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Tree Protection Report

Relating to the site:

Southern Cross Hospital, Newtown

Attention:

Local Landscape Architecture Collective

Report Prepared
12/03/19

Amended
25/07/19

Site Visit
03 September 2018

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1 Brief

This report aims to –

- Provide a timeline for tree protection works (Pre, during and post development)
- Provide specifications for tree protection measures (Mulching, irrigation, tree protection fencing, signage, contractor inductions, exploratory hydro excavation pre development, root moisture retention and barriers, site arborist, monitoring)
- Provide recommendations for a site monitoring schedule (Site arborist, which works are overseen and when, root pruning, compliance report)
- Outline a TPZ (Tree protection zone) (At the edge of the garden bed/at nib where fencing is to be erected)
- Provide specifications for tree pruning (Canopy pruning at edge of garden bed/nib on development side)
- Provide aftercare and monitoring schedule (Irrigation, re-mulching, arborist inspections)

2 Limitations

- All observations relied upon in this report are limited to the condition of the trees at the time of inspection. This report does not make assumptions on any works prior to those observed on the site visit.
- This report is intended for the use of the property owner and all parties involved in the consent process and shall not be used for any other purpose. This report is to be used as documentation providing the client with appropriate information on the trees and must be updated when/if any further works are carried out.
- All development information is based upon the drawings attached to this document. Arb Innovations cannot guarantee the accuracy of these documents.
- This report is only to be considered alongside the Arboricultural Assessment compiled by Arb Innovations on the 3rd of September 2018 and should not be considered a stand-alone document.
- Any additional conditions of consent from the governing authority must be considered alongside this report

3 Methodology

- During the site visit a VTA (Visual Tree Inspection) was performed.
- All observations were made on the condition of the trees at the time of inspection.
- This inspection was done from ground level.
- All assessments are based on what could be observed from ground level.
- No invasive diagnostic tools were used.

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4 Tree protection Zone

TPZ Introduction

The TPZ (Tree Protection Zone) will be considered an area where restricted activities apply to all contractors working on site. The author has considered the listed trees in their current location and established the TPZ as a maximum encroachment distance without the supervision of a site arborist. This is a critical measure put in place to protect the tree parts most vulnerable to damage in a development environment; the roots, trunk and branches.

The TPZ will be clearly defined in this report and must be communicated to all contractors working on the site.

a) TPZ location

- **Pre works commencement** the TPZ will be defined as the area at the outermost branches of the listed trees in a rectangular shape surrounding the garden bed and the space between the listed trees. Tree protection fencing and signage will need to be erected at the perimeter of this TPZ in accordance with the Tree Protection Fencing specifications and Tree Protection Signage specifications noted in section 7 of this report. Exception is given to the garden bed on the Eastern Street frontage where fencing will interfere with the public walking path. Waratah and mesh fencing can be erected on this side, inside the bed to act as the tree protection fencing.
See Appendix A for image of approximate TPZ location.
- **Post pruning operations and exploratory excavations** the Western side of the TPZ fencing will line up with the existing garden nib/edging.
See Appendix A for image of approximate TPZ location.
- **During the demolition of existing hard surfaces and installation of the footings and retaining wall** the TPZ fencing is to be either removed or modified under the supervision of the site arborist only. Fencing is to be re-erected at the end of each working day. During this stage, steel mesh fencing can be substituted with waratah and mesh barriers where permitted by the site arborist.
- **Post retaining wall construction** TPZ fencing is to be modified to further protect the upper canopies of the listed trees and any other areas deemed necessary by the site arborist. The location and implementation of this fencing will be under the instruction of the site arborist.

- **During the installation of the landscaping screen with climbers** Works methodologies must be communicated to the site arborist with consideration given for foot traffic in the garden bed. Load sharing surfaces may be required to allow contractors to access the area to reduce compaction of soil. If deemed sufficient by the site arborist, the existing mulch layer may serve this purpose. *See Section 7 - Mulching*

b) Permitted activities

The TPZ is to be treated as a no go zone to all contractors outside of scheduled works permitted in this report. The following activities are **NOT** permitted within the TPZ and are to be listed on the tree protection signage

- Storage of **any** materials. Soil, concrete, building waste, paints etc.
- Opening or alteration to the tree protection fencing without consent from the site arborist.
- Site washout/run off of paints, materials, chemicals, etc where they could run into the TPZ.
- Machinery movement or foot traffic within the TPZ. *Compaction of soil commonly kills trees on development sites.*
- Adjacent machinery operations where they could impact on the trees i.e. physical damage, causing injury to trunk and/or branches.
- Any ground works not permitted in this report.

