WOODVALE
TREE SERVICES

Arboricultural Impact Assessment (AIA).

14 Highfields Circuit, Port Macquarie 2444.

Address: PO BOX 1754
Port Macquarie NSW 2444
Mobile: 0412 394 820
Phone: 02 6586 4073
Fax: 02 6585 2899
Email: office@woodvaletreeservices.com.au
ABN: 21 143 955 506

Arboricultural Impact Assessment (AIA).

14 Highfields Circuit, Port Macquarie 2444.

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1 EXECUTIVE SUMMARY.

Primary Health Care Limited and Australian Unity Investment Management Administration Pty Ltd (AUIMA) as trustee for Primary Health Care Property Trust (PHPT) Pty Ltd. has contracted Woodvale Tree Services Pty. Ltd. to carry out an Arboricultural Impact Assessment to be submitted as part of a Development Application.

The site assessment was carried out on 30/10/17 and 31/10/17, the weather on each day of the inspection was fine with adequate lighting. This report is an assessment of the trees situated at 14 Highfields Circuit, Port Macquarie 2444. To conform to AS 4970-2009 and AS 4373 - 2007, trees within neighbouring properties that were deemed to potentially be affected by the proposed development were also included within the report, these properties include- 16 Highfields Circuit, Port Macquarie 2444 and 11 Kulai Place, Port Macquarie.

Access to the neighbouring properties was not sought so all measurements regarding neighbouring trees are estimates and all comments and assessment outcomes are limited to this restriction.

Trees were assessed utilising the IACA Significance of a tree, Assessment Rating System (STARS©) attached to this report and a summary of the assessment are as follows.

To construct the proposed building, it will require the removal of 2 high retention value trees – 0 medium retention value trees and 11 low retention value trees, it is noted tree 14 and 17 are a stand of palm trees, trees 18 and 19 are both classified as stands/groups, in order to construct the proposed car park it will require the removal of 0 high retention value tree, 0 medium retention value trees and 5 low retention value trees.

In order to allow for the proposed carpark, OSD storm-water tank, substation and waste area specifications for above grade construction, supervision and restricted access is recommended within the Tree Protection Zones of trees to be retained - trees 11 & 21-34. All services and utilities to facilitate this must be installed out of tree TPZs and with the OSD storm-water tank to be installed at a preferable distance from trees 21-34 so as to only impact TPZs by 10% maximum.

There is Deadwood removal, hazard reduction pruning and various canopy reduction pruning required to trees 20-34 as within section 4 of this document (Summary of AIA) and detailed within column (AC) of the accompanying excel spreadsheet.

2 INTRODUCTION.

This report provides observations in relation to trees throughout the site and additionally specific tree observations for each of the trees that are identified to potentially be affected by the proposed development. Findings and recommendations are provided, these are presumed to be submitted for the proposed development application.

The client has requested Woodvale Tree Services provide comment on tree retention of the larger trees and supplied a preliminary concept plan provided dated 31/10/17 (SK04-Option C), the survey plan date surveyed 29/9/17 plan number B04025 – 1 and the Site and stormwater management updated plans received 16/11/17 which is included within section 4 of this document.

The report details the results of the site assessment and provides recommendations that conform to AS4970 - 2009. This report will only document and reflect the observations captured at the time of the data collection. These trees may be subject to additional biotic or abiotic factors or unforeseen impacts throughout the development or into the future where these outcomes should be subject to further assessment by an AQF level 5 arborist.

It is noted these assessments are based upon the concept plan being interpreted accurately during the tree inspections. Measurements from boundaries, buildings, carpark and infrastructure may not be detailed specific to some trees; in these circumstances a visual estimate was utilized to achieve measurements for this report. This report was conducted from the ground only, with no aerial or below ground assessment carried out.

When determining the potential impacts of encroachment into individual assets calculated TPZs and within the limitations of a visual tree assessment the following factors have also been considered to contribute to the overall outcome and recommendations as per section 3.3.4 of A.S.4970 - 2009:

- Location and distribution of the roots to be determined through non-destructive investigation methods (pneumatic, hydraulic, hand digging or ground penetrating radar). Photographs should be taken and a root zone map prepared.
- The potential loss of root mass resulting from the encroachment: number and size of roots.
- Tree species and tolerance to root disturbance.
- Age, vigour and size of the tree.
- Lean and stability of the tree.
- Soil characteristics and volume, topography and drainage.
- The presence of existing or past structures or obstacles affecting root growth.
- Design factors.

The start of the report validation timeframe commences on the date of inspection only and not when the report is delivered to the client. Report validation timeframe – 6 months, upon any changes to the site or proposed works or adverse weather conditions/storm events.

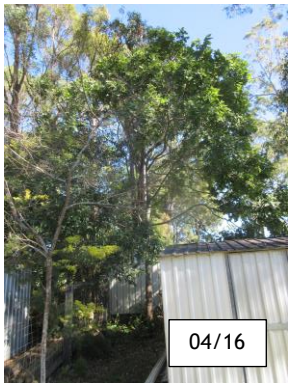
3 THE SITE.

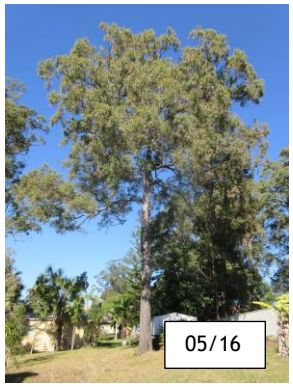
The following observations relate to the site and trees establishment locations:

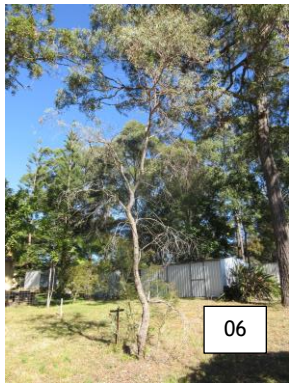
- Trees within the site have had limited arboricultural management previously.
- There are multiple trees established throughout the site believed to be a mix of existing remnant trees that were retained during the sub-division and planted trees established for aesthetical landscape installation. Species present are both Native and Exotic.
- The site is approximately 3500 m2 in an area/size.
- The site is land zoned as R1-General Residential (PMHC-LEP-2011) with differing land zones of lots located around the site based on usage.

4 ARBORICULTURAL IMPACT ASSESSMENT, TREE I.D, REFERENCE PLANS AND SUMMARY.

Tree Identification, photo: 01-34, trees 01-19 are also tagged with aluminium tree tags affixed and numbered, trees included within the surveyors plan have orange tags affixed with the corresponding surveyor's number. The below number in the photos corresponds with reports as follows:
Number assigned within this report/Where present Number assigned by surveyor's tree tags.

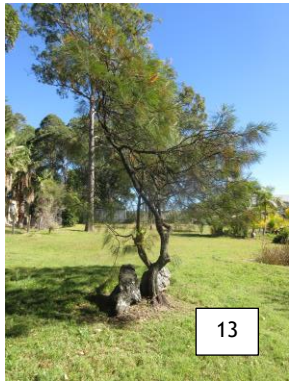







11/13


12/12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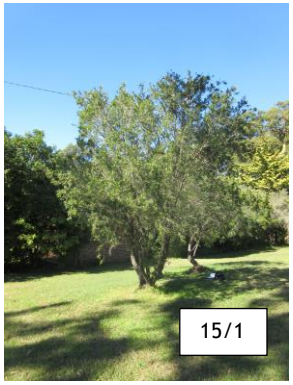
14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17


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19


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22/?


