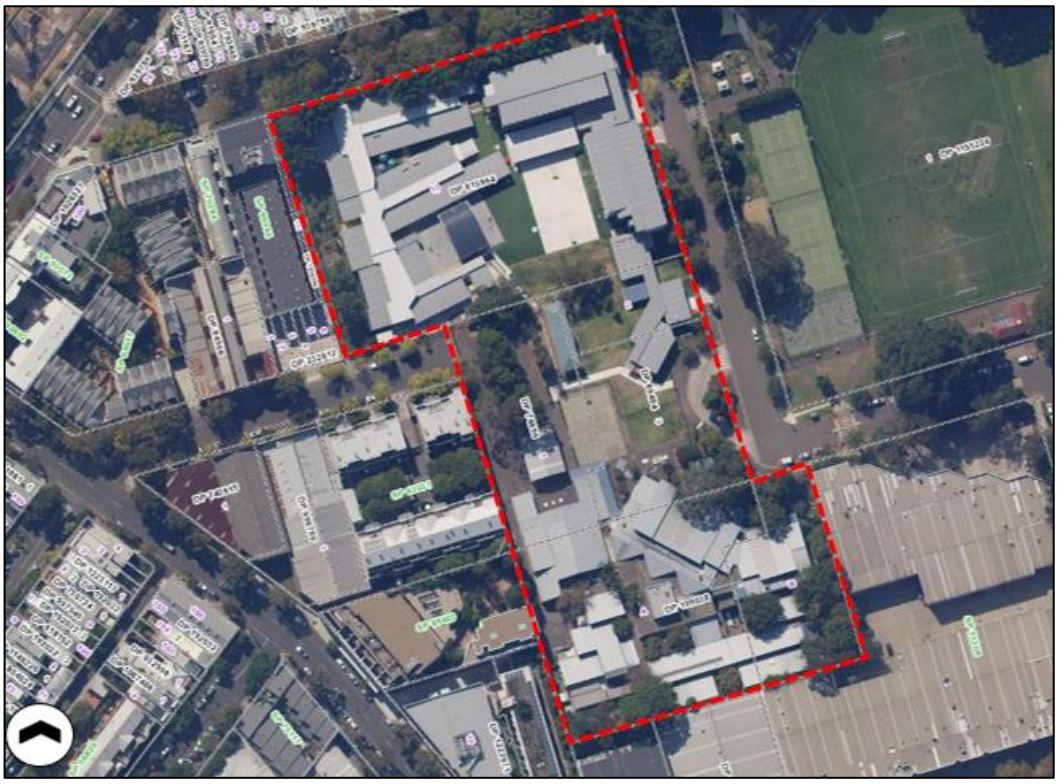
ABORIGINAL CULTURAL HERITAGE MANAGEMENT PLAN

Lot 11 DP 615964, Lot 1 DP 74696, Lots 2 & 3 DP 69494, Lots A & B DP 109038

Alexandria Park Community School
7-11 Park Road
Alexandria NSW
(City of Sydney LGA)



Benjamin Streat, Yolanda Pavincich & Steven J. Vasilakis

Archaeo*logical* Management and Consulting Group
& Streat Archaeological Services

for
Heritage21

On behalf of
Richard Crookes Constructions Pty Ltd

Version
May 2020

Disclaimer

The veracity of this report is not guaranteed unless it is a complete and original copy.

This report may be inaccurate, incomplete, not original, or modified, if it appears in monochrome form and the signature below is a copy.

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Cover Image
Aerial of study area
Six Maps, LPI Online (accessed 30/03/19).

ACKNOWLEDGEMENT OF COUNTRY

Richard Crookes Constructions Pty Ltd would like to acknowledge the Traditional Custodians of the Eora Nation– Gadigal people– and pay respect to their cultural heritage, beliefs and continuing relationship with the land.

Richard Crookes Constructions Pty Ltd would also like to acknowledge the post contact experiences of Aboriginal peoples who have attachment to the Sydney area.

“We pay our respect to the Elders – past, present and future – for they hold the memories, traditions, culture and hopes of Aboriginal Peoples in the area”.

Richard Crookes Constructions Pty Ltd recognises the role of the registered Aboriginal parties in the management of the Aboriginal cultural heritage sites, landscape features and values of this project.

Richard Crookes Constructions Pty Ltd would like to thank the Registered Aboriginal Parties for their participation in this project and for their valuable contribution to this Aboriginal Cultural Heritage Management Plan which has been enriched by their willingness to share valuable aspects of their cultural knowledge especially in respect of Caring for Country

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EXECUTIVE SUMMARY

Background
Archaeological Management and Consulting Group (AMAC) in conjunction with Streat Archaeological Services Pty Ltd (SAS) was commissioned by Heritage 21 on behalf of Richard Crookes Constructions Pty Ltd in March 2019, to prepare an Aboriginal Cultural Heritage Management Plan for the proposed State Significant Development (SSD# 8373); Alexandria Park Community School, 7-11 Park Road, Alexandria, New South Wales.

