28 August 2019

The General Manager
Northern Beaches Council
1 Park Street
MONA VALE NSW 2103

Attention: Planning and Tree Management Officers

PROPOSED DISABLED ACCESS INCLINATOR THRESHOLD STRUCTURE
159 Riverview Road Avalon

URBAN FORESTRY AUSTRALIA

TREE MANAGEMENT
CONSULTING ARBORICULTURISTS
HORTICULTURISTS
LANDSCAPE DESIGNERS

Dear Officers,

At the request of Annie and Rowan Ross, owners and occupiers of 159 Riverview Road, Avalon (the site), I supervised a root mapping investigation at the site on 22 August 2019.

This Root Mapping Report is to be read in conjunction with the Arboricultural Impact Assessment prepared for this proposal in May 2018. The recommendations for protection of this tree, outlined in the May 2018 report remain valid and are to be adopted during the construction period.

BACKGROUND

This root mapping investigation was undertaken to assist in determining the possible impacts of a proposed 450mm diameter support column on the health and stability of a large and mature Spotted Gum located in the site. The column is close to the Structural Root Zone offset of the tree.

My original involvement with this site dates to January 2004 when I undertook preliminary tree assessments leading up to an Arboricultural Impact Assessment dated March 2006 and prepared for a DA for a new dwelling on the site. The subject tree is identified in the 2006 report as Tree 1.

The tree was located at the base of a stone retaining wall along the site's east boundary. The site topography was originally (and still is) quite steep falling from the road level around RL 35 to the Mean High Water Mark at Pittwater to the west. The original garage and driveway were located directly adjacent to the tree and the original ground level here was clearly altered by adding fill material and consolidating it to support the structures (Plate 1).

My initial impact assessment for this proposal dated May 2018, stated the east sandstone retaining wall may require partial or complete removal. However, I have since been advised by the consulting engineer (Richard Yates of James Taylor and Associates) that only a portion of the existing concrete wall will be removed – nominally 250mm below the existing ground at road level. This is to accommodate the car platform being seated on the wall and be flush with the existing ground at road level (Figure 1). The engineer advises this will not cause any destabilisation to the sandstone wall, nor to the concrete wall.

There will not be any excavation near the Structural Root Zone of the tree other than for the proposed south column.

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ROOT MAPPING DETAILS

Mr Brad Davies of Tree Health Solutions carried out the root mapping works using an AirSpade®; this is a hand held tool that uses compressed air to remove soil and expose items in the soil profile. Used with care, the AirSpade® generally does not injure significant tree roots.

Pit Location

The pit was dug within a 1m x 1m area identified by the engineer and architect as the desired area in which to place the supporting column (Figure 1).
The pit was dug at approximately 4m west of retaining wall behind the subject tree. The pit was moved to be just outside the notional 3.4m Structural Root Zone radius, and to also avoid an existing irrigation line between the proposed column location and the tree.

Pit Dimensions

The pit was approximately 500mm in diameter and dug to an average depth of 600mm.
At the west corner of the pit an investigatory depth of 900mm depth was achieved without any obstructions or roots encountered.

0 – 50mm depth

- The top layer was site mulch and was removed from the pit area by hand and put aside

50 – 150mm depth

- The topsoil was removed by hand and put in a separate pile.
- The soil was generally consistent with introduced planting media with some soil and bark chips, etc.
- A steel star spike was encountered about 200m below ground level. The star spike was firmly embedded in the soil and was left in situ as it proved too difficult to pull out.
- Small roots less than 5mm diameters were found only in the upper 100 - 200mm of the soil profile
- Three woody roots of around 12mm diameter were encountered at a depth of approximately 200mm. These roots were well spaced apart around the pit edge.

150 – 600mm depth.

- The subsoil was dislodged with the AirSpade® and removed by hand.
- The soil is fine and sandy, and of poor structure and cohesiveness. It is interspersed with building rubble, old rock core samples and small pieces of sandstone. It has the hallmarks of fill material and is consistent with this area's past use as a driveway on the original sloping terrain.
- Scattered, small, non-woody roots activity were observed.

