Arboricultural Impact assessment

PREPARED FOR CONNOISSEUR PROPERTIES
13 LODGE LANE, FRESHWATER. 29.11.2022

Prepared by Lee Hancock Consulting Arborist AQF Level 5
LEE@LEEHANCOCKARBORIST.COM.AU

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1.Introduction

At the request of Connoisseur Properties Pty Ltd. Lee Hancock Consulting Arborist AQF Level 5 was commissioned to prepare an Arboricultural Impact Assessment for trees located on and offsite of 13 Lodge Lane, Freshwater, CP SP30051, in the local government area (LGA) of Northern Beaches Council.

2.Aim

2.2 Tree protection controls for Northern Beaches Council Local Government Area apply to any tree or palm, whether it is a native or an exotic species that:

- has a height equal to or exceeding four metres
- any tree or mangrove vegetation located on public land, irrespective of size
- forms part of a heritage item, or that is within a heritage conservation area
- forms part of an Aboriginal object, or that is within an Aboriginal place of heritage significance
- is listed on the NSW Heritage Register.

2.3 *Wildlife Habitat*

Most of the trees are Biosecurity Weed species.

2.3.1 *Noxious Plants and Environmental Weeds*

Most of the trees assessed are scheduled as weeds by the Biosecurity Act 2015.

2.3.2 *Threatened species& Ecological Communities*

None of the subject trees are listed as NSW Threatened Species Scientific Committee or form part of Endangered Ecological Communities (EEC's) under the provisions of the Biodiversity *Conservation Act 2016.*

2.3.3 Heritage Conservation Area

The site is not in a Heritage Conservation Area.

2.3.4 *Significant Tree Register*

None of the trees are nominated on Northern Beaches Councils Register of Significant Trees.

2.4 The Author is aware of and will comply with the determining authorities

Table 1 Documents Provided

Architect	Studio Johnston Architects	SK1 Level 1 Lwr Grd Flr SK2 Level 2 SK2 Parking	November 2022
Surveyor	RVS Surveyors	6379	26.9.2022

Northern Beaches Council Tree Protection Order.

- Under five metres in height
- On the Exempt Tree Species List
- in an area in which the Council has authorised their removal as part of a hazard reduction program, where that removal is necessary to manage risk.
- Required to be removed under other legislation (including the NSW Rural Fires Act 1997 and the Environmental Planning and Assessment Act 1979)
- Can be removed under the 10/50 Legislation. Some clearing of vegetation is allowed if your property is mapped in the 10/50 entitlement area. Development Application Approval conditions in some circumstances prevent the use of the RFS 10/50 entitlement area from being used.
- Removed by Rural Fire Services because they pose or will pose a significant threat to access along required fire trails or to human life, buildings, or other property during a bush fire
- Located within two metres of an existing approved building (not including decks, pergolas, sheds, patios, or the like, even if they are attached to a building). The measurement is made from the building to the base of the tree trunk.
- Is considered an elevated risk/imminent danger certified by a Level 5 qualified arborist. These trees can be removed without Council consent by the owner of the tree subject to the owner obtaining written confirmation from the arborist that clearly states

2.5 All trees included in the site survey are numbered and assessed by the Author as the basis as to which trees are suitable for retention.

For each tree they have been assessed for.

a) Correct botanical identification and common name
b) Health and vigour
c) Structure
d) Dimensions, height, crown spread and DBH
e) Age class
f) Estimated life expectancy
g) Heritage and /or cultural matters

h) Ecological and habitat matters
i) The location relative to existing site features
j) Other matters to the site
k) Retention value

2.6 *Wildlife Habitat*

Most of the trees are Biosecurity Weed species.

2.6.1 *Noxious Plants and Environmental Weeds*

Most of the trees assessed are scheduled as weeds by the Biosecurity Act 2015.

