress	E - Tihi	- 36.93389785	174.8404233	Not Pest Species	2500	25	15	Crane Assisted Dismantling
165	Araucaria heterophylla - Norfolk Island pine	E - Tihi	- 36.93402783	174.8403951	Not Pest Species	700	25	6	Crane Assisted Dismantling
166	Crataegus laevigata - English hawthorn	E - Tihi	- 36.93413423	174.8402694	Surveillance Pest Plant	500	6	6	Crane Assisted Dismantling
167	Crataegus laevigata - English hawthorn	E - Tihi	- 36.93393993	174.8399388	Surveillance Pest Plant	200	5	4	Manual Felling
168	Platanus x acerifolia - London Plane tree	E - Tihi	- 36.93395467	174.8398416	Not Pest Species	500	15	15	Manual dismantling
169	Crataegus laevigata - English hawthorn	E - Tihi	- 36.93393457	174.8397142	Surveillance Pest Plant	200	5	5	Manual Felling
170	Pinus radiata - Monterey pine	E - Tihi	- 36.93360788	174.8397044	Not Pest Species	1500	15	15	Helicopter assisted dismantling
171	Cupressus macrocarpa - Monterey cypress	E - Tihi	- 36.93371642	174.8396247	Not Pest Species	0	25	15	Helicopter assisted dismantling
172	Ficus macrophylla - Morton Bay fig	E - Tihi	- 36.93355857	174.8395076	Not Pest Species	1000	8	25	Helicopter assisted dismantling
173	Quercus robur - English oak	E - Tihi	- 36.93278989	174.8389187	Not Pest Species	1800	22	20	Helicopter assisted dismantling
174	Populus deltoides - cottonwood	E - Tihi	-36.9326991	174.8385726	Not Pest Species	1800	28	15	Crane Assisted Dismantling
175	Quercus robur - English oak	E - Tihi	- 36.93270955	174.8387375	Not Pest Species	900	20	10	Helicopter assisted dismantling
176	Quercus robur - English oak	E - Tihi	- 36.93270955	174.8387375	Not Pest Species	900	20	10	Helicopter assisted dismantling
177	Platanus x acerifolia - London Plane tree	E - Tihi	- 36.93281112	174.8385853	Not Pest Species	700	15	10	Crane Assisted Dismantling
178	Platanus x acerifolia - London Plane tree	E - Tihi	- 36.93293253	174.8387375	Not Pest Species	2000	25	25	Helicopter assisted dismantling
179	Castanea sativa - European chestnut	E - Tihi	-36.9331421	174.8388072	Not Pest Species	1800	25	10	Helicopter assisted dismantling
180	Ficus macrophylla - Morton Bay fig	E - Tihi	- 36.93313862	174.8390359	Not Pest Species	2500	25	25	Helicopter assisted dismantling
181	Phoenix canariensis - phoenix palm	E - Tihi	- 36.93325706	174.8391276	Surveillance Pest Plant	800	18	3	Helicopter assisted dismantling

Item No:	Tree Species	Operating Area	latitude	longitude	RPMS status	DBH (mm)	Approx. height (m)	Crown spread (m)	Removal Method
182	Platanus x acerifolia - London Plane tree	E - Tihi	- 36.93324769	174.8393879	Not Pest Species	1200	25	25	Helicopter assisted dismantling
183	Ulmus sp.	A - Ring Road	- 36.93287785	174.8410355	Not Pest Species	700	16	15	Crane Assisted Dismantling
184	"Populus nigra - Lombardy poplar, black poplar"	A - Ring Road	- 36.93281219	174.8409282	Not Pest Species	1000	20	20	Crane Assisted Dismantling
185	Ulmus sp.	A - Ring Road	- 36.93279129	174.8409141	Not Pest Species	300	12	10	Crane Assisted Dismantling
186	Quercus palustris- pin oak	E - Tihi	- 36.93305179	174.8405782	Not Pest Species	600	15	10	Helicopter assisted dismantling
187	Fagus sylvatica-european beech	E - Tihi	-36.9331287	174.8404112	Not Pest Species	600	15	7	Helicopter assisted dismantling
188	"Acmena smithii, Syzyium - lilly pilly, monkey apple"	A - Ring Road	- 36.93257528	174.8411267	Surveillance Pest Plant	400	9	5	Crane Assisted Dismantling
189	Platanus x acerifolia - London Plane tree	E - Tihi	-36.9326589	174.8383358	Not Pest Species	900	20	10	Crane Assisted Dismantling
190	Platanus x acerifolia - London Plane tree	E - Tihi	- 36.93266292	174.8384257	Not Pest Species	2000	25	20	Crane Assisted Dismantling
191	Platanus x acerifolia - London Plane tree	E - Tihi	- 36.93263773	174.8382393	Not Pest Species	900	20	10	Crane Assisted Dismantling
192	Platanus x acerifolia - London Plane tree	E - Tihi	-36.9326664	174.8382889	Not Pest Species	900	20	10	Crane Assisted Dismantling
193	Olea sp. - olive	F - Sports Field Area	- 36.93294217	174.841589	Not Pest Species	200	5	6	Manual Felling
194	Liquidambar styraciflua - sweetgum	A - Ring Road	- 36.93093939	174.8402268	Not Pest Species	900	7	6	Manual dismantling
195	Casuarina sp. - she oak	A - Ring Road	- 36.93097557	174.84032	Not Pest Species	800	7	6	Manual dismantling
196	"Populus nigra - Lombardy poplar, black poplar"	A - Ring Road	- 36.93109162	174.8404172	Not Pest Species	1000	15	8	Manual dismantling
197	Casuarina sp. - she oak	A - Ring Road	-36.931142	174.8406107	Not Pest Species	1300	8	12	Crane Assisted Dismantling
198	Olea sp. - olive	A - Ring Road	- 36.93148773	174.840897	Not Pest Species	400	6	6	Crane Assisted Dismantling
199	Platanus x acerifolia - London Plane tree	F - Sports Field Area	- 36.93141945	174.8412377	Not Pest Species	1600	30	25	To be Retained
200	Cinnamomum camphora-camphor laurel	F - Sports Field Area	-36.9316023	174.8414229	Not Pest Species	0	18	20	Crane Assisted Dismantling
201	Populus x euramericana - hybrid poplar P. nigra x P. deltoides	F - Sports Field Area	- 36.93171051	174.8414534	Not Pest Species	1700	35	25	Crane Assisted Dismantling

