ARBORICULTURAL IMPACT ASSESSMENT REPORT

BOTANY AQUATIC CENTRE

FOR

Bayside Council
Serving Our Community

PREPARED BY

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1.0 INTRODUCTION

Sturt Noble Arboricultural Consulting was engaged by Co.Op Studio to assess the trees on the site of a proposed redevelopment of Botany Aquatic Centre at the corner of Myrtle St and Jasmine St, Botany. We were also engaged to provide an Arboricultural Assessment Report, including management of any trees proposed to be retained, to assist Co.Op in preparing a Development Application to Bayside Council.

The Development Application seeks consent to redevelop existing outdoor and indoor swimming pools, open green space and buildings, and construct a new grandstand, health and fitness space, community space and new water play areas. This development will require removal of twenty-two (22) of the existing trees on site. All other trees will be retained and protected on site adjacent to the site on Council land and private industrial lots.

Arborist Guy Sturt inspected two hundred and twenty-seven (227) trees (Denoted trees 1-206) on 21st, 22nd and 28th of May 2020; and trees were assessed by the Visual Tree Assessment (VTA) method. (Mattheck & Breloer,1994).

All of the trees were assessed by viewing from the ground. No aerial inspection or diagnostic testing was undertaken as part of this assessment.

Consulting Arborist Guy Sturt; in this report considers the likely impacts of works proposed and makes recommendations for tree removal, retention and protection.

The aims of this report are:

- To assess and review the condition of existing trees by undertaking a Visual Tree Assessment
- Assess each individual tree's suitability to be retained as a sustainable part of the proposed development in the long term, considering the likely impacts of works proposed.
- Provide recommendations for tree removal, retention and protection.
- Provide recommendations where appropriate to enable trees to be retained or have better long-term health outcomes and minimize potentials for hazard.
- To provide information on appropriate tree protection measures, appropriate setbacks, constraints and tree management procedures during site works.

None of the trees identified on the development site are listed as Threatened or Vulnerable species or form part of Bushland or an Endangered Ecological Community.

2.0 METHODOLOGY

2.1 Site Inspection

This report, its comments and recommendations have been prepared based on the information gathered during two detailed site inspections carried out on the on the 21st May and the 29th May 2020. This assessment is summarised in Appendix 1.

2.2 Tree Locations

The location of the subject trees are based on the site survey; *B04710-DETAIL,* Prepared by Project Surveyors on the 27/04/2020.

2.2.1 Visual Tree Assessment

The trees were assessed from the ground by the Visual Tree Assessment (VTA) method as described in Mattheck & Breloer (1994), using non-invasive tools such as binoculars and acoustic mallet. No digging or exposing of the root zones occurred in this inspection and no aerial inspection by climbing was performed. No aerial inspection or diagnostic testing was undertaken as part of this assessment.

The following data was collected for each tree:

- Botanical and common name.
- Tree dimensions (approximate only).
- Canopy density (approximate only).
- Overall health and vitality, including epicormic growth, deadwood and predation by pests and diseases.
- Structural condition including evident faults such as Bark Inclusions or poor branch attachments, decay, cavities and mechanical or biological damage.
- Stability of the tree including excessive trunk lean, stability of the soil, soil cracking, soil heaving, exposed roots and root damage.

2.2.2 Retention Value

Each tree has been given a Sustainable Retention Index Value (SRIV) according to the rating system set out in the Sustainable Retention Index Value Matrix (refer to Appendix 2). The SRIV for each tree is based on its health, vigour, structure and age class as established in the Visual Tree Assessment. The SRIV does not take into account the impact of the proposed development.

2.2.3 Tree Protection Zones (TPZ) and Structural Root Zones (SRZ)

The intention of the TPZ is to ensure protection of the root system and canopy from the potential damage from construction works and ensure the long-term health and stability of each tree to be retained.

The Structural Root Zone (SRZ) is located within the TPZ around the base of a tree and provides the bulk of mechanical support and anchorage for a tree.

The Tree Protection Zones (TPZ) and Structural Root Zones (SRZ) have been arrived at using methods as detailed in Australian Standard AS 4970– 2009. Specific site factors are also considered that may influence the location of the TPZ and/or structural tree roots.

2.2.4 Encroachment and Development Impacts

Encroachments and development impacts to tree TPZ's and SRZ's include;

- Excavation
- Filling
- Changes to existing soil levels
- Placing items and elements within the zones even if only temporarily
- Soil disturbance
- Any other physical damage to the trunk or root system or any other activity likely to cause damage to the tree.

Under AS 4970:2009 Protection of trees on development sites, a minor encroachment of up to 10% of the area of the TPZ is considered acceptable, provided that there is no encroachment to the SRZ. The area lost to this encroachment should be compensated for elsewhere in a contiguous area to the TPZ.

Major encroachments is greater than 10% of the area of the TPZ and the Project Arborist must determine and demonstrate that the tree would remain viable. More detailed investigations, such as exploratory excavations and root investigation to enable an informed evaluation of the potential impact of the proposed works may be required.

Encroachments into the SRZ are not likely to be supported unless the Project Arborist has undertaken exploratory investigation and can demonstrate that there will be minimal impact to the tree.

3.0 OBSERVATIONS

3.1 The Site

The site is a portion of land accessible from Myrtle St with close proximity to the train corridor at the rear. The site features a carpark to the east, the main pool outdoor area in the centre and a separate fenced off area to the west that contains the majority of the trees.

A preliminary assessment of the trees in the fenced off area was only included (species and general comments only) as this was outside the scope of the proposed development.

Tree specimens on site generally receive full sun exposure although some specimens in the western area are suppressed by their close proximity to each other.

Figure 1: Location Plan

3.2 Soils

The site is underlain by layers of marine quartz sands and sections of fill. Before settlement this area would have consisted of gently undulating coastal dunefields, however the site has been highly disturbed by human activity. It is likely that the sandy soils have been disturbed and areas could consist of fill covered by a layer of sand or clay.

3.3 Vegetation Community

The site is highly disturbed and modified. It would appear all the locally-indigenous vegetation has been cleared for the Aquatic centre. As noted by Doug Benson & Jocelyn Howell in “Taken for granted” the original vegetation of this area consisted of Low Swamp Woodland & Eastern Suburbs Banksia Scrub, with dominant locally-indigenous tree species including *Angophora costata* (Sydney Red Gum), *Eucalyptus piperita* (Sydney Peppermint) and *Banksia aemula* (Wallum Banksia) on higher areas and *Eucalyptus robusta* (Swamp Mahogany) and *Melaleuca quinquenervia* (Broadleaved Paperbark) occurring in low lying areas.

Booralee Park was proclaimed a Reserve on 17 September 1886. Botany Council cleared, grassed and planted trees in the park and in 1965 an Olympic pool was constructed at the site.

Although there are large stands of the endemic *Melaleuca quinquenervia* (Broadleaved Paperbark) existing and also specimens of *Angophora costata* (Sydney Red Gum), *Eucalyptus robusta* (Swamp Mahogany) and *Eucalyptus botryoides (*Bangalay*);* given the estimated age of these trees and the planting layout they would appear to have been planted and not remnant.

The existing plantings (227 trees/ palms) consist of a range of both exotic, non-local native and endemic species, located mostly around the periphery of the site. The trees have all been identified by number on the tree plan in Appendix 2. There are also a smaller number of exotic species (27).

3.4 Tree Health and Condition

A complete tree assessment schedule for the trees located within the current site was prepared and is included in Appendix 1. This includes the following: a tree number, botanical name, common name, height, canopy spread, canopy density, defects, pests & diseases and a SRIV rating (IACA 2010).

Botany Bay Development Control Plan 2013 Part 3L Landscaping and Tree management states that "*tree works requiring Council approval are actions affecting the health, form, habitat or canopy of a tree or vegetation community and includes modification to the tree crown (all types of pruning work, crown thinning and crown lifting – refer to AS4373-2007), root pruning and tree removal."*

The removal, lopping, topping, ring barking, injuring or wilful destruction of the following trees and vegetation without Council approval is prohibited:

(i) Any tree works that are not considered to be exempt (refer to Part 3L. 4.3 – Exempt Tree Works);

A *Morus alba* (Mulberry) is the only tree which is exempt under their listing.

(ii) Any tree, palm or vegetation on private land (other than an exempt species listed in Table 3L.1) at least 3 metres in height or with a diameter at breast height (DBH) equal to or greater than 200mm or 600mm circumference for a multi trunked tree;

(iii) Any tree or plant identified as a heritage item, located on a heritage listed property; and

(iv) Any vegetation within an area identified as an Endangered Ecological Community under the Threatened Species Conservation Act 1995 or protected by any other State or Federal legislation(Environment Protection and Biodiversity Conservation Act 1999) irrespective of size.

Part 3L. 4.3: Exempt Tree Works

The following tree removal or pruning works do not require Council approval:

(i) Any tree works that do not require approval under Section 3L.4.2 – Tree Works Requiring Council Approval;

(ii) Tree works to exempt species identified in Table 3L.1;
(iii) Trees that meet criteria under SEPP (Exempt & Complying Development Codes) 2008 (Clause 3.6A and Clause 5A.3);

(iv) Removal of noxious weed species in the Botany Bay Local Government Area under the Noxious Weeds Act 1993 (as listed in Part 10 – Landscape Technical Guidelines for Development Sites);

(v) Pruning near domestic power or telecommunications lines to maintain line distance clearance where the work is a maximum distance clearance of 500mm of branches up to 50mm diameter at the nearest branch collar (Branch collar is the point of attachment to another branch/trunk). Work must be carried out by an experienced Arborist or Tree Surgeon AQF Level 5 in accordance with AS4373-2007;

(vi) Minor pruning work at a maximum distance clearance of 2 metres measured from the surface of the structural component (wall/ roof) of the building's edge and of branches up to 50mm in diameter at the nearest branch collar. (Branch collar is the point of attachment to another branch/trunk for branches overhanging the roof only);

(vii) Tree works authorised under the Electricity Supply Act 1995 or the Roads Act 1993;

(viii) Emergency work carried out by Council, State Emergency Services, Fire Services or a public authority;

(ix) Removal or pruning works undertaken by Council or a contractor acting on behalf of Council on Council owned or controlled land; and

(x) Where Council is satisfied the tree is dying or dead or poses a risk to human health or safety.

None of the native trees identified on the site are listed as Threatened or Vulnerable species or form part of Bushland or an Endangered Ecological Community.

