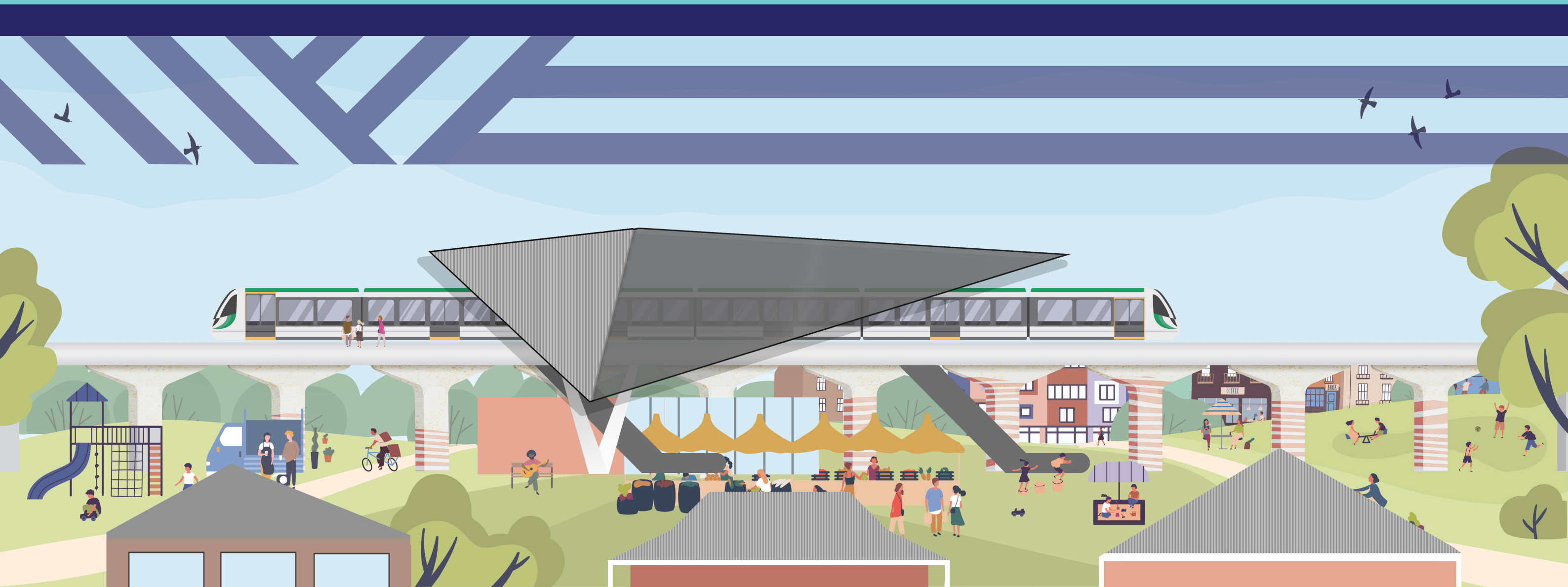


Appendix H – Work Zones and Tree Management Plans

Victoria Park-Canning Level Crossing Removal

TREE MANAGEMENT PLAN SUMMARY

September 2022



1.1 ARBORIST SURVEY

The project arborist has provided a 'Preliminary Arboricultural Report' report including advice on particular trees of value, retention advice and tree protection advice during construction.

The survey includes 3000+ trees captured in & outside rail corridor (PTA, ToVP, CoC & CoG).

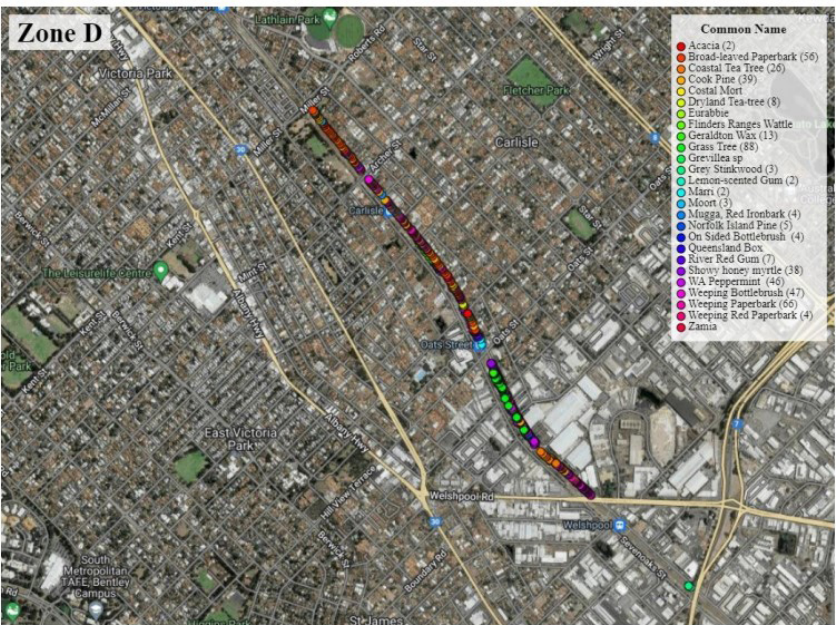
Data provided:

- Species
- Health
- Size (height, canopy width, TPZ + RPZ)
- Structure
- Useful life expectancy
- Habitat value
- Black cockatoo foraging species
- Native / exotic
- Arborist notes, comments



Preliminary Tree Survey

Excerpt



Cook Pine Tree ID #116

Tree Details		Tree Location	
Latin Name:	Araucaria columnaris	Longitude:	115.918219
Common Name:	Cook Pine	Latitude:	-31.990519
Tree Age:	Mature	Land Use:	Street Verge
Health:	Fair	Land Type:	Public Area
Structure:	Fair		
Tree Height (Estimated) [m]:	14		
Canopy Spread [m]:	3		
DBH [cm]:	48		
DBH Range:	46-60cm		
Diameter at Root Flare (DRF) [m]:	0.52		
Tree Protection Zone (TPZ) [m]:	5.76		
Structural Root Zone (SRZ) [m]:	2.51		
Useful Life Expectancy:	40+ years		
Origin:	Exotic		
Habitat value:	Low		
QTRA Risk Category:	Broadly Acceptable		
Observation Comments:	Minor uplifting required to provide 2m clearance above ground level		
Notes:			
Foraging species:			

Photos

Street View

Map View

1.2 MODELLING, COORDINATION & DOCUMENTATION

Arborist survey data imported to shared BIM model. Existing trees geolocated and modelled in 3D for coordination + clash detection with all design disciplines including canopies, RPZs + TPZs.

Trees assessed for protection based on:

- Species
- Health
- Size (height, canopy width, TPZ + RPZ)
- Structure
- Useful life expectancy
- Habitat value
- Black cockatoo foraging species
- Native / exotic
- Valuable / weed species

Extensive design review & coordination has been undertaken and is ongoing with the construction team and all design disciplines against:

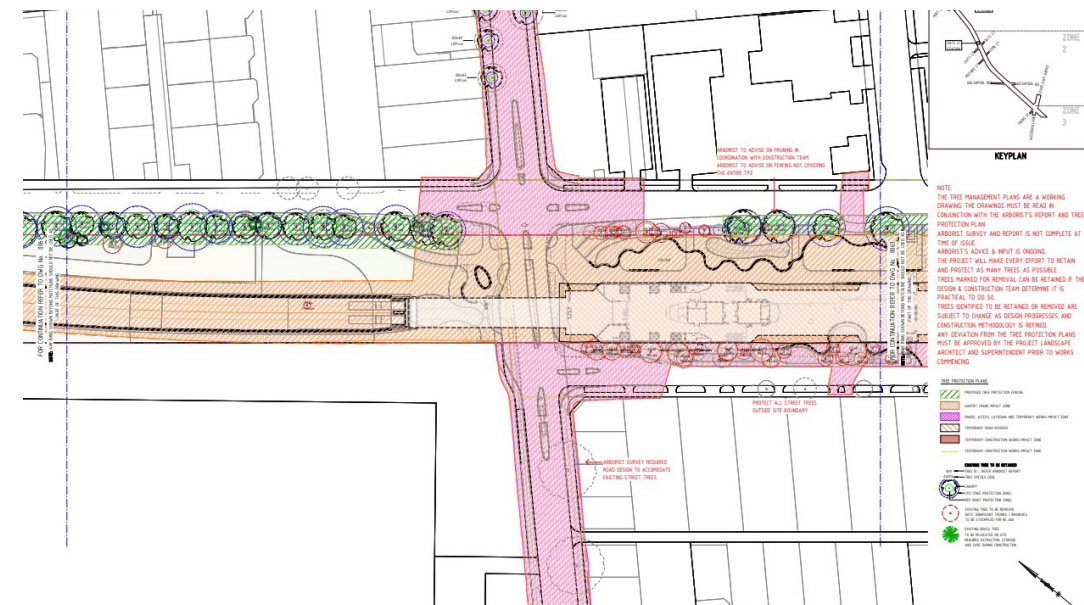
- Design & constructability - new station buildings, viaduct, retaining walls, car parks etc.
- CPTED, sightlines + safety
- Gantry crane operations
- Earthworks
- Access + laydown areas
- Utility modification works
- Road & intersection upgrades
- Temporary works

The tree retention plans form part of the Landscape and Urban Design Package. This is a working drawing, subject to change as design progresses. Any departures from these drawings must be approved by the project landscape architect. ALUA will continue to aim to retain as many trees as possible.

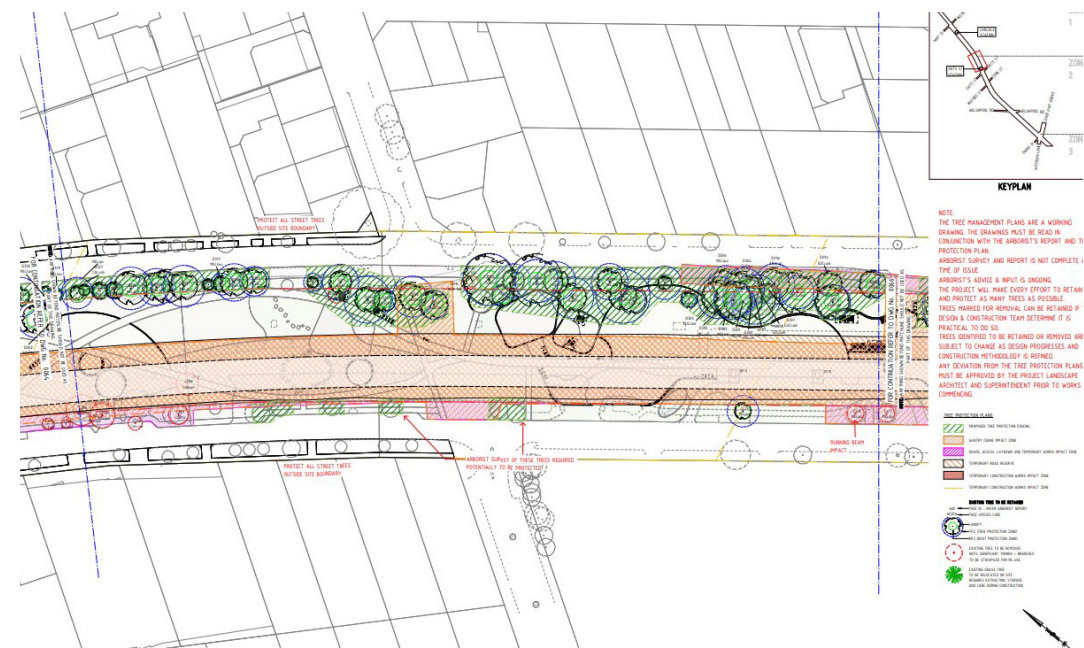
The project arborist is to provide 'Arboricultural Impact Report' & 'Construction Specification' as per AS4970 prior to works on site commencing.



