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ASSET PROTECTION ZONE
BUSHFIRE FUEL MANAGEMENT PLAN

Lot 5 DP 1117326, Lot 1 DP 134787, Lot 1 DP 167380,
Lot 2 DP 961928, Lot 6 DP 1117326
Walmsleys Road & Stott Street, Bilambil Heights

Major Project No. 05-0198

Peter Thornton
BPAD L3 – 14867 Accredited Practitioner
16 June 2020

Prepared by:

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DOCUMENT CONTROL

Revision No.	Date	Description	Prepared	Checked	Authorised
A	13.11.2019	Draft	Peter Thornton	SJT	Peter Thornton
B	16.01.2020	Final	Peter Thornton	SJT	Peter Thornton
C	16.06.2020	Final amended	Peter Thornton	SJT	Peter Thornton

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1.0 INTRODUCTION

This Bushfire Fuel Management Plan (the 'Plan') has been prepared at the request of WDLC Pty Ltd, M Walmsley, H Mabbit, V Bailey and D Miller to address Conditions B24 and E7 of Project Approval 05_0198 as modified.

The report has been amended to reflect the amended Vegetation Management Plan (VMP) and Tree Removal Plan (TRP) prepared by Biolink as required by Tweed Shire Council correspondence dated 12th May 2020 (see ***attached*** Appendix C).

Each approved allotment in the subdivision within 100m of the bushfire hazard shall be managed as an asset protection zone with landscaping complying with Appendix 5 Planning for Bushfire Protection 2006. This requirement however will be associated and conditioned with the development consent for each future dwelling within this area.

This Plan will focus on the approved asset protection zone immediately adjacent to the hazard where no dwellings are permitted to be constructed unless permitted with a future development consent for a dwelling in which case this Bushfire Management Plan will require amendment.

The Project Approval has required a 25m asset protection zone around the subdivision with exception to the northeast corner of the community title allotment No. C6 which has a 10m APZ. These areas are shown in Figures 1, 2 and 3 with green and red shading respectively.

Figure 1 – Location of 25m EMA/APZ (green) and 10m EPA/APZ (red).

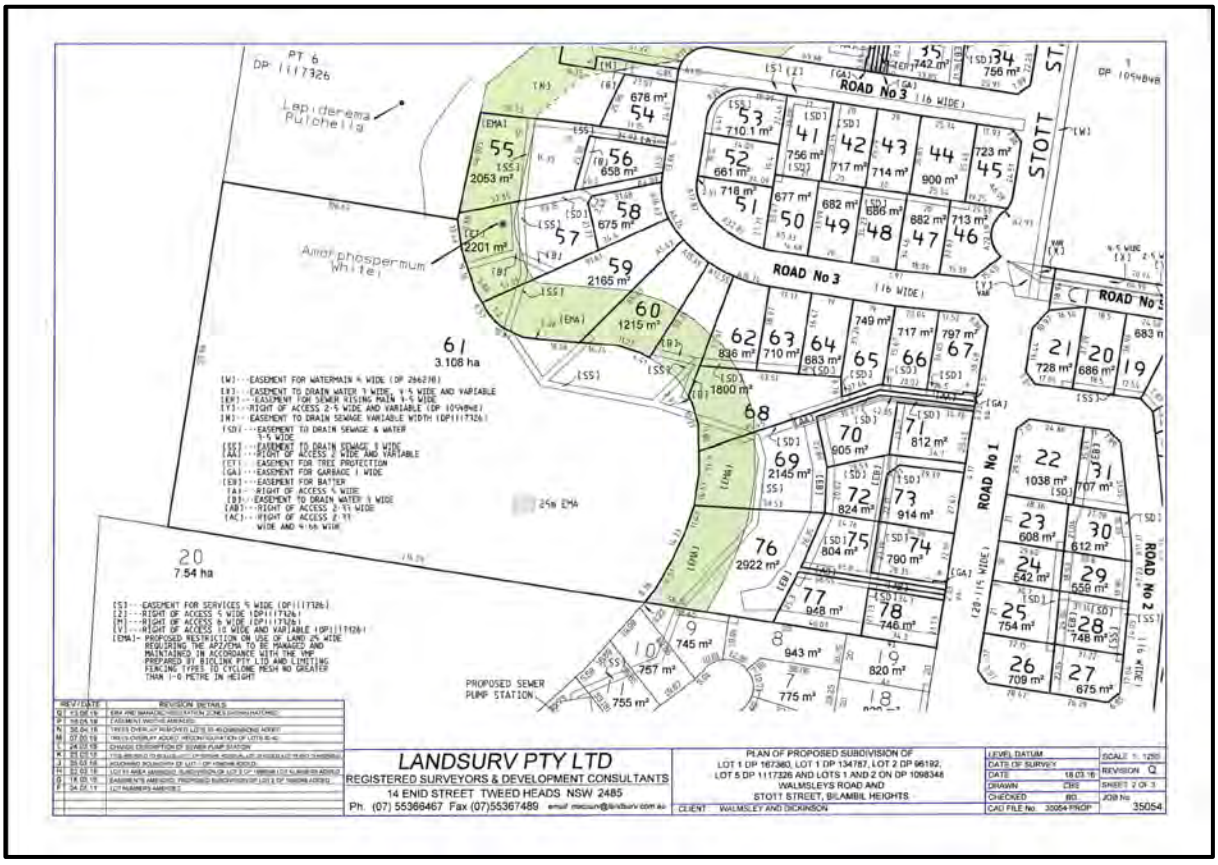


Figure 2 - Location of 25m EMA/APZ (green).

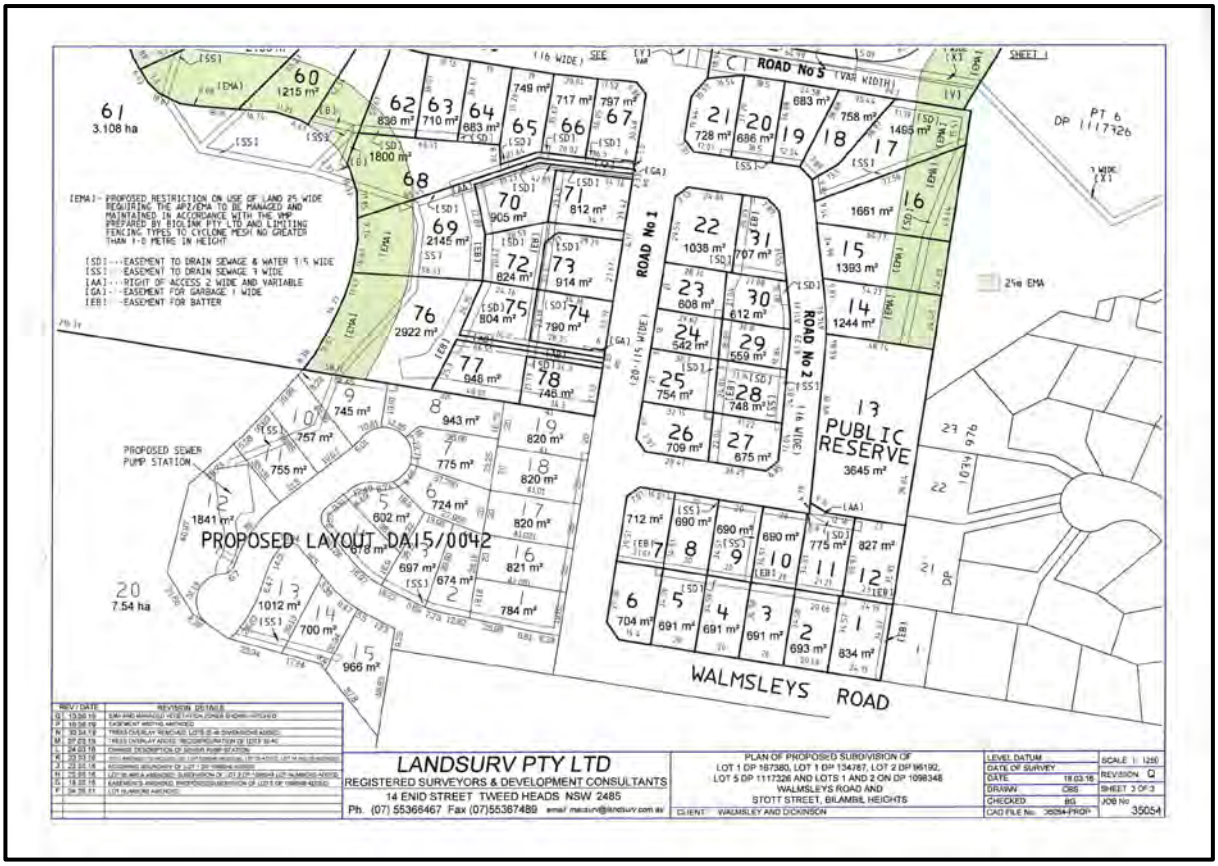


Figure 3 - Location of 25m EMA/APZ (green).

It is noted the plans in Figures 1, 2 and 3 provide for an additional 5m between the APZ and the minimum building envelope on lots 38, 39 and 40 in order to address Tweed Shire Council's concerns relating to APZ and building envelope locations. In this regard it is considered likely a 'Method 2' performance solution bushfire report will be required for the future dwellings on these sites when a development application is submitted for each dwelling.

It is noted Figure 4 modelling is purely for demonstration purposes to establish the building envelope locations will be capable of complying with the 29kW/m^2 threshold set by Planning for Bushfire Protection 2006. A specific performance solution report for these allotments will be required to be submitted with the development application for the future dwelling/s on these allotments.

Run Description:	Design Fire 1		
Vegetation Information			
Vegetation Type:	Rainforest	**Vegetation Group:**	Forest and Woodland
Vegetation Slope:	22 Degrees	**Vegetation Slope Type:**	Downslope
Surface Fuel Load(t/ha):	10	**Overall Fuel Load(t/ha):**	12
Vegetation Height(m):	2	Only Applicable to Shrub/Scrub and Vesta	
Site Information			
Site Slope:	25 Degrees	**Site Slope Type:**	Downslope
Elevation of Receiver(m):	Default	**APZ/Separation(m):**	30
Fire Inputs			
Veg./Flame Width(m):	100	**Flame Temp(K)**	1090
Calculation Parameters			
Flame Emissivity:	95	**Relative Humidity(%):**	25
Heat of Combustion(kJ/kg)	18600	**Ambient Temp(K):**	308
Moisture Factor:	5	**FDI:**	80
Program Outputs			
Category of Attack:	HIGH	**Peak Elevation of Receiver(m):**	0.86
Level of Construction:	BAL 29	**Fire Intensity(kW/m):**	27160
Radiant Heat(kW/m2):	25.75	**Flame Angle (degrees):**	83
Flame Length(m):	29.91	**Maximum View Factor:**	0.418
Rate Of Spread (km/h):	4.38	**Inner Protection Area(m):**	30
Transmissivity:	0.809	**Outer Protection Area(m):**	0

Figure 4 – Sample modelling for building envelopes on Lots 38, 39 and 40.

An 88b instrument is to be created over part of Lot 6 DP 1117326 requiring the land owner of that property to manage the 25m EMA/APZ as shown in the green shaded area in Figure 1. This plan is also provided to ensure the portion of land where the future dwelling is to be located to the east of the 25m APZ is also to be managed as an APZ during the pre-construction time.

1.1 AIM OF THE PLAN

The aim of the Plan is to ensure the future maintenance of the required asset protection zones (dwelling exclusion zone) as identified in Figures 1, 2 and 3 is undertaken in accordance with Appendix 2 and 5 of Planning for Bushfire Protection 2006. Further guidance is provided in the Standards for Asset Protection Zones (NSW RFS 2005) as provided in Appendix B.

1.2 OBJECTIVE OF THE PLAN

The Plan will identify the location of the approved 25m asset protection zones and 10m (site C6) asset protection zone as approved by Project Approval 05_0198 as modified.

The Plan addresses Condition B24 and E7 of the aforementioned Project Approval. It is noted these conditions may be modified and if so this BMP may need modifying. The Plan will clearly articulate the limitations and requirements for the Inner Protection Areas which will be 100% of these Asset Protection Zones.

The objective of the Plan is to:

- Provide a fuel reduced buffer zone between a bush fire hazard and the location of a future asset.
- Provide an area of reduced bush fire fuel that allows suppression of fire.
- Provide actions to reduce potential bush fire fuels within the APZ. This is so the vegetation within the planned zone does not provide a path for the transfer of fire to the asset either from the ground level or through the tree canopy.
- Promote the reduction the risk of direct flame contact on the asset, damage to the built asset from intense radiant heat and ember attack.
- Create and maintain a defendable space for occupants and fire fighters during a bushfire event.

2.0 SITE LOCATION

This Plan relates to the land located on Lot 5 DP 1117326, Lot 1 DP 134787, Lot 1 DP 167380, Lot 2 DP 961928 and Part Lot 6 DP 1117326 as shown in Figures 1, 2 and 3. The area consists of an 85-lot subdivision comprising –

- 77 Torrens title residential lots,
- A 6 lot Community Title scheme (5 residential and 1 neighbourhood property).
- A public reserve lot.
- Sewage pumping station lot; and
- Associated roads, stormwater and utility infrastructure.

The development area is located off Stott Street and Walmsleys Road as shown in Figure 5.

Figure 5 – Location of the properties subject to this plan (yellow shading).

3.0 WHAT IS BUSHFIRE FUEL?

Bushfire fuel is fuels that predominantly support a bushfire consisting primarily of leaf litter, fallen bark, grasses, and shrubs. These fuels are typically less than 6mm wide in diameter. These fuels dry out, heat up quickly as a fire approaches, and burn rapidly releasing large amounts of energy and contributing significantly to the intensity of bushfires.

The arrangement of bushfire fuels is also critical in that the horizontal and vertical arrangement of this type of fuel will significantly influence the rate of spread and intensity of bushfires

4.0 TYPE OF VEGETATION WITHIN ASSET PROTECTION ZONES TO BE MANAGED

Existing vegetation required to be maintained within the asset protection zones are identified and described in the Vegetation Management Plan (VMP) prepared by Biolink dated June 2020 (see ***attached*** Appendix C).

Further discussions with John Callaghan (Biolink) on 14th June 2020 confirmed there are only two trees required to remain and one tree to be specifically planted within the approved asset protection zones and consistent with the Modified Tree Removal Plan dated June 2020 (see second report in ***attached*** Appendix C).

These trees are located within approved Lot 38, 57 and 59 as shown with the "star" icon in Figure 6, it being noted all other trees are to be removed from the approved asset protection zones and also from the "planted tree corridor" through the centre of the site so as to remove the current bushfire hazard.

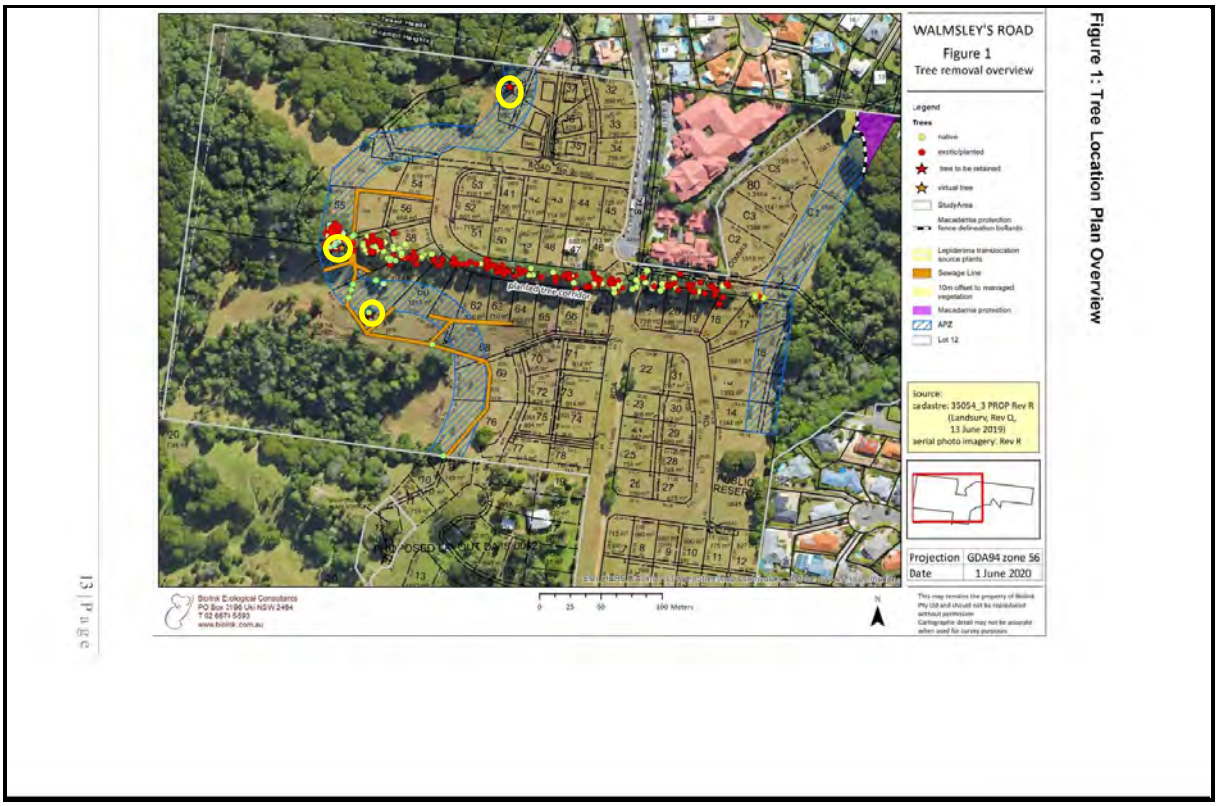


Figure 6 – Location of 2 trees to remain in the APZ and one tree to be planted (yellow circle)

The VMP identifies the revegetated areas within the bushfire hazard and the location of the management zones within the subdivision with reference to the Modified Tree Removal Plan (Biolink June 2020). Reference should be made to the VMP to ensure the appropriate recommended protection measures, if any, are adhered to.

5.0 AREAS OF VEGETATION OUTSIDE THE ASSET PROTECTION ZONES

The area identified for rainforest regeneration located outside the APZ requires no management in relation to bushfire given the re-vegetation has been taken into consideration with the intitial bushfire assessment and is to consist of rainforest vegetation.

The plans provided in the Biolink (June 2020) Vegetation Management Plan as identified in Figure 2 and 3 of that report show the locations of the proposed rainforest revegetation outside the approved 25m and 10m asset protection zones.

6.0 ASSET PROTECTION ZONES AND PERMITTED PLANTINGS

The vegetation is to be managed in accordance with Appendix 2 and 5 of Planning for Bushfire Protection 2006. As shown in Appendix A the areas shaded in green are to be managed for a width of 25m and the area shaded red for 10m. Lots 38 and 39 have the building envelope located an additional 5m beyond the 25m APZ in anticipation that a performance solution for the future dwelling is likely to be undertaken and require a building line setback from the hazard as distance varying between 25-30m.

The asset protection zones as identified in Figure 1 shall be managed as an Inner Protection Area. Planning for Bushfire Protection 2019 describes when establishing and maintaining an IPA the following requirements apply:

Trees:

- *Canopy cover should be less than 15% (at maturity) trees (at maturity) should not touch or overhang the building;*
- *Lower limbs should be removed up to a height of 2m above ground;*
- *Tree canopies should be separated by 2 to 5m*
- *Preference should be given to smooth barked and evergreen trees.*

Shrubs:

- *Create large discontinuities or gaps in the vegetation to slow down or break the progress of fire towards buildings;*
- *Shrubs should not be located under trees;*
- *Shrubs should not form more than 10% ground cover;*
- *Clumps of shrubs should be separated from exposed windows and doors by a distance of at least twice the height of the vegetation.*

Grass:

- *Should be kept mown (as a guide grass should be kept to no more than 100mm in height)*
- *Leaves and vegetation debris should be removed.*

The performance of the Inner Protection Area must be such that:

• there is minimal fine fuel at ground level which could be set alight by a bushfire; and

- any vegetation in the Inner Protection Area does not provide a path for the transfer of fire to the development – that is, the fuels are discontinuous. The presence of a few shrubs or trees in the Inner Protection Area is acceptable provided that they:

  - do not touch or overhang the building;
  - are well spread out and do not form a continuous canopy;
  - are not species that retain dead material or deposit excessive quantities of ground fuel in a short period or in a danger period;
  - have high moisture content, large rounded leaves and rainforest species (see Section 3.1);
  - do not take up an area when measured from a plan view, of more than 15% of the APZ area (this includes canopy coverage);
  - comply with the relevant conditions of consent for the construction of the dwelling; and
  - are located far enough away from the house so that they will not ignite the house by direct flame contact or radiant heat emission.
  - no organic mulch is permitted within the APZ or adjacent to the dwelling.

Woodpiles, wooden sheds, combustible material storage areas, large areas/quantities of garden mulch, stacked flammable building materials etc. should not be permitted in the Inner Protection Area.

Landscape plans should be required as a condition of development consent for future dwellings. The landscape plan will be required to comply with this Bushfire Fuel Management Plan (BFMP) and be specifically assessed to comply strictly with Planning for Bushfire Protection in force at the time of the submission fo the development application.

7.0 SUITABILITY OF VEGETATION WITHIN THE ASSET PROTECTION ZONES

The following is a list of attributes of plants that need to be considered prior to planting as managed landscaping within the APZ pursuant to Appendix 5 of Planning for Bushfire Protection 2006. This list is provided by Ramsay and Rudolph 2003.

- Moisture content of leaves;
- Volatile oil content of leaves;
- Mineral content of leaves; Leaf fineness;
- Density of foliage;
- Continuity of plant form;
- Height of lowest foliage above the ground;
- Size of plant;

- Dead foliage on the plant;
- Bark texture;
- Quantity of ground fuels;
- Fineness of ground fuels;
- Compaction ability of ground fuels; and
- Mineral content of ground fuel.

No organic mulch is permitted within the asset protection zones and fencing is to be non-combustible.

8.0 WORKS TO BE UNDERTAKEN WITHIN THE ASSET PROTECTION ZONES

It is recommended that the APZ be assessed before the bushfire season, in the month of August on an annual basis to ensure the APZs comply with the information provided in Section 6 and 9 of this Plan. The landscaping must also be confirmed to comply with the approved landscape plans for the development consent approved as part of the approval of the residential dwelling.
The assessment is to be undertaken by a BPAD Bushfire Practitioner accredited with Fire Protection Association Australia (FPAA). Should the landscape plans approved with the development application for the dwelling not be considered to comply with this Bushfire Management Plan then this plan will take precedence.

A statement of compliance is to be prepared by the BPAD Bushfire Practitioner and provided to the owner of the property which, in turn, is to be submitted to the Consent Authority (Tweed Shire Council), demonstrating compliance with this Bush Fire Management Plan and therefore the condition of consent. Non-compliances identified will require suitable compliance action to be undertaken by Tweed Shire Council. Confirmation is required that the landscaping plantings are generally consistent with the plant attributes listed in Section 7 of this Plan. There is to be no organic mulch within the asset protection zones and all fencing on bushfire prone land is to be non-combustible.

9.0 TREATMENTS TO MANAGE THE ASSET PROTECTION ZONES

The majority of the asset protection zones will be located within privately owned residential allotments and will be managed with the use of push mowers and on steeper sites such as Lots 38, 39 and 40 with a combination of push mowers and whipper snippers.

Ride-on mowers are not recommended unless the APZ area is generally flat. There are areas of the APZ which is located within the road reserves and these areas will be managed in accordance with Tweed Shire Council's Occupational Health and Safety.

In this regard, it is noted Lots 38, 39 and 40 will require specific access to manage the steeper asset protection zones. Some limited impact treatments may include sleepers or the like forming steps or narrow pathways to assist in safe management of the APZ. Hand tools are likely to be the method of managing these areas.

Example of accessing steeper APZ areas.

10.0 OCCUPATIONAL HEALTH AND SAFETY REQUIREMENTS

All works shall be undertaken in accordance with Occupational Health and Safety (OH&S) requirements and legislation in force at the time of the works. This may change over time and hence the works and methods may also need to be amended.

Alternatives hand tools such as brush cutters or lawnmowers may be required to be used where appropriate.

11.0 ENVIRONMENTAL CONSIDERATIONS

During maintenance of the APZ it is recommended the ground cover is not mown/ cut back to the soil to protect the soil from erosion. The VMP associated with the Project Approval will address further environment considerations and must be consistent with the APZ requirements outlined in this report.

12.0 RESPONSIBILITY FOR THE PLAN

Each allotment owner is responsible for the construction / implementation and the maintenance of the APZ applicable to the lot. The road reserve is to be managed by the local authority. Tweed Shire Council being the consent authority is ultimately responsible for enforcing compliance with this Bush Fire Management Plan and the relevant conditions of development consent.

Disclaimer

This document was prepared for the purposes and exclusive use of the stated client to provide a bush Fire fuel management plan to be submitted for approval by Tweed Shire Council relating to the development and is not to be used for any other purpose or by any other person or Corporation. BCA Check Pty Ltd accepts no responsibility for any loss or damage suffered howsoever arising to any person or Corporation who may use or rely on this report in contravention of the terms of this clause. The management plan does not comment on the assessment and any required remediation works in relation to slip zones. Should any requirements for soil stabilisation be required then the plan will need to be reassessed for consistency with the objective of this plan.

As identified in Planning for Bushfire Protection 2006 and the Building Code of Australia the report is to provide recommendations to reduce the risk of ignition and does not guarantee the complete protection of the building in the event of bush fire or that the building will not be adversely impacted upon.

Reporting has been based on the relevant Council and Rural Fire Service Guidelines however recommendations or suggestions given in this report are based on our site investigation at the time of reporting. In some cases site conditions may change dramatically within a few years due to rapid vegetation re-growth and invading weed species.

References

NSW Rural Fire Service and Planning NSW (2006), *Planning for bushfire protection, A guide for councils planners fire authorities developers and homeowners.* Rural Fire Service NSW Australia.

NSW Rural Fire Service and Planning NSW (2018), *Draft Planning for bushfire protection, A guide for councils planners fire authorities developers and homeowners.* Rural Fire Service NSW Australia.

Ramsay, C & Rudolph, L (2003) Landscape and Building Design for Bushfire Areas. CSIRO Publishing Australia

Standards for Asset Protection Zones (2005) – NSW Rural Fire Service.

Vegetation Management Plan (June 2020) – Biolink.

Modified Tree Removal Plan (June 2020) – Biolink.

APPENDIX A: Subdivision Plan and APZ Setbacks

REV	DATE	REVISION DETAILS
Q	13.06.19	EMA AND MANAGED VEGETATION ZONES SHOWN HATCHED
P	15.05.19	EASEMENT WIDTHS AMENDED
N	30.04.19	TREES OVERLAY REMOVED LOTS 32-40 DIMENSIONS ADDED
M	07.03.19	TREES OVERLAY ADDED, RECONFIGURATION OF LOTS 32-40
L	24.03.18	CHANGE DESCRIPTION OF SEWER PUMP STATION
K	23.03.18	TITLE AMENDED TO INCLUDE LOT 1 DP 1098348, RESIDUAL LOT 20 ADDED, LOT 14 AND 15 AMENDED
J	23.03.18	ADJOINING BOUNDARY OF LOT 1 DP 1098348 ADDED
H	22.03.18	LOT 55 AREA AMENDED, SUBDIVISION OF LOT 2 DP 1098348 LOT NUMBERS ADDED
G	18.03.16	EASEMENTS AMENDED, PROPOSED SUBDIVISION OF LOT 2 DP 1098348 ADDED
F	04.05.11	LOT NUMBERS AMENDED

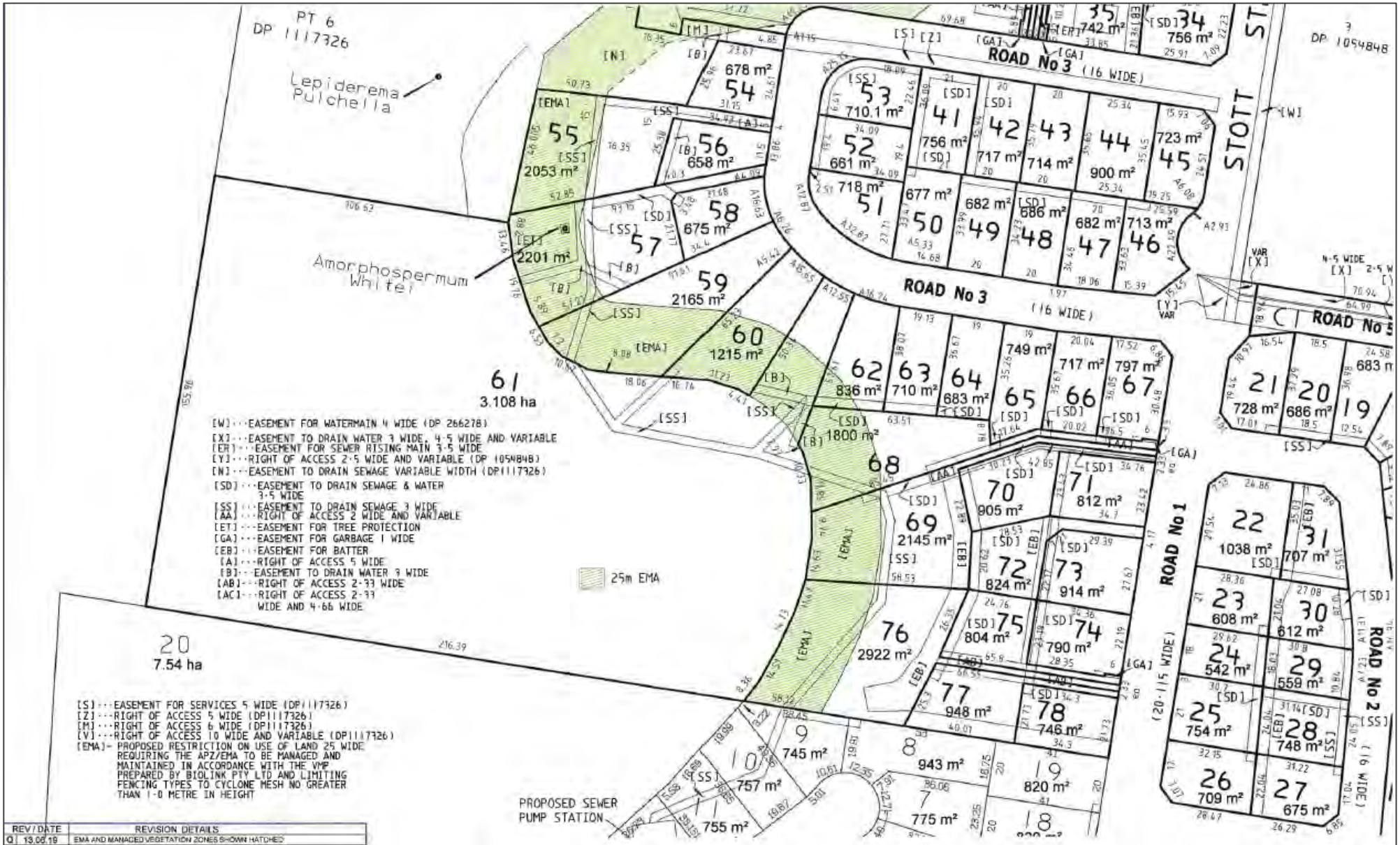
LANDSURV PTY LTD
REGISTERED SURVEYORS & DEVELOPMENT CONSULTANTS
14 ENID STREET TWEED HEADS NSW 2485
Ph. (07) 55366467 Fax (07)55367489 email: macsurv@landsurv.com.au

PLAN OF PROPOSED SUBDIVISION OF
LOT 1 DP 167380, LOT 1 DP 134787, LOT 2 DP 96192,
LOT 5 DP 1117326 AND LOTS 1 AND 2 ON DP 1098348
WALMSLEYS ROAD AND
STOTT STREET, BILAMBIL HEIGHTS

CLIENT : WALMSLEY AND DICKINSON

LEVEL DATUM	
DATE OF SURVEY	
DATE	18.03.16
DRAWN	CBS
CHECKED	BG
CAD FILE No.	35054-PROP

SCALE	1: 1250
REVISION	Q
SHEET	1 OF 3
JOB No	35054



REV	DATE	REVISION DETAILS
Q	13.06.19	EMA AND MANAGED VEGETATION ZONES SHOWN HATCHED
P	15.05.19	EASEMENT WIDTH IS AMENDED
N	30.04.19	TREES OVERLAY REMOVED. LOTS 32-40 DIMENSIONS ADDED
M	07.03.19	TREES OVERLAY ADDED. RECONFIGURATION OF LOTS 32-40
L	24.03.16	CHANGE DESCRIPTION OF SEWER PUMP STATION
K	23.03.16	TITLE AMENDED TO INCLUDE LOT 1 DP 1098348. RESIDUAL LOT 20 ADDED. LOT 56 AND 65 AMENDED.
J	23.03.16	ADJOINING BOUNDARY OF LOT 1 DP 1098348 ADDED
H	22.03.16	LOT 55 AREA AMENDED, SUBDIVISION OF LOT 2 DP 1098348 LOT NUMBERS ADDED
G	18.03.16	EASEMENTS AMENDED, PROPOSED SUBDIVISION OF LOT 2 DP 1098348 ADDED
F	04.05.11	LOT NUMBERS AMENDED

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STOTT STREET, BILAMBIL HEIGHTS

CLIENT: WALMSLEY AND DICKINSON

LEVEL DATUM	
DATE OF SURVEY	
DATE	18.03.16
DRAWN	CBS
CHECKED	BG
CAD FILE No.	35054-PROP

SCALE 1: 1250
REVISION Q
SHEET 2 OF 3
JOB No 35054

REV / DATE	REVISION DETAILS
Q 13.06.19	EMA AND MANAGED VEGETATION ZONES SHOWN HATCHED
P 16.05.19	EASEMENT WIDTHS AMENDED
N 30.04.19	TREES OVERLAY REMOVED. LOTS 32-40 DIMENSIONS ADDED
M 07.03.19	TREES OVERLAY ADDED. RECONFIGURATION OF LOTS 32-40
L 24.03.16	CHANGE DESCRIPTION OF SEWER PUMP STATION
K 23.03.16	TITLE AMENDED TO INCLUDE LOT 1 DP 1098348 RESIDUAL LOT 29 ADDED LOT 14 AND 15 AMENDED
J 23.03.16	ADJOINING BOUNDARY OF LOT 1 DP 1098348 ADDED
H 22.03.16	LOT 50 AREA AMENDED. SUBDIVISION OF LOT 2 DP 1098348 LOT NUMBERS ADDED
G 18.03.16	EASEMENTS AMENDED. PROPOSED SUBDIVISION OF LOT 2 DP 1098348 ADDED
F 04.05.11	LOT NUMBERS AMENDED

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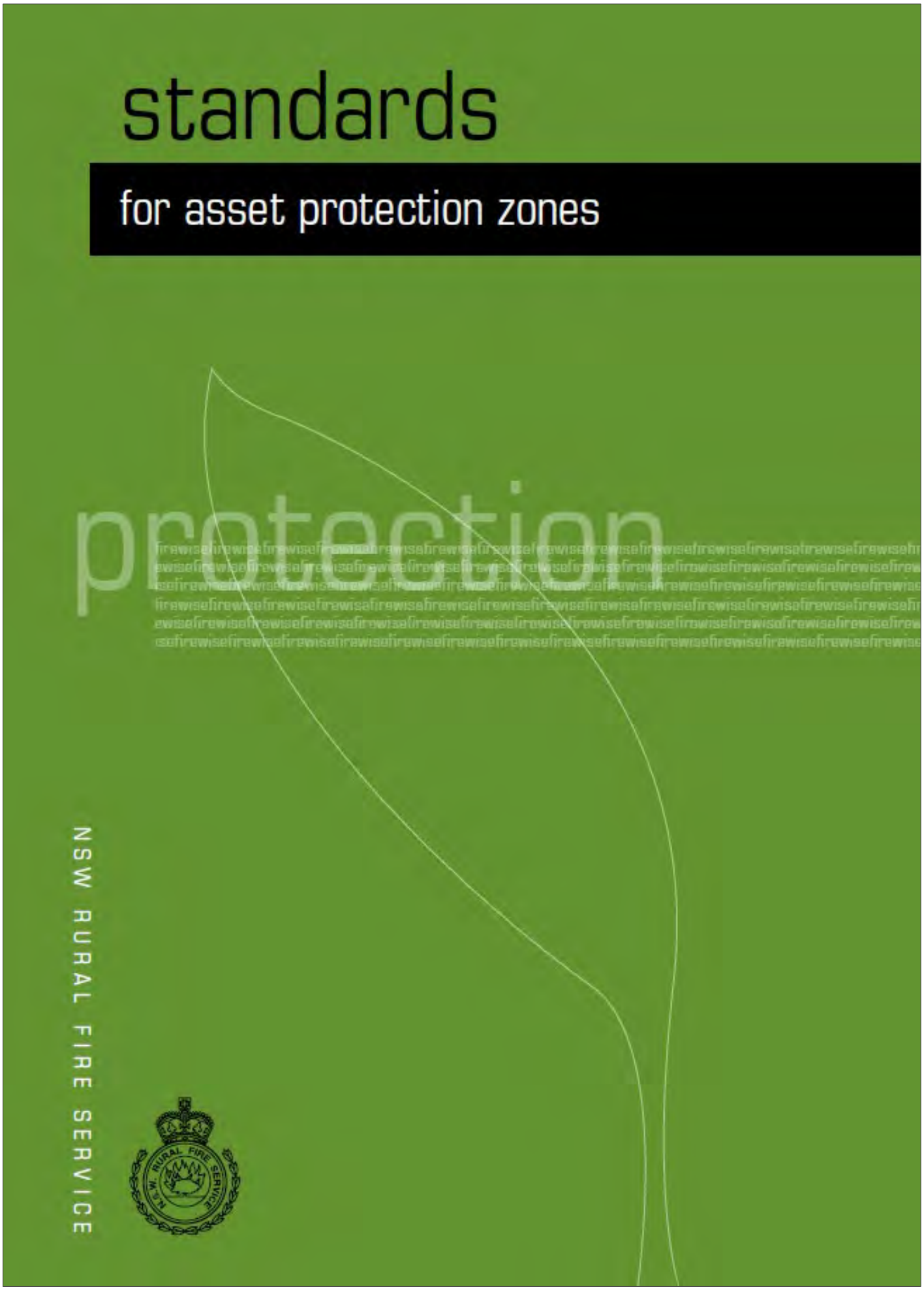
CLIENT: WALMSLEY AND DICKINSON

LEVEL DATUM	
DATE OF SURVEY	
DATE	18.03.16
DRAWN	CBS
CHECKED	BG
CAD FILE No.	35054-PROP

SCALE	1: 1250
REVISION	Q
SHEET	3 OF 3
JOB No	35054

APPENDIX B: Standards for Asset Protection Zones (RFS 2005)


standards
for asset protection zones
protection
NSW RURAL FIRE SERVICE

STANDARDS FOR ASSET PROTECTION ZONES

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WHERE SHOULD I PUT AN APZ? 4

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STEP 2. DETERMINE WHAT APPROVALS ARE REQUIRED FOR CONSTRUCTING YOUR APZ 5

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INTRODUCTION

For thousands of years bush fires have been a natural part of the Australian landscape. They are inevitable and essential, as many Australian plants and animals have adapted to fire as part of their life cycle.

