



# Construction Impact Assessment and Management Plan.



**Site Address:** 1 Queens Park Road, Queens Park.

**Prepared for:** Avar.

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**Dated:** September, 2019.



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# 1.0 INTRODUCTION

## 1.1 Background

1.1.1 This report has been requested by Aver on behalf of Moriah College to better understand the arboricultural implications associated with the proposed works. These works are part of the Moriah College Masterplan 2019 and are part of a major redevelopment to revitalise existing facilities to improve educational opportunities and outcomes. This development will allow the College to become a world class learning facility, encouraging the development of generations of student's contribution to the betterment of a broader society.

1.1.3 The purpose of this report is to identify all existing trees, assess both health and condition, determine landscape significance and life expectancy. A determination for preservation, removal or transplantation will be made based on sustainability and suitability within the setting. For the purpose of this report Botanics has assessed the likely impact that the proposed development will have on the subject trees. This report will then provide recommendations in relation to the management of these in accordance with Australian Standard (AS) 4970 for the Protection of Trees on Development Sites. Pruning and removal works will be based on AS4373 for the Pruning of Amenity trees where applicable.

## 1.2 The Proposal

1.2.1 1.4 The impacts of the proposed works have been assessed based on the following supplied plans:

- Moriah College Masterplan 06 September, 2019 Stage 1A, 1B and Landscape Works.

1.2.2 The proposed works will reconfigure the south eastern quarter of the grounds.



## 2.0 RESULTS

### 2.1 The Site

2.1.1 The College comprises an area bounded by York Road to its south and west, with Baronga Avenue and Queens Park Road providing its eastern and northern boundaries. The site's south western corner is part of the endangered Eastern Suburbs Banksia Scrub. <https://www.environment.nsw.gov.au/determinations/EasternSuburbsBanksiaScrubEndComListing.htm> This area has been fenced off from the College with restricted access ensuring its preservation. Ecological conservation works are ongoing, being directed by Centennial Parklands <https://www.centennialparklands.com.au/stories/2016/conserving-eastern-suburbs-banksia-scrub> and it is hoped that this will encourage the establishment of better outcomes for our urban forest community.

5.2 The majority of the trees on the remaining portions of the site will have been cleared of native vegetation as part of both the early subdivisions and the construction of the College following its founding in 1942.

5.3 The site's eastern boundary comprises a constructed sandstone escarpment that retains a soil profile that has allowed the adjacent tennis courts and parking facility to be constructed on a single level.

5.4 Previous works have included the construction of tennis courts, basketball courts, large outdoor courtyards and classrooms. These have affected much of the surrounding ground levels and the trees that will have been there.

### 2.2 The Trees

2.2.1 A total of forty four (44) trees have been assessed using Visual Tree Assessment (VTA) criteria and notes. As required under Clause 2.3.2 of the Australian Standard 4970 (2009) for the Protection of Trees on Development Sites, each tree has been allocated a Retention Value based on the tree's Useful Life Expectancy and Landscape Significance with consideration to its health, structure, condition and site suitability. The Retention Value does not take into account any proposed development. All trees have been allocated 1 of 4 Retention Values;

- High Value - Priority for Retention.
- Moderate Value - Consider for Retention.
- Low Value - Consider for Removal.
- Remove - Recommended for Removal Irrespective of works.

Refer to Tree Table and Tree Assessment Schedule.

2.2.2 This report focuses on those trees located within the portions of the detailed site. These comprise a small stand of *Pinus radiata*, or Monterey Pines documented as Trees 1, 2 and 3. These are all located on the southern side of the vehicular entrance off York Road. These are an exotic tree species that will have established here less than forty (40) years previously. These remain a small fraction of their full biological



potential and while remaining in good health can be expected to continue to grow towards this in time. Tree 1 has developed with a co dominate trunk and an inclusion that extends for over 40cm.

2.2.3 Tree 4 is a collapsed *Erythrina sykesii*, or Coral tree. These are an exempt tree species under Randwick Council's Tree Preservation Legislation <https://www.randwick.nsw.gov.au/environment-and-sustainability/trees/removing-and-pruning-trees> and is recommended for removal irrespective of the proposed development.