Overview of Tree Management Plans Layout



Station plaza (example extract)



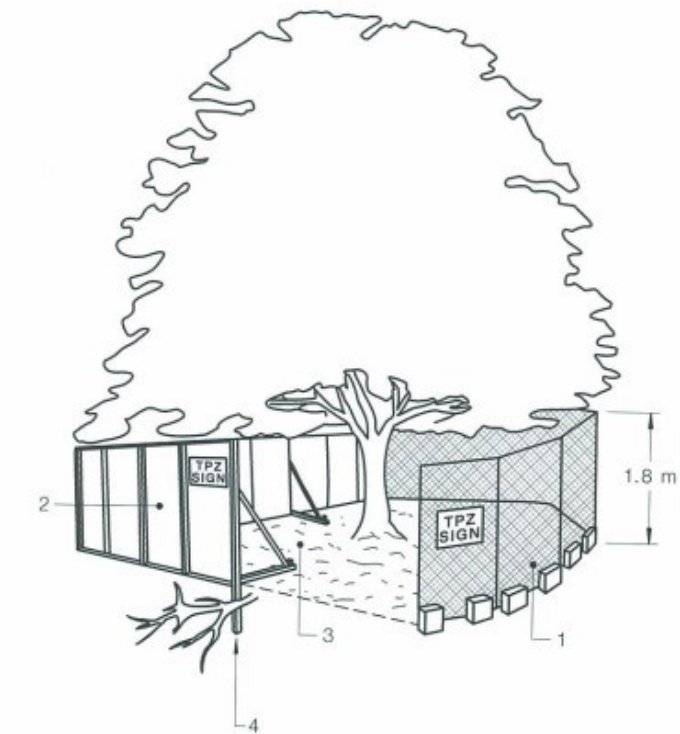
Green Corridor (example extract)

1.3 CONSTRUCTION PHASE

The project arborist is to provide Updated Tree Protection Plan including 'Construction Specification' as per AS4970 prior to works on site commencing.

Protection measures throughout the construction phase include but are not limited to:

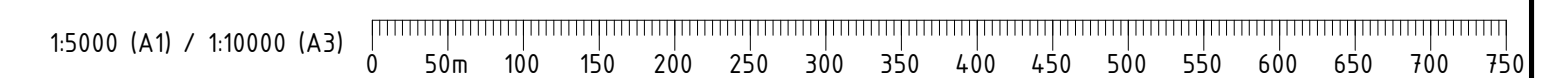
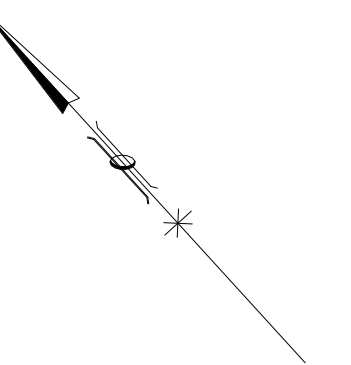
- Tree Protection Fencing as per AS4970
- Formative pruning (by qualified arborist) as per AS4373
- Supplemental watering, fertilizing or other treatments as advised by project arborist and as per AS 4970
- Arborist present on site during works within TPZs or SRZs as per AS4970
- Any additional measures outlined in the 'Arboricultural Impact Report'
- Regular site visits by project arborist as per AS4970, 2009 and as set out in the Tree Protection Construction Specification



LEGEND:



- 1 Chain wire mesh panels with shade cloth (if required) attached, held in place with concrete feet.
- 2 Alternative plywood or wooden paling fence panels. This fencing material also prevents building materials or soil entering the TPZ.
- 3 Mulch installation across surface of TPZ (at the discretion of the project arborist). No excavation, construction activity, grade changes, surface treatment or storage of materials of any kind is permitted within the TPZ.
- 4 Bracing is permissible within the TPZ. Installation of supports should avoid damaging roots.

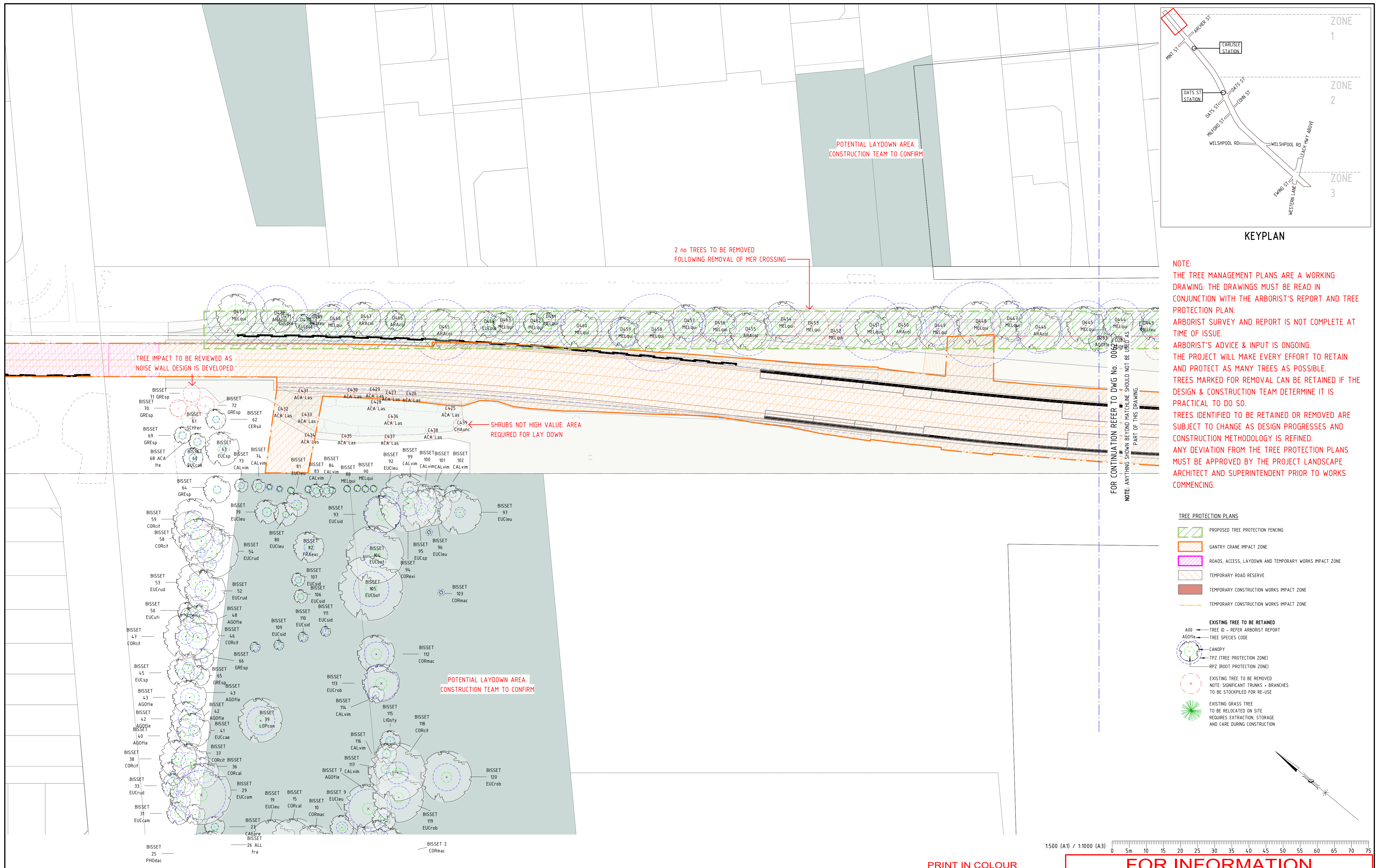
FIGURE 3 PROTECTIVE FENCING

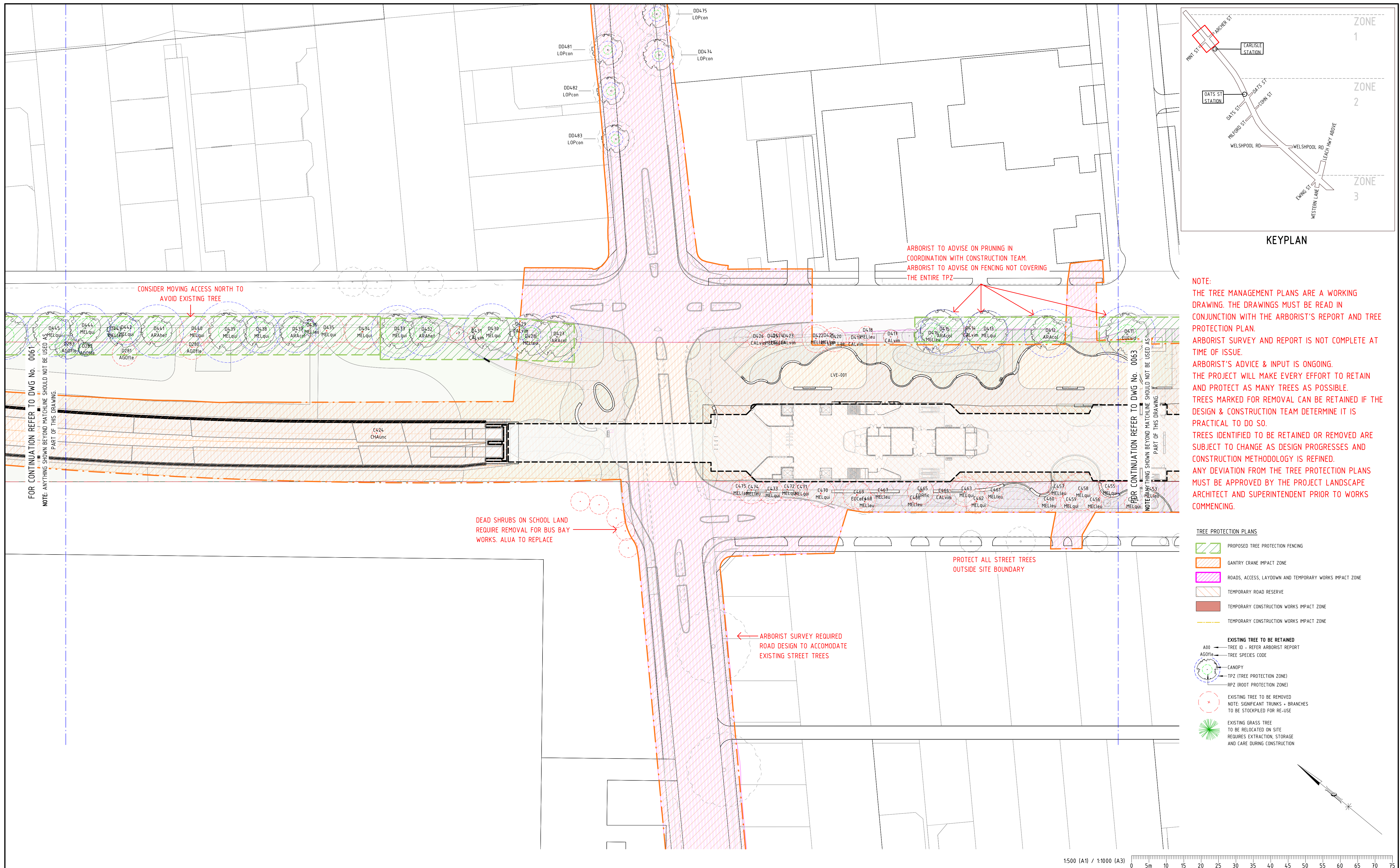


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		AT ORIGINAL PLOT SIZE																													

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TREE PROTECTION PLANS

	PROPOSED TREE PROTECTION FENCING
	GANTRY CRANE IMPACT ZONE
	ROADS, ACCESS, LAYDOWN AND TEMPORARY WORKS IMPACT ZONE
	TEMPORARY ROAD RESERVE
	TEMPORARY CONSTRUCTION WORKS IMPACT ZONE
	TEMPORARY CONSTRUCTION WORKS IMPACT ZONE

EXISTING TREE TO BE RETAINED

A00 TREE ID - REFER ARBORIST REPORT

AG01a TREE SPECIES CODE

CANOPY

TPZ (TREE PROTECTION ZONE)

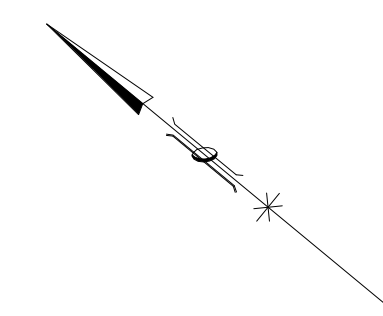
RPZ (ROOT PROTECTION ZONE)