In recent years developments in bushland areas have increased the risk of bush fires harming people and their homes and property. But landowners can significantly reduce the impact of bush fires on their property by identifying and minimising bush fire hazards. There are a number of ways to reduce the level of hazard to your property, but one of the most important is the creation and maintenance of an Asset Protection Zone (APZ).

A well located and maintained APZ should be used in conjunction with other preparations such as good property maintenance, appropriate building materials and developing a family action plan.

WHAT IS AN ASSET PROTECTION ZONE?

An Asset Protection Zone (APZ) is a fuel reduced area surrounding a built asset or structure. This can include any residential building or major building such as farm and machinery sheds, or industrial, commercial or heritage buildings.

An APZ provides:

- a buffer zone between a bush fire hazard and an asset;
- an area of reduced bush fire fuel that allows suppression of fire;
- an area from which backburning may be conducted; and
- an area which allows emergency services access and provides a relatively safe area for firefighters and home owners to defend their property.

Potential bush fire fuels should be minimised within an APZ. This is so that the vegetation within the planned zone does not provide a path for the transfer of fire to the asset either from the ground level or through the tree canopy.

WHAT WILL THE APZ DO?

An APZ, if designed correctly and maintained regularly, will reduce the risk of:

- direct flame contact on the asset;
- damage to the built asset from intense radiant heat; and
- ember attack on the asset.

WHERE SHOULD I PUT AN APZ?

An APZ is located between an asset and a bush fire hazard.

The APZ should be located wholly within your land. You cannot undertake any clearing of vegetation on a neighbour's property, including National Park estate, Crown land or land under the management of your local council, unless you have written approval.

If you believe that the land adjacent to your property is a bush fire hazard and should be part of an APZ, you can have the matter investigated by contacting the NSW Rural Fire Service (RFS).

There are six steps to creating and maintaining an APZ. These are:

1. Determine if an APZ is required;
2. Determine what approvals are required for constructing your APZ;
3. Determine the APZ width required;
4. Determine what hazard reduction method is required to reduce bush fire fuel in your APZ;
5. Take measures to prevent soil erosion in your APZ; and
6. Landscape and regularly monitor in your APZ for fuel regrowth.

STEP 1. DETERMINE IF AN APZ IS REQUIRED

Recognising that a bush fire hazard exists is the first step in developing an APZ for your property.

If you have vegetation close to your asset and you live in a bush fire prone or high risk area, you should consider creating and maintaining an APZ.

Generally, the more flammable and dense the vegetation, the greater the hazard will be. However, the hazard potential is also influenced by factors such as slope.

- A large area of continuous vegetation on sloping land may increase the potential bush fire hazard.
- The amount of vegetation around a house will influence the intensity and severity of a bush fire.
- The higher the available fuel the more intense a fire will be.

Isolated areas of vegetation are generally not a bush fire hazard, as they are not large enough to produce fire of an intensity that will threaten dwellings.

This includes:

- bushland areas of less than one hectare that are isolated from large bushland areas; and
- narrow strips of vegetation along road and river corridors.

If you are not sure if there is a bush fire hazard in or around your property, contact your local NSW Rural Fire Service Fire Control Centre or your local council for advice.

STEP 2. DETERMINE WHAT APPROVALS ARE REQUIRED FOR CONSTRUCTING YOUR APZ

If you intend to undertake bush fire hazard reduction works to create or maintain an APZ you must gain the written consent of the landowner.

Subdivided land or construction of a new dwelling
If you are constructing an APZ for a new dwelling you will need to comply with the requirements in *Planning for Bushfire Protection*. Any approvals required will have to be obtained as part of the Development Application process.

Existing asset
If you wish to create or maintain an APZ for an existing structure you may need to obtain an environmental approval. The RFS offers a free environmental assessment and certificate issuing service for essential hazard reduction works. For more information see the RFS document *Application Instructions for a Bush Fire Hazard Reduction Certificate* or contact your local RFS Fire Control Centre to determine if you can use this approval process.

Bear in mind that all work undertaken must be consistent with any existing land management agreements (e.g. a conservation agreement, or property vegetation plan) entered into by the property owner.

If your current development consent provides for an APZ, you do not need further approvals for works that are consistent with this consent.

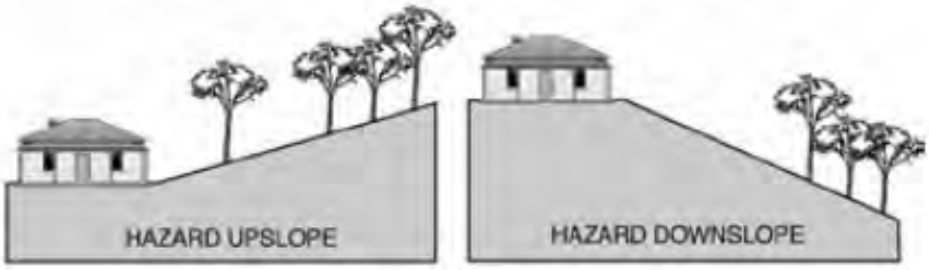
If you intend to burn off to reduce fuel levels on your property you may also need to obtain a Fire Permit through the RFS or NSW Fire Brigades. See the RFS document *Before You Light That Fire* for an explanation of when a permit is required.

STEP 3. DETERMINE THE APZ WIDTH

The size of the APZ required around your asset depends on the nature of the asset, the slope of the area, the type and structure of nearby vegetation and whether the vegetation is managed.

Fires burn faster uphill than downhill, so the APZ will need to be larger if the hazard is downslope of the asset.

Gentle slopes require a smaller APZ distance than steep slopes



A hazard downslope will require a greater APZ distance then a hazard upslope of the asset

Different types of vegetation (for example, forests, rainforests, woodlands, grasslands) behave differently during a bush fire. For example, a forest with shrubby understorey is likely to result in a higher intensity fire than a woodland with a grassy understorey and would therefore require a greater APZ width.

A key benefit of an APZ is that it reduces radiant heat and the potential for direct flame contact on homes and other buildings. Residential dwellings require a wider APZ than sheds or stockyards because the dwelling is more likely to be used as a refuge during bush fire.

Subdivided land or construction of a new dwelling
If you are constructing a new asset, the principles of *Planning for Bushfire Protection* should be applied. Your Development Application approval will detail the exact APZ distance required.

Existing asset
If you wish to create an APZ around an existing asset and you require environmental approval, the Bush Fire Environmental Assessment Code provides a streamlined assessment process. Your Bush Fire Hazard Reduction Certificate (or alternate environmental approval) will specify the maximum APZ width allowed.

For further information on APZ widths see *Planning for Bushfire Protection* or the *Bush Fire Environmental Assessment Code* (available on the RFS website), or contact your local RFS Fire Control Centre.

STEP 4. DETERMINE WHAT HAZARD REDUCTION METHOD IS REQUIRED TO REDUCE BUSH FIRE FUEL IN YOUR APZ

The intensity of bush fires can be greatly reduced where there is little to no available fuel for burning. In order to control bush fire fuels you can reduce, remove or change the state of the fuel through several means.

Reduction of fuel does not require removal of all vegetation, which would cause environmental damage. Also, trees and plants can provide you with some bush fire protection from strong winds, intense heat and flying embers (by filtering embers) and changing wind patterns. Some ground cover is also needed to prevent soil erosion.

Fuels can be controlled by:

1. raking or manual removal of fine fuels
Ground fuels such as fallen leaves, twigs (less than 6 mm in diameter) and bark should be removed on a regular basis. This is fuel that burns quickly and increases the intensity of a fire.

Fine fuels can be removed by hand or with tools such as rakes, hoes and shovels.

2. mowing or grazing of grass
Grass needs to be kept short and, where possible, green.

3. removal or pruning of trees, shrubs and understorey
The control of existing vegetation involves both selective fuel reduction (removal, thinning and pruning) and the retention of vegetation.

Prune or remove trees so that you do not have a continuous tree canopy leading from the hazard to the asset. Separate tree crowns by two to five metres. A canopy should not overhang within two to five metres of a dwelling.

Native trees and shrubs should be retained as clumps or islands and should maintain a covering of no more than 20% of the area.

When choosing plants for removal, the following basic rules should be followed:

1. Remove noxious and environmental weeds first. Your local council can provide you with a list of environmental weeds or 'undesirable species'. Alternatively, a list of noxious weeds can be obtained at **www.agric.nsw.gov.au/noxweed/;**
2. Remove more flammable species such as those with rough, flaky or stringy bark; and
3. Remove or thin understorey plants, trees and shrubs less than three metres in height

The removal of significant native species should be avoided.

Prune in acordance with the following standards:

- Use sharp tools. These will enable clean cuts and will minimise damage to the tree.
- Decide which branches are to be removed before commencing work. Ensure that you maintain a balanced, natural distribution of foliage and branches.
- Remove only what is necessary.
- Cut branches just beyond bark ridges, leaving a small scar.
- Remove smaller branches and deadwood first.

There are three primary methods of pruning trees in APZs:

1. Crown lifting (skirting)
Remove the lowest branches (up to two metres from the ground). Crown lifting may inhibit the transfer of fire between the ground fuel and the tree canopy.

2. Thinning
Remove smaller secondary branches whilst retaining the main structural branches of the tree. Thinning may minimise the intensity of a fire.

3. Selective pruning
Remove branches that are specifically identified as creating a bush fire hazard (such as those overhanging assets or those which create a continuous tree canopy). Selective pruning can be used to prevent direct flame contact between trees and assets.

Your Bush Fire Hazard Reduction Certificate or local council may restrict the amount or method of pruning allowed in your APZ.

See the *Australian Standard 4373 (Pruning of Amenity Trees)* for more information on tree pruning.

4. Slashing and trittering
Slashing and trittering are economical methods of fuel reduction for large APZs that have good access. However, these methods may leave large amounts of slashed fuels (grass clippings etc) which, when dry, may become a fire hazard. For slashing or trittering to be effective, the cut material must be removed or allowed to decompose well before summer starts.

If clippings are removed, dispose of them in a green waste bin if available or compost on site (dumping clippings in the bush is illegal and it increases the bush fire hazard on your or your neighbour's property).

Although slashing and trittering are effective in inhibiting the growth of weeds, it is preferable that weeds are completely removed.

Care must be taken not to leave sharp stakes and stumps that may be a safety hazard.

5. Ploughing and grading
Ploughing and grading can produce effective firebreaks. However, in areas where this method is applied, frequent maintenance may be required to minimise the potential for erosion. Loose soil from ploughed or graded ground may erode in steep areas, particularly where there is high rainfall and strong winds.

6. Burning (hazard reduction burning)
Hazard reduction burning is a method of removing ground litter and fine fuels by fire. Hazard reduction burning of vegetation is often used by land management agencies for broad area bush fire control, or to provide a fuel reduced buffer around urban areas.

Any hazard reduction burning, including pile burns, must be planned carefully and carried out with extreme caution under correct weather conditions. Otherwise there is a real danger that the fire will become out of control. More bush fires result from escaped burning off work than from any other single cause.

It is YOUR responsibility to contain any fire lit on your property. If the fire escapes your property boundaries you may be liable for the damage it causes.

Hazard reduction burns must therefore be carefully planned to ensure that they are safe, controlled, effective and environmentally sound. There are many factors that need to be considered in a burn plan. These include smoke control, scorch height, frequency of burning and cut off points (or control lines) for the fire. For further information see the RFS document *Standards for Low Intensity Bush Fire Hazard Reduction Burning*, or contact your local RFS for advice.

7. Burning (pile burning)
In some cases, where fuel removal is impractical due to the terrain, or where material cannot be disposed of by the normal garbage collection or composted on site, you may use pile burning to dispose of material that has been removed in creating or maintaining an APZ.

For further information on pile burning, see the RFS document *Standards for Pile Burning*.

In areas where smoke regulations control burning in the open, you will need to obtain a Bush Fire Hazard Reduction Certificate or written approval from Council for burning. During the bush fire danger period a Fire Permit will also be required. See the RFS document *Before You Light that Fire* for further details.

STEP 5. TAKE MEASURES TO PREVENT SOIL EROSION

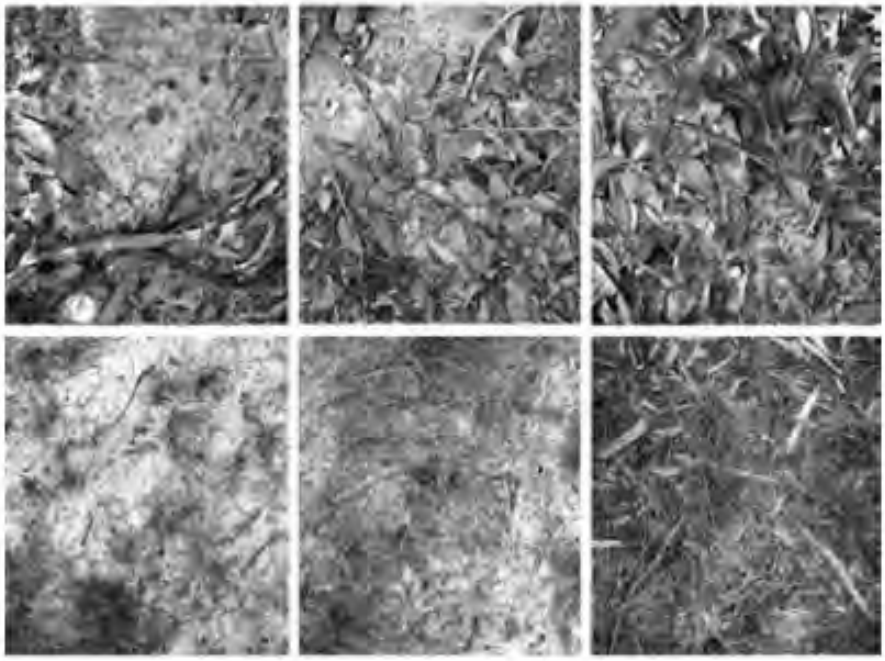
While the removal of fuel is necessary to reduce a bush fire hazard, you also need to consider soil stability, particularly on sloping areas.

Soil erosion can greatly reduce the quality of your land through:

- loss of top soil, nutrients, vegetation and seeds
- reduced soil structure, stability and quality
- blocking and polluting water courses and drainage lines

A small amount of ground cover can greatly improve soil stability and does not constitute a significant bush fire hazard. Ground cover includes any material which directly covers the soil surface such as vegetation, twigs, leaf litter, clippings or rocks. A permanent ground cover should be established (for example, short grass). This will provide an area that is easy to maintain and prevent soil erosion.

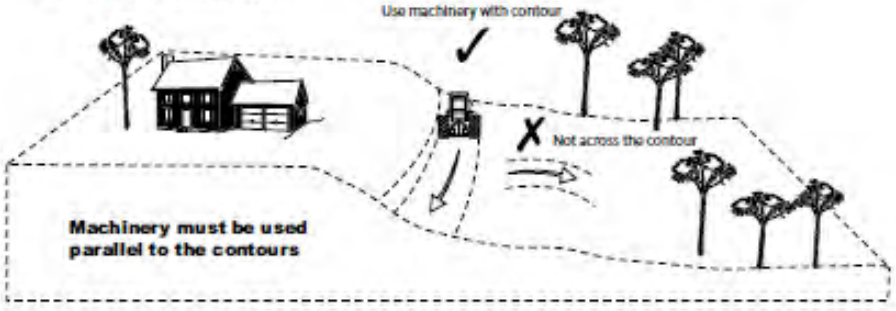
When using mechanical hazard reduction methods, you should retain a ground cover of at least 75% to prevent soil erosion. However, if your area is particularly susceptible to soil erosion, your Hazard Reduction Certificate may require that 90% ground cover be retained.



50% **75%** **100%**

Ground Cover

To reduce the incidence of soil erosion caused by the use of heavy machinery such as ploughs, dozers and graders, machinery must be used parallel to the contours. Vegetation should be allowed to regenerate, but be managed to maintain a low fuel load.



STEP 6. ONGOING MANAGEMENT AND LANDSCAPING

Your home and garden can blend with the natural environment and be landscaped to minimise the impact of fire at the same time. To provide an effective APZ, you need to plan the layout of your garden to include features such as fire resistant plants, radiant heat barriers and windbreaks.

Layout of gardens in an APZ
When creating and maintaining a garden that is part of an APZ you should:

- ensure that vegetation does not provide a continuous path to the house;
- remove all noxious and environmental weeds;
- plant or clear vegetation into clumps rather than continuous rows;
- prune low branches two metres from the ground to prevent a ground fire from spreading into trees;
- locate vegetation far enough away from the asset so that plants will not ignite the asset by direct flame contact or radiant heat emission;
- plant and maintain short green grass around the house as this will slow the fire and reduce fire intensity. Alternatively, provide non-flammable pathways directly around the dwelling;
- ensure that shrubs and other plants do not directly abut the dwelling. Where this does occur, gardens should contain low-flammability plants and non flammable ground cover such as pebbles and crush tile; and
- avoid erecting brush type fencing and planting "pencil pine" type trees next to buildings, as these are highly flammable.

Removal of other materials
Woodpiles, wooden sheds, combustible material, storage areas, large quantities of garden mulch, stacked flammable building materials etc. should be located away from the house. These items should preferably be located in a designated cleared location with no direct contact with bush fire hazard vegetation.

Other protective features
You can also take advantage of existing or proposed protective features such as fire trails, gravel paths, rows of trees, dams, creeks, swimming pools, tennis courts and vegetable gardens as part of the property's APZ.

PLANTS FOR BUSH FIRE PRONE GARDENS

When designing your garden it is important to consider the type of plant species and their flammability as well as their placement and arrangement.

Given the right conditions, all plants will burn. However, some plants are less flammable than others.

Trees with loose, fibrous or stringy bark should be avoided. These trees can easily ignite and encourage the ground fire to spread up to, and then through, the crown of the trees.

Plants that are less flammable, have the following features:

- high moisture content
- high levels of salt
- low volatile oil content of leaves
- smooth barks without "ribbons" hanging from branches or trunks; and
- dense crown and elevated branches.

When choosing less flammable plants, be sure not to introduce noxious or environmental weed species into your garden that can cause greater long-term environmental damage.

For further information on appropriate plant species for your locality, contact your local council, plant nurseries or plant society.

If you require information on how to care for fire damaged trees, refer to the Firewise brochure *Trees and Fire Resistance; Regeneration and care of fire damaged trees*.

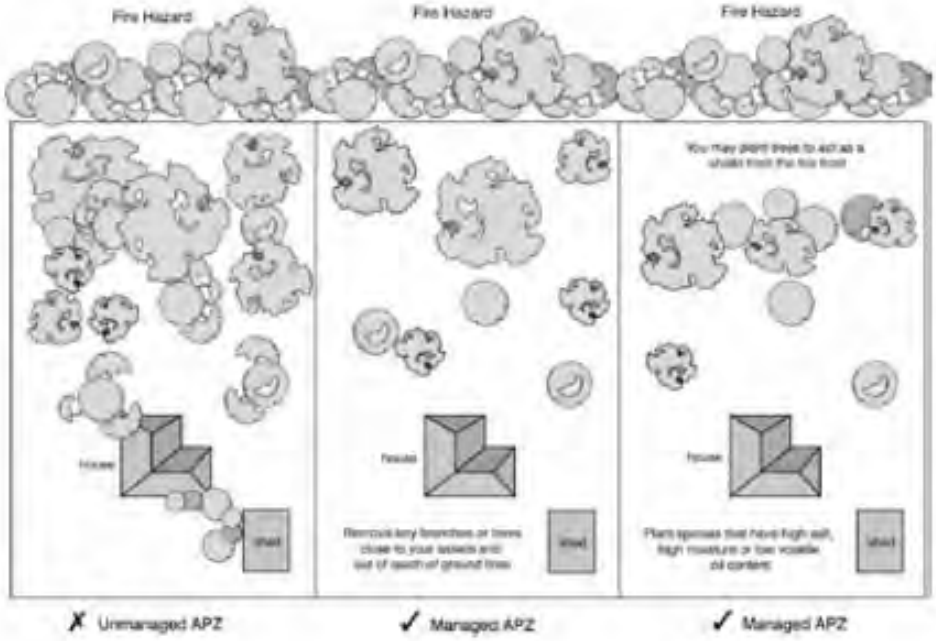
WIND BREAKS

Rows of trees can provide a wind break to trap embers and flying debris that could otherwise reach the house or asset.

You need to be aware of local wind conditions associated with bush fires and position the wind break accordingly. Your local RFS Fire Control Centre can provide you with further advice.

When choosing trees and shrubs, make sure you seek advice as to their maximum height. Their height may vary depending on location of planting and local conditions. As a general rule, plant trees at the same distance away from the asset as their maximum height.

When creating a wind break, remember that the object is to slow the wind and to catch embers rather than trying to block the wind. In trying to block the wind, turbulence is created on both sides of the wind break making fire behaviour erratic.



HOW CAN I FIND OUT MORE?

The following documents are available from your local Fire Control Centre and from the NSW RFS website at **www.rfs.nsw.gov.au.**

- Before You Light That Fire
- Standards for Low Intensity Bush Fire Hazard Reduction Burning
- Standards for Pile Burning
- Application Instructions for a Bush Fire Hazard Reduction Certificate

If you require any further information please contact:

- your local NSW Rural Fire Service Fire Control Centre. Location details are available on the RFS website or
- call the NSW RFS Enquiry Line 1800 679 737 (Monday to Friday, 9am to 5pm), or
- the NSW RFS website at **www.rfs.nsw.gov.au.**

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APPENDIX C: Revised Vegetation Management Plan, Biolink dated June 2020 & Modified Tree Removal Plan, Biolink dated June 2020

Revised Vegetation Management Plan

For Major Project No. 05-0198 (as modified)
Approval Condition B23
Lot 1 DP 134787, Lot 1 DP 167380, Lot 2 DP 961928
& Lot 5 DP 1117326
Walmsley's Road and Stott Street, Bilambil Heights

Final Report

June 2020

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Appendix 3: Native Plants Recorded on Subject Site and Surrounding Areas

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Appendix 5: Weed Species Recorded on Subject Site and Surrounding Areas

Appendix 6: Measures for Weed Control and Management

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Appendix 8: NPWS Bush Regeneration Checklist

Appendix 9: Project Risk Assessment Form and Matrix

Appendix 10: Planting Schedule

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Appendix 13: Photo Point Monitoring Guidelines and Record Sheet

Appendix 14: Letter from owners of Lot 6 granting consent to the creation of easements and carrying out work.

1. Introduction

This Revised Vegetation Management Plan (VMP) has been prepared for the landowners for the proposed subdivision of Major Project No. 05_0198 (dated 2nd August 2012) (as modified) for the proposed subdivision at Lot 1 DP 167380, Lot 2 DP 961928, Lot 1 DP 134787 and Lot 5 DP 1117326, Walmsley's Road, Bilambil Heights (Figure 1) for the purposes of complying with:

- The NSW Government approval of Major Project No. 05_0198 (dated 2nd August 2012) as modified (MODs 1 to 4, 6 and 7);
- Rural Fire Service and Office of Environment and Heritage comments;
- The proposed Modification 4 for the major development currently with DPIE); and
- Feedback from, and outcomes of, consultation with Tweed Shire Council and the project's BPAD certifier, in relation to the initial Asset Protection Zone Management Plan submitted, as related to the VMP.

The proposed project (MP No. 08_0194 as modified) includes subdivision to provide:

- 77 Torrens title residential lots;
- A 6 lot Community Title scheme (5 residential and 1 neighbourhood property);
- An open space lot for public reserve lot;
- Sewage pumping station lot;
- An asset protection zone and environmental management area (APZ-EMA);
- Associated roads, stormwater and utility infrastructure; and
- Areas for habitat rehabilitation and restoration.

Background:

- On 2 August 2012, the Planning and Assessment Commission (PAC) issued Major Project Approval No. 05_0198 for an 84 lot subdivision of the subject land.
- On 5 June 2017, the Approval was modified (MOD1).
- On 12 October 2017, the Director of Modification Assessments modified the Project Approval (MOD2) by amending Condition A6 to extend the lapse date to 2 August 2018.

- On 6 July 2018, the Approval was modified (MOD3) to extend the lapse date to 2 August 2019.
- On 1 August 2018 Modification Application No. 4 was lodged via the Department's Online Lodgement Portal. MOD4 requests amendment of Conditions B24 and E7 as the conditions could not be complied with in their current form. On 17 August 2018, Tweed Shire Council made a submission in relation to MOD4 relating to ecological and bushfire issues.
- Mod 5 (approved on 14 June 2019) amended condition A2 to enable survey and geotechnical work not requiring tree removal to be carried out without the need for a Tree Removal Plan.

In accordance with Condition A2 (1A)(b)(Mod 5), drilling of geotechnical boreholes on road alignments and survey work that did not require tree removal has been completed. A Compliance Certificate has been obtained from the certifying authority.

1.1. Relevant Conditions of Approval

The primary conditions of MP No. 08_0194 (as modified) to which this VMP relates are Condition A2, B23, and several conditions relating to bushfire protection, and the registration of easements.

Relevant NSW Planning Assessment Commission Conditions of Approval

A2 Staging:

"The project is to be constructed in seven (7) stages, generally in accordance with Revision L of Plan 35054 dated 24.03.16 prepared by Landsurv Pty Ltd, incorporating the lots as follows:

(1A) Stage 1A Preliminary Works Stage comprising:

(a) Removal of the existing trees within and adjacent to the alignment of approved Roads 3 and 5. Prior to removing any trees within or adjacent to approved Roads 3 and 5 the Proponent shall:

(i) submit a Tree Removal Plan for the approval of the Secretary identifying all trees proposed to be removed within Stage 1A; and

(ii) provide a copy of the approved Tree Removal Plan to the PCA prior to the issue of a Construction Certificate authorising any tree removal works.

(b) Surveying of all proposed road alignments including placing pegs, observing levels, preparing spatial data drilling geotechnical bore holes on road alignments. Survey work and investigative geotechnical work that does not require tree removal.

(c) The following conditions of approval shall be complied with prior to commencing the preliminary works stage referred to in Condition A2(1A)(a): Conditions C1 to C4, Condition C10, and Conditions C12 to C14.

(d) The following conditions of approval shall be complied with prior to commencing the preliminary works stage referred to in Condition A2(1A)(b): Conditions C3 and C4.

(1) Stage 1 comprises lots 1-13 inclusive, incorporating roads and public reserve (see note (a) below).

(2) Stage 2 comprises lots 14-31 inclusive incorporating roads.

(3) Stage 3 comprises Community Title subdivision containing six lots.

(4) Stage 4 comprises lots 32-40 inclusive incorporating roads.

(5) Stage 5 comprises lots 41-61 inclusive incorporating roads. Prior to removing any trees associated with the construction of the sewer line at the rear of approved lots 55, 57, 59 and 60 the Proponent shall:

(iii) submit a Tree Removal Plan for the approval of the Secretary identifying all trees proposed for removal and demonstrating the design and construction techniques proposed to minimise tree removal within the Environmental Management Area: and

(iv) provide a copy of the approved Tree Removal Plan to the PCA prior to the issue of a Construction Certificate authorising any tree removal works.

(6) Stage 6 comprises lots 62-78 inclusive incorporating roads. Prior to removing any trees associated with the construction of the sewer line at the rear of approved lots 69, 70 and 77 the Proponent shall:

(v) submit a Tree Removal Plan for the approval of the Secretary identifying all trees proposed for removal and demonstrating the design and construction techniques proposed to minimise tree removal within the Environmental Management Area; and

(vi) provide a copy of the approved Tree Removal Plan to the PCA prior to the issue of a Construction Certificate authorising any tree removal works.

Note (a). The public reserve, shown as part of Stage 1, together with a road access shall be constructed prior to the issuing of a subdivision certificate for any part of the development."

Subject to any conditions of approval, staging of allotment and/or road construction may vary in sequence and timing. Essential infrastructure associated with and including, but not limited to, roads, roundabouts, bus routes, footpaths, parks, services, landscaping and environmental management, shall be constructed as specified in the staging listed above or as otherwise provided in these conditions and the proponent's Statement of Commitments. Any revised staging plan that varies the stage boundaries or components listed in (1) – (6) inclusive, and subject to note (a) of this condition, shall be submitted for the approval of the Secretary, prior to the issuing of a Construction Certificate for subdivision works.

Response: A Revised Tree Removal Plan (Biolink 2020) has been prepared to comply with this condition. The Tree Removal Plan (TRP) has relevance to this VMP in relation to Approval Condition B10.

B10 Site Regrading

2) At the interface between the areas subject to vegetation management and earthworks proposals,and to ensure vegetation management objectives are achieved, earthworks are not permitted closer than 5 m to vegetation management works at the eastern and western boundaries of the site.

Response: The measures to be put in place to address the requirements imposed by this condition are provided in Appendix 1 and the Tree Removal Plan (Biolink 2020). The approved EMA area will now form part of the APZ to achieve the required Planning for Bushfire Protection requirements, and additional habitat rehabilitation and restoration will be undertaken to compensate for any loss of rehabilitation and restoration areas in the approved EMA. Although the approval, required 5 m buffer which will impinge on the EMA in the vicinity of Road No. 4 (due to the requirement for the installation of a retaining wall to ensure all works remain clear of the EMA), this will no longer be an issue due to moving the entire rehabilitation/restoration areas below the EMA.

B23 Vegetation Management Plan

A Vegetation Management Plan (VMP) shall be prepared for the site in accordance with the recommendations contained in report prepared by Biolink Ecological Consultants, dated June 2011, Appendix 1, that proposes Objectives and Guiding Principles.

Response: This VMP has been prepared with consideration to the Objectives and Guiding Principles in Biolink (2011) and pusuant to Condition B23. There has been a minor deviation from this approval condition to address the Planning for Bushfire Guideline requirements, resulting in all the habitat rehabilitation and restoration areas situated below the APZ-EMA area. The habitat rehabilitation and restoration areas have been increased to compensate for areas in the EMA proposed in Biolink (2011) that are no longer being rehabilitated or restored.

B24 Asset Protection Zones

1) *Asset Protection Zones (APZs) in each stage are to be provided in accordance with the Bushfire Planning Assessment in the Biolink Ecological Consultants, dated June 2011, as contained within the Environmental Management Area, illustrated on the proposed subdivision plans in Condition A3. Details and a plan showing the APZs accompanied by RFS endorsement are to be provided.*

Response: Condition B24 1) has been addressed in the Additional Information – Bushfire report (BCA Check 2020). Where the APZ has deviated from or modified the recommendations in Biolink (2011) this is explained in BCA Check (2020). Any deviation and modification has served to improve both the outcomes for managing bushfire risk and for the environment. A proposed modification (MOD 4) is currently with the Department of Planning, Industry and Environment (DoPIE). Any further consideration by RFS will be at the time of assessing future proposed development of each individual Lot.

Approval Conditions B24 2), B24 3), E7, and E8 5) d) are also addressed in the Additional Information – Bushfire report (BCA Check 2020).

D5 Protection of Trees – on-site

All trees on the site that are not approved for removal are to be suitably protected by way of tree guards, barriers or other measures as necessary are to be provided to protect root system, trunk and branches, during construction of any stage of the project.

Response: The protection of trees to be retained are to be undertaken in accordance with Appendix 1 of this VMP, and with the Australian Standard *AS4970-2009 Protection of Trees on Development Sites*.

6) A public positive covenant is to be created under Section 88E of the Conveyancing Act 1919, to require that the land subject to the VMP is to be maintained in accordance with the requirements of the VMP.

Response: The project manager/landowner will ensure the requirements of this condition are reflected in the S88E Instrument as a Restriction to User. Additional Restrictions to User in relation to the VMP are to be included on the S88B Instrument, and these are detailed in Section 7 of this VMP.

E21 Vegetation Management Maintenance

All works associated with the Vegetation Management Plan (excluding ongoing maintenance) are to be completed to the satisfaction of PCA prior to the release of the Subdivision Certificate for Stages 4, 5, or 6 (whichever comes first). The land subject to the VMP is to be maintained in perpetuity in accordance with the VMP recommendations.

Response: The project manager/landowner will ensure the requirements of this condition are completed. The maintenance in perpetuity of the land subject to this VMP will be reflected in the S88E Instrument, as provided for in Section 7 of this VMP.

Schedule 3 The Proponent's Statement of Commitments (October 2001)

For the protection of existing threatened species of flora and biodiversity, and the rehabilitation of 7 d zoned land

- *Final subdivision design shall demonstrate that the rare and/or threatened flora species (A, whitei, E. globosa, L. pulchella, M. tetraphylla) that occur in close proximity to the 2(c)/7(d) boundary are located and appropriately identified and/or signposted such that they remain unaffected by any activities(including provision of any asset protection zones for bushfire management purposes) associated with the development of the site.*

Response: The location of threatened plants in relation to the Management Zones 1 and 2 (Section 4 of this Plan) will be identified and marked once the final subdivision designs are completed and the survey pegs are in the ground delineating the boundaries of these management zones. The procedure for identifying plants and for minimising and avoiding impacts to rainforest plants are provided in Section 4.3.1. Maps showing the approximate locations of the threatened plants species is provided in Appendix 2 of this VMP.

Note: The threatened plant *Amorphospermum whitei* (*A. whitei*) has been subject to a name change and is now known as *Niemeyera whitei.* For the purposes of this report, the currently recognised name will be used. Despite detailed searches in and around the locality of the *Niemeyera whitei* specimen recorded in the Biolink (2011) report, it could not be located, and is considered no longer present in this location. The location where this specimen occurred is marked as a virtual plant on Figure 1. A replacement specimen will be planted in this location and related management is further discussed in Sections 3-8.

For the purposes of complying with Planning for Bushfire Protection 2006:

- *A minimum 25 m combined asset protection zone and Ecological Management Area must be located wholly within the boundaries of the lots within the 2c zoned area.*

Response: The 25 m APZ-EMA combined asset protection zone is wholly located within the boundaries of the lots within the 2c zoned area. The APZ-EMA area will not include any habitat rehabilitation or restoration. To compensate for this change, additional areas for rehabilitation and restoration have been identified below the APZ-EMA area. This is further addressed in the Additional Information – Bushfire report (BCA Check (2020).

- *A Section 88B Covenant shall be created requiring the asset protection zone area to be maintained as mowed lawn with any plantings restricted to endemic Lowland Rainforest species such that no more than 20% of the asset protection zone is covered by tree canopy or tree crowns to be separated by a minimum distance of 2-5 m.*

Response: The requirements to be placed on a Section 88B covenant under this commitment are detailed in the Additional Information – Bushfire report (BCA Check 2020) and Section 7 of this report.

- *Where canopy thinning is required, tree removal is restricted to camphor laurels only.*

Response: Within the Habitat Restoration and Habitat Rehabilitation areas tree removal will be restricted to the removal of camphor laurels and large-leaved privet. Tree removal of the planted windbreak, and for the APZ and sewer lines are addressed in the TRP (Biolink 2020) and identified in Figures 8 and 9.

- *Rear fencing of residential allotments abutting the 7d zoned areas must include a gate to facilitate access for fire-fighting purposes.*

Response: Rear fencing requirements are to be placed on a Section 88B covenant, and are detailed in the Additional Information – Bushfire report (BCA Check 2020) and Section 7 of this report.

1.2. Aims and Objectives

The primary objectives of the VMP as identified by Biolink (2011) are:

1) increasing ecological integrity of remnant rainforest areas adjoining the proposed development precinct;
2) minimising potential for detrimental influence of abiotic edge effects;
3) reducing the influence and dominance of Camphor Laurel;
4) enhancing a level of east-west connectivity across the proposed development precinct; and
5) increasing community awareness.

Additional primary objectives of this VMP Plan are to provide strategies for:

1) achieving a pre-cleared ecological community of Lowland Rainforest in Management Zones 1 and 2;
2) compensation for the vegetation, constituting the Endangered Ecological Community *Lowland Rainforest in the North Coast and Sydney Basin Bioregions,* that will be removed as part of the approved development;
3) the conservation of native species, including threatened species, existing on the subject site;
4) the protection of native vegetation that is to be retained on the subject site;
5) the control and eradication of weed species in Management Zones 1, 2, & 3;
6) management of the rehabilitation and restoration areas;

7) appropriate on site management, maintenance and monitoring of the rehabilitation and restoration areas;
8) limiting the impacts on the adjacent areas of Lowland Rainforest; and
9) achieving site capture of Management Zones 1 and 2 within a 5 year maintenance period.

The primary objective of enhancing a measure of east-west connectivity across the proposed development precinct, is provided for through use of predominantly local native species in the approved site-based Landscaping Plan (Form Landscape Architects 2017).

2. Description of Subject Site

2.1. Location in the Landscape

The subject site is located within the Tweed Local Government Area on the far north coast of New South Wales, delineated by the boundaries of those parcels of land formerly described as Lot 1 DP 134787, Lot 1 DP 167380, Lot 2 DP 961928 and Lot 5 DP 1117326. The land is currently zoned R1 – Urban Expansion and 7(d) – Environmental Protection Scenic/ Escarpment) for purposes of the *Tweed Local Environmental Plan 2000*.

2.2. Land Use

The historic land use of the subject site and surrounding areas has been agricultural, primarily for beef cattle and horse grazing. The current land use is also agricultural, for beef cattle and horse grazing. The future land use of the subject site will be for the development of the approved subdivision including associated infrastructure, and the management and conservation of lowland rainforest as the subject of this VMP.

Future land uses of the adjacent areas are variable and include:

- The property to the south of this development will be subject to a 20-Lot subdivision and an area on Lot 12 is the subject of a Habitat Restoration Plan (Biolink 2019);

- The majority of the properties adjoining the subject site to the east and west will be managed for conservation, some areas of which will be rehabilitated or restored as part of this VMP;
- To the north of the subject site is largely existing residential development; and
- One property adjoining the subject site in the west is not part of any proposed or approved development. Whether or not this will be subject to a future development is not known. It is currently a mix of remnant and regenerating rainforest (including threatened plant species) with a high proportion of exotic species.

2.3. Site Characteristics

The study area currently present as a habitat matrix of agricultural land and regenerating patches of native vegetation containing a high proportion of exotic species, notably Camphor Laurel C*innamomum camphora* and Large Leaved Privet *Ligustrum lucidum*. Remaining vegetated areas are further characterised by their presence on steep slopes with south-westerly, north and north-easterly aspects.

The subject site is located on kraznozem and chocolate soils derived from Basalts associated with the Lamington Volcanics (Morand 1994). There are consequently numerous boulders of varying size on the subject site.

Site elevations within the study area vary from sea level to around 80m asl.

2.4. Biodiversity at the Landscape Level

The subject site and surrounding area, although somewhat fragmented is relatively intact for the purposes of a wildlife corridor, providing a mix of contiguous and stepping stone vegetation.

With the development of the site as well as the adjoining 20-Lot approved development, there will be some further fragmentation and isolation between east and west of the subject site. This fragmentation will be partially offset in the longer term by the proposed landscape plantings that will provide north-south and east-west corridors through both developments linking to habitat on and off the site. Despite the landscape

planting not providing for all species that are likely to utilise these areas currently, it is expected to provide a valuable resource for many species, particularly birds.

The subject site has local significance in supporting connectivity between adjacent patches of Lowland Rainforest vegetation and reducing the edge effects. The site and associated landscapes are considered of regional significance in maintaining contiguous vegetation as habitat for flora and fauna species.

2.5. Native Vegetation

The vegetation on the subject site is primarily open pasture with a few scattered remnant rainforest trees, and a planted windbreak. On the eastern and western boundaries there are areas of remnant vegetation that extends into the subject site.

