ARBORICULTURAL IMPACT ASSESSMENT REPORT
BELROSE MANOR: 181 FOREST WAY, BELROSE

FOR

HUNTINGDON NURSING HOME

PREPARED BY

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1.0 INTRODUCTION

Sturt Noble Arboricultural Consulting was engaged by Huntingdon Nursing Home to assess the trees on the site of a Residential Aged Care Facility at 181 Forest Way, Belrose. We were also engaged to provide an Arboricultural Impact Assessment Report, including management of any trees proposed to be retained, to assist Trinity Management Services Pty. Ltd. in preparing a Development Application to Northern Beaches Council.

The Development Application seeks consent to demolish the existing residence and adjacent carport, and construct a new 138 bed Residential Aged Care Facility containing basement carparking for 46 cars. This development will require removal of 45 of the existing trees on site.

Arborist Guy Sturt inspected 87 trees at 181 Forest Way, Belrose, in the close vicinity of the proposed development footprint only (denoted trees 1-85); on 22nd November 2016 and 9th August 2018; and trees were assessed by the Visual Tree Assessment (VTA) method. (Mattheck & Breloer,1994).

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

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

The aims of this report are:

- To assess/ review the condition of existing trees located within the vicinity of a new Residential Aged Care Facility construction in order to assess each individual tree's suitability to be retained as a sustainable part of the landscape in the long term.
- To provide information to the Trinity Management Services Pty. Ltd., Project Architect, Engineers and other consultants on recommended adjustments if required to their designs that will enable trees to be retained or have better long term health outcomes and minimize potentials for hazard.
- To satisfy the requirements of the consent authority by providing information about the trees their overall health and suitability for removal or retention based on plans supplied.
- To provide information to Trinity Management Services Pty. Ltd., Project Architect and Site Manager on appropriate tree protection measures, appropriate setbacks, constraints and tree management procedures during site works.
- To provide information to Trinity Management Services Pty. Ltd., Project Architect and Site Manager about the importance of tree management and necessary protection measures required to prevent creating a later hazard due to site works.

2.0 METHODOLOGY

2.1 Tree Assessment

Consulting Arborist Guy Sturt visited the site on 22nd November 2016; to assess the trees and consider the likely impacts of works proposed on 66 trees in the close vicinity of the proposed development footprint for a new Residential Aged Care Facility (Denoted trees 1-64). This assessment is summarised in Appendix 1.

Consulting Arborist Guy Sturt visited the site again on 9th August 2018; to assess the trees and consider the likely impacts of works proposed on 20 trees in the close vicinity of the proposed slip road widening required by RMS (Denoted trees 65-85). This assessment is summarised in Appendix 1.

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

The following data was collected for each tree:

- Botanical and common name.
- Tree dimensions.
- Canopy density.
- Overall health and vitality, including epicormic growth, deadwood and predation by pests and diseases.
- Structural condition was assessed including evident faults such as *Bark Inclusions* or poor branch attachments, decay, cavities and mechanical or biological damage.
- Stability of the tree including excessive trunk lean, stability of the soil, soil cracking, soil heaving, exposed roots and root damage.
- Tree retention values were assessed by assessing each tree according to the Sustainable Retention Index Value Matrix (SRIV)
- The Tree Protection Zones (TPZ) and Structural Root Zones (SRZ).

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

The Tree Protection Zones (TPZ) and Structural Root Zones (SRZ) have been arrived at using methods as detailed in Australian Standard AS 4970– 2009.The intention of the TPZ is to ensure protection of the root system and canopy from the potential damage from construction works and ensure the long-term health and stability of each tree to be retained. The Structural Root Zone (SRZ) is located within the TPZ and provides the bulk of mechanical support and anchorage for a tree.

2.3 Incursions to the Tree Protection Zone

Under *AS 4970:2009 Protection of trees on development sites*, an incursion of up to 10% of the area of the TPZ is considered acceptable, provided that there is no encroachment to the SRZ. Major (> 10%) incursions to the TPZ may require more detailed investigations, such as exploratory excavations and root investigation to enable an informed evaluation of the potential impact of the proposed works.

2.4 Incursions into the Structural Root Zone

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

3.0 OBSERVATIONS

3.1 The Site

The total site is a trapezoidal shaped lot DP 805710 at at 181 Forest Way, Belrose. It has a total area of 2.117 Ha and the site includes an existing single story private residence, gravel paved driveways and a carport. It is a largely cleared sloping site with trees being a combination of groupings of remnant bushland and individual planted specimens of both exotic and native (non endemic) species.

The Report only assesses 86 trees in the close vicinity of the proposed development footprint for a new Residential Aged Care Facility-not the entire site.

Figure 1: Location Plan

3.2 Soils

The Sydney Soil Map (Chapman, G. A & Murphy, C. L, 1989) indicates the site is situated on a Hawkesbury Sandstone ridgeline with shale lenses outcrops occurring between sandstone layers. Soils are slightly more fertile and have a higher clay content than normal Hawkesbury Sandstone soils. Rock outcrops are present on site as are areas of deeper soil. Soil landscapes are likely to be Gymea or Somersby.

3.3 Vegetation Community

The site is highly disturbed and modified. The entire site has been largely cleared for its development. Groupings of remnant bushland remain as do isolated endemic specimens. In addition individual planted specimens of both exotic and introduced native (non endemic) species are planted in the vicinity of the residence.

The Cumberland Ecology Flora and Fauna Assessment (Dec. 2016) notes "*approximately 1.99 ha of vegetation occurs within the subject site. This includes 0.08 ha of Duffys Forest Ecological Community (DFEC). DFEC is listed as an Endangered Ecological Community (EEC) under the TSC Act but is not listed under the EPBC Act. The majority of the subject site has already been largely cleared of the native vegetation.*

Over 200 flora species have been recorded from the subject site during surveys. Species present within the subject site consist of a mix of native species (60%) and exotic/non-endemic native planted species (40%)."

Surveys by Cumberland Ecology for this assessment refined the existing vegetation mapping of the subject site and confirmed the occurrence of the following vegetation communities:

- Duffys Forest Ecological Community (Regrowing Understorey);
- Coastal Sandstone Heath-Mallee;
- Sydney North Exposed Sandstone Woodland;
- Coastal Sandstone Gully Forest; and
- Urban Native/Exotic vegetation.

3.4 Tree Health and Condition

A complete tree assessment schedule for the 86 trees in the close vicinity of the proposed development footprint for a new Residential Aged Care Facility (Denoted trees 1-85; was prepared and is included in Appendix 1. This includes the following: a tree number, botanical name, common name, height, canopy spread, canopy density, defects, pests & diseases and a SRIV rating (IACA 2010).

86 trees were assessed - 26 exotic specimens, 20 Australian native trees and 40 endemic trees. Figure 2 indicates the tree locations.

15 trees are exempt under The Northern Beaches Council Tree Preservation Order and can be removed without consent.

Endemic trees identified on the development site are listed as significant trees under the Northern Beaches Council Threatened or Vulnerable species or form part of an Endangered Ecological Community. Refer Cumberland Ecology Report

3.5 Construction Methodology

The plans provided by Morrison Design Partnership (MDP) Architects with details of the proposed new Residential Aged Care Facility are minimal with regard to Construction Detailing. The Drawings prepared by MDP Architects (Figure 3/ 3a) indicates a single story basement will be excavated over part of the building footprint with on ground slab construction over the rest of the building area.

