Eastern Busway – EB2 and EB3 Residential

Tree Protection Management Plan

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Eastern Busway – EB2 and EB3 Residential

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List of Abbreviations and Definitions

Abbreviation and Definitions	Description
ACM	Asbestos containing material
AT	Auckland Transport
AUP(OP)	Auckland Unitary Plan (Operative in part) 2016
CEMP	Construction Environmental Management Plan
CMA	Coastal Marine Area
DED	Dutch Elm Disease
EB2	Eastern Busway 2 (Pakuranga Town Centre)
EB3R	Eastern Busway 3 (Pakuranga to Ti Rakau Bridge)
EBA	Eastern Busway Alliance
ESCP	Erosion and Sediment Control Plan
HSWA	Health and Safety Work Act 2015
m	Metre(s)
m^3	Cubic Metre(s)
NoR	Notice of Requirement
SRZ	Structural Root Zone
RMA	Resource Management Act 1991
TPZ	Tree Protection Zone

1 Introduction

Eastern Busway Alliance (EBA) has developed this Tree Protection Management Plan (TPMP) on behalf of Auckland Transport (AT) to support the following stages of the Eastern Busway Project:

- The application for a notice for requirement (NoR) and resource consents in relation to Eastern Busway 2 (EB2) – Pakuranga Town Centre, including the Reeves Road Flyover (RRF) and Pakuranga Bus Station
- The applications for resource consents in relation to Eastern Busway 3 – Residential (EB3R) – Ti Rakau Drive from the South-Eastern Arterial (SEART) to Pakuranga Creek, including Edgewater and Gossamer Intermediate Bus Stations

The combined EB2 and EB3R work packages are hereon referred to as 'EB2/EB3R'.

1.1 Purpose and Scope

The purpose of this TPMP is to:

- As far as is reasonably practicable, avoid, remedy or mitigate any adverse construction effects on those trees to be retained as part of EB2/EB3R
- Meet the requirements of the designation conditions and resource consent conditions associated with EB2/EB3R.

The principles outlined in the Construction Environmental Management Plan (CEMP) and this TPMP will be used by EB2/EB3R team to set out management procedures and methodologies for undertaking works within the vicinity of retained trees.

The Arboricultural Effects Assessment prepared for EB2/EB3R by Arborlab Consultancy Services Limited forms the basis of this TPMP.

1.1.1 Tree Protection and Management Plan Objectives

The objectives of the TPMP are to:

- Minimise works and native vegetation clearance within roads, reserves and Coastal Marine Areas (CMA's), and ensure vegetation removal is clearly identified prior to avoid accidental vegetation removal
- Minimise works within the root zones of retained trees
- Ensure that any works within the root zones or pruning of trees is undertaken in accordance with arboricultural best practice methodologies.

1.2 Project Description

EB2/EB3R relates to stages EB2 and EB3R of the overarching Eastern Busway Project.

EB2 commences from the intersection of William Roberts Road and Pakuranga Road and traverses west to the Ti Rakau Drive / SEART /Reeves Road intersection.