Although not at the highest level of species diversity for Lowland Subtropical Rainforest, there is a moderate level of diversity on the subject site (Appendix 3). There is currently a lack of vegetation structure in all strata on most of the subject site, with patches of native grasses and groundcovers, isolated regenerating shrubs and trees, and a few mature remnant trees, with regeneration occurring underneath. In some of the adjacent vegetated areas there is a relatively high level of diversity in all strata.

The subject site contains very small areas that adjoin the western remnants that are consistent with Lowland Subtropical Rainforest and would meet the criteria for the NSW Endangered Ecological Community *Lowland Rainforest in the North Coast and Sydney Basin Bioregion* and the National Endangered Ecological Community *Lowland Rainforest of Subtropical Australia.*

Vegetation Communities

Biolink (2011) identified four main floristic communities in the study area, including the subject site and adjacent areas, namely:

1. Sclerophyll forest

(i) Tall open forest dominated by Turpentine *Syncarpia glomulifera*. This is a non-endemic community approximately 0.75 ha in size, entirely contained within the proposed development footprint and originally planted for the purposes of providing

a windbreak. Understorey vegetation in this narrow strip consists of isolated shrubs and saplings to 3m tall comprised of species such as Sweet Pittosporum *Pittosporum undulatum,* Tuckeroo *Cupaniopsis anacardioides,* Native Gardenia *Randia benthamiana,* Crow's Ash *Pentaceras australe* and Camphor Laurel *Cinnamomum camphora*.

(ii) Tall woodland dominated by Camphor Laurel, Brush Box *Lophostemon confertus* and Grey Gum *Eucalyptus propinqua*. Mid-stratum consists of mid-high to tall, mid-dense Foambark *Jagera pseudorhus,* Red Kamala *Mallotus philippensis,* Black Walnut *Endiandra globosa,* Red-fruited Laurel *Cryptocarya laevigata,* Brush Pepperbush *Tasmannia insipida,* Crow's Ash *Pentaceras australe* and Fire-wheel Tree *Stenocarpus salignus*. Understorey vegetation consists of native vine, grass and fern species such as Prickly Rasp Fern *Doodia aspera,* Lawyer Vine *Smilax australis* and Rough Saw-sedge *Gahnia aspera*.

(iii) Tall open forest dominated by Camphor Laurel and Tallowwood *Eucalyptus microcorys*, the latter planted during the 1950s (Chris Roberts pers. comm.). Mid-stratum consists of mid-high to tall rainforest indicator species such as Bangalow Palm *Archontophoenix cunninghamiana,* Straw Tree Fern *Cyathea cooperi,* Red Kamala, Sweet Pittosporum, Foambark and Brush Cherry *Syzygium australe*. Understorey is very sparse and mostly comprised of leaf litter and native vine and fern species such as Lawyer Vine, Prickly Rasp Fern and Common Bracken *Pteridium esculentum*.

2. Rainforest

This community best conforms to a regenerating, simple notophyll very tall closed forest dominated by Camphor Laurel with emergent Pink Bloodwood *Corymbia intermedia* and Brush Box, the latter more obvious in adjoining lands to the north west. Also present in some areas is an earlier successional stage of this community, again dominated by Camphor Laurel and with little or no midstratum. Understorey vegetation consists of shrubs and saplings to 3m comprised of rainforest species such as Sweet Pittosporum, Hairy Alectryon *Alectryon tomentosus*, and very sparse native groundcover such as Prickly Rasp Fern. Despite its young age and the presence of Camphor Laurel, a number of

threatened plant species were recorded, while the physiognomic attributes associated with this community further qualify it as an analog of the Endangered Ecological Community (EEC) *Lowland rainforest in the NSW North Coast and Sydney Basin Bioregion*.

Other vegetation communities present near the subject site includes a small exotic Pine *Pinus* sp. plantation in the north east of the study area, which Biolink (2011) described as "wet grassland" on the lower reaches of the catchment area immediately upstream of the impounded water body.

Threatened or rare flora species

Twelve rare or threatened plant species have been identified as occurring within the subject site and the adjacent vegetation:

- Marblewood *Acacia bakeri*
- White Laceflower *Archidendron hendersonii*
- Brush Cassia *Cassia marksiana*
- Finger Lime *Citrus australasica*
- Stinking Cryptocarya *Cryptocarya foetida*
- Long-leaved Tuckeroo *Cupaniopsis newmanii*
- Black Walnut *Endiandra globosa*
- Fine-leaved Tuckeroo *Lepiderema pulchella*
- Rough-leaved Bush Nut *Macadamia tetraphylla*
- Rusty Plum *Niemeyera whitei*
- Spiny Gardenia *Randia moorei*
- Smooth Turpentine Scrub *Rhodamnia maideniana*

.

Several of these species including Black Walnut *Endiandra globosa*, Fine-leaved Tuckeroo *Lepiderema pulchella*, Spiny Gardenia *Randia moorei*, Long-leaved Tuckeroo *Cupaniopsis newmanii* and Rough-shelled Bush Nut *Macadamia tetraphylla*, occur in close proximity to precinct boundaries along the north, east and west of the precinct (Appendix 2). For purposes of clarity not all individuals have been plotted, but are indicative of locations. Each plant will be clearly marked and labelled in the field prior to works commencing.

2.6. Native Fauna

A list of native fauna recorded in the local area that includes one native frog species, eight snake species, four lizard species, over 50 bird species, and 14 mammal species (Biolink 2011; Bushland Restoration 2004; Chris Roberts, pers. comm.) is provided in Appendix 4.

2.7. Exotic Species

There are over 50 exotic weed species recorded on the subject site and in the surrounding areas. A list of these weed species is provided in Appendix 5.

Exotic animal species recorded in the local area include dog/fox, hare, house mouse and black rat. Scats from hares were observed on the subject site during the preparation of this report but no animals were observed. There was little evidence of grazing by hares. Cattle and horses are currently grazing in the paddock areas and will be removed for the development of the site and excluded from the restoration areas.

2.8. Ecosystem Resilience

The subject site and surrounding areas have a relatively high level of ecosystem resilience, evidenced by the many plants recolonising from seed or spores from adjacent areas, primarily through bird dispersal and perching on existing trees.

3. Management Issues

Management issues relevant to the VMP include:

- Ecological restoration strategies applicable to the site (natural regeneration, assisted natural regeneration, reconstruction);
- Translocation, reintroduction and introduction of *Niemeyera whitei*, and transplant salvage of *Lepiderema pulchella*;
- Weed management (weed species and abundance, weed dispersal to and from the site, management techniques with potential to impact on habitat values, qualifications of regenerators, and timeframes);

- Habitat reconstruction (planting design and planting list, propagule selection, fauna habitat reconstruction, vegetation structural complexity, food resources, and hygienic considerations);
- Fire management (appropriate for Lowland Rainforest);
- Soil management and erosion control;
- Provision and management of fencing (details of the type, location and purpose of fencing);
- Community awareness for protection of threatened species and Lowland Rainforest, and habitat for fauna; and
- The Registration of Easements.

3.1. Restoration Technique Selection

The restoration techniques selected include natural regeneration, assisted natural regeneration, and reconstruction, consistent with the requirements of the VMP guiding principles (Biolink 2011).

These restoration techniques apply to Management Zones 1 and 2, where there are small patches of naturally regenerating rainforest and open gaps. In the rehabilitation and reconstruction areas, natural regeneration should be encouraged to improve local resilience of the overall restoration area. The removal of weeds across the rehabilitation and restoration area will result in assisted natural regeneration. All existing native plants that have regenerating within the rehabilitation area are to be retained.

Ten *Lepiderema pulchella* plants will be translocated, as a transplant salvage, from the eastern end of the windbreak corridor. These plants are mostly small seedlings <40 cm, with two plants just over 1 m tall. There is a possibility of more *Lepiderema pulchella* plants germinating prior to the tree removal works. The transplanting is part of the TRP (Biolink 2020). Details of the translocation are provided in Section 4.

The *Niemeyera whitei* plant which has not been located is marked as a virtual plant on Figure 1. An individual of this species will be planted at that location, and two individuals in the restoration area, as part of the VMP establishment phase works. The

replacement and additional plants will be derived from local native stock and will be of a suitable size (50-75 cm) at time of planting. They will be adequately protected and will be monitored as part of the VMP implementation (Biolink 2020).

3.2. Clearing of Vegetation

Clearing of vegetation on the subject site comprises the clearing of:

- the planted windbreak and regenerating rainforest underneath (Figure 8), and for the APZ (Figure 9) and sewer line (Figure 10);
- the removal of Camphor Laurel from across the site and in the rehabilitation and restoration areas, including from Lots 38, 39, 40, 55, 57, 59, 60 and 61, as required by the approval conditions.

Management of the clearing of the planted windbreak trees and regenerating rainforest is addressed in the Tree Removal Plan (Biolink 2020).

The loss of Lowland Rainforest species across the site is compensated for through the management of the rehabilitation and restoration areas in Management Zones 1 and 2, and is described throughout Sections 3 and 4 of this Plan. The removal of Camphor Laurel is addressed in Sections 3.3., 4.3.3., and associated appendices.

Temporary bollards or barrier mesh will be established at the boundaries of the APZ-EMA habitat restoration and rehabilitation areas (Figure 1), and around individual trees to be retained prior to any other works commencing on site. Permanent concrete post and plain wire fencing will be established on the vegetation side of the temporary bollards or barrier mesh, around the area of *Macadamia tetraphylla* conservation, and around the boundaries of Lot 61 (Figure1). No native vegetation is to be cleared for the establishment of either the temporary or permanent fencing.

3.3. Weed Management

Weed species and abundances are provided in Appendix 5. There is potential for weed dispersal from adjacent areas into the rehabilitation and restoration areas in Management Zones 1 and 2. The management techniques that are to be applied in these areas are provided in Section 4 and Appendices 6 and 7. The NPWS Checklist

for bush regeneration activities is included and Appendix 8 is to be followed in areas of existing vegetation.

Minimum qualifications and experience of a specialist ecological consultant practising in the Tweed Council LGA should comprise a tertiary degree in the natural sciences (or equivalent) and two years documented field experience in ecological restoration in north-eastern New South Wales and/or south-eastern Queensland. Additional TAFE Certificate IV qualifications in Bushland Regeneration or Natural Area Restoration are highly desirable.

Regenerators working on the subject site will also be required to have relevant licences and qualifications, including a Section 132C licence under the *National Parks and Wildlife Act 1974* when undertaking weed control in threatened species habitat, and up-to-date Chemical Users Certificate qualifications for the use of herbicides and fungicides. All works are to be undertaken in accordance with the legislative requirements of the relevant approvals and qualifications. In addition, regenerators working on the subject site will be required to work in accordance with the Job Safety and Risk Analysis provided in Appendix 9.

3.4. Habitat Regeneration and Restoration

Natural regeneration and assisted natural regeneration will comprise any native plants that emerge following site preparation works in Management Zones 1 and 2, particularly following weed control. These plants are to be marked, labelled and retained.

The habitat restoration will be undertaken in Management Zone 1 and will comprise retention of existing and naturally regenerating rainforest species, weed control, and planting of appropriate species for Lowland Rainforest in the Bilambil Heights area. Species selection for planting is based on species recorded on the subject site and adjacent areas (Appendix 3 and 10). As much as possible (*i.e.* subject to availability) plants will be sourced from local provenance of the Terranora sub-catchment in the first instance and the broader Tweed Valley where necessary. Plants will be sourced

from local nurseries with a guarantee of product that meets the requirements in Appendix 11.

The timing of planting, planting design, closing and after-care requirements are detailed in Sections 4.3.3, 4.3.4, 4.3.6, and 4.4.

3.5. Hygiene Management

Hygiene protocols have been developed (Appendix 11) and are to be implemented to address the:

- NSW Government listing of the key threatening process, *Infection of native plants by Phytophthora cinnamomi*, under the *Biodiversity Conservation Act* (NSW Scientific Committee, 2002);
- Australian Government listing of the key threatening process, *Dieback caused by the root-rot fungus Phytophthora cinnamomi,* under the EPBC Act (Australian Government Scientific Committee, 2000);
- associated Threat abatement plan for disease in natural ecosystems caused by *Phytophthora cinnamomi* (Australian Government Department of the Environment, 2014);
- NSW Government listing of the key threatening process, *Introduction and establishment of Exotic Rust Fungi of the order Pucciniales pathogenic on plants of the family Myrtaceae*, under the *Biodiversity Conservation Act* NSW Scientific Committee, 2011);
- Australian Government listing of the key threatening process, *Novel biota and their impact on biodiversity,* under the EPBC Act (Australian Government Scientific Committee, 2013); and
- NSW Government preliminary determination to list *Rhodamnia rubescens* and *Rhodomyrtus psidioides* as endangered species (NSW Scientific Committee, 2017).

Lowland Rainforest and *Macadamia tetraphylla* are known to be susceptible to infection from *Phytophthora cinnamomi*. Several of the rainforest plants occurring on the site and surrounding areas, and proposed for planting including, *Melaleuca quinquenervia, Rhodamnia rubescens, Rhodamnia maideniana, Rhodomyrtus*

psidioides, and lillypilly species, are known to be susceptible to infection from Myrtle Rust.

3.6. Soil Management and Erosion Control

Soil management and erosion control measures will be necessary to ensure the protection of threatened species and rainforest plants to be retained on the subject site, particularly on the western and eastern boundaries. Soil management and erosion control for the development, in accordance with the approval conditions will avoid impacts to the vegetation being retained.

The restoration to be undertaken in Management Zone 1 (Section 4.1.1) may result in soil management issues and the need for erosion control as a result of the steepness of the restoration areas. The control of weed groundcovers, primarily exotic grasses during site preparation across the restoration area will potentially leave these steep slopes bare and subject to erosion and loss of topsoil. Measures to address these issues are provided in Sections 3.3, 4.2, and 4.4 of this VMP.

3.7. Fire Management

Fire management for the purposes of bushfire protection is addressed in the revised Asset Protection Zone Management Plan (BCA Check 2020). As fire kills most rainforest plants, with some species capable of re-sprouting following, fire is to be avoided within the existing regenerating rainforest and the rehabilitation and restoration areas (Management Zones 1 and 2).

3.8. Community Awareness

The VMP Objectives and Guiding Principles (Biolink 2020) identified that people living in residential estates adjoining natural areas are rarely informed as to ecological and/or management needs of such areas, including the consequences of dumping garden waste, vegetation trampling and the depredations of domestic animals.

The guiding principles recommend local residents must be informed of the site's context and the measures/actions they can take to assist long term maintenance of ecological values, including the use of native rainforest species for landscaping purposes.

To this end, a brochure detailing site context, threats and a *how you can help* section has been prepared (Appendix 12). To accompany the brochure, the VMP recommended new residents receive a gift of 10 – 12 suitable rainforest shrub and small tree species to be used for landscaping purposes subject to the provisions of the revised Asset Protection Zone Management Plan.

3.9. Registration of Easements

Under S88B and S88E Instruments, the registration of easements will be required for land in Management Zones 1, 2, and 3. The details of information to be included on the associated Restrictions to the User are provided in Section 7, and are consistent with the requirements of approval condition E8(5).

4. Management Strategy

The management approach is to:

1) establish Management Zones;
2) retain existing native plants within Management Zones 1, 2, and 3;
3) protect threatened plants and rainforest plants being retained from the impacts during the establishment of the subdivision and in the future;
4) prepare the rehabilitation and restoration areas on the subject site to facilitate planting, including primary weed control;
5) plant locally occurring rainforest species sourced from local provenance plants, within the restoration areas;
6) retain naturally regenerating native species in the rehabilitation and restoration areas;
7) follow-up site maintenance; and
8) monitoring and adaptive management.

4.1. Management Zones

For the purposes of this plan, four management zones are to be established (Figures 1, 2 and 3). The management approaches for each management zone is to follow the requirements in Sections 4.2, 4.3 and 4.4. Specific measures relevant to individual zones that are addressed in the following sub-sections.

Prior to any construction works commencing, temporary bollards or barrier mesh are to be placed at the interface of Management Zones 1 and 2, with the APZ-EMA. On the restoration and rehabilitation side of the bollards a permanent concrete post and plain wire fence is to be erected. Lot 61 is also to be permanently fenced with a concrete post and plain wire fence. The permanent fencing is to be fauna friendly and able to prevent cattle from accessing the restoration and rehabilitation areas. The permanent fencing is to be established by the end of the Year 1 establishment stage.

4.1.1. Management Zone 1: Restoration Areas

Management Zone 1 comprises the six open areas amongst the regenerating Lowland Rainforest (Figures 1, 4a and 4b). The restoration areas are adjacent to the APZ areas (Management Zone 3).

Weed control will be undertaken in accordance with the requirements and strategies in Sections 3.3, 4.3.2, and Appendices 6-9. The site will need to be prepared for planting with primary and follow-up weed control. Primary weed control may require at least two treatments to bring weeds under control or alternatively weed matting may be used in this area.

Management Zone 1 requires direct management intervention actions on three fronts simultaneously:

1) the establishment of a definable edge and sealing thereof.

   Increasing the ecological integrity of remnant rainforest areas adjoining the APZ-EMA (Management Zone 3). The focus of Management Zone 1 is to seal exposed and open edges. In conjunction with proposed measures of Camphor Laurel control, all edges at the APZ-EMA/Management Zone 1 interface must be "sealed" using a combination of pioneer (edge) and late succession mixed species (infilling) planting. Plantings in Management Zone 1 are to be medium density (1 tree per

10-15 m^2) plantings of later secondary and mature phase tree species in all internal gaps, transitioning to use of pioneer/early secondary species at higher density (1 plant per 3 - 5 m^2) where the permanent edge is required. The edges are to effectively be sealed plus any associated infilling accomplished over a 3 - 5 year timeframe.

2) Camphor Laurel control.

The treatment of Camphor Laurel in Management Zone 1 is to be staged, with 100% of seedlings and juveniles (<100 mm dbh) controlled, and 20% of mature trees (>100mm dbh) killed by stem injection/frilling *in situ* in the first year establishment stage. During each of the subsequent 4 years of the maintenance period, the 100% control of Camphor Laurel seedlings and juveniles, and another 20% of mature Camphor Laurel. 100% Camphor Laurel treatment should be achieved by the end of Year 4 of the maintenance period. Follow up control will be required in Year 5 of the maintenance period.

3) the filling of extant canopy gaps and/or openings.

Planting is to be characteristic, structurally and floristically, of Lowland Rainforest, with plants to be randomly placed within the landscape. Plants species identified for planting in Management Zone 1 is provided in the Planting Schedule in Appendix 10. The densities of plantings identified above are to be achieved within the establishment phase and maintained at those levels or denser for the 5 year maintenance period.

Plants will need to be protected from grazing and wind damage, either through the use of individual plant guards, or shade cloth or fencing of broader areas.

This area will be the subject of a S88E covenant in conjunction with negotiations with the landholder. The landowner has provided consent for the proposed works to be undertaken and for the required easement and title to apply to the adjoining Lot 6 (C. Roberts pers. comm.).

4.1.2 Management Zone 2: Rehabilitation Areas

Management Zone 2 comprises weed control and natural regeneration in seven blocks (Figures 1 and 5). All native plants naturally regenerating in this area will be retained.

Weed control will be undertaken in accordance with the requirements and strategies in Sections 3.3, 4.3.2, and Appendices 6-9. The treatment of Camphor Laurel in Management Zone 2 is to be staged, with 100% of seedlings and juveniles (<100 mm dbh) controlled, and 20% of mature trees (>100mm dbh) killed by stem injection/frilling *in situ* in the first year establishment stage. During each of the subsequent 4 years of the maintenance period, the 100% control of Camphor Laurel seedlings and juveniles, and another 20% of mature Camphor Laurel. 100% Camphor Laurel treatment should be achieved by the end of Year 4 of the maintenance period. Follow up control will be required in Year 5 of the maintenance period.

Should natural regeneration fail, there is to be planting of species diversity and density, consistent with the restoration of Management Zone 1, and floristically consistent with that of a Lowland Rainforest. Plant species identified for planting in this area are provided in the Planting Schedule in Appendix 10.

Primary weed control may require at least two treatments to bring weeds under control or alternatively weed matting may be used in this area. Plants will need to be protected from grazing and wind damage, through the use of individual plant guards, and fencing of broader areas.

This area will be the subject of a S88E covenant in conjunction with negotiations with the landholder. The landowner has provided consent for the proposed works to be undertaken and for the required easement and title to apply to the adjoining Lot 6 (C. Roberts pers. comm.).

4.1.3. Management Zone 3: Asset Protection Management

Management Zone 3 comprises the Asset Protection Zones, the APZ-EMA on the eastern and western boundaries of the development (Figures 7a and 7b). Management of this Zone is provided for in the Additional Information Bushfire report

(BCA Check 2020). Management Zone 3 is the subject of S88B covenants with Restrictions as to User (Section 7).

Tree clearing associated with the establishment of the Asset Protection Zone is discussed in the Additional Information – Bushfire report for the site (BCA Check 2020) and the TRP (Biolink 2020). This clearing includes an extension to the clearing of the windbreak trees, which contains 36 Camphor Laurel trees and 15 native trees (Figure 9). The native trees in this area will be removed, as their retention will be extremely difficult given the surrounding Camphor Laurels must be removed, as well difficulties in maintaining these individuals in accordance with the standards for asset protection zones.

Within Management Zone 3, two rainforest trees will be retained, a Red Kamala *Mallotus philippensis* and a Teak *Flindersia australis*. These trees are marked on Figure 1 as to be retained. In addition, a replacement specimen of *Niemeyera whitei* is to be planted at the original location within Management Zone 3. The location of this plant is also marked on Figure 1. These trees to be retained or planted are to be protected from the development construction works and clearly marked with barrier mesh, installed no less than 2 m around the outside perimeter of each canopy.

4.1.4. Management Zone 4: Planted Windbreak

Management Zone 4 comprises the planted windbreak that runs east-west across the site (Figure 9).

This Management Zone covers the initial phase of clearing operations for Stage 1A. There will be no clearing or tree removal in Management Zone 4 until the VMP is approved by Tweed Shire Council.

Lepiderema pulchella (Fine-leaved Tuckeroo) is a listed threatened species in the vulnerable category both within NSW and nationally. The emergence of several individuals of *Lepiderema pulchella* after the assessment by Biolink (2011), necessitates the salvage translocation of these plants, comprising two individuals over 1 m in height, plus eight seedlings-juveniles.

The salvage of *Lepiderema pulchella* plants is to be undertaken prior to tree clearing. There is to be no clearing of non-threatened vegetation within this management zone until the *Lepiderema pulchella* plants identified for salvage have been removed from the clearing area.

The *Lepiderema pulchella* plants to be salvaged are located between plants 1-6 in the Tree Removal Schedule, and as identified in Figures 1 and 3d of the TRP (Biolink 2020). As there is potential for further germination of *Lepiderema pulchella* plants, a further search is to be undertaken under the windbreak trees prior to their removal. Any additional located specimens are to be included in the salvage operation. The transplants are to be planted primarily in the restoration areas (Management Zone 1 of the VMP), with a few specimens to be planted into the rehabilitation area (Management Zone 2 of the VMP).

Prior to salvaging, a health assessment of each specimen is to be recorded. Healthy plants are to be directly transplanted into pre-prepared holes, in accordance with the planting requirements in Section 4.3.4 of the VMP (Biolink 2020). Plants exhibiting signs of poor health (e.g., insect attack, rust, lack of new growth) are to be potted and maintained until considered sufficiently healthy for planting. All plants are to be trimmed of 75% of foliage prior to salvaging, in order to reduce transpiration.

When extracting the plants, care must be taken to minimize damage to the root system by leaving adequate soil around the root ball. The transplants are to be placed into a large pot with soil from the site and watered well in readiness for transfer to the restoration and rehabilitation areas or to a nursery for maintenance. All transplanted specimens are to be adequately watered following replanting to maximize survival.

Records of transplanted individuals are to include plant number, plant health at the time of transplanting, whether directly planted or potted, date of transplanting, timing of watering over the first 12 months, and survival of transplants.

The transplanted plants are to be monitored monthly for the first six months after replanting, and 6-monthly for a further 4.5 years (see Section 5.1 below).

The translocation, transplanting salvage, is to be consistent with the Australian Network for Plant Conservation's translocation guidelines (Vallee *et al.* 2004).

4.2. Site Preparation

In preparing the management zones, the following actions are to be undertaken:

- Establishment of Management Zone boundaries;
- Identification of trees to be removed within the Tree Removal Plan, including the removal of the planted windbreak, and for the establishment of the APZ and the sewer line.
- Establishment of tree-vegetation protection barriers around vegetation being retained and protected in Management Zones 1 and 2 from the earthworks and vegetation clearing associated with the development;
- Identification of threatened plants with permanent markers;
- Establishment of photo point locations;
- Temporary fencing of the restoration area; and
- Primary weed control and eradication to provide a suitable environment for planting.

4.3. Restoration Methods and Techniques

The restoration methods and techniques applied to this VMP are:

- the retention of existing threatened and rainforest plants in Management Zones 1 and 2;
- weed control;
- natural regeneration and assisted regeneration; and
- planting.

4.3.1. Retention of Existing Rainforest Plants

The existing remnant rainforest plants in the rehabilitation and restoration areas (Management Zones 1 and 2) are to be retained.

Within the rehabilitation and restoration areas it is possible that additional seedlings will have regenerated prior to site preparation works being undertaken. Any naturally regenerating native plants, or those regenerating with assistance (through weed

control) in these areas are to be retained, and will contribute to the overall densities to achieve site capture of Lowland Rainforest.

4.3.2. Weed control

Within the rehabilitation and restoration areas (Management Zones 1 and 2), primary weed control is intended to comprehensively remove all weed species within each Management Zone in the restoration area prior to planting. The list of the weed species recorded in the habitat restoration area and the control methods are provided in Appendix 6. There is likely to be some germination of weed species from the seedbank. These are to be subject to follow-up control before planting.

Grasses and annual plants are to be hand removed and/or sprayed. Dead plant material, without seed on, is to be retained to stabilise soil. Shrubs, small trees and large trees are to be controlled using cut and paint or frilling techniques. Vines are to be controlled using scrape and paint techniques.

Weeds emerging following planting are to be eradicated by follow-up weed control in Years 1-5. Measures for weed control and information to be collected is provided in Appendices 6 and 7.

In the first two years, weed control maintenance rotations are to be undertaken every two months, and every three months for the duration of the 5 year maintenance period. This will ensure that annual plants emerging at different times of the year are largely controlled, and will encourage natural regeneration. The number of hours will be dependent on the extent of regeneration of weeds during the implementation and will be commensurate with what is required to meet the objectives and actions in this Plan.

Weed waste that does not have seed on it is to be retained on site. Weed waste with seed is to be bagged and disposed of at the local Council rubbish tip.

4.3.3. Planting

The aim of the planting is to achieve Lowland Rainforest across Management Zones 1 and 2 in conjunction with natural regeneration and consistent with the diversity of species and number of individuals provided in Appendix 10, and density

targets identified for Management Zone 1 (Section 4.1.1). In conjunction with the baseline monitoring (which will identify current density of plants in each of the Management Zone Areas marked in Figure 1), monitoring at the end of each year of the monitoring period will determine whether density targets are likely to be met and if additional plants are to be sourced and planted. If any target plant species are unavailable at a given point, one or more substitute species from Schedule 10 are to be selected, ensuring that no individual species exceeds more than 5% contribution to density, with the exception of pioneer plants.

The schedules of species to be planted in Management Zones 1 and 2 are provided in Appendix 10. The planting arrangement in Management Zones 1 and 2 will be random, characteristic of Lowland Rainforest. The bush regenerator engaged by the landowner can use their discretion to best place the most appropriate species in each restoration location in Management 1, and across the rehabilitation areas in Management Zone 2, in accordance with this VMP.

The *Niemeyera whitei* plant which has not been located is marked as a virtual plant on Figure 1. An individual of this species will be planted at that location, and two individuals are to be planted in the restoration area during the establishment phase works. The replacement and additional plants will be derived from local native stock and will be of a suitable size (50-75 cm) at the time of planting. These specimens will be adequately protected and will be monitored.

The planting is to be undertaken in accordance with the standard *Dwg. No. S.D. 701-702 Tree and Shrub Planting Details and Standard Revegetation Detail* in TSC *Landscape Procedures and Style Manual Appendix H* (of the DCP A5 Subdivision Manual – D14 Landscaping Public Space) (Figure 6). All plants are to be staked, with each stake having a uniquely identifying plant code. The location of each plant is to be GPS recorded.

All plants are to be checked prior to leaving the nursery to ensure correct labelling with a unique code, and assessed for signs of disease, fungus, and insects, and pots checked for weeds, to avoid their introduction to the site, particularly for *Phytophthora*

and Myrtle Rust. Any unhealthy plants will be discarded and replaced with healthy plants.

To minimize weed emergence, weed free mulch is to be lightly placed around all plants. Plants are to be watered heavily on planting, and regularly for the first 6 months, and throughout the implementation of the VMP, as required and dependent on local rainfall.

4.4. Site Maintenance

The maintenance of the restoration plantings, regenerating native species and control of weed species is required to be undertaken for a period of 5 years after planting. Site maintenance is to include as required:

- Continued weed control;
- Resetting and relabeling the stakes;
- Assessment of plants to and treatment of those suspected as suffering from *Phytophthora* or Myrtle Rust using the most up-to-date treatment methods.
- Increasing level of mulch or maintaining mulch level as necessary to reduce weed infestations;
- Watering as determined necessary for the survival of plantings; and
- Establishing shade and wind barriers temporarily if needed to shelter plants.

In addition to the above requirements, site maintenance is to include:

- Checking of fences, and repairs as necessary;
- The removal of all domestic/commercial rubbish, debris and litter from Management Zones 1 and 2; and
- Maintenance of the restoration and rehabilitation areas free from domestic/commercial rubbish, debris and litter in Management Zones 1 and 2.

5. Monitoring and Evaluation

5.1. Monitoring

The monitoring period is to commence prior to any works with baseline monitoring to be undertaken. The baseline monitoring of number and density of regenerating rainforest plants will form part of the assessment used by the bush regenerator to determine additional planting needs to achieve Lowland Rainforest for each management unit within Management Zones 1 and 2. The VMP has a five (5) year monitoring commitment following planting in Management Zones 1 and 2, to coincide with the maintenance period. Monitoring of the Lowland Rainforest plantings, natural regeneration and weed control, are to be undertaken at 6-monthly intervals for the establishment period, and at the same regularity throughout the five (5) year maintenance period. This will enable corrective and follow-up actions to be implemented in a timely manner. The first monitoring event will commence six months after planting.

The monitoring is to include:

- Assessment of survival of restoration plantings and naturally regenerated plants in Management Zones 1 and 2;
- Assessment of survival of *Lepiderema pulchella* transplants, and *Niemeyera whitei* plantings are to be monitored monthly for the first six months after planting, and 6-monthly for a further 4.5 years. Monitoring is to include:
    - *Growth*: height of plants;
    - *Health:* signs of heat stress, with any signs of disease and pest damage addressed promptly; and
    - *Survival*: assess options for addressing any loses, e.g., by collecting seed from adjacent areas to propagate additional plants, or watering more frequently.
- General assessment of weed control and regeneration in Management Zones 1, 2, and 3;
- Identification of reasons for any mortality, e.g. heat stress, disease, drought, grazed; and
- Photo point monitoring - photo point monitoring guidelines and record sheet are provided in Appendix 13.

5.2. Performance Criteria

The performance criteria are related to the objectives of this Plan to achieve site capture after a minimum 5-year maintenance period and are specific and measurable. In order to evaluate the implementation of the VMP and implement adaptive management practices as needed, the performance criteria are:

1) Revegetation of Management Zones 1 and 2, including the species diversity of plantings, has been undertaken in accordance with the management strategies in this VMP;
2) Trees to be retained on and adjacent to the subject site are protected in accordance with the management strategies in this VMP;
3) 95% control of all environmental weeds at the end of the Year 1 maintenance period, and maintained at that level for the remainder of the 5 year maintenance period;
4) 100% of existing native species, including threatened species, are conserved in Management Zones 1 and 2 in accordance with the management strategies in this VMP;
5) 95% plant survival rate shall be achieved in revegetation areas and is to be maintained at that rate for the entire 5-year maintenance period;
6) All non-surviving plants are replaced with the same species from local provenance, to ensure the 95% survival target is maintained ;
7) Evidence of increased recruitment of native species in Management Zones 1 and 2;
8) All *Macadamia tetraphylla* specimens (in the protection area in the far northeast), the replacement *Niemeyera whitei* (to be planted), and the individual Red Kamala and Teak trees identified for protection within Management Zone 3 are retained and protected;
9) All salvaged plants of *Lepiderema pulchella* survive translocation, and non-surviving plants are replaced with local provenance plants;
10) Site preparation has been undertaken in accordance with the management strategies in this VMP, including removal of domestic/commercial rubbish, debris and litter from Management Zones 1 and 2;
11) Maintenance of the restoration and rehabilitation areas free of domestic/commercial rubbish, debris and litter in Management Zones 1 and 2;

12) On-site management and maintenance has been undertaken in accordance with the management strategies in this VMP;
13) Monitoring of the restoration area has been undertaken in accordance with the management strategies in this VMP; and
14) Domestic stock has been excluded from the habitat restoration and rehabilitation areas, Management Zones 1 and 2, at the time of commencing implementation of the VMP.

5.3. Adaptive Management

Adaptive management will form part of this VMP. The adaptive management approach to be taken needs to enable any problems that arise, or that are identified in the progress reports, to be overcome, including but not limited to:

- Weed control effort insufficient to control weeds – weeds will require additional treatments;
- Lack of natural regeneration – may require additional plantings to fill gaps;
- Plantings failing to survive - may require additional plantings to meet the 95% target at end of the Plan's implementation;
- Erosion evident – additional controls to manage erosion will be put in place.

6. Reporting

Reporting will be provided under this Plan for a period of 5 years after planting – the maintenance period. The reports are to be sent from the bush regenerator to the client who will then forward them to relevant agencies for consideration.

The Year 1 Progress Report is to be provided at the end of Year 1 (*i.e.* 12 months after planting and primary weed control is completed) and is to include details of:

- Who is undertaking the restoration works, together with evidence of relevant qualifications, experience, and licences;
- The site preparation process, including any problems encountered;
- Natural regeneration and plants being retained; and
- Copies of daily work sheets and chemical operator's data sheet.

Progress reports are to be provided annually at the end of Years 2-5, and are to include:

- Completed monitoring forms and daily worksheets;
- Details of works undertaken and progress;
- Completed photo point recording forms and photos;
- Compliance with relevant performance criteria;
- Adaptive management changes made during implementation of the Plan;
- Any non-compliance with this Plan, and limitations of the restoration/ regeneration, such as influence of season and weather conditions; and
- Recommendations for variations to future works.

A final report is to be provided at the end of Year 6 and is to include:

- A summary of works undertaken in Years 1-6;
- Completed monitoring forms and daily worksheets for Year 6;
- Adaptive management changes made during Plan implementation; and
- Any non-compliance with this Plan and limitations of the restoration/ regeneration; such as influence of season and weather conditions.

7. Post-implementation Requirements

As required by the approval conditions, Management Zones 1, 2 and 3 are to be the subject of S88 Instruments under the Conveyancing Act.

The conditions on the covenant to be placed on the S88E Instrument for Management Zones 1 and 2 are:

- Management Zones 1 and 2 as identified in the Figures of the VMP, are to be managed in accordance with the VMP; and
- Management Zones 1 and 2 are to be managed in perpetuity for the purposes identified in this VMP.

The S88E Instrument Restriction as to User to apply to the APZ-EMA for Management Zone 3 of this VMP are:

- The landowner must maintain the APZ-EMA identified on relevant figures as an Asset Protection Zone, in accordance with Appendix 2 of the "Planning for

Bushfire Protection 2006 Guidelines", the Standards for Asset Protection Zones, and the General Terms of Approval of the consent as imposed under Section 100B of the Rural Fires Act 1997, in perpetuity;

- The landowner must maintain the APZ-EMA as a mowed lawn;
- The landowner will ensure no dwellings are constructed within the APZ-EMA and that only the permissible uses as private open space, roads, backyards, and pools are provided within the APZ-EMA; and
- The landowner will ensure the provision of a gate at the rear fence suitable to facilitate foot-based access for firefighting purposes.

A copy of the letter from the owners of Lot 6 granting consent to the creation of easements and carrying out work on their property in conjunction with this development is provided in Appendix 14.

