AEP

BIODIVERSITY | BUSHFIRE | ARBORICULTURE

NEWCASTLE SYDNEY

Arboricultural Impact Assessment

Proposed Residential Sub-division

36 Sanctuary Drive, Lochinvar 2321

Lot 1 DP1309170

Prepared for: Urban Land Housing

AEP Ref: 5553

May 2025

Revision: 01

Newcastle | Sydney
10 Darvall St Carrington 2294 | 275 Stanmore Rd Petersham 2049
P 0420 624 707 E info@andersonep.com.au ABN 57 659 651 537

Document Control

Document Name	Arboricultural Impact Assessment for proposed residential subdivision at 36 Sanctuary Drive, Lochinvar, NSW
Project Number	5553
Client Name	Urban Land Housing
AEP Project Team	Warwick Muir Mitch Dyer

Revision

Revision	Date	Author	Reviewed	Approved
00	29/04/2025	Mitch Dyer	Warwick Muir	Mitch Dyer
01	01/05/2025	Mitch Dyer	Warwick Muir	Mitch Dyer

Distribution

Revision	Date	Name	Organisation
00	29/04/2025	Breanna Maloney	Urban Land Housing
01	01/05/2025	Breanna Maloney	Urban Land Housing

Disclaimer

Direct observations are relevant only to the trees identified within this report. This report utilizes a rapid assessment of tree health and condition to inform retention value. This assessment of tree health and condition is based on non-destructive visual observations from ground level. Thus, it is not possible to identify all structural faults at high levels in the tree, internal structural faults or within the root system. Observations about Tree Health, Structure, and other characteristics have been made at the time of assessment and these characteristics may change over time due to natural growth of the tree as a living organism or due to unforeseen events. As such the observations that are supplied within are relevant for a period of 12 months from the time of assessment, after which re-assessment may be required for the trees assessed within this report. The recommendations and methodologies for Tree Protection within this report are relevant only to the Trees assessed within this report. The author is not responsible for tree damage related to failure to apply these recommendations or methodologies for Tree Protection in full within this report or for tree damage relating to works conducted by an unaffiliated person. No responsibility for damage to persons or property is accepted for damage by trees referred to within this report.

Executive Summary

At the request of Breanna Maloney on behalf of Urban Land Housing (the client), Anderson Environment & Planning (AEP) have prepared an Arborist Impact Assessment to address the potential arboricultural impacts from the proposed 19 lot residential subdivision (the Proposal) 36 Sanctuary Drive Lochinvar 2321 (the Subject Site).

This document meets the specific requirements Clause 5.10 of the Maitland Local Environmental Plan 2011 (LEP), and Chapter 2 of State Environmental Planning Policy (Biodiversity and Conservation) 2021 Manual (2018).

The arborist site survey was undertaken on 16th April 2025. Tree Assessment was undertaken by the following methodologies (**Section 4**):

- A visual tree assessment as described by Mattheck and Breloer (1994);
- Characteristic features for each tree were recorded;
- Structural Root Zone (SRZ) and Tree Protection Zone (TPZ) using methods of calculation as outlined in AS 4970 – 2009; and
- Landscape Significance Rating (LSR) and Retention Values as outlined by Morton (2006).

A total of 37 trees identified within the site and surrounds were assessed. The condition of the assessed trees includes one (1) in dead condition, one (1) in fair condition and 35 in good condition (**Section 5.1**).

In addition to the assessed trees, various small Olea europaea (African Olive trees) and Syzygium species are scattered throughout the site. These specimens do not meet the minimum size threshold to be classified as trees under relevant assessment criteria, but will also require removal to accommodate the proposed works.

With consideration of the estimated life expectancy for each tree, Retention Values were assigned to each tree within the site. This identified the following:

- Five (5) ‘Moderate’;
- 31 ‘Low’; and
- One (1) ‘Very Low’ Retention Value Trees.

A total of 37 trees will be directly impacted by the proposed development due to encroachments into their Structural Root Zones (SRZ) or significant encroachment into their Tree Protection Zones (TPZ) exceeding 10%. These impacts result from the proposed civil works, including cut and fill earthworks, the installation of underground infrastructure such as sewer and water lines, and the construction of retaining walls. The extent of these encroachments renders tree retention unfeasible within the development footprint.

Contents

Tables

Figures

Appendices

1.0 Introduction

1.1 Background

At the request of the Urban Land Housing (the client), Anderson Environment & Planning (AEP) have prepared an Arboricultural Impact Assessment report to address the potential arboricultural impacts from the proposed residential subdivision and associated civil infrastructure (the Proposal) at 36 Sanctuary Drive Lochinvar NSW (the Subject Site).

1.2 Objectives

Further to the above the following objectives for this report have been assigned:

- Tree identification plan and schedule identifying tree species, size, canopy spread and other dimensions;
- Assessment of all trees within the Subject Site, including, but not limited to, the health and vigour of the trees, structural integrity, life expectancy, retention value and landscape significance;
- Likely impact the proposed sub-division will have on assessed trees, including TPZ and SRZ encroachments; and
- Tree protection plan and methodologies throughout the development for all impacted trees to be retained.