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

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

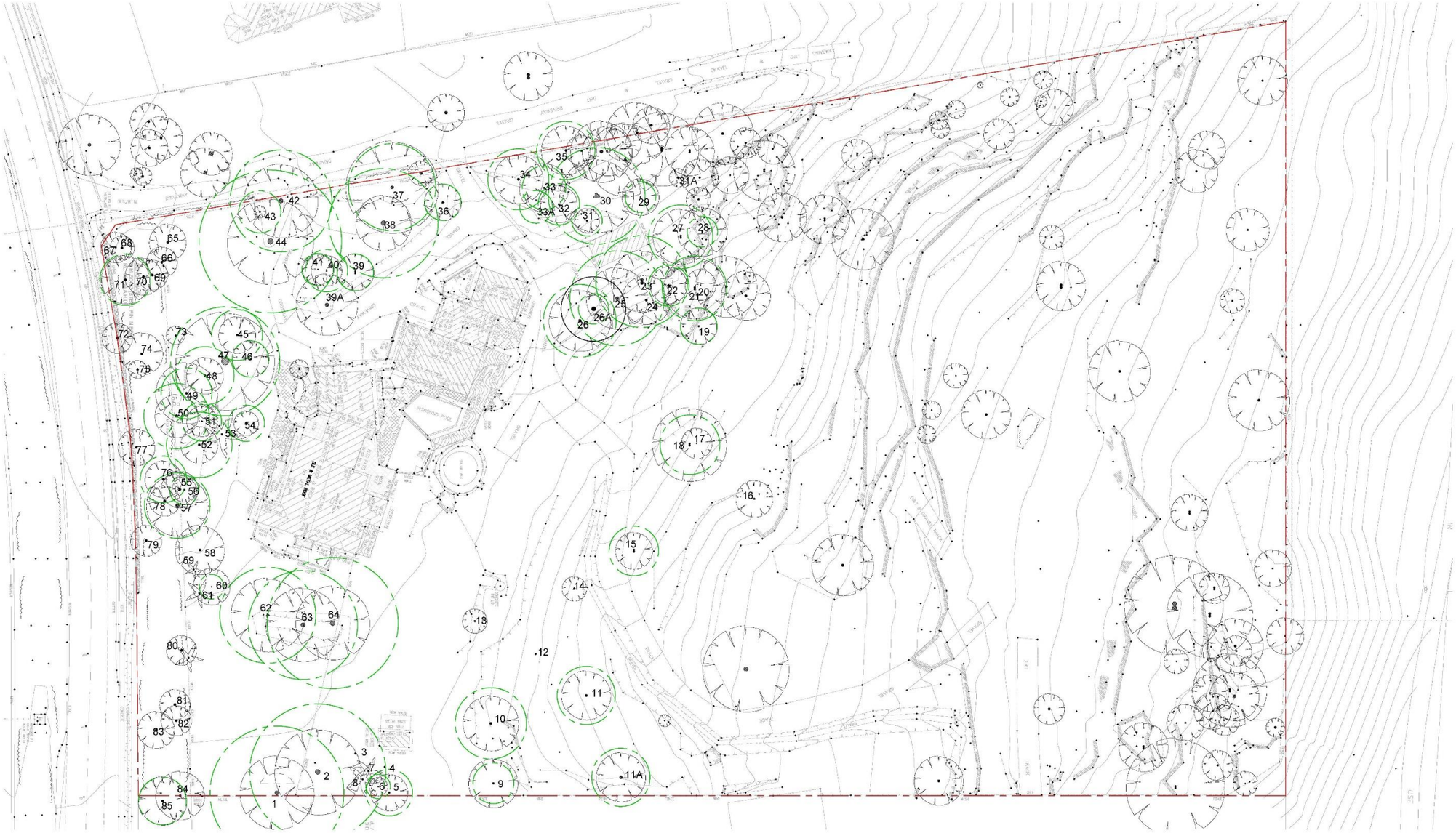
3.6 Construction Impacts

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

- Excavations for basement parking and on ground slab construction.
- Excavations for landscape paved areas and retaining walls
- Excavations and trenching for underground services.

- Ripping or cultivation of soil for landscaped areas.
- Excavations and footings for boundary fences.
- Soil level changes including the placement of fill material for the footings and to make up grades to landscape areas.
- Laying impermeable paving to paths and slabs.
- Movement and storage of plant, equipment & vehicles;
- Erection of site sheds;
- Storage of building materials, waste and waste receptacles;