EXISTING TREE TO BE REMOVED

NOTE: SIGNIFICANT TRUNKS + BRANCHES TO BE STOCKPILED FOR RE-USE

EXISTING GRASS TREE TO BE RELOCATED ON SITE

REQUIRES DRAINAGING, STORAGE AND CARE DURING CONSTRUCTION



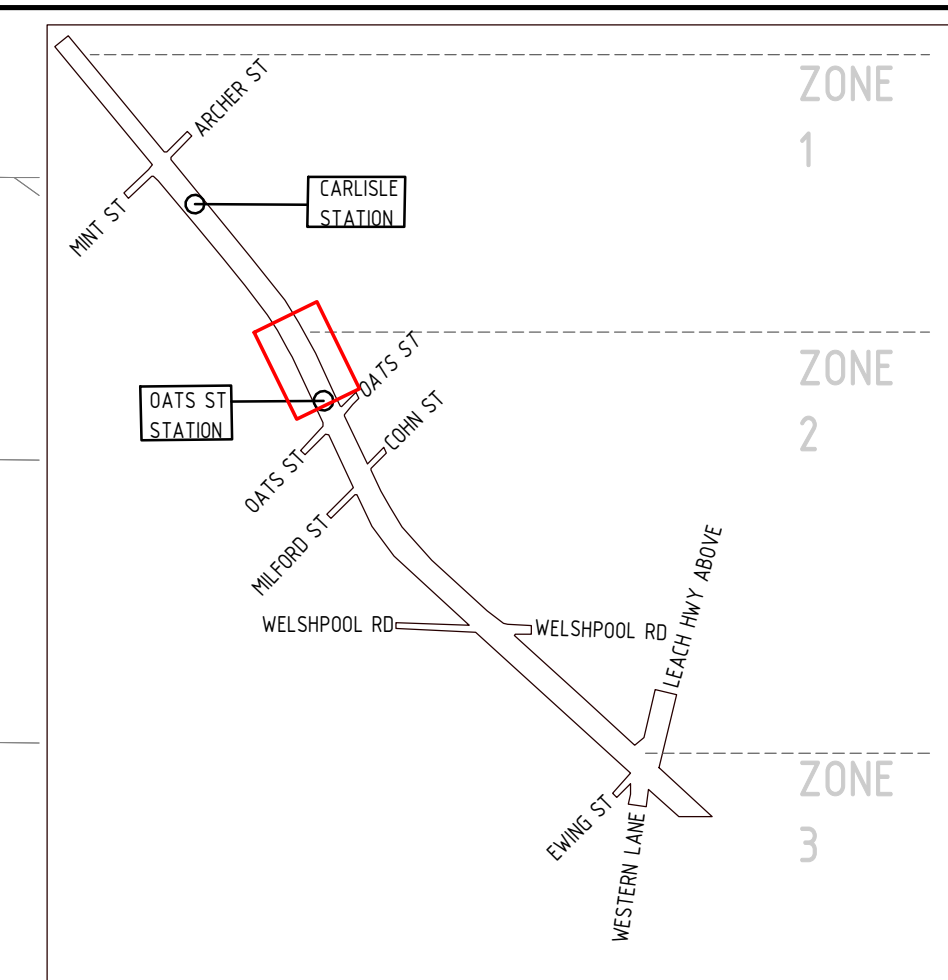
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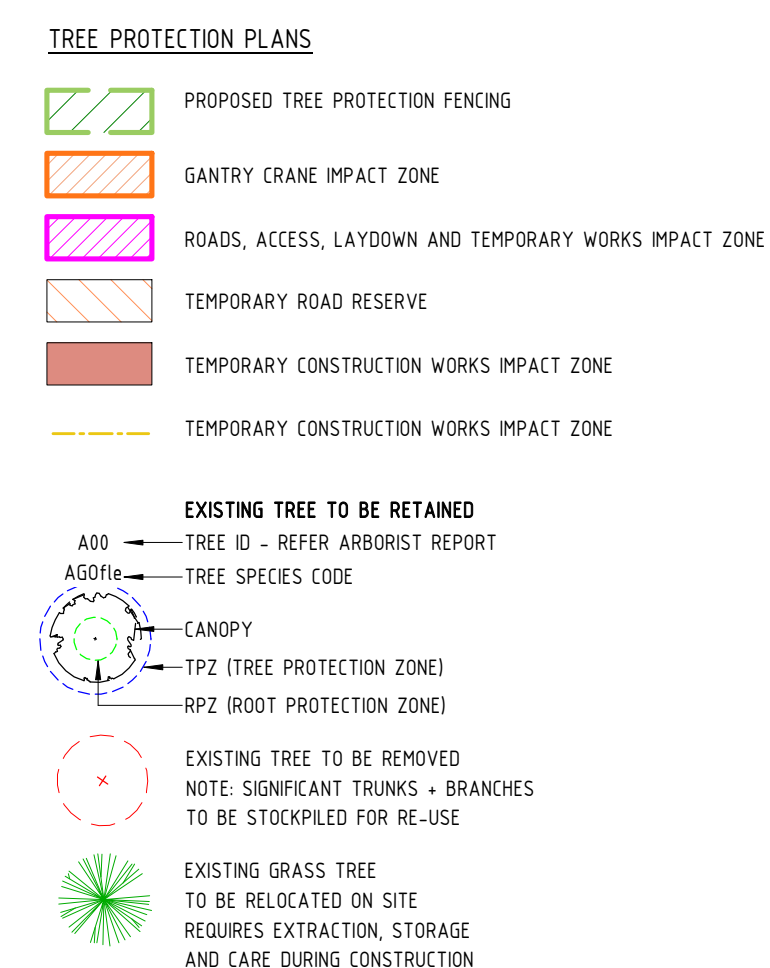
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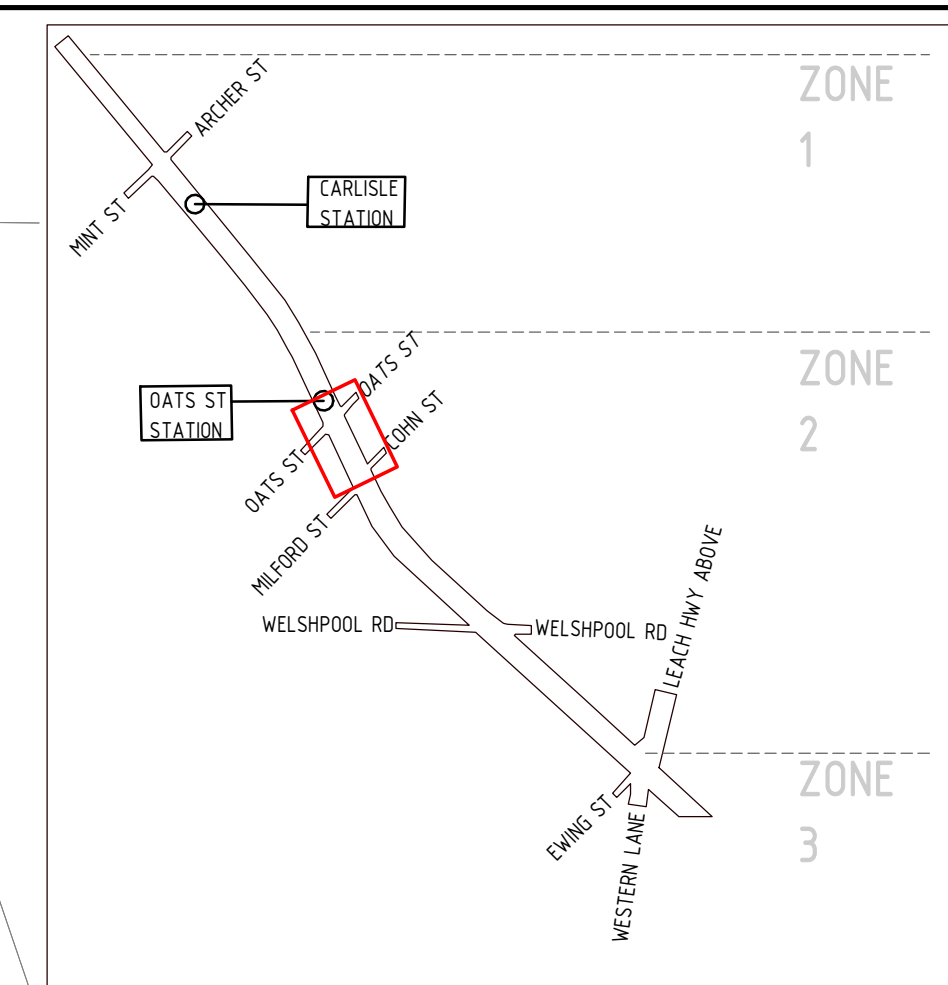
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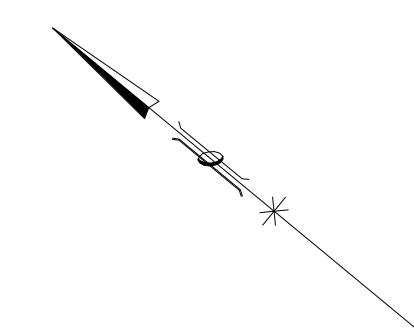
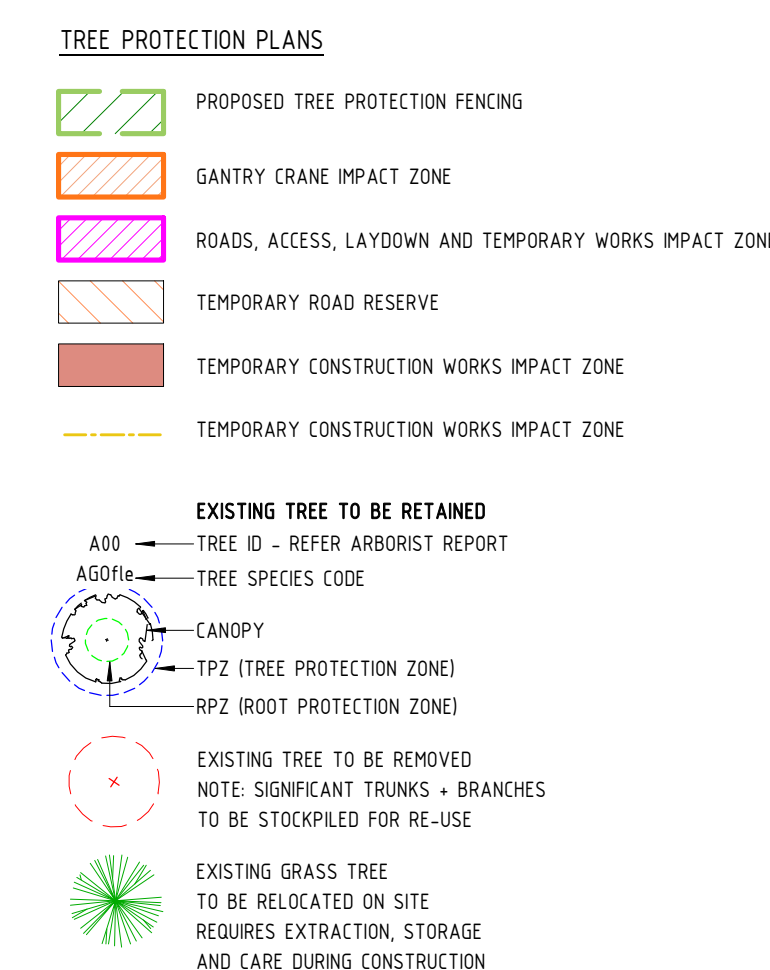
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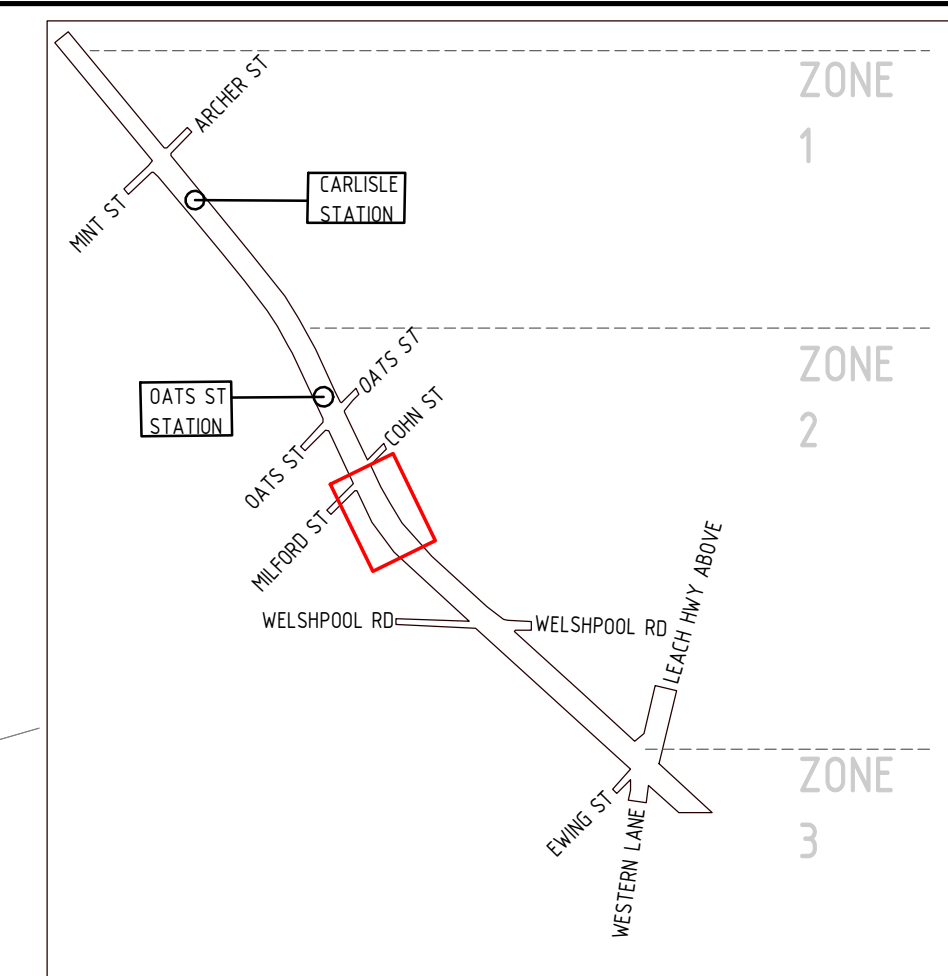
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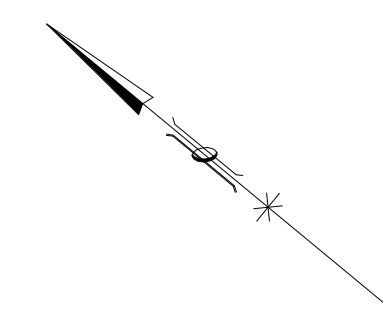