An Aboriginal Heritage Impact Permit (AHIP) and associated documentation are not needed as part of this development and its status as a State Significant Development. All such conditions and procedures which were the domain of an AHIP have now been replaced by this Aboriginal Cultural Heritage Management Plan (ACHMP), as required as part of Development Consent for SSD # 8373 (Section 4.38) of the Environmental Planning and Assessment Act 1979.

The SSD conditions concerning Aboriginal Cultural Heritage are outlined in Part B and C. These include the following;

B5. Prior to the commencement of any works involving ground disturbance, the Applicant must engage a suitably qualified heritage consultant to prepare a Heritage Management Plan addressing the HMP requirements in the report titled Aboriginal Cultural Heritage Assessment: Alexandria Park Community School, prepared by Extent Heritage Pty Ltd and dated 7 November 2018 have been compiled with in full. A copy of the HMP must be submitted to the satisfaction of the Certifying Authority.

B20.
(f) an unexpected finds protocol for contamination and associated communications procedure.

C.1 Within 6 months of commencement of construction, a Heritage Interpretation Strategy (HIS) must be prepared by a suitably qualified heritage consultant identifying the interpretive values of the site and specifically Aboriginal heritage values across the site, and to provide direction for potential interpretive installations. A copy of the HIS must be submitted to the Certifying Authority.

C30. In the event that surface disturbance identifies a new Aboriginal object, all works must halt in the Immediate area to prevent further impacts to the object(s). A suitably qualified archaeologist and the registered Aboriginal representatives must be contacted to determine the significance of the objects. The site is to be registered in the Aboriginal Heritage Information Management System (AHIMS) which is managed by OEH and the management outcome for the site included in the information provided to AHIMS. The Applicant must consult with the Aboriginal community representatives, the archaeologists and OEH to develop and implement management strategies for all objects/sites. Works shall only recommence with the written approval of OEH.

The recommendations within the report titled *Aboriginal Cultural Heritage Assessment Alexandria Park Community School* prepared by Extent Heritage Pty

Ltd are outlined in Section 10.2 and include the following which form the framework of this report;

10.2 Recommendations
Based on the findings of the ACHA, the following recommendations should be integrated into the Minister's conditions of approval for the project:

- *Prior to ground disturbance, a heritage management plan (HMP) must be developed by a heritage specialist in consultation with the RAPs and consent authority to provide the post-approval framework for managing Aboriginal and historical heritage within the study area. The HMP should include the following issues:*
    - *processes, timing, and methods for maintaining Aboriginal community consultation through the remainder of the project*
    - *description and methods of additional post-excavation analysis of chronological, soil, and environmental samples that were recovered during the test excavations undertaken as part of the ACHA process and were required to inform the interpretation strategy.*
    - *descriptions and methods of any additional archaeological excavation and/or cultural monitoring that may be required, including location/s, methods, personnel, and timing. This should include the footprint of Building A, and areas on the periphery of the site where archaeological investigations have been sparse to date.*
    - *descriptions and methods of the recovery, relocation and/or re-use of plantings and vegetation of contemporary cultural value in the southeast of the study area.*
    - *procedures for managing the unexpected discovery of Aboriginal objects and/or human remains during the project*
    - *procedures for the curation of Aboriginal objects and other cultural materials recovered as part of the ACHA process and at any subsequent stages of excavation required as part of the HMP*
    - *processes for reviewing, monitoring, and updating the HMP as the project progresses.*
- *A heritage-interpretation strategy must be developed by a heritage specialist to identify the interpretive values of the study area, and specifically Aboriginal heritage values across the study area, and to provide direction for potential interpretive installations and devices. This strategy should be made available for consultation and feedback with relevant stakeholders and RAPs. Following consultation and feedback on the strategy, a heritage interpretation plan will refine the strategy with content (visual and textual) and design details in order to allow the implementation stage. The outcomes of these reports must be undertaken prior to the issue of the occupation certificate (or equivalent). the interpretation strategy and interpretation plan must include consideration of three main components identified though the ACHAR process:*
    - *input and feedback from the RAPs, which to date include the contemporary connections of the Redfern Football club to the region, the use of Darug language in any outputs, and the use (or re-use) of endemic plants in any landscaping for the project.*

- *the historical record of the study and its immediate environs, which has documented associations with Aboriginal people, dating to the early and mid-twentieth century*
- *the past cultural and environmental landscape once informed by further analyses recommended to be undertaken as part of the HMP.*

