

2 February 2023



Mr Gavin Tutill
MONTEFIORE
120 High Street,
Hunters Hill, NSW 2110
c/o- Sarah Fitzgerald, Jackson Teece Architects

**RE: UPDATED PRELIMINARY ARBORICULTURAL ASSESSMENT
 MONTEFIORE AGED CARE, HUNTERS HILL NSW 2110**

1. Introduction

This report is an update to the previously issued 'preliminary' assessment. Its purpose is to provide greater clarity regarding the quality and distribution of the tree population across the site and to aid the project team in the design resolution of this master planning project.

Arterra was engaged by Montefiore (the client), to undertake a preliminary tree inspection of the site and prepare an initial plan and report highlighting the most significant trees that should represent a material constraint to any proposed future development, both within and immediately adjacent to the site. This first assessment was completed 13 September 2021, with a preliminary report and drawing issued 15 September 2021.

Having now received a topographic and positional site survey, Arterra have returned to the site on 19 October 2021 to complete a full and thorough assessment of the current condition of all trees within and immediately adjacent to the site. This detailed assessment informs this updated preliminary report and will ultimately feed into the Arboricultural Impact Assessment (AIA) that will be required for any DA submission.



Figure 1 – Typical photo of the site and conditions. Many of the more prominent existing trees are located around the periphery of the site such as these large street trees (mostly Tallowoods) along Barons Crescent. (Photo: Arterra 14/9/20)



*Figure 2 – Typical photo of the site and conditions. Many of the trees in the SW corner gardens are tall and significant trees, likely dating to the earliest periods of the sites development in the late 1800s or early 1900s. The Cook Pine in the centre of the photo and the Bunya Pine to the right are particularly impressive specimens. The surrounding Monterey Pines (*Pinus radiata*) would also date to the early periods, but at approximately 100 years old, they are reaching the end of their useful lives and a replacement strategy should be considered. The pair of Italian Cypress in the foreground likely relate to the entry of a previous building and represent a significant pairing and a reflection of past uses and landscaping styles. (Photo: Arterra 14/9/20)*



Figure 3 – The very large and prominent Spotted Gum that borders the adjoining residential area. This tree is a significant tree but from a more recent period. It would be our recommendation to retain and work around this now very large tree. (Photo: Arterra 14/9/20)

2. Context and Relevant Controls

Provisions of the State Environmental Planning Policy (Vegetation in Non-Rural Areas) 2017 and Hunters Hill Consolidated Development Control Plan 2013 (DCP 2013) apply to the management and maintenance of existing trees and vegetation in Hunters Hill. Together these documents require that a development consent or a permit is obtained from Hunter's Hill Council before removing or altering any "Prescribed Vegetation".

Council's list of "Prescribed Vegetation" is provided under clause 2.3.3 of its DCP 2013. This defines prescribed vegetation as:

- Any vegetation which has a height of 4 metres or more.
- Any vegetation which has a stem diameter of 200mm or more, measured at 1.4 metres above ground level (existing).
- Bushland or individual plants which are bushland remnants, on properties which adjoin Buffalo Creek Reserve or Boronia Park Reserve.
- Species that are listed as rare, vulnerable or threatened according to the Commonwealth Environmental Protection and Biodiversity Conservation Act, or the NSW Biodiversity Conservation Act 2016.
- Vegetation on lands which are defined by the Hunters Hill LEP 2012 as having biodiversity or high biodiversity significance.
- Trees which are listed as a heritage item by the Hunters Hill LEP 2012.
- Trees which are listed on the Hunters Hill Significant Tree Register.

3. Tree Assessment Methodology

On the 19 October, Robert Smart and Chloe Bristow of Arterra completed a detailed assessment of the trees within and immediately adjacent to the site. The trees' health and condition were assessed via a visual inspection from the ground only. Requisite tree data (including DBH, DGL, height & canopy spread, condition, proximity to services and other infrastructure) was recorded using an Apple iPad and Filemaker Pro database.