3.6 Construction Impacts

Foreseeable impacts to note from the proposed construction type and anticipated methodology include:

- Demolition Activities
- Excavations for Foundations, paved areas and access paths.
- Excavations for crossovers and driveways.
- Excavations and trenching for underground services.
- Soil level changes including the placement to make up grades
- Laying impermeable paving to paths and slabs.
- Movement and storage of plant, equipment & vehicles;
- Erection of site sheds;
- Storage of building materials, waste and waste receptacles;

4.0 DISCUSSION

4.2 Tree Retention

The Retention Values for all trees on site was prepared and is included in the Tree Assessment in Appendix 3. These values have been determined on the basis of the estimated longevity of the trees and their landscape significance rating.

Of the surveyed trees; 127 trees were assessed. The impacts of the construction of the new aquatic centre are critical with regard to twenty-two (22) of the existing trees on site which will require removal. Four of these (Tree Nos. 46,47,47A and 51) need to be further assessed by Project Arborist and may be able to be retained if they are deemed to be not only safe but also if there is minimal impact to the tree and the tree can continue to thrive and provide amenity.

In addition; 13 palms to be removed will be transplanted for reuse on site.

It is assumed for this report that excavation for construction of the new aquatic centre will not extend greater than 500mm from the footprint; and this limit can be considered to be the extent of disturbance to the root zones with the exception of service lines.

Further detail of site works are required particularly details of excavation extent of services (water, telecoms and electrical), design details, levels of pavements and level changes, particularly within the TPZ of any trees proposed for retention. This should be provided prior to construction so any additional impacts can be assessed.

Table 1: Trees to be removed

Poor Health/Senescent	Exempt	Major Encroachment: Tree Trunk within New Footprint
15A, 65		36,37,41,48,49,50,52-59,180A,196A,196-199

Table 2: Trees to be retained

Clear of all Works	Major Encroachment: Tree Trunk within New Footprint	Transplanted
1-15,16-21,34,39,40,42-45,60-64,65A, 66-180,181,182,183,184A,185,185A, 185B,186,187,195,200-202	35,38,179A 184,188-194,203-206	22-33

Table 3: Trees to be investigated during construction for potential retention

Potential Retention: To be assessed by Arborist due to health and hazard potential
46, 47, 47A and 51

Proposed site design and construction of the development and associated infrastructure/facilities should consider the Tree Protection Zones as discussed in the following sections to minimise any adverse impact.

4.3 Tree Protection

4.3.1 Tree Protection Zones (TPZ)

The intention of the TPZ is to ensure protection of the root system from potential damage from construction works and ensure the long-term health and stability of each tree to be retained. Suitable protective devices, such as temporary fencing, trunk protection boards or ground protection (where appropriate) must be installed to ensure adequate protection of a tree from construction activity and avoid disturbance within the TPZ.

The indicative TPZ areas have been calculated as specified in Section 3.2 of *AS 4970:2009 Protection of trees on development sites*.

Additionally the report considers and addresses specific site factors that may influence the location of the TPZ and/or structural tree roots. Examples of factors to be considered are (but not limited to) the location of existing footings, paths, kerbs and roadways, other vegetation and soil types. The indicative TPZ may require adjustment accordingly.

AS 4970:2009 Protection of trees on development sites prohibits the following activities within specified Tree Protection Zones:

a. excavations and trenching (with exception of the approved foundations and underground services);
b. ripping or cultivation of soil;
c. mechanical removal of vegetation (using an excavator or similar);
d. soil disturbance or movement of natural rock;
e. soil level changes including the placement of fill material (excluding any suspended floor or slab);
f. movement and storage of plant, equipment & vehicles;
g. erection of site sheds;
h. affixing of signage or hoardings to trees;
i. storage of building materials, waste and waste receptacles;
j. storage of bulk materials such as sand, gravel, soil, spoil or similar materials;
k. disposal of waste materials and chemicals including paint, solvents, cement slurry, fuel, oil and other toxic liquids; and
l. any other physical damage to the trunk or root system or any other activity likely to cause damage to the tree.

5.0 CONCLUSIONS

127 trees have been considered on the site as part of this assessment and their locations are shown in **Appendix 2**.

The proposed development is a refurbishment of construction of the new aquatic centre.

Of the surveyed trees; 127 trees were assessed. The impacts of the construction of the new aquatic centre are critical with regard to twenty-two (22) of the existing trees on site which will require removal. Four of these (Tree Nos. 46,47,47A and 51) need to be further assessed by Project Arborist and may be able to be retained if they are deemed to be not only safe but also if there is minimal impact to the tree and the tree can continue to thrive and provide amenity.

In addition; 13 palms to be removed will be transplanted for reuse on site.

It is assumed for this report that excavation for construction of the new aquatic centre will not extend greater than 500mm from the footprint; and this limit can be considered to be the extent of disturbance to the root zones with the exception of service lines.

Further detail of site works are required particularly details of excavation extent of services (water, telecoms and electrical), design details, levels of pavements and level changes, particularly within the TPZ of any trees proposed for retention. This should be provided prior to construction so any additional impacts can be assessed.

Table 1: Trees to be removed

Poor Health/Senescent	Exempt	Major Encroachment: Tree Trunk within New Footprint
15A, 65		36,37,41,48,49,50,52-59,180A,196A,196-199

Table 2: Trees to be retained

Clear of all Works	Major Encroachment: Tree Trunk within New Footprint	Transplanted
1-15,16-21,34,39,40,42-45,60-64,65A, 66-180,181,182,183,184A,185,185A, 185B,186,187,195,200-202	35,38,179A 184,188-194,203-206	22-33

Table 3: Trees to be investigated during construction for potential retention

Potential Retention: To be assessed by Arborist due to health and hazard potential
46,47, 47A and 51

Proposed site design and construction of the development and associated infrastructure/facilities should consider the Tree Protection Zones as discussed in the following sections to minimise any adverse impact.

Detail design and documentation of services should be provided prior to construction so any addition impacts can be assessed.

Where recommended work processes and tree protection measures cannot be adhered to further advice should be sought from the Project Arborist.

6.0 TREE PROTECTION RECOMMENDATIONS

6.1 Design of the Development

Trees on the site are mostly mature specimens adapted to the existing conditions. In general any proposed new developments shall optimally provide for the long term health of those existing trees which are recommended for retention.

Excavation/ Construction on the site will require that close attention be paid to management of all trees being retained. Any disturbance to soil structure could destabilise the trees. Should any changes to soil within the TPZ/ SRZ be proposed further discussion and assessment must be undertaken.

6.2 Tree Removal

Application for removal of twenty-two (22) should be sought as part of the Development Application. Namely:-

Poor Health/Senescent	Exempt	Major Encroachment: Tree Trunk within New Footprint
15A, 65		36,37,41,48,49,50,52-59,180A,196A,196-199

6.3 Canopy and root pruning

6.3.1 Canopy pruning

Care shall be taken when operating backhoes, excavators and similar equipment near trees to avoid damage to tree canopies (foliage and branches). Under no circumstances shall branches be torn-off by construction equipment. Where there is potential conflict between tree canopy and construction activities, the advice of the Project Arborist must be sought.

All pruning works shall be directed by the Project Arborist and shall be carried out by an AQF Level 3 Arborist. All pruning works shall be in accordance with the Australian Standard *(AS) 4373:2007 Pruning of amenity trees.* This standard outlines appropriate pruning practices and procedures that reduce the risk of damage and injury to trees. Correct pruning practices respect the natural form and branching habit of a tree and work with the trees natural defence mechanisms against disease to avoid damage and injury to trees.

Pruning should always be limited to the minimum amount necessary to achieve the desired aim. Significant loss of foliage created by excessive pruning may weaken the tree, leading to premature decline or predisposition to branch failure or disease, creating potential hazards.

Council consent will be required prior to commencement of the work. Pruning must be performed in accordance with Australian Standard (AS) *4373:2007 Pruning of amenity trees* (Standards Australia 2007).

6.3.2 Root pruning

Exploratory excavation may be required where the proposed excavation created by the development works exceeds 10% of the Tree Protection Zone of any Prescribed Tree; or service trenches are required within the TPZ; to determine the impact of the development on the tree. The purpose of the investigation is to verify the quantity, size, type, depth and orientation of tree roots along the perimeter of the proposed encroachment in order to make an informed judgement in relation to the potential impact on the tree.

Exploratory excavation shall only be carried out using non-destructive or non-injurious techniques, such as careful digging using handheld implements, using compressed air (Airspade®), water pressure, or suction (vacuum device) or a combination of these techniques, to carefully remove soil without damaging roots. The work shall be undertaken by an arborist with a minimum qualification of AQF Level 3. Once roots are exposed, a visual examination can be carried with the Project Arborist to evaluate the potential impact of the proposed root loss on the health and stability of the tree.

The results of the root investigation together with a Development Impact Assessment must be documented in the report and submitted to Council. The report shall contain information that demonstrates that the trees will remain viable in conjunction with the works.

Where root pruning is required, roots shall be severed with sterile, clean, sharp pruning implements resulting in a clean cut. Any excavated root zones shall be retained in a moist condition during the construction phase using Hessian material or mulch where practical. Trees that have roots removed shall have drip irrigation installed around the root zone to ensure they receive an adequate supply of water.

6.4 Tree Protection Measures

It is recommended a site-specific Tree Protection Plan (TPP) is prepared to guide the construction process to ensure all trees designated for retention remain as a sustainable part of the landscape in the long term.

The plan shall be prepared by a consulting arborist (AQF Level 5) and should at a minimum include a detailed plan of the locations of, and specifications for, tree protection measures.

The TPP shall include a monitoring schedule relating to critical points during the works (hold points) where the Project Arborist is required to visit the site and confirm that works are being undertaken as conditioned by Council/as required.

The following tree protection measures shall be implemented prior to the commencement of any site works, and shall remain in place for the duration of the development.

6.4.1 Tree Protection Zones

The Tree Protection Zones recommended for all trees within the site to be retained shall be equivalent to the Tree Protection Zone as illustrated in Figure 2. This is a radial distance measured from the centre of the trunk of the subject trees.

The following activities are prohibited within the specified Tree Protection Zones:-

- Excavations and trenching (with exception of the approved underground services);
- Ripping or cultivation of soil;
- Mechanical removal of vegetation;
- Soil level changes including the placement of fill;
- Movement and storage of plant, equipment & vehicles;
- Erection of site sheds;
- Affixing of signage or hoardings to trees;
- Storage of building materials, waste and waste receptacles;
- Disposal of waste materials and chemicals including paint, solvents, cement slurry, fuel, oil and other toxic liquids;
- Other physical damage to the trunk or root system; and
- Any other activity likely to cause damage to the tree.

Place a 50-75mm layer of coarse organic mulch over the entire surface of the TPZ. Where the TPZ is adjacent to construction activities first lay down geotextile fabric beneath the mulch to

facilitate easy removal of the mulch at completion and any accidental spillage of construction materials.

Install drip irrigation installed around the root zone if required by the Project Arborist.

