

This approval pertains only to vegetation requiring removal as a direct result of the assessable Filling and Excavation works. **No vegetation outside of the Footprint of Filling and Excavation Works as shown on the approved Tree Removal Plans 1 - 9, is permitted to be removed.** Vegetation outside of the footprint of identified Filling and Excavation works is subject to separate assessment and approval under the Natural Assets Local Law 2003.

Arboricultural Impact Assessment

Indooroopilly Golf Course Redevelopment Stage 1

December 2021

PRE-START MEETING

Arrange a Pre-start meeting with DS Ecologist prior to any site/operational works occurring. The Project Arborist and Fauna Spotter Catcher are to be present for the Pre-start meeting.

Sediment and Erosion Control measures must be located wholly outside of the TPZ's of retained vegetation, or otherwise must be approved by the Project Arborist.

Where Sediment and Erosion Control works in the TPZ's of retained trees are approved by the Project Arborist, the Project Arborist must supervise the installation of the works within the TPZ's.

Vegetation at this site is protected under the **Natural Assets Local Law 2003**.

Any interference with vegetation (including clearing, or root/canopy pruning) that are approved on the Tree Removal Plans 1 - 9 require a permit from Council. Works must not commence until all relevant permits have been granted.

Fire Ant Movement Controls

To prevent the spread of fire ants, the Queensland Government has implemented controls that apply to individuals and commercial operators, to restrict the movement of materials that could carry fire ants including soil, turf, potted plants, mulch, baled hay or straw, animal manures, mining or quarry products.

Penalties apply for non-compliance with the movement controls. If you are unsure of your obligations under the Biosecurity Act 2014 contact the relevant Queensland State Government Department.

This plan is to be read in conjunction with the following approved documents:

- Tree Removal Plan
- Tree Data Table
- Fauna Management Plan

Where this plan refers to 'Arborist' or 'Project Arborist', that person must be qualified with AQF level 5 Arboriculture, with a minimum of 10 years industry experience and be a current member of a recognised Arboriculture Association.

THIS APPROVAL SHOULD NOT BE TAKEN TO CONSTITUTE PERMISSION TO ENTER NEIGHBOURING PROPERTIES TO CONSTRUCT (INCLUDING ASSOCIATED WORKS SUCH AS DRAINAGE AND EXCAVATION) ANY BUILT TO BOUNDARY WALL OR FENCES. PERMISSION MUST BE OBTAINED FROM RELEVANT PROPERTY OWNERS.

Herbicides must be applied by appropriately qualified/supervised persons in accordance with the Agricultural Chemicals and Distribution Control Act 1966 at rates identified on registered product labels, or on an Australian Pesticides and Veterinary Medicines Authority (APVMA) issued off-label permit where applicable. Refer to South East Queensland Ecological Restoration Framework for additional guidance.

| Document Control | |
|--|---|
| This document has been prepared by Arbor Australis Consulting Pty Ltd. | |
| Project | |
| Project Name | Indooroopilly Golf Course Redevelopment |
| Report Name | Arboricultural Impact Assessment |
| Site Address | Meiers Road, Indooroopilly QLD 4068. |
| Client | |
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| Author Qualification and Experience Summary | |
| Jeremy Young | <ul style="list-style-type: none"> • AQF level 6 (Arboriculture). • 32 Years industry experience. • Arboriculture Australia, Approved Consultant. • Queensland Arboricultural Association, Approved Consultant. • Brisbane City Council, Panel of Providers, Arboricultural Consultant. • Arboricultural Impact Assessment experience in over 800 projects in the past 8 years ranging from small developments to major infrastructure development. |

| Revision History | | | | | |
|------------------|------------|----------------------------------|--------|----------|------------|
| Issue | Date | Details | Author | Reviewed | Authorised |
| A | 15/12/2021 | Arboricultural Impact Assessment | JY | JB | JDY |

Table of Contents

1.0 Reason for Inspection 5

2.0 Methodology 6

3.0 Documents Provided to AAC 7

4.0 Assumptions and Limitations 7

5.0 Tree Impact Summary - Trees to be Removed 8

6.0 Tree Protection Requirements 10

6.1 Minimum Arboricultural Hold Points 11

6.2 Tree Protection Details 12

7.0 Conclusion 14

Tree Data Table **See separate Document, 'Tree Data Table'.**

Appendix 1: Tree Retention Strategies 43

Appendix 2: Service Installation within Tree Protection Zone 44

Appendix 3: Maintaining Tree Health, General Guidelines 46

DISCLOSURE STATEMENT 48

Arboricultural Impact Assessment: Indooroopilly Golf Course Stage 1

Date of Inspection: 3/11/2021, 4/11/2021 & 5/11/2021

Client: Indooroopilly Golf Club

Site: Meiers Road, Indooroopilly QLD 4068

Proposed Works: Redevelopment of the golf course.