The basic health and condition criteria that were inspected for each tree can be summarised as follows: -

- Tree size, broad age class and general balance of the tree;
- Above ground obstructions;
- Evidence of recent site disturbance;
- Canopy foliage size, colour and density;
- Dieback and epicormic growth;
- Trunk or branch wounding, branch tear outs and pruning history;
- Structural defects such as any co-dominant stems, cracks, splits, included bark, decay; and
- Pests and disease evidence or occurrence.

The trees were photographed, identified and tagged with a unique identification number. Their details were recorded and plotted onto a scaled base plan for referencing and identification throughout the report and for future discussions and co-ordination. (Refer Appendix 4.1). The photographic record of trees and general site context was taken using the inbuilt Apple iPad camera and a Panasonic Lumix TZ220 digital camera. Files have been resized, dated, named and filed in accordance with normal office procedures and protocols. No other image manipulation has been undertaken.

Tree trunk diameters were measured using a metric diameter tape measure. Tree heights were measured using the two-point clinometer function of a Nikon Forestry Pro laser range finder. Canopy spreads were estimated and cross referenced to survey information and aerial photos. Canopy position and extents were then altered on the plans to more accurately portray the canopy extent and position.

No specialised equipment or methods were employed to test for the extent of decay in any of the trees, apart from a nylon 'sounding' mallet. No plant samples were analysed or independently tested to verify or formally identify any pests or diseases.

Desktop Review and Research

Digital AutoCAD files of the survey, and layout of the proposed park embellishments were imported into Arterra's standard CAD software (ArchiCAD v24). Various area calculations and measurements were made in the CAD software to depict the tree TPZs and SRZs.

Recent aerial photography was obtained from the Nearmap website with aerial photos of the site dating from January 2021 imported into the above software for cross checking and assessment. (<http://www.nearmap.com/> accessed 12/09/2021) Various historic aerial photography was also reviewed on the NSW Spatial Services website.

Items to note relating to the Tree Assessment and Tree Retention Value Plan:

- Arterra's Tree Plans should now be the primary reference plan for all trees across the site
- All trees' positions have been confirmed in the field. The Tree Retention Value Plan has been updated to reflect where trees were found in the field and may show trees that were not shown on the surveyors site survey.
- Dead trees, weeds such as Privet, and vegetation less than 4m in height are not shown on the Tree Protection Plan.
- Some trees in and around the central garden defined by the main driveway have previously been assessed and tagged in 2018. Where this was the case, the previous tags have been left in place and Arterra's new tags added. Hence some trees may have two different numbered tags that look very similar.

4. Key Definitions and Abbreviations

The following abbreviations are used throughout this report.

"TPZ" = Tree Protect Zone

This is the area as defined by AS 4970 – "Protection of Trees on Development Sites" and means the typical minimum area above and below ground at a given distance from the trunk to provide for protection of the tree. Most importantly it represents the root zone required to be left undisturbed to maintain a healthy and viable tree. Please note, that roots will usually extend well beyond this zone, so this represents the minimum remaining root zone required, assuming all others are lost or damaged due to construction. It is typically calculated as a circle centred on the trunk unless existing site conditions can be assessed and indicate otherwise.

"TPA" = Tree Protection Area

Although based on the nominal TPZ above, this is a consolidated and often simplified area to be applied during construction for tree protection. This area is often shaped to deal with practical construction realities whilst maintaining appropriate protection of the nominal TPZ (i.e fencing a nominal circular TPZ can be difficult and impractical. TPA areas often define a square or rectangular shape which includes the area calculated as the nominal TPZ). It often amalgamates and simplifies tree protection zones, particularly when they are overlapping and can be amended for items such as buildings, walls, pathways and existing fences. It also protects areas that are contiguous to the calculated nominal TPZ, which are to be applied when the nominal TPZ is not completely circular due to structures potentially impeding root growth, or when there is an incursion calculated within the TPZ and compensatory areas are required.

"SRZ" = Structural Root Zone

This is the area as defined by AS 4970 – "Protection of Trees on Development Sites" and means the area immediately around the base of the tree at a given distance from the trunk within which the woody roots and soil cohesion are considered vital to the structural stability of the tree. Disturbance, damage or removal of soil and roots within this area will typically render the tree unstable and require its removal. It is typically calculated as a circle, centred on the trunk, unless existing site conditions can be assessed and indicate otherwise.

