



Tree Protection and Management Plan

**AMETI Eastern Busway
Stage 1 –
Panmure to Pakuranga
March/2019**



Document Control				
Title	Tree Protection and Management Plan			
	Name	Position	Signed/Approved	Date
Originator	Omar Seychell	National Environmental Manager - Construction		08-02-19
Review	Leon Saxon	ArborLab – Senior Consultant Arborist		11-03-19
Approval				

Document Details

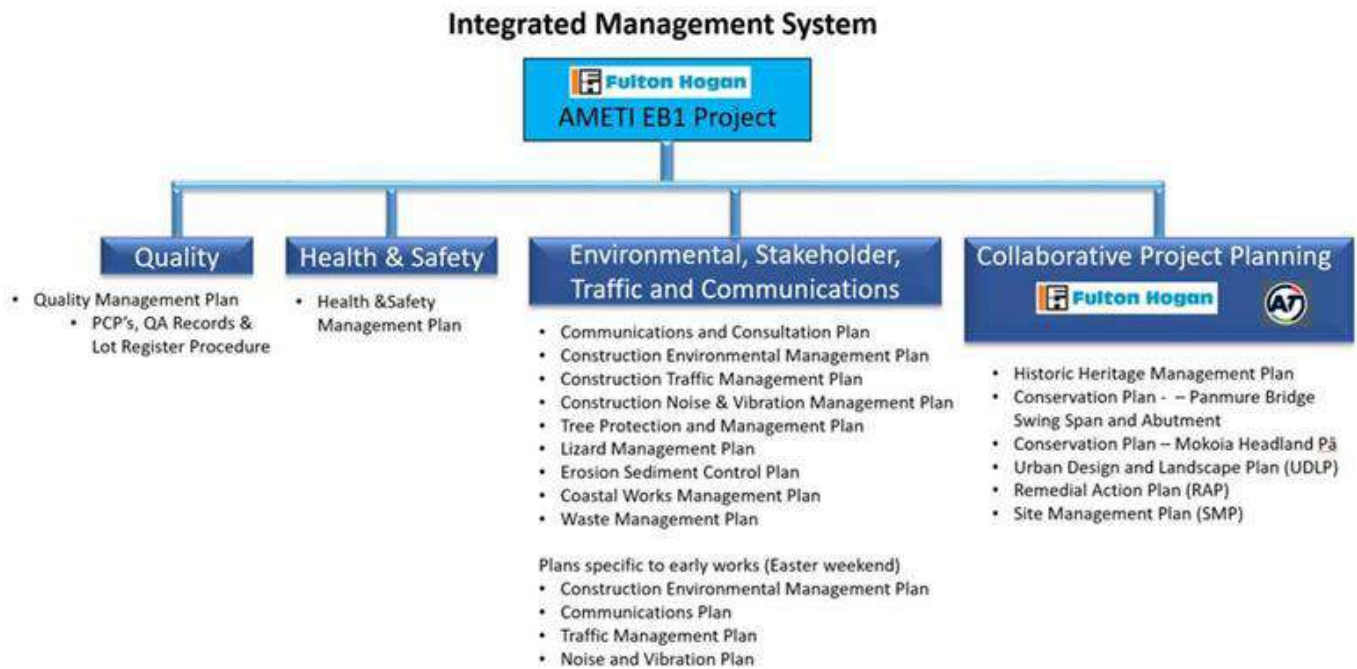
Document name	Status	Document No.	Author
Tree Protection and Management Plan	Draft for AT Comment	AEB1-EN-2005	Omar Seychell

Document History and Status

Revision	Date	Author	Reviewed by	Approved by	Status
1	11-03-2019	O. Seychell	L. Saxon		Draft
2	12-03-2019	O. Seychell	C. Redmond		Final Draft
3	20-03-2019	L. Saxon	C. Redmond		Final Draft

Revision Details

Revision	Details
1	Draft (includes comments from meeting with AC on the 08/03/19 and ArborLab review)
2	Draft for Submission (includes Jacobs review)
3	Draft for Submission (includes AT review comments)



* Note: Some Management Plans are currently being written or amended. Any changes to the current IMS Framework will be advised and amended accordingly.

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1 Introduction

1.1 Purpose and scope

This Tree Protection and Management Plan (TPMP) is to avoid, remedy or mitigate any adverse construction effects on those trees to be retained as part of the project as far as reasonably practicable.

The purpose of this plan is to meet the requirements of the designation conditions for the AMETI Eastern Busway Stage 1 – Panmure to Pakuranga works (the Project).

The principles outlined in the Construction Environmental Management Plan and this Plan will be used by the project team to set out management procedures and methodologies for undertaking works within the vicinity of trees.

The Arboricultural Assessment undertaken for the Project by Richard Peers (21/12/16) found in Appendix D of this plan and the Statement of Evidence of Matthew Trevor Paul (on behalf of Auckland Transport) found in Appendix E forms the basis of this TPMP.

1.2 Project description

AMETI is a package of improvements focused on promoting an integrated, multi-modal transport system to support population and economic growth in south-east Auckland. This involves the provision of a greater number of improved transport choices and aims to enhance the safety, quality and attractiveness of public transport and walking and cycling environments, while recognising that not all transport demand can be met by these modes alone.

The overall AMETI project involves the construction of a dedicated busway between Panmure, Pakuranga and Botany town centres, the construction of new stations at Panmure and Pakuranga, as well as roading improvements at traffic bottlenecks across the extent of the overall AMETI project area; which encompasses Panmure, Mt Wellington, Sylvia Park, Pakuranga and Botany.

1.3 Location

The location of the project is shown below in Figure 1.1.

Figure 1.1: Local context of the Project



1.4 Management plan framework

The project requires a suite of environmental management and mitigation plans to ensure the successful construction of the project. The Construction Environmental Management Plan sets the overall framework for

the management of the environmental aspects of the project and is supported by a series of sub management plans focussing on specialist environmental areas. This TPMP is one of those sub management plans.

1.5 Roles and responsibilities

The Construction Manager is responsible for the implementation of this Plan. All parties (including subcontractors), who may be carrying out construction works at the site, shall be provided a briefing of its contents prior to works occurring.

Roles and responsibilities for the implementation of this Plan are provided in Table 1.1.

Table 1.1: Plan implementation - roles and responsibilities

Name	Role	Phone number	Contact email	Responsibility
Omar Seychell	National Environmental Manager - Construction	027 705 4450	Omar.seychell@fultonhogan.com	Development of the TPMP. Onsite environmental compliance auditing.
James Weller	Project Manager	027 274 2961	James.weller@fultonhogan.com	Implementation of the TPMP.
Jason Haggerty	Construction Environmental Manager	027 547 0140	Jason.Haggerty@fultonhogan.com	Day to day implementation of the CEMP and sub management plan and mitigation plans onsite Onsite environmental compliance
David McGoey	Construction Manager	027 809 4604	David.McGoey@fultonhogan.com	Ensuring the Construction Environmental Manager and the Zone managers are aligned in their approach to ensuring environmental compliance with the CEMP and subplans
Jeremy Gordon	Zone Manager – Bridge Construction	027 520 9391	Jeremy.Gordon@fultonhogan.com	Day to day supervision of the implementation of the environmental controls in their respective construction zones
Fathi Hassneiah	Utilities Manager	027 576 7267	Fathi.Hassneiah@fultonhogan.com	
Tommy Temple	Superintendent	027 223 1798	Tommy.Temple@fultonhogan.com	
Leon Saxon	Consultant Arborist	0274 957 221	leon@arborlab.co.nz	Arboricultural assessments Arboricultural advice
Shaun Barnett	Supervising Arborist	027 4957 440	shaun@arborlab.co.nz	Be onsite as required to monitor works Provide advice and guidance to ensure the health of the trees is maintained throughout the construction period Support the preparation of the Tree Protection Management Plan with Auckland Council
Jason Lord	Works Arborist	021 343 721	jason@franklintrees.com	Undertake tree removal, tree relocations (where required) and tree pruning requirements.
Auckland Council - Heritage Arborist	Nick Stott			Be onsite as required to provide input on decisions around activities undertaken within the root zones of or pruning of notable trees throughout the construction period

Auckland Council – Manukau Parks Arborist	Allan Gasson / Simon Cook			Be onsite as required to provide input on decisions around activities undertaken within the root zones of or pruning of Parks trees throughout the construction period
Auckland Council – Street Trees	Howell Davies	027 448 4993	Howell.Davies@aucklandcouncil.govt.nz	Be onsite as required to provide input on decisions around activities undertaken within the root zones of or pruning of street trees throughout the construction period

2 Environmental management

2.1 Summary of arboricultural effects assessment

Below is a summary of the arboricultural effects assessment as taken from the Arboricultural Evidence (noted in Appendix D of this plan) which includes changes in effects as a result of the Proposed Auckland Unitary Plan (PAUP) which has become operative in part and some design change which is now proposed at the Ti Rakau/Pakuranga Road intersection to improve the performance of the intersection.

- The assessment identifies that a total of one hundred and thirty four (134) protected and non-protected trees/groups of trees will require removal for the Project. Of these, ninety two (92) trees/groups of trees are protected. Seventy eight (78) trees/groups of trees are located on the Panmure side of the Tamaki River. Fifty six (56) trees/groups of trees are located on the Pakuranga side of the Tamaki River.
- In addition, works are proposed within the driplines of seventy-nine (79) protected trees.
- Twenty-one (21) scheduled trees will require works to be undertaken within their respective driplines. These are the twenty (20) scheduled Pōhutukawa trees within Panmure Domain Reserve, and one (1) Swamp Cypress tree standing within 1 Kerswill Place, Pakuranga.
- All works involving excavations within the driplines of, or in close proximity to, trees within the Project area are to be supervised by a monitoring arborist in order to ensure that any potential adverse effect on those retained trees is avoided or minimised. All works are to be undertaken in accordance with the tree protection methodology outlined in the Arboricultural Assessment (Appendix D).
- Some tree pruning will be required to clear the existing and new infrastructure overhead for vehicular traffic. At a minimum, a clearance of 4.25 metres would be required. All pruning that is assessed as being required would be minor in scale, and within the accepted arboricultural pruning thresholds.
- The actual and potential adverse effects of the various construction and earthworks activities that are proposed to take place within the driplines of various trees can be appropriately managed, provided appropriate tree protection measures are implemented.
- As noted in paragraph 4.3 of Appendix E of this plan, an additional twenty three (23) trees will be impacted as part of the changes. A total of six (6) trees will require removal in order to form the new third lane on Ti Rakau Drive; with the remaining seventeen (17) protected trees (within road reserve) requiring works to be undertaken within their driplines in order to widen the footpath to the east of the intersection. No additional notable trees are affected.

2.2 Legislative requirements

The current relevant designation conditions, and how they are addressed by the project, are set out in Table 2.1.

It should be noted that the Arboricultural Assessment (Appendix D) was originally assessed under the Auckland Isthmus and Manukau City legacy plans and the PAUP. Since the assessment was undertaken, the PAUP has become operative in part (AUP(OIP)). Some changes around protected tree heights and tree species are noted. Most notably, under the AUP(OIP), all trees growing within road reserve or park land are protected in excess of 4 metres in height or 400mm in girth.

On the Pakuranga side of the Tamaki River (formerly Manukau City), an additional twenty-two (22) trees would be protected under the AUP(OIP). These twenty-two (22) additional protected trees have always

been within the Project footprint. However, while these trees were shown in the landscape plans for removal, the Arboricultural Assessment did not explicitly assess the effects of their removal as their removal was a permitted activity at the time of the assessment. It is noted in Appendix D that replacement planting, in its current form, greatly exceeds a 1:1 replacement ratio. It is also noted that the proposed replacement planting volumes adequately mitigates the loss of the additional twenty two (22) protected trees, so that any effects remain no more than minor. The assessment concludes that the Project is consistent with the revised provisions of the AUP(OIP).

Table 2.1: Relevant designation conditions

Condition number	Condition	Reference
Notice of Requirement Conditions		
55	The Requiring Authority must work with the Council's arboricultural specialists in its Parks and Heritage division to develop a joint Tree Protection and Management Plan ("TPMP") for submission to the Team Leader, Southern Monitoring for certification. The objective of the TPMP is to avoid, remedy or mitigate any adverse construction effects on those trees to be retained as part of the project as far as reasonably practicable. As part of the TPMP, where required the Requiring Authority must develop specific work procedures that are to be outlined in the contract tender documentation for the civil works contracts for the project. The TPMP must also include the final construction methodology details for works close to or around any notable trees in the project area, based on the final detailed design.	Sc 3, Sc 3.7
56	In order for the TPMP to meet the designation requirements, the plan is to include specific vegetation protection measures to be implemented on site, including:	
	I. Tree protection measures for notable trees at the Domain Reserve and 1 Kerswill Place, based on the items in Schedule 1A of these conditions;	Sc 3.2
	II. Tree protection measures for trees to be retained based on the items in Schedule 1B of these conditions;	Sc 3.3
	III. Tree pruning measures based on the recommendations in Schedule 1C of these conditions (including pruning any trees outside the designated area by the Council's tree maintenance contractors under the direction of the Council's arborist advisor). These measures must also demonstrate that the extent of works will be undertaken in accordance with the following permitted activity standards in the Auckland Unitary Plan (Operative in Part): E26.4.5.1 (which applies to tree trimming or alteration of trees in streets and open space zones), and E26.3.5.2(8) (which relates to the alteration or removal of vegetation required to maintain the visibility of road safety signage, vehicle sightlines, carriageway clearance heights and widths);	Sc 3.4
	IV. Demarcation of temporary construction access and storage areas, outside the permeable dripline and / or rootzone areas of retained trees;	Sc 3.3 (e,f) Sc 3.7.4
	V. Use of protective barrier fencing;	Sc 3.2 (d) Sc 3.3 (g) Sc 3.7.3
	VI. Procedures for working within the dripline / rootzone of any retained tree, including appointment of a qualified Council approved arborist ("appointed arborist") to oversee directly all works within the dripline and rootzone of the trees located in the designated areas of work for the duration of the site works, until the route is considered completed, and including any reinstatement works that fall outside the area of the designation;	Sc 3.2 & 3.3
	VII. Specific bio-security removal restrictions that will apply to all protected elms, to avoid the risk of Dutch Elm Disease (refer Appendix 6 of the arboricultural assessment prepared by Peers Brown Miller dated 21 December 2016), including vetting and approving the methodology and treatment of the Elm material by the Council's arboricultural specialist	Sc 3.5

Condition number	Condition	Reference
	responsible for handling and treatment of all Elm material controlled under the Biosecurity Act, prior to any works taking place;	
	VIII. Measures to provide for clear marking of all tree removals prior to implementation of each stage of the works, with verification of the removals by the Requiring Authority's arborist in consultation with the Council's arboricultural specialist;	Sc 3.2 (c) and Sc 3.3
	IX. The methodology required to relocate the Pohutukawa trees from Queens Road, Panmure, including measures to enable, where practical, the uplifting and temporary storage of the existing Pohutukawa trees where they fall in the designated area of works, as well as their appropriate maintenance and repositioning in a suitable alternative location in consultation with the Council's arboricultural specialist Parks;	Sc 3.6
	X. Determination of the practicality of uplifting trees for transplanting by a qualified and experienced arborist (in consultation with the Council's arborist advisor), having particular regard to below ground infrastructure and its planned renewal and relocation;	Sc 3.6
	XI. For those trees that can be practicably uplifted (transplanted), retaining the services of an appropriately qualified arboriculturalist experienced with best practice tree relocation procedures to extract the Pohutukawa trees to be retained and thereafter maintain and irrigate the trees until such time as they are relocated.	Sc 3.6
57	<p>Prior to finalising detailed designs for works close to or around any notable trees in the project area the Requiring Authority is to arrange a meeting between the appointed arborist, the Council's parks arboricultural specialist, the Council's Heritage arborist, and any other relevant employees/contractors who will be working on the project.</p> <p>The purpose of this meeting is to review the detailed designs for works planned in the rootzone area of the notable trees adjacent to the area of works (which comprise the Pohutukawa trees in Domain Reserve, the willow trees on Pakuranga Road, and the Swamp Cypress in Kerswill Place).</p>	Sc 3.1.1
58	<p>Prior to any construction works commencing, a pre-commencement site meeting must be arranged by the Requiring Authority. The purpose of the meeting is for the appointed works arborist to explain all vegetation protection measures to a representative of all contractors, subcontractors and work site supervisory staff who will carry out project works within the dripline of any retained tree on the designated route. The following Council officers must also be invited to attend the meeting:</p> <ul style="list-style-type: none"> a) Team Leader Southern Monitoring (or representative); b) In the case of trees on private land – the Resource Consents Specialist Advisor – Arborist; c) In the case of trees on Parks owned land – the Senior Arboriculture and Eco Specialist (or equivalent), Operational Management and Maintenance, Auckland Council Community Services. d) In the case of street trees located in the road reserve – the Senior Advisor – Urban Forest (or equivalent), Parks Services, Auckland Council Parks, Sport and Recreation. 	Sc 3.1.2
59	Compliance with the recommended tree protection measures and construction methodology must be monitored by the appointed works arborist and logged in accordance with the vegetation log sheet contained in the TPMP. The log sheet must be provided to Council officers at agreed intervals or, where required, on request.	Sc 3.2 & Sc 3.3
60	If the design of the project is modified so that it becomes apparent that trees identified to be retained on the approved/certified landscape plans are required to be removed, then removal of these trees is appropriate if:	Sc 3.1.1

Condition number	Condition	Reference
	a) The tree to be removed is not one of the scheduled Pohutukawa trees at the Domain Reserve, a Pohutukawa tree(s) along the southern side of Lagoon Drive, or the Swamp Cypress and Kauri tree at 1 Kerswill Place; and b) The design modification results in retention of a tree that was identified to be removed (i.e. no net loss of generally protected trees); or c) If the design modification will result in a net loss of generally protected trees, a suitable replacement specimen tree is provided in the project alignment (in addition to the proposed planting shown on the approved/certified landscape plans).	

3 Implementation and operation

Fulton Hogan has worked with Council's arboricultural specialists in its Parks and Heritage Division (Howell Davies) to develop this joint Tree Protection and Management Plan (TPMP).

The TPMP has been reviewed by Leon Saxon, ArborLab Consultant Arborists.

The plan is to be submitted to the Team Leader, Southern Monitoring for certification prior to any tree works commencing or prior to any works within root zones of trees.

As part of on-site works, Fulton Hogan will develop safe work method statements (also known as work instructions) which will detail the procedures to avoid, remedy or mitigate any adverse construction effects on those identified trees (as outlined in the location plans - Appendix F of this plan).

3.1 Pre-start construction meetings

3.1.1 Detailed design stage

Detailed designs for works close to or around the notable trees in the Domain Reserve have been finalised following a meeting between Auckland Transport and Council's parks arboricultural specialist on 9 November 2017.

Any minor modifications to detailed designs for works planned in the rootzone area of the notable trees adjacent to the area of works (which comprise the Pohutukawa trees in Domain Reserve, the Willow trees on Pakuranga Road, and the Swamp Cypress in Kerswill Place) will be further considered during the pre-start meetings.

If the design of the project is modified so that it becomes apparent that trees identified to be retained on the approved/certified landscape plans are required to be removed, then removal of these trees is appropriate if:

- The tree to be removed is not one of the scheduled Pohutukawa trees at the Domain Reserve, a Pohutukawa tree(s) along the southern side of Lagoon Drive, or the Swamp Cypress and Kauri tree at 1 Kerswill Place; and
- The design modification results in retention of a tree that was identified to be removed (i.e. no net loss of generally protected trees); or
- If the design modification will result in a net loss of generally protected trees, a suitable replacement specimen tree is provided in the project alignment (in addition to the proposed planting shown on the approved/certified landscape plans).

3.1.2 Construction phase – project staging/works arborist process

Prior to each stage commencing, the Works Arborist will carry out the following actions as identified in Table 3.1. Responsibilities for each action are identified. The actions shall be completed prior to the pre-start meeting held with Auckland Council representatives.

Table 3.1: Project Staging – Works Arborist Process

Action	How	Responsibility	To be documented / confirmed by
Identify trees for removal	Tree marked with a red 'X' with dazzle 5 days prior to removal.	Arborlab	Arborlab
	Checked by Franklin before starting work each day. Franklin to contact Arborlab if any discrepancies. Record that checks have	Franklin	

	been completed on daily 'tool box' pre start sheet.		
Identify lizard management areas	Identify exclusion area, invite herpetologist to site and confirm removal methodology requirements.	Fulton Hogan Arborlab	Fulton Hogan
Identify trees for retention	Marked with pink ribbon, tied to tree 3 metres above ground level.	Arborlab	Arborlab
Identify scheduled trees	Attach 'scheduled tree' sign with tape/straps.	Arborlab	Arborlab
Identify retained trees; works in root zone / biosecurity	Identify exclusion area, attach 'protected tree' signs (Appendix C).	Arborlab	Arborlab
Confirm timber usage	Walkover with iwi (if required) 5 days prior to tree removal.	Fulton Hogan Arborlab	Fulton Hogan Arborlab to pass information onto Franklin Trees

Prior to any works commencing, a meeting will be held at the site to discuss all the tree protection measures proposed and to gain clarification of the conditions of consent imposed by Council. Present at the meeting should be:

- the consent holder
- the site's project manager (or other contractor representative)
- the works/supervisory arborist appointed by Fulton Hogan

In the case of the areas identified in the Lizard Management Plan:

- Project herpetologist
- Mana Whenua cultural monitor

The following Council officers must also be invited to attend this meeting:

- Team Leader Southern Monitoring (or representative);
- In the case of trees on private land – the Resource Consents Specialist Advisor – Arborist;
- In the case of trees on Parks owned land – the Senior Arboriculture and Eco Specialist (or equivalent), Operational Management and Maintenance, Auckland Council Community Services.
- In the case of street trees located in the road reserve – the Senior Advisor – Urban Forest (or equivalent), Parks Services, Auckland Council Parks, Sport and Recreation.
- In the case of scheduled trees an Auckland Council Heritage Arborist

Any additional trees assessed during site walkover as requiring removal/pruning (but not identified on the Arboricultural Assessment (Appendix D) as requiring removal/pruning) will be discussed at the construction pre-start meeting. Any recommendations/actions arising from this meeting will be recorded on the Arborist Meeting Minutes form (Appendix A) as evidence of agreed actions.

- Note: To date, on site reviews have indicated that there could be the potential for additional trees to be removed from Ti Rakau Intersection which have not been identified on the Arboricultural Assessment report. These trees will be discussed as part of the pre-start meetings to discuss possible course of action with agreement from AT and Auckland Council.
- Note 2: Three critical points have been identified which require arboricultural input prior to finalisation of detailed design. These include; the engineering design of the retaining wall (RW-L1.1) adjacent to Tree 21 (scheduled pōhutukawa; the batter slope within the root zone of Tree 135 (scheduled swamp cypress); and the shared driveway for 48-54 Lagoon Drive.

3.2 Tree protection measures (Domain Reserve and 1 Kerswill Place)

There are twenty (20) scheduled Pohutukawa trees in Domain Reserve. None of these are proposed for removal. However, there will be works within the driplines of these scheduled trees. There is also a notable/scheduled Swamp Cypress tree at 1 Kerswill Place. This tree will have works within its dripline.

All works are to be undertaken in accordance with the Protection Measures outlined in the Tree Assessment Report (Appendix D – Section 11A) and as noted below.

- a) Prior to any works commencing near or adjacent to trees, a meeting should be held at the site to discuss all the tree protection measures proposed and to gain clarification of the conditions of consent imposed by Council. The Arborist Meeting Minutes form is to be used for demonstrating compliance with this requirement (Appendix A). Refer to Section 3.1.
- b) Tree removals in the vicinity of any scheduled/notable tree should be undertaken by a qualified arborist with the skills required to avoid accidental damage occurring to the adjacent retained trees.
- c) Prior to any tree removal operation, the works arborist should, in consultation with the site manager, identify with a clear marking system those trees that are to be removed (refer to section 3.1.2 above).
- d) A protective barricade is to be erected to enclose as much of the dripline area as practicably possible of all notable/scheduled Trees (tree numbers: 21, 23-30, 34-36, 46-48, 50-54, 135 and 166-167 as per Schedule of Affected Trees).
- e) The works arborist will supervise the following activities;
 - Any excavation activity in the vicinity of scheduled Trees 21, 23-30, 34-36, 46-48, 50-54, 135 – most particularly the formation of new accessway surfacing and retaining wall construction in the root zones of Trees 21, 23-30, and 34-36.
 - The traversal of an excavation machine through Domain Reserve for earthworks within the driplines of scheduled trees.
 - The positioning and digging of post holes for the retaining wall at 54 Lagoon Drive.
 - Any resurfacing of the driveway at 54 Lagoon Drive.
 - Works adjacent to tree 185 (which is subject to tree removal under the landscape plans, but is recommended for retention if possible under the tree assessment report).
- f) During the excavation and construction phases, and on completion of the project, the root zone of the scheduled Pohutukawa trees in Domain Reserve will be irrigated and monitored by the worksite arborist. Mulching around the bases of Trees 21, 23-30, 34-36 and 135 (Swamp cypress) will also be undertaken for the duration of the works.
- g) Any tree roots that may be encountered during the course of excavation work are to be pruned back cleanly to the excavation face, using a sharp saw or a pair of secateurs past any point of fracture or damage. Any exposed root ends shall be protected from drying out by a covering of hessian or similar material that is to be kept damp until the excavated area can be backfilled.
- h) No storage of materials or equipment, or passage of vehicles or machinery, should take place on open ground within areas of ground enclosed by protective fences.
- i) Any excavation for the retaining wall below the scheduled trees 21, 23-30 and 34-36 is to be attended by the works arborist. Any roots that may be encountered within the required excavation depth should be severed cleanly by the arborist.
- j) Prior to construction of the retaining wall at 54 Lagoon Drive, the location of major tree roots of Tree 54 should be determined. A hand dig should occur around the base of this tree to determine this. Post holes should be positioned as to minimise damage to major tree roots encountered. With regard to the excavation of post holes for the retaining wall construction within the dripline of protected tree 54, the first 500mm should be excavated by hand to ascertain for the presence of roots prior to any use of an auger. Any root encountered that has a diameter greater than 35mm should be retained intact and the pile hole moved to avoid the root. Roots of smaller diameters can be severed cleanly. All works should be directly supervised by the worksite arborist.
- k) Washings from the production of concrete will not be flushed on to open ground within the dripline of any retained tree on the site.
- l) Compliance with all conditions of consent relating to tree protection will be monitored by the appointed worksite arborist - with the detail of each visit, and any communication, being recorded using the Supervising Arborist Record form found in Appendix B of this plan. The completed forms are to be provided at the completion of the project to serve as a compliance report.

3.3 Tree protection measures for trees to be retained

This section outlines a set of tree protection measures for generally protected and non-protected trees that are to be retained in:

- Area A1 – Panmure side of Tamaki River
- Area A3 – Pakuranga side of Tamaki River

Refer to Appendix D - Schedule of Affected Trees for a list of trees and Appendix F for the Tree Relocation Plans.

All works are to be undertaken in accordance with the Protection Measures outlined in the Tree Assessment Report (Appendix D – Section 11B) and as noted below.

- a) A competent arborist (works arborist) will be employed to monitor, direct and supervise all works within the driplines of any retained trees adjacent to the works site. Refer to Table 1.2 for the nominated works arborist.
- b) Prior to the commencement of each stage of site works a site specific management plans that detail all relevant construction information, including all infrastructural elements, that has potential to conflict with retained street trees, should be submitted to Council's Street Tree arborist for all works being undertaken within the vicinity and driplines and/or rootzones of all retained street trees standing adjacent to the proposed works area, and for the removal and mitigation for any other street tree not identified for removal in this report.
- c) Prior to works commencing, a meeting will be arranged so that all tree protection measures are explained by the works arborist to all contractors, sub-contractors and work site supervisory staff who are carrying out any works associated with the project within the dripline of any retained tree within the Project area.
- d) The site meeting required by foregoing measure (c) should also be attended by the relevant Council arborist (or representative) responsible for the street tree asset.
- e) Temporary access and storage areas are to be identified and delineated prior to the commencement of site works (at the pre-start meeting). All construction machinery and materials will be confined to agreed areas and the demarcated work areas.
- f) All vehicle movements to access the work sites should be excluded from the permeable dripline and/or rootzone areas of retained trees.
- g) Prior to any site works commencing, protective barrier fencing consisting of 1.8 metre high pole/wire mesh fencing material with ground anchor spikes (or an accepted alternative approved by the Council arborist, or representative), should be erected at the extremities of the permeable berm/road reserve or footpath area to totally exclude access or the storage of any materials from within the permeable dripline and/or rootzone area of retained trees.
- h) When working within the dripline of any retained tree all care will be taken when removing the existing hard surface to not disturb tree roots that may be beneath the surface. Hand held tools or appropriate machinery will be used (under direct arborist supervision) to remove the existing hard surface working backwards, situated on the existing hard seal at all times. At no time should the machine operate or traverse over the exposed unsealed root zone.
- i) Once the hard seal surface is removed all existing base course should be left *in-situ*. Augmenting with extra base course material where required should not disturb any potential roots that may have established in the substratum base.
- j) Any fresh incursion into unsealed ground within the dripline of any retained tree should be carried out by hand (spade) with all care taken not to damage any roots unless agreed to by the works arborist.
- k) Any roots of retained trees, measuring 35mm or greater in diameter, that are exposed during the course of development work, are to be retained, carefully worked around and protected. All roots less than 35mm diameter exposed in the course of excavation works should be pruned back cleanly past any point of fracture or damage, using a sharp saw or a pair of secateurs. All retained and/or cut roots should be protected from drying out with a covering of hessian or similar material that is to be kept damp until the excavated area can be backfilled.
- l) In any instance where the above measure cannot be met, approval for the removal of tree roots measuring 35mm or greater in diameter located within the rootzone, as defined by the existing dripline of a particular tree, should be obtained from the works arborist prior to works commencing or continuing. The arborist may carry out the removal of such roots only when he/she is satisfied that the health and stability of the subject tree would not be compromised.
- m) The placement of any new services should in the first instance be positioned outside the driplines of the affected street trees and scheduled trees. Where site circumstances such as the location of existing service connections dictate works in closer proximity to the affected trees, the works should be as far away as practicable from the trees. Any new services should be installed by directional drilling or similar where practicable. No open trench excavation should occur within the dripline area of the trees. When works in close proximity to the dripline of any retained tree or scheduled trees is necessitated due to existing site conditions (e.g. location of existing services) "pot hole" excavations should be utilised for service location and new connections; these works should be supervised by a qualified arborist and should only be undertaken using hand held tools.
- n) Where there is a need to decommission any existing services, excavation work in the dripline area of any retained tree should be supervised by a qualified arborist.