2.7 *Threatened species& Ecological Communities*

None of the subject trees are listed as NSW Threatened Species Scientific Committee or form part of Endangered Ecological Communities (EEC's) under the provisions of the Biodiversity *Conservation Act 2016.*

2.8 Heritage Conservation Area

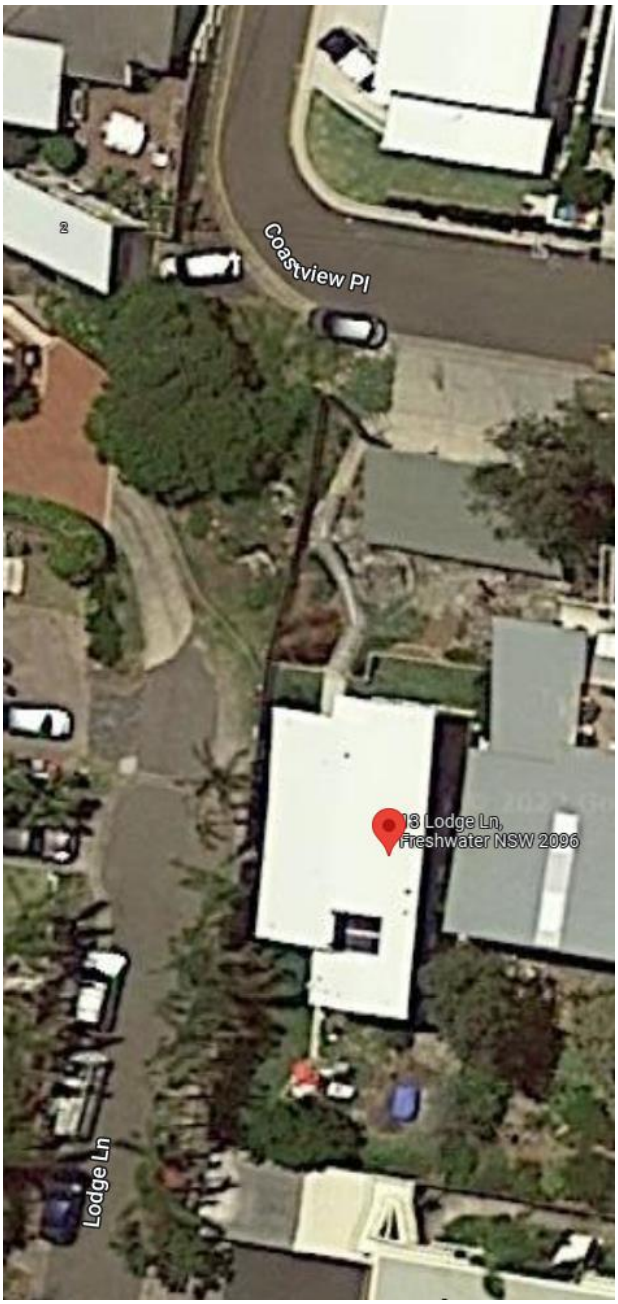
The site is not in a Heritage Conservation Area

2.9 *Significant Tree Register*

Council currently maintains a Register of Significant Trees onsite are not registered.

3. Site Analysis

The existing building is red brick two storey apartment building, the existing vegetation consists of Cocos Palms lining the western boundary of the site, two Banksia species, are located offsite eastern boundary. The site is accessed from Lodge Lane and extends down the escarpment to Coastview Place.



4. Discussion

An assessment of each tree was made using the Visual Tree Assessment (VTA) procedure. The subject trees were assessed from the ground. No aerial inspection has been undertaken as part of this assessment. The initial point of reference in assessing the impacts of the proposed development is AS4970 (2009) *'Protection of Trees on Development Sites'.*

Trees 1 – 10 *Syagrus romanzoffiana* (Cocos Palm)

Semi mature stand of 10 Palms planted on the western boundary, trees are listed as weed species under the Biosecurity Act 2015. Removal is recommended.

Tree 11. *Lauris nobilis* (Bay Tree)

Large shrub form located on rock outcrop rear yard of site, in good form and vigour, tree/shrub is nominated for removal. Rated as moderate landscape significance and amenity value. Low retention value.