2.0 Arborist Details

Name:	Mitch Dyer	Warwick Muir
Business Name & ABN:	Anderson Environmental & Planning ABN: 57 659 651 537	
Business Address:	10 Darvall St, Carrington, NSW 2294	
Qualification level and details	AQF Level 5 Diploma of Arboriculture.	• AQF Level 5 Diploma of Arboriculture. • BSc (Biology). • TRAQ and QTRA qualifications.
Contact details:	M: 0489 298 298 E: mitchd@andersonep.com.au	M: 0448 689 698 E: warwick@andersonep.com.au

3.0 Site Description and Locality

Table 1 provide the site details for the Subject Site.

Table 1: Site Particulars

Detail	Comments
Client	Urban Land Housing
Address	36 Sanctuary Drive, Lochinvar
Title(s)	Lot no. 1/-/DP1309170
Date of Site Visits	16th April 2025
Proposed development	It is proposed to construct a 19-lot residential subdivision.
Site Description	Single dwelling home, pool and detached shed. Previous dirt Storage pads for equipment or truck parking. The Subject site is within the Blacktown Soil Landscape, characterised by either friable brownish black loam or hard setting brown clay loam within the topsoil. (eSpade, 2023)

Figure 1 depicts the extent of the Subject Site overlain on an aerial photograph of the locality.

Figure 2 shows a concept plan for the proposed development.

Study Area

Cadastre

Figure 1- Site Location

0 80 160 m

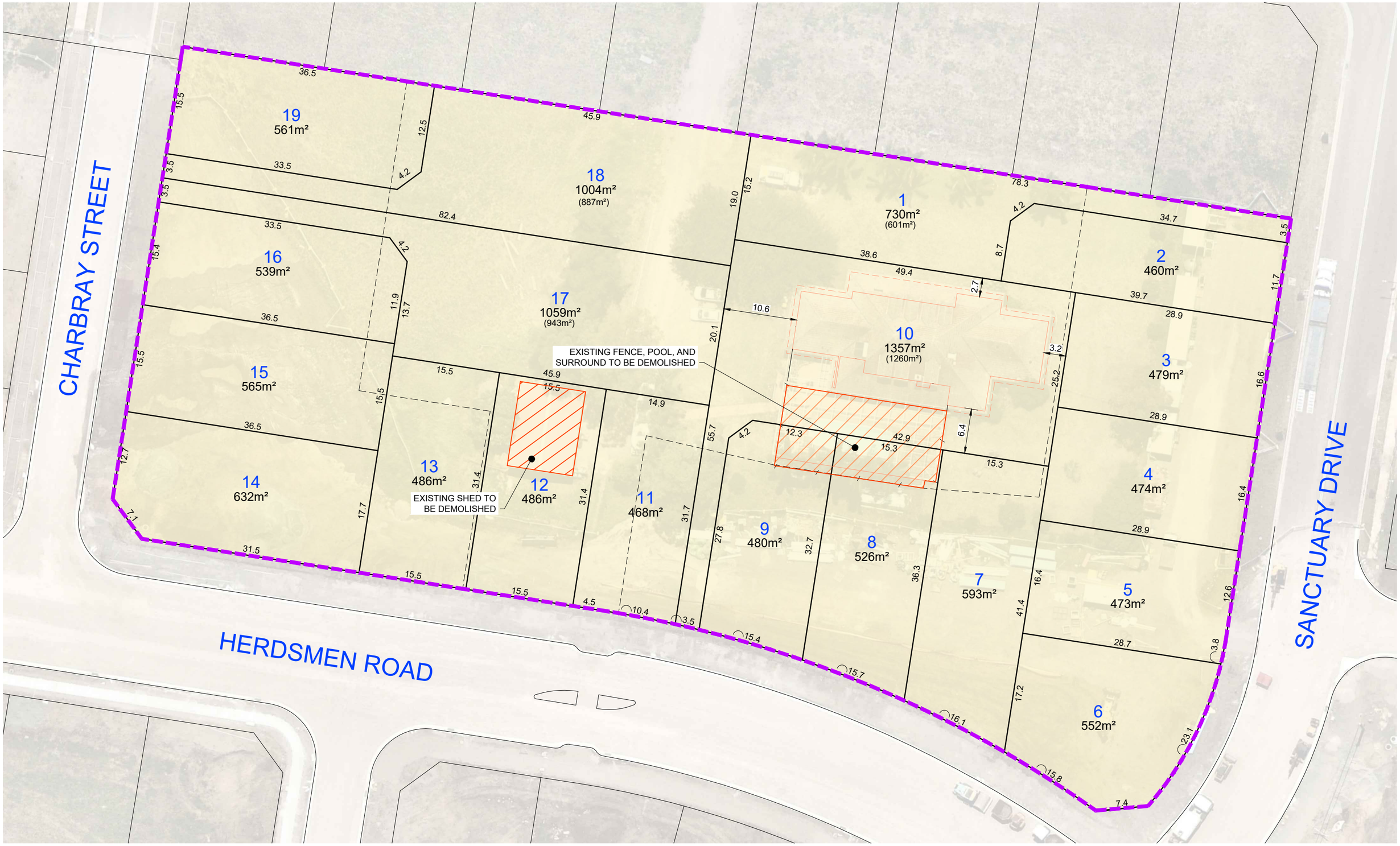
Scale: 1:4,706

N

AEP

Address: 36 Sanctuary Dr, Lochinvar
Client: Urban Land Housing
AEP Ref: 5553 | Date: 17 April 2025