DBH = Diameter at Breast Height

This is the diameter of the trunk measured at 1.4m above ground level.

DGL = Diameter at Ground Level

This is the diameter of the trunk measured at ground level, but just above any root flare.

Non-Destructive Digging

This is the process of safely excavating the ground surface to minimise the risk of damage to existing tree roots. This method is used to map and locate existing tree roots within the TPZ and/or SRZ and helps to guide and inform the installation and/or construction of proposed services and/or structures which are in close proximity to retained trees. This is often achieved through hand digging using a shovel, trowel and/or fork with care not to damage the bark and wood of any roots. Compressed air (air spade) or water vacuum extraction are appropriate non-destructive alternatives to hand digging. When this work occurs within a TPZ and/or SRZ of a tree to be retained, a consulting arborist should always be present to monitor the works.

4. Tree Retention / Significance Values.

The information gathered in the field was tabulated and the retention values assessed using a combination of techniques commonly used and recognised in the arboricultural industry. The tree life expectancy was established using the Safe Useful Life Expectance (SULE) system. A brief summary of these systems is described below.

SULE – SAFE USEFUL LIFE EXPECTANCY

This is a system developed by Jeremy Barrell in 1993 that determines the time a tree may be expected to be retained based on its age, health, condition, safety and location. This is then moderated by the economics of maintenance or other costs of retaining the tree. A long SULE means the tree is presently expected to live longer

than 40 years with minimal intervention and cost. A short SULE indicates a tree that is not expected to live longer than 5 years or may require substantial intervention or costs to retain it.

RETENTION VALUES

The proposed retention value of the trees was determined based on a considered combination of the size, age, condition and suitability of the tree.

Each tree was then ranked according to one of 4 retention categories.

:

1. **“High” Significance/Retention Value** – these are trees that are typically in good or very good condition, large and visually prominent, historically or environmentally important. They may also be lesser quality trees, but part of an important grouping of trees. They should represent a serious physical constraint to the development and their removal avoided wherever possible and feasible.
2. **“Moderate” Significance/Retention Value** – these are trees that are in good condition and should be retained where possible and feasible to do so. They may also be lesser trees, but part of an important grouping of trees and therefore warrant retention based on the group’s value.
3. **“Low” Retention Value** – these are trees that are of poor condition or have structural defects, are particularly small or common place, are not historically, environmentally or socially significant and should not be considered as a constraint to the development. They could be retained only if they are not likely to be impacted by or constrain potential desirable development outcomes.
4. **“Should Remove” / No Retention Value** – these are trees that are in very poor health, or poor form, or have serious structural defects, are considered weeds or combination of all these, and therefore should be considered for removal regardless of any development.

Consideration has also been given to the relationship of the trees to one another and their proximity to the likely development areas on the site. For example, trees that are part of a closely spaced group, or are likely to be significantly misshapen or unstable with the removal of surrounding trees and structures are considered with these factors in mind.

5. Brief Site History

Hunters Hill was named after Captain John Hunter who charted Sydney Harbour in January and February 1788. A high, rugged peninsula, at that time thickly covered with Turpentine trees, Grey Ironbark and other native Eucalypt species. Hunters Hill is bounded by water on two sides, at the confluence of the Lane Cove and Parramatta Rivers.