Figure 2: Existing Trees



LEGEND

SITE BOUNDARY

EXISTING TREES
REFER TO TREE ASSESSMENT SHEET

SURVEY INFORMATION FROM
BETH & LETHBRIDGE PTY LTD.
REF 19442 REV 00 14.04.2016

Figure 3: Development Plan – Lower Ground Level

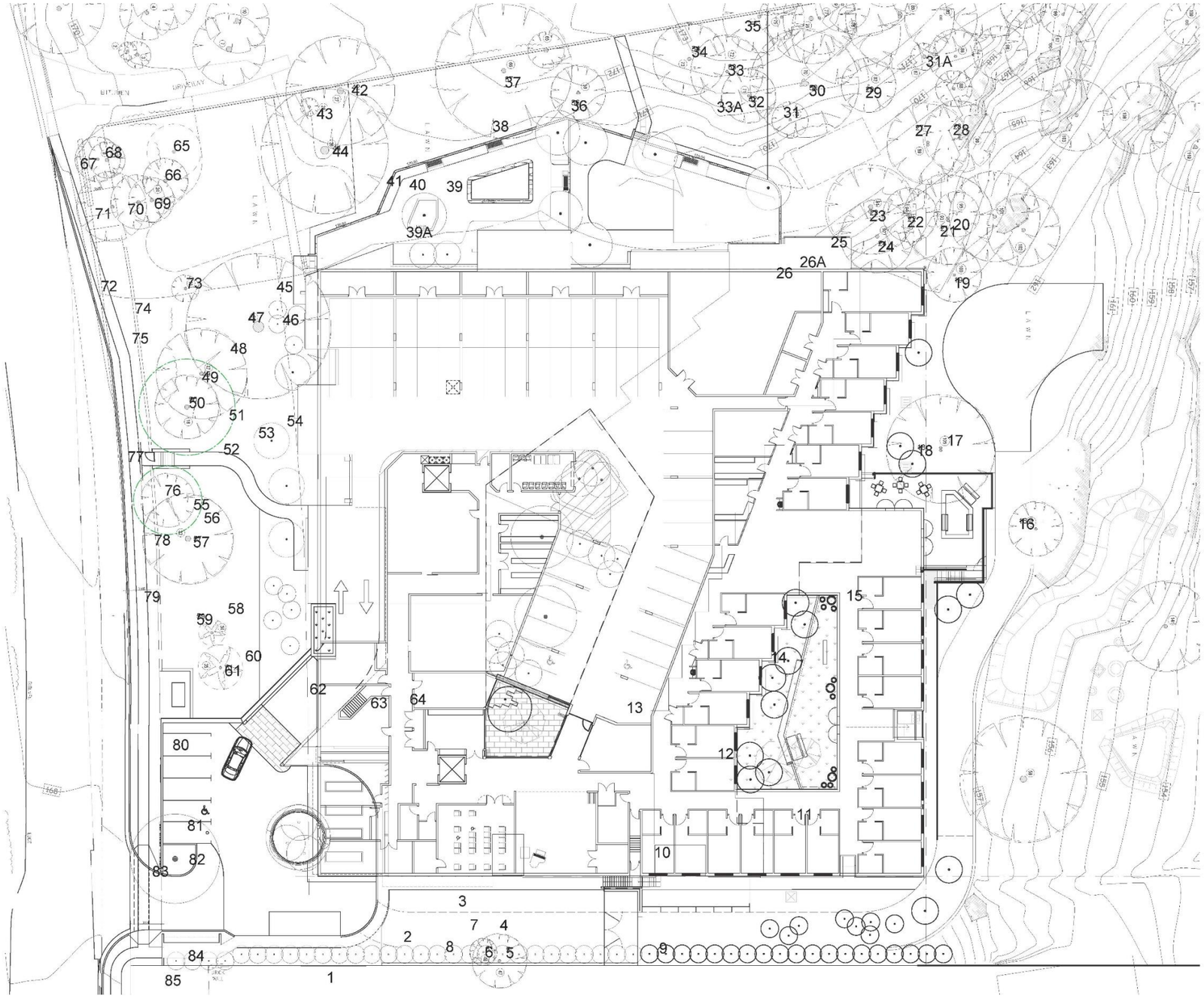


Figure 3a: Development Plan – Ground Floor

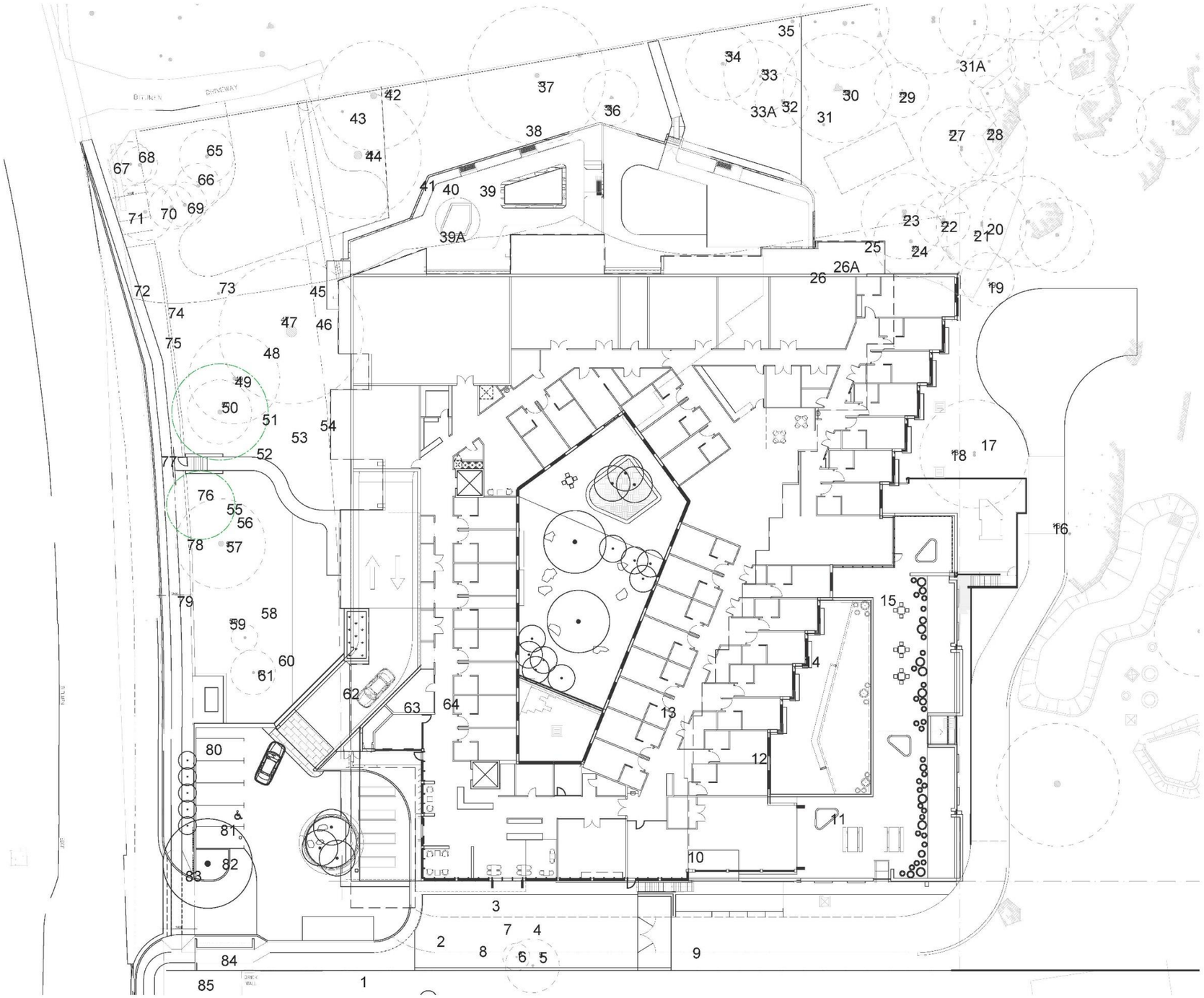
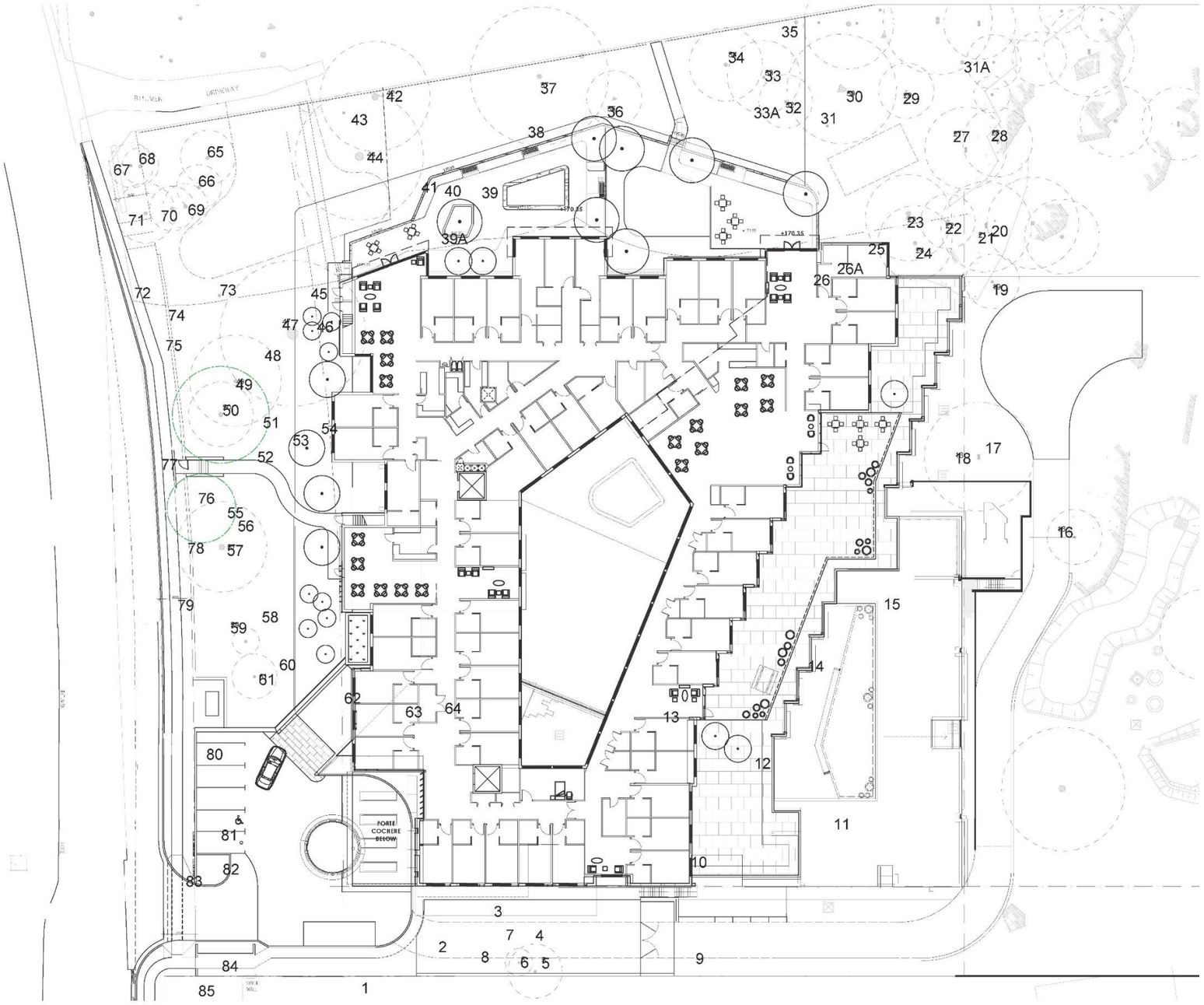


Figure 3b: Development Plan – First Floor



4.0 DISCUSSION

4.1 Soil Characteristics

The Sydney Soil Map (Chapman, G. A & Murphy, C. L, 1989) indicates the site is situated on a Hawkesbury Sandstone ridgeline with shale lenses outcrops occurring between sandstone layers. Soils are slightly more fertile and have a higher clay content than normal Hawkesbury Sandstone soils. Rock outcrops are present on site as are areas of deeper soil. Soil landscapes are likely to be Gymea or Somersby.

4.2 Tree Retention

The Retention Values for all trees on site was prepared and is included in Appendix 1. These have been determined on the basis of the estimated longevity of the trees and their landscape significance rating.

The impacts of construction of the basement, carpark and on ground slab construction are critical with regard to nineteen (19) trees which will require removal.

In addition, as a result of assessment of trees on site it is proposed to remove a further twenty (25) trees on site for a range of reasons.

A number of trees in addition to those surveyed are required to be thinned as part of the bushfire mitigation strategy within Asset Protections Zones (APZ) . Refer Bushfire Assessment Report: Travers Bush Fire Consulting. Two (2) of the endemic trees surveyed Trees No. 31 and 35 are marked on site for removal as part of this strategy.

We have also noted Tree Number 31A as a habitat tree and this should be retained and protected as per guidelines by Cumberland Ecology. Refer Cumberland Ecology Report.

With implementation of the tree protection measures it should be possible all other trees on the developed site.

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

In addition to Tree Protection Zones, the extent of the canopy (canopy dripline) should also be considered, particularly in relation to construction activities and along access points. Significant pruning of trees to accommodate digging machinery is generally not acceptable. Trees may not be pruned by more than 10% without consent.

4.3 Tree Protection

4.3.1 General

Northern Beaches Council requires anyone wanting to carry out work in relation to trees to refer to Control B4.22 Preservation of Trees or Bushland Vegetation (Adopted: 17 December 2012) in the Pittwater 21 Development Control Plan (P21 DCP Part B).

As per the control, some tree species are exempt, trees listed as exempt can be removed without consent from Council. Trees may be pruned by up to 10% once in every 12 calendar months in accordance with AS4373-2007 Pruning of Amenity Tree without council consent.

The Control states a;

" A tree is, any plant whether native, endemic, exotic or introduced species where the

i) Height exceeds three (3.0) metres, or
ii) Trunk, bole or branch girth exceeds 0.5 metres or which has a combined girth or each of two or more trunks or boles exceeding 0.5 metres, or
iii) Branch canopy width exceeds five (5.0) metres, or
iv) Is not a plant declared to be a noxious weed under the Noxious Weeds Act 1993);

Bushland is:

i) Land on which there is vegetation which is either a remainder of the natural vegetation of the land or, if altered, is still representative of the structure and floristics of the natural vegetation (as defined by the Local Government Act 1993)"

The Northern Beaches Council's Control B4.22 Preservation of Trees or Bushland Vegetation (In Force From: 9 February 2013) also states:

"A person shall not ringbark, cut down, top, lop, remove, poison, injure, or willfully destroy any prescribed tree or bushland vegetation without a Tree and Bushland Vegetation Removal Permit unless authorised by a current Development Consent.

This includes damage to a tree or bushland vegetation by:

- Damaging or tearing live branches and roots;
- Damaging the bark, including attachment of objects using invasive fastenings, the fastening of materials around the trunk of trees which may result in a detrimental impact on tree health;
- Tree topping, where large branches and/or the trunk of the tree is removed from the top of the trees canopy;
- Tree lopping, where branches are removed to reduce the height and spread of the tree;
- Damaging the root zone of a tree by way of compaction, including storage and stockpiling materials;
- Changing of ground levels within the root zone of a tree by way of excavation, trenching, filling or stockpiling;
- Under-scrubbing of bushland vegetation;
- Burning of vegetation (not part of a Hazard Reduction Certificate);
- Any other act or activity that causes the destruction of; the severing of trunks or stems of; or any other substantial damage to, some or all of the native vegetation in an area.

This tree removal/ management application will be made as part of the Development Application for the Development and as such will not require a separate Tree Permit Application. This report will support the Application. Moreover all works on site will be specified and certified in accordance with the provisions of Australian Standard *AS4970 – 2009 Protection of trees on development sites* (Standards Australia 2009).

Trees that are in good health and condition, that are sustainable in the medium to long term and make a positive contribution to amenity, heritage or ecological values will be retained as part of this new development wherever possible.

In order to determine how much space trees require for their long term viability, Tree Protection Zones (TPZs) and Structural Root Zones (SRZs) are calculated in accordance with *AS 4970:2009 Protection of trees on development sites.*

4.3.2 Tree Protection Zones (TPZ)

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

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

Additionally the report considers and addresses specific site factors that may influence the location of the TPZ and/or structural tree roots. *AS 4970:2009 Protection of trees on development sites* prohibits the following activities within specified Tree Protection Zones:

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

4.4 Impact Assessment

The plan in Figure 4 indicates impacts of the proposed development construction on the existing trees proposed to be retained.