Imagery: ESRI
Spatial Reference: GDA2020 MGA Zone 56



Rev	Description	Drawn	Date
4	EXISTING SHED ADDED	JE	11.04.25
3	ADJUSTED 7 - 9	AS	10.03.25
2	ADJUSTED ACCESS HANDLES	AS	10.03.25
1	ORIGINAL ISSUE	AS	27.02.25

GCA ENGINEERING SOLUTIONS
A.B.N. 92 086 017 745
1 HARTLEY DRIVE (P.O. BOX 3337)
THORNTON NSW 2322
PHONE: 49641811

Client: LOCHINVAR RIDGE ESTATE PTY LTD

Project Status: DA

Scale: 1:500 (0 10 20 30)

Project Title: LOCHINVAR RIDGE ESTATE

Project Address: LOT 1 & 3 DP1309170

Drawing Title: SUBDIVISION PLAN

Project No: 24299

Revision: 4

Drawing No: LD01

PLOT DATE: 11/04/2025 9:17:18 AM CAD FILE: Q:\24\24299 Lochinvar Ridge, Subdivision of Ex House\02_CAD\AutoCAD\LD\24299LD01 r4.dwg

4.0 Methodology

The arborist site survey was undertaken on 16th April 2025. Each tree observed within the Subject Site was assigned a unique tree number. Tree species were identified based on guidance from regional identification guides (Fairley and Moore 1989, Robinson 2003), and descriptions and records provided by the Royal Botanic Gardens (Plantnet 2024).

4.1 Visual Tree Assessment

A visual tree assessment to evaluate the health and condition of these trees in relation to the impacts of the proposed development was undertaken from ground level following the methodology described by Mattheck and Breloer (1994).

- Each tree observed within the Subject Site was assigned a unique tree number.
- Tree species were identified based on guidance from regional identification guides (Fairley and Moore 1989, Robinson 2003), and descriptions and records provided by the Royal Botanic Gardens (Plantnet 2024).
- Tree height was estimated following the guidance outlined in the Private Native Forestry Code of Practice (DECC 2007) and confirmed with a laser range finder.
- The Diameter at Breast Height (DBH) and Diameter Above Buttress (DAB) was determined using a DBH tape
- Calculation of the Structural Root Zone (SRZ) and Tree Protection Zone (TPZ) applied as outlined in Australian Standard 4970-2009 *Protection of trees on development Sites* (AS 4970 – 2009) (Standards Australia 2009).
- Tree Total Canopy Area was estimated from the formula Pi x (average canopy spread)^2.
- Images of the tree and characteristics were taken using mobile phone camera.

4.2 Tree Retention Value

To determine tree Retention Value a Landscape Significance Rating (LSR) was assigned to each tree. The LSR value provides consideration of the tree's amenity, environmental and heritage values (refer **Appendix B**). Trees are then assigned one of the following LSR categories:

- Significant (1);
- Very High (2);
- High (3);
- Moderate (4);
- Low (5);
- Very Low (6); and
- Insignificant (7).

Once the landscape significance value has been determined the following assessment matrix that utilises estimated life expectancy and landscape significance (**Table 2**) was applied to each tree.

Table 2: Tree Retention Status Matrix Assessment matrix adopted from Morton (2006).

Landscape significance rating							
Estimated Life Expectancy	**1**	**2**	**3**	**4**	**5**	**6**	**7**
Greater than 40 Years	High						
15 to 40 Years			Moderate				
5 to 15 Years				Low			
Less than 5 Years					Very low		
Dead or Hazardous							

4.3 Limitations

This report utilises a rapid assessment of tree health and condition to inform retention value. Should a detailed assessment of tree structural health and condition be required a tree risk assessment report should be commissioned.

This assessment of tree health and condition is based on non-destructive visual observations from ground level. Thus, it is not possible to identify all structural faults at high levels in the tree, internal structural faults or within the root system. Should a detailed assessment for structural faults be required a tree risk assessment report should be commissioned.

Weather conditions such as extreme wind, storm activity, lightning as well as other events or disturbances independent of the proposed activities are unpredictable. Unforeseeable damage to trees may occur as a result of unpredictable or unplanned weather events or disturbances.

Tree identifications are based on identifying features (fruit, inflorescence, etc.) found during April and made at ground level from within the Subject Site.

The total canopy area for each tree utilised within this report is an estimation based on field observation of canopy spread and the true amount of canopy area may differ.

Tree identified within by this plan are located to GPS accuracy and there may be some minor discrepancy in the true location.

Impact assessment was based to limited concept design confined to identification of the approximate proposal footprint at the time of preparation of this report. Variation of this concept design will alter some of the recommendations and this report should be updated to reflect these changes.

5.0 Tree Assessment Results

A total of 37 trees identified within the site and neighbouring properties were assessed. Observations were made for each assessed tree **(Appendix A).** Tree locations are shown in **Figure 3.**

5.1 Summary of Tree Condition and Characteristics

Of the 37 trees assessed, 37 of these trees are located within the Subject Site.

All trees assessed within the site are native species. The condition of the assessed trees includes Three (3) in poor or dead condition, Two (2) in fair condition and 32 in good condition.