2.2.4 Tree 5 is one of a number of self seeded *Ficus* species. This *Ficus macrophylla*, or Moreton Bay Fig tree will have established following a bird or a bat dropping. All are well suited to the local environmental conditions and remain a small fraction of their full biological potential. All should be considered for retention and are of a Moderate Value.

2.2.5 Tree 6 is a small *Eucalyptus robusta*, or Swamp Mahogany. This tree has been suppressed by the neighbouring *Ficus* and is in fair health only. Low Value.

2.2.6 Tree 7 is a well established *Ficus benjamina*, or Benjamina fig. These are an exotic *Ficus* species from the West Indies that became a popular indoor ornamental species. [https://en.wikipedia.org/wiki/Ficus\\_benjamina](https://en.wikipedia.org/wiki/Ficus_benjamina) It will be assumed that this tree will have established following a period spent indoors. This will have affected root development and has also resulted in a significant bark inclusion in the tree's lower canopy. See **Figure 2**

2.2.7 Trees 8, 9 and 10 are all *Ficus rubiginosa*, or Port Jackson Fig trees. These are an ecologically important tree species that will have established here within the past twenty (20) years. All have been affected by the construction and establishment of the adjacent tennis courts. All retain a Moderate Value and should be considered for retention.

2.2.8 Trees 11- 14 comprise a stand of *Tristaniopsis laurina*, or Water Gums. These are a well suited native tree species that have been planted as part of more recent landscape works. All remain in good health and condition and remain a small fraction of their full biological potential. Moderate Value.

2.2.9 Trees 15 - 18 comprise stand of *Platanus x hybrids*, or London Plane trees. Again, these are part of more recent plantings and remain a small fraction of their full biological potential. Despite their relatively young age and biological potential, Tree 18 appears to have defoliated earlier in the season than its neighbours. This may be due to reduced, or limited access to an adequate volume of soil. Low Value for a range of reasons.

2.2.10 Trees 19 - 34 are all *Celtis sinensis* <https://weeds.dpi.nsw.gov.au/Weeds/Details/37>. These are a well recognised environmental weed species and have been recommended for removal irrespective of the proposed development.

2.2.11 Trees 35, 36 and 37 are all *Schinus molle*, or Peppercorn trees. [https://en.wikipedia.org/wiki/Schinus\\_molle](https://en.wikipedia.org/wiki/Schinus_molle). The largest of these are just over 10m in height and supported on trunks of less than 50cm in diameter. These remain in good health and a small fraction of their full biological potential with mature examples of this species regularly reaching heights and canopy spreads of over 15m and supported on trunks of over 1m.



2.2.12 Trees 38 - 44 comprise a stand of semi mature *Casuarina glauca*, or Swamp She-oak. These have all been planted adjacent to the site's eastern boundary. These are a well suited tree species providing a natural screen from Barong Avenue. A large number of smaller trees of this species have also established here. These newer shoots will compromise the development of the remaining stand and should be removed. Moderate Value.

2.2.13 Additional trees assessed include a number of *Olea europea var. africana*, or African Olives. These are an exempt tree species under Randwick Council's Tree Preservation Legislation and can be removed without seeking approval. <https://www.randwick.nsw.gov.au/environment-and-sustainability/trees/removing-and-pruning-trees> This exemption is due to the impact that the species has on our urban forest. There are also numerous environmental weeds located on the eastern escarpment. <https://weeds.dpi.nsw.gov.au/> These have all been recommended for removal to allow for the sound establishment of the remaining native tree species.

## 3.0 ARBORICULTURAL IMPACT ASSESSMENT

3.1 There are no trees on site that are of sufficient arboricultural significance to be considered as a material constraint to any significant development proposal.

3.2 The Pines documented as Trees 1, 2 and 3 remain a small fraction of their full biological potential. These are a fast growing tree with relatively poor wood structure resulting in the formation of large volumes of dead wood under the tree's upper canopy. This is both unsightly and results in regular failures. The largest of these trees has been documented as Tree 1. This tree's upper canopy is supported on a co dominate fork that is partially included. [https://en.wikipedia.org/wiki/Tree\\_fork](https://en.wikipedia.org/wiki/Tree_fork) This is a structural fault that may lead to the failure of the sub dominant leader. This is a large portion of the tree located adjacent to this secure vehicular access point.

3.3 All documented environmental weeds should be removed irrespective of the proposed. This includes Tree 4 and all located within the eastern sandstone escarpment. This will both eliminate the multiple hazards associated with their retention and allow for the sound establishment of those trees remaining.