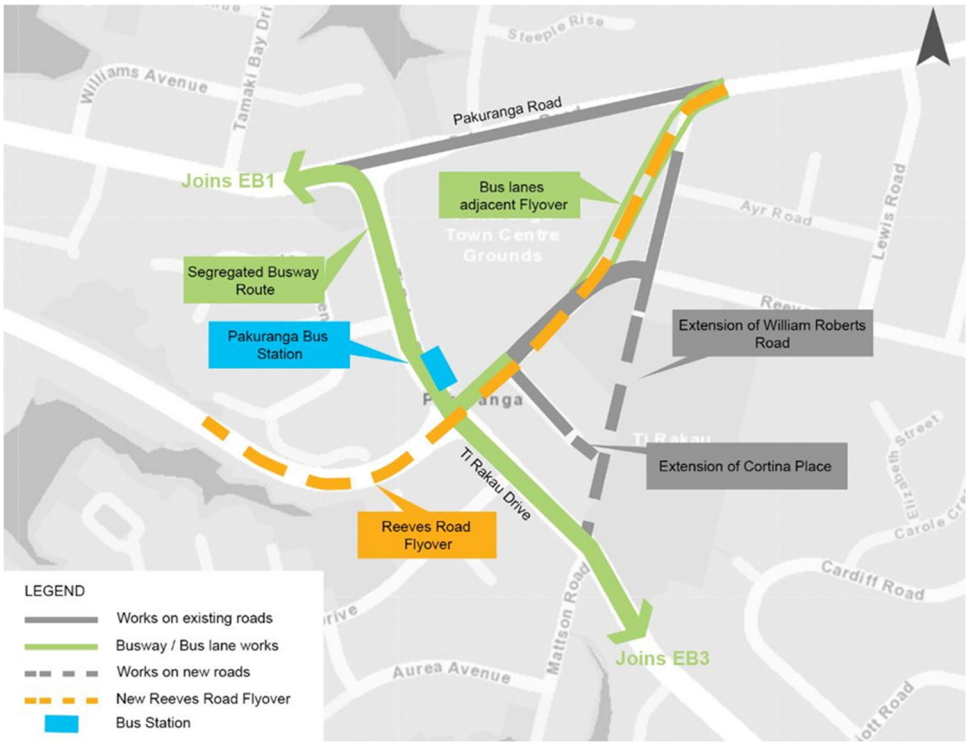
EB2 will improve safety by simplifying intersections and provides the provision of extra crossings to the town centre (including more regular crossing intervals). New cycle lanes and walking paths will make it possible to walk or cycle off-road, improving accessibility and safety around the town centre.

Key elements of EB2 include:

- Pakuranga Station - the key station for Pakuranga/Howick users of the busway leading to the Panmure Station and Botany; and
- Reeves Road Flyover - provides for local traffic to bypass the heavily congested Pakuranga Road and Ti Rakau Drive route to the Pakuranga Highway/South-Eastern Arterial (SEART) via an overpass between SEART and Pakuranga Road (north).

An overview of the proposed works is shown in Figure 1 below.

Figure 1 EB2 Overview



EB3R will provide the extension of the Rapid Transport Network from SEART in the west to Pakuranga Creek in the east, including additional walking and cycling infrastructure. The construction of the busway within EB3R will involve a staged approach to construction to minimise disruption on the existing road network.

Key elements of EB3R include:

- A separated busway through the centre of Ti Rakau Drive
- The construction of two new westbound lanes for general traffic
- Two intermediate bus stations, being Edgewater Station and Gossamer Station (interim design)
- The western abutment for a future bridge across Pakuranga Creek, adjacent to the existing Ti Rakau Drive Bridge
- Intersection upgrades along Ti Rakau Drive, including William Roberts Road and Gossamer Drive.

Figure 2 EB3R Location (shown in yellow)

1.3 Roles and Responsibilities in Relation to the TPMP

The team responsible for achieving TPMP objectives is set out in Table 1 below. Team members will have the appropriate experience, project involvement and responsibility to ensure that all relevant aspects of EB2/EB3R are considered when making decisions on TPMP implementation.

Table 1 Roles and Responsibilities

Person	Role	Responsibility
TBC	Environmental Lead	Implementation of CCP on site and environmental compliance auditing.
TBC	Project Director	Implementation of designation and resource consents
TBC	Construction Manager	Ensuring the zone managers are aligned in their approach to ensuring environmental compliance with the TPMP
TBC	Project Arborist	Provide technical Arboricultural assessments and advice
TBC	Works Arborist	Onsite arboricultural monitoring as required. Provide advice and guidance to construction managers.

Person	Role	Responsibility
TBC	Arborist Operations Manager	Undertake tree removals and tree pruning requirements.
TBC	Auckland Council Urban Forest Specialist	Be on site as required by NoR/ resource consent conditions.
TBC	Auckland Council Compliance Monitoring Arborist	Monitoring compliance of arboricultural designation and resource consent conditions

1.4 Works Arborist

The appointed Works Arborist will be experienced in tree protection systems and construction methodologies and will be responsible for implementing the TPMP on site in accordance with the condition set submitted with the application.

This arborist will be responsible for confirming tree removal and retention in accordance with the Arboricultural Effects Assessment Tree Plans that accompany the resource consent and designation applications (hereon referred to as Tree Plans), and to oversee directly, all works within the dripline and rootzone of the retained 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.