If entry or alterations to the TPZ are required outside of scheduled works permitted in this report, the site arborist must be contacted immediately to approve and oversee the works on site prior to entry or alterations.

c) Access to the TPZ

Foot traffic access may be required during the construction of the retaining wall. Under the supervision of the site arborist contractors may enter the TPZ so long as the soil is adequately protected from compaction by the mulch layer *See section 7 - Mulching*. If this is deemed to be insufficient, a load sharing surface must be installed for foot traffic.

Small machinery access may also be permitted depending on the weight and load sharing surface utilised, ensuing that there is satisfactory space between the trees to operate safely without causing damage to the trees.

Temporary geo web/geo cloth with a plywood top laid on top of the mulch layer is recommended for this application. Sign off along with supervision by the site arborist must be maintained at all times if working within the TPZ.

Required access must be communicated in advance to the site arborist and approved. A minimum of 24 hour's notice is to be given.

5 Demolition of existing garden edging/nib

Demolition of the western garden bed edging will need to be performed without disturbing the soil and roots within the bed.

Bitumen to the west of the edging can be scraped back to allow a void to pull the edging into.

A demolition methodology must be communicated to the site arborist prior to work commencement, along with an exploratory hydro vac trench excavated along the concrete nib supervised by the site arborist to ensure no root structure is present.

6 Installation of footings and retaining wall

The maximum encroachment distance to these trees will be the existing soil edge where it meets the existing garden bed edging. It has been estimated all the critical roots of these trees are located within this soil area and up to the western edge of the garden bed.

The proposed retaining wall will need to be installed no closer than this zone. All installation methodologies will need to consider this area as a no go zone. If this soil area is disturbed it is likely to have a detrimental effect on tree health and tree stability. For the trees to be retained it is imperative that this area is adequately protected.

If, during construction of the retaining wall the soil area is required to be exposed for prolonged periods, moist cardboard and hessian is to be affixed to the soil edge with retaining pins and kept wet to reduce root dehydration.

See appendix A for drawing of maximum encroachments.

If footings are designed to be installed beneath the root plates/TPZ. Proposed measurements and depths will need to be discussed in consultation with an arborist. As a general guide, root systems in clay soils generally grow in the top 350-450mm of soil. Soil allowance below the root plates will also need to be retained.

Ideally the footings would be situated beneath and between the trees at a depth greater than 500mm below natural ground level.

If this method is to be considered soil retention systems will need to be put in place during footing/wall installation. These systems are to be designed by a suitably qualified expert and approved by an arborist.

Details for this methodology will need to be added to this report once design plans have been drawn and supplied.

7 Specifications

Tree removal and stump grinding – (of trees identified to be removed)

Removal of trees to be performed by suitably qualified arborists (NZ ARB Approved contractor such as Arb Innovations Ltd or see <https://www.nzarb.org.nz/> for alternative suppliers). Particular care must be taken when removing the stumps so as not to damage the root systems of adjacent trees being retained. All works to be done under the supervision of the site arborist.

Mulching

Spreading mulch in the garden bed will improve the current soil health by retaining moisture and providing food for microorganisms responsible for producing available nutrients to the trees. Any tree stress sustained during the development can be offset by mulching.

Aged arborist mulch to be spread throughout the entire garden bed. Mulch is to be spread 10cm thick and not piled up against the trunk or over the root flair leaving a 10cm gap.

Mulch needs to be re-applied after 12 – 24 months or when it has broken down amongst the soil.

Irrigation

An irrigation system must be established to retain the soil moisture levels pre, during and post development. This system must be designed by an appropriately qualified contractor and monitored throughout the development stages.

Optimal soil moisture levels to be determined by irrigation contractor and ensured they are maintained.