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TREE PROTECTION PLANS

- | | |
|---|--|
|  | PROPOSED TREE PROTECTION FENCING |
|  | GANTRY CRANE IMPACT ZONE |
|  | ROADS, ACCESS, LAYDOWN AND TEMPORARY WORKS IMPACT ZONE |
|  | TEMPORARY ROAD RESERVE |
|  | TEMPORARY CONSTRUCTION WORKS IMPACT ZONE |
|  | TEMPORARY CONSTRUCTION WORKS IMPACT ZONE |

- EXISTING TREE TO BE RETAINED**
- A00 — TREE ID - REFER ARBORIST REPORT
A001E — TREE SPECIES CODE
- CANOPY
TP2 (TREE PROTECTION ZONE)
RP2 (ROOT PROTECTION ZONE)
- EXISTING TREE TO BE REMOVED**
NOTE: SIGNIFICANT TRUNKS + BRANCHES TO BE STOCKPILED FOR RE-USE
- EXISTING GRASS TREE**
TO BE RELOCATED ON SITE
REQUIRES EXTRACTION, STORAGE AND CARE DURING CONSTRUCTION




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				CHECKED	H. GALLOWAY			
				APPROVED	K. MELING			
DATE APPROVED			HORIZONTAL: PCG20 VERTICAL: AHD71	DATE	05.08.22	PTA Drawing No: 04-C-19-0067		Rev: A

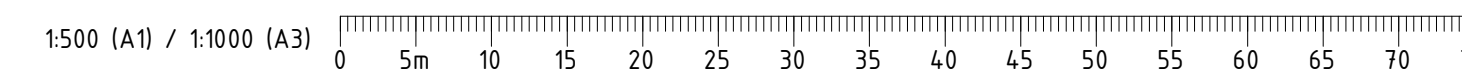
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TREE PROTECTION PLANS

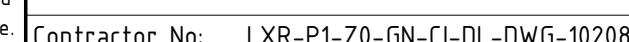
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	TEMPORARY ROAD RESERVE
	TEMPORARY CONSTRUCTION WORKS IMPACT ZONE
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EXISTING TREE TO BE RETAINED	
A00	TREE ID - REFER ARBORIST REPORT
AG01a	TREE SPECIES CODE
	
	EXISTING TREE TO BE REMOVED NOTE: SIGNIFICANT TRUNKS + BRANCHES TO BE STOCKPILED FOR RE-USE
	EXISTING GRASS TREE TO BE RELOCATED ON SITE REQUIRES EXTRACTION, STORAGE AND CARE DURING CONSTRUCTION

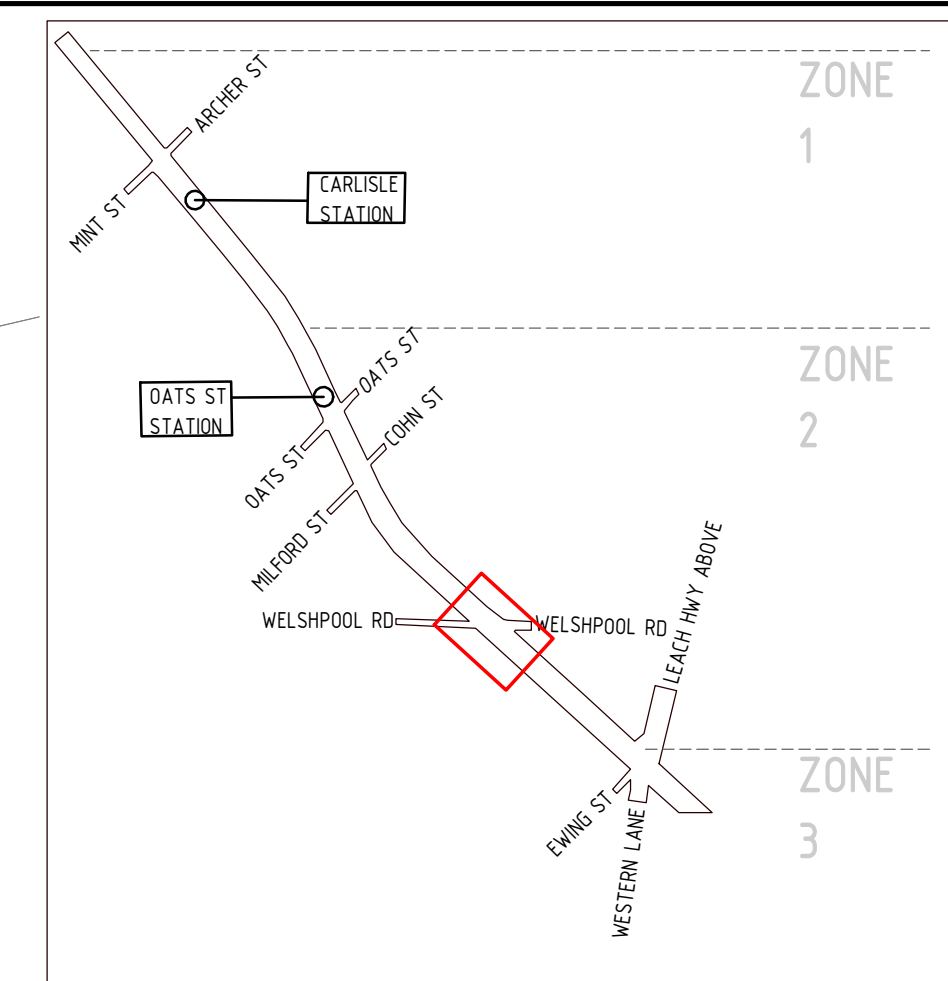


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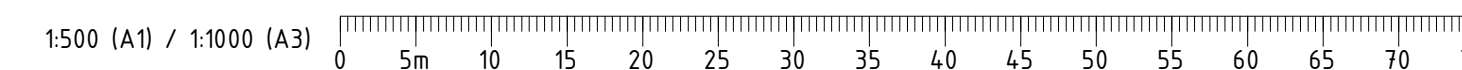
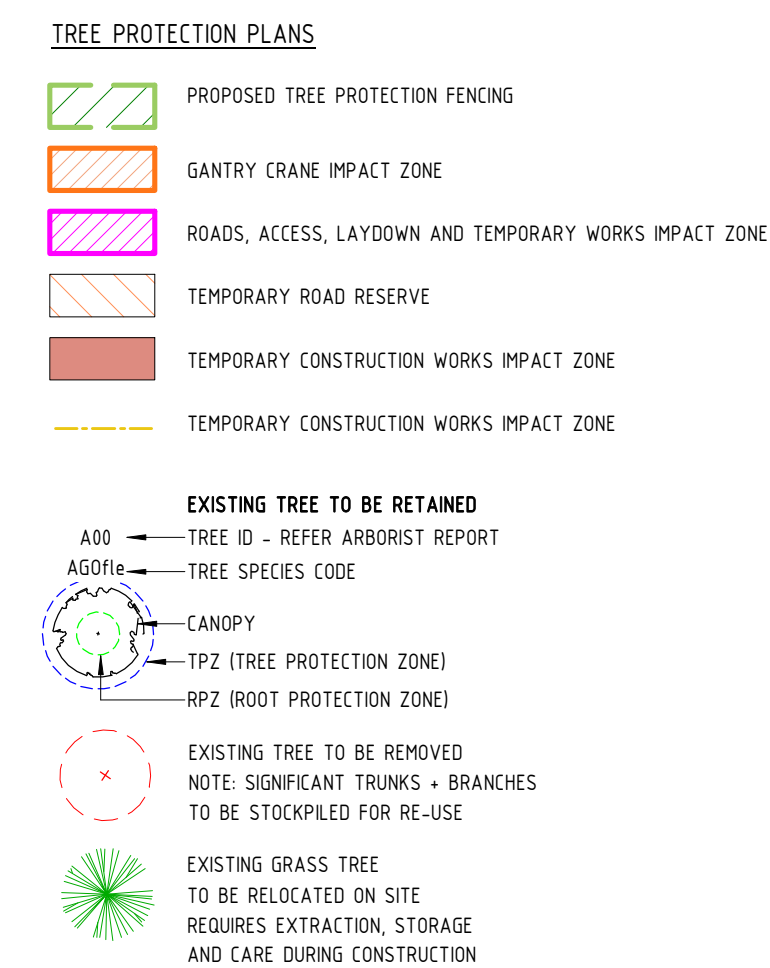
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 Government of Western Australia Public Transport Authority	VICTORIA PARK TO CANNING LEVEL CROSSING REMOVAL	
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PTA Drawing No:	04-C-19-0068	Rev: A



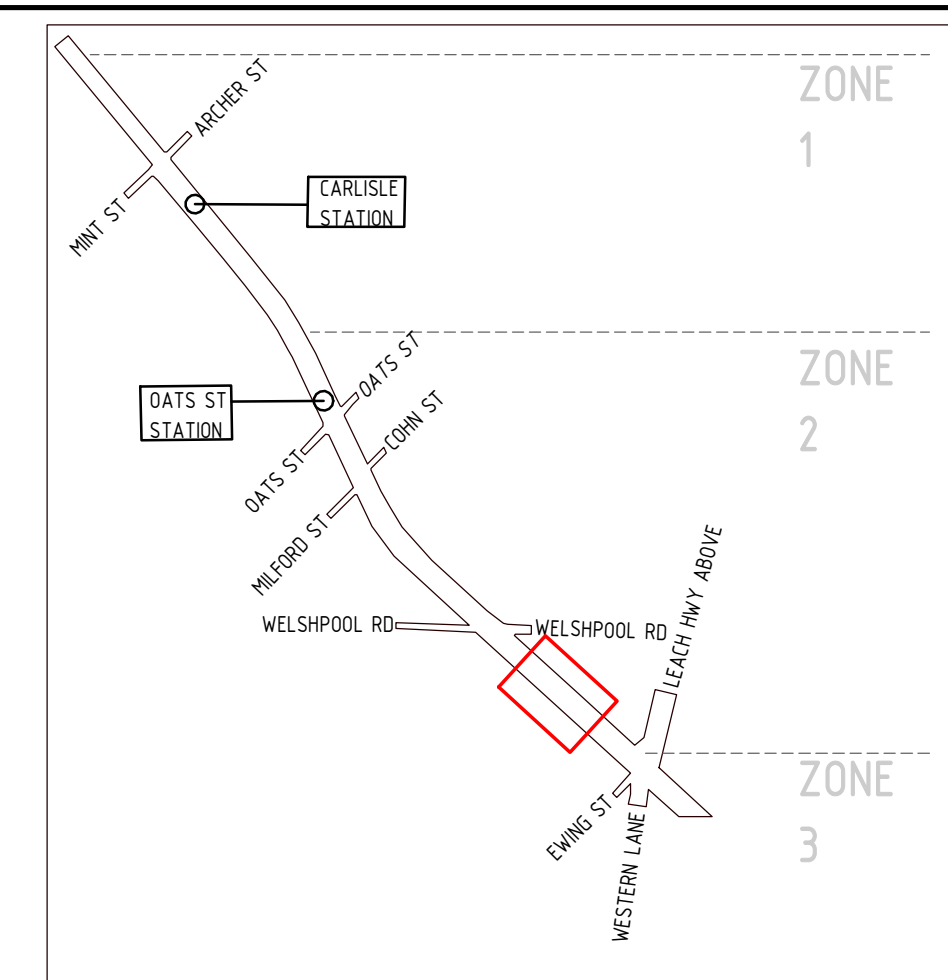
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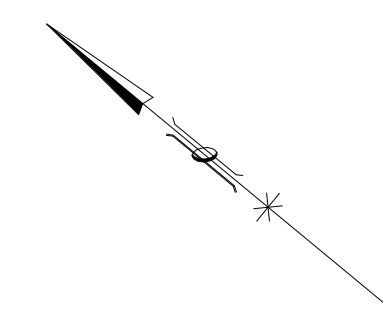