Item No:	Tree Species	Operating Area	latitude	longitude	RPMS status	DBH (mm)	Approx. height (m)	Crown spread (m)	Removal Method
202	Liriodendron tulipifera - tulip tree	F - Sports Field Area	- 36.93179379	174.841461	Not Pest Species	1900	13	12	Crane Assisted Dismantling
203	Casuarina sp. - she oak	F - Sports Field Area	- 36.93180225	174.8414339	Not Pest Species	700	15	15	Manual dismantling
204	Quercus palustris- pin oak	F - Sports Field Area	- 36.93193553	174.8415236	Not Pest Species	800	16	17	Crane Assisted Dismantling
205	Populus x euramericana - hybrid poplar P. nigra x P. deltoides	F - Sports Field Area	- 36.93203837	174.8415452	Not Pest Species	1000	26	20	Crane Assisted Dismantling
206	Populus x euramericana - hybrid poplar P. nigra x P. deltoides	F - Sports Field Area	- 36.93208091	174.8415213	Not Pest Species	1890	35	25	Crane Assisted Dismantling
207	Camellia sp.	F - Sports Field Area	- 36.93239976	174.8415888	Not Pest Species	100	4	3	Manual Felling
208	Betula pendula- silver birch	F - Sports Field Area	- 36.93329588	174.8432169	Not Pest Species	400	7	12	Manual Felling
209	Betula pendula- silver birch	F - Sports Field Area	- 36.93340367	174.8429556	Not Pest Species	400	5	10	Manual Felling
210	Quercus palustris- pin oak	F - Sports Field Area	- 36.93083402	174.8427851	Not Pest Species	400	13	14	Crane Assisted Dismantling
211	Quercus palustris- pin oak	F - Sports Field Area	- 36.93094889	174.8428804	Not Pest Species	300	12	12	Manual dismantling
212	Quercus palustris- pin oak	F - Sports Field Area	-36.9310343	174.8429607	Not Pest Species	300	12	13	Crane Assisted Dismantling
213	Quercus palustris- pin oak	F - Sports Field Area	- 36.93105987	174.8430033	Not Pest Species	200	10	8	Crane Assisted Dismantling
214	Quercus palustris- pin oak	F - Sports Field Area	- 36.93107336	174.8430552	Not Pest Species	300	13	13	Crane Assisted Dismantling
215	Cryptomeria japonica - Japanese cedar	F - Sports Field Area	- 36.93148588	174.8431851	Not Pest Species	500	14	10	Manual dismantling
216	Cupressus sempervirens- Italian cypress	F - Sports Field Area	- 36.93162917	174.8432756	Not Pest Species	450	14	6	Manual dismantling
217	Cryptomeria japonica - Japanese cedar	F - Sports Field Area	- 36.93176189	174.8432563	Not Pest Species	600	11	12	Manual dismantling
218	Quercus palustris- pin oak	F - Sports Field Area	- 36.93194692	174.8433145	Not Pest Species	500	15	18	Manual dismantling
219	"Fraxinus excelsior - european ash, common ash"	F - Sports Field Area	- 36.93208003	174.8433674	Not Pest Species	250	7	10	Manual dismantling
220	Liquidambar styraciflua - sweetgum	F - Sports Field Area	- 36.93212051	174.8433865	Not Pest Species	450	11	15	Manual dismantling

Item No:	Tree Species	Operating Area	latitude	longitude	RPMS status	DBH (mm)	Approx. height (m)	Crown spread (m)	Removal Method
221	Quercus robur - English oak	F - Sports Field Area	- 36.93222416	174.8433635	Not Pest Species	500	15	18	Manual dismantling
222	"Fraxinus excelsior - european ash, common ash"	F - Sports Field Area	- 36.93228174	174.843385	Not Pest Species	200	7	8	Manual dismantling
223	"Fraxinus excelsior - european ash, common ash"	F - Sports Field Area	- 36.93234838	174.8433848	Not Pest Species	200	7	10	Manual dismantling
224	"Fraxinus excelsior - european ash, common ash"	F - Sports Field Area	- 36.93239288	174.8434201	Not Pest Species	200	7	10	Manual dismantling
225	Quercus robur - English oak	F - Sports Field Area	-36.9325029	174.8434763	Not Pest Species	600	15	15	Manual dismantling
226	"Fraxinus excelsior - european ash, common ash"	F - Sports Field Area	- 36.93267338	174.8434765	Not Pest Species	200	6	6	Manual dismantling
227	Quercus robur - English oak	F - Sports Field Area	-36.9327751	174.8434817	Not Pest Species	500	8	15	Manual dismantling
228	Schinus molle- Peruvian pepper tree	F - Sports Field Area	- 36.93290741	174.843482	Surveillance Pest Plant	2000	10	18	Crane Assisted Dismantling
229	"Fraxinus excelsior - european ash, common ash"	F - Sports Field Area	- 36.93298402	174.8434454	Not Pest Species	200	5	7	Crane Assisted Dismantling
230	"Fraxinus excelsior - european ash, common ash"	F - Sports Field Area	-36.9330416	174.8434803	Not Pest Species	400	7	7	Crane Assisted Dismantling
231	Betula pendula- silver birch	F - Sports Field Area	- 36.93309735	174.8433238	Not Pest Species	400	8	10	Manual dismantling
232	"Cedrus atlantica - Atlas cedar, blue"	F - Sports Field Area	- 36.93323799	174.8432564	Not Pest Species	1600	16	17	Manual Felling
233	Phoenix canariensis - phoenix palm	D - Water Tower	- 36.93453702	174.8372254	Surveillance Pest Plant	550	10	8	Helicopter assisted dismantling
234	Platanus x acerifolia - London Plane tree	E - Tihī	- 36.93263183	174.8381994	Not Pest Species	900	20	10	Crane Assisted Dismantling
235	Pinus radiata - Monterey pine	B - Motor Club	-36.9320307	174.8378829	Not Pest Species	1500	15	15	Crane Assisted Dismantling
236	Quercus robur - English oak	B - Motor Club	- 36.93230802	174.8378456	Not Pest Species	500	8	15	Manual dismantling
237	Ficus macrophylla-Morton Bay fig	B - Motor Club	- 36.93231371	174.8379727	Not Pest Species	1500	20	20	Crane Assisted Dismantling
238	Pinus radiata - Monterey pine	B - Motor Club	- 36.93242788	174.8381226	Not Pest Species	1000	20	8	Crane Assisted Dismantling