Fencing

Temporary steel mesh fencing with a minimum of 2 meters in height securely affixed to each other to be installed as TPZ fencing referred to in section 4 of this report.

Fencing footings on the council walking path to have traffic cones placed around them to alert the public and reduce trip hazards.

Signage

Signage shall be installed on the TPZ fencing with the site arborists contact details and shall not be removed without permission from the Site Arborist.

Signage must be clearly visible on all sides of the TPZ.

The signage will outline a summary of restricted activities within the TPZ as outlined in section 4 of this report.

Contractor inductions

An induction process for all contractors/sub-contractors shall be held prior to any entry into the TPZ. This pre start induction is run by the site Arborist and covers procedures for working onsite around the trees, along with the processes required for work within the TPZ of each tree. Once the pre start is finished, each person signs onto the pre start record, acknowledging the procedures in place for this site.

Any contractors or visitors entering or working within the tree protection fencing will need to be inducted by the site arborist before carrying out work, acknowledging their responsibilities and the procedures for working around the trees.

This report should be included in the onsite documents and should be mentioned during prestart meetings at the start of each day when works are being carried out in proximity to the TPZ.

Exploratory trenching

Trenching is to be performed on the western side of the existing nib where it becomes bitumen. A trench will need to be dug at the entire length of the garden bed to inspect for roots. Hydro excavation or a similar minimally invasive method must be used to dig the trench. If any roots are found this method of excavation will minimise damage.

Any significant roots discovered will be inspected by the site arborist and their locations marked and noted. They will then need to be pruned to allow demolition of the existing nib. The trench will need to be backfilled immediately after inspections and pruning. Once demolition of the existing wall has been completed, any existing roots will need to be pruned again to allow for the retaining wall installation.

Back filling of the trench within the TPZ should be primarily back filled with premium topsoil.

If for any reasons the trench needs to stay open for a period longer than 2 hours, root moisture retention measures will need to be taken. Refer to “Root moisture retention” below.

Root moisture retention

At any time where roots are exposed to open air they need to be kept moist and backfilled with premium top soil as soon as possible. Dehydration of roots is a major cause of tree decline on development sites.

Dependant on the application there are a few options to keep roots moist.

In short periods of root exposure (less than 2 hours) temporary watering can keep roots moist prior to backfilling.

During longer periods of root exposure (more than 2 hours) Hessian or peat can be used to keep the area moist. Hessian covering wet cardboard works particularly well on vertical soil faces as it can be pinned into the soil to retain contact and moisture.

Root barriers

Dependant on the footing and retaining wall design it may be necessary to install root barriers. This can be installed during the construction of the retaining wall. This should be inspected and noted by the site arborist prior to back filling.

Root barriers should be fit for purpose and at least 500mm in height buried below ground as per manufacturer's instructions.

Site arborist

A site arborist must be appointed prior to any works starting onsite, supplied with this report and any conditions of consent supplied by council regarding the trees and permitted activities.

The site arborist must be suitably qualified with a minimum NZQA Level 4 qualification in arboriculture or overseas equivalent.

The site arborist will be responsible for the following -

- Overseeing all works adjacent to or within the TPZ.
- Inducting contractors onto site as per contractor inductions section of this report.
- Overseeing or performing canopy pruning and any root pruning if necessary.
- Overseeing all other works specified in this report.
- Compiling compliance notes during site inspections as per reporting section of this report and any other relevant conditions of consent requirements.
- Be on call for any unscheduled tree issues during the development.

Reporting – To site arborist

If at any time the listed trees are damaged or unexpected works are likely to damage the listed trees including their canopy, roots, trunk or surrounding soils the site arborist must be contacted immediately, prior to this work commencing.

If damage has been caused, it is imperative that it is reported to the site arborist immediately. The site arborist must visit the site, record data on the damage and implement a treatment/remediation plan.

8 Tree pruning

Initial tree pruning will require the canopies to be pruned back to be in line with the existing garden bed edging/nib on the western side. The pruning can be carried out without taking out any major limbs or making significant pruning wounds.

All pruning cuts are to be made with either secateurs or a sharp handsaw to ensure good collar cuts are made. Pruning is to be carried out in accordance with industry best practice by a suitably qualified arborist under the supervision of the site arborist.