- *Consultation should be maintained with the RAPs during the finalisation of the development proposal. This should focus on the long-term curation and management of the Aboriginal objects recovered through the archaeological excavation program, any mitigation measures that were implemented prior to, and during, the works, and the development of the interpretation strategy and plan.*
- *A copy of the ACHA should be lodged with AHIMS and provided to each of the RAPs.*
- *A Site Recording Form for the isolated object and potential cultural deposits within the study area should be submitted to the AHIMS database.*
- *If any element of the development is relocated outside the area assessed in this study, or if any alteration to the development plan is proposed that could result in additional impact to the potential cultural deposit, further assessment of the additional area(s) should be undertaken to identify and appropriately manage Aboriginal objects/sites/places that may be in the additional area(s).*
- *The Department of Education should advise all relevant personnel and contractors involved in the design, construction, and operation of the development proposal of the relevant heritage considerations, legislative requirements, and recommendations identified in this report.*

Aboriginal Consultation

Consultation for this report has been undertaken in accordance with the National Parks and Wildlife Act 1974: Part 6 *Aboriginal Cultural Heritage Consultation Requirements for Proponents* (DECCW 2010).

There is a mandatory 28-day period for the Aboriginal stakeholders to comment on this document. A final Aboriginal stakeholder approved version of this report shall be issued at the close of this period (should any changes be required as a result of the exhibition process or Aboriginal stakeholder comment they will be included at this stage).

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Metropolitan Local Aboriginal Land Council	Selina Timothy	PO Box 1103 Strawberry Hills NSW 2016 culturalheritage@metrolalc.org.au

1.0 INTRODUCTION

1.1 BACKGROUND

Archaeological Management and Consulting Group (AMAC) in conjunction with Streat Archaeological Services Pty Ltd (SAS) was commissioned by Heritage 21 on behalf of Richard Crookes Constructions Pty Ltd in March 2019, to prepare an Aboriginal Cultural Heritage Management Plan for the proposed State Significant Development (SSD# 8373); Alexandria Park Community School, 7-11 Park Road, Alexandria, New South Wales.

An Aboriginal Heritage Impact Permit (AHIP) and associated documentation are not needed as part of this development and its status as a State Significant Development. All such conditions and procedures which were the domain of an AHIP, have now been replaced by this Aboriginal Cultural Heritage Management Plan (ACHMP), as required as part of Development Consent for SSD# 8373 (Section 4.38of the Environmental Planning and Assessment Act 1979).

This report conforms to the reporting process, conditions and requirements of Aboriginal Cultural Heritage Standards and Guidelines Kit (NPWS 1998) and Part 6; National Parks and Wildlife Act *Aboriginal Cultural Heritage Consultation Requirements for Proponents* (DECCW 2010). This document also aims to address the SSD conditions concerning Aboriginal Cultural Heritage are outlined in Part B and C. These include the following;

B5. Prior to the commencement of any works involving ground disturbance, the Applicant must engage a suitably qualified heritage consultant to prepare a Heritage Management Plan addressing the HMP requirements in the report titled Aboriginal Cultural Heritage Assessment: Alexandria Park Community School, prepared by Extent Heritage Pty Ltd and dated 7 November 2018 have been compiled with in full. A copy of the HMP must be submitted to the satisfaction of the Certifying Authority.

B20.
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C.1 Within 6 months of commencement of construction, a Heritage Interpretation Strategy (HIS) must be prepared by a suitably qualified heritage consultant identifying the interpretive values of the site and specifically Aboriginal heritage values across the site, and to provide direction for potential interpretive installations. A copy of the HIS must be submitted to the Certifying Authority.

C30. In the event that surface disturbance identifies a new Aboriginal object, all works must halt in the Immediate area to prevent further impacts to the object(s). A suitably qualified archaeologist and the registered Aboriginal representatives must be contacted to determine the significance of the objects. The site is to be registered in the Aboriginal Heritage Information Management System (AHIMS) which is managed by OEH and the management outcome for the site included in the information provided to AHIMS. The Applicant must consult with the Aboriginal community representatives, the archaeologists and OEH to develop and implement

management strategies for all objects/sites. Works shall only recommence with the written approval of OEH.

The recommendations within the report titled *Aboriginal Cultural Heritage Assessment Alexandria Park Community School* prepared by Extent Heritage Pty Ltd are outlined in Section 10.2 and include the following which form the framework of this report;

The recommendations within the report titled *Aboriginal Cultural Heritage Assessment Alexandria Park Community School* prepared by Extent Heritage Pty Ltd as outlined in Section 10.2, include the following which form the framework of this report;

10.2 Recommendations
Based on the findings of the ACHA, the following recommendations should be integrated into the Minister's conditions of approval for the project:

