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- Australian Institute of Horticulture
- Arboriculture Australia
- International Society of Arboriculture (USA)
- Australian Chapter of International Society of Arboriculture

Arborist Report

Project	**812 Pittwater Road and 4 Delmar Parade** **Dee Why NSW 2099** Ref: 2021-1061 Job: 65488
Client	**Dee Why 3 Pty Ltd & Dee Why 4 Pty Ltd** **c/o Willow Frank** Suite 110 , Level 1 13A Montgomery St Kogarah NSW 2217
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1 Summary

1.1 Proposed works are to redevelop the site.

a) Demolition of existing buildings, tree removal and site clearing
b) Construction of 2 x new mixed-use buildings over a shared two-storey basement car park comprising

i) 230 residential apartments

ii) Commercial tenancies on ground floor.

1.2 Trees 1 to 9 - unknown species - have been removed

1.3 Trees 10 to 19 - Melaleucas - have been removed

1.4 A tree assessment was carried out on trees 20,21 and 31 to 90.

1.5 Trees 20 and 21 are growing in front 4 Delmar Parade on the western corner of 2 Delmar Parade.

1.6 Trees 22 to 24 have already been removed

1.7 Trees 25 to 30 –are non-existent trees. I commenced my tree numbering at Tree 31.

1.8 Trees 31 to 38 are growing on street front of 4 Delmar Parade.

1.9 Trees 39 to 50 are growing on the eastern side of 4 Delmar Parade.

1.10 Trees 51 to 54 are growing at the rear of front building of 4 Delmar Parade in south-western corner.

1.11 Trees 55 to 58 are Casuarina trees which are growing along the western side boundary.

1.12 Tree 59 to 65 are growing in southwestern corner on Council land and private land. They are predominantly Casuarina trees with two Banksia trees.

1.13 Trees 66 to 71 are growing along southern boundary next to Council car park in one group. They are a mix of Banksia and Casuarina trees and one Cheese tree.

1.14 Trees 72 and 73 are growing on Council pathway on southern boundary. They are both Banksia trees. Their canopies have been dramatically modified for overhead power lines.

1.15 Trees 74 to 79 (as seen in photograph 17) and Trees 81 to 90 (as seen in photographs 22,23 and 24) are growing along eastern boundary next to sandstone embankment on eastern side of trees and car park on northern side of trees. These trees are in shallow soils and non-significant specimens due to limited root run. These trees are a mix of Casuarina and Melaleucas.

1.16 There are no significant trees growing on the site as the majority are Casuarina trees and some Paperbark. The dominant trees on site are Trees 55, 56, 57, 58, and 80. Trees 55,56,57 and 58 are outside of the proposed building footprint but are proposed to be removed for new landscaping and for structural issues with their trunk inclusions. Tree 80 falls within the proposed footprint,

1.17 Trees 66,67,69,70 and 71 a growing next to boundary line in council land are outside of the proposed building footprint. There will be a Tree Protection Zone incursion with the removal of existing car park. It is unknown the root activity under existing car park.

a) Tree 70 is a collection of epicormic growths growing from the stump and has a low suitability of preservation.
b) Tree 67 - Cheese tree - is a young juvenile tree.
c) Trees 66 and 68 are significant and dominant trees which have trunk and branch inclusions in their upper canopies.
d) Tree 71 has a canopy growing over the car park and has a major lean or bend in the trunk towards the car park.

1.18 Trees 72 and 73 a growing along the southern boundary on Council land next to power lines. All the southern side of the canopies have been removed with the remaining canopy growth growing over car park on the northern side of the tree. These trees would have a major underground incursion with basement excavation works. The majority of the excavation works would be extending up to the boundary line. The building alignment would require a majority of the canopy to be removed. These two trees will require to be removed.

1.19 Tree 80 - Casuarina - requires to be removed as it falls within footprint and has a one-sided canopy which is comprised of epicormic growth. The tree has a low suitability for preservation.

1.20 Trees 74, 75, 76, 78, 79, growing on southern boundary have been lopped. Trees 74 to 90 (not 80) are growing along this eastern boundary next to exposed sandstone rock shelf, in a narrow garden bed and car park on the western side of the trees. These trees are growing in shallow soils.

1.21 Trees proposed for retention are 62, 63, 67, 70, all other trees on site are proposed for removal.

1.22 Tree 62 Casuarina has TPZ of 12 metres, Tree 63 Casuarina has a TPZ of 10 metres, Tree 67 cheese tree has a TPZ of 6 metres, Tree 70 Casuarina has a TPZ of 8 metres. These tree protection zones should be marked on plans and trunk protection installed before demolition works with tree protection fencing installed where possible and mulching of the tree protection zone where possible. Removal of existing structures within the tree protection zone (TPZ) and excavation in the soil profile should be monitored by a trained arborist with aims to cleanly cut tree roots, and wrap with dampened rags, within this TPZ where excavations being carried out. A trained arborist needs to make a determination of what canopy needs to be pruned to give clearance for machinery carrying out piling or excavation works.

1.23 Tree Protection Zone (TPZ) incursions area as follows:

a) Tree 62 –Casuarina - has a TPZ of 2.4 metres and no incursion. Tree needs Tree Protection Zone established, with heavy mulching.
b) Tree 63 – Casuarina - has a TPZ of 2 metres and no incursion. Tree needs Tree Protection Zone established, with heavy mulching.
c) Tree 67 – Cheese tree - has a TPZ of 2 metres and a proposed incursion of 7.5%. There is an existing incursion of 14.1% into hard concrete surface which forms part of the car park. The incursion is wholly within the area of the carpark. These structures as a general rule are not active growing root zones. Tree needs Tree Protection Zone established, with heavy mulching.
d) Tree 70 – Casuarina – has a TPZ of 2.4 metres and a proposed incursion of 3.10%. There is an existing incursion of 36.5% into hard concrete surface which forms part of the car park. The incursion is wholly within the area of the carpark. These structures as a general rule are not active growing root zones. Tree needs Tree Protection Zone established, with heavy mulching.

1.24 Follow guidelines as listed in this report –

a) Sections 13 & 14- Tree and Trunk Protection,
b) Section 15 - Guidelines for Excavating near Trees to be Preserved
c) Section 16- Root Pruning Methodology.

2 Aims of the Report

2.1 Aim is to carry out a second assessment on trees growing at 4 Delmar Parade:

a) Trees at 2 Delmar Parade are numbered 1 to 24. This numbering was used in the in the Development Application of 2 Delmar Parade. Only Trees 20 and 21 remain.
b) Trees at 4 Delmar Parade are numbered 31 to 54. I started my tree numbering at Tree 31.
c) Trees at 812 Pittwater Road are numbered 55 to 90.

3 Methodology

3.1 Trees growing at 2 Delmar Parade are numbered 1 to 24, Trees at 4 Delmar Parade are numbered 31 to 54, Trees at 812 Pittwater Road are numbered 55 to 90.

3.2 In preparation of this report, a ground level visual tree assessment (VTA[1]) was undertaken.

3.3 No aerial (climbing) inspections, woody tissue testing, or tree root mapping were undertaken as part of the preparation of this report.

3.4 Heights, widths and diameters were estimated by eye from ground level.

3.5 No digging or root exposing work was done.

3.6 The comments and recommendations contained in this report are based on findings from the site inspection.

[1] VTA-Visual Tree Assessment undertaken by tree professionals is a recognised (International Society of Arboriculture) systematic method of identifying tree characteristics as hazard potential. Journal of Arboriculture, Vol. 22, No. 6, Nov. 1996. VTA is also an assessment method described by Claus Mattheck in the Body Language of Trees – a handbook for failure analysis. The Stationery Office, London (1994).

4 Site Observations

4.1 Tree 20 - Casuarina - has a trunk diameter estimated at 50 cm and basal diameter of 70 cm. The tree has a height of 12 metres with a canopy width of 6 metres. It is mature in age with a health rating of 5 out of 5 with a structure rating of 2 out of 5. The tree has 75% canopy cover and is a dominant tree with a TPZ of 6 metres and SRZ of 2.8 metres. I could not enter the base of tree due to tree protection fencing. The tree has major swelling around the union at 3 metres - this union is a trunk inclusion. There is an inclusion at 4 metres which also has swelling around the union.

4.2 Tree 21 – Casuarina - has a trunk diameter estimated at 30 cm and a basal diameter of 50 cm. (I could not take measurements due to tree protective fencing which has been installed around the tree). It has a height of 12 metres with a canopy spread of 6 metres. The tree is mature in age with a health rating of 5 out of 5 and a structure rating of 5 out of 5. It is a codominant tree with 60% canopy cover. (Note: Marked as Tree 22 on Figures 7.4 and 7.5)

4.3 Tree 31 Casuarina Glauca has a trunk diameter of 50 cm, a height of 14 metres and a canopy spread of 6 x 10 metres. The tree is mature in age and has a health rating of 5 out of 5 and a structure rating of 4 out of 5. It has a dominant canopy with 40% canopy cover. The canopy is one sided. It has been given a moderate suitability for preservation. The tree has a four-way trunk union at 8 metres, and it has been possibly lopped at 8 metres.

4.4 Tree 32 Casuarina Glauca has a trunk diameter of 30 cm, a height of 12 metres and a canopy spread of 8 x 6 metres. The tree is mature in age and has a health rating of 5 out of 5 and a structure rating of 4 out of 5. It has a codominant canopy with 45% canopy cover. It has been given a moderate suitability for preservation. Two leaders have been removed at 7 metres.

4.5 Tree 33 Casuarina Glauca has a trunk diameter of 40 cm, a height of 16 metres and a canopy spread of 8 x 8 metres. The tree is mature in age and has a health rating of 5 out of 5 and a structure rating of 4 out of 5. It has a dominant canopy with 55% canopy cover. It has been given a high suitability for preservation. The tree has limited canopy on south side.

4.6 Tree 34 Casuarina Glauca has a trunk diameter of 45 cm, a height of 13 metres and a canopy spread of 10 x 8 metres. The tree is mature in age and has a health rating of 5 out of 5 and a structure rating of 3 out of 5. It has a codominant canopy with 60% canopy cover. It has been given a low suitability for preservation. The tree has limited canopy on south side and it has an inclusion at 5 metres.

4.7 Tree 35 Casuarina Glauca has multiple trunk diameters of 15, 10, 10 and 15 cm. It has a height of 8 metres and a canopy spread of 10 x 6 metres. The tree is mature in age and has a health rating of 5 out of 5 and a structure rating of 2 out of 5. It has an

intermediate canopy with 80% canopy cover. It has been given a low suitability for preservation. Trunk wound and cavity at 2 metres. Inclusion at base.

4.8 Tree 36 Casuarina Glauca has a trunk diameter of 20 cm, a height of 8 metres and a canopy spread of 4 x 6 metres. The tree is mature in age and has a health rating of 5 out of 5 and a structure rating of 3 out of 5. It has an intermediate canopy with 40% canopy cover. It has been given a low suitability for preservation.

4.9 Tree 37 Casuarina Glauca has a trunk diameter of 50 cm, a height of 12 metres and a canopy spread of 8 x 10 metres. The tree is mature in age and has a health rating of 5 out of 5 and a structure rating of 2 out of 5. It has a codominant canopy with 70% canopy cover. It has been given a low suitability for preservation. Inclusion at 3 metres and major inclusion at 7 metres with major reaction wood around inclusion.

4.10 Tree 38 Casuarina Glauca has a trunk diameter of 50 cm, a height of 16 metres and a canopy spread of 8 x 8 metres. The tree is mature in age and has a health rating of 5 out of 5 and a structure rating of 3 out of 5. It has a dominant canopy with 70% canopy cover. It has been given a moderate suitability for preservation. Inclusion at 8 metres.

4.11 Tree 39 Melaleuca quinquenervia has multiple trunk diameters of 30, 30, 25, 20 cm. The tree has a height of 8 metres and a canopy spread of 7 x 7 metres. The tree is mature in age and has a health rating of 5 out of 5 and a structure rating of 4 out of 5. It has a dominant canopy with 90% canopy cover. It has been given a high suitability for preservation.

4.12 Tree 40 Casuarina Glauca has a trunk diameter of 50 cm, a height of 14 metres and a canopy spread of 6 x 6 metres. The tree is mature in age and has a health rating of 5 out of 5 and a structure rating of 5 out of 5. It has a dominant canopy with 75% canopy cover. It has been given a high suitability for preservation. The tree is impacting on kerb and gutter and growing hard against the wall.

4.13 Tree 41 Casuarina Glauca has a trunk diameter of 35 cm, a height of 12 metres and a canopy spread of 6 metres. The tree is mature in age and has a health rating of 4 out of 5 and a structure rating of 3 out of 5. It has a codominant canopy with 25% canopy cover. It has been given a low suitability for preservation. The tree has inclusion at 3 metres with stain to bark above union, possible fungal / virus infection.

4.14 Tree 42 Melaleuca quinquenervia has a trunk diameter of 25 cm, a height of 11 metres and a canopy spread of 6 x 4 metres. The tree is mature in age and has a health rating of 5 out of 5 and a structure rating of 2 out of 5. It has a codominant canopy with 30% canopy cover. It has been given a low suitability for preservation. The tree has inclusion at 4 metres.

4.15 Tree 43 Casuarina Glauca has a trunk diameter of 15 cm, a height of 5 metres and a canopy spread of 2 metres. The tree is mature in age and has a health rating of 4 out of 5 and a structure rating of 3 out of 5. It has an intermediate canopy with 30%

canopy cover. It has been given a low suitability for preservation. The tree has been lopped at 2 metres.

4.16 Tree 44 Casuarina Glauca has a trunk diameter of 15 cm, a height of 10 metres and a canopy spread of 2 metres. The tree is mature in age and has a health rating of 4 out of 5 and a structure rating of 3 out of 5. It has a codominant canopy with 10% canopy cover. It has been given a low suitability for preservation. The tree is growing in a shallow garden bed and has major exposed roots.

4.17 Tree 45 Casuarina Glauca has a trunk diameter of 20 cm, a height of 11 metres and a canopy spread of 4 metres. The tree is mature in age and has a health rating of 3 out of 5 and a structure rating of 3 out of 5. It has a dominant canopy with 15% canopy cover. It has been given a low suitability for preservation. The tree is growing in a shallow garden bed and has major exposed roots

4.18 Tree 46 Casuarina Glauca has a trunk diameter of 20 cm, a height of 10 metres and a canopy spread of 4 metres. The tree is mature in age and has a health rating of 3 out of 5 and a structure rating of 3 out of 5. It has a codominant canopy with 25% canopy cover. It has been given a low suitability for preservation. The tree is growing in a shallow garden bed and has major exposed roots.

4.19 Tree 47 Paper Bark has two trunks, both 15 cm in diameter. The tree has a height of 8 metres and a canopy spread of 4 by 2 metres. The tree is mature in age and has a health rating of 5 out of 5 and a structure rating of 2 out of 5. It has an intermediate canopy with 70% canopy cover. It has been given a moderate suitability for preservation. The tree has trunk inclusion, and the trunks are rubbing and crossing.

4.20 Tree 48 Casuarina Glauca has a trunk diameter of 30 cm, a height of 12 metres and a canopy spread of 4 x 4 metres. The tree is mature in age and has a health rating of 5 out of 5 and a structure rating of 4 out of 5. It has a codominant canopy with 40% canopy cover. It has been given a moderate suitability for preservation.

4.21 Tree 49 Melaleuca quinqueervia has a trunk diameter of 25 cm, a height of 8 metres and a canopy spread of 4 x 2 metres. The tree is mature in age and has a health rating of 5 out of 5 and a structure rating of 4 out of 5. It has a codominant canopy with 40% canopy cover. It has been given a moderate suitability for preservation. The tree has limited canopy cover.

4.22 Tree 50 Casuarina Glauca has a trunk diameter of 30 cm, a height of 12 metres and a canopy spread of 4 x 4 metres. The tree is mature in age and has a health rating of 4 out of 5 and a structure rating of 3 out of 5. It has a dominant canopy with 40% canopy cover. It has been given a low suitability for preservation. Tip dieback, trunk inclusion at 6 metres.

4.23 Tree 51 Casuarina Glauca has two trunks, both 30 cm in diameter. The tree has a height of 12 metres and a canopy spread of 6 x 6 metres. The tree is mature in age

and has a health rating of 5 out of 5 and a structure rating of 3 out of 5. It has a codominant canopy with 85% canopy cover. It has been given a moderate suitability for preservation. The tree has trunk inclusion at base. Branches are fused together at 4 metres.

4.24 Tree 52 Casuarina Glauca has two trunks, both 40 cm in diameter. The tree has a height of 12 metres and a canopy spread of 6 x 8 metres. The tree is mature in age and has a health rating of 5 out of 5 and a structure rating of 4 out of 5. It has a dominant canopy with 65% canopy cover. It has been given a moderate suitability for preservation. Surface roots are growing hard against structure.

4.25 Tree 53 Casuarina Glauca has a trunk diameter of 60 cm, a height of 12 metres and a canopy spread of 8 x 6 metres. The tree is mature in age and has a health rating of 5 out of 5 and a structure rating of 5 out of 5. It has a codominant canopy with 90% canopy cover. It has been given a moderate suitability for preservation. Trunk inclusion at 1.4 metres.