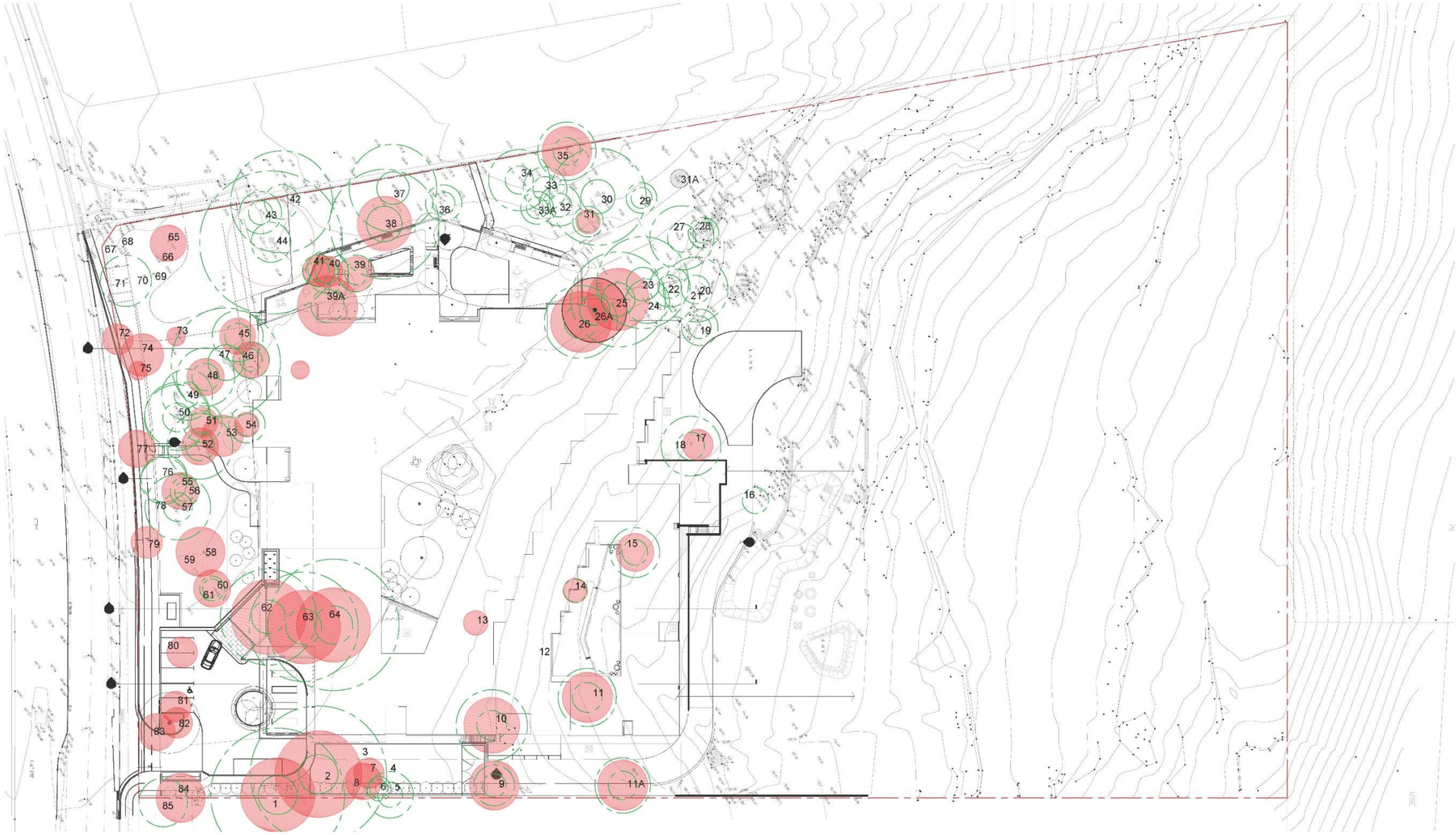
The footprint and excavation required for the proposed development will lead to the removal of 19 trees. An additional 500 mm extension of the developments footprint has been assumed as the excavation zone. The SRZ was calculated in order to assess the impacts of the development's construction on the trees. When an encroachment of greater than 10% was calculated, they became subjected to removal.

A further 26 trees have been selected to be removed without encroachment on their SRZ for reasons outlined previously.

The 86 trees assessed in this report have their SRZ calculated and outlined in Figure 4. This will inform later design decisions and temporary tree protection fences.

2 trees (No. 44,47) have encroachments of greater than 10% on their TPZ. Both hare encroached by approximately 12% which in our opinion is acceptable subject to the tree protection measures in this report being followed.

Figure 4: Impact assessment



5.0 CONCLUSIONS

86 trees have been considered on the site and are discussed with regard to their retention and management in relation to the future works proposed. The proposed development is a new new Residential Aged Care Facility.

86 trees were assessed - 26 exotic specimens, 20 Australian native trees and 40 endemic trees. Figure 2 indicates the tree locations.

The impacts of construction of the basement, carpark and on ground slab construction are critical with regard to nineteen (19) trees which will require removal.

In addition, as a result of assessment of trees on site it is proposed to remove a further twenty six (26) trees on site for a range of reasons.

We have also noted Tree Number 31A as a habitat tree and this should be retained an protected as per guidelines by Cumberland Ecology. Refer Cumberland Ecology Report.

2 trees (No. 44,47) have encroachments of greater than 10% on their TPZ. Both hare encroached by approximately 12% which in our opinion is acceptable subject to the tree protection measures in this report being followed.

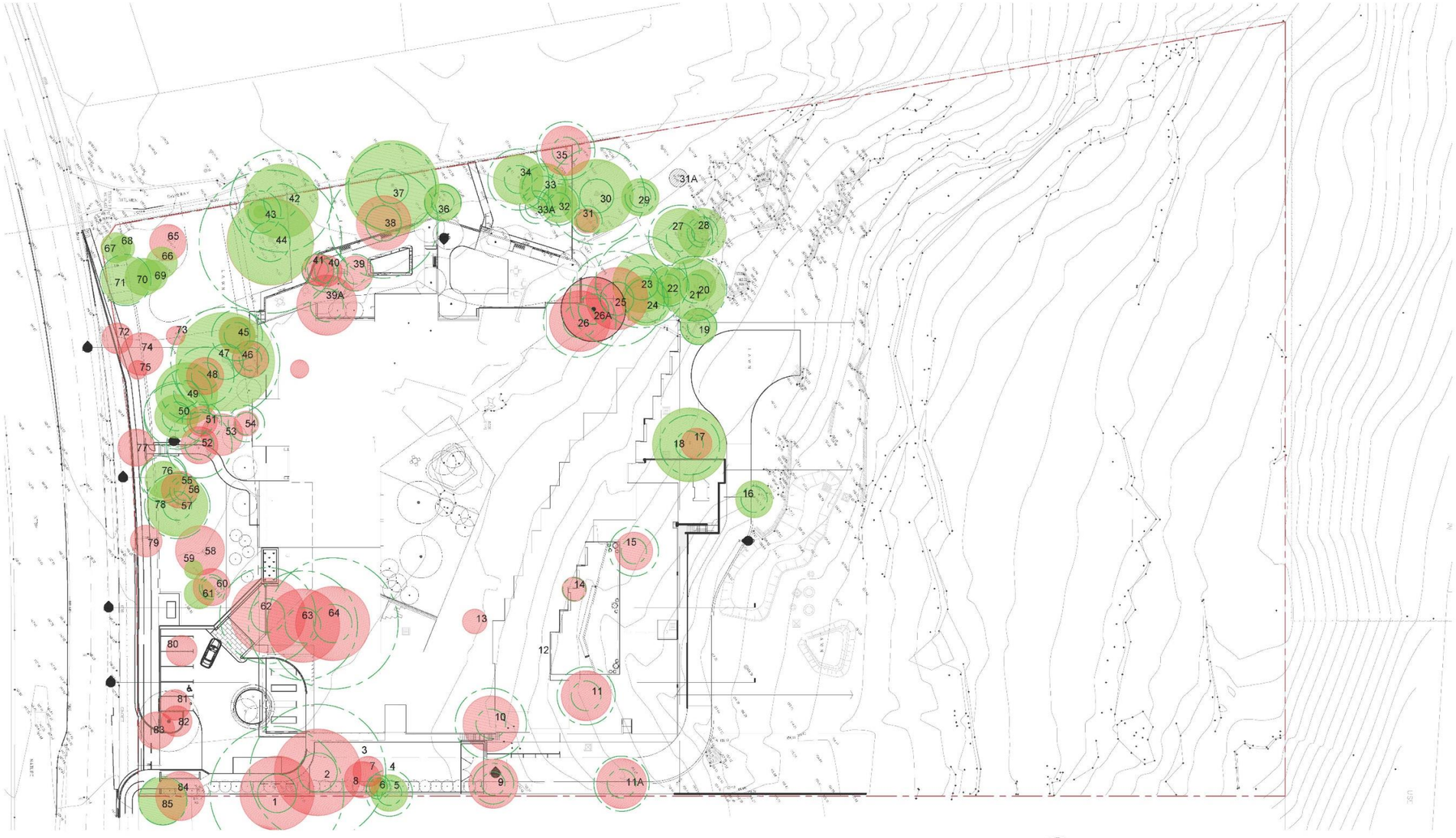
A number of trees in addition to those surveyed are required to be thinned as part of the bushfire mitigation strategy within Asset Protections Zones (APZ) . Refer Bushfire Assessment Report: Travers Bush Fire Consulting. Two (2) of the endemic trees surveyed Trees No. 31 and 35 are marked on site for removal as part of this strategy.