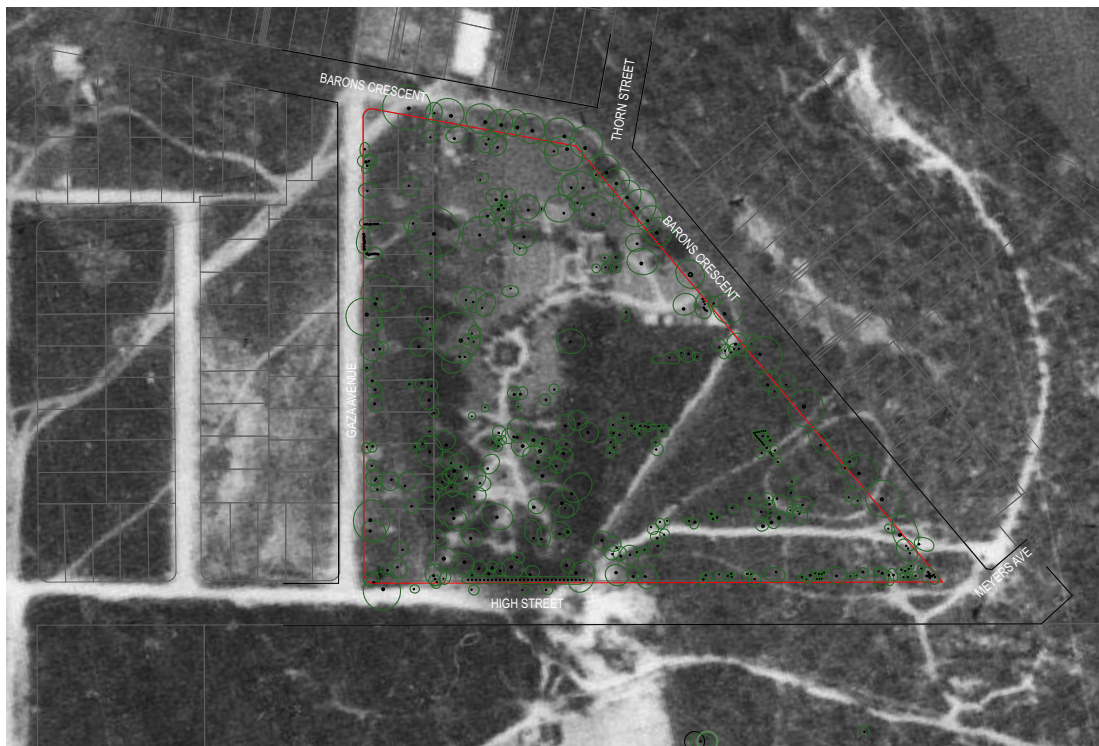
Review of the earliest available 1930 aerial imagery of the site shows what appears to be a residence towards the centre of the site, and a sweeping, formal carriage-way with access from both High Street and Barons Crescent. The site appears to be substantially cleared of native vegetation with the exception of the south-east portion. There appears to be boarder mature and semi-mature planting along the southern and western boundaries and some distinct tree planting along the carriage-way to the house.

The Montefiore organisation first took possession of the site in March 1939. The site was subsequently occupied by the army in 1940-1946, during the Second World War. The 1943 aerial image of the site contains what appears to be tents and temporary accommodation setup across the site. The prominent coniferous planting is clearly evident in these early photos, particular focussed in the garden areas of the south-west corner, near High Street.

In the period between 1946 and 1996 the Montefiore facilities have undergone a series of expansions and upgrades resulting in its current configuration with low-care hostel style accommodation, high-care nursing home and dementia specific accommodation for over 330 residents. The remaining trees date from a variety of periods, with most dating from the early 1970s to early 1980s.

It should be noted that the gardens of Montefiore are listed in the Hunters Hill Council LEP 2012 as an item of local heritage significance (I472). As such, all trees and other vegetation are protected. Council is likely to prioritise protection of the trees that are considered particularly historical and aesthetically significant. They are also likely to value and protect any trees that are representative of the locally occurring natural vegetation communities and also their adjoining street trees.

Although the gardens are listed as a local heritage item, at this time, we have been unable to locate a statement of significance from Council’s web site or the NSW Heritage Database. We have also been unable to find any early photographs or imagery of the site. We will continue our research as the planning proceeds.



1930



Figure 4 – 1930 - The driveway access from High Street, with formal planting leading to a main house. The site appears predominantly cleared with an indication of perimeter planting to the east and west of the main southern driveway. (Photo: NSW SpatialServices)



1943



Figure 5 – 1943 - The development 1939-1943 can be seen with new buildings and more formalised gardens. Former house demolished. Tents and military equipment can be seen in southeast corner reflecting military occupation during WWII. (Photo: NSW SpatialServices)



1951

Figure 6 – 1951 – The main gardens are maturing. Tents and military equipment are gone and native vegetation likely to be regenerating and visible to the southeast corner of the site. New surrounding residential development has intensified on streets to the west. (Photo: NSW SpatialServices)