600mm+ depth

- The soil texture and structure differ slightly at this point, becoming very fine, more compacted and definitely not conducive to root incursion.
- AirSpade probing to the west to a depth of 900mm below ground level did not encounter any obstructions or resistance consistent with g roots, rocks or other structures.
- Very few non-woody roots were observed at this depth.

The northern location for the second column is sufficiently clear of the tree's notional Structural Root Zone to not warrant further excavation of the existing ground at this time. The recommendations of the May 2018 report allow for supervised hand digging at the initial stages of approved excavation for construction.

The enlarged 1m x 1m area (DA-01, Rev 10) allows for column location flexibility, if required, but it is highly unlikely the column will need any shifting given the existing consolidated fill (and hostile root environment) within the area to be excavated.

CONCLUSIONS

Based on the root mapping investigation for the location of the proposed column, it is my opinion it is highly unlikely any significant woody tree roots belonging to Tree 1 will be disturbed or damaged during piering and installation of the southern column.

I am also satisfied there is no reason to undertake any further excavation for the purpose of mapping tree roots for the northern column as it is well clear of the tree's notional Structural Root Zone and the soil conditions are not conducive to root growth in this area.

RECOMMENDATIONS

Refer to the recommendations included with the 4 May 2018 arboriculturist report by Urban Forestry Australia for protection of this tree (Tree 1) during construction of the proposed disabled access inclinator threshold structure.

Should you require any further assistance with this matter, including liaison with Council's Tree Management Officers if required, please do not hesitate to call me.

Yours faithfully,

Catriona Mackenzie
Consulting arboriculturist, horticulturist and landscape designer.
Tree Risk Assessment Qualified 2014 (TRAQ)
Certificate of Horticulture *Honours*
Diploma of Horticulture (Arboriculture) *Distinction*
Associate Diploma of Applied Science (Landscape) *Distinction*
Member of the International Society of Arboriculture (ISA)
Founding Member of the Institute of Australian Consulting Arboriculturists (IACA) ACM0052003

Plate 1—Illustrates the location of the original dwelling, garage and driveway prior to the more recent construction of the new dwelling. Note the levelled areas supporting the structures. The soil beneath these was consolidated over time. The tree (arrowed) at the base of the original retaining wall.
Photo C. Mackenzie. March 2006.