6.4.2 Tree Protection Fencing

All trees within the site to be retained shall be protected prior to and during construction from all activities that may result in detrimental impact by erecting a suitable protective fence beneath the canopy to the full extent of the Tree Protection Zone (excluding the footprint of the proposed works and areas within adjoining properties).

As a minimum the fence should consist temporary chain wire panels 1.8 metres in height, supported by steel stakes as required and fastened together and supported to prevent sideways movement. The fence shall be erected prior to the commencement of any work on-site and shall be maintained in good condition for the duration of construction. Where tree protection zones merge together a single fence encompassing the area is deemed to be adequate.

Appropriate signage shall be installed on the fencing to prevent unauthorised movement of plant and equipment or entry to the Tree Protection Zone.

Refer to Appendix 4 for examples of protective fencing and signage.

6.4.3 Trunk, Branch & Ground Protection

Where provision of tree protection fencing is in impractical due to its proximity to the proposed building envelope, trunk protection shall be erected around the tree to avoid accidental damage. As a minimum, the trunk protection shall consist of two metre (2m) lengths of hardwood timbers (100 x 50mm) spaced at 100-150mm centres secured together with 2mm galvanised wire. These shall be strapped around the trunk (not fixed in any way) to avoid mechanical injury or damage. Trunk protection should be installed prior to any site works and maintained in good condition for the duration of the construction period.

Pavements should be avoided within the Tree Protection Zone of trees to be retained where possible. Proposed paved areas within the Tree Protection Zone of trees to be retained should be placed above grade to minimise excavations within the root zone and avoid root severance and damage.

Placement of fill material within the Tree Protection Zone of trees to be retained should be avoided where possible. Where placement of fill cannot be avoided, the material should be a coarse, gap-graded material such as 20 – 50mm crushed basalt (Blue Metal) or equivalent to provide some aeration to the root zone. Note that Roadbase or crushed sandstone or other material containing a high percentage of fines is unacceptable for this purpose. The fill material should be consolidated with a non-vibrating roller to minimise compaction of the underlying soil. A permeable geotextile may be used beneath the sub-base to prevent migration of the stone into the sub-grade. No fill material should be placed in direct contact with the trunk.

Refer to Appendix 4 for examples of trunk, branch and ground protection.

6.4.4 Demolition Works within Tree Protection Zones

It is noted major demolition of existing buildings, swimming pools and concrete slabs is required on this site.

Any demolition in the Tree Protection Zone of trees to be retained shall be undertaken under the supervision of the Project Arborist. Pavement and sub-base shall be stripped-off using a

small rubber tracked excavator or alternative approved method to avoid damage to underlying roots and minimise soil disturbance. The machine shall work on the existing pavements to avoid compaction of the uncovered soil. The final layer of sub-base material shall be removed using hand tools were required to avoid compaction of the underlying soil profile and damage to woody roots.

Following removal of the pavement surface and sub-base, clean, friable topsoil shall be used to fill in the excavated area and bring flush with surrounding levels. Soil shall only be imported and spread when the underlying soil conditions are dry to avoid compaction of the soil profile.

6.4.5 Underground Services

All proposed underground services should be located as far away as practicable to avoid excavation within the Tree Protection Zone of trees to be retained.

For underground services, where the incursion to the Root Zone is less than 10% of the total TPZ (i.e. beyond the Minimum Setback Distance), a chain trenching device may be used. A backhoe or skid steer loader (bobcat) is unacceptable due to the potential for excessive compaction and root damage. Where large woody roots (greater than 50mm in diameter) are encountered during excavation or trenching, these shall be retained intact wherever possible (eg by sub-surface boring beneath roots or re-routing the service etc).

Excavations required for underground services within the Structural Root Zone of any tree to be retained should only be undertaken by sub-surface boring. The Invert Level of the pipe, plus the pipe diameter, must be lower than the estimated root zone depth as specified at a minimum depth of 600mm. This will depend on the soil conditions at the site. Where this is not practical and root pruning is the only alternative, proposed root pruning should be assessed by the Project Arborist to determine continued health and stability of the subject tree.

6.4.7 Tree Damage/ Decline

If trees show signs of stress or deterioration, remedial action shall be taken to improve the health and vigour of the subject tree(s) in accordance with best practice arboricultural principles. Advice must be sought from the Project Arborist.

In the event of any tree becoming damaged for any reason during the construction period the Project Arborist must be engaged to inspect and provide advice on any remedial action to minimise any adverse impact. Such remedial action shall be implemented as soon as practicable and certified by the arborist.

7.0 DISCLAIMER

The author and Sturt Noble Arboricultural Consulting take no responsibility for actions taken and their consequences, contrary to those expert and professional instructions given as recommendations.

This is not a hazard assessment report and it should be noted that trees are always inherently dangerous. This assessment was carried out from the ground, and covers what was reasonably able to be assessed and available to the assessor at the time of inspection. No aerial or subterranean inspections were carried out and structural weakness may exist within roots, trunk or branches.

Any protection or preservation methods recommended are not a guarantee of tree survival or safety but are designed to improve vigour and reduce risk. Timely inspections and reports are necessary to monitor the trees' condition. No responsibility is accepted for damage or injury caused by the trees and no responsibility is accepted if the recommendations in this report are not followed.

Limitations on the use of this report:
Trees are dynamic living structures, growing and adapting to conditions around them. Tree condition will change and vary over time depending on weather, environmental factors and mechanical or human interaction.

This report is to be utilised in its entirety only. Any written or verbal submission, report or presentation that includes statements taken from the findings, discussions, conclusions or recommendations made in this report, may only be used where the whole of the original report (or a copy) is referenced in, and directly attached to that submission, report or presentation.

Assumptions
Care has been taken to obtain information from reliable resources. All data have been verified insofar as possible; however, Sturt Noble Arboricultural Consulting can neither guarantee nor be responsible for the accuracy of information provided by others.

Unless stated otherwise:
Information contained in this report covers only the trees that were examined and reflects the condition of the trees at the time of inspection.

Assessment is limited to the conditions at the time of the inspection and only trees discussed in the report have been assessed.

Where access to the base of the tree is limited, such as difficult site access due to site conditions, only general comments can be made. Assessment of tree health and structure is limited to that visible from the site of proposed works and may not reflect the true condition of the tree. Assessment of tree health and structure is limited to that visible from the site of proposed works and may not reflect the true condition of the tree.

Plans used to assess likely impact are those appended/ referenced.

Ongoing monitoring of all trees is advised and where significant changes are observed, further advice should be requested.

Unusual developments or sudden changes in a tree's condition should be addressed immediately.

8.0 REFERENCES

Botany Bay Development Control Plan 2013 Part 3L Landscaping and Tree Management

Draper, D.B and Richards, P.A (2009) Dictionary for managing Trees in Urban Environments, (IACA) Institute of Australian Consulting Arboriculturists ©. Pub. CSIRO Publishing, Melbourne.

IACA, 2010, Sustainable Retention Index Value Matrix (SRIV) Version 4, A visual method of objectively rating the viability of urban trees for development sites and management, based on general tree and landscape assessment criteria, Institute of Australian Consulting Arborculturists, Australia.

Googlemaps ©. Viewed 1st July 2023

https://www.environment.nsw.gov.au/heritageapp/ViewHeritageItemDetails.aspx?ID=1210063 Booralee Park

Mattheck, Dr. Claus, Breloer Helge (1994) Sixth Edition (2001), *The Body Language of Trees – A handbook for failure analysis*. Research for Amenity Trees No 4. Pub. The Stationary Office London.

NSW Work Cover Code of Practice for the Amenity Tree Industry (1998) Pub. © WorkCover NSW

Standards Australia (2007) Australian Standard AS4373-2007 *Pruning of Amenity Trees,* Pub. Standards Australia, Sydney.

Standards Australia (2009) Australian Standard AS4970-2009 *Protection of Trees on Development Sites*, Pub. Standards Australia, Sydney.

APPENDIX 1: METHODOLOGY

A1.1 Site Inspection

This report, its comments and recommendations have been prepared based on the information gathered during a detailed site inspection carried out on the on the 20th April 2021. This assessment is summarised in **Appendix 1**.

A1.2 Tree Locations

The location of the subject trees are based on the site survey, 104-16G T02 [00] RO, 12/05/2021 prepared by Craig and Rhodes.

A1.3 Visual Tree Assessment

The trees were assessed from the ground by the Visual Tree Assessment (VTA) method as described in Mattheck & Breloer (1994), using non-invasive tools such as binoculars and acoustic mallet. No digging or exposing of the root zones occurred in this inspection and no aerial inspection by climbing was performed. No aerial inspection or diagnostic testing was undertaken as part of this assessment.

The following data was collected for each tree:

- Botanical and common name.
- Tree dimensions (approximate only).
- Canopy density (approximate only).
- Overall health and vitality, including epicormic growth, deadwood and predation by pests and diseases.
- Structural condition including evident faults such as Bark Inclusions or poor branch attachments, decay, cavities and mechanical or biological damage.
- Stability of the tree including excessive trunk lean, stability of the soil, soil cracking, soil heaving, exposed roots and root damage.

A1.4 Retention Value

Each tree has been given a Sustainable Retention Index Value (SRIV) according to the rating system set out in the Sustainable Retention Index Value Matrix (refer to the table in section A1.8). The SRIV for each tree is based on its health, vigour, structure and age class as established in the Visual Tree Assessment. The SRIV does not take into account the impact of the proposed development.

A1.5 Landscape Significance Assessment

Landscape Significance is an essential criterion to establish the importance that a particular tree may have on a site. Each tree has been given a Tree Significance in landscape rating based on the 'IACA Significance of a Tree, Assessment Rating System'. A tree is to have a minimum of three criteria in a category to be applicable for that rating.