- o) Any pile holes or excavations, associated with the construction works, with exposed root matter or severed root ends, should be lined with polythene sheeting or a similar material prior to the placement of any concrete, in order to prevent leaching of any liquid into the soil.
- p) When backfilling excavated areas, a 50mm layer of sand or soil should surround all tree roots. The 50mm layer of sand or soil around the tree roots is to be compacted by hand tamping methods only.
- q) All construction equipment should be manoeuvred within the work sites in a manner that avoids any damage to the crown structure of any retained tree located adjacent to the works area.
- r) Where practicable, conflict between the existing canopies of retained trees/scheduled trees and the construction works on site should be managed in the first instance by the tying back or stroping of the existing tree canopies.
- s) The non-protected Kauri tree at 1 Kerswill Place that is proposed for retention within the proposed site office compound should be offered the same level of protection as all other retained trees, as per the tree protection measures outlined in this section of the report. Particular regard should also be given to ensuring adherence to the measures outlined in the Earthworks and Soil Removal section of Appendix 7 of the Tree Assessment Report (Appendix D).
- t) If changes to the identified line of works are required within close proximity to any retained tree, the works arborist is to update the site and monitoring record sheet (Appendix B of this report) and, where appropriate, include a digital photograph. Details shall include, but not be limited to, changes to previously agreed works in relation to retained trees, alteration of tree protection methodologies and an assessment of effects of changes. For any changes that result in adverse effects to a retained tree that are any greater than those anticipated in the Notice of Requirement, a memo shall be provided to the relevant Council Arborist prior to finalising the changes.
- u) Compliance with the recommended tree protection measures and construction methodology should be monitored by the appointed works arborist and logged in accordance with the appended record sheet (Appendix B of this report). This record sheet shall be provided to Council officers at agreed intervals or where required, upon request.

3.4 Tree pruning measures

Several of the trees along the route of the new busway, shared cycleway/footpath will need to be pruned to provide necessary clearances – for cyclists, pedestrians, traffic visibility and, to allow a clear sightline to any new traffic signals.

It is assessed that pruning of canopies of retained street trees standing adjacent to the proposed busway and shared cycleway and footpath - in order that clearance between new infrastructure and tree canopies is achieved and maintained - would typically be addressed through municipal tree pruning works. These works see a clearance of at least 4.25 metres maintained above the carriageway.

All pruning needed for the various elements of this project can be carried out as a Permitted Activity in accordance with the Auckland Unitary Plan (Operative in Part):

- E26.4.5.1 (which applies to tree trimming or alteration of trees in streets and open space zones), and
- E26.3.5.2(8) (which relates to the alteration or removal of vegetation required to maintain the visibility of road safety signage, vehicle sightlines, carriageway clearance heights and widths).

Prior to construction the construction manager shall engage Council Approved arboricultural contractors to carry out preliminary pruning to maintain safe working areas.

The exact extent of any pruning will be discussed prior to commencement at a meeting held between the works arborist and the arboricultural contractor engaged to carry out the pruning.

At the completion of construction, the required clearances will be re-checked and any final pruning will be arranged.

3.5 Biosecurity measures

3.5.1 Dutch Elm Disease

There are strict rules, under the Biosecurity Act (1993), pertaining to the disposal of elm material in the Auckland region. Golden elm is particularly susceptible to Dutch Elm Disease. The removal of the Golden elm trees from within this project area must therefore be undertaken in full compliance with the rules listed below. It is an offence, under the Act, to not comply.

To ensure that this is the case, the selected arborist will demonstrate (in writing) that they have the appropriate resources to fulfil the biosecurity obligations prior to carrying out the removal of all elm trees as listed in the Schedule of Affected trees.

- All material must be chipped. Logs can either be cut up and chipped, or chipped and buried in landfill

- Chip to be buried in landfill or kept at storage site to compost for a minimum of three months.
- Clean all equipment (chainsaw, pruning saw) after use with methylated spirits/trigene.
- The tree stump must be stump ground or debarked.

3.5.2 Kauri Dieback

Kauri Dieback Prevention Measures are to be adopted for works around tree 136 (*Agathis australis*), located at 1 Kerswill Place. Refer to Appendix 7 of the Tree Assessment Report (Appendix D of this plan) for detailed procedures to be followed involving tree works and earthworks.

3.6 Tree relocation plans

Tree numbers; 8, 9, 10, 11 and 12 have been identified for further assessment for relocation feasibility.

The trees will be assessed by the works Arborist (in consultation with the Council's arborist advisor) for a determination of the practicality of uplifting these trees for transplanting. Particular regard to below ground infrastructure and its planned renewal and relocation will form part of this assessment.

Recorded minutes of all tree relocation discussions will be noted in the monitoring forms as identified in Appendix A and B of this plan.

In the event that the trees are identified as worthy of and practicably able to be transplanted, the works arborist will prepare a detailed tree transplanting methodology report, which shall include;

- Site details
- Tree details
- Indicative root ball size requirements
- Proposed transplant methodology
- Direct replanting versus containerising and temporary storage
- Proposed replanting locations
- Aftercare requirements

A suitably experienced arboricultural contractor will be engaged by the project manager to carry out the tree transplanting in accordance with the tree transplanting methodology report under the guidance of the works arborist. The planting locations of transplanted trees shall be selected in consultation with the Council's Parks arboricultural specialist.

3.7 Methodology

3.7.1 Supervision

Any works requiring tree protection measures shall be conducted under the supervision and direction of a suitably qualified and experienced Arborist, as outlined in Section 3.2 and 3.3. The appointed works arborist will be experienced in tree protection systems and construction methodologies, and will coordinate site works to ensure that the tree protection methodology is correctly implemented.

3.7.2 Pre/post work administration procedures

Prior to works in the vicinity of protected trees to be retained commencing, FH will arrange a pre-start meeting (in accordance with Section 3.1.2). At the meeting, the foreman shall agree with the works arborist:

- The methodology and timing of the works
- Site access and areas for manoeuvring vehicles and machinery
- Areas for storing and/or stockpiling materials, spoil and equipment
- The care needed when working around trees
- The conditions of the resource consent.

The meeting will be recorded on the arborist meeting minutes form attached in Appendix A.

On completion of the works, the works arborist at their discretion shall "sign off" the work. This shall be recorded on the supervising arborist record in Appendix B. If requested, the works arborist shall provide a brief account of the project to the council arborist (if necessary with photos). The account of works shall include, but no be limited to:

- The effects of the works on the subject tree
- Any remedial work which may be necessary.

It is the responsibility of Fulton Hogan to ensure that all persons engaged or otherwise to work on the site are made aware of the conditions of consent, and that those conditions are adhered to at all times.

No work shall take place within the root zone and/or drip line of the protected trees to be retained without prior approval from the works arborist.

3.7.3 Reporting

Monthly report of arboricultural monitoring shall be provided to the relevant Auckland Council Arborists with a folder of completed Supervising Arborist Records (Appendix B) or approved similar method. Reporting will also be carried out as follows:

Table 3.2: Reporting methods

Item	Reporting
Identify trees for removal	Pre-commencement minutes
Pre-commencement meeting	Monthly memo
Tree removal	
Tree protection in place	
Excavations adjacent to trees	
Confirmation of root pruning	
Monthly inspection	
Final inspection	Final report upon completion

3.7.4 Protective barrier fencing

Prior to physical works commencing in the vicinity of protected trees, and where practicable to do so, a suitable protective fence shall be erected around the tree. The exact location and nature of the protective fence shall first be agreed and minuted upon with the works arborist. For the duration of time the protective fence is in place, the area enclosed by the fence shall be regarded as sacrosanct, and no material is to be stored, emptied or disposed of within the area enclosed by the protective fence. No person, vehicle or machinery may enter the area enclosed by the protective fence unless otherwise authorised to do so by the works arborist.

If for any reason it becomes necessary to move the protective fencing, then for the duration of time that the protective fence is not in place, the area which was previously enclosed by the fence shall be regarded in the same manner as if the protective fence were still in place.

Protective barrier fencing shall consist of 1.8 metre high pole/wire mesh fencing material with ground anchor spikes (or an accepted alternative approved by the Council arborist, or representative). The fencing should be erected at the extremities of the permeable berm/road reserve or footpath area to totally exclude access or the storage of any materials from within the permeable dripline and/or rootzone area of retained trees.

3.7.5 Storage, access and operation

No material is to be stored, emptied or disposed of in or around the root zone of the tree unless otherwise authorised to do so by the works arborist. Any material which is to be stored or temporarily placed in or around the root zone shall be stored carefully on an existing or temporary hard surface such as asphalt or plywood sheets.

If, during the course of the works, machinery or vehicle access/manoeuvring is required in or around the root zone, then depending on the nature of the loading of the vehicle, it may be necessary to cover those areas with a protective overlay sufficient to protect the ground from being muddied, compacted, churned up or otherwise disturbed. This may involve the employment of 'Track mats', or a layer of mulch or sand/SAP7 overlaid if necessary with a raft of wire planks, plywood or similar.

If machinery/vehicles are to be operated or stored within the root zone area on an existing temporary load bearing surface, then the machinery/vehicle shall not cause any detrimental effect to the tree through compaction, physical damage, spillage of lubricants and fuels or discharge of waste emissions.

3.7.6 Excavations

Any soil excavations are to be managed in accordance with sections 3.2 and 3.3 when working within drip zones of tree. These excavations shall utilise hand digging only unless other methods are approved and overseen by the supervising arborist.

The cutting, breaking and lifting of any concrete and/or asphalt around the root zone of trees shall be done in conjunction with the works arborist through a careful combination of machine and hand operated equipment. Ideally, the concrete/asphalt will first be cracked or broken with a steel bar or sledge hammer, and the sections of concrete carefully lifted out by hand. At the discretion of the works arborist, the cutting, cracking, lifting and removal of concrete/asphalt may proceed with machinery, such as a concrete cutter, and/or small excavator. All

excavators and machinery shall sit on the existing concrete/asphalt surface and work slowly backwards away from the tree.

3.7.7 Root protection

Any roots which are encountered during any part of the process are to be retained where possible. Every effort shall be made to retain all roots 35mm in diameter or greater. The severance of any root less than 35mm shall be done so at the discretion of the works arborist. Where roots are to be severed, they shall be cut cleanly with a sharp hand saw or loppers, and the area around the root shall be backfilled with the original material.

When a root greater than 35mm in diameter is impeding the construction and all other alternatives to work around the root have been exhausted, the supervising works arborist shall only remove the root if he/she determines in writing that its removal will not be detrimental to the health and stability of the tree.

Where roots to be retained are encountered and there is need for these roots to remain exposed in order that works are not impeded, then those roots shall be covered with a suitable protective material (such as moist Hessian) in order to protect them from desiccation and/or mechanical damage, until such a time as the area around the root can be backfilled with the original material. The wrapping or covering of any roots shall be undertaken by the works arborist.

If during the works a large area of the tree's root zone is exposed, then it may be necessary to protect the exposed root zone with a protective overlay sufficient enough to protect the ground and roots from being disturbed, for example a layer of geotextile fabric laid over a 150mm thick layer of wood mulch.

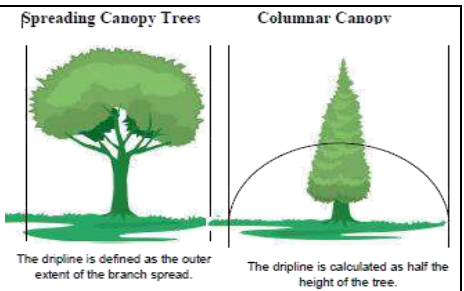
Where concrete is to be poured into excavations containing exposed roots, then all exposed roots shall first be covered in a layer of polythene to prevent the concrete from contacting the exposed root.

If during the works, it become necessary to pour concrete and/or lay asphalt directly over exposed roots (for example during reinstatement, or footpath construction), then all exposed roots shall first be covered with a layer of fine sand not less than 50mm thick and a layer of geotextile fabric shall be placed over the roots prior to pouring the concrete/asphalt.

Appendix A: Arborist meeting minutes

Is an arborist walkover required?

1. Check drawings for potential tree conflicts.
2. Verify by conducting a site visit prior to works.
3. If any of the following apply, arrange a walkover with the arborist to determine necessary controls and record controls in the form below:
 - Tree conflict which may require tree removal or pruning,
 - Works below drip zones (including hydroexcavation),
 - Changes to kerb / berm levels around trees,
 - Work areas and plant movements under tree drip zones on unsealed areas.



Zone	Arborist	Zone Manager	Project / Site Engineer

Meeting Minutes: Description of arborist works and tree controls required

Date:

These minutes will guide the stand-over arborist and site crew. Please note details on tree location, tree condition, which tree(s) controls apply to, which trees are impacted by berm level changes, etc. (Continue overleaf if required.)

Arborist Controls Sign Off	Name	Signature
Arborist (confirm all controls are minuted)		
FH representative at meeting		

Meeting Minutes: Description of arborist works and tree controls required (cont'd)

--	--

Pre-Construction Checklist	Y	N	N/A	Comment
Have you conducted a site visit to verify all tree conflicts have been identified?				
If there are changes in kerb and berm levels or if there is a lateral shift of kerb alignment, will this impact on any trees? <i>(Note details of changes.)</i>				
Are any tree removals required as part of these works?				

Zone Manager Sign-Off

All of the above elements have been assessed, necessary controls and approvals are in place, and an arborist has been engaged if required. Construction is approved to proceed.

Name	Sign	Date

Please file these minutes in your project records. A copy must be provided to the Supervising Arborist and Site Foreman for the works. Any works required by a supervising arborist must be recorded on the Supervising Arborist Record Form.

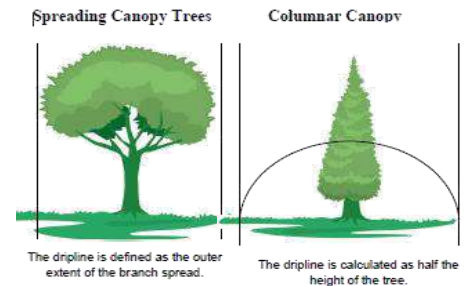
Appendix B: Supervising arborist record

This form is to be completed for all works completed by a Supervising Arborist, including (but not limited to) stand-over of works below drip zones, root trimming, tree pruning, and tree removals.

Zone	Site Location	Subcontractor

Are the tree protection measures in place?

1. Is the tree protection fencing still in place and working.
2. Have there been any unmonitored works in Tree Protection Zones.
3. Is there any debris/spoil stored within the Tree Protection Zones
4. Has there been any unauthorised pruning.



I confirm that I have reviewed the Arborist Walkover Minutes for these works and understand what controls are required for works around trees.

Position	Name	Signature
Supervising Arborist		
Project / Site Engineer		
Site Foreman		

Description of arborist works conducted	Date:
---	-------

Please include Tree ID or locations, tree condition, nature of works, any issues or concerns, instructions to site crew, etc. (Continue overleaf if required)

Supervising Arborist Sign-Off

Before leaving site, I have installed all necessary controls / protection for the above trees, and have provided instruction to the site crew on any further protection or supervision requirements (as noted above / overleaf).

Signature

Description of arborist works conducted (cont'd)

Please file this record in your project records.

Appendix C: Tree protection sign for tree protection areas

HELP PROTECT OUR TREES

**Don't damage my branches
and root system with your work!**

**Don't park or place goods
under my branches.**



If you need to dig or cut contact: Arborlab.co.nz 0274 957 440

Consent:

Tree Ref:

Date:

Arborist:

Appendix D: Arboricultural assessment



ARBORICULTURAL ASSESSMENT

Project: AMETI Stage 2a

Prepared for: Auckland Transport
Attn: Blair Masefield – Beca

By: Richard Peers

Date: 21 December 2016

PEERS BROWN MILLER LTD

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1.0 Introduction

Peers Brown Miller Ltd has been commissioned by Beca Ltd (Beca) on behalf of Auckland Transport, to undertake an arboricultural assessment for the AMETI Stage 2a Project (the Project) which includes upgrades to the Panmure roundabout and a new busway which extends from the Panmure roundabout along Lagoon Drive, across the Tamaki River (on a new bridge) and along Pakuranga Road to the intersection with Ti Rakau Drive. The Project also involves the construction of cycleways, footpaths, medians, swales, stormwater channels and other associated works along the route of the existing road network.

This report serves to support the Notices of Requirement and resource consent application(s) for the project, which will be lodged with Auckland Council.

2.0 Scope of Assessment

The purpose and scope of this report is:

- 2.1 To identify and assess those trees, subject to tree protection rules of the Auckland Council District Plan – Operative Auckland City Isthmus Section (1999), and the Auckland Council District Plan – Operative Manukau Section (2002), and the Proposed Auckland Unitary Plan (2013) which would be affected by activities associated with the Project.
- 2.2 To identify and assess certain selected non-protected trees that warrant being discussed in the report.
- 2.3 To provide an assessment of the effects of various activities associated with the Project on the identified protected trees.
- 2.4 To outline the measures that should be put in place to avoid and/or minimise adverse effects on any protected trees which are to be retained in the vicinity of the Project works.
- 2.5 To comment on proposed mitigation, by way of replacement tree planting, for the effects of the loss from the landscape of any protected trees that are proposed for removal.

3.0 Methodology of Assessment

The methodology for this assessment involved the following steps:

Review of design plans and background information (including arborist reports previously prepared).

- Site walkover to survey all trees and collect data

- Research into the protective status of trees
- Prepare numbered tree schedule identifying protective status of trees, ownership of trees, trees to be retained, trees to be removed
- Liaison with Council arborists: street trees (Howell Davies), resource consents (Paul Hansen), heritage trees (Nick Stott), parks trees (Simon Cook, Allan Gasson)
- Liaison with Project landscape architect regarding mitigation planting and/or tree retention
- Assessments of effects
- Identification and recommendation of tree protection measures and potential mitigation options

This report has been structured to focus on proposed activities, and the effects of those activities on trees or groups of trees. This is because of the large number of trees on the site and because multiple trees are affected by certain activities. Another reason for this approach is that, with certain activities, the precise number of affected trees is indeterminate at this stage of design. In those cases, an estimate of the trees affected is given – with some trees and groups of trees simply referred to by their assigned numbers.

The discussion of each activity identifies the trees that are to be removed and the reason for their removal, followed by a more detailed assessment of the effects on trees that are to be retained in the vicinity of the particular activity.

Of relevance to this arboricultural assessment, the proposed works include:

- Excavations for the busway, shared cycle lane and footpath
- Construction of new carpark access to Domain Reserve
- Construction of new accessways to private property
- Construction of bus stops
- Construction of raised medians
- The construction of vegetated swale drains
- Reconfiguration of intersections
- Removal of some existing vehicle access ways
- Pruning of tree canopies to provide mandated clearance

All significant works affecting trees along the route have been captured and considered.

The schedule that is Appendix 1 describes each tree's (or group of tree's) form, condition, relevant details in relation to the subject works and recommended tree protection measures. It is recommended that these tree protection measures be incorporated as specifications of the contract between the client and its construction contractors. The subject vegetation is identified numerically on the tree plans (Appendix 2).

4.0 Description of Project

AMETI is a package of improvements focused on promoting an integrated, multi-modal transport system to support population and economic growth in south-east Auckland. This involves the provision of a greater number of improved transport choices and aims to enhance the safety, quality and attractiveness of public transport and walking and cycling environments, while recognising that not all transport demand can be met by these modes alone.

The overall AMETI project involves the construction of a dedicated busway between Panmure, Pakuranga and Botany town centres, the construction of new stations at Panmure and Pakuranga, as well as roading improvements at traffic bottlenecks across the extent of the overall AMETI project area; which encompasses Panmure, Mt Wellington, Sylvia Park, Pakuranga and Botany.

4.1 Delivery of AMETI

AMETI has been divided into a number of different stages for delivery. AMETI Stage 1, which included the upgrade of Panmure Station and the construction of Te Horeta Road, is nearing completion. Stage 2A, the current stage, includes the construction of a new busway and other transport improvements between Panmure and Pakuranga. Future stages following Stage 2A will be required to deliver the overall AMETI project.

This report relates specifically to the Stage 2A components.

Auckland Transport proposes to designate the land required for the Stage 2A project, and is giving Notice of Requirement (NoR) to provide for its construction, operation and maintenance. In addition, Auckland Transport is seeking resource consents to undertake works associated with its construction and operation.

4.2 Project Area

As noted above, this report relates specifically to Stage 2A. The Stage 2A Project Area ('the Project Area') comprises Panmure Roundabout in the north, Lagoon Drive and Panmure Bridge, and Pakuranga Road to Ti Rakau Drive in the south. Figure 1 below shows the Project Area.



Figure 1 Extent of Project Area. (*Auckland Council GIS Viewer, 2015*).

4.3 Proposed Design

Auckland Transport proposes to reconfigure the Panmure roundabout to a signalised

intersection, and provide a new 2.4 km long dedicated busway from this intersection along Lagoon Drive, across the Tamaki River and along Pakuranga Road to the intersection with Ti Rakau Drive. The project will also provide for shared or separated cycle and footpaths, medians and stormwater treatment devices. The works will require widening of Lagoon Drive and Pakuranga Road (on the northern side) and a duplication of the Panmure Bridge. In addition, as part of the project, a number of changes are proposed to existing intersections and property access arrangements.

Key elements of the proposed design include:

- The Panmure Roundabout will be replaced with a four-legged signal controlled intersection, including bus priority and pedestrian crossings;
- A 7.0m wide segregated busway, with one 3.5m wide lane in each direction, located along the northern side of Lagoon Drive and Pakuranga Road between the existing Panmure Roundabout and Ti Rakau Drive;
- A new bus stop on Pakuranga Road at the Williams Ave intersection;
- A 4.0–4.3m wide shared path alongside the northern side of Lagoon Drive, and a separate cycle path (3.0m) and footpath (2.0m) alongside Pakuranga Road;
- An additional bridge (approximately 200m long) across the Tamaki River, on a parallel alignment with, and on the northern side of the existing bridge, comprising two 3.5m wide dedicated bus lanes and a 4.3m wide shared path, to provide a pedestrian/cyclist connection across the Tamaki River and link the proposed busway on Lagoon Drive and Pakuranga Road. The proposed bridge will be 1.4m higher (max) than the existing Panmure Bridge, to minimise excavation on the Mokoia Pā headland at the western abutment. This also provides navigational benefits in the future;
- Planted medians (1.2m wide) along Lagoon Drive to provide separation between traffic lanes and the proposed busway, and a 1.4m high pedestrian fence between the busway and the shared path to provide separation for pedestrians;
- Planted swales and raingardens (approx. 3.0m wide) along Pakuranga Road to provide for stormwater treatment as well as separation between traffic lanes and the busway, and between the busway and the cycle/footpaths;
- Landscaping is proposed throughout the project length to provide a higher degree of public amenity. Particular design treatment is proposed in the following locations:
 - Terraced pocket parks at the corner of Lagoon Drive and Queens Road, and at the corner of Lagoon Drive and Church Crescent;
 - A linear park alongside Pakuranga Road between the Millen Ave and Williams Ave intersections; and
 - Grassed parkland area alongside Pakuranga Road between the Williams Ave and Ti Rakau intersections (noting that this is a temporary land use and that ultimately this land is expected to be developed).

In addition to the above design features, the Project will also involve a number of changes to the existing road layouts, intersections and property access arrangements:

- Lagoon Drive (which currently provides for two traffic lanes in each direction) will be reconfigured to a single traffic lane in each direction between intersections, to provide for the Busway;

- The intersection of Domain Road and Basin View Lane will be re-aligned slightly to the north;
- The existing intersections on Pakuranga Road at Kerswill Place and Williams Ave will be signalised;
- Latham Avenue will be converted into a cul-de-sac, removing the connection to Pakuranga Road. Access to Pakuranga Road will be via Millen Ave and a new connection created between Latham Avenue and Dillimore Avenue; and
- Tamaki Bay Drive will also be converted into a cul-de-sac to remove the connection with Pakuranga Road. Access to Pakuranga Road will be via the new signalised intersection at Williams Avenue

Property access across the new busway will be prevented for safety and efficiency. As a result new accessways for a number of properties are proposed.

5.0 Statutory Framework – Tree Protection

- 5.1 The AMETI Stage 2a Project extends over land that is covered in part by the Auckland Council District Plan – Operative Auckland City Isthmus Section (1999) (west of the Tamaki River), and in part by the Auckland Council District Plan – Operative Manukau Section (2002) (east of Tamaki River). The Proposed Auckland Unitary Plan (2013) is also relevant, to the entire Project alignment.
- 5.2 Tree protection rules for the Auckland Council District Plan – Operative Auckland City Isthmus Section (1999) are contained in;
- 5C.7.3.3A – Scheduled Trees
 - 5C.7.3.3B – Trees on Roads and Unzoned Land
 - 5C.7.3.3C – General Tree Protection.
- 5.3 Tree protection rules for the Auckland Council District Plan – Operative Manukau Section (2002) are contained in:
- Chapter 6.9.2 (Rules – Activity Table) and Schedule 6C – (Species of Trees to be Protected).
 - Schedule 6B – Notable Trees and Stands of Trees to be Protected.
- 5.4 Tree protection rules for the Proposed Auckland Unitary Plan are contained in;
- H.4.3.1.1 Vegetation management all zones and roads
 - J.6.4 Notable trees.

There are some differences in the terminology used to describe protected trees in the Auckland and Manukau sections of the Operative District Plan.

The following table is included to clarify any ambiguity in the terminology:

Term	Auckland	Manukau
Notable Trees	Highest level of tree	<u>Schedule 6B</u> – Notable trees

	protection, Appendix 2 – <u>Schedule of Notable Trees...</u>	and stands of trees to be protected
Generally Protected	All zone-based general tree protection rules, including those for Open Space zonings, were revoked in September 2015. However, those rules still apply if a site is defined as a non-urban environment. This is the case with the Open Space zones implicated with this project. Trees on road reserve land are still subject to Rule 5C.7.3.3B of the operative Isthmus District Plan	The general tree protection rules contained in Chapter 6.9 of the Manukau District Plan were revoked in 2012. However, those rules still apply if a site is defined as a non-urban environment. This is the case with trees that stand in road reserve and reserve land implicated with this project
Non-protected	Some selected trees that are not subject to the above tree protection rules, and which are considered to warrant particular attention, are included in the Schedule of Affected Trees	Some selected trees that are not subject to the above tree protection rules, and which are considered to warrant particular attention, are included in the Schedule of Affected Trees

6.0 Existing Environment – Summary of Tree Survey

A Schedule of Affected Trees is included as Appendix 1. Tree location maps are included as Appendix 2. The tree survey identified two hundred and twenty-eight (228) individual, or groups of, trees, as follows:

6.1 Trees for removal

One hundred and twenty-eight (128) generally protected and non-protected trees or groups of trees that stand within the footprint of the proposed works are proposed for removal, including:

- Seventy-eight (78) trees/groups of trees located on the Panmure side of the Tamaki River
- Fifty (50) trees/groups of trees located on the Pakuranga side of the Tamaki River

6.2 Retained trees

Seventy-nine (79) generally protected and non-protected trees/groups of trees that stand along or adjacent to the proposed works which require works within the dripline but are to be retained and protected during the works, including:

- Fifty-two (52) trees located on the Panmure side of the Tamaki River
- Twenty-five (25) trees located on the Pakuranga side of the Tamaki River (including one non-protected Kauri at 1 Kerswill Place (see Appendix 7))

6.3 Notable trees in Domain Reserve

There are twenty (20) scheduled Pohutukawa trees in Domain Reserve. None of these are proposed for removal. However, there will be works within the driplines of these scheduled trees.

6.4 Notable tree at 1 Kerswill Place

There is a notable/scheduled Swamp Cypress tree at 1 Kerswill Place. This tree will have works within its dripline.

6.5 Notable trees on the corner of Ti Rakau Drive and Pakuranga Road

There are two (2) notable Weeping willow trees in the reserve on the corner of Ti Rakau Drive and Pakuranga Road. Neither of these trees is proposed for removal and works are beyond the driplines of the two trees. However, tree protection measures have been proposed for these trees.

6.6 A schedule of all trees is included as Appendix 1. It can be noted that the text for each tree is colour-coded to denote the following;

- **Red** – proposed to be removed at this stage (although certain trees may be able to be retained and incorporated when the precise detail of certain activities is finalised)
- **Black** – retained trees
- **Green** – scheduled/notable trees (all retained)

6.7 Tree Location plans are included as Appendix 2. All trees listed in the schedule (Appendix 1) are circled and assigned a number (unique ID).

7.0 Plan References

A comprehensive suite of plans for the Project has been produced by Beca and Tonkin and Taylor. The major design milestones at which the plans were reviewed were 30%, 60% and 90%. Within the suite are individual sets that are devoted to certain elements of the proposal, such as pavement detail, lighting, traffic signalling, drainage, landscape design, etc. Information contained in a variety of plans has been drawn upon to assist with this arboricultural assessment. However, it was decided to utilise the Landscape Plan set (produced by Beca) on which to show all the trees listed in the Tree Schedule (Appendix 1), as these plans give a good impression of the overall proposed roading layout, as well as the proposed landscaping detail.

The Landscape Plans (Sheets 1–10) are based on aerial overviews of the complete Project area. Many plotted trees and groups of trees that were originally surveyed have been carried through to the Landscape Plans – which is another reason why this plan set was used as the base plans for this report. Trees that were not plotted on the original Landscape Plan set were identified and located using other available indicators. The tree numbering system is also depicted on

these plans. Those trees, and groups of trees, are clearly identified on the plans by being encircled in red. The tree numbers are in black text. It should be noted, at this point, that the Schedule of Affected Trees shows that the tree number total is 223. However, the actual tree number total is 228 – five trees being assigned numbers 147 a–c, 178a and 179a. Those five trees were identified during further investigations following the initial plan mark-up.

The set of marked-up plans is named **Tree Location Plan – Sheets 1–10**, and is appended to this report as **Appendix 2**

8.0 The Trees

The route of the new busway, cycleway, footpaths and other associated work has been split into the following areas in order to address removals and any appropriate tree protection measures (see Fig. 2 below):



Figure 2 - Tree assessment areas in the Project Area (*Auckland Council GIS Viewer, 2015*)

- **Area A2:** Panmure side of the Tamaki River – Notable trees in Domain Reserve. The relocation of the car park access, the relocation of the vehicular access to residential properties on the southern boundary of Domain Reserve and construction of a retaining wall at the end of the right of way at 54 Lagoon Drive have the potential to affect these trees
- **Area A1:** Panmure side of the Tamaki River – from the Panmure roundabout to the new bridge. Lagoon Drive widening is proposed in this area. The northern boundary of the proposed route is where most of the works and land requisitions have occurred. The southern edge of Lagoon Drive from the existing Panmure Roundabout to the new bridge would retain the bulk of the existing kerbing, with minor works proposed beneath the driplines of protected trees
- **Area M3:** Pakuranga side of the Tamaki River – from the new bridge to Ti Rakau Drive. This includes the road widening of Williams Avenue and the alterations to Latham Ave

8.1 Trees for Removal

128 trees or groups of trees are proposed for removal. The Schedule of Affected Trees (Appendix 1) lists each of these trees or groups of trees and gives specific detail; including the species name, protective status, condition, the types of activity affecting the trees and general comment and recommendations.

8.2 Retained Trees within Project Area

Seventy-nine (79) generally protected and non-protected trees or groups of trees are proposed to be retained and protected based on the design alignment at this time. Twenty-three (23) scheduled/notable trees are also to be retained and protected.

These trees are all listed in Appendix 1 – which describes each tree's form, condition, relevant details in relation to the subject works and recommended tree protection measures. It is recommended that these tree protection measures be incorporated as specifications of the contract between the client and its construction contractors.

