



University of New England Armidale Tree Management Plan

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Revisions

Version	Date	Comments	Authorised
1	3/03/2021	Version 1	Associate Director Operations, EBE
2	10/03/2023	Revised tree communication protocols	Director, EBE
2	19/04/2023	New procedure for dead tree removal	Director, EBE

University of New England Tree Management Plan

1. Introduction

The Urban Forest is a significant feature of the University of New England's (UNE) campus. It contributes to the campus' character, provides shade, enhances biodiversity, and improves the health, wellbeing and experience of students, staff and visitors.

The management of the urban forest at University is a balance between maintaining the vegetation and habitat for native fauna and ensuring a safe environment for students, staff and visitors to the campus. As the owner of the high voltage network, UNE also has a responsibility to manage vegetation near power lines to maintain safety to individuals and a reliable, high quality electricity supply.

2. Objectives

The two key objectives of this Tree Management plan (TMP) are to address the Work Health and Safety aspect of the vegetation on campus:

1. Managing the risk associated with falling trees or limbs, as identified through regular inspections of the trees by a minimum Level 5 Qualified Arborist; and
2. Safely maintaining the electricity infrastructure on campus by ensuring vegetation does not impact the electrical network, both above and below ground.

This document will:

- Provide an overview of the risk management process for trees at the UNE Armidale campus based on arborists assessments and recommendations;
- Address the legislative requirements for the electricity distributor under the *Electricity Supply (Safety and Network Management) Regulation 2014* and the *Electricity Supply Act 1995*;
- Identify the roles and responsibilities of key stakeholders;
- Establish reactive response protocols;
- Minimise danger to the public posed by trees in close proximity to powerlines;
- Reduce the risk of fires caused by trees coming into contact with electricity wires;
- Minimise environmental impact during tree removal and maintenance;
- Reduce the risk of vegetation causing damage to or interfering with powerlines; and
- Identify acceptable mitigation actions.

3. Scope

The scope of this plan is limited to:

- The main UNE campus located in Armidale, NSW;
- The Work, Health and Safety aspects of tree management to ensure a safe campus for students, staff and visitors;
- Protection of electrical infrastructure
- Tree safety risk assessment and mitigation actions;
- Emergency tree protocols.

The scope of this document excludes:

- Management of trees on the UNE SMART Farms, regional study centres and the Parramatta Campus; and
- The environmental aspects of the urban forest, including habitat management, tree plantings and landscaping (this is covered by the UNE Landscape Management Plan).

4. Legislative Drivers

The following electrical safety legislation applies:

- Part 5 of the *Electricity Supply (Safety and Network Management) Regulation 2014* which relates to management of vegetation by a network operator;
- Section 48 of the *Electricity Supply Act 1995* which covers Interference with electricity works by trees and contains requirements for maintaining vegetation and powers of a distributor to ensure trees do not cause interference with electricity assets.

Management of the vegetation at UNE also takes into consideration the following:

- National Parks and Wildlife Act 1974;
- Environment Protection and Biodiversity Conservation Act 1999;
- State Environmental Planning Policy (Educational Establishments and Child Care Facilities) 2017; and
- Protection of the Environment Operations Act 1997.
- Heritage Act 1977
- Native Vegetation Act 2003
- Noxious Weeds Act 1993
- Plant Diseases Act 1924
- Threatened Species Conservation Act 1995.

5. Key Stakeholders

5.1. University of New England

In 2020 the University took over the High Voltage network from Essential Energy as part of the Stage 1 Solar Farm project. As the owner of the network, UNE is responsible for maintaining the safety and protection of this asset, including protection from damage due to trees and other vegetation.

5.2. Estate and Built Environment

Estate and Built Environment (EBE) is responsible for the maintenance of the campus including the built environment and the surrounding landscape. Each year a minimum Level 5 qualified Arborist assesses the attributes of over 5,000 trees on the campus, taking into account not just the trees health and structural condition, but its location (e.g. whether it is located in an area that is highly trafficked by pedestrians such as a main footpath), whether or not there are visible defects such as soil lifting or cracking, and the environmental, social and cultural significance of the tree. From this assessment derives a risk rating and recommended remedial actions to form the basis of the Universities Tree management strategy.