Tree 12. *Banksia integrifolia* (Coast Banksia) offsite

Medium sized tree located offsite, in good form and vigour, located offsite Eastern boundary, the supplied plans show the existing Car Port is proposed to be demolished for the proposed basement car park. The overhanging canopy shall require branches tied back during the demolition of existing car ports. The hard stand area shall remain until development is completed. Once the proposed development is finalised the existing hard stand area within Tree 12. Hard stand area gradually removed in layers no greater than 50 mm thick using a small rubber tracked excavator or alternatively approved method to avoid damage to underlying roots and minimise disturbance and compaction of the underlying soil profile. The machine shall work within the footprint of the existing hard stand area. Once removed the surface and sub soil shall be removed. The supplied plans show the new crossover will be located towards western boundary with the area within Tree 12, to be turfed, this will enhance the growing environment of the tree. Rated as high landscape significance amenity and ecological value. High retention value.

Refer: Section 10. Tree Protection Specifications.

Tree 13. *Banksia integrifolia* (Coast Banksia)

Located offsite 1.5m eastern rear boundary, mature specimen, a large rock shelf onsite within SRZ and TPZ will more than likely buffer any existing roots within the vicinity of the rock shelf. Branches overhanging shall be tied back during demolition and construction to minimise damage to tree branches. Rated as high landscape significance amenity and ecological value.

Tree 14. *Syagrus romanzoffiana* (Cocos Palm) x 2 offsite

Two Cocos Palms are located offsite on western boundary, on adjoining property, to be retained and protected throughout all stages of the development. High retention value.

Refer: Section 10. Tree Protection Specifications.

5. Conclusion

The site analysis has collected all relevant data in assessing the condition of 16 trees on site and offsite, an assessment of their health and vigour, estimated life expectancy, significance in the landscape and amenity value have been recorded.

6. Recommendations

The proposed development shall necessitate the removal of 10 *Syagrus romanzoffiana* (Cocos Palm) Biosecurity Weeds from the site, removal is recommended.

The tree identified as *Lauris nobilis* (Bay Tree) is nominated for removal.

Approved tree removal shall be carried out by an experienced Certified AQF Level 3 Arborist in accordance with Safe Work Australia Code of Practice 'Guide to Managing Risks of Tree Trimming and Removal Work'

6.1 The remaining trees offsite numbered 12, 13 and 14 are to be retained and protected.

Refer: Section 10. Tree Protection Specifications

6.2 To compensate for the loss of amenity of Trees, replacement planting should consist of tree species endemic to the area to promote biodiversity.

- The trees should have a minimum 10m height at maturity to compensate for the loss of existing trees.
- The planting size shall be 75 litres and compliant with Natspec guidelines.
- Planted by a qualified horticulturalist or arborist AQF Certificate 3.
- The replacement plantings must be planted in such a manner as to promote good health during the establishment period, and must be maintained, as far as practicable to ensure tree growth into maturity.

- Consideration of suitable replacement species be installed which are compliant with the NATSPEC guideline "*Specifying Trees – A Guide to assessment of Tree Quality*".
- The tree cover on the site will be enhanced by planting with advanced specimens of appropriate tree species for the space available, above and below ground, being soil volumes available and to prevent future conflict between trees and built structures.

7.Images

Plate 1. Trees 1 – 10 *Syagrus romanzoffiana* (Cocos Palm) x 10 & Tree 11 *Lauris nobilis* (Bay Tree)

Plate 2. **Tree 12.** ***Banksia integrifolia*** **(Coast Banksia)**

Plate 3. **Tree 12.** ***Banksia integrifolia*** **(Coast Banksia) Proposed basement**

Plate 3. **Tree 13 Banksia *integrifolia* (Coast Banksia)**

No Images trees 14 *Syagrus romanzoffiana* (Cocos Palm) x 2 offsite

8. References

AS4970 *'Protection of Trees on Development Sites'.* (2009)

Harris, Clark & Matheny. *Arboriculture: Integrated Management of Landscape Trees, Shrubs and Vines*, (1999) Prentice Hall, New Jersey.

