Arboricultural Assessment and Management Plan

4-18 Doncaster Avenue, Kensington.

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1. Summary

1.1 This assessment provides information in relation to the mature *Eucalyptus saligna,* or Sydney Blue Gum previously documented as Tree 42. This is the largest and most significant tree on site and has been seen as a material constraint to the proposed development. The remainder of the trees on site have been removed as part of the demolition and site establishment.

1.2 The existing stormwater infrastructure runs under the proposed building footprint and requires re alignment to comply with current industry standards. This requires that the stormwater pipe sits outside all construction and is able to be accessed for maintenance and repair.

1.3 The location and sensitivity of the installation requirements have been considered by the Water Services Co-Ordinator Colin Pickering of K.R. Stubbs, myself and Edan Norris as the Project Manager for the Landowner. This was done as an on site assessment on the 12th February, 2020 to discuss construction requirements and feasibility.

1.4 Decay at the tree's base was noted. This will likely have been caused by mechanical damage to the tree's base and structural roots zone (SRZ) in the process of Council and the associated authorities when they performed works in the verge (outside the property boundary) including installation of the footpath and water infrastructure for the previous dwellings, which appears to be within 100mm of the base of the tree. A formal assessment of this decay has been made with the aid of a Picus Sonic Tomograph test. This determined that the decay has been affectively compartmentalised by the tree and represents less than 10% of its diameter at ground level. As such, it has been determined that the tree remains a well structured and significant example of the species and is required for consideration throughout any construction process.

1.5 The tree's basal flare is over 1.2m, representing a Structural Root Zone (SRZ) of 3.6 meters and with a trunk diameter of 80cm requiring a theoretical Tree Protection Zone (TPZ) of 11 meters. As detailed the stormwater installation works will require excavation within 3m of the tree's base. This will require the preservation of all larger diameter (30mm+) roots to ensure the tree's structural integrity. These have been based on our current standard for the *Protection of Trees on Development Sites AS4970-2009.*

1.6 A pre construction assessment of the feasibility of this would require the lifting/removal of portions of the footpath to allow non destructive excavation of the proposed trench. This report will recommend that this non destructive excavation occur as part of the installation works to limit impacts on pedestrian and traffic movements here.

1.7 The proposed development recognises the significance of this tree. The installation of stormwater services here is the final portion of the development application that requires approval. Alternative installation methods and locations have been considered and have not been found to be viable.

2. Background

2.1 The site has been cleared of all remaining trees as part of the approved works. The installation of the stormwater remains the single issue holding up the commencement of the construction process. The site sits on a block of approximately 4000m (square) and is located adjacent to the Randwick Race Course on Alison Road, Randwick. This has recently been purchased by the current owner who is proposing to facilitate the increased demand for residential student space that will occur as part of the CBD and South East Light Rail Network.

2.2 The site has a large existing Sydney Water Stormwater asset that runs through the property. An existing DA was approved for a residential scheme across the site that required this asset to be moved to the current proposed location and also retain the street tree (Tree 42). The current owners acquired the site and have submitted a new application (SSD-9649) for Student Accomodation. This report will focus on the retention of the street tree and proposed reticulation of the Sydney Stormwater asset.

3. Aims

3.1 The aims of this report are to;

- Review Council Policies for applicable conditions regarding the site and documented trees;
- Conduct a visual assessment of the documented trees and their growing environment;
- Provide a detailed list of Tree Preservation Recommendations aimed at preserving those trees documented for preservation.

3.2 There is no warranty or guarantee, expressed or implied that health, pests, disease, deficiencies, decay or any structural failures may occur at any time following documentation. Information contained in this report covers only the documented trees and reflects their health and condition at the time of inspection.

4. Methodology

4.1 A Visual Tree Assessment (VTA) was performed from ground level and consideration was given to the overall health of each tree, percentage of canopy, epicormic growth, deadwood, and form for this species. The tree heights and canopy spreads have been estimated and where relevant the orientation of the canopy spread noted. The trunk diameters of each tree has been estimated at breast height of 1.4meters (DBH) and measured with a diameter tape where required to calculate Tree Protection Zones (TPZ). The site was inspected by consulting arborist George Palmer in February, 2020.

5. Tree Data

5.1 The remaining *Eucalyptus saligna*, or Sydney Blue Gum has been documented as Tree 42. As previously detailed this is a locally native tree species that will have been planted in this location less than eighty (80) years ago. The tree is a mature and significant example of the species and will be allocated the maximum TPZ construction setback of 12m under AS4970 guidelines for the *Protection of Trees on Development Sites.*

6. Discussion

6.1 The proposed stormwater installation will see a 1.8m stormwater pipe within 6 meters of the base of the tree. This is within both the tree's theoretical TPZ and SRZ as outlined within our *Australian Standards for the Protection of Trees on Development Sites.* Consideration of this will need to occur throughout this portion of the design and construction process.

6.2 The excavation to allow for the installation will require a combination of non destructive digging and mechanical excavation. This will need to be completed with full recognition of the significance of the tree and done in such a way as to limit the impacts on both the tree's structural and feeder root network.