Tree Significance in the landscape ratings:

High	Medium	Low
▪ The tree is in good condition and good vigour; ▪ The tree has a form typical for the species; ▪ The tree is a remnant or is a planted locally indigenous specimen and/or is rare or uncommon in the local area or of botanical interest or of substantial age; ▪ The tree is listed as a Heritage Item, Threatened Species or part of an Endangered ecological community or listed on Councils significant Tree Register; ▪ The tree is visually prominent and visible from a considerable distance when viewed from most directions within the landscape due to its size and scale and makes a positive contribution to the local amenity; ▪ The tree supports social and cultural sentiments or spiritual associations, reflected by the broader population or community group or has commemorative values; ▪ The tree's growth is unrestricted by above and below ground influences, supporting its ability to reach dimensions typical for the taxa in situ - tree is appropriate to the site conditions.	▪ The tree is in fair-good condition and good or low vigour; ▪ The tree has form typical or atypical of the species; ▪ The tree is a planted locally indigenous or a common species with its taxa commonly planted in the local area ▪ The tree is visible from surrounding properties, although not visually prominent as partially obstructed by other vegetation or buildings when viewed from the street, ▪ The tree provides a fair contribution to the visual character and amenity of the local area, ▪ The tree's growth is moderately restricted by above or below ground influences, reducing its ability to reach dimensions typical for the taxa in situ.	▪ The tree is in fair-poor condition and good or low vigour; ▪ The tree has form atypical of the species; ▪ The tree is not visible or is partly visible from surrounding properties as obstructed by other vegetation or buildings, ▪ The tree provides a minor contribution or has a negative impact on the visual character and amenity of the local area, ▪ The tree is a young specimen which may or may not have reached dimension to be protected by local Tree Preservation orders or similar protection mechanisms and can easily be replaced with a suitable specimen, ▪ The tree's growth is severely restricted by above or below ground influences, unlikely to reach dimensions typical for the taxa in situ - tree is inappropriate to the site conditions, ▪ The tree is listed as exempt under the provisions of the local Council Tree Preservation Order or similar protection mechanisms, ▪ The tree has a wound or defect that has potential to become structurally unsound. ▪ Environmental Pest / Noxious Weed Species ▪ The tree is an Environmental Pest Species due to its invasiveness or poisonous/ allergenic properties, ▪ The tree is a declared noxious weed by legislation. ▪ Hazardous/Irreversible Decline ▪ The tree is structurally unsound and/or unstable and is considered potentially dangerous, - The tree is dead, or is in irreversible decline, or has the potential to fail or collapse in full or part in the immediate to short term.

A1.6 Tree Protection Zones (TPZ) and Structural Root Zones (SRZ)

The intention of the TPZ is to ensure protection of the root system and canopy from the potential damage from construction works and ensure the long-term health and stability of each tree to be retained.

The Structural Root Zone (SRZ) is located within the TPZ around the base of a tree and provides the bulk of mechanical support and anchorage for a tree.

The Tree Protection Zones (TPZ) and Structural Root Zones (SRZ) have been arrived at using methods as detailed in Australian Standard AS 4970– 2009. Specific site factors are also considered that may influence the location of the TPZ and/or structural tree roots.

A1.7 Encroachment and Development Impacts

Encroachments and development impacts to tree TPZ's and SRZ's include;

- Excavation
- Filling
- Changes to existing soil levels
- Placing items and elements within the zones even if only temporarily
- Soil disturbance
- Any other physical damage to the trunk or root system or any other activity likely to cause damage to the tree.

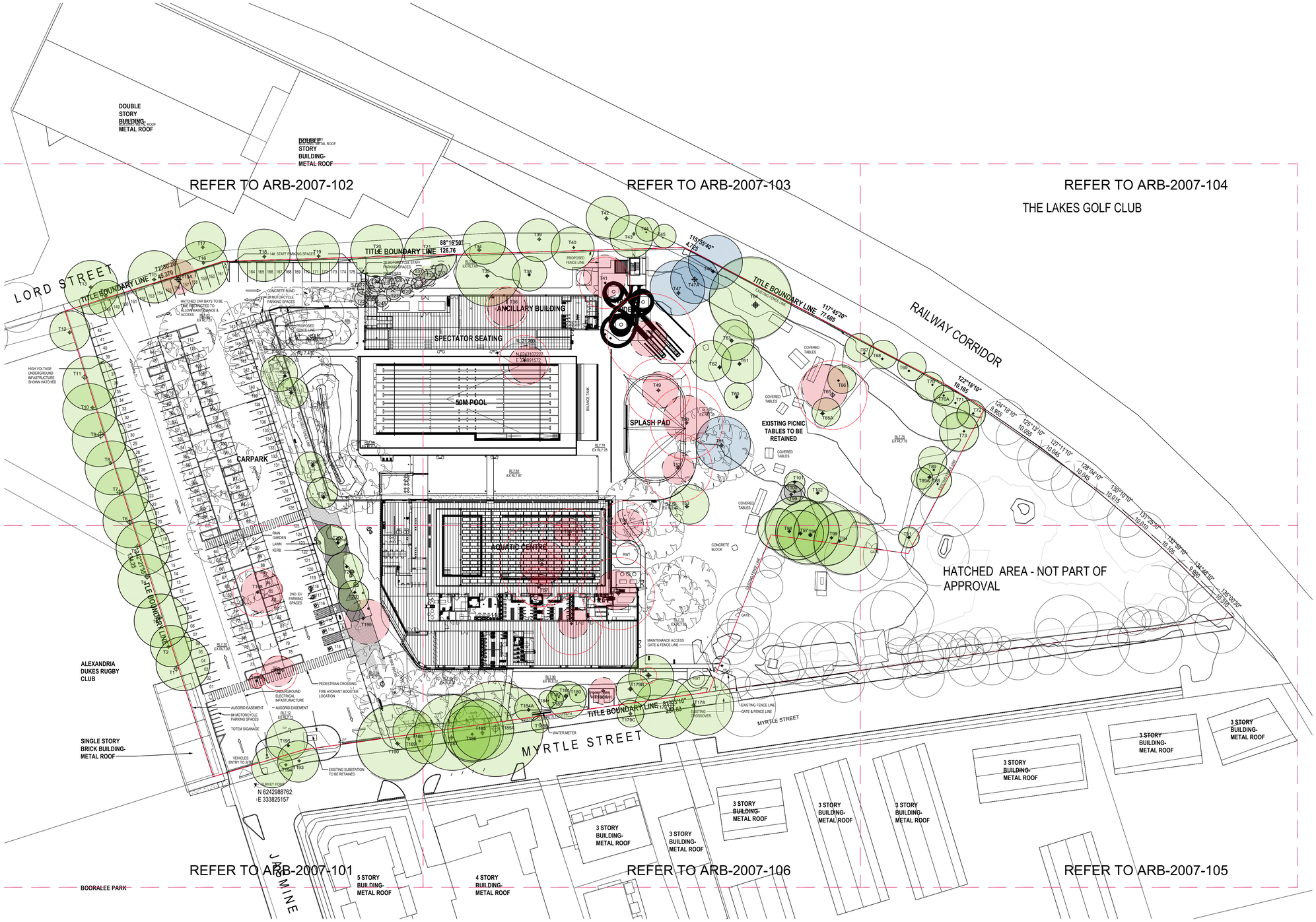
Under *AS 4970:2009 Protection of trees on development sites*, a major encroachment is greater than 10% of the area of the TPZ and the Project Arborist must determine and demonstrate that the tree would remain viable. More detailed investigations, such as exploratory excavations and root investigation to enable an informed evaluation of the potential impact of the proposed works may be required.

Encroachments into the SRZ are not likely to be supported unless the Project Arborist has undertaken exploratory investigation and can demonstrate that there will be minimal impact to the tree.

A1.8 SRIV Table

Age Class	Vigour Class and Condition Class					
	Good Vigour & Good Condition (GVG)	Good Vigour & Fair Condition (GVF)	Good Vigour & Poor Condition (GVP)	Low Vigour & Good Condition (LVG)	Low Vigour & Fair Condition (LVF)	Low Vigour & Poor Condition (LVP)
	Able to be retained if sufficient space available above and below ground for future growth. No remedial work or improvement to growing environment required. May be subject to high vigour. Retention potential - Medium - Long Term.	Able to be retained if sufficient space available above and below ground for future growth. Remedial work may be required or improvement to growing environment may assist. Retention potential - Medium Term. Potential for longer with remediation or favourable environmental conditions	Able to be retained if sufficient space available above and below ground for future growth. Remedial work unlikely to assist condition, improvement to growing environment may assist. Retention potential - Short Term. Potential for longer with remediation or favourable environmental conditions.	May be able to be retained if sufficient space available above and below ground for future growth. No remedial work required, but improvement to growing environment may assist vigour. Retention potential - Short Term. Potential for longer with remediation or favourable environmental conditions.	May be able to be retained if sufficient space available above and below ground for future growth. Remedial work or improvement to growing environment may assist condition and vigour. Retention potential - Short Term. Potential for longer with remediation or favourable environmental conditions.	Unlikely to be able to be retained if sufficient space available above and below ground for future growth. Remedial work or improvement to growing environment unlikely to assist condition or vigour. Retention potential - Likely to be removed immediately or retained for Short Term. Potential for longer with remediation or favourable environmental conditions
Young (Y)	**YGVG - 9** Index Value 9 Retention potential - Long Term. Likely to provide minimal contribution to local amenity if height Retain, move or replace	**YGVF - 8** Index Value 8 Retention potential - Short - Medium Term. Potential for longer with improved growing conditions. Likely to provide minimal contribution to local amenity if height Medium-high potential for future growth and adaptability. Retain, move or replace.	**YGVP - 5** Index Value 5 Retention potential - Short Term. Potential for longer with improved growing conditions. Likely to provide minimal contribution to local amenity if height Low-medium potential for future growth and adaptability. Retain, move or replace	**YLVG - 4** Index Value 4 Retention potential - Short Term. Potential for longer with improved growing conditions. Likely to provide minimal contribution to local amenity if height Medium potential for future growth and adaptability. Retain, move or replace	**YLVF - 3** Index Value 3 Retention potential - Short Term. Potential for longer with improved growing conditions. Likely to provide minimal contribution to local amenity if height <5m. Low-medium potential for future growth and adaptability. Retain, move or replace	**YLVP - 1** Index Value 1 Retention potential - Likely to be removed immediately or retained for Short Term. Likely to provide minimal contribution to local amenity if height
Mature (M)	**MGVG - 10** Index Value 10 Retention potential - Medium - Long Term	**MGVF - 9** Index Value 9 Retention potential - Medium Term. Potential for longer with improved growing conditions.	**MGVP - 6** Index Value 6 Retention potential - Short Term. Potential for longer with improved growing conditions	**MLVG - 5** Index Value 5 Retention potential - Short Term. Potential for longer with improved growing conditions	**MLVF - 4** Index Value 4 Retention potential - Short Term. Potential for longer with improved growing conditions	**MLVP - 2** Index Value 2 Retention potential - Likely to be removed immediately or retained for Short Term.
Over-mature (O)	**OGVG - 6** Index Value 6 Retention potential - Medium - Long Term.	**OGVF - 5** Index Value 5 Retention potential - Medium Term.	**OGVP - 4** Index Value 4 Retention potential - Short Term.	**OLVG - 3** Index Value 3 Retention potential - Short Term. Potential for longer with improved growing conditions.	**OLVF - 2** Index Value 2 Retention potential - Short Term.	**OLVP - 0** Index Value 0 Retention potential - Likely to be removed immediately or retained for Short Term