5.3. UNE Work Health and Safety

The key functions of the UNE Work, Health and Safety (WHS) team are to:

- Develop and maintain capability to effectively manage safety and organisational hazards and risks;
- Provide training, support and motivate staff to effectively identify, report and investigate workplace incidents, hazards and risks;
- Develop culture to embed safety and wellbeing into all processes and tasks to continuously improve performance;
- Build resilience through structured Emergency Management and Business Continuity planning and response practices; and

- Support the Health and Wellbeing of staff and students and deliver appropriate Injury/Illness Management.

5.4. Landscape Advisory Committee

The Landscape Advisory Committee (LAC) was established in 2018 and includes representatives from EBE, Aboriginal Cultural Advisor, and UNE staff and students. The LAC provides a forum for consultation and feedback from the University community regarding the development, management and maintenance of the natural bushland and landscape spaces at the Armidale Campus.

Following the results of the annual tree assessment the LAC is invited to inspect and comment on individual trees and the recommended remedial actions (e.g. exclusion zones, pruning, removal of deadwood, removal of trees) to reach a consensus on their ongoing management. The LAC is also consulted on new and replacement plantings.

5.5. Landscape Management Committee

The Landscape Management Committee (LMC) is established as a Vice-Chancellor's Committee and is delegated a number of functions in relation to the development, management, and maintenance of the natural bushland and landscape spaces at the University of New England, Armidale Campus.

5.6. Armidale Regional Council

Armidale Regional Council (ARC) considers it important to preserve and manage existing tree plantings to maintain the scenic qualities of the local landscape and streetscape. In addition to their aesthetic qualities, new and replacement plantings are encouraged to establish and maintain green corridors, to increase species diversity, and to reduce the impacts of pollution and climate change. The provisions for the preservation of trees or other vegetation is outlined in the Armidale Regional Local Environmental Plan 2012.

6. Tree Structure Risk Management

This section outlines the tree management process with regards to the health and structural aspects of the tree based on an assessment by a Level 5 qualified arborist.

6.1. Arborist Inspection and Risk Assessment

Trees are assessed at the UNE campus on an annual basis, and after significant weather events in consultation with UNE Work Health and Safety (WHS). In 2020 4,774 trees were inspected and assessed using techniques including Picus/Arbotom Sonic Tomograph testing, Resistograph testing and Aerial Inspection of defects. The tree is assessed by a minimum level 5 qualified arborist and assigned a risk rating of:

- Negligible;
- Very Low;
- Low;
- Medium;
- High;
- Urgent; or
- Critical.

		PROBABILITY				
		A). No Detectable Threat	B). Failure Unlikely	C). Failure Possible	D). Failure Likely	E). Failure Certain
CONSEQUENCE	1). Minor	NEGLECTIBLE	VERY LOW	LOW	MEDIUM	MEDIUM
	2). Moderate	VERY LOW	LOW	MEDIUM	MEDIUM	HIGH
	3). Serious	LOW	MEDIUM	MEDIUM	HIGH	URGENT
	4). Extreme	MEDIUM	MEDIUM	HIGH	URGENT	CRITICAL

Figure 1: Risk Rating Matrix

A risk matrix rating of high, urgent or critical risk is deemed to be unacceptable by EBE. These ratings can be assigned for a variety of tree structural/health scenarios with mitigation methods being as varied. In some cases it is necessary to remove trees where alternative actions such as implementing exclusion zones, reduction or habitat pruning, or installing supporting hardware are not possible, provide only short term mitigation or are deemed unreasonable.

6.2. Tree Remediation Actions

The Level 5 qualified arborist provides a report to UNE with remediation actions to address the risk level of each tree. For each tree, the report contains the following information:

- Date of inspection
- Tree ID number
- Risk category (from Critical down to Negligible)
- Location
- Species and common name
- Arborist comments which include observations and descriptions of the issue/s
- Work required; and
- Estimated cost to undertake remedial works.

As previously mentioned, a summary report is provided to the LAC and a subsequent site visit to each tree is undertaken.

6.3. Remediation Action Roles and Responsibilities

The following table outlines the roles and responsibilities relating to the risk assessment of trees. Please refer to Appendix A for the process flowchart.