6.3 There are a number of larger diameter limbs that extend from the tree's western canopy. These extend over the roadway and should be considered for removal to eliminate both the potential hazard associated with their retention and to compensate the tree for the inevitable removal of a portion of the tree's feeder root network.

7. Tree Management Recommendations

7.1 This *Eucalyptus saligna,* or Sydney Blue Gum is a mature and significant example of this locally native tree species and is required for preservation. As detailed the works will require excavation within both the SRZ and TPZ of the tree. Any excavation within 3.8m of the base will need to consider the structural integrity of the tree and avoid the removal of any root over 30mm in diameter.

7.2 Access to allow for the installation of a 1.8m diameter stormwater pipe will not be easy. The excavated trench will be over 2m in diameter and dug to a depth of close to 4m below existing ground levels. This installation will inevitably lead to the removal of smaller diameter feeder roots and possibly larger roots.

7.3 The impacts of this on both the tree's health and structural integrity will need to be considered as they occur.

7.4 All roots required for pruning or removal should be cut cleanly adjacent to the edge of the proposed construction and covered with hessian to limit the spread of decay and their exposure to the atmosphere.

7.5 The remaining Tree Protection Recommendations are generic recommendations that have been based on AS4970 Standards and should be implemented where applicable.

7.6 Appointment of Site Arborist
A site arborist shall be appointed prior to the commencement of work on site. The Site Arborist shall clearly mark out all trees to be removed and ensure that all trees documented for retention are preserved with the implementation of the following tree protection measures. The Site Arborist shall have a minimum qualification equivalent to a NSW TAFE Certificate Level 5 or above in Arboriculture.

7.6.1 Inspection Points
Give 5 working days notice to allow inspections to be undertaken at the following stages;

Inspection Point	Inspection Personnel
Installation of Tree Protection Zones including Tree Protection Fencing, Silt Fencing and Signage	Site Arborist
Modification of the Tree Protection Zone	Site Arborist
Works within the Tree Protection Zone	Site Arborist
Completion of Construction Works	Site Arborist Site Supervisor.

7.6.2 Education
Contractors and site workers shall receive a copy of these specifications prior to the commencement of work. Contractors and site workers undertaking any works within a TPZ shall sign the site log to confirm that they have read and understand these specifications prior to their undertaking.

7.6.3 Tree Protection Zones
Where applicable, all trees to be retained through the construction process shall be protected from mechanical damage and the indirect impacts of the construction process with the installation of Tree Protection Zones (TPZ). Unless otherwise stated, the following activities must not be carried out within a TPZ;

- modification of existing soil levels
- excavation or trenching
- cultivation of soil
- mechanical removal of vegetation
- movement of natural rock
- storage of materials, plant or equipment
- erection of site sheds
- affixing signage or hoarding to trees
- disposal of chemical waste or construction material
- any activity that may directly or indirectly affect the health of these or surrounding trees.

Note: If access to a TPZ is required as part of the approved development, prior authorisation is required by the Site Arborist.

7.6.4 Tree Protection Fencing
Tree Protection Fencing shall be installed at the perimeter of the TPZ. As a minimum the Tree Protection Fencing shall be 1.8 meters high temporary chain supported by steel stakes. This shall be fastened and supported to prevent sideways movement. The tree's woody roots shall not be damaged during the installation of this Tree Protection Fencing.
This Tree Protection Fencing shall be erected prior to the commencement of works on site and shall be maintained for the duration of the construction process.

7.6.5 Trunk and branch protection
Where TPZ fencing cannot be installed due to practical site constraints, trunk protection shall be installed around the trunk or branch to avoid mechanical damage. As a minimum, the trunk and branch protection shall consist of padding wrapped

around the trunk and/or branches of affected tree. Timber panels will then need to be erected around the affected branch or trunk.

7.6.6 Signage
Tree Protection Signage shall be attached the the TPZ and displayed in a prominent location. These signs shall be repeated in 10m intervals or closer where the fence changes direction. These shall be a minimum of a 72 font size and each sign at-least 600 x 500mm.

7.6.7. Tree and root pruning
All tree and root pruning and removal works shall be carried out in accordance with Australian Standard 4373 - 2007 Pruning of Amenity Trees. All pruning and removal works are to be carried out by a suitable qualified arborist, in accordance with the NSW WorkCover Code of Practice for the Amenity Tree Industry (1998).
Where root pruning is required, these should cut cleanly at the edge of the construction impact zone and kept moist by covering with a hessian material or mulch, for the duration of the construction period.

7.6.8 Mulching
The area within the TPZ shall be mulched and maintained with 80mm of leaf litter mulch for the duration of the construction process. This mulch shall be spread by hand to limit the impact on underlying roots and shall be installed prior to the commencement of works on site.

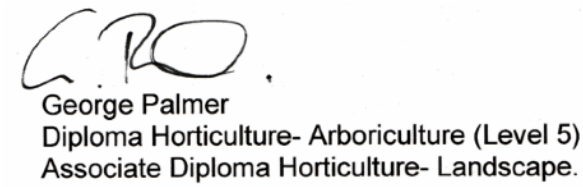
7.6.9The Site Arborist shall inspect and approve the TPZ including mulching. signage, Tree ProtectionFencing, Silt fencing and Signage prior to the commencement of works on site.