9 Aftercare

An aftercare schedule will need to be compiled post development by the site arborist. The details of this regimen will be reliant on the health of the trees at the time of development completion.

It should include irrigation requirements, re-mulching, fertilisation plan, soil decompaction and a monitoring schedule.

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10 Timeline/Schedule

Activity	When	Actioned by	Specifications	Purpose
Appoint a site arborist	Prior to any development works starting.	Principal contractor	See site arborist under section 7	To comply with tree protection conditions in this report
Tree removal and stump grinding	Prior to any development works starting.	Suitably qualified arborist under the supervision of the site arborist	See tree removal and stump grinding under section 7	To facilitate development area as outline in plans
Spread arborist mulch throughout garden bed	Prior to any development works starting.	Site arborist/Arboricultural contractor	See mulching under section 7	To enrich soil, reduce compaction and regulate moisture delivery
Installation of irrigation	Prior to any development works starting.	Irrigation contractor under the supervision of the site arborist	See irrigation under section 7	To establish and maintain optimal moisture levels for listed trees
Erect stage 1 of TPZ fencing and signage	Prior to any development works starting.	Site arborist/fencing contractor under site arborist instruction	See fencing under section 7	To protect TPZ and communicate restricted activities within
Perform exploratory excavations	Prior to demolition of existing garden bed edging	Hydro-excavation contractor under supervision of the site arborist	See exploratory trenching under section 7	To ensure there are no critical roots extending beyond the garden edging heading west.
Perform canopy pruning	Prior to demolition of existing garden bed edging	Suitably qualified arborist under the supervision of the site arborist	See section 8 – Tree pruning	To allow room for retaining wall.
Contractor inductions	Prior to any development works starting adjacent to or within the TPZ	Site arborist	See section 7 – contractor inductions	To ensure adherence to tree protection measures by all site contractors

Demolition of existing garden bed edging/nib on western side	After all above activities have been performed	Development contractor under supervision of the site arborist	See section 5	To facilitate construction of proposed retaining wall
Second root pruning back to soil edge if roots are present and identified in exploratory trenching stage	Immediately after demolition	Site arborist	See section 7 – Exploratory trenching	To facilitate construction of proposed retaining wall.
Installation of moisture and soil retention coverings	Immediately after demolition of garden bed edging/nib	Development contractor or Arborist contractor under the supervision of the site arborist	See section 6 – Installation of footings and retaining wall and section 7 - root moisture retention	To ensure roots don't dehydrate after being exposed and to ensure soil structure stays in place.
Installation of load sharing surface (If access is required inside the TPZ)	Prior to retaining wall construction or when deemed necessary by the site arborist	Site arborist or contractor under supervision of site arborist	See section 4c – Access to the TPZ	To ensure soil isn't compacted
Construction of footings and retaining wall	After moisture and soil retention coverings are installed	Development contractor under supervision of site arborist	As per contractors approved methodology	Development as per plans
Removal of moisture and soil retention coverings and Installation of root barrier	After completion of below ground works on retaining wall	Development contractor or Arborist contractor under the supervision of the site arborist	See root barrier under section 7	To protect retaining wall from ongoing root growth
Alterations to TPZ fencing	After completion of below ground works on retaining wall	Development contractor or Arborist contractor under the supervision of the site arborist	See section 4a – TPZ location	To protect trees during ongoing development

Install creepers/landscaping	After completion of retaining wall	Landscaping contractor under the supervision of the site arborist	See section 4a	Landscaping as per plans
Remove TPZ fencing/Signage	After completion of development	Site arborist or fencing contractor under the supervision of the site arborist	See fencing under section 7	Finalise tree protection
Compile compliance report	Duration of development and post development	The site arborist	Section 11	To ensure all conditions of this report and any council conditions are met during development

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11 Additional documents required

Irrigation plan and implementation is required to be presented to the site arborist and signed off by the arborist for installation. Irrigation must be monitored and in good working condition throughout the development.

Landscaping plan with methodologies outlining the installation of climbers and plants in garden bed, signed off by the site arborist before planting.