3.4 Trees 6 and 7 have been planted between the tennis courts and the eastern boundary. Tree 6 is a small Eucalyptus that has been suppressed by the neighbouring Ficus. As noted, it will be assumed that this tree will have established following time spent as an indoor ornamental. As such the tree will not meet NATSPEC standards [https://www.natspec.com.au/pdf\\_product/Specifying\\_Trees.pdf](https://www.natspec.com.au/pdf_product/Specifying_Trees.pdf) that form the horticultural industry standard for planting. The tree canopy is supported on a co dominate and partially included fork that again represents a structural fault that may lead to failure. The tree has also been affected by the parking infrastructure with exposed surface roots noted.

3.5 Trees 5, 8 and 9 comprise the range of locally native Ficus species including both the *Ficus rubiginosa*, or Port Jackson Fig tree (Trees 8 and 9), as well as the *Ficus macrophylla*, or Moreton Bay Fig tree. All will have established here following bird or bat droppings into this disturbed soil profile. All remain a small fraction of



their full biological potential and while remaining in good health, can be expected to continue to grow towards this in time. Mature examples of these species can be seen throughout the neighbouring Centennial Parklands.

3.6 Trees 11-14 comprise a small stand of *Tristania laurina*, or Water Gums. These are a well suited native tree species that will have been planted here as part of more recent landscape works. This will have occurred within the past fifteen (15) years resulting in a Low to Moderate Value.

3.7 Trees 15 - 18 are all *Platanus x hybrida*, or London Plane trees. These are an exotic tree species known for their vigorous and hardy nature. This deciduous tree species produces large volumes of leaves and pollen that can lead to breathing and other health issues <https://www.theage.com.au/national/victoria/plane-trees-a-serious-health-risk-during-spring-doctors-say-20151030-gkmxzd.html>

3.8 Trees 19 - 34 are all *Celtis sinensis* <https://weeds.dpi.nsw.gov.au/Weeds/Details/37>. These are a well recognised environmental weed species and have been recommended for removal irrespective of the proposed development.

3.9 Trees 35, 36 and 37 are all *Schinus molle*, or Peppercorn trees. [https://en.wikipedia.org/wiki/Schinus\\_molle](https://en.wikipedia.org/wiki/Schinus_molle). The largest of these is just over 10m in height and supported on a trunk of less than 50cm in diameter. These remain in good health and a small fraction of their full biological potential with mature examples of this species regularly reaching heights and canopy spreads of over 15m and supported on trunks of over 1m.

3.10 Trees 38 - 44 comprise a stand of semi mature *Casuarina glauca*, or Swamp She-oak. These have all been planted adjacent to the site's eastern boundary. These are a well suited tree species providing a natural screen from Barong Avenue. A large number of smaller trees of this species have also established here. These newer shoots will compromise the development of the remaining stand and should be removed. The remainder provide a Moderate arboricultural contribution only, with an amenity that could be replaced within 15 years. As such, they should be considered for retention only and not considered as a material constraint to the proposed development.

3.11 Additional trees assessed include a number of *Olea europea var. africana*, or African Olives. These are an exempt tree species under Randwick Council's Tree Preservation Legislation and can be removed without seeking approval. <https://www.randwick.nsw.gov.au/environment-and-sustainability/trees/removing-and-pruning-trees> This exemption is due to the impact that the species has on our urban forest. There are also numerous environmental weeds located on the eastern escarpment. <https://weeds.dpi.nsw.gov.au/> These have all been recommended for removal to allow for the sound establishment of the remaining native tree species.

## 4.0 DISCUSSION

4.1 Works within the proposed construction footprint will require the removal of those trees located within it. The include Trees 1, 2, 3, 4, 5, 6, 7, 11, 12, 13, 14, 15 - 29, 30 - 34, 35, 36 and 37.





4.2 Retention recommendations have been made for the *Casuarina glauca* (Trees 38, 39, 40, 41, 42, 43), but as noted, they are not considered to be of sufficient significance as to be seen as a material constraint the the proposed development. The Ficus Trees documented as Trees 5, 8, 9 and 10. All located adjacent to the site's eastern boundary. The construction of a boundary retaining wall, as well as, the natural contours of the site will have affected the abiotic spread and development of their roots. [https://en.wikipedia.org/wiki/Abiotic\\_component](https://en.wikipedia.org/wiki/Abiotic_component). This will have limited their spread, particularly to their west theoretically allowing construction within 3m of their base. (See Figure 1).