The Works Arborist will make decisions on appropriate management of roots identified during excavations, carry out root pruning where required, and install materials (such as hessian/wool mulch) to maintain moisture levels within exposed rooting areas (refer to section 4.7).

The Works Arborist will work in cooperation with the Environmental Lead to ensure that sites are set up in a manner which avoids or minimises adverse effects to retained trees, without compromising site safety.

1.5 Project Arborist

The Project Arborist shall be suitably qualified and experienced in the preparation of technical reports, will provide specialist input, and assistance to the Works Arborist in appropriate decision making on site where required. The Project Arborist will prepare memorandums to be provided to the Auckland Council Compliance Monitoring Arborist as required (Section 3.3.2).

1.6 TPMP Certification and Review

Once certified, minor amendments as a result of changes in design, construction materials, methods or management of effects can be made to the TPMP without the need to seek recertification provided that the amendments are agreed to by Council, prior to the implementation of any changes.

The TPMP may be submitted in parts or stages to address activities or to reflect the staged implementation of the Project. If submitted in part, the TPMP will clearly show the linkage with plans for adjacent stages and interrelated activities.

Any amendments to the certified TPMP that may result in a materially different outcome/effect will be submitted to Council to certify these amendments are consistent with the relevant designation and resource consent conditions prior to implementation.

If no written response is received from Council within 10 working days of the management plan being submitted for certification, the TPMP will be deemed to have certification and works can commence.

2 Legal Requirements

The TPMP has been prepared in accordance with the relevant designation and resource consent conditions contained in the condition set submitted with the application. This document is intended to provide a framework and information that will assist in the implementation of these requirements.

If there is a conflict between the TPMP and the corresponding legislative requirements, including consent conditions, then the legislative requirements shall prevail.

3 Implementation and Operation

The TPMP is to be submitted to Auckland Council for certification in accordance with Section 1.6prior to any tree works associated with EB2/EB3R being carried out.

As part of the on-site works, the EBA shall develop safe work method statements which detail the procedures to avoid, remedy or mitigate any adverse construction effects on those trees identified for retention.

3.1 Pre-Construction

Works close to retained trees will be reviewed by the Project Arborist (Section 1.4) prior to construction.

Any minor alterations to detailed designs for works planned around retained trees, that do not introduce a material change to the certified TPMP, will be further considered during pre-start meetings, which will include Auckland Council representatives.

If the design of EB2/EB3R is modified so that it becomes apparent that protected trees identified as being retained within the Tree Plans are required to be removed, then the removal of the trees is appropriate if;

a) The design modification results in retention of a tree that was identified to be removed (i.e. no net loss of protected trees); or
b) If the design modification will result in a net loss of protected trees, a suitable replacement specimen tree is provided in EB2/EB3R alignment (in addition to the proposed planting shown on the approved/certified UDLP).

3.2 Construction Methodology/Project Staging

Prior to each stage of construction commencing, the Works Arborist (identified in Table 1) will carry out the following actions as identified in Table 3. Responsibilities for each action are identified. The actions shall be completed prior to the pre-start meeting held with Auckland Council representatives.

Table 3: Project Staging – Works Arborist Process

(i) Action	(ii) How	(iii) Responsibility	(iv) Document/ confirmed by:
Identify trees for removal	Tree marked with a red X with dazzle 5 days prior to removal. Checked by Works Arborist before starting work each day. Arborist Operations Manager to contact Arborlab if any discrepancies. Record that the checks have been completed on daily 'tool box' pre start sheet.	TBC	TBC

(i) Action	(ii) How	(iii) Responsibility	(iv) Document/ confirmed by:
Identify lizard habitat areas	Identify exclusion area, invite herpetologist to site, confirm removal methodology requirements.	TBC	TBC
Identify trees for retention	Marked with pink ribbon, tied to tree at 3 meters above ground level.	TBC	TBC
Identify retained trees; works in root zone / biosecurity	Identify exclusion area, attach 'protected tree' signs.	TBC	TBC

Prior to any works commencing, a meeting will be held at the site to discuss all the tree protection measures proposed and the relevant designation or resource consent conditions. Present at the meeting should be:

- AT
- the site's Environmental Lead
- the Works Arborist

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

- Project herpetologist
- Mana whenua cultural monitor

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

- Team Leader Monitoring (or representative)
- In the case of trees on Roads or Parks owned land – the Senior Urban Forest Specialist (or equivalent), Operational Management and Maintenance, Auckland Council Community Facilities.