4.26 Tree 54 Casuarina Glauca has a trunk diameter of 35 cm, a height of 12 metres and a canopy spread of 6 x 6 metres. The tree is mature in age and has a health rating of 5 out of 5 and a structure rating of 5 out of 5. It has a codominant canopy with 80% canopy cover. It has been given a moderate suitability for preservation

4.27 A tree assessment was carried out on trees 55 to 90.

4.28 Trees 55 to 58 are Casuarina trees which are growing along the western side boundary.

4.29 Tree 59 to 65 are growing in southwestern corner on Council land and private land. The trees are predominantly Casuarina with two Banksia trees.

4.30 Trees 66 to 71 are growing along southern boundary next to Council car park in one group. They are a mix of Banksia and Casuarina trees and one Cheese tree.

4.31 Trees 72 and 73 - Banksia trees - are growing on Council pathway on southern boundary.

4.32 Trees 74 to 79 (as seen in photograph 17) and Trees 81 to 90 (as seen in photographs 23 and 24) are growing along eastern boundary, next to sandstone embankment on eastern side of trees and car park on northern side of trees. These trees are in shallow soil and are non-significant specimens due to limited root run. They are a mix of Casuarina and Melaleuca trees.

4.33 Tree 55 - Casuarina - has a trunk diameter of 60 cm, a height of 12 metres and a canopy spread of 8 metres. The tree is mature in age with a health rating of 5 out of 5. and a structural rating of 5 out of 5. It is a dominant tree with 60% canopy cover. Surface roots have damaged the kerb and guttering. (See photograph 1).

4.34 Tree 56 - Casuarina - has a trunk diameter of 40 cm, a height of 12 metres with a canopy spread of 6 metres. The tree is mature in age with a health rating of 5 out of 5 and a structure rating of 4 out of 5. It has a codominant canopy with 55% canopy cover.

4.35 Tree 57 - Casuarina - has a trunk diameter of 40 cm, a height of 12 metres with a canopy spread of 4 metres x 8 metres. The tree is mature in age with a health rating of 5 out of 5 and a structure rating of 3 out of 5. It has a codominant canopy with 40% canopy cover. The tree has a trunk inclusion at six metre plus mark with swelling around inclusion. (See photograph 2).

4.36 Tree 58- Casuarina - has a trunk diameter of 50 cm, a height of 12 metres with a canopy spread of 10 metres. The tree is mature in age with a health rating of 5 out of 5 and a structure rating of 3 out of 5. It has a dominant canopy with 60% canopy cover. There is a mild trunk inclusion at the six-metre mark with a misshapen canopy (See photograph 2).

4.37 Tree 59 - Casuarina - has a trunk diameter of 40 cm with a height of 12 metres and a canopy spread of 6 metres. The tree is mature in age with a health rating of 5 out of 5 and a structure rating of 3 out of 5. It is a dominant tree with 30% canopy cover. The tree has trunk inclusions at the 6 metre and 7 metre marks and misshapen canopy. (See photograph 3).

4.38 Tree 60 - Casuarina - has a trunk diameter of 8 cm, a height of 6 metres with a canopy spread of 1 metre x 2 metres. The tree is semi -mature in age with a health rating of 5 out of 5 and a structure rating of 4 out of 5. It has an intermediate crown class with 10% canopy cover. The tree has trunk inclusions at four metre and six metre marks.

4.39 Tree 61 - Casuarina - has a trunk diameter of 30 cm, a height of 12 metres with a canopy spread of 4 metres. The tree is mature in age with a health rating of 5 out of 5 and a structure rating of 3 out of 5. It is dominant tree with 85% canopy cover. The tree has trunk inclusion at the 7.5 metre mark. Trees 60 and 61 are growing next to each other, as seen in photograph 4.

4.40 Tree 62 - Casuarina - has a trunk diameter of 20 cm, a height of 12 metres with a canopy spread of 6 metres. The tree is mature in age and a health rating of 5 out of 5 with a structure rating of 3 out of 5. It has a dominant canopy with 85% canopy cover. There is a trunk inclusion of the 8-metre mark with major swelling. It is growing next to Tree 63, as seen in photograph 5.

4.41 Tree 63 – Casuarina - has a trunk diameter of 15 cm, a height of 10 metres with a canopy spread of 4 metres x 6 metres. The tree is mature in age with a health rating of 5 out of 5 and a structure rating of 4 out of 5. It has a codominant canopy with 50% canopy cover. The tree has a misshapen canopy due to powerline clearing.

4.42 Tree 64 - Banksia - has a trunk diameter of 40 cm, a height of 12 metres with a canopy spread of 4 metres. The tree is overmature with health rating of 4 out of 5 and a structure rating of 1 out of five. It is a dominant tree with 35% canopy cover. The tree has misshapen from building clearance and has a major trunk wound with cavities. (see photographs 6 and 7).

4.43 Tree 65 -Banksia - has a trunk diameter of 30, a height of 10 metres and a width of 4 metres. The tree is over- mature in age with a health rating of 4 out of 5 and a structure rating of zero out of 5. It currently has a suppressed crown class and has had major root plate failure. (See in photograph 7).

4.44 Tree 66 - Banksia - has a trunk diameter of 40 cm, a height of 14 metres with a canopy spread of 8 metres x 6 metres. The tree is mature in age and has a health rating of 5 out of 5 and a structure rating of 4 out of 5. It has codominant crown class with 40% canopy cover and has very limited lower canopy. (See photograph 8).

4.45 Tree 67 - Cheese tree - has a trunk diameter of 15 cm, a height of 6 metres with a canopy spread of 6 metres x 4 metres. The tree is semi- mature in age, with a health rating of 3 out of 5, and a structure rating of 3 out of 5. It has an intermediate crown class with 40% canopy cover. The tree has trunk and branch inclusions at the 2 and 2.5 metre marks. It has 70% of its canopy cover on the top 30% of. (See photograph 9).

4.46 Tree 68 - Casuarina - has a trunk diameter of 55 cm, a height of 14 metres. The tree is mature in age with a health rating of 5 out of 5 and a structure rating of 3 out of 5. It has a dominant canopy crown class with 60% canopy cover. The is a trunk inclusion at 7 metres with swelling around the union. There is unknown stability of trunk with this union. (See in photographs 10 ,11).

4.47 Tree 69 - - has a trunk diameter of 50 cm, a height of 12 metres. The tree is mature in age with a health rating of 5 out of 5 and a structure rating of 3 out of 5. It has a dominant crown class with 50% canopy cover. There is storm damage at the 10-metre mark with trunk inclusion and swelling at the eight-metre mark. (See photograph 12).

4.48 Tree 70 - Casuarina - has multiple trunks of up to 10 cm in diameter, a height of 8 metres with a canopy spread of 4 metres x 6 metres. The tree is mature in age and has a health rating of 5 out of 5 and a structure rating of 3 out of 5. It has a codominant canopy with 50% canopy cover. The tree has Coppicing - which is epicormic growth growing from old stump.

4.49 Tree 71 - Casuarina - has a trunk diameter of 30 cm, a height of 8 metres with a canopy spread of 4 metres x 6 metres. The tree is mature in age with a health rating of 5 out of 5 and a structure rating of 4 out of 5. It has a codominant canopy with 90% canopy cover. The tree has a trunk inclusion at the 6-metre mark and a major bend in trunk. (See photograph 13).

4.50 Tree72 - Melaleuca - has three trunks of 15cm, 20cm, and 50 cm diameter, a height of 10 metres with a canopy spread of 6 metres. The tree is mature in age with a health rating of 5 out of 5 and a structural rating of 3 out of 5. It is a dominant tree with 35% canopy cover, which is one-sided due to heavy powerline clearing. (See photographs 14 and 15).

4.51 Tree 73 - Melaleuca - has trunk diameters of 40 cm and 40 cm, with a height of 10 metres and a canopy spread of 10 metres x 6 metres. The tree is mature in age with a health rating of 5 out of 5 and a structure rating of 4 out of 5. It is a dominant tree with a one-sided canopy due to powerline clearing. (See photograph 16).

4.52 Tree 74 - Casuarina - has a trunk diameter of 20 cm with a height of 6 metres and canopy spread of 2 metres. The tree is mature in age with a health rating of 5 out of 5 and a structure rating of 3 out of 5. It has a codominant canopy with 5% canopy cover. The tree has been lopped and has a trunk inclusion at the three-metre mark.

4.53 Tree 75 - Casuarina - has a trunk diameter of 20 cm, a height of 7 metres with a canopy width of 1 metre. The tree is mature in age and has a health rating of 5 out of 5 and a structure rating of 4 out of 5. It has a codominant canopy with 5% canopy cover. The tree has been lopped at the seven-metre mark. (See photograph 17).

4.54 Tree 76 -Casuarina - has a trunk diameter of 20 cm, a height of 7 metres with a canopy spread of 1 metre. The tree is mature in age with a health rating of 5 out of 5 and a structure rating of 4 out of 5. It has a codominant canopy with 5% canopy cover. The tree has been lopped at 7 metre mark.

4.55 Tree 77 - Casuarina - has a trunk diameter of 15 cm, a height of 6 metres with a canopy width of 1 metre. The tree is mature in age with a health rating of 5 out of 5 and a structure rating of 4 out of 5. It has a codominant crown class with 5% canopy cover. The tree has been lopped at the six-metre mark.

4.56 Tree 78 - Casuarina - is not on the survey. The tree has a trunk diameter of 10 cm, a height of 10 metres with a canopy spread of 6 metres x 2 metres. The tree is mature in age with a health rating of 5 out of 5 and a structure rating of 3 out of 5. It has a codominant canopy cover with 10% canopy cover. The tree has a major bend on its trunk and is growing out of the rock face with ficus vine on the trunk and in the canopy (See photograph 18),

4.57 Tree 79 - Melaleuca - has trunk diameters of 15 cm and 15 cm, a height of 9 metres with a width of 4 metres. The tree is mature in age with a health rating of 5 out of 5 and a structure rating of 3 out of 5. It has a codominant canopy with 20% canopy cover. The tree has a trunk inclusion at the 1.4 metre mark. (See photograph 19).

4.58 Tree 80 - Casuarina - is standalone specimen next to building, with a trunk diameter of 60 cm, a height of 11 metres and a canopy spread of 9 metres x 6 metres. The tree is mature in age with a health rating of 5 out of 5and a structure rating of 3 out of 5. It has a dominant canopy with only 35% canopy cover. This canopy cover is one-sided due to canopy clearance for building and has epicormic growth which forms the canopy. The tree has multiple old wounds from pruning which have limited wound closure, (See photographs 19,20,21).

4.59 Tree 81 - Casuarina has a trunk diameter of 15 cm, a height of 10 metres with a canopy spread of 2 metres. The tree is mature in age with a health rating of 4 out of 5 and a structure rating of 4 out of 5. It has a codominant canopy with 35% canopy cover, which is one-sided.

4.60 Tree 82 - Casuarina - has a trunk diameter of 20 cm, a height of 10 metres with a canopy spread of 5 metres. The tree is mature in age with a health rating of 5 out of 5 and a structure rating of 4 out of 5. It has a codominant canopy with 30% canopy cover. The tree has a trunk inclusion at the eight-metre mark.

4.61 Tree 83 - Casuarina - has a trunk diameter of 15 cm, a height of 9 metres and a canopy spread of 4 metres x 2 m metres . The tree is mature in age with a health rating of 4 out of five and a structure rating of 5 out of 5. It has a codominant canopy with 15% canopy cover and all of the canopy in the top 30% of the tree.

4.62 Tree 84 - Casuarina - has a trunk diameter of 15 cm, a height of 9 metres with a canopy spread of 2 metres. The tree is mature in age with a health rating of 4 out of 5 and a structure rating of 5 out of 5. It has a codominant canopy with 35% canopy cover.

4.63 Tree 85 - Melaleuca - has a trunk diameter of 15 cm, a height of 7 metres with a canopy spread of 2 metres. The tree is mature in age with a health rating of 5 out of 5 and a structure rating of 4 out of 5. It has an intermediate canopy cover with 45% canopy and this canopy is one-sided.

4.64 Tree 86 - Casuarina - has a trunk diameter of 15 cm, a height of 8 metres with a canopy spread of 2 metres. The tree is mature in age with a health rating of 5 out of 5 and a structure rating of 5 out of 5. It has a dominant canopy with 40% canopy cover.

4.65 Tree 87 -Casuarina - has a trunk diameter of 25 cm, a height of 8 metres with a width of 6 metres. The tree is mature in age with a health rating of 5 out of 5 and a structure rating of 4 out of 5. It has a dominant canopy with 40% canopy cover. The tree has a three-way trunk inclusion at the 6-metre mark and trunk wound on the trunk.

4.66 Tree 88 - Melaleuca - has trunk diameters of 15 cm and 15 cm, a height of 6 metres with a canopy spread of 4 metres. The tree is mature in age with a health rating of 5 out of 5 and a structure rating of 3 out of 5. It has an intermediate crown class with 65% canopy cover. There is a trunk inclusion at 2 metres. (See photograph 22).

4.67 Tree 89 - Casuarina - has a trunk diameter of 15 cm, a height of 10 metres with a canopy spread of 2 metres. The tree is mature in age with a health rating of 5 out of 5 and a structure rating of 4 out of 5. It has a codominant canopy with 40% canopy cover. The tree has a three-way trunk union at the eight-metre mark.

4.68 Tree 90 - Casuarina -has diameter of 15 cm, a height of 8 metres with a canopy spread of 5 metres. The tree is mature in age and has a health rating of 4 out of 5 and a structural rating of 4 out of 5. It has a codominant canopy with 30% canopy cover. This canopy cover is thin and sparse.

4.69 Proposed works are to redevelop the site. This involves the removal of existing buildings and excavation to create a two-level underground car park which is accessed on the most north-eastern corner of the boundary with an access ramp. Two towers with a small third complex on the southwestern side of the block are proposed to be constructed.

5 Conclusions

5.1 Trees 1 to 19 have already been removed for 2 Delmar Parade Development.

5.2 Trees 20 – Casuarina – has major swelling around the trunk inclusion at the 3-metre mark and also swelling at the 4-metre mark around the inclusion. This is why I have given it a structural rating of two out of five and a SULE rating of Sh (short).

5.3 Tree 21 - Casuarina – falls within the proposed building footprint and has had a major incursion with the development of 2 Delmar Parade.

5.4 Trees 22 to 24 have already been removed

5.5 Trees 25 to 30 – are non-existent trees. I commenced my tree numbering at Tree 31.

5.6 Trees 31 to 38 are to be removed as within proposed building footprint (along Delmar frontage).

5.7 Trees 39 to 50 are to be removed as within proposed building footprint (along eastern boundary of 4 Delmar Parade).

5.8 Trees 51 to 54 - are to be removed as within proposed building footprint (at rear of existing 4 Delmar Parade building - South-west corner).

5.9 There are no significant trees growing on the site as the majority are Casuarina trees and some Paperbark trees. The dominant trees on site are Trees 55, 56, 57, 58, and 80

a) Trees 55,56,57,58 are outside of the proposed building footprint, but are proposed to be removed for new landscaping and due to structural issues with the tree trunk inclusions.

b) Tree 80 falls within the proposed footprint. This tree has a one-sided canopy which is formed by epicormic growth and has multiple locations of poor pruning techniques which have limited wound closure.

5.10 Trees 62 and 63 Tree Protection Zones are outside the proposed site boundary and building footprint and can be retained.

a) Tree 65 has had major root plate failure and needs to be removed.

b) Tree 64 has low suitability of preservation due to its major trunk wounds and cavity at base of tree.

c) Tree 60 is growing into the canopy of Tree 61 and has a major lean in the trunk.

d) The remaining Casuarina trees have moderate suitability for preservation and are not significant trees. Possibly the owner of the trees would allow removal and re landscaping the area as this is a significant area with entrance to the car park and to the botanical gardens.

5.11 Trees 66,67,69,70,71 are growing next to boundary line in Council land and are outside of the proposed building footprint. There will be a TPZ incursion with the removal of the existing car park. It is unknown the extent of root activity under existing car park.

a) Tree 70 is a collection of epicormic growths growing from the stump and has a low suitability of preservation.

b) Tree 67 - Cheese tree is a young juvenile tree.

c) Trees 66 and 68, significant and dominant trees which have trunk and branch inclusions in upper canopy. Therefore, I see short-term and long-term structural issues with these trees.

d) Tree 71 has a canopy growing over the car park and has a major lean or bend in the trunk towards the car park.

5.12 Trees 72 and 73 are growing along the southern boundary on Council land next to power lines. All the southern side of the canopies have been removed with the remaining canopy growth growing over car park on the northern side of the tree. These trees would have a major underground incursion with basement excavation works. The majority of the excavation works would be extending up to the boundary line and the building alignment would require a majority of the canopy to be removed

5.13 Trees 74, 75, 76, 78, 79, growing on southern boundary have been lopped. Trees 74 to 90 (not 80) are growing along this eastern boundary next to exposed sandstone rock shelf, In a narrow garden bed and car park on the western side of the trees. My opinion is that these soils are of a shallow nature. This has left a very competitive environment for the trees to grow. There is a heavy or dense occupation of fine roots in this garden bed, which also gives me indication of shallow soils.