Notable Trees within this grouping that are in poor or dead Structural and Health Condition including the following:

- Tree 34 – Deceased *Casuarina sp.* with no live canopy observed at the time of assessment.
- Trees 27 – *Casuarina glauca* (Swamp oak) exhibits overall good health, with no visible signs of canopy decline or pest infestation. A significant structural defect is present at approximately 1 metre above ground level, where a large co-dominant stem exhibits both visible decay and cracking at the union. Additionally, a large cavity is present within the main stem, impacting the tree's structural stability.
- Tree 24 – *Eucalyptus robusta* (Swamp mahogany) presents having poor structure and poor health resulting from previous pruning techniques causing an un-even canopy with epicormic re-growth.
- Tree 35 – *Gleditsia triacanthos* (Honey locust) exhibits overall good health, with no visible signs of canopy decline or pest infestation. Co-dominant leaders with visible cracking at the union, indicating a potential point of structural weakness. Previous branch failure at the main union present.

5.2 Summary of Landscape Significance and Retention Value

The following landscape significance ratings (LSRs) have been applied to the assessed trees;

- Five (5) 'Moderate' due to their canopy size and higher visibility as exotic or native cultivar status; and
- 31 'Low' as exotic shrub species of low visibility or amenity value.
- One (1) 'Very Low' as the tree is a standing dead tree with no live canopy.

With consideration of the estimated life expectancy for each tree, Retention Values were assigned to each tree within the site. This identified the following:

- Five (5) 'Moderate';
- 31 'Low' and
- One (1) 'Very Low' Retention Value Trees.

No hollows were noted in the assessed trees. One (1) small stick nest in Tree 33 *Casuarina glauca* (Swamp oak), No animal activity was present at time of assessment.

Study Area
Cadastre

Retention Value
- High
- Low
- Moderate
- Very Low

Figure 3 - Tree Locations

0 10 20 m

Scale: 1:781

N

AEP

Address: 36 Sanctuary Dr, Lochinvar
Client: Urban Land Housing
AEP Ref: 5553 | Date: 17 April 2025

Imagery: NearMap
Spatial Reference: GDA2020 MGA Zone 56

6.0 Tree Impact Assessment

The Tree Protection Zone (TPZ) encroachment may impact tree health and vigour depending on site conditions. Structural Root Zone (SRZ) is an indicative area closer to the tree critical for maintaining a tree's stability. Any ground works within the TPZ area is likely to impact the viability of the health and long-term sustainability of a tree. Any ground works within the SRZ will impact the stability of the tree by injuring the root system.

6.1 Proposal Impacts

Table 3 provides a summary of impact assessment.

Table 3 Summary of Impact Assessment

Tree Assessment	Retention Value (Tree No)			Total
	High	Moderate	Low and Very Low	
Remove (Development Footprint)		Trees 12 ,23, 25, 35 and 37	Trees 1-11, 13-22, 24, 27, 26, 28-33 and 36	**37**

6.2 Details of impacts

Upon review of the supplied proposal footprint, the following impacts from the proposed works have been identified on the assessed trees;

- Trees 1-11, 13-22, 24, 25, 27-36 will have both major encroachment to their SRZ/TPZ zones from the proposed storm water pipe or the cut and fill civil works.
- Tree 12 will have major impacts to SRZ/TPZ from the proposed cut and fill civil works.
- Tree 23 will have major encroachment to their SRZ/TPZ zones from the proposed Sewer line.
- Tree 26,35 and 37 will have major impacts to the SRZ/TPZ from the proposed retaining wall and the cut and fill civil works.

These trees will require removal to facilitate the development. Impacts are unlikely to be mitigated through tree protection measures without major design changes, and tree stability and viability cannot be guaranteed.

Study Area
Cadastre
SRZ
TPZ

Tree Assessment
Remove (Footprint)

Figure 4 - Tree Assessment

0 10 20 m

Scale: 1:781

N

AEP

Address: 36 Sanctuary Dr, Lochinvar
Client: Urban Land Housing
AEP Ref: 5553 | Date: 17 April 2025

Imagery: NearMap
Spatial Reference: GDA2020 MGA Zone 56

7.0 Recommendations

7.1 Tree Removal Plan

- Trees designated for removal within this report as outlined in **Section 6** should be removed by a qualified tree worker with appropriate professional liability insurance.
- Selection of suitable species to replace the removed trees is key to ensuring long-term tree health and minimal conflict with built infrastructure. A well-planned landscape strategy will help restore canopy cover, contribute to environmental resilience, and support the overall character of the new development.

7.2 Replacement tree recommendations

Table 4 below recommends replacement tree species to be used in landscaping and street design, to compensate for the trees removed within this report.

Table 4 Recommended replacement tree species

Common Name	Scientific Name
Tuckeroo	*Cupaniopsis anarcardioides*
Weeping Bottlebrush	*Callistemon viminalis*
Water Gum	Tristaniopsis laurina
Cheese Tree	*Glochidion ferdinandii*
Brush Box	Lophostemon Confertus

8.0 Conclusion

The recommendation for the removal of 37 trees has been made with the aim of minimising arboricultural impacts, while accommodating the requirements of the proposed 19-lot subdivision. The current development proposal—which includes civil earthworks involving both cut and fill, stormwater and sewer infrastructure, as well as the construction of retaining walls—necessitates the direct removal of all 37 assessed trees. Due to the extent of proposed works and site constraints, no assessed trees can be retained within the development footprint.