23

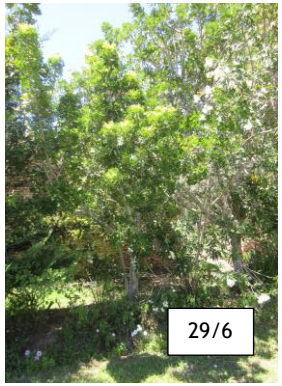

24/11


25/10


26/9


27/8


28/7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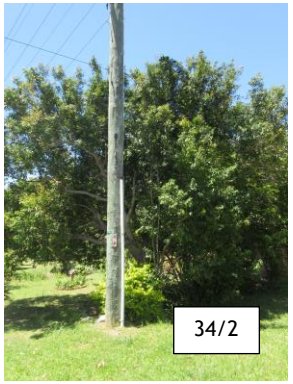
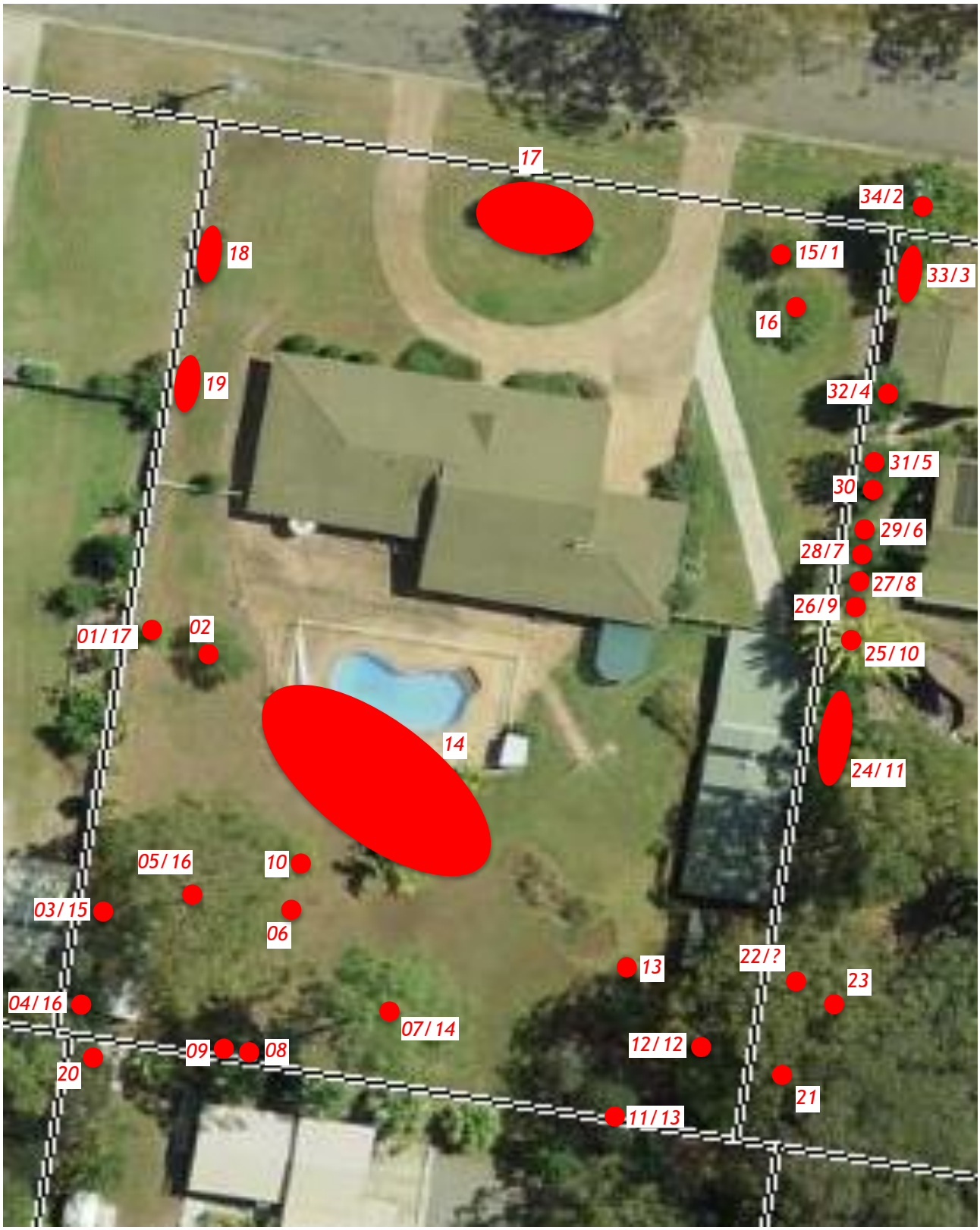
31/5


32/4

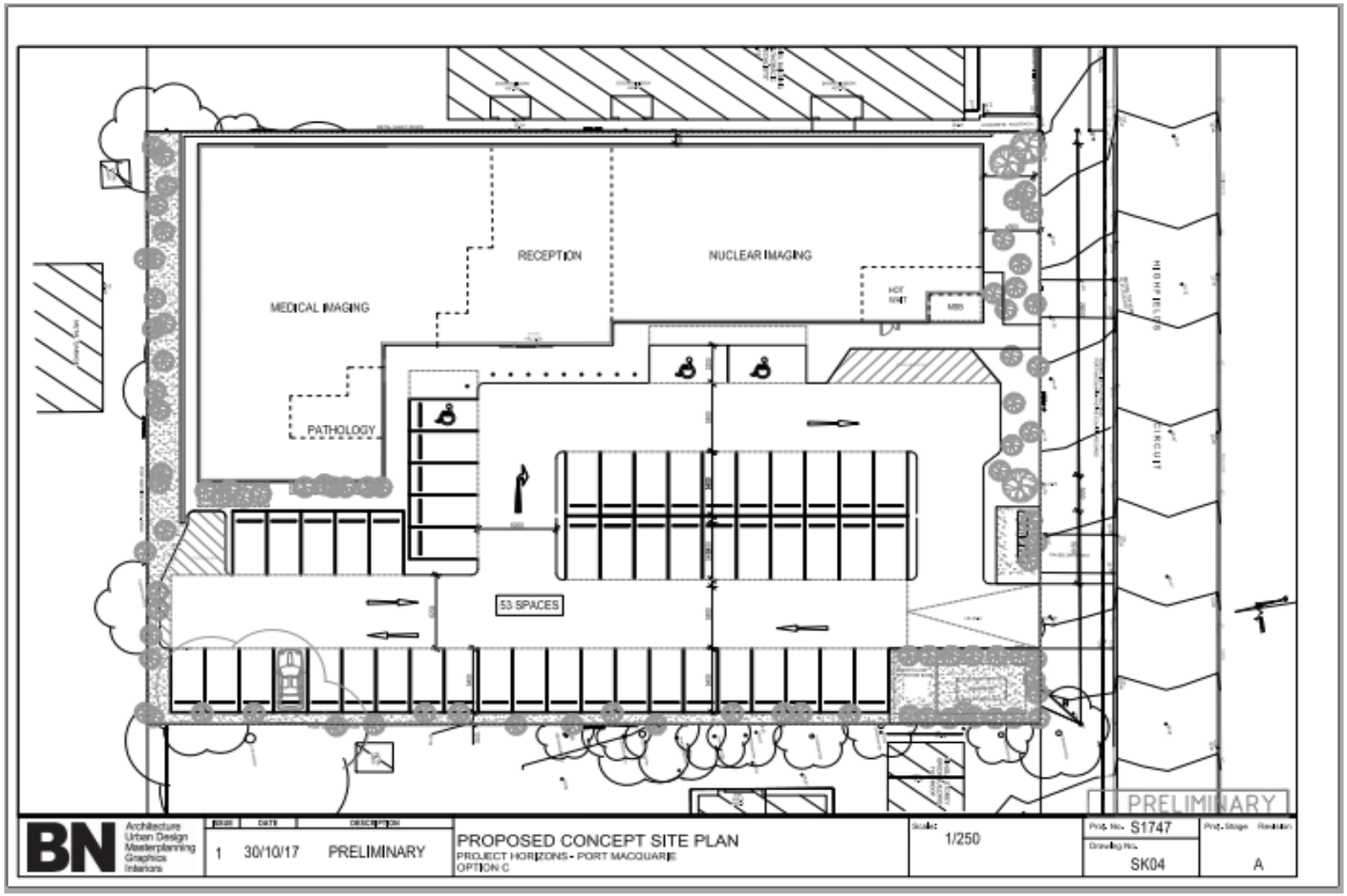

33/3


34/2

Single tree/Group Locations on site, aerial imagery utilised from web based mapping service SIX MAPS numbers are distinguished by: Number assigned within this report/Where present Number assigned by surveyor's tree tags.