7.6.10. Ground protection
Wherever applicable pedestrian, vehicular and mechanical access shall be excluded from the TPZ. Where required access within the TPZ shall be restricted to areas where ground protection has been installed.

7.6.11 Site Management
Materials and waste storage, site sheds and temporary services shall not be located within the TPZ unless specified. Storage points shall be covered when not in use and be no greater than 2m in height.

7.6.12 Works within the TPZ
The TPZ may need to be modified during the works to allow access between the protected tree and the proposed construction. The TPZ shall remain as specified and only those works detailed in the proposed construction undertaken.

7.6.13 Completion of Works within specified TPZ
Upon the completion of works within a TPZ the protective fencing shall be reinstated as specified. Where the construction of new structures does not allow for the reinstallation of fencing the TPZ shall be modified by the Site Arborist.



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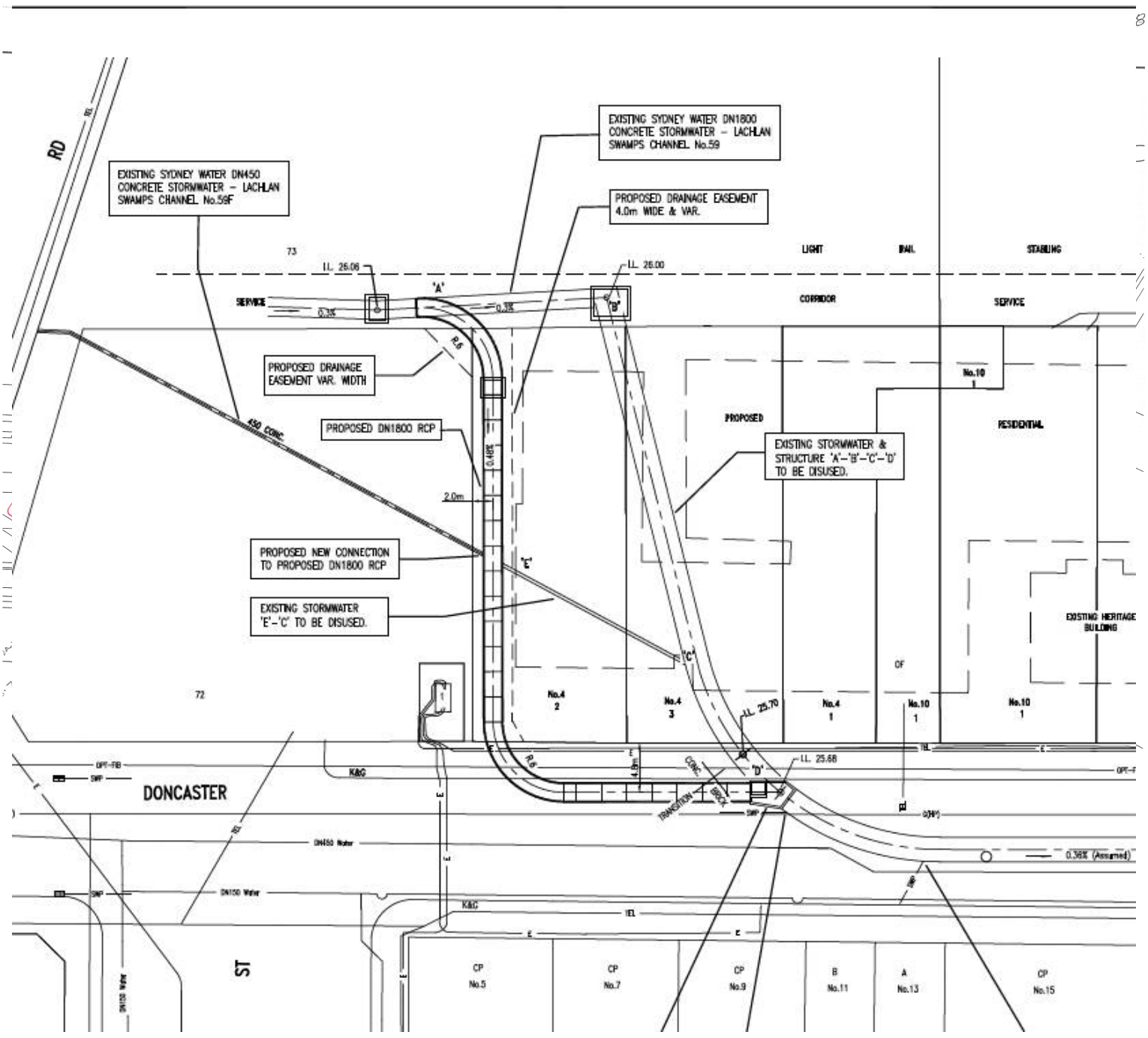

Figure 1 Shows the locations of both the existing and proposed stormwater pipe.