Mattheck, C. & Breloer, H. (1994) *The Body Language of Trees.*

Morton, A. Earthscape Horticultural Services -Tree Retention Values

www.northernbeaches.nsw.gov.au

Disclaimer

The author, Lee Hancock Consulting Arborist takes no responsibility for actions taken and their consequences, contrary to those expert and professional instructions given as recommendations pertaining to safety by way of exercising our responsibility to our client and the public as our duty of care commitment to mitigate or prevent hazards from arising, from a failure moment in full or part, from a structurally deficient or unsound tree or a tree likely to be rendered thus by its retention and subsequent modifications to its growing environment either above or below ground contrary to our advice.

This report is a recommendation only. In no way does it guarantee any particular actions by the determining authorities.

9.Methodologies

9.1 Visual Tree Assessment (VTA)

A technique developed by (Mattheck & Breloer) was conducted on all trees from the ground. The technique involves, identification of the Genus and Species of trees on the site. The Diameter at Breast Height (DBH) 1.4m above ground level determined from the circumference of the trunk divided by *pi* (π).
Tree height (m) Diameter at Ground Level (DAGL), Canopy spread (m) in four cardinal points (north, south, east, west) Structural integrity, Amenity value, Indigenous/ Endemic value, Health, and vigor of trees.

9.2 Useful Life Expectancy (ULE)

An assessment procedure has been developed by (Barrell, J.D.) 1993 'by which trees on a site are accurately recorded and designated according to their suitability for retention in the short, medium or long term'. This methodology is a measure of the "sustainability" of the remaining contribution in years that the tree can provide in the context of the site.

9.3 Landscape Significance

The significance of trees in the landscape is assessed in determining their retention values in three categories. Heritage Value reflects Historical significance, Ecological Value maintains biodiversity values and Amenity values contributes to the character of the landscape.

9.4 Tree Retention Values

A rating was given to each tree on site; the information gathered was then processed by evaluating the health and vigour, the remaining useful life expectancy (ULE), plus their significance in the landscape. A retention value for each tree was then evaluated ranging from High, Moderate, Low and Very Low.

9.5 Determining Structural Root Zones

As defined in AS 4970 Section 1.4.5 the SRZ is 'the area around the base of a tree required for the tree's stability in the ground. The woody root growth and soil cohesion in this area are necessary to hold the tree upright.' The SRZ area has been calculated as specified in Section 3.3.5 of AS 4970.

9.5.1 Structural Root Zone (SRZ)

SRZ is the measurement of the area around the base of the tree. Measurements are taken at the centre of the trunk; a radial measurement is calculated in meters. This process determines the trees structural stability. The formula is SRZ radius = (D x 50) x 0.64 D = trunk diameter, in metres.

9.6 Tree Protection Zone (TPZ)

This area is specified above and below the ground at a given distance from the trunk to protect tree roots and canopy to protect the viability and stability of a tree retained on site where there is a potential for the tree to be damaged by development.

9.6.1 Determining Tree Protection Zones

As defined in AS 4970 Section 1.4.7 the TPZ is 'A specified area above and below ground and at a given distance from the trunk set aside for the protection of a tree's roots and crown (canopy) to provide for the viability and stability of a tree to be retained where it is potentially damaged by development'. The TPZ is the root zone/canopy area required for vigour and long-term viability. The TPZ area has been calculated as specified in Section 3.2 of AS 4970.