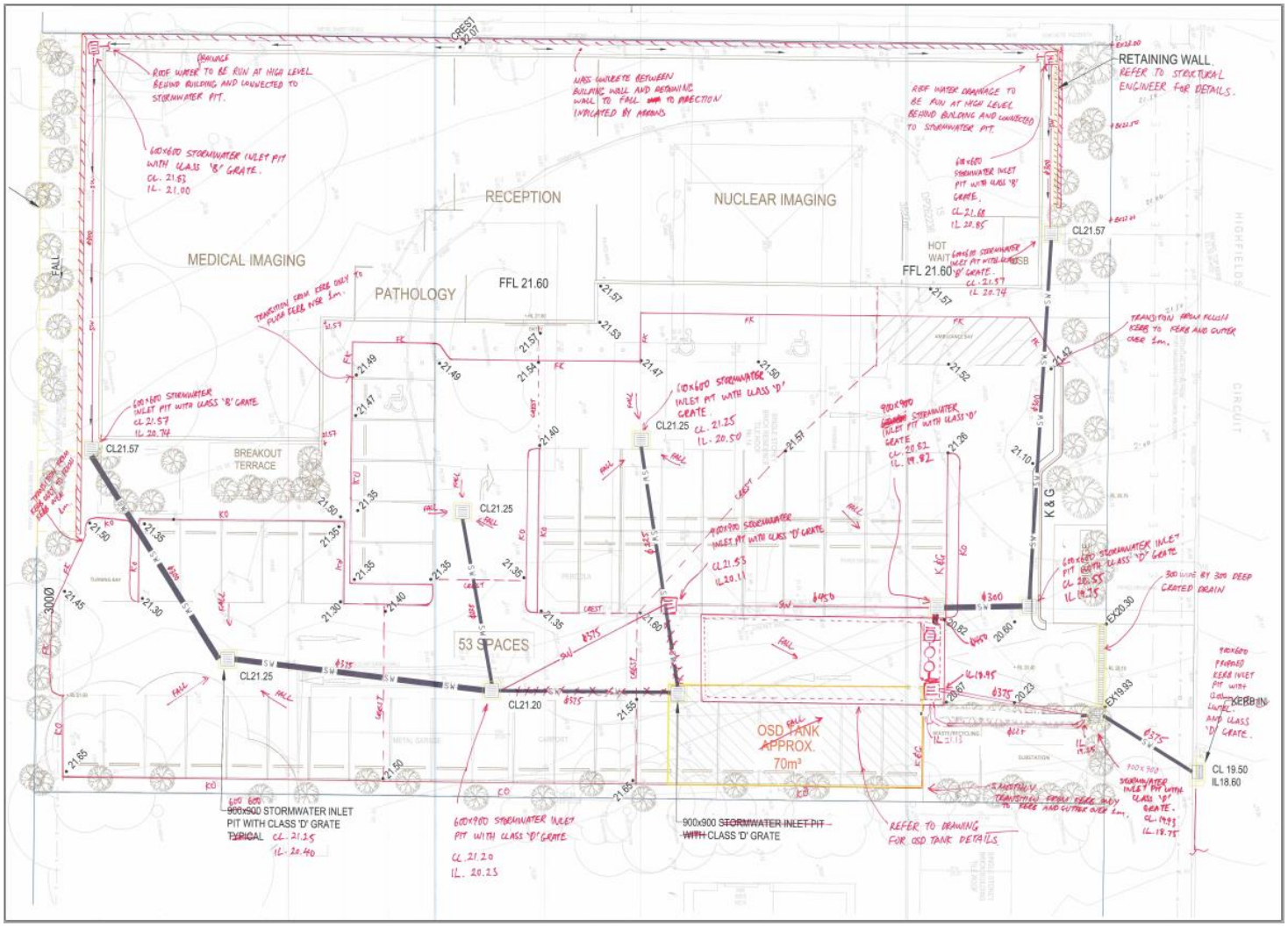


Preliminary concept site plans (utilised to assess the Arboricultural Impacts of the project): Drawing number SK04 option C received 31/10/17.



Survey plans (utilised to assess the Arboricultural Impacts of the project): Plan number B04025-1, survey date 29/09/17.

Site and stormwater updated management plans (utilised to assess the Arboricultural Impacts of the project): Received 16/11/17. Please note the OSD stormwater tank has been relocated.



Summary of Arboricultural Impact Assessment:

Please see accompanying Excel Spreadsheet with relevant tree data and classifications which correspond with the tree identifications, locations and the recommendations within the following table, more specific details are prescribed within the following sections of this report.

Tree/Group Number (AIA document)	Tree/Group Number (Assigned by surveyor)	Recommendation of the AIA	Pruning / arboricultural works if recommended
1	17	Remove Tree	N/A
2		Remove Tree	N/A
3	15	Remove Tree	N/A
4	16	Remove Tree	N/A
5	16	Remove Tree	N/A
6		Remove Tree	N/A
7	14	Remove Tree	N/A
8		Remove Tree	N/A
9		Remove Tree	N/A
10		Remove Tree	N/A
11	13	Retain tree and protect to A.S 4970 - Protection of trees on development sites for the full terms of the works including monitoring pre, during and post works by suitably qualified person. Above current grade construction methods, restriction of TPZs and Project arborist management is applicable for all works in TPZs as described within Section 5 and 6 of this report.	Deadwood removal, Monitoring of tree structure during routine inspections. Prune significant girdling J root at surface if required and at the discretion of the project arborist.
12	12	Remove Tree	N/A
13		Remove Tree	N/A
14		Remove Tree	N/A
15	1	Remove Tree	N/A
16		Remove Tree	N/A
17		Remove Tree	N/A
18		Remove Tree	N/A
19		Remove Tree	N/A
20		Retain tree and protect to A.S 4970 - Protection of trees on development sites for the full terms of the works including monitoring pre, during and post works by suitably qualified person. Above current grade construction methods, restriction of TPZs and Project arborist management is applicable for all works in TPZs as described within Section 5 and 6 of this report.	Canopy reduction to approximate boundary, Monitoring of tree structure during routine inspections.
21		Retain tree and protect to A.S 4970 - Protection of trees on development sites for the full terms of the works including monitoring pre, during and post works by suitably qualified person. Above current grade construction methods, restriction of TPZs and Project arborist management is applicable for all works in TPZs as described within Section 5 and 6 of this report.	Monitor for any changes in physical or health status.
22	?	Retain tree and protect to A.S 4970 - Protection of trees on development sites for the full terms of the works including monitoring pre, during and post works by suitably qualified person. Above current grade construction methods, restriction	Canopy reduction to reduce overhang and reduce stress on attachment points through 'lever arm' from over extended end weighted limbs overhanging the site. , hazard reduction pruning of canopy including deadwood removal. Monitoring of tree structure during routine

		of TPZs and Project arborist management is applicable for all works in TPZs as described within Section 5 and 6 of this report.	inspections. Climbing /Aerial inspection of multi stem union of main stem.
23		Retain tree and protect to A.S 4970 - Protection of trees on development sites for the full terms of the works including monitoring pre, during and post works by suitably qualified person. Above current grade construction methods, restriction of TPZs and Project arborist management is applicable for all works in TPZs as described within Section 5 and 6 of this report.	Canopy reduction to approximate boundary, Monitoring of tree structure during routine inspections. Prune significant surface root if required and at the discretion of the project arborist.
24	11	Retain tree and protect to A.S 4970 - Protection of trees on development sites for the full terms of the works including monitoring pre, during and post works by suitably qualified person. Above current grade construction methods, restriction of TPZs and Project arborist management is applicable for all works in TPZs as described within Section 5 and 6 of this report.	Canopy reduction to approximate boundary where possible due to species canopy reduction is limited to live foliage present only, hazard reduction pruning of canopy including deadwood removal. Monitoring of tree structure during routine inspections.
25	10	Retain tree and protect to A.S 4970 - Protection of trees on development sites for the full terms of the works including monitoring pre, during and post works by suitably qualified person. Above current grade construction methods, restriction of TPZs and Project arborist management is applicable for all works in TPZs as described within Section 5 and 6 of this report.	Necrotic frond removal if required. Monitoring of tree structure during routine inspections.
26	9	Retain tree and protect to A.S 4970 - Protection of trees on development sites for the full terms of the works including monitoring pre, during and post works by suitably qualified person. Above current grade construction methods, restriction of TPZs and Project arborist management is applicable for all works in TPZs as described within Section 5 and 6 of this report.	Canopy reduction to approximate boundary where possible due to species canopy reduction is limited to live foliage present only, hazard reduction pruning of canopy including deadwood removal. Monitoring of tree structure during routine inspections.
27	8	Retain tree and protect to A.S 4970 - Protection of trees on development sites for the full terms of the works including monitoring pre, during and post works by suitably qualified person. Above current grade construction methods, restriction of TPZs and Project arborist management is applicable for all works in TPZs as described within Section 5 and 6 of this report.	Canopy reduction to approximate boundary, hazard reduction pruning of canopy including deadwood removal. Monitoring of tree structure during routine inspections.
28	7	Retain tree and protect to A.S 4970 - Protection of trees on development sites for the full terms of the works including monitoring pre, during and post works by suitably qualified person. Above current grade construction methods, restriction of TPZs and Project arborist management is applicable for all works in TPZs as described within Section 5 and 6 of this report.	Canopy reduction to approximate boundary, hazard reduction pruning of canopy including deadwood removal. Monitoring of tree structure during routine inspections.
29	6	Retain tree and protect to A.S 4970 - Protection of trees on development sites for the full terms of the works including monitoring pre, during and post works by suitably qualified person. Above current grade construction methods, restriction	Canopy reduction to approximate boundary, hazard reduction pruning of canopy including deadwood removal. Monitoring of tree structure during routine inspections.