Issues Addressed: Arboricultural Assessment in relation to the proposed works



Final image provided by Arbor Australis Consulting

Image 1: The yellow highlighted area represents the approximate area of tree survey and assessment.

1.0 Reason for Inspection

Indooroopilly Golf Club (IGC) has engaged Arbor Australis Consulting (AAC) to assess the impacts of the proposed works on existing trees.

The tree assessment included a review of the health and structure of all trees greater than 150mm in trunk diameter within the proposed works area. This report provides recommendations of removal or retention together with guidance for tree protection for the proposed retained trees.

Final tree retention recommendations are based on a combination of the proposed design, environmental considerations, tree health and tree structure. It is the combination of the three assessments that will form the Arboricultural Impact Assessment for the proposed works.

2.0 Methodology

Following a request for an assessment of the trees from IGC, discussions with the design team were held to review the proposed works. A tree assessment and survey were conducted to confirm the trees' species, condition, location, and site conditions. An assessment of the existing adjacent environment and proposed works was also carried out to further understand the trees' ability to endure such activity.

Assessment is carried out in a set pattern:

- Assessment of trees is based on health and structure to determine if the trees should be considered suitable for retention. Tree health, structure and species can combine to determine the tree as not suitable for retention.
- Assessment of the proposed development to determine impacts on tree health and structure as a result of the works. From this assessment, trees which can be successfully retained are identified.
- Development of the Tree Protection Requirements to ensure trees to be retained are protected during the development process. This may include minor alterations to the design and recommendations for alternate construction methods.

The following tools were utilised during the assessment:

- A smart phone camera for taking photographs.
- GPS Survey equipment to plot tree locations and record assessment data.

All measurements have been estimated and tree structures have been assessed with a Visual Tree Assessment¹ from the ground. No further investigation was deemed to be necessary at this point. This report must be read in conjunction with the Tree Data Table and the Tree Protection Plan (TPP).

Tree locations have been plotted on the course design and the accuracy is based on GPS sub-meter accuracy equipment. The Tree Protection Zones (TPZ) are plotted in accordance with *AS 4970 – 2009 Protection of Trees on Development Sites*.

The determination of construction impacts has been based on both the assessment of drawings provided to Arbor Australis and a general understanding of the potential impacts of the proposed works.

¹ *Visual Tree Assessment (VTA)* is based on *Mattheck C and Breloer H (1994)* and *Lonsdale D (1999)*

3.0 Documents Provided to AAC

- *Indooroopilly Golf Club Natural History, 1.1 Introduction to the Trees*, received from BES on 1/11/2021.
- 2-211021_PWClearing Plan Gr1-5_IGC edits, received from BES on 1/11/2021.
- 20211021_PW-09 Tree Clearing Sheet 2_IGCcomments, received from BES on 1/11/2021.
- Appendix I - List of Flora by Botanical Names.xlsx, received from BES on 1/11/2021.
- BE190133-101 - Stage 1 Earthworks - 28-10-21.pdf, received from BES on 2/11/2021.
- BE190133-101-C200.dwg, received from BES on 2/11/2021.
- X-BE190133-AERIAL PHOTO.dwg, received from BES on 2/11/2021.
- X-BE190133-ARCHITECTURAL.dwg, received from BES on 2/11/2021.
- X-BE190133-BASE.dwg, received from BES on 2/11/2021.
- X-BE190133-CONT EXISTING 0.5.dwg, received from BES on 2/11/2021.
- X-BE190133-COURSE LAYOUT.dwg, received from BES on 2/11/2021.
- X-BE190133-DEPTH RANGE STAGE 1.dwg, received from BES on 2/11/2021.
- Final Civil Design, X-BE190133-DEPTH RANGE STAGE 1.dwg, received from BES on 9/12/2021.

4.0 Assumptions and Limitations

AAC has made the following assumptions regarding this project:

- No detailed proposed services drawings have been provided for this project and further assessment of impacts will be required if new services are proposed within the identified Tree Protection Areas.
- This report is based on the documents provided to AAC, discussions with the design team, data collected and previous experience. Any changes to the proposed design will alter potential impacts to the trees, rendering the AIA, data table and TPP inaccurate.
- This report makes assumptions about potential engineering and construction requirements for the works. These assumptions are based on previous experience and discussions with the design team.
- Measurements have been scaled off the drawings provided where no written measurement was indicated.
- During the works (including demolition), site access will occur from outside the proposed Tree Protection Areas (TPAs).
- No proposed construction methodology has been provided. There may be some changes to impacts on trees due to unforeseen construction requirements or methodologies.
- This report assumes that the areas identified as Tree Protection Areas (TPA²) within the Tree Protection Plan (TPP) can be isolated from construction without encroachment. Any changes to the plans or construction requirements that alter this may impact trees proposed for retention.