9. Implementation Schedule

ACTION	DEVELOPMENT STAGE – TIMING	DURATION FREQUENCY	RESPONSIBILITY
1. All primary plantings installed and established for a minimum period of 6 months			
2. All primary environmental weed works (except for Camphor Laurel) undertaken, demonstrating 80% control and treatment			
3. The first stage of Camphor Laurel primary treatment completed			
4. Transplanting of *Lepiderema pulchella* plants from Management Zone 4 to Management Zones 1 and 2			
5. All domestic/commercial rubbish, debris and litter removed from Management Zones 1 and 2			
6. Delineation of temporary bollards and/or barrier mesh installed			
OTHER ACTIONS TO BE IMPLEMENTED			
1. Survey pegs in ground at APZ-EMA and Management Zones 2 and 3 boundaries, and the Macadamia conservation area	Pre-earthworks and tree clearing	One-off	Landowner Project Manager Surveyor
2. Stake, label and GPS locate all threatened plant species	Pre-earthworks and tree clearing	One-off	Ecologist
3. Put no-go zone barriers on edges between APZ-EMA and Management Zones 2 and 3	Pre-earthworks and tree clearing	One-off	Landowner Project Manager Construction Contractor
4. Put no-go zone barriers around remnant rainforest trees that are to be retained in Management Zone 3	Pre-earthworks and tree clearing	One-off	Landowner Project Manager Construction Contractor
5. Engage bush regenerator contractor, and identify nursery/ies for sourcing plants	Pre-earthworks and tree clearing	One-off – for period of implementation	Landowner/ Project Manager
6. Flag seedlings to be retained In Management Zones 1 and 2	Pre-earthworks and tree clearing	On-going for period of implementation	Bush Regenerator
7. Site preparation works – including primary weed control	Year 1	One-off	Bush Regenerator
8.Sourcing plants, including *Niemeyera whitei* replacement and 2 other individuals	Year 1-6	One-off to on-going, pending plant survival	Landowner/ Bush regenerator
9.Transplanting *Lepiderema pulchella*	Pre-tree clearing	One-off	Bush regenerator
10.Planting *Niemeyera whitei* replacement and putting no-go zone barriers around the	Post-tree clearing in APZ	One-off to on-going, pending plant survival	Bush Regenerator

ACTION	DEVELOPMENT STAGE – TIMING	DURATION FREQUENCY	RESPONSIBILITY
plant that is to be retained in Management Zone 3			
11. Control of Camphor Laurel from Management Zones 1, 2, and 3 in accordance with strategies in Section 4	Pre-earthworks and ongoing Years 1-6	On-going for period of 5 years after planting	Bush regenerator
12. Weed Control in Management Zones 1 and 2 in accordance with strategies in Section 4 and Appendices 6-9	Years 1-6	Commencing Year 1 (establishment period). Years 1-2 maintenance rotations 2-monthly. For the duration of the 5 year maintenance period, maintenance rotations 3-monthly	Bush regenerator
13. Maintenance of no-go zone barrier fencing	All stages	As needed, weekly checks for breached	Construction Contractor
14. Baseline Monitoring	Pre-earthworks and tree clearing	One-off	Bush Regenerator
15. Establishment Period Monitoring	Years 1-2	6 monthly	Bush regenerator
16. Maintenance Period Monitoring	Years 2-6	6 monthly	Bush regenerator
17. Reporting	All stages	On-going, Annually for 5 years after planting	Bush Regenerator
18. Post-implementation Requirements	Post-construction	One-off	Landowner/ Project Manager

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FIGURES

Figure 1: The subject site overview

Figure 2: Management Zones – Western

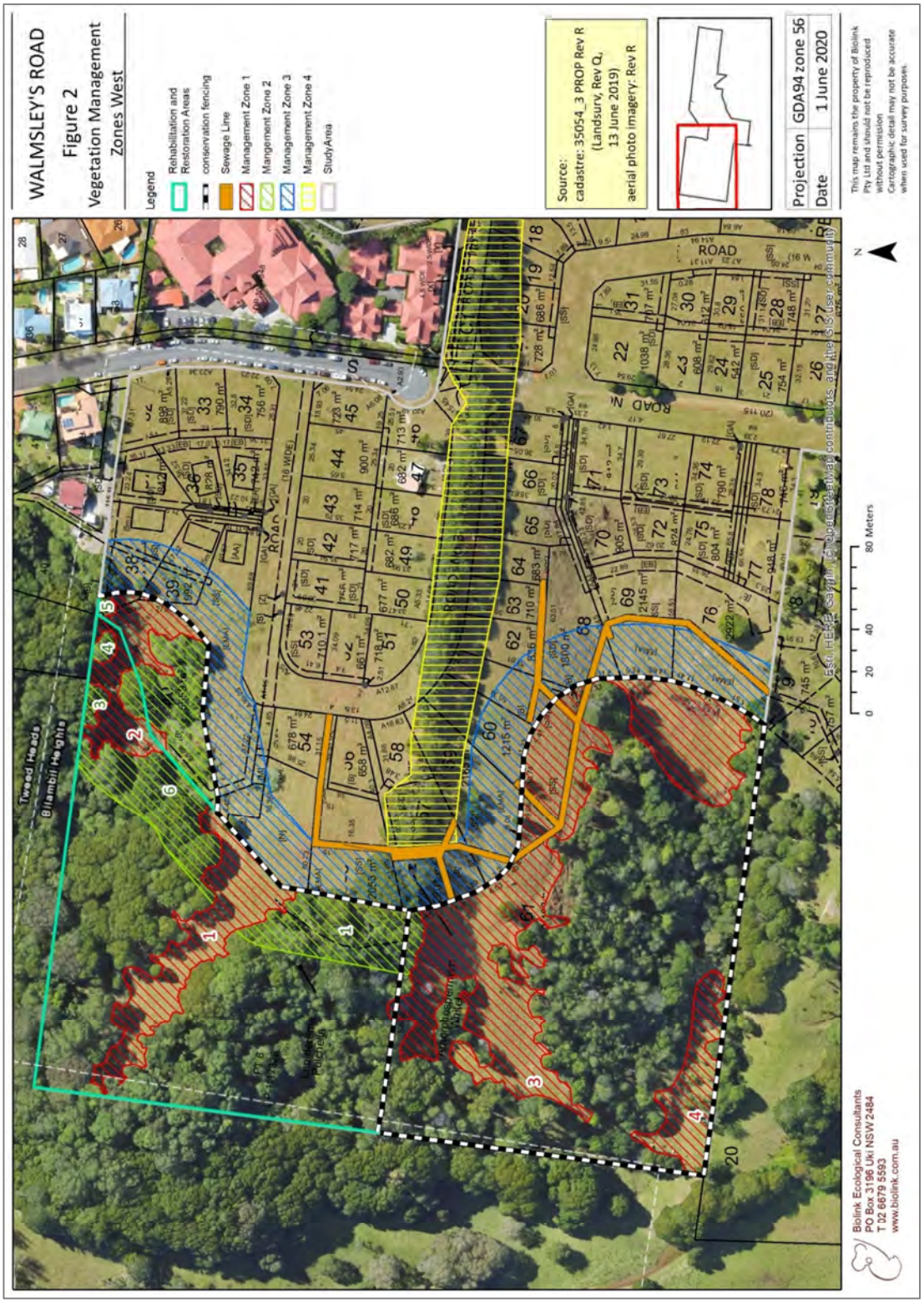


Figure 3: Management Zones – Eastern

Figure 4a: Management Zone 1 – Restoration Areas Western

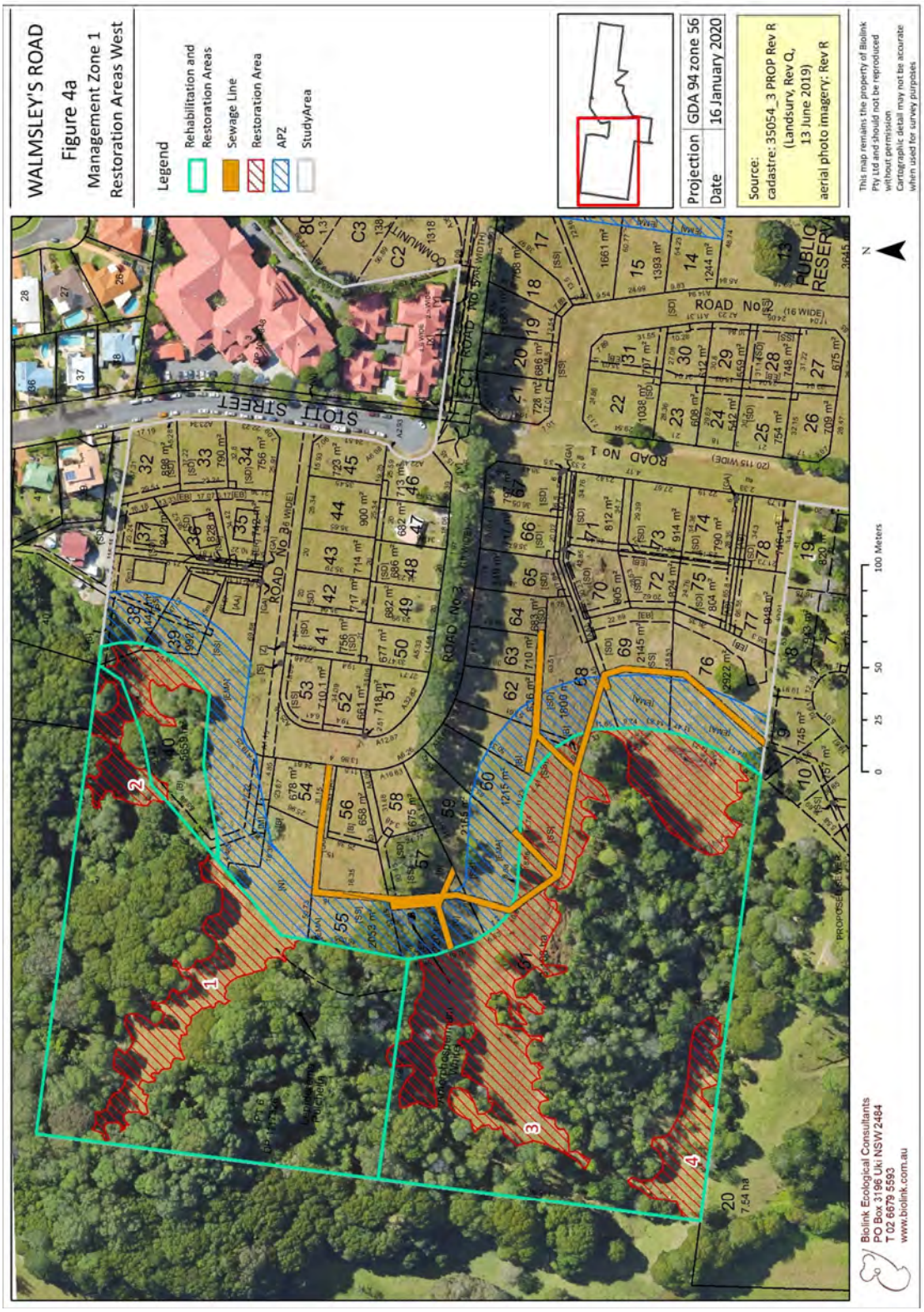


Figure 4b: Management Zone 1 – Restoration Areas Eastern

Figure 5: Management Zone 2 – Rehabilitation Areas

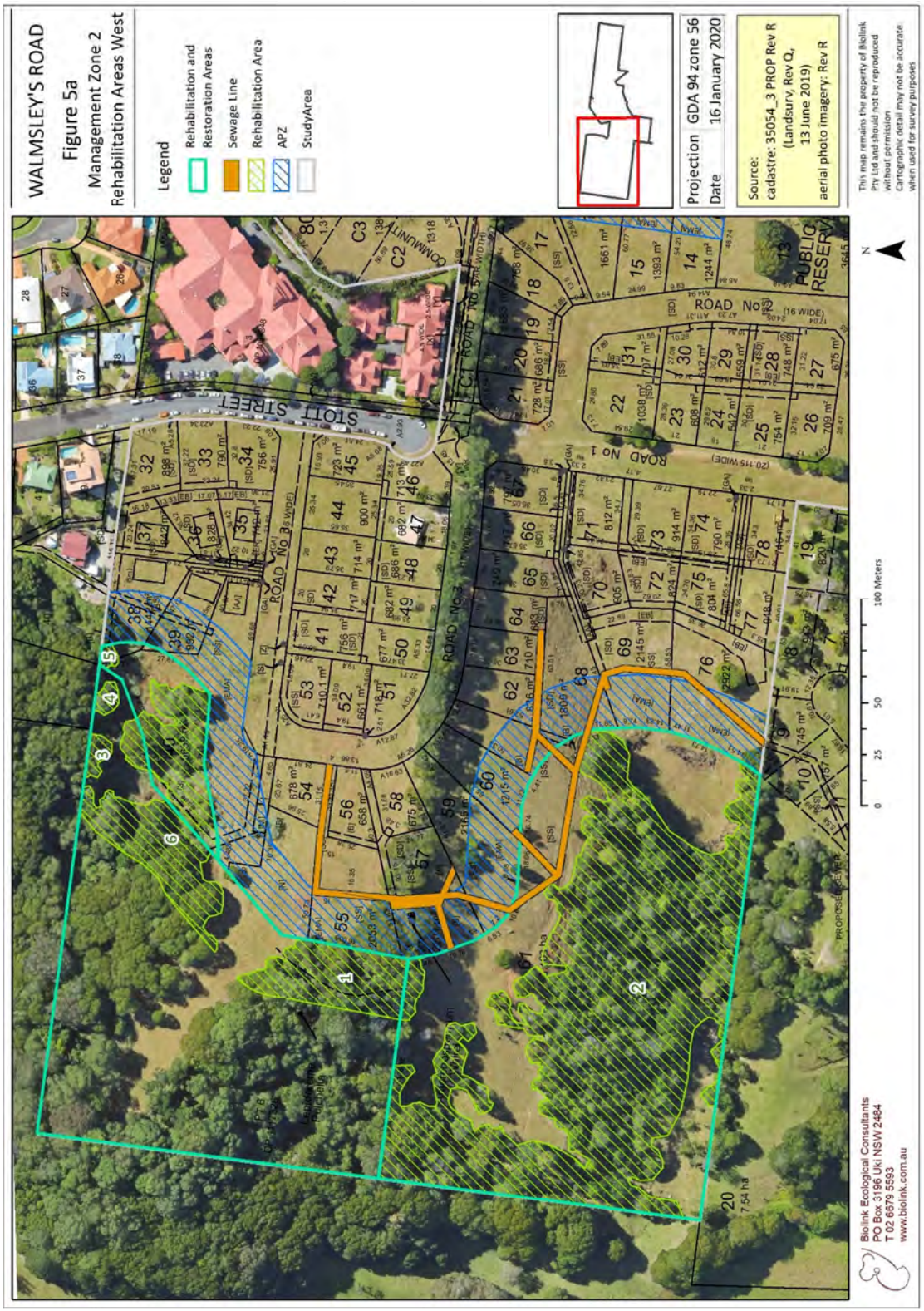


Figure 6: Planting Approach - Appendix H of Tweed Landscaping Plan

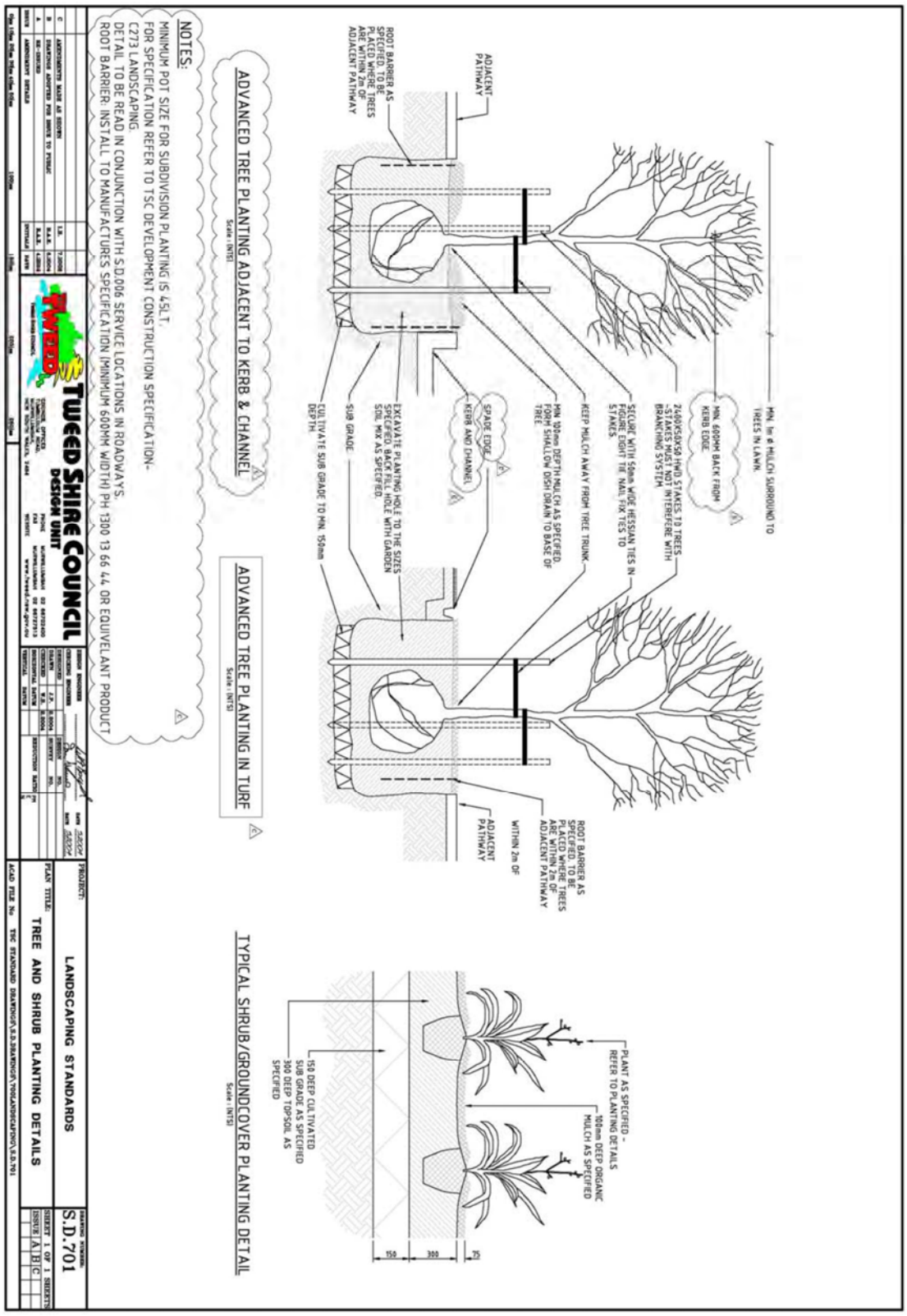


Figure 7a: Management Zone 3 – APZ Western Boundary

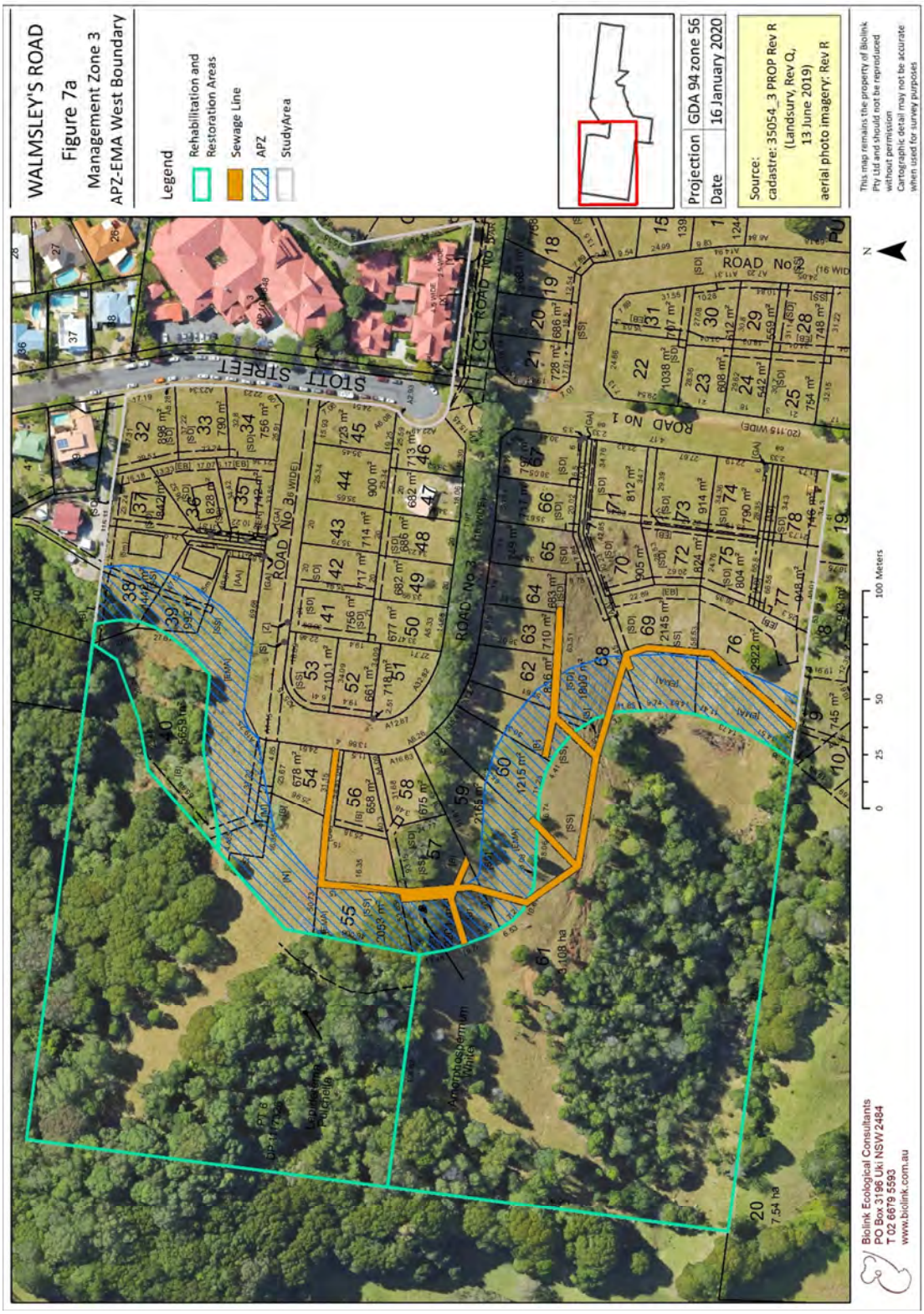


Figure 7b: Management Zone 3 – APZ Eastern Boundary

Figure 8a: Tree Removal in Management Zone 4 (Planted Windbreak) - Figure 2 of Tree Removal Plan (Biolink 2020)

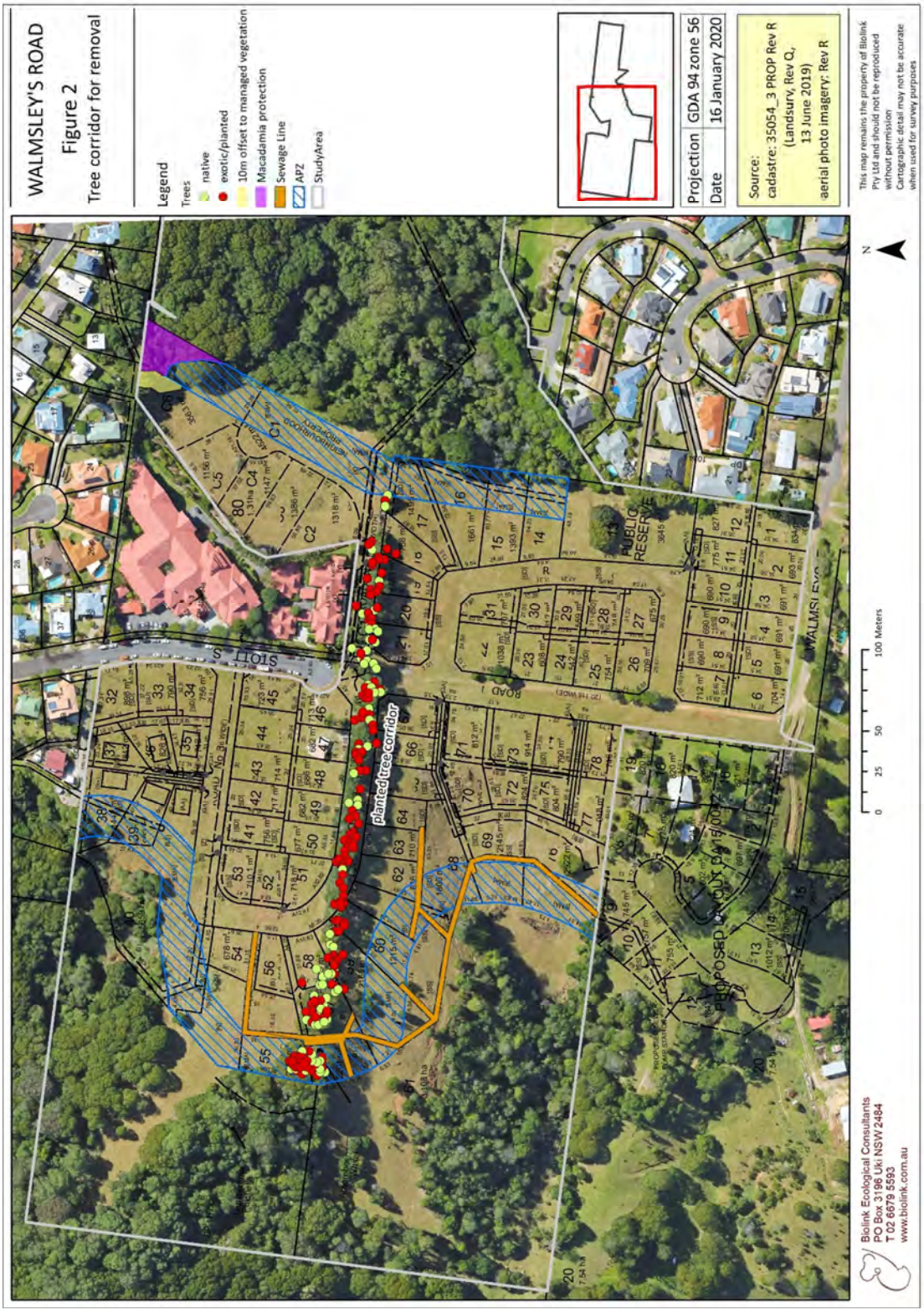


Figure 8b: Tree Removal in Management Zone 4 (Planted Windbreak)

***Lepiderema pulchella* translocation source plants - Figure 3d of Tree Removal Plan (Biolink 2020)**

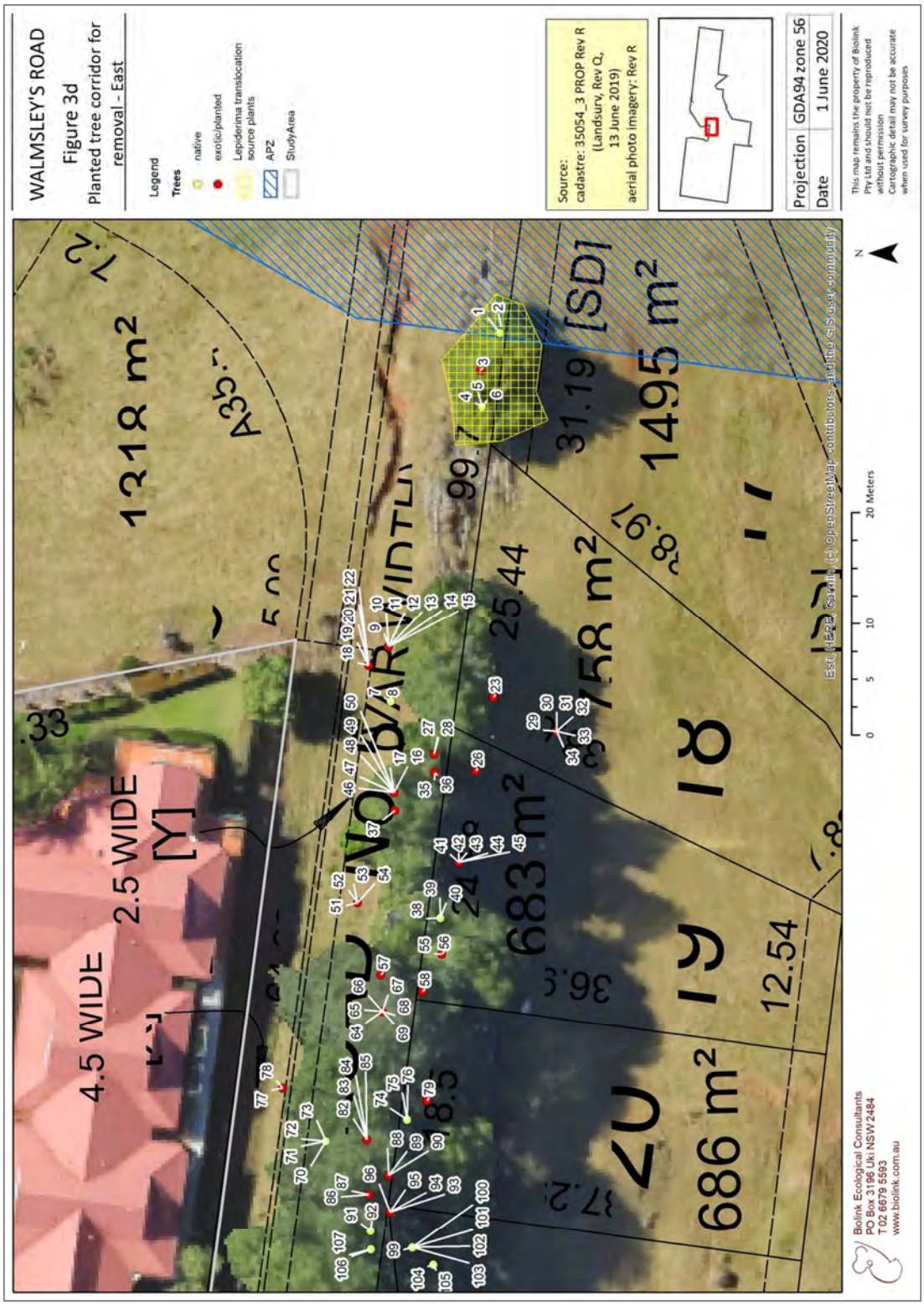


Figure 9: Tree Removal in APZ - Figure 4 of Tree Removal Plan (Biolink 2020)

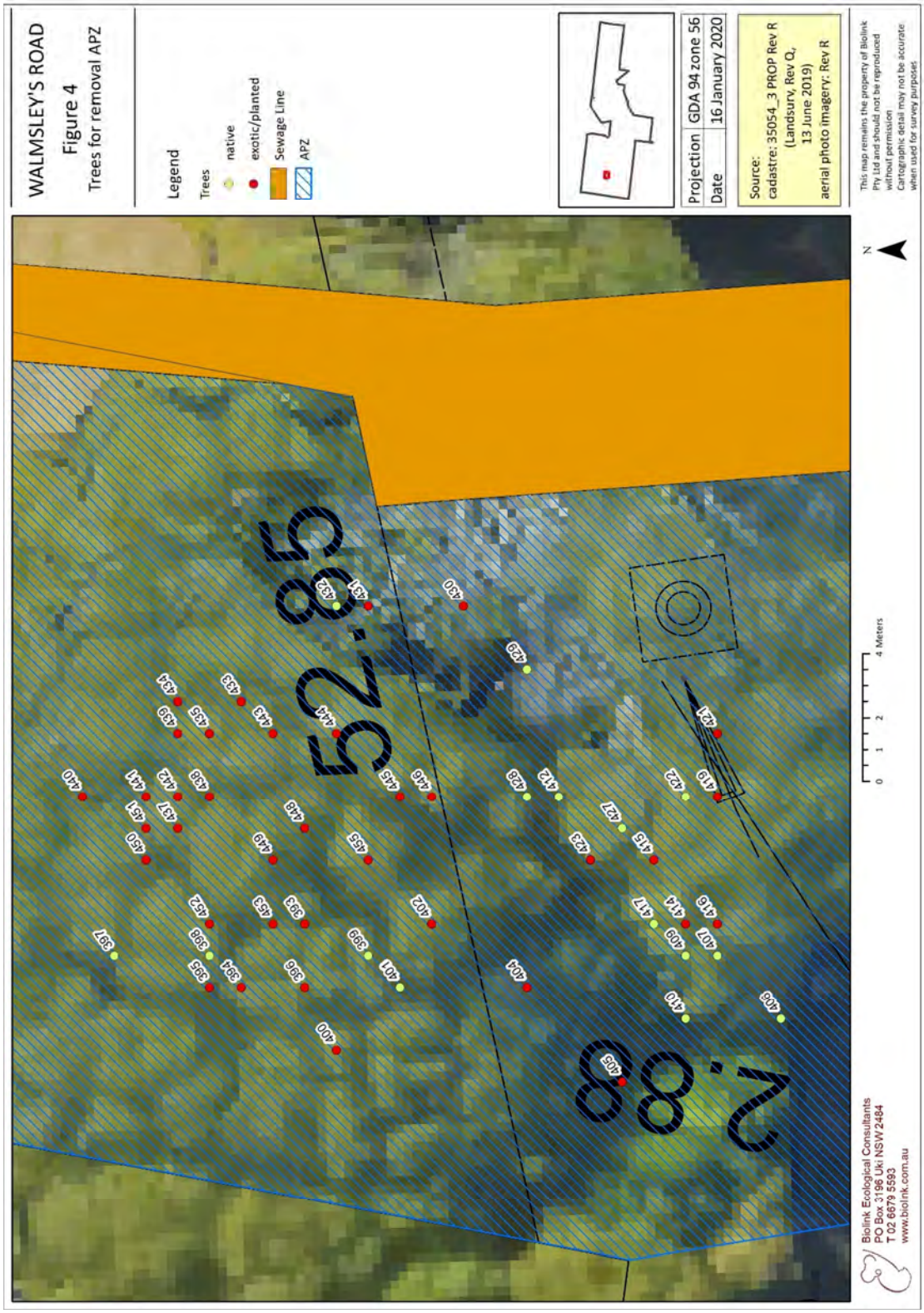


Figure 10: Tree Removal for Sewer Line - Figure 5 of Tree Removal Plan (Biolink 2020)

APPENDICES

Appendix 1: Measures for Protection of Vegetation - For Construction and Tree Clearing Workers

The landowner/project manager is to include this checklist in the brief for the engaged earthmoving and construction workers, and is to advise contractors and sub-contractors of these requirements. These measures are to be implemented during the pre-construction and construction stages of the development.

☐ The guidelines in Australian Standard *AS4970-2009 Protection of Trees on Development Sites* are to be followed to avoid damage to tree trunks and roots systems.

☐ The boundaries of the western and eastern rehabilitation areas (Management Zone 2) are to be delineated using orange construction barrier tape, and to have signs at regular intervals that identify the area as an environmental protection area, and no-go zones for construction and tree removal workers

☐ A worker is to be assigned as responsible for inspection of site twice daily to ensure construction limits (i.e. "no-go zones") set-up and maintained, and that sites for material storage, storage of construction equipment, vehicles turning, and toilets are located outside the "no-go zones". The assigned worker is to check for encroachment into "no-go zones", and to repair barrier tape and signs as needed

☐ Orange safety barrier tape erected prior to earthmoving and construction worker's commencing, to delineate "no-go zones"

☐ Appropriate erosion and sediment control structures and devices are to be installed prior to commencement of work

☐ Pre-construction briefings are to be conducted for construction workers and subcontractors, to ensure extra care is taken when moving vehicles around the site, to avoid indirect environmental impacts to vegetation, and to advise workers of "no-go zones", and provision of a plan that provided areas where vegetation can be removed, where the no go zones are located, the limits of construction, and where facilities and storage areas may be placed

☐ Trees that may contain wildlife are to be marked with red tape and follow the guidelines in the Tree Removal Plan

Appendix 2: Rare and Threatened Plant Locations From Biolink (2011)

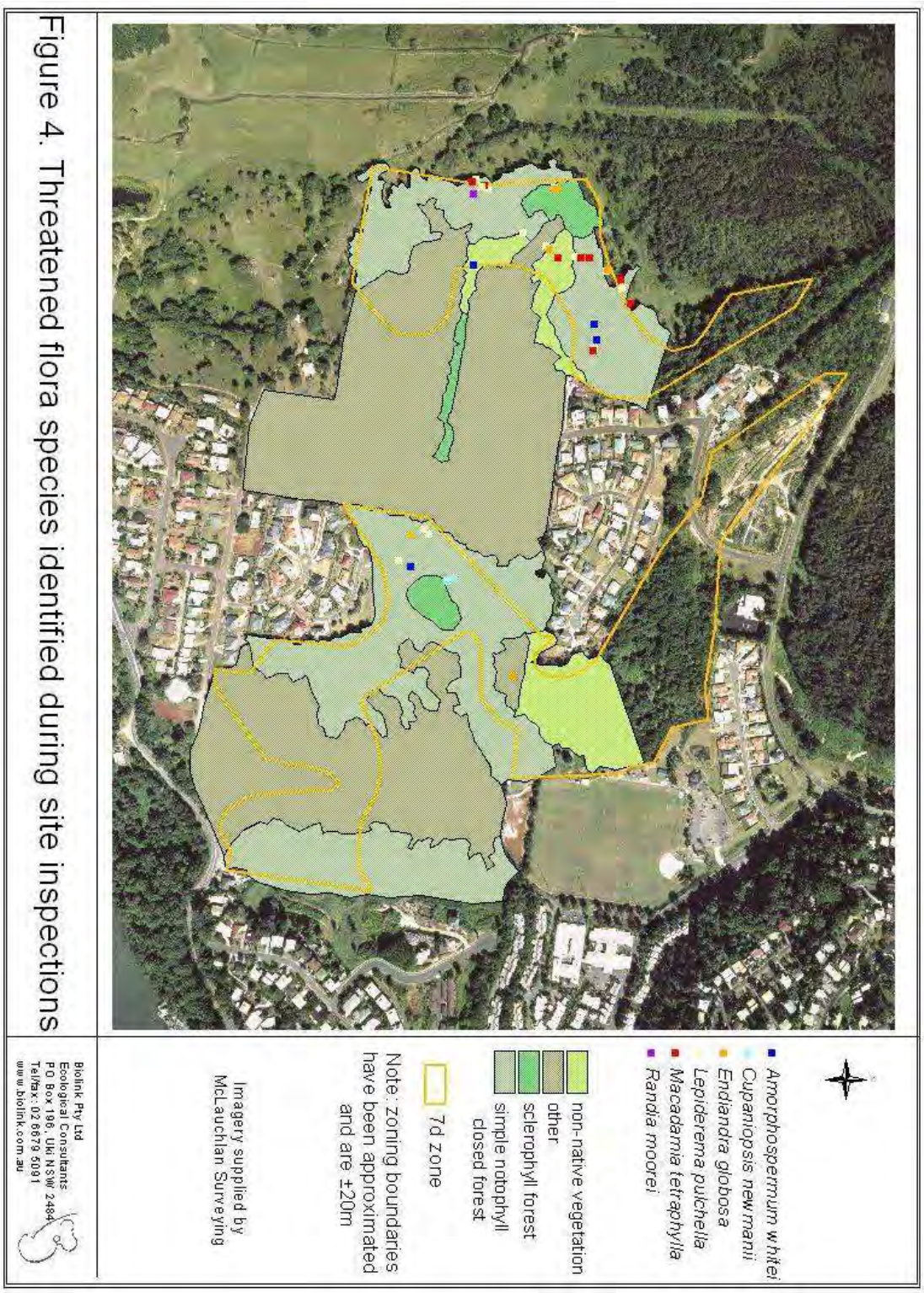
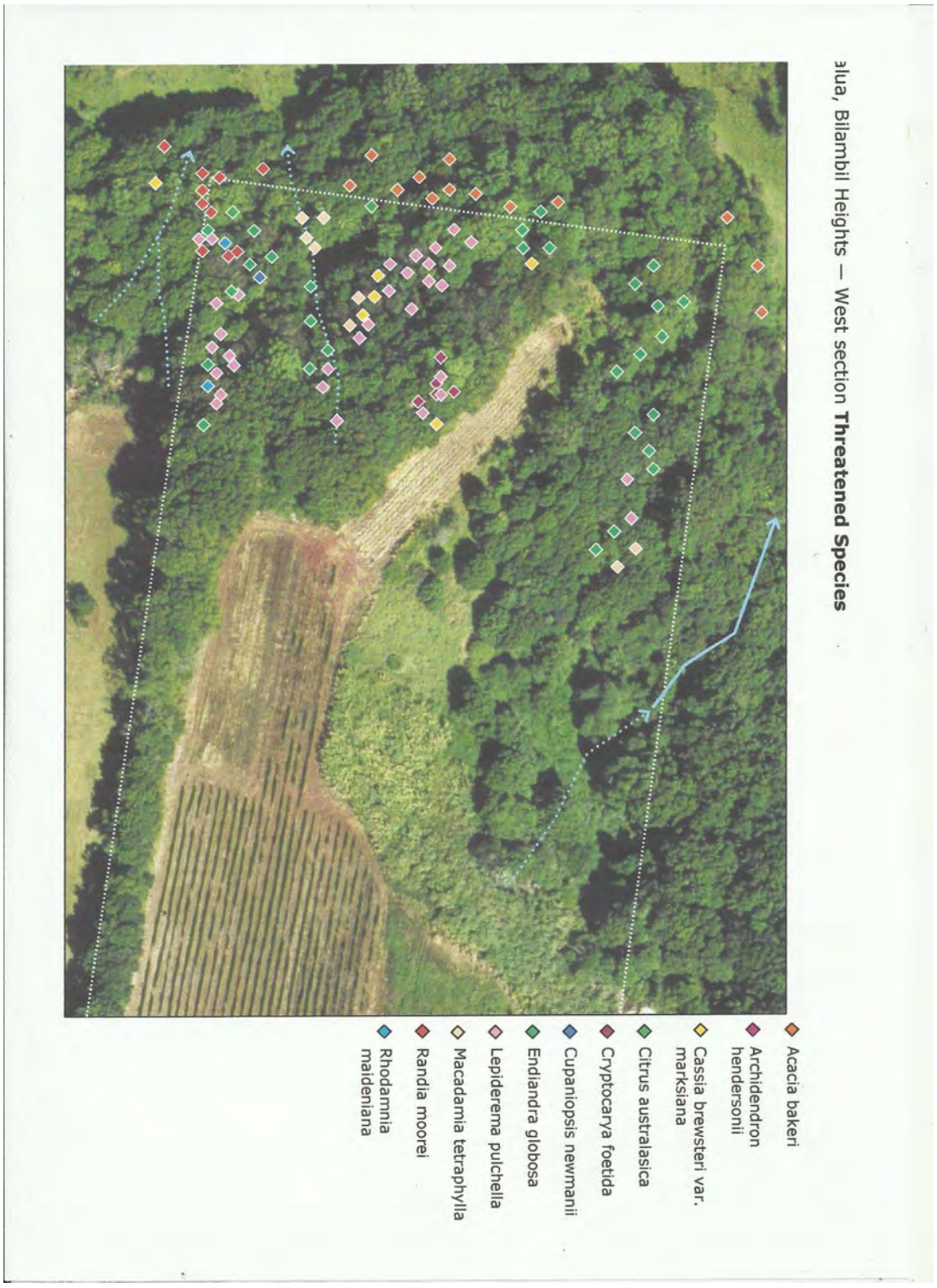
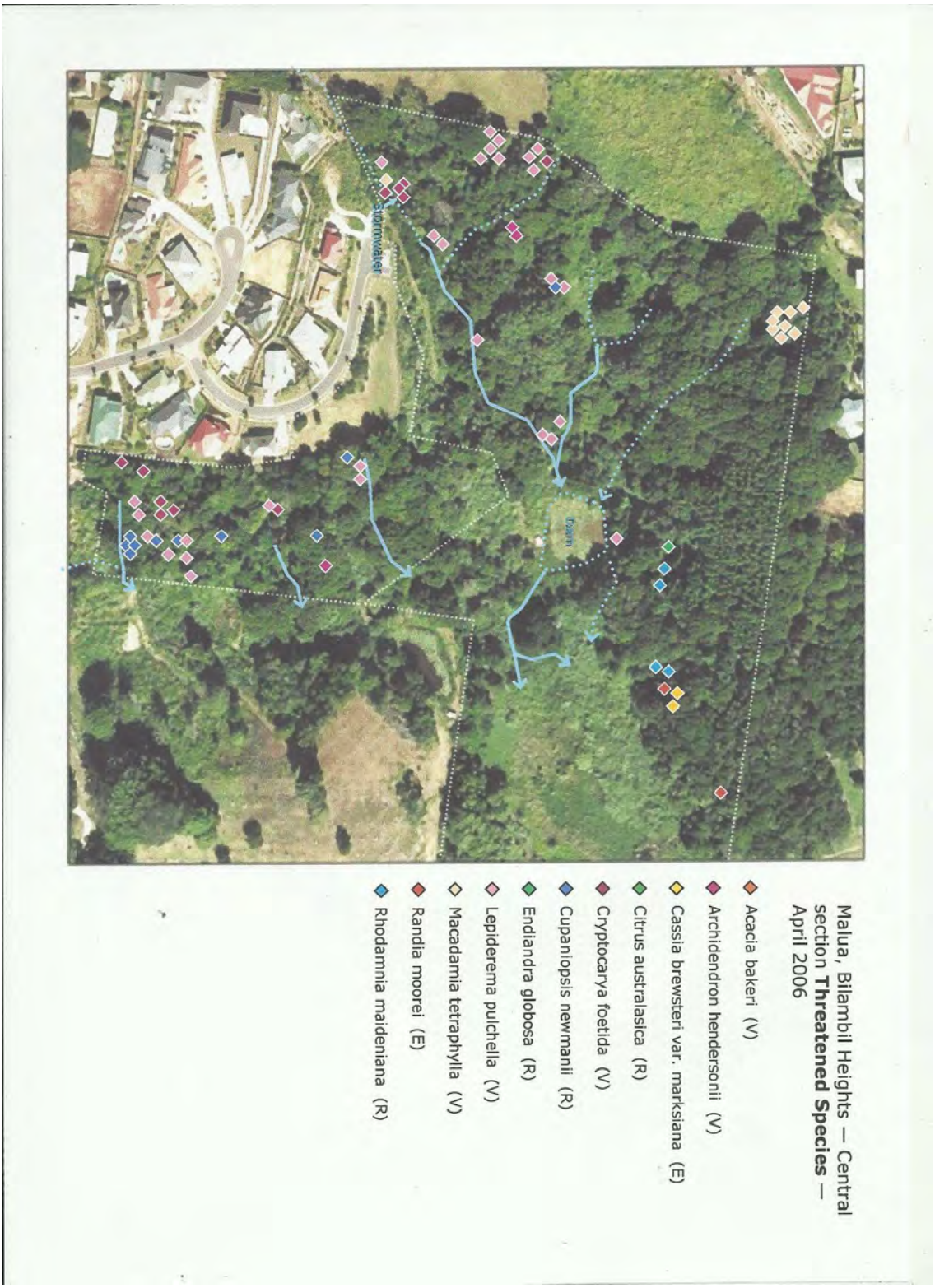