APPENDIX 2: PLANS



LEGEND

- EXTENT OF WORKS
- TX — EXISTING TREE TRUNK Refer to Tree Impact Assessment Schedule
- EXISTING TREE CANOPY Refer to Tree Impact Assessment Schedule
- TREES TO BE RETAINED Refer to Tree Impact Assessment Schedule
- TREES TO BE REMOVED Refer to Tree Impact Assessment Schedule
- TREES TO BE INVESTIGATED FOR POTENTIAL HAZARD AND REMOVE IF REQUIRED Refer to Tree Impact Assessment Schedule
- TREE PROTECTION ZONE

ISSUE	DESCRIPTION	DATE
G	ISSUE FOR TENDER / REVIEW	05.11.2024
F	ISSUE FOR TENDER / REVIEW	22.10.2024
E	ISSUE FOR TENDER / REVIEW	29.02.2024
D	ISSUE FOR TENDER / REVIEW	15.08.2023
C	ISSUE FOR TENDER / REVIEW	18.07.2023
B	ISSUE FOR TENDER / REVIEW	12.04.2023

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BOTANY AQUATIC CENTRE
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DRAWING
SHEET LAYOUT

DRAWING NUMBER: ARB-2007-001
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REFER TO SHEET ARB-2007-102

REFER TO SHEET ARB-2007-106

LEGEND

- EXTENT OF WORKS
- TX — EXISTING TREE TRUNK. Refer to Tree Impact Assessment Schedule
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TREE PLAN 01

DRAWING NUMBER: ARB-2007-101
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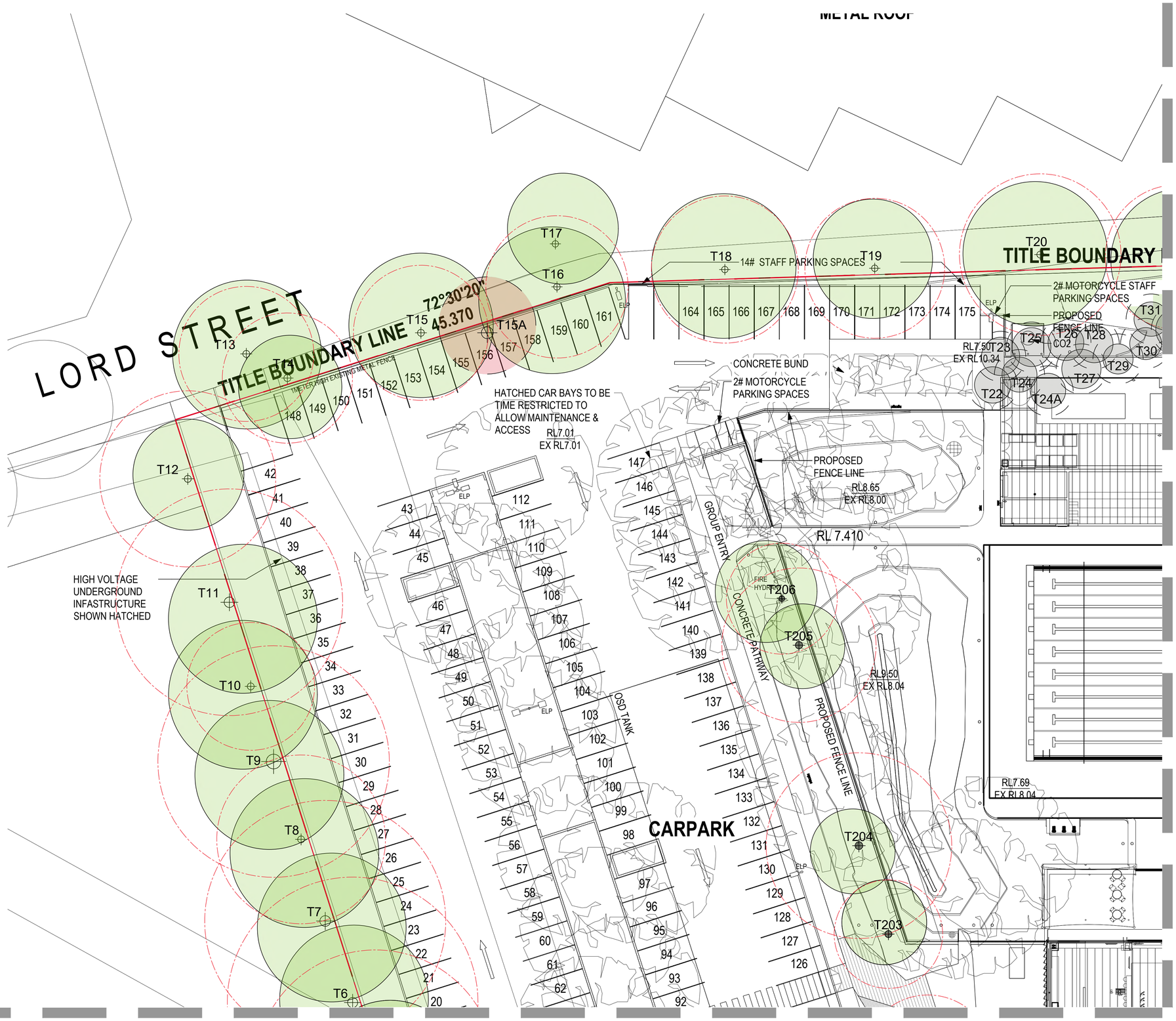

REFER TO SHEET ARB-2007-101

REFER TO SHEET ARB-2007-103

LEGEND

- EXTENT OF WORKS
- TX — EXISTING TREE TRUNK. Refer to Tree Impact Assessment Schedule
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- PALMS TO BE TRANSPLANTED. Refer to Tree Impact Assessment Schedule.

ISSUE	DESCRIPTION	DATE
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TREE PLAN 02

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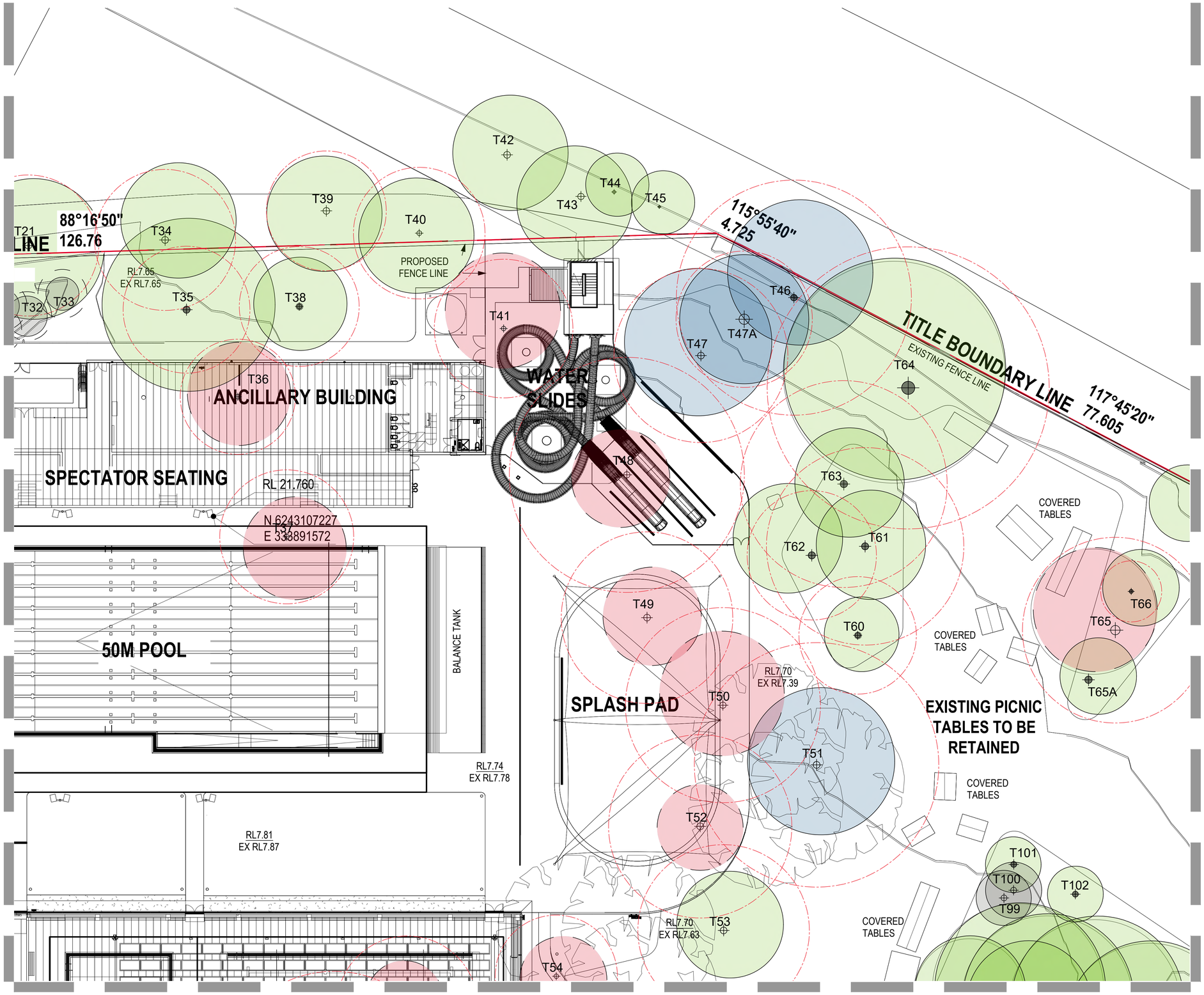
REFER TO SHEET ARB-2007-102

REFER TO SHEET ARB-2007-104



REFER TO SHEET ARB-2007-106

LEGEND

- EXTENT OF WORKS
- TX — EXISTING TREE TRUNK. Refer to Tree Impact Assessment Schedule
- EXISTING TREE CANOPY. Refer to Tree Impact Assessment Schedule
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THE LAKES GOLF CLUB