5.14 Tree 80 is a standalone Casuarina which has had all its canopy removed on the western side of the tree, leaving the remaining canopy overhanging existing car park. This canopy is mainly formed by epicormic growth which is a result of poor pruning practises. From the previous pruning practises flush cuts have occurred on the main trunk and horizontal limbs. These flush cuts have left the hardwood exposed and have limited wound closure. This tree has a low suitability for preservation. This tree falls within the proposed basement excavations for building works.

6 Recommendations

6.1 Trees 62 and 63 are outside of the proposed building footprint as the placement of the building is being moved away from these trees.

6.2 Trees 67 and 70 are growing next to boundary line in Council land and are outside of the proposed building footprint. There will be a Tree Protection Zone incursion with the removal of existing car park. Tree Protection Zone will need to be created around these trees for preservation. There may be a need to do canopy modification on the northern side of the trees over car park.

6.3 Removal of Trees 20,21, 31 to 61, 64,65,66, 68, 69, 71 to 90

6.4 Removal of Council trees 71, 72,73 due to major incursion into Tree Protection Zone.

6.5 To allow future substantial growth for new landscaping on eastern boundary where Trees 74 to 90 are growing I suggest that the bedrock be excavated to a minimum depth of 1.5 metres if possible and material to be left on site in the location of landscaping area. It would be preferable if the rock is pulverised to allow free drainage and air penetration for ample root development - this will create deep soil areas.

6.6 Trees proposed for retention are 62, 63, 67, 70, all other trees on site are proposed for removal.

6.7 Tree 62 Casuarina has TPZ of 12 metres, Tree 63 Casuarina has a TPZ of 10 metres, Tree 67 cheese tree has a TPZ of 6 metres, Tree 70 Casuarina has a TPZ of 8 metres. These tree protection zones should be marked on plans. Trunk protection installed before demolition works with tree protection fencing installed where possible and mulching of the tree protection zone where possible.

a) Monitoring by a Level 5 arborist of any works within the Tree Protection Zones of Tree 62, Tree 63, Tree 67, Tree 70, with removal of existing driveways and monitoring earthworks in the soil profile.

6.8 Only a trained arborist can prune canopy when needed to give access for piling all earth moving machinery. The site arborist is to carry out site induction of machine operators of need to preserve canopy and how to work around the canopy.

6.9 Follow guidelines as listed in this report –

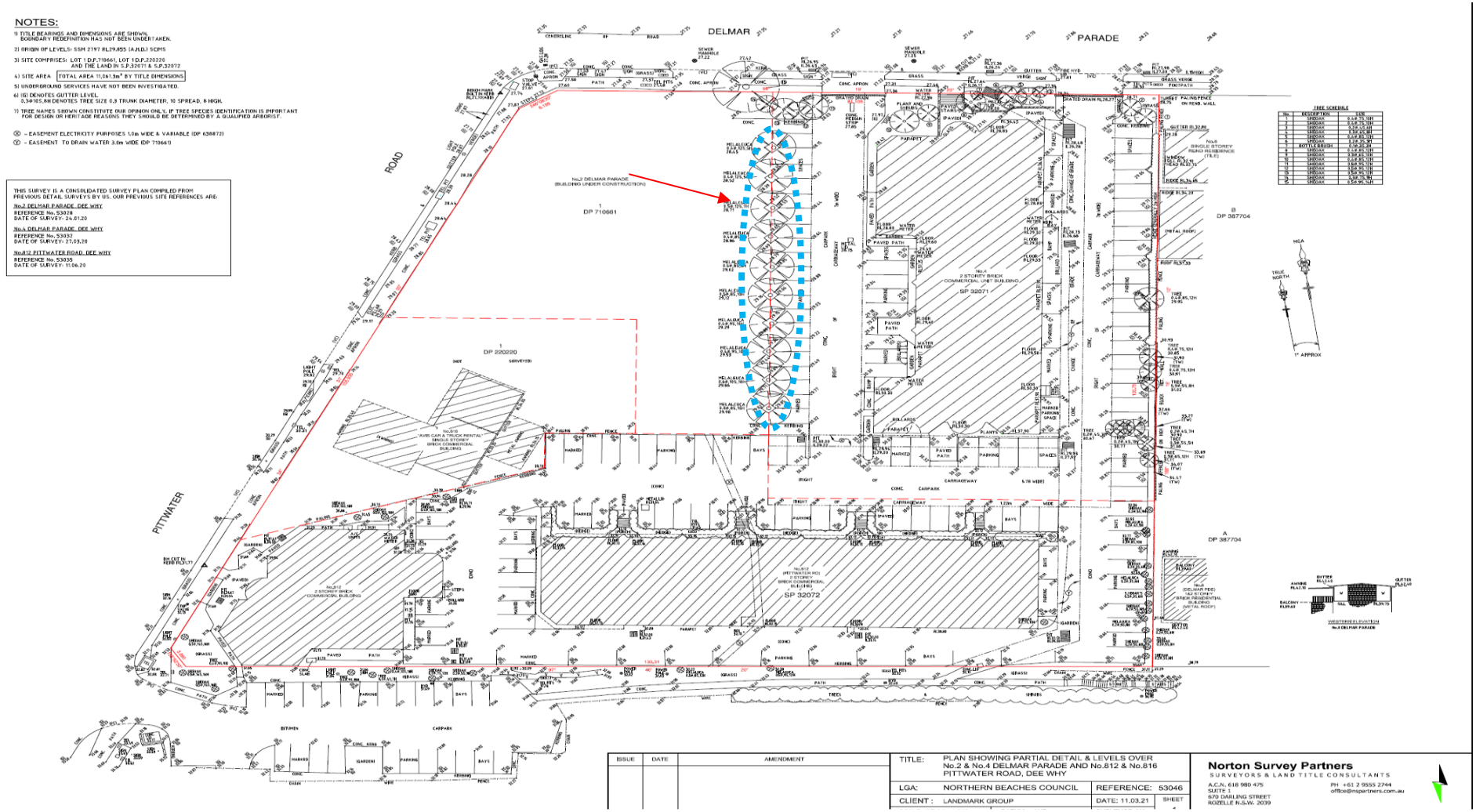
a) Sections 13 & 14- Tree and Trunk Protection,
b) Section 15 - Guidelines for Excavating near Trees to be Preserved
c) Section 16- Root Pruning Methodology.

7 Survey Plans

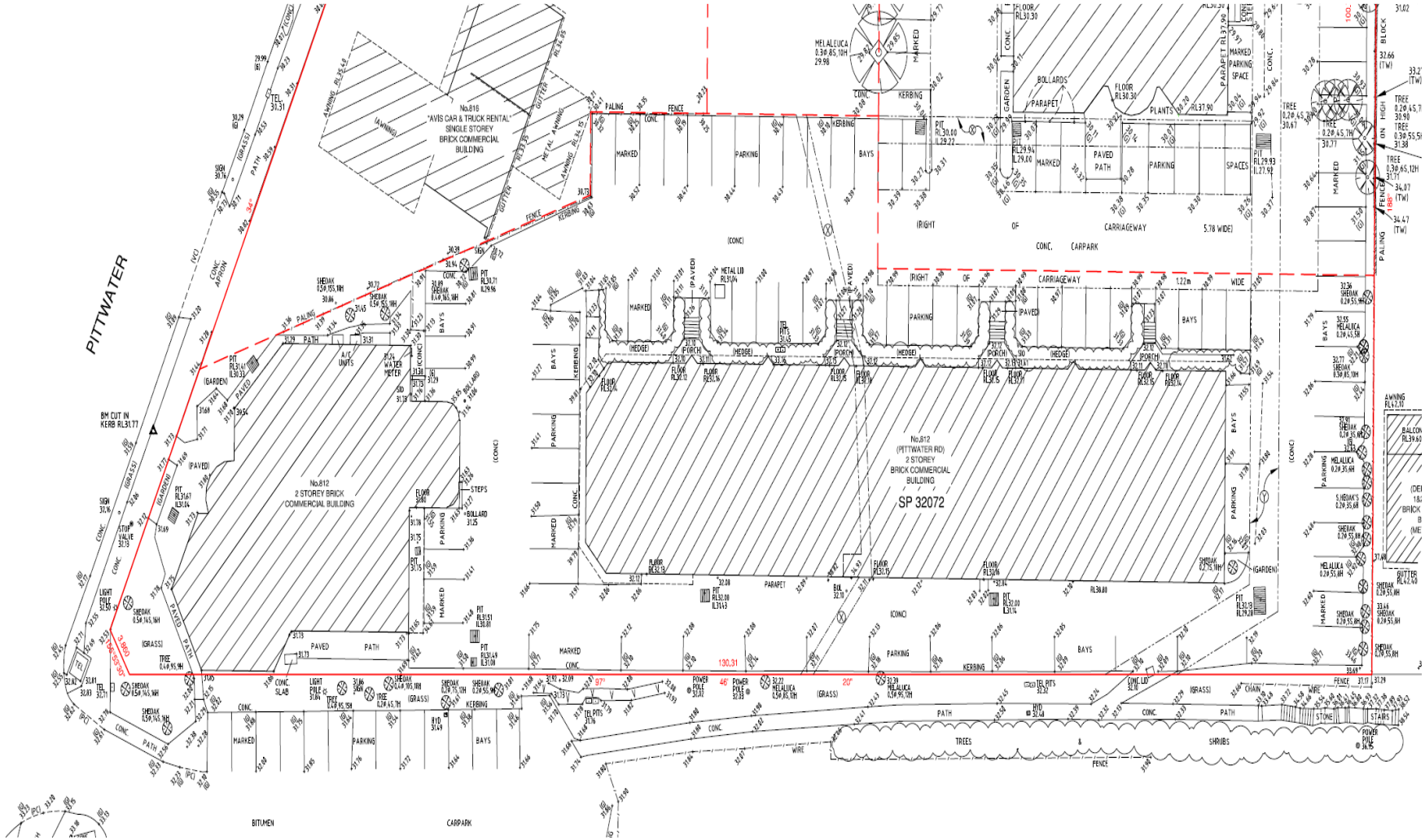
7.1 Figure 7.1 – Aerial photograph of site

The Subject Property is located adjacent to an existing Landmark Group development at 2 Delmar Parade, Dee Why which is currently undergoing redevelopment. The site excludes the Avis car rental located at 814 Pittwater Road, Dee Why.

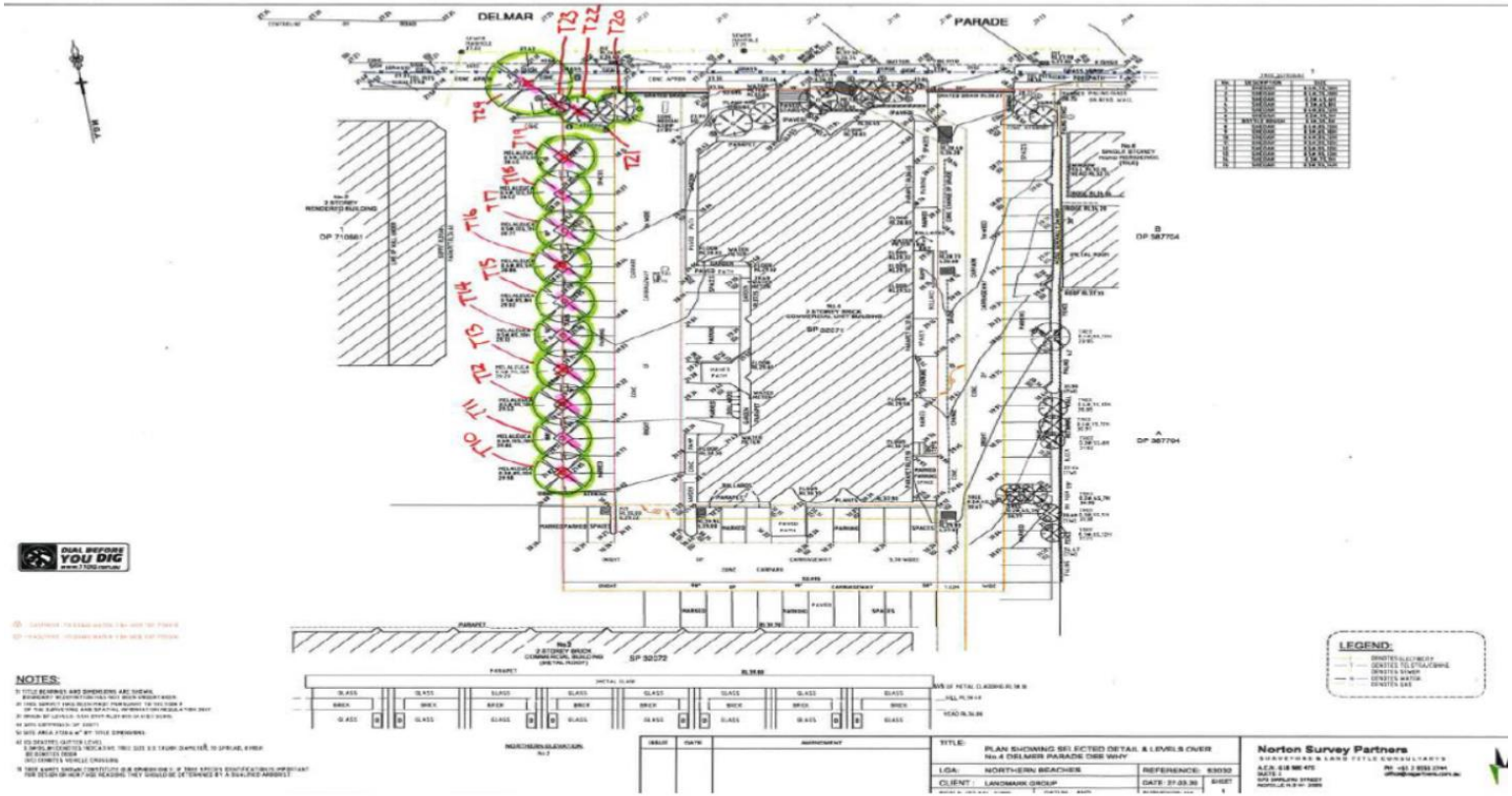
7.2 Figure 7.2 –Survey - Trees outlined with blue circle have been removed.