Figure 4. Threatened flora species identified during site inspections

From Chris Roberts:




Malua, Bilambil Heights – Central section **Threatened Species** – April 2006
Acacia bakeri (V)
Archidendron hendersonii (V)
Cassia brewsteri var. marksiana (E)
Citrus australasica (R)
Cryptocarya foetida (V)
Cupaniopsis newmanii (R)
Endiandra globosa (R)
Lepiderema pulchella (V)
Macadamia tetraphylla (V)
Randia moorei (E)
Rhodamnia maideniana (R)
Stormwater
Dam

Appendix 3: Native Plant Species on the Subject Site and Nearby Remnants in Adjoining Properties (Recorded by Biolink 2011; Bushland Restoration and Rehabilitation Pty Ltd, 2004; Ecosure 2016; Chris Roberts, ongoing; Matthes, this study)

Species Name	Common Name
Trees	
Acacia bakeri	**Marblewood**
Acacia melanoxylon	Blackwood
Actephila lindleyi	Actephila
Ailanthus triphysa	White Bean
Alectryon tomentosus	Hairy Bird's Eye
Alphitonia excelsa	Red Ash
Apananthe philippensis	Rough-leaved Elm
Araucaria cunninghamii	Hoop Pine
Archidendron hendersonii	**White Lace Flower**
Archidendron grandiflorum	Pink Laceflower
Archirhodomyrtus beckleri	Rose Myrtle
Archontophoenix cunninghamiana	Bangalow Palm
Arytera distyla	Twin-leaved Coogera
Atractocarpus benthamiana	Native Gardenia
Beilschmiedia elliptica	Grey Walnut
Cassia marksiana	**Brush Cassia**
Cinnamomum oliveri	Oliver's Sassafras
Citrus australasica	**Finger Lime**
Clerodendrum floribundum	Smooth Clerodendrum
Corymbia intermedia	Pink Bloodwood
Croton verreauxii	Native Cascarilla
Cryptocarya foetida	**Stinking Cryptocarya**
Cryptocarya glaucescens	Jackwood
Cryptocarya obovata	Pepperberry
Cryptocarya triplinervis var. *pubens*	Three-veined Laurel
Cupaniopsis anacardioides	Tuckeroo
Cupaniopsis newmanii	**Long-leaved Tuckeroo**
Daphnandra micrantha	Socketwood
Denhamnia celastroides	Orange Boxwood
Diospyros pentamera	Myrtle Ebony
Diploglottis australis	Native Tamarind
Dysoxylum mollissimum	Red Bean
Elaeocarpus reticularis	Blueberry Ash
Elaeocarpus obovatus	Hard Quandong
Elaeodendron australe var. *australe*	Red Olive Plum
Endiandra discolor	Rose Walnut
Endiandra globosa	**Black Walnut**
Endiandra sieberi	Hard Corkwood
Eucalyptus microcorys	Tallowwood
Eucalyptus propinqua	Small-fruited Grey Gum
Ficus coronata	Creek Sandpaper Fig
Ficus fraseri	Sandpaper Fig
Ficus macrophylla	Moreton Bay Fig
Ficus obliqua	Small-leaved Fig

Species Name	Common Name
Ficus rubignosa	Rusty Fig, Port Jackson Fig
Ficus virens	White Fig
Ficus watkinsiana	Strangler Fig
Flindersia australis	Crows Ash, Teak
Flindersia schottiana	Cudgerie
Glochidion sumatranum	Umbrella Cheese Tree
Guioa semiglauca	Guioa
Jagera pseudorhus	Foambark Tree
Lepiderema pulchella	**Fine-leaved Tuckeroo**
Lophostemon confertus	Brush Box
Macadamia tetraphylla	**Rough-shelled Bush Nut**
Mallotus philippensis	Red Kamala
Melaleuca quinquenervia	Broad-leaved Paperbark
Melicope elleryana	Pink Euodia
Myrsine variabilis	Muttonwood
Neolitsea dealbata	White Bollygum
Niemeyera whitei	**Rusty Plum**
Notelaea johnsonii	Veinless Mock Olive
Notelaea longifolia	Mock Olive
Olea paniculata	Native Olive
Pentaceras australis	Bastard CrowsAsh
Pittosporum lancifolium	Narrow-leaved Orange Thorn
Pittosporum undulatum	Sweet Pittosporum
Pouteria queenslandica	Blush Coondoo
Polyscias murrayi	Pencil Cedar
Polyscias elegans	Celerywood
Pseudoweinmannia lachnocarpa	Rose Marara
Randia moorei	**Spiny Gardenia**
Rhodamnia argentea	Malletwood
Rhodamnia maideniana	**Smooth Scrub Turpentine**
Rhodamnia rubescens	Scrub Turpentine
Rhodomyrtus psidioides	Native Guava
Rhodosphaera rhodanthema	Tulip Satinwood
Stenocarpus salignus	Beef Scrubwood
Stenocarpus sinuatis	Firewheel Tree
Streblus brunonianus	Whalebone Tree
Symplocus thwaitesii	Buff Hazelwood
Syncarpia glomulifera	Turpentine (planted)
Synoum glandulosum	Scentless Rosewood
Syzygium australe	Brush Cherry
Syzygium francisii	Giant Water Gum
Syzygium oleosum	Blue Lillypilly
Syzygium smithii	Lillypilly
Tasmannia insipida	Brush Pepperbush
Toechima dasyrrhache	Blunt-leaved Steelwood
Toechima tenax	Brush Teak
Vitex lignum-vitae	Lignum-vitae
Wilkea huegliana	Veiny Wilkea
Wilkea austroqueenslandica	Smooth Wilkea
Shrubs	
Alpinia caerulea	Native Ginger
Breynia oblongifolia	Native Coffee Bush
Citrus australasica	Finger Lime

Species Name	Common Name
Cordyline petiolaris	Broad-leaved Palm Lily
Cordyline stricta	Narrow-leaved Palm Lily
Cryptocarya laevigata	Glossy Laurel
Eupomatia laurina	Bolwarra
Exocarpus latifolius	Broad-leaved Cherry
Homolanthus populifolius	Bleeding Heart
Macaranga tanarius	Macaranga
Pilidiostigma glabrum	Plum Myrtle
Psychotria simmondsiana var. *glabrescens*	Small Psychotria
Tabernaemontana pandacaqui	Banana Bush
Trema tomentosa var. *viridis*	Poison Peach
Wilkea huegeliana	Veiny Wilkea
Vines and Scramblers	
Austrosteenisia blackii	Blood Vine
Calamus muelleri	Lawyer Vine
Carissa ovata	Carissa
Carronia multisepala	Carronia
Celastrus australis	Staff Vine
Cissus antartica	Water Vine
Cissus hypoglauca	Five-leaf Water Vine
Derris involuta	Native Derris
Dioscorea transversa	Native Yam
Flagellaria indica	Whip Vine
Geitenoplesium cymosum	Scrambling lilly
Glycine microphylla	Small-leaved Glycine
Hibbertia scandens	Guinea flower
Maclura cochinchinensis	Cockspur Thorn
Parsonsia straminea	Common Silkpod
Rhodamnia maideniana	Smooth Scrub Turpentine
Ripogonum album	White Supplejack
Rubus moluccanus	Molucca Bramble
Rubus rosifolius	Native Raspberry
Smilax australis	Austral Sarsparilla
Stephania japonica var. *discolor*	Snake Vine
Trophis scandens	Burny Vine
Groundcovers	
Adiantum diaphanum	Filmy Maidenhair Fern
Adiantum formosum	Giant Maidenhair Fern
Asplenium australasicum	Bird's Nest Fern
Blechnum cartilagineum	Gristle Fern
Centella asiatica	Pennywort
Christella dentate	Binung Fern
Commelina cyanea	Native Wandering Jew
Cyathea australia	Rough Treefern
Cyathea cooperi	Straw Treefern
Cynodon dactylon	Common Couch
Dianella caerulea	Blue Flax Lily
Doodia media	Common Rasp Fern
Gahnia aspera	Red-fruited Saw-sedge
Gleichenia sp.	Coral Fern
Hydrocotyle pedicellosa	Pennywort
Lomandra longifolia	Spiny-headed Mat-Rush
Oplismenus aemulus	Basket Grass

Species Name	Common Name
Oplismenus imbecillis	Basket Grass
Platycerum superbum	Staghorn
Psilotum nudum	Skeleton Fork Fern
Pteridium esculentum	Bracken Fern
Sticherus flabellatus	Shiny Fan Fern

*Note: Species in **bold** are those identified as rare or threatened plant species*

Appendix 4: Fauna Species Recorded on Subject Site and Nearby Remnants (Recorded by Biolink 2011; Bushland Restoration and Rehabilitation Pty Ltd, 2004; Chris Roberts, ongoing)

SPECIES NAME	COMMON NAME
AMPHIBIA	
*Chaunus marinus**	Cane Toad
Limnodynastes peroni	Striped Marsh Frog
REPTILIA	
Morelia spilota	Carpet Python
Boiga irregularis	Brown Tree Snake
Cacophis kreftii	Dwarf Crown Snake
Dendrelaphis punctulata	Green Tree Snake
Vermicella annulata	Bandy-Bandy
Pseudechis porphyriacus	Red-bellied Black Snake
Pseudonaja textilis	Eastern Brown Snake
Tropidechis carinatus	Rough-scaled Snake
Cryptoblepharus virgatus	Skink
Lampropholis delicate	Garden Skink
Pogona barbata	Eastern Bearded Dragon
Tiliqua scincoides	Eastern Blue-tongue Lizard
Varanua varius	Lace Monitor
AVES	
Accipiter fasciatus	Brown Goshawk
Haliastur sphenurus	Whistling Kite
Anas superciliosa	Pacific Black Duck
Ardea ibis	Cattle Egret
Cracticus nigrogularis	Pied Butcherbird
Gymnorhina tibicen	Australian Magpie
Strepera graculina	Pied Currawong
Coracina novaehollandiae	Black-faced Cuckoo-shrike
Lalage leucomela	Varied Triller
Centropus phasianinus	Pheasant Coucal
Vanellus miles	Masked Lapwing

Psophodes olivaceus	Eastern Whipbird
Chalcophaps indica	Emerald Dove
*Columbia livia**	Rock Dove (Feral Pigeon)
Geopelia humeralis	Bar-shouldered Dove
Leucosarcia melanoleuca	Wonga Pigeon
Lopholaimus antarcticus	Topknot Pigeon
Macropygia amboinensis	Brown Cuckoo Dove
Ocyphaps lophotes	Crested Pigeon
Ptilinopus regina	Rose-crowned Fruit-dove
Corvus sp.	Raven/Crow
Cacomantis flabelliformis	Fan-tailed Cuckoo
Dicaeum hirundiaceum	Mistletoe Bird
Dicrurus bracteatus	Spangled Drongo
Rhipidura fuliginosa	Grey Fantail
R.leucophrys	Willie Wagtail
R. rufifrons	Rufous Fantail
Falco berigora	Brown Falcon
F. longipennis	Australian Hobby
Dacelo novaeguineae	Laughing Kookaburra
Hirundo neoxena	Welcome Swallow
Malurus cyaneus	Superb Fairy-wren
Alectura lathami	Australian Brush Turkey
Lichmera indistincta	Brown Honeyeater
Manorina melanocephala	Noisy Miner
Meliphaga lewinii	Lewin's Honeyeater
Merops ornatus	Rainbow Bee-eater
Sphecotheres viridis	Figbird
Colluricincla harmonica	Grey Shrike-thrush
Pachycephala pectoralis	Golden Whistler
Acanthiza lineata	Striated Thornbill
A. pusilla	Brown Thornbill
Pardalotus punctatus	Spotted Pardalote
P. striatus	Striated Pardalote
Sericornis frontalis	White-browed Scrubwren
Lonchura castaneothorax	Chestnut-breasted Mannikin
Neochmia temporalis	Red-browed Finch

Taeneopygia bichenovii	Double-barred Finch
Trichoglossus haemotodus	Rainbow Lorikeet
Threskiornis Molucca	Australian White Ibis
Zosterops lateralis	Silvereye
MAMMALIA	
Canis familiaris/Vulpesvulpes*	Dog/Fox Scat
*Lepus capensis**	Hare
Wallabia bicolor	Swamp Wallaby
*Saccolaimus flaviventris*3	Yellow-bellied Sheathtail Bat
*Mus musculus**	House Mouse
Rattus fuscipes	Bush Rat
*R. rattus**	Black Rat
Isoodon macrourus	Northern Brown Bandicoot
Trichosurus caninus	Bobuck
Pseudocheirus peregrinus	Ring-tailed Possum
Trichosurus vulpecula	Common Brushtail Possum
Pteropus Alecto	Black Flying-fox
Chalinolobus gouldii	Gould's Wattled Bat
Miniopteris australis	Little Bent-wing Bat
M. schreibersii oceanensis	Eastern Bent-wing Bat
Nyctophilus sp	Long-eared Bat
Vespedalus pumilus	Eastern Forest Bat
Tachyglossus aculeatus	Echidna

** Introduced species*

Appendix 5: Weed Species Recorded in surrounding area (Recorded by Biolink 2011; Bushland Restoration and Rehabilitation Pty Ltd, 2004; Ecosure 2016; Chris Roberts, ongoing; Matthes, this study)

Species Name	Common Name
Cinnamomum camphora	Camphor Laurel
Eriobotrya japonica	Loquat
Eugenia uniflora	Brazillian Cherry
Ficus benjamina (planted)	Weeping Fig (?planted)
Ligustrum lucidum	Broad-leaved Privet
Schefflera actinophylla	Umbrella Tree
Duranta erecta	Duranta, Giesha Girl
Lantana camara	Lantana
Ligustrum sinense	Small-leaved Privet
Ochna serrulata	Ochna
Ricinus communis	Caster Oil Plant
Rubus ellipticus	Yellow Raspberry
Senna alata	Candlebush
Senna pendula var. *glabrata*	Winter Senna
Senna septemtrionalis	Arsenic Bush
Solanum capsicoides	Devil's Apple
Solanum chrysotrichum	Giant Devil's Fig
Solanum mauritianum	Wild Tobacco
Triumfetta rhomboidea	Chinese Burr
Asparagus plumosus	Climbing Asparagus
Asparagus africanus	Asparagus Fern
Desmodium uncinatum	Silver-leaf Desmodium
Ipomoea cairica	Five-leaf Morning Glory
Macroptilium atropurporeum	Siratro
Neonotonia wightii	Glycine
Passiflora edulis	Edible Passionfruit
Passiflora suberosa	Corky Passionfruit
Passiflora subpeltata	White Passionfruit
Solanum seaforthianum	Climbing Nightshade
Vigna parkeri	Creeping Vigna
Ageratina adenophora	Crofton Weed
Ageratina riparia	Mistflower
Ageratum houstonianum	Billy Goat Weed
Asclepias curvassica	Red-headed Cotton Bush
Bidens pilosa	Farmer's Friends
Chamaesyce hirta	Asthma Plant
Chloris gayana	Rhodes Grass
Cirsium vulgare	Spear Thistle
Conyza species	Fleabane species
Cuphea carthagenensis	Cuphea
Gomphocarpus fruticosus	Milkweed
Hypochaeris radicata	Catsear, Flatweed
Melinis minutiflora	Molasses Grass
Panicum maximum var. *trichoglume*	Green Panic
Paspalum wettsteinii	Broad-leaved Paspalum
Pennisetum purpureum	Elephant Grass, Bahna Grass
Senecio madagascariensis	Fireweed

Sida rhombifolia	Paddy's Lucerne
Sphagneticola trilobata	Singapore Daisy
Sporobolus sp.	Rat's Tail Grass
Tagetes minuta	Stinking Roger
Trifolium species	Clover species

Appendix 6: Measures For Weed Control and Management (adapted from BSRLG, 2000 and DPI, 2014)

Species Name	Common Name	Baseline Frequency	Management Approach and Control Method
Trees			
Cinnamomum camphora	Camphor Laurel	Common	Control isolated plants, seedlings and saplings before seed set as a priority. Hand pull seedlings and juveniles. Spray thickets of seedlings 1:50 + LI700. CS&P saplings 1:1:5 SI trees >25cm dbh undiluted 2ml/inject, SI trees less than 25cm dbh 1:1 2ml/inject
Eriobotrya japonica	Loquat	Not currently in HRA	If appears in restoration area, hand pull seedlings, C&P saplings and trees 1:1:5; spray regrowth 1:100 +LI700
Eugenia uniflora	Brazillian Cherry	Not currently in HRA	If appears in restoration area, hand pull seedlings; C&P saplings and trees 1:1.5; SI 1:1.5. Spray early autumn
Ficus benjamina (planted)	Weeping Fig (?planted)	Infrequent – One tree	May be able to be removed as part of earthworks, if not C&P 1:1:5
Ligustrum lucidum	Broad-leaved Privet	Occasional	Best time summer-autumn. Hand pull seedlings; spray seedlings 1:50 + LI700; CS&P saplings 1:1.5; SI undiluted 2 ml/inject.
Schefflera actinophylla#	Umbrella Tree	Not currently in HRA. One plant outside on western boundary to be controlled	If appears in restoration area, control isolated plants and mature plants before seed set. Hand pull seedlings and juveniles. CS&P trees 1:1.5. Prevent cut stems from resprouting on ground.
Shrubs			
Duranta erecta	Duranta, Giesha Girl	Infrequent	Spray seedlings 1:100 +LI700; CS&P 1:1:5; cut down and spray regrowth 1:100 + LI 700; SI 1:1.5 large shrubs when actively growing
Lantana camara	Lantana	Occasional	Control isolated plants and mature plants before seed set. Hand pull seedlings and juveniles
Ligustrum sinense	Small-leaved Privet	Infrequent	Control isolated plants and mature plants before seed set. Best time summer-autumn. Hand pull seedlings; spray seedlings 1:50 + LI700; CS&P saplings 1:1.5; SI undiluted 2 ml/inject.
Ochna serrulata	Ochna	Infrequent	Control before seed set. DO NOT Hand pull seedlings and juveniles. SI 1:1.5; cut low down CS&P

			undiluted; spray 1:50 +LI700. Spray late spring. May need to use a metsulfuron-methyl mix.
Ricinus communis	Caster Oil Plant	Not currently in HRA	If appears in restoration area, hand pull seedlings and small plants, knock down larger plants and spray seedlings and coppice shoots 1:50, CS&P 1:1.5
Rubus ellipticus	Yellow Raspberry	Infrequent	Hand remove small plants with care to remove all roots. C&P metsulphuron-methyl 28g/L of water
Senna alata#	Candlebush	Not currently in HRA. One plant outside on western boundary to be controlled	If appears in restoration area, Best time summer-autumn. C&P undiluted
Senna pendula var. glabrata	Winter Senna	Infrequent	Control plants before seed set. Bag seed heads. Hand pull seedlings and juveniles carefully. Shrubs C&P 1:1.5 or SI 1:1.5, spot spray 1:50
Senna septemtrionalis	Arsenic Bush, Smooth Senna	Not currently in HRA	If appears in restoration area, Control plants before seed set. Bag seed heads. Hand pull seedlings and juveniles carefully. Shrubs C&P 1:1.5 or SI 1:1.5, spot spray 1:50
Solanum capsicoides	Devil's Apple	Infrequent	Small plants hand remove with care not to get spiked. Spray 1:100 +LI700 or 1:50 with Brushoff (10g/100Lmix) with a wetting agent
*Solanum chrysotrichum^*	Giant Devil's Fig	Common	Small plants hand remove with care not to get spiked. Handgun application 1:50 with Brushoff (10g/100Lmix) with a wetting agent
*Solanum mauritianum^*	Wild Tobacco	Infrequent	Spray foliage seedlings 1:50; C&P or SI 1:1.5
Triumfetta rhomboidea	Chinese Burr	Common	Hand pull small seedlings, Foliar spray dense areas
Vines-Scramblers			
Asparagus plumosus	Climbing Asparagus	Not currently in HRA	If appears in restoration area, hand remove small plants, cut crown out, spot spray active regrowth 1:50 + LI700; CS&P 1:1.5
Asparagus africanus	Asparagus Fern	Infrequent	Hand remove small plants, cut crown out, spot spray between flower and fruit 1:50 + LI700; CS&P 1:1.5
Desmodium uncinatum	Silver-leaf Desmodium	Not currently in HRA	If appears in restoration area, spray 1:50 + LI700; CS&P tuberous root 1:1.5. Bag seed heads

Ipomoea cairica	Five-leaf Morning Glory	Infrequent	Roll up runners. Spot spray 1:100 +LI700 or 1:50 with metsulfuron-metyl (1.5g/10L), S&P 1:1.5
Macroptilium atropurporeum	Siratro	Occasional	spray 1:50 + LI700; CS&P 1:1 or foliar spray metsulfuron-methyl 1 g/10L of water. Bag seed heads
Neonotonia wightii	Glycine	Not currently in HRA	If appears in restoration area, spray 1:50 + LI700; CS&P 1:1. Bag seed heads
Passiflora edulis	Edible Passionfruit	Not currently in HRA	If appears in restoration area, hand pull or CS&P vines 1:1.5
Passiflora suberosa	Corky Passionfruit	Infrequent	Hand pull seedlings; CS&P vines 1:1.5; spray regrowth 1:50 + LI700
Passiflora subpeltata	White Passionfruit	Infrequent	Hand pull seedlings; CS&P vines 1:1.5; spray regrowth 1:50 + LI700
Solanum seaforthianum	Climbing Nightshade	Infrequent	Hand pull seedlings; CS&P vines 1:1.5; spray regrowth 1:100 + LI700
Vigna parkeri	Creeping Vigna	Common	spray 1:50 + LI700; CS&P 1:1. Bag seed heads may need 2,4-D
Groundcovers-Grasses-Annuals			
Ageratina adenophora	Crofton Weed	Infrequent	Hand pull seedlings. Spray during active growth 1:200 or 1:100 +LI700. May need metsulfuron-methyl mix 1.5g/10L of water
Ageratina riparia	Mistflower	Infrequent	Hand pull seedlings. Spray during active growth 1:200 or 1:100 +LI700. May need metsulfuron-methyl mix 2.5g/10L of water
Ageratum houstonianum	Billy Goat Weed	Occasional	Hand pull small seedlings. Spray during active growth 1:200 or 1:100 +LI700. May need metsulfuron-methyl mix1g/10L of water with surfactant
Asclepias curvassica	Red-headed Cotton Bush	Infrequent	Hand pull all plants. Any roots in ground CS&P 1:1.5.
Bidens pilosa	Farmer's Friends	Infrequent	Control individuals prior to seed set. Hand pull.
Chamaesyce hirta	Asthma Plant	Infrequent	Hand pull. Foliar spray
Chloris gayana	Rhodes Grass	Common	Control individuals prior to seed set. Hand pull, mattock or spray thickets. Spray Glyphosate 1:100 +LI 700
Cirsium vulgare	Spear Thistle	Infrequent	Hand control before seed set.
Conyza species	Fleabane species	Occasional	Control individuals prior to seed set. Hand pull
Cuphea carthagenensis	Cuphea	Infrequent	Control individuals prior to seed set. Hand pull
Gomphocarpus fruticosus	Milkweed	Occasional	Hand pull all plants. Any roots in ground CS&P 1:1.5.
Hypochaeris radicata	Catsear, Flatweed	Occasional	Spot spray 1:150
Melinis minutiflora	Molasses Grass	Not currently in HRA	If appears in restoration area, control individuals prior to seed set. Hand pull, mattock or spray

			thickets. Spray Glyphosate 1:100 +LI 700
Panicum maximum var. *trichoglume*	Green Panic	Occasional	Control individuals prior to seed set. Hand pull, mattock or spray thickets. Spray Glyphosate 1:100 +LI 700
Paspalum wettsteinii	Broad-leaved Paspalum	Common	Control individuals prior to seed set. Hand pull, mattock or spray thickets. Spray Glyphosate 1:100 +LI 700
Pennisetum purpureum	Elephant Grass, Bana Grass	Not currently in HRA	If appears in restoration area, slash or chop out first, foliar spray 1:100 + LI700
Senecio madagascariensis	Fireweed	Occasional	Hand pull all plants.
Sida rhombifolia	Paddy's Lucerne	Infrequent	Chip plants out. Spot spraying young plants. Spray new growth.
Sphagneticola trilobata	Singapore Daisy	Infrequent	Spot spray 1:50, can add metsulfuron-methyl (1.5g/10L water)
Sporobolus sp.	Rat's Tail Grass	Infrequent	Spot spray 1:100 when plants actively growing
Tagetes minuta	Stinking Roger	Not currently in HRA	If appears in restoration area, hand pull prior to seeding.
Trifolium species	Clover species		Spot spray 1:100

Key:
CS&P – cut, scrape and paint
C&P – cut and paint
FI – frill inject

Numbers are glyphosate 360g/L dilution ratios
1:1.5 – 400 ml herbicide added to 600 ml of water
1:50 – 300 ml herbicide added to 15 litres of water
1:100 –150 ml herbicide added to 15 litres of water

LI700 – denotes use of penetrant

Weed Control Techniques

Hand pulling – grab plant at base and pull out, ensuring all roots are removed. A large knife may assist in loosening plants from the ground
CS&P (also known as cut stump) – cut the stem 1-2 cm above ground level using secateurs, loppers, pruning saw, or chainsaw. Immediately apply herbicide to cut stump.
C&P (also known as cut stump) – cut the stem 1-2 cm above ground level using secateurs, loppers, pruning saw, or chainsaw. Immediately apply herbicide to cut stump.
Frill Inject – using an axe make a series of cuts into the stem approximately 20-30 mm deep as close to the ground level as possible. Before axe is removed fill cut with 1-2 ml of herbicide, refill cuts as herbicide absorbs.
Spraying - for thickets of weeds with no or little natives. Care is to be taken to avoid drift onto non-target species. Spot spraying is recommended to reduce drift.

Appendix 7: Daily Weed Control and Management Worksheet and Chemical Operators Data Sheet

DAILY WEED CONTROL AND MANAGEMENT WORK SHEET

DATE OF WORK:_____ **TIME ON:** _____ **TIME-OFF:** _____

NAME OF WORKER(S): _____

WEEDS CONTROLLED AND MANAGED

Common Name	Method of Weed Control
TREES	
Camphor Laurel	
Loquat	
Brazillian Cherry	
Weeping Fig (?planted)	
Broad-leaved Privet	
Umbrella Tree	
SHRUBS	
Duranta, Giesha Girl	
Lantana	
Small-leaved Privet	
Ochna	
Caster Oil Plant	
Yellow Raspberry	
Candlebush	
Winter Senna	
Arsenic Bush	
Devil's Apple	
Giant Devil's Fig	
Wild Tobacco	
Chinese Burr	
VINES-SCRAMBLERS	
Climbing Asparagus	
Asparagus Fern	
Silver-leaf Desmodium	
Five-leaf Morning Glory	
Siratro	
Glycine	
Edible Passionfruit	
Corky Passionfruit	
White Passionfruit	
Climbing Nightshade	
Creeping Vigna	
GROUNDCOVERS-GRASSES	
Crofton Weed	
Mistflower	
Billy Goat Weed	
Red-headed Cotton Bush	
Farmer's Friends	

Asthma Plant	
Rhodes Grass	
Spear Thistle	
Fleabane species	
Cuphea	
Milkweed	
Catsear, Flatweed	
Molasses Grass	
Green Panic	
Broad-leaved Paspalum	
Elephant Grass, Bana Grass	
Fireweed	
Paddy's Lucerne	
Singapore Daisy	
Rat's Tail Grass	
Stinking Roger	
Clover species	

NOTES (e.g. native species observed regenerating, previously unrecorded weed species):

_____
_____
_____
_____
_____
_____
_____
_____
_____
_____

Chemical Operator's Data Sheet

LOCATION: _____

DATE OF WORK:_____ **TIME ON:** _____ **TIME-OFF:** _____

NAME OF WORKER(S): _____

Herbicide	Batch Number	Dilution Rate	Total Chemical Used	Operator Initials	Equipment
Additives					
Redeye					
Agral					
Li700					
Protec Plus					
Other					

Growing Conditions	Temperature	Weather Conditions	Wind speed/Direction
[ ] very good	[ ] cool <20°	[ ] showers	
[ ] good	[ ] warm 21°-25°	[ ] overcast	
[ ] poor	[ ] very warm 26°-30°	[ ] clear sky	
[ ] very poor	[ ] hot >30°	[ ] variable	

Zone/Area worked: _____

Comments: _____
_____
_____
_____

Signature: _____

Appendix 8: NPWS Checklist for Bush Regeneration in Threatened Species Habitat or in an Endangered Ecological Community

Management Planning:	**yes**	**no**	**more info attached**
The proposed activities will be in accordance with a management plan or site plan (map). Please attach the plan or relevant sections of the plan or strategy to the licence application.			
The project has been discussed with the relevant Landcare coordinator. If not, provide details of any other professional advice you have sought, e.g. from a qualified bush regenerator.			
A NPWS Wildlife Atlas database search of a 5km radius of the site has been undertaken to identify threatened flora/fauna species known or likely to occur on the site.			
Prior to commencing any works on site, a permit or permission will be obtained from the relevant landowner(s) or land manager(s).			
Training and supervision:	**yes**	**no**	**more info attached**
All activities by workers will be regularly checked and approved by the co-ordinator.			
All workers will be informed of any threatened species or endangered ecological communities known from the area or which may occur in the area and the potential impacts of activities on these species/communities e.g. vines on the edge of a littoral rainforest remnant may protect the remnant from salt-bearing winds.			
All workers have adequate weed and native plant identification skills i.e. all workers can identify and differentiate between weeds and native plants that occur on the site.			
Workers will be familiar with the identifying features of threatened flora that are known or likely to occur in the project area. Where threatened species known from the area are similar to weed species, the distinguishing features between these will be understood prior to commencing the work.			
Access to site:	**yes**	**no**	**more info attached**
All vehicular access to the site will be restricted to formed roads.			
Unnecessary damage to sites will be avoided e.g. avoid working in wet weather to lessen soil compaction.			
To reduce the possibility of introducing plant diseases and weeds the following measures will be applied: (1) Secateurs will be sharp and cleaned with methylated spirits; and (2) Footwear will be cleaned of loose soil and preferably treated with bleach between sites.			
Impacts on flora:	**yes**	**no**	**more info attached**
Prior to any works being undertaken, the presence or absence of threatened flora will be determined by a thorough walking search of the area.			
All threatened flora will be tagged with highly visible flagging tape before work commences. If a number of individuals occur in a clump, the area should be marked out with flagging tape.			
Cutting or damaging of threatened flora will be avoided.			

All plants will be positively identified before they are removed (pulled, cut, poisoned etc).			
Weed removal within two metres of a threatened species will be undertaken by hand.			
Impacts on fauna:	**yes**	**no**	**more info attached**
All workers will be aware of any threatened fauna that are known or likely to occur on site, and the potential impacts of the proposed activities on those species.			
The habitat and refuge potential of weeds and rubbish will be considered prior to removal e.g. Lantana can provide cover for threatened fauna such as the Bush-hen. Dead Lantana and poisoned Camphor Laurels should, where possible, be left in situ.			
Weeds will be removed gradually in areas where an infestation is extensive. Ideally, 50% of weeds that may provide habitat should be left until native plant species have re-established and provide alternative refuge.			
Disturbance to, and removal of rocks, logs and other potential refuge sites will be avoided.			
A herbicide registered for use near waterways will be used within five metres of waterways.			
Herbicide spraying will be restricted to a distance greater than five metres from watercourses where threatened frogs are known or likely to occur and within a ten metre radius of records of threatened frogs.			
A buffer of one metre along other watercourses will be maintained in which no herbicide will be sprayed.			
Care will be taken to minimise disturbance to shy or cryptic species e.g. the Marbled Frogmouth roosts in vine 'curtains'.			
Care will be taken to minimise disturbance to the leaf litter layer.			
Reconstruction through revegetation: (Note - this section does not address propagation or planting of threatened species. This activity would need to be separately addressed).	**yes**	**no**	**more info attached**
Seed collection or cuttings will be from species, populations or ecological communities other than those listed as threatened (unless licensed)			
Prior to collecting any seed or cuttings permission will be obtained from the relevant landholder or manager of the site e.g. a licence is required to collect native plants on National Parks estate.			
Seed collection from any one species will be limited to less than 10% of the available crop at that site.			
Seed collection from any individual plant will be limited to less than 10% of the available crop.			
If your seed source is used by other seed collectors, has consideration been given to minimising any cumulative impacts to the source plants? Some individual plants are known as a reliable seed source and their seed is collected extensively. This may result in – (1) a reduction in genetic diversity); and (2) an impediment to the individual's natural ability to regenerate.			
When collecting propagation material from a wild population, collection will be random from as many individuals as possible across the population to ensure a representative range of genetic material is collected. Collectors will avoid selection of propagation			

material on the basis of physical attributes e.g. tallest, most attractive, greatest amount of seed or flowers.			
Plantings will be sourced from stock of local provenance.*			
Will propagated material collected only be used at the subject site? i.e. excess material will only be used at other sites if it meets the provenance criteria.			
(Plants are likely to be purchased from reputable commercial nurseries – appropriate seed collecting techniques assumed)			
A buffer of five metres will be maintained around all threatened plant specimens. Planting will only be undertaken outside this buffer. This requirement is intended to protect the roots of the threatened plant from damage or introduction of disease.			
Care will be taken to ensure that mulch does not introduce weeds or impede natural regeneration at the site.			
Care will be taken to ensure that weeds and/or *Phytophthora cinnamomi* are not introduced to a site from pots of cultivated plants.			
Consideration will be given to the possible impacts of plantings on the ecological requirements of threatened species at the site e.g. reduced light, competition, etc.			
Species will be planted within their natural habitat and range. Plantings will be guided by the plants' local habitat preferences e.g. the species used for plantings along watercourses should be those that naturally occur in that habitat in your local area.			
Herbicide use: (Note - A permit from the National Registration Authority for Agricultural and Veterinary Chemicals PO Box E240, Kingston ACT 2604 may be required for herbicide use that is not consistent with conditions specified on the label).	**yes**	**no**	**more info attached**
A buffer of two metres will be maintained around all threatened plant specimens. Herbicide use will only be undertaken outside this buffer.			
Herbicide use will cease where there are any signs of threatened species being affected by herbicide e.g. browning off, wilting or deformed growth.			
All herbicide spray operators will be capable of undertaking precise and effective weed control.			
Spray will be directed away from threatened flora.			
Herbicide will only be sprayed in suitable weather conditions when the impact of spray drift (windy) or run-off (wet) on threatened flora is minimised.			
Marker dyes e.g. white field marker' will be mixed with herbicide before use. Marker dye enables the worker to see where the spray is landing.			
Reporting and data records:	**yes**	**no**	**more info attached**
Any new records of threatened species will be provided within three months to NPWS. These records will be in a format appropriate for entry into the Wildlife Atlas, once identification of a threatened species is confirmed by a recognised authority.			