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Item No:	Tree Species	Operating Area	latitude	longitude	RPMS status	DBH (mm)	Approx. height (m)	Crown spread (m)	Removal Method
239	Pinus radiata - Monterey pine	B - Motor Club	- 36.93228209	174.8382239	Not Pest Species	2500	30	25	Crane Assisted Dismantling
240	Pinus radiata - Monterey pine	E - Tihi	-36.9317418	174.8381813	Not Pest Species	800	12	15	Crane Assisted Dismantling
241	Pinus radiata - Monterey pine	E - Tihi	- 36.93239754	174.8384128	Not Pest Species	1500	25	15	Crane Assisted Dismantling
242	Pinus radiata - Monterey pine	E - Tihi	- 36.93242359	174.8385048	Not Pest Species	1800	25	10	Crane Assisted Dismantling
243	Olea sp. - olive	E - Tihi	-36.9321558	174.8391306	Not Pest Species	400	6	5	Helicopter assisted dismantling
244	Olea sp. - olive	E - Tihi	-36.9321558	174.8391306	Not Pest Species	400	6	5	Helicopter assisted dismantling
245	Cupressus macrocarpa - Monterey cypress	E - Tihi	- 36.93212558	174.8394054	Not Pest Species	1200	10	15	Helicopter assisted dismantling
246	Olea sp. - olive	E - Tihi	- 36.93205884	174.8394801	Not Pest Species	200	6	6	Helicopter assisted dismantling
247	Pinus radiata - Monterey pine	E - Tihi	- 36.93268147	174.8391518	Not Pest Species	2000	20	15	Helicopter assisted dismantling
248	Pinus radiata - Monterey pine	E - Tihi	- 36.93252846	174.8391267	Not Pest Species	2500	25	20	Helicopter assisted dismantling
249	Ficus macrophylla-Morton Bay fig	E - Tihi	- 36.93247317	174.8392548	Not Pest Species	3000	15	30	Helicopter assisted dismantling
250	Olea sp. - olive	A - Ring Road	- 36.93088536	174.8392867	Not Pest Species	400	6	5	Crane Assisted Dismantling
251	"Acmena smithii, Syzyium - lilly pilly, monkey apple"	A - Ring Road	- 36.93082495	174.8394778	Surveillance Pest Plant	800	10	8	Crane Assisted Dismantling
252	Cinnamomum camphora-camphor laurel	A - Ring Road	- 36.93190528	174.841117	Not Pest Species	0	12	12	Crane Assisted Dismantling
253	"Fraxinus excelsior - european ash, common ash"	F - Sports Field Area	- 36.93334498	174.8429975	Not Pest Species	170	6	7	Manual Felling
254	Cupressus sempervirens-Italian cypress	F - Sports Field Area	- 36.93361635	174.8426209	Not Pest Species	700	12	6	Crane Assisted Dismantling
255	"Cedrus atlantica - Atlas cedar, blue"	F - Sports Field Area	- 36.93361023	174.8425435	Not Pest Species	1200	17	18	Manual dismantling
256	Cupressus sempervirens-Italian cypress	F - Sports Field Area	- 36.93368131	174.8425395	Not Pest Species	800	12	5	Crane Assisted Dismantling
257	Crataegus laevigata - English hawthorn	D - Water Tower	- 36.93455364	174.8376083	Surveillance Pest Plant	600	6	10	Manual Felling
258	Crataegus laevigata - English hawthorn	D - Water Tower	- 36.93455364	174.8376083	Surveillance Pest Plant	600	6	10	Manual Felling

Item No:	Tree Species	Operating Area	latitude	longitude	RPMS status	DBH (mm)	Approx. height (m)	Crown spread (m)	Removal Method
259	Crataegus laevigata - English hawthorn	D - Water Tower	- 36.93455364	174.8376083	Surveillance Pest Plant	600	6	10	Manual Felling
260	Ficus macrophylla-Morton Bay fig	D - Water Tower	- 36.93398013	174.8377937	Not Pest Species	4200	12	30	Crane Assisted Dismantling
261	Betula pendula- silver birch	F - Sports Field Area	- 36.93330194	174.8430902	Not Pest Species	400	5	8	Crane Assisted Dismantling
262	"Cedrus atlantica - Atlas cedar, blue"	F - Sports Field Area	- 36.93341217	174.8428552	Not Pest Species	1300	13	12	Crane Assisted Dismantling
263	Betula pendula- silver birch	F - Sports Field Area	- 36.93333238	174.843082	Not Pest Species	400	5	5	Manual Felling
264	"Cedrus atlantica - Atlas cedar, blue"	F - Sports Field Area	-36.9335985	174.8425017	Not Pest Species	1200	15	15	Manual dismantling
265	Eriobotrya japonica - loquat	F - Sports Field Area	- 36.93310539	174.8421768	Not Pest Species	200	7	6	Manual Felling
266	Eriobotrya japonica - loquat	F - Sports Field Area	- 36.93310539	174.8421768	Not Pest Species	200	7	6	Manual Felling
267	Hymenosporum flavum - Australian frangipani	F - Sports Field Area	- 36.93307035	174.842175	Not Pest Species	500	13	9	Manual Felling
268	Camellia sp.	F - Sports Field Area	- 36.93250436	174.8420036	Not Pest Species	400	4	4	Manual Felling
269	Camellia sp.	F - Sports Field Area	- 36.93250436	174.8420036	Not Pest Species	400	4	4	Manual Felling
270	Camellia sp.	F - Sports Field Area	- 36.93250436	174.8420036	Not Pest Species	400	4	4	Manual Felling
271	Camellia sp.	F - Sports Field Area	- 36.93250436	174.8420036	Not Pest Species	400	4	4	Manual Felling
272	Camellia sp.	F - Sports Field Area	- 36.93250436	174.8420036	Not Pest Species	400	4	4	Manual Felling
273	Camellia sp.	F - Sports Field Area	- 36.93250436	174.8420036	Not Pest Species	400	4	4	Manual Felling
274	Camellia sp.	F - Sports Field Area	- 36.93250436	174.8420036	Not Pest Species	400	4	4	Manual Felling
275	Camellia sp.	F - Sports Field Area	- 36.93250436	174.8420036	Not Pest Species	400	4	4	Manual Felling
276	Camellia sp.	F - Sports Field Area	- 36.93250436	174.8420036	Not Pest Species	400	4	4	Manual Felling
277	Camellia sp.	F - Sports Field Area	- 36.93250436	174.8420036	Not Pest Species	400	4	4	Manual Felling
278	Camellia sp.	F - Sports Field Area	- 36.93250436	174.8420036	Not Pest Species	400	4	4	Manual Felling

Item No:	Tree Species	Operating Area	latitude	longitude	RPMS status	DBH (mm)	Approx. height (m)	Crown spread (m)	Removal Method
279	Camellia sp.	F - Sports Field Area	- 36.93250436	174.8420036	Not Pest Species	400	4	4	Manual Felling
280	Camellia sp.	F - Sports Field Area	- 36.93250436	174.8420036	Not Pest Species	400	4	4	Manual Felling
281	Camellia sp.	F - Sports Field Area	- 36.93250436	174.8420036	Not Pest Species	400	4	4	Manual Felling
282	Camellia sp.	F - Sports Field Area	- 36.93250436	174.8420036	Not Pest Species	400	4	4	Manual Felling
283	Camellia sp.	F - Sports Field Area	- 36.93250436	174.8420036	Not Pest Species	400	4	4	Manual Felling
284	Camellia sp.	F - Sports Field Area	- 36.93250436	174.8420036	Not Pest Species	400	4	4	Manual Felling
285	Camellia sp.	F - Sports Field Area	- 36.93250436	174.8420036	Not Pest Species	400	4	4	Manual Felling
286	Camellia sp.	F - Sports Field Area	- 36.93250436	174.8420036	Not Pest Species	400	4	4	Manual Felling
287	Camellia sp.	F - Sports Field Area	- 36.93250436	174.8420036	Not Pest Species	400	4	4	Manual Felling
288	Ficus macrophylla-Morton Bay fig	F - Sports Field Area	- 36.93243003	174.8419706	Not Pest Species	800	8	12	Crane Assisted Dismantling
289	Camellia sp.	F - Sports Field Area	- 36.93240323	174.8417875	Not Pest Species	350	4	4	Manual Felling
290	Camellia sp.	F - Sports Field Area	- 36.93241448	174.8417778	Not Pest Species	150	4	4	Manual Felling
291	Olea sp. - olive	D - Water Tower	- 36.93408974	174.8383382	Not Pest Species	300	7	9	Manual Felling
292	Crataegus laevigata - English hawthorn	D - Water Tower	- 36.93412806	174.8382282	Surveillance Pest Plant	350	6	10	Manual Felling
293	Crataegus laevigata - English hawthorn	D - Water Tower	- 36.93415379	174.8380928	Surveillance Pest Plant	100	4	6	Manual Felling
294	"Chamaecyparis lawsoniana - Port Orford cedar, Lawson cypress"	D - Water Tower	- 36.93439472	174.8379362	Not Pest Species	250	10	5	Manual Felling
295	Ulmus glabra - Scots wych elm	D - Water Tower	- 36.93453783	174.8384847	Not Pest Species	500	12	11	Helicopter assisted dismantling
296	Ulmus glabra - Scots wych elm	D - Water Tower	- 36.93453783	174.8384847	Not Pest Species	500	12	11	Helicopter assisted dismantling
297	Ulmus glabra - Scots wych elm	D - Water Tower	- 36.93453783	174.8384847	Not Pest Species	500	12	11	Retained / Possible Manual dismantling
298	"Acmena smithii, Syzygium - lilly pilly, monkey apple"	D - Water Tower	- 36.93443513	174.8386298	Surveillance Pest Plant	650	22	20	Retained / Possible Manual dismantling