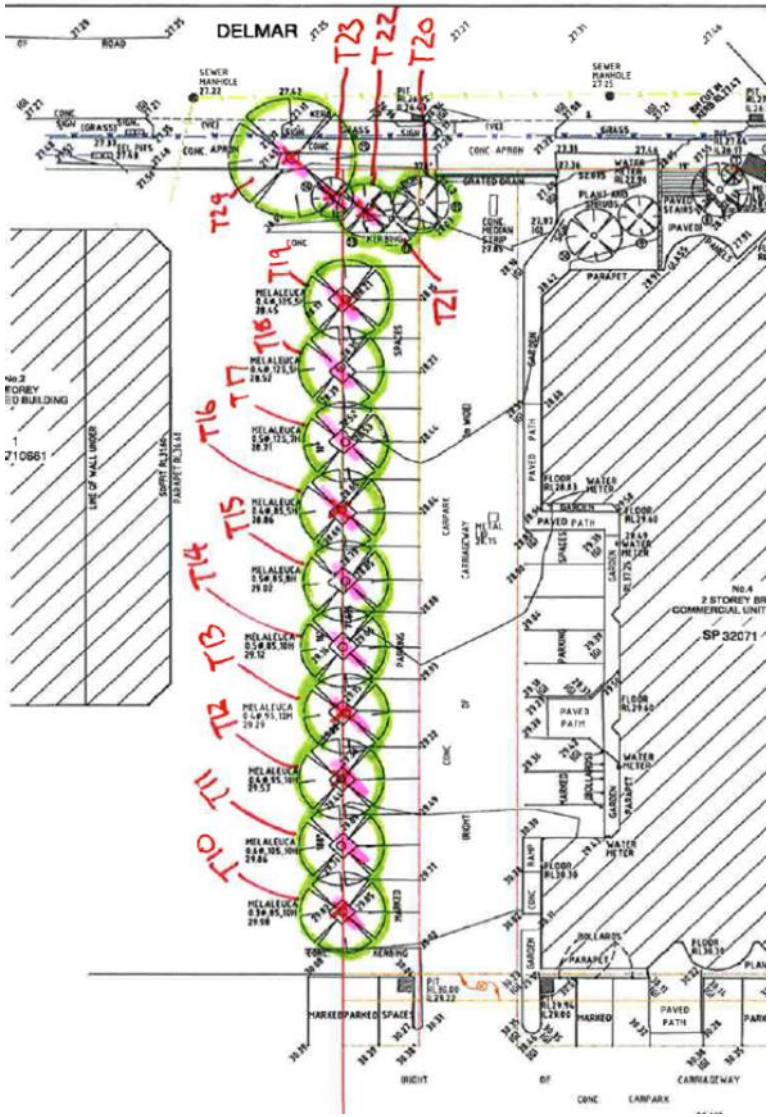
7.3 Figure 3 – Detailed Survey



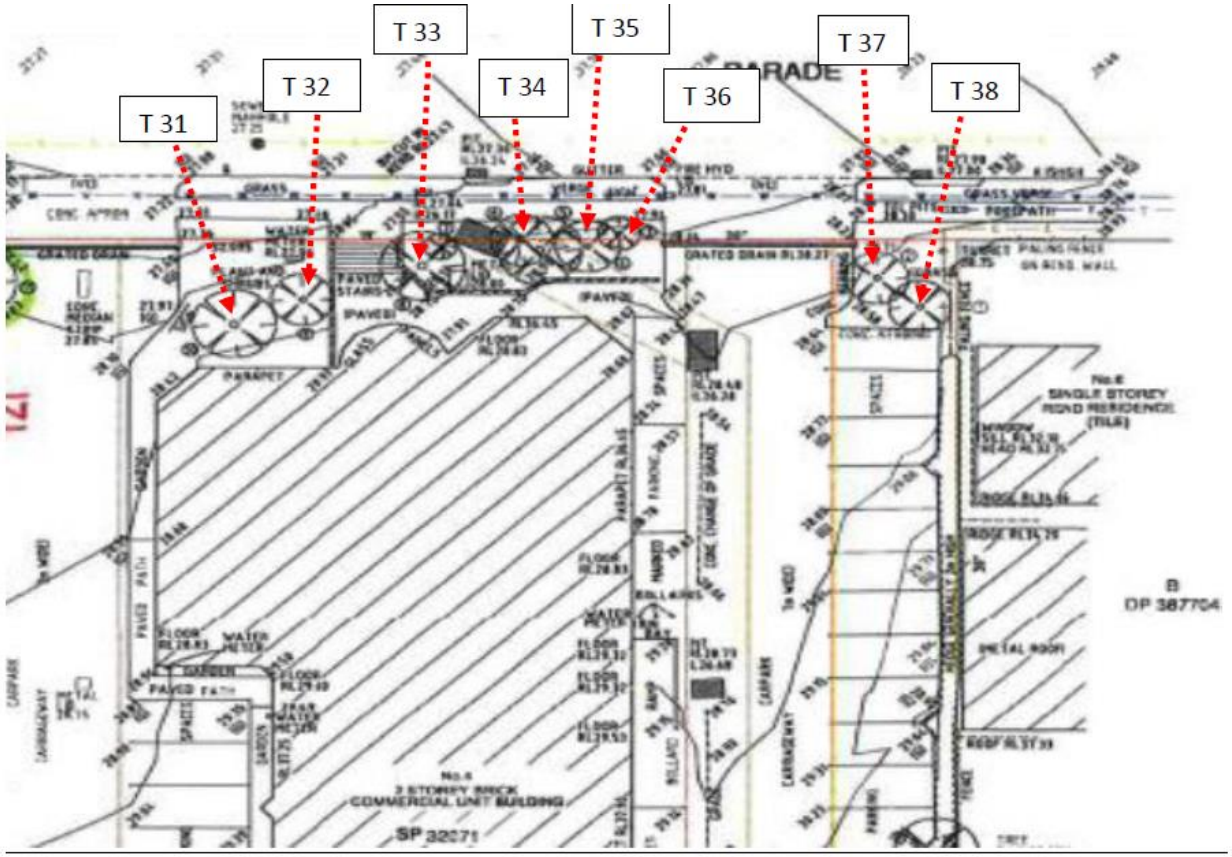
7.4 Figure 4 – From Report 968 – August 2020.