** Local provenance species should be regarded as those species propagated from material that has been collected from a natural wild population as close as possible to a site. For example, within the local catchment which may be based on a local creek.*

Appendix 9: Project Risk Assessment Form and Matrix

Risk Assessment Form

HAZARD IDENTIFIED	RISK RATING	CONTROL MEASURE RISK ASSESSMENT
Working in close proximity to construction work		□ Use of witches hats or temporary barrier □ High visibility clothing □ Inform site manager of presence on site
Sun Exposure Hot conditions		□ Reduce exposure time – rest breaks □ Provide ample water □ Protective clothing and sunscreen
Working With Chemicals		□ Current MSDS held □ Adequate washing facilities □ Hazardous substances stored and labelled correctly □ Use of personal protective clothing □ Rotate tasks to avoid prolonged exposure
Biological Hazard Needle stick injury		□ Inspect site before work commences □ Provide appropriate waste disposal container □ Personal protective equipment
Manual Handling Handling heavy objects		□ Use correct lifting and carrying techniques □ Use lifting aids □ Use wheelbarrow etc wherever possible □ Ensure clear area before lifting □ Share the load □ Rotate activities or rest breaks □ Appropriate personal protective clothing
Crush Impact Cut, crush and impact		□ Knowledge and correct use of tools □ Appropriate personal protective clothing □ Correct tool for job
Slips, Trips and Falls		□ Avoid carrying awkward or heavy objects on uneven ground □ Remove all potential hazards if possible or mark with coloured tape □ Do not leave tools lying in pathways □ Do not run □ Ensure boots are firmly laced
Hazardous Plants Plants that may cause allergic reaction		□ Identify plants which may cause allergic reactions □ Mark area with coloured tape
Bites and Stings		□ Create disturbance on site before beginning work □ Apply insect repellent □ Wear appropriate personal protective equipment

Risk Assessment Matrix

How severely could it hurt someone OR How ill could it make someone	Very likely - could happen anytime	Likely - could happen sometime	Unlikely - could happen, but very rarely	Very unlikely- could happen, but probably never will
☠ kill or cause permanent disability or ill health	1	1	2	3
Long term illness or serious injury	1	2	3	4
Medical attention and several days off work	2	3	4	5
! First aid needed	3	4	5	6

Appendix 10: Planting Schedule

Restoration and Rehabilitation Areas Management Zones under S88E Instrument

Species Name	Common Name	Mature Height	No. of Plants@	% of plants&	MZ 1U	MZ 1L	MZ 2U	MZ 2L
Trees								
Acacia melanoxylon	Blackwood	18 m	10	5.02	X	X		X
Actephila lindleyi	Actephila	12 m	4	2.01	X	X		X
Alectryon tomentosus	Hairy Bird's Eye	15 m	8	4.02	X	X	X	X
Alphitonia excelsa	Red Ash	20 m	8	4.02	X	X		X
Apananthe philippensis	Rough-leaved Elm	35 m	2	1.0	X	X		X
Archidendron grandiflorum	Pink Laceflower	15 m	2	1.0	X	X		X
Archirhodomyrtus beckleri	Rose Myrtle	15 m	6	3.01	X	X		X
Arytera distylis	Twin-leaved Coogera	24 m	6	3.01		X		X
Cinnamomum oliveri	Oliver's Sassafras	30 m	1	0.5		X		
Clerodendrum floribundum	Smooth Clerodendrum	20 m	5	2.51	X	X		X
Croton verreauxii	Native Cascarilla	20 m	4	2.01	X	X		X
Commersonia bartramia		25 m	2	1.0		X		X
Cryptocarya glaucescens	Jackwood	30 m	1	0.5		X		
Cryptocarya triplinervis var. *pubens*	Three-veined Laurel	18 m	6	3.01	X	X		X
Cupaniopsis anacardioides	Tuckeroo	15 m	6	3.01	X	X		X
Daphnandra micrantha	Socketwood	20 m	4	2.01		X		X
Denhamnia celastroides	Orange Boxwood	18 m	2	1.0	X			X
Elaeocarpus obovatus	Hard Quandong	45 m	2	1.0		X		X
Endiandra sieberi	Hard Corkwood	30 m	1	0.5		X		
Ficus rubignosa	Rusty Fig, Port Jackson Fig	30 m	1	0.5		X		
Ficus virens	White Fig	30 m	1	0.5				X
Flindersia australis	Crows Ash, Teak	40 m	1	0.5		X		
Glochidion sumatranum	Umbrella Cheese Tree	15 m	10	5.02	X	X		X
Guioa semiglauca	Guioa	18 m	10	5.02	X	X		X
Jagera pseudorhus	Foambark Tree	30 m	4	2.01		X		X
Lepiderema pulchella#	**Fine-leaved Tuckeroo**	**15m**	**10**	5.02	X	X	X	X
Lophostemon confertus	Brushbox	25 m	2	1.0		X		
Mallotus philippensis	Red Kamala	25 m	8	4.02	X	X		X
Melicope elleryana	Pink Euodia	25 m	2	1.0		X		
Myrsine variabilis	Muttonwood	15 m	6	3.01	X	X		X

Species Name	Common Name	Mature Height	No. of Plants@	% of plants&	MZ 1U	MZ 1L	MZ 2U	MZ 2L
Neolitsea dealbata	White Bollygum	12 m	8	4.02	X	X		X
Niemeyera whitei	**Rusty Plum**	**20m**	**2**	1.0		**X**		
Notelaea longifolia	Mock Olive	9 m	8	4.02	X	X		X
Olea paniculata	Native Olive	30 m	1	0.5				X
Pentaceras australis	Bastard CrowsAsh	18 m	4	2.01	X			X
Pittosporum lancifolium	Narrow-leaved Orange Thorn	25 m	1	0.5				X
Pittosporum undulatum	Sweet Pittosporum	25 m	5	2.51	X	X		X
Polyscias elegans	Celerywood	30 m	1	0.5				X
Rhodamnia argentea	Malletwood	30 m	1	0.5				X
Rhodamnia rubescens	Scrub Turpentine	30 m	1	0.5				X
Rhodomyrtus psidioides	Native Guava	12 m	8	4.02	X	X		X
Rhodosphaera rhodanthema	Tulip Satinwood	25 m	1	0.5				X
Stenocarpus salignus	Beef Scrubwood	30 m	1	0.5		X		
Streblus brunonianus	Whalebone Tree	30 m	1	0.5		X		
Symplocus thwaitesii	Buff Hazelwood	17 m	2	1.0	X			X
Synoum glandulosum	Scentless Rosewood	18 m	6	3.01	X			X
Syzygium oleosum	Blue Lillypilly	15 m	6	3.01	X			X
Syzygium smithii	Lillypilly	20 m	2	1.0		X		
Toechima dasyrrhache	Blunt-leaved Steelwood	30 m	1	0.5				X
Toechima tenax	Brush Teak	18 m	4	2.01	X			X
Sub-total			**199**					
Shrubs-Small Trees								
Alpinia caerulea	Native Ginger	2.5 m	20	6.51	X	X	X	X
Atractocarpus benthamiana	Native Gardenia	8 m	10	3.25	X	X		X
Breynia oblongifolia	Native Coffee Bush	3 m	20	6.51	X	X	X	X
Cordyline petiolaris	Broad-leaved Palm Lily	5 m	20	6.51	X	X	X	X
Cordyline stricta	Narrow-leaved Palm Lily	5 m	20	6.51	X	X	X	X
Cryptocarya laevigata	Glossy Laurel	6 m	10	3.25	X	X		X
Elaeodendron australe var. *australe*	Red Olive Plum	9 m	10	3.25	X	X	X	X
Eupomatia laurina	Bolwarra	7 m	20	6.51	X	X	X	X
Homolanthus populifolius^	Bleeding Heart	6 m	30	9.77	X	X		X
Macaranga tanarius^	Macaranga	6 m	30	9.77	X	X		X
Pilidiostigma glabrum	Plum Myrtle	5m	15	4.88	X	X		X
Psychotria simmondsiana var. *glabrescens*	Small Psychotria	4 m	20	6.51	X	X	X	X

Species Name	Common Name	Mature Height	No. of Plants@	% of plants&	MZ 1U	MZ 1L	MZ 2U	MZ 2L
Tabernaemontana pandacaqui	Banana Bush	5 m	20	6.51	X	X	X	X
Trema tomentosa var. *viridis*^	Poison Peach	6 m	50	16.28	X	X		X
Wilkea huegeliana	Veiny Wilkea	8 m	6	1.95	X	X		X
Wilkea austroqueenslandica	Smooth Wilkea	9 m	6	1.95	X	X	X	X
Sub-total			**307**					
Vines-Scramblers								
Carissa ovata	Carissa	2 m	5	33.33	X	X		X
Carronia multisepala	Carronia	1.5 m	5	33.33	X	X		X
Geitenoplesium cymosum	Scrambling lilly	2 m	5	33.33	X	X		X
Sub-total			**15**					
Groundcovers-Ferns								
Adiantum diaphanum	Filmy Maidenhair Fern	0.3 m	30	10.34	X	X	X	X
Adiantum formosum	Giant Maidenhair Fern	1.2 m	30	10.34	X	X	X	X
Christella dentata	Binung Fern	0.5 m	40	13.79	X	X	X	X
Dianella caerulea	Blue Flax Lily	2 m	30	10.34	X	X	X	X
Doodia media	Common Rasp Fern	0.4 m	25	8.62	X	X	X	X
Doodia aspera	Prickly Rasp Fern	0.35 m	25	8.62	X	X	X	X
Lomandra longifolia	Spiny-headed Mat-Rush	1 m	30	10.34	X	X	X	X
Pellaea falcata#	Sickle Fern	0.6 m	20	6.89	X	X	X	X
Sticherus flabellatus	Shiny Fan Fern	1.5 m	10	3.44	X	X	X	X
Viola hederacea	Native Violet	0.1 m	50	17.24	X	X	X	X
Sub-total			**290**					
TOTAL			**811**					

*Lepiderema pulchella* is to be planted from the salvaged transplants
^ Pioneer species to be planted at higher density on edges to seal from edge effects
@ Not all species may be able to be sourced, so where a species is not available, one or more substitute species from Schedule 10 are to be selected, ensuring that no individual species of plant shall exceed more than 5% contribution to density, with the exception of pioneer plants.
& *Percentage of plants within each vegetation stratum.*

MZ1U = Management Zone 1: Upper – from mid slope to top of the slope
MZ1L = Management Zone 1: Lower – from mid slope to bottom of the slope
MZ2U = Management Zone 2: Upper – from top of slope down 10 m
MZ2L = Management Zone 2: Lower – from MZ2U 10 m downslope

Notes:
1. Mature plant heights based on maximum height the plant species could attain.

2. Additional plants, particularly pioneer species, may need to be sourced and planted depending on natural regeneration and gaps following control of Camphor Laurel that may need to be filled with plantings.

Appendix 11: Nursery Plant Quality Guarantee

This checklist is to be used to support selection of nurseries to provide plants for the habitat restoration planting and threatened plant propagation for the Major Project Walmsley's Road Bilambil Heights. It is aimed at reducing the potential for pathogens, bacteria, pests and weeds being inadvertently introduced to the property, in particular Phytophthora to which *Macadamia tetraphylla* is susceptible, and Myrtle Rust, to which many species in the Myrtaceae family are susceptible.

Name of Nursery Supplying Plants

_____

Check those measures in place at the nursery. Any items not checked require a precautionary management approach for Macadamia and Myrtaceae species

Hygiene Management Protocol for Nursery Facilities and Equipment

☐ uses chloramine and chlorhexidine based products for cleaning and disinfecting surfaces, including cracks and joints, washing facilities, working surfaces-benches, trolleys trays, floors, walls, pathways, beds, containers (tubes, pots, trays), propagation tools and vehicles

☐ uses sterile disinfecting footbaths to access nursery areas

☐ has special measures in place to avoid-minimise chalara, phytophthorra and myrtle rust

☐ uses treatment suitable for non-porous surfaces, such as capillary mats, production surfaces, cement, gravel, sand beds

Hygiene Management Protocol for Plants grown and held at the nursery

☐ has measures in place to prevent infection of growing media

☐ has an isolated preparation area

☐ maintains and monitors mother-stock plants to reduce opportunities for infection and spread of pests and pathogens

Hygiene Management Protocol for Staff

☐ trains staff in personal hygiene related to management of pests and pathogens

☐ provides signs in prominent places to remind staff of the importance of hygiene in nursery

Hygiene Management Protocol for Active Pests and Pathogens

☐ has a Monitoring Program to detect active pests and pathogens

☐ has a disinfestation protocol for active problems

☐ has procedures for isolation and treatment if pests and pathogens are detected, in particular for Phytophthora and Myrtle Rust

Appendix 12: Community Awareness Brochure

Ways we can impact on the natural environment and what we can do to help

If you are lucky enough to live near or adjacent to bushland, or if you have remnant vegetation on your property, there is a lot you can do to help

Use of fertilisers, detergents, herbicides, and pesticides

can runoff downslope during rain

increase nutrients in bush and waterways

better for weeds not natives

affecting water quality, and aquatic plants and animals

affect birds that eat seeds and insects on the ground

Consider using no phosphorus detergents and washing your car on the lawn

Consider alternatives

Soil in Bilambil Heights is high in nutrients, fertiliser shouldn't be needed

Pets harassing wildlife

Cats and dogs can harass, injure and kill wildlife, naturally preying on native animals.

Keep cats and dogs inside or confined overnight, particularly between dusk and dawn

Get cats and dogs de-sexed

Take unwanted cats and dogs to the RSPCA or animal rescue

Put two bells on a cat collar

Train dogs not to bark at or harass wildlife

Pick up dog faeces

Walk your dog on a lead

Weed Invasion

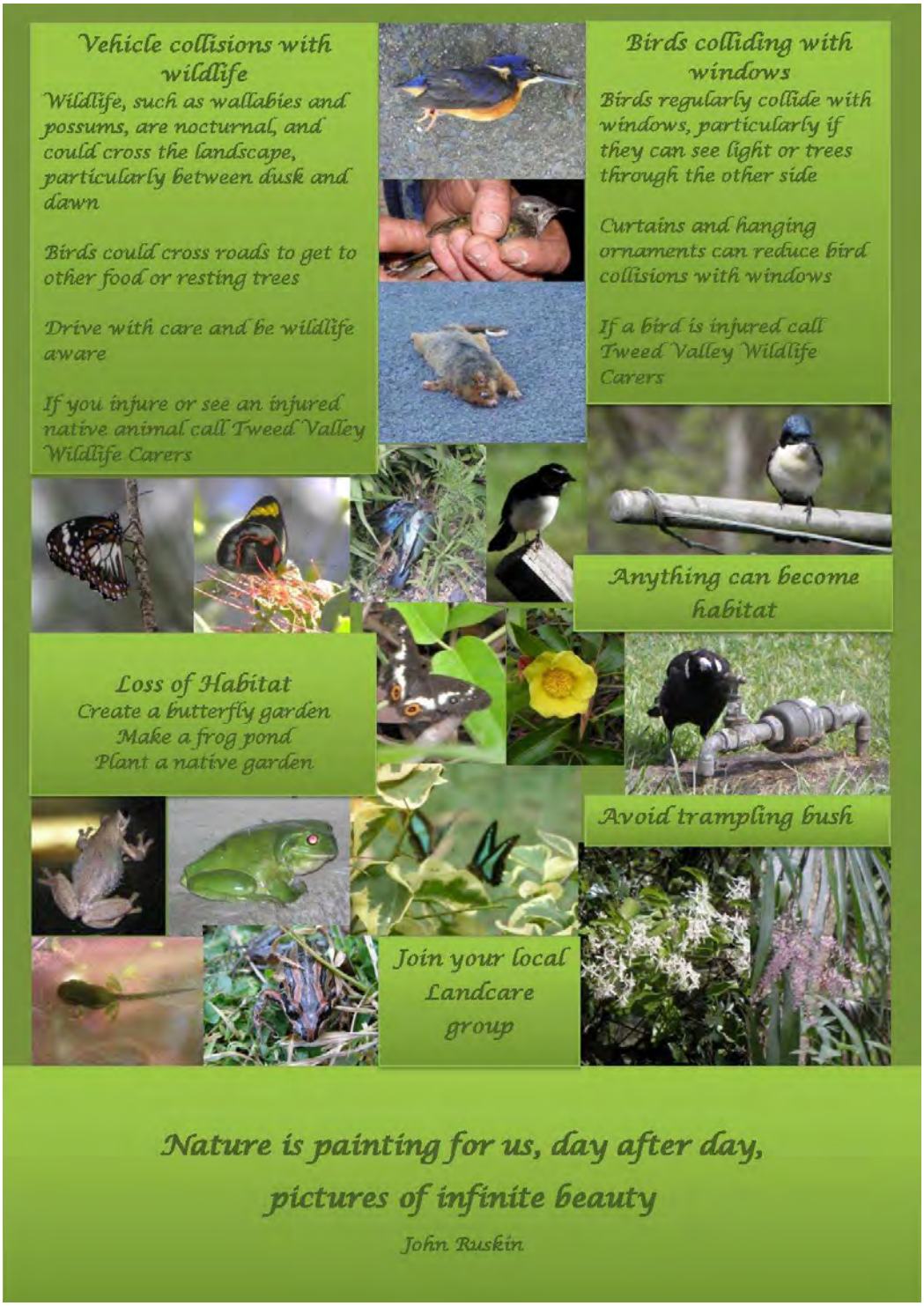
Changes nutrients, competes with natives, destroys bushland

Dumping garden waste over back fence can increase nutrients and provide a source of weed seeds

Use garden waste to start a compost and worm farm, and feed your vegetable and herb garden

We did not inherit the Earth from our ancestors,
We are borrowing it from our children

Ralph Waldo Emerson


Vehicle collisions with wildlife
Wildlife, such as wallabies and possums, are nocturnal, and could cross the landscape, particularly between dusk and dawn
Birds could cross roads to get to other food or resting trees
Drive with care and be wildlife aware
If you injure or see an injured native animal call Tweed Valley Wildlife Carers
Birds colliding with windows
Birds regularly collide with windows, particularly if they can see light or trees through the other side
Curtains and hanging ornaments can reduce bird collisions with windows
If a bird is injured call Tweed Valley Wildlife Carers
Anything can become habitat
Loss of Habitat
Create a butterfly garden
Make a frog pond
Plant a native garden
Avoid trampling bush
Join your local Landcare group
Nature is painting for us, day after day,
pictures of infinite beauty
John Ruskin

Tips for attracting beautiful birds to your garden

To attract birds to your garden, you need to provide food, water and shelter

Bird Baths

Put the bird bath around vegetation – birds like to feel safe and protected
Plant small shrubs with dense foliage around the bird bath
Keep it filled with fresh water and the birds will know where to come

Bushrock

Put some bushrock around the bird bath
Many birds like to sing or play around rocks.

Bushrock can also provide a better vantage point to see ants and other insects on the ground

It will also provide habitat for small lizards

Plant nectar-producing and rainforest fruiting shrubs and small trees

For more information about the natural environment

Tweed Shire Council 02 6670 2400 www.tweed.nsw.gov.au

Office of Environment and Heritage 02 9995 5000 www.environment.nsw.gov.au

North Coast Local Land Services 02 6623 3900 www.northcoast.lls.nsw.gov.au

Tweed Landcare Inc. 02 6670 2199 www.tweedlandcare.org.au

Tweed Valley Wildlife Carers 02 6672 4789 www.twwc.org.au

This brochure was prepared by Biolink Pty Ltd 2017 Photo credits: Maria Matthes

Appendix 13: Photo Point Monitoring Guidelines and Record Sheet

Photo Point Monitoring Guidelines

The aim of the photo point monitoring is to use photographs to document the effect of management actions, and to record and compare changes to the vegetation over time.

Setting Up

- Select six locations in Management Zone 1 Restoration Areas, and four locations in Management Zone 2 Rehabilitation Areas, using the guidance on the Photo Point Monitoring Record Sheet, making sure the locations will be accessible to take photos in the future.
- At each photo point location, place four star pickets in the ground, approximately 5 m apart, in the direction the photo is to be taken (e.g. from north east corner to the south). Three photo directions are to be taken from each locations and details recorded on the Photo Point Monitoring Record Sheet. One star picket will be the camera post and one will be the sighter post.
- Roughly mark the location of the photo points on a map, and use an arrow to indicate the direction of the photo. Use the photo point and photo numbers on the Photo Point Monitoring Record Sheet.
- Record the location of each photo point using a GPS.

Taking Photos

- Photos are to be taken from photo points:
- prior to the initial weed control works commencing;
- after the initial weed control;
- before and after the secondary primary weed control, prior to planting; and
- following planting
- annually for 5 years after planting
- Photos are to be taken, preferably, on a cloudy but bright day when shadows are minimised.
- Note on the photo – the photo point number, the photo number and the date of the photo.
- Complete a photo record sheet for each monitoring event

PHOTO MONITORING RECORD SHEET

LOCATION: Scott Street Walmsley Road, Bilambil Heights

DATE OF PHOTOGRAPHS:_____

TIME PHOTOGRAPHS TAKEN: _____

WEATHER CONDITIONS: _____

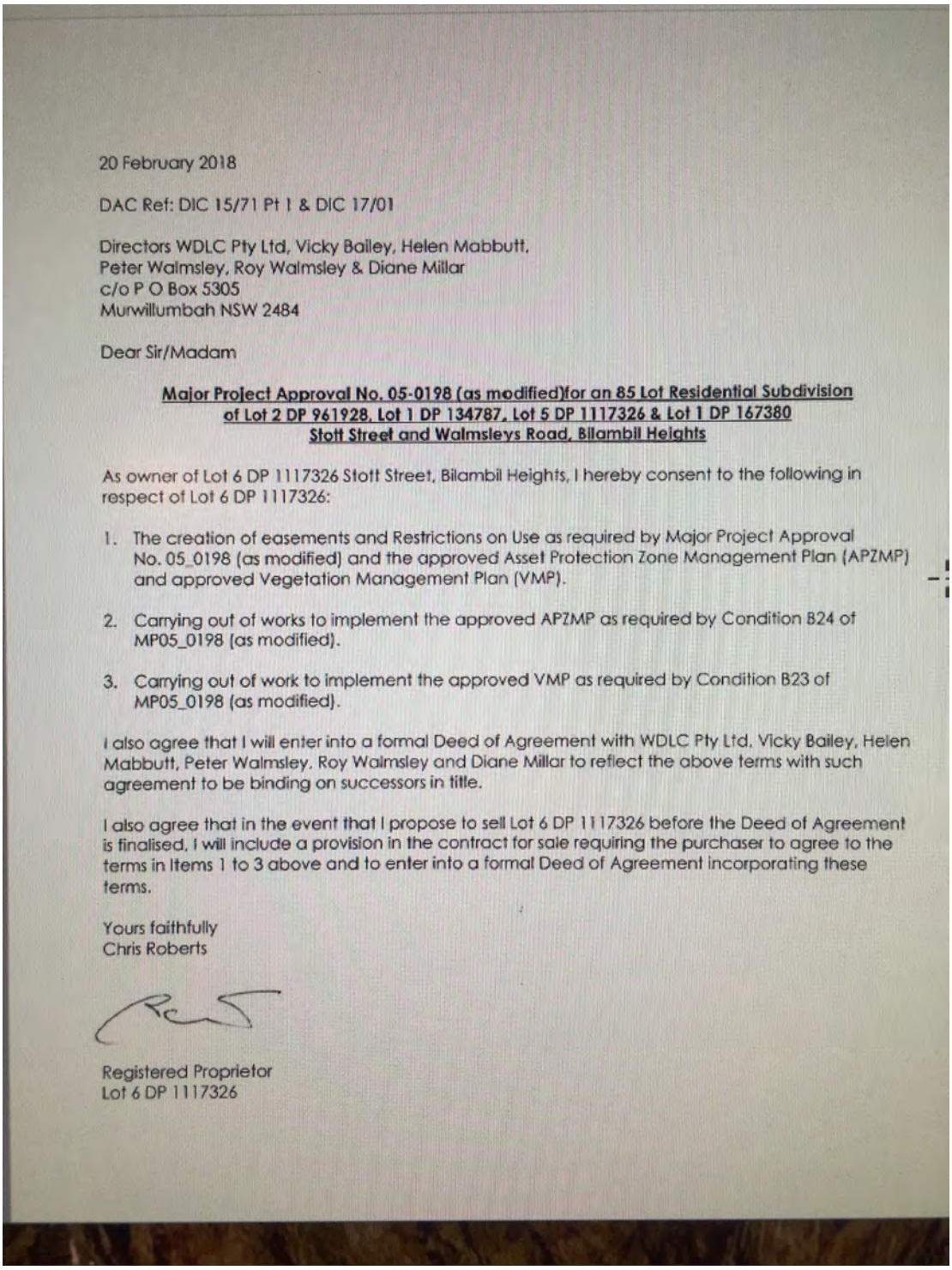
NAME OF PHOTOGRAPHER: _____

Photo point 1	**Photo 1**	**Photo 2**	**Photo 3**
Location and Direction of Photo Management Zone 1			
Observations – weed growth			
Observations – planting and transplanting growth and survival			
Photo point 2	**Photo 1**	**Photo 2**	**Photo 3**
Location and Direction of Photo Management Zone 1			
Observations – weed growth			
Observations – planting and transplanting growth and survival			
Photo point 3	**Photo 1**	**Photo 2**	**Photo 3**
Location and Direction of Photo Management Zone 1			
Observations – weed growth			

Observations – planting and transplanting growth and survival			
Photo point 4	**Photo 1**	**Photo 2**	**Photo 3**
Location and Direction of Photo Management Zone 1			
Observations – weed growth			
Observations – planting and transplanting growth and survival			
Photo point 5	**Photo 1**	**Photo 2**	**Photo 3**
Location and Direction of Photo Management Zone 1			
Observations – weed growth			
Observations – planting and transplanting growth and survival			
Photo point 6	**Photo 1**	**Photo 2**	**Photo 3**
Location and Direction of Photo Management Zone 1			
Observations – weed growth			
Observations – planting and transplanting growth and survival			
Photo point 7	**Photo 1**	**Photo 2**	**Photo 3**
Location and Direction of Photo Management Zone 2			

Observations – weed growth			
Observations – planting and transplanting growth and survival			
Photo point 8	**Photo 1**	**Photo 2**	**Photo 3**
Location and Direction of Photo Management Zone 3			
Observations – weed growth			
Observations – planting and transplanting growth and survival			
Photo point 9	**Photo 1**	**Photo 2**	**Photo 3**
Location and Direction of Photo Management Zone 2			
Observations – weed growth			
Observations – planting and transplanting growth and survival			
Photo point 10	**Photo 1**	**Photo 2**	**Photo 3**
Location and Direction of Photo Management Zone 2			
Observations – weed growth			
Observations – planting and transplanting growth and survival			

Appendix 14: Letter from owners of Lot 6 granting consent to the creation of easements and carrying out work.



20 February 2018

DAC Ref: DIC 15/71 Pt 1 & DIC 17/01

Directors WDLC Pty Ltd, Vicky Bailey, Helen Mabbutt,
Peter Walmsley, Roy Walmsley & Diane Millar
c/o P O Box 5305
Murwillumbah NSW 2484

Dear Sir/Madam

Major Project Approval No. 05-0198 (as modified)for an 85 Lot Residential Subdivision of Lot 2 DP 961928, Lot 1 DP 134787, Lot 5 DP 1117326 & Lot 1 DP 167380 Stott Street and Walmsleys Road, Bilambil Heights

As owner of Lot 6 DP 1117326 Stott Street, Bilambil Heights, I hereby consent to the following in respect of Lot 6 DP 1117326:

1. The creation of easements and Restrictions on Use as required by Major Project Approval No. 05_0198 (as modified) and the approved Asset Protection Zone Management Plan (APZMP) and approved Vegetation Management Plan (VMP).

2. Carrying out of works to implement the approved APZMP as required by Condition B24 of MP05_0198 (as modified).

3. Carrying out of work to implement the approved VMP as required by Condition B23 of MP05_0198 (as modified).

I also agree that I will enter into a formal Deed of Agreement with WDLC Pty Ltd, Vicky Bailey, Helen Mabbutt, Peter Walmsley, Roy Walmsley and Diane Millar to reflect the above terms with such agreement to be binding on successors in title.

I also agree that in the event that I propose to sell Lot 6 DP 1117326 before the Deed of Agreement is finalised, I will include a provision in the contract for sale requiring the purchaser to agree to the terms in Items 1 to 3 above and to enter into a formal Deed of Agreement incorporating these terms.

Yours faithfully
Chris Roberts

Registered Proprietor
Lot 6 DP 1117326

Modified Tree Removal Plan

Major Project No. MP05-0198 (as modified)
Approval Condition A2

Lot 1 DP 134787, Lot 1 DP 167380, Lot 2 DP 961928,
& Lot 5 DP 1117326

Walmsley's Road and Stott Street, Bilambil Heights

Final Report
June 2020

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1.0 Introduction

This Tree Removal Plan (TRP) has been prepared for Darryl Anderson Consulting Pty. Ltd. on behalf of the proponents for the purposes of complying with the Major Project Approval MP05_0198 approval condition A2 (as modified - Modification 1, approved on 16 May 2014 and Modification 5, approved on 14 June 2019) for the subdivision at Lot 1 DP 134787, Lot 1 DP 167380, Lot 2 DP 961928, & Lot 5 DP 1117326 Walmsley's Road, Bilambil Heights.

Approval Condition - A2 Staging:
The project is to be constructed in seven (7) stages, generally in accordance with Revision of Plan 35054 dated 24.03.16 prepared by Landsurv Pty Ltd, incorporating the lots as follows:

(1A) Stage 1A Preliminary Works Stage comprising:

(a) Removal of the existing trees within and adjacent to the alignment of approved Roads 3 and 5. Prior to removing any trees within or adjacent to approved Roads 3 and 5 the proponent shall:

> *(i) submit a Tree Removal Plan for the approval of the Secretary identifying all trees proposed to be removed within Stage 1A; and*
>
> *(ii) provide a copy of the approved Tree Removal Plan to the PCA prior to the issue of a Construction Certificate authorising any tree removal works.*

(b) Surveying of all proposed road alignments including placing pegs, observing levels, preparing spatial data drilling geotechnical bore holes on road alignments. Survey work and investigative geotechnical work that does not require tree removal.

(c) The following conditions of approval shall be complied with prior to commencing the preliminary works stage referred to in Condition A2(1A)(a): conditions C1 to C4, Condition C10, and conditions C12 to C14.

(d) The following conditions of approval shall be complied with prior to commencing the preliminary works stage referred to in Condition A2(1A)(b): conditions C3 and C4.

(5) Stage 5 comprises lots 41-61 inclusive incorporating roads and sewer pumping station. Prior to removing any trees associated with the construction of the sewer line at the rear of approved lots 55, 57, 59 and 60 the proponent shall:

> *(iii) submit a Tree Removal Plan for the approval of the Secretary identifying all trees proposed for removal and demonstrating the design and construction techniques proposed to minimise tree removal within the Environmental Management Area: and*
>
> *(iv) provide a copy of the approved Tree Removal Plan to the PCA prior to the issue of a Construction Certificate authorising any tree removal works.*

(6) Stage 6 comprises lots 63-79 62-78 inclusive incorporating roads. Prior to removing any trees associated with the construction of the sewer line at the rear of approved lots 69, 70 and 77 the proponent shall:

> *(v) submit a Tree Removal Plan for the approval of the Secretary identifying all trees proposed for removal and demonstrating the design and construction techniques proposed to minimise tree removal within the Environmental Management Area; and*
>
> *(vi) provide a copy of the approved Tree Removal Plan to the PCA prior to the issue of a Construction Certificate authorising any tree removal works.*

This Tree Removal Plan satisfies condition A2 and includes:

- An overview of tree removal associated with the development (Figure 1);
- A general tree removal plan and a tree removal schedule of trees identifying locations of trees to be removed for the construction of Roads 3 and 5 (Figure 2);

- Tree removal plans (Sections 1, 2, 3, 4) identifying locations of trees to be removed in each section for the construction of Roads 3 and 5 (Figures 3a, 3b, 3c, 3d);
- A general tree removal plan and tree removal schedule of trees requiring removal for the establishment of the APZ (Figures 4 and 5); and
- A general tree removal plan and tree removal schedule of trees requiring removal for the sewer line and trees adjacent to the sewer line within the APZ for Stages 5 and 6 (Figure 5).

Between trees 1-6 (Figures 1 and 3d), small regenerating plants of the threatened species, *Lepiderema pulchella* (Fine-leaved Tuckeroo) were located. These plants will be subject to translocation – transplant salvage (Sections 3 and 4).

A specimen of the threatened species, *Amorphospermum whitei* (Rusty Plum), now known as *Niemeyera whitei*, was recorded in the original flora study (Biolink 2011). Despite several recent searches, this individual has not been located and is assumed to no longer exist. This is discussed further in Sections 3 and 4.

2.0 Methodology

For each plant over 2 m in height within the specified area of Roads 3 and 5, the APZ, and the sewer line, a tree number was allocated, and the following information was recorded:

- the species scientific name and common name,
- the location - latitude and longitude or eastings and northings, and
- any relevant notes such as whether the tree was dead, had obvious hollows, or wildlife present.

The locations were determined using a handheld GARMIN GPS unit. The location of each tree was then plotted over a digital air photo image with the location of Roads 3 and 5 superimposed.

The data recorded for each tree is provided in the Tree Removal Schedule in Appendix 1.

3.0 Discussion

The required vegetation removal for the development comprises 3 components:

1) *Tree clearing of the Planted Windbreak for construction of Roads 3 and 5*. This component of the tree clearing is associated with Stage 1 of the development approval. The vegetation consists of a planted windbreak with regenerating native and exotic species. The majority of the large trees to be removed are planted Turpentine (*Syncarpia glomulifera*) and Camphor Laurel (*Cinnamomum camphora*).

   There are a small number of remnant rainforest trees toward the western end of the strip of vegetation, and regenerating exotics and native rainforest species occur within the planted windbreak (see Photos 1 and 2). Regenerating rainforest occurs towards the western end of the study area.

   Ten plants of *Lepiderema pulchella* will be translocated, as a transplant salvage, from the eastern end of the windbreak corridor. These plants are mostly small seedlings <40cm, with two plants just over 1 m tall. There is a possibility of more *Lepiderema pulchella* plants germinating prior to the tree removal works. Details of the translocation are provided in Section 4.


Photos 1 and 2: Vegetation to be removed for approved Road 3

2) *Tree clearing associated with the establishment of the Asset Protection Zone*. The management of this area is discussed in the Additional Information – Bushfire report for the site (BCA Check 2020). This clearing includes an extension to the clearing of the windbreak trees, which contains 36 Camphor Laurel trees and 15 native trees (Figure 4 and Appendix 1). The native trees in this area will be removed, as their retention would be extremely difficult given that the surrounding Camphor Laurels must be removed. Maintaining these individuals would also conflict with achieving the required standards for asset protection zones.

   Two trees within the APZ have been identified for retention (Figure 1). These are a *Mallotus philippensis* (Red Kamala) and a *Flindersia australis* (Teak). Location and plant details are provided at the end of Appendix 1.

   The *Niemeyera whitei* plant which has not been located is marked as a virtual plant on Figure 1. An individual of this species will be planted at that location, and two individuals in the restoration area, as part of the VMP (Biolink 2020) establishment phase works. The replacement and additional plants will be derived from local native stock and will be of a suitable size (50-75cm) at time of planting. The specimen will be adequately protected and will be monitored as part of the VMP implementation (Biolink 2020).

3) *Tree clearing required for the sewer line*. The sewer line occurs mostly in open paddocks with a small number of small trees requiring removal.

The Vegetation Management Plan (VMP) (Biolink 2020) for the development has incorporated compensation measures to offset the numbers and species of native trees that will need to be removed. These measures include replantings (as detailed in the VMP replanting schedule) to restore open areas and gaps created through weed control within the designated rehabilitation areas.

Several trees were observed with hollows that appeared to be used, with possum scats underneath. A common brushtail possum and a common ringtail possum dray were observed during the field survey (see Photos 3 and 4).

Photo 3: Example of tree hollow

Photo 4: Common brushtail possum

4.0 Implementation

Implementation of the Tree Removal Plan is to be guided by Appendix 2 (Measures for Tree Clearing - Protection and Management of Vegetation and Welfare of Animals During Vegetation Removal - Checklist), in order to minimise impacts to all retained vegetation and to wildlife.

The location of fencing to protect the area of *Macadamia tetraphylla* (Rough-shelled Bush Nut) in the north-eastern corner of the site is shown on Figure 1 and is detailed in the VMP. Tree number 457 in the Tree Removal Schedule (Appendix 1) is a 2m-high *Macadamia integrifolia* that self-propagated from a seed that was dispersed to the site by the landowner. This tree is located on the immediate edge of the planned sewer line and the intention will be to retain this tree in-situ if possible (see Figure 5).

Threatened Plant Salvage – Lepiderema pulchella

Lepiderema pulchella (Fine-leaved Tuckeroo) is a listed threatened species in the vulnerable category both within NSW and nationally. The emergence of several individuals of *Lepiderema pulchella* since the original assessment by Biolink (2011) necessitates the salvage translocation of these plants, which comprise two individuals over 1m in height, as well as eight seedlings-juveniles.

The salvage of *Lepiderema pulchella* plants is to be undertaken prior to tree clearing. There will be no clearing of non-threatened vegetation under this Tree Removal Plan

until the *Lepiderema pulchella* plants identified for salvage have been removed from the clearing area.

The *Lepiderema pulchella* plants to be salvaged are located between plants 1-6 in the Tree Removal Schedule, as identified in Figures 1 and 3d of this Plan. As there is potential for further germination of *Lepiderema pulchella* plants, a further search is to be undertaken under the windbreak trees prior to their removal. Any additional located specimens are to be included in the salvage operation. The transplants are to be planted primarily in the restoration areas (Management Zone 1 of the VMP), with a few specimens to be planted into the rehabilitation area (Management Zone 2 of the VMP).

Prior to salvaging, a health assessment of each specimen is to be recorded. Healthy plants are to be directly transplanted into pre-prepared holes, in accordance with the planting requirements in Section 4.3.4 of the VMP (Biolink 2020). Plants exhibiting signs of poor health (e.g., insect attack, rust, lack of new growth) are to be potted and maintained until considered sufficiently healthy for planting. All plants are to be trimmed of 75% of foliage prior to salvaging, in order to reduce transpiration.

When extracting the plants, care must be taken to minimize damage to the root system by leaving adequate soil around the root ball. The transplants are to be placed into a large pot with soil from the site and watered well in readiness for transfer to the restoration and rehabilitation areas or to a nursery for maintenance. All transplanted specimens are to be adequately watered following replanting to maximize survival.

Records of transplanted individuals are to include plant number, plant health at the time of transplanting, whether directly planted or potted, date of transplanting, timing of watering over the first 12 months, and survival of transplants.

The transplanted plants are to be monitored monthly for the first six months after replanting, and 6-monthly for a further 4.5 years. Monitoring is to include:

- *Growth*: height of plants;
- *Health:* signs of heat stress, with any signs of disease and pest damage addressed promptly; and
- Survival: assess options for addressing any loses, e.g., by collecting seed from adjacent areas to propagate additional plants, or watering more frequently.

The salvage of *Lepiderema pulchella* is also addressed in Sections 3.4, 4.3.1 and 4.3.2 of the VMP (Biolink 2020) and will be consistent with the Australian Network for Plant Conservation's translocation guidelines (Vallee *et al.* 2004).