9.6.2 Variations to the TPZ – Minor

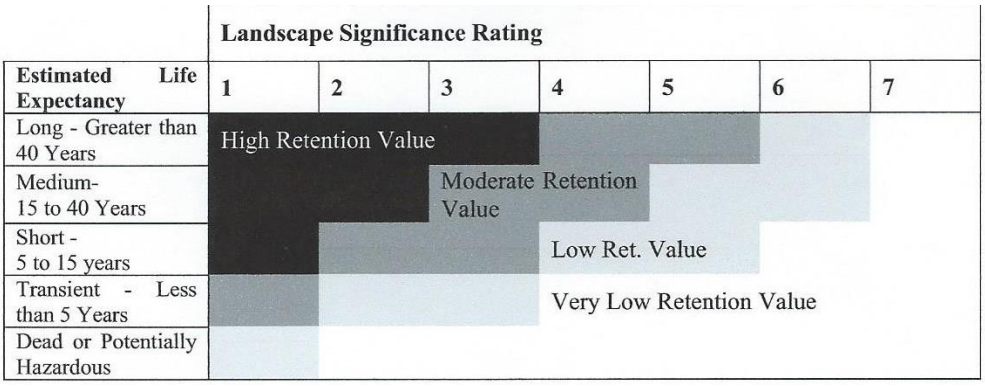
If there are no other options a minor encroachment (≤10%) into the TPZ area may be acceptable provided the incursion does not impact the SRZ. Examples of how minor encroachments can be configured. Refer to Section 3.3.2 of AS 4970 for additional details relating to minor encroachments.

AS 4970 states that the area lost to the encroachment must be compensated for elsewhere and must be contiguous with the TPZ.

9.6.3 Variation to the TPZ – Major

Should major encroachments (> 10%) of the TPZ be proposed it must be demonstrated by The Project Arborist that the tree will remain viable into the long term. Demonstration of viability may include non - destructive methods of root investigation and should be made in consideration of the following factors as listed in Section 3.3.4 of AS 4970:

Tree Retention Values – Assessment Methodology



Retention Value Methodology

RETENTION VALUE	RECOMMENDED ACTION
"High"	1. These trees considered worthy of preservation as such careful consideration should be given to their retention as a priority. 2. Proposed site design and placement of buildings and infrastructure should consider lessening any mitigating issues in relation to trees. 3. In addition, the extent of the canopy (canopy dripline) should also be considered, particularly in relation to high rise developments. Significant pruning of the trees to accommodate the building envelope or temporary scaffolding is generally not acceptable.
"Moderate"	1. The retention of these trees is desirable. 2. These trees should be retained as part of any potential development if possible however they trees are considered less critical for retention. 3. If these trees must be removed, replacement planting should be considered in accordance with Council's Tree Replacement Policy to compensate for loss of amenity.
"Low"	4. These trees are not considered to worthy of any special measures to ensure their preservation, due to current health, condition, or suitability. They do not have any special ecological, heritage or amenity value, or these values are substantially diminished due to their ULE. 5. These trees should not be considered as a constraint to the potential development of the site.
"Very Low"	1. These trees are considered potentially hazardous or very poor specimens or may be environmental or noxious weeds. 2. The removal of these trees is therefore recommended regardless of the implications of any proposed development.

10.Tree Protection Specifications

10.1 Specifications for Tree Protection

The tree protection measures included in this document are site specific and are to be implemented prior to, during and after the construction phase, including embellishment works. The project arborist will monitor the impacts of demolition, bulk earth works, installation of temporary infrastructure including bunding, sediment control and drainage works.

The intention is to ensure that construction related issues and conflicts are resolved prior to the commencement of this project.

The aim is to ensure that specifications are site specific and that the previously approved Tree Management Plan can be implemented as part of the conditions of consent.

10.2 Certification Reporting

Following each stage, Site establishment, Construction Stage and Landscape Construction. The Project Arborist shall prepare a statement of compliance certifying whether the works have been completed in accordance with this plan and the conditions of development consent granted by Northern Beaches Council to Tree Protection.

10.3 Appointment of a Project Arborist

An Arborist with an AQF Level 5 Diploma in Arboriculture with experience in tree protection on construction sites should be engaged prior to the commencement of work on the site. Site monitoring will occur at each Hold Point. If conditions have been breached, remedial action shall be recommended to minimise any further adverse effect on the tree's health.