Where unforeseen construction requirements or methodologies change impacts identified in this approved plan or the approved Tree Protection Plan or Tree Removal Plan, the proposed changes must be approved in writing by DS Ecologist prior to the work occurring.

Any impacts to vegetation to be retained must be reported immediately to Council. Penalties may apply for non-compliance. Any rectification works subject to agreement in writing by DS Ecologist.

² Tree Protection Area is the area of isolation intended for tree protection. This area is modified from the Tree Protection Zone as set out in AS 4970 – 2009 to suit the site and the species.

The Project Arborist must be present to direct any works that are within the Tree Protection Zone of trees to be retained.

Certification must be provided from the Project Arborist that all necessary arboricultural works have been carried out in accordance with the requirements of this plan, the approved Tree Protection Plan and the Approved Tree Removal Plan.

- It is assumed that the Project Arborist (PA) will be involved during the Project's construction. This is to provide advice, help resolve any potential adverse impacts, direct construction crews working around trees and to confirm and document tree protection measures.
- Areas of landscape works (including turf) which encroach into TPAs require the Project Arborist to be on site during set out and to direct works to limit impacts to retained trees. The Project Arborist may require the construction crew to implement an alternative construction methodology to limit adverse impacts to trees.
- Trees usually indicate internal anomalies through external biomechanics. However external indicators may not always be present, especially with the limitations of a ground based VTA.
- This assessment is ground based and is thus limited in assessing aerial aspects of trees.
- The assessment is carried out for the sole purpose of impact of works. It is recommended that a proactive management plan is implemented to manage the trees for both risk and health.
- It is assumed that all aspects and components of this AIA and TPP will be implemented in their totality.

5.0 Tree Impact Summary - Trees to be Removed

The assessed vegetation consists of semi-mature to mature native and exotic species. Most of the trees are in good to fair health with only a few trees showing signs of significant stress. There have been some impacts to the trees from works in the past, however the trees generally appear to have adapted to these changes and the growing environments.

A total of **252 trees** have been identified for removal. Tree removal was determined by three defining factors:

1. **Environmental considerations:** Trees that are weed species and are not desirable for retention. As a proactive measure **104 weed trees** are proposed for removal. These removals represent **9.7%** of the total survey population and **41.3%** of the trees proposed for removal.
2. **Health and Structure:** Trees that are of poor health or structure have been identified for removal where their current condition is unlikely to improve through the implementation of a remedial works or plant health care program. **11 trees** are required for removal due to poor health or structure. These removals represent **1.1%** of the total survey population and **4.4%** of the tree proposed for removal.
3. **Design Conflicts:** Trees that conflict with course civil design or the revised course layout. **135 trees** conflict with course layout. The retention of these trees would adversely impact the intent of the design. These removals represent **13.4%** of the total survey population and **53.6%** of the tree proposed for removal.

This approval pertains only to vegetation requiring removal as a direct result of the assessable Filling and Excavation works. **No vegetation outside of the Footprint of Filling and Excavation Works is permitted to be removed.** Vegetation outside of the footprint of identified Filling and Excavation works is subject to separate assessment and approval under the Natural Assets Local Law 2003.

5.1 Advice on Design Impacts; Trees to be Retained

The assessment has determined that the remainder of the trees on the site can be retained with the implementation of all aspects of the tree protection strategy set out in this document. Consideration must be given to the following items:

Site Access: Access for works must be limited to the area outside the identified Tree Protection Areas (TPAs) shown on the TPP. Any access into TPAs must only be done under the supervision of the Project Arborist. If access into the TPA is required, the Project Arborist may direct trunk protection, and/ or ground protection to be installed such as ground-mats or boards.

Once works have occurred Project Arborist must direct realignment of TPA fence.

Grubbing: The demolition of the existing fairways and grubbing of topsoil must be completed from outside the identified Tree Protection Areas. Where fairways fall within the TPA the Course Designer, Contractor and Project Arborist will work together to ensure tree roots are not compromised. Within these conflict areas there will be no grubbing. Preparation will be limited to:

- scarification of existing grass.
- maximum of 100mm of topsoil added.
- turf or seeding

Services Installation: Although no service information has been provided it is accepted that new services will be required. It is also expected that services will be installed within the fairways and outside the Tree Protection Areas. This is not always possible and the installation of sub ground services with the TPA's has the potential to impact the existing trees. *Appendix 2* provides a guideline to service design and installation with an aim of limiting impacts to existing trees and provides a general risk assessment of impacts during construction. This is intended as a starting point only. New services proposed within TPAs must be constructed with either vacuum excavation or bore methods and must be reviewed by the Project Arborist to determine the least impact.