This assessment and the corresponding recommendations are based on the plans provided: *"LOT 1 & 3 DP1309170, Herdsmen Road, Lochinvar Ridge Estate Concept Civil Engineering Design," Code: 24299C dC00 r1.*

In addition to the assessed trees, various small Olea europaea (African Olive trees) and Syzygium species are scattered throughout the site. These specimens do not meet the minimum size threshold to be classified as trees under relevant assessment criteria, but will also require removal to accommodate the proposed works.

Please note that these recommendations are subject to revision should further design or engineering details become available. In such cases, this report will require updating to reflect any changes.

We trust this meets your requirements. Should you require further details or clarification, please do not hesitate to contact the undersigned or Natalie Black, Senior Environmental Manager (0431 249 360).

Yours faithfully,

Mitch Dyer

Arborist

AQF5

0489 298 298

9.0 References

Fairley, A. and Moore, P. (2010). Native Plants of the Sydney Region, From Newcastle to Nowra and West to the Dividing Range. Third Edition. Allen & Unwin, Sydney, NSW.

Mattheck, C. and Breloer, H. (1999). The Body Language of Trees – a handbook for failure analysis 5th ed., London: The Stationery Office, UK.

NSW Department of Planning, Industry and Environment (2023) *eSpadev2 Spatial viewer*. Accessed from https://www.environment.nsw.gov.au/eSpade2Webapp#.

Robinson, L. (1991). Field Guide to the Native Plants of Sydney. Revised Second Edition. Kangaroo Press.

Standards Australia (2007). Australian Standards 4373 – 2007 Pruning of Amenity Trees. Prepared by Committee EV-018, Standards Australia.

Standards Australia (2009). Australian Standards 4970 – 2009 Protection of trees on development Sites. Prepared by Committee EV-018, Council of Standards Australia.

PDF 24299C dC00 r1 CONCEPT CIVIL ENGINEERING DESIGN

PDF 24299LT DA SW r1 Stormwater Management Plan

Nearmap (2025) *Mapbrowser* Accessed April 2024 from https://www.nearmap.com/au

Appendix A – Tree Schedule

Appendix A– Assessed Tree Schedule

Tree ID	*Scientific Name*	Common Name	DBH (m)	DAB (m)	Canopy Spread (m)				Canopy Spread Average	Estimated Total Canopy Area	Height (m)	Age Class	Health	Structure	Landscape significance rating	Estimated life expectancy	Retention Value	TPZ (m)	SRZ (m)	Remove / Retain
					N	E	S	W	(m)	(m^2)										
1	*Syagrus romanzoffiana*	Cocos Palm	0.34	0.40	3	3	3	3	3	28	9	Mature	Good	Good	Low	.5-15	Low	4.1	2.3	Remove (Footprint)
2	*Syagrus romanzoffiana*	Cocos Palm	0.31	0.38	3	3	3	3	3	28	9	Mature	Good	Good	Low	.5-15	Low	3.7	2.2	Remove (Footprint)
3	*Syagrus romanzoffiana*	Cocos Palm	0.37	0.47	3	3	3	3	3	28	9	Mature	Good	Good	Low	.5-15	Low	4.4	2.4	Remove (Footprint)
4	*Syagrus romanzoffiana*	Cocos Palm	0.25	0.32	3	3	3	3	3	28	10	Mature	Good	Good	Low	.5-15	Low	3.0	2.1	Remove (Footprint)
5	*Syagrus romanzoffiana*	Cocos Palm	0.40	0.44	3	3	3	3	3	28	7	Mature	Good	Good	Low	.5-15	Low	4.8	2.3	Remove (Footprint)
6	*Syagrus romanzoffiana*	Cocos Palm	0.35	0.39	3	3	3	3	3	28	9	Mature	Good	Good	Low	.5-15	Low	4.2	2.2	Remove (Footprint)
7	*Syagrus romanzoffiana*	Cocos Palm	0.29	0.38	2	2	2	2	2	13	7	Mature	Good	Good	Low	.5-15	Low	3.5	2.2	Remove (Footprint)
8	*Syagrus romanzoffiana*	Cocos Palm	0.38	0.35	2	2	2	2	2	13	5	Mature	Good	Good	Low	.5-15	Low	4.6	2.1	Remove (Footprint)
9	*Syagrus romanzoffiana*	Cocos Palm	0.25	0.30	2	2	2	2	2	13	5	Mature	Good	Good	Low	.5-15	Low	3.0	2.0	Remove (Footprint)
10	*Syagrus romanzoffiana*	Cocos Palm	0.30	0.40	2	2	2	2	2	13	7	Mature	Good	Good	Low	.5-15	Low	3.6	2.3	Remove (Footprint)
11	*Syagrus romanzoffiana*	Cocos Palm	0.31	0.42	2	2	2	2	2	13	6	Mature	Good	Good	Low	.5-15	Low	3.7	2.3	Remove (Footprint)
12	*Eucalyptus sideroxylon*	Red Ironbark	0.44	0.47	3	3	3	3	3	28	9	Mature	Good	Good	Low	40+	Moderate	5.3	2.4	Remove (Footprint)
13	*Syagrus romanzoffiana*	Cocos Palm	0.40	0.45	3	3	3	3	3	28	6	Mature	Good	Good	Low	.5-15	Low	4.8	2.4	Remove (Footprint)
14	*Syagrus romanzoffiana*	Cocos Palm	0.35	0.40	3	3	3	3	3	28	9	Mature	Good	Good	Low	.5-15	Low	4.2	2.3	Remove (Footprint)