Table 1: Roles and Responsibilities Relating to Tree Risk Assessment

Action	Responsible	Comments
Arborist tree inspection	Arborist, EBE	Annual inspection currently assesses almost 5,000 individual trees
Arborist Report provided to UNE. EBE to provide report to COO	Arborist, EBE	Any critical or urgent rated trees to be addressed immediately, determine suitability of exclusion zone as interim measure
Critical and Urgent trees to be prioritised for mitigation action.	EBE	Depending on contractor availability, additional measures such as signage, WHS app alert, UNE communication to avoid tree vicinity
EBE and WHS review Arborist Report and identify high risk trees requiring immediate action after site inspection	EBE, WHS	Action could include implementation of exclusion zone as interim while tree contractors are being engaged. Any proposed actions are to be approved by arborist. If actions do not change the risk rating from High to an acceptable level of Medium or Low,

		tree is to be removed asap, with approval from the COO.
LAC provided with high risk trees and proposed actions	EBE, LAC	A summary report including location maps, tree defects and proposed actions.
EBE provide LAC and public 14 days to provide feedback on proposed actions	EBE	EBE ensure proposed tree maintenance activities published on Urban Forest Maintenance website for 14 days, and notice provided in EBE weekly update
LAC tree inspection	EBE, LAC	Representative of EBE to attend with LAC members if they request a site inspection
Outcomes of LAC inspection summarised for discussion at LAC meeting	EBE, LAC, WHS	Arborist recommendations and potential alternatives to removal discussed. Any proposals that differ from arborist advice to be consulted with arborist for approval.
LAC endorse management plan for high risk trees	LAC	Aim for as soon as possible
Plan sent to COO for approval	EBE	Final plan requires approval from the COO prior to actions
Implement LAC endorsed works	EBE	Notice of disruptions to be sent out via weekly EBE update
Update Arborist tree database with outcomes of maintenance	Arborist	EBE to advise Arborist when maintenance is complete so they can update the database
Update the interactive tree map for the UNE website	EBE	The interactive website will require an update at least annually.

7. Risk Mitigation Measures

7.1. Exclusion Zones

If a tree is rated Critical or Urgent an exclusion zone must be implemented until tree contractors can remove the tree or prune to Arborist specifications.

Trees rated high risk to be reviewed by EBE and WHS to determine if there are trees that require additional measures, over and above recommended mitigation actions such as interim exclusion zones, on trees located in highly trafficked areas or outdoor congregation areas.

7.2. Pruning and Removal of Deadwood

Pruning and dead wood removal are to be endorsed by LAC prior to commencing unless the tree is deemed High, Urgent or Critical.

7.3. Tree Removal

Tree removals are to be endorsed by the LAC and communicated as per the process listed in Table 1, in section 6.3 of this plan. UNE has veto right to remove trees deemed dangerous without consultation in instances where timing is critical.

7.4. Dead Tree Removal

- EBE to provide the following information to LAC:
 - Tree ID # and species
 - Location
 - Photos (making sure to capture every angle of the tree)
 - Confirmation that the tree has no cultural or ecological value
- LAC given 14 days for feedback, with a reminder 3 days before feedback due
- Information to be placed on UNE Urban Forest Maintenance website for 14 days; notice to staff via weekly EBE update
- If there are any objections to particular trees, these will be tabled at the next LAC meeting

- Approved trees to be added to schedule for the next time tree contractors are on site
- Arborist database updated to reflect removed trees.

8. Electrical Safety Risk Management

This section outlines tree management with regards to minimising risks associated with vegetation in proximity to power lines, reducing the risk of fires caused by trees coming into contact with electrical wires, and ensuring a safe and reliable supply of electricity.

8.1. Species Selection for Planting in Proximity to Electrical Infrastructure

The size of the mature plant should always be considered when planting in proximity to electrical infrastructure. This applies not just to above head power lines, but also underground infrastructure such as buried cable, electrical pits and pad mount transformers, where root systems may cause impacts. Access for future maintenance should also be a consideration.

A list of recommended species has been provided by the Armidale Tree Group and endorsed by the LAC. Appendix C contains a list of unsuitable species as published by Essential Energy.