References

BCA Check 2020. *Additional Information – Bushfire: Lot 5 DP 1117326, Lot 1 DP 134787, Lot 1 DP 167380, & Lot 2 DP 961928 Walmsley's Road and Stott Street, Bilambil Heights Major Project No. 05-0198.* Report prepared for Darryl Anderson Town Planning Consultants.

Biolink. 2020. *Revised Vegetation Management Plan Lot 1 DP 167380, Lot 2 DP 961928, Lot 1 DP 134787 & Lot 5 DP1117326 Walmsley's Road, Bilambil Heights.* Prepared for Darryl Anderson Consulting Pty Ltd. Biolink Ecological Consultants, Uki. NSW.

Vallee, L., Hogbin, T., Monks, L., Makinson, B., Matthes, M., & Rossetto, M. 2004. *Guidelines for the translocation of threatened plants in Australia*. Second Edition. Australian Network for Plant Conservation. Canberra.

FIGURES

Figure 1: Tree Location Plan Overview

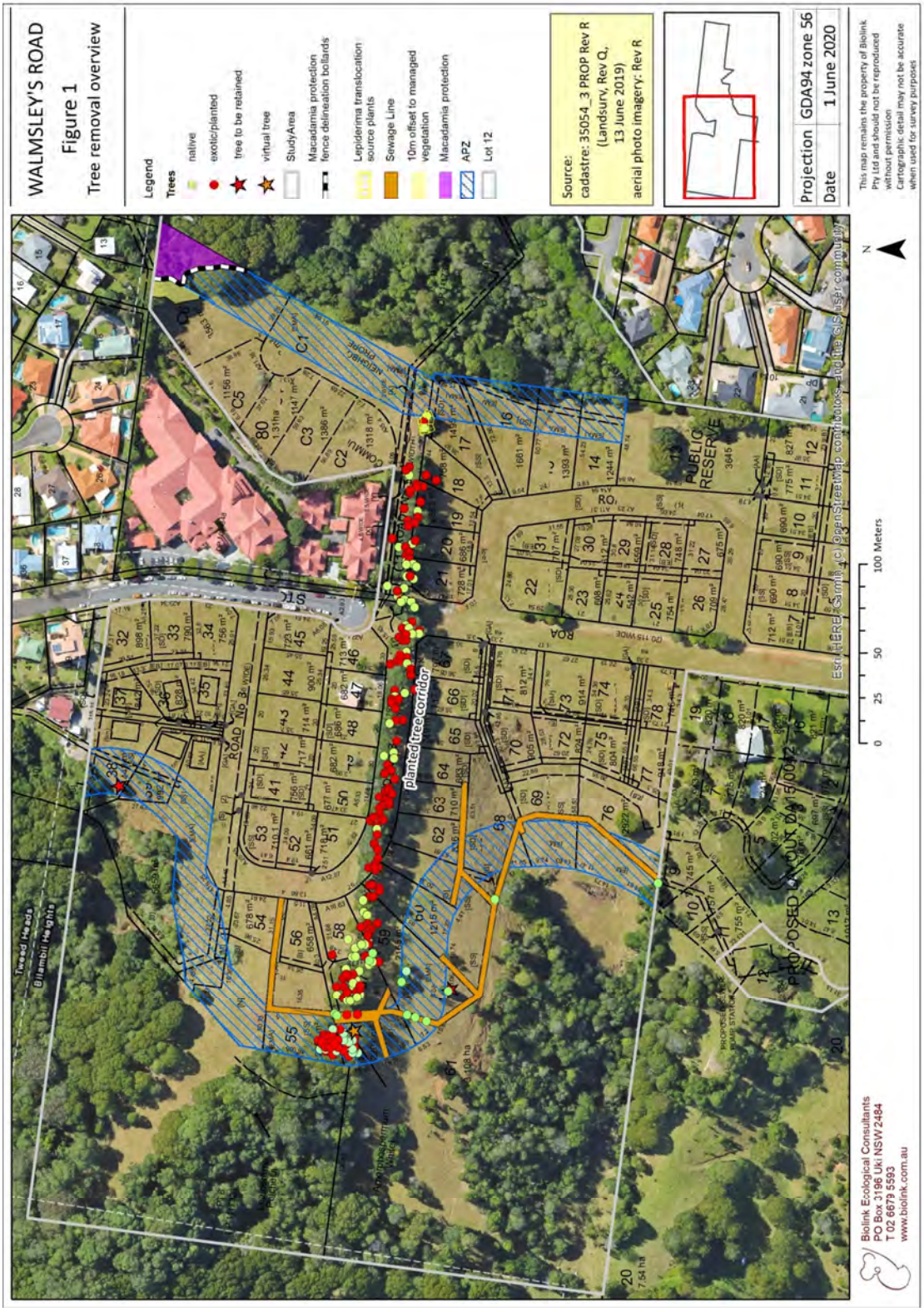

Figure 2: Tree Location Planted Windbreak

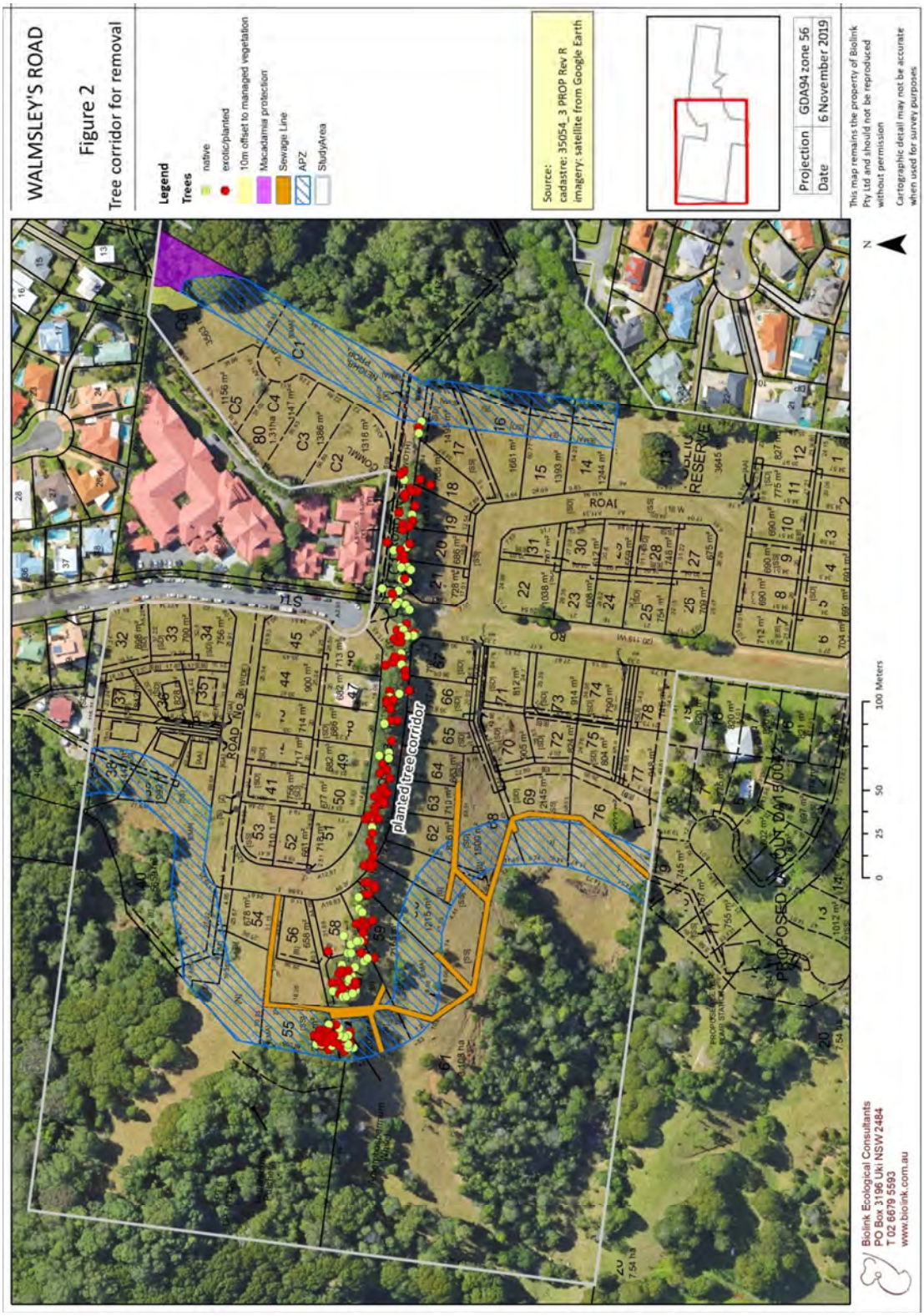

Figure 3a: Tree Location Planted Windbreak - Section 1

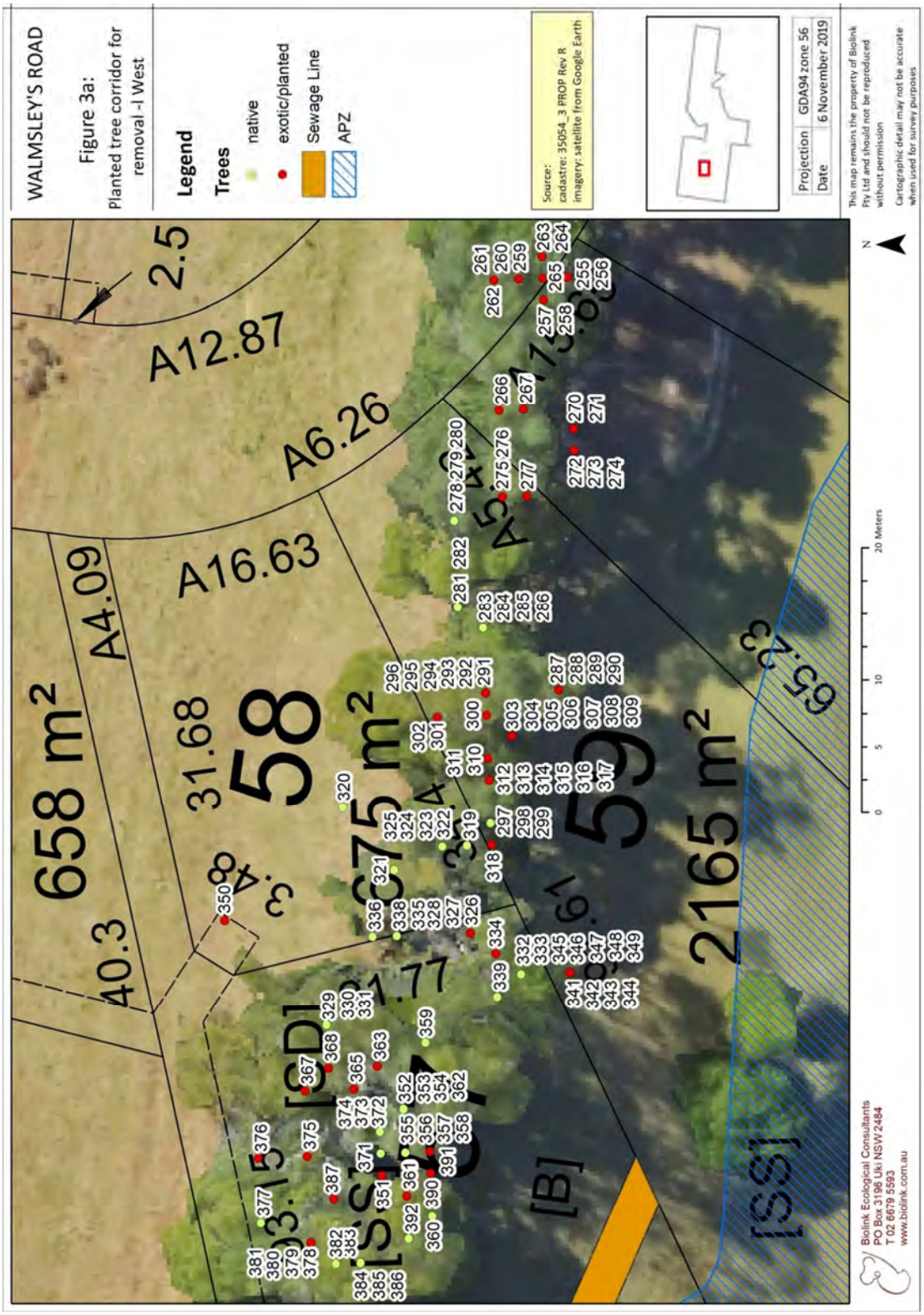

Figure 3b: Tree Location Planted Windbreak - Section 2

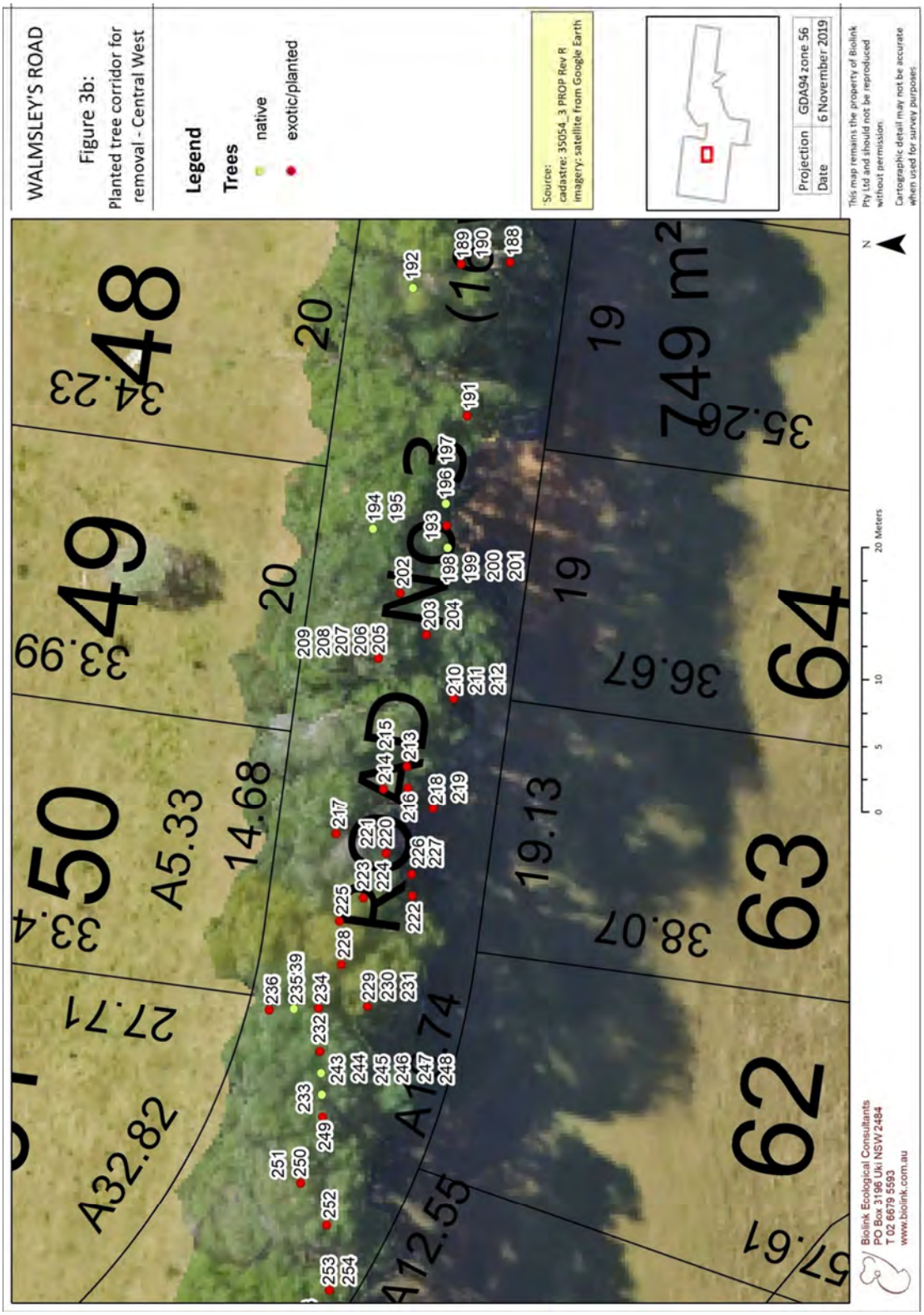

Figure 3c: Tree Location Planted Windbreak - Section 3

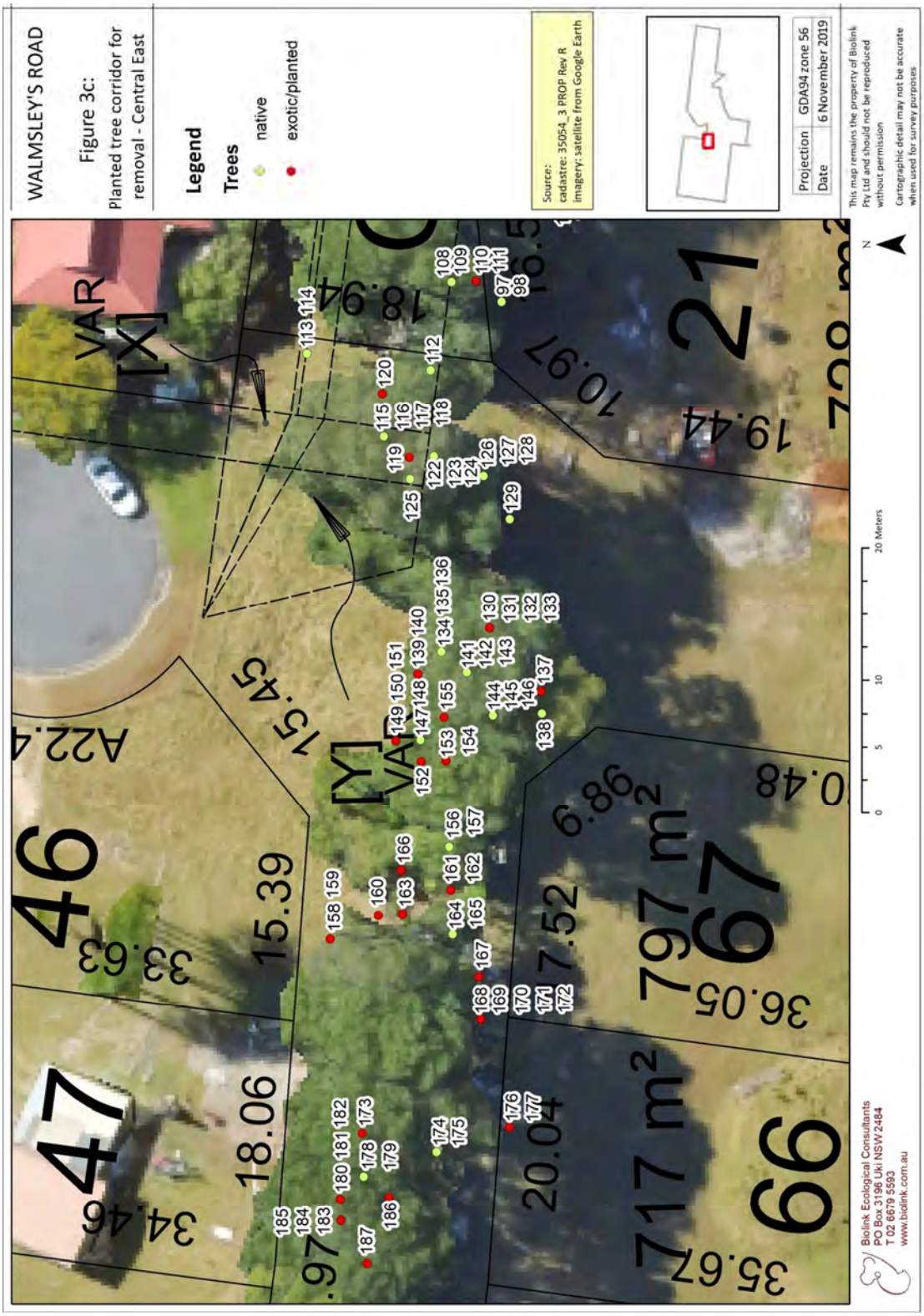

Figure 3d: Tree Location Planted Windbreak - Section 4

Figure 4: Tree Removal - Asset Protection Zone

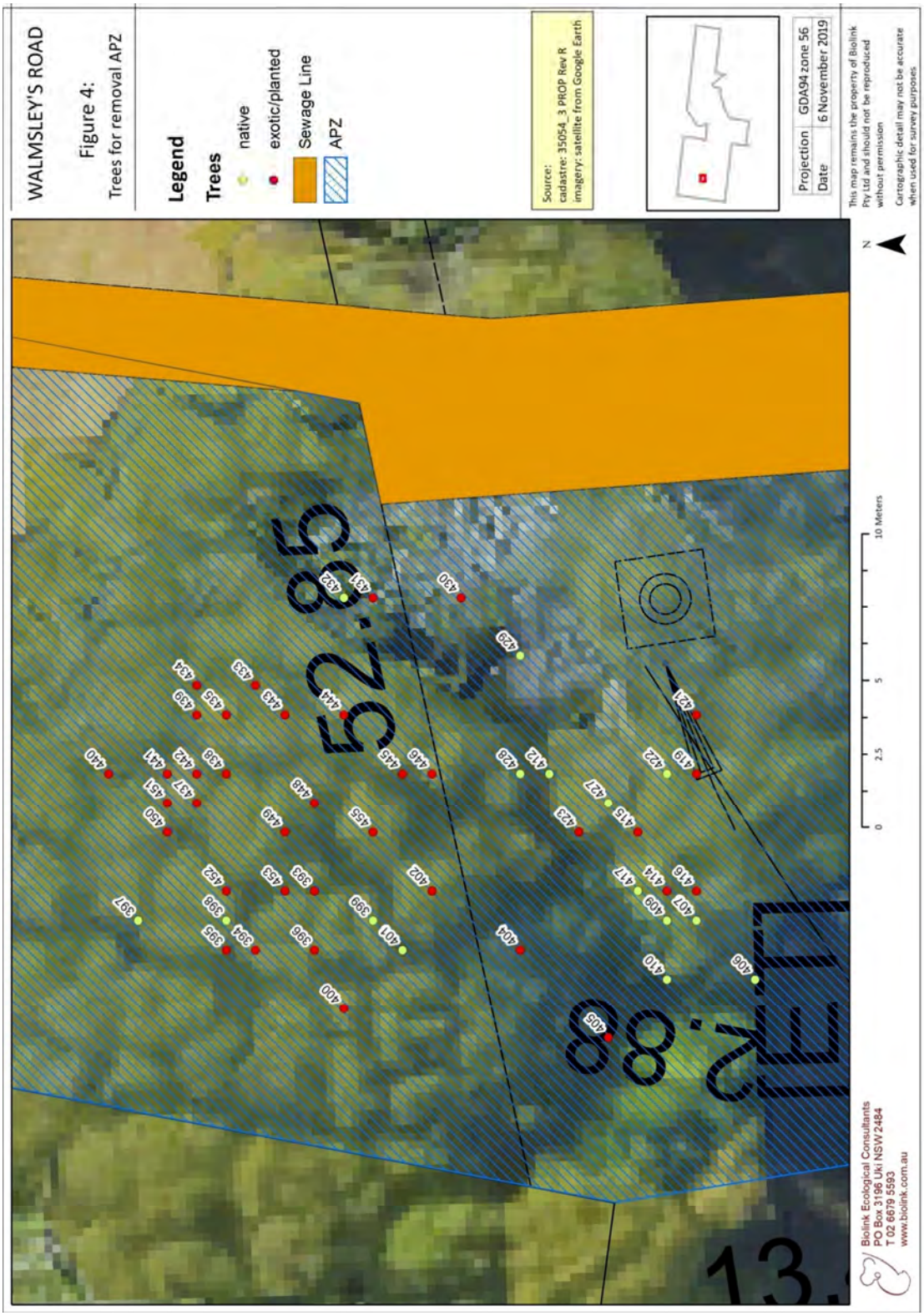

Figure 5: Tree Removal - Sewer Line and adjacent Asset Protection Zone

APPENDIX 1: Tree Removal Schedule

Tree No.	Species - Scientific Name	Common Name	Latitude	Longitude	Height (m)	Notes
1	*Cinnamomum camphora*	Camphor Laurel	S 28º11.721'	E 153º29.711'	4	
2	*Guioa semiglauca*	Guioa	S 28º11.721'	E 153º29.711'	2.3	
3	*Cinnamomum camphora*	Camphor Laurel	S 28º11.720'	E 153º29.709'	9	3 stems dead
4	*Cinnamomum camphora*	Camphor Laurel	S 28º11.720'	E 153º29.707'	4	
5	*Cinnamomum camphora*	Camphor Laurel	S 28º11.720'	E 153º29.707'	4	
6	*Macaranga tanarius*	Macaranga	S 28º11.720'	E 153º29.707'	3.75	
7	*Cinnamomum camphora*	Camphor Laurel	S 28º11.715'	E 153º29.691'	5	
8	*Guioa semiglauca*	Guioa	S 28º11.715'	E 153º29.691'	4.5	
9	*Cinnamomum camphora*	Camphor Laurel	S 28º11.715'	E 153º29.694'	5	
10	*Cinnamomum camphora*	Camphor Laurel	S 28º11.715'	E 153º29.694'	4	
11	*Cinnamomum camphora*	Camphor Laurel	S 28º11.715'	E 153º29.694'	4	
12	*Cinnamomum camphora*	Camphor Laurel	S 28º11.715'	E 153º29.694'	3	
13	*Cinnamomum camphora*	Camphor Laurel	S 28º11.715'	E 153º29.694'	4	
14	*Cinnamomum camphora*	Camphor Laurel	S 28º11.715'	E 153º29.694'	6	
15	*Cinnamomum camphora*	Camphor Laurel	S 28º11.715'	E 153º29.694'	4	
16	*Cinnamomum camphora*	Camphor Laurel	S 28º11.715'	E 153º29.686'	5	Dead
17	*Cinnamomum camphora*	Camphor Laurel	S 28º11.715'	E 153º29.686'	4.5	
18	*Cinnamomum camphora*	Camphor Laurel	S 28º11.714'	E 153º29.693'	6	
19	*Cinnamomum camphora*	Camphor Laurel	S 28º11.714'	E 153º29.693'	5	
20	*Cinnamomum camphora*	Camphor Laurel	S 28º11.714'	E 153º29.693'	5	
21	*Cinnamomum camphora*	Camphor Laurel	S 28º11.714'	E 153º29.693'	5	
22	*Cinnamomum camphora*	Camphor Laurel	S 28º11.714'	E 153º29.693'	6	
23	*Cinnamomum camphora*	Camphor Laurel	S 28º11.720'	E 153º29.691'	5	2 stems dead
24	*Cinnamomum camphora*	Camphor Laurel	S 28º11.720'	E 153º29.691'	4.5	
25	*Cinnamomum camphora*	Camphor Laurel	S 28º11.720'	E 153º29.691'	1.7	
26	*Cinnamomum camphora*	Camphor Laurel	S 28º11.719'	E 153º29.687'	5	Main stem dead
27	*Cinnamomum camphora*	Camphor Laurel	S 28º11.717'	E 153º29.688'	5	

Tree No.	Species - Scientific Name	Common Name	Latitude	Longitude	Height (m)	Notes
28	*Cinnamomum camphora*	Camphor Laurel	S 28º11.717'	E 153º29.688'	6	
29	*Cinnamomum camphora*	Camphor Laurel	S 28º11.723'	E 153º29.689'	6	
30	*Cinnamomum camphora*	Camphor Laurel	S 28º11.723'	E 153º29.689'	3	
31	*Cinnamomum camphora*	Camphor Laurel	S 28º11.723'	E 153º29.689'	6	
32	*Melaleuca quinquenervia*	Broad-leaved Paperbark	S 28º11.723'	E 153º29.689'	10	Dead, Orange Cockspur all way to top
33	*Cinnamomum camphora*	Camphor Laurel	S 28º11.723'	E 153º29.689'	7	
34	*Cinnamomum camphora*	Camphor Laurel	S 28º11.723'	E 153º29.689'	4	
35	*Cinnamomum camphora*	Camphor Laurel	S 28º11.717'	E 153º29.687'	5	
36	*Cinnamomum camphora*	Camphor Laurel	S 28º11.717'	E 153º29.687'	4	
37	*Syncarpia glomulifera*	Turpentine	S 28º11.715'	E 153º29.685'	11	
38	*Syncarpia glomulifera*	Turpentine	S 28º11.717'	E 153º29.679'	8	
39	*Macaranga tanarius*	Macaranga	S 28º11.717'	E 153º29.679'	5	
40	*Jagera pseudorhus*	Foambark	S 28º11.717'	E 153º29.679'	2	
41	*Cinnamomum camphora*	Camphor Laurel	S 28º11.718'	E 153º29.682'	5	
42	*Cinnamomum camphora*	Camphor Laurel	S 28º11.718'	E 153º29.682'	4	
43	*Cinnamomum camphora*	Camphor Laurel	S 28º11.718'	E 153º29.682'	5	
44	*Cinnamomum camphora*	Camphor Laurel	S 28º11.718'	E 153º29.682'	5	
45	*Cinnamomum camphora*	Camphor Laurel	S 28º11.718'	E 153º29.682'	6	
46	*Cinnamomum camphora*	Camphor Laurel	S 28º11.715'	E 153º29.686'	5	Main stem dead
47	*Syncarpia glomulifera*	Turpentine	S 28º11.715'	E 153º29.686'	8	
48	*Syzygium oleosum*	Blue Lilly Pilly	S 28º11.715'	E 153º29.686'	5	
49	*Cinnamomum camphora*	Camphor Laurel	S 28º11.715'	E 153º29.686'	5	
50	*Cinnamomum camphora*	Camphor Laurel	S 28º11.715'	E 153º29.686'	5	Main stem dead
51	*Cinnamomum camphora*	Camphor Laurel	S 28º11.713'	E 153º29.680'	7	
52	*Syncarpia glomulifera*	Turpentine	S 28º11.713'	E 153º29.680'	6.5	Dead

Tree No.	Species - Scientific Name	Common Name	Latitude	Longitude	Height (m)	Notes
53	*Cinnamomum camphora*	Camphor Laurel	S 28º11.713'	E 153º29.680'	3.5	
54	*Cinnamomum camphora*	Camphor Laurel	S 28º11.713'	E 153º29.680'	10	
55	*Cinnamomum camphora*	Camphor Laurel	S 28º11.717'	E 153º29.677'	7	
56	*Cinnamomum camphora*	Camphor Laurel	S 28º11.717'	E 153º29.677'	9	One stem dead
57	*Syncarpia glomulifera*	Turpentine	S 28º11.714'	E 153º29.676'	10	
58	*Cupaniopsis anacardioides*	Tuckeroo	S 28º11.716'	E 153º29.675'	5	
59	*Cupaniopsis anacardioides*	Tuckeroo	S 28º11.716'	E 153º29.675'	4.5	
60	*Cinnamomum camphora*	Camphor Laurel	S 28º11.716'	E 153º29.675'	7	
61	*Cupaniopsis anacardioides*	Tuckeroo	S 28º11.716'	E 153º29.675'	3	
62	*Cinnamomum camphora*	Camphor Laurel	S 28º11.716'	E 153º29.675'	6	
63	*Syncarpia glomulifera*	Turpentine	S 28º11.716'	E 153º29.675'	13	
64	*Ligustrum lucidum*	Broad-leaved Privet	S 28º11.714'	E 153º29.674'	3.5	
65	*Syncarpia glomulifera*	Turpentine	S 28º11.714'	E 153º29.674'	6.5	
66	*Guioa semiglauca*	Guioa	S 28º11.714'	E 153º29.674'	5	
67	*Guioa semiglauca*	Guioa	S 28º11.714'	E 153º29.674'	4.5	
68	*Syncarpia glomulifera*	Turpentine	S 28º11.714'	E 153º29.674'	5	Dead
69	*Cinnamomum camphora*	Camphor Laurel	S 28º11.714'	E 153º29.674'	10	Possum scats underneath
70	*Mallotus philippensis*	Red Kamala	S 28º11.711'	E 153º29.667'	4	
71	*Mallotus philippensis*	Red Kamala	S 28º11.711'	E 153º29.667'	4	
72	*Cupaniopsis anacardioides*	Tuckeroo	S 28º11.711'	E 153º29.667'	2.5	
73	*Notelaea longifolia*	Mock Olive	S 28º11.711'	E 153º29.667'	7	
74	*Guioa semiglauca*	Guioa	S 28º11.715'	E 153º29.668'	4.5	
75	*Syncarpia glomulifera*	Turpentine	S 28º11.715'	E 153º29.668'	13	
76	*Alectryon tomentosa*	Hairy Birds Eye	S 28º11.715'	E 153º29.668'	4	
77	*Ficus fraseri*	Sandpaper Fig	S 28º11.709'	E 153º29.670'	2	
78	*Syncarpia glomulifera*	Turpentine	S 28º11.709'	E 153º29.670'	13	

Tree No.	Species - Scientific Name	Common Name	Latitude	Longitude	Height (m)	Notes
79	*Clerodendrum floribundum*	Smooth Clerodendrum	S 28º11.716'	E 153º29.669'	3.5	
80	*Synoum glandulosum*	Scentless Rosewood	S 28º11.716'	E 153º29.669'	1.5	
81	*Cinnamomum camphora*	Camphor Laurel	S 28º11.716'	E 153º29.669'	9	
82	*Syncarpia glomulifera*	Turpentine	S 28º11.713'	E 153º29.667'	15	
83	*Lepiderima pulchella*	Fine-leaved Tuckeroo	S 28º11.713'	E 153º29.667'	3	
84	*Cupaniopsis anacardioides*	Tuckeroo	S 28º11.713'	E 153º29.667'	3	
85	*Duranta repens*	Geisha Girl, Duranta	S 28º11.713'	E 153º29.667'	3.5	
86	*Syncarpia glomulifera*	Turpentine	S 28º11.713'	E 153º29.664'	15	
87	*Duranta repens*	Geisha Girl, Duranta	S 28º11.713'	E 153º29.664'	2	
88	*Cinnamomum camphora*	Camphor Laurel	S 28º11.714'	E 153º29.665'	9	
89	*Ligustrum lucidum*	Broad-leaved Privet	S 28º11.714'	E 153º29.665'	5	
90	*Syncarpia glomulifera*	Turpentine	S 28º11.714'	E 153º29.665'	13	
91	*Cinnamomum camphora*	Camphor Laurel	S 28º11.713'	E 153º29.662'	8	
92	*Syzygium smithii*	Lilly Pilly	S 28º11.713'	E 153º29.662'	3	
93	*Syncarpia glomulifera*	Turpentine	S 28º11.714'	E 153º29.663'	13	
94	*Ligustrum lucidum*	Broad-leaved Privet	S 28º11.714'	E 153º29.663'	3.5	
95	*Ligustrum lucidum*	Broad-leaved Privet	S 28º11.714'	E 153º29.663'	4	
96	*Cinnamomum camphora*	Camphor Laurel	S 28º11.714'	E 153º29.663'	8	
97	*Synoum glandulosum*	Scentless Rosewood	S 28º11.715'	E 153º29.656'	4	
98	*Synoum glandulosum*	Scentless Rosewood	S 28º11.715'	E 153º29.656'	6	
99	*Syncarpia glomulifera*	Turpentine	S 28º11.715'	E 153º29.661'	17	Possum observed in tree
100	*Synoum glandulosum*	Scentless Rosewood	S 28º11.715'	E 153º29.661'	3	Lots of rainforest seedlings-juveniles between tree

Tree No.	Species - Scientific Name	Common Name	Latitude	Longitude	Height (m)	Notes
						100 and 113
101	*Synoum glandulosum*	Scentless Rosewood	S 28º11.715'	E 153º29.661'	5	
102	*Synoum glandulosum*	Scentless Rosewood	S 28º11.715'	E 153º29.661'	8	
103	*Synoum glandulosum*	Scentless Rosewood	S 28º11.715'	E 153º29.661'	4	
104	*Synoum glandulosum*	Scentless Rosewood	S 28º11.716'	E 153º29.660'	6	
105	*Synoum glandulosum*	Scentless Rosewood	S 28º11.716'	E 153º29.660'	5	
106	*Synoum glandulosum*	Scentless Rosewood	S 28º11.713'	E 153º29.661'	4.5	
107	*Synoum glandulosum*	Scentless Rosewood	S 28º11.713'	E 153º29.661'	5	
108	*Synoum glandulosum*	Scentless Rosewood	S 28º11.713'	E 153º29.657'	5	
109	*Synoum glandulosum*	Scentless Rosewood	S 28º11.713'	E 153º29.657'	6	
110	*Synoum glandulosum*	Scentless Rosewood	S 28º11.714'	E 153º29.657'	7	
111	*Syncarpia glomulifera*	Turpentine	S 28º11.714'	E 153º29.657'	16	
112	*Synoum glandulosum*	Scentless Rosewood	S 28º11.712'	E 153º29.653'	3.5	
113	*Syncarpia glomulifera*	Turpentine	S 28º11.707'	E 153º29.654'	15	
114	*Cupaniopsis anacardioides*	Tuckeroo	S 28º11.707'	E 153º29.654'	3.75	
115	*Synoum glandulosum*	Scentless Rosewood	S 28º11.710'	E 153º29.650'	3.5	
116	*Ligustrum lucidum*	Broad-leaved Privet	S 28º11.710'	E 153º29.650'	2	
117	*Jagera pseudorhus*	Foambark	S 28º11.710'	E 153º29.650'	1.8	
118	*Synoum glandulosum*	Scentless Rosewood	S 28º11.710'	E 153º29.650'	5.5	
119	*Syncarpia glomulifera*	Turpentine	S 28º11.711'	E 153º29.649'	15	
120	*Syncarpia glomulifera*	Turpentine	S 28º11.710'	E 153º29.652'	13	
121	*Ligustrum lucidum*	Broad-leaved Privet	S 28º11.710'	E 153º29.652'	3.5	
122	*Synoum glandulosum*	Scentless Rosewood	S 28º11.712'	E 153º29.649'	5	
123	*Mallotus philippensis*	Red Kamala	S 28º11.712'	E 153º29.649'	10	
124	*Synoum glandulosum*	Scentless Rosewood	S 28º11.712'	E 153º29.649'	2	
125	*Cupaniopsis anacardioides*	Tuckeroo	S 28º11.711'	E 153º29.648'	6	
126	*Guioa semiglauca*	Guioa	S 28º11.714'	E 153º29.648'	3.5	