8.3 Appendix 2 – Tree Location Plans

The locations of the trees are shown clearly on the plans that comprise Appendix 2. The trees are numbered sequentially in a clockwise order commencing at Panmure Roundabout to travel eastwards on the northern side of Lagoon Drive and Pakuranga Rd – then to return westwards along the southern sides of those roads.

9.0 Assessment of Proposed Tree Removals within the Project Area

Tree removals are proposed where trees are located directly within the footprint of the new busway, shared cycleway and footpath and associated works (including the widening of Williams Avenue), or where the bases of the tree trunks are close to new kerbing alignments and other works. Column 'O' of the Schedule of Affected Trees – entitled: Activity affecting Trees, contains a summary of the specific factor/s driving the decision to have a respective tree removed.

It is acknowledged that further iterations of the design proposal may result in some refinement of infrastructure locations that could result in a reduction, or slight increase, in the numbers of trees so affected.

9.1 Effects of Tree Removal

The numbers of trees proposed for removal are summarised in Section 6.1. None of these trees are notable/scheduled and therefore none are required to be fully protected or retained. Furthermore, none of these trees are easily able to be relocated to locations within the project area. In addition, specific bio-security removal restrictions will apply to all elm trees, to avoid the risk of spreading Dutch Elm Disease (see Appendix 6).

Notwithstanding the above, removal of these trees will have an urban landscape impact that needs to be mitigated/offset. This is discussed below.

9.2 Mitigation of Effects of Tree Removal

The AMETI Stage 2A Landscape and Visual Assessment prepared by Beca has divided the AMETI corridor into three sectors, which are summarised below along with the rationale for the proposed landscaping approach in each sector:

Sector 1: The Lagoon Drive (Panmure Town Centre). This area is commercial and residential and is vehicle dominated. Some significant trees outside the squash courts on Lagoon Drive will be removed. Due to the close proximity of the Squash Club no replanting is proposed here. However, a variety of native trees of 160L size are proposed for replanting around the Panmure roundabout area and along Lagoon Drive as shown on Landscape Plans, in Volume 3 and Appendix 2). The scheduled trees in Domain Drive, which predominantly fall into Sector 1, are all being retained.

Sector 2: Lagoon Drive (Panmure Basin). This sector will experience the most physical changes to the road corridor. However, the existing Pohutukawa and other native and exotic trees on the southern side of Lagoon Drive will be retained. A variety of new plantings are proposed, including:

- A 2m wide planting band of mixed bush species along the cliff area, replacing the existing mixture of native, exotic and weed species
- A pocket park at the Church Street / Lagoon Drive intersection
- A pocket park at the end of Bridge Street and to the north of Lagoon Drive
- Native street trees and low growing vegetation along medians adjacent to shared pathway.

Sector 3: Pakuranga Road (Pakuranga Suburb). This sector will experience removal of a substantial amount of predominantly exotic established trees and shrubs. To offset this, large areas of residual land, now vacant from the land requisition, will have plantings of both native and exotic species. Further plantings in the medians and swales will offset the loss of vegetation in this sector. Other proposed new planted areas are:

- Reconfiguration of Kerswill Corner Reserve
- A Linear park / Open space near Williams Ave / Pakuranga Road intersection
- Low growing vegetation within medians, swales/rain gardens adjacent to the cycle path
- Large exotic tree species within road medians and along edge of road corridor
- Native coastal planting at the southern abutment of Panmure Bridge.

The Notable trees in this area – at 1 Kerswill Place and on the corner of Pakuranga Road and Ti Rakau Drive, are also being retained.

From an arboricultural perspective, the proposed landscaping and re-planting as shown in the landscape plans (Volume 3 and Appendix 1), would adequately mitigate any temporary effects that may arise from the removal of these trees. Both the landscape plans for Areas A1 and A2– Panmure side of the Tamaki River and Area M3 – Pakuranga side of the Tamaki River, demonstrate mitigation for the effects of tree removal by way of planting new trees. This is evidenced by plantings along the medians and shared pathways, new pocket and linear parks and native revegetation plantings at the southern abutment of Panmure Bridge.

10.0 Assessment of Trees to be Retained/Protected

One hundred and two (102) trees, or groups of protected and non-protected trees, located adjacent to the route, are proposed to be retained. Assessment data relating to these trees are contained in Appendix 1. It should be noted that all measurements are approximate only.

Section 10.1 addresses the scheduled/notable trees to be retained/protected and Section 10.2 relates to generally protected and non-protected trees to be retained/protected.

The rules referred to below are referenced in Section 5.0.

10.1 Scheduled/Notable trees

10.1.1 Area A2 – Notable trees in Domain Reserve

The activities proposed within the driplines of the notable Pohutukawa trees in Area A2 are:

- New access to the carpark, involving the removal of two Monkey apple trees
- Retaining wall to support the bank below the scheduled Pohutukawa
- Construction of a driveway to the residential properties to the south of the reserve
- Construction of a retaining wall at 54 Lagoon Drive
- Resurfacing of driveway at 54 Lagoon Drive.

Rule 5C.7.3.3c Assessment Criteria – Works within/adjacent to the Rootzone of Scheduled Trees

Criteria relating to arboriculture matters are addressed below. It is understood criteria relating to broader planning considerations will be addressed in the planner's assessment.

- *The extent to which the tree or trees contribute to the amenity of the neighbourhood*

From an arboricultural perspective all the affected trees contribute positively to the visual, physical and habitat values of the local area.

The extent to which the trees contribute to the amenity of the area, both visual and physical, including contributions as habitats for birds and other animals, will not be adversely affected provided appropriate tree protection measures are implemented.

- *The necessity for carrying out the works*

The proposed works are required to implement the proposed AMETI Stage 2a Project. The proposed works have been designed considering the integrity of the trees located adjacent to the project.

- *Whether or not the proposed activities in the rootzone area are in the opinion of the Council likely to damage the tree or endanger its health*

The proposed works within the rootzones of several scheduled trees have been generally discussed with Council's Street Tree arborist. As stated later in this report, an independent arborist will be peer reviewing the report on Council's behalf. However, tree protection measures have been proposed so that the construction works can be managed in a way that does not damage the trees or endanger their health.

It is recommended that these trees are retained regardless of any changes to the design and alignment within the designation during or prior to construction.

10.1.2 Area M3 – Notable tree at 1 Kerswill Place

The activities taking place within the dripline of the notable Swamp Cypress tree are;

- Construction of a shared footpath and cycleway within the dripline
- Clearance of the majority of remaining vegetation within the property (noting that the Kauri tree – identified as Tree 136, is to be retained) in order to establish a site office compound. At the completion of the Project, this site will be converted to landscaped open space

Assessment Criteria – Works within/ adjacent to the Rootzone of Scheduled Trees

Criteria relating to arboriculture matters are addressed below. It is understood criteria relating to broader planning considerations will be addressed in the planner's assessment.

- *The heritage values for which the tree has been scheduled and the effects on these*

Provided appropriate tree protection measures are implemented, heritage values of the tree will not be adversely affected.

- *The extent to which the tree or trees contribute to the amenity of the area both visual and physical, including contributions as habitats for birds and other animals.*

From an arboricultural perspective, this tree contributes positively to the visual, physical and habitat values of the area.

The extent to which the tree contributes to the amenity of the area, both visual and physical, including contributions as habitats for birds and other animals, will not be adversely affected, provided appropriate tree protection measures are implemented.

- *Any function the tree may have in the conservation of water, soil or soil stability.*

From an arboricultural perspective the affected tree contributes positively to the conservation of water, soil or soil stability within the site.

It is assessed that these functions will not be adversely affected provided appropriate tree protection measures are implemented.

- *The necessity for carrying out the works*

The proposed works are required to implement the proposed AMETI Stage 2a project. The proposed works have been designed considering the integrity of this tree.

- *Whether or not the proposed activities in the rootzone area are in the opinion of the Council likely to damage the tree or endanger its health.*

The proposed works within the rootzone of this tree have been generally discussed with Council's Street Tree arborist. The independent arborist who will be peer reviewing the report on Council's behalf may have further comment to offer. Again however, tree protection measures have been proposed so that the construction works can be managed in a way that does not damage the tree or endanger its health.

It is recommended that these trees are retained regardless of any changes to the design and alignment within the designation during or prior to construction.

10.1.3 Area M3 – Notable trees at the Corner of Pakuranga Road and Ti Rakau Drive

There are two notable Weeping Willow trees on this corner. However, the extent of works is beyond the driplines of these protected trees. General tree protection measures are recommended to be implemented for these trees during the construction period.

10.1.4 Summary – Works within the Rootzones of Notable Trees

Notable trees within AMETI Stage 2a works zone will have works undertaken within their root zones as defined by the existing dripline areas. It is assessed that, assuming that the following mitigating factors occur, it is likely that any potential effects on these trees are acceptable:

- Existing growing conditions are maintained
- Significant earthworks are remote from scheduled trees
- Construction measures minimise earthworks footprints
- Appropriate tree protection measures as described in Section 11a are implemented
- Upon the finalisation of all design work, a tree protection and management schedule is devised that addresses each individual scheduled/notable tree

10.2 Generally Protected Trees

10.2.1 Areas A1, A2 and M3 – Generally Protected Trees

Trees on road reserve and in reserve land are protected throughout the Project area. The purpose of general tree protection is to ensure that the existing tree cover is retained where possible. The specific rules pertaining to trees east and west of the bridge are contained in Section 5.0.

Appendix 1 contains the details of trees that are identified as generally protected in each of the Areas A1, A2 and M3.

There are varied activities taking place within the driplines of the retained trees. These are also listed in Appendix 1.

The trees that are to be retained in the vicinity of the southern edge of Lagoon Drive from the Panmure roundabout to the new bridge would each have a degree of encroachment into their driplines with any resealing of the road. It is considered that, subject to certain measures being undertaken to mitigate the effects of the small degree of potential root disturbance or severance that may occur, the trees would be able to withstand the effects of such root disturbance – with their health and stability not being adversely affected to an unacceptable degree. Certainly, and more importantly, their stability in the ground would not be compromised.

An arboricultural monitoring programme should be included and appropriate tree protection measures as described in Section 11b should be implemented in order to maintain the ongoing health and stability of retained trees.

None of these generally protected trees are notable/scheduled trees. If, as a result of further design modifications, or during the construction phase, it becomes apparent that some of these trees do need to be removed, this is appropriate, and would not result in significant adverse effects provided the removal could be mitigated by either:

- Retaining a different generally protected tree that was previously proposed for removal, or
- Replacement planting of specimen tree/s in addition to those shown in the Landscape Plans

10.2.2 Summary – Works within the Rootzones of Trees

Many retained trees within the AMETI Stage 2a works zone will have a variety of works activity undertaken within their root zones as defined by the existing dripline areas. However, it is assessed that, assuming the following mitigation factors occur, it is likely that any potential effects on these trees are acceptable:

- Existing growing conditions are maintained
- Construction measures minimise earthworks footprints
- Appropriate tree protection measures as described in Section 11b are adopted and implemented
- Upon the finalisation of all design work, a tree protection and management schedule is devised that addresses each individual generally protected or non-protected tree that is being retained in the vicinity of the works

11A Recommended Tree Protection Measures for Notable Trees in Area 1 – Panmure side of Tamaki River and Notable Trees in Area 3 – Pakuranga side of Tamaki River

This section contains a set of tree protection guidelines that should be adopted by all parties carrying out any activity associated with working within the root zones of the scheduled/notable trees in Domain Reserve and at 1 Kerswill Place.

In the very first instance, the guidelines should be the subject of a special meeting with key personnel at the site – and, importantly, prior to any works commencing – including tree and vegetation removal. At the meeting, certain aspects of tree protection, quantity of tree removal, level of arborist supervision, and appropriate methodologies, can be discussed – with a view to gaining a common understanding, and a refined sense of definition, of all those issues. The holding of this meeting should be the first condition of consent pertaining to tree matters involved with the project.

Recommended Tree Protection Measures

- (a) Prior to any works commencing, a meeting should be held at the site to discuss all the tree protection measures proposed and to gain clarification of the conditions of consent imposed by Council. Present at the meeting should be:
 - the consent holder
 - the site's project manager
 - the supervisory arborist appointed by the consent holder
 - a Council arborist or compliance officer
 - other relevant site personnel
- (b) Tree removals in the vicinity of any scheduled/notable tree should be undertaken by a qualified arborist with the skills required to avoid accidental damage occurring to the adjacent retained trees.
- (c) Prior to any tree removal operation, the project arborist should, in consultation with the site manager, identify with a clear marking system those trees that are to be removed.
- (d) A protective barricade should also be erected to enclose as much of the dripline area as practicably possible of all notable/scheduled Trees – 21, 23–30, 34–36, 46–48, 50–54, 135 and 166–167.
- (e) The project arborist should be present to supervise the following particular activities;
 - Any excavation activity in the vicinity of scheduled Trees 21, 23–30, 34–36, 46–48, 50–54, 135 – most particularly the formation of new accessway surfacing and retaining wall construction in the root zones of Trees 21, 23–30, and 34–36.
 - The traversal of an excavation machine through Domain Reserve for earthworks within the driplines of scheduled trees.
 - The positioning and digging of post holes for the retaining wall at 54 Lagoon Drive.
 - Any resurfacing of the driveway at 54 Lagoon Drive
- (f) During the excavation and construction phases, and on completion of the project, the root zone of the scheduled Pohutukawa trees in Domain Reserve will be irrigated and monitored by the worksite arborist. Mulching around the bases of Trees 21, 23–30, 34–36 and 135 (Swamp cypress) is also recommended for the duration of the works.
- (g) Any tree roots that may be encountered during the course of excavation work should be pruned back cleanly to the excavation face, using a sharp saw or a pair of secateurs past any point of fracture or damage. Any exposed root ends shall be protected from drying out by a covering of hessian or similar material that is to be kept damp until the excavated area can be backfilled.
- (h) No storage of materials or equipment, or passage of vehicles or machinery, should take place on open ground within areas of ground enclosed by protective fences.

- (i) Any excavation for the retaining wall below the scheduled trees 21, 23–30 and 34–36 should be attended by the project arborist. Any roots that may be encountered within the required excavation depth should be severed cleanly by the arborist.
- (j) Prior to construction of the retaining wall at 54 Lagoon Drive, the location of major tree roots of Tree 54 should be determined. A hand dig should occur around the base of this tree to determine this. Post holes should be positioned as to minimise damage to major tree roots encountered. With regard to the excavation of post holes for the retaining wall construction within the dripline of protected tree 54, the first 500mm should be excavated by hand to ascertain for the presence of roots prior to any use of an auger. Any root encountered that has a diameter greater than 35mm should be retained intact and the pile hole moved to avoid the root. Roots of smaller diameters can be severed cleanly. All works should be directly supervised by the worksite arborist.
- (k) Washings from the production of concrete should not be flushed on to open ground within the dripline of any retained tree on the site.
- (l) Compliance with all conditions of consent relating to tree protection would be monitored by the appointed worksite arborist – with the detail of each visit, and any communication, being logged. The completed log would be provided at the completion of the project to serve as a compliance report.

11 B Recommended Protection Measures for Retained Trees

This section outlines a set of tree protection measures for generally protected and non-protected trees that are to be retained in:

- Area A1 – Panmure side of Tamaki River – (Refer to Appendix 1 for full details of individual and groups of trees)
- Area A3 – Pakuranga side of Tamaki River – (Refer to Appendix 1 for full details of individual and groups of trees)

Recommended Tree Protection Measures (Areas A1 and A3)

- (a) A competent arborist (works arborist) should be employed to monitor, direct and supervise all works within the driplines of any retained trees adjacent to the works site. The name of the works arborist would be submitted to Council for approval prior to the commencement of any site works.
- (b) Prior to the commencement of site works a tree management plan (TMP) that details all relevant construction information, including all infrastructural elements, that has potential to conflict with retained street trees, should be submitted for certification to Council's Street Tree arborist for all works being undertaken within the vicinity and driplines and/or rootzones of all retained street trees standing adjacent to the proposed works area, and for the removal and mitigation for any other street tree not identified for removal in this report.

- (c) Prior to works commencing, a meeting should be arranged so that all tree protection measures are explained by the works arborist to all contractors, sub-contractors and work site supervisory staff who are carrying out any works associated with the project within the dripline of any retained tree within the Project area.
- (d) The site meeting required by foregoing measure (c) should also be attended by the relevant Council arborist (or representative) responsible for the street tree asset.
- (e) Temporary access and storage areas are to be identified and delineated prior to the commencement of site works (at the pre-start meeting). All construction machinery and materials will be confined to agreed areas and the demarcated work areas.
- (f) All vehicle movements to access the work sites should be excluded from the permeable dripline and/or rootzone areas of retained trees.
- (g) Prior to any site works commencing, protective barrier fencing consisting of 1.8 metre high pole/wire mesh fencing material with ground anchor spikes (or an accepted alternative approved by the Council arborist, or representative), should be erected at the extremities of the permeable berm/road reserve or footpath area to totally exclude access or the storage of any materials from within the permeable dripline and/or rootzone area of retained trees.
- (h) When working within the dripline of any retained tree all care should be taken when removing the existing hard surface to not disturb tree roots that may be beneath the surface. Hand held tools or appropriate machinery should be used (under direct arborist supervision) to remove the existing hard surface working backwards, situated on the existing hard seal at all times. At no time should the machine operate or traverse over the exposed unsealed root zone.
- (i) Once the hard seal surface is removed all existing base course should be left *in-situ*. Augmenting with extra base course material where required should not disturb any potential roots that may have established in the substratum base.
- (j) Any fresh incursion into unsealed ground within the dripline of any retained tree should be carried out by hand (spade) with all care taken not to damage any roots.
- (k) Any roots of retained trees, measuring 35mm or greater in diameter, that are exposed during the course of development work, are to be retained, carefully worked around and protected. All roots less than 35mm diameter exposed in the course of excavation works should be pruned back cleanly past any point of fracture or damage, using a sharp saw or a pair of secateurs. All retained and/or cut roots should be protected from drying out with a covering of hessian or similar material that is to be kept damp until the excavated area can be backfilled.

- (l) In any instance where the above measure cannot be met, approval for the removal of tree roots measuring 35mm or greater in diameter located within the rootzone, as defined by the existing dripline of a particular tree, should be obtained from the works arborist prior to works commencing or continuing. The arborist may carry out the removal of such roots only when he/she is satisfied that the health and stability of the subject tree would not be compromised.
- (m) The placement of any new services should in the first instance be positioned outside the driplines of the affected street trees and scheduled trees. Where site circumstances such as the location of existing service connections dictate works in closer proximity to the affected trees, the works should be as far away as practicable from the trees. Any new services should be installed by directional drilling or similar where practicable. No open trench excavation should occur within the dripline area of the trees. When works in close proximity to the dripline of any retained tree or scheduled trees is necessitated due to existing site conditions (e.g. location of existing services) "pot hole" excavations should be utilised for service location and new connections; these works should be supervised by a qualified arborist and should only be undertaken using hand held tools.
- (n) Where there is a need to decommission any existing services, excavation work in the dripline area of any retained tree should be supervised by a qualified arborist.
- (o) Any pile holes or excavations, associated with the construction works, with exposed root matter or severed root ends, should be lined with polythene sheeting or a similar material prior to the placement of any concrete, in order to prevent leaching of any liquid into the soil.
- (p) When backfilling excavated areas, a 50mm layer of sand or soil should surround all tree roots. The 50mm layer of sand or soil around the tree roots is to be compacted by hand tamping methods only.
- (q) All construction equipment should be manoeuvred within the work sites in a manner that avoids any damage to the crown structure of any retained tree located adjacent to the works area.
- (r) Where practicable, conflict between the existing canopies of retained trees/scheduled trees and the construction works on site should be managed in the first instance by the tying back or stropping of the existing tree canopies.
- (s) The non-protected Kauri tree at 1 Kerswill Place that is proposed for retention within the proposed site office compound should be offered the same level of protection as all other retained trees, as per the tree protection measures outlined in this section of the report. Particular regard should also be given to ensuring adherence to the measures outlined in the Earthworks and Soil Removal section of Appendix 7.
- (t) If changes to the identified line of works are required within close proximity to any retained tree, the works arborist is to update the site and monitoring log sheet (Appendix 3 of this report) and, where appropriate, include a digital photograph. Details

shall include, but not be limited to, changes to previously agreed works in relation to retained trees, alteration of tree protection methodologies and an assessment of effects of changes.

- (u) Compliance with the recommended tree protection measures and construction methodology should be monitored by the appointed works arborist and logged in accordance with the appended log sheet (Appendix 3 of this report). The log sheet shall be provided to Council officers at agreed intervals or where required, upon request.

12.0 Tree Pruning

Several of the trees along the route of the new busway, shared cycleway/footpath would need to be pruned to provide necessary clearances – for cyclists, pedestrians, traffic visibility and, to allow a clear sightline to any new traffic signals.

It is assessed that pruning of canopies of street trees standing adjacent to the proposed busway and shared cycleway and footpath – in order that clearance between new infrastructure and tree canopies is achieved and maintained – would typically be addressed through municipal tree pruning works. These works see a clearance of at least 4.25 metres maintained above the carriageway.

All pruning needed for the various elements of this project can be carried out as a Permitted Activity. At the appropriate time, a Request for Service (RFS) should be made to Council for it to be carried out by Council contractors.

The exact extent of any pruning should be discussed prior to commencement at a meeting held between the project arborist and the arboricultural contractor engaged to carry out the pruning.

13.0 Involvement of Council's Heritage, Parks and Streets Arborist Advisors

A site meeting was held in January 2015 with Howell Davies and Simon Cook from Auckland Council. Both the Heritage Arborist (Nick Stott) and Manukau Parks Arborist (Allan Gasson) were unable to attend; however both were given the same information as the others.

An independent arborist will now peer review this report on Council's behalf.

14.0 Conclusion

This report has been prepared to accompany the Notice(s) of Requirement and resource consent applications for the AMETI Stage 2a Project. It provides the information that will assist Council to assess activities that may affect trees that are protected under the relevant tree protection rules. In summary:

- One hundred and twenty-eight (128) generally protected and non-protected trees or groups of trees are proposed for removal (as identified with red text in Appendix 1 of this report) – seventy-eight (78) trees or groups of trees on the Panmure side of Tamaki River and fifty (50) trees or groups of trees on the Pakuranga side of Tamaki River

None of these trees are notable/scheduled trees and therefore none are required to be fully protected/retained. Furthermore, none of these trees are easily able to be relocated to locations within the project area. In addition, specific bio-security removal restrictions will apply to all elm trees, to avoid the risk of the spread of Dutch Elm Disease (see Appendix 6).

Notwithstanding this, the removal of these trees will have an urban amenity impact that needs to be offset/mitigated. Mitigation for the effects of the tree removal is proposed as part of the Project, via the provision of many new trees that are elements of the landscape plans that have been prepared for the Panmure side of Tamaki River and the Pakuranga side of Tamaki River. Considering this, it is considered that the effects of the removal of one hundred and twenty-eight (128) trees or groups of trees would be no more than minor, and temporary.

The substantial replanting that is shown on the proposed landscape plans offers an appropriate level of mitigation and environmental enhancement for the surrounding area, thereby mitigating the effects of the loss of the existing vegetation.

- Seventy-nine (79) generally protected trees or groups of trees (as identified with black text in Appendix 1) will be retained but will have works carried out within their driplines – fifty-two (52) trees or groups of trees on the Panmure side of Tamaki River and twenty-seven (27) trees or groups of trees on the Pakuranga side of Tamaki River

It is considered that the variety of activities that are proposed to take place within the driplines of these generally protected trees can be managed such that any adverse effect on any tree will be acceptable and less than minor. This would be especially the case if the tree protection recommendations outlined in this report are adopted as contract specifications for the Project.

- The most significant trees are the Notable trees. Twenty (20) protected (scheduled) trees (as identified with green text in Appendix 1), located in the Panmure side of Tamaki River side surrounding the Panmure Stadium and three (3) protected (scheduled) trees (as identified with green text in Appendix 1), located on the Pakuranga side of Tamaki River – will be retained but will have works carried out within their driplines and/or further protected by being enclosed behind protective fences. It is anticipated that the proposed activities would have no adverse effect on these protected trees. There will therefore be no more than a minor degree of impact on the root zones of these trees. Recommended protective measures pertaining to these trees are also outlined in Appendix 1 and Section 11a of this report

Apart from the scheduled trees in Areas A2 and M3, there were no other generally protected trees identified as being particularly significant specimens. The removal effects on this basis are able to be mitigated as discussed in Section 9.0 above.

Subject to retention of the scheduled trees, removal of all other trees within the designation can be appropriately mitigated by either the proposed landscaping or additional specimen replanting.

Please feel free to contact the undersigned if any further information is required.

AUTHORS:

A handwritten signature in black ink, appearing to read 'Matt Paul', with a stylized, cursive script.

**Matt Paul
Consultant
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A handwritten signature in black ink, appearing to read 'R. Peers', with a stylized, cursive script.

**Richard Peers
Director
Peers Brown Miller Ltd**

Appendix 1 – Schedule of Affected Trees

A1 A2 M3	Tree No	Address	Common Name	Botanical name	Ownership (Private/public)	Zone	Removal/Retain	Height (m)	Stem Girth (mm)	Crown Spread (m)	Condition G - good F - fair P - poor	Comments on Tree/s	P - protected NP - non-protected SCH - scheduled	Activity affecting Tree/s	Assessment/Discussion	Recommendations
A1	1	Ellerslie Panmure Highway	Pohutukawa	<i>Metrosideros excelsa</i>	Public	Road Res	Rem	3	350	2	G	Juvenile street tree. Newly planted at Phase 1	P	Stands within traffic median to be re-aligned		Remove
A1	2	Ellerslie Panmure Highway	Pohutukawa	<i>Metrosideros excelsa</i>	Public	Road Res	Rem	3	350	2	G	Juvenile street tree. Newly planted at Phase 1	P	Stands within traffic median to be re-aligned		Remove
A1	3	6 Queens Road	Bangalow Palm	<i>Archontophoenix cunninghamiana</i>	Public	Road Res	Rem	5.5	630	1.7	G	Mature specimen. Good health, typical form for the species	P	Stands directly in new footpath		Remove
A1	4	6 Queens Road	Bangalow Palm	<i>Archontophoenix cunninghamiana</i>	Public	Road Res	Rem	8.5	900	2.7	F	Mature specimen. Fair health, typical form for the species	P	Stands directly in new footpath		Remove
A1	5	18-20 Queens Road	Cape Lilac	<i>Melia azedarach</i>	Public	Road Res	Ret	6.5	1550	6.2	F	Mature specimen. Good health and form. Previous major limb removal. Previous major limb failure	P	Out of area		
A1	6	32 Queens Road	Cape Lilac	<i>Melia azedarach</i>	Public	Road Res	Ret	6.5	1280	5.1	F	Mature specimen. Fair health and form. Vehicle damage. Bark wound, decay. Minor deadwood	P	Out of area		
A1	7	25 Queens Road	Titoki	<i>Alectryon excelsus</i>	Public	Road Res	Ret	4.5	430	2.4	F	Semi mature specimen. Good health and form. Poorly pruned. Canopy lifted. Previous major limb removal	P	Out of area		
A1	8	Road Reserve (Opp 21 Queens Road)	Pohutukawa	<i>Metrosideros excelsa</i>	Public	Road Res	Rem	4	440	1.4	F	Semi mature specimen. Good health and form. In median strip	P	Tree stands directly in new road alignment. Traffic island being removed		Remove
A1	9	Road Reserve (Opp 13 Queens Road)	Pohutukawa	<i>Metrosideros excelsa</i>	Public	Road Res	Rem	4	660	2	F	Semi mature specimen. Good health and form. In median strip	P	Tree stands directly in new Road alignment. Traffic island being removed. New median hard L/S		Remove

A1 A2 M3	Tree No	Address	Common Name	Botanical name	Ownership (Private/public)	Zone	Removal/Retain	Height (m)	Stem Girth (mm)	Crown Spread (m)	Condition G - good F - fair P - poor	Comments on Tree/s	P - protected NP - non-protected SCH - scheduled	Activity affecting Tree/s	Assessment/Discussion	Recommendations
A1	10	Road Reserve (Opp 7-11 Queens Road)	Pohutukawa	<i>Metrosideros excelsa</i>	Public	Road Res	Rem	4.5	610	1.9	F	Semi mature specimen. Good health and form. In median strip	P	Tree stands directly in new road alignment. Traffic island being removed. New median hard L/S		Remove
A1	11	Road Reserve (Opp 7-11 Queens Road)	Pohutukawa	<i>Metrosideros excelsa</i>	Public	Road Res	Rem	4.5	600	1.8	F	Semi mature specimen. Good health and form. Co-dominant stem. Included union. In median strip	P	Tree stands directly in new road alignment. Traffic island being removed. New median hard L/S		Remove
A1	12	Road Reserve (Opp 7-11 Queens Road)	Pohutukawa	<i>Metrosideros excelsa</i>	Public	Road Res	Rem	4.5	700	2.1	F	Semi mature specimen. Good health and form. In median strip	P	Tree stands directly in new Road alignment. Traffic island being removed. New median hard L/S		Remove
A1	13	Road Reserve (Opp 7-11 Queens Road)	Bangalow Palm	<i>Archontophoenix cunninghamiana</i>	Public	Road Res	Rem	3	330	1	F	Young specimen. Twin stem. Good health and form	P	Tree stands in garden being removed - area being scarified		Remove
A1	14	Opposite 23 Lagoon Drive in ANZ Carpark	Cabbage Tree	<i>Cordyline australis</i>	Private	Bus	Rem	3			F	Young tree	NP	In line of works		Remove
A1	15	25 Domain Drive (Property purchase)	Tarata	<i>Pittosporum eugenoides</i>	Private	Bus	Rem	4			F	Young tree	NP	In line of works		Remove
A1	16	23 Domain Drive (Kindergarten)	Cape Lilac	<i>Melia azedarach</i>	Public	Road Res	Rem	5	1500	3.1	F	Semi mature specimen. Multi-stemmed. Previous major limb removal. Included union	P	Tree stands directly in new Road alignment.		Remove
A1	17	Road Reserve (Opp 23 Domain Drive)	Cabbage Tree	<i>Cordyline australis</i>	Public	Road Res	Rem	4	500	1	F	Semi mature specimen. Fair health and form. Minor deadwood. Bark wound	P	Stands directly in new shared footpath/cycleway		Remove
A1	18	Road reserve (Opp 23 Domain Drive)	Cabbage Tree	<i>Cordyline australis</i>	Public	Road Res	Rem	3	400	1	F	Semi mature specimen. Twin stem. Typical form for species. Minor deadwood. Trunk damage.	P	Stands directly in new shared footpath/cycleway		Remove