		of TPZs and Project arborist management is applicable for all works in TPZs as described within Section 5 and 6 of this report.	
30		Retain tree and protect to A.S 4970 - Protection of trees on development sites for the full terms of the works including monitoring pre, during and post works by suitably qualified person. Above current grade construction methods, restriction of TPZs and Project arborist management is applicable for all works in TPZs as described within Section 5 and 6 of this report.	Canopy reduction to approximate boundary where possible due to species canopy reduction is limited to live foliage present only, hazard reduction pruning of canopy including deadwood removal. Monitoring of tree structure during routine inspections.
31	5	Retain tree and protect to A.S 4970 - Protection of trees on development sites for the full terms of the works including monitoring pre, during and post works by suitably qualified person. Above current grade construction methods, restriction of TPZs and Project arborist management is applicable for all works in TPZs as described within Section 5 and 6 of this report.	Canopy reduction to approximate boundary, hazard reduction pruning of canopy including deadwood removal. Monitoring of tree structure during routine inspections.
32	4	Retain tree and protect to A.S 4970 - Protection of trees on development sites for the full terms of the works including monitoring pre, during and post works by suitably qualified person. Above current grade construction methods, restriction of TPZs and Project arborist management is applicable for all works in TPZs as described within Section 5 and 6 of this report.	Canopy reduction to approximate boundary where possible due to species canopy reduction is limited to live foliage present only, hazard reduction pruning of canopy including deadwood removal. Monitoring of tree structure during routine inspections.
33	3	Retain tree and protect to A.S 4970 - Protection of trees on development sites for the full terms of the works including monitoring pre, during and post works by suitably qualified person. Above current grade construction methods, restriction of TPZs and Project arborist management is applicable for all works in TPZs as described within Section 5 and 6 of this report.	Canopy reduction to approximate boundary, hazard reduction pruning of canopy including deadwood removal. Monitoring of tree structure during routine inspections.
34	2	Retain tree and protect to A.S 4970 - Protection of trees on development sites for the full terms of the works including monitoring pre, during and post works by suitably qualified person. Above current grade construction methods, restriction of TPZs and Project arborist management is applicable for all works in TPZs as described within Section 5 and 6 of this report.	Canopy reduction to approximate boundary, hazard reduction pruning of canopy including deadwood removal. Monitoring of tree structure during routine inspections.

5 COMMENTS, CONSTRUCTION METHODS AND SITE GUIDANCE.

To construct the proposed development, the removal of 18 trees/groups within the site will be required/recommended. Potential alterations to the plans as well as specified protection measures throughout the development and above current grade construction methods utilised to lower impacts on neighbouring trees is prescribed within the report.

Each tree was assessed utilising the IACA Significance of a tree, Assessment Rating System (STARS ©).

To construct the proposed building, it will require the removal of 2 high retention value trees – 0 medium retention value trees and 11 low retention value trees, it is noted tree 14 and 17 are a stand of palm trees, trees 18 and 19 are both classified as stands/groups, in order to construct the proposed car park it will require the removal of 0 high retention value tree, 0 medium retention value trees and 5 low retention value trees.

In order to allow for the proposed carpark, facilitate the OSD storm-water tank installation, substation and waste area, specifications for above grade construction, supervision and restricted access is recommended within the Tree Protection Zones of trees to be retained - trees 11 & 21-34. All services and utilities to facilitate this must be installed out of tree TPZs with the OSD storm-water tank to be installed at a preferable distance from trees 21-34 so as to only impact TPZs by 10% maximum.

There is Deadwood removal, hazard reduction pruning, various canopy reduction pruning and root pruning required to trees 11 & 20-34 as within section 4 of this document (Summary of AIA) and detailed within column (AC) of the accompanying excel spreadsheet.

As per all construction projects undertaken within the vicinity of trees and with any circumstances on a site where a tree is established and the site undergoes change there is always an underlying risk of tree health, structure and stability being impacted, however with management by a qualified Arborist and to the guidelines and industry practice permitted and recommended within Australian Standards 4970 – 2009 Protection of trees on development sites the risk can be reduced to an acceptable level and to where practicable encourage and assist the trees to be resilient and adapt to any changes with this management, and effectively be incorporated and utilised in the new site. Any tree pruning or tree removals should also consider and incorporate the effects those works may have on other trees and vegetation within the vicinity and may even dictate the necessity to complete additional compensatory works on other trees and vegetation to reduce a newly introduced potential of failure affecting other retained assets due to changing dynamics and introduced exposures.

Site observations.

Tree numbers have been assigned which correspond to the details and tree identification purposes of this report, tree numbers of surveyors tags are also included where present on site however these surveyors tags on multiple assets do not correspond to the surveyors plans provided and in the case of tree 22 as identified within this report there is no surveyors number assigned on the plan or tag present on site. Trees have been included within this report if they were assessed to be protected by the PMHC DCPs or their calculated TPZ or canopy has potential to be impacted and they are likely not exempt under the PMHC DCPs. Additional trees are included within this report if they are established on neighbouring lands and assessed to be potentially affected by the development even if they are classified as noxious weeds or undesirable species they have also been included for the purpose of this report.

Based upon the ecological report provided by Naturecall Environmental for the site there was one tree identified as a Threatened plant species (identified as number 6 within this report). However it is believed this tree has been planted and does not qualify as an Endangered Ecological Community. The site has not

been identified as protected via the State Environmental Planning Policies (SEPPs) SEPP 44 (Koala Habitat Protection) eligible as per the section 'Legislative Compliance' (page 6) of the ecological report provided by Naturecall Environmental, however this may require review should the agent/owners collective adjoining land size increase and results in a total collective land size of 1 hectare or above.

Tree 11/13 although identified within the survey plans as being within the site it is established on the physical fence line present between the site and the rear property with no clear indicator of tree ownership apart from the survey plans which show the tree is situated in the subject property. This tree may require further consultation to confirm asset ownership and assign responsibility of the further management of that tree based upon the confirmed trees location. Additionally tree ownership is assumed to be accurate to the survey plans provided unless otherwise advised.

It is important to note that any trees undergoing works are subject to all legalities that are relevant for any works conducted to trees that are either part owned or owned by a separate party through establishment on neighbouring lands, all works recommended are only recommended to be conducted to the boundary line of the site only and are to conform to the above requirements unless otherwise agreed with the property owner. If uncertain legal advice should be utilised by a specialist in legal matters. Additional tree loss may result due to works beyond the building construction footprint.

Please note all assessments have been conducted based upon the measurements available within the concept site plans, survey plans and stormwater site plans provided within the introduction and section four of this document and has also been subject to visual indicators and reference points identified on these plans to indicate approximate distances used to calculate TPZs and there projected incursions and ultimately provide the recommendations within this report.

Site Specific comments and requirements for construction:

All methods discussed are to be assessed and agreed to or declined by the project arborist, this may include the ongoing management and possible introduction of new management controls and activities should they be deemed necessary by the project arborist.

Pre described tree works.

All prescribed tree works for trees 20-34 will require approval from Port Macquarie Hastings Council and are to be completed prior to any other pre-construction works taking place, in conjunction with Project Arborist supervision and carried out before the installation of tree protection measures.
Tree works are advised to be completed with the Project Arborist on site to minimize excessive cutting and to ensure all cuts and works are completed in accordance with applicable standards.
Trees for removal should be marked onsite as per the approved tree protection plan. Before removal, the Project Arborist should confirm that all marked trees correspond with those shown on the schedule or plan. Other tree work may be specified in the tree protection plan. Any approved pruning required to allow for works should be done at this stage. AS 4373 specifies requirements for pruning. Stumps to be removed from within a TPZ must be removed in a manner that avoids damaging or disturbing roots of trees to be retained. This work must be completed while supervised by the project arborist.
It is advised to have a qualified Ecologist present at the commencement and if required during any arboricultural works including pruning and removals of trees and vegetation within the site or adjoining sites to inspect and identify fauna 'at risk' including Koalas during the works and advise accordingly.
Within section 4 of this document and the accompanying data spreadsheet a set of works have been recommended (Column AC) which aims to:

- Identify any potential risk of failures and through the various stages of the project mitigate these risks to an acceptable level.
- Accommodate the proposed usage of the area for example uplifting tree canopy above car parking areas etc.

- As a method of protection for trees to remove the potential for damage by activities and development within the site by pruning some overhanging canopy etc.

All works are subject to governing body approvals and are recommendations based upon the potential of tree protection, through the construction stages and also incorporating the projected end usage of the site. As this is based upon concept plans this should be monitored and adjusted by the project arborist for the term of the project and then reassessed once the project is completed to ensure the presence of the trees then compliments the completed site and the trees presence coexist well.
All works are to conform to A.S 4970 – 2009 Protection of trees on development sites and A.S 4373 – Pruning of amenity trees, carried out by qualified arborists only.

Further Investigation.