LEGEND

- EXTENT OF WORKS
- TX — EXISTING TREE TRUNK. Refer to Tree Impact Assessment Schedule
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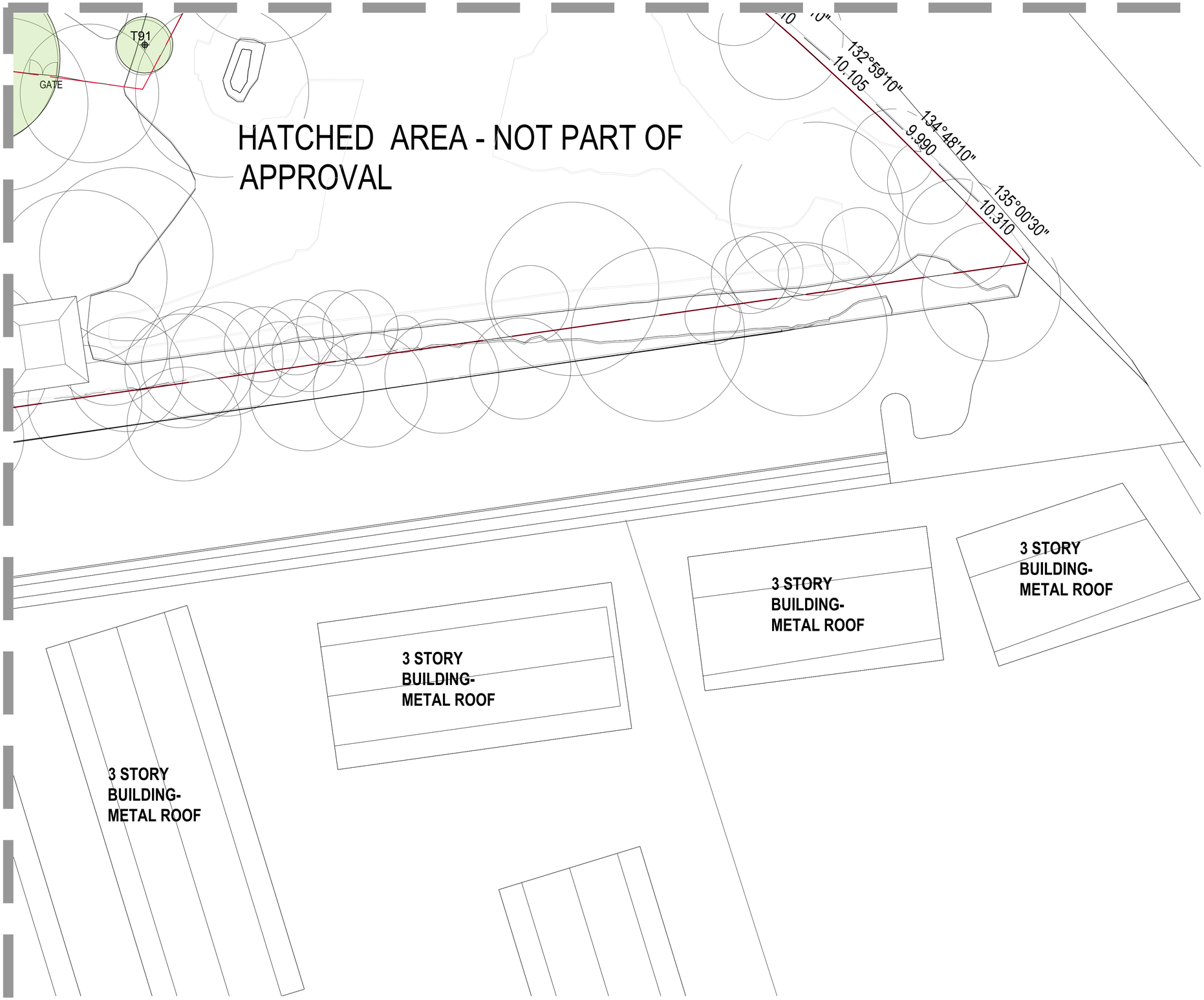
REFER TO SHEET ARB-2007-106



LEGEND

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ACN: 164 245 514 ABN: 99 164 245 514

REFER TO SHEET ARB-2007-103

REFER TO SHEET ARB-2007-101

REFER TO SHEET ARB-2007-105

AQUATIC CENTRE

T55

T56

T57

T58

T59

RWT

CONCRETE BLOCK

T98 T97 T96 T95 T94

EXISTING FENCE LINE

GATE

RL7.70
EX RL7.93

MAINTENANCE ACCESS GATE & FENCE LINE

RL7.85
EX RL8.02

RL7.90
EX RL8.02

T179A

T179B

RWT

T181 T180

T182

T184

T183

PROPOSED SUBSTATION

T184A

EXISTING CONCRETE FOOTPATH

TITLE BOUNDARY LINE 81°53'10" 257.83

T178

T179

EXISTING CROSSOVER.

EXISTING FENCE LINE

GATE & FENCE LINE

T179C

T185

T185A

T185B

WATER METER

T186

T187

MYRTLE STREET

3 STORY BUILDING- METAL ROOF

3 STORY BUILDING- METAL ROOF

3 STORY BUILDING- METAL ROOF

3 STORY BUILDING- METAL ROOF

4 STORY BUILDING-

LEGEND

EXTENT OF WORKS

TX EXISTING TREE TRUNK
Refer to Tree Impact Assessment Schedule

EXISTING TREE CANOPY
Refer to Tree Impact Assessment Schedule

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Refer to Tree Impact Assessment Schedule

TREES TO BE REMOVED
Refer to Tree Impact Assessment Schedule

TREES TO BE INVESTIGATED FOR POTENTIAL HAZARD AND REMOVE IF REQUIRED
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TREE PROTECTION ZONE

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TREE PLAN 06

DRAWING NUMBER
ARB-2007-106

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1:400 @ A3

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ACN: 164 245 514 ABN: 99 164 245 514

APPENDIX 3: TREE ASSESSMENT SCHEDULE

Encroachment Analysis

		TPZ radius (m)	TPZ area (m2)	Encroachment (m2)	**Percentage (%)**	**within development**	**Design Notes**
1	*Melaleuca quinquenervia* **Broad-leaved Paperbark**	10.80	366.25				No encroachment. Retain
2	*Melaleuca quinquenervia* **Broad-leaved Paperbark**	7.20	162.78				No encroachment. Retain
3	*Melaleuca quinquenervia* **Broad-leaved Paperbark**	9.48	282.19				No encroachment. Retain
4	*Melaleuca quinquenervia* **Broad-leaved Paperbark**	9.60	289.38				No encroachment. Retain
5	*Melaleuca quinquenervia* **Broad-leaved Paperbark**	12.00	452.16				No encroachment. Retain
6	*Melaleuca quinquenervia* **Broad-leaved Paperbark**	12.48	489.06				No encroachment. Retain
7	*Melaleuca quinquenervia* **Broad-leaved Paperbark**	12.00	452.16				No encroachment. Retain
8	*Melaleuca quinquenervia* **Broad-leaved Paperbark**	8.40	221.56				No encroachment. Retain
9	*Melaleuca quinquenervia* **Broad-leaved Paperbark**	11.52	416.71				No encroachment. Retain
10	*Melaleuca quinquenervia* **Broad-leaved Paperbark**	6.36	127.01				No encroachment. Retain
11	*Melaleuca quinquenervia* **Broad-leaved Paperbark**	11.28	399.53				No encroachment. Retain
12	*Melaleuca quinquenervia* **Broad-leaved Paperbark**	8.76	240.96				No encroachment. Retain
13	*Eucalyptus microcorys* **Tallowwood**	6.72	141.80	0.00	0.0		No encroachment. Retain
14	*Eucalyptus microcorys* **Tallowwood**	6.48	131.85	0.00	0.0		No encroachment. Retain
15	*Eucalyptus microcorys* **Tallowwood**	6.72	141.80	0.00	0.0		No encroachment. Retain
15A	*Acacia sp.* **Wattle**						Poor condition. Remove
16	*Eucalyptus microcorys* **Tallowwood**	7.08	157.40	49.33	31.3		No encroachment. Retain
17	*Eucalyptus microcorys* **Tallowwood**						No encroachment. Retain
18	*Eucalyptus microcorys* **Tallowwood**	7.32	168.25	1.00	0.6		No encroachment. Retain
19	*Eucalyptus microcorys* **Tallowwood**	6.96	152.11	3.00	2.0		No encroachment. Retain
20	*Eucalyptus microcorys* **Tallowwood**	8.04	202.97	0.00	0.0		No encroachment. Retain
21	*Eucalyptus microcorys* **Tallowwood**	7.20	162.78	0.00	0.0		No encroachment. Retain
22	*Washingtonia robusta* **Mexican Fan Palm**					YES	Transplant on site
23	*Washingtonia robusta* **Mexican Fan Palm**					YES	Transplant on site
24	*Washingtonia robusta* **Mexican Fan Palm**					YES	Transplant on site
24A	*Washingtonia robusta* **Mexican Fan Palm**					YES	Transplant on site
25	*Washingtonia robusta* **Mexican Fan Palm**					YES	Transplant on site
26	*Washingtonia robusta* **Mexican Fan Palm**					YES	Transplant on site
27	*Washingtonia robusta* **Mexican Fan Palm**					YES	Transplant on site
28	*Washingtonia robusta* **Mexican Fan Palm**					YES	Transplant on site
29	*Washingtonia robusta* **Mexican Fan Palm**					YES	Transplant on site