A1 A2 M3	Tree No	Address	Common Name	Botanical name	Ownership (Private/public)	Zone	Removal/Retain	Height (m)	Stem Girth (mm)	Crown Spread (m)	Condition G - good F - fair P - poor	Comments on Tree/s	P - protected NP - non-protected SCH - scheduled	Activity affecting Tree/s	Assessment/Discussion	Recommendations
A1	19	Road Reserve (Opp 23 Domain Drive)	Cabbage Tree	<i>Cordyline australis</i>	Public	Road Res	Rem	4	600	1	F	Semi mature multi-stemmed specimen	P	Stands directly in new shared footpath/cycleway		Remove
A1	20	Road Reserve (Opp 23 Domain Drive)	Cabbage Tree	<i>Cordyline australis</i>	Public	Road Res	Rem	2	400	0.5	F	Semi mature multi-stemmed specimen. Poorly pruned	P	Stands directly in new shared footpath/ cycleway		Remove
A2	21	36-46 Lagoon Drive (Domain Reserve)	Pohutukawa	<i>Metrosideros excelsa</i>	Public	OS3	Ret	11	12000	9.5	F	Mature multi-stemmed specimen. Good health and form. Exposed roots	SCH	New footpath and shared footpath/ cycleway within dripline. Soil levels being raised/ lowered?		Refer Sec 11a Recommended Tree Protection Measures for Notable trees for Area 1 – Auckland side and Notable trees in Area 3
A2	22	36-46 Lagoon Drive (Domain Reserve) on Domain Road	Karaka	<i>Corynocarpus laevigatus</i>	Public	OS3	Ret	8	3500	4.1	F	Mature multi-stemmed specimen. Good health, fair form. Supressed by Pohutukawa Tree 20. Prolific canopy. Minor deadwood	P	New footpath joins existing footpath within dripline. Existing footpath demolished. Where does it stop?		Refer Sec 11a Recommended Tree Protection Measures for Notable trees for Area 1 – Auckland side and Notable trees in Area 3
A2	23	36-46 Lagoon Drive (Domain Reserve) on Domain Road	Pohutukawa	<i>Metrosideros excelsa</i>	Public	OS3	Ret	11	12500	11	F	Mature multi-stemmed specimen. Exposed roots. Previous major limb removal. Rubbing LV power lines. Minor deadwood. Epicormic growth	SCH	New footpath appears to stop between Tree s 40 & 41, however new accessway to carpark, and retaining wall, below this stand of notable trees	Works arborist to supervise all work around these notable trees	Refer Sec 11a Recommended Tree Protection Measures for Notable trees for Area 1 – Auckland side and Notable trees in Area 3
A2	24	36-46 Lagoon Drive (Domain Reserve) on Domain Road	Pohutukawa	<i>Metrosideros excelsa</i>	Public	OS3	Ret	11	5500	11	F	Mature multi-stemmed specimen. Exposed roots. Previous major limb removal. Minor deadwood	SCH	New footpath appears to stop between Tree s 40 & 41, however new accessway to carpark, and retaining wall, below this stand of notable trees	Works arborist to supervise all work around these notable trees	Refer Sec 11a Recommended Tree Protection Measures for Notable trees for Area 1 – Auckland side and Notable trees in Area 3

A1 A2 M3	Tree No	Address	Common Name	Botanical name	Ownership (Private/public)	Zone	Removal/Retain	Height (m)	Stem Girth (mm)	Crown Spread (m)	Condition G - good F - fair P - poor	Comments on Tree/s	P - protected NP - non-protected SCH - scheduled	Activity affecting Tree/s	Assessment/Discussion	Recommendations
A2	25	36-46 Lagoon Drive (Domain Reserve) on Domain Road	Pohutukawa	<i>Metrosideros excelsa</i>	Public	OS3	Ret	12	10500	11	F	Mature multi-stemmed specimen. Good health, fair form. Exposed roots. Previous major limb removal. Decay at stubs Included unions. Epicormic growth	SCH	New footpath appears to stop between Trees 40 & 41, however new accessway to carpark, and retaining wall, below this stand of notable trees	Works arborist to supervise all work around these notable trees	Refer Sec 11a Recommended Tree Protection Measures for Notable trees for Area 1 – Auckland side and Notable trees in Area 3
A2	26	36-46 Lagoon Drive (Domain Reserve) on Domain Road	Pohutukawa	<i>Metrosideros excelsa</i>	Public	OS3	Ret	12	7500	9.7	F	Mature multi-stemmed specimen. Good health, fair form. Exposed roots. Previous major limb removal. Exposed roots. Remove major deadwood	SCH	New footpath appears to stop between Tree s 40 & 41,however new accessway to carpark, and retaining wall, below this stand of notable trees	Works arborist to supervise all work around these notable trees	Refer Sec 11a Recommended Tree Protection Measures for Notable trees for Area 1 – Auckland side and Notable trees in Area 3
A2	27	36-46 Lagoon Drive (Domain Reserve) on Domain Road	Pohutukawa	<i>Metrosideros excelsa</i>	Public	OS3	Ret	12	3500	11	F	Mature multi-stemmed specimen. Good health, fair form. Previous major limb removal. Exposed roots. Epicormic growth. Minor deadwood. Touching LV power line	SCH	New footpath appears to stop between Tree s 40 & 41,however new accessway to carpark, and retaining wall, below this stand of notable trees	Works arborist to supervise all work around these notable trees	Refer Sec 11a Recommended Tree Protection Measures for Notable trees for Area 1 – Auckland side and Notable trees in Area 3
A2	28	36-46 Lagoon Drive (Domain Reserve) on Domain Road	Pohutukawa	<i>Metrosideros excelsa</i>	Public	OS3	Ret	12	7000	10	F	Mature multi-stemmed specimen. Good health, fair form. Previous major limb removal. Exposed roots. Epicormic growth. Minor deadwood	SCH	New footpath appears to stop between Tree s 40 & 41,however new accessway to carpark, and retaining wall, below this stand of notable trees	Works arborist to supervise all work around these notable trees	Refer Sec 11a Recommended Tree Protection Measures for Notable trees for Area 1 – Auckland side and Notable trees in Area 3
A2	29	36-46 Lagoon Drive (Domain Reserve) on Domain Road	Pohutukawa	<i>Metrosideros excelsa</i>	Public	OS3	Ret	12	3500	8.7	F	Mature multi-stemmed specimen. Good health, fair form. Exposed roots. Previous major limb removal. Major limb rubbing Tree No 48. Epicormic growth. Minor deadwood	SCH	New footpath appears to stop between Tree s 40 & 41,however new accessway to carpark, and retaining wall, below this stand of notable trees	Works arborist to supervise all work around these notable trees	Refer Sec 11a Recommended Tree Protection Measures for Notable trees for Area 1 – Auckland side and Notable trees in Area 3

A1 A2 M3	Tree No	Address	Common Name	Botanical name	Ownership (Private/public)	Zone	Removal/Retain	Height (m)	Stem Girth (mm)	Crown Spread (m)	Condition G - good F - fair P - poor	Comments on Tree/s	P - protected NP - non-protected SCH - scheduled	Activity affecting Tree/s	Assessment/Discussion	Recommendations
A2	30	36-46 Lagoon Drive (Domain Reserve) on Domain Road	Pohutukawa	<i>Metrosideros excelsa</i>	Public	OS3	Ret	12	9500	11.5	F	Mature multi-stemmed specimen. Good health, fair form. Exposed roots. Previous major limb removal. Crossing and rubbing branches. Epicormic growth. Major limb rubbing Tree No.47. Included union. Minor deadwood	SCH	New footpath appears to stop between Tree s 40 & 41, however new accessway to carpark, and retaining wall, below this stand of notable trees	Works arborist to supervise all work around these notable trees	Refer Sec 11a Recommended Tree Protection Measures for Notable trees for Area 1 – Auckland side and Notable trees in Area 3
A2	31	36-46 Lagoon Drive (Domain Reserve) on Domain Road	Acmena	<i>Syzygium smithii</i>	Public	OS3	Rem	10.5	8000	7.5	F	Mature multi-stemmed specimen. Fair health and form. Previous stem removal and deadwood in canopy. Weed species	NP	Removal proposed to facilitate new roadway works		Removal works to be undertaken in accordance with best practice
A2	32	36-46 Lagoon Drive (Domain Reserve) on Domain Road	Acmena	<i>Syzygium smithii</i>	Public	OS3	Rem	10.5	4500	5	F	Mature multi-stemmed specimen. Fair health and form. Previous stem removal and deadwood in canopy. Weed species	NP	Removal proposed to facilitate new roadway works		Removal works to be undertaken in accordance with best practice.
A2	33	36-46 Lagoon Drive (Domain Reserve) on Domain Road	Totara	<i>Podocarpus totara</i>	Public	OS3	Ret	12	1860		F	Mature specimen. Good health and form. Included union. Upright, partially suppressed by adjacent trees	P	Works close to dripline	Proposed works on outer edge of dripline	Refer Sec 11b Recommended Tree Protection Measures (Group measures & measures for all other retained trees)
A2	34	36-46 Lagoon Drive (Domain Reserve) on Domain Road	Pohutukawa	<i>Metrosideros excelsa</i>	Public	OS3	Ret	10.5	7200		F	Mature multi-stemmed specimen. Exposed roots. Good health and form. Previous major limb removal	SCH	Works close to dripline	Confirm if excavations for new access are within dripline	Refer Sec 11a Recommended Tree Protection Measures for Notable trees for Area 1 – Auckland side and Notable trees in Area 3
A2	35	36-46 Lagoon Drive (Domain Reserve)	Pohutukawa	<i>Metrosideros excelsa</i>	Public	OS3	Ret	12	5000+	9.5	F	Good health & form. HV Power line clearance.	SCH	Out of works area		Refer Sec 11.0 a Recommended Tree Protection Measures for Notable trees for Area 1 – Auckland side and Notable trees in Area 3

A1 A2 M3	Tree No	Address	Common Name	Botanical name	Ownership (Private/public)	Zone	Removal/Retain	Height (m)	Stem Girth (mm)	Crown Spread (m)	Condition G - good F - fair P - poor	Comments on Tree/s	P - protected NP - non-protected SCH - scheduled	Activity affecting Tree/s	Assessment/Discussion	Recommendations
A2	36	36-46 Lagoon Drive (Domain Reserve)	Pohutukawa	<i>Metrosideros excelsa</i>	Public	OS3	Ret	12	7000+	12	F	Good health & form. Multi stemmed. Exposed roots. Previous major limb removal. Epicormic growth. HV Power line clearance	SCH	Dripline possibly over new shared driveway - tree protection measures		ditto
A2	37	36-46 Lagoon Drive (Domain Reserve)	Eucalyptus sp.	<i>Eucalyptus sp.</i>	Public	OS3	Ret	20	2800	11	F	Good Health & form. Minor deadwood	P	Dripline possibly over new shared driveway - Tree protection measures		Refer Sec 11b Recommended Tree Protection Measures (Group measures & measures for all other retained trees)
A2	38	36-46 Lagoon Drive (Domain Reserve)	Tasmanian Blackwood	<i>Acacia melanoxylon</i>	Public	OS3	Ret	11	1540	6	F	Good health. Fair form. Previous major limb removal Minor deadwood. Remove hanger	P	Dripline possible over new shared driveway - Tree protection measures		ditto
A2	39	36-46 Lagoon Drive (Domain Reserve)	Eucalyptus sp.	<i>Eucalyptus sp.</i>	Public	OS3	Ret	18	2500	9	F	Good health & form	P	Dripline possible over new shared driveway - Tree protection measures		ditto
A1	40	26 Domain Road	Honey locust	<i>Gleditsia triacanthos</i>	Private	Res 6a	Ret	12	1800	8.5	F	Good health & form	NP	Out of works area		
A1	41	26 Domain Road	Privet	<i>Ligustrum lucidum</i>	Private	Res 6a	Ret	4		2	F	Weed species	NP	Out of works area		
A1	42	26 Domain Road	Willow Myrtle	<i>Agonis flexuosa</i>	Private	Res 6a	Ret	6	1000	3.5	F	Multi stemmed, included unions, low branching	NP	Out of works area		
A1	43	26 Domain Road	Feijoa (4)	<i>Acca sellowiana</i>	Private	Res 6a	Ret				F	Hedge	NP	Out of works area		
A1	44	26 Domain Road	Liquidambar	<i>Liquidambar styraciflua</i>	Private	Res 6a	Ret	10	2000	7	F	Good health & form. Included unions. Clearance from powerlines / street light	NP	Out of works area		
A2	45	36-46 Lagoon Drive (Domain Reserve)	Lilly Pilly	<i>Acmena smithii</i>	Public	OS3	Ret	14	3500	9	F	Fair form & health. Will require pruning over drive	NP	Dripline over new shared driveway - Tree protection measures		

A1 A2 M3	Tree No	Address	Common Name	Botanical name	Ownership (Private/public)	Zone	Removal/Retain	Height (m)	Stem Girth (mm)	Crown Spread (m)	Condition G - good F - fair P - poor	Comments on Tree/s	P - protected NP - non-protected SCH - scheduled	Activity affecting Tree/s	Assessment/Discussion	Recommendations
A2	46	36-46 Lagoon Drive (Domain Reserve)	Pohutukawa	<i>Metrosideros excelsa</i>	Public	OS3	Ret	15	7000+	10	F	Good health & form. Previous limb removal	SCH	Dripline over new shared driveway - Tree protection measures		Refer Sec 11a Recommended Tree Protection Measures for Notable trees for Area 1 – Auckland side and Notable trees in Area 3
A2	47	36-46 Lagoon Drive (Domain Reserve)	Pohutukawa	<i>Metrosideros excelsa</i>	Public	OS3	Ret	15	7000+	10	F	Good health & form Exposed roots. Major limb to be removed over proposed drive	SCH	Dripline over new shared driveway - tree protection measures		ditto
A2	48	36-46 Lagoon Drive (Domain Reserve)	Pohutukawa	<i>Metrosideros excelsa</i>	Public	OS3	Ret	14	7000+	9	F	Multi stemmed, fair health & form	SCH	Dripline over new shared driveway - Tree protection measures		ditto
A2	49	36-46 Lagoon Drive (Domain Reserve)	Tarata	<i>Pittosporum eugenioides</i>	Public	OS3	Ret	8	1000	3.7	F	Included union. Previous major limb removal	P	Dripline over new shared driveway - Tree protection measures		Refer Sec 11b Recommended Tree Protection Measures (Group measures & measures for all other retained trees)
A2	50	36-46 Lagoon Drive (Domain Reserve)	Pohutukawa	<i>Metrosideros excelsa</i>	Public	OS3	Ret	14	5000	7.5	F	Exposed roots, multi stemmed	SCH	Dripline over new shared driveway - Tree protection measures		Refer Sec 11.0 a Recommended Tree Protection Measures for Notable trees for Area 1 – Auckland side and Notable trees in Area 3
A2	51	36-46 Lagoon Drive (Domain Reserve)	Pohutukawa	<i>Metrosideros excelsa</i>	Public	OS3	Ret	14		5.5	F	Good health & form. Leaning. Single stem left. Previous major limb removal	SCH	Dripline over new shared driveway - Tree protection measures		ditto
A2	52	36-46 Lagoon Drive (Domain Reserve)	Pohutukawa	<i>Metrosideros excelsa</i>	Public	OS3	Ret	14	6000	11	F	Good health & form. Exposed roots. Multi stemmed	SCH	Dripline over new shared driveway - tree protection measures		ditto
A2	53	36-46 Lagoon Drive (Domain Reserve)	Pohutukawa	<i>Metrosideros excelsa</i>	Public	OS3	Ret	14	7000+	9.5	F	Good health, fair form. Touching building. Previous major limb removal. Multi stemmed. Ivy choking trunk - remove	SCH	Dripline over new shared driveway and retaining wall within root zone - tree protection measures		ditto

A1 A2 M3	Tree No	Address	Common Name	Botanical name	Ownership (Private/public)	Zone	Removal/Retain	Height (m)	Stem Girth (mm)	Crown Spread (m)	Condition G - good F - fair P - poor	Comments on Tree/s	P - protected NP - non-protected SCH - scheduled	Activity affecting Tree/s	Assessment/Discussion	Recommendations
A2	54	36-46 Lagoon Drive (Domain Reserve)	Pohutukawa	<i>Metrosideros excelsa</i>	Public	OS3	Ret	14	7000+	12	F	Good health & form, Clear trunk of ivy	SCH	Dripline over new shared driveway - tree protection measures		Ditto
A2	55	36-46 Lagoon Drive (Domain Reserve)	Pohutukawa (6)	<i>Metrosideros excelsa</i>	Public	OS3	Ret	7	500-1500	3	F	Good form & health	P	Dripline close to drive - protection measures		Refer Sec 11.b Recommended Tree Protection Measures (Group measures & measures for all other retained trees)
A2	56	36-46 Lagoon Drive (Domain Reserve)	Norfolk Island Hibiscus	<i>Lagunaria pattersonii</i>	Public	OS3	Ret	8	2000	4	F	Good form & health	P	Dripline close to drive - protection measures		Ditto
A1	57	36-46 Lagoon Drive	Chinese Elm	<i>Ulmus parvifolia</i>	Public	OS3	Rem	9	1700	9.5	F	Mature specimen. Good health and form. Previous major limb removal. Previous failure. Bark wounds. Exposed roots. Potential conflict with roots and hard surfaces. Remove major deadwood	P	Stands directly in new shared footpath/cycleway	Bio security removal procedure - *Dutch elm Disease	Remove. Bio security removal procedure - *Dutch elm Disease. Refer Appendix 6 - Dutch Elm disease removal protocol
A1	58	36-46 Lagoon Drive	Chinese Elm	<i>Ulmus parvifolia</i>	Public	OS3	Rem	9	1030	8	F	Mature specimen Fair health and form. Suppressed by adjacent Chinese Elms. Exposed roots. Potential conflict with roots and hard surfaces. Wide canopy spread across road	P	Stands directly in new shared footpath/cycleway	Bio security removal procedure - *Dutch elm Disease	Remove. Bio security removal procedure - *Dutch elm Disease. Refer Appendix 6 - Dutch Elm disease removal protocol
A1	59	36-46 Lagoon Drive	Chinese Elm	<i>Ulmus parvifolia</i>	Public	OS3	Rem	9	1760	9	F	Mature specimen. Good health, fair form. Leaning. Exposed roots. Potential conflict with roots and hard surfaces. Previous major limb removal. Wide canopy spread across road	P	Stands directly in new shared footpath/cycleway	Bio security removal procedure - *Dutch elm Disease	Remove. Bio security removal procedure - *Dutch elm Disease. Refer Appendix 6 - Dutch Elm disease removal protocol

A1 A2 M3	Tree No	Address	Common Name	Botanical name	Ownership (Private/public)	Zone	Removal/Retain	Height (m)	Stem Girth (mm)	Crown Spread (m)	Condition G - good F - fair P - poor	Comments on Tree/s	P - protected NP - non-protected SCH - scheduled	Activity affecting Tree/s	Assessment/Discussion	Recommendations
A1	60	36-46 Lagoon Drive	Chinese Elm	<i>Ulmus parvifolia</i>	Public	OS3	Rem	9	1650	8.4	F	Mature specimen. Good health, fair form. Exposed roots. Potential conflict with roots and hard surfaces. Previous major limb removal. Remove major deadwood. Crossing branches	P	Stands directly in new footpath and directly adjacent to Busway	Bio security removal procedure - *Dutch elm Disease	Remove. Bio security removal procedure - *Dutch elm Disease. Refer Appendix 6 - Dutch Elm disease removal protocol
A1	61	36-46 Lagoon Drive	Chinese Elm	<i>Ulmus parvifolia</i>	Public	OS3	Rem	9	1400	6.3	F	Mature specimen. Fair form and health. Suppressed by adjacent Norfolk Island pine. Previous major limb removal. Potential conflict with roots and hard surfaces	P	Stands directly in new footpath and directly adjacent to Busway	Bio security removal procedure - *Dutch elm Disease	Remove. Bio security removal procedure - *Dutch elm Disease. Refer Appendix 6 - Dutch Elm disease removal protocol
A1	62	36-46 Lagoon Drive	Norfolk Island pine	<i>Araucaria heterophylla</i>	Public	OS3	Rem	15	3000	7	F	Mature specimen. Good health and form. Exposed roots. Ground surface modified below tree - hard surface for parking. Rootzone confined. Potential conflict with roots	P	Stands directly adjacent to new footpath. Existing footpath being demolished. Excavations adjacent to trunk. Confirm excavation distance to trunk		Can cycleway be narrowed slightly?
A1	63	36-46 Lagoon Drive	Bangalow Palm	<i>Archontophoenix cunninghamiana</i>	Public	OS3	Ret	7.5	2500	2	F	Mature multi-stemmed specimen. Exposed roots. Fair health, typical form	P	Close to shared footpath/cycleway. Could possibly retain - small rootball		Refer Sec 11b Recommended Tree Protection Measures (Group measures & measures for all other retained trees)
A1	64	36-46 Lagoon Drive	Flowering Cherry	<i>Prunus sp.</i>	Public	OS3	Rem	5.5	4200	6.1	F	Mature specimen. Fair health. Poor form	P	Trunk adjacent to new footpath		Remove
A1	65	36-46 Lagoon Drive	Cabbage Tree x 3	<i>Cordyline australis</i>	Public	OS3	Rem	6	1500	2	F	Grouping of mature specimens. Good health and form	P	Stands within new footpath/cycleway		Remove
A1	66	36-46 Lagoon Drive	Cabbage Tree	<i>Cordyline australis</i>	Public	OS3	Rem	6	1300	2	F	Mature multi-stemmed specimen. Wounding at base	P	Stands within new footpath/cycleway		Remove
A1	67	36-46 Lagoon Drive	Bangalow Palm	<i>Archontophoenix cunninghamiana</i>	Public	OS3	Ret	8	2000	3	F	Mature multi-stemmed specimen	P	Outside works area		Retain

A1 A2 M3	Tree No	Address	Common Name	Botanical name	Ownership (Private/public)	Zone	Removal/Retain	Height (m)	Stem Girth (mm)	Crown Spread (m)	Condition G - good F - fair P - poor	Comments on Tree/s	P - protected NP - non-protected SCH - scheduled	Activity affecting Tree/s	Assessment/Discussion	Recommendations
A1	68	36-46 Lagoon Drive	Karo	<i>Pittosporum crassifolium</i>	Public	Road Res	Rem	4			F	Self-sown specimen against pole	NP	Stands within new footpath/cycleway		Remove
A1	69	58 Lagoon Drive	Rose of Sharon	<i>Hibiscus syriana</i>	Public	Road Res	Rem	2.5			F	Untidy shrub with Karo growing through	P	Stands within new footpath/cycleway		Remove
A1	70	58 Lagoon Drive	Japanese Cedar	<i>Cryptomeria japonica</i>	Private		Ret	9			F	Growing on edge of public land. Single specimen	NP	On edge of new roadway works. Retained		Retain
A1	71	58 Lagoon Drive	Rose of Sharon	<i>Hibiscus syriana</i>	Public	Road Res	Rem	3.5			F	Growing within grassed area adjacent to existing roadway	P	Stands within new footpath/cycleway		Remove
A1	72	58 Lagoon Drive	Rose of Sharon	<i>Hibiscus syriana</i>	Public	Road Res	Rem	4			F	Growing within grassed area adjacent to existing roadway	P	Stands within new footpath/cycleway		Remove
A1	73	58 Lagoon Drive	Totara	<i>Podocarpus totara</i>	Private		Ret	10			F	Growing within private property	NP	Is clear of any works proposed		Retain
A1	74	Adjacent to 6 Sunset view on Lagoon Dr	Rose of Sharon	<i>Hibiscus syriana</i>	Public	Road Res	Rem	4			F	Growing within grassed area adjacent to existing roadway	P	Stands within new footpath/cycleway		Remove
A1	75	Adjacent to 6 Sunset view on Lagoon Dr	Rose of Sharon	<i>Hibiscus syriana</i>	Public	Road Res	Rem	4			F	Growing within grassed area adjacent to existing roadway	P	Stands within new footpath/cycleway		Remove
A1	76	Adjacent to 6 Sunset view on Lagoon Dr	Kermadec Pohutukawa	<i>Metrosideros kermadecensis</i>	Public	Road Res	Rem	7		9	F	Growing within grassed area adjacent to existing roadway. Low hanging canopy blocking existing footpath	P	Stands within new footpath/cycleway		Remove
A1	77	Adjacent to 6 Sunset view on Lagoon Dr	Cabbage tree	<i>Cordyline australis</i>	Public	Road Res	Rem	5		2	F	Growing within grassed area adjacent to existing roadway	P	Stands within new footpath/cycleway		Remove
A1	78	Adjacent to 6 Sunset view on Lagoon Dr	Group - Pohutukawa, Wattle, Coprosma		Public	Road Res	Rem	5,10			F	Growing on rock embankment above the existing roadway	P	Stands within construction footprint		Remove
A1	79	6 Sunset View Road	Poplar	<i>Populus sp.</i>	Public	OS	Rem	20+			F	Growing on rock embankment above the existing roadway	P	Stands within construction footprint		Remove
A1	80	6 Sunset View Road	Poplar	<i>Populus sp.</i>	Public	OS	Rem	20+			F	Growing on rock embankment above the existing roadway	P	Stands within construction footprint		Remove

A1 A2 M3	Tree No	Address	Common Name	Botanical name	Ownership (Private/public)	Zone	Removal/Retain	Height (m)	Stem Girth (mm)	Crown Spread (m)	Condition G - good F - fair P - poor	Comments on Tree/s	P - protected NP - non-protected SCH - scheduled	Activity affecting Tree/s	Assessment/Discussion	Recommendations
A1	81	6 Sunset View Road	Poplar	<i>Populus sp.</i>	Public	OS	Rem	20+			F	Growing on rock embankment above the existing roadway	P	Stands within construction footprint		Remove
A1	82	6 Sunset View Road	Magnolia	<i>Magnolia sp.</i>	Public	OS	Rem	8			F	Growing in reserve area at the end of Sunset View Road	P	Stands on the edge of the construction footprint		Retain. Works within the dripline to be undertaken in accordance with Tree Protection Measures
A1	83	6 Sunset View Road	Flowering Cherry	<i>Prunus sp.</i>	Public	OS	Rem	7.5	1500		F	Fair form and health. Poorly pruned in the past	P	Stands on the edge of the construction footprint		Retain. Works within the dripline to be undertaken in accordance with Tree Protection Measures
A1	84	6 Sunset View Road	Citrus	<i>Citrus sp.</i>	Public	OS	Rem	1.5			F	Planted by resident. Small tree.	NP	Stands within construction footprint		Remove
A1	85	Adjacent to 7 Sunset View Road	Flowering Cherry	<i>Prunus sp.</i>	Public	Road Res	Rem	5.5	800		F	Good Health and Form	P	Stands on the edge of the construction footprint		Retain. Works within the dripline to be undertaken in accordance with Tree Protection Measures
A1	86	6 Sunset View Road	Poplar	<i>Populus sp.</i>	Public	Road Res	Rem	15	3500		F	Fair health and form	P	Stands on the edge of the construction footprint		Retain. Works within the dripline to be undertaken in accordance with Tree Protection Measures
A1	87	6 Sunset View Road	Macrocarpa	<i>Cupressus macrocarpa</i>	Public	OS	Rem	10	4000		F	Poor form. Topped in the past; Stands on the lower banked area	P	Stands within construction footprint		Remove
A1	88	6 Sunset View Road	Poplar	<i>Populus sp.</i>	Public	OS	Rem	18	4200		F	Fair form and health. On the rocky cliff top edge	P	Stands within construction footprint		Remove
A1	89	Adjacent to 7&8 Sunset View Road (On Lagoon Dr)	Grouping of various trees	<i>Various</i>	Public	Road Res	Rem				F	On the edge of the banked area and retaining wall	P	Trees stand within the proposed bus lane and footpath		Remove

A1 A2 M3	Tree No	Address	Common Name	Botanical name	Ownership (Private/public)	Zone	Removal/Retain	Height (m)	Stem Girth (mm)	Crown Spread (m)	Condition G - good F - fair P - poor	Comments on Tree/s	P - protected NP - non-protected SCH - scheduled	Activity affecting Tree/s	Assessment/Discussion	Recommendations
A1	90	Adjacent to 8 Sunset View Road (On Lagoon Dr)	Peach	<i>Prunus sp.</i>	Public	Road Res	Rem				F	On the edge of the banked area and retaining wall	P	Trees stand within the proposed bus lane and footpath		Remove
A1	91	Adjacent to 8 Sunset View Road (On Lagoon Dr)	Mahoe	<i>Melicytus ramiflorus</i>	Public	Road Res	Rem				F		P	Trees stand within the proposed bus lane and footpath		Remove
A1	92	Adjacent to 22 Church St (On Lagoon Dr)	Box Elder	<i>Acer Negundo</i>	Public	Road Res	Rem				F	Some pruning required	P	Tree stands within shared pathway and footpath. In conflict with noise fencing		Remove
A1	93	Adjacent to 22 Church St (On Lagoon Dr)	Thuja	<i>Thuja sp.</i>	Public	Road Res	Rem				F		P	Tree stands within the proposed bus lane and footpath		Remove
A1	94	Adjacent to 32 Church St (On Lagoon Dr)	Thuja (Row)	<i>Thuja sp.</i>	Public	Road Res	Rem				F		P	Tree stands within the shared pathway		Remove
A1	95	Adj 32 Church Street (on Lagoon Drive)	Pohutukawa	<i>Metrosideros excelsa</i>	Public	Road Res	Rem				F		P	Tree stands directly in busway, shared cycleway & footpath		Remove
A1	96	Adj 32 Church Street (on Lagoon Drive)	Privet (4)	<i>Ligustrum oleaceae</i>	Public	Road Res	Rem				F		P	Tree stands directly in busway, Shared cycleway & footpath. Weed species		Remove
A1	97	Adj 40 Church Street (on Lagoon Drive)	Hawthorn	<i>Crataegus rosaceae</i>	Public	Road Res	Rem				F	Weed species	P	Tree stands directly in busway, shared cycleway & footpath		Remove
A1	98	Adj 40 Church Street (on Lagoon Drive)	Hawthorn	<i>Crataegus rosaceae</i>	Public	Road Res	Rem				F	Weed species	P	Tree stands directly in bus lane		Remove
A1	99	Adj 40 Church Street (on Lagoon Drive)	Lilly Pilly	<i>Acmena smithii</i>	Public	Road Res	Rem				F		P	Tree stands directly in bus lane. Weed species		Remove
A1	100	Adj 44 Church Street (on Lagoon Drive)	Group - Natives	<i>Various</i>	Public	Road Res	Rem				F	Cabbage trees, Karaka, Pohutukawa, Pittosporum, Coprosma	P	Tree stands directly in bus lane		Remove