1961

Figure 7 – 1961 – Development continues with expansion of the facilities to the north. Adjacent residential development continues on Barons Crescent. (Photo: NSW SpatialServices)



1965

Figure 8 – 1965 – Development continues with expansion of the facilities and synagogue constructed near Thorn St. Adjacent residential development continues on Meyers Avenue and additional tree planting begins on some internal driveways. (Photo: NSW SpatialServices)



1978

Figure 9 – 1978 – Development continues with expansion of the facilities across the site. Further formalisation of the gardens can be seen together with the first indications of the street tree planting on Barons Crescent. Internal driveway and parking configurations now resembling present day. (Photo: NSW SpatialServices)



1986



Figure 10 – 1986 – Demolition of previous buildings and redevelopment of south-east portions of site. Minimal tree planting evident along northern stretches of Barons Crescent (Photo: NSW SpatialServices)



2002



Figure 11 – 2002 – Completion of redevelopment of south-east portion of site. Extensive maturing of new tree planting throughout site and now well matured tree planting clearly evident along northern stretches of Barons Crescent (Photo: NSW SpatialServices)



2010

Figure 12 – 2010 – Largely reflective of current tree planting, representing a significantly treed site and noting a very large fig (believed to be a Hill's Weeping Fig) in the western carpark, now removed. (Photo: NearMap)



2021

Figure 13 – 2021 – Current status of tree planting around the site. Significant fig removed from western carpark area since 2010. (Photo: NearMap)

6. Current Tree Population

The site contains trees from a variety of periods during its development. Most trees that are closely associated with the existing buildings and more recent facilities are small, common place and generally of only fair to poor condition. Many have been significantly pruned to achieve and maintain building clearances. This has often left reasonably substandard tree forms. The majority of significant and well-formed trees within the site are located within the extensive garden area at the south-west corner of the current facilities. Retaining this area in its current form, as an open space area will go a long way to protecting and maintaining most of these significant tree assets.

The street trees along Barons Crescent are large, visually significant trees that Council are likely to place great emphasis on their retention and protection throughout any adjacent redevelopment works.

Below is a brief summary of the major tree consideration that we believe should be factored into the site planning.

- The significant street trees along Barons Crescent will need to be retained and protected. They have nominal TPZ areas that project well into the site. We will need to maintain a setback of approximately 6-7m from the boundary, and in some isolated instances larger than that, in order to protect these trees. These trees date from the 1970 and 1980s and are typically now 17-18m tall.
- There are very significant and historic conifer plantings with several very significant specimens. These can be easily observed from the surrounding district and streets. Historically and visually, the most significant that must be worked around, in our opinion, would be the Bunya Pine, The Norfolk Island Pine, The Cook Pine and the pair of Italian Cypress and the very tall Italian Pencil Pine. Although from a later period there are several Kashmir Cypress's that are also very worthwhile trees.
- The accompanying very large and mature Monterey Pines (*Pinus radiata*) likely also date to the earliest periods of the sites development but are now approaching the end of their useful lives and thought should be certainly put towards their staged replacement strategy with more appropriate and longer-lived specimens. The replacements should be of the same ultimate size and character, and maintain the historical associations, but we would not recommend replacement with the same species, given the modern day problems associated with Monterey Pines. A possible alternative that should be considered is *Araucaria cunninghamii* (Hoop Pine)
- Some other large trees, but probably only dating to the mid 1970s, include the Morton Bay Fig, The Spotted Gum, The Plane Trees and some of the larger Lemon-scented Gums. These are now visually significant and should be worked around if possible.
- There is a particularly large Aleppo Pine on the edge of the site near Thorn St. Although large, this tree probably dates to only the last 40 years.
- Some good quality but smaller scaled amenity trees that would contribute greatly to any new redevelopment have also been identified and highlighted within the high and Moderate retention values.
- The value and significance of the existing Camellia hedge along High Street frontage should not be under estimated.
- There are five trees planted as tributes/memorials. These should be retained if possible, particularly the large Brush Box in the north of the site, adjacent the Synagogue.