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-
- EXISTING TREE TO BE RETAINED**
- ADD TREE ID - REFER ARBORIST REPORT
 - ADDFREE TREE SPECIES CODE
 - CANOPY
 - TPZ (TREE PROTECTION ZONE)
 - RPZ (ROOT PROTECTION ZONE)
- EXISTING TREE TO BE REMOVED**
- NOTE: SIGNIFICANT TRUNKS + BRANCHES TO BE STOCKPILED FOR RE-USE
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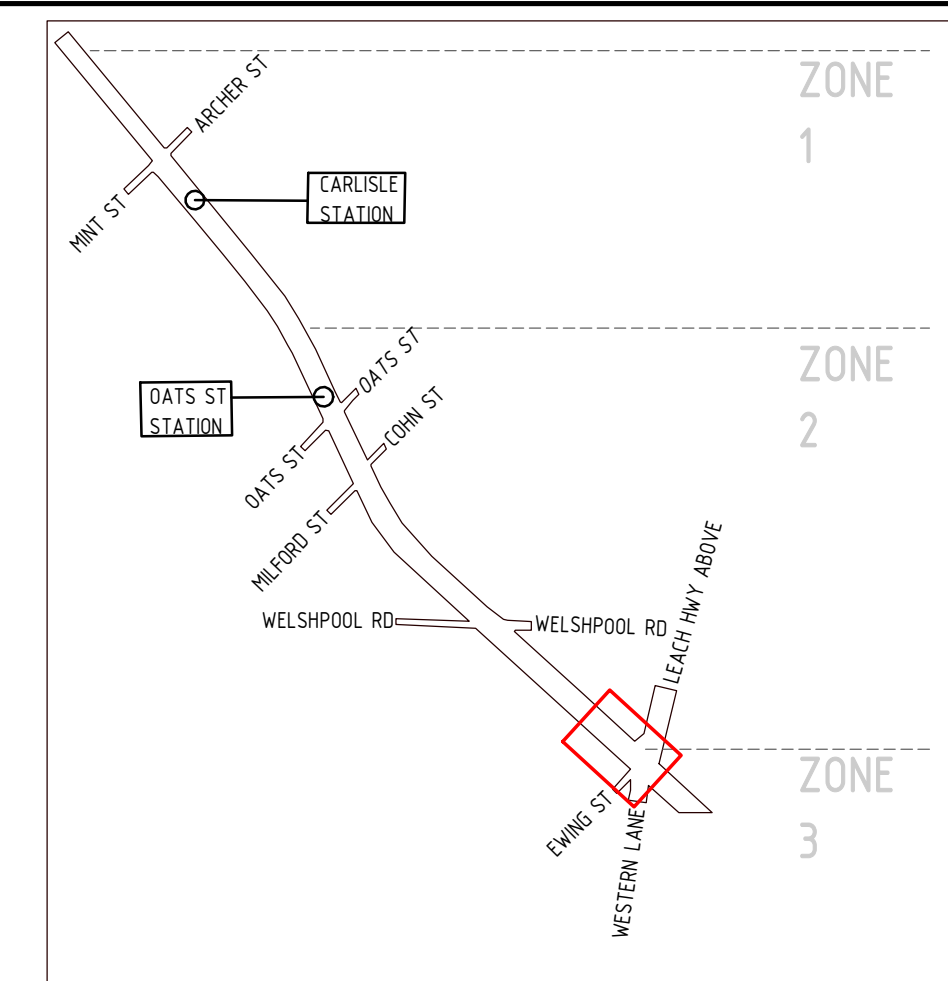
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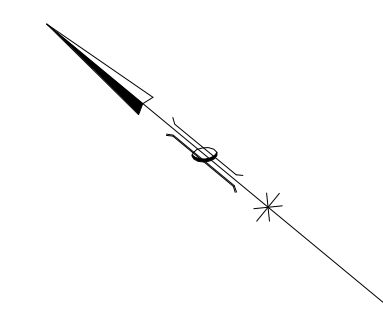
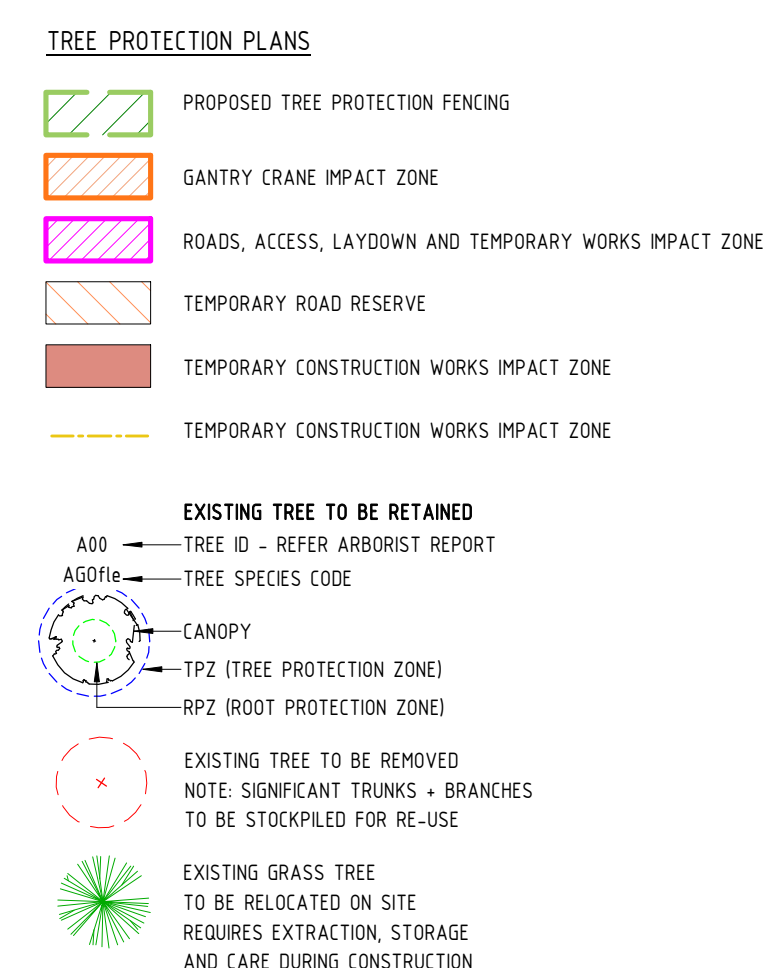
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			DATUM HORIZONTAL: PCG20 VERTICAL: AHD71		CHECKED	H. GALLOWAY
DATE	APPROVED				K. MELING	
DATE APPROVED	DATE				05.08.22	

 Government of Western Australia Public Transport Authority	VICTORIA PARK TO CANNING LEVEL CROSSING REMOVAL	
	ZONE 0 - URBAN DESIGN & LANDSCAPE PACKAGE 1 - OATS STREET TREE MANAGEMENT PLAN - SHEET 10	
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Preliminary Tree Survey

Location: Armadale Line Upgrade;
Leach Highway to Miller Street

Report Prepared for: ALUA

Date: 18 August 2022

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Grad Cert Arboriculture

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Westworks Consultancy

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www.westworksconsultancy.com.au

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1.0 Introduction

A tree survey was undertaken to pick up the details of trees on the verge and within the Rail corridor along the Armadale Train line from Leach Highway, Welshpool to Miller Street, East Victoria Park (Package 1). The purpose of this tree survey is to inform the design process for the raising of the train line and creation of new public areas.

The survey area has been divided into two sections, with the rail being the divide. “Part C,” is the western half of the Rail Corridor and verge and “Part D,” being the Eastern half of the rail corridor and adjacent verge. Trees have been number from 1 onwards for each portion

This portion of Track has been surveyed at different times, due to changing requirements of the project, as such the tree numbering is not necessarily concurrent on the map.

This also includes trees around Welshpool Train Station, which are in section 7 and 8, with the trees being numbered 1 to 49.

This report is a combined report of those previously provided on the 6 May, 12 May, and 7 July 2022

2.0 Methodology

This tree survey consisted of a walk-through assessment to collect the following details of trees within 5m of the Rail Corridor Fence from Leach Highway to Miller Street (East and West Verges):

- Age
- Height (in meters),
- Canopy spread
- Diameter of the trunk at breast height and ground level (for determining TPZ and SRZ)
- Health and structure,
- Useful Life Expectancy
- Origin of species
- Habitat Value.
- Foraging – this is noted by exception with a “Yes,” otherwise left blank

An aerial assessment and Soil or tissue sampling was not undertaken during this assessment.

2.1 Methodology – Tree Measurements

The height of the tree is an approximate height taken in meters (m)

The canopy spread gives an indication of the general spread of the canopy in meters

The Diameter of the trunk is measures at 1.4m above ground level and at ground level with a DBH tape. This allows for the calculation of the Tree Protection Zone (TPZ) and the Structural Root Zone (SRZ) in line with the Australian Standard for Protection of Trees on Development Sites (AS 497 – 2009) The TPZ and SRZ information is provided with each tree.

2.2 Methodology – Tree Health

- **Good:** The tree will show good to excellent vigour throughout the tree for the species. The tree will exhibit a full and healthy canopy of foliage with only minimal pest or diseases evident.
- **Fair:** The tree is growing in a reasonable condition and shape with adequate canopy foliage for the species. Minor dead wood may be present throughout the crown, with reasonable colour and density when compared to a typical healthy specimen of that species.
- **Poor:** The tree appears to not be growing to its full capability with the canopy potentially visibly showing signs of openness and thinning with excessive amounts of dead or dying limbs. Evidence of established pest and disease issues will be evident or symptoms of stress indicating the tree is in decline.
- **Dead:** No living tissue was found; the tree is dead and should be removed. Unless it is otherwise noted as holding potential as a habitat tree.

2.3 Methodology - Structure

- **Good:** The tree will show good to excellent vigour throughout the tree for the species. The tree will exhibit a full and healthy canopy of foliage with only minimal pest or diseases evident.
- **Fair:** The tree is growing in a reasonable condition and shape with adequate canopy foliage for the species. Minor dead wood may be present throughout the crown, with reasonable colour and density when compared to a typical healthy specimen of that species.
- **Poor:** The tree appears stunted and not growing to its full capability with the canopy potentially visibly showing signs of openness and thinning with excessive amounts of dead or dying limbs. Evidence of established pest and disease issues will be evident or symptoms of stress indicating the tree is in decline.
- **Very poor:** The tree is in a state of decline with the canopy visibly open with considerable deadwood with pest and diseases being present throughout the tree as it enters the final stages of senescing.
- **Has Failed:** The tree is of a significantly poor structural integrity that a failure event was present at time of inspection.