Soft Landscape: It is accepted there will be a requirement for minor works within the TPA's. All soft landscape works (including turf) within the TPAs must have the work methodology approved by the Project Arborist prior to work commencing. Arboricultural supervision will be required for any landscaping in TPAs. There must be no grubbing or change of ground level within the TPAs.

6.0 Tree Protection Requirements

The Tree Protection Plan (TPP) and Arboricultural Impact Assessment (AIA) outline Tree Protection Requirements to ensure that retained trees are not impacted by the proposed construction. These requirements must be reviewed against the contractor's proposed construction methodology to ensure tree protection is not compromised.

The tree protection requirements for this project are as follows:

1. Engage a Project Arborist to monitor tree protection and oversee any works that are adjacent to or encroach within the Tree Protection Zones as shown in the TPP. The Contractor must provide the Project Manager with written confirmation of engagement and will provide evidence of the Project Arborist's qualification and experience.
2. The TPP identifies Zones of Protection which must be fenced with tree protection fencing and are to be considered an absolute exclusion zone unless permitted otherwise by the Project Arborist.
3. To help maintain tree health during construction the TPA's should be mulched with aged forest mulch to a depth of 100mm throughout construction and temporary irrigation established to maintain soil moisture levels.
4. For occasions when the Project Arborist permits works within a TPA, the Project Arborist may direct Trunk and Branch Protection to be installed.
5. There must be no machinery access into a TPA without installation of ground protection to avoid soil compaction.
6. All tree protection fencing must be signed as *Tree Protection Fencing, No Access*.
7. Fortnightly inspections are to be carried out to confirm compliance with the Tree Protection Strategies. Ongoing assessment is required to provide certification at completion of the project in accordance with *AS 4970-2009 Protection of Trees on Development Sites*.
8. The Project Arborist must provide to the Project Manager, monthly certification that tree protection measures have been maintained together with a notification of any non-conformance and remedial action recommended.
9. The exhaust of vehicles left running such as cranes and delivery trucks must not point into the canopy of a retained tree.
10. Within the Tree Protection Areas there must be no excavation, changes in levels, storage of materials/machinery or any construction activities without prior approval of the Project Arborist.
11. Areas of landscape works (including turf) which encroach into TPAs require the Project Arborist to be on site during set out and to direct works to limit impacts to retained trees. The Project Arborist may require the construction crew to implement an alternative construction methodology to limit adverse impacts to trees.

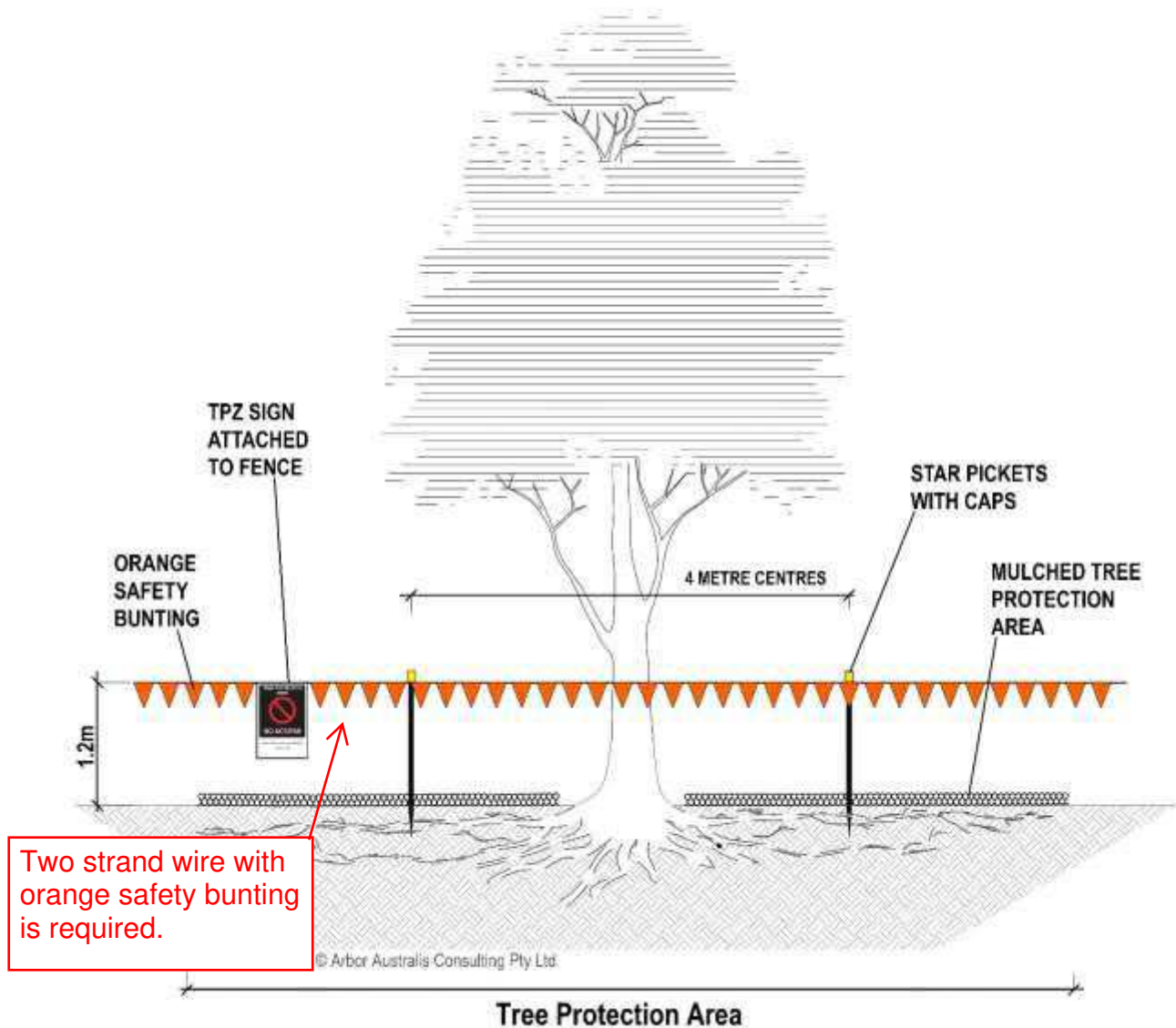
Any impacts to vegetation to be retained must be reported immediately to Council. Penalties may apply for non-compliance. Any rectification works subject to agreement in writing by DS Ecologist.