Tree ID	*Scientific Name*	Common Name	DBH (m)	DAB (m)	Canopy Spread (m)				Canopy Spread Average	Estimated Total Canopy Area	Height (m)	Age Class	Health	Structure	Landscape significance rating	Estimated life expectancy	Retention Value	TPZ (m)	SRZ (m)	Remove / Retain
					N	E	S	W	(m)	(m^2)										
15	*Syagrus romanzoffiana*	Cocos Palm	0.35	0.40	3	3	3	3	3	28	9	Mature	Good	Good	Low	.5-15	Low	4.2	2.3	Remove (Footprint)
16	*Syagrus romanzoffiana*	Cocos Palm	0.30	0.30	2	2	2	2	2	13	5	Mature	Good	Good	Low	.5-15	Low	3.6	2.0	Remove (Footprint)
17	*Syagrus romanzoffiana*	Cocos Palm	0.35	0.35	2	2	2	2	2	13	7	Mature	Good	Good	Low	.5-15	Low	4.2	2.1	Remove (Footprint)
18	*Syagrus romanzoffiana*	Cocos Palm	0.33	0.43	3	3	3	3	3	28	10	Mature	Good	Good	Low	.5-15	Low	4.0	2.3	Remove (Footprint)
19	*Syagrus romanzoffiana*	Cocos Palm	0.31	0.36	3	3	3	3	3	28	9	Mature	Good	Good	Low	.5-15	Low	3.7	2.2	Remove (Footprint)
20	*Syagrus romanzoffiana*	Cocos Palm	0.31	0.34	2	2	2	2	2	13	8	Mature	Good	Good	Low	.5-15	Low	3.7	2.1	Remove (Footprint)
21	*Syagrus romanzoffiana*	Cocos Palm	0.28	0.30	2	2	2	2	2	13	5	Mature	Good	Good	Low	.5-15	Low	3.4	2.0	Remove (Footprint)
22	*Syagrus romanzoffiana*	Cocos Palm	0.33	0.38	3	3	3	3	3	28	8	Mature	Good	Good	Low	.5-15	Low	4.0	2.2	Remove (Footprint)
23	*Eucalyptus robusta*	Swamp Mahogany	0.57	0.64	5	5	5	3	4.5	64	13	Mature	Good	Good	Moderate	40+	Moderate	6.8	2.7	Remove (Footprint)
24	*Eucalyptus robusta*	Swamp Mahogany	0.49	0.58	2	2	2	2	2	13	5	Mature	Poor	Poor	Low	.5-15	Low	5.9	2.6	Remove (Footprint)
25	*Eucalyptus robusta*	Swamp Mahogany	0.74	0.70	6	5	6	3	5	79	16	Mature	Good	Good	Moderate	40+	Moderate	8.9	2.9	Remove (Footprint)
27	*Casuarina glauca*	Swamp Oak	0.57	0.80	4	2	5	4	3.75	44	12	Mature	Good	Poor	Moderate	.5-15	Low	6.8	3.0	Remove (Footprint)
26	*Olea europaea*	African Olive Tree	0.25	0.45	4	3	4	4	3.75	44	6	Mature	Good	Good	Low	.5-15	Low	3.0	2.4	Remove (Footprint)
28	*Casuarina glauca*	Swamp Oak	0.25	0.35	2	2	2	2	2	13	9	Mature	Good	Good	Low	.5-15	Low	3.0	2.1	Remove (Footprint)
29	*Casuarina glauca*	Swamp Oak	0.18	0.22	1	1	1	1	1	3	6	Semi-Mature	Good	Good	Low	.5-15	Low	2.2	1.8	Remove (Footprint)
30	*Casuarina glauca*	Swamp Oak	0.40	0.46	3	3	3	3	3	28	9	Mature	Good	Good	Low	15-40	Low	4.8	2.4	Remove (Footprint)
31	*Casuarina glauca*	Swamp Oak	0.20	0.30	2	2	2	2	2	13	9	Mature	Good	Good	Low	15-40	Low	2.4	2.0	Remove (Footprint)
32	*Casuarina glauca*	Swamp Oak	0.27	0.38	2	2	2	2	2	13	9	Mature	Good	Good	Low	15-40	Low	3.2	2.2	Remove (Footprint)