Trees on site that are recommended to be retained as part of the approved development must be protected from potential damage caused by construction activities. Tree Protection can include fencing, trunk/branch protection and ground protection. Refer to Section 6.0 for detailed requirements and for activities prohibited within any Tree Protection Zone.

Matters requiring further assessment are discussed in Recommendations: Section 6 however further detail of site works is required particularly details of basement and Foundation/footing systems, site services, drainage works and level changes particularly within the TPZ of trees proposed for retention.

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

Figure 5: Tree Retention Plan



6.0 TREE PROTECTION RECOMMENDATIONS

6.1 Design of the Development

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

Excavation on the site will require that close attention be paid to management of the trees being retained. Any disturbance to soils within TPZ's could destabilise the trees or impact on long term health. Should any changes to soil within the TPZ/ SRZ be proposed further discussion and assessment must be undertaken.

The site soils are prone to erosion and slumping is common place in such soil landscapes. Over excavation may be an issue where shoring is not correctly installed and impacted on tree root zones especially in areas of basement excavation.

6.2 Tree Removal

Application for removal of forty five (45) trees of the trees:-

(Nos.1,2,7,8,9,10,11,11A,13,14,15,17,25,26,26A,31,35,38,39,39A,40,41,45,46,48,51,52,53, 54,55,58,60,62,63,64,65,72,77,79,80,81,82,83,84) should be sought as part of the Development Application.

Tree No 55 is dead and does not require consent. Trees No. 7,8,41,46,48,51,53,62; are exempt under Northern Beaches Council's Control B4.22 Preservation of Trees or Bushland Vegetation(Adopted: 17 December 2012) and can be removed without consent.

6.3 Canopy and root pruning

6.3.1 Canopy pruning

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

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

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

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

6.3.2 Root pruning

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

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

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

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

6.4 Tree Protection Measures

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

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

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

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

6.4.1 Tree Protection Zones

The Tree Protection Zones recommended for all trees within the site to be retained shall be equivalent to the Tree Protection Zone as specified in Figure 4. This is a radial distance measured from the centre of the trunk of the subject trees.

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

- Excavations and trenching (with exception of the approved foundations and underground services);
- Ripping or cultivation of soil;
- Mechanical removal of vegetation;

- Soil disturbance or movement of natural rock;
- Soil level changes including the placement of fill material (excluding any suspended floor or slab);
- Movement and storage of plant, equipment & vehicles;
- Erection of site sheds;
- Affixing of signage or hoardings to trees;
- Storage of building materials, waste and waste receptacles;
- Disposal of waste materials and chemicals including paint, solvents, cement slurry, fuel, oil and other toxic liquids;
- Other physical damage to the trunk or root system; and
- Any other activity likely to cause damage to the tree.

Place a 50-75mm layer of coarse organic mulch over the entire surface of the TPZ. Where the TPZ is adjacent to construction activities first lay down geotextile fabric beneath the mulch to facilitate easy removal of the mulch at completion and any accidental spillage of construction materials.

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

6.4.2 Tree Protection Fencing

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

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

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

Refer to appendix 2 for examples of protective fencing and signage.

6.4.3 Trunk, Branch & Ground Protection

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

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

Placement of fill material within the Tree Protection Zone of trees to be retained should be avoided where possible. Where placement of fill cannot be avoided, the material should be a coarse, gap-graded material such as 20 – 50mm crushed basalt (Blue Metal) or equivalent to provide some aeration to the root zone. Note that Roadbase or crushed sandstone or other

material containing a high percentage of fines is unacceptable for this purpose. The fill material should be consolidated with a non-vibrating roller to minimise compaction of the underlying soil. A permeable geotextile may be used beneath the sub-base to prevent migration of the stone into the sub-grade. No fill material should be placed in direct contact with the trunk.

Refer to Appendix 2 for examples of trunk, branch and ground protection.

6.4.4 Demolition Works within Tree Protection Zones

It is noted little major demolition is required on this site. Removal of the carpark pavements and kerbs shall avoid damage to potential root growth within the TPZ of Tree No. 2.

The existing carpark pavements and kerbs shall be stripped-off in thick using a small rubber tracked excavator or alternative approved method to avoid damage to underlying roots and minimise soil disturbance.

The final layer of sub-base material shall be removed using hand tools where required to avoid compaction of the underlying soil profile and damage to woody roots.

6.4.5 Excavations within Tree Protection Zones

The excavator shall work within the footprint of existing pavements where possible to avoid compaction of the adjacent soil and Tree Protection Zones.

6.4.6 Underground Services

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

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

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

6.4.7 Tree Damage/ Decline

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

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

7.0 DISCLAIMER

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

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

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

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

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

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

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

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

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

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

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

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

8.0 REFERENCES

Kelvin Saxon, (December 2016) Flora and Fauna Assessment Report. Cumberland Ecology

Control B4.22 Preservation of Trees or Bushland Vegetation: Pittwater 21 Development Control Plan (P21 DCP Part B. Adopted: 17 December 2012).

Chapman, G. A & Murphy, C. L, 1989 *Soil landscapes of the Sydney 1:100,000 sheet (9130)* Pub. NSW Govt.

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

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

IACA 2010, IACA Significance of a Tree, Assessment Rating System (STARS) Institute of Australian Consulting Arborists

Googlemaps ©. Viewed 28th November 2016

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

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

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

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

9.0 APPENDICES

*9.1 **Appendix 1** Tree Assessment Schedule*

Tree Assessment Sheet

Location: 181 Forest Way Belrose

Client: Huntingdon Nursing Home C/- Trinity Management Services Pty Ltd

Date: 22.11.2016

Tree No.	Botanical Name / **Common Name**	Dimentions							Health				Vigour				Structure					Age Class					**Retention Value SRIV**	Comments
		TPZ radius (m)	**SRZ** radius (m)	DBH (mm)	DAB (mm)	Height (m)	Spread EW (m)	Spread NS (m)	Deadwood	Dieback	Pests	Diseases	Canopy density %	Foliage size	Foliage colour	Extension growth	Inclusions	Fractures	Wounds	Cavities	Decay	Senescent	Mature	Semi Mature	Young	New planting		
1	*Pinus radiata* **Monterey Pine**	11.04	3.28	920	980	17	16	14	●	●			70	good	good	●							●				**MGVF-9**	Large Specimen. Encroachment on SRZ. Remove
2	*Pinus radiata* **Monterey Pine**	11.22	3.31	935	1000	18	13	12	●	●			70	good	good	●							●				**MGVF-9**	Co-dominant. Supressed to south. Uneven form. Encroachment on TPZ. Remove.
3	*Tree Removed*																											
4	*Tree Removed*																											
5	*Allocasuarina torulosa* ***Forest Oak***	3.84	2.25	320	400	11	5	5					70														**YGVF-8**	Retain
6	Melaleuca stypheloides **Prickly Leaved Paperbark**	2.00	1.65	140	190	6	4	4					60	small	pool	●											**YGVP-5**	Co-dominant. Supressed to south. Uneven form. Possible removal.
7	*Syagrus romanzoffiana* ***Cocos Palm***					3																						Exempt from TPO. Remove
8	*Syagrus romanzoffiana* ***Cocos Palm***					8																						Exempt from TPO. Remove
9	*Acacia parramattensis* ***Parramata Green Wattle***	3.36	2.18	280	370	10	8	8	●		●		80			●			●				●				**OLVG-3**	Leaning at 60 degrees to North. Supressed to south. Uneven form. Longicorn damage. Remove.
10	*Ficus microcarpa var. hillii.* ***Hill's Weeping Fig.***	5.88	2.37	490	450	8	7	7			●		80	small	pale	No								●			**YLVG-4**	Good condition but stressed/Low vigour. Scale on leaves. Requires feeding & Irrigation. Exempt from TPO. Within building footprint. Remove
11	*Allocasuarina torulosa* ***Forest Oak***	4.80	2.37	400	450	7	5	5	●	●			25	small		●			●			●					**OLVP-0**	Tree on 45° angle to south Senescent, remove
11A	*Allocasuarina torulosa* ***Forest Oak***	4.80	2.37	400	450	9	5	5					75	small		●							●				**MGVF-9**	In alignment of fire truck access.Remove
13	Persea americana **Avocado**	3.00	1.85	250	250	7	5	5	●	●			30	small	Pale									●			**MLVP-2**	Poor Condition/ Vigour. Remove
14	*Callistemon Spp.* **Bottlebrush**	3.24	2.13	270	350	6	4	4					70	good	good										●		**YLVF-3**	Multistem. Encroachment on SRZ/TPZ. Remove
15	*Eucalyptus racemosa* **Snappy Gum**	4.08	2.13	340	350	9	5	8	●	●	●		50	good	good	●			●				●				**YGVG-9**	Bifurcated. Within building footprint. Remove