- *Prior to ground disturbance, a heritage management plan (HMP) must be developed by a heritage specialist in consultation with the RAPs and consent authority to provide the post-approval framework for managing Aboriginal and historical heritage within the study area. The HMP should include the following issues:*
    - *processes, timing, and methods for maintaining Aboriginal community consultation through the remainder of the project*
    - *description and methods of additional post-excavation analysis of chronological, soil, and environmental samples that were recovered during the test excavations undertaken as part of the ACHA process and were required to inform the interpretation strategy.*
    - *descriptions and methods of any additional archaeological excavation and/or cultural monitoring that may be required, including location/s, methods, personnel, and timing. This should include the footprint of Building A, and areas on the periphery of the site where archaeological investigations have been sparse to date.*
    - *descriptions and methods of the recovery, relocation and/or re-use of plantings and vegetation of contemporary cultural value in the southeast of the study area.*
    - *procedures for managing the unexpected discovery of Aboriginal objects and/or human remains during the project*
    - *procedures for the curation of Aboriginal objects and other cultural materials recovered as part of the ACHA process and at any subsequent stages of excavation required as part of the HMP*
    - *processes for reviewing, monitoring, and updating the HMP as the project progresses.*
- *A heritage-interpretation strategy must be developed by a heritage specialist to identify the interpretive values of the study area, and specifically Aboriginal heritage values across the study area, and to provide direction for potential interpretive installations and devices. This strategy should be made available for consultation and feedback with relevant stakeholders and RAPs. Following consultation and feedback on the strategy, a heritage interpretation plan will*

refine the strategy with content (visual and textual) and design details in order to allow the implementation stage. The outcomes of these reports must be undertaken prior to the issue of the occupation certificate (or equivalent). the interpretation strategy and interpretation plan must include consideration of three main components identified though the ACHAR process:

- *input and feedback from the RAPs, which to date include the contemporary connections of the Redfern Football club to the region, the use of Darug language in any outputs, and the use (or re-use) of endemic plants in any landscaping for the project.*
- *the historical record of the study and its immediate environs, which has documented associations with Aboriginal people, dating to the early and mid-twentieth century*
- *the past cultural and environmental landscape once informed by further analyses recommended to be undertaken as part of the HMP.*

- *Consultation should be maintained with the RAPs during the finalisation of the development proposal. This should focus on the long-term curation and management of the Aboriginal objects recovered through the archaeological excavation program, any mitigation measures that were implemented prior to, and during, the works, and the development of the interpretation strategy and plan.*
- *A copy of the ACHA should be lodged with AHIMS and provided to each of the RAPs.*
- *A Site Recording Form for the isolated object and potential cultural deposits within the study area should be submitted to the AHIMS database.*
- *If any element of the development is relocated outside the area assessed in this study, or if any alteration to the development plan is proposed that could result in additional impact to the potential cultural deposit, further assessment of the additional area(s) should be undertaken to identify and appropriately manage Aboriginal objects/sites/places that may be in the additional area(s).*
- *The Department of Education should advise all relevant personnel and contractors involved in the design, construction, and operation of the development proposal of the relevant heritage considerations, legislative requirements, and recommendations identified in this report.*

1.2 STUDY AREA

The study site is that piece of land described as Lot 11 of the Land and Property Information Deposited Plan(DP) 615964, Lot 1 DP 74696, Lots 2 & 3 DP 69494, Lots A & B DP 109038; forming the following street address 7-11 Park Road, Alexandria, New South Wales, in the Parish of Alexandria, County of Cumberland (Figure 1.1 – 1.2).

Lot	Deposited Plan
11	615964
1	74696
2	69494
3	69494
A	109038
B	109038

1.3 SCOPE

The aims of this ACHMP are to facilitate in the implementation of mitigation and conservation strategies for the study area. The proposed development will impact on intact soil profiles and potential Aboriginal archaeological deposits and/or objects and as such this document outlines the processes that are to be set in place to manage this impact on the Aboriginal cultural heritage of the site, prior to the proposed development taking place.

The following appendices aim to accompany this document and the management processes to be set in place;

- Appendix One: A copy of the Development Consent for SSD #8373.
- Appendix Two: Arboricultural Report
- Appendix Three: Palynological Testing Results
- Appendix Four: Test Excavation Results

1.4 AUTHOR IDENTIFICATION

The analysis of the archaeological background and the reporting were undertaken by Mr. Benjamin Streat (BA, Grad Dip Arch Her, Grad Dip App Sc), archaeologist and Director of Streat Archaeological Services Pty Ltd in association with archaeologists Ms. Yolanda Pavincich (B. Arch, Grad Dip Cul Her) and Mr. Steven J. Vasilakis (B. Arch. Hons.), under the guidance of Mr. Martin Carney archaeologist and Managing Director of AMAC Group.