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Table 5. Trees Impacted by Proposed Development Assessment Schedule

Tree No.	Genus/Species	SRZ	TPZ	Incursions to root Zone &/or Canopy	Likely Impact	Recommendation
1-10	*Syagrus romanzoffiana* (Cocos Palm)	_____	_____	_____	_____	Removal is recommended
11	*Lauris nobilis* (Bay Tree)	_____	_____	_____	_____	Removal is recommended
12	*Banksia integrifolia* (Coast Banksia)	Multi stem	Multi stem	Encroachment into canopy	Possible Damage to canopy	Selective pruning to remove branches no more than 10 % causing conflict from excavation works Prior to site establishment.
13	Banksia *integrifolia* (Coast Banksia)	2.8mR	7.0 mR	Encroachment into canopy	Possible Damage to canopy	Selective pruning to remove branches no more than 10 % causing conflict, to proposed building. Prior to site establishment.
14	*Syagrus romanzoffiana* (Cocos Palm)	_____	_____	_____	_____	Removal is recommended

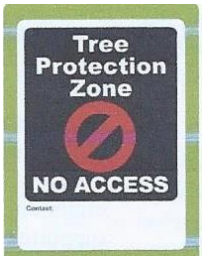
AS 4970 STATES: ***The of Palms and other monocots, cycads and tree ferns should not be less than 1m outside the crown projection.***

10.4 Tree Removal

Approved tree removal shall be obtained prior to the removal before site establishment. Tree removal work shall be carried out by an experienced Certified AQF Level 3 Arborist in accordance with Safe Work Australia Code of Practice 'Guide to Managing Risks of Tree Trimming and Removal Work'

10.5.3 Signage - Tree Protection Zone

To be displayed around the edge of all TPZ fenced off areas and visible within the development site. Identifying the TPZ should be placed outside the edge of TPZ the lettering on the sign should comply with AS1319.



10.6 Ground Protection

Ground protection if temporary access for machinery is unavoidable within the TPZ ground protection measures will be required. The purpose of ground protection is to avoid root damage and soil compaction. The area within the TPZ may be protected with mulch and geo textile fabric blanket or crushed rock below rumble boards to provide access of equipment.

HOLD POINT: Project Arborist to supervise demolition of Car Port.

10.6.2 Demolition Phase

Demolition of existing walls and other structures within the Tree Protection Zone of tree 12 and tree 13 to be retained shall be undertaken under the supervision of the Site arborist. The structures shall be demolished using equipment or stationed outside the TPZ where possible or within the footprint of existing hardstand areas. Care shall be taken to avoid root systems, trunks, and lower branches of trees in the vicinity of the structures during demolition works with special attention required during demolition of the footings and other sub-surface members to avoid damage to woody roots.

10.6.1 Prior to any mechanical excavations for the proposed basement a trench shall be dug along the perimeter of the proposed basement line within the tree protection zone of Tree 12 using hand- held digging

implements. All care shall be undertaken to preserve all woody roots greater than 40mm intact and undamaged during excavation works. Where woody roots greater than 40mm are encountered, the advice of a qualified arborist should be sought prior to root severance.

10.7 Tree Protection Plan Construction Phase.

The following Tree protection measures are to be implemented during the construction phase.

10.7.1 Temporary Infrastructure

Site sheds, Waste disposal and Stock piling areas to be placed outside the Tree Protection Zone.

10.7.2 Haul Route vehicles accessing site.

Haul route usage entry from Coastview Place.

10.7.3 Plant and Equipment

Light weight plant equipment such as small rubber tracked excavators and the demolition material for excavations removed to stockpiling area using small tipper trucks (2-3 tonne maximum).

10.7.4 Scaffolding within tree protection zone is to be the minimum width to protect roots from soil compaction. Scaffolding installed as per AS9470 (2009)

10.8 Underground services

Installing underground services should be routed outside of TPZ. When this is unavoidable services installed by directional drilling or manually excavated trenches.