Tree Assessment Sheet

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Date: 22.11.2016

Tree No.	Botanical Name / **Common Name**	Dimentions							Health				Vigour				Structure					Age Class					**Retention Value SRIV**	Comments
		TPZ radius (m)	**SRZ** radius (m)	DBH (mm)	DAB (mm)	Height (m)	Spread EW (m)	Spread NS (m)	Deadwood	Dieback	Pests	Diseases	Canopy density %	Foliage size	Foliage colour	Extension growth	Inclusions	Fractures	Wounds	Cavities	Decay	Senescent	Mature	Semi Mature	Young	New planting		
16	*Eucalyptus haemastoma* ***Scribbly Gum***	4.20	2.25	350	400	7	5	5					90	good	good	●								●			**MGVF-9**	Growing on S/S outcrop. Retain.
17	*Ligustrum lucidum* ***Broadleaf privet***																											Noxious weed. Exempt from TPO. Remove
18	*Eucalyptus haemastoma* ***Scribbly Gum***	4.92	2.13	410	350	10	10	8	●				80	good	good	●			●					●			**YGVF-5**	Multistem.3 trunks. Retain subject to structural details for cantilever terrace
19	*Corymbia gummifera* ***Red Bloodwood***	3.00	1.94	250	280	12	6	6					70	good	good	●							●				**MGVF-9**	Base of S/S outcrop. Retain
20	*Eucalyptus globoidea* ***White Stringybark***																											Marked for removal by Bushfire Consultant to satisfy APZ requirements
21	*Eucalyptus globoidea* ***White Stringybark***	5.33		444		8	10	10					70	good	good	●							●				**MGVF-9**	On S/S outcrop. Retain
22	*Eucalyptus haemastoma* ***Scribbly Gum***	3.36	2.13	280	350	7	7	8					80	good	good	●								●			**YGVF-5**	On S/S outcrop. Retain. Suppressed and on angle
23	*Eucalyptus globlulus* ***Tasmanian Blue Gum***	7.56		630		14	10	10					70	good	good								●				**MLVG-5**	On S/S outcrop. Retain. Introduced and Non endemic. Multistem.2 trunks.
24	*Eucalyptus globlulus* ***Tasmanian Blue Gum***	3.00	1.85	250	250	12	6	6					60	good	good								●				**MLVG-5**	On S/S outcrop. Retain. Introduced and Non endemic.
25	*Eucalyptus globlulus* ***Tasmanian Blue Gum***	7.80	2.85	650	700	15	8	8	●				70	good	good								●				**MLVG-5**	On S/S outcrop. Retain. Introduced and Non endemic. Encroachment on SRZ. Remove
26	*Eucalyptus scoparia* ***Wallangarra white gum***	6.00	2.49	500	510	14	12	12	●				70	good	good	●							●				**MLVF-9**	Codominant trunks. Introduced and Non endemic. Within building footprint. Remove.
26A	*Eucalyptus scoparia* ***Wallangarra white gum***	2.52	1.72	210	210	7	6	3					70	good	good	●							●				**MGVP-6**	Supressed by 26.Lean to East. Introduced and Non endemic. Encroachment on SRZ/TPZ. Remove
27	*Corymbia gummifera* ***Red Bloodwood***	5.28	2.20	440	380	9	10	10	●	●			50	snall									●				**MGVF-9**	On S/S outcrop. Retain. Multistem 2 trunks
28	*Eucalyptus haemastoma* ***Scribbly Gum***	2.52	1.72	210	210	7	6	8					80	good	good	●											**MGVF-9**	On S/S outcrop. Retain.
29	*Eucalyptus sieberi* ***Silver-top Ash***	2.52	1.85	210	250	8	6	6					70	good	good	●							●				**MGVF-9**	On S/S outcrop. Retain. Supressed with 45 degree lean to South.

Tree Assessment Sheet

Location: 181 Forest Way Belrose

Client: Huntingdon Nursing Home C/- Trinity Management Services Pty Ltd

Date: 22.11.2016

Tree No.	Botanical Name / **Common Name**	Dimentions							Health				Vigour				Structure					Age Class					**Retention Value SRIV**	Comments
		TPZ radius (m)	**SRZ** radius (m)	DBH (mm)	DAB (mm)	Height (m)	Spread EW (m)	Spread NS (m)	Deadwood	Dieback	Pests	Diseases	Canopy density %	Foliage size	Foliage colour	Extension growth	Inclusions	Fractures	Wounds	Cavities	Decay	Senescent	Mature	Semi Mature	Young	New planting		
30	*Eucalyptus sieberi* ***Silver-top Ash***	7.98		665		10	10	6	●				70	good	good	●							●				**MGVF-9**	On S/S outcrop. Retain. Multi trunk (4)
31	*Corymbia gummifera* ***Red Bloodwood***	2.52	1.85	210	250	8	8	8					70										●				**MGVF-9**	Marked for removal by Bushfire Consultant to satisfy APZ requirements
31A	*Eucalyptus globoidea* ***White Stringybark***																											Habitat Tree. RETAIN & PROTECT. Refer to Ecological Report by Cumberland Ecology
32	*Corymbia gummifera* ***Red Bloodwood***	3.42	1.85	285	250	8	4	4					20												●		**YGVP-1**	On S/S outcrop. Retain. Poor condition. Supressed.
33A	*Eucalyptus globoidea* ***White Stringybark***	2.70		225		5	4																		●		**YGVF-8**	Multistem (2)Marked for removal by Bushfire Consultant to satisfy APZ requirements
33	*Corymbia gummifera* ***Red Bloodwood***	3.60	2.13	300	350	9	7	4	●				80	good	good	●							●				**MGVF-9**	On S/S outcrop. Retain.
34	*Eucalyptus sieberi* ***Silver-top Ash***	5.04		420		9	7	6	●				70	good	good	●							●				**MGVF-9**	On S/S outcrop. Retain.
35	*Eucalyptus sieberi* ***Silver-top Ash***	4.80	2.37	400	450	9	7	6	●				70	good	good	●							●				**MGVF-9**	Marked for removal by Bushfire Consultant to satisfy APZ requirements
36	*Pittosporum undulatum* ***Sweet Pittosporum***	3.00	1.85	250	250	8	6	6	●				70	good	good	●									●		**YGVP-5**	Low amenity value. Encroachment by retaining wall construction is 7%. Retain
37	*Corymbia citriodora* ***Lemon Scented Gum***	7.20	2.85	600	700	18	12	12					80	good	good	●							●				**MGVF-9**	Retain. Introduced and Non endemic.
38	*Pinus radiata* **Monterey Pine**	9.00	3.11	750	860	16	15	14	●	●			80	good	good	●							●				**MGVF-5**	Large Specimen. Encroachment on SRZ. Remove
39	*Acer buergerianum* ***Trident maple***	3.00	1.85	250	250	8	6	4					60	Poor	small										●		**YLVP-1**	Poor condition. Multi stem. Supressed by 39A. Introduced and non endemic. Remove
39A	*Syzygium australe* ***Brush Cherry***	7.56		630		10	12	14					90	good	good	●							●				**MGVF-9**	Large Specimen. Introduced and non endemic/. Encroachment on SRZ/TPZ. Remove.
40	*Gordonia axillaris* ***Fried Egg Tree***	3.48		290		4	3	3					60												●		**YGVF-8**	Multi stem. Supressed by 39A/41. Introduced and non endemic.

Tree Assessment Sheet

Location: 181 Forest Way Belrose

Client: Huntingdon Nursing Home C/- Trinity Management Services Pty Ltd

Date: 22.11.2016

Tree No.	Botanical Name / **Common Name**	Dimentions							Health				Vigour				Structure					Age Class					**Retention Value SRIV**	Comments
		TPZ radius (m)	**SRZ** radius (m)	DBH (mm)	DAB (mm)	Height (m)	Spread EW (m)	Spread NS (m)	Deadwood	Dieback	Pests	Diseases	Canopy density %	Foliage size	Foliage colour	Extension growth	Inclusions	Fractures	Wounds	Cavities	Decay	Senescent	Mature	Semi Mature	Young	New planting		
41	*Jacaranda mimosifolia* ***Jacaranda***	2.64		220		6	5	4					80	good	good	●									●		**YGVF-8**	Multi stem. Supressed by 39A/40. Introduced and non endemic. Exempt from TPO. Remove due to Construction.
42	*Eucalyptus cladocalyx* ***Sugar Gum***	8.40	3.01	700	800	13	12	6	●				70	good	good	●							●				**MGVF-9**	Large Specimen. Retain Introduced and non endemic
43	*Cupressus Spp.* ***Cedar***	3.48		290		8	3						100	good	good	●											**MGVG-10**	Exempt from TPO. Good Condition.Retain
44	*Eucalyptus cladocalyx* ***Sugar Gum***	11.76	3.38	980	1050	15	14	14	●				70	good	good	●							●				**MGVF-9**	Large Specimen. Introduced and non endemic. Encroachment by retaining wall construction 12%. Assess and manage construction.
45	*Fraxinus exclesior* ***Ash***	4.20	2.25	350	400	7	6	6	●				70	good	good									●			**MLVF-4**	Poor condition. Supressed by 47. Encroachment by construction is 15%. Remove
46	*Citharexylum spinosum* ***Fiddlewood***	3.00	1.68	250	200	6	3	3	●	●			60												●		**YLVP-1**	Exempt from TPO. Poor condition. Supressed by 47. Remove
47	*Platanus hybrida* ***London Plane Tree***	9.00		750		15	16	16					80	good	good	●							●				**MGVF-9**	Multi tunk (7) Large Specimen. Encroachment by construction is 12%. Retain. Assess and manage during construction.
48	*Cupressus Spp.* ***Cedar***	4.80	2.47	400	500	10	3						70														**MLVP-2**	Exempt from TPO. Poor Condition. Remove
49	*Angophora costata* ***Sydney Red Gum***	4.20	2.47	350	500	14	9	6	●				40										●				**MLVP-2**	Remove rope ringbarking tree. Retain.
50	*Syncarpia glomulifera* ***Turpentine***	5.40	2.43	450	480	11	8	8					90	good	good	●							●				**MGVG-10**	Retain.
51	*Cupressus Spp.* ***Cedar***	3.24	2.00	270	300	7	3						70														**MLVP-2**	Exempt from TPO. Poor Condition. Remove
52	*Allocasuarina torulosa* ***Forest Oak***	5.40	2.47	450	500	11	5	5	●	●			25	small								●					**OLVF-2**	Poor Condition Senescent, remove
53	*Syagrus romanzoffiana* ***Cocos Palm***					8																						Exempt from TPO. Remove