7.5 Figure 5. From Report 968 – August 2020.

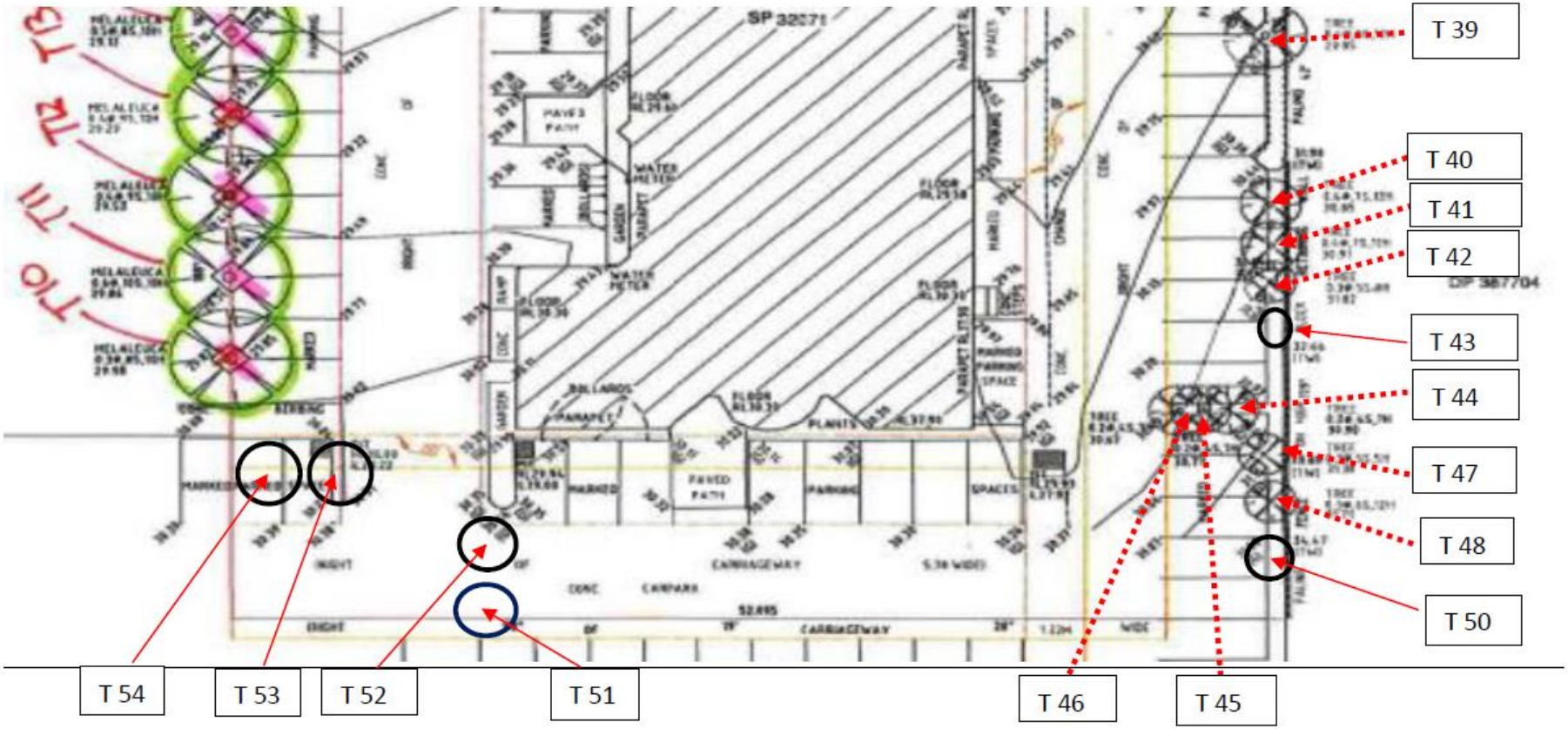


7.6 Figure 6 From Report 968 – August 2020.



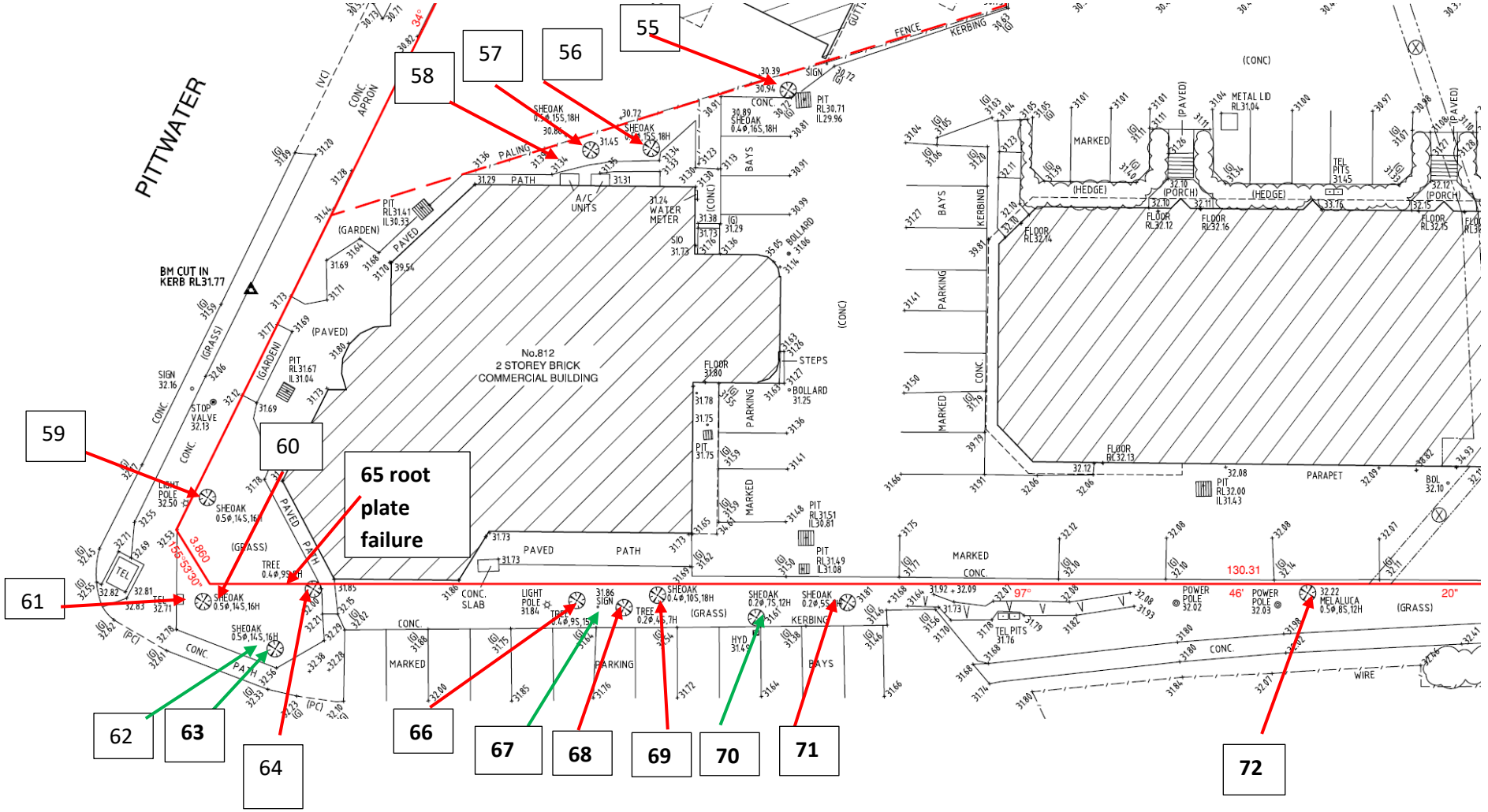
Trees 31 to tree 38

7.7 Figure 7. From Report 968 – August 2020.

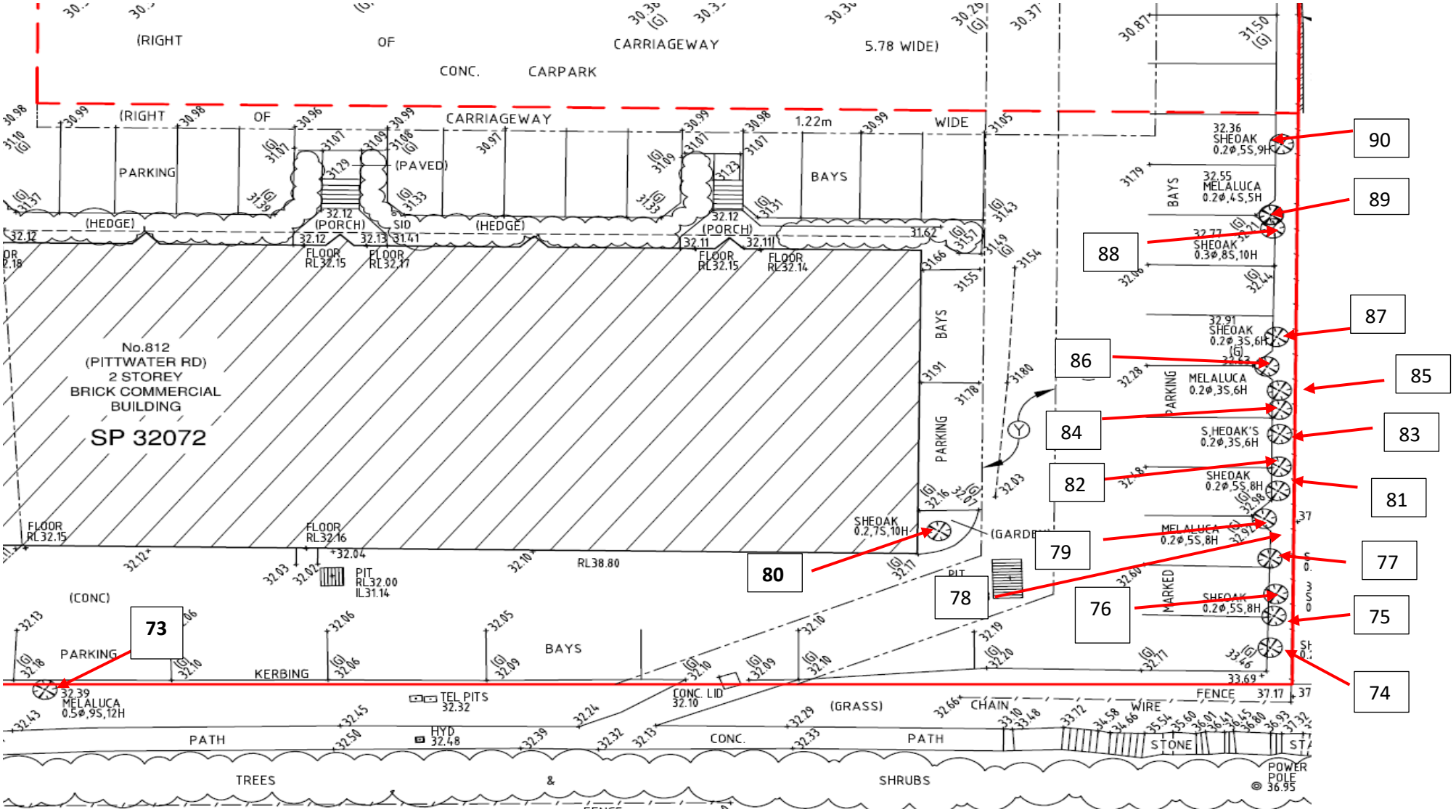


Trees 39 to tree 54

7.8 Figure 7.8– Detail B of Survey - green arrows are for trees to be preserved.

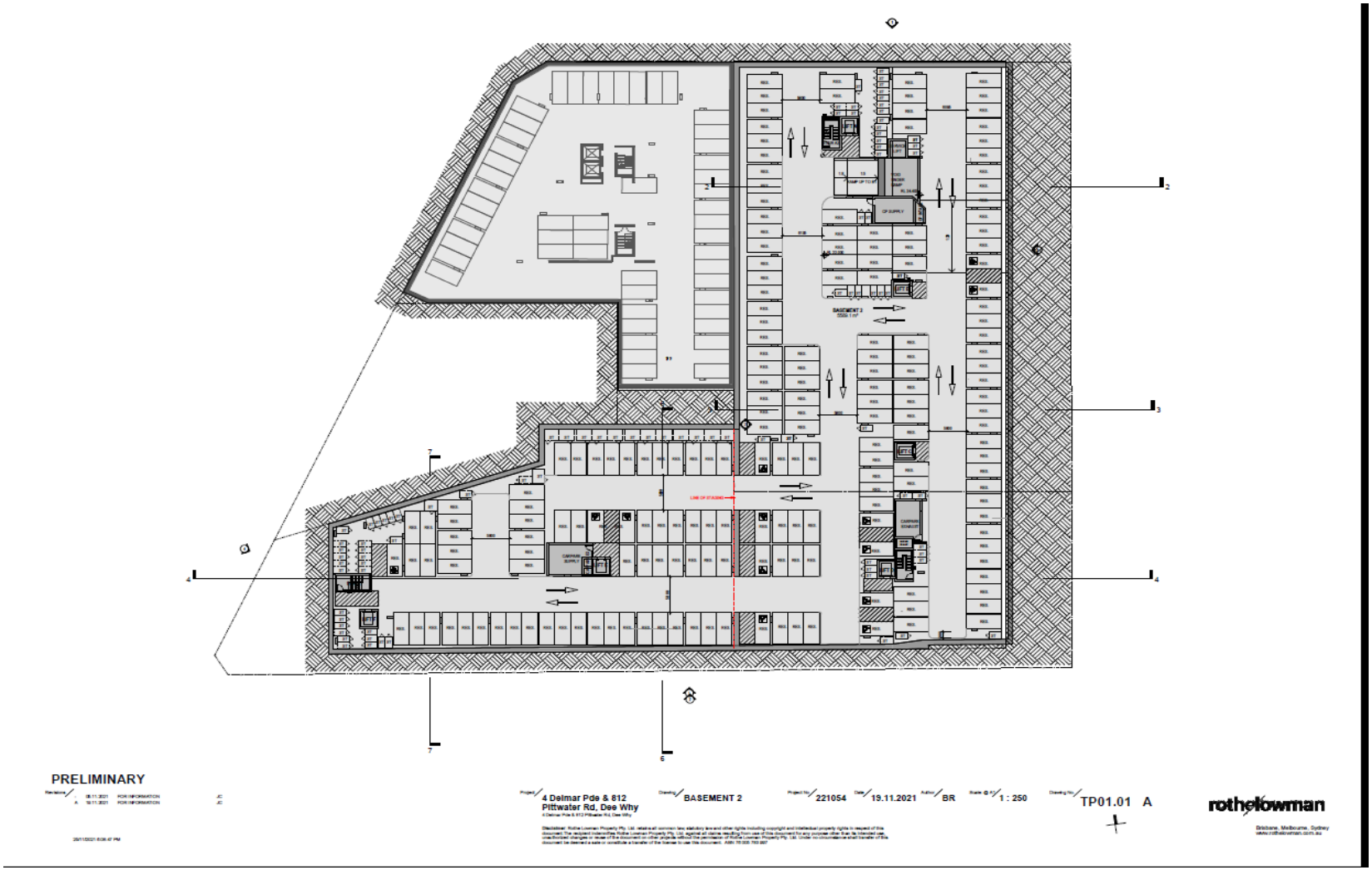


7.9 Figure 7.9 - – Detail C of Survey

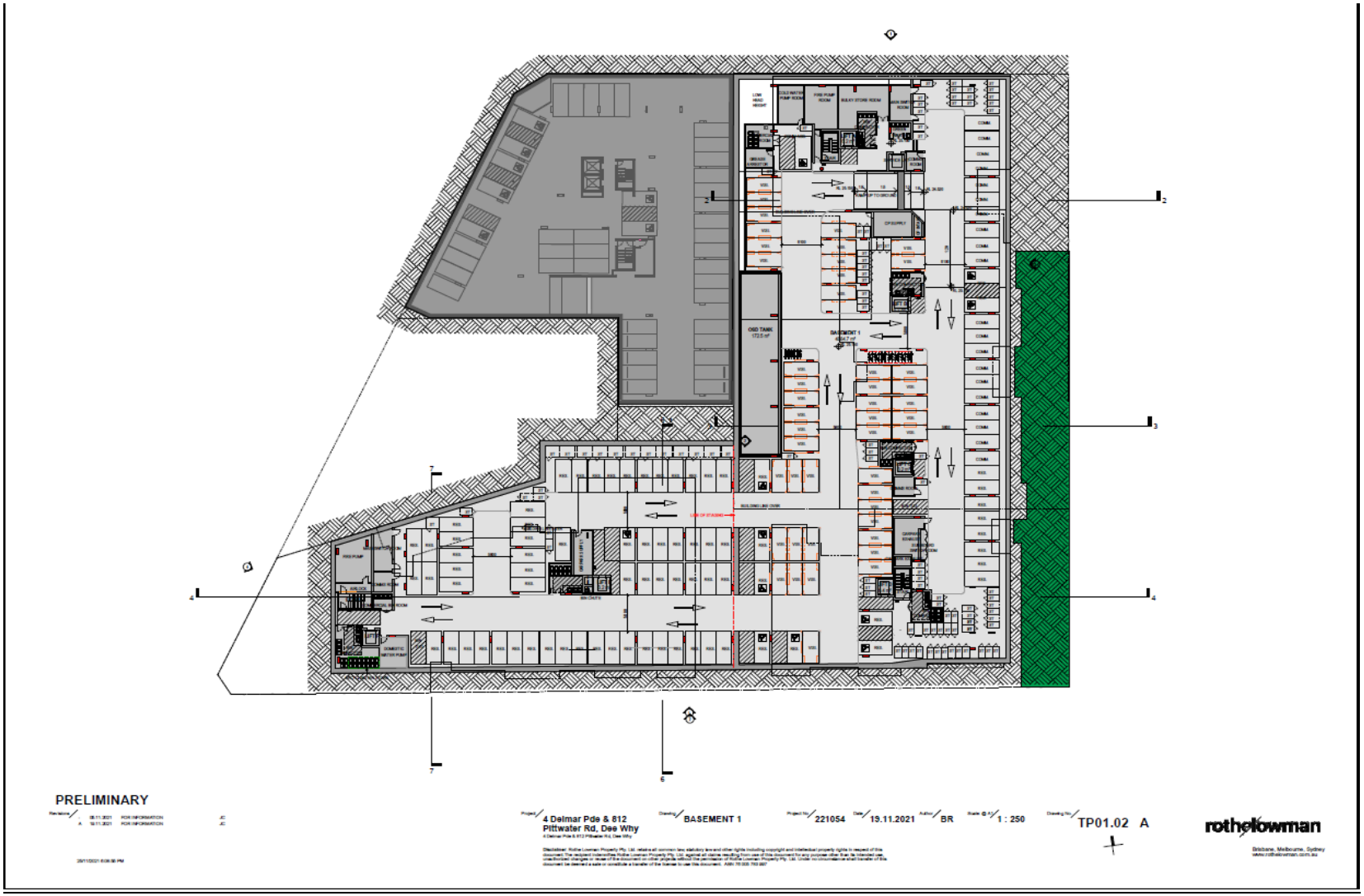


8 Site Plans

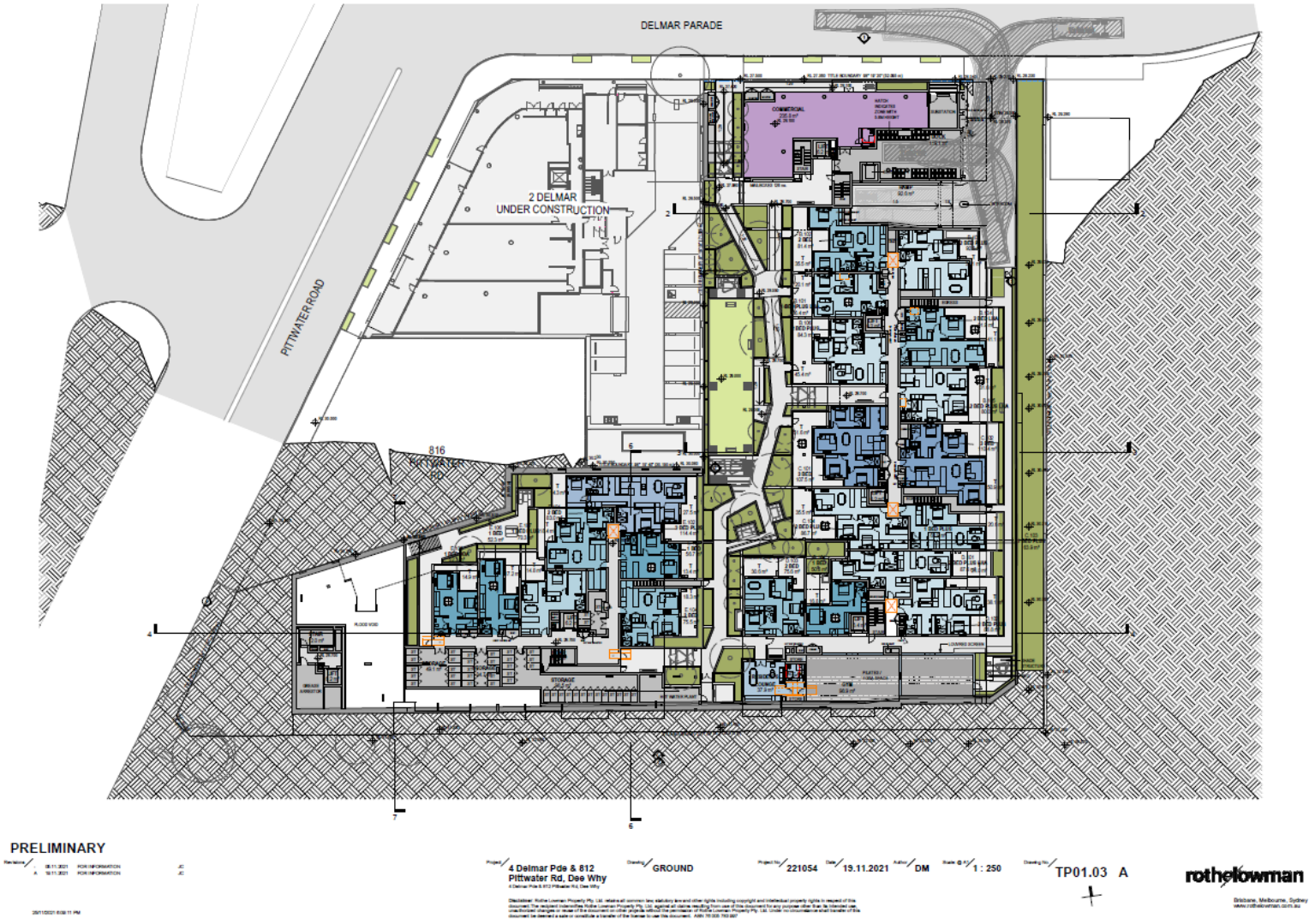
8.1 Figure 8.1 – 4 Delmar Parade & 812 Pittwater Rd – Basement 2 – Drawing TP 01.01A Revision A – Preliminary. Dated 6.08 pm 25/11/2021



8.2 Figure 8.2 – 4 Delmar Parade & 812 Pittwater Rd – Basement 1 – Drawing TP 01.02A Revision A – Preliminary. Dated 6.08 pm 25/11/2021



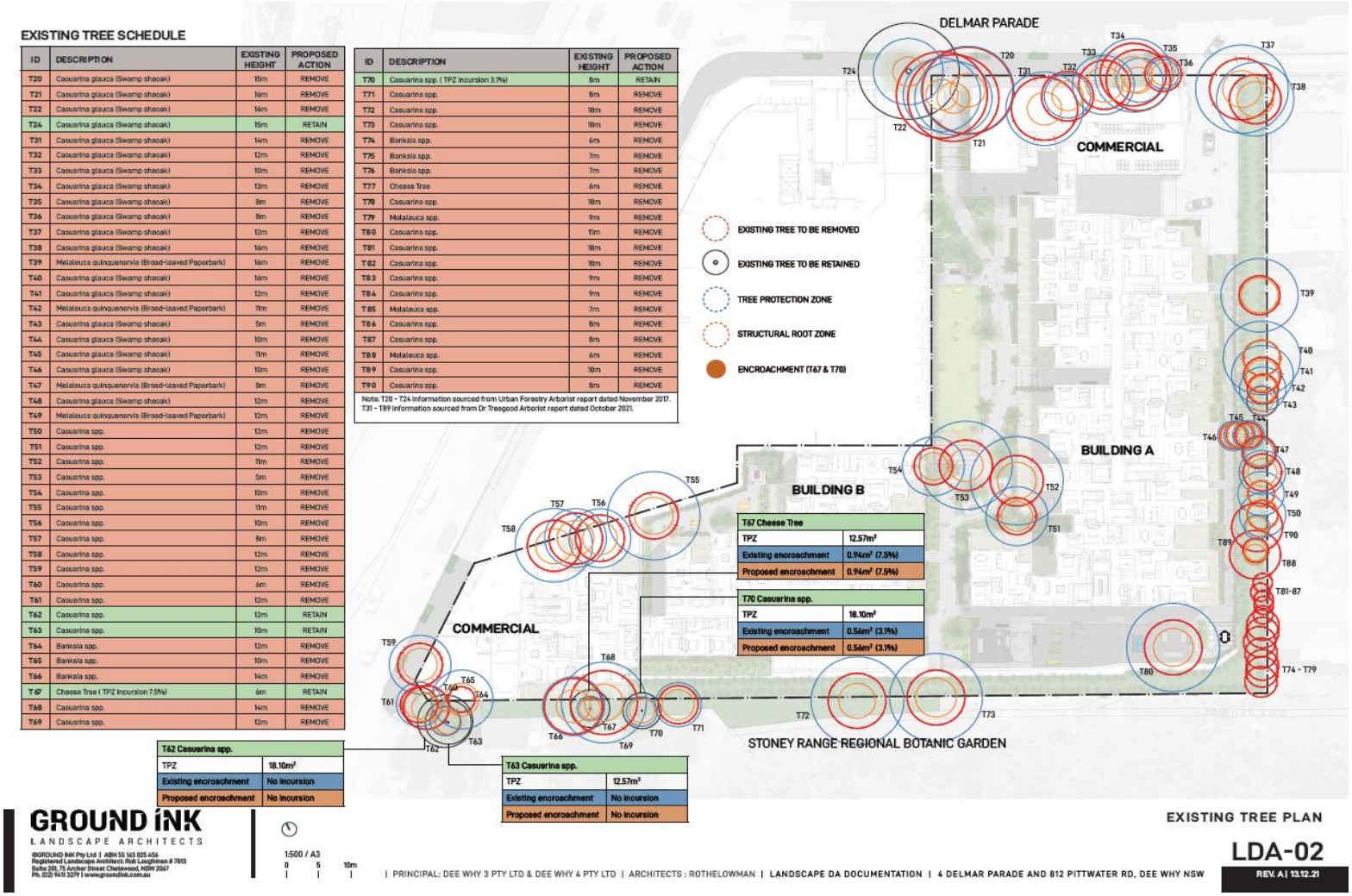
8.3 Figure 8.3 – 4 Delmar Parade & 812 Pittwater Rd – Ground Floor – Drawing TP 01.03A Revision A – Preliminary. Dated 6.08 pm 25/11/2021



8.4 Figure 8.4 4 4 Delmar Parade & 812 Pittwater Rd – Level 1 – Drawing TP 01.04A Revision A – Preliminary. Dated 6.08 pm 25/11/2021

9 Landscape Plan

9.1 Existing Tree Plan – Drawing LDA-02 – Rev A - Dated 13/12/2021



ID	DESCRIPTION	EXISTING HEIGHT	PROPOSED ACTION
T20	Casuarina glauca (Swamp sheoak)	15m	REMOVE
T21	Casuarina glauca (Swamp sheoak)	14m	REMOVE
T22	Casuarina glauca (Swamp sheoak)	14m	REMOVE
T24	Casuarina glauca (Swamp sheoak)	15m	RETAIN
T31	Casuarina glauca (Swamp sheoak)	14m	REMOVE
T32	Casuarina glauca (Swamp sheoak)	12m	REMOVE
T33	Casuarina glauca (Swamp sheoak)	10m	REMOVE
T34	Casuarina glauca (Swamp sheoak)	13m	REMOVE
T35	Casuarina glauca (Swamp sheoak)	8m	REMOVE
T36	Casuarina glauca (Swamp sheoak)	8m	REMOVE
T37	Casuarina glauca (Swamp sheoak)	12m	REMOVE
T38	Casuarina glauca (Swamp sheoak)	14m	REMOVE
T39	Melaleuca quinquenervia (Broad-leaved Paperbark)	14m	REMOVE
T40	Casuarina glauca (Swamp sheoak)	14m	REMOVE
T41	Casuarina glauca (Swamp sheoak)	12m	REMOVE
T42	Melaleuca quinquenervia (Broad-leaved Paperbark)	11m	REMOVE
T43	Casuarina glauca (Swamp sheoak)	5m	REMOVE
T44	Casuarina glauca (Swamp sheoak)	10m	REMOVE
T45	Casuarina glauca (Swamp sheoak)	11m	REMOVE
T46	Casuarina glauca (Swamp sheoak)	10m	REMOVE
T47	Melaleuca quinquenervia (Broad-leaved Paperbark)	8m	REMOVE
T48	Casuarina glauca (Swamp sheoak)	12m	REMOVE
T49	Melaleuca quinquenervia (Broad-leaved Paperbark)	12m	REMOVE
T50	Casuarina spp.	12m	REMOVE
T51	Casuarina spp.	12m	REMOVE
T52	Casuarina spp.	11m	REMOVE
T53	Casuarina spp.	5m	REMOVE
T54	Casuarina spp.	10m	REMOVE
T55	Casuarina spp.	11m	REMOVE
T56	Casuarina spp.	10m	REMOVE
T57	Casuarina spp.	8m	REMOVE
T58	Casuarina spp.	12m	REMOVE
T59	Casuarina spp.	12m	REMOVE
T60	Casuarina spp.	6m	REMOVE
T61	Casuarina spp.	12m	REMOVE
T62	Casuarina spp.	12m	RETAIN
T63	Casuarina spp.	10m	RETAIN
T64	Banksia spp.	12m	REMOVE
T65	Banksia spp.	10m	REMOVE
T66	Banksia spp.	14m	REMOVE
T67	Cheese Tree (TPZ incursion 7.5%)	6m	RETAIN
T68	Casuarina spp.	14m	REMOVE
T69	Casuarina spp.	12m	REMOVE

ID	DESCRIPTION	EXISTING HEIGHT	PROPOSED ACTION
T70	Casuarina spp. (TPZ incursion 3.1%)	8m	RETAIN
T71	Casuarina spp.	8m	REMOVE
T72	Casuarina spp.	10m	REMOVE
T73	Casuarina spp.	10m	REMOVE
T74	Banksia spp.	6m	REMOVE
T75	Banksia spp.	7m	REMOVE
T76	Banksia spp.	7m	REMOVE
T77	Cheese Tree	6m	REMOVE
T78	Casuarina spp.	10m	REMOVE
T79	Melaleuca spp.	9m	REMOVE
T80	Casuarina spp.	11m	REMOVE
T81	Casuarina spp.	10m	REMOVE
T82	Casuarina spp.	10m	REMOVE
T83	Casuarina spp.	9m	REMOVE
T84	Casuarina spp.	9m	REMOVE
T85	Melaleuca spp.	7m	REMOVE
T86	Casuarina spp.	8m	REMOVE
T87	Casuarina spp.	8m	REMOVE
T88	Melaleuca spp.	6m	REMOVE
T89	Casuarina spp.	10m	REMOVE
T90	Casuarina spp.	8m	REMOVE

Note: T20 - T24 information sourced from Urban Forestry Arborist report dated November 2017.
T31 - T89 information sourced from Dr Treegood Arborist report dated October 2021.