The tree identified as number 34/2 within this report is believed to be established within the public space/nature strip of 16 Highfields Circuit, Port Macquarie 2444, therefore it is assumed asset ownership is Port Macquarie Hastings Council, and the appropriate notification and consultation must be sought with the asset owner. Additionally the tree identified as number 34/2 within this report may be subject to further incursions of the TPZ if any construction works and or infrastructure such as a public footpath are to be installed within the public space/nature strip of the site or neighbouring property and will be subject to reassessment. Further investigation may be required by the project arborist when installing the infrastructure to facilitate the accurate placement of piers etc associated with the installation of the carpark, substation, OSD Stormwater tank and the waste area.

Construction Methods identified to be utilised.

Trees identified as 11 & 21-34 are subject to various levels of encroachment to the TPZs during the project. It is interpreted by the plans provided that the area occupied by their TPZs will be subject to fill installation to accommodate a carpark area, waste area and substation plus additional Excavation for the installation of the OSD stormwater tank area. Therefore the following recommendations are advised to be incorporated to accommodate this:

- Construction methods of the carpark, substation and waste area are to be of pier with above current grade beam construction which must have flexible installation points of the piers, the location of the piers are to be approved or declined by the project arborist as to avoid any significantly diameter root system. This may or may not incorporate the use of preliminary non-invasive excavation by the project arborist to determine suitable pier locations.
- The OSD stormwater tank must be installed and located at a minimal distance from trees 21-34 so as to only encroach on TPZs by 10% maximum.
- Geofabric material is to be installed at the grade interface with large diameter porous material (e.g. such as Blue metal) utilised as fill instead of a clay or loam soil. The exclusion to this recommendation are trees 32-34 where further investigation and root mapping is to be conducted before specifications or final recommendations are provided.
- An engineer or specialist in the alternative designs of the carpark is to construct the carpark in a manner that does not significantly impact the trees to be retained and is structurally adequate to withstand the forces exerted by tree roots. Please note: as with all sites where fill is installed within the vicinity of existing root zones or areas where root zones have potential there is the long term possibility that roots may occupy and impact this area, a common occurrence is the lifting or cracking of concrete due to root development beneath it.
- All service infrastructure and easements associated with the site, the carpark area, OSD stormwater tank, substation and waste area are to be placed within areas allocated for driveways and non-root system occupied areas (TPZs) and car parking where possible. This is to ensure that no additional impact upon the TPZ of trees occurs due to service trenching. Where this is not possible or practical then services must circumnavigate the TPZ areas of trees to be retained which may require additional manholes and bends. Under boring or non-destructive excavation will also be considered upon consultation with the site arborist. Some excavation will be required within the TPZ of trees retained and as such the Project Arborist is to supervise the excavation

works ensuring minimal damage and correct pruning techniques are used when severing any roots greater than 20mm diameter at the project arborist's discretion.

- When finalising plans Tree Sensitive measures as described within section 2.3.4 of the A.S 4970 Guidelines should always be adhered to with all works that have potential to impact the TPZ of trees within the site or neighbouring sites.
- Retaining walls utilised are recommended to be constructed by flexible placement of footings/piers and constructed of materials which allow a greater movement of water and oxygen and are not completely impervious structures, all works within any potential TPZs to be managed and approved or declined by a project arborist.

Landscape design plans and landscaping installation.

The Landscape design plans although not highlighted as conflicting this report will require flexibility within TPZ's as well as project arborist consultation and supervision during each stage of landscape works. Trees likely to be impacted by landscaping works are established within the neighbouring properties. This restriction also includes the installation of any fencing or boundary indication infrastructure which is required to conform to Tree Sensitive measures as described within section 2.3.4 of the A.S 4970 Guidelines and should always be adhered to with all works that has the potential to impact the TPZ of trees within the site or neighbouring sites. The installation of any infrastructure, trees, shrubs and vegetation should be flexible and subject to the availability spatially and also be considerate to ensure there is no damage to any part of retained trees ensuring there is no long term detrimental effects that may impact the retained trees longevity within the landscape. This is to be managed by the project arborist during the various stages of the landscape and construction stages.

Comments Regarding neighbouring properties/boundaries.

There were multiple semi mature and mature trees identified within the neighbouring properties of 11 Kulai Place, Port Macquarie and 16 Highfields Circuit, Port Macquarie. However these trees have not been assessed via VTA or included within this report as upon assessment these trees TPZs are unlikely to be impacted by the proposed works, however the project arborist should monitor any trees within these properties during all stages to identify any changes and act accordingly if required.

Consideration of Future Tree Growth.

Most of the trees highlighted for retention are mature, however consideration should always be given to allow for the trees ultimate projected lifespan and ultimate dimensional potentials above and below ground this includes managing the site to avoid a conflict that may result in a reduced timescale in retaining these trees within the landscape. This also includes any trees, shrubs and vegetation installed as part of the landscaping thereafter.

Re-Planting Requirements post development.

The conditions presented within the approved Development application should stipulate the requirements for compensatory trees required as an offset for Koala significant trees lost. As the site has not been identified as being within an area of coverage by a Koala Plan of Management (KPOM) conforming to Port Macquarie Hastings Council Development Control Plans (DCPs) therefor the requirement is to compensate koala significant trees removed by replanting compensatory offset trees at a ratio of two trees for every one removed (2:1). Port Macquarie Hastings Council also have the option of proposing a financial offset payment for trees removed or if they feel replanting on site or at a nearby secure site agreed to by them is not feasible. Total offset compensatory plantings required based upon the Arboricultural Impact Assessment is 0 trees. Tree 6 although classed as an 'other browse species' is unlikely to require offset replacement based upon it being planted, displays poor vigour, declining vitality, and is semi mature with health implications that are unlikely to recover. This is also confirmed within section 6.1 of the Naturecall Environmental ecological report for the site.

6 REQUIREMENTS FOR TREE PROTECTION.

Monitoring and management requirements.

To ensure ongoing monitoring and management of the existing trees being retained a number of controls need to be put in place.

It is required that an Independent AQF5 Arborist be engaged on a regular basis as a project arborist to inspect and provide reports, documentation and a detailed site diary (timescale can be based upon the recommendations of an arborist and based upon the occurrence of the sites tree protection and tree management needs, for project arborist management and protection measures, unusual/adverse climatic conditions and atypical abiotic events) with recommendations for all trees identified. The development stage must be monitored on a regular basis to ensure tree protection measures are put in place and being adhered to and trees identified are monitored accordingly.

The following actions are to be carried out prior to and during construction:

- Staff Induction – a number of specialists will be involved in the construction of the project under the direction of the site/project manager. It is recommended under the contract for each relevant company that a copy of the arborist report be provided and the requirements of the report be outlined in an induction for all staff working on the project by the Project arborist.
- At site establishment the Project Arborist must be in attendance to ensure all tree protection fencing measures, hoarding and mulching if required is carried out in accordance with the arborist recommendations and in accordance with AS 4970-2009.
  The Project Arborist must inspect the site on a regular basis (typically weekly, fortnightly, as required or upon any change) during construction to ensure ongoing compliance with tree protection measures and monitor tree health, structure and stability.
- The Project Arborist must be present during any excavation or works being carried out within the Tree Protection Zone or should TPZ protection need relocating.
- If injury or damage occurs to any of the trees the Project Arborist shall be contacted immediately to examine the tree and provide a written report with recommendations on how to manage the impact.
- Upon completion of all construction works the Project Arborist shall assess the retained trees condition and their growing environment and make recommendations for any necessary remedial actions or amendment's required Post Construction. Post construction maintenance is required as any negative impact the construction may have had upon the trees may take several years to become apparent.
- It is recommended that the site manager engage an Independent Consulting Arborist on a regular basis (or after a high wind/storm event) to inspect and monitor the retained trees and prescribe appropriate arboriculture practices as required after completion of the project.

Arboricultural Compliancy Stages.