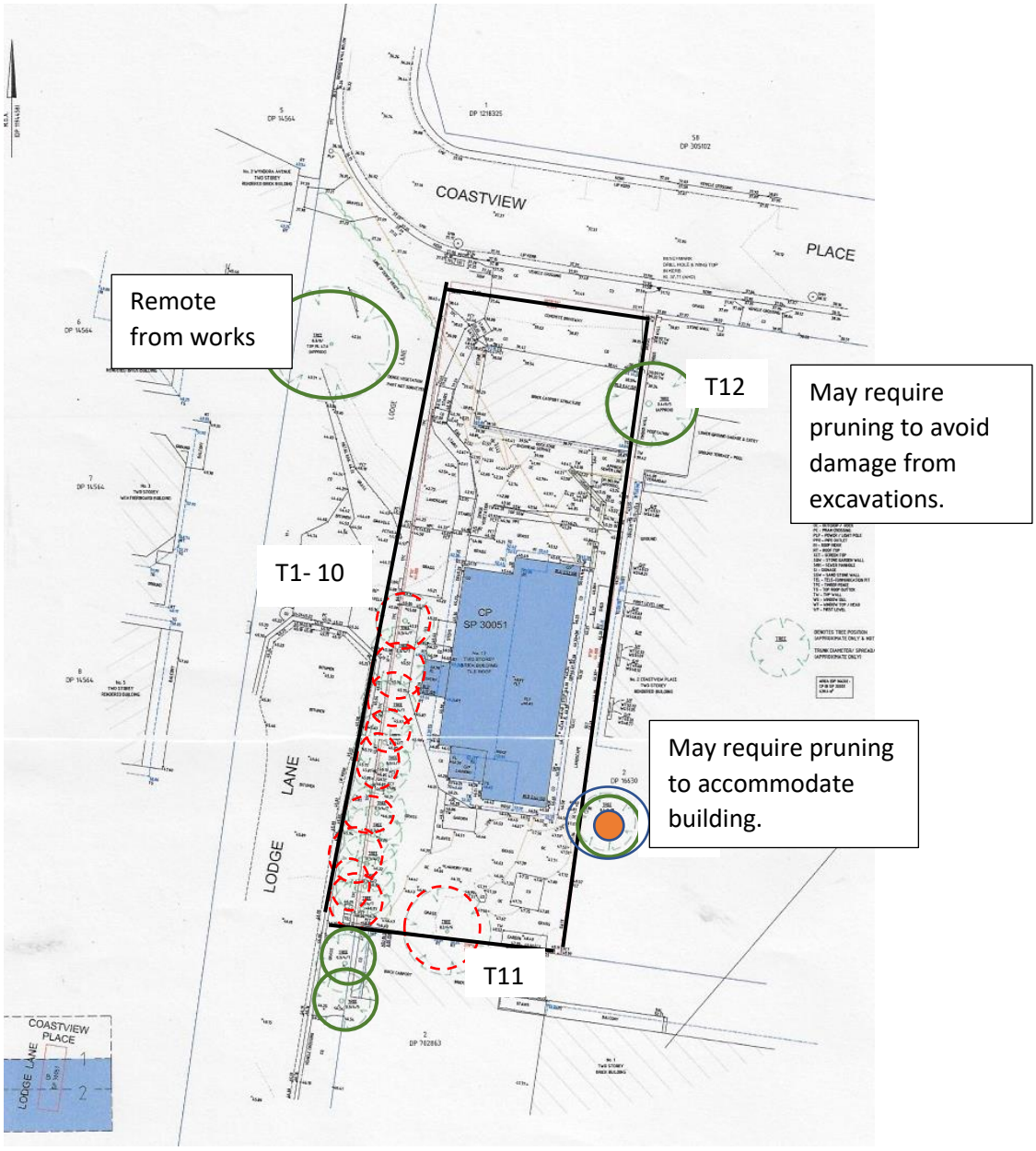
10.9 Landscape Construction

The landscape plan to be checked for compliance with the tree protection plan. Project Arborist to approve the staged removal of protection measures required to allow for landscape works. This includes the installation of paving, irrigation, installing and planting.

10.9.1 Post Construction Phase

On completion of construction and landscaping works. Project Arborist to assess tree condition and provide certification of tree protection. Following final inspection Project Arborist should certify that the completed works have been carried out in compliance with the approved plans and specifications for tree protection

Appendix A. Tree Location Plan



LEGEND: **Not to scale**

RETAIN **REMOVE** **SRZ** **TPZ**