A1 A2 M3	Tree No	Address	Common Name	Botanical name	Ownership (Private/public)	Zone	Removal/Retain	Height (m)	Stem Girth (mm)	Crown Spread (m)	Condition G - good F - fair P - poor	Comments on Tree/s	P - protected NP - non-protected SCH - scheduled	Activity affecting Tree/s	Assessment/Discussion	Recommendations
A1	101	Adj 44 Church Street	Cabbage tree	<i>Cordyline australis</i>	Public	Road Res	Rem				F		P	Tree stands directly in bus lane		Remove
A1	102	Adj 44 Church Street	Pohutukawa	<i>Metrosideros excelsa</i>	Public	Road Res	Rem				F		P	Tree stands directly in bus lane		Remove
A1	103	44 Church Street	Group (3+)	<i>Various</i>	Public	Road Res	Rem				F	Group of 2 x prunus, Eucalyptus, shrubs. Public or Private - TBC	P	Shared footpath / cycle lane either side of group		Remove
A1	104	44 Church Street	Cabbage tree	<i>Cordyline australis</i>	Public	Road Res	Ret				F	edge of works area	P	Out of works area		Refer Sec 11b Recommended Tree Protection Measures (Group measures & measures for all other retained trees)
A1	105	44 Church Street	Liquidambar	<i>Liquidambar styraciflua</i>	Public	Road Res	Ret				F	Check works area	P	Out of works area		
A1	106	47-49 Church Crescent	Monkey Apple	<i>Acmena smithii</i>	Public	Road Res	Ret				F	Growing on bank	NP	Noise wall close to trunk		Refer Sec 11.b Recommended Tree Protection Measures (Group measures & measures for all other retained trees)
A1	107	16 Bridge Street	Copper Beach	<i>Fagus sylvatica 'purpurea'</i>	Private	Private	Rem				F	Growing within the private property known as 16 Bridge Street	NP	Stands within new shared pathway		Remove
A1	108	16 Bridge Street	Group - (13)	<i>Various</i>	Public	Road Res	Rem				F	Mixed Hedge of Tarata, Hoheria and China Doll	P	Check if landscaper want to keep? In soft LS area		Remove
A1	109	Adj 16 Bridge Street (end cul-de-Sac)	Pohutukawa	<i>Metrosideros excelsa</i>	Public	Road Res	Rem				F		P	Tree stands directly in bus lane		Remove
A1	110	19A Bridge street	Plum tree	<i>Prunus domestica</i>	Public	Road Res	Rem				F		P	Existing grassed area to be cleared		Remove
A1	111	19A Bridge street	Flowering plum	<i>Prunus cerasifera nigra</i>	Public	Road Res	Rem				F		P	Stands in new cul-de-sac		Remove
M3	112	21 Bridge Street (on Lagoon Drive)	Group - (18)	<i>Various</i>	Public	Road Res	Rem				F	Mixed Group of Pittosporum and Karo planted as a hedge	P	Check if landscaper wants to keep? In soft LS area		Remove

A1 A2 M3	Tree No	Address	Common Name	Botanical name	Ownership (Private/public)	Zone	Removal/Retain	Height (m)	Stem Girth (mm)	Crown Spread (m)	Condition G - good F - fair P - poor	Comments on Tree/s	P - protected NP - non-protected SCH - scheduled	Activity affecting Tree/s	Assessment/Discussion	Recommendations
M3	113	21 Bridge Street (on Lagoon Drive)	Hoheria	<i>Hoheria populnea</i>	Public	Road Res	Rem				F		P	Tree stands directly in new road alignment	Tree cannot be designed around	Remove
M3	114	21 Bridge Street (on Lagoon Drive)	Gleditsia	<i>Gleditsia triacanthos</i>	Public	Road Res	Rem				F		P	Tree stands directly in new road alignment	Tree cannot be designed around.	Remove
M3	115	21 Bridge Street (on Lagoon Drive)	Hoheria	<i>Hoheria populnea</i>	Public	OS2	Rem				F		P	Tree stands directly in new Road alignment.	Tree cannot be designed around	Remove
M3	116	21 Bridge Street (on Lagoon Drive)	Karaka	<i>Corynocarpus laevigatus</i>	Private	Private	Rem				F	Stands on the bank edge	P	Tree stands directly in new road layout		Remove
M3	117	21 Bridge Street (on Lagoon Drive)	Pohutukawa	<i>Metrosideros excelsa</i>	Private	Private	Rem				F	Stands on the bank edge	P	Tree stands directly in new road layout		Remove
M3	118	Opp 2 Pakuranga Road	Willow Myrtle x 2	<i>Agonius flexuosa</i>	Public	Road Res	Rem				F	Fair health and form	P	Trees stand within the proposed bus lane and footpath		Remove
M3	119	Opp 2 Pakuranga Road	Mixed Species	<i>Various</i>	Public	Road Res	Rem				F		P	Melaleuca, 2 x Peppermint gums, Peach tree. Stand within proposed bus lane and footpath		Remove
A1	120	18R Pakuranga Road	Golden Elm	<i>Ulmus glabra</i> 'Lutescens'	Public	OS2	Rem	7.5	1640	7.5	F	Good health. Fair form. Exposed roots. Previous pruning works undertaken	P	Tree stands directly in new bus lane/intersection alignment		Remove in accordance with Biosecurity procedures - Dutch Elm Disease. Ref: Appendix 6
A1	121	18R Pakuranga Road	Golden Elm	<i>Ulmus glabra</i> 'Lutescens'	Public	OS2	Rem	7.5	1600	8	F	Good health. Fair form. Exposed roots. Previous pruning works undertaken	P	Tree stands directly in new bus lane/ intersection alignment		Remove in accordance with Biosecurity procedures - Dutch Elm Disease. Ref: Appendix 6

A1 A2 M3	Tree No	Address	Common Name	Botanical name	Ownership (Private/public)	Zone	Removal/Retain	Height (m)	Stem Girth (mm)	Crown Spread (m)	Condition G - good F - fair P - poor	Comments on Tree/s	P - protected NP - non-protected SCH - scheduled	Activity affecting Tree/s	Assessment/Discussion	Recommendations
A1	122	18R Pakuranga Road	Golden Elm	<i>Ulmus glabra</i> 'Lutescens'	Public	OS2	Rem	7	1800	7.25	F	Good health. Fair form. Exposed roots. Previous pruning works undertaken	P	Tree stands directly in new bus lane/ intersection alignment.		Remove in accordance with Biosecurity procedures - Dutch Elm Disease. Ref: Appendix 6
A1	123	18R Pakuranga Road	Golden Elm	<i>Ulmus glabra</i> 'Lutescens'	Public	OS2	Rem	7	1860	8.2	F	Good health. Fair form. Exposed roots. Previous pruning works undertaken	P	Tree stands directly in new bus lane/ intersection alignment		Remove in accordance with Biosecurity procedures - Dutch Elm Disease. Ref: Appendix 6
A1	124	18R Pakuranga Road	Pohutukawa	<i>Metrosideros excelsa</i>	Public	OS2	Rem	7.5	6000	7.5	F	Good health and form. Multi stemmed. Copious aerial roots.	P	Tree stands directly in new bus lane/ intersection alignment.		
A1	125	18R Pakuranga Road	Golden Elm	<i>Ulmus glabra</i> 'Lutescens'	Public	OS2	Rem	7	1800	6.5	F	Good health. Fair form. Exposed roots. Previous pruning works undertaken	P	Tree stands directly in new bus lane/ intersection alignment.		Remove in accordance with Biosecurity procedures - Dutch Elm Disease. Ref: Appendix 6
M3	126	18R Pakuranga Road	Golden Elm	<i>Ulmus glabra</i> 'Lutescens'	Public	OS2	Rem	7	1800	6.5	F	Good health. Fair form. Exposed roots. Previous pruning works undertaken	P	Tree stands directly in new bus lane/ intersection alignment		Remove in accordance with Biosecurity procedures - Dutch Elm Disease. Ref: Appendix 6
M3	127	Pakuranga Road (Road Reserve between 18R & 20R)	Golden Elm	<i>Ulmus glabra</i> 'Lutescens'	Public	OS2	Rem	8	1030	6	F	Good health. Fair form. Exposed roots. Previous pruning works undertaken	P	Tree stands directly in new bus lane/ intersection alignment.		Remove in accordance with Biosecurity procedures - Dutch Elm Disease. Ref: Appendix 6

A1 A2 M3	Tree No	Address	Common Name	Botanical name	Ownership (Private/public)	Zone	Removal/Retain	Height (m)	Stem Girth (mm)	Crown Spread (m)	Condition G - good F - fair P - poor	Comments on Tree/s	P - protected NP - non-protected SCH - scheduled	Activity affecting Tree/s	Assessment/Discussion	Recommendations
M3	128	Pakuranga Road (Road Reserve between 18R & 20R)	Golden Elm	<i>Ulmus glabra</i> 'Lutescens'	Public	OS2	Rem	8	1300	7.2	F	Good health. Fair form. Exposed roots. Previous pruning works undertaken	P	Tree stands directly in new bus lane/ intersection alignment		Remove in accordance with Biosecurity procedures - Dutch Elm Disease. Ref: Appendix 6
M3	129	Pakuranga Road (Road Reserve between 18R & 20R)	Golden Elm	<i>Ulmus glabra</i> 'Lutescens'	Public	OS2	Rem	8	1400	7.2	F	Good health. Fair form. Exposed roots. Previous pruning works undertaken	P	Tree stands directly in new bus lane/ intersection alignment		Remove in accordance with Biosecurity procedures - Dutch Elm Disease. Ref: Appendix 6
M3	130	Pakuranga Road (Road Reserve between 18R & 20R)	Golden Elm	<i>Ulmus glabra</i> 'Lutescens'	Public	OS2	Rem	8	1600	6.5	F	Good health. Fair form. Exposed roots. Previous pruning works undertaken	P	Tree stands directly in new bus lane/ intersection alignment		Remove in accordance with Biosecurity procedures - Dutch Elm Disease. Refer Appendix 6
M3	131	Pakuranga Road (Road Reserve between 18R & 20R)	Bottle Brush x 5	<i>Callistemon citrinus</i>	Public	Road Res	Rem	6			F	Good health. Fair form. Suppressed by adjacent Elm	P	Trees stand within the proposed bus lane and footpath		Remove
M3	132	Pakuranga Road (Road Reserve between 18R & 20R)	Golden Elm	<i>Ulmus glabra</i> 'Lutescens'	Public	OS2	Rem	8	1400	6	F	Good health. Fair form. Exposed roots. Previous pruning works undertaken	P	Tree stands directly in new bus lane/ intersection alignment.		Remove in accordance with Biosecurity procedures - Dutch Elm Disease. Ref: Appendix 6
M3	133	Pakuranga Road (Road Reserve between 18R & 20R)	Golden Elm	<i>Ulmus glabra</i> 'Lutescens'	Public	OS2	Rem	5.5	1200	5.2	F	Good health. Fair form. Exposed roots. Previous pruning works undertaken	P	Tree stands directly in new bus lane/ intersection alignment		Remove in accordance with Biosecurity procedures - Dutch Elm Disease. Ref: Appendix 6

A1 A2 M3	Tree No	Address	Common Name	Botanical name	Ownership (Private/public)	Zone	Removal/Retain	Height (m)	Stem Girth (mm)	Crown Spread (m)	Condition G - good F - fair P - poor	Comments on Tree/s	P - protected NP - non-protected SCH - scheduled	Activity affecting Tree/s	Assessment/Discussion	Recommendations
M3	134	Pakuranga Road (Road Reserve between 18R & 20R)	Golden Elm	<i>Ulmus glabra</i> 'Lutescens'	Public	OS2	Rem	6.5	1020	4	F	Good health. Fair form. Exposed roots. Previous pruning works undertaken	P	Tree stands directly in new bus lane/ intersection alignment		Remove in accordance with Biosecurity procedures - Dutch Elm Disease. Ref: Appendix 6
M3	135	1 Kerswill Place	Swamp Cypress	<i>Taxodium distichum</i>	Private	Res	Ret	13	3150	6.7	F	Good health and form. Powerlines to house rubbing branch. Ivy growing around base - remove. Previous major limb removal.	SCH	Works within the dripline proposed as this area is proposed as a temporary storage area. Tree to be retained	Excellent specimen	Refer Sec 11a Recommended Tree Protection Measures for Notable trees for Area 1 – Auckland side and Notable trees in Area M3
M3	136	1 Kerswill Place	Kauri	<i>Agathis australis</i>	Private	Res	Ret	15			F	Good health and form. At rear of private property within a densely planted area	NP	Works within the dripline proposed as this area is proposed as a temporary storage area	This tree should be retained and have no excavation carried out within 30m of its base that involves the soil being removed from the site	Any works within the dripline or soil movement must be undertaken in accordance with biosecurity protocols in relation to kauri dieback prevention
M3	137	20R Pakuranga Road Kerswill Corner (Reserve)	Cooks Pine	<i>Araucaria columnaris</i>	Public	OS	Rem	11	1050	6.5	F	Good health and form. Typical form and structure.	P	Tree stands directly in new bus lane/median alignment		Remove
M3	137a	20R Pakuranga Road Kerswill Corner (Reserve)	Golden Elm	<i>Ulmus glabra</i> 'Lutescens'	Public	Esp Res	Rem	6.5	750	4	F	Good health. Fair form. Exposed roots. Previous pruning works undertaken	P	Tree stands directly in new bus lane/ intersection alignment		Remove in accordance with Biosecurity procedures - Dutch Elm Disease. Ref: Appendix 6
M3	138	20R Pakuranga Road Kerswill Corner (Reserve)	Golden Elm	<i>Ulmus glabra</i> 'Lutescens'	Public	Esp Res	Rem	6.5	1200	7	F	Good health. Fair form. Exposed roots. Previous pruning works undertaken	P	Tree stands directly in new bus lane/ intersection alignment		Remove in accordance with Biosecurity procedures - Dutch Elm Disease. Ref:

A1 A2 M3	Tree No	Address	Common Name	Botanical name	Ownership (Private/public)	Zone	Removal/Retain	Height (m)	Stem Girth (mm)	Crown Spread (m)	Condition G - good F - fair P - poor	Comments on Tree/s	P - protected NP - non-protected SCH - scheduled	Activity affecting Tree/s	Assessment/Discussion	Recommendations
																Appendix 6
M3	139	20R Pakuranga Road Kerswill Corner Reserve)	Golden Elm	<i>Ulmus glabra</i> 'Lutescens'	Public	Esp Res	Rem	8	1200	7	F	Good health. Fair form. Exposed roots. Previous pruning works undertaken	P	Tree stands directly in new bus lane/ intersection alignment		Remove in accordance with Biosecurity procedures - Dutch Elm Disease. Ref: Appendix 6
M3	140	22 Pakuranga Road	Camellia	<i>Camellia</i> sp.	Public	Road Res	Rem	1.5			F	Good health and Typical form	NP	Tree stands within proposed bus lane and footpath		Remove
M3	141	27 Williams Avenue	Pohutukawa	<i>Metrosideros excelsa</i>	Public	Road Res	Rem	3	500	1.5	F	Good health and fair form	P	Tree stands directly in proposed bus lane		Remove
M3	142	20 Williams Ave	Pohutukawa	<i>Metrosideros excelsa</i>	Public	Road Res	Rem	2.5		1	F	Young specimen. Good health and form. Exposed roots	NP	Tree stands within 0.5m widened road alignment		Candidate for transplanting. Or refer Sec 11b Recommended Tree Protection Measures (Group measures & measures for all other retained trees)
M3	143	25 Williams Ave	Cape Lilac	<i>Melia azedarach</i>	Public	Road Res	Rem	4.5		3	F	Mature specimen. Fair health and form. Exposed roots. Previous major limb removal. Borer	NP	Tree stands directly in widened road alignment		Remove
M3	144	18 Williams Ave	Pohutukawa	<i>Metrosideros excelsa</i>	Public	Road Res	Ret	3.5		1	F	Young specimen. Good health and form	NP			Refer Sec 11b Recommended Tree Protection Measures (Group measures & measures for all other retained trees)

A1 A2 M3	Tree No	Address	Common Name	Botanical name	Ownership (Private/public)	Zone	Removal/Retain	Height (m)	Stem Girth (mm)	Crown Spread (m)	Condition G - good F - fair P - poor	Comments on Tree/s	P - protected NP - non-protected SCH - scheduled	Activity affecting Tree/s	Assessment/Discussion	Recommendations
M3	145	16 Williams Ave	Pohutukawa	<i>Metrosideros excelsa</i>	Public	Road Res	Ret	2.5		0.5	F	Young specimen. Good health and form	NP			Refer Sec 11b Recommended Tree Protection Measures (Group measures & measures for all other retained trees)
M3	146	Opp 14-16 Williams Ave	Cape Lilac	<i>Melia azedarach</i>	Public	OS	Rem	4		4	F	Mature specimen. Fair health and form. Exposed roots. Previous major limb failure. Previous major limb removal. Borer	NP	Tree stands directly in widened road alignment		Remove
M3	147	14 Williams Ave	Pohutukawa	<i>Metrosideros excelsa</i>	Public	Road Res	Ret	3.3		1	F	Young specimen. Good health and form	NP			Refer Sec 11b Recommended Tree Protection Measures (Group measures & measures for all other retained trees)
M3	147a	19 Williams Ave	Cape Lilac	<i>Melia azedarach</i>	Public	Road Res	Rem	4		3	F	Semi mature specimen. Fair health, poor form. Co-dominant stem. Included union. Major trunk decay	NP	Tree stands directly in widened road alignment		Remove
M3	147b	17 Williams Ave	Cape Lilac	<i>Melia azedarach</i>	Public	Road Res	Rem	5.5		3	F	Mature specimen. Poor health and form. Major deadwood. Trunk decay. Large exposed roots	NP	Tree stands directly in widened road alignment		Remove
M3	147c	14 Williams Ave	Cape Lilac	<i>Melia azedarach</i>	Public	Road Res	Rem	5		2	F	Mature specimen. Fair health, poor form. Major trunk decay	NP	as above		Remove
M3	148	14 Williams Ave	Cape Lilac	<i>Melia azedarach</i>	Public	Road Res	Rem	5		2	F	Mature specimen. Fair health, poor form. Major trunk decay	NP	as above		Remove
M3	149	12 Williams Ave	Liquidambar	<i>Liquidambar styraciflua</i>	Public	Road Res	Ret	6		4.5	F	Semi mature specimen. Good health and form	P			Refer Sec 11b Recommended Tree Protection Measures (Group measures & measures for all other retained trees)

A1 A2 M3	Tree No	Address	Common Name	Botanical name	Ownership (Private/public)	Zone	Removal/Retain	Height (m)	Stem Girth (mm)	Crown Spread (m)	Condition G - good F - fair P - poor	Comments on Tree/s	P - protected NP - non-protected SCH - scheduled	Activity affecting Tree/s	Assessment/Discussion	Recommendations
M3	150	15 Williams Ave	Cape Lilac	<i>Melia azedarach</i>	Public	Road Res	Rem	5.5		4	F	Mature specimen. Fair health, poor form. Included union. Previous major limb failure. Previous major limb removal	NP	Tree stands directly in widened road alignment		Remove
M3	151	15 Williams Ave	Cape Lilac	<i>Melia azedarach</i>	Public	Road Res	Rem	5.5		4	F	Mature specimen. Fair health, poor form. Included union. Previous major limb failure. Previous major limb removal	NP	Tree stands directly in widened road alignment		Remove
M3	152	15 Williams Ave	Cape Lilac	<i>Melia azedarach</i>	Public	Road Res	Rem	5.5		4	F	Mature specimen. Fair health, poor form. Included union. Previous major limb failure. Previous major limb removal	NP	Tree stands directly in widened road alignment		Remove
M3	153	8 Williams Ave	Pohutukawa	<i>Metrosideros excelsa</i>	Public	Road Res	Ret	3		4	F	Young specimen. Fair health and form	NP			Refer Sec 11b Recommended Tree Protection Measures (Group measures & measures for all other retained trees)
M3	154	3 Williams Ave	Cape Lilac	<i>Melia azedarach</i>	Public	Road Res	Rem	5.5		4	F	Mature specimen. Fair health, poor form. Included union. Previous major limb failure. Previous major limb removal	NP	Tree stands directly in widened road alignment		Remove
M3	155	7 Williams Ave	Cape Lilac	<i>Melia azedarach</i>	Public	Road Res	Rem	5.5		4	F	Mature specimen. Fair health, poor form. Included union. Previous major limb failure. Previous major limb removal	NP	Tree stands directly in widened road alignment		Remove
M3	156	5 Williams Ave	Cape Lilac	<i>Melia azedarach</i>	Public	Road Res	Rem	5.5		4	F	Mature specimen. Fair health, poor form. Included union. Previous major limb failure. Previous major limb removal	NP	Tree stands directly in widened road alignment		Remove

A1 A2 M3	Tree No	Address	Common Name	Botanical name	Ownership (Private/public)	Zone	Removal/Retain	Height (m)	Stem Girth (mm)	Crown Spread (m)	Condition G - good F - fair P - poor	Comments on Tree/s	P - protected NP - non-protected SCH - scheduled	Activity affecting Tree/s	Assessment/Discussion	Recommendations
M3	157	2B Williams Ave	Jacaranda	<i>Jacaranda mimosaeifolia</i>	Public	Road Res	Ret	4.5		5	F	Young specimen. Good health and form	NP			Refer Sec 11b Recommended Tree Protection Measures (Group measures & measures for all other retained trees)
M3	158	8 Williams Ave	Pohutukawa	<i>Metrosideros excelsa</i>	Public	Road Res	Ret	4		1.5	F	Young specimen. Fair health and form	NP			Refer Sec 11b Recommended Tree Protection Measures (Group measures & measures for all other retained trees)
M3	159	8 Williams Ave	Pohutukawa	<i>Metrosideros excelsa</i>	Public	Road Res	Ret	4		1	F	Young specimen. Fair health and form	NP			Refer Sec 11b Recommended Tree Protection Measures (Group measures & measures for all other retained trees)
M3	156	5 Williams Ave	Cape Lilac	<i>Melia azedarach</i>	Public	Road Res	Rem	6		5.5	F	Mature specimen. Fair health, poor form. Included union. Previous major limb failure. Previous major limb removal	NP	Tree stands directly in widened road alignment		Remove
M3	161	70 Pakuranga Road (on Tamaki Bay Drive)	Yellow Gum	<i>Eucalyptus leucoxylon</i>	Public	Road Res	Rem	7.5	1450	5.4	F	Fair health and form	NP	Tree stands within new cul-de-sac alignment.		Remove
M3	162	1R Ti Rakau Drive	Camphor Laurel	<i>Cinnamomum camphora</i>	Public	OS	Ret	8	3540	7.7	F	Fair form & health. Previous pruning works	P	No change to Road or footpath alignment - just resealing. Dripline extends over road.		Refer Sec 11b Recommended Tree Protection Measures (Group measures & measures for all other retained trees)

A1 A2 M3	Tree No	Address	Common Name	Botanical name	Ownership (Private/public)	Zone	Removal/Retain	Height (m)	Stem Girth (mm)	Crown Spread (m)	Condition G - good F - fair P - poor	Comments on Tree/s	P - protected NP - non-protected SCH - scheduled	Activity affecting Tree/s	Assessment/Discussion	Recommendations
M3	163	1R Ti Rakau Drive	Camphor Laurel	<i>Cinnamomum camphora</i>	Public	OS	Ret	8	1870	7.7	F	Fair form & health. Previous pruning works	P	No change to road or footpath alignment - just resealing. Dripline extends over road		Refer Sec 11b Recommended Tree Protection Measures (Group measures & measures for all other retained trees)
M3	164	1R Ti Rakau Drive	Pin Oak	<i>Quercus palustris</i>	Public	OS	Ret	9.5	2360	8.5	F	Fair health & form. Minor deadwood	P	No change to Road or footpath alignment - just resealing. Dripline extends over road		Refer Sec 11b Recommended Tree Protection Measures (Group measures & measures for all other retained trees)
M3	165	1R Ti Rakau Drive	Camphor Laurel	<i>Cinnamomum camphora</i>	Public	OS	Ret	7	3400	4.6	F	Fair form & health. Previous pruning works. Minor deadwood	P	No change to Road or footpath alignment - just resealing. Dripline extends over road		Refer Sec 11b Recommended Tree Protection Measures (Group measures & measures for all other retained trees)
M3	166	1R Ti Rakau Drive	Weeping Willow	<i>Salix babylonica</i>	Public	OS	Ret	8	3440	7	F	Fair form & health. A number of previous wounding and cavities visible within the main stem	SCH	No change to road or path		Refer Sec 11b Recommended Tree Protection Measures (Group measures & measures for all other retained trees)
M3	167	1R Ti Rakau Drive	Weeping Willow	<i>Salix babylonica</i>	Public	OS	Ret	8	3440	7	F	Fair form & health. A number of previous wounding and cavities visible within the main stem	SCH	No change to road or path		Refer Sec 11b Recommended Tree Protection Measures (Group measures & measures for all other retained trees)
M3	168	1R Ti Rakau Drive	Weeping Willow	<i>Salix babylonica</i>	Public	OS	Ret	4	3440	7	F	Composed of stump only - all scaffold system collapsed and/or removed	P	No change to road or path		Refer Sec 11b Recommended Tree Protection Measures (Group measures & measures for all other retained trees)

A1 A2 M3	Tree No	Address	Common Name	Botanical name	Ownership (Private/public)	Zone	Removal/Retain	Height (m)	Stem Girth (mm)	Crown Spread (m)	Condition G - good F - fair P - poor	Comments on Tree/s	P - protected NP - non-protected SCH - scheduled	Activity affecting Tree/s	Assessment/Discussion	Recommendations
M3	169	1R Ti Rakau Drive	Weeping Willow	<i>Salix babylonica</i>	Public	OS	Ret	8	3440	7	F	Fair form & health. A number of previous wounding and cavities visible within the main stem	P	No change to road or path		Refer Sec 11b Recommended Tree Protection Measures (Group measures & measures for all other retained trees)
M3	170	1R Ti Rakau Drive	Claret Ash	<i>Fraxinus raywoodii</i>	Public	OS	Ret	8.5	1800	7.1	F	Fair health & form. Exposed roots. Major deadwood. Previous major limb removal	NP	No change to road or footpath alignment - just resealing. Dripline extends over road		Refer Sec 11.b Recommended Tree Protection Measures (Group measures & measures for all other retained trees)
M3	171	15 Latham Avenue	Titoki	<i>Alectryon excelsus</i>	Public	Road Res	Rem	2.5			F	Small scrappy tree. Poor Condition	NP	Stands within the new cul-de-sac alignment		Remove
M3	172	44 Latham Avenue	Titoki	<i>Alectryon excelsus</i>	Public	Road Res	Rem	3.5			F	Small scrappy tree. Poor condition	NP	Stands within the new cul-de-sac alignment		Remove
M3	173	19 Latham Avenue	Box Elder	<i>Acer negundo</i>	Public	Road Res	Rem	5			F	Young tree. Fair form and structure	NP	Stands within the new cul-de-sac alignment		Remove
M3	174	46 Latham Avenue	Titoki	<i>Alectryon excelsus</i>	Public	Road Res	Rem	4			F	Semi-mature specimen. Fair form & health	P	Stands within the new cul-de-sac alignment		Remove
M3	175	25 Latham Ave	Totara	<i>Podocarpus totara</i>	Public	Road Res	Rem	6	2300	2.6	F	Resident planted. Good condition & form	P	Stands within the new cul-de-sac alignment		Remove
M3	176	25 Latham Ave	Pohutukawa	<i>Metrosideros excelsa</i>	Public	Road Res	Rem	6.5	1500	4	F	Semi-mature specimen. Fair form & health	P	Stands within the new cul-de-sac alignment		Remove
M3	177	25 Latham Ave	Pohutukawa/ Totara	<i>Metrosideros excelsa</i> / <i>Podocarpus totara</i>	Private	Private	Rem	5			F	Semi-mature specimens within private property that grow very close together	NP	Require removal for new roading layout		Remove
M3	178	41-43 Pakuranga Road	Bottle Brush	<i>Callistemon citrinus</i>	Public	Road Res	Ret	2.5			F	Small scrappy tree. Poor condition	NP	Planted by resident, no changes to layout		
M3	179	33 Pakuranga Road (on Millen Ave)	Willow myrtle	<i>Agonis flexuosa</i>	Public	Road Res	Rem	6.5	1800	4.2	F	Fair health and form	P	Road widening works required		Remove

A1 A2 M3	Tree No	Address	Common Name	Botanical name	Ownership (Private/public)	Zone	Removal/Retain	Height (m)	Stem Girth (mm)	Crown Spread (m)	Condition G - good F - fair P - poor	Comments on Tree/s	P - protected NP - non-protected SCH - scheduled	Activity affecting Tree/s	Assessment/Discussion	Recommendations
M3	178a	13a-15 Pakuranga Road	Red Flowering Gum	<i>Corymbia ficifolia</i>	Public	Road Res	Ret	6.5	3500	4.2	F	Fair form and health. Previous limb removal and poor pruning	P	Road widening works required		Refer Sec 11b Recommended Tree Protection Measures (Group measures & measures for all other retained trees)
M3	179a	13a Pakuranga Road	Eucalyptus	<i>Eucalyptus sp.</i>	Public	Road Res	Ret	11	1650	8.3	F	Good health. Fair form.	NP	Dripline extends over road		Refer Sec 11b Recommended Tree Protection Measures (Group measures & measures for all other retained trees)
M3	180	11 Pakuranga Road	Pohutukawa	<i>Metrosideros excelsa</i>	Public	Road Res	Ret	6	1070	3.3	F	Good health. Fair form. Included union	P	Works within the dripline	Tree protection measures proposed	Refer Sec 11.b Recommended Tree Protection Measures (Group measures & measures for all other retained trees)
M3	181	11 Pakuranga Road	Pohutukawa	<i>Metrosideros excelsa</i>	Public	Road Res	Ret	6	700	2.6	F	Good health & form	P	Dripline extends over road. Works within the dripline	Tree protection measures proposed	Refer Sec 11b Recommended Tree Protection Measures (Group measures & measures for all other retained trees)
M3	182	11 Pakuranga Road	Pohutukawa	<i>Metrosideros excelsa</i>	Public	Road Res	Ret	6	700	2.6	F	Good health & form	P	Works within the dripline	Tree protection measures proposed	Refer Sec 11b Recommended Tree Protection Measures (Group measures & measures for all other retained trees)

A1 A2 M3	Tree No	Address	Common Name	Botanical name	Ownership (Private/public)	Zone	Removal/Retain	Height (m)	Stem Girth (mm)	Crown Spread (m)	Condition G - good F - fair P - poor	Comments on Tree/s	P - protected NP - non-protected SCH - scheduled	Activity affecting Tree/s	Assessment/Discussion	Recommendations
M3	183	7 Pakuranga Road	Robinia	<i>Robinia psuedoacacia</i>	Public	Road Res	Ret	8			F	Good health & form. Self-sown or resident planted specimens against fence.	NP	Works within the dripline	Tree protection measures proposed	Refer Sec 11b Recommended Tree Protection Measures (Group measures & measures for all other retained trees)
M3	184	5 Pakuranga Road	Mixed Species	<i>Various</i>	Public	Road Res	Ret	4			F	Mixed planting of trees by resident. Includes Tarata, Flowering Cherry, Atlantic Cypress, China Doll, Photinia.	NP	Works within the dripline proposed. New roading layout	Tree protection measures proposed	Refer Sec 11b Recommended Tree Protection Measures (Group measures & measures for all other retained trees)
M3	185	3-5 Pakuranga Road	London Plane	<i>Platanus x acerifolia</i>	Public	Road Res	Rem	8	2420	9.4	F	Specimen street tree. Good form & structure	P	Removal proposed under landscape plans. However, further investigations as to its possible retention are warranted	Tree protection measures proposed (to be included if retained)	Refer Sec 11b Recommended Tree Protection Measures (Group measures & measures for all other retained trees)
M3	186	3 Pakuranga Road	Loquat tree	<i>Eriobotrya japonica</i>	Public	Road Res	Rem	5.5	1300	2.4	F	Poor specimen. Weed species	NP	Stands close to 185		Remove
M3	187	Opp 1 Pakuranga Road	Row of Monkey Apple	<i>Acmena smithii</i>	Public	Road Res	Rem	11		3.9	F	Line of trees against boundary	NP	Removal proposed to facilitate new roadway works and access to marina		Remove
M3	188	Opp 1 Pakuranga Road (near kerb)	Oleander	<i>Nerium oleander</i>	Public	Road Res	Rem	4		4	F	Shrub growing at the road edge	NP	Removal proposed. Re-alignment works within this area		Remove
M3	189	Opp 1 Pakuranga Road (near kerb)	Pohutukawa	<i>Metrosideros excelsa</i>	Public	Road Res	Ret	8	3000	6.5	F	Semi-mature specimen. Good health and form	P	Works within the dripline proposed to re-align road	Tree protection measures proposed	Refer Sec 11b Recommended Tree Protection Measures (Group measures & measures for all other retained trees)