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Item No:	Tree Species	Operating Area	latitude	longitude	RPMS status	DBH (mm)	Approx. height (m)	Crown spread (m)	Removal Method
299	Crataegus laevigata - English hawthorn	D - Water Tower	- 36.93441519	174.8385881	Surveillance Pest Plant	250	9	16	Manual Felling
300	Crataegus laevigata - English hawthorn	D - Water Tower	- 36.93438319	174.8381488	Surveillance Pest Plant	350	8	88	Manual Felling
301	Crataegus laevigata - English hawthorn	D - Water Tower	- 36.93438319	174.8381488	Surveillance Pest Plant	350	8	88	Manual Felling
302	Quercus ilex - holm oak	D - Water Tower	- 36.93445904	174.8382011	Not Pest Species	1400	18	22	Helicopter assisted dismantling
303	Quercus ilex - holm oak	D - Water Tower	- 36.93445904	174.8382011	Not Pest Species	1400	18	22	Helicopter assisted dismantling
304	Quercus ilex - holm oak	D - Water Tower	- 36.93445904	174.8382011	Not Pest Species	1400	18	22	Helicopter assisted dismantling
305	Quercus ilex - holm oak	D - Water Tower	- 36.93445904	174.8382011	Not Pest Species	1400	18	22	Helicopter assisted dismantling
306	Quercus ilex - holm oak	D - Water Tower	- 36.93445904	174.8382011	Not Pest Species	1400	18	22	Helicopter assisted dismantling
307	"Populus nigra - Lombardy poplar, black poplar"	D - Water Tower	- 36.93427707	174.8386755	Not Pest Species	850	16	6	Crane Assisted Dismantling
308	Ulmus glabra - Scots wych elm	D - Water Tower	- 36.93448155	174.8387456	Not Pest Species	1200	24	18	Retained / Possible Manual dismantling
309	Ulmus glabra - Scots wych elm	D - Water Tower	- 36.93446332	174.8389209	Not Pest Species	550	17	12	Helicopter assisted dismantling
310	Ulmus glabra - Scots wych elm	D - Water Tower	- 36.93446332	174.8389209	Not Pest Species	550	17	12	Retained / Possible Manual dismantling
311	Camellia sp.	F - Sports Field Area	- 36.93242008	174.8416394	Not Pest Species	400	4	5	Manual dismantling
312	Washingtonia filifera - fan palm	F - Sports Field Area	- 36.93252435	174.8415779	Not Pest Species	700	13	5	Crane Assisted Dismantling
313	Washingtonia filifera - fan palm	F - Sports Field Area	- 36.93252435	174.8415779	Not Pest Species	700	13	5	Crane Assisted Dismantling
314	Washingtonia filifera - fan palm	F - Sports Field Area	- 36.93252435	174.8415779	Not Pest Species	700	13	5	Crane Assisted Dismantling
315	Washingtonia filifera - fan palm	F - Sports Field Area	- 36.93252435	174.8415779	Not Pest Species	700	13	5	Crane Assisted Dismantling
316	Washingtonia filifera - fan palm	F - Sports Field Area	- 36.93252435	174.8415779	Not Pest Species	700	13	5	Crane Assisted Dismantling
317	Washingtonia filifera - fan palm	F - Sports Field Area	- 36.93252435	174.8415779	Not Pest Species	700	13	5	Crane Assisted Dismantling
318	Washingtonia filifera - fan palm	F - Sports Field Area	- 36.93252435	174.8415779	Not Pest Species	700	13	5	Crane Assisted Dismantling

Item No:	Tree Species	Operating Area	latitude	longitude	RPMS status	DBH (mm)	Approx. height (m)	Crown spread (m)	Removal Method
319	Washingtonia filifera - fan palm	F - Sports Field Area	- 36.93252435	174.8415779	Not Pest Species	700	13	5	Crane Assisted Dismantling
320	Washingtonia filifera - fan palm	F - Sports Field Area	- 36.93252435	174.8415779	Not Pest Species	700	13	5	Crane Assisted Dismantling
321	Washingtonia filifera - fan palm	F - Sports Field Area	- 36.93252435	174.8415779	Not Pest Species	700	13	5	Crane Assisted Dismantling
322	"Acmena smithii, Syzygium - lilly pilly, monkey apple"	A - Ring Road	- 36.93124063	174.83922	Surveillance Pest Plant	2500	15	12	Crane Assisted Dismantling
323	"Acmena smithii, Syzygium - lilly pilly, monkey apple"	E - Tihi	- 36.93165188	174.8397088	Surveillance Pest Plant	600	10	7	Helicopter assisted dismantling
324	"Acmena smithii, Syzygium - lilly pilly, monkey apple"	E - Tihi	- 36.93170745	174.8399675	Surveillance Pest Plant	700	10	43322	Helicopter assisted dismantling
325	Ficus macrophylla-Morton Bay fig	A - Ring Road	- 36.93083299	174.8396713	Not Pest Species	3000	15	20	Crane Assisted Dismantling
326	"Populus nigra - Lombardy poplar, black poplar"	A - Ring Road	-36.9312659	174.8389549	Not Pest Species	1600	11		Crane Assisted Dismantling
327	Platanus x acerifolia - London Plane tree	A - Ring Road	- 36.93124108	174.8390473	Not Pest Species	1600	27	25	Crane Assisted Dismantling
328	Platanus x acerifolia - London Plane tree	A - Ring Road	- 36.93110475	174.8391962	Not Pest Species	0	25	25	Crane Assisted Dismantling
329	Cinnamomum camphora-camphor laurel	A - Ring Road	- 36.93107634	174.8401732	Not Pest Species	2500	15	15	Crane Assisted Dismantling
330	Pinus radiata - Monterey pine	A - Ring Road	- 36.93155259	174.8388646	Not Pest Species	800	20	10	Crane Assisted Dismantling
331	Ilex sp. - holly	A - Ring Road	- 36.93114468	174.8398469	Not Pest Species	800	8	6	Crane Assisted Dismantling
332	"Populus nigra - Lombardy poplar, black poplar"	A - Ring Road	- 36.93120713	174.8398647	Not Pest Species	800	20	5	Crane Assisted Dismantling
333	Pinus radiata - Monterey pine	A - Ring Road	- 36.93132371	174.8400156	Not Pest Species	1000	20	10	Crane Assisted Dismantling
334	Ficus macrophylla-Morton Bay fig	A - Ring Road	- 36.93126502	174.840209	Not Pest Species	0	25	25	Crane Assisted Dismantling
335	Ficus macrophylla-Morton Bay fig	A - Ring Road	- 36.93123554	174.8403203	Not Pest Species	1000	12	10	Crane Assisted Dismantling
336	Ficus macrophylla-Morton Bay fig	E - Tihi	- 36.93139393	174.83939	Not Pest Species	3000	25	25	Crane Assisted Dismantling
337	Ficus macrophylla-Morton Bay fig	E - Tihi	- 36.93173885	174.8394235	Not Pest Species	5000	10	25	Crane Assisted Dismantling
338	Ficus macrophylla-Morton Bay fig	E - Tihi	- 36.93156036	174.8397852	Not Pest Species	2500	15	20	Helicopter assisted dismantling