Tree ID	*Scientific Name*	Common Name	DBH (m)	DAB (m)	Canopy Spread (m)				Canopy Spread Average	Estimated Total Canopy Area	Height (m)	Age Class	Health	Structure	Landscape significance rating	Estimated life expectancy	Retention Value	TPZ (m)	SRZ (m)	Remove / Retain
					N	E	S	W	(m)	(m^2)										
33	*Casuarina glauca*	Swamp Oak	0.32	0.40	2	2	2	2	2	13	9	Mature	Good	Good	Low	15-40	Low	3.8	2.3	Remove (Footprint)
34	*Dead Tree*	Stag	0.27	0.27	0	0	0	0	0	0	8	Semi-Mature	Dead	Dead	Very Low	Dead	Very Low	3.2	1.9	Remove (Footprint)
35	*Gleditsia triacanthos*	Honey locust	0.57	0.48	5	5	4	4	4.5	64	7	Mature	Good	Fair	Moderate	15-40	Moderate	6.8	2.4	Remove (Footprint)
36	*Callistemon viminalis*	Weeping Bottlebrush	0.43	0.43	2	2	2	2	2	13	4	Semi-Mature	Good	Fair	Low	.5-15	Low	5.2	2.3	Remove (Footprint)
37	*Gleditsia triacanthos*	Honey locust	0.45	0.51	5	6	5	3	4.75	71	8	Mature	Good	Good	Moderate	15-40	Moderate	5.4	2.5	Remove (Footprint)

Appendix B – Glossary

GLOSSARY

Age Classes

- Juvenile refers to an immature tree.
- Semi-mature refers to a tree between immaturity and full size.
- Mature refers to a full-sized tree with some capacity for further growth.
- Over-mature refers to a tree already in decline.

Diameter at breast height (DBH)

Tree stem diameter at 1.4 meters above ground level.

Diameter at buttress (DAB)

Tree stem diameter as measured above the root buttress at ground level.

Tree Protection Zone (TPZ)

An indicative measure of the area necessary to protect for tree viability, encompassing the area necessary to protect both the crown and woody roots as calculated by the formula TPZ= DBH x 12

Structural Root Zone (SRZ)

An indicative measure of the spread of the primary woody and structural roots necessary for tree stability, as calculated by the formula SRZ= $(DAB*50)^{0.42}x0.64$

Visual Tree Assessment (VTA)

Visual inspection of tree only.

Co-dominant leaders

A tree where two or more stems are of similar diameter.

Included Bark Junctions

A junction where the angle of the union creates an area of ingrown bark. This can create a structural weakness, and is often found on co-dominant stems.

Crown

The portion of the tree consisting of branches and leaves and any part of the trunk from which branches arise.

Stem

The position of the tree consisting of branches and leaves and any part of the trunk from which branches arise. An organ which supports branches, leaves, flowers and fruits.

Epicormic Growth

Refers to shoots produced by dormant buds within the bark or stem of a tree as a result of stress, incorrect pruning or increased light.

Health Condition

Exceptional

- Visually complete crown with dense foliage throughout that indicates strong health and vigor.
- Leaf size and colour that is true to type for the species and free from pest (insect) and disease (pathogen) damage.

- Expected levels of primary growth or seasonal extension and internodal growth evident for the species.
- No evidence of colonising saprophytes and no deadwood evident.

Good

- Visually complete crown, varying in foliage density throughout.
- Leaf size and colour that is true to type for the species with none or minor levels of pest (insect) and/or disease (pathogen) damage evident.
- Expected levels of primary growth or seasonal extension and internodal growth evident for the species.
- No evidence of colonising saprophytes and low levels of deadwood present and approximately 10mm or less in size.

Fair

- Sparse crown, varying in foliage density throughout.
- Reduced leaf size and atypical in colour for the species.
- Low to medium levels of pest (insect) and/or disease (pathogen) damage.
- Reduced, seasonal extension and internodal growth.
- Deadwood easily visible and less than approximately 30mm in size.
- Epicormic growth may be evident.

Poor

- Obvious signs of crown decline, exhibiting significant reduction in live crown volume and foliage density with reduced leaf size and atypical in colour for the species.
- Evidence of defoliation and/or dieback of branch tips.
- Medium to high levels of pest (insect) and disease (pathogen) damage.
- Presence of exudates (kino and resins) from wounds (open and/or weeping).
- Significant reduction in seasonal extension and internodal growth, with significant levels of epicormic growth evident.
- Deadwood easily visible, approximately 30mm to 100mm in size.

Dead

- No evidence of live foliage observed throughout the crown.
- Obvious signs of cracking and shrinking wood.
- Visible evidence of delaminating bark to stems and branches.

Structure Condition

Very Good

- Strong branch unions at attachment points with no acute angles (compression and tension forks) and good branch taper at unions.
- No visibly, defective tree parts or structural defects.
- No wounds to stems and branches, no crossing and rubbing of branches and no wounds to exposed roots.
- No fungal fruiting bodies present to stems, branches and roots indicating, a presence of fungal pathogens.

Good to Fair

- Developing inclusions at unions of leading, codominant stems and branches.
- Evidence of defective tree parts (low levels) including branch and stem inclusions and crossing and rubbing of branches.
- Evidence of mechanical damage to periderm of stems, branches and roots, exposing vascular tissues.
- Exposed wounds for surface, colonising pathogens and entry points for developing decay.
- Presence of fungal fruiting bodies.
- Some evidence of cavities or hollows. (Fair only)
- No evidence of soil upheaval surrounding base of tree.