1.5 ACKNOWLEDGEMENTS

The author would like to thank the following for advice and/or input into this assessment:

- Mr. P. Rappaport of Heritage 21;
- Ms. L. Schultz of Heritage 21;
- Ms. S. Rappaport of Heritage 21;
- Mr. J. Peacock of Richard Crookes Construction;
- Ms. S. Musengi of Richard Crookes Construction;
- Ms. S. Timothy of Metropolitan Local Aboriginal Land Council;
- Mr. J. Workman and Mr. G. Workman of Darug Land Observations;
- Mr. P. Khan of Kamilaroi-Yankuntjatjara Working Group;
- Mr. S. Franks of Tocomwall;
- Ms. S. Storer of Biamanga;
- Ms. C. Everingham of Darug Aboriginal Cultural Heritage Assessments;
- Mr. D. Duncan of DJMD Consultancy;
- Mr. D. Dyer of Darug Aboriginal Landcare Inc.
- Mr. P. Boney of Wailwan Aboriginal Digging Group

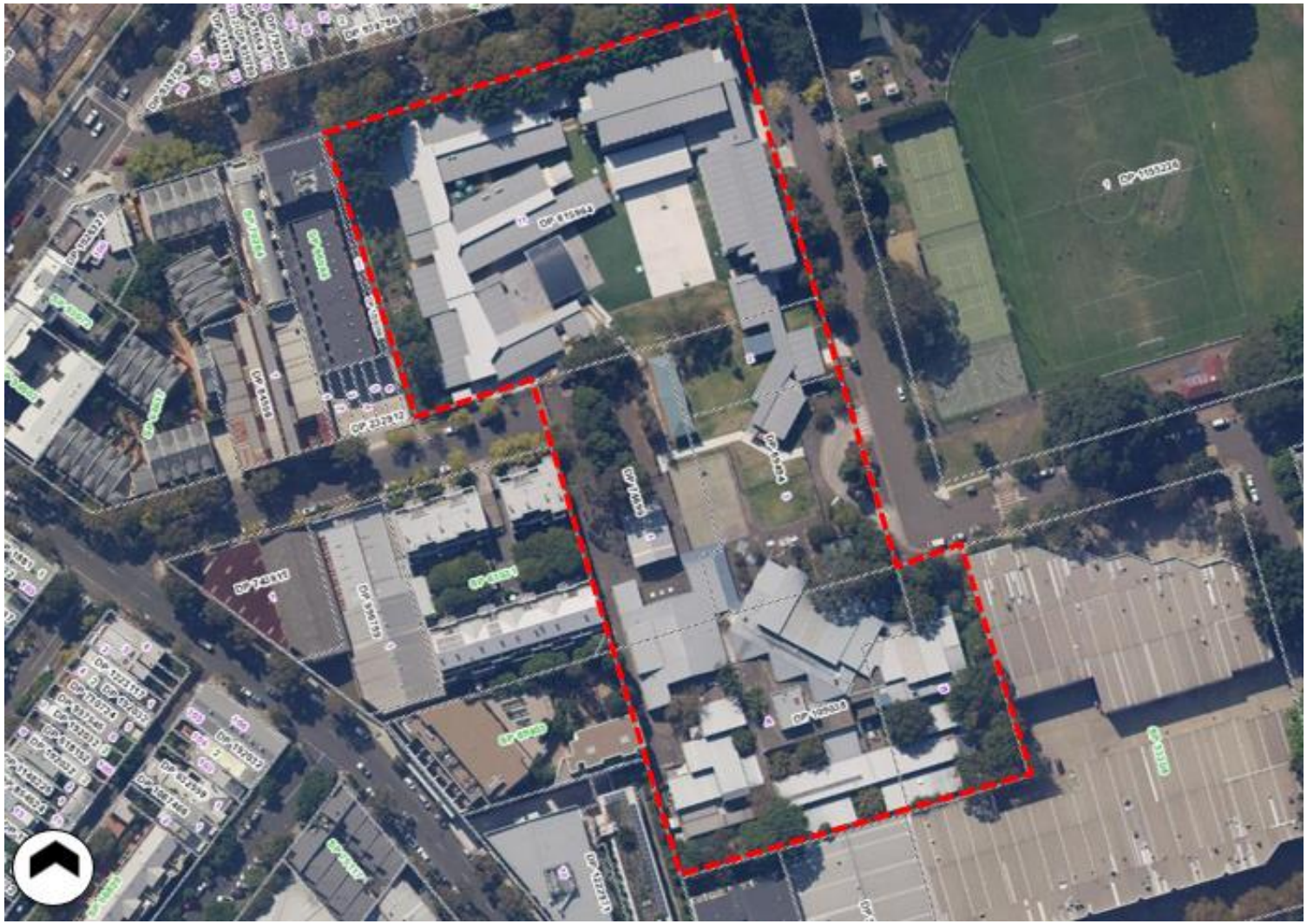

Figure 1.1 Aerial of study area.
Study area outlined in red. Six Maps, LPI Online (accessed 30/03/19).