10 Tree Assessment Survey Sheets

10.1 Tree Assessment- Trees 20 and 21

1.0 Tree Assessment Survey Sheet

Client: WillowFrank
Job: 65488
Page number: 5
Version: 0.1

Location : 4 Delmar Parade Dee Why **Weather: Fine 16/11/2021**

Tree #	Species Botanical name Common name	Trunk Diameter @1.4m	Trunk Diameter (buttress)	Height MT	Width MT	Age	TPZ SRZ	Health 1 = Poor 5 = Excel	Structure 1 = Poor 5 = Excel	Canopy Cover %	Crown Class	SULE	Tree Surgery	Suitability for Preservation	Comments
20	Casuarina	50 cm	70 cm	12	6	M	6.00 2.80	5	2	75%	D	Sh		MODERATE	Swelling at 4 metres (inclusion) Major trunk swelling at 3 metres (inclusion **Could not get to base of tree due to Tree Protection fencing
21	Casuarina	30 cm	50 cm	12	6	M	3.60 2.5	5	5	60%	C	L		HIGH	

Tree surgery:
1. Deadwood. **2**. Reshape Crown. **3**. Wound repair. **4**. Insect control. **5** Improve soil conditions (mulch, fertility, aeration etc).
6.Investigate cavities. **7**.Thin crown, consider installation of cabling/bracing and or retain and fence off for public safety.
8.Line clearance of structures or service wires. **9**. Remove attached plant.**10**.Root girdling. **11** Remove. **12**. No tree surgery required.
13. Requires tree protection measures. *Refer to accompanying report. **14**. Borer damage. **15**.Fungal or bacterial damage. **16**. Monitor.

Age classification:

Y - Young
SM - Semi Mature
M - Mature
OM - Overmature

Crown Class

D - Dominant
C- CoDominant
I - Intermediate
S- Suppressed

SULE
L = Long
M = Medium
Sh = Short
R = Remove
Sm = Small
U = Unstable

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10.2 Tree Assessment – Trees 31 to 40

1.0 Tree Assessment Survey Sheet

Client: Landmark Group Australia
Job: 64177
Page number: 1/3

Location : 4 Delmar Parade Dee Why NSW 2099 **Weather:**

Tree #	Species Botanical name Common name	Trunk Diameter @1.4m	Trunk Diameter (buttress)	Height	Width	Age	TPZ SRZ	Health 1 = Poor 5 = Excel	Structure 1 = Poor 5 = Excel	Canopy Cover %	Crown Class	Tree Surgery	Suitability for Preservation	Comments
31	Casuarina Glauca	50	60cm	14	6 by 10	M	6m 2.67	5	4	40%	D		Moderate	4 way trunk union at 8 meters possibly lopped at 8 m, one side canopy
32	Casuarina Glauca	30	50cm	12	8 by 6	M	3.6 2.42	5	4	45%	C		Moderate	2 x leaders removed at 7 meters
33	Casuarina Glauca	40	70cm	16	8 by 8	M	4.8 2.85	5	4	55%	D		High	Limited canopy on south side
34	Casuarina Glauca	45	75cm	13	10 by 8	M	6 2.95	5	3	60%	C		Low	Limited canopy on south side Inclusion at 5 meters
35	Casuarina Glauca	15,10 10,15	35cm	8	10 by 6	M	3.6 2.13	5	2	80%	I	11	Low	Trunk wound and cavity at 2 meters Inclusion at base
36	Casuarina Glauca	20	25cm	8	4 by 6	M	2.4 1.85	5	3	40%	I		Low	
37	Casuarina Glauca	50	80cm	12	8 by 10	M	7.2 3.01	5	2	70%	C		Low	Inclusions at 3 meters, major inclusion at 7 meters with major reaction wood around inclusion
38	Casuarina Glauca	50	70cm	16	8 by 8	M	6 2.85	5	3	70%	D		Moderate	Inclusion at 8 meters
39	Melaleuca quinquenervia	30,30 25,20	70cm	8	7 by 7	M	6 2.85	5	4	90%	D		High	
40	Casuarina Glauca	50	70cm	14	6 by 6	M	6 2.93	5	5	75%	D		High	Impacting on kerb and gutter and growing hard against wall

Tree surgery:
1. Deadwood**. 2**. Reshape Crown. **3**. Wound repair. **4**. Insect control. **5** Improve soil conditions (mulch, fertility, aeration etc).
6.Investigate cavities. **7**.Thin crown, consider installation of cabling/bracing and or retain and fence off for public safety.
8.Line clearance of structures or service wires. **9**. Remove attached plant.**10**.Root girdling. **11** Remove. **12**. No tree surgery required.
13. Requires tree protection measures. *Refer to accompanying report. **14**. Borer damage. **15**.Fungal or bacterial damage. **16**. Monitor.

Age classification:

Y - Young
SM - Semi Mature
M - Mature
OM - Overmature

Crown Class

D - Dominant
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10.3 Tree Assessment - Trees 41 to 50

1.0 Tree Assessment Survey Sheet

Client: 4 Delmar Parade Dee Why NSW 2099
Job: 64177
Page number: 2/3

Location : 4 Delmar Parade Dee Why NSW 2099 **Weather:**

Tree #	Species Botanical name Common name	Trunk Diameter @1.4m	Trunk Diameter (buttress)	Height	Width	Age	TPZ SRZ	Health 1 = Poor 5 = Excel	Structure 1 = Poor 5 = Excel	Canopy Cover %	Crown Class	Tree Surgery	Suitability for Preservation	Comments
41	Casuarina Glauca	35	55cm	12	6	M	4.8 2.57	4	3	25%	C		Low	Inclusion at 3 meters,with stain to bark above union, possible fungal / virus infection
42	Melaleuca quinquenervia	25	35cm	11	6 4	M	3.6 2.13	5	2	30%	C		Low	Inclusion at 4 meters
44	Casuarina Glauca	15	20cm	10	2	M	2.4 1.68	4	3	10%	C	10	Low	Growing in shallow garden bed Major exposed roots
45	Casuarina Glauca	20	30cm	11	4	M	2.4 2	3	3	15%	D	10	Low	Growing in shallow garden bed Major exposed roots
46	Casuarina Glauca	20	30cm	10	4	M	2.4 2	3	3	25%	C	10	Low	Growing in shallow garden bed Major exposed roots
43	Casuarina Glauca	15	20cm	5	2	M	2.4 1.68	4	3	30%	I	9	Low	Has been lopped at 2 meters
47	Paper Bark Melaleuca	15 15	35cm	8	4 by 2	M	2.4 2.13	5	2	70%	I	11	Moderate	Trunk inclusion, rubbing and crossing trunks
48	Casuarina Glauca	30	40cm	12	4 by 4	M	3.6 2.25	5	4	40%	C		Moderate	
49	Melaleuca quinquenervia	25	35cm	8	4 by 2	M	3.6 2.13	5	4	40%	C		Moderate	Limited canopy cover
50	Casuarina Glauca	30	50cm	12	4 by 4	M	3.6 2.47	4	3	40%	D		Low	Tip die back, trunk inclusion at 6 meters

Tree surgery:

1. Deadwood. **2**. Reshape Crown. **3**. Wound repair. **4**. Insect control. **5** Improve soil conditions (mulch, fertility, aeration etc).
6.Investigate cavities. **7**.Thin crown, consider installation of cabling/bracing and or retain and fence off for public safety.
8.Line clearance of structures or service wires. **9**. Remove attached plant.**10**.Root girdling. **11** Remove. **12**. No tree surgery required.
13. Requires tree protection measures. *Refer to accompanying report. **14**. Borer damage. **15**.Fungal or bacterial damage. **16**. Monitor.

Age classification:

Y - Young
SM - Semi Mature
M - Mature
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Crown Class

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C- CoDominant
I - Intermediate
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SULE

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10.4 Tree Assessment Trees 51 to 54

1.0 Tree Assessment Survey Sheet

Client: Landmark Group Australia
Job: 64177
Page number: 3/3

Location : 4 Delmar Parade Dee Why NSW 2099 **Weather:**

Tree #	Species Botanical name Common name	Trunk Diameter @1.4m	Trunk Diameter (buttress)	Height	Width	Age	TPZ SRZ	Health 1 = Poor 5 = Excel	Structure 1 = Poor 5 = Excel	Canopy Cover %	Crown Class	Tree Surgery	Suitability for Preservation	Comments
51	Casuarina Glauca	30 30	48cm	12	6 6	M	4.8 2.43	5	3	85%	C		Moderate	Trunk inclusion at base Branches fused together at 4 metres
52	Casuarina Glauca	40 40	72cm	12	6 by 8	M	7.2 3.01	5	4	65%	D	10	Moderate	Surface root growing hard against structure
53	Casuarina Glauca	60	70cm	12	8 6	M	7.2 2.67	5	5	90%	C		Moderate	Trunk inclusions at 1.4 metres
54	Casuarina Glauca	35	40cm	12	6 by 6	M	4.8 2.25	5	5	80%	C		Moderate	

Tree surgery:
1. Deadwood. **2**. Reshape Crown. **3**. Wound repair. **4**. Insect control. **5** Improve soil conditions (mulch, fertility, aeration etc).
6.Investigate cavities. **7**.Thin crown, consider installation of cabling/bracing and or retain and fence off for public safety.
8.Line clearance of structures or service wires. **9**. Remove attached plant.**10**.Root girdling. **11** Remove. **12**. No tree surgery required.
13. Requires tree protection measures. *Refer to accompanying report. **14**. Borer damage. **15**.Fungal or bacterial damage. **16**. Monitor.

Age classification:
Y - Young
SM - Semi Mature
M - Mature
OM - Overmature

Crown Class
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C- CoDominant
I - Intermediate
S- Suppressed

SULE
L = Long
M = Medium
Sh = Short
R = Remove
Sm = Small
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10.5 Tree Assessment Trees 55 to 64

1.0 Tree Assessment Survey Sheet

Client: Landmark Australia
Job: 65173
Page number: 1/4
Version: 0.3

Location : 4 Delmar Pde & 812 Pittwater Rd Dee Why **Weather: 19/7/2021 Fine**

Tree #	Species Botanical name Common name	Trunk Diameter @1.4m	Trunk Diameter (buttress)	Height mt	Width mt	Age	TPZ SRZ	Health 1 = Poor 5 = Excel	Structure 1 = Poor 5 = Excel	Canopy Cover %	Crown Class	SULE	Tree Surgery	Suitability for Preservation	Comments
55	Casuarina	60	80	12	8	M	7.20 3.01	5	5	60%	D	M		HIGH	Large amount of surface roots which damage kerbing
56	Casuarina	40	60	12	6	M	4.80 2.67	5	4	55%	C	M		HIGH	
57	Casuarina	40	70	12	4 by 8	M	4.80 2.85	5	3	40%	C	SH		MODERATE	Inclusion at 6 plus metres Swelling around inclusion
58	Casuarina	50	70	12	10	M	6.00 2.85	5	3	60%	D	SH		MODERATE	Mild trunk inclusion at 6 metres No south canopy due to building
59	Casuarina	40	60	12	6	M	4.80 2.67	5	3	30%	D	SH		MODERATE	Trunk inclusion at 6 metres and 7 metres Misshapen canopy
60	Casuarina	8	10	6	1 by 2	SM	9.60 1.50	5	4	10%	I	SH		LOW	Trunk inclusions at 4 metres and 6 metres
61	Casuarina	30	40	12	4	M	3.60 2.25	5	3	85%	D	SH		MODERATE	Trunk inclusion at 7.5 metres
62	Casuarina	20	40	12	6	M	2.40 2.25	5	3	85%	D	SH	4	MODERATE	Inclusion at 8 metres with swelling
63	Casuarina	15	30	10	4 by 6	M	2.00 2.00	5		50%	C	SH	4,8	LOW	
64	Banksia	40	60	12	4	OM	4.80 2.67	4	1	35%	D	SH	11	LOW	Misshapen canopy from building clearance Major trunk wound with cavities

Tree surgery:
1. Deadwood. **2**. Reshape Crown. **3**. Wound repair. **4**. Insect control. **5** Improve soil conditions (mulch, fertility, aeration etc).
6.Investigate cavities. **7**.Thin crown, consider installation of cabling/bracing and or retain and fence off for public safety.
8.Line clearance of structures or service wires. **9**. Remove attached plant.**10**.Root girdling. **11** Remove. **12**. No tree surgery required.
13. Requires tree protection measures. *Refer to accompanying report. **14**. Borer damage. **15**.Fungal or bacterial damage. **16**. Monitor.

Age classification:
Y - Young
SM - Semi Mature
M - Mature
OM - Overmature

Crown Class
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C- CoDominant
I - Intermediate
S- Suppressed

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R = Remove
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10.6 Tree Assessment Trees 65 to 74

1.0 Tree Assessment Survey Sheet

Client: Landmark Australia
Job: 65173
Page number: 2/4
Version: 0.3

Location : 4 Delmar Pde & 812 Pittwater Rd Dee Why **Weather: 19/7/2021 Fine**

Tree #	Species Botanical name Common name	Trunk Diameter @1.4m	Trunk Diameter (buttress)	Height mt	Width mt	Age	TPZ SRZ	Health 1 = Poor 5 = Excel	Structure 1 = Poor 5 = Excel	Canopy Cover %	Crown Class	SULE	Tree Surgery	Suitability for Preservation	Comments
65	Banksia	30	70	10	4	OM	3.60 2.85	4	0	20%	S	R	11	LOW	Root plate failure
66	Banksia	40	60	14	8 by 6	M	4.80 2.67	5	4	40%	C	L		MODERATE	Limited lower canopy
67	Cheese tree	15	20	6	6 by 4	SM	2.00 1.68	3	3	40%	I	L		MODERATE	Trunk/branch inclusion at 2 and 2 1/2metres 70% canopy cover in top 30% of tree
68	Casuarina	55	80	14		M	6.60 3.01	5	3	60%	D	Sh		LOW	Trunk inclusion at 7 metres with swelling around union Unknown structure of trunk union
69	Casuarina	50	60	12		M	6.00 2.67	5	3	50%	D	M	7,3	HIGH	Storm damage at 10 metre mark Inclusion with swelling at 8 metres
70	Casuarina	7 x 10 cm	30	8	4 by 6	M	2.40 2.00	5	3	50%	C	R	11	LOW	Coppicing - epicormic growth from old growth
71	Casuarina	30	50	8	4 by 6	M	3.60 2.47	5	4	90%	C	SH		MODERATE	Inclusion at 6 metres
72	Melaleuca armillaris	15,20 50	70	10	6	M	7.20 2.85	5	3	35%	D	SH		LOW	One-sided canopy due to heavy power line clearing
73	Melaleuca armillaris	40,40	90	10	10 by 6	M	7.20 3.17	5	4	50%	D	SH	8	MODERATE	One-sided canopy due to power line clearing
74	Casuarina	20		6	2	M		5	3	5%	C	SH		LOW	Have been lopped Trunk inclusion at 3 metres

Tree surgery:
1. Deadwood. **2**. Reshape Crown. **3**. Wound repair. **4**. Insect control. **5** Improve soil conditions (mulch, fertility, aeration etc).
6.Investigate cavities. **7**.Thin crown, consider installation of cabling/bracing and or retain and fence off for public safety.
8.Line clearance of structures or service wires. **9**. Remove attached plant.**10**.Root girdling. **11** Remove. **12**. No tree surgery required.
13. Requires tree protection measures. *Refer to accompanying report. **14**. Borer damage. **15**.Fungal or bacterial damage. **16**. Monitor.