Item No:	Tree Species	Operating Area	latitude	longitude	RPMS status	DBH (mm)	Approx. height (m)	Crown spread (m)	Removal Method
339	Ficus macrophylla-Morton Bay fig	E - Tihi	- 36.93152578	174.8399609	Not Pest Species	3000	25	25	Crane Assisted Dismantling
340	Magnolia soulangeana x - Asian magnolia	E - Tihi	- 36.93147084	174.8401081	Not Pest Species	1000	22	10	Crane Assisted Dismantling
341	Ilex sp. - holly	E - Tihi	- 36.93155955	174.8401366	Not Pest Species	300	6	6	Crane Assisted Dismantling
342	Quercus ilex - holm oak	D - Water Tower	- 36.93431003	174.8387764	Not Pest Species	1050	20	15	Crane Assisted Dismantling
343	Fagus sylvatica-european beech	D - Water Tower	- 36.93426099	174.8384827	Not Pest Species	1400	20	22	Crane Assisted Dismantling
344	Fagus sylvatica-european beech	D - Water Tower	- 36.93410341	174.8389779	Not Pest Species	2300	14	20	Crane Assisted Dismantling
345	Populus deltoides - cottonwood	D - Water Tower	- 36.93446386	174.8390956	Not Pest Species	110	26	16	Crane Assisted Dismantling
346	Populus deltoides - cottonwood	D - Water Tower	- 36.93424303	174.839169	Not Pest Species	1500	24	23	Helicopter assisted dismantling
347	Populus deltoides - cottonwood	D - Water Tower	- 36.93424303	174.839169	Not Pest Species	1500	24	23	Helicopter assisted dismantling
348	Populus deltoides - cottonwood	D - Water Tower	- 36.93424303	174.839169	Not Pest Species	1500	24	23	Crane Assisted Dismantling
349	Populus deltoides - cottonwood	D - Water Tower	- 36.93446949	174.8391821	Not Pest Species	100	25	15	Crane Assisted Dismantling
350	Quercus ilex - holm oak	D - Water Tower	- 36.93448208	174.8392636	Not Pest Species	110	14	14	Crane Assisted Dismantling
351	Fagus sylvatica-european beech	D - Water Tower	-36.9344493	174.8393707	Not Pest Species	900	13	9	Crane Assisted Dismantling
352	Populus x euramericana - hybrid poplar P. nigra x P. deltoides	D - Water Tower	- 36.93436819	174.8395076	Not Pest Species	2000	22	19	Crane Assisted Dismantling
353	Ginkgo biloba	D - Water Tower	- 36.93432718	174.8395435	Not Pest Species	850	16	15	Crane Assisted Dismantling
354	"Tilia sp. - lime, linden, basswood"	D - Water Tower	- 36.93415191	174.8397038	Not Pest Species	850	8	12	Crane Assisted Dismantling
355	Populus deltoides - cottonwood	D - Water Tower	- 36.93420782	174.8395983	Not Pest Species	900	22	13	Helicopter assisted dismantling
356	Populus deltoides - cottonwood	D - Water Tower	- 36.93420782	174.8395983	Not Pest Species	900	22	13	Helicopter assisted dismantling
357	Populus deltoides - cottonwood	D - Water Tower	- 36.93420782	174.8395983	Not Pest Species	900	22	13	Crane Assisted Dismantling
358	Populus deltoides - cottonwood	D - Water Tower	- 36.93415084	174.8394962	Not Pest Species	1500	25	16	Crane Assisted Dismantling

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Item No:	Tree Species	Operating Area	latitude	longitude	RPMS status	DBH (mm)	Approx. height (m)	Crown spread (m)	Removal Method
359	Eucalyptus sp.	D - Water Tower	- 36.93402167	174.8394322	Not Pest Species	1000	21	24	Crane Assisted Dismantling
360	Laurus nobilis - Bay laurel	A - Ring Road	-36.9342567	174.8405296	Not Pest Species	500	8	9	Manual Felling
361	Quercus ilex - holm oak	D - Water Tower	- 36.93424437	174.8405792	Not Pest Species	1800	18	22	Crane Assisted Dismantling
362	Populus deltoides - cottonwood	D - Water Tower	- 36.93431137	174.8406905	Not Pest Species	1500	24	11	Crane Assisted Dismantling
363	Populus deltoides - cottonwood	D - Water Tower	- 36.93439686	174.8405755	Not Pest Species	1200	24	11	Crane Assisted Dismantling
364	Ulmus glabra - Scots wych elm	D - Water Tower	- 36.93445636	174.8404712	Not Pest Species	600	14	12	Crane Assisted Dismantling
365	Ulmus glabra - Scots wych elm	D - Water Tower	- 36.93445636	174.8404712	Not Pest Species	600	14	12	Crane Assisted Dismantling
366	Cryptomeria japonica - Japanese cedar	D - Water Tower	- 36.93441133	174.8404571	Not Pest Species	650	10	10	Crane Assisted Dismantling
367	Ulmus glabra - Scots wych elm	A - Ring Road	- 36.93438855	174.840023	Not Pest Species	700	24	17	Crane Assisted Dismantling
368	Castanea sativa - European chestnut	A - Ring Road	- 36.93447833	174.8402211	Not Pest Species	800	13	18	Crane Assisted Dismantling
369	Populus deltoides - cottonwood	A - Ring Road	- 36.93430494	174.8403073	Not Pest Species	1400	24	18	Crane Assisted Dismantling
370	Populus deltoides - cottonwood	A - Ring Road	- 36.93436149	174.8402459	Not Pest Species	400	12	9	Crane Assisted Dismantling
371	Quercus ilex - holm oak	A - Ring Road	- 36.93423097	174.8401004	Not Pest Species	1500	22	20	Crane Assisted Dismantling
372	Ulmus glabra - Scots wych elm	A - Ring Road	- 36.93427573	174.8399033	Not Pest Species	500	22	10	Helicopter assisted dismantling
373	Ulmus glabra - Scots wych elm	A - Ring Road	- 36.93427573	174.8399033	Not Pest Species	500	22	10	Helicopter assisted dismantling
374	Ulmus glabra - Scots wych elm	A - Ring Road	- 36.93427573	174.8399033	Not Pest Species	500	22	10	Helicopter assisted dismantling
375	Ulmus glabra - Scots wych elm	A - Ring Road	- 36.93427573	174.8399033	Not Pest Species	500	22	10	Helicopter assisted dismantling
376	Ulmus glabra - Scots wych elm	A - Ring Road	- 36.93427573	174.8399033	Not Pest Species	500	22	10	Helicopter assisted dismantling
377	Ulmus glabra - Scots wych elm	A - Ring Road	- 36.93427573	174.8399033	Not Pest Species	500	22	10	Helicopter assisted dismantling
378	Ulmus glabra - Scots wych elm	A - Ring Road	- 36.93427573	174.8399033	Not Pest Species	500	22	10	Helicopter assisted dismantling