Tree No.	Species - Scientific Name	Common Name	Latitude	Longitude	Height (m)	Notes
127	*Guioa semiglauca*	Guioa	S 28º11.714'	E 153º29.648'	4.5	
128	*Synoum glandulosum*	Scentless Rosewood	S 28º11.714'	E 153º29.648'	3.5	
129	*Cinnamomum virens*	Red-barked Sassafras	S 28º11.715'	E 153º29.646'	9	Rust infection
130	*Cinnamomum camphora*	Camphor Laurel	S 28º11.714'	E 153º29.641'	6	
131	*Cinnamomum camphora*	Camphor Laurel	S 28º11.714'	E 153º29.641'	4	
132	*Cinnamomum camphora*	Camphor Laurel	S 28º11.714'	E 153º29.641'	4	
133	*Cinnamomum camphora*	Camphor Laurel	S 28º11.714'	E 153º29.641'	7	
134	*Jagera pseudorhus*	Foambark	S 28º11.712'	E 153º29.640'	6	
135	*Cupaniopsis anacardioides*	Tuckeroo	S 28º11.712'	E 153º29.640'	3	
136	*Alectryon tomentosa*	Hairy Birds Eye	S 28º11.712'	E 153º29.640'	5	
137	*Cinnamomum camphora*	Camphor Laurel	S 28º11.716'	E 153º29.638'	3.5	
138	*Alectryon tomentosa*	Hairy Birds Eye	S 28º11.716'	E 153º29.637'	3.5	
139	*Syncarpia glomulifera*	Turpentine	S 28º11.711'	E 153º29.639'	15	
140	*Cinnamomum camphora*	Camphor Laurel	S 28º11.711'	E 153º29.639'	9	
141	*Cinnamomum camphora*	Camphor Laurel	S 28º11.713'	E 153º29.639'	10	
142	*Cinnamomum camphora*	Camphor Laurel	S 28º11.713'	E 153º29.639'	6	
143	*Jagera pseudorhus*	Foambark	S 28º11.713'	E 153º29.639'	3.5	
144	*Cinnamomum camphora*	Camphor Laurel	S 28º11.714'	E 153º29.637'	10	
145	*Cinnamomum camphora*	Camphor Laurel	S 28º11.714'	E 153º29.637'	9	
146	*Guioa semiglauca*	Guioa	S 28º11.714'	E 153º29.637'	2.5	
147	*Guioa semiglauca*	Guioa	S 28º11.711'	E 153º29.636'	3.5	
148	*Guioa semiglauca*	Guioa	S 28º11.711'	E 153º29.636'	4.5	
149	*Syncarpia glomulifera*	Turpentine	S 28º11.710'	E 153º29.636'	9	Dead; hollows in use
150	*Cinnamomum camphora*	Camphor Laurel	S 28º11.710'	E 153º29.636'	2.5	
151	*Cinnamomum camphora*	Camphor Laurel	S 28º11.710'	E 153º29.636'	6	
152	*Cinnamomum camphora*	Camphor Laurel	S 28º11.711'	E 153º29.635'	6	

Tree No.	Species - Scientific Name	Common Name	Latitude	Longitude	Height (m)	Notes
153	*Syncarpia glomulifera*	Turpentine	S 28º11.712'	E 153º29.635'	15	Nest or dray
154	*Cinnamomum camphora*	Camphor Laurel	S 28º11.712'	E 153º29.635'	2.5	
155	*Cinnamomum camphora*	Camphor Laurel	S 28º11.712'	E 153º29.637'	5	
156	*Schefflera actinophylla*	Umbrella Tree	S 28º11.712'	E 153º29.631'	4	
157	*Cupaniopsis anacardioides*	Tuckeroo	S 28º11.712'	E 153º29.631'	3.5	Dead
158	*Syncarpia glomulifera*	Turpentine	S 28º11.707'	E 153º29.627'	3.5	
159	*Cinnamomum camphora*	Camphor Laurel	S 28º11.707'	E 153º29.627'	5	
160	*Syncarpia glomulifera*	Turpentine	S 28º11.709'	E 153º29.628'	5.5	
161	*Schefflera actinophylla*	Umbrella Tree	S 28º11.712'	E 153º29.629'	4.5	
162	*Cinnamomum camphora*	Camphor Laurel	S 28º11.712'	E 153º29.629'	7	
163	*Syncarpia glomulifera*	Turpentine	S 28º11.710'	E 153º29.628'	9	
164	*Ficus macrophylla*	Moreton Bay Fig	S 28º11.712'	E 153º29.627'	7	
165	*Jagera pseudorhus*	Foambark	S 28º11.712'	E 153º29.627'	9	
166	*Syagrus romanzoffiana*	Cocos Palm	S 28º11.710'	E 153º29.630'	7 to 9	Plants outliers - north of main band of vegetation
167	*Syncarpia glomulifera*	Turpentine	S 28º11.713'	E 153º29.625'	15	Hollows in use
168	*Cinnamomum camphora*	Camphor Laurel	S 28º11.713'	E 153º29.623'	8	
169	*Cinnamomum camphora*	Camphor Laurel	S 28º11.713'	E 153º29.623'	6	
170	*Cupaniopsis anacardioides*	Tuckeroo	S 28º11.713'	E 153º29.623'	5	
171	*Syncarpia glomulifera*	Turpentine	S 28º11.713'	E 153º29.623'	13	
172	*Cinnamomum camphora*	Camphor Laurel	S 28º11.713'	E 153º29.623'	8	
173	*Syncarpia glomulifera*	Turpentine	S 28º11.708'	E 153º29.618'	7	Dead
174	*Syncarpia glomulifera*	Turpentine	S 28º11.711'	E 153º29.617'	11	
175	*Apananthe philipiensis*	Native Elm	S 28º11.711'	E 153º29.617'	3.5	
176	*Cupaniopsis anacardioides*	Tuckeroo	S 28º11.714'	E 153º29.618'	3	

Tree No.	Species - Scientific Name	Common Name	Latitude	Longitude	Height (m)	Notes
177	*Syncarpia glomulifera*	Turpentine	S 28º11.714'	E 153º29.618'	7	Dead; hollows in use
178	*Syncarpia glomulifera*	Turpentine	S 28º11.708'	E 153º29.616'	15	
179	*Cupaniopsis anacardioides*	Tuckeroo	S 28º11.708'	E 153º29.616'	4.5	
180	*Syncarpia glomulifera*	Turpentine	S 28º11.707'	E 153º29.615'	16	
181	*Cinnamomum camphora*	Camphor Laurel	S 28º11.707'	E 153º29.615'	3.5	
182	*Cinnamomum camphora*	Camphor Laurel	S 28º11.707'	E 153º29.615'	6	
183	*Syncarpia glomulifera*	Turpentine	S 28º11.707'	E 153º29.614'	14	Planted
184	*Schefflera actinophylla*	Umbrella Tree	S 28º11.707'	E 153º29.614'	4.5	
185	*Cinnamomum camphora*	Camphor Laurel	S 28º11.707'	E 153º29.614'	5	
186	*Syncarpia glomulifera*	Turpentine	S 28º11.709'	E 153º29.615'	14	
187	*Syncarpia glomulifera*	Turpentine	S 28º11.708'	E 153º29.612'	15	
188	*Syncarpia glomulifera*	Turpentine	S 28º11.710'	E 153º29.608'	14	Hollows in use
189	*Syncarpia glomulifera*	Turpentine	S 28º11.708'	E 153º29.608'	12	
190	*Syncarpia glomulifera*	Turpentine	S 28º11.708'	E 153º29.608'	12	Hollows in use
191	*Syncarpia glomulifera*	Turpentine	S 28º11.708'	E 153º29.601'	13	
192	*Mallotus philippensis*	Red Kamala	S 28º11.706'	E 153º29.607'	3	
193	*Syncarpia glomulifera*	Turpentine	S 28º11.707'	E 153º29.596'	12	
194	*Syncarpia glomulifera*	Turpentine	S 28º11.704'	E 153º29.596'	12	
195	*Alectryon tomentosa*	Hairy Birds Eye	S 28º11.704'	E 153º29.596'	3.5	
196	*Syncarpia glomulifera*	Turpentine	S 28º11.707'	E 153º29.597'	12	
197	*Alectryon tomentosa*	Hairy Birds Eye	S 28º11.707'	E 153º29.597'	4	Dead
198	*Cinnamomum camphora*	Camphor Laurel	S 28º11.707'	E 153º29.595'	6	
199	*Cinnamomum camphora*	Camphor Laurel	S 28º11.707'	E 153º29.595'	5	
200	*Cupaniopsis anacardioides*	Tuckeroo	S 28º11.707'	E 153º29.595'	5	
201	*Cupaniopsis anacardioides*	Tuckeroo	S 28º11.707'	E 153º29.595'	6	
202	*Syncarpia glomulifera*	Turpentine	S 28º11.705'	E 153º29.593'	14	

Tree No.	Species - Scientific Name	Common Name	Latitude	Longitude	Height (m)	Notes
203	*Syncarpia glomulifera*	Turpentine	S 28º11.706'	E 153º29.591'	11	One stem dead; hollows in use
204	*Cinnamomum camphora*	Camphor Laurel	S 28º11.706'	E 153º29.591'	6	
205	*Syncarpia glomulifera*	Turpentine	S 28º11.704'	E 153º29.590'	11	
206	*Ligustrum lucidum*	Broad-leaved Privet	S 28º11.704'	E 153º29.590'	3.5	
207	*Cupaniopsis anacardioides*	Tuckeroo	S 28º11.704'	E 153º29.590'	4	
208	*Mallotus philippensis*	Red Kamala	S 28º11.704'	E 153º29.590'	5	
209	*Cinnamomum camphora*	Camphor Laurel	S 28º11.704'	E 153º29.590'	6	
210	*Syncarpia glomulifera*	Turpentine	S 28º11.707'	E 153º29.588'	12	
211	*Cupaniopsis anacardioides*	Tuckeroo	S 28º11.707'	E 153º29.588'	9	
212	*Cinnamomum camphora*	Camphor Laurel	S 28º11.707'	E 153º29.588'	3.5	Dead
213	*Syncarpia glomulifera*	Turpentine	S 28º11.705'	E 153º29.585'	9	
214	*Cinnamomum camphora*	Camphor Laurel	S 28º11.704'	E 153º29.584'	6	
215	*Syncarpia glomulifera*	Turpentine	S 28º11.704'	E 153º29.584'	9	
216	*Cinnamomum camphora*	Camphor Laurel	S 28º11.705'	E 153º29.584'	7	
217	*Syncarpia glomulifera*	Turpentine	S 28º11.702'	E 153º29.582'	14	
218	*Cinnamomum camphora*	Camphor Laurel	S 28º11.706'	E 153º29.583'	5	
219	*Syncarpia glomulifera*	Turpentine	S 28º11.706'	E 153º29.583'	12	
220	*Cinnamomum camphora*	Camphor Laurel	S 28º11.704'	E 153º29.581'	7	
221	*Cinnamomum camphora*	Camphor Laurel	S 28º11.704'	E 153º29.581'	10	
222	*Cinnamomum camphora*	Camphor Laurel	S 28º11.705'	E 153º29.579'	7	
223	*Cinnamomum camphora*	Camphor Laurel	S 28º11.703'	E 153º29.579'	6	Dead
223	*Cinnamomum camphora*	Camphor Laurel	S 28º11.703'	E 153º29.579'	12	
224	*Cinnamomum camphora*	Camphor Laurel	S 28º11.702'	E 153º29.578'	12	
226	*Cinnamomum camphora*	Camphor Laurel	S 28º11.705'	E 153º29.580'	9	
227	*Cinnamomum camphora*	Camphor Laurel	S 28º11.705'	E 153º29.580'	6	
228	*Cinnamomum camphora*	Camphor Laurel	S 28º11.702'	E 153º29.576'	4	

Tree No.	Species - Scientific Name	Common Name	Latitude	Longitude	Height (m)	Notes
229	*Syncarpia glomulifera*	Turpentine	S 28º11.703'	E 153º29.574'	7	One stem dead
230	*Cinnamomum camphora*	Camphor Laurel	S 28º11.703'	E 153º29.574'	5	
231	*Cinnamomum camphora*	Camphor Laurel	S 28º11.703'	E 153º29.574'	7.5	
232	*Mallotus philippensis*	Red Kamala	S 28º11.701'	E 153º29.570'	2	
233	*Mallotus philippensis*	Red Kamala	S 28º11.701'	E 153º29.570'	3.5	
234	*Syncarpia glomulifera*	Turpentine	S 28º11.701'	E 153º29.574'	12.5	
235	*Guioa semiglauca*	Guioa	S 28º11.700'	E 153º29.574'	3.5	
236	*Cinnamomum camphora*	Camphor Laurel	S 28º11.699'	E 153º29.574'	3.5	Chopped off with numerous reshoots
237	*Cinnamomum camphora*	Camphor Laurel	S 28º11.699'	E 153º29.574'	8	
238	*Cinnamomum camphora*	Camphor Laurel	S 28º11.699'	E 153º29.574'	5	
239	*Syncarpia glomulifera*	Turpentine	S 28º11.700'	E 153º29.575'	6	
240	*Cinnamomum camphora*	Camphor Laurel	S 28º11.700'	E 153º29.575'	8	
241	*Cinnamomum camphora*	Camphor Laurel	S 28º11.700'	E 153º29.575'	5	
242	*Cinnamomum camphora*	Camphor Laurel	S 28º11.700'	E 153º29.575'	8.5	
243	*Syncarpia glomulifera*	Turpentine	S 28º11.701'	E 153º29.572'	12	
244	*Cinnamomum camphora*	Camphor Laurel	S 28º11.701'	E 153º29.572'	7.5	
245	*Syncarpia glomulifera*	Turpentine	S 28º11.701'	E 153º29.571'	12	
246	*Cinnamomum camphora*	Camphor Laurel	S 28º11.701'	E 153º29.571'	8	
247	*Syncarpia glomulifera*	Turpentine	S 28º11.701'	E 153º29.571'	13	
248	*Cupaniopsis anacardioides*	Tuckeroo	S 28º11.701'	E 153º29.571'	3.5	
249	*Syncarpia glomulifera*	Turpentine	S 28º11.701'	E 153º29.569'	14	
250	*Cinnamomum camphora*	Camphor Laurel	S 28º11.700'	E 153º29.566'	3.5	
251	*Syncarpia glomulifera*	Turpentine	S 28º11.700'	E 153º29.566'	14	
252	*Cinnamomum camphora*	Camphor Laurel	S 28º11.701'	E 153º29.564'	6	
253	*Flindersia australis*	Teak	S 28º11.701'	E 153º29.561'	2.5	

Tree No.	Species - Scientific Name	Common Name	Latitude	Longitude	Height (m)	Notes
254	*Syncarpia glomulifera*	Turpentine	S 28º11.701'	E 153º29.561'	9	
255	*Syncarpia glomulifera*	Turpentine	S 28º11.701'	E 153º29.558'	13	
256	*Cinnamomum camphora*	Camphor Laurel	S 28º11.701'	E 153º29.558'	6	
257	*Cupaniopsis anacardioides*	Tuckeroo	S 28º11.700'	E 153º29.557'	2.5	
258	*Syncarpia glomulifera*	Turpentine	S 28º11.700'	E 153º29.557'	13	
259	*Syncarpia glomulifera*	Turpentine	S 28º11.699'	E 153º29.558'	13	
260	*Guioa semiglauca*	Guioa	S 28º11.699'	E 153º29.558'	5	
261	*Cinnamomum camphora*	Camphor Laurel	S 28º11.699'	E 153º29.558'	4	
262	*Cinnamomum camphora*	Camphor Laurel	S 28º11.698'	E 153º29.558'	7	
263	*Syncarpia glomulifera*	Turpentine	S 28º11.700'	E 153º29.559'	13	
264	*Cinnamomum camphora*	Camphor Laurel	S 28º11.700'	E 153º29.559'	5	
265	*Syncarpia glomulifera*	Turpentine	S 28º11.700'	E 153º29.558'	12	
266	*Cinnamomum camphora*	Camphor Laurel	S 28º11.698'	E 153º29.552'	7	
267	*Cinnamomum camphora*	Camphor Laurel	S 28º11.699'	E 153º29.552'	9	
268	*Cinnamomum camphora*	Camphor Laurel	S 28º11.699'	E 153º29.552'	2.5	
269	*Syncarpia glomulifera*	Turpentine	S 28º11.699'	E 153º29.552'	9	
270	*Syncarpia glomulifera*	Turpentine	S 28º11.701'	E 153º29.551'	15	
271	*Cinnamomum camphora*	Camphor Laurel	S 28º11.701'	E 153º29.551'	3.5	
272	*Cinnamomum camphora*	Camphor Laurel	S 28º11.701'	E 153º29.550'	7	
273	*Cinnamomum camphora*	Camphor Laurel	S 28º11.701'	E 153º29.550'	5	
274	*Cinnamomum camphora*	Camphor Laurel	S 28º11.701'	E 153º29.550'	2.5	
275	*Cinnamomum camphora*	Camphor Laurel	S 28º11.698'	E 153º29.548'	3.5	
276	*Cinnamomum camphora*	Camphor Laurel	S 28º11.698'	E 153º29.548'	8	
277	*Cinnamomum camphora*	Camphor Laurel	S 28º11.699'	E 153º29.548'	11	Hollows in use
278	*Guioa semiglauca*	Guioa	S 28º11.696'	E 153º29.547'	3.5	
279	*Guioa semiglauca*	Guioa	S 28º11.696'	E 153º29.547'	3.5	
280	*Guioa semiglauca*	Guioa	S 28º11.696'	E 153º29.547'	3.5	

Tree No.	Species - Scientific Name	Common Name	Latitude	Longitude	Height (m)	Notes
281	*Cinnamomum camphora*	Camphor Laurel	S 28º11.696'	E 153º29.543'	6.5	
282	*Acacia melanoxylon*	Blackwood	S 28º11.696'	E 153º29.543'	5	
283	*Guioa semiglauca*	Guioa	S 28º11.697'	E 153º29.542'	4.5	
284	*Cinnamomum camphora*	Camphor Laurel	S 28º11.697'	E 153º29.542'	5.5	
285	*Cinnamomum camphora*	Camphor Laurel	S 28º11.697'	E 153º29.542'	3.5	
286	*Alectryon tomentosa*	Hairy Birds Eye	S 28º11.697'	E 153º29.542'	3	
287	*Cinnamomum camphora*	Camphor Laurel	S 28º11.700'	E 153º29.539'	10	
288	*Cinnamomum camphora*	Camphor Laurel	S 28º11.700'	E 153º29.539'	10	Hollows in use
289	*Cinnamomum camphora*	Camphor Laurel	S 28º11.700'	E 153º29.539'	10	
290	*Cinnamomum camphora*	Camphor Laurel	S 28º11.700'	E 153º29.539'	5.5	
291	*Cinnamomum camphora*	Camphor Laurel	S 28º11.697'	E 153º29.539'	10	
292	*Guioa semiglauca*	Guioa	S 28º11.697'	E 153º29.539'	5.5	
293	*Cinnamomum camphora*	Camphor Laurel	S 28º11.697'	E 153º29.539'	7	
294	*Mallotus philippensis*	Red Kamala	S 28º11.697'	E 153º29.539'	5	
295	*Cupaniopsis anacardioides*	Tuckeroo	S 28º11.697'	E 153º29.539'	5	
296	*Cinnamomum camphora*	Camphor Laurel	S 28º11.697'	E 153º29.539'	9	
297	*Guioa semiglauca*	Guioa	S 28º11.697'	E 153º29.533'	9	
298	*Cinnamomum camphora*	Camphor Laurel	S 28º11.697'	E 153º29.533'	7.5	
299	*Guioa semiglauca*	Guioa	S 28º11.697'	E 153º29.533'	3.5	
300	*Cinnamomum camphora*	Camphor Laurel	S 28º11.697'	E 153º29.538'	12	
301	*Cinnamomum camphora*	Camphor Laurel	S 28º11.695'	E 153º29.538'	7	
302	*Cinnamomum camphora*	Camphor Laurel	S 28º11.695'	E 153º29.538'	5.5	
303	*Cinnamomum camphora*	Camphor Laurel	S 28º11.698'	E 153º29.537'	9	
304	*Cinnamomum camphora*	Camphor Laurel	S 28º11.698'	E 153º29.537'	7	
305	*Cinnamomum camphora*	Camphor Laurel	S 28º11.698'	E 153º29.537'	4.5	
306	*Cinnamomum camphora*	Camphor Laurel	S 28º11.698'	E 153º29.537'	0.5	Cut stump with numerous

Tree No.	Species - Scientific Name	Common Name	Latitude	Longitude	Height (m)	Notes
						reshoots; many hollows in use
307	*Cupaniopsis anacardioides*	Tuckeroo	S 28º11.698'	E 153º29.537'	8	
308	*Cinnamomum camphora*	Camphor Laurel	S 28º11.698'	E 153º29.537'	9	
309	*Cinnamomum camphora*	Camphor Laurel	S 28º11.698'	E 153º29.537'	5.5	
310	*Mallotus philippensis*	Red Kamala	S 28º11.697'	E 153º29.536'	2.5	
311	*Cinnamomum camphora*	Camphor Laurel	S 28º11.697'	E 153º29.536'	10	
312	*Cinnamomum camphora*	Camphor Laurel	S 28º11.697'	E 153º29.535'	3	
313	*Cinnamomum camphora*	Camphor Laurel	S 28º11.697'	E 153º29.535'	6	
314	*Cinnamomum camphora*	Camphor Laurel	S 28º11.697'	E 153º29.535'	3.5	
315	*Notelaea longifolia*	Mock Olive	S 28º11.697'	E 153º29.535'	6	
316	*Cinnamomum camphora*	Camphor Laurel	S 28º11.697'	E 153º29.535'	9	
317	*Cinnamomum camphora*	Camphor Laurel	S 28º11.697'	E 153º29.535'	5	
318	*Cinnamomum camphora*	Camphor Laurel	S 28º11.697'	E 153º29.532'	10	
319	*Mallotus philippensis*	Red Kamala	S 28º11.696'	E 153º29.532'	3.5	
320	*Guioa semiglauca*	Guioa	S 28º11.691'	E 153º29.534'	12	
321	Rainforest tree		S 28º11.693'	E 153º29.531'	8	Dead; unidentifiable
322	*Guioa semiglauca*	Guioa	S 28º11.695'	E 153º29.532'	9	
323	*Guioa semiglauca*	Guioa	S 28º11.695'	E 153º29.532'	6	Dead
324	*Cinnamomum camphora*	Camphor Laurel	S 28º11.695'	E 153º29.532'	3	
325	*Guioa semiglauca*	Guioa	S 28º11.695'	E 153º29.532'	4	Dead
326	*Cinnamomum camphora*	Camphor Laurel	S 28º11.696'	E 153º29.528'	10	
327	*Guioa semiglauca*	Guioa	S 28º11.696'	E 153º29.528'	10	
328	*Guioa semiglauca*	Guioa	S 28º11.696'	E 153º29.528'	8	+ 5 dead Guioa
329	*Cupaniopsis anacardioides*	Tuckeroo	S 28º11.690'	E 153º29.524'	5	
330	*Jagera pseudorhus*	Foambark	S 28º11.690'	E 153º29.524'	2	

Tree No.	Species - Scientific Name	Common Name	Latitude	Longitude	Height (m)	Notes
331	*Jagera pseudorhus*	Foambark	S 28º11.690'	E 153º29.524'	2.5	
332	*Cinnamomum camphora*	Camphor Laurel	S 28º11.698'	E 153º29.526'	5	
333	*Cinnamomum camphora*	Camphor Laurel	S 28º11.698'	E 153º29.526'	10	
334	*Cinnamomum camphora*	Camphor Laurel	S 28º11.697'	E 153º29.527'	7	
335	*Cinnamomum camphora*	Camphor Laurel	S 28º11.696'	E 153º29.528'	5	
336	*Cinnamomum camphora*	Camphor Laurel	S 28º11.692'	E 153º29.528'	9	
337	Rainforest tree		S 28º11.692'	E 153º29.528'	7	Dead; unidentifiable
338	*Mallotus philippensis*	Red Kamala	S 28º11.693'	E 153º29.528'	8	
339	*Syzygium smithii*	Lilly Pilly	S 28º11.697'	E 153º29.525'	9	
340	*Syzygium smithii*	Lilly Pilly	S 28º11.697'	E 153º29.525'	8	
341	*Cinnamomum camphora*	Camphor Laurel	S 28º11.700'	E 153º29.526'	9	
342	*Cinnamomum camphora*	Camphor Laurel	S 28º11.700'	E 153º29.526'	8	
343	*Cinnamomum camphora*	Camphor Laurel	S 28º11.700'	E 153º29.526'	6	
344	*Cinnamomum camphora*	Camphor Laurel	S 28º11.700'	E 153º29.526'	10	
345	*Cinnamomum camphora*	Camphor Laurel	S 28º11.698'	E 153º29.526'	9	
346	*Cinnamomum camphora*	Camphor Laurel	S 28º11.698'	E 153º29.526'	7	
347	*Syzygium smithii*	Lilly Pilly	S 28º11.698'	E 153º29.526'	2	
348	*Mallotus philippensis*	Red Kamala	S 28º11.698'	E 153º29.526'	3.5	
349	*Notelaea longifolia*	Mock Olive	S 28º11.698'	E 153º29.526'	3.5	
350	*Cinnamomum camphora*	Camphor Laurel	S 28º11.686'	E 153º29.529'	15	
351	*Cinnamomum camphora*	Camphor Laurel	S 28º11.692'	E 153º29.517'	9	
352	*Guioa semiglauca*	Guioa	S 28º11.693'	E 153º29.520'	10	
352	*Guioa semiglauca*	Guioa	S 28º11.693'	E 153º29.520'	11	
354	*Syagrus romanzoffiana*	Cocos Palm	S 28º11.693'	E 153º29.520'	6	
355	*Guioa semiglauca*	Guioa	S 28º11.693'	E 153º29.518'	7	Dead
356	*Guioa semiglauca*	Guioa	S 28º11.693'	E 153º29.518'	9	Dead

Tree No.	Species - Scientific Name	Common Name	Latitude	Longitude	Height (m)	Notes
357	*Guioa semiglauca*	Guioa	S 28º11.693'	E 153º29.518'	7	
358	*Guioa semiglauca*	Guioa	S 28º11.693'	E 153º29.518'	10	
359	*Guioa semiglauca*	Guioa	S 28º11.694'	E 153º29.523'	8	Dead
360	*Elaeocarpus obovatus*	Hard Quandong	S 28º11.694'	E 153º29.515'	4.5	
361	*Mallotus philippensis*	Red Kamala	S 28º11.693'	E 153º29.516'	3.5	
362	*Guioa semiglauca*	Guioa	S 28º11.693'	E 153º29.520'	7	
363	*Guioa semiglauca*	Guioa	S 28º11.692'	E 153º29.522'	8	
364	*Cinnamomum camphora*	Camphor Laurel	S 28º11.692'	E 153º29.522'	5	
365	*Cinnamomum camphora*	Camphor Laurel	S 28º11.691'	E 153º29.521'	6	
366	*Cinnamomum camphora*	Camphor Laurel	S 28º11.691'	E 153º29.521'	9	
367	*Ligustrum lucidum*	Broad-leaved Privet	S 28º11.689'	E 153º29.521'	5	
368	*Cinnamomum camphora*	Camphor Laurel	S 28º11.690'	E 153º29.522'	8	
368	*Cinnamomum camphora*	Camphor Laurel	S 28º11.690'	E 153º29.522'	2	
370	*Cinnamomum camphora*	Camphor Laurel	S 28º11.690'	E 153º29.522'	1.5	
371	*Guioa semiglauca*	Guioa	S 28º11.692'	E 153º29.518'	3.5	
372	*Toechima dasyrrachne*	Blunt Steelwood	S 28º11.692'	E 153º29.519'	12	
373	*Cupaniopsis anacardioides*	Tuckeroo	S 28º11.692'	E 153º29.519'	8	
374	*Cupaniopsis anacardioides*	Tuckeroo	S 28º11.692'	E 153º29.519'	9	
375	*Ligustrum lucidum*	Broad-leaved Privet	S 28º11.689'	E 153º29.518'	5	
376	*Mangifera indica*	Mango	S 28º11.687'	E 153º29.518'	6	
377	*Guioa semiglauca*	Guioa	S 28º11.687'	E 153º29.515'	6.5	
378	*Cinnamomum camphora*	Camphor Laurel	S 28º11.689'	E 153º29.514'	6.5	
379	*Cinnamomum camphora*	Camphor Laurel	S 28º11.689'	E 153º29.514'	6.5	
380	*Cupaniopsis anacardioides*	Tuckeroo	S 28º11.689'	E 153º29.514'	3.5	
381	*Cinnamomum camphora*	Camphor Laurel	S 28º11.689'	E 153º29.514'	3.5	
382	*Cinnamomum camphora*	Camphor Laurel	S 28º11.690'	E 153º29.513'	6	
383	*Guioa semiglauca*	Guioa	S 28º11.690'	E 153º29.513'	9	

Tree No.	Species - Scientific Name	Common Name	Latitude	Longitude	Height (m)	Notes
384	*Guioa semiglauca*	Guioa	S 28º11.691'	E 153º29.513'	8	
385	*Cinnamomum camphora*	Camphor Laurel	S 28º11.691'	E 153º29.513'	10	
386	*Cupaniopsis anacardioides*	Tuckeroo	S 28º11.691'	E 153º29.513'	3.5	
387	*Cinnamomum camphora*	Camphor Laurel	S 28º11.690'	E 153º29.516'	11	
388	*Cinnamomum camphora*	Camphor Laurel	S 28º11.693'	E 153º29.516'	9	
389	*Cinnamomum camphora*	Camphor Laurel	S 28º11.693'	E 153º29.516'	12	
390	*Cinnamomum camphora*	Camphor Laurel	S 28º11.694'	E 153º29.517'	12	
391	*Cinnamomum camphora*	Camphor Laurel	S 28º11.694'	E 153º29.518'	8	
392	*Toechima dasyrrachne*	Blunt Steelwood	S 28º11.693'	E 153º29.514'	6	
			Easting	**Northing**		
393	*Mallotus philippensis*	Red Kamala	548250	6881126	2	
394	*Cinnamomum camphora*	Camphor Laurel	548248	6881128	14	2 trunks
395	*Cinnamomum camphora*	Camphor Laurel	548248	6881129	7.5	
396	*Cinnamomum camphora*	Camphor Laurel	548248	6881126	13	2 trunks
397	*Mallotus philippensis*	Red Kamala	548249	6881132	5	
398	*Mallotus philippensis*	Red Kamala	548249	6881129	2	
399	*Mallotus philippensis*	Red Kamala	548249	6881124	4	
400	*Cinnamomum camphora*	Camphor Laurel	548246	6881125	12	
401	*Cinnamomum camphora*	Camphor Laurel	548248	6881123	18	
402	*Cinnamomum camphora*	Camphor Laurel	548250	6881122	9	
403	*Mallotus philippensis*	Red Kamala	548248	6881123	1.7	
404	*Duranta repens*	Giesha Girl	548248	6881119	3	
405	*Cinnamomum camphora*	Camphor Laurel	548245	6881116	20	
406	*Syzygium smithii*	Lillypilly	548247	6881111	5	
407	*Cinnamomum camphora*	Camphor Laurel	548249	6881113	5	
408	*Guioa semiglauca*	Guioa	548249	6881113	5	
409	*Mallotus philippensis*	Red Kamala	548249	6881114	6	

Tree No.	Species - Scientific Name	Common Name	Latitude	Longitude	Height (m)	Notes
			Easting	Northing		
410	*Syzygium smithii*	Lillypilly	548247	6881114	5	
411	*Guioa semiglauca*	Guioa	548247	6881114	1.5	
412	*Synoum glandulosum*	Scentless Rosewood	548254	6881118	1	
413	*Cupaniopsis anacardioides*	Tuckeroo	548249	6881114	5	
414	*Cinnamomum camphora*	Camphor Laurel	548250	6881114	7	
415	*Cinnamomum camphora*	Camphor Laurel	548252	6881115	7	
416	*Cinnamomum camphora*	Camphor Laurel	548250	6881113	3	
417	*Guioa semiglauca*	Guioa	548250	6881115	20	Dying
418	*Mallotus philippensis*	Red Kamala	548249	6881114	6	
419	*Guioa semiglauca*	Guioa	548254	6881113	10	
420	*Cinnamomum camphora*	Camphor Laurel	548254	6881113	8	
421	*Cinnamomum camphora*	Camphor Laurel	548256	6881113	18	
422	*Jagera pseudorhus*	Foambark	548254	6881114	3.5	
423	*Cinnamomum camphora*	Camphor Laurel	548252	6881117	6	
424	*Mallotus philippensis*	Red Kamala	548252	6881117	4	
425	*Cinnamomum camphora*	Camphor Laurel	548252	6881117	8	
426	*Cinnamomum camphora*	Camphor Laurel	548252	6881117	8	
427	Rainforest tree	Rainforest species	548253	6881116	8	Dying/Dead
428	*Mallotus philippensis*	Red Kamala	548254	6881119	12	
429	*Alectryon tomentosus*	Hairy Birds Eye	548258	6881119	4	
430	*Cinnamomum camphora*	Camphor Laurel	548260	6881121	2.5	
431	*Cinnamomum camphora*	Camphor Laurel	548260	6881124	25	6 trunks
432	*Guioa semiglauca*	Guioa	548260	6881125	9	
433	*Cinnamomum camphora*	Camphor Laurel	548257	6881128	25	3 trunks
434	*Cinnamomum camphora*	Camphor Laurel	548257	6881130	11	
435	*Cinnamomum camphora*	Camphor Laurel	548256	6881129	7	

Tree No.	Species - Scientific Name	Common Name	Latitude	Longitude	Height (m)	Notes
			Easting	Northing		
436	*Cinnamomum camphora*	Camphor Laurel	548256	6881129	10	
437	*Cinnamomum camphora*	Camphor Laurel	548253	6881130	15	
438	*Cinnamomum camphora*	Camphor Laurel	548254	6881129	14	
439	*Cinnamomum camphora*	Camphor Laurel	548256	6881130	28	
440	*Cinnamomum camphora*	Camphor Laurel	548254	6881133	8	
441	*Cinnamomum camphora*	Camphor Laurel	548254	6881131	8	
442	*Cinnamomum camphora*	Camphor Laurel	548254	6881130	6	
443	*Cinnamomum camphora*	Camphor Laurel	548256	6881127	25	3 trunks
444	*Cinnamomum camphora*	Camphor Laurel	548256	6881125	6	
445	*Cinnamomum camphora*	Camphor Laurel	548254	6881123	5	
446	*Cinnamomum camphora*	Camphor Laurel	548254	6881122	9	
447	*Cinnamomum camphora*	Camphor Laurel	548250	6881122	7	
448	*Cinnamomum camphora*	Camphor Laurel	548253	6881126	25	2 trunks
449	*Cinnamomum camphora*	Camphor Laurel	548252	6881127	25	
450	*Cinnamomum camphora*	Camphor Laurel	548252	6881131	9	
451	*Cinnamomum camphora*	Camphor Laurel	548253	6881131	13	
452	*Cinnamomum camphora*	Camphor Laurel	548250	6881129	26	
453	*Cinnamomum camphora*	Camphor Laurel	548250	6881127	27	
454	*Cinnamomum camphora*	Camphor Laurel	548250	6881126	25	
455	*Cinnamomum camphora*	Camphor Laurel	548342	6880938	8	
456	Rainforest tree	Rainforest species	548315	6881022	1.5	
457	*Macadamia integrifolia*	Macadamia	548336	6881020	2	* Germinated from seed dispersed by landholder
458	*Cupaniopsis anacardioides*	Tuckeroo	548301	6881037	5	With a Foambark (4m)

Tree No.	Species - Scientific Name	Common Name	Latitude	Longitude	Height (m)	Notes
			Easting	Northing		
459	*Cupaniopsis anacardioides*	Tuckeroo	548301	6881059	12	
460	*Jagera pseudorhus*	Foambark	548282	6881055	9	
461	*Elaeocarpus reticulatis*	Blueberry Ash	548265	6881067	8	
462	*Cinnamomum camphora*	Camphor Laurel	548291	6881104	20	
463	*Cinnamomum camphora*	Camphor Laurel	548262	6881096	20	With a Red Kamala (2.5m) + Foambark (3m)
464	*Mallotus philippensis*	Red Kamala	548263	6881103	5	
465	*Guioa semiglauca*	Guioa	548262	6881102	6	
466	*Guioa semiglauca*	Guioa	548262	6881062	6	
467	*Guioa semiglauca*	Guioa	548260	6881058	7	
468	*Cupaniopsis anacardioides*	Tuckeroo	548293	6881084	8	
469	*Cupaniopsis anacardioides*	Tuckeroo	548297	6881082	7	
TREES TO BE RETAINED WITHIN THE ASSET PROTECTION ZONE (APZ)						
Tree 1	*Mallotus philippensis*	Red Kamala	548402	6881240	10	
Tree 2	*Flindersia australis*	Teak	548285	6881063	12	

* To be retained if possible.

APPENDIX 2: MEASURES FOR TREE CLEARING - PROTECTION AND MANAGEMENT OF VEGETATION AND WELFARE OF ANIMALS DURING VEGETATION REMOVAL - CHECKLIST

This checklist is to guide engaged contractors and sub-contractors. These measures are to be implemented before and throughout the tree removal.

☐ A qualified arborist with experience in tree surgery, tree care, and working with native wildlife and wildlife carers should be engaged. It is preferable that the engaged arborist has a procedure to minimise the potential for injury to wildlife.

PROTECTION AND MANAGEMENT OF VEGETATION

☐ Hygiene management is to be applied to all stages of the tree removal.

☐ The arborist is to ensure all tools, equipment and vehicles are to be cleaned free of weed propagules and potential pathogens, such as *Phytophthora*.

☐ The boundary of the clearing on the western edge is to be delineated using orange construction barrier tape. This is to identify the **"no-go zones"**.

☐ Erect signs that identify the area beyond the barrier tape as a "no-go zone".

☐ Mark trees with hollows and possum drays and bird nests with red tape to indicate trees that may contain wildlife.

☐ Conduct pre-construction briefing for construction workers and subcontractors.

☐ No other trees are to be removed other than those identified in the Tree Removal Plan.

☐ If a tree to be retained is damaged, immediately assess the situation and apply the appropriate level of treatment to facilitate recovery.

☐ The arborist is to ensure no direct physical wounds to trees being retained, that result in:
- potential for decay and disease to enter wounds and scraped off bark;
- roots being torn through improper excavation;
- roots being bruised and crushed;
- roots in topsoil being lost, reducing access to oxygen and moisture; and
- structural support of trees being lost, causing stress to the tree.

WELFARE OF ANIMALS DURING VEGETATION REMOVAL

The arborist is to minimise impacts, and manage disruptions to wildlife, including possums, gliders, bats, and nesting birds when undertaking vegetation removal activities. Where possible, avoid tree trimming of hollow trees between May to July (late autumn to mid-winter) when fauna are most likely to be using hollows. Where tree clearing will be undertaken toward the end of July and August, added awareness of the potential for wildlife to be using hollows should be exercised.

Pre tree removal-trimming activities

☐ A wildlife spotter-catcher is to be present throughout tree clearing activities and for woodchipping-mulching activities for trees identified as containing hollows.

☐ Prior to clearing, hollow-bearing trees should be flagged with red tape and should be shaken or nudged with tree-felling equipment prior to felling in order to encourage any fauna present to vacate the hollow.

☐ If no wildlife emerges from hollows after shaking and nudging, the tree can be felled and lowered to the ground where possible.

☐ If an animal emerges from hollows after shaking and nudging, at least 30 minutes should be allowed for the animal(s) to leave the tree. After the animal has exited the tree and moved outside the construction zone, the tree may be felled.

☐ Once a tree is felled a search will be made by the spotter-catcher of the branches for any animals and hollows inspected with a torch for the presence of animals.

☐ Retain as many tree sections containing hollows and bush rocks as possible for later deployment in areas of retained vegetation.

☐ Wildlife with possible injuries or that are not of independent age should be captured and transferred to a suitably cotton bag or transport cage by the spotter-catcher prior to arranging transfer to Tweed Valley Wildlife Carers or Currumbin Sanctuary Wildlife Hospital as soon as possible.

☐ Uninjured animals should be released into appropriate habitat at the site beyond the construction zone as soon as practicable (e.g., at night for nocturnal species).

☐ Any wildlife injuries or deaths are to be reported to Council.