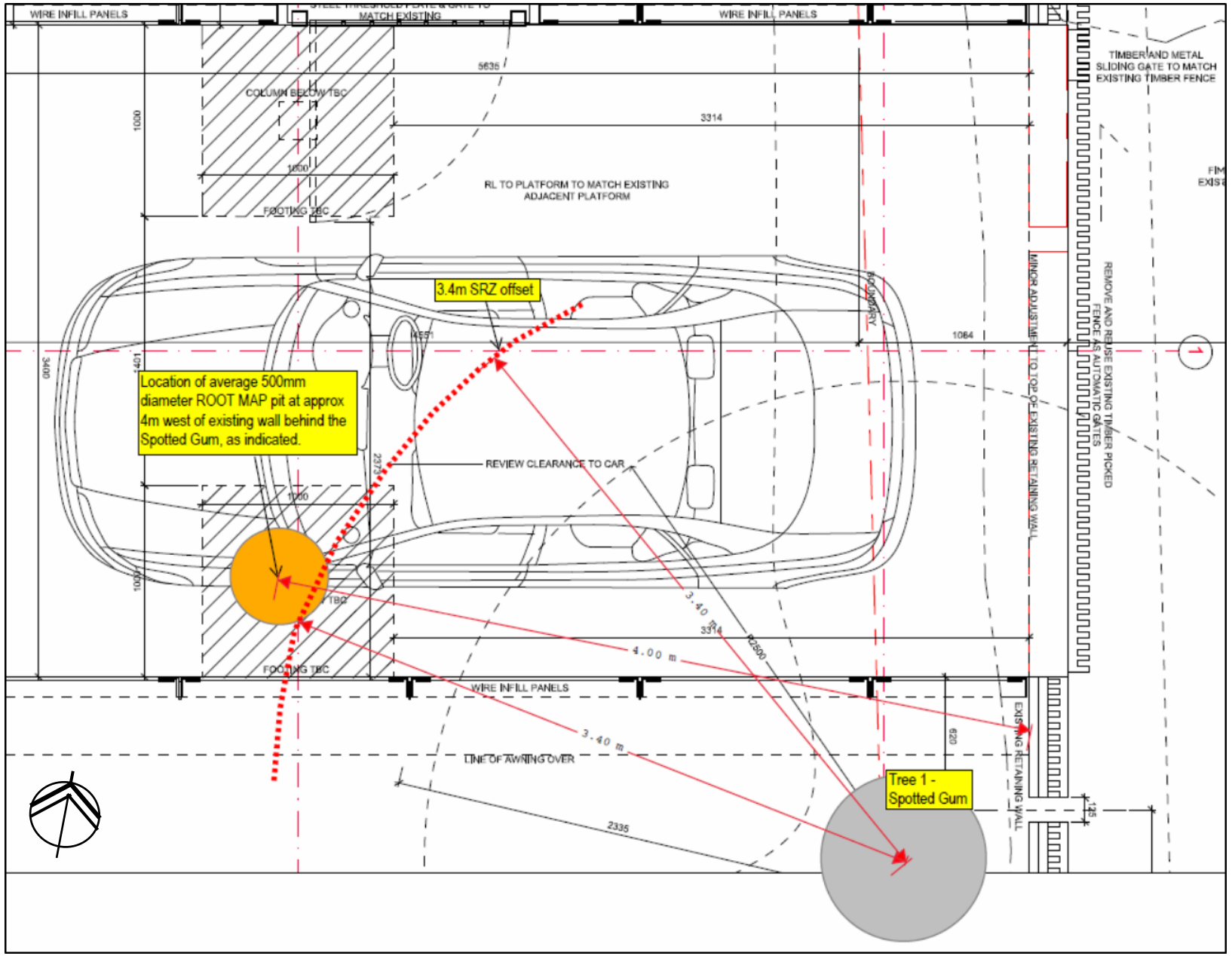

Figure 1—Illustrates the location of the root mapping pit in relation to the subject tree.
Excerpt of DA-01, Rev.10, dated 16.08.10, marked up by C. Mackenzie. Not to scale.