6.1 Minimum Arboricultural Hold Points

| Hold Point | Point | Action |
|---|--|---|
| 1 | Pre-start <div style="border: 1px solid red; padding: 5px; width: fit-content; margin: 5px auto;"> Prestart meeting must be held with BCC DS Ecologist. Project Arborist and Fauna Spotter must attend the prestart meeting. </div> | <ul style="list-style-type: none"> • Introduce the Project Arborist to the Contractor and confirm contact details and establish working relationship. • Confirm access restrictions to the Tree Protection Zones. • Confirm Tree Protection Fencing requirements. • Discuss any conflicts between the Tree Protection Plan and the proposed construction requirements • Check that all permits and approvals are in place. Copies of all permits and approvals are provided to the Project Arborist. • Confirm and mark approved tree removals. |
| 2 | Tree work: Removals and any required canopy pruning (<i>although not expected</i>) | <ul style="list-style-type: none"> • Confirm trees approved for removal have been removed. • Project Arborist to review retained trees to assess for pruning required to achieve necessary requirements. • Project Arborist to provide written confirmation of pruning that is required. |
| 3 | Monitoring | <ul style="list-style-type: none"> • Tree protection measures to be monitored at minimum fortnightly intervals during all civil works. • Soil moisture levels to be monitored in areas specified for PHC at fortnightly intervals and irrigation levels adjusted based on observations. |
| 4 | Prior to the removal of Tree Protection Fencing | <ul style="list-style-type: none"> • Project Arborist to assess any further works and determine the potential for adverse impacts to tree health or structure. • Project Arborist confirmation required before fencing is removed. |
| 5 | Completion of works | <ul style="list-style-type: none"> • Project Arborist to provide Completion Report and Summary of tree protection implementation. |
| At completion of works, the Project Arborist must provide certification to the BCC DS Ecologist, that all necessary arboricultural works have been carried out in accordance with the requirements of this plan, the Vegetation Management and the Tree Protection Plan. | | |

Vegetation at this site is protected under the **Natural Assets Local Law 2003**. Any interference with vegetation (including clearing, or root/canopy pruning) as shown on the approved Tree Removal Plans 1 - 9, require a permit from Council. Works must not commence until all relevant permits have been granted.