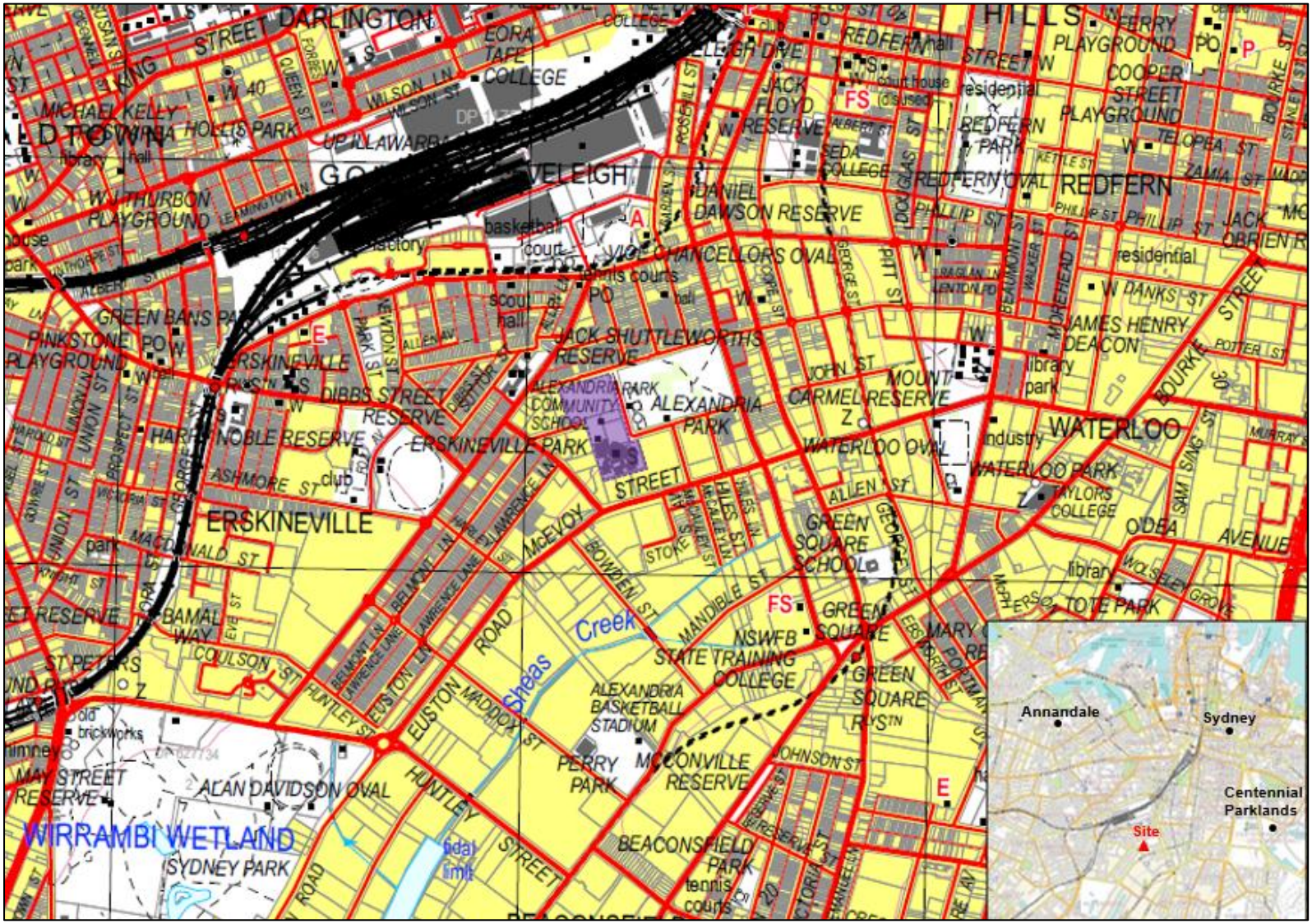

Figure 1.2 Topographic map with site location.
Study area indicated in purple. Six Maps, LPI Online, accessed 30/03/2019

2.0 LEGISLATIVE CONTEXT AND STATUTORY CONTROLS

This section of the report provides a brief outline of the relevant legislation and statutory instruments that protect Aboriginal archaeological and cultural heritage sites within the state of New South Wales. Some of the legislation and statutory instruments operate at a federal or local level and as such are applicable to Aboriginal archaeological and cultural heritage sites in New South Wales. This material is not legal advice and is based purely on the author's understanding of the legislation and statutory instruments. This document seeks to meet the requirements of the legislation and statutory instruments set out within this section of the report.

2.1 COMMONWEALTH HERITAGE LEGISLATION AND LISTS

One piece of legislation and two statutory lists and one non-statutory list are maintained and were consulted as part of this report; the National Heritage List and the Commonwealth Heritage List.