In order to ensure that protection measures are being adhered to during the pre-construction, construction and post construction stages, a regular site inspection must be carried out by the Project Arborist throughout duration of works. Matters to be monitored and reported should include tree condition, tree protection measures and impact of site works which may arise from monitoring or changes to the approved plans. If there is non-compliance with tree protection measures or if trees have been damaged, a timeframe for compliance and remedial works should be specified by the Project Arborist. The determining authority (Port Macquarie Hastings Council) must be notified of non-compliance issues. Monitoring, reporting and certification should be carried out at the following critical stages of construction:

- Site Establishment:
  The Project Arborist will monitor the impacts of demolition including any trees to be removed or worked upon before the site is established, the project arborist will manage and approve all tree protection measures installed, bulk earth works, installation of temporary infrastructure including bunding, sediment control works and drainage works.
  The construction management plan (site establishment and demolition plan) should be checked for compliance with the tree protection plan. The construction management plan normally includes location of site sheds, stockpile areas, temporary access roads and sediment control devices. At completion of site establishment, the project arborist should certify that tree protection measures comply with the tree protection plan.
- Construction Works:
  The Project Arborist will monitor the impacts of general construction works on retained trees. Monitoring should be done at regular intervals or in consultation with the site manager. Monitoring is to be recorded for inclusion in certification at practical completion.
  Critical stages typically include installation of services, footings and slabs, scaffolding, works within the TPZ and at completion of building works.
- Landscape Works:
  The landscape plan should be checked for compliance with the tree protection plan. The Project Arborist may need to approve the staged removal of protection measures required to allow for landscape works. The Project Arborist should supervise any works within TPZs, including retaining walls, irrigation and lighting installation, topdressing, planting and paving. The Project Arborist should specify any remedial works above and below ground. Monitoring is to be recorded for inclusion in certification at practical completion.
- Practical Completion:
  Practical completion assumes that all construction and landscaping works are finished. At practical completion all remaining tree protection measures should be removed. The Project Arborist should assess tree condition and provide certification of tree protection.
- Final Certification:
  The Project Arborist should assess the condition of trees and their growing environment, and make recommendations for any necessary remedial actions. Following the final inspection and the completion of any remedial works, the Project Arborist should certify (as appropriate) that the completed works have been carried out in compliance with the approved plans and specifications for tree protection. Certification should include a statement on the condition of the retained trees, details of any deviations from the approved tree protection measures and their impacts on trees. Copies of monitoring documentation may be required.

Tree Protection Plan for TPZ areas outside of tree protection fences.
Trees 11 & 20-34.

All methods discussed are to be assessed and agreed to or declined by the project arborist, this may include the ongoing management and possible introduction of new management controls and activities should they be deemed necessary by the project arborist.

Being a construction site it is not possible nor practical to fence off entire areas of TPZ's. Areas outside of the protective fencing however may be subject to activities that are not conducive to the protection of the trees root zone and alternative measures will need to be put in place to minimize impact upon the trees within these zones. These alternative measures shall include:

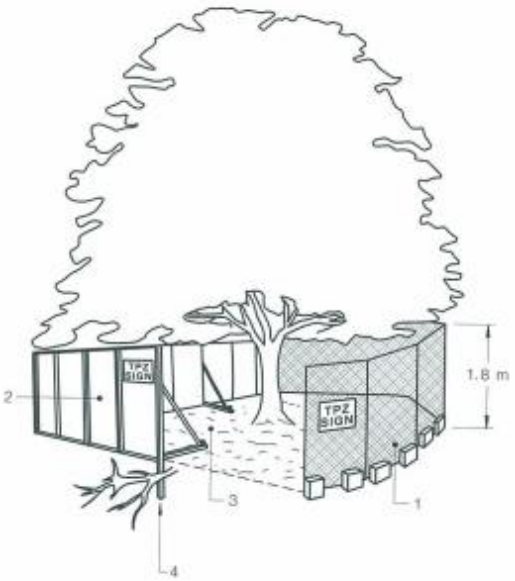
- Site worker awareness – Inductions in the importance of tree protection, measures & management shall be carried out by the Project Arborist (P.A) for every contractor or representative entering the site. Contractors are not trained in tree protection and will need to be made aware of the protection measures in place and the reasons these measures are required. Site induction should include all tree protection measures discussed in this report, the project arborist's contact details and to be made available to all persons on the site and additionally all persons on the site to be made aware that it is a shared responsibility to maintain the trees in their current state.
- Ground protection – where construction vehicles enter or move on the site on a temporary basis then ground protection measures are to be put in place within TPZ areas to prevent soil compaction which is detrimental to the tree health and longevity. This is to take the form of a geotextile fabric under a layer of mulch or timber rumble boards rated to the vehicles utilising the access. Designated entry, exit and driving areas should also be established to steer clear of TPZs and immediate tree areas.
- Monitoring of TPZ areas pre, during & post construction - A project arborist should regularly visit this site to observe and provide instructions in consultation with the site manager in relation to tree protection measures.
- If there are any questions and/or breaches in regards to Tree Protection Zones contact the Project Arborist immediately as the affects could be detrimental to tree health and stability.
- All TPZs to be maintained as per section 4.6 of A.S 4970 and at the direction of the project arborist including and not limited to additional watering, weed control etc.

Tree Protection Plan for defined TPZ areas.
Trees 11 & 20-34.

All methods discussed are to be assessed and agreed to or declined by the project arborist, this may include the ongoing management and possible introduction of new management controls and activities should they be deemed necessary by the project arborist.

The requirement is to establish a tree protection zone around all trees to be retained which is to be defined by the installation of protective fencing prior to any construction work commencing in conjunction with the Project Arborist. Fencing and other protection measures are to be installed in compliance with the Tree Protection Plan and Section 4 of AS 4970. Soil surface areas within the protection zone are then protected from compaction by prohibiting vehicles, pedestrians, material stockpiles, site sheds etc within these areas. Site workers need to be made aware of the protection measures in place and the reasons these measures are required. Practices such as washing out cement or chemicals near the root zone are to be prohibited. Please see the following notes (taken from A.S – 4970) and also read and understand the requirements fully of A.S 4970 – Protection of trees on development sites:

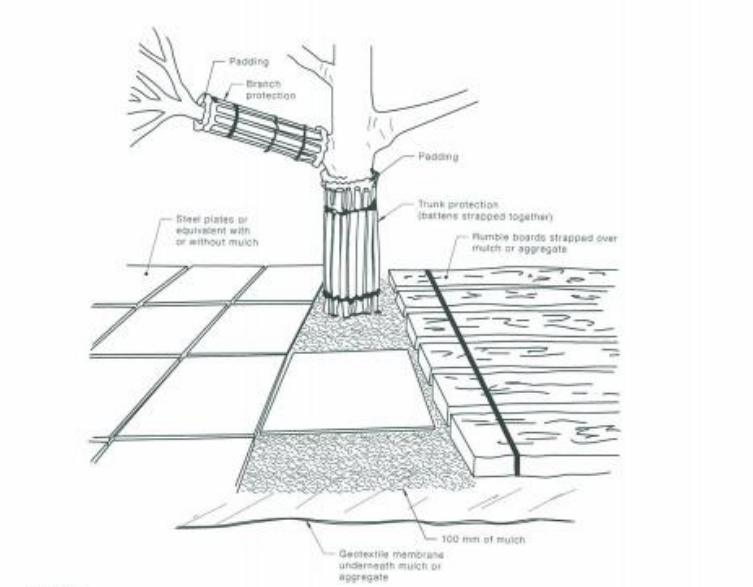
- The TPZ is a restricted area usually delineated by protective fencing (or use of an existing structure such as an existing fence or wall). It is installed prior to site establishment and retained intact until completion of the works.
- Signs identifying the TPZ should be placed around the edge of the TPZ and be visible from within the development site. The lettering on the sign should comply with AS 1319. (Figure 3 of section 4 within the A.S 4970 – 2009 Standards document - below).
- Tree Protection - fencing shall be compliant with Section 4 and Figure 3 of section 4 within the A.S 4970 – 2009 Standards document - below).



LEGEND:
1 Chain wire mesh panels with shade cloth (if required) attached, held in place with concrete feet.
2 Alternative plywood or wooden paling fence panels. This fencing material also prevents building materials or soil entering the TPZ.
3 Mulch installation across surface of TPZ (at the discretion of the project arborist). No excavation, construction activity, grade changes, surface treatment or storage of materials of any kind is permitted within the TPZ.
4 Bracing is permissible within the TPZ. Installation of supports should avoid damaging roots.

FIGURE 3 PROTECTIVE FENCING

- Tree Protection - trunk or branch protection and ground protection shall be compliant with the Section 4 and Figure 4 of section 4 within the A.S 4970 – 2009 Standards document - below).



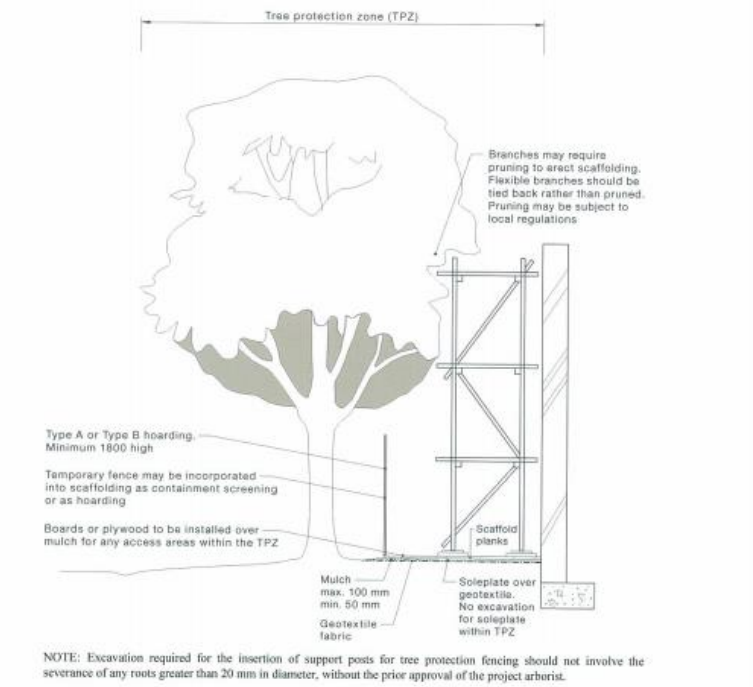
NOTES:

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.