A1 A2 M3	Tree No	Address	Common Name	Botanical name	Ownership (Private/public)	Zone	Removal/Retain	Height (m)	Stem Girth (mm)	Crown Spread (m)	Condition G - good F - fair P - poor	Comments on Tree/s	P - protected NP - non-protected SCH - scheduled	Activity affecting Tree/s	Assessment/Discussion	Recommendations
M3	190	Lagoon Drive (Road Reserve - water side of bridge approach)	Pohutukawa	<i>Metrosideros excelsa</i>	Public	OS2	Ret				F	Large healthy specimen	P	Extent of works not confirmed	Retain	Refer Sec 11b Recommended Tree Protection Measures (Group measures & measures for all other retained trees)
M3	191	Lagoon Drive (Road Reserve - water side of bridge approach)	Coral Tree (3)	<i>Erythrina x Sykesii</i>	Public	OS2	Ret	8			F	Cliff edge	P	Extent of works not confirmed	Retain	Refer Sec 11b Recommended Tree Protection Measures (Group measures & measures for all other retained trees)
M3	192	Lagoon Drive (Road Reserve - water side of bridge approach)	Pohutukawa (6)	<i>Metrosideros excelsa</i>	Public	OS2	Ret	8			F	Cliff edge	P	Extent of works not confirmed.	Retain	Refer Sec 11b Recommended Tree Protection Measures (Group measures & measures for all other retained trees)
M3	193	Lagoon Drive (Road Reserve - water side of bridge approach)	Kermadec Pohutukawa	<i>Metrosideros kermadecensis</i>	Public	OS2	Ret	8			F	Stem damage. Work reqd.	P	Dripline over road	The extent of any root development under the existing surface is unknown. The lack of heaving gives hope that such root development may be limited. However, roots that are encountered when uplifting occurs will need to be assessed by the works arborist at that time	Refer Sec 11b Recommended Tree Protection Measures (Group measures & measures for all other retained trees)
M3	194	Lagoon Drive (Road Reserve - water side of bridge approach)	Puriri	<i>Vitex lucens</i>	Public	OS2	Ret	8			F	Cliff edge	P	Works estimated to be outside dripline, however protective fencing should be utilised	Retain	Refer Sec 11b Recommended Tree Protection Measures (Group measures & measures for all other retained trees)

A1 A2 M3	Tree No	Address	Common Name	Botanical name	Ownership (Private/public)	Zone	Removal/Retain	Height (m)	Stem Girth (mm)	Crown Spread (m)	Condition G - good F - fair P - poor	Comments on Tree/s	P - protected NP - non-protected SCH - scheduled	Activity affecting Tree/s	Assessment/Discussion	Recommendations
M3	195	Lagoon Drive (Road Reserve - water side of bridge approach)	Pohutukawa	<i>Metrosideros excelsa</i>	Public	OS2	Ret	9			F	Cliff edge	P	Dripline over road	The extent of any root development under the existing surface is unknown. The lack of heaving gives hope that such root development may be limited. However, roots that are encountered when uplifting occurs will need to be assessed by the works arborist at that time.	Refer Sec 11b Recommended Tree Protection Measures (Group measures & measures for all other retained trees)
M3	196	Lagoon Drive (Road Reserve - water side of bridge approach)	Pohutukawa	<i>Metrosideros excelsa</i>	Public	OS2	Ret	10			F		P	Works estimated to be outside dripline, however protective fencing should be utilised	Retain	Refer Sec 11b Recommended Tree Protection Measures (Group measures & measures for all other retained trees)
M3	197	Lagoon Drive (Road Reserve - water side of bridge approach)	Pohutukawa	<i>Metrosideros excelsa</i>	Public	OS2	Ret	10			F		P	Works estimated to be outside dripline, however protective fencing should be utilised	Retain	Refer Sec 11b Recommended Tree Protection Measures (Group measures & measures for all other retained trees)
A1	198	Lagoon Drive (Road Reserve - water side of bridge approach)	Totara	<i>Podocarpus totara</i>	Public	OS2	Ret	10			F		P	Works estimated to be outside dripline, however protective fencing should be utilised	Retain	Refer Sec 11b Recommended Tree Protection Measures (Group measures & measures for all other retained trees)
A1	199	Lagoon Drive (Road Reserve - water side of bridge approach)	Pohutukawa	<i>Metrosideros excelsa</i>	Public	OS2	Ret	7			F		P	Works estimated to be outside dripline, however protective fencing should be utilised	Retain	Refer Sec 11b Recommended Tree Protection Measures (Group measures & measures for all other retained trees)
A1	200	Lagoon Drive (Road Reserve)	Group (40) - Natives	<i>Various</i>	Public	OS2	Ret	>6			F	Group - predominantly Pohutukawa	P	Works estimated to be outside dripline, however protective fencing should be utilised	Retain	Refer Sec 11b Recommended Tree Protection Measures (Group measures & measures for all other retained trees)

A1 A2 M3	Tree No	Address	Common Name	Botanical name	Ownership (Private/public)	Zone	Removal/Retain	Height (m)	Stem Girth (mm)	Crown Spread (m)	Condition G - good F - fair P - poor	Comments on Tree/s	P - protected NP - non-protected SCH - scheduled	Activity affecting Tree/s	Assessment/Discussion	Recommendations
A1	201	Opp 54-58 Lagoon drive	Group (21) - Natives	Various	Public	OS2	Ret	>6			F	Group - Pohutukawa, Karo, Pittosporum, Cabbage tree	P	Driplines extend over Roadway. Existing seal surfacing would be removed and replaced. Existing kerbing to remain	The extent of any root development under the existing surface is unknown. The lack of heaving gives hope that such root development may be limited. However, roots that are encountered when uplifting occurs will need to be assessed by the works arborist at that time	Refer Sec 11b Recommended Tree Protection Measures (Group measures & measures for all other retained trees)
A1	202	29 Lagoon Drive	Silver Birch	<i>Betula pendula</i>	Public	Road Res	Ret	6.5	1270	4	F	Mature specimen. Co-dominant stem. Exposed roots. Included union. Previous major limb removal. Minor deadwood	P	Dripline extends over Roadway. Existing seal surfacing would be removed and replaced. Existing kerbing to remain	The extent of any root development under the existing surface is unknown. The lack of heaving gives hope that such root development may be limited. However, roots that are encountered when uplifting occurs will need to be assessed by the works arborist at that time	Refer Sec 11b Recommended Tree Protection Measures (Group measures & measures for all other retained trees)
A1	203	29 Lagoon Drive	Silver Birch	<i>Betula pendula</i>	Public	Road Res	Ret	6	900	4	F	Mature specimen. Co-dominant stem. Fair health, poor form. Basal growth, bark wound and decay. Cavities	P	as above	as above	Refer Sec 11b Recommended Tree Protection Measures (Group measures & measures for all other retained trees)
A1	204	29 Lagoon Drive	Silver Birch	<i>Betula pendula</i>	Public	Road Res	Ret	6.5	700	4	F	Mature specimen. Fair health, fair form. Previous limb failure. Basal growth	P	as above	as above	Refer Sec 11b Recommended Tree Protection Measures (Group measures & measures for all other retained trees)
A1	205	29 Lagoon Drive	Silver Birch	<i>Betula pendula</i>	Public	Road Res	Ret	7	1250	4	F	Mature specimen. Good health, fair form. Standing in garden. Basal growth	P	as above	as above	Refer Sec 11b Recommended Tree Protection Measures (Group measures & measures for all other retained trees)
A1	206	29 Lagoon Drive	Silver Birch	<i>Betula pendula</i>	Public	Road Res	Ret	7	810	4	F	Mature specimen. Good health, fair form. Previous limb removal. Cavities. Standing in garden	P	as above	as above	Refer Sec 11b Recommended Tree Protection Measures (Group measures & measures for all other retained trees)

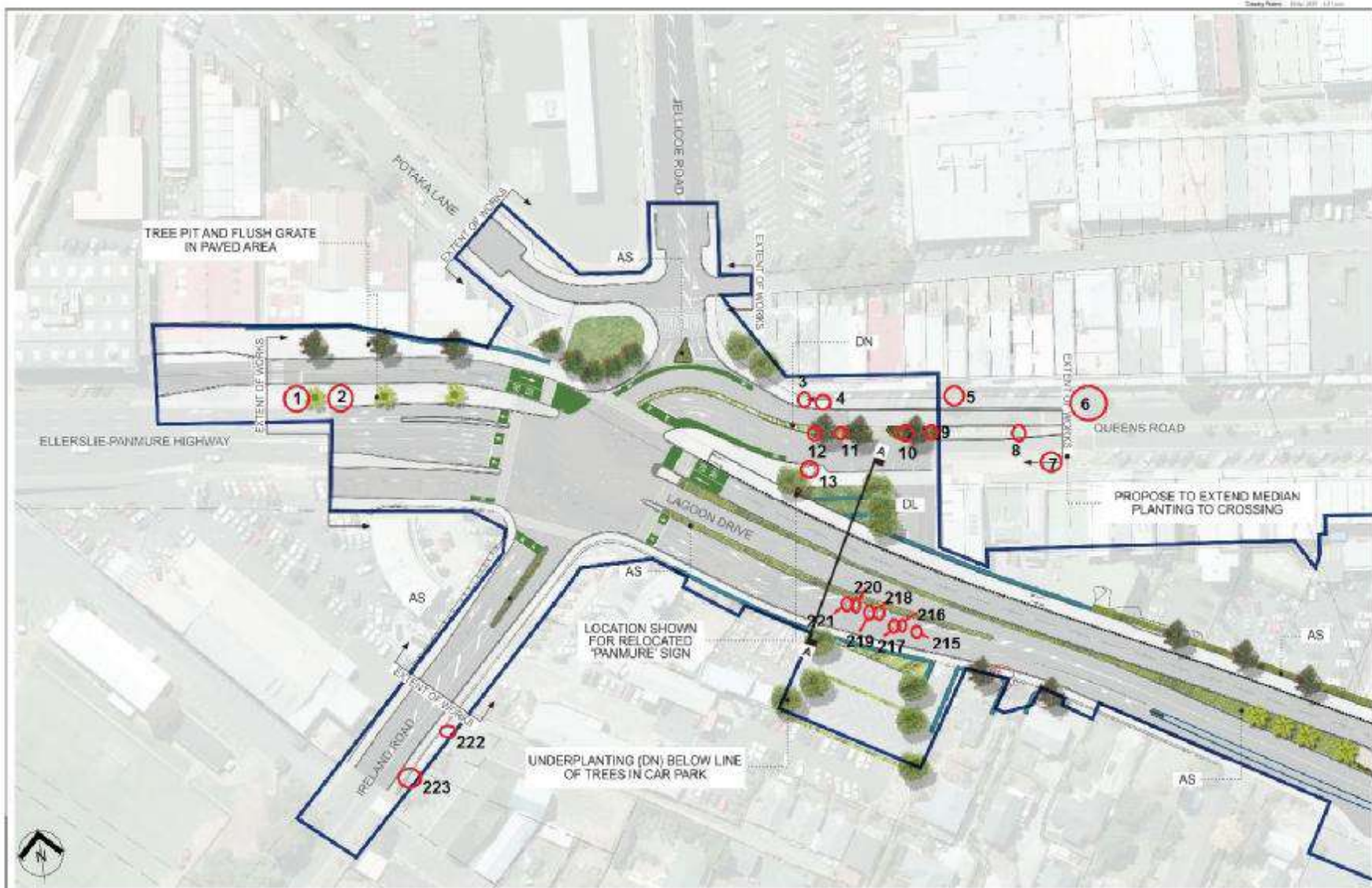
A1 A2 M3	Tree No	Address	Common Name	Botanical name	Ownership (Private/public)	Zone	Removal/Retain	Height (m)	Stem Girth (mm)	Crown Spread (m)	Condition G - good F - fair P - poor	Comments on Tree/s	P - protected NP - non-protected SCH - scheduled	Activity affecting Tree/s	Assessment/Discussion	Recommendations
A1	207	29 Lagoon Drive	Eucalyptus	<i>Eucalyptus sp.</i>	Public	OS2	Ret	9	3000	8		Mature specimen. Good health and form. Previous major limb removal. Dieback at tips	P	as above	as above	Refer Sec 11b Recommended Tree Protection Measures (Group measures & measures for all other retained trees)
A1	208	29 Lagoon Drive	Pohutukawa	<i>Metrosideros excelsa</i>	Public	OS3	Ret	9	3500	9.5	G	Mature multi-stemmed specimen. Good health and form. Root disturbance to pavement. Major deadwood. Epicormic growth. Invasive ivy on trunk.	P	Dripline extends over new footpath. Roots evident under footpath.	as above	Refer Sec 11b Recommended Tree Protection Measures (Group measures & measures for all other retained trees)
A1	209	29 Lagoon Drive	Liquidambar	<i>Liquidambar styraciflua</i>	Public	OS3	Ret	9	1500	10	G	Mature specimen. Good health, fair form. Previous major limb removal. Poorly pruned. Previous failure. Crossing and rubbing branches	P	Dripline extends over new footpath. Roots evident under footpath.	as above	Refer Sec 11b Recommended Tree Protection Measures (Group measures & measures for all other retained trees)
A1	210	29 Lagoon Drive	Liquidambar	<i>Liquidambar styraciflua</i>	Public	OS3	Ret	9.5	2300	9	G	Mature specimen. Good health and form. Previous major limb removal. Previous failure. (Tidy up broken limb over road) Touching street lighting cables. Soil levels raised. Minor deadwood. Poorly pruned	P	No works within dripline		
A1	211	29 Lagoon Drive	False Cypress	<i>Chamaecyparis lawsoniana</i>	Public	OS3	Ret	8	3200	6.5	G	Mature specimen. Included union. Previous major limb removal. Crossing and rubbing branches. Soil raised around trunk. Bark wounds	P	No works within dripline		
A1	212	29 Lagoon Drive	Totara	<i>Podocarpus totara</i>	Public	OS3	Ret	7	1520	4	G	Mature specimen. Good health and form. Exposed roots. Previous limb removal. Crossing and rubbing branches	P	No works within dripline		

A1 A2 M3	Tree No	Address	Common Name	Botanical name	Ownership (Private/public)	Zone	Removal/Retain	Height (m)	Stem Girth (mm)	Crown Spread (m)	Condition G - good F - fair P - poor	Comments on Tree/s	P - protected NP - non-protected SCH - scheduled	Activity affecting Tree/s	Assessment/Discussion	Recommendations
A1	213	29 Lagoon Drive	Totara	<i>Podocarpus totara</i>	Public	OS3	Ret	7	1380	3	G	Mature specimen. Good health, fair form. Previous major limb removal. Included union. Exposed roots. Historical association - Plaque - Planted in 1975 by Mayor of Mt Wellington, Mr H.J Bean as tribute to Rt Hon Norman Kirk	P	No works within dripline		
A1	214	29 Lagoon Drive	Totara	<i>Podocarpus totara</i>	Public	OS3	Ret	7	1730	3	G	Mature specimen. Good health, fair form. Included union. Exposed roots. Crossing and rubbing stems. Historical association - Plaque - Planted in 1975 by Mayor of Mt Wellington, Mr H.J Bean as tribute to Rt Hon Norman Kirk	P	No works within dripline		
A1	215	11-13 Lagoon Drive	Mexican Pine	<i>Pinus patula</i>	Private	Com	Rem	12		5	F	Semi-mature specimen. Ivy growing up main stem. Fair form and structure	NP	Removal proposed for roading layout		Remove
A1	216	11-13 Lagoon Drive	Mexican Pine	<i>Pinus patula</i>	Private	Com	Rem	8		4	F	Semi-mature specimen. Ivy growing up main stem. Fair form and structure	NP	Removal proposed for roading layout		Remove
A1	217	11-13 Lagoon Drive	Pohutukawa	<i>Metrosideros excelsa</i>	Private	Com	Rem	4		3	G	Young specimen. Good form and structure	NP	Removal proposed for roading layout		Remove
A1	218	11-13 Lagoon Drive	Mexican Pine	<i>Pinus patula</i>	Private	Com	Rem	7		4	F	Semi-mature specimen. Ivy growing up main stem. Fair form and structure	NP	Removal proposed for roading layout		Remove
A1	219	11-13 Lagoon Drive	Mexican Pine	<i>Pinus patula</i>	Private	Com	Rem	7.5		2.5	F	Semi-mature specimen. Ivy growing up main stem. Fair form and structure	NP	Removal proposed for roading layout		Remove

A1 A2 M3	Tree No	Address	Common Name	Botanical name	Ownership (Private/public)	Zone	Removal/Retain	Height (m)	Stem Girth (mm)	Crown Spread (m)	Condition G - good F - fair P - poor	Comments on Tree/s	P - protected NP - non-protected SCH - scheduled	Activity affecting Tree/s	Assessment/Discussion	Recommendations
A1	220	11-13 Lagoon Drive	Pohutukawa	<i>Metrosideros excelsa</i>	Private	Com	Rem	6.5		3	G	Semi-mature specimen. Ivy growing up main stem. Good form & structure	NP	Removal proposed for roading layout		Remove
A1	221	11-13 Lagoon Drive	Pohutukawa	<i>Metrosideros excelsa</i>	Private	Com	Rem	6.5		3.5	G	Semi-mature specimen. Ivy growing up main stem. Fair form & structure	NP	Removal proposed for roading layout		Remove
A1	222	20 Ireland Road	Flowering cherry	<i>Prunus serrulata</i>	Public	Road Res	Rem	1.5	20	0.5	P	Tiny specimen. Poor condition	P	Stands directly in new footpath		Remove
A1	223	20 Ireland Road	Flowering cherry	<i>Prunus serrulata</i>	Public	Road Res	Rem	6.5	1400	3	F	Mature specimen. Fair form. Good health. Crossing and rubbing stems. Previous major limb removal	P	Stands directly in new footpath		Remove

Appendix 2 – Tree Location Plans

(the 228 items (trees and groups of trees) are encircled in red on these plans. The accompanying tree numbers are in black text)



TREE LOCATION PLAN - SHEET 1

PRELIMINARY
NOT FOR CONSTRUCTION

DATE	10/06/2020
BY	10/06/2020
FOR	10/06/2020
NO.	10/06/2020



Project Name	AMETI PHASE 2a
Project No.	331125-AR-4101
Project Manager	
Project Engineer	
Project Designer	
Project Checker	
Project Approver	



AMETI PHASE 2a
LAGOON DRIVE URBAN BUSWAY &
PANMURE BRIDGE

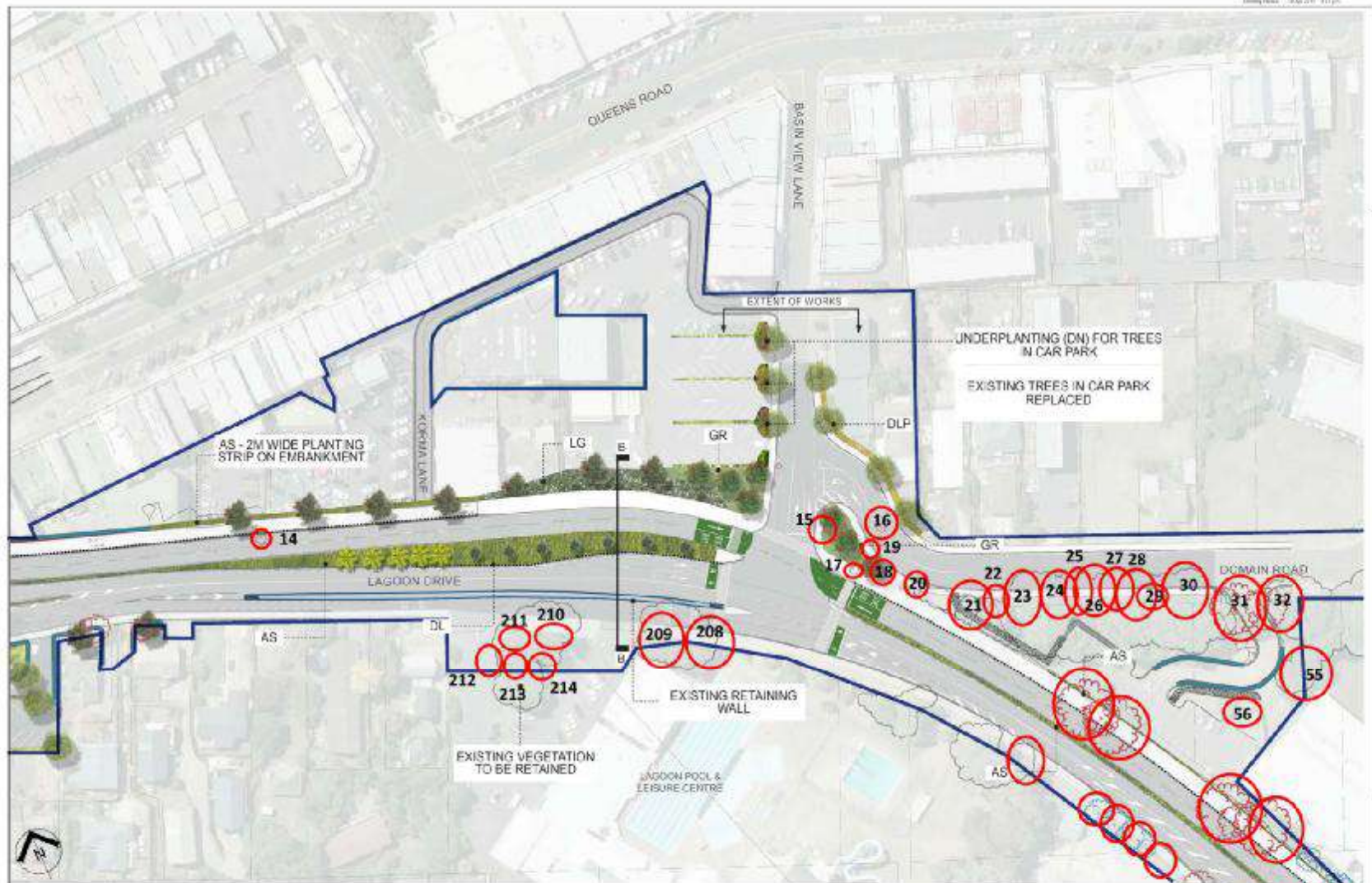
LANDSCAPE PLAN
SHEET 1 OF 10

Project Name	LANDSCAPE
Project No.	331125-AR-4101
Project Manager	
Project Engineer	
Project Designer	
Project Checker	
Project Approver	

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331125-AR-4101



TREE LOCATION PLAN – SHEET 2

PRELIMINARY
NOT FOR CONSTRUCTION

1	TREE NO.	21	22	23	24	25	26	27	28	29	30	31	32	55	56	208	209	210	211	212	213	214	
2	TREE NO.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22
3	TREE NO.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22
4	TREE NO.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22

Beca



AMETI PHASE 2a
LAGOON DRIVE URBAN BUSWAY &
PANMURE BRIDGE

LANDSCAPE PLAN
SHEET 2 OF 10

LANDSCAPE
3311129-AR-1102

C



TREE LOCATION PLAN - SHEET 3

PRELIMINARY
NOT FOR CONSTRUCTION

DATE	10/04/2023
BY	10/04/2023
CHECKED BY	10/04/2023
APPROVED BY	10/04/2023



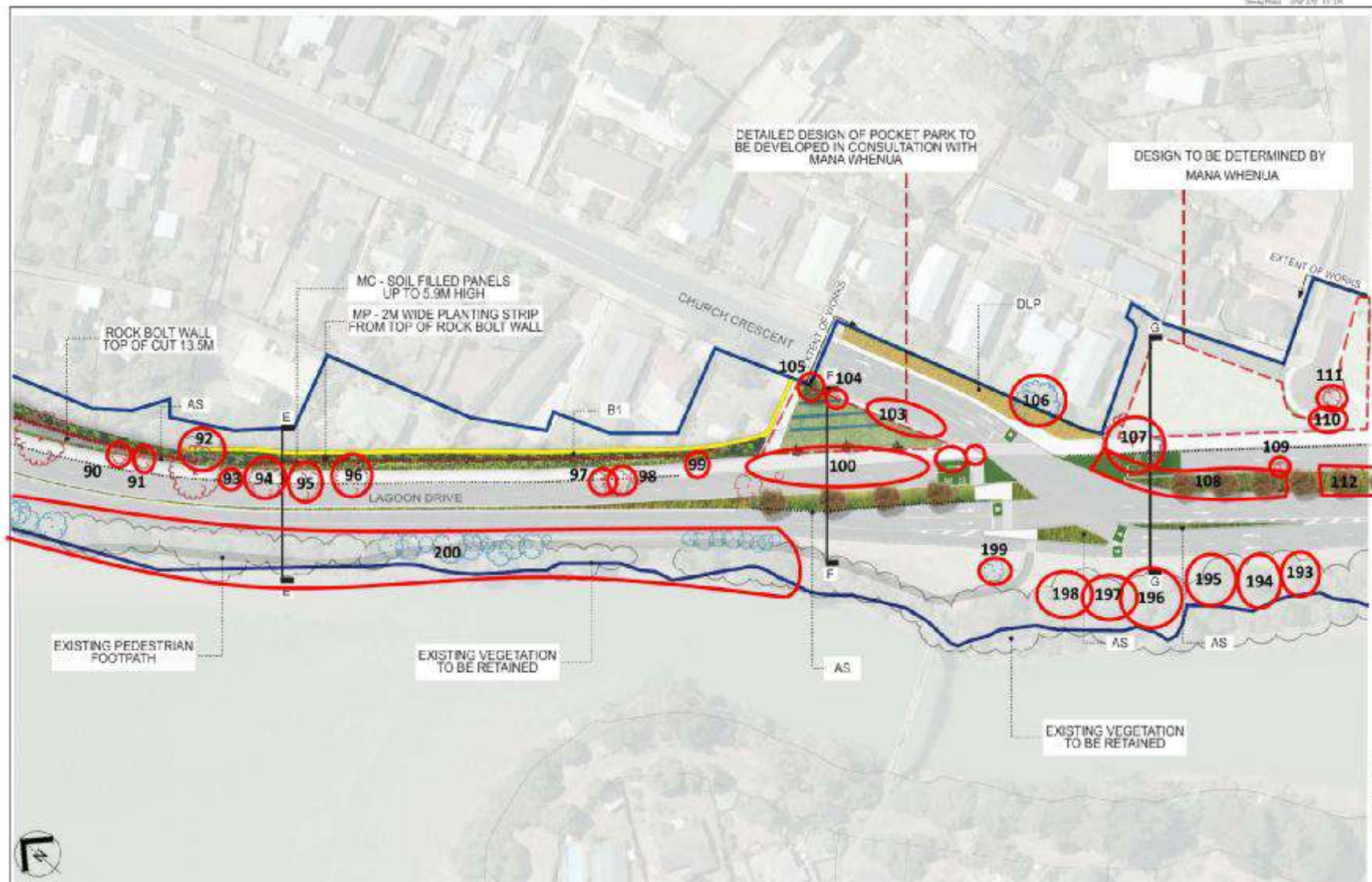
PROJECT	AMETI PHASE 2b
LOCATION	LAGOON DRIVE URBAN BUSWAY & PANMURE BRIDGE
DATE	10/04/2023
BY	10/04/2023
CHECKED BY	10/04/2023
APPROVED BY	10/04/2023



PROJECT	AMETI PHASE 2b
LOCATION	LAGOON DRIVE URBAN BUSWAY & PANMURE BRIDGE
DATE	10/04/2023
BY	10/04/2023
CHECKED BY	10/04/2023
APPROVED BY	10/04/2023

PROJECT	LANDSCAPE PLAN
LOCATION	SHEET 3 OF 10
DATE	10/04/2023
BY	10/04/2023
CHECKED BY	10/04/2023
APPROVED BY	10/04/2023

PROJECT	LANDSCAPE
LOCATION	3311125-AR-4103
DATE	10/04/2023
BY	10/04/2023
CHECKED BY	10/04/2023
APPROVED BY	10/04/2023



TREE LOCATION PLAN - SHEET 4

PRELIMINARY
NOT FOR CONSTRUCTION

PROJECT	AMETI PHASE 2a
LOCATION	LAGOON DRIVE URBAN BUSWAY & PANMURE BRIDGE
DATE	10/11/20
SCALE	1:1000

Beca

CLIENT	AMETI
PROJECT	AMETI PHASE 2a
LOCATION	LAGOON DRIVE URBAN BUSWAY & PANMURE BRIDGE
DATE	10/11/20



AMETI PHASE 2a
LAGOON DRIVE URBAN BUSWAY &
PANMURE BRIDGE

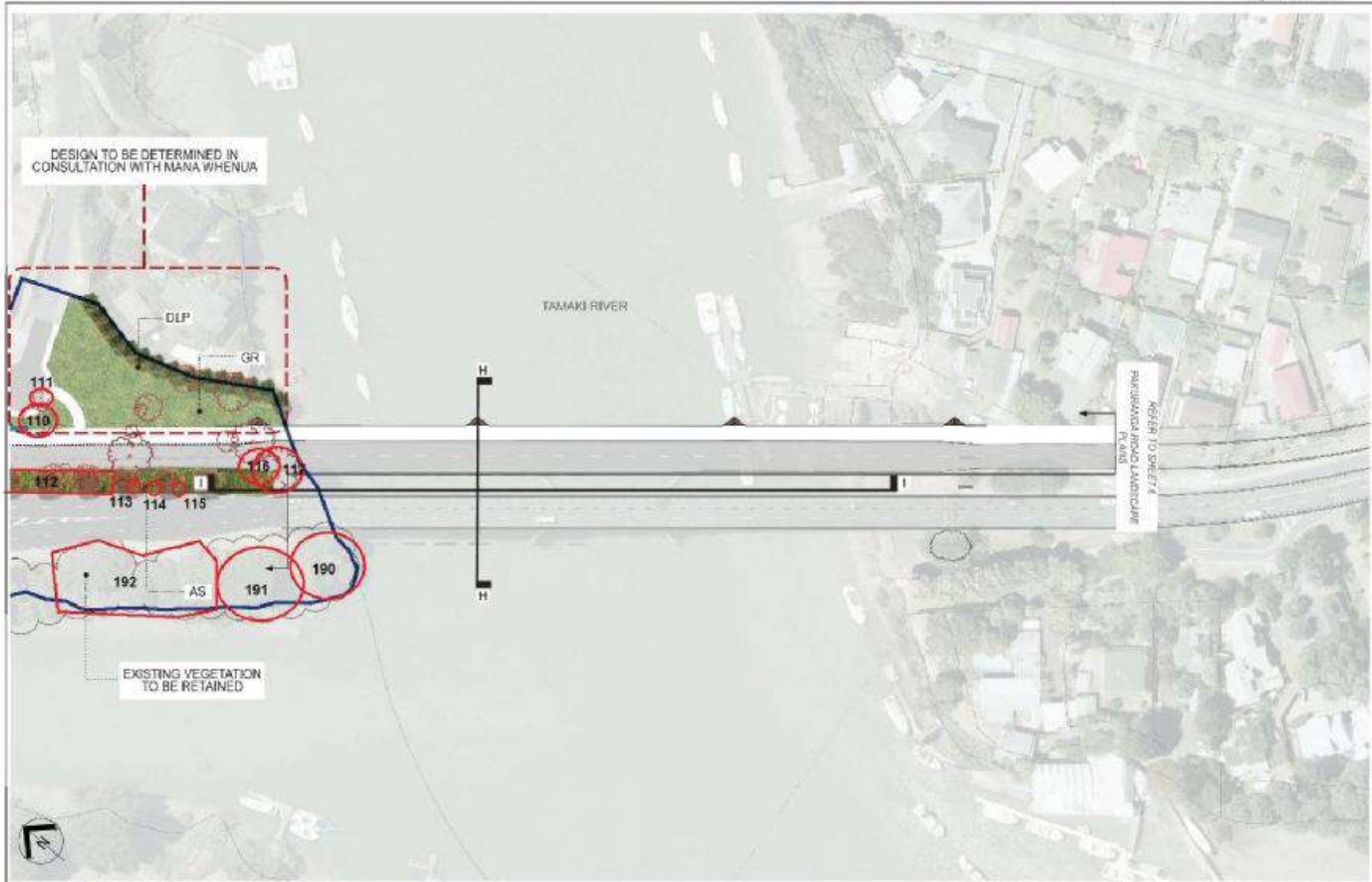
LANDSCAPE PLAN
SHEET 4 OF 10

LANDSCAPE	3311120-AR-4104
DATE	10/11/20
SCALE	1:1000

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TREE LOCATION PLAN - SHEET 5