Encroachment Analysis

		TPZ radius (m)	TPZ area (m2)	Encroachment (m2)	**Percentage (%)**	**within development**	**Design Notes**
30	*Washingtonia robusta* **Mexican Fan Palm**					YES	Transplant on site
31	*Washingtonia robusta* **Mexican Fan Palm**					YES	Transplant on site
32	*Washingtonia robusta* **Mexican Fan Palm**					YES	Transplant on site
33	*Washingtonia robusta* **Mexican Fan Palm**					YES	Transplant on site
34	*Eucalyptus microcorys* **Tallowwood**	7.20	162.78	8.67	5.3		No encroachment. Retain
35	*Angophora costata* **Smooth-barked Apple**	6.48	131.85	11.00	8.3		Minor encroachment. Retain
36	*Eucalyptus robusta* **Swamp Mahogany**	5.88	108.56	108.56	100.0	YES	Major encroachment incl. SRZ. Remove
37	*Melaleuca quinquenervia* **Broad-leaved Paperbark**	6.84	146.91	146.91	100.0	YES	Major encroachment incl. SRZ. Remove
38	*Melaleuca quinquenervia* **Broad-leaved Paperbark**	6.12	117.61	5.29	4.5		Minor encroachment. Retain
39	*Eucalyptus microcorys* **Tallowwood**	6.12	117.61	0.00	0.0		On adjacent property.No encroachment. Retain
40	*Eucalyptus microcorys* **Tallowwood**	6.72	141.80	0.00	0.0		On adjacent property.No encroachment. Retain
41	*Corymbia maculata* **Spotted Gum**	7.08	157.40	157.40	100.0	YES	Major encroachment incl. SRZ. Remove
42	*Eucalyptus microcorys* **Tallowwood**						On adjacent property.No encroachment. Retain
43	*Ficus hillii* **Weeping Fig**						On adjacent property.No encroachment. Retain
44	*Melaleuca quinquenervia* **Broad-leaved Paperbark**						On adjacent property.No encroachment. Retain
45	*Melaleuca quinquenervia* **Broad-leaved Paperbark**						On adjacent property.No encroachment. Retain
46	*Eucalyptus benthamii* **Camden white gum *1**	12.00	452.16	0.00	0.0		Wound wood with Chino seepage. Aerial investigation & possible removal
47	*Eucalyptus tereticonis* ***Forest Red Gum*1***	8.88	247.60	57.46	23.2	YES	Major encroachment. Retain subject to root investigation and detail design levels.
47A	*Eucalyptus benthamii* **Camden white gum *1**	6.96	152.11	0.00	0.0		Poor condition. Retain. Aerial investigation & possible removal.
48	*Melaleuca quinquenervia* **Broad-leaved Paperbark**	12.00	452.16	452.16	100.0	YES	Major encroachment incl. SRZ. Remove
49	*Melaleuca quinquenervia* **Broad-leaved Paperbark**	8.76	240.96	240.96	100.0	YES	Major encroachment incl. SRZ. Remove
50	*Melaleuca quinquenervia* **Broad-leaved Paperbark**	9.96	311.49	208.94	67.1	YES	Major encroachment incl. SRZ. Remove
51	*Melaleuca quinquenervia* **Broad-leaved Paperbark**	12.48	489.06	78.67	16.1		Major encroachment. Investigation and possible removal.
52	*Melaleuca quinquenervia* **Broad-leaved Paperbark**	9.36	275.09	275.09	100.0	YES	Major encroachment incl. SRZ. Remove
53	*Melaleuca quinquenervia* **Broad-leaved Paperbark**	8.76	240.96	35.03	14.5		Major encroachment. Remove
54	*Melaleuca quinquenervia* **Broad-leaved Paperbark**	6.24	122.26	122.26	100.0	YES	Major encroachment incl. SRZ. Remove
55	*Melaleuca quinquenervia* **Broad-leaved Paperbark**	7.20	162.78	162.78	100.0	YES	Major encroachment incl. SRZ. Remove
56	*Melaleuca quinquenervia* **Broad-leaved Paperbark**	11.64	425.44	425.44	100.0	YES	Major encroachment incl. SRZ. Remove
57	*Melaleuca quinquenervia* **Broad-leaved Paperbark**	5.52	95.68	95.68	100.0	YES	Major encroachment incl. SRZ. Remove
58	*Melaleuca quinquenervia* **Broad-leaved Paperbark**	9.96	311.49	311.49	100.0	YES	Major encroachment incl. SRZ. Remove
59	*Melaleuca quinquenervia* **Broad-leaved Paperbark**	8.52	227.93	227.93	100.0	YES	Major encroachment incl. SRZ. Remove

Encroachment Analysis

		TPZ radius (m)	TPZ area (m2)	Encroachment (m2)	**Percentage (%)**	**within development**	**Design Notes**
60	*Melaleuca quinquenervia* **Broad-leaved Paperbark**	6.00	113.04	0.00	0.0		No encroachment. Retain
61	*Eucalyptus sp* *1	10.08	319.04	0.00	0.0		No encroachment. Retain
62	*Eucalyptus sp* *1	6.60	136.78	0.57	0.4		Minor encroachment. Retain
63	*Melaleuca quinquenervia* **Broad-leaved Paperbark**	10.56	350.15	0.00	0.0		No encroachment. Retain
64	*Eucalyptus tereticonis* **Forest Red Gum*1**	14.40	651.11	0.00	0.0		No encroachment. Retain
65	*Acacia elata* **Cedar Wattle**	9.48	282.19	0.00	0.0		Remove. Refer to tree assessment schedule
65A	*Strelitzia nicolai* **Giant White Bird of Paradise**						No encroachment. Retain
66	*Eucalyptus robusta* **Swamp Mahogany**	3.12	30.57	0.00	0.0		No encroachment. Retain
67	*Eucalyptus leucoxylon rosea* **Yellow Gum *1**						No encroachment. Retain
68	*Eucalyptus ficifolia* **Red Flowering Gum**						No encroachment. Retain
69	*Eucalyptus sp* *1						No encroachment. Retain
70	*Eucalyptus citriodora* **Lemon Scented Gum*1**						No encroachment. Retain
70A	*Eucalyptus sp* *1						No encroachment. Retain
71	*Agonis flexuosa* **Willow Myrtle**						No encroachment. Retain
72	*Jacaranda mimosifolia* **Jacaranda**						No encroachment. Retain
73	*Jacaranda mimosifolia* **Jacaranda**						No encroachment. Retain
88	*Jacaranda mimosifolia* **Blue Jacaranda**						No encroachment. Retain
89	*Agonis flexuosa* **Willow Myrtle**						No encroachment. Retain
89A	*Eucalyptus botryiodes* **Bangalay**						No encroachment. Retain
91	*Araucaria heterophylla* **Norfolk Island Pine**						No encroachment. Retain
92	*Eucalyptus saligna* **Sydney Blue Gum**						No encroachment. Retain
94	*Corymbia maculata* **Spotted Gum**						No encroachment. Retain
95	*Corymbia maculata* **Spotted Gum**						No encroachment. Retain
96	*Corymbia maculata* **Spotted Gum**						No encroachment. Retain
97	*Corymbia maculata* **Spotted Gum**						No encroachment. Retain
98	*Corymbia maculata* **Spotted Gum**						No encroachment. Retain
99	*Archontophoenix cunninghamiana* **Bangalow Palm**						No encroachment. Retain
100	*Archontophoenix cunninghamiana* **Bangalow Palm**						No encroachment. Retain
101	*Strelitzia nicolai* **Giant White Bird of Paradise**						No encroachment. Retain
102	*Strelitzia nicolai* **Giant White Bird of Paradise**						No encroachment. Retain