Item No:	Tree Species	Operating Area	latitude	longitude	RPMS status	DBH (mm)	Approx. height (m)	Crown spread (m)	Removal Method
379	Ulmus glabra - Scots wych elm	A - Ring Road	- 36.93427573	174.8399033	Not Pest Species	500	22	10	Crane Assisted Dismantling
380	Sequoia sempervirens	D - Water Tower	- 36.93422695	174.8397236	Not Pest Species	500	20	8	Crane Assisted Dismantling
381	Pinus radiata - Monterey pine	E - Tihi	- 36.93166236	174.8404676	Not Pest Species	3000	30	20	Crane Assisted Dismantling
382	Olea sp. - olive	E - Tihi	- 36.93216738	174.8406104	Not Pest Species	400	6	4	Helicopter assisted dismantling
383	Olea sp. - olive	E - Tihi	- 36.93216738	174.8406104	Not Pest Species	400	6	4	Helicopter assisted dismantling
384	"Populus nigra - Lombardy poplar, black poplar"	A - Ring Road	- 36.93126963	174.8386973	Not Pest Species	800	13	10	Crane Assisted Dismantling
385	"Populus nigra - Lombardy poplar, black poplar"	A - Ring Road	- 36.93102944	174.8388931	Not Pest Species	1800	15	10	Crane Assisted Dismantling
386	"Populus nigra - Lombardy poplar, black poplar"	A - Ring Road	- 36.93116213	174.8388266	Not Pest Species	1600	13	10	Crane Assisted Dismantling
387	Platanus x acerifolia - London Plane tree	E - Tihi	- 36.93112914	174.8387308	Not Pest Species	600	20	15	Crane Assisted Dismantling
388	Platanus x acerifolia - London Plane tree	E - Tihi	- 36.93112914	174.8387308	Not Pest Species	600	20	15	Crane Assisted Dismantling
389	Platanus x acerifolia - London Plane tree	E - Tihi	- 36.93112914	174.8387308	Not Pest Species	600	20	15	Crane Assisted Dismantling
390	Platanus x acerifolia - London Plane tree	A - Ring Road	- 36.93112914	174.8387308	Not Pest Species	600	20	15	Crane Assisted Dismantling
391	"Acmena smithii, Syzygium - lilly pilly, monkey apple"	A - Ring Road	- 36.93121543	174.8388287	Surveillance Pest Plant	1400	16	15	Crane Assisted Dismantling
392	"Populus nigra - Lombardy poplar, black poplar"	A - Ring Road	- 36.93086415	174.8391875	Not Pest Species	1400	12	7	Manual dismantling
393	Cupressus x leylandii - Leyland cypress	A - Ring Road	- 36.93082605	174.8392652	Not Pest Species	1200	7	5	Crane Assisted Dismantling
394	"Populus nigra - Lombardy poplar, black poplar"	A - Ring Road	- 36.93080154	174.8393349	Not Pest Species	1200 at 800 from ground	8	6	Crane Assisted Dismantling
395	Quercus robur - English oak	A - Ring Road	- 36.93076273	174.8394362	Not Pest Species	1200	13	18	Manual dismantling
396	"Populus nigra - Lombardy poplar, black poplar"	A - Ring Road	-36.9307023	174.839535	Not Pest Species	900	7	5	Manual dismantling
397	"Acmena smithii, Syzygium - lilly pilly, monkey apple"	A - Ring Road	- 36.93066254	174.8396314	Surveillance Pest Plant	1000	7	8	Manual dismantling

Item No:	Tree Species	Operating Area	latitude	longitude	RPMS status	DBH (mm)	Approx. height (m)	Crown spread (m)	Removal Method
398	"Populus nigra - Lombardy poplar, black poplar"	A - Ring Road	- 36.93083674	174.8401282	Not Pest Species	609	10	5	Manual dismantling
399	"Populus nigra - Lombardy poplar, black poplar"	A - Ring Road	- 36.93083674	174.8401282	Not Pest Species	609	10	5	Manual dismantling
400	"Populus nigra - Lombardy poplar, black poplar"	A - Ring Road	- 36.93083674	174.8401282	Not Pest Species	609	10	5	Manual dismantling
401	"Populus nigra - Lombardy poplar, black poplar"	A - Ring Road	- 36.93083674	174.8401282	Not Pest Species	609	10	5	Manual dismantling
402	"Populus nigra - Lombardy poplar, black poplar"	A - Ring Road	- 36.93083674	174.8401282	Not Pest Species	609	10	5	Manual dismantling
403	"Populus nigra - Lombardy poplar, black poplar"	A - Ring Road	- 36.93083674	174.8401282	Not Pest Species	609	10	5	Manual dismantling
404	"Populus nigra - Lombardy poplar, black poplar"	A - Ring Road	- 36.93088863	174.8401753	Not Pest Species	1000	10	7	Manual dismantling
405	"Populus nigra - Lombardy poplar, black poplar"	A - Ring Road	- 36.93088863	174.8401753	Not Pest Species	1000	10	7	Manual dismantling
406	"Populus nigra - Lombardy poplar, black poplar"	A - Ring Road	- 36.93088863	174.8401753	Not Pest Species	1000	10	7	Manual dismantling
407	"Populus nigra - Lombardy poplar, black poplar"	A - Ring Road	- 36.93088863	174.8401753	Not Pest Species	1000	10	7	Manual dismantling
408	Cinnamomum camphora-camphor laurel	F - Sports Field Area	- 36.93269392	174.8424053	Not Pest Species	1500	18	16	Crane Assisted Dismantling
409	Pinus radiata - Monterey pine	A - Ring Road	- 36.93213496	174.8411408	Not Pest Species	0	30	8	Crane Assisted Dismantling
410	Cupressus macrocarpa - Monterey cypress	A - Ring Road	-36.9320776	174.8411136	Not Pest Species	1000	20	15	Crane Assisted Dismantling
411	Cupressus macrocarpa - Monterey cypress	A - Ring Road	- 36.93218561	174.8409202	Not Pest Species	2000	30	20	Crane Assisted Dismantling
412	Pinus radiata - Monterey pine	A - Ring Road	- 36.93222902	174.8410365	Not Pest Species	1500	30	8	Crane Assisted Dismantling
413	Crataegus laevigata - English hawthorn	A - Ring Road	- 36.93207571	174.8409123	Surveillance Pest Plant	300	6	6	Crane Assisted Dismantling
414	Pinus radiata - Monterey pine	A - Ring Road	- 36.93199238	174.8408967	Not Pest Species	2000	25	20	Crane Assisted Dismantling
415	Pinus radiata - Monterey pine	A - Ring Road	- 36.93185945	174.8407565	Not Pest Species	300	15	7	Crane Assisted Dismantling
416	Olea sp. - olive	A - Ring Road	- 36.93176511	174.8408243	Not Pest Species	400	6	5	Helicopter assisted dismantling
417	Olea sp. - olive	A - Ring Road	- 36.93176511	174.8408243	Not Pest Species	400	6	5	Crane Assisted Dismantling