Arboricultural compliance report to be compiled during development by the site arborist. Compliance report should list all requirements of this document and any conditions of consent imposed by council.

Aftercare schedule and specifications report to be compiled post development by the site arborist. Report to detail irrigation requirements, re-mulching and any other arboricultural works to maintain long term tree and soil health.

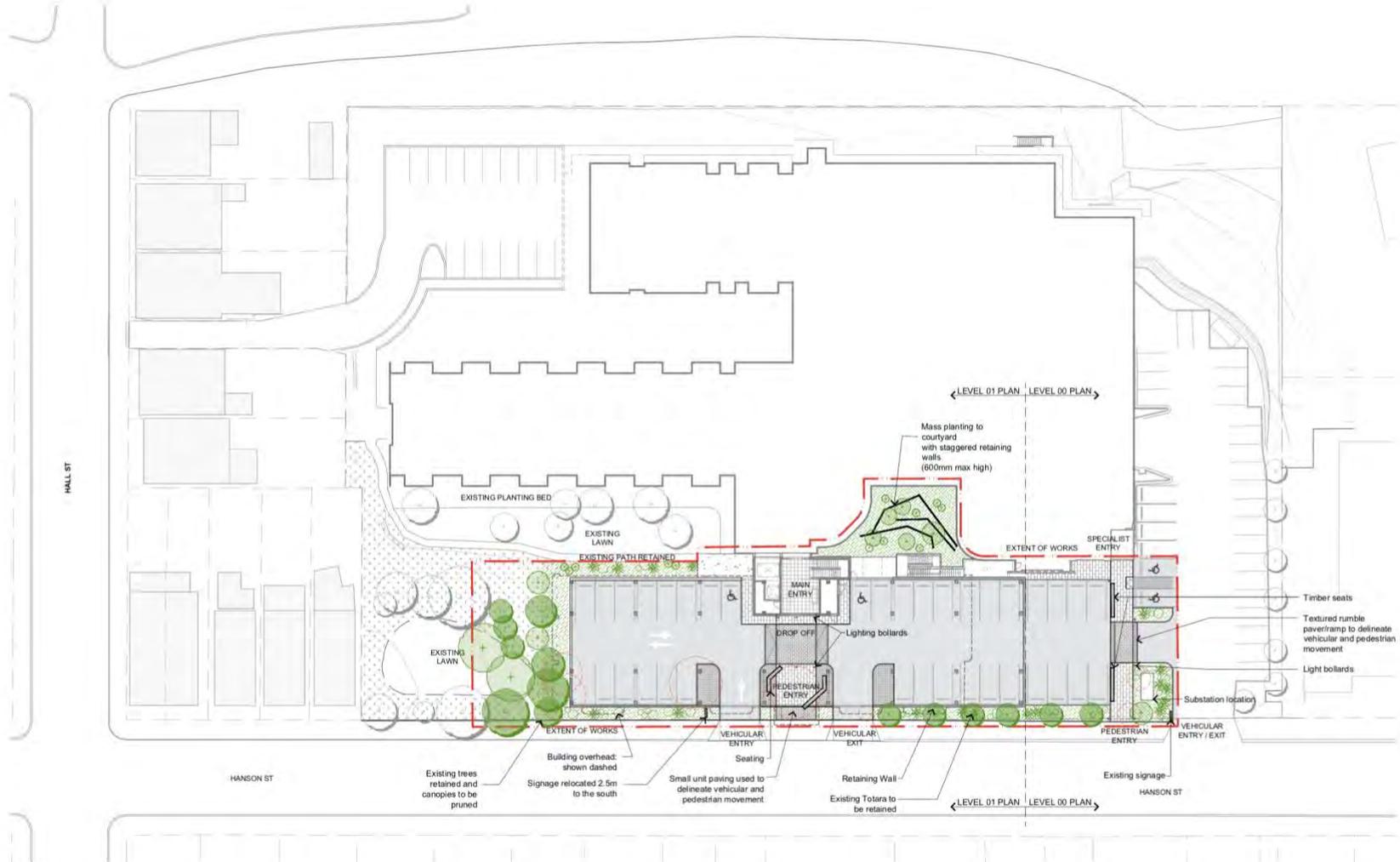
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12 Appendix A – TPZ and Exploratory excavation drawing