6.2 Tree Protection Details



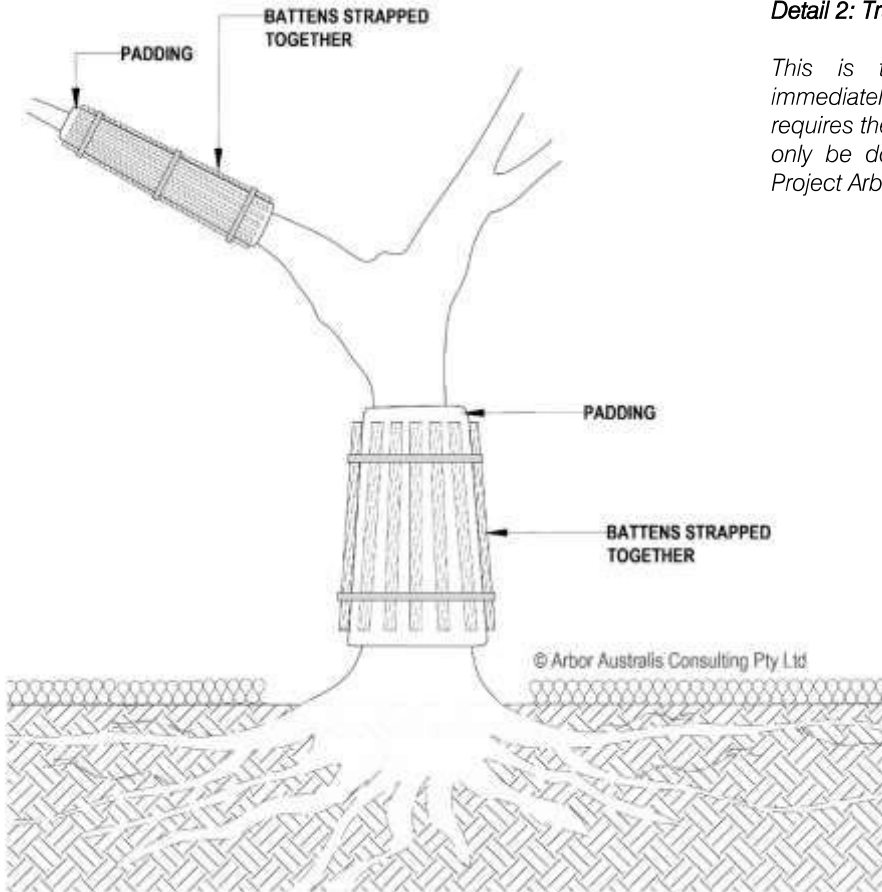
Detail 1: Tree Protection Fencing

To be installed in accordance with locations shown on the Tree Protection Plan.

or as per Figure 6.2 in the approved Vegetation Management Plan

Detail 2: Trunk and branch protection.

This is to be installed for works immediately adjacent to a tree that requires the TPF to be removed. This can only be done with the approval of the Project Arborist.



Detail 3: Example of ground protection.

If access into a TPA is required, the Project Arborist may direct trunk protection, and/or ground protection to be installed such as ground-mats or boards.

This approval pertains only to vegetation requiring removal as a direct result of the assessable Filling and Excavation works. **No vegetation outside of the Footprint of Filling and Excavation Works as shown on the approved Tree Removal Plans 1 - 9, is permitted to be removed.** Vegetation outside of the footprint of identified Filling and Excavation works is subject to separate assessment and approval under the Natural Assets Local Law 2003.

7.0 Conclusion

This report outlines the trees located within and directly adjacent to the work area at the time of assessment and the impact of this proposed contusion on the trees. 252 Trees are proposed for removal. Of the trees proposed for removal, 45% are weed species or in poor condition.

The implementation of all recommendations is vital to ensure the intention of this impact assessment is not compromised. Under the proposed design and with the involvement of a Project Arborist, the trees identified for retention can be retained successfully provided all the tree protection measures in this report are implemented.

Based on the information provided for this report and the restriction on access set out in the TPP, the retained trees can be retained with limited impact. It is vital that any changes to access for construction and the proposed construction methodology are reviewed by the Project Arborist to ensure the intent is not compromised.

It is also imperative that all parties assigned to conducting the project works are aware of the proposed arboricultural requirements. Communications between all parties regarding the arboricultural requirements must be clear, open, and forthcoming for the duration of the project to ensure optimal tree retention outcomes.

For the strategies of the tree protection specified in this report to be successful, an allocation of finances is required to be integral to the project. Any budgetary constraints regarding tree protection will potentially limit the desired outcome of tree retainability and sustainability.

Appendix 1: Tree Retention Strategies

Project Arborist

A Project Arborist will be appointed for the duration of the project. The Project Arborist must be qualified with AQF level 5 Arboriculture, with a minimum of 10 years industry experience and be a current member of a recognised Arboriculture Association. The primary role on this project is to ensure tree protection is established and maintained. The Project Arborist is to approve and supervise all works within fenced Tree Protection Areas.

Monitoring

All tree protection measures are to be monitored and recorded on a fortnightly basis to ensure tree protection is being maintained. This is to be summarised in a Completion Report certifying that the tree protection was maintained for the duration of the project. Any activity that is to occur within the Tree Protection Areas is to be certified by the Project Arborist. *Note: Supervision outlined in the control measures is likely to be greater than the minimum week inspection period.*

Supervision

Supervision requires the Project Arborist to assess work methodology prior to works commencing and to be on site for works in the identified areas. Supervision has been identified where works need to occur within the zone that has the potential to adversely impact retained trees. ***The contractor's proposed construction methodology may need to be changed to reduce impacts to retained trees.***

Tree Protection Area

NB: TPA refers to the site-specific area that has been determined by the Project Arborist as the minimum protection area for the tree. This determination is based on the species, soil depth and existing site conditions. All these factors have a bearing on the protection area required to achieve successful tree retention.