Item No:	Tree Species	Operating Area	latitude	longitude	RPMS status	DBH (mm)	Approx. height (m)	Crown spread (m)	Removal Method
418	Ilex sp. - holly	A - Ring Road	- 36.93165737	174.8406965	Not Pest Species	400	6	6	Crane Assisted Dismantling
419	Pinus radiata - Monterey pine	A - Ring Road	- 36.93159198	174.8408293	Not Pest Species	800	20	10	Crane Assisted Dismantling
420	Cupressus macrocarpa - Monterey cypress	A - Ring Road	- 36.93150676	174.8407693	Not Pest Species	2000	18	9	Crane Assisted Dismantling
421	Pinus radiata - Monterey pine	A - Ring Road	- 36.93146924	174.8406456	Not Pest Species	700	12	12	Crane Assisted Dismantling
422	Olea sp. - olive	E - Tihi	-36.9317217	174.8402919	Not Pest Species	500	7	7	Helicopter assisted dismantling
423	Olea sp. - olive	E - Tihi	-36.9317217	174.8402919	Not Pest Species	500	7	7	Crane Assisted Dismantling
424	Cupressus macrocarpa - Monterey cypress	E - Tihi	- 36.93175305	174.8401346	Not Pest Species	0	15	15	Helicopter assisted dismantling
425	Olea sp. - olive	E - Tihi	- 36.93190957	174.8403683	Not Pest Species	500	6	5	Helicopter assisted dismantling
426	Olea sp. - olive	E - Tihi	- 36.93190957	174.8403683	Not Pest Species	500	6	5	Helicopter assisted dismantling
427	Cupressus macrocarpa - Monterey cypress	E - Tihi	- 36.93188652	174.840085	Not Pest Species	2500	15	15	Helicopter assisted dismantling
428	Pinus radiata - Monterey pine	E - Tihi	- 36.93211325	174.8402908	Not Pest Species	1500	20	10	Helicopter assisted dismantling
429	Pinus radiata - Monterey pine	E - Tihi	- 36.93232229	174.8404773	Not Pest Species	3000	20	20	Helicopter assisted dismantling
430	Olea sp. - olive	E - Tihi	- 36.93239787	174.8406932	Not Pest Species	200	6	5	Crane Assisted Dismantling
431	Pinus radiata - Monterey pine	E - Tihi	- 36.93236973	174.8408018	Not Pest Species	2000	25	20	Crane Assisted Dismantling
432	Crataegus laevigata - English hawthorn	E - Tihi	- 36.93240644	174.840891	Surveillance Pest Plant	400	5	7	Crane Assisted Dismantling
433	Platanus x acerifolia - London Plane tree	A - Ring Road	- 36.93246115	174.8411759	Not Pest Species	300	10	8	Crane Assisted Dismantling
434	Phoenix canariensis - phoenix palm	A - Ring Road	- 36.93263558	174.8411079	Surveillance Pest Plant	600	12	6	Crane Assisted Dismantling
435	Platanus x acerifolia - London Plane tree	E - Tihi	- 36.93258734	174.8407871	Not Pest Species	2000	20	20	Crane Assisted Dismantling
436	Cryptomeria japonica - Japanese cedar	E - Tihi	- 36.93326404	174.8405463	Not Pest Species	1200	19	12	Helicopter assisted dismantling
437	Cupressus macrocarpa - Monterey cypress	E - Tihi	- 36.93327583	174.8404558	Not Pest Species	1400	24	17	Crane Assisted Dismantling
438	Cupressus macrocarpa - Monterey cypress	E - Tihi	- 36.93321553	174.8402828	Not Pest Species	1200	25	17	Helicopter assisted dismantling

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Item No:	Tree Species	Operating Area	latitude	longitude	RPMS status	DBH (mm)	Approx. height (m)	Crown spread (m)	Removal Method
439	Unknown species	E - Tihi	- 36.93316435	174.8402369		3000			Helicopter assisted dismantling
440	Fagus sylvatica-european beech	E - Tihi	- 36.93310083	174.8402479	Not Pest Species	1200	16	19	Helicopter assisted dismantling
441	Olea sp. - olive	E - Tihi	- 36.93298505	174.8402566	Not Pest Species	600	7	13	Crane Assisted Dismantling
442	Olea sp. - olive	E - Tihi	- 36.93281461	174.8402875	Not Pest Species	1200	7	12	Helicopter assisted dismantling
443	Olea sp. - olive	E - Tihi	- 36.93284918	174.8402409	Not Pest Species	700	7	9	Crane Assisted Dismantling
444	Pinus radiata - Monterey pine	E - Tihi	- 36.93274546	174.8404571	Not Pest Species	1500	18	20	Helicopter assisted dismantling

Appendix D: Recommended Operational Management Requirements

Environmental Management

A detailed plan showing the processes and procedures the contractor will use to ensure the service meets all of the legislative / regulatory requirements;

Resource Plan

A detailed plan showing the resources (equipment and labour) the contractor will use to ensure the works meet all of the requirements stated in an agreement yet to be drawn up. This agreement would detail the number of staff, qualification levels and competencies with regard to arboricultural operations. This plan will also include management of response work requests, including 24/7 call centre or equivalent processing to take account of incidents which could arise at the site;

Traffic Management Plan

The contractor will provide a detailed plan showing processes and procedures to ensure that appropriate traffic management systems are used to ensure the work processes will meet all of the legislative requirements:

- (i) The contractor is to adopt/develop, implement and manage suitable generic and specific traffic management plans (TMPs) so that the works requiring public highway access can be undertaken in accordance with the relevant legislative requirements;
- (ii) Temporary traffic control shall be in accordance with 'The NZTA Code of Practice for Temporary Traffic Management' and any other Codes of Practice adopted by the Authority, depending upon the specific traffic control requirements for the site; and

Relationship Management Plan

A detailed plan showing the processes and procedures the contractor will use to ensure that all communications relating to the management and operation of the works facilitates understanding and provides a 'No surprises' regime. This is likely to be a high profile undertaking and regular exchanges of information will be required to field potential external queries and inform timely intervention where matters unexpectedly deviate from the plan.