The following tables provide an overview of the tree population

Table 1 – Existing Tree Retention Values

Tree Retention Values	Total Trees	% Total Population
High	39	(10%)
Moderate	137	(34%)
Low	214	(54%)
Very Low/Should Remove	8	(2%)
TOTAL	398	(100%)

Table 2 – Species Distribution – Top Five Species by Prevalence

Species Name	Common Name	Number of Trees	% Total Population
<i>Camellia japonica</i>	Japanese Camellia	35	9%
<i>Casuarina glauca</i>	Swamp She-Oak	27	7%
<i>Pittosporum undulatum</i>	Sweet Pittosporum	27	7%
<i>Cupressus torulosa</i>	Bhutan Cypress	21	5%
<i>Syzygium australe</i>	Brush Cherry	19	5%

Table 3 – High Retention Value Trees – By Species

Species Name	Common Name	Number of Trees	Population %
<i>Eucalyptus microcorys</i>	Tallowood	14	36%
<i>Liriodendron tulipifera</i>	Tulip Tree	5	13%
<i>Eucalyptus saligna</i>	Sydney Blue Gum	2	5%
<i>Cupressus sempervirens</i>	Italian Cypress	2	5%
<i>Pinus radiata</i>	Monterey Pine	2	5%
<i>Corymbia citriodora</i>	Lemon Scented Gum	2	5%
<i>Phoenix canariensis</i>	Canary Island Date Palm	2	5%
<i>Araucaria columnaris</i>	Cook Pine	1	3%
<i>Cupressus sempervirens</i> 'Stricta'	Pencil Pine	1	3%
<i>Eucalyptus resinifera</i> **	Red Mahogany	1	3%
<i>Syzygium paniculatum</i>	Magenta Cherry	1	3%
<i>Waterhousea floribunda</i>	Weeping Lilly Pilly	1	3%
<i>Corymbia maculata</i>	Spotted Gum	1	3%
<i>Araucaria bidwillii</i>	Bunya Pine	1	3%
<i>Araucaria heterophylla</i>	Norfolk Island Pine	1	3%
<i>Lophostemon confertus</i>	Brush Box	1	3%
<i>Pinus halepensis</i>	Aleppo Pine	1	3%
TOTAL		39	100%

** Local Native Species

6. Tree Management Recommendations

It is recommended that the following be the focus with regard to the existing tree population on and adjacent to the site:-

1. Work to retain and protect all the 'High' value trees by providing appropriate offsets during site planning to enable adequate protection of the trees during construction. If this is done they should be able to be retained and protected with minimal impacts. At this stage this should be focussed around ensuring appropriate setbacks and minimising any proposed re-grading or building development within the nominated tree protection areas. These trees should be seen as a major asset for the site rather than a constraint.
2. Retain and adequately protect all Council street trees
3. Retain and incorporate as many of the other moderate significance / retention value trees on the site, as possible.
4. Generally, it would then be anticipated to then remove most of the other smaller scale and less significant trees to facilitate the development and new landscaping outcomes.
5. Begin the discussions of a staged succession plan of the *Pinus radiata* to a more suitable species.

It should also be factored that there will be some general tree related impacts resulting from construction such as topsoil removal and general soil compaction, which can have significant and lasting negative impacts upon retained trees if not properly managed. It is important to note that larger and older trees typically have much lower tolerance to construction related impacts, than younger, smaller and healthier trees. The client and the site planning team will need to have realistic expectations regarding the area around the trees that will have to remain undisturbed if the tree is to be successfully retained. The following broad guidelines are given for the Tree Protection that will likely be required for the project.

- Appropriate tree protection areas should be established using suitable temporary tree protection fencing. These areas should typically be as large as possible to minimise the likelihood of damage and ensure the long-term health and ongoing viability of the trees.
- As much as possible, all work, including trenching, road construction and landscaping should be avoided within any identified nominal Tree Protection Zones (TPZ). Where an incursion is required, this should be limited to less than 10% of the area and appropriate compensatory areas applied elsewhere, that are contiguous to the remaining TPZ.

If you have any questions regarding this preliminary report please do not hesitate to contact the undersigned.

Regards



Robert Smart AAILA, ISA, AA

Director / Registered Landscape Architect (054) / Registered Consulting Arborist (1804)
rsmart@arterra.com.au