Suitable Species:

- Acacia Rubida: red stemmed wattle 3 metres in height
- Acacia fimbriata: fringed wattle 3 metres in height
- Acacia pravissima: ovens Wattle 3 metres in height
- Banksia integrifolia: 2.5 metres in height
- Callistemon ptyoides: Alpine Bottlebrush 2 metres
- Callistemon pungens: Lana Bottlebrush 3 metres
- Leptospermum: minutifolium Small Leaf Tea Tree 2 metres
- Leptospermum: novae-angliae New England Tea Tree 2 metres
- Melaleuca decussate: cross-leaf Honey Myrtle 2.5 metres

Species that are native to the area will be prioritised, as their adaptation to the local soils and climate conditions will increase the rate of survival. This also aligns with the key objectives of the Landscape Management Plan and Environmental Sustainability Strategy.

8.2. Maintenance of Existing Vegetation

Each year prior to the commencement of the bushfire season (September), an inspection of trees and power lines will be undertaken by the Engineering Services Manager (ESM) in consultation with Arborist as required. The ESM will provide a report detailing the maintenance requirements, and the works will be scheduled as soon as practicable.

The UNE Landscape Management Plan will specify the planting guidelines for zones in the vicinity of electrical infrastructure. Any new plantings will be endorsed by the Landscape Advisory Committee and a representative of WHS which will ensure that no unsuitable vegetation selected.

8.3. Emergency Tree Maintenance

In an emergency situation Security will immediately notify the EBE Operational and Grounds Teams to report the incident. Emergency services are also immediately contacted where required and UNE WHS is notified.

If power lines have been impacted, the Engineering Services Manager will turn off and isolate the area immediately and notify Essential Energy. The contractor have a four hour response plan and will

coordinate with Essential Energy where necessary. Please refer to Appendix D and E for the Contractor Emergency Response Plan and Bushfire Management Plan

8.4. Trimming Methodology

Trimming will be undertaken in accordance with Australian Standard AS 4373-2007: Pruning of Amenity Trees. This standard sets out the requirements including considerations prior to pruning, foliage distribution, pruning classes, unacceptable practices and root pruning..

8.5. Accredited Contractors

All works relating to tree maintenance will be undertaken by an appropriately qualified, accredited contractor. Arborist recommend that at a minimum, the contractor must have the following:

- Accreditation/licensing to work in the vicinity of power lines;
- Construction Induction card;
- First Aid: It is a Work Safe requirement that an adequate number of workers are trained to administer first aid at the workplace
- Chainsaw ticket (current for three years);
- Australian Qualifications Framework (AQF) levels of:
 - AQF Level 1 to trim and cut felled trees;
 - AQF Level 2 for basic and intermediate tree felling; and
 - QQG Level 3 for advanced tree felling.
- Evidence of competency in the operation of wood chippers, such as evidence of appropriate training and instruction and Safe Work Method Statements (SWMS);
- License to operate an Elevated Work Platform (Boom Lift);
- Climbers should have a climbing certificate and rescue aloft certificate;
- Evidence of appropriate level of training in the use of Bobcats and Excavators;
- Insurance and industry membership.

8.6. Tree Maintenance Cost Allocation

UNE will cover the costs associated with tree maintenance activities.

8.7. Environmental Factors

8.7.1. Protection of Wildlife

Ecologist to assess the trees to identify hollow bearing and habitat trees and evidence of fauna usage (including presence of bird nests and possum dreys). Prior to clearing and pruning works, veterinarians/wildlife workers will be contacted to ensure they are available to treat injured fauna, if required.

An experienced ecologist/wildlife worker will inspect trees to be removed for any arboreal fauna and bird nests prior to removal or modification. If nesting avifauna are identified within the canopy the preference is for the clearing to be undertaken at a later date when the nest is empty. If a Koala is present within any tree to be removed (or within 50 metres of an area to be cleared/disturbed), then works would be delayed in that area until the Koala dispersed of its own volition.

A licenced arborist, experienced in the felling of habitat trees will undertake tree/modification removal works. Where hollows trunk or limbs hollows require removal, an arboreal inspection of the hollow would be undertaken by the arborist. If unexpected protected fauna is discovered, then work would stop immediately, and a plan would be formulated by the ecologist/wildlife carer to determine the most appropriate course of action.