Age classification:

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Crown Class

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SULE
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10.7 Tree Assessment Trees 75 to 84

1.0 Tree Assessment Survey Sheet

Client: Landmark Australia
Job: 65173
Page number: 3/4
Version: 0.3

Location : 4 Delmar Pde & 812 Pittwater Rd Dee Why **Weather: 19/7/2021 Fine**

Tree #	Species Botanical name Common name	Trunk Diameter @1.4m	Trunk Diameter (buttress)	Height mt	Width mt	Age	TPZ SRZ	Health 1 = Poor 5 = Excel	Structure 1 = Poor 5 = Excel	Canopy Cover %	Crown Class	SULE	Tree Surgery	Suitability for Preservation	Comments
75	Casuarina	20		7	1	M		5	4	5%	C	SH	11	LOW	Has been lopped at 7 metres
76	Casuarina	20		7	1	M		5	4	5%	C	SH	11	LOW	Has been lopped at 7 metres
77	Casuarina	15		6	1	M		5	4	5%	C	SH	11	LOW	Has been lopped at 6 metres
78	Casuarina	10		10	6 x 2	M		5	3	10%	C	SH	11	LOW	Growing out of rock face Ficus vine growing on trunk
79	Melaleuca	15,15	25	9	4	M	2.40 1.85	5	3	20%	C	SH		LOW	Trunk inclusion at 1.4 metres
80	Casuarina	60	85	11	9 x 6	M	7.20 3.09	5	3	35%	D	SH		MODERATE	One-sided canopy due to building clarance for canopy Epicormic growth in canopy Old wounds with limited closure
81	Casuarina	15	20	10	2	M	2.00 1.68	4	4	35%	C	SH		LOW	One-sided canopy
82	Casuarina	20	25	10	5	M	2.00 1.85	5	4	30%	C	SH		MODERATE	Inclusion at 8 metres
83	Casuarina	15	20	9	4 x 2	M	2.00 1.68	4	5	15%	C	SH		LOW	All canopy in top 30% of tree
84	Casuarina	15	20	9	2	M	2.00 1.68	4	5	35%	C	SH		LOW	

Tree surgery:
1. Deadwood. **2**. Reshape Crown. **3**. Wound repair. **4**. Insect control. **5** Improve soil conditions (mulch, fertility, aeration etc).
6.Investigate cavities. **7**.Thin crown, consider installation of cabling/bracing and or retain and fence off for public safety.
8.Line clearance of structures or service wires. **9**. Remove attached plant.**10**.Root girdling. **11** Remove. **12**. No tree surgery required.
13. Requires tree protection measures. *Refer to accompanying report. **14**. Borer damage. **15**.Fungal or bacterial damage. **16**. Monitor.

Age classification:

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10.8 Tree Assessment Trees 85 to 89

1.0 Tree Assessment Survey Sheet

Client: Landmark Australia
Job: 65173
Page number: 4/4
Version: 0.3

Location : 4 Delmar Pde & 812 Pittwater Rd Dee Why **Weather: 19/7/2021 Fine**

Tree #	Species Botanical name Common name	Trunk Diameter @1.4m	Trunk Diameter (buttress)	Height mt	Width mt	Age	TPZ SRZ	Health 1 = Poor 5 = Excel	Structure 1 = Poor 5 = Excel	Canopy Cover %	Crown Class	SULE	Tree Surgery	Suitability for Preservation	Comments
85	Melaleuca Paperbark	15	20	7	2	M	2.00 1.68	5	4	45%	I	SH		LOW	One-sided canopy
86	Casuarina	15	20	8	2	M	2.00 1.68	5	5	40%	D	SH		MODERATE	
87	Casuarina	25	40	8	6	M	3.60 2.25	5	4	40%	D	SH		MODERATE	3-way trunk union at 6 metres Trunk wound on trunk
88	Melaleuca	15,15	20	6	4	M	2.40 1.68	5	3	65%	I	SH		MODERATE	Trunk inclusion at 2 metres
89	Casuarina	15	20	10	2	M	2.00 1.68	5	4	40%	C	SH		LOW	3-way trunk union at 8 metres

Tree surgery:
1. Deadwood. **2**. Reshape Crown. **3**. Wound repair. **4**. Insect control. **5** Improve soil conditions (mulch, fertility, aeration etc).
6.Investigate cavities. **7**.Thin crown, consider installation of cabling/bracing and or retain and fence off for public safety.
8.Line clearance of structures or service wires. **9**. Remove attached plant.**10**.Root girdling. **11** Remove. **12**. No tree surgery required.
13. Requires tree protection measures. *Refer to accompanying report. **14**. Borer damage. **15**.Fungal or bacterial damage. **16**. Monitor.

Age classification:

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11 Photos

PHOTO 1

Tree 55 - Casuarina - has impacted concrete kerb

PHOTO 2

Trees 58 -has trunk inclusions at 6.5 metre mark and Tree 57 has trunk inclusions at 6 metre

PHOTO 3

Tree 59 - Casuarina - has major branch inclusions

PHOTO 4

Trees 60 - Casuarina

Tree 61 - Casuarina

PHOTO 5

Trees 62 and 63 Casuarina - growing on council land

PHOTO 6

Tree 64 – has major cavity extending up the trunk from the base of the tree. Major structural issue.

PHOTO 7

Tree 65 – Root plate failure

Tree 64 – Major cambium damage on trunk.

PHOTO 8

Photo 66 – Banksia with limited lower canopy

PHOTO 9

Tree 67 – Cheese tree suppressed by surrounding trees .

PHOTO 10

Tree 68 – Trunk inclusion at 7 metre mark

PHOTO 11

Tree 68 – Trunk inclusion at 7 metre mark

PHOTO 12

Tree 69 – Swelling around branch inclusion

PHOTO 13

Tree 71 – bend in trunk

PHOTO 14

Tree 72 – Melaleuca – misshapen canopy

PHOTO 15

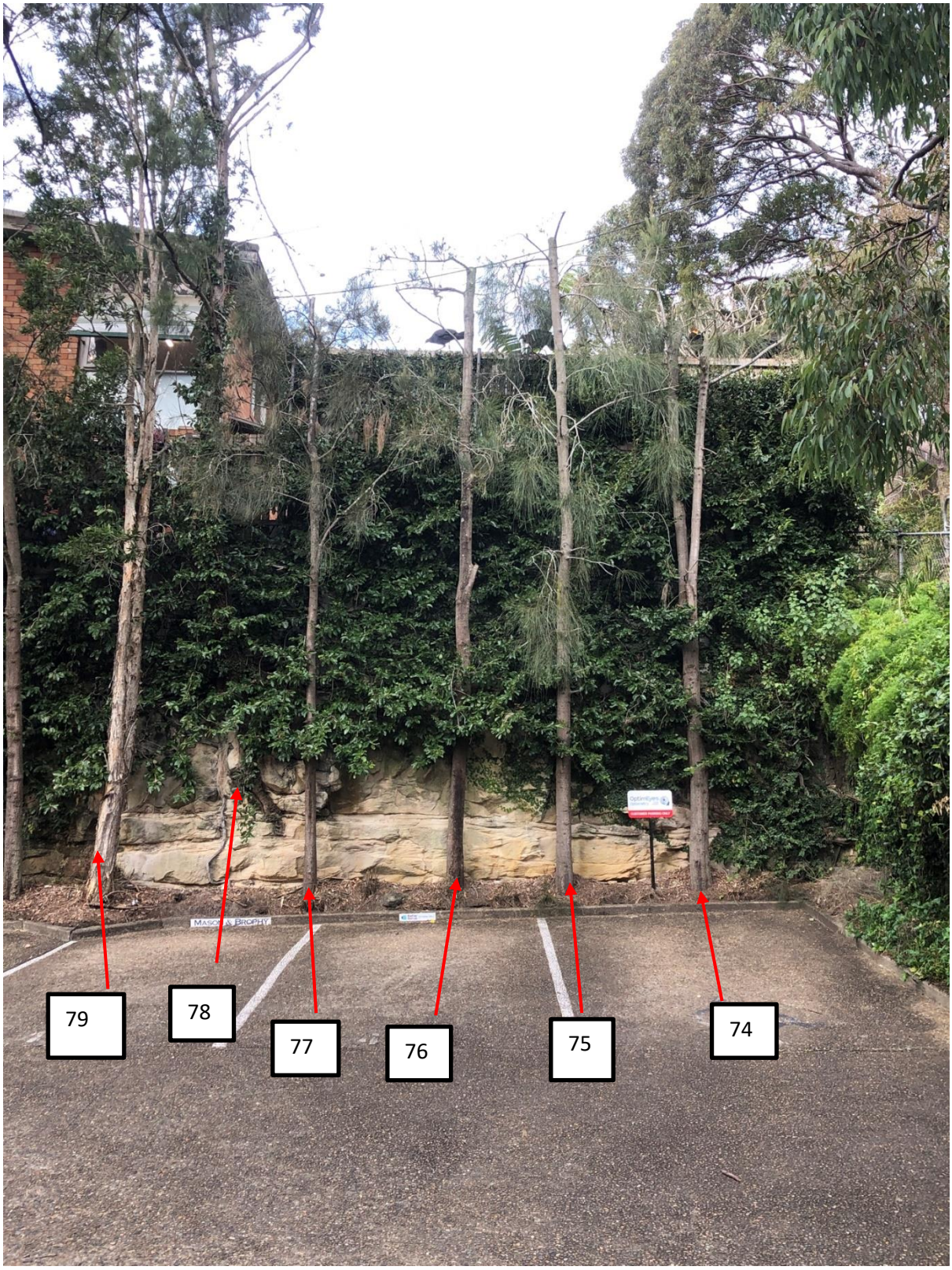
Tree 72 – Melaleuca – one-sided canopy

PHOTO 16

Tree 73 – Melaleuca – one-sided canopy which overhangs driveway and building.

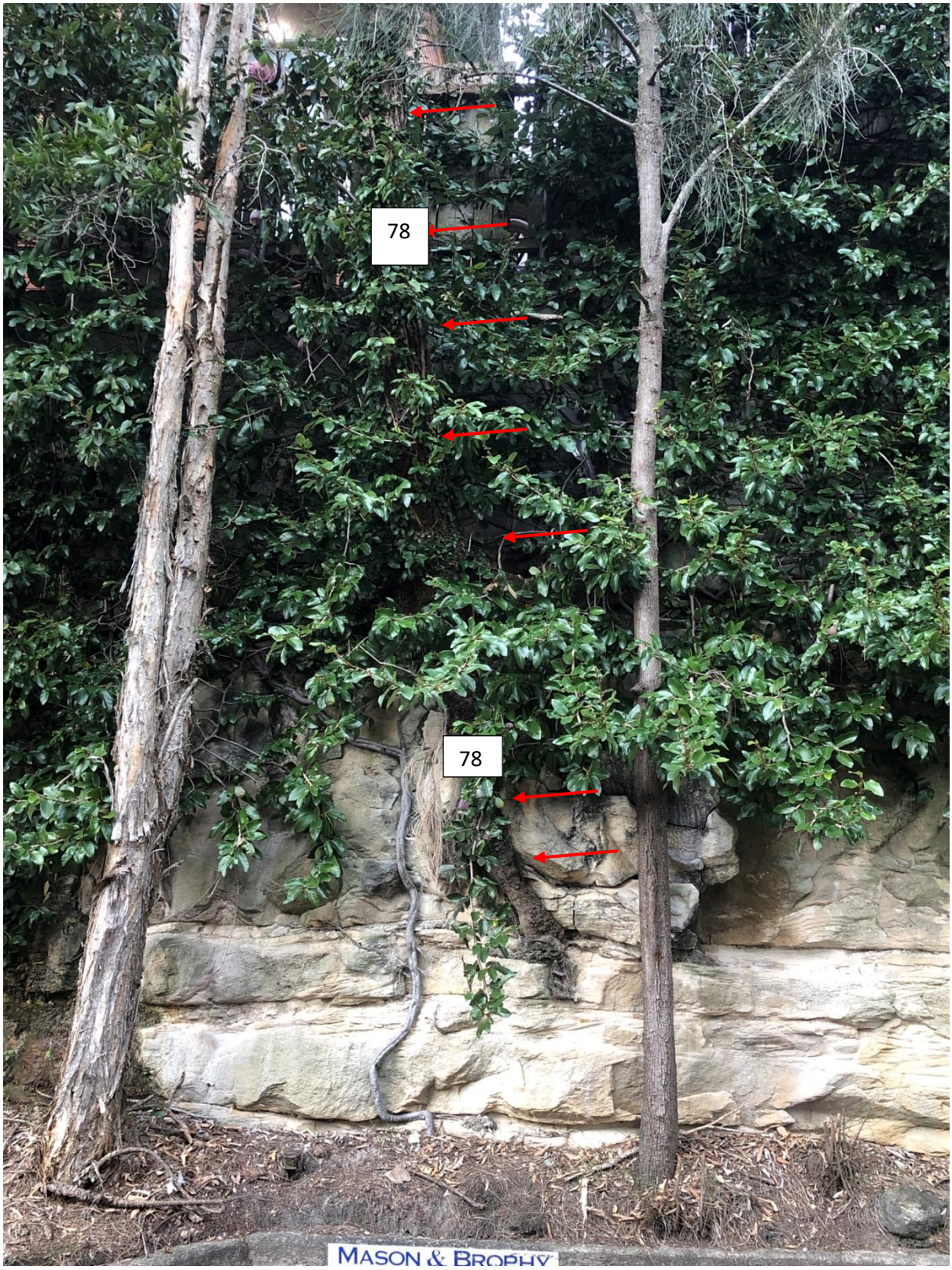
PHOTO 17

Tree 72 – Melaleuca – one-sided canopy



Trees 74 to 79 Trees 74, 75 76 77 have been lopped. Tree78 is growing out of rockface

PHOTO 18



Tree 78 Casuarina – growing out of rock face

PHOTO 19

Tree 80 - Canopy cover only over car parking on road

PHOTO 20

Tree 80 – one-sided canopy

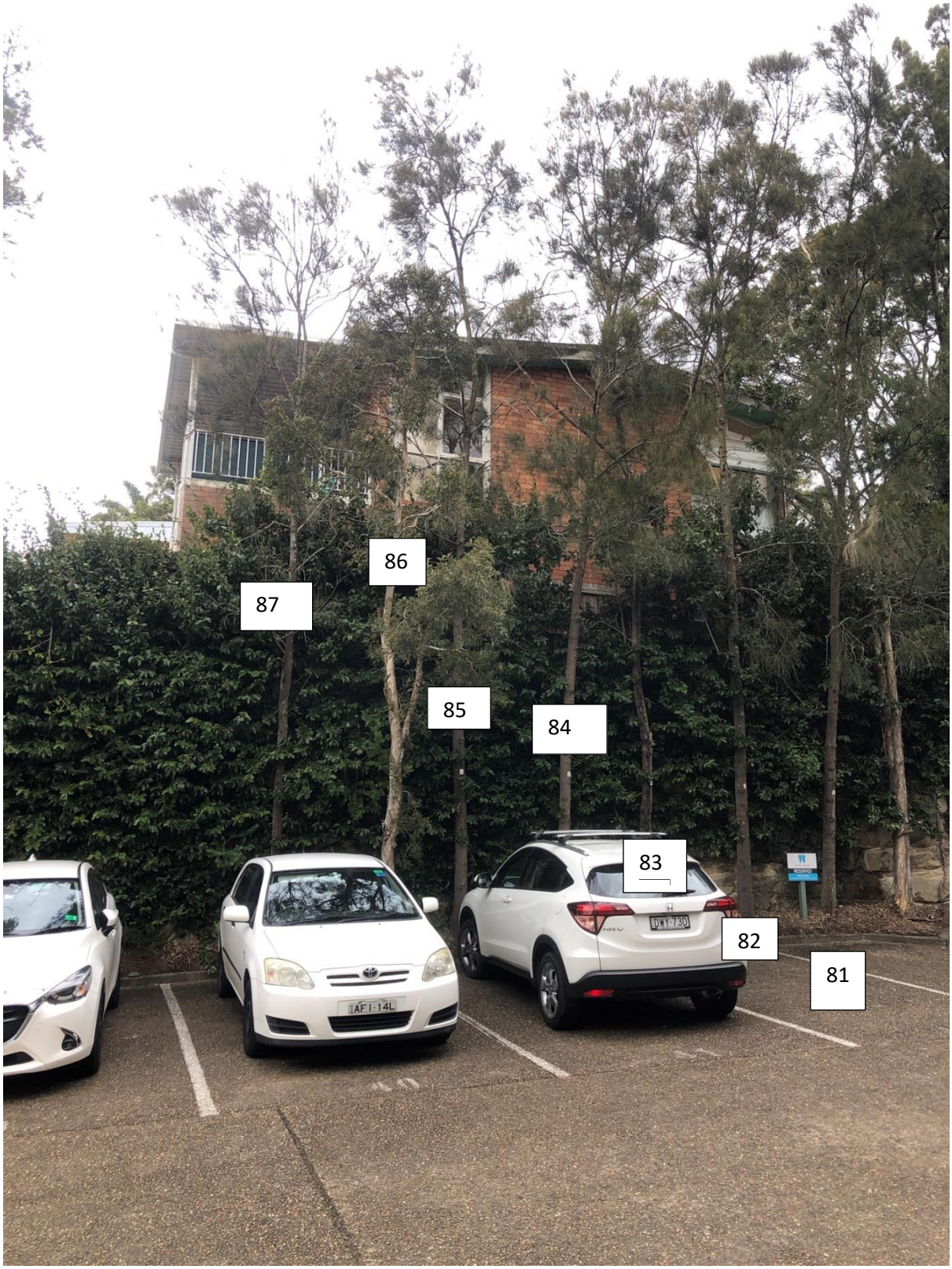
PHOTO 21

Tree 80 – Old wounds with limited closure

PHOTO 22

Trees 79,81,82,83,84,85,86 – trees growing in narrow garden bed with rock face behind and driveway in front shallow soil .