Any additional trees noted during site walkover as requiring removal/pruning/works within rootzone (but not identified on the Tree Plans as requiring any works) 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 as evidence of agreed actions.

3.3 Tree Protection Measures

An experienced, qualified arborist (Works Arborist), as identified in section 1.4, experienced in tree protection systems, protocols and construction methodologies around trees, is to be engaged to manage the excavation works near the tree.

3.3.1 Pre/Post Work Administration Procedures

Prior to works commencing in the vicinity of protected trees to be retained, the Environmental Lead will arrange a pre-start meeting (as discussed in Section 3.1). 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.

An invitation shall be extended to the relevant Auckland Council Arborist responsible for the tree asset. The invitation shall be forwarded a minimum of five (5) days prior to the meeting.

Details of the meeting will be recorded on a digital arborist meeting minutes form.

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 and demarcated work areas.

All vehicle movements to access the site will be excluded from the permeable Tree Protection Zone (TPZ) – refer to section 4.8 and Appendix A for explanation of areas of retained trees.

Prior to works commencing, protective barrier fencing (refer to section 4.4 below) shall be erected to ensure exclusion of as much of the TPZ of retained trees as practicably possible, at the direction of the Works Arborist.

No chemicals or harmful fluids are to be emptied or disposed of within the TPZ.

Damage and/compaction to existing soil structure is to be avoided by the exclusion of machinery, structures, and vehicles from the TPZ, unless protected with appropriate, fit for purpose, temporary load bearing surfaces (refer to section 4.4 and 4.5 below).

Excavation methods within the TPZ are to be dependent on work and tree protection requirements. The primary method of excavation while within the rootzone of the retained tree will be by the way of hand-held tools such as a spade, hydro and/or air excavation. These will be used at the edge of the required excavation footprint to expose any roots that can be retained. Once the roots are protected, the remaining area of excavation can be undertaken cautiously by a light machine excavator working on top of load bearing surfaces (refer to sections 4.6 and 4.7 below).

Roots uncovered during the operation are to be retained and protected wherever possible. However, if this cannot be achieved, the severance of any root in excess of 35mm shall be done so at the discretion of the appointed arborist if the cumulative effects are within the tree's tolerances.

Where roots are to be severed, they are to be cut by the appointed arborist, or a contractor approved by the appointed arborist.

The backfill of excavations, around retained roots, is to utilise the original excavated material or with a superior quality soil.

Retained roots are to be protected through hessian or wool mulch wrapping (or a similar product), and where exposed to chemicals or concrete, to be covered in a layer of polythene (or a similar product). Surface roots are to be covered with geotextile fabric and a 75mm layer of sand when affected by paving.

On completion of the works, the works arborist at their discretion shall "sign off" the work. If requested, the works arborist shall provide a brief account of EB2/EB3R 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 the Environmental Lead to ensure that all persons engaged or otherwise to work on the site are made aware of the conditions of the designation and resource consents, and that those conditions are adhered to at all times.

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

3.3.2 **Reporting**

A monthly report of arboricultural monitoring shall be provided to the relevant Auckland Council Compliance Monitoring Arborist with a folder of completed Supervising Arborist Records. The data will be recorded digitally and provided as a brief written document. Reporting will be carried out in accordance with Table 2 below.

Table 2 reporting

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

3.4 Tree Retention

Regular forward works walkovers shall occur, with the Environmental Lead and the Works Arborist to review upcoming works. Where works are required within the root zone of retained trees, the Works Arborist will confirm that the proposed works can be completed with no more than minor adverse effects to the tree, as anticipated by the relevant resource consent and designation conditions.

3.5 Biosecurity measures

Dutch Elm Disease (DED) Prevention Measures are to be adopted for works around any elm trees (*Ulmus sp.*), identified within the site.

There are strict rules, under the Biosecurities Act (1993), pertaining to the disposal of elm material in the Auckland region. The removal of the elm trees from within Eb2/EB3R 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 Arborist Operations Manager will demonstrate (in writing) that they have the appropriate resources to fulfil the biosecurity obligations prior to carrying out the removal of any elm trees as listed for removal in the Tree Plans.