## 5.0 CONCLUSIONS

5.1 The majority of the trees recommended for removal will have been recommended for removal irrespective of the proposed development for a broad range of reasons.

5.2 The proposed works will greatly improve the functionality of the space and provide a range of social benefits for generations to come.

## 6.0 RECOMMENDATIONS

6.1 This report will recommend the retention of Trees 5, 8, 9, 10 and Trees 39 - 44 for the reasons outlined. These will be retained via the implementation of the following list of recommendations where applicable. These have been based on our national standard for the *Protection of Trees on Development Sites AS4970*.

8.2 Removal recommendations have been made for all environmental weed species. [weeds.dpi.nsw.gov.au](https://weeds.dpi.nsw.gov.au) This includes Tree 4, as well as, those located along its eastern boundary.

8.3 Dead wood should also be pruned from all trees to a height of 2.5m to both improve visual amenity and to reduce the hazards associated with retention.

8.4 All construction works should be done from within the construction impact zone to limit the indirect impacts of the development process. No works are to be undertaken outside those detailed here. All Tree Protection Zones will be fenced off, marked as a Tree Protection Zone (TPZ) and mulched in accordance with the following conditions.

8.5 Any roots located in the excavation process will be cut cleanly at the edge of the proposed construction to limit the spread of decay and their exposure to the air and atmosphere.





8.6 All trees documented for preservation will be preserved with the implementation of the following list of *Tree Preservation Recommendations*. These have been based on our *National Standard for the Protection of Trees on Development Sites AS4970* and should be implemented during the construction process, where applicable.

6.5 The remainder of the indirect construction impacts should be mitigated with the implementation of the following.

#### 6.6 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.

#### 6.7 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.

#### 6.8 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.

#### 6.9 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.

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.

#### 6.10 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 trees 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.

#### 6.11 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.

#### 6.12 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.

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

#### 6.14 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.

#### 6.15 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.



#### 6.16 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.

## 7.0 BIBLIOGRAPHY & REFERENCES

Barrell (1995), 'Pre-development Tree Assessments', in Trees & Building Sites, Proceedings of an International Conference Held in the Interest of Developing a Scientific Basis for Managing Trees in Proximity to Buildings, International Society of Arboriculture, Illinois, USA, pp. 132-142.

Dunster J, Smiley T, Matheny N, Lilly S (2013), Tree Risk Assessment Manual, Champaign, Illinois, International Society of Arboriculture, USA.

Harris, Clark & Matheny (1999), Arboriculture: Integrated Management of Landscape Trees, Shrubs and Vines, Prentice Hall, New Jersey.

Mattheck & Breloer (1994), The Body Language of Trees: A Handbook for Failure Analysis, The Stationary Office, London.

NSW Office of Environment and Heritage's Atlas of NSW Wildlife (2011), BioNet Atlas of NSW Wildlife.

Simon, Dormer & Hartshorne (1973), Lowson's Botany, Bell & Hyman, London.

Standards Australia (2009), Protection of Trees on Development Sites AS-4970.

Standards Australia (2007), Pruning of Amenity Trees AS-4373.

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#### Disclaimer

All care has been taken to assess potential hazards, but trees are inherently dangerous. This assessment was carried out from the ground, and covers what was reasonable to be assessed at the time of inspection. No aerial or underground inspections were carried out. Liability is accepted for damage or injury caused by trees and no responsibility is accepted if the recommendations in this report are not adhered to. Limitations on the use of this report: This report is to be utilised in its entirety only. Any written or verbal submission that includes statements taken from this report may only be used where the whole report is referenced. Assumptions: Care has been taken to obtain accurate information from reliable sources. Botanics can neither guarantee nor be responsible for the accuracy of information provided by others.



**Figure 1** Shows the trees documented in relation to both the existing and proposed construction.





**Figure 2** Shows the stand of London Plane trees documented as Trees 15 - 18.



**Figure 3** Shows the inclusion at the base of Tree 1.





**Figure 4** Shows the bark inclusion at the base of Tree 7.