PHOTO 23



Trees 87,86,85,84,83,82,81

PHOTO 24

Tree 90 Casuarina Tree 89 Melaleuca Tree 88 – Casuarina

PHOTO 25

Tree 87 – 3-way trunk union at 6 metres

PHOTO 26

Tree 8 – trunk inclusion

PHOTO 27

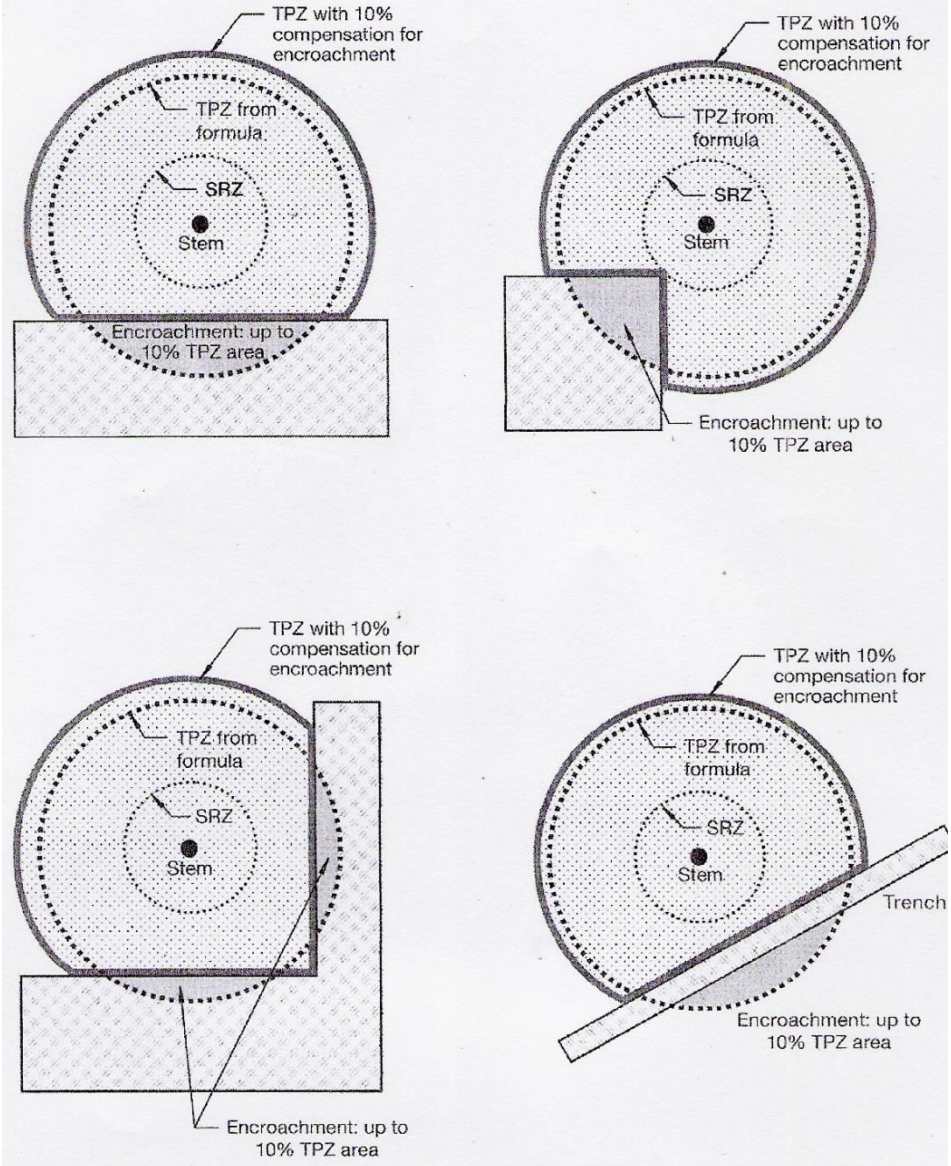
Tree 20- Swelling around trunk inclusion

PHOTO 28

Tree 20 – Selling at 4 metres around trunk inclusion

12 (TPZ)Acceptable Incursions to the Tree Protection Zone (TPZ)

APPENDIX 2 – ACCEPTABLE INCURSIONS TO THE TREE PROTECTION ZONE (TPZ)



NOTE: Less than 10% TPZ area and outside SRZ. Any loss of TPZ compensated for elsewhere.

REF:- Council of Standards Australia (August 2009)
AS 4970 – 2009 – Protection of Trees on Development Sites
Standards Australia, Sydney

13 Tree and Trunk Protection Methodology

13.1 Tree Protection Fencing

a) The trees to be retained should be protected by means of fencing prior to commencement of demolition (including tree removal) or bulk earthworks.
b) The protection fencing should be immovable. It should be constructed from 1.8-metre-high chain link suspended on 2.4m x 45mm galvanised steel pipe.
c) The area within should be kept free of all building materials, contaminants and other debris. It should not be used for storage of any building materials.

13.2 Mulching

a) The area within the protective fencing should be mulched to a depth greater than 75mm and not exceeding 100millimetre using a leaf mulch or 25-millimetre eucalypt chip. The mulch should be free of weed seeds and other contaminants. If construction access is required within the tree's dripline, outside the protective fencing, heavier mulch should be spread to a depth no greater than 100 millimetres to reduce soil compaction.

13.3 Trunk Protection

a) Trunk protection of hardwood timbers should be used to protect the trees trunk where construction is proposed. This should be fastened around the trunk with hoop iron strapping or similar, and padded with carpet underlay or equivalent

14 Tree Protection Photograph

15 Guidelines for Excavating near Trees to be preserved

1.1 Monitor the excavation work within a five plus metre radius of the tree. Excavation in this zone is to be done using hand tools, not an excavator.

a) An arborist must monitor all excavation works within the TPZ.
b) Use hand tools to carry out ay work within the drip zone of the tree.
c) Excavation work can be also done with Air Knit or Air Spade.

1.2 An arborist must cut any roots to be removed with a clean sharp handsaw.

a) Cut all roots with clean equipment that is specifically designed to cut roots not with impacted tool.
b) Do not cut large roots (>30mm diameter) closer than halfway from drip line to the trunk.
c) Severance of structural roots of 25mm or more in diameter is not permitted without prior permission of the arborist.

1.3 Wrap any roots found in damp cloth.

a) Protect roots that are exposed during excavation from drying out – wrap etc.
b) Immediately wrap all tree roots uncovered in dampened jute matting or equivalent sacking made or natural fibre cloth, until backfilling takes place. Hessian fibre or Hessian sack. Tree roots must not remain exposed.
c) Clumps of fibrous roots must not be severed/cut and need to be retained as per wrapping instructions in 'b'. Arborist must inspect to give guidelines.

1.4 Any area within five metres of the tree trunk (limited) should not be used to storage or mixing of building materials as this could change the microorganisms in the soil.

a) Do not store equipment, materials, or chemical based solutions in the TPZ.
b) Do not use heavy machinery within the protection zone.
c) No vehicle access without the agreement of the arborist.
d) If vehicle access require measure must be put in place to prevent compaction.

1.5 Any footing in the zone of the roots is to be built with a pier and beam construction with the aim to give 100mm clearance of the roots.

a) Keep the original soil level – RL – where possible – with no disturbance of the soil, including level changes or compaction, within the TPZ without prior consultation with the arborist.

a) Make no changes that will alter the amount of water infiltration surrounding or within the TPZ without the consent of the arborist.

1.6 Any paving installed must allow air and water penetration to the root zone. The pavers must have sand placed between them and not cement as cement would prevent air flow to the root location.

1.7 If any roots are found in this zone, the pavers are to be raised by the placement of washed sand over the roots. This RL should be determined at an early stage of the construction so that the pavers do not go above the damp course of the house.

16 Root Pruning Methodology

1.8 Expose roots with hand tools or air spade or air knife. Clean roots with water or soft brush. Cover exposed roots and soil and prevent foot traffic in area. A trained arborist should inspect toots before pruning or removing roots.

1.9 Cover the roots with wetted rages or natural fibre. Then cover with soil where possible if left exposed for more than one day, or as soon as possible in extreme weather conditions. The natural fibre will break down in time and can be left on roots or buried.

1.10 Clean cut any roots found with a clean and sharp handsaw. The saw or secateurs should be cleaned by dipping in bleach or methylated spirits, or use alcohol wipes, to clean the saw. This can be done after each cut and must be done if pruning roots of different trees. This will minimise the spreading of pathogens or disease.

1.11 Drench the exposed soil with water and mulch soil surface with wood chips and leaf litter, not pine bark or palm fronds.

1.12 Hydrophobic soil may need wetting agent applied to aid in water penetration.

1.13 Cover the exposed soil along the excavation line with jute matting or hessian and apply water to the covering material once a day minimum in cool weather and up to 3 times per day in hot or windy conditions, until the trench is back filled. Hold jute matting in place with pegs or equivalent.

17 References

Urban, J. (2008) *Up by Roots*

Matheny, N. and Clark, J. (1998) *Trees and Development*

18 Glossary

Absorbing roots – common term describing the fine, non-woody, short-lived roots that absorb water and mineral nutrients and that are often infected with beneficial organisms.

Aerobic – a biochemical process or condition occurring in the presence of oxygen.

Air knife – device that directs a jet of highly compressed air to excavate and loosen soil. Used within the root zone of trees or near underground structures such as pipes and wires to avoid or minimize damage to the roots or structure.

Anaerobic – biological process that occurs in the absence of oxygen.

Bark – protective outer covering of branches and stems that arises from the cork cambium or cambium.

Basal (or trunk) flare – the increased diameter where the roots and trunk meet (also known as the root flare or buttress).

Bifurcation – Tree fork - A tree fork is a bifurcation in the trunk of a tree giving rise to two roughly equal diameter branches. These forks are a common feature of tree crowns. The wood grain orientation at the top of a tree fork is such that wood cells interlock to provide sufficient mechanical support.

Branch collar – area where a branch joins another branch or trunk that is created by the over-lapping vascular tissues from both the branch and the trunk. Typically enlarged at the base of the branch.

Broad-leaved – trees whose foliage is flat and broad.

Buttress root – roots at the trunk base that help support the tree and equalize mechanical stress.

Cambium – thin layer(s) of meristematic cells that give rise (outward) to the phloem and (inward) to the xylem, increasing steam and root diameter.

Central leader – the main stem, trunk, or bole.

Clay – (1) soil particles with a typical grain size less than 0.002 millimetre (USDA classification) and less than 0.005 AASHTO Classification. (2) A soil predominantly composed of such particles.

Compaction – compression of the soil that breaks down soil aggregates and reduces soil volume and total pore space, especially macrospore space.

Compartmentalization – natural defence process in trees by which chemical and physical boundaries are created that act to limit the spread of disease and decay organisms.

Compost – (1) (noun) organic matter that has been intentionally subjected to decay processes and is more or less decomposed. (2) (verb) To subject organic matter to decay and decomposition processes.

Compression – action of forces to squeeze, crush, or push together any material(s) or substance(s). Contrast with tension.

Coppicing – to cut back (a tree or shrub) to ground level periodically to stimulate growth.

Cork cambium – meristematic tissue from which the corky, protective outer layer of bark is formed.

Crown (or canopy) – the leaves and branches of a tree.

Deciduous – Trees that lose their leaves each year.

Decurrent – trees that lack a central leader; the crown is composed of a number of equal-sized branches.

Dripline – the edge of the canopy

Epicormic branches – shoot arising from a latent or adventitious bud (growth point).

Evergreen – trees that maintain foliage throughout the year.

Expanding clay – clay that tends to expand when wet and then, when drying, contracts more than other particles in the soil.

Field capacity – maximum soil moisture content following the drainage of water due to the force of gravity.

Gap-graded – soil with some particles coarse and some fine but without any significant amount of intermediate-sized fine and very fine sand particles.

Girdling root – root that encircles all or part of the trunk of a tree or other roots and constricts the vascular tissue and inhibits secondary growth and the movement of water.

Heart rot – any of several types of fungal decay of tree heartwood, often beginning with infected wounds in the living portions of wood tissue.

Heartwood – wood that is altered (inward) from sapwood and provides chemical defence against decay-causing organisms and continues to provide structural strength to the trunk. Trees may or may not have heartwood.

Hyphae – long, root-like, filamentous cells of a fungus.

Inclusion - A narrow or appressed junction between two or more branches where bark formation continues to develop, gradually pushing the adjacent limb out from the primary one causing severe stress on the internal wood structure.

Infiltration – movement of water penetrating the soil surface and into the soil. Contrast with percolation.

Lateral roots – roots that branch from larger primary roots.

Loam – soil texture classification containing some proportion of each of the tree major soil particle types (sand, silt, and clay). Has good qualities for plant growth.

Multi-trunked – tree with more than one trunk arising at or near the ground.

Percolation – movement of water through the soil. Contrast with infiltration.

Phloem – plant vascular tissue that transports sugar and growth regulators. Situated on the inside of the bark, just outside the cambium. Is bidirectional (transports up and down). Contrast with xylem.

Pollarding – specialty pruning technique in which a tree with a large-maturing form is kept relatively short. Starting on a young tree, pruning cuts are made at the same point in the tree, resulting in the development of callus knobs at the cut height. Requires regular (usually annual) removal of the sprouts arising from the cuts.

Psyllid – tiny sap sucking insects which attack mostly native plants such as lily pilly.

Reaction wood – wood formed in leaning or crooked trunks and stems as a means of counteracting the effects of gravity.

Root crown – the point at which the trunk and buttress roots meet.

Root plate – area under the ground around the base of the tree where the roots taper away from the trunk (see zone of rapid taper). The area of the primary roots that structurally support the forces on the tree.

R.L – Reduced level.

Scaffold branches – the major structural support branches that attach to the trunk.

Sapwood – outer wood (xylem) that is active in longitudinal transport of water and minerals.

Soil – surface layers of sand, silt, clay, and organic material on the surface of the earth that support plants. More generally, the material between the rocky parts of the planet and the atmosphere composed of fine – to coarse-grained mineral material.

Soil amendment – item added to the soil to improve certain aspects of the soil's condition.

Suckers – shoot arising from the roots.

S.R.Z. – Structural root zone

Taper – the change in diameter associated with height or length; related to strength.

Tap root – central, vertical root growing directly below the main stem or trunk that may or may not persist into plant maturity; rarely exists in nursery-produced plants.

Tension – in mechanics, the action of forces to stretch or pull apart any material or substance.

Trunk flare or root flare – transition zone from trunk to roots, above the ground where the trunk expands begins to expand to the form root structures that support the tree.

T.P.Z - Tree protection zone.

Xylem – main water – and mineral-conducting (unidirectional, up only) tissue in trees and other plants. Provides structural support. Arises (inward) from the cambium and becomes wood after lignifying. Contract with phloem.

Zone of rapid taper – area around the base of the tree under the ground where the roots taper away from the trunk. The taper reflects the stresses within the root generated by wind and gravity.

19 Expert Witness Code of Conduct

Uniform Civil Procedure Rules 2005

Schedule 7 Expert witness code of conduct

(Rule 31.23)

(cf SCR Schedule K)

19.1 Application of code

This code of conduct applies to any expert witness engaged or appointed:

a) to provide an expert's report for use as evidence in proceedings or proposed proceedings, or

b) to give opinion evidence in proceedings or proposed proceedings

19.2 General duty to the court

1) An expert witness has an overriding duty to assist the court impartially on matters relevant to the expert witness's area of expertise.

2) An expert witness's paramount duty is to the court and not to any party to the proceedings (including the person retaining the expert witness).

3) An expert witness is not an advocate for a party.

19.3 Duty to comply with court's directions

An expert witness must abide by any direction of the court.

19.4 Duty to work co-operatively with other expert witnesses

An expert witness, when complying with any direction of the court to confer with another expert witness or to prepare a parties' expert's report with another expert witness in relation to any issue:

a) must exercise his or her independent, professional judgement in relation to that issue, and

b) must endeavour to reach agreement with the other expert witness on that issue, and

c) must not act on any instruction or request to withhold or avoid agreement with the other expert witness.

19.5 Experts' reports

1) An expert's report must (in the body of the report or in the annexure to it) include the following:

a) the expert's qualifications as an expert on the issue the subject of the report,

b) the facts, and assumptions of fact, on which the opinions in the report are based (a letter of instructions may be annexed),

c) the expert's reasons for each opinion expressed,

d) if applicable, that a particular issue falls outside the expert's field of expertise,

e) any literature or other materials used in support of the opinions,

f) any examinations, tests or other investigations on which the expert has relied, including details of the qualifications of the person who carried them out,

g) in the case of a report that is lengthy or complex, a brief summary of the report (to be located at the beginning of the report).

2) If an expert witness who prepares an expert's report believes that it may be incomplete or inaccurate without some qualification, the qualification must be stated in the report.

3) If an expert witness considers that his or her opinion is not a concluded opinion because of insufficient research or insufficient data or for any other reason, this must be stated when the opinion is expressed.

4) If an expert witness changes his or her opinion on a material matter after providing an expert's report to the party engaging him or her (or that party's legal representative), the expert witness must forthwith provide the engaging party (or that party's legal representative) with a supplementary report to that effect containing such of the information referred to in subclause (1) as is appropriate.

19.6 Experts' conference

1) Without limiting clause 3, an expert witness must abide by any direction of the court:

a) to confer with any other expert witness, or

b) to endeavour to reach agreement on any matters in issue, or

c) to prepare a joint report, specifying matters agreed and matters not agreed and reasons for any disagreement, or

d) to base any joint report on specified facts or assumptions of fact.

2) An expert witness must exercise his or her independent, professional judgement in relation to such a conference and joint report, and must not act on any instruction or request to withhold or avoid agreement.