- 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.

3.6 Sustainability

Vegetation removed shall generally be chipped, and the resulting mulch re-used within the open space area from which it has been removed. If any trees from road reserve are removed, the mulch may be used within the nearest available open space area. Re-using the mulch has multiple benefits, including; soil moisture retention for planted areas, improving soil condition and reducing weed infestation. Any pest species should be chipped and removed from site to either an appropriate landfill, or a local, large-scale composting operation to avoid the spread of pest seeds. When resulting mulch is to be re-used on site it should be stored in piles and left to age for several months before use.

If mulch is not able to be used within EB2/EB3R, it will be donated to a local group where possible for use on appropriate environmental improvement projects.

Logs from any larger trees which require removal may also be re-used within open space areas. Uses could include; play material for children (logs securely laid on the ground to climb upon), stumps left high for carving on site, scattered in any areas likely to have herpetofauna present as habitat/food source (food source as the wood decays and insects become present).

Re-using both mulch and logs reduces vehicle movements that would otherwise be required to remove the materials from site.

Any use of chainsaws will use eco-friendly chain-bar lube.

4 Methodology

4.1 Supervision

Any works requiring tree protection measures shall be conducted under the supervision and direction of a suitably qualified and experienced arborist (Section 1.4). 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.

4.2 Staff Training

All staff who will be working on sites where retained trees are present shall receive a briefing from the Works Arborist, utilising the attached flash cards.

4.3 Pre/Post work administration procedures

Auditing reports are to be compiled by the Works Arborist following the completion of each zone.

4.4 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 recorded by the Works Arborist. For the duration of time the protective fence is in place, the area enclosed by the fence shall be regarded as protected, 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 Auckland Council arborist or representative) (Figure 3). The form of the fencing shall be dependent on the type of activity to be undertaken within the vicinity of the tree and shall be suitable for the purpose. 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 TPZ area of retained trees.

Figure 3 – Standard tree protection type

4.5 Storage, access and operation

No material is to be stored, emptied or disposed of in or around the root zone of the retained tree(s) 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 deployment 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.

4.6 Excavations

Any soil excavations are to be managed appropriately by the Works Arborist when working within the TPZ (refer to Section 4.7 below) of the tree. These excavations may utilise a suite of methodologies appropriate to the situation, ranging from hand digging, air-excavation, hydro-excavation and suitably sized machinery 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 sledgehammer, 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.

4.7 Root protection

In accordance with New Zealand Arboricutural Association guidelines, this TPMP references the Australian Standards (AS4970:2009) - Protection of Trees on Development Sites. Prior to construction, the TPZ and Structural Root Zone area for each tree proposed to be retained will be calculated and marked out on site.

- **Tree Protection Zone (TPZ)**

  The TPZ is the optimal combination of crown and root area (as defined by AS 4970-2009) that requires protection during the construction process so that the tree can remain viable. The TPZ is an area that is isolated from the work zone to ensure no disturbance or encroachment occurs into this zone. Tree-sensitive construction measures must be implemented if work is to proceed within the TPZ.

- **Structural Root Zone (SRZ):**

  The SRZ is the area of the root system (as defined by AS 4970-2009) used for stability, mechanical support and anchorage of the tree.

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 find sand not less than 50mm thick and a layer of geotextile fabric shall be placed over the roots prior to pouring the concrete/asphalt.