***Determining removal versus retention**

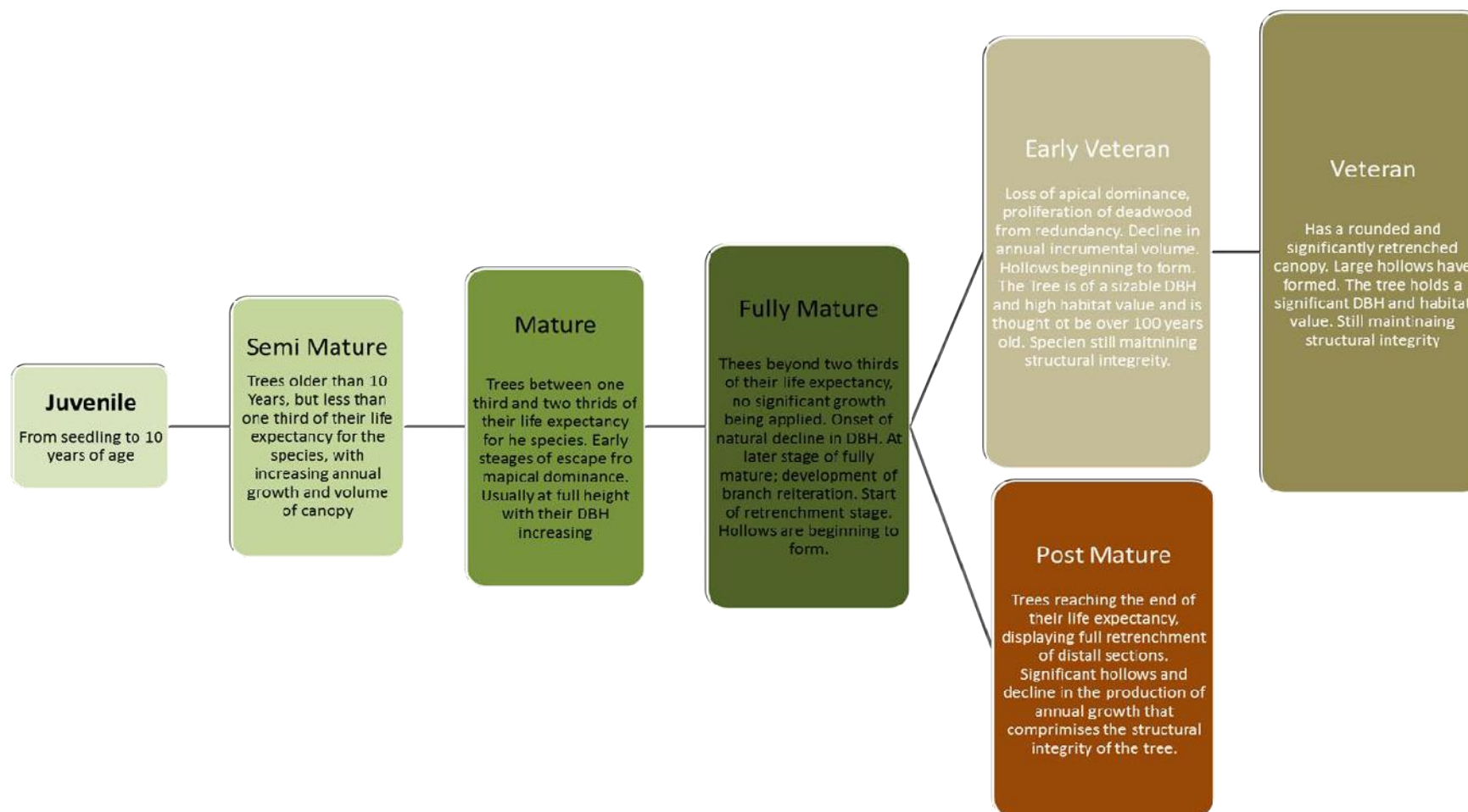
All trees are typically advocated for retention if they are recorded as fair or good in either the Health or structure category.

Where a tree required removal on the ground of poor health or poor structural integrity it will be expressly noted in the Comments section.

In terms of guidance for the removal of trees due to design constraints, where trees are recorded as Poor in terms of Health or Poor or Very Poor in the structure category, should be considered over and above those that rate fair/good in both categories. With the design being altered to retain as many trees as possible.

2.4 Methodology – Age Assessment

The age of the subject trees was assessed against the following categories.



2.5 Useful Life Expectancy

Very Long (Greater than 40 + years)

Very high quality and high value, these trees would hold such a condition that make them a valuable part of the environment/ landscape, would be considered to hold a Useful Life Expectancy (ULE) of greater than 40 years, thus allowing them to make a substantial contribution for a long period of time.

Long (Greater than 20 to 40 years)

High quality and high value, these trees would hold such a condition that make them a valuable part of the environment/ landscape, thus allowing them to make a substantial contribution to for at least 20 years from the time of inspection.

Medium (Between 11 to 20 years)

Medium quality and medium value, trees of this category are thought of as making a good contribution to the area they dwell in and would be considered to hold a ULE of a minimum of 11 years.

Short (Between 6 to 10 years)

Low quality and low value. These trees would be regarded as being in an adequate condition that would see them being retained for a period that would allow new plantings to establish.

Transient (1 to 5 years)

Very Low quality and very low value, these trees would be regarded as having a poor form, displaying a low vitality, and may be exhibiting initial signs of structural decline. They would be considered to have a ULE of less than 5 years and are to be included replacement plan.

Dead or hazardous (no remaining ULE).

Trees in this category would be considered to hold such a condition that would potentially hold no value or in their current state it would be reasonable to undertake their removal for reasons of sound Arboricultural management, due to a high level of risk.

2.6 Origin of species

Native – The definition below is as it is stipulated in the Environmental Protections Act 1986

3(1). native vegetation means indigenous aquatic or terrestrial vegetation, and includes dead vegetation unless that dead vegetation is of a class declared by regulation to be excluded from this definition but does not include vegetation in a plantation;

51A. native vegetation has the meaning given by section 3(1) but does not include vegetation that was intentionally sown, planted or propagated unless —

- (a) that vegetation was sown, planted or propagated as required under this Act or another written law; or
- (b) that vegetation is of a class declared by regulation to be included in this definition;

Exotic – A species of plant that is not indigenous to the Project area, and/or has been planted

2.7 Habitat (Nesting) Value

High value - Trees in this category will have a DBH of 500mm or greater, and/or has hollows of 150mm in diameter or greater.

Medium value. - Trees with a DBH of up to 500mm but not greater than 300mm with hollows of up to 140mm in diameter this also relates to the potential for future significant nesting hollows.

Low Value - Trees with no hollows, holding low nesting values.

2.8 Foraging Species

Trees in the project area have been assessed in regards to their suitability as foraging trees for Forest red-tailed black cockatoo (*calyptorhynchus banksii naso*); - Baudin's cockatoo (*calyptorhynchus baudinii*); - Carnaby's cockatoo (*calyptorhynchus latirostris*); - Peregrine falcon (*falco peregrinus*).

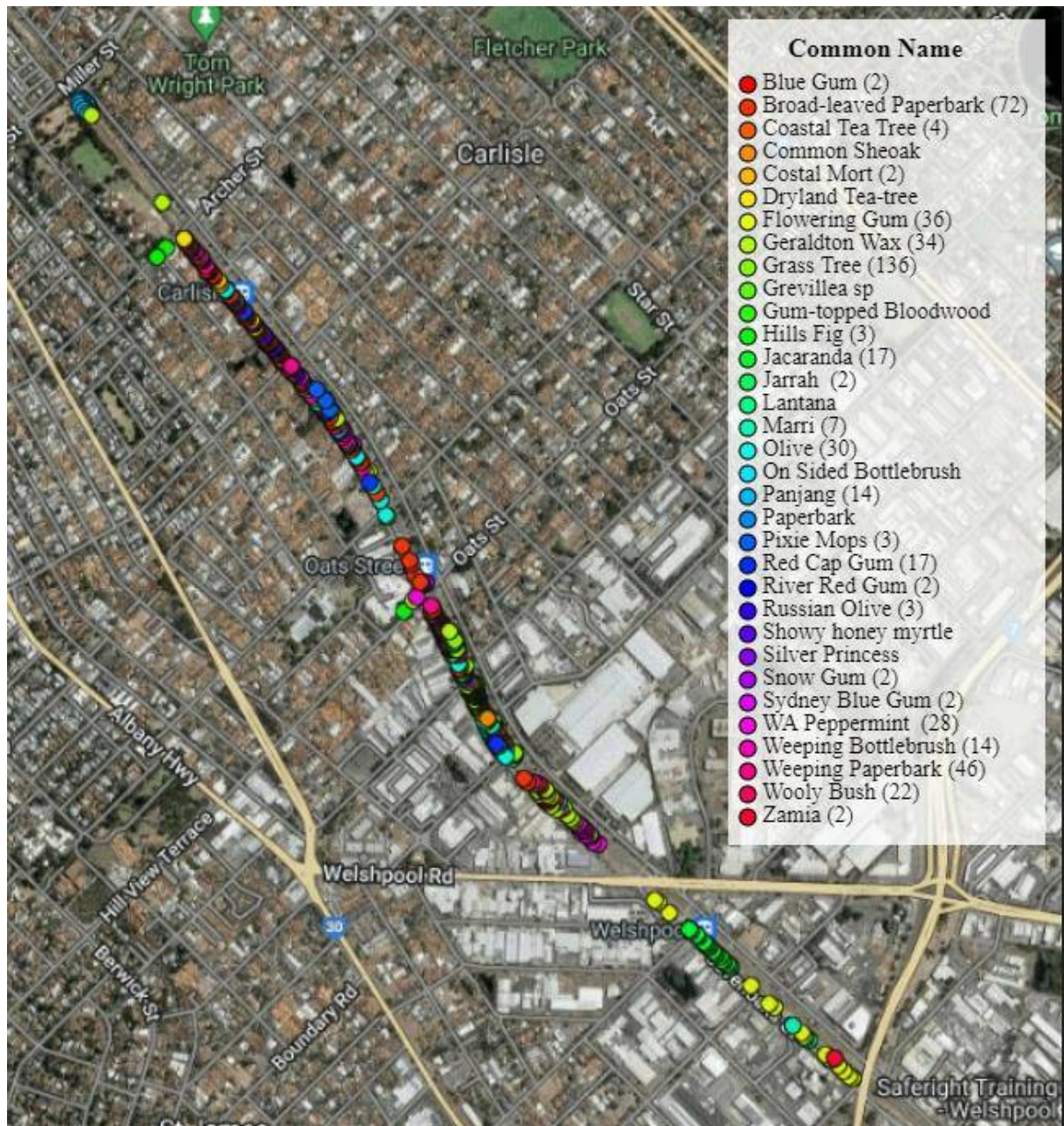
Yes. – Are a suitable tree species for foraging