13 Appendix B – Landscape plans supplied



Do not scale. Verify dimensions on site before commencing work.
 For previous revisions A to J, refer to earlier plans.
 K Resource Consent 22.07.19
 Not For Construction

KEY	
	SOW line
	Canopy overhead
	Concrete paving
	Paver large
	Paver small
	Textured setts
	Asphalt
	Proposed garden bed
	Existing garden bed
	Existing tree retained
	Proposed tree
	Tree to be removed

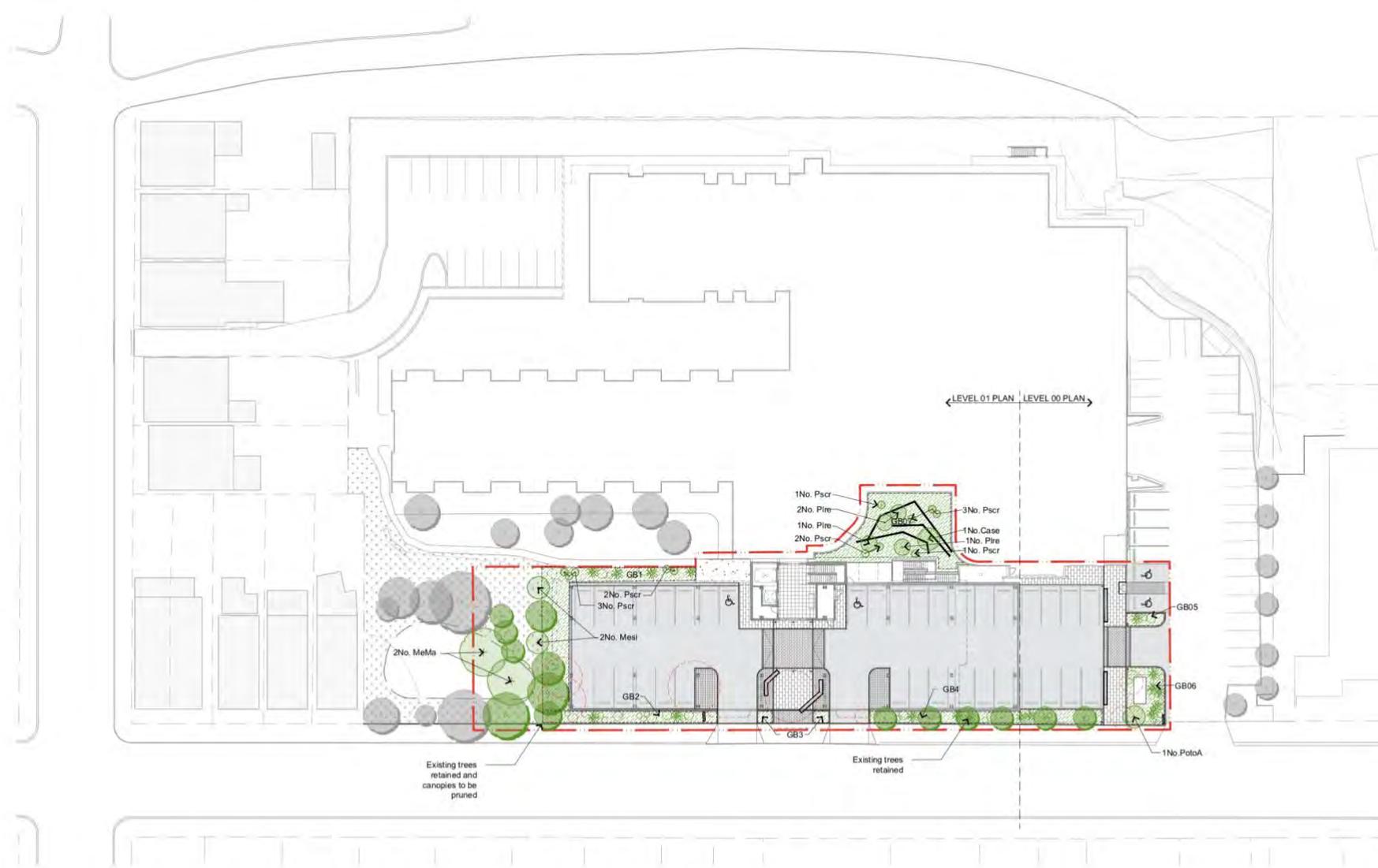
Verify all dimensions on site and report inconsistencies to the Landscape Architect prior to commencement.