Tree Assessment Sheet

Location: 181 Forest Way Belrose

Client: Huntingdon Nursing Home C/- Trinity Management Services Pty Ltd

Date: 22.11.2016

Tree No.	Botanical Name / **Common Name**	Dimentions							Health				Vigour				Structure					Age Class					**Retention Value SRIV**	Comments
		TPZ radius (m)	**SRZ** radius (m)	DBH (mm)	DAB (mm)	Height (m)	Spread EW (m)	Spread NS (m)	Deadwood	Dieback	Pests	Diseases	Canopy density %	Foliage size	Foliage colour	Extension growth	Inclusions	Fractures	Wounds	Cavities	Decay	Senescent	Mature	Semi Mature	Young	New planting		
54	*Camellia sasanqua* ***Camellia***	3.00		250		5	4	4					75											●			**MLVG-5**	Encroachment on SRZ/TPZ. Remove
55	*Dead Tree*																											
56	*Pittosporum undulatum* ***Sweet Pittosporum***	2.40	1.68	200	200	5	3	3					70	good	good	●									●		**YGVP-5**	Retain. Low amenity value
57	*Harpephyllum Kaffrum* ***Kaffir Plum***	5.40	2.43	450	480	10	8	8					80	good	good								●				**MLVG-9**	Good Amenity.Exempt from TPO. Retain
58	*Schinus molle var areira.* ***Peppercorn Tree***																											Dead/ Senescent. Remove
59	*Archontophoenix cunninghamiana* ***Bangalow Palm***					5																						Exempt from TPO. Retain
60	*Acacia parramattensis* ***Parramata Green Wattle***	2.04	1.94	170	280	8	3	4	●		●		60						●			●					**OLVP-0**	Senescent. Longicorn damage. Remove.
61	*Archontophoenix cunninghamiana* ***Bangalow Palm***					8																						Exempt from TPO. Retain
62	*Ficus benjamina* *W* ***eeping Fig***	7.92		660		8	9	15					30											●			**MLVP-2**	Poor Condition.Exempt from TPO. Within Building Footprint. Remove
63	*Lophostemon confertus* ***Brushbox***	9.00	3.24	750	950	13	9	8				●	80	small	yellow								●				**MGVP-6**	Good condition but stressed/Low vigour. Yellow Leaf Spot (Elsinoe Tristaniae) extensive on leaves. Within Building Footprint. Remove.
64	*Pinus radiata* **Monterey Pine**	10.80	3.69	900	1300	12	14	14	●				80									●					**OLVP-0**	Senescent/ Dead. Within Building Footprint. Remove.
65	*Corymbia gummifera* ***Red Bloodwood***																					●					**OLVP-0**	Senescent. Mainly Dead. Remove
66	*Cupressus Spp.* ***Cedar***			550	600	22	5	5					50										●				**MLVP-2**	Exempt from TPO. Retain
67	*Eucalyptus globoidea* ***White Stringybark***			250	300	8	6	6(S)					80	good	good								●				**MGVF-9**	60% Lean to West. Retain if possible
68	*Angophora costata* ***Sydney Red Gum***			200	250	10	5	5					60	good	good								●				**MGVF-9**	Retain if possible

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Tree No.	Botanical Name / **Common Name**	Dimentions							Health				Vigour				Structure					Age Class					**Retention Value SRIV**	Comments
		TPZ radius (m)	**SRZ** radius (m)	DBH (mm)	DAB (mm)	Height (m)	Spread EW (m)	Spread NS (m)	Deadwood	Dieback	Pests	Diseases	Canopy density %	Foliage size	Foliage colour	Extension growth	Inclusions	Fractures	Wounds	Cavities	Decay	Senescent	Mature	Semi Mature	Young	New planting		
69	*Ceratopetalum gummiferum* ***NSW Christmas Bush***			150	200	11	3	3					50	good	good	No							●				**MGVP-6**	Bare at bottom half of tree.Retain if possible
70	*Camellia sasanqua* ***Camellia***			300	300	6	6	6					90										●				**MGVF-9**	Multi trunk.Retain if possible
71	*Angophora costata* ***Sydney Red Gum***			350	300	12	8	8					90	good	good								●				**MGVG-10**	Retain if possible
72	*Banksia integrifolia* ***Coast Banksia***			250	200	8	5	5					90	good	good								●				**MGVF-9**	Within slip road widening works. Remove
73	*Cupressus Spp.* ***Cedar***			340	350	16	3	3					50										●				**MLVP-2**	Exempt from TPO. Retain
74	*Banksia integrifolia* ***Coast Banksia***			300	350	9	7	7					80	good	good								●				**MGVF-9**	Retain
75	*Allocasuarina torulosa* ***Forest Oak***			150	200	8	3	3	●	●			25	small		No			●				●				**MLVP-2**	Retain. Co Dominant trunks
76	*Angophora costata* ***Sydney Red Gum***			320	380	15	6	6					80	good	good	Yes							●				**MGVG-10**	Retain if possible
77	*Eucalyptus globoidea* ***White Stringybark***			300	300	8	6	6	●	●			30	good	good			●	●	●			●				**MLVP-2**	Within slip road widening works. Remove
78	*Banksia integrifolia* ***Coast Banksia***			300	350	9	6	5 (S)					70	good	good								●				**MGVF-9**	Retain. Suppressed by Tree 57. Lean 60 Degrees to NW
79	*Eucalyptus sieberi* ***Silver-top Ash***			300	350	9	5	6(S)	●				70	good	good	●							●				**MGVF-9**	Within slip road widening works. Remove
80	*Erythrina crista galli* ***Cockspur Coral Tree***																										**OLVP-0**	Senescent. Mainly Dead. Remove
81	*Allocasuarina torulosa* ***Forest Oak***			250	300	12	5	5	●	●			70	small		No			●				●				**MLVF-4**	Within carpark works. Remove
82	*Allocasuarina torulosa* ***Forest Oak***			250	300	11	5	5	●	●			70	small	small	No			●				●				**MLVF-4**	Within carpark works. Remove
83	*Allocasuarina torulosa* ***Forest Oak***			250	300	9	6	6	●	●			90	good	good	yes											**MGVG-10**	Within carpark works. Remove
84	*Allocasuarina torulosa* ***Forest Oak***			300	400	18	8	8 (N)	●	●			90	good	good	yes											**MVVP-6**	Within carpark works. Remove
85	*Pinus radiata* **Monterey Pine**			650	700	18	7	8	●	●			50	small		No						●					**OLVP-0**	On neighbours property. Retain. Adjust footpath to protect SRZ/TPZ.

Tree Assessment Sheet

Location:	181 Forest Way Belrose
Client:	Huntingdon Nursing Home C/- Trinity Management Services Pty Ltd
Date:	22.11.2016

Tree No.	Botanical Name / **Common Name**	Dimentions							Health				Vigour				Structure					Age Class					**Retention Value SRIV**	Comments
		TPZ radius (m)	**SRZ** radius (m)	DBH (mm)	DAB (mm)	Height (m)	Spread EW (m)	Spread NS (m)	Deadwood	Dieback	Pests	Diseases	Canopy density %	Foliage size	Foliage colour	Extension growth	Inclusions	Fractures	Wounds	Cavities	Decay	Senescent	Mature	Semi Mature	Young	New planting		

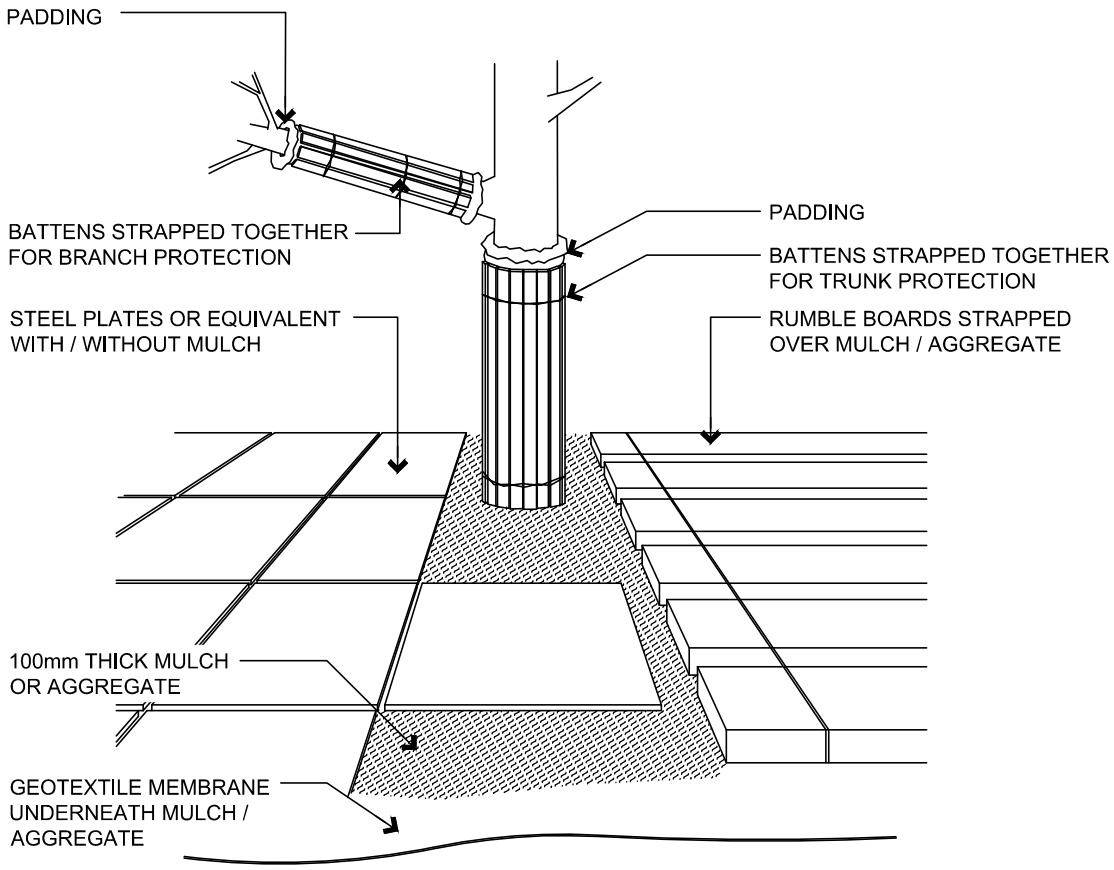
Legend
Tree to be retained and protected
Tree to be removed due to other reason
Tree to be removed due to Construction
Dead tree
Tree to be removed to comply with APZ