Emergency Work Plan

A detailed plan showing the processes and procedures the contractor will use to manage any Emergency Work that is required to be undertaken as part of the works;

Business Continuity Plan

A detailed plan showing the processes and procedures the contractor will use to manage uninterrupted continuation of the works;

Risk Mitigation Plan

A detailed plan showing the processes and procedures the contractor will use to manage risk assessment and management of risks identified by the contractor. The contractor will need to ensure Public liability cover of at least \$2 million indemnity is current for the duration of the works;

Information and Reporting

A detailed plan showing the processes for gathering, managing, checking and reporting information;

Billing

A detailed plan showing the processes for ensuring invoicing is on time, with enough information for the Authority to be able to easily ask questions, understand what is being billed for, and assess the progress of works to date.

Quality Management Plan (QMP)

A detailed Quality Management Plan should be provided by the contractor.

It may prove expedient for the Authority to agree with any prospective contractor the standard to be adopted for the purposes of the contract as a baseline reference point. The content of the Quality Management Plan should include but not be limited to:

- Quality management processes to ensure all works are delivered to the appropriate standard and comply with all relevant industry practises and legislation;
- A compliments and complaints procedure, including a process for effectively responding to complaints; and
- All other things necessary to ensure the quality of the works as may be required by the Authority.

The Quality Management Plan should be approved in writing by the Authority. If such a quality management plan is rejected by the Authority the contractor should address all issues regarding the Quality Management Plan made known to the contractor by the Authority and re-submit until approval is obtained.

Variation to the QMP may be required from time to time by mutual agreement.

The contractor must regularly update and maintain the Quality Assurance Plan throughout the works period.

Working Hours

The contractor shall need to ensure that all works, particularly helicopter extractions, which generate excessive noise or other hindrances are carried out at times that minimise the impact to the public and local residents and comply with any relevant bylaws and/or specific noise restrictions.

The contractor shall comply with operations limitations such as helicopter fly times and noise restrictions as set out in any conditions of consent and specific management plans.

Operational Protocols

In general, tree operational control and management will be led by an appointed arborist engaged to oversee the works and be a conduit between the consent holder, contractor and stakeholders.

Prior to works commencing, the appointed arborist shall arrange a pre-start meeting with the principal contractor, The Tūpuna Maunga Authority, consent holder (other than listed) and stakeholders. The pre-start meeting will identify:

- Roles and responsibilities of the works, including consultation and communication to stakeholders and the wider public.
- The conditions of consent and how these will affect the management and timings of the works.
- Detail the archaeological, cultural and historical features, requirements and limitations of the maunga, and outline the maunga protection areas and how these are to be protected.
- Operational zones, processing areas and other operational limitations.
- Tree removal methods, safety requirements, handling of material and storage requirements.
- Post works requirements (if any)
- At the completion of works, the appointed arborist shall “sign off” the work and provide a brief account of the project to The Tūpuna Maunga Authority.

It shall be the responsibility of the consent holder in conjunction with the appointed arborist to ensure that all

persons engaged or otherwise to work on the site are made aware of the conditions of consent and tree protocols and that these conditions are adhered to at all times.

Prior to the removal of the tree, the appointed arborist will physically identify each tree with a removal methodology demarcation and a corresponding processing method.

The appointed arborist in conjunction with the arboricultural contractor shall determine the processing options and maunga protection methods. This could include the identification of areas where ground protection is appropriate. The ground protection will be sufficient and appropriate for the task so that the ground is protected from damage. Prior to the works the ground protection will be emplaced and removed at the completion of the works. Where loads will exceed the ground protection and alternative ground protection methods are not applicable, the manner of removal will be altered or if this cannot be altered safely, the tree removal method will be changed. The contractor shall ensure that they can source sufficient ground protection mats.

All work shall be undertaken in a manner that avoids damage to the trees being retained. If pruning is required to allow for machinery and/or vehicle access, the works will be undertaken to modern tree pruning targets. All pruning will be recorded and a brief report of any adverse effects will be provided to the Tūpuna Maunga Authority. Mitigation of the pruning will be undertaken as outlined by the appointed arborist.

Matting

Matting will be of a robust material that can be pinned to the ground using a small gauge looped pin. The matting will cover any areas that could possibly be affected by the dismantling or processing areas. All 'dragging' / transport of material and branches will be undertaken on top of the matting. The contractor will procure and supply all matting. The composition / type of matting will be with the agreement of the Tūpuna Maunga Authority.

Load Bearing Boards

Load bearing boards will be robust in nature that can sufficiently distribute the load of the machinery and vehicles required for the task. There will sufficient load bearing boards available for use. The contractor will procure and supply all load bearing boards.

Manual Dismantling Protocol

Where the manual dismantling method is proposed, the tree will be manually dismantled using rigging techniques and then transported carefully by hand on top of a robust matting that will prevent scarification of the ground. The branch shall be held by the wooded end of a branch so the branchlets and leaves will act as a flexible, absorbent layer that distributes the weight of the branch when 'dragged' from the dismantling site to the processing site.

Matting will be staked to the ground using a small gauge looped pin that will leave only a small hole of shallow depth. The contractors will ensure that the matting will be maintained in place for the duration of the time required to complete the task.

Trees will not be felled or branches 'thrown' to the ground as the matting won't protect the ground from impact damage.

Where branches need to be 'thrown' / rolled down a bank adjacent to the road, care will be taken so that no impact damage occurs to the ground surface, including the sealed road. Load bearing boards may need to be placed on top of the ground to absorb the impact.

Dragging / transporting branches or material is not permitted in areas where archaeological features are visible such as the edges of pits or terracing.

Trimming

Any trimming required to allow access of the cranes and vehicles will be undertaken by the contracting arborist. The trimming will be carried out in accordance with best arboricultural practices. The trimming will only remove branches and foliage that could be damaged during the transit of the cranes and vehicles. No more than 10% of live growth will be removed, trimming will not remove any branches measuring 100mm (at the point of severance) or greater, and will retain the natural shape, form and branch habit of the tree.

Crane and Helicopter Assisted Dismantling

All works shall be under the direction of a nominated person from the arboricultural contractor. A site-specific works methodology will be agreed to by the crane, helicopter and arboricultural contractor. The processing sites outlined within this report shall be utilised for the processing sites. The traverse of the cranes shall be undertaken to avoid damage to the ground. Any damage to the processing site shall be remedied by the engaged arboricultural contractor.

Health and safety

A detailed plan showing the contractor's site-specific hazards and how it will be specifically applied to the maunga will be compiled and implemented by the contracting arborist.

Appendix E: Figure 2: Maps of Operating Zones, Tree Locations & Removal Methods