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 landscape architecture collective limited

Scale: 1:250@A1
 Date: 22.07.19
 Resource Consent

Southern Cross Hospital
 Landscape Plan

LA 1.01



Do not scale. Verify dimensions on site before commencing work.
 For previous revisions A to I, refer to earlier plans
 J Resource Consent 19.07.19

Not For Construction

KEY

- SOW line
- - - Canopy overhead
- ▨ Concrete paving

- ▨ Paver large
- ▨ Paver small
- ▨ Textured setts
- ▨ Asphalt
- ▨ Proposed garden bed
- ▨ Existing garden bed

- Existing tree retained
- Proposed tree
- Tree to be removed

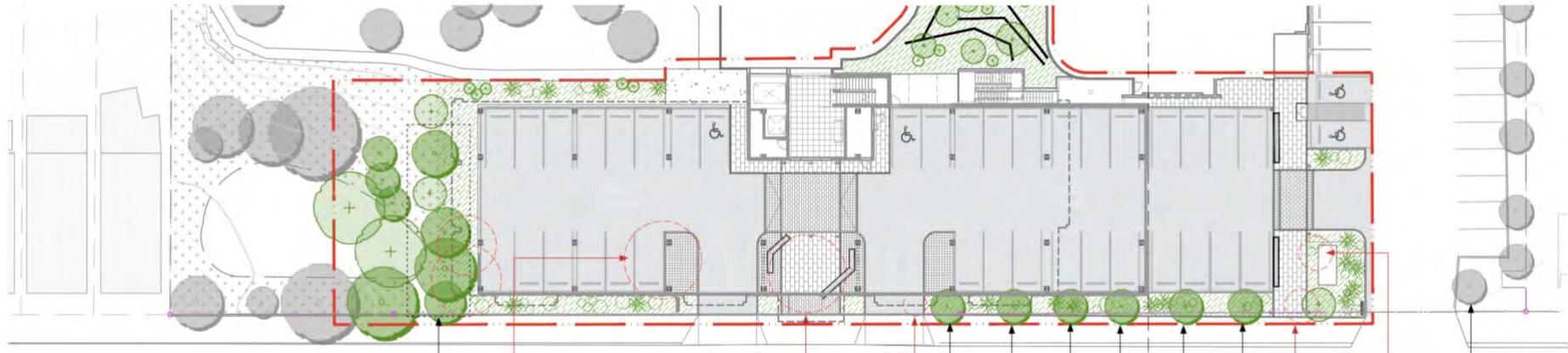
Verify all dimensions on site and report inconsistencies to the Landscape Architect prior to commencement.

local
 local landscape architecture collective limited
 Level 2, 11 Vivian Street Wellington (New Zealand, 6111)
 Phone: 04 801 4437 www.localcollective.nz

Job Number: 1802-978
 Drawing Title: J
 Project: Resource Consent

Southern Cross Hospital
 Planting Reference Plan

LA 1.02



Existing trees to be pruned/trimmed and thinned, (two from group removed)



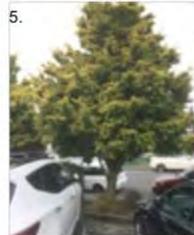
Existing Phoenix Palm removed



Existing Totara to remain



Existing Totara to remain



Existing Totara to remain



Existing Totara removed



Existing Totara to remain



Existing Phoenix Palm removed



Existing Totara removed



Existing Totara to remain



Existing Totara to remain



Existing Totara to remain



Existing Totara removed

local North
Scale
 NTS
local landscape architecture collective limited

Job Number:
1802-978
Revision:
B
Issued For:
For Resource Consent

Level 5, 11 Kiroko Street, Wellington, New Zealand, 6011

Project:
Southern Cross Hospital
Drawing Title:
Tree Identification Plan

Drawing No.:
LA1.04

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