PRELIMINARY
NOT FOR CONSTRUCTION

1. POSITION	2. DATE	3. BY	4. CHECKED BY	5. DATE



Client	Project	Location
331125-AR-4105	AMETI PHASE 2b	LAGOON DRIVE URBAN BUSWAY & PANMURE BRIDGE
Project	Drawn	Checked
331125-AR-4105	331125-AR-4105	331125-AR-4105



AMETI PHASE 2b
LAGOON DRIVE URBAN BUSWAY &
PANMURE BRIDGE

LANDSCAPE PLAN
SHEET 5 OF 10

Project	331125-AR-4105
Drawn	331125-AR-4105
Checked	331125-AR-4105

Sheet 5 of 10



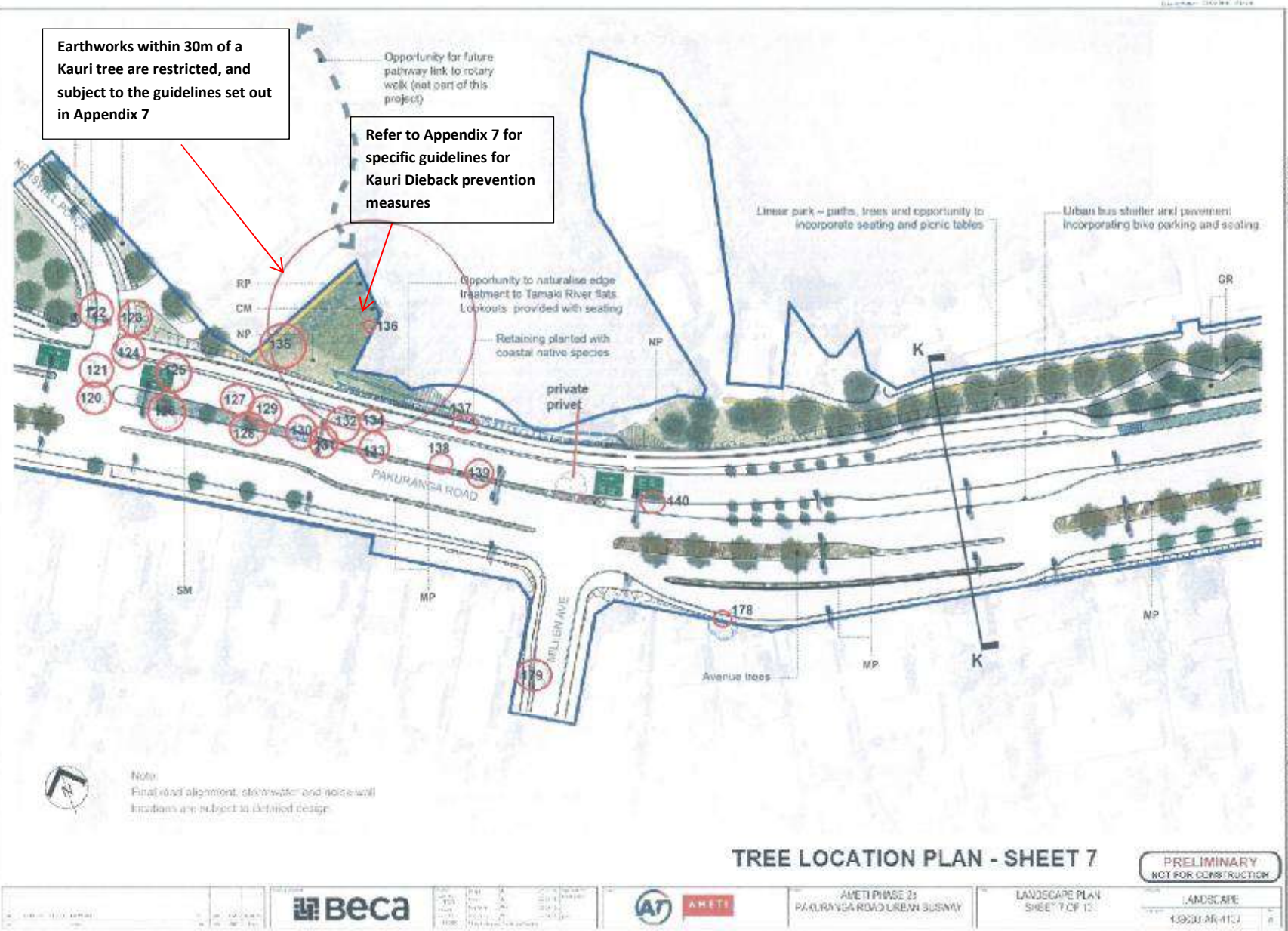
TREE LOCATION PLAN - SHEET 6

PRELIMINARY
NOT FOR CONSTRUCTION

<p>Project Name: PAKURANGA ROAD URBAN BUSWAY</p> <p>Client: A. PAKURANGA ROAD URBAN BUSWAY</p> <p>Scale: 1:1000</p> <p>Drawn: [Signature]</p> <p>Checked: [Signature]</p> <p>Approved: [Signature]</p>	<p>Beca</p> <p>Project: PAKURANGA ROAD URBAN BUSWAY</p> <p>Client: A. PAKURANGA ROAD URBAN BUSWAY</p> <p>Scale: 1:1000</p> <p>Drawn: [Signature]</p> <p>Checked: [Signature]</p> <p>Approved: [Signature]</p>	<p>AMETI</p> <p>Project: AMETI PHASE 2a</p> <p>Client: PAKURANGA ROAD URBAN BUSWAY</p> <p>Scale: 1:1000</p> <p>Drawn: [Signature]</p> <p>Checked: [Signature]</p> <p>Approved: [Signature]</p>	<p>Project: AMETI PHASE 2a</p> <p>Client: PAKURANGA ROAD URBAN BUSWAY</p> <p>Scale: 1:1000</p> <p>Drawn: [Signature]</p> <p>Checked: [Signature]</p> <p>Approved: [Signature]</p>	<p>Project: LANDSCAPE PLAN</p> <p>Client: SHEET 6 OF 10</p> <p>Scale: 1:1000</p> <p>Drawn: [Signature]</p> <p>Checked: [Signature]</p> <p>Approved: [Signature]</p>	<p>Project: LANDSCAPE PLAN</p> <p>Client: SHEET 6 OF 10</p> <p>Scale: 1:1000</p> <p>Drawn: [Signature]</p> <p>Checked: [Signature]</p> <p>Approved: [Signature]</p>
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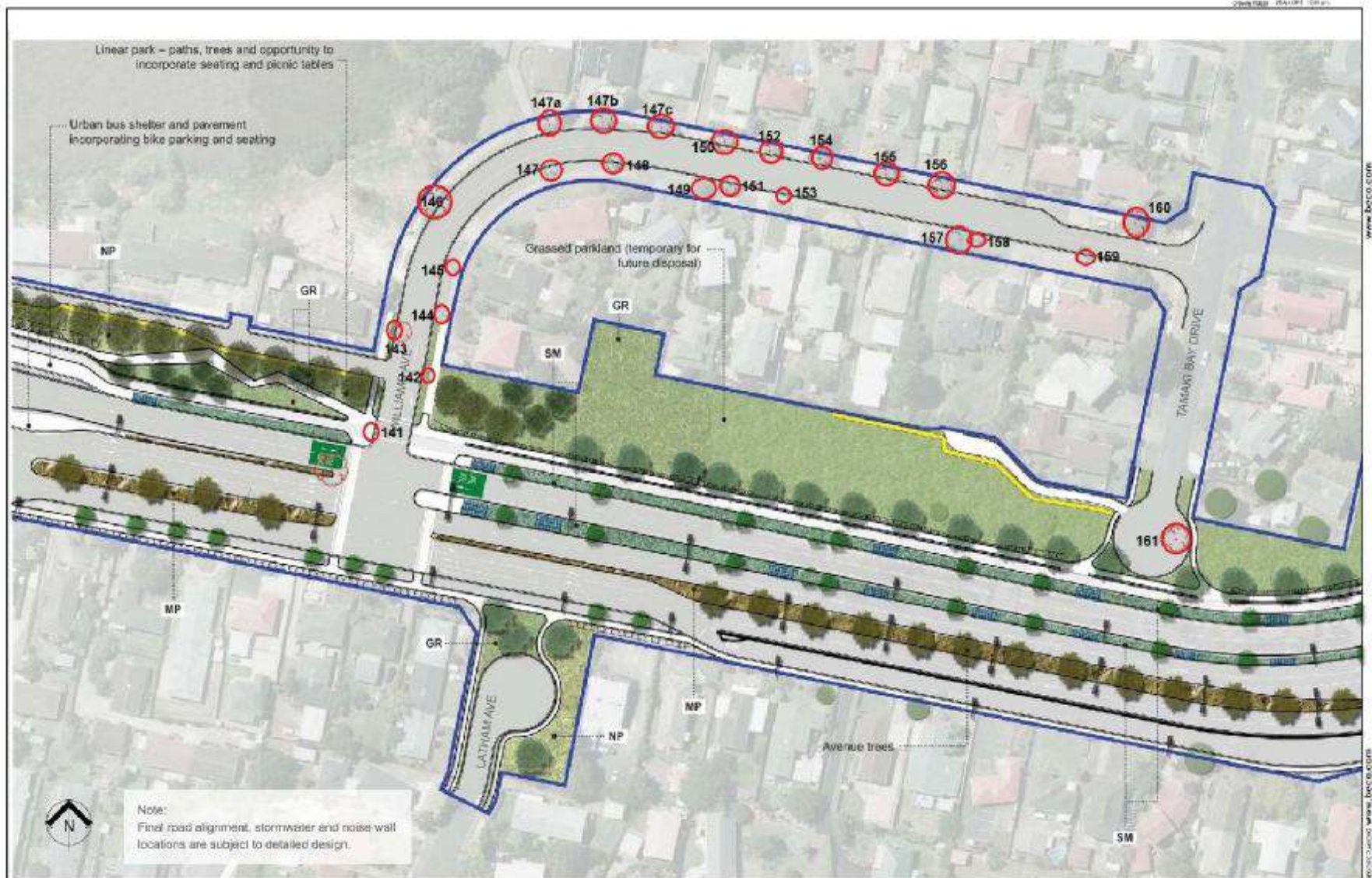
Earthworks within 30m of a Kauri tree are restricted, and subject to the guidelines set out in Appendix 7

Refer to Appendix 7 for specific guidelines for Kauri Dieback prevention measures



TREE LOCATION PLAN - SHEET 7

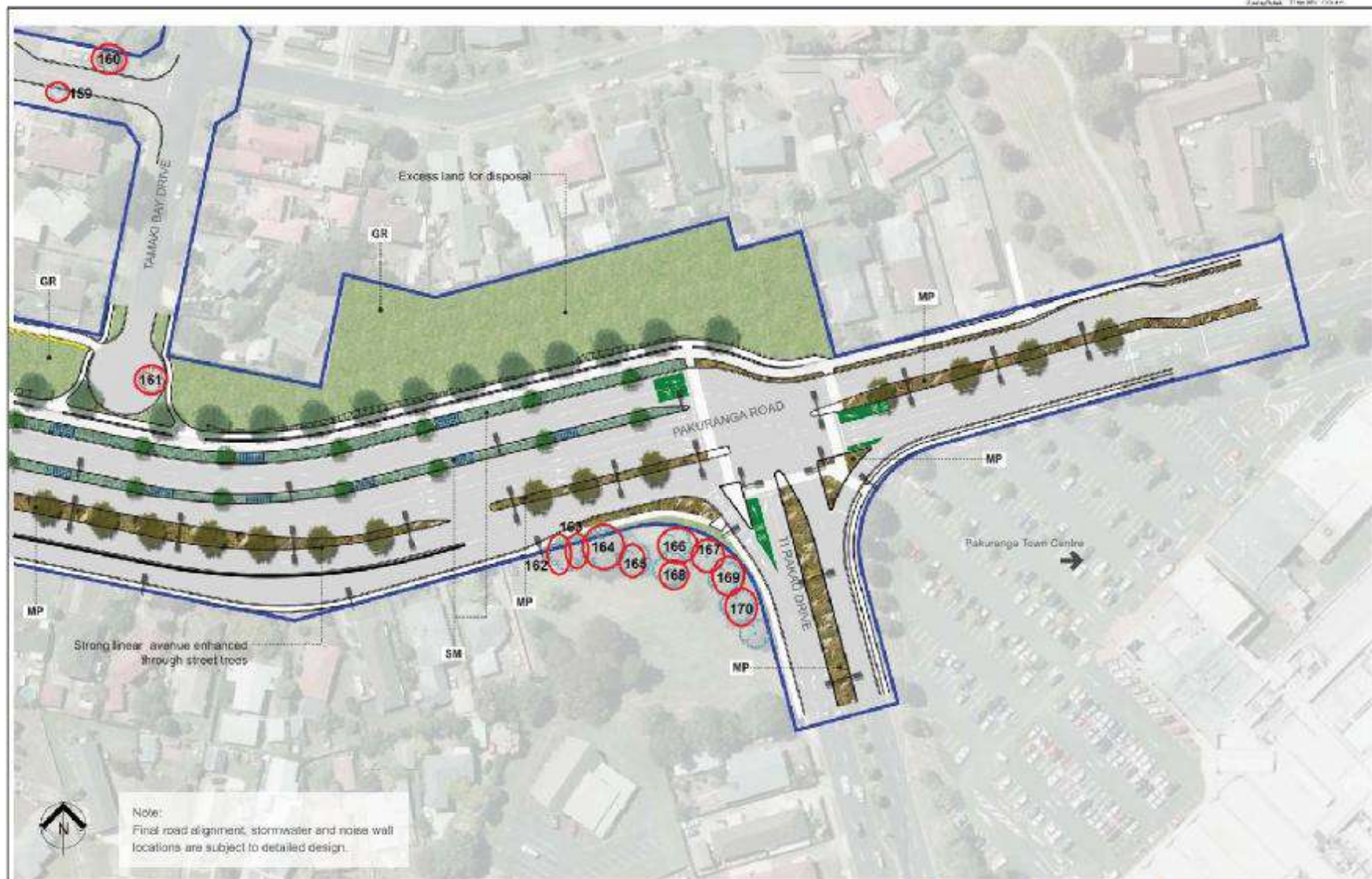
PRELIMINARY
NOT FOR CONSTRUCTION



TREE LOCATION PLAN - SHEET 8

PRELIMINARY
NOT FOR CONSTRUCTION

<p>Client: Beca</p> <p>Project: AMETI PHASE 2a PAKURANGA ROAD URBAN BUSWAY</p> <p>Drawn: [Name]</p> <p>Checked: [Name]</p> <p>Approved: [Name]</p> <p>Date: 20/01/2023</p>	<p>Scale: 1:1000</p> <p>Sheet: 8 OF 10</p> <p>Project: AMETI PHASE 2a PAKURANGA ROAD URBAN BUSWAY</p> <p>Drawn: [Name]</p> <p>Checked: [Name]</p> <p>Approved: [Name]</p> <p>Date: 20/01/2023</p>	<p>Client: AMETI</p> <p>Project: AMETI PHASE 2a PAKURANGA ROAD URBAN BUSWAY</p> <p>Drawn: [Name]</p> <p>Checked: [Name]</p> <p>Approved: [Name]</p> <p>Date: 20/01/2023</p>	<p>Client: LANDSCAPE</p> <p>Project: LANDSCAPE PLAN SHEET 8 OF 10</p> <p>Drawn: [Name]</p> <p>Checked: [Name]</p> <p>Approved: [Name]</p> <p>Date: 20/01/2023</p>
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TREE LOCATION PLAN - SHEET 9

PRELIMINARY
NOT FOR CONSTRUCTION

1. 100% ROAD DESIGN	2. 100% ROAD DESIGN	3. 100% ROAD DESIGN	4. 100% ROAD DESIGN
5. 100% ROAD DESIGN	6. 100% ROAD DESIGN	7. 100% ROAD DESIGN	8. 100% ROAD DESIGN

Beca

100%	100%	100%	100%
100%	100%	100%	100%



AMETI PHASE 2a
PAKURANGA ROAD URBAN BUSWAY

LANDSCAPE PLAN
SHEET 9 OF 10

LANDSCAPE	436033-AR-4109	A
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Note:
Final road alignment, stormwater and noise wall
locations are subject to detailed design.

TREE LOCATION PLAN - SHEET 10

PRELIMINARY
NOT FOR CONSTRUCTION

DATE	10/04/2016
TIME	10:00 AM
BY	10/04/2016
BY	10/04/2016



DATE	10/04/2016
TIME	10:00 AM
BY	10/04/2016
BY	10/04/2016



PROJECT	AMETI PHASE 2a
LOCATION	PAKURANGA ROAD URBAN BUSWAY

DATE	10/04/2016
TIME	10:00 AM
BY	10/04/2016
BY	10/04/2016

DATE	10/04/2016
TIME	10:00 AM
BY	10/04/2016
BY	10/04/2016

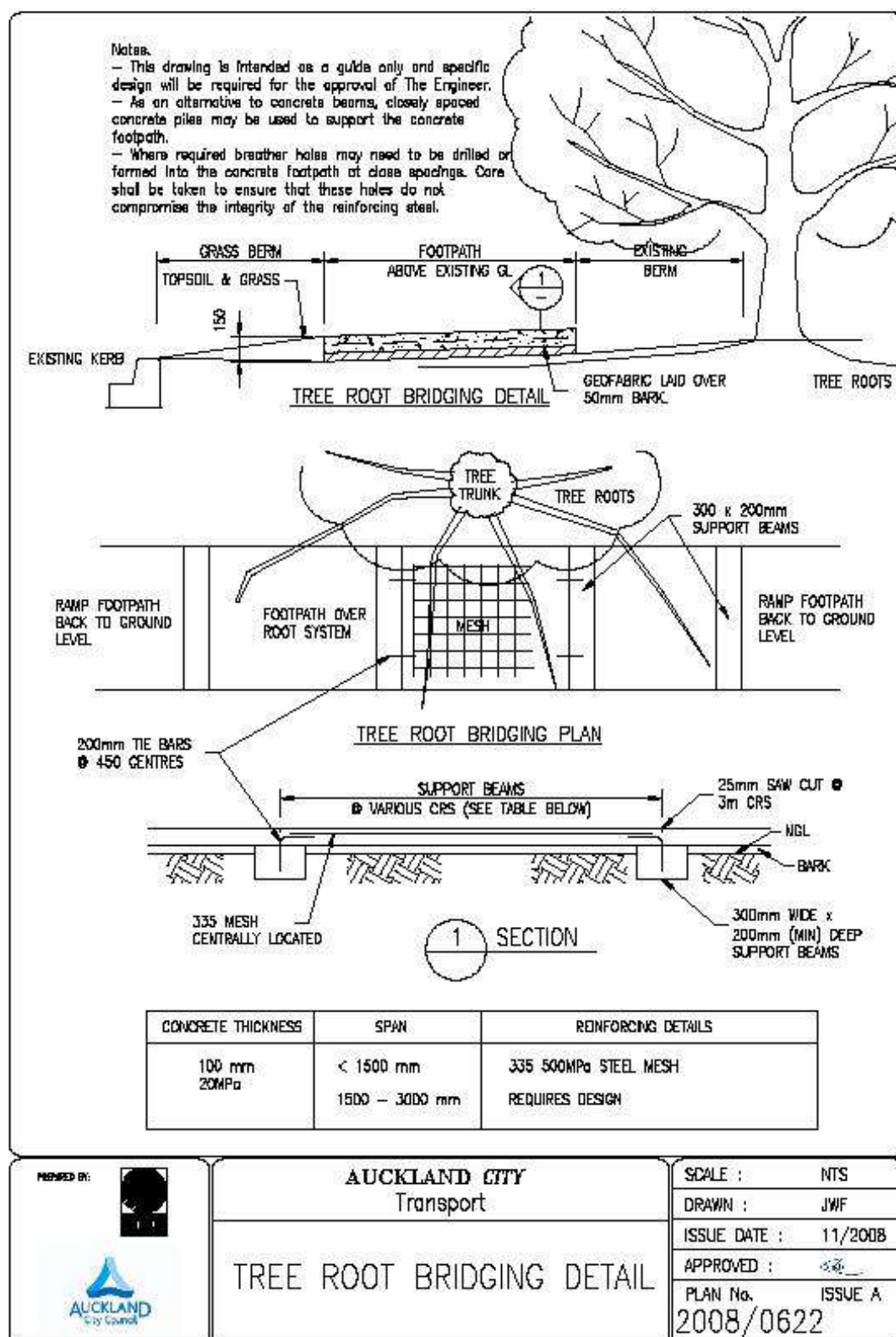
Appendix 3 – Monitoring Log

Log of Arborist Involvement with AMETI Stage 2a Project

Project Manager & contact phone no.	
Contractor(s) & contact phone no.	
Supervising Arborist(s) & contact phone no.	

[illegible]

Appendix 4 – Auckland City Transport –Tree Pit & Tree Root Bridging Detail



Appendix 5 – Recommended Tree Protection Measures for Non-protected Trees on AMETI Stage 2a Route

1. No storage of materials or equipment, or passage of vehicles or machinery, should take place on open ground within the dripline area.
2. No mixing of concrete or other contaminants or refuelling of equipment should take place on unsealed surfaces within the unsealed root zone areas of retained vegetation. All appropriate procedures should take place to ensure that leaching or spillage of contaminants would not occur.
3. When working within the dripline of the any tree all care should be taken when removing the existing hard surface so not to disturb tree roots that may be beneath the surface. Hand held tools or appropriate machinery should be used (under direct arboricultural supervision) to remove the existing hard surface working backwards, situated on the existing hard seal at all times. At no time should the machine operate, or traverse over the exposed unsealed root zone.

Once the hard seal surface is removed all existing base course should be left in-situ augmenting where required so not to disturb any potential roots that may have established in the substratum base.

4. Where practicable all tree roots measuring 35mm or greater in diameter, exposed during the course of construction work, should be carefully worked around, protected and incorporated in the base course of the proposed new structures. All roots less than 35mm diameter exposed in the course of excavation works, would be pruned back cleanly, using a sharp saw or a pair of secateurs past any point of fracture or damage. All retained and or cut roots should be protected from drying out by a covering of hessian or similar material that is to be kept damp until the excavated area can be backfilled.
5. All engineering and design alternatives should be explored prior to the removal of any roots greater than 35mm in diameter. In any instance where engineering and design alternatives could not provide for the retention of roots greater than 35mm in diameter, advice from the works arborist should be sought for the removal of the subject tree roots. The arborist should only recommend the root is removed only when he is satisfied that the health and safety of the subject vegetation would not be compromised.
6. Excavations that would be filled with concrete and have exposed roots at the excavation face should first be lined with polythene to prevent concrete contamination of roots.

Appendix 6 – Dutch Elm Disease Protocol

Dutch Elm Disease Sanitation Measures

There are strict rules, under the Biosecurity Act (1993), pertaining to the disposal of elm material in the Auckland region. Golden elm is particularly susceptible to Dutch Elm Disease. The removal of the Golden elm trees from within this project area must therefore be undertaken in full compliance with the rules listed below. It is an offence, under the Act, to not comply.

To ensure that this is the case, an arboricultural company with the appropriate resources to fulfil those obligations would be contracted to carry out the removal of the elm tree.

- All material must be chipped. Logs can either be cut up and chipped, or chipped and buried in landfill
- Chip to be buried in landfill or kept at storage site to compost for a minimum of three months. Chip should be sprayed with insecticide (e.g. Deltamethrin) to prevent Borer (vector) spread
- Clean all equipment (chainsaw, pruning saw) after use with methylated spirits. Note - the fungus was spread to Napier via earthmoving equipment
- The tree stump must be stump ground or debarked.



Kauri Dieback Disease - Tree Removal and Earthworks Procedures

Overview

Kauri Dieback is a fungus-like disease called *Phytophthora taxon Agathus*. The disease is specific to Kauri and kills trees of all ages and sizes. It can spread through both water and soil, with soil movement on equipment such as footwear and machinery.

Controls have been implemented at a regional level to attempt to restrict the spread and infection of this disease, including a tree removal and earthworks procedure for both the removal of trees and works in the vicinity of both healthy and infected trees.

Tree Removal

The removal of both healthy and diseased Kauri should be undertaken in the accordance with the following procedure:

- Any foliage removed as part of the felling process should be chipped, with no foliage to be removed intact unless removed to an approved landfill (Council's biosecurity division has a list of these sites). Where possible, logs should be left whole on site.

However, if it is impractical to leave the logs on site, they must be disposed of at an approved landfill.

- Tree stumps should be left in place where possible, with resultant stumps preferably stump ground to prevent further soil contamination.
- All associated machinery including chainsaws and/or climbing equipment should be inspected for any evidence of soil, and sprayed with Trigene (Biosecurity approved disinfectant) before it is removed from site.

Earthworks and Soil Removal

- There are strict rules, detailed in the Proposed Unitary Plan, pertaining to the prevention of the spread of the Kauri Dieback Disease (*Phytophthora taxon Agathis*).
- The rule states that the removal of soils within 30m of a New Zealand Kauri tree is restricted. No soil within this zone can be removed from a site, unless it is taken to an approved landfill.
- The Unitary Plan rule: PART 3 - REGIONAL AND DISTRICT RULES» Chapter H: Auckland-wide rules»4 Natural resources»4.2 Earthworks»2. Controls»2.1 Permitted activities»2: states: *To prevent the spread of Kauri Dieback disease, vehicle and equipment hygiene techniques must be adopted so that no soil from earthworks within 30m of a New Zealand kauri tree is transported offsite.*
- It should be noted that biosecurity personnel have recently proposed an amendment to the rule, in that the '30m radius from any Kauri tree' will be imminently replaced with 'three times the radial spread of a particular tree's crown spread'.
- When transporting this material from site, the soil should be covered. Once the load has been dumped at the approved site, Trigene should be applied to the deck surface to prevent any further contamination of future loads or new sites.

- All associated equipment including trucks, diggers and associated equipment in direct contact with soil material should be washed or brushed before leaving site.

If you require any further information relating to Kauri Dieback please contact a Peers Brown Miller Ltd staff member on 09 631 7610 or phone the Kauri Dieback Hotline on 0800 NZ Kauri 0800 6952874

Appendix E: Statement of Evidence of Matthew Trevor Paul on behalf of Auckland Transport

IN THE MATTER

of the Resource Management Act 1991

AND

IN THE MATTER

of Resource Consents and a Notice of Requirement for the development of Stage 2A of the Auckland Manukau Eastern Transport Initiative

**STATEMENT OF EVIDENCE OF MATTHEW TREVOR PAUL ON BEHALF OF
AUCKLAND TRANSPORT
ARBORICULTURE**

1. INTRODUCTION AND EXPERIENCE

1.1 My full name is Matthew Trevor Paul. I am a Director at Peers Brown Miller Ltd and have been an employee since December 2014. I have a Diploma in Arboriculture (Level 6) from the Waikato Institute of Technology.

1.2 I have thirteen years' experience working in the arboricultural industry, including as a director of a successful arboricultural service company which provided both physical tree works and consultancy services. I am now a consultant arborist with Peers Brown Miller Ltd. I am also a member of the New Zealand Arboricultural Association and am actively involved in the industry.

1.3 Although this matter is not before the Environment Court, I confirm that I have been shown a copy of the Environment Court's Code of Conduct for Expert Witnesses, and have read that document. I confirm that I agree to comply with the Code of Conduct. I have outlined my expert qualifications above. I confirm that in this statement I address matters within my area of expertise and that I have undertaken sufficient research and data analysis to form the views and opinions that are expressed in my evidence. I confirm that I have not omitted to consider material facts known to me that might alter or detract from the opinions expressed.

2. EXECUTIVE SUMMARY

- 2.1** I have been engaged by Beca as Auckland Transport's Arboricultural Expert for the AMETI Stage 2a Project. I am part of the team that compiled the Arboricultural Assessment for the Project (Volume 4, Appendix C of the notified documentation set).
- 2.2** The Arboricultural Assessment was undertaken by Peers Brown Miller Ltd to identify those trees affected by the Project. A total of two hundred and twenty eight (228) trees/ or groups of trees were surveyed as part of the Project. Of these trees, a total of one hundred and thirty four (134) protected and non-protected trees/groups of trees will require removal for the Project. Of these, ninety two (92) trees/groups of trees are protected. Seventy eight (78) trees/groups of trees are located on the Panmure side of the Tamaki River. Fifty (56) trees/groups of trees are located on the Pakuranga side of the Tamaki River.
- 2.3** In addition to those trees proposed for removal, works are proposed within the driplines of seventy-nine (79) protected trees. Twenty-one (21) scheduled trees will require works to be undertaken within their respective driplines. These are identified as twenty (20) scheduled Pōhutukawa trees within Panmure Domain Reserve, and one (1) Swamp Cypress tree standing within 1 Kerswill Place, Pakuranga.
- 2.4** In order to adequately mitigate the one hundred and twenty eight (128) trees proposed for removal, extensive replacement planting is proposed. An estimated three hundred and sixty six (366) new trees are proposed for planting within the Project area.
- 2.5** In my opinion as an arboricultural expert, any adverse effect arising from the removal of the one hundred and thirty four (134) protected and non-protected trees will be no more than minor, due to the extensive landscape and mitigation planting proposed.
- 2.6** The substantial replanting will offset the removal of protected and non-protected trees and will more than adequately mitigate the effects of the loss of the existing vegetation.
- 2.7** With regard to the protected and notable trees that are to be retained in the vicinity of the works, appropriate protection methods (as outlined in the proposed conditions) will be adopted and adhered to during the implementation phases of the Project, so that the retained protected vegetation should continue to thrive.