*9.2 **Appendix 2** Tree protection measures*

TREE PROTECTION ZONE SIGN

Based on AS4970-2009

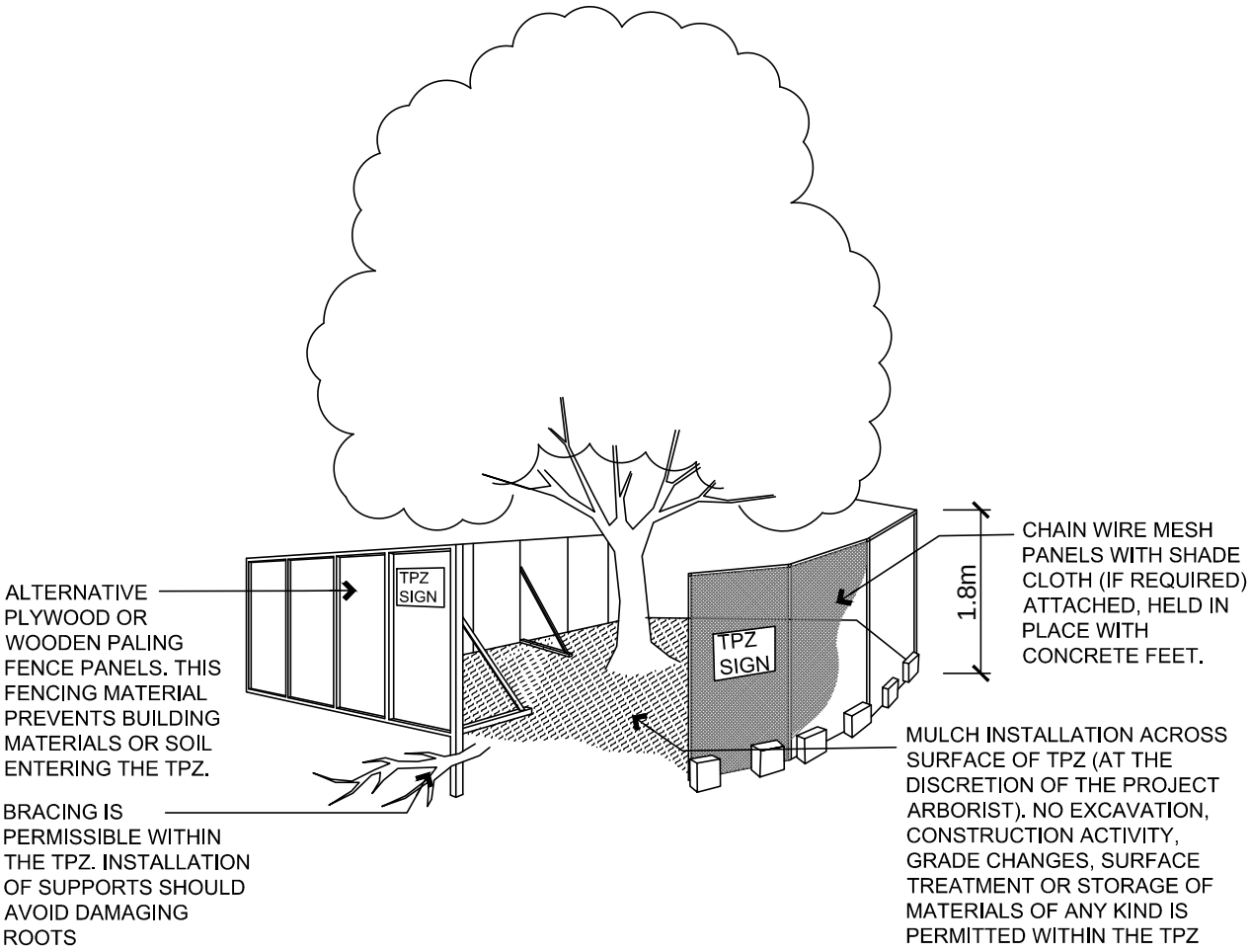
NOT TO SCALE



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

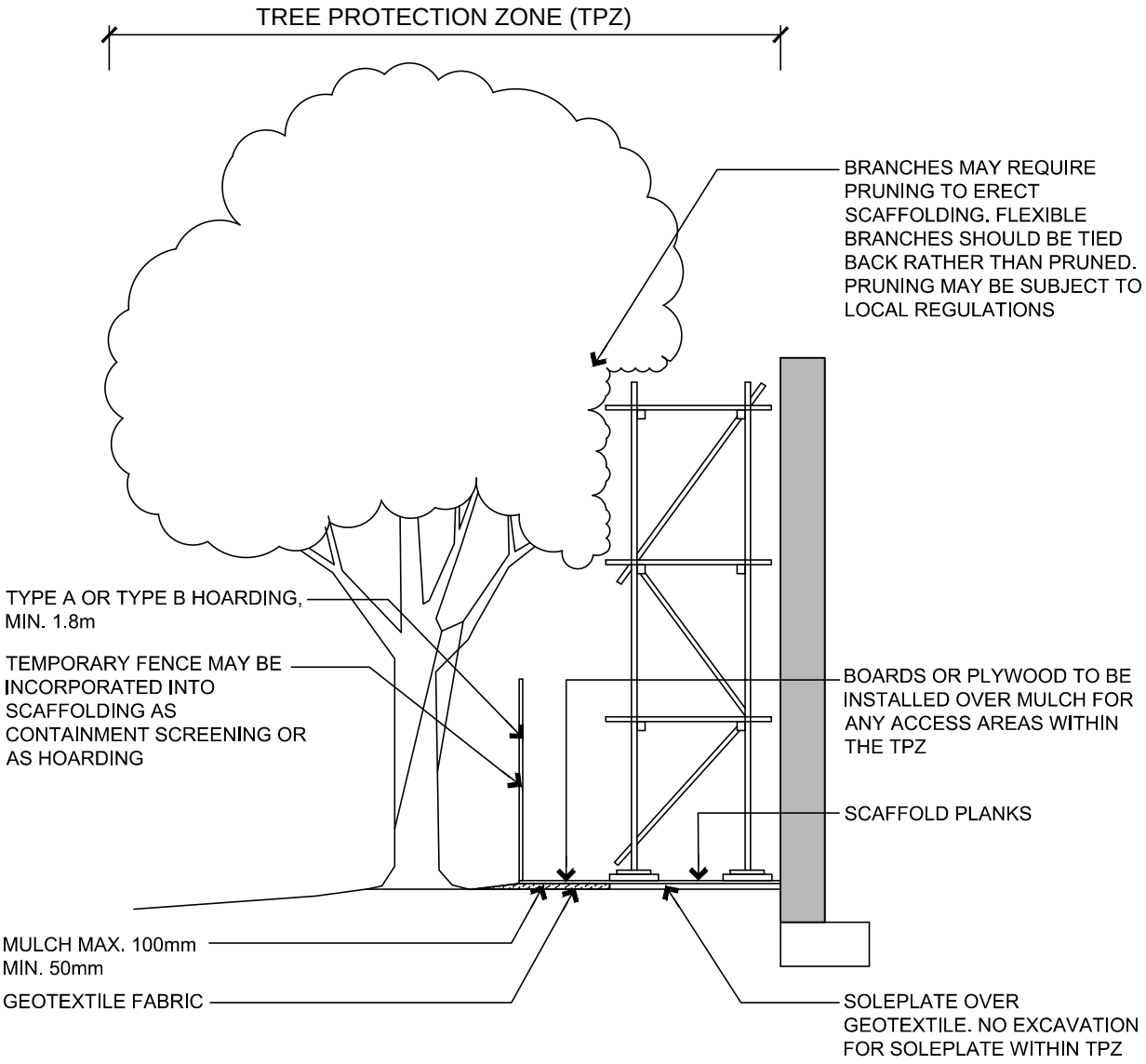
EXAMPLES OF TRUNK, BRANCH AND GROUND PROTECTION

Based on AS4970-2009 NOT TO SCALE



PROTECTIVE FENCING

Based on AS4970-2009 NOT TO SCALE



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

INDICATIVE SCAFFOLDING WITHIN A TPZ

Based on AS4970-2009 NOT TO SCALE