4.8 Tree Pruning Measures

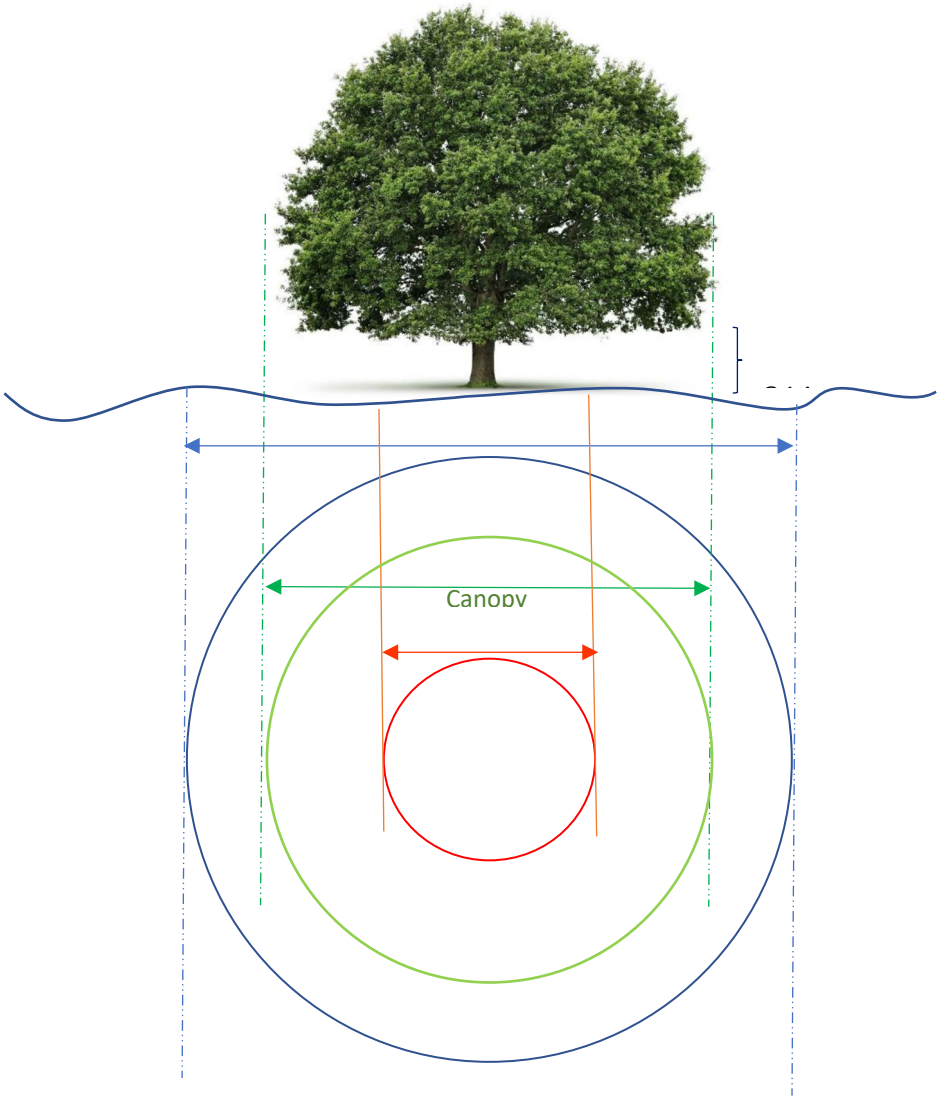
Prior to construction the construction manager shall engage Council approved arboricultural contractors to carry out preliminary pruning to maintain safe working areas.

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.

Any arboricultural work shall be undertaken by suitably trained and experienced individuals in accordance with NZARB pruning standards (MIS308).

Appendix A: Tree Protection Zone (TPZ) & Structural Root Zone (SRZ).

The Australian Standard *AS 4970-2009 - Protection of trees on development sites* is used for the allocation of tree protection zones. This method provides a TPZ that addresses both tree stability and growth requirements. TPZ distances are measured as a radius from the centre of the trunk at ground level.



AS4970-2009, s3: The radius of the TPZ is calculated for each tree by multiplying its Diameter @ Breast Height measured @ 1.4m from ground level (DBH × 12 = TPZ). (DBH = Trunk Girth @ 1.4m ÷ π).

To calculate the SRZ: Radius SRZ = **D**iameter **A**bove **R**oot **C**rown (**DRC** x 50) ^ 0.42 x 0.64. If the DRC is less than 0.15m the SRZ will be 1.5m.