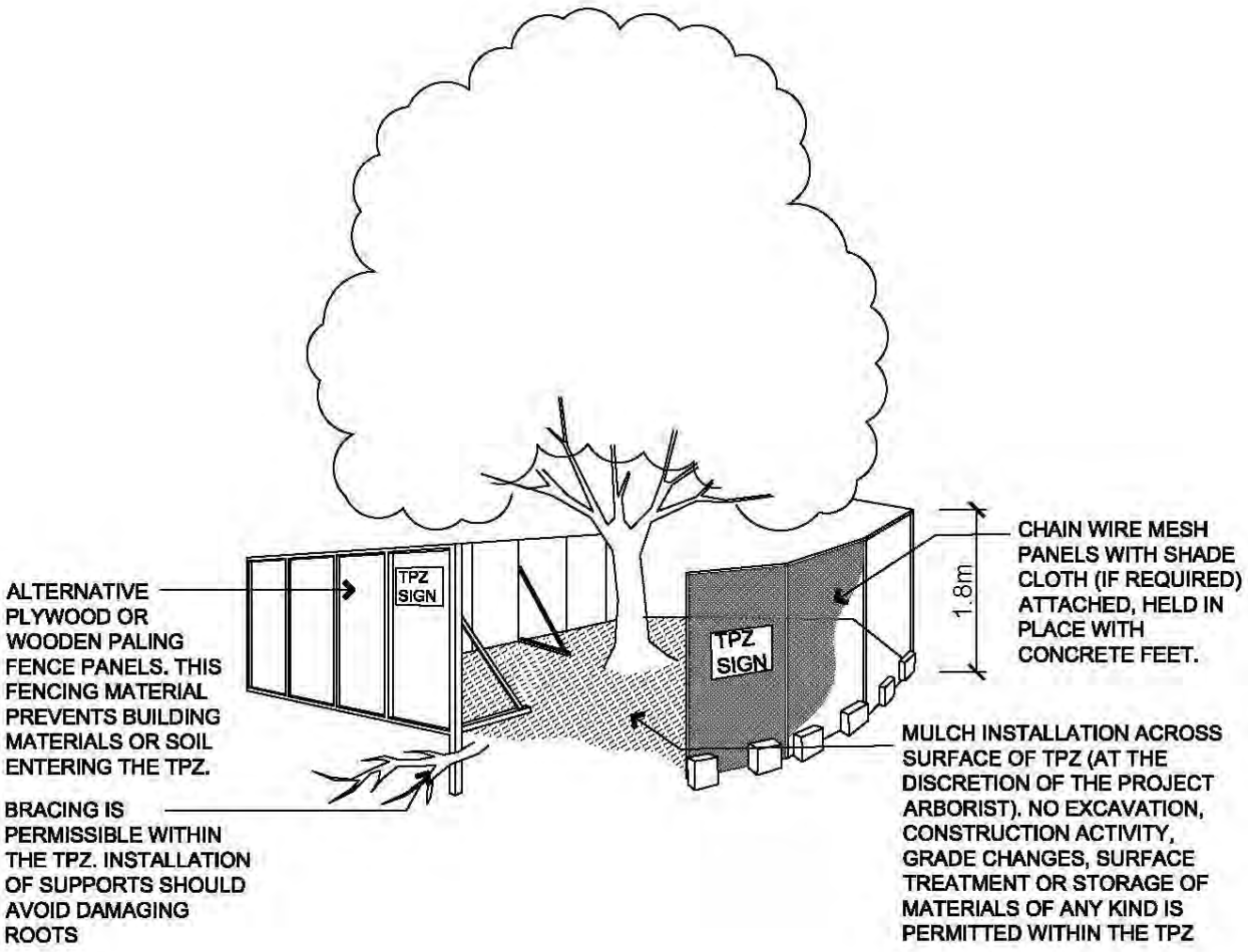
Encroachment Analysis

		TPZ radius (m)	TPZ area (m2)	Encroachment (m2)	**Percentage (%)**	**within development**	**Design Notes**
178	*Eucalyptus botryiodes* **Bangalay**	6.72	141.80	0.00	0.0		No encroachment. Retain
179	*Eucalyptus saligna X Botryoides* **Southern Blue Gum *1**	14.76	684.07	0.00	0.0		No encroachment. Retain
179A	*Syzygium luehmannii* **Small-leaved Lilly Pilly**	2.28	16.32	0.00	0.0		No encroachment. Retain
179B	*Cupaniopsis anarcardioides* **Tuckeroo**	2.52	19.94	0.00	0.0		No encroachment. Retain
179C	*Corymbia eximia* **Yellow Bloodwood**	2.00	12.56	0.00	0.0		No encroachment. Retain
180	*Brachychiton populneus* **Kurrajong**	2.64	21.88	0.00	0.0		No encroachment. Retain
180A	*Strelitzia nicolai* **Giant White Bird of Paradise**					YES	Major encroachment incl. SRZ. Remove
181	*Cupaniopsis anarcardioides* **Tuckeroo**	4.56	65.29	166.67	255.3		No encroachment. Retain
182	*Syzygium paniculatum* **Magenta Lilly Pilly**	2.00	12.56	167.67	1335.0		No encroachment. Retain
183	*Acmena smithii* **Lilly Pilly**	2.00	12.56	168.67	1342.9		No encroachment. Retain
184A	*Morus alba* **Mulberry**						Retain. Refer to tree assessment schedule
184	*Brachychiton acerifolius* **Illawarra Flame Tree**	2.76	23.92	1.64	6.9		Minor encroachment. Retain
185	*Eucalyptus microcorys* **Tallowwood**	5.76	104.18	0.00	0.0		No encroachment. Retain
185A	*Eucalyptus botryiodes* **Bangalay**	13.08	537.21	3.80	0.7		Co-dominant. Bracket fungus. Retain
185B	*Corymbia eximia* **Yellow Bloodwood**	2.00	12.56	0.00	0.0		No encroachment. Retain
186	*Eucalyptus microcorys* **Tallowwood**	6.36	127.01	0.00	0.0		No encroachment. Retain
187	*Eucalyptus microcorys* **Tallowwood**	9.12	261.17	0.00	0.0		No encroachment. Retain
188	*Eucalyptus microcorys* **Tallowwood**	4.92	76.01	0.63	0.8		Minor encroachment. Retain
189	*Eucalyptus microcorys* **Tallowwood**	5.16	83.60			YES	Minor encroachment. Retain
190	*Eucalyptus microcorys* **Tallowwood**	8.88	247.60			YES	Minor encroachment. Retain
193	*Eucalyptus microcorys* **Tallowwood**	3.72	43.45	0.07	0.2		Minor encroachment. Retain
194	*Eucalyptus microcorys* **Tallowwood**	8.64	234.40	3.70	1.6		Minor encroachment. Retain
195	*Banksia integrifolia* **Coast Banksia**	3.12	30.57	0.00	0.0		No encroachment. Retain
196	*Banksia serrata* **Old Man Banksia**	4.80	72.35	0.00	0.0		Assume no excavation, cut/fill in car park area. No encroachment. Retain
196A	*Banksia integrifolia* **Coast Banksia**	2.00	12.56	0.00	0.0		Assume no excavation, cut/fill in car park area. No encroachment. Retain
197	*Banksia serrata* **Old Man Banksia**	5.40	91.56	0.00	0.0		Assume no excavation, cut/fill in car park area. No encroachment. Retain
198	*Angophora costata* **Smooth-barked Apple**	6.72	141.80	0.00	0.0		Assume no excavation, cut/fill in car park area. No encroachment. Retain
199	*Lophostemon confertus* **Brush Box**	6.96	152.11	0.00	0.0		No encroachment. Remove
200	*Lophostemon confertus* **Brush Box**	6.60	136.78	0.00	0.0		No encroachment. Retain
201	*Lophostemon confertus* **Brush Box**	6.24	122.26	0.00	0.0		No encroachment. Retain

Encroachment Analysis

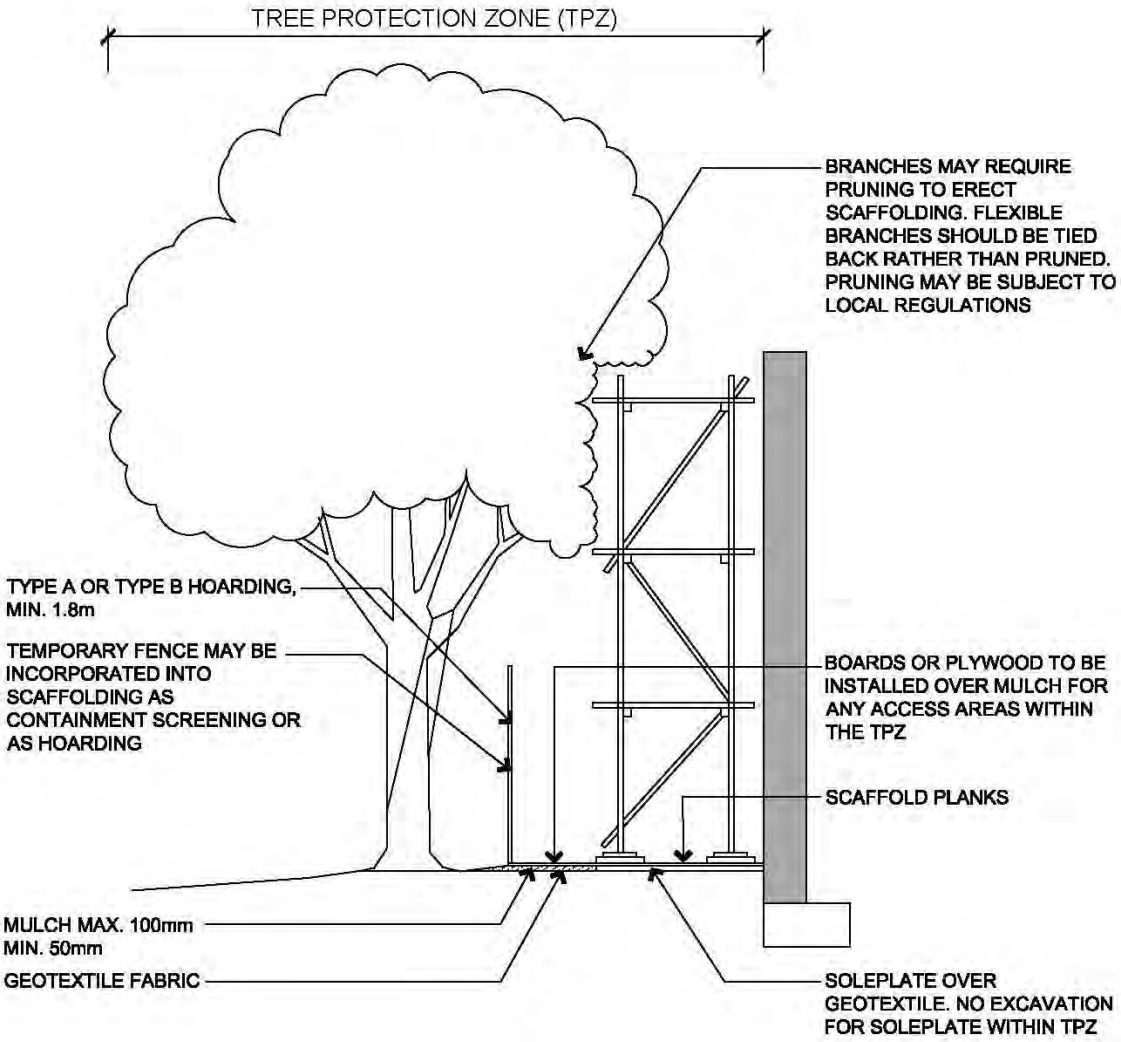
		TPZ radius (m)	TPZ area (m2)	Encroachment (m2)	**Percentage (%)**	**within development**	**Design Notes**
202	*Lophostemon confertus* **Brush Box**	6.48	131.85	0.00	0.0		No encroachment. Retain
203	*Lophostemon confertus* **Brush Box**	5.40	91.56	23.53	25.7		Minor encroachment. Retain
204	*Lophostemon confertus* **Brush Box**	9.24	268.09	108.65	40.5		Minor encroachment. Retain
205	*Lophostemon confertus* **Brush Box**	7.68	185.20	76.17	41.1		Minor encroachment. Retain
206	*Lophostemon confertus* **Brush Box**	5.52	95.68	34.15	35.7		Minor encroachment. Retain

APPENDIX 4: TYPICAL TREE PROTECTION DETAILS



PROTECTIVE FENCING

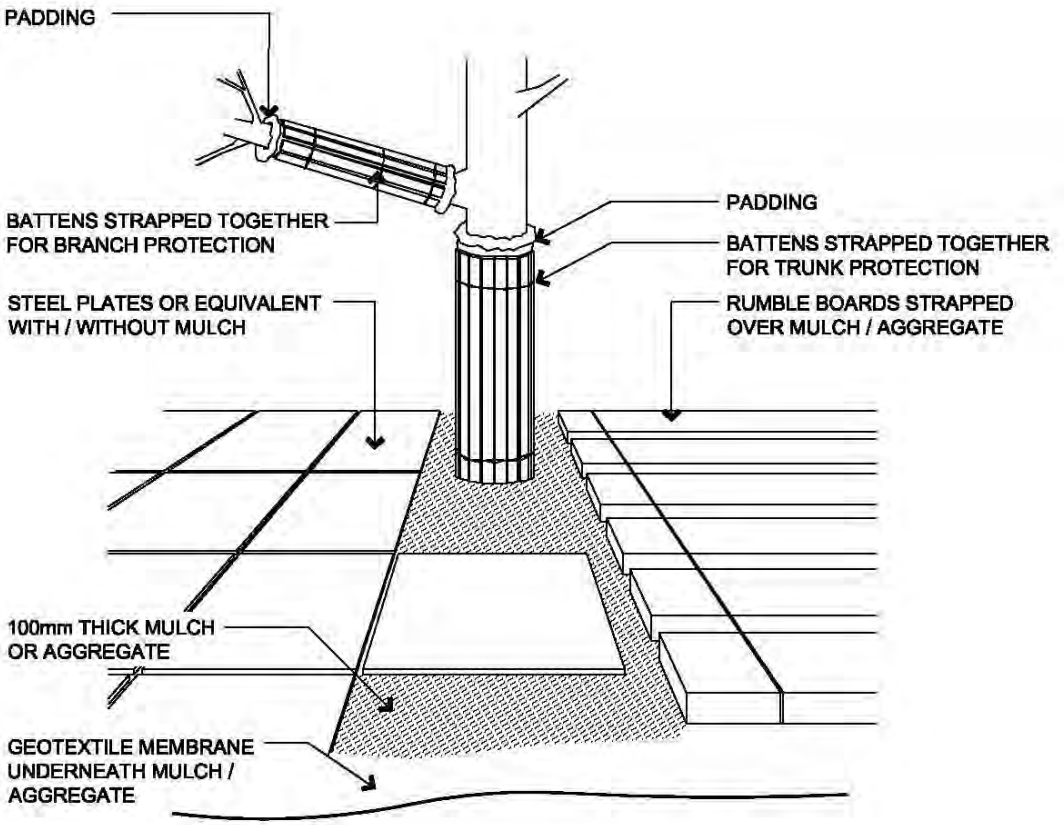
Based on AS4970-2009 NOT TO SCALE



NOTE: Excavation required for the insertion of support posts for tree protection fencing should not involve the severance of any roots greater than 20mm in diameter, without the prior approval of the project arborist.

INDICATIVE SCAFFOLDING WITHIN A TPZ

Based on AS4970-2009 NOT TO SCALE



NOTE:
1. For trunk and branch protection use boards and padding that will prevent damage to bark. Boards are to be strapped to trees, not nailed or screwed.
2. Rumble boards should be of a suitable thickness to prevent soil compaction and root damage.

EXAMPLES OF TRUNK, BRANCH AND GROUND PROTECTION

Based on AS4970-2009 NOT TO SCALE

TREE PROTECTION ZONE SIGN

Based on AS4970-2009 NOT TO SCALE