8.7.2. Aboriginal Cultural and Heritage Considerations

Where trees with Aboriginal Cultural or local/state/commonwealth heritage significance requires maintenance or removal, potential impacts will be evaluated prior to undertaking works. No works will be carried out on a heritage listed or protected site without prior approval from the appropriate authority. All works will be carried out in accordance with the conditions stated within approvals.

8.7.3. Noise

All works will be undertaken during business hours with the exception of an emergency event requiring immediate action. A Notice of Disruption will be sent to staff detailing the location, duration and nature of the works.

8.7.4. Weeds

Where invasive weed control is required, UNE will ensure all pesticide application is carried out by appropriately trained personnel and that the Pesticide Notification Plan is implemented, which will provide the community with information to enables them to avoid potential contact with pesticides.

Any manual removal of invasive species will be disposed of at an appropriate waste facility, with a record of the disposal recorded internally.

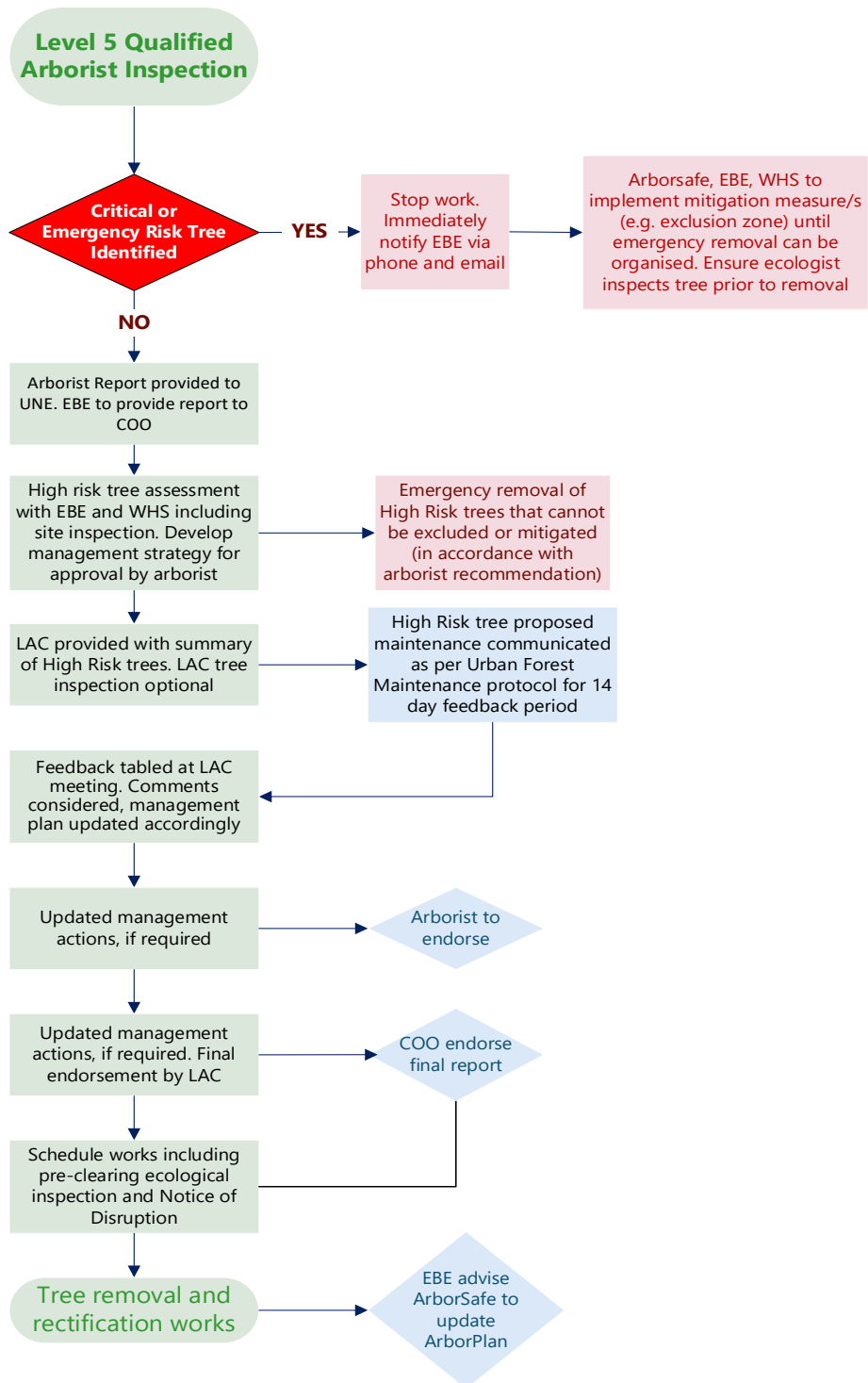
8.7.5. Erosion and Sediment Control

Where trees must be removed, erosion and sedimentation controls will be implemented where required. Prevention of potential erosion and sediment through the retention of root structures will be applied, and vegetated buffer zones adjacent to waterways will be retained where possible.

8.8. Public Education and Publicity

Given that UNE, specifically the EBE Team, have control over the planting activities that occur on campus the requirement to encourage suitable species selection and maintenance is not a necessity.

9. Appendix A: Remediation Action Roles and Responsibilities Flowchart



10. Appendix B: Legislative Requirements

The items required in the Tree Management Plan under Part 5 of the *Electricity Supply (Safety and Network Management) Regulation 2014* are addressed in the following sections.

Tree Management Plan Requirements	Section
(a) Lists of suitable species of trees for planting under or near power lines in different localities or situations	7.1 Appendix B