Appendix B: Auckland Unitary Plan Operative in part, J1 Definitions

Protected root zone: "*The circular area of ground around the trunk of a protected tree, the radius of which is the greatest distance between the trunk and the outer edge of the canopy. For columnar crown species the protected root zone is half the height of the tree".*

Figure J1.4.5 Protected root zone A

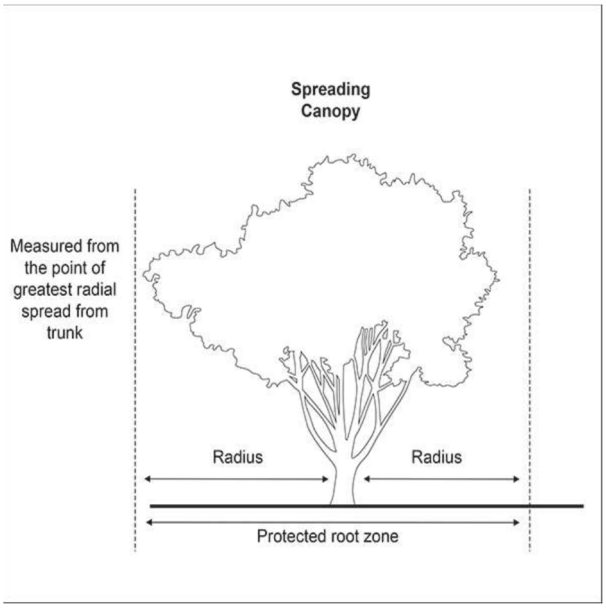
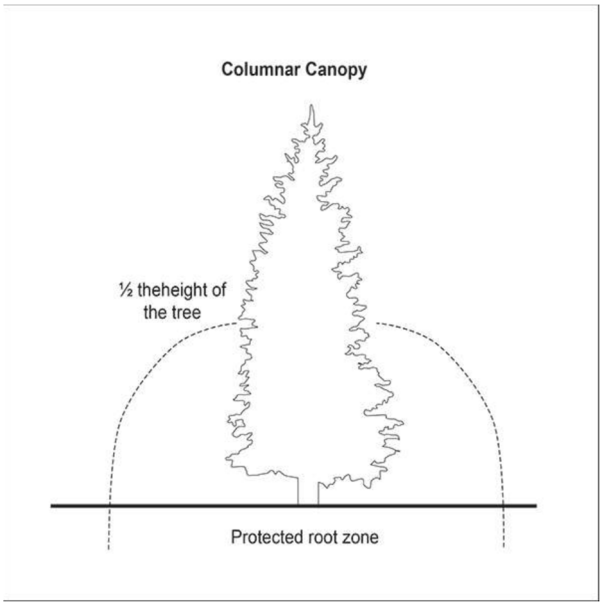


Figure J1.4.6 Protected root zone B



Appendix C: Arborlab Tree Protection Card

March 2021

Tree Protection Process

When operating within the Root Zone of protected trees

- The Works Arborist must be approved by the governing Council authority and MUST be familiar with all relevant rules, standards & conditions
- All personnel must have attended an Arborlab induction on working within the root zone of trees
- All personnel involved in the project must be aware of the tree issues on the site and have the tree reports and conditions of consent on site
- Arborist MUST pre-inspect site to assess risks and develop a work plan with the contractor
- Arborist MUST supervise excavations within the root zone of trees

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OR MONITORING MANAGER
027 495 7433

Arborist MUST supervise excavations within the root zone of trees

- **No materials stored within root zone**
- **No machinery stored within root zone**
- **No unsupervised machinery digging within root zone**
- **No damaging overhanging vegetation (look up)**
- **No pruning or damaging roots - Arborist must approve all pruning**
- **Arborist must be on site to supervise the removal of any hard surface within the rootzone of a tree**

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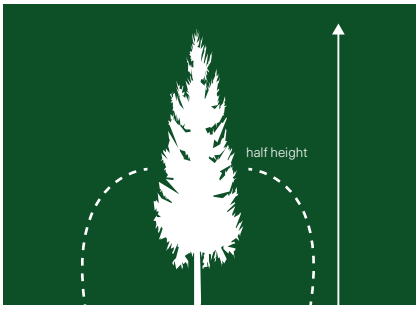
March 2021

How to determine a Root Zone

Ensure the correct determination procedure

The rootzone is measured as per the illustrations below.



Columnar Canopy
(Tall, Narrow, Upright trees)
Measure half the height of the tree and apply it in a radius around the trunk.

Spreading Canopy
Measured from the point of greatest radial spread (generally the northern side of the tree) and applied in a radius around the trunk.

Kauri Tree
Measure the outermost canopy dripline and multiply three times in a radius around the trunk.