No – Not a suitable species for foraging

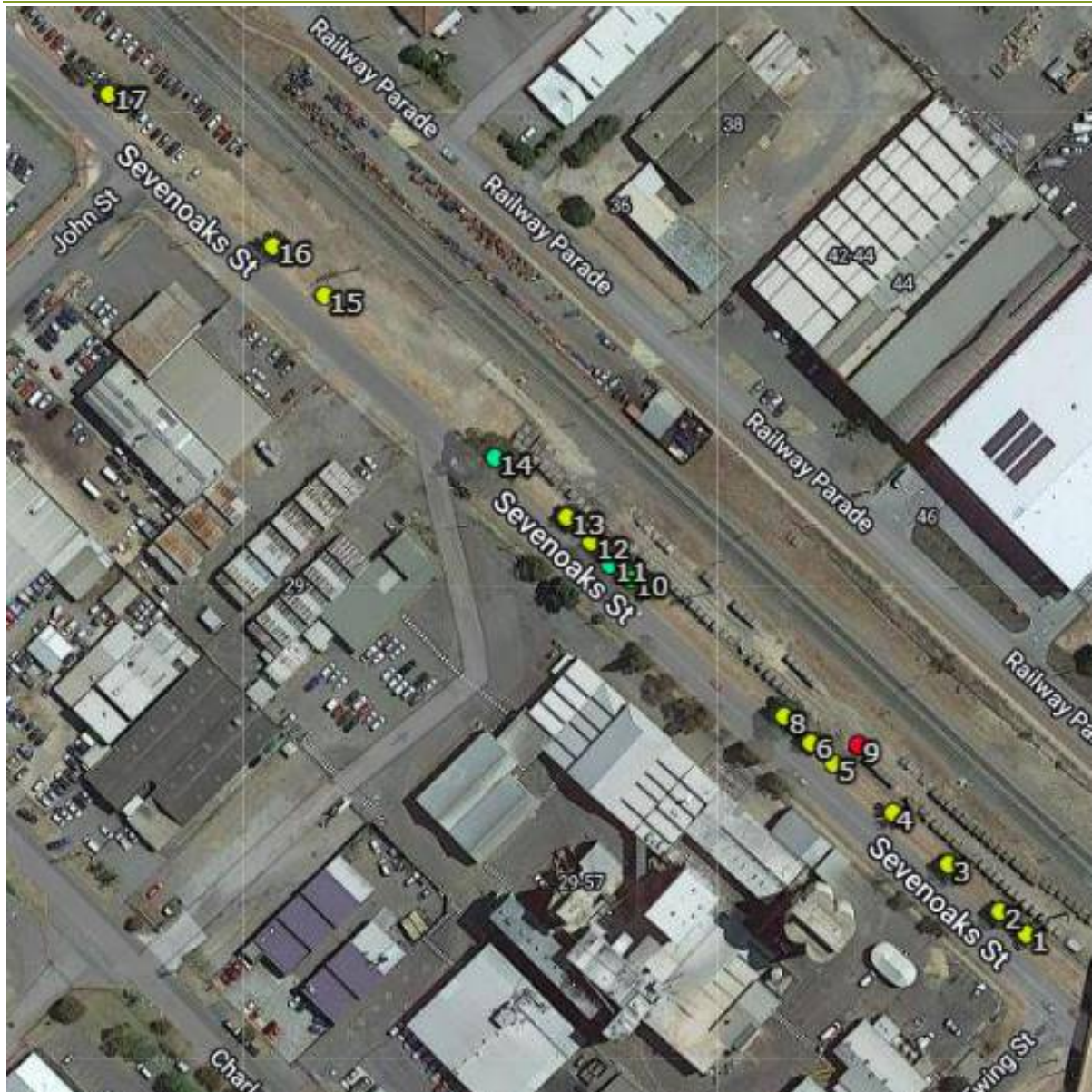
Black Cockatoo foraging tree means native plant species known to be utilised by black cockatoo species for foraging and includes *Corymbia calophylla* (marri), *Eucalyptus marginata* (jarrah), *Eucalyptus* spp., *Banksia* spp., *Allocasuarina* spp., and *Xanthorrhoea* spp

3.0 Location of Subject Trees – Part C

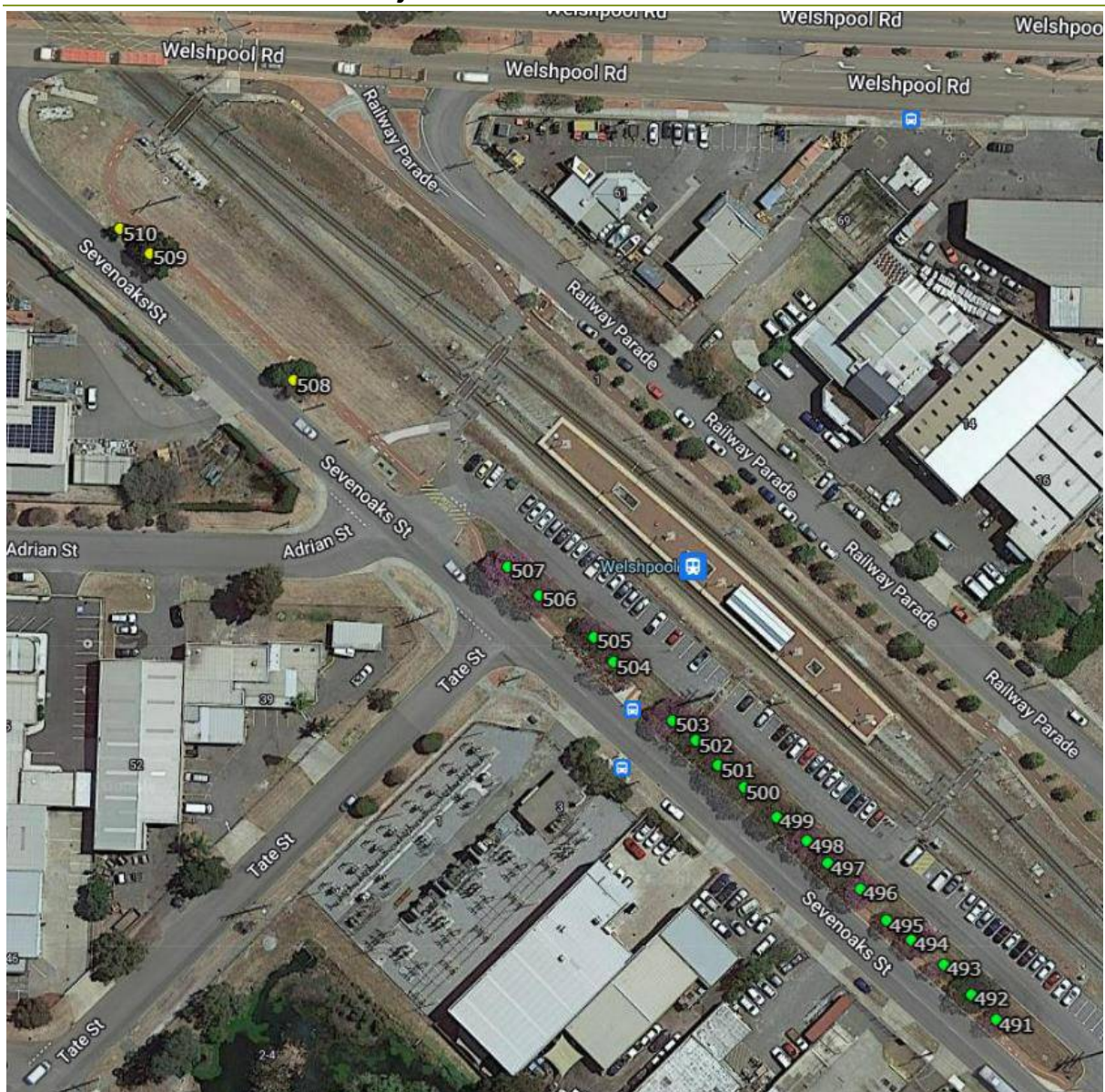
Subject tree marked coloured dots in relation to species.