(b) Plans for trimming or removing and replacing existing trees and for controlling future planting of suitable species of trees	7.2
(c) Trimming or removing trees in an emergency	7.3
(d) Methods for trimming trees	7.4
(e) The use of accredited contractors for trimming trees	7.5
(f) The intended allocation of costs between the distributor and Armidale Regional Council	7.6
(g) The environmental factors to be considered in trimming trees	7.7

11. Appendix C: Suitable and Unsuitable Tree Species

Essential Energy considers the trees listed in the table below and other tall growing species (where height may exceed 3 metres) as unsuitable under or near powerlines.

Table 2: Essential Energy List of Unsuitable Species

Botanical name	Common name
Acacia species (large)	Wattle
Acer species	Maples - not Japanese
Acmena species	Lilly Pilly or Bush Cherry
Alnus species	Black & Evergreen alder
Araucaria species	Bunya-Bunya, Hoop or Norfolk Island Pine
Bambusa species	Bamboo
Banksia species (large)	Banksia
Betula species	Birch
Brachychiton species	Lacebark, Flame & Kurrajong
Caesalpinia ferrea	Leopard tree
Casuarina species	She-Oaks
Cedrus species	Cedar, also Fir & Spruce
Celtis species	Nettle-tree
Cinnamomum camphora	Camphor laurel
Cupressus species	Cypress trees
Delonix regia	Poinciana or Flamboyant
Erythrina species	Coral-tree
Eucalyptus species (large)	Gum trees
Ficus species	Fig trees
Fraxinus species	Ash
Gleditsia species	Honey Locust
Grevillia robusta	Silky Oak
Hymenosporum flavum	Native Frangipani
Jacaranda mimosifolia	Jacaranda
Ligustrum species	Privet
Liquidambar species	Liquidambar
Lophostemon confertus	Brush box
Magnolia grandiflora	Bull Bay Magnolia
Melaleuca species (large)	Paperbarks

Melia azedarach	White cedar
Palm species	Palm
Pinus species	Pine
Platanus species	Plane tree
Populus species	Poplar
Quercus species	Oak
Salix species	Willow
Schinus species	Pepper-corn tree
Stenocarpus sinuatus	Qld. Firewheel tree
Syncarpia glomulifera	Turpentine
Syzygium species	Lilly pilly or bush cherry
Tamarix aphylla	Athel pine
Tilia species	Linden or lime tree
Tipuana tipu	Race-horse tree
Ulmus species	Elm
Zelkova serrata	Japanese Elm
ALL	Tall growing fruit & nut trees