2.1.1 Environmental Protection and Biodiversity Conservation Act 1999

The *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act) offers provisions to protect matters of national environmental significance. This act establishes the National Heritage List and the Commonwealth Heritage List which can include natural, Indigenous and historic places of value to the nation. This Act helps ensure that the natural, Aboriginal and historic heritage values of places under Commonwealth ownership or control are identified, protected and managed (Australian Government 1999).

2.1.2 National Heritage List

The National Heritage List is a list which contains places, items and areas of outstanding heritage value to Australia; this can include places, items and areas overseas as well as items of Aboriginal significance and origin. These places are protected under the Australian Government's EPBC Act.

2.1.3 Commonwealth Heritage List

The Commonwealth Heritage List can include natural, Indigenous and historic places of value to the nation. Items on this list are under Commonwealth ownership or control and as such are identified, protected and managed by the Federal Government.

2.2 NEW SOUTH WALES STATE HERITAGE LEGISLATION AND LISTS

The state (NSW) based legislation that is of relevance to this assessment comes in the form of the acts which are outlined below.

2.2.1 National Parks and Wildlife Act 1974

The NSW National Parks and Wildlife Act 1974 (as amended*)* defines Aboriginal objects and provides protection to any and all material remains which may be evidence of the Aboriginal occupation of lands continued within the state of New South Wales. The relevant sections of the Act are sections 84, 86, 87 and 90.
An Aboriginal object, formerly known as a relic is defined as:

'any deposit, object or material evidence (not being a handicraft made for sale) relating to the Aboriginal habitation of the area that comprises New South Wales, being habitation before or concurrent with (or both) the occupation of that area by persons of non-Aboriginal extraction, and includes Aboriginal remains" (NSW Government, 1974).

It is an offence to harm or desecrate an Aboriginal object or places under Part 6, Section 86 of the NPW Act:
Part 6, Division 1, Section 86: Harming or desecrating Aboriginal objects and Aboriginal places:

(1) A person must not harm or desecrate an object that the person knows is an Aboriginal object.

Maximum penalty:

(a) in the case of an individual—2,500 penalty units or imprisonment for 1 year, or both, or (in circumstances of aggravation) 5,000 penalty units or imprisonment for 2 years, or both, or

(b) in the case of a corporation—10,000 penalty units.

(2) A person must not harm an Aboriginal object.

Maximum penalty:

(a) in the case of an individual—500 penalty units or (in circumstances of aggravation) 1,000 penalty units, or

(b) in the case of a corporation—2,000 penalty units.

(3) For the purposes of this section, ***circumstances of aggravation*** *are:*

(a) that the offence was committed in the course of carrying out a commercial activity, or

(b) that the offence was the second or subsequent occasion on which the offender was convicted of an offence under this section.

This subsection does not apply unless the circumstances of aggravation were identified in the court attendance notice or summons for the offence.

(4) A person must not harm or desecrate an Aboriginal place.

Maximum penalty:

(a) in the case of an individual—5,000 penalty units or imprisonment for 2 years, or both, or

(b) in the case of a corporation—10,000 penalty units.

(5) The offences under subsections (2) and (4) are offences of strict liability and the defence of honest and reasonable mistake of fact applies.

(6) Subsections (1) and (2) do not apply with respect to an Aboriginal object that is dealt with in accordance with section 85A.

(7) A single prosecution for an offence under subsection (1) or (2) may relate to a single Aboriginal object or a group of Aboriginal objects.

(8) If, in proceedings for an offence under subsection (1), the court is satisfied that, at the time the accused harmed the Aboriginal object concerned, the accused did not know that the object was an Aboriginal object, the court may find an offence proved under subsection (2).

2.2.2 Environmental Planning & Assessment Act 1979

The Environmental Planning and Assessment Act 1979 (EP&A Act) states that environmental impacts of proposed developments must be considered in land use planning procedures. Four parts of this act relate to Aboriginal cultural heritage.

- Part 3, divisions 3 and 4 refer to Regional strategic plans and both Local Environmental Plans (LEP) and Development Control Plans (DCP), which are environmental planning instruments and call for the assessment of Aboriginal heritage among other requirements.
- Part 4 determines what developments require consent and what developments do not require consent. Section 4.15 calls for the evaluation of

  The likely impacts of that development, including environmental impacts on both the natural and built environments and the social and economic impacts in the locality (NSW Government 1979).

  This part of the legislation also addresses State Significant Developments as mentioned in division 4.7 with section 4.38 outlining the consent for State Significant Development in relation to the environmental planning instruments.

- Part 5 of this Act requires that impacts on a locality which may have an impact on the aesthetic, anthropological, architectural, cultural, historic, scientific, recreational or scenic value are considered as part of the development application process (NSW Government, 1979).