Poor

- Obvious signs and evidence of included bark to basal unions of codominant, leading stems and branches.
- Advanced, structural defects evident with failure of tree parts determined within 5 years from time of inspection and assessment.
- Evidence of decay from open wounds with presence of exudates (kino and resins) and exposed and degraded woody tissues.
- Presence of fungal fruiting bodies.
- Presence of cavities and hollows.
- Evidence of mechanical damage with advanced degradation of exposed roots.

a) Hazardous Tree

b) Immediate Removal

- Advanced, structural defects evident. Open cracks to codominant stem and branch unions evident.
- Previous branch and stem failures evident. Failure of remaining tree parts determined within 3 months 6 months, from time of inspection and assessment. Arboricultural works to be scheduled immediately to mitigate associated hazard and risk.
- Severed roots and soil upheaval evident indicating failure of root zone.
- Tree failure imminent within 12 months from time of inspection and assessment

Landscape Significance

Assesses a tree within the landscape and rates according to criteria taken from Morton (2006):

1. Significant

- The subject tree is listed as a Heritage Item under the Local Environment Plan (LEP) with a local, state or national level of significance; or
- The subject tree forms part of the curtilage of a Heritage Item (building / structure /artifact as defined under the LEP) and has a known or documented association with that item; or
- The subject tree is a Commemorative Planting having been planted by an important historical person (s) or to commemorate an important historical event; or

- The subject tree is scheduled as a Threatened Species or is a key indicator species of an Endangered Ecological Community as defined under the or Biodiversity Conservation Act 2016 (NSW) or The Environmental Protection and Biodiversity Conservation Act 1999 (Federal); or
- The tree is a locally indigenous species, representative of the original vegetation of the area and is known as an important food, shelter or nesting tree for endangered or threatened fauna species; or
- The subject tree is a Remnant Tree, being a tree in existence prior to development of the area; or
- The subject tree has a very large live crown size exceeding 300m² with normal to dense foliage cover, is located in a visually prominent in the landscape, exhibits very good form and habit typical of the species and makes a significant contribution to the amenity and visual character of the area by creating a sense of place or creating a sense of identity; or
- The tree is visually prominent in view from surrounding areas, being a landmark or visible from a considerable distance.

2. Very high

- The tree has a strong historical association with a heritage item (building/structure/artifact/garden etc) within or adjacent the property and/or
- Exemplifies a particular era or style of landscape design associated with the original development of the site; or
- The subject tree is listed on Council's Significant Tree Register; or
- The tree is a locally-indigenous species and representative of the original vegetation of the area and the tree is located within a defined Vegetation Link/ Wildlife Corridor or has known wildlife habitat value;
- The subject tree has a very large live crown size exceeding 200m²; a crown density exceeding 70% Crown Cover (normal-dense), is a very good representative of the species in terms of its form and branching habit or is aesthetically distinctive and makes a positive contribution to the visual character and the amenity of the area.

3. High

- The tree has a suspected historical association with a heritage item or landscape supported by anecdotal or visual evidence; or
- The tree is a locally-indigenous species and representative of the original vegetation of the area; or
- The subject tree has a large live crown size exceeding 100m²; and
- The tree is a good representative of the species in terms of its form and branching habit with minor deviations from normal (eg crown distortion/suppression) with a crown density of at least 70% Crown Cover (normal); and
- The subject tree is visible from the street and surrounding properties and makes a positive contribution to the visual character and the amenity of the area.

4. Moderate

- The subject tree has a medium live crown size exceeding 40m²; and
- The tree is a fair representative of the species, exhibiting moderate deviations from typical form (distortion/suppression etc) with a crown density of more than 50% Crown Cover (thinning to normal); and
- The tree makes a fair contribution to the visual character and amenity of the area; and

- The tree is visible from surrounding properties, but is not visually prominent – view may be partially obscured by other vegetation or built forms.
- The tree has no known or suspected historical association

5. Low

- The subject tree has a small live crown size of less than 40m² and can be replaced within the short term with new tree planting; or
- The tree is a poor representative of the species, showing significant deviations from the typical form and branching habit with a crown density of less than 50% Crown Cover (sparse); and
- The subject tree is not visible from surrounding properties (visibility obscured) and makes a negligible contribution or has a negative impact on the amenity and visual character of the area.

6. Very low

- The subject tree is listed as an Environment Weed Species in the relevant Local Government Area, being invasive, or a nuisance species.
- The subject tree is scheduled as exempt (not protected) under the provisions of the local Council's Tree Preservation Order due to its species, nuisance or position relative to buildings or other structures.

7. Insignificant

- The tree is a declared Noxious Weed under the Biosecurity Act (NSW) 2015 or identified as a priority weed within the local region.

Appendix C – Site Photographs

Plate 1 Above: Trees 1 - 11 – *Syagrus romanzoffiana.*

Plate 2 Below: Tree 12 – *Eucalyptus sideroxylon*.

Plate 3 Above: Trees 13-17 – Syagrus romanzoffiana showing position on gradient.

Plate 4 Below: Tree 35 and 37 – Gleditsia triacanthos.

Plate 5 Above: Tree 27 – *Casuarina glauca* trunk section showing co-dominant leaders, cracking and decay.

Plate 6 Below: Tree 34 – *Casuarina* sp. stag tree (deceased).

Plate 7 Above: Tree 24 - *Eucalyptus robusta showing epi-cormic re-growth*.

Plate 8 Below: Tree 26 Olea europaea.

Plate 9 Above: Eastern boundary aspect. Showing small *Olea europaea* and *syzgium sp.* trees.