FIGURE 4 EXAMPLES OF TRUNK, BRANCH AND GROUND PROTECTION

- Tree protection - in conjunction with scaffold shall be compliant with the Section 4 and Figure 5 of section 4 within the A.S 4970 – 2009 Standards document - below).



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

- Any works and activities within the TPZ may be authorized, although these agreed to or declined by the project arborist and MUST be supervised by the Project Arborist at all times.
- Any additional encroachment that becomes necessary as the site works progress must be reviewed by the Project Arborist and be acceptable to the determining authority before being carried out.
- Fencing should be erected before any machinery or materials are brought onto the site and before the commencement of works including demolition/excavation. Once erected, protective fencing must not be removed or altered without approval by the Project Arborist. The TPZ should be secured to restrict access.
- If there are any questions and/or breaches in regards to Tree Protection Zones contact Project Arborist immediately as the affects could be detrimental to tree health and stability.
- Where vehicle access is required within TPZ areas the ground must be covered with geotextile fabric under a layer of mulch or timber rumble boards, these will need to be rated to the machinery that travels across them. This will reduce the impact of compaction upon the root system. The use of alternative techniques such as a concrete pump track is recommended however any craning activity will need to be assessed for approval or decline by the project arborist.
- Organic mulch layer to a depth of 100mm where possible and if agreed to by the project arborist be placed around the root zone of all trees to be retained, this is limited to the TPZ within the subject property, this is to replenish food and nutrient sources, retain moisture and deter mower activity from getting within close proximity of the trees stems and causing further compaction or mechanical damage to the root zone.
- All TPZs to be maintained as per section 4.6 of A.S 4970 and at the direction of the project arborist including and not limited to additional watering, weed control etc.

Activities excluded within the TPZ and not limited to:

- Machine excavation including trenching:
- Excavation for silt fencing.
- Cultivation:
- Storage of any materials, tools, mixers etc.:
- Preparation of chemicals/cement products:
- Parking and operation of vehicles and plant machinery:
- Refuelling:
- Dumping of waste:
- Wash down and cleaning of equipment:
- Placement of fill:
- Lighting of fires:
- Soil level changes:
- Temporary or permanent installation of utilities and signs:
- Physical damage to ANY part of the tree.

7 LIMITATIONS AND CONSTRAINTS.

This report reflects the tree on the day of inspection, any changes to site conditions or surroundings, such as construction works, landscape works, issues arising from adverse weather conditions or any other environmental pressures from the trees surroundings may alter the findings of this report in the future. The author accepts no responsibility for damage caused by the trees in this report to persons or property now and in the future. The author accepts no responsibility for any use of the contents of this report by third parties.

This report may offer recommendations as a guideline with the aim to mitigate and reduce the impact the tree may pose on persons, property or its environment should the tree fail in any form, however in the case of the recommended works not being carried out due to a governing authority rejecting the recommendations and or the client or any other parties disagreeing with any recommendations the client should seek an alternative outcome and or review the report to ensure there is alternative actions which addresses the initial concerns raised to a suitable level.

No soil samples were taken, there were no inspections below ground level therefor the author may recommend further tests to compliment this report for a more detailed evaluation. The VTA was carried out at ground level only, therefor limited to the restrictions posed by not being able to inspect the crown from the perspective of being within the trees canopy, therefor an aerial inspection may be recommended to help gather more information of all aspects of the trees upper stem and canopy should there have been a visual trigger measurement identified during the VTA.

This report only covers identifiable defects present at the time of inspections. The author accepts no responsibility or cannot be held liable for any structural defect or unforeseen event/situation that may occur after the time of inspection. It is not feasible to assume that Arborists identify all hazards or risks associated with trees at the time of consultation or indeed in this report. Therefor the Arborist and author will not be required to give testimony or to attend court by reason of this report under any circumstances.

As detailed this is a visual tree assessment only and apart from approximate dimensions and measurements recorded, no measurable test were conducted.

The author cannot guarantee trees contained within this report will be structurally sound under all circumstances, it is not possible to detect all bio-mechanical structural faults, both internally and in the higher canopy of the tree, Similarly the detection of internal wood decay in the branches, trunks and roots and cannot guarantee that the recommendations made will categorically result in the tree being made safe. It is recommended for the property owner / manager to restrict access to persons below or within the potential fall zone of trees in abnormal abiotic conditions and or if they feel there is an increased risk of failure occurring.

Unless specifically mentioned this report will only be concerned with the above ground inspections, that will be undertaken visually from ground level. The Author will have no knowledge if any structural roots have been severed or cut previously or be capable of detecting any decay or structural weaknesses affecting the trees root zone and below ground that are not visible during a VTA.

Trees are living organisms and as such cannot be classified as safe under any circumstances, this is due to the ever changing environment, health constraints and pressures from the trees surrounding environment altering tree health and structure.

The recommendations are made on the basis of what can be reasonably identified at the time of inspection therefore the author accepts no liability for any recommendations made.

All observations and recommendations within this report are advised to be carried out and where practical any areas of influence that have potential to be impacted in the event of tree failure excluded until

actions have been undertaken to mitigate the identified potential of tree failure especially during adverse climatic conditions or usual circumstances.

Care has been taken to obtain all information from reliable sources. All data has been verified insofar as possible; however, the author can neither guarantee nor be responsible for the accuracy of information provided by others.

It may be beneficial for a suitably qualified person / engineer to evaluate this report and to provide comment and re-evaluate should they feel that any buildings, services and infrastructures both current and proposed may become compromised in the future by trees identified within this report.

8 TERMS OF REFERENCE AND METHODOLOGY.

Methodology used to gather information by Jon Kay N.D – Tree management & Arboriculture, H.N.C – Arboriculture, NVQ2 Landscape Design - Arborist at Woodvale Tree Services.

- Mattheck, K and Breloer, H (1994) The Body Language of Trees – A handbook for Failure Analysis, TSO London.
- Google Maps.
- Revised Burnley Method of estimating tree value within the landscape.
- TPZ & SRZ calculations Treetec AS4970.
- Lonsdale D (1990) Principles of Tree Hazard Assessment and Management.
- NSW Rural fire Service websites.
- Various Internet Reference sites.
- Simple GPS display application for Android.
- Port Macquarie Hastings Council 2011 Lep Map series for land zoning – PMHC website.
- Six maps mapping website reference site.
- Willy Weather application for Android (Weather analysis). (All wind readings are taken from the application on a location to the nearest weather station to the site basis).
- J Roberts, N Jackson, M Smith (1996) Tree Roots in the Built Environment.
- Helliwell, D.R. (1985) Trees on Development Sites. Romsey, UK; Arboricultural Assn.
- Safe Work Australia (2011) Safe Access in tree trimming and Arboriculture. Draft Code of Practice.
- Standards Australia (2007). Australian Standard: pruning of amenity trees, AS 4373 – 2007, Standards Australia, Sydney.
- Standards Australia (2009). Australian Standard: protection of trees on development sites, AS 4970 –2009, Standards Australia, Sydney.
- TRAQ ISA Tree Risk Assessment Qualification completion date 16/9/16.

Arboricultural qualifications continued further learning and industrial experience working to industry standards promote the safety of people and property by providing a standardized and systematic process for assessing trees within the landscape. The results of a tree analysis report can provide tree owners and risk managers with the information to make informed decisions to enhance tree benefits, health, and

longevity. With all the information collated this allows us to estimate future outcomes and manage any predicted events.

Useful Terminology:

- **VTA** refers to Visual Tree Assessment method of assessing trees visually from the ground.

- **Tree Genus/Species** refers to the Botanic name of the tree as complying with Industry accepted best practice,
  taxonomic nomenclature used by *Sydney Botanic Gardens* and Horticultural institutions in Australia and
  Internationally.

- **Height** refers to the vertical height of the tree from ground level to the top of the canopy.

- **DBH** of the tree trunk refers to the Diameter at Breast Height or 1.4 meters above ground level where the
  diameter of the trunk is measured. Where there are two or more trunks they are all measured, recorded and converted to a single measurement.