- A pre-commencement meeting is to be held between the contractor and Arborlab to ensure all personnel are aware of the tree work plan
- All excavations within the root zone of all trees shall be supervised by the Works Arborist
- Main stems shall be protected from potential damage
- All activities shall be recorded by Arborlab and reported on
- Any noncompliance issues are documented and reported to site managers
- All active sites are regularly audited throughout the duration of the projects`

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OR MONITORING MANAGER
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Appendix D: Working within the Vicinity of Trees

Working within the vicinity of trees

Trees provide immense benefits to the environment, community and society.

Auckland Council have recognised that trees hold value, and have given specific groups of trees protection within the Auckland Unitary Plan (AUP). The AUP has set out specific rules and standards that must be adhered to if work is proposed within the vicinity of these trees.

FIVE MAIN GROUPS OF TREE PROTECTION

Street Trees - Trees located in the road corridor
Park Trees - All trees in open spaces
Notable Trees - Specified list of historic or significant trees
Ecological & Environmental Vegetation -In overlay areas or "sensitive environments" as identified in the AUP.
Kauri Trees -To prevent Kauri dieback disease *see handout for more details.

Talk to one of our solutions experts

With over 20 years experience our consulting team specialise in Arboriculture, Ecology and Green space asset management and sustainability

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Key Points when working within the vicinity of the five main groups:

	TREES ON PRIVATE LAND	STREET TREES	PARKS AND RESERVE TREES	NOTABLE TREES	ECOLOGICAL & ENVIRONMENTAL VEGETATION	KAURI TREES
REVIEW REQUIRED	NO	✓	✓	✓	✓	✓
ARBORIST REQUIRED ON SITE WHEN EXCAVATIONS UNDERTAKEN	NO	✓	✓	✓	✓	NOT IF KAURI DIEBACK PROTOCOL IS ADHERED TO
ARBORIST INPUT NOTABLE TREES	✓	✓	✓	✓	✓	✓
ARBORIST INPUT OVERLAY AREAS	✓	✓	✓	✓	✓	✓

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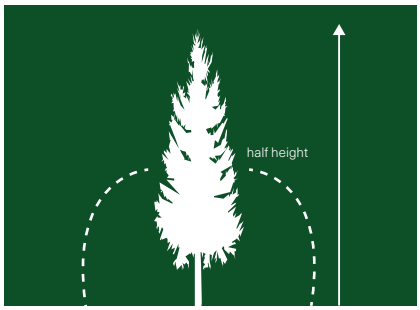
Identifying the protected root zone

A specialist arborist will be able to identify and record the tree species and dimensions, in order to calculate the protection zone, structural root zone and the extent of incursion.

All trees that are OVER 4m in height or 400mm in diameter are protected. You also need Tree Owner Approval for all activities within the rootzone of ALL COUNCIL TREES. The rootzone is measured as per illustrations below.



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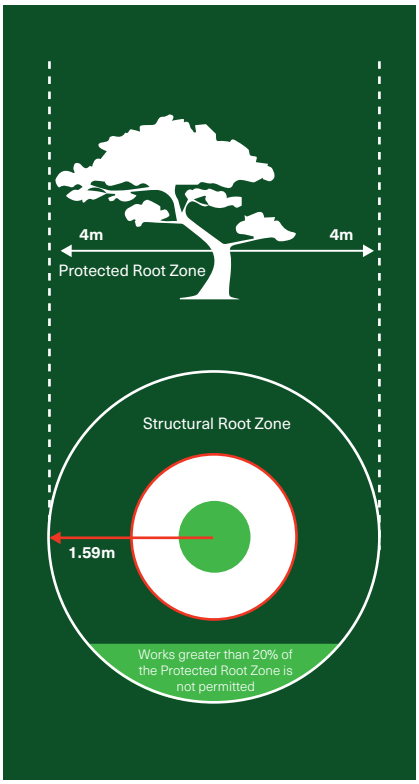
Measuring the structual root zone



Structural Root Zone Radius

Calculation: (Diameter above root crown x 50) $^{0.42}$ x 0.64 (0.175 x 50) $^{0.42}$ x 0.64 = 1.59m

Step by step process :

1. Clarify potential rules by location, tree type, asset owner and overlays

2. Identify trees

3. Calculate root zone

4. Assess incursion and if it is within permitted standards or requires Tree Consent

5. Get approvals, monitor works and send final memos as per requirement

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