It is vital that the trees receive protection during construction to reduce the effects of compaction, root severance and moisture loss from the soil profile. Changes in levels around the trees are the greatest cause of damage both directly and indirectly. This issue is to be addressed through no changes in levels within the fenced TPA as set out by the Project Arborist. Fencing will identify the work zone for machinery access.

Fencing

All trees that are to be retained **must** be fenced as set out by the Project Arborist prior to excavation. The fencing **must** be in accordance with the tree protection details. The **must** should clearly be signed Tree Protection Zone. Any activity within the protected zone requires the approval of the Project Arborist.

prior to the activity occurring. All works in the protected zones must be supervised by the Project Arborist

Appendix 2: Service Installation within Tree Protection Zone

Objectives

The excavation of services within the Tree Protection Zone may have the potential to adversely impact tree health and structure as a result of root damage and compaction. Often, the occurrence of damage from adverse impacts do not present as visible symptoms for some time.

Impacts are caused by:

Root severance: Excavation to install services can often result in the loss to roots. This loss of roots can be both a structural impact where the tree stability is compromised and long-term health decline as the root loss removes the absorption roots. Root severance also increases opportunity of pathogen entry into the tree as the wounding damages the tree natural defence system.

Compaction: The movement of machinery and in some cases pedestrian movement over a concentrated area can significantly impact the soil structure. The loss of pore space decreases the available gas exchange and moisture holding capacity in the soil. The tree adsorbs water and nutrients through single cell root hairs that are easily damaged by compaction.

Design Considerations

- Understand current pavement and existing compacted subgrade depths that will have prevented root growth.
- Use ground penetrating radar where possible to map existing root structure provides evidence of what roots are present and a clear understanding of potential impacts. This is suitable for flat areas such as footpaths.
- Use vacuum excavation to investigate the presence of roots.
- The knowledge of root levels, through investigation, will confirm if a service can be installed under the roots leaving their functionality in place.
- Consider the following alternative installation methods:
 - If possible directional bore past the TPZ removing the need for excavation
 - If excavation is required, utilise non-destructive method such as Vacuum Excavation.
 - Consult with Project Arborist to understand the impacts of proposed works.

Service Installation Arboricultural Safe Work Method Guide

Note: This is a guideline only and is provided as a starting point for considering the impacts of construction around trees.

| Activity | Impact | Risk | Control Measure |
|-----------------------------|--|--------|--|
| Excavation and construction | Crown damage from machinery | Medium | Machinery to be positioned outside TPF and TPZ |
| | | | Machinery exhaust are to be directed away from the foliage |
| | | | Machinery height is to be limited to under canopy level |
| | | | Assessment is to be carried out prior to work commencing to determine if lower foliage needs to be pruned. |
| | Trunk damage from machinery | Low | Machinery to be positioned outside TPF |
| | | | Should machinery be required inside the identified TPF trunk, protection will be required. |
| | Root damage and compaction from machinery | High | Should machinery be required inside the identified TPF the PA is to review and approve work methodology and supervise all works. |
| | | | Machinery and concrete pump to be positioned outside TPF and TPZ. |
| | | | Machinery to be limited to low ground pressure equipment, or if approved by Project Arborist ground protection may be installed to allow access. |
| | | | Location of all excavation work is to be reviewed by the PA prior to commencement. Where required the PA may identify level changes or modification to construction methods to protected tree roots. |
| | | | All footing excavations will be carried out by Vacuum Excavation unless otherwise approved by the PA. |
| | | | |
| Notes: | 1. TPF refers to Tree Protection Fencing, fencing is to be 1.8m height and must be pinned to the ground | | |
| | 2. PA refers to Project Arborist. Minimum qualification of AQF level 5 | | |
| | 3. Trunk Protection refers to jute matting wrapped around the trunk and covered with palings no less than 50mm thick. Refer to AS 4970 – 2009 Protection of Trees on Development Sites for further details | | |
| | 4. Ground Protection refers to a protection layer to spread load and reduce compaction to the root zone of trees. Refer to AS 4970 - 2009 for further details. | | |
| | 5. Where pruning is required the Project Arborist will direct works. All works must comply with AS 4373 - 2007 Pruning of Amenity Trees | | |

Appendix 3: Maintaining Tree Health, General Guidelines

The guidelines below are General Guidelines aimed at informing the client and contractor of key points that may be required to maintain tree health. As every site is different this program will be adjusted at the direction of the Project Arborist to address the needs of the trees.

