ABN 53 110 564 102
40 Timbarra Road
St Ives NSW 2075
T/F: 02 9943 6510
M: 0425 342 051
E: landscapematrix@optusnet.com.au
9th December 2021

Mr John Green
Sirius Developments Pty Ltd
120B Underwood Street
Paddington NSW 2021

Dear Mr Green,

Re: Sirius Building - Tree numbers 50 and 51 – Options for basement rectification works – Updated advice 9/12/2021.

Reference is made to my previous Arboricultural Impact Report and advices in respect of the likely impacts of the proposed basement rectification works at the Sirius Building to two adjoining trees located in the Gloucester Walk. I note that City of Sydney has raised significant concerns regarding the proposed removal of the trees.

The trees in question are identified as tree numbers 50 and 51 in the earlier report prepared by Landscape Matrix and were summarised in the earlier report as follows:

Tree Number 50
A mature, single trunked Platanus x hybrida (Plane Tree) approximately 18 metres in height with a canopy spread of 16 metres and a DBH of 590mm. In good health and of high landscape significance.
The tree displays fair branch attachment with multiple leaders from 3 metres - not considered at risk of failure. Limited TPZ area due to adjacent infrastructure, level changes etc. Pathway adjacent to the tree is lifted and cracked consistent with displacement by roots. Some foliage damage likely due to Sycamore Lace Bug.

Tree Number 51
A mature, single trunked Platanus x hybrida (Plane Tree) approximately 18 metres in height with a canopy spread of 16 metres and a DBH of 570mm. In good health and of high landscape significance.
Limited TPZ area due to adjacent infrastructure, level changes etc. Pathway adjacent to the tree is lifted and cracked consistent with displacement by roots. Some foliage damage likely due to Sycamore Lace Bug.

Under *AS4970-2009 Protection of trees on development sites* tree number 50 has a tree protection zone (TPZ) of 7.1 metres and tree number 51 a TPZ of 6.8 metres. Both trees have a structural root zone (SRZ) of 2.9 metres. The TPZs and SRZs are radial offsets measured from the centre of trunk.

AS4970-2009 identifies the structural root zone as the area required for stability and where disturbance of any sort should be avoided.

As noted in the earlier report the trees have a limited TPZ area due to adjacent infrastructure, significant level changes etc. Included in these limitations is the existing basement of the Sirius building. The existing basement is located well within the identified SRZs of both trees.

The earlier Arboricultural Impact Report identified the trees would not be impacted by the development proposal as the existing basement wall was proposed to be retained in situ.

Subsequent to the Development Application process further input from the Structural Engineer has been prepared during the course of detailed design development. This additional investigation has identified the existing basement walls are:

- Not compliant to current codes and cannot be certified;
- The retained material behind the walls needs to be removed;
- The walls will need to be demolished and re-constructed; and
- Tree root damage to the retaining walls has been documented and is compromising the structural integrity of wall allowing water ingress to basement;
- Tree root damage to the existing stormwater lines has also been documented;
- Given the immediate proximity of the trees to the damaged sections of the wall together with the absence of other trees in the vicinity it is considered inevitable that the roots causing the damage are from tree numbers 50 and 51.

The selected option to resolve the issues was to remove and reconstruct the walls in the same alignment as the current retaining walls. It is understood that other options were considered but not identified as the preferred solution due to a variety of factors. The other options included:

Rock anchor the existing wall – the existing wall would remain in situ and be anchored beyond the boundary with permanent anchors. It is understood the installation of the anchors will extend through the existing wall and SRZs of the tree's and result in high levels of disturbance and the likely loss of structural roots.

Without further detailed design information and investigation (including root mapping) it is not possible to accurately identify the impacts to the trees arising from this option. However, given the extent of works required and proximity to the trees, it is considered probable this option would have a significant impact on the trees.

To investigate this option further from a tree perspective, root mapping would need to be undertaken using an 'air-knife' or water jet under supervision of an AQF Level 5 arborist. This would involve carefully removing the soil around the proposed location of all of the anchors to identify the location, depth, dimensions etc of any roots that would be impacted by the works.

Following the collection of data through the root mapping an analysis would be undertaken to assess the likely impacts of the works.

However, I confirm my advice that there would be no justification to undertake the disturbance associated with this investigation if the option of rock anchors is not a viable option from an engineering perspective.

Build new soldier piled wall in front of the existing wall on the basement side – the existing wall would stay in situ and would minimise disturbance immediately adjacent to the trees. This option involves a soldier pile wall built in front of the existing wall (ca. 500mm diameter) embedded 4 metres below the basement level into rock.

The installation of the piers will likely result in some damage to roots as there is evidence of roots growing under the basement slab floor (the extent of which cannot be confirmed by ground penetrating radar due to interference to signals from the steel reinforcement in the basement slab).

However, this extent of root loss is considered likely to be within acceptable thresholds given the retention of the existing wall in situ. In addition, preliminary cutting in the slab (prior to piling) could be undertaken to enable location of the piers to avoid any structural roots of substance.

Remove and reconstruct the walls in the same alignment
The selected option was to remove and reconstruct the walls in the same alignment as the current retaining walls. My previous advice identified these works would have a significant impact on the trees and would almost certainly render the trees unstable and at risk of failure in the short term.

Given the high levels of target (human) activity in the immediate vicinity of the trees their removal, prior to commencement of works, was identified as the only option if the works were to proceed as proposed (i.e. removal of the existing walls and construction of new walls on the same alignment).

That advice remains unchanged.

In respect to the other issues raised the following advice is confirmed:
1. I have been provided with 'in pipeline' videos showing roots have infiltrated existing storm water lines adjacent to tress 50 and 51 with blockages and damage to the pipelines. Given the proximity of the trees to the blocked pipelines, together with lack of other vegetation of substance in the vicinity, it is considered highly probable roots from trees 50 and 51 are the cause of the blockages. The video was from the blocked pipeline adjacent to trees 51. I am advised the pipeline adjacent to tree 51 was too heavily blocked to enable a video of the roots.

2. The trees are relatively young mature trees with considerable future growth potential (above and below ground).

3. As the trees continue to grow the pressure from root growth against the retaining wall will continue as will the existing disturbance to the Gloucester Walk (lifted and cracked paving). The paving will require ongoing management to minimise trip hazards etc, including raising the existing pavement levels to effect repairs and retain roots. It is understood this will render Gloucester Walk not compliant to DDA requirements in the future.

Don’t hesitate to contact me if you wish to discuss any aspect of this advice.

Yours sincerely

Guy Paroissien MAIH, MIACA, MISA, MAA
M Env. Mgt. & Restor., Dip. Arboriculture, Hort. Cert., Tree Care Cert.
Director
Landscape Matrix Pty Ltd