- **DAB** refers to the Diameter of stem at the point where the stem converts to the buttressing root collar.

- **Canopy Spread/diameter** refers to the distance from the tree trunk to the drip-line of the outer foliage measured in two cardinal directions usually the widest point.

- **Vitality** in tree assessment is an overall appraisal of physiological and biomechanical processes in which high vitality equates with healthy function (Lonsdale 1999) – classed as poor, declining or good.

- **Vigour** in tree assessment is an overall appraisal of the rate of shoot production, shoot extension or diametre growth (Lonsdale 1999) – classed as poor, average or good.

- **Useful Life Expectancy (ULE)** refers to the classification of the tree as per (J Barrell 2001) evaluation system and catagorised by the following:

  Useful Life Expectancy (ULE) methodology can be used to categorise trees as follows:
  1. Long (Greater than 40 years); = L
  2. Medium (Between 15 and 40 years); = M
  3. Short (Between 5 and 15 years); = S
  4. Removal (no remaining ULE); = R
  5. Small, young or regularly pruned. = SY

  To ensure the correct categories are assigned to individual assets and to facilitate further learning and accurate tree evaluation the author has studied the publication (SULE its use and status in the new millennium as presented to the NAAA Sydney by J Barrell 2001).

- **Failure** refers to the structural collapse in part or full of any part of the tree anatomically where the trees intrinsic strengths have been exceeded this may be influenced by additional factors

including and not restricted too: wounding or from the actions of pests and diseases, or overcome by loading forces in excess of its loadbearing capacity and influences, abiotic, none abiotic and biotic. This also includes external factors which may contribute to tree failure for example soil structure.

- **Deadwood** refers to the amount and size of dead limbs, branches, scaffold limbs and trunk present on the
tree, amount/volumes of deadwood expressed as a percentage of crown occupancy and diameter measurement.

- **Age Class** refers to the current stage of life-cycle of the tree.

- **Abiotic exposure classification** is a visual assessment of the assets exposure to abiotic pressures particularly wind exposure these are classified as – Protected, Partially exposed, fully exposed or subject to wind funnelling. (Parameters used from ISA TRAQ Target assessment part of Basic tree risk assessment).

- **Branch Order** refers to the classification of limbs - First Order Branches (1OB) are attached to the stem (scaffolds) / Second Order Branches (2OB) are attached to 1st Order Branches / Third Order Branches (3OB) are attached to 2nd Order Branches etc.

- **Comments** refers to additional sections detailing any additional faults or observations recorded during the VTA, where there are
not relevant comments not covered elsewhere.

- **Tree Significance** is assessed using the IACA, 2010, IACA Significance of a Tree, Assessment Rating System (STARS), Institute of Australian Consulting Arboriculturist's, Australia, system and is assessed against the following criteria with the following guidance to reach a retainability outcome of High, Medium or Low:

Associated IACA Significance and retention value with matrix identifying Significance and Useful Life Expectancy outcome (Please see following screenshot provided from the website:

IACA Significance of a Tree, Assessment Rating System (STARS)©

(IACA 2010)©

In the development of this document IACA acknowledges the contribution and original concept of the Footprint Green Tree Significance & Retention Value Matrix, developed by Footprint Green Pty Ltd in June 2001.

The landscape significance of a tree is an essential criterion to establish the importance that a particular tree may have on a site. However, rating the significance of a tree becomes subjective and difficult to ascertain in a consistent and repetitive fashion due to assessor bias. It is therefore necessary to have a rating system utilising structured qualitative criteria to assist in determining the retention value for a tree. To assist this process all definitions for terms used in the Tree Significance - Assessment Criteria and Tree Retention Value - Priority Matrix, are taken from the IACA Dictionary for Managing Trees in Urban Environments 2009.

This rating system will assist in the planning processes for proposed works, above and below ground where trees are to be retained on or adjacent a development site. The system uses a scale of High, Medium and Low significance in the landscape. Once the landscape significance of an individual tree has been defined, the retention value can be determined. An example of its use in an Arboricultural report is shown as Appendix A.

Tree Significance - Assessment Criteria

1. High Significance in landscape
- 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.

2. Medium Significance in landscape
- 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.

3. Low Significance in landscape
- 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.

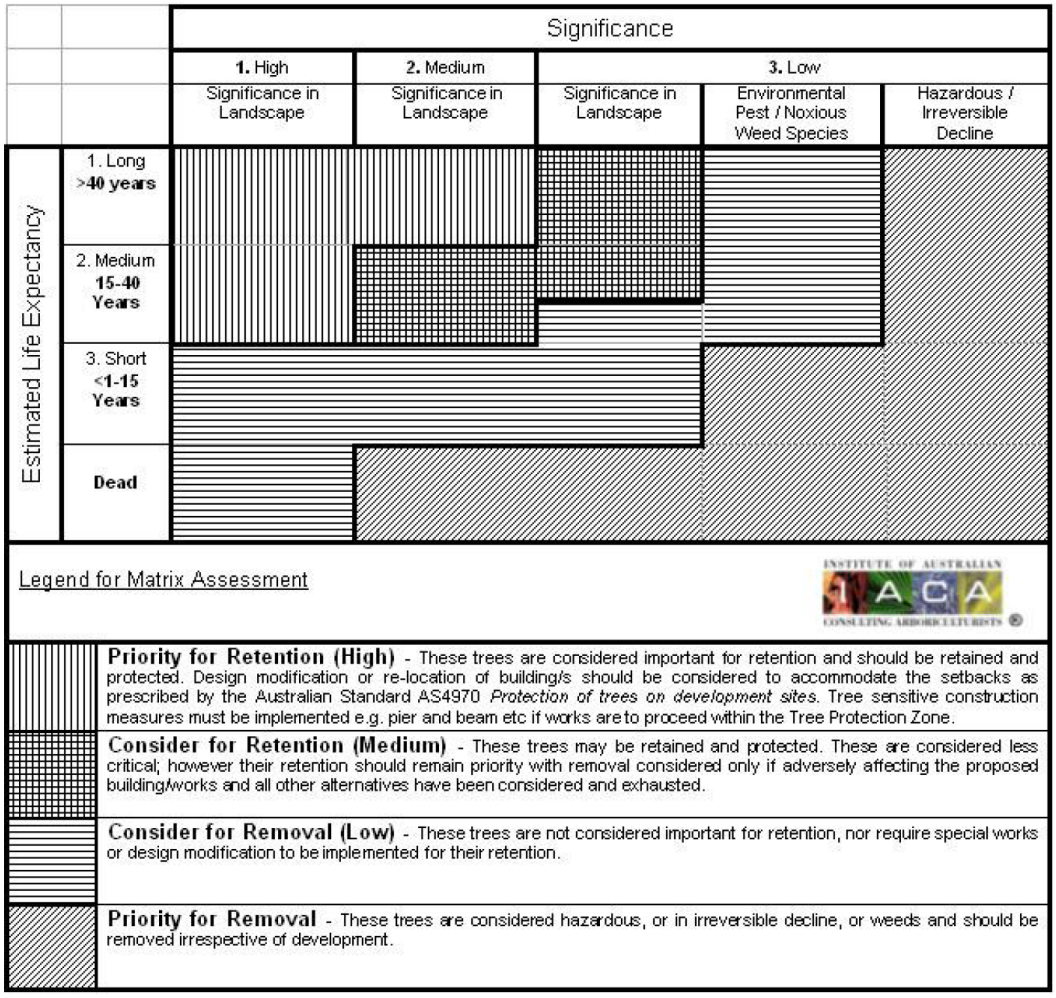
4. Hazardous/Irreversible Decline

- 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.

The tree is to have a minimum of three (3) criteria in a category to be classified in that group.

Note: The assessment criteria are for individual trees only, however, can be applied to a monocultural stand in its entirety e.g.

Table 1.0 Tree Retention Value - Priority Matrix



USE OF THIS DOCUMENT AND REFERENCING

The IACA Significance of a Tree, Assessment Rating System (STARS) is free to use, but only in its entirety and must be cited as follows:

IACA, 2010, IACA Significance of a Tree, Assessment Rating System (STARS), Institute of Australian Consulting Arboriculturists, Australia, www.iaca.org.au

Tools used to conduct this report:

- Nikon 550 Hypsometre, (to measure the Trees height).
- Yamayo DBH conversion tape, (to Measure the Trees DBH).
- Trojan 30cm Plumbers trowel, (to investigate hollows /roots etc.).
- Samsung Digital Camera, (to validate and confirm various tree data issues).
- Thor rubber mallet (for sounding dead wood).
- Aluminum Foil tree tags marked with a tree number (i.e.T1) and WTS (Woodvale Tree Services).
- Aquaterr M350 Moisture Meter.
- Forestry soil core sampler probe.

Replacement trees should be thoughtfully replanted

END OF REPORT