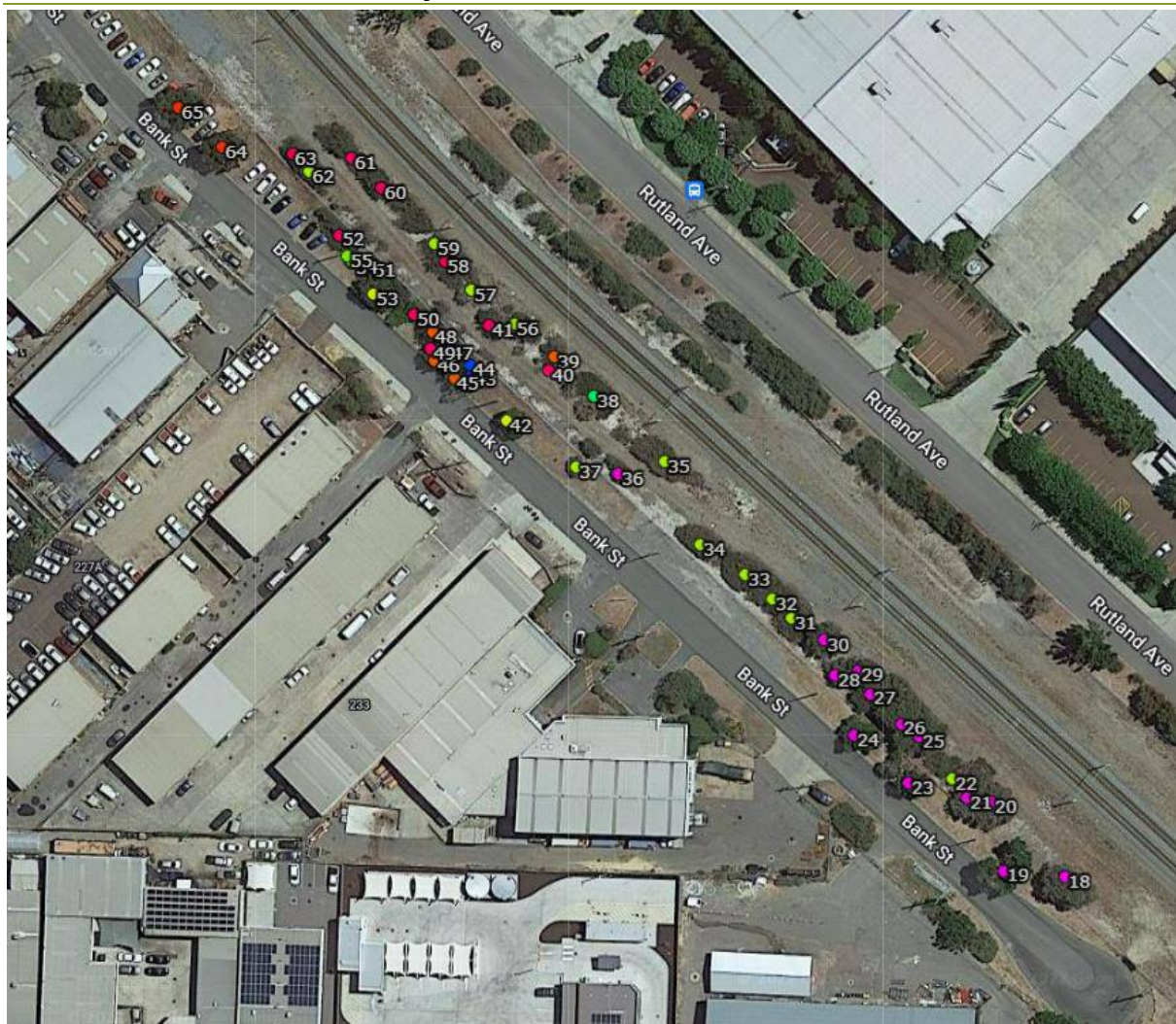
3.1 Location of Subject Trees – Part C



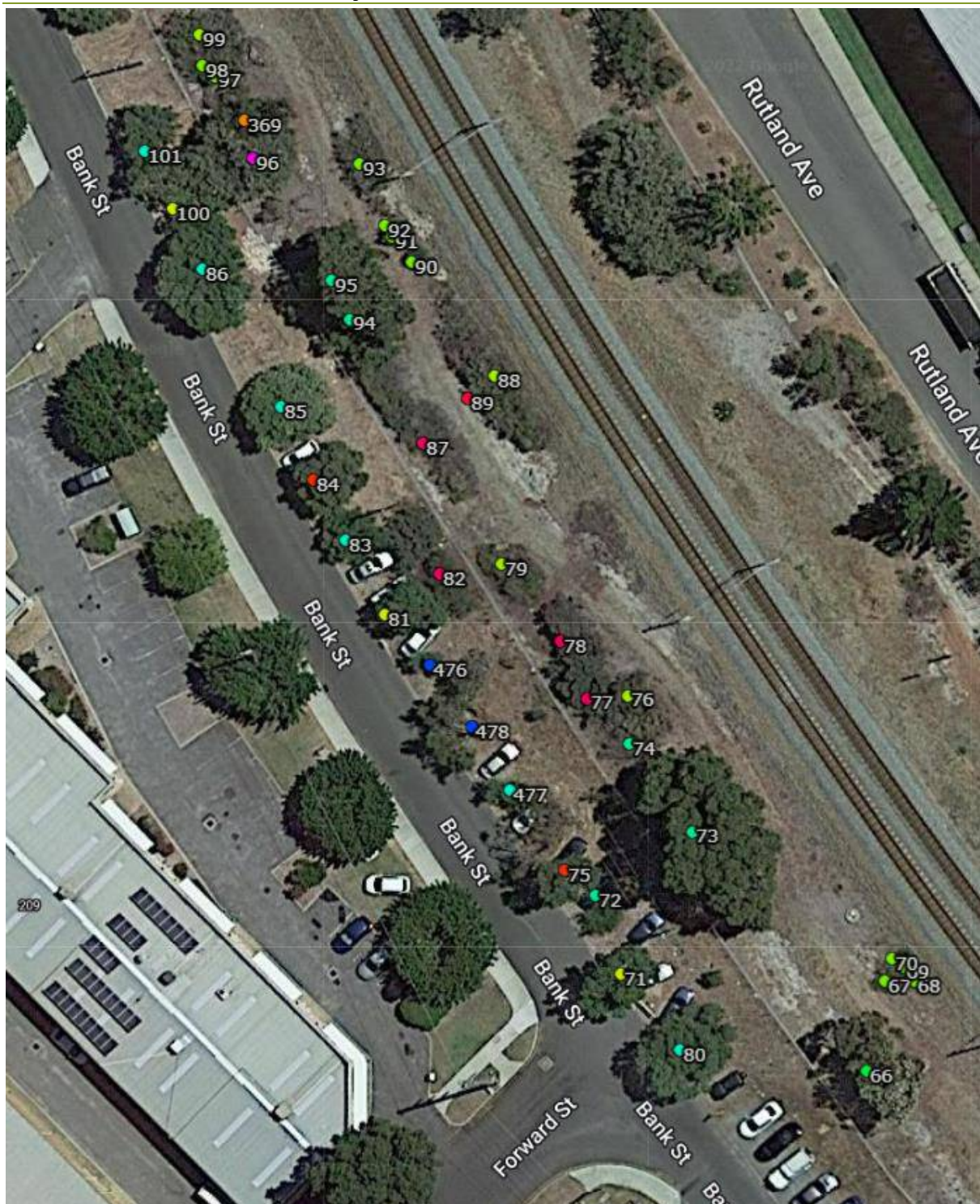
3.2 Location of Subject Trees – Part C



3.3 Location of Subject Trees – Part C



3.4 Location of Subject Trees – Part C



3.5 Location of Subject Trees – Part C



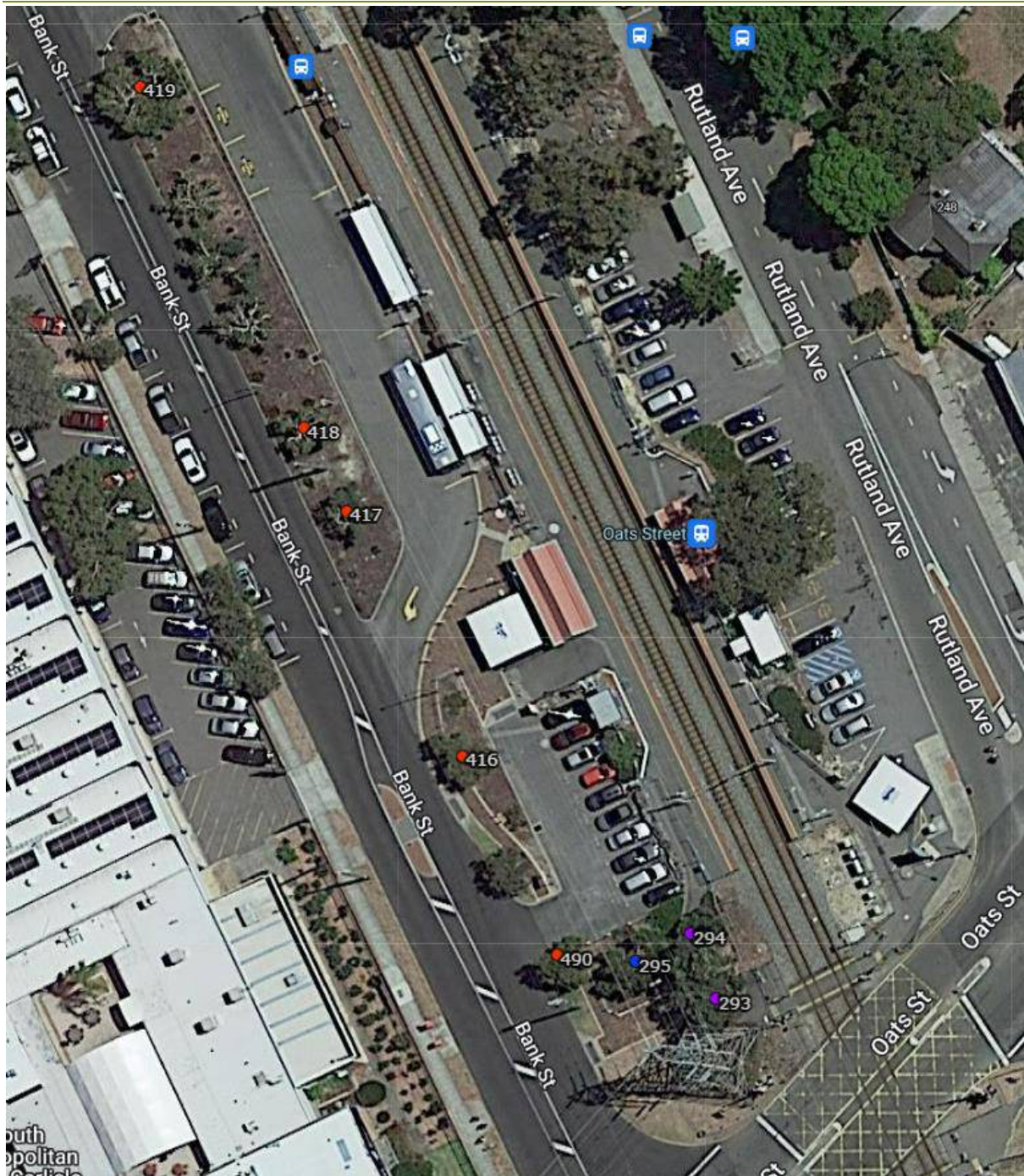
3.6 Location of Subject Trees – Part C



3.7 Location of Subject Trees – Part C



3.8 Location of Subject Trees – Part C



3.9 Location of Subject Trees – Part C



3.10 Location of Subject Trees – Part C



3.11 Location of Subject Trees – Part C



3.12 Location of Subject Trees – Part C



3.13 Location of Subject Trees – Part C



3.14 Location of Subject Trees – Part C



3.15 Location of Subject Trees – Part C



3.17 Location of Subject Trees – Part C



Flowering Gum Tree ID #1

Tree Details

Latin Name: *Corymbia ficifolia*

Common Name: Flowering Gum

Tree Age: Semi mature

Health: Poor

Structure: Poor

Tree Height
(Estimated) [m]: 6

Canopy Spread [m]: 6

DBH [cm]: 37

DBH Range: 30-45cm

Diameter at Root Flare
(DRF) [m]: 0.462

Tree Protection Zone
(TPZ) [m]: 4.44

Structural Root Zone
(SRZ) [m]: 2.39

Useful Life
Expectancy: 11-20 years

Origin: Exotic

Habitat value: Low

QTRA Risk Category: Broadly Acceptable

Observation
Comments: This tree is in poor condition, likely due to compacted soil around it remove all grass for radius of 3 m and replace with mulch Myer prime at 1% and remove all dead wood over 25 mm in diameter.

Foraging species: No

Tree Location

Longitude: 115.927255

Latitude: -31.998454

[Photos](#) [Street View](#) [Map View](#)



Flowering Gum Tree ID #2

Tree Details

Latin Name: *Corymbia ficifolia*

Common Name: Flowering Gum

Tree Age: Semi mature

Health: Poor

Structure: Poor

Tree Height
(Estimated) [m]: 8

Canopy Spread [m]: 7

DBH [cm]: 54

DBH Range: 46-60cm

Diameter at Root Flare
(DRF) [m]: 0.556

Tree Protection Zone
(TPZ) [m]: 6.48

Structural Root Zone
(SRZ) [m]: 2.59

Useful Life
Expectancy: 11-20 years

Origin: Exotic

Habitat value: Low

QTRA Risk Category: Broadly Acceptable

Observation
Comments: This tree is in poor condition likely due to compacted soil around it remove all grass for radius of 3 m and replace with mulch Myer prime at 1% and remove all dead wood over 25 mm in diameter.

Foraging species: No

Tree Location

Longitude: 115.927179

Latitude: -31.998397

[Photos](#) [Street View](#) [Map View](#)



Flowering Gum Tree ID #3

Tree Details

Latin Name: *Corymbia ficifolia*

Common Name: Flowering Gum

Tree Age: Semi mature

Health: Poor

Structure: Poor

Tree Height
(Estimated) [m]: 9

Canopy Spread [m]: 7

DBH [cm]: 44.7

DBH Range: 30-45cm

Diameter at Root Flare
(DRF) [m]: 0.535

Tree Protection Zone
(TPZ) [m]: 5.36

Structural Root Zone
(SRZ) [m]: 2.54

Useful Life
Expectancy: 11-20 years

Origin: Exotic

Habitat value: Low

QTRA Risk Category: Broadly Acceptable

Observation
Comments: This tree is in poor condition likely due to compacted soil around it remove all grass for radius of 3 m and replace with mulch Bioprime at 1%. Remove all dead wood over 25 mm in diameter, basal suckers and uplift the canopy to 2m above ground level.

Foraging species: No

Tree Location

Longitude: 115.927030

Latitude: -31.998282

[Photos](#) [Street View](#) [Map View](#)



Flowering Gum Tree ID #4

Tree Details

Latin Name: *Corymbia ficifolia*

Common Name: Flowering Gum

Tree Age:

Health: Dead

Structure:

Tree Height
(Estimated) [m]:

Canopy Spread [m]:

DBH [cm]:

DBH Range: N/A

Diameter at Root Flare
(DRF) [m]:

Tree Protection Zone
(TPZ) [m]:

Structural Root Zone
(SRZ) [m]:

Useful Life
Expectancy: 0 years

Origin: Exotic

Habitat value: Low

QTRA Risk Category:

Observation
Comments: This tree is dead
remove to ground level
and stump grind.

Foraging species: No

Tree Location

Longitude: 115.926867

Latitude: -31.998156

[Photos](#) [Street View](#) [Map View](#)



Flowering Gum Tree ID #5

Tree Details

Latin Name: *Corymbia ficifolia*

Common Name: Flowering Gum

Tree Age: Semi mature

Health: Fair

Structure: Poor

Tree Height
(Estimated) [m]: 3

Canopy Spread [m]: 4

DBH [cm]: 13

DBH Range: 8-16cm

Diameter at Root Flare
(DRF) [m]: 0.22

Tree Protection Zone
(TPZ) [m]: 2

Structural Root Zone
(SRZ) [m]: 1.75

Useful Life
Expectancy: 11-20 years

Origin: Exotic

Habitat value: Low

QTRA Risk Category: Broadly Acceptable

Observation
Comments: This tree is in poor condition likely due to compacted soil around it remove all grass for radius of 3 m and replace with mulch Bioprime at 1%. Remove all dead wood over 25 mm in diameter, basal suckers and uplift the canopy to 2m above ground level.

Foraging species: No

Tree Location

Longitude: 115.926699

Latitude: -31.998033

[Photos](#) [Street View](#) [Map View](#)



Flowering Gum Tree ID #6

Tree Details

Latin Name: *Corymbia ficifolia*

Common Name: Flowering Gum

Tree Age: Semi mature

Health: Poor

Structure: Poor

Tree Height
(Estimated) [m]: 7

Canopy Spread [m]: 6

DBH [cm]: 41.2

DBH Range: 30-45cm

Diameter at Root Flare
(DRF) [m]: 0.53

Tree Protection Zone
(TPZ) [m]: 4.94

Structural Root Zone
(SRZ) [m]: 2.53

Useful Life
Expectancy: 11-20 years

Origin: Exotic

Habitat value: Low

QTRA Risk Category: Broadly Acceptable

Observation
Comments: This tree is in poor condition likely due to compacted soil around it remove all grass for radius of 3 m and replace with mulch Myer prime at 1% and remove all dead wood over 25 mm in diameter.

Foraging species: No

Tree Location

Longitude: 115.926632

Latitude: -31.997980

Photos Street View Map View



Flowering Gum Tree ID #8

Tree Details

Latin Name: *Corymbia ficifolia*

Common Name: Flowering Gum

Tree Age: Semi mature

Health: Poor

Structure: Very Poor

Tree Height
(Estimated) [m]: 8

Canopy Spread [m]: 9

DBH [cm]: 41.2

DBH Range: 30-45cm

Diameter at Root Flare
(DRF) [m]: 0.53

Tree Protection Zone
(TPZ) [m]: 4.94

Structural Root Zone
(SRZ) [m]: 2.53

Useful Life
Expectancy: 11-20 years

Origin: Exotic

Habitat value: Low

QTRA Risk Category: Broadly Acceptable

Observation
Comments: This tree is in poor condition likely due to compacted soil around it remove all grass for radius of 3 m and replace with mulch Myer prime at 1% and remove all dead wood over 25 mm in diameter.

Foraging species: No

Tree Location

Longitude: 115.926552

Latitude: -31.997919

[Photos](#) [Street View](#) [Map View](#)