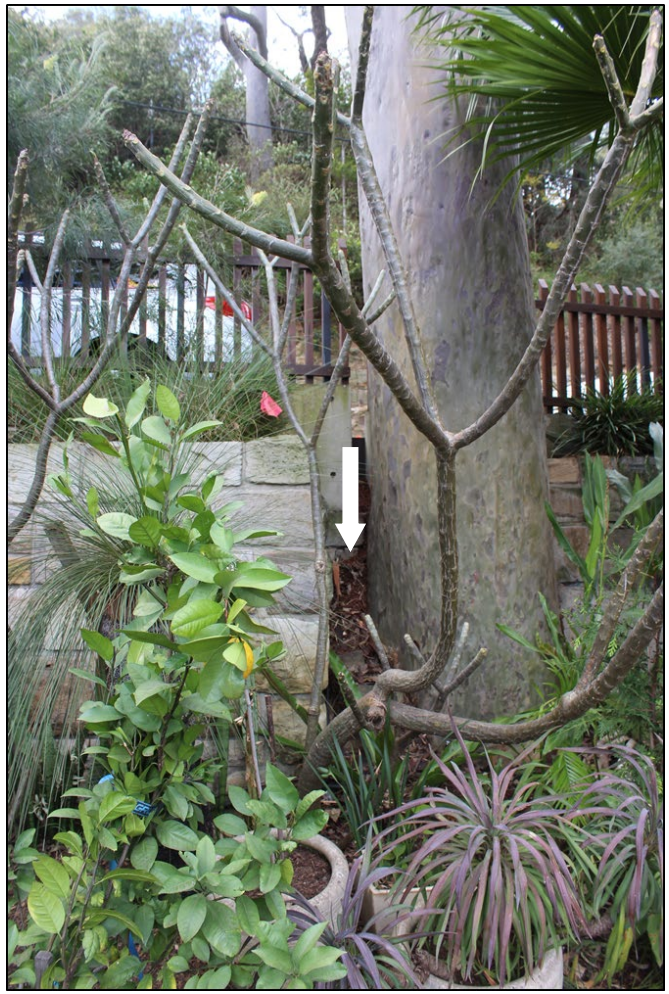

Plate 2—Illustrates the point where the pit location was measures from, i.e. 4m from this retaining wall behind the tree.

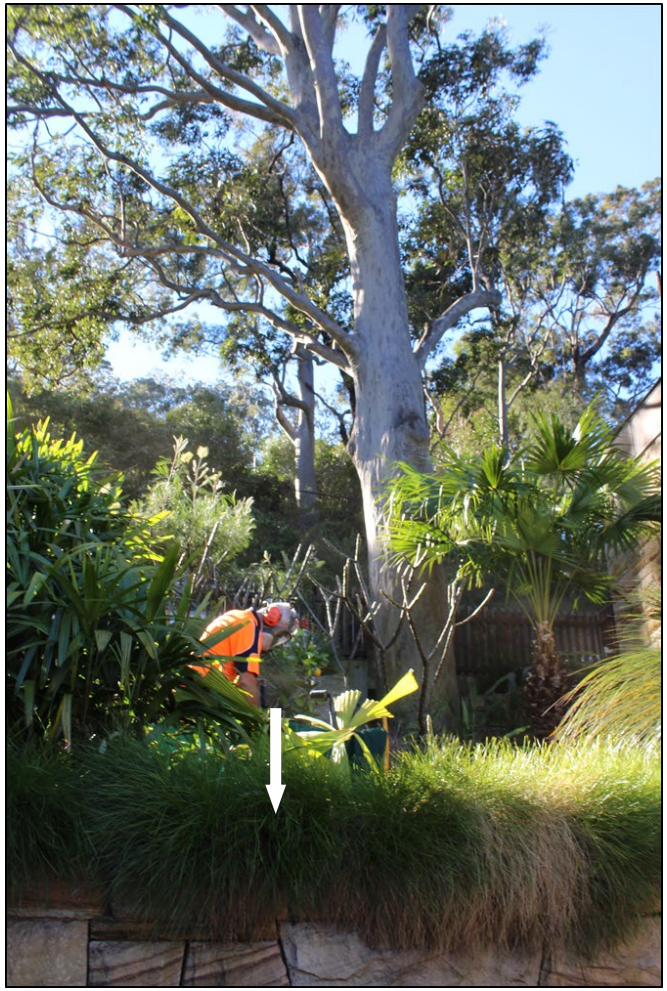

Plate 3—View of root mapping contractor using the AirSpade® to excavate the pit for the proposed column. Arrow illustrates approximate location of pit in relation to the tree.

Plate 4—View of root mapping contractor using the AirSpade® to excavate the pit for the proposed column.

Plate 5 (left)
Mulch layer placed to right of plastic bin. Topsoil to left, and subsoil far left. The yellow pipe is the compressed air line for the AirSpade®.

Plate 6 (right)
Illustrates the location of pit in relation to the existing inclinator structure (background)

Plate 7 (left)
Image taken during excavation of pit.

Plate 6 (right)
Illustrates the depth of the pit to a minimum of 600mm. Note presence of star picket in pit.

Plate 8—Illustrates the 3 small roots less than 15mm diameters encountered in the pit excavation.
The pit walls are layers of stacked rock and fill material densely compacted.
Note irrigation pipe to east, and old star picket in pit.
Inset – image of largest root encountered about 12mm diameter.