3. SCOPE OF EVIDENCE

3.1 I have been asked by Auckland Transport to provide evidence in relation to the AMETI Stage 2A Project (**the Project**).

3.2 I have been engaged by Beca as the Arboricultural Expert for the Project. I am part of the team that compiled the Arboricultural Assessment for the Project (Volume 4, Appendix C of the notified documentation set), and have been involved in the planning process to date.

3.3 My evidence addresses the following:

- (a) Project background
- (b) Arboricultural issues;
- (c) Assessment methodology;
- (d) Vegetative character of the site;
- (e) Summary of arboricultural effects assessment, including changes as a result of design changes since notification of the documentation;
- (f) Proposed mitigation;
- (g) Effects conclusion;
- (h) Discussion of changes between the legacy Auckland district plans, the Proposed Auckland Unitary Plan (PAUP) and the Auckland Unitary Plan (Operative in Part) (AUP(OIP));
- (i) Comments on the Proposed Conditions;
- (j) Comments on Council reporting officer's report; and
- (k) Conclusion.

4. PROJECT BACKGROUND

4.1 AMETI is the collective name given to a group of transport projects for the eastern suburbs of Auckland. AMETI is designed to provide an integrated multi-modal transport system that supports population and economic growth in East Auckland. It does this by providing improved alternative modes of transport beyond reliance on private vehicles, thereby helping to manage the effects of congestion on roads.

4.2 AMETI Stage 2A includes the reconfiguration of the Panmure Roundabout to a signalised intersection, provision of a new 2.4 kilometre long dedicated busway from this intersection along Lagoon Drive, across the Tamaki River, and along Pakuranga Road to the intersection with Ti Rakau Drive. AMETI Stage 2A will also provide for shared and dedicated cycle and footpaths, stormwater treatment devices and landscaping. AMETI Stage 2A will require widening of Lagoon Drive and Pakuranga Road (on the northern side) and duplication of the Panmure Bridge on a parallel alignment with the existing bridge. The resource consents and Notice of Requirement (**NOR**) for AMETI Stage 2A will provide for the project's construction, operation and maintenance. While Stage 2A has some elements that facilitate later stages of the AMETI Project, it is a stand-alone scheme that will provide a multi-modal transport corridor providing for better connections and accessibility between (and within) Panmure and Pakuranga town centres for all transport users.

4.3 The traffic modelling that accompanied the notified application was updated in August 2017. This was to anticipate the ongoing and projected population growth within the Auckland eastern suburbs and the increase in traffic volumes along Lagoon Drive and Pakuranga Road. On the basis of this updated modelling, it has been determined that minor amendments to the design of the intersections at Ti Rakau Drive/Pakuranga Road, and Lagoon Drive/Church Crescent, are required to optimise flows and increase capacity at these intersections. These design changes are described in Mr Duncan Humphrey's evidence and reflected in the updated Hearing Plan set attached to that evidence. My evidence addresses the effect of these changes, and any mitigation that may be required.

5. ARBORICULTURAL ISSUES

5.1 The arboricultural issues relevant to the Project include removal of trees directly affected by the Project construction or operational footprint, as well as potential

effects on trees where they are proposed to be retained, but works within the dripline are proposed. The majority of affected trees are growing within or adjacent to the existing road corridor or adjacent park land. More substantial tree clearance is proposed in the area between Lagoon Drive and Sunset View Road in order to construct new infrastructure and widen the existing corridor. Lay-down and temporary storage areas are also required as part of the construction phase of the Project. The formation of these particular areas will also impact trees, with both works within the dripline and tree removals proposed.

6. ASSESSMENT METHODOLOGY

6.1 An Arboricultural Assessment was prepared in December 2016 in relation to the trees likely to be affected by the Project. This was submitted with the Assessment of Environmental Effects, as Volume 4, Appendix C.

6.2 This assessment was based on the submitted layout provided by Beca. Site visits were undertaken in February 2015 and November 2015, with tree details and locations recorded and marked on a suite of Landscape Plans provided as part of the Project. Detailed information pertaining to the protection status of identified trees, and the required actions, were also recorded as part of the assessment.

6.3 The protection status of each tree was defined by three categories being:

- (a) Scheduled – those trees identified as significant and important specimens under Appendix 2 of the Auckland Council Isthmus Legacy Plan, Appendix 6B of the Manukau Legacy Plan or Schedule 10 Chapter L of the Proposed Auckland Unitary Plan (**PAUP**);
- (b) Protected – those trees standing on road reserve or within Parks land in excess of the threshold for protection, being 6 metres in height in the Legacy Isthmus and Manukau Plans or 4 metres in height and 400mm in girth under the PAUP;
- (c) Non-protected – those trees not scheduled or below the threshold for protection.

6.4 The Arboricultural Assessment was originally assessed under the Auckland Isthmus and Manukau City legacy plans, and the PAUP. Since the assessment was

undertaken, the PAUP has become operative in part (AUP(OIP)). Some changes around protected tree heights and tree species are noted. Most notably, under the AUP(OIP), all trees growing within road reserve or park land are protected in excess of 4 metres in height or 400mm in girth. The change in protection status as a consequence of these changes is described in my evidence below in section 10.

- 6.5** As part of the Arboricultural Assessment, the various activities and level of physical works as a result of the Project affecting trees were reviewed and defined. This information was then collated as part of the Arboricultural Assessment, with a schedule of those trees and the associated required activity defined, including works within the dripline, tree removal and/or protection during construction.

7. VEGETATIVE CHARACTER OF THE SITE

- 7.1** The trees/groups of trees affected by the Project are growing on both public and private land. The vast majority of trees affected are growing within Road Reserve and Council Parks land (216 trees). Approximately 12 trees are growing on private property.

- 7.2** The trees are a mixture of both exotic and native specimens ranging in age from juvenile to mature. The trees are predominately in fair to good arboricultural condition. In particular, the scheduled trees growing within Panmure Domain Reserve are large mature specimens in good condition and structural health. Likewise, the two scheduled trees growing within 1 Kerswill Place are also healthy specimens.

- 7.3** Conversely, the scheduled Willow trees growing on the corner of Ti Rakau Drive and Pakuranga Road are largely in poor condition.

- 7.4** These three groupings of Scheduled trees are affected to some degree by the Project construction, as explained below. No Scheduled trees are proposed for removal.

8. SUMMARY OF ARBORICULTURAL EFFECTS ASSESSMENT

- 8.1** In this section I have provided a summary of the arboricultural effects as detailed in my Arboricultural Assessment. Since preparation of this assessment, the PAUP has become operative in part and some design change is now proposed at the Ti

Rakau/Pakuranga Road intersection to improve the performance of the intersection. The change in effects as a consequence of these issues is also discussed below in my evidence.

- 8.2** The assessment identifies that a total of one hundred and thirty four (134) protected and non-protected trees/groups of trees will require removal for the Project. Of these, ninety two (92) trees/groups of trees are protected. Seventy eight (78) trees/groups of trees are located on the Panmure side of the Tamaki River. Fifty six (56) trees/groups of trees are located on the Pakuranga side of the Tamaki River.
- 8.3** Works are proposed within the driplines of seventy-nine (79) protected trees.
- 8.4** Twenty-one (21) scheduled trees will require works to be undertaken within their respective driplines. These are the twenty (20) scheduled Pōhutukawa trees within Panmure Domain Reserve, and one (1) Swamp Cypress tree standing within 1 Kerswill Place, Pakuranga.
- 8.5** All works involving excavations within the driplines of, or in close proximity to, trees within the Project area are to be supervised by a monitoring arborist in order to ensure that any potential adverse effect on those retained trees is avoided or minimised. All works are to be undertaken in accordance with the tree protection methodology outlined in the Arboricultural Assessment¹.
- 8.6** Some tree pruning will be required to clear the existing and new infrastructure overhead for vehicular traffic. At a minimum, a clearance of 4.25 metres would be required. All pruning that is assessed as being required would be minor in scale, and within the accepted arboricultural pruning thresholds.
- 8.7** The actual and potential adverse effects of the various construction and earthworks activities that are proposed to take place within the driplines of various trees can be appropriately managed, provided appropriate tree protection measures are implemented, as discussed in section 9 of my evidence below., This will ensure that any adverse effects on the health and stability of any tree will be no more than minor.

¹ Sections 11A and 11B

- 8.8** As noted in paragraph 4.3, in response to submissions and recent traffic modelling, some minor design changes are proposed at the Church Crescent/Lagoon Drive and Ti Rakau Drive/Pakuranga Road intersections. I have assessed the implications of these changes in relation to arboricultural effects, and conclude that an additional twenty three (23) trees will be impacted as part of the changes. A total of six (6) trees will require removal in order to form the new third lane on Ti Rakau Drive; with the remaining seventeen (17) protected trees (within road reserve) requiring works to be undertaken within their driplines in order to widen the footpath to the east of the intersection. No additional notable trees are affected.

9. PROPOSED MITIGATION

- 9.1** An extensive landscape/mitigation planting plan has been produced in order to offset any potential adverse effects arising from the removal of trees and vegetation as part of this Project.²
- 9.2** The Landscape Plans illustrate the planting of large numbers of both specimen trees and shrub under-planting. The number of new specimen trees proposed greatly exceeds the number of trees proposed for removal (ninety two (92) protected and thirty six (36) non-protected trees detailed in the Arboricultural Assessment, plus the additional six (6) trees affected by the proposed design changes). An estimated three hundred and sixty six (366) new trees are proposed for planting within the Project area, based on the detail of the supplied Landscape Plans. In addition, the proposed NOR conditions (refer Condition 23.13) require that if a design modification will result in a net loss of generally protected trees, a suitable replacement specimen tree must be provided within the Project alignment (in addition to the proposed planting shown on the Landscape Plans). I consider that this adequately addresses this issue.
- 9.3** From an arboricultural perspective, the planting of these trees adequately mitigates the one hundred and thirty four (134) trees/groups of trees proposed to be removed as part of the Project.
- 9.4** As recommended in the Arboricultural Assessment, various tree protection measures can be implemented to protect the health of trees where works are proposed within their driplines, including preparation of a Tree Management Plan,

² Refer Volume 3, Appendix B –Landscape Plans in the notified documentation set.

protective barriers around all scheduled trees in the vicinity, and the presence of a qualified arborist to monitor, direct and supervise all tree removals and works within the dripline of any retained trees. These measures are referenced in the proposed NOR conditions (refer Conditions 23.1 to 23.13).

10. EFFECTS CONCLUSION

- 10.1** In my opinion, any adverse effects arising from the removal of the one hundred and thirty four (134) protected and non-protected trees or groups of trees will be temporary and no more than minor.
- 10.2** The substantial replanting — specifically the estimated three hundred and sixty (360) new trees that are illustrated as part of the proposed landscape mitigation plan— offers an enhanced environmental gain to the surrounding area, thereby more than adequately mitigating the effects of the loss of the existing vegetation.
- 10.3** With regard to the protected trees that are to be retained in the vicinity of the works, if appropriate protection methods (as outlined in the proposed NOR conditions) are adopted and adhered to during the implementation phases of the Project, it is my opinion that these retained protected trees will continue to thrive.

11. DISCUSSION OF CHANGES BETWEEN THE LEGACY AUCKLAND ISTHMUS & MANUKAU DISTRICT PLAN AND THE AUCKLAND UNITARY PLAN

- 11.1** The Arboricultural Assessment undertaken as part of the Project was originally assessed under the Auckland Isthmus and Manukau City legacy plans, and the PAUP. Since the assessment was undertaken, the PAUP has become operative in part. Some changes around protected tree heights and tree species are noted.
- 11.2** In the legacy plans, those trees on road reserve and within park land were protected at higher height thresholds than under the AUP(OIP). Under the legacy plans, publicly owned trees were protected at a height of 6 metres and 600mm in girth (Auckland Isthmus) and 6 metres in height for those trees outlined in Schedule 6B (Manukau District Plan).
- 11.3** Under the AUP(OIP) all trees in open space zones and on roads are protected at a threshold of 4 metres or 400mm in girth. On the Pakuranga side of the Tamaki River

(formerly Manukau City), an additional twenty-two (22) trees would be protected under the AUP(OIP).

- 11.4** These twenty-two (22) additional protected trees have always been within the Project footprint. However, while these trees were shown in the landscape plans for removal, the Arboricultural Assessment did not explicitly assess the effects of their removal as their removal was a permitted activity at the time of the assessment. I note that replacement planting, in its current form, greatly exceeds a 1:1 replacement ratio, and is nearer to a 1:3 replacement ratio (1:2.7) (tree removed vs tree replaced). Therefore, I consider that the proposed replacement planting volumes adequately mitigates the loss of the additional twenty two (22) protected trees, so that any effects remain no more than minor.
- 11.5** An assessment against the objectives and policies of the AUP(OIP) is covered in Mr Julyan's evidence and section 10.6.4 of the AEE. He concludes that there is an appropriate balance between the removal of protected trees and the retention of scheduled and significant Pōhutukawa trees around the Panmure Domain Reserve, and the provision for the maintenance and upgrading of infrastructure. On that basis Mr Julyan considers that the Project is consistent with the revised provisions of the AUP(OIP).

12. COMMENTS ON PROPOSED CONDITIONS

- 12.1** In general terms, from an arboricultural perspective, the proposed draft NOR conditions that relate to tree protection (refer Conditions 23.1 to 23.13 in Council's hearing set of conditions) are acceptable and provide adequate protection and processes for ensuring that the works are to be undertaken in accordance with best arboricultural practice.
- 12.2** However, I recommend that an amendment be made to Condition 23.2 (a)(iii). Council has proposed that the extent of pruning work referred to in this condition shall be limited to the removal of branches to provide a maximum clearance of 4.25 metres of the road carriageway, as well as avoidance, where practical, of the removal of any large branches or limbs that exceed 100mm in diameter. I recommend that this condition is amended to state : *The measures shall also demonstrate that the extent of works will be undertaken in accordance with Standard E26.4.5.1(which apply to the tree trimming or alteration of trees in streets and in open space zones) and as outlined in E26.3.5.2 (8) of the Auckland Unitary*

Plan which relate to the alteration or removal of vegetation required to maintain the visibility of road safety signage, vehicle sightlines, carriageway clearance heights and widths.

I recommend this wording change as, in my opinion, the proposed condition (Condition 23.2 (a) (iii) is too restrictive, and does not align with those permitted standards (outlined in Standard E26.4.5.1 and *Section E26.3.5.2 (8) of the Auckland Unitary Plan*) which allow for the necessary clearance of any Requiring Authority's assets and certain works relating to infrastructure to be undertaken as a permitted activity.

- 12.3** The conditions require that specific details pertaining to the protection of each tree proposed for retention as part of the Project, in terms of construction methodologies and arboricultural advice, will be set out in a Tree Protection and Management Plan. This plan is to be submitted and certified by Council prior to construction commencement.

13. COMMENTS ON REPORTING OFFICER'S REPORT

- 13.1** I have read Council's hearing report (s42a) report and make the following comments.
- 13.2** On behalf of Council Parks, Mr Howell Davies has provided comments that discuss the trees and vegetation affected by the Project. Mr Davies generally supports the Project in principle, subject to a implementation of the replacement plantings and a number of revised conditions outlined in the proposed NOR conditions.
- 13.3** In my arboricultural opinion, those conditions (23.1 to 23.13 subject to the amendment as stated in para 12.2 of my evidence) adequately address those comments and concerns raised by Mr Davies.

14. CONCLUSION

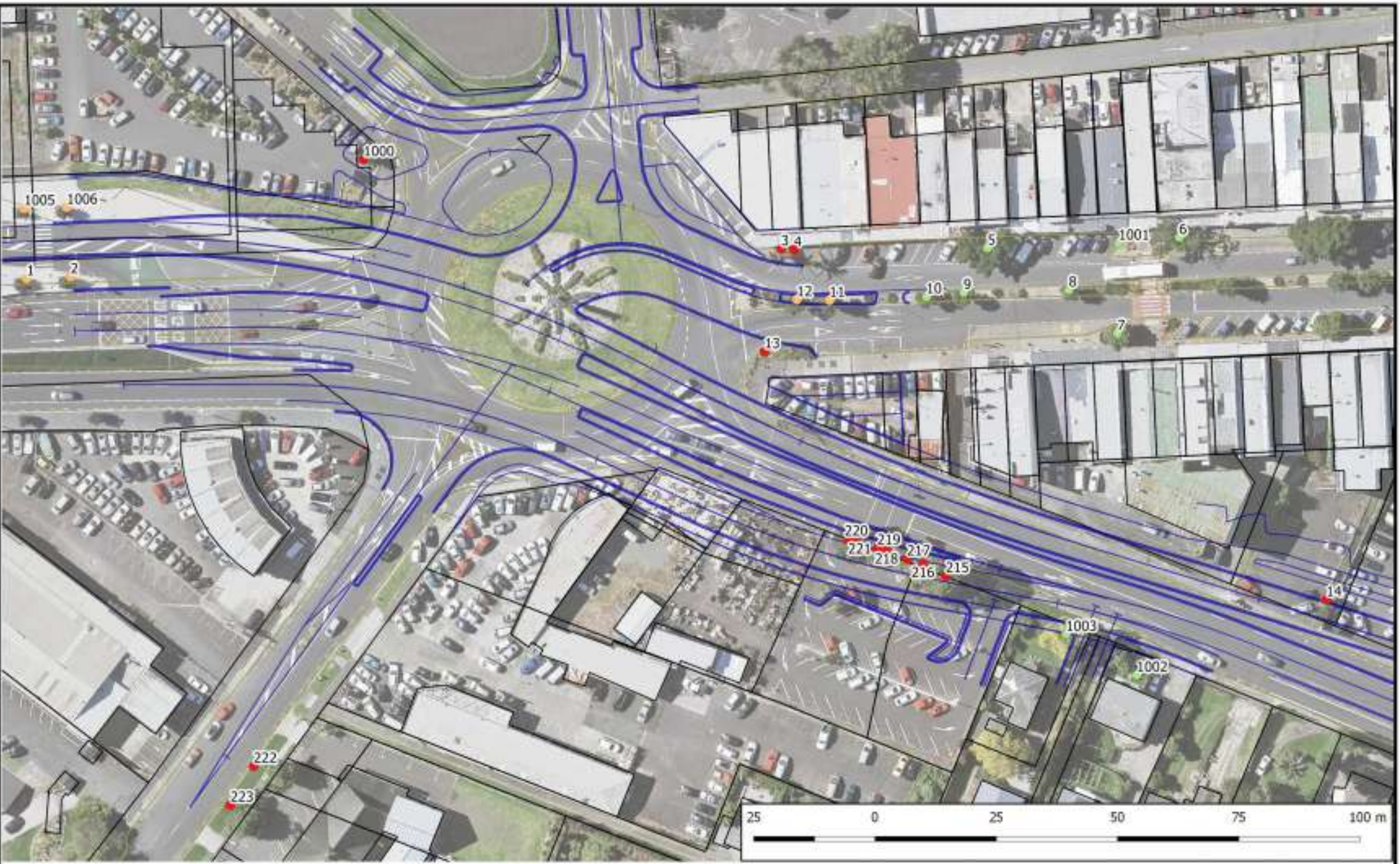
- 14.1** In my view, any adverse effect arising from the removal of the one hundred and thirty four (134) protected and non-protected trees will be no more than minor, due to the extensive landscape and mitigation planting proposed.

- 14.2** The substantial replanting will offset the removal of protected and non-protected trees and will more than adequately mitigate the effects of the loss of the existing vegetation.
- 14.3** With regard to the protected trees that are to be retained in the vicinity of the works, appropriate protection methods (as outlined in the proposed conditions) will be adopted and adhered to during the implementation phases of the Project, so that the retained protected vegetation should continue to thrive.

Matthew Paul

28 November 2017

Appendix F: Tree location plans



As the design evolves, the map will be updated to reflect the actual vegetation status. Vegetation is shown as existing or potential. Where it is shown as potential, specific vegetation may have been planted and captured.

Vegetation should be removed that is subject to removal under the current vegetation management plan. It should be noted that the map is not a site plan and should be used in conjunction with the site plan.

Vegetation within the road area of trees should be removed by the approved road plan.

Legend

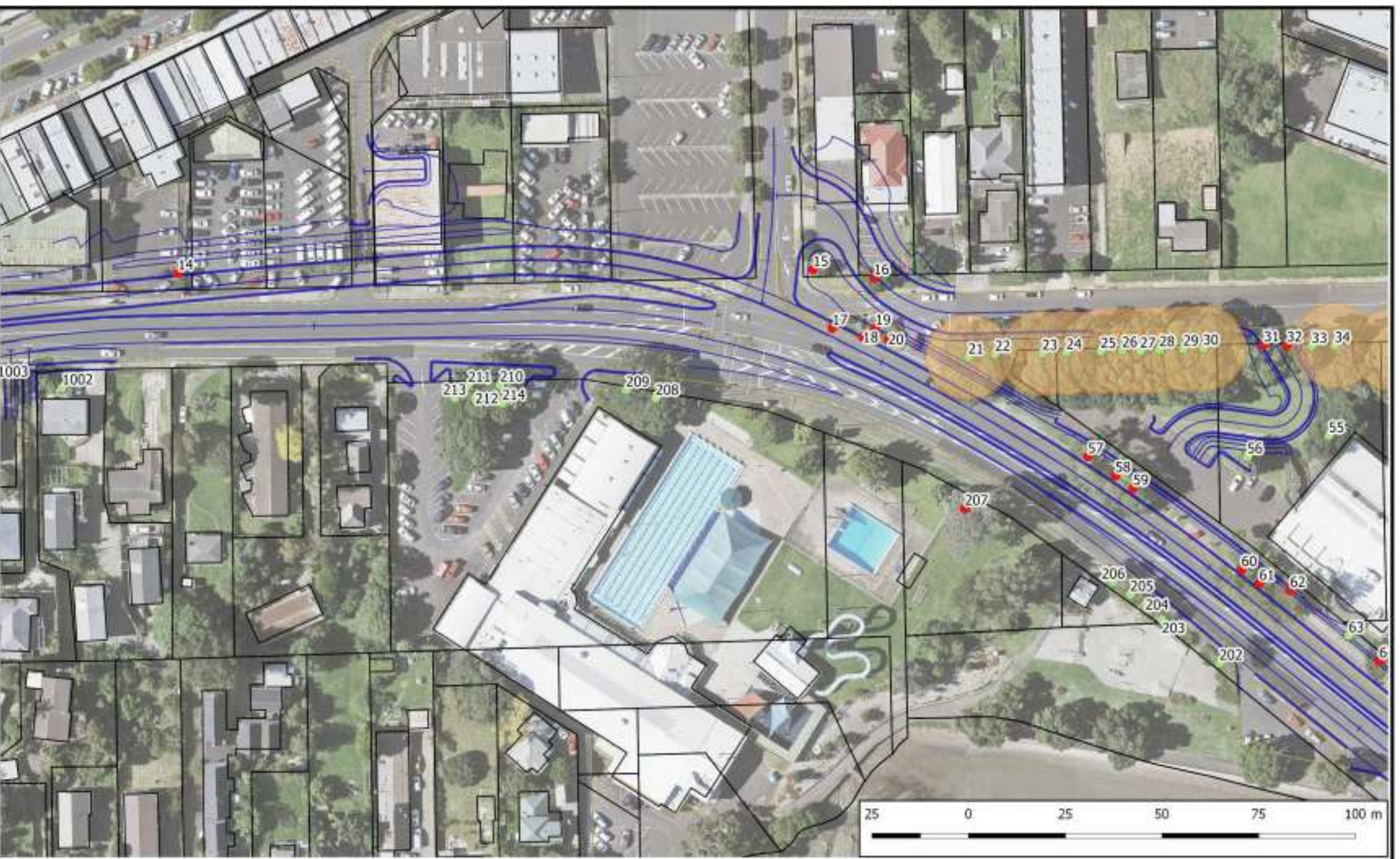
Trees	● Retain
● Remove	● Remove, Explore Relocation



AMETI 2A

TREE LOCATION PLAN

Requested by		Date
Approved by	LGS	08/03/19
Checked by	LGS	08/03/19
Drawn by	JR	08/03/19
Sheet number	LGS-31439-01	Rev
		A



These images may not accurately reflect the actual vegetation on-site. Vegetation is plotted as accurately as possible, unless otherwise stated. Project specific vegetation only has been detailed and captured.

Vegetation should be removed to support infrastructure and requirements for construction. It should be the client's responsibility to determine whether or not this is the case.

Vegetation within the red zone of trees should be supported by an approved works schedule.

Legend		
trees	● Retain	Scheduled trees
● Remove	● Remove, Explore Relocation	



AMETI 2A

TREE LOCATION PLAN

Prepared by		Drawn by	
Checked by	LGS	Reviewed by	08/03/19
Approved by	LGS	Checked by	08/03/19
Drawing number	LGS-31439-02	Scale	A



Legend

Trees



Remove



Retain



Remove, Explore Relocation



AMETI 2A

TREE LOCATION PLAN

Requested by		
Submitted by	LGS	08/03/19
Planned by	LGS	08/03/19
Checked by	JR	08/03/19
Drawing Number	LGS-31439-03	B



Aerial images may not accurately reflect the actual vegetation cover. Vegetation is plotted as accurately as possible. Dates of aerial images, project specific vegetation only have been plotted and captured.

Vegetation: when determined may be subject to invasive control requirements and/or removal. It should be the client's responsibility to determine whether or not this is the case.

Vegetation within the root zone of trees should be supported by an established works plan.

Legend	
Trees	● Retain
● Remove	● Remove, Explore Relocation



AMETI 2A
TREE LOCATION PLAN

Prepared by		
Designed by	LGS	08/03/19
Plotted by	LGS	08/03/19
Checked by	JR	08/03/19
Drawing Number	LGS-31439-04	B



Some images may not accurately reflect the actual vegetation on site. Vegetation is shown as an aerial view. Colors of images depict, suggest specific vegetation only has been shown and captured.

Vegetation plantations should be subject to future research requirements and/or surveys. It should be clear that the responsibility to determine whether or not this is the case.

Vegetation within the road right-of-way should be removed by an approved contractor.

Legend

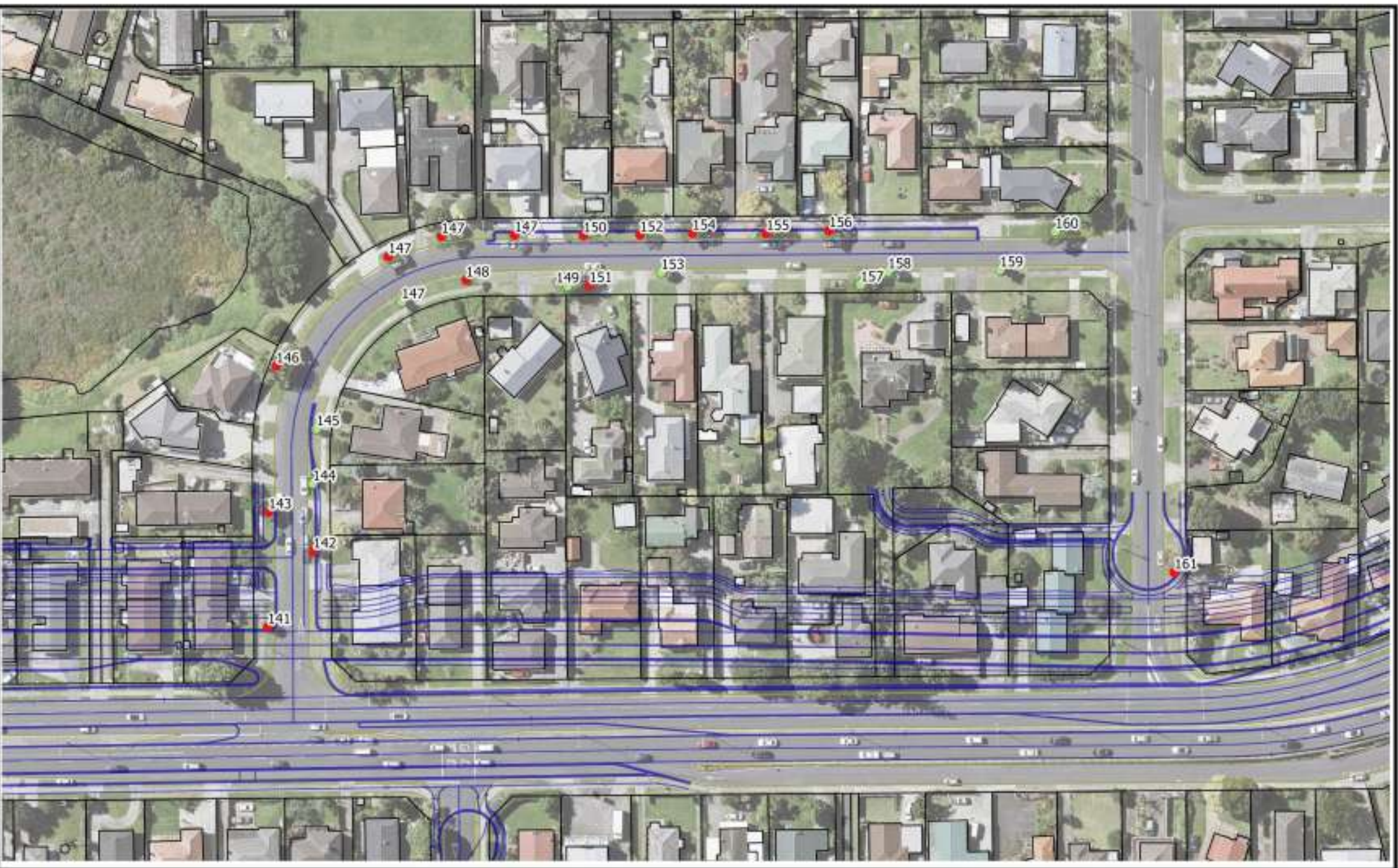
- Trees
- Retain
 - Remove
 - Remove, Explore Relocation



AMETI 2A

TREE LOCATION PLAN

Prepared by		Leaf
Supported by	LGS	08/03/19
Plotted by	LGS	08/03/19
Checked by	JR	08/03/19
Drawing number	LGS-31439-05	A



Plantings may not accurately reflect the actual vegetation on site. Vegetation is noted as accurately as possible. Other changes noted, project specific approval only has been obtained and approved.

Vegetation information may be subject to change in response to site conditions. It shall be the client's responsibility to determine whether or not this is the case.

Items within the red zone of lines should be protected by an approved water control.

Legend

Trees

- Remove

- Retain
- Remove, Explore Relocation



AMETI 2A

TREE LOCATION PLAN

Requested by		Date
Designed by	LGS	08/03/19
Plotted by	LGS	08/03/19
Checked by	JR	08/03/19
Drawing number	LGS-31439-06	A