Pre-Development:

To minimise long term impacts on tree health as a result of changing site conditions it is vital that the root zones of trees proposed for retention are prepared to maximise fibrous root growth in the available space. Ideally this process will begin 12 months prior to development. This process will include:

- Mulch Tree Protection Area (TPA) with aged forest³ mulch to a depth of 100mm
- Watering to maintain soil at field capacity. The amount and timing of watering will vary between trees. The Project Arborist will need to monitor watering and adjust program as required.
- Where trees are of reduced vigour there may be a requirement to promote health improvements through Health Care Programs (PHC). As all trees are different this will need to be adjusted by the Project Arborist to match the needs of both the trees and the site.

During Development:

The primary plant health impact during development and civil works is the loss of soil moisture. Soil moisture can be lost both from lack of mulch and excavation. To compensate for this loss, the TPA may require irrigation during the development period.

If excavation extends into the TPA for whatever reason, remedial works will be required to address loss of absorption roots. An adjustment to irrigation will be required and the application of a PHC program to promote new root growth must be implemented.

Key Points:

- Maintain soil at Field Capacity.
- Maintain mulch cover on the TPA.
- Exclude all construction activity from the TPA.

Post Development:

Provided the preparation for development and Tree Protection during development has properly considered the trees and their requirements for growth, there should be no need for any post construction remedial works. However, if damage is sustained the Project Arborist may advise on extending measures to be implemented during construction.

It would be prudent to implement re-inspection of retained trees at 12 and 24 months following the completion development to determine the true impacts that occurred during construction.

³ Aged forest mulch has been stockpiled and turned for a minimum of 3 months. Tub ground mulch is not acceptable for use for around trees.

About the Author

Experience

With 34 years' experience in all aspects of the Arboricultural Industry, I can provide a well-rounded, experienced and educated approach to arboricultural related issues in most environments. A commitment to continual professional development has ensured that I can provide up to date information that will add value and resolve tree issues for most sites.

Memberships

| | |
|--|---------------------|
| Arboriculture Australia (AA) | Approved Consultant |
| Arboricultural Association UK (AAUK) | Member |
| Queensland Arboricultural Association (QAA) | Approved Consultant |
| International Society of Arboriculture (ISA) | Member |

Educational History:

2018 BSC (Hons) Arboriculture, Myerscough UK, (under completion)
2014 Diploma Arboriculture Upgrade (AQF Level 5 ACH 50510)
2004 Certified Arborist AU 0011-A
2004 Diploma Horticulture (Arb) (AQF 5)
2004 Advanced Diploma of Horticulture (Arb) (AQF level 6)
2003 Timber Pest Certificate
2001 Certificate II Pest control
2001 Certificate IV Work Site Assessor
1992 Certificate of Arboriculture Merrist Wood UK
Various OH&S operational tickets
CPD: Ongoing attendance of National Arboricultural Conferences and training courses.

Licences and Certifications

Australian Arborist Industry Licence AL1204
ISA Certified Arborist AU-0011A
Quantified Tree Risk Assessment (QTRA)
Tree Risk Assessment Qualification (TRAQ)
Cert IV in workplace trainer
Timber Pest Inspector
Construction Safety Blue / White Card



DISCLOSURE STATEMENT

Arbor Australis Consulting and their employees are tree specialists who use their qualifications, education, knowledge, training, diagnostic tools and experience to examine trees, recommend measures to enhance the beauty and health of trees, and attempt to reduce the risk of living near trees. Clients may choose to accept or disregard the recommendations of this assessment and report.

Arbor Australis Consulting and their employees cannot detect every condition that could possibly lead to the structural failure of a tree. Trees are living organisms that fail in ways the arboriculture industry does not fully understand. Conditions are often hidden within trees and below ground. Arbor Australis Consulting cannot guarantee that a tree will be healthy or safe under all circumstances, or for a specified period of time. Likewise, remedial treatments cannot be guaranteed.

Treatment, pruning and removal of trees may involve considerations beyond the scope of Arbor Australis Consulting services, such as property boundaries and ownership, disputes between neighbours, sight lines, landlord-tenant matters, and related incidents. Arbor Australis Consulting cannot take such issues into account unless complete and accurate information is given prior or at the time of the site inspection. Likewise, Arbor Australis Consulting cannot accept responsibility for the authorisation or non-authorisation of any recommended treatment or remedial measures.

Trees can be managed, but they cannot be controlled. To live or work near a tree involves some degree of risk. The only way to eliminate all risks associated with a tree is to eliminate the tree and human interaction.

All written reports must be read in their entirety. At no time shall part of the written assessment be referred to unless in taken in full context of the written report.

If this written report is to be used in a Court of Law or in any legal situation Arbor Australis Consulting must be advised in writing prior to the written assessment being presented in any form.