2.2.3 The Aboriginal Land Rights Act 1983

The NSW *Aboriginal Land Rights Act 1983* (ALR Act), administered by the NSW Department of Aboriginal Affairs, established the NSW Aboriginal Land Council (NSWALC) and Local Aboriginal Land Councils (LALCs). The ALR Act requires these bodies to:

- take action to protect the culture and heritage of Aboriginal persons in the council's area, subject to any other law;
- promote awareness in the community of the culture and heritage of Aboriginal persons in the council's area.

These requirements recognise and acknowledge the statutory role and responsibilities of New South Wales Aboriginal Land Council and Local Aboriginal Land Councils.
The ALR Act also establishes the Office of the Registrar whose functions include but are not limited to, maintaining the Register of Aboriginal Land Claims and the Register of Aboriginal Owners.

Under the ALR Act the Office of the Registrar is to give priority to the entry in the Register of the names of Aboriginal persons who have a cultural association with:

- lands listed in Schedule 14 to the NPW Act;
- lands to which section 36A of the ALR Act applies (NSW Government, 1974 & DECCW 2010).

2.2.4 The Native Title Act 1993

The *Native Title Act 1993* (NTA) provides the legislative framework to:

- recognise and protect native title;

- establish ways in which future dealings affecting native title may proceed, and to set standards for those dealings, including providing certain procedural rights for registered native title claimants and native title holders in relation to acts which affect native title;
- establish a mechanism for determining claims to native title;
- provide for, or permit, the validation of past acts invalidated because of the existence of native title.

The National Native Title Tribunal has a number of functions under the NTA including maintaining the Register of Native Title Claims, the National Native Title Register and the Register of Indigenous Land Use Agreements and mediating native title claims (NSW Government, 1974 & DECCW 2010).

2.2.5 New South Wales Heritage Register and Inventory 1999

The State Heritage Register is a list of places and objects of particular importance to the people of NSW. The register lists a diverse range of over 1,500 items, in both private and public ownership. Places can be nominated by any person to be considered to be listed on the Heritage register. To be placed an item must be significant for the whole of NSW. The State Heritage Inventory lists items that are listed in local council's local environmental plan (LEP) or in a regional environmental plan (REP) and are of local significance.

2.2.6 Register of Declared Aboriginal Places 1999

The NPW Act protects areas of land that have recognised values of significance to Aboriginal people. These areas may or may not contain Aboriginal objects (i.e. any physical evidence of Aboriginal occupation or use). Places can be nominated by any person to be considered for Aboriginal Place gazettal. Once nominated, a recommendation can be made to EPA/OEH for consideration by the Minister. The Minister declares an area to be an 'Aboriginal place' if the Minister believes that the place is or was of special significance to Aboriginal culture. An area can have spiritual, natural resource usage, historical, social, educational or other type of significance. Under section 86 of the NPW Act it is an offence to harm or desecrate a declared Aboriginal place. Harm includes destroying, defacing or damaging an Aboriginal place. The potential impacts of the development on an Aboriginal place must be assessed if the development will be in the vicinity of an Aboriginal place (DECCW 2010).

2.3 LOCAL PLANNING INSTRUMENTS

2.3.1 Sydney Local Environmental Plan 2012

The City of Sydney Council Local Environment Plan was endorsed in 2012. Heritage Conservation is discussed in Part 5; Clause 5.10. The following section highlights the Aboriginal cultural heritage considerations in relation to developments:

5.10 Heritage conservation

(1) Objectives

The objectives of this clause are as follows:

(a) to conserve the environmental heritage of the City of Sydney

(b) to conserve the heritage significance of heritage items and heritage conservation areas, including associated fabric, settings and views,

(c) to conserve archaeological sites,

(d to conserve Aboriginal objects and Aboriginal places of heritage significance.

(2) Requirement for consent

Development consent is required for any of the following:

(a) demolishing or moving any of the following or altering the exterior of any of the following (including, in the case of a building, making changes to its detail, fabric, finish or appearance):

(i) a heritage item,

(ii) an Aboriginal object,

(iii) a building, work, relic or tree within a heritage conservation area,

(b) altering a heritage item that is a building by making structural changes to its interior or by making changes to anything inside the item that is specified in Schedule 5 in relation to the item,

(c) disturbing or excavating an archaeological site while knowing, or having reasonable cause to suspect, that the disturbance or excavation will or is likely to result in a relic being discovered, exposed, moved, damaged or destroyed,

(d) disturbing or excavating an Aboriginal place of heritage significance,

(e) erecting a building on land:

(i) on which a heritage item is located or that is within a heritage conservation area, or

(ii) on which an Aboriginal object is located or that is within an Aboriginal place of heritage significance,

(f) subdividing land:

(i) on which a heritage item is located or that is within a heritage conservation area, or

(ii) on which an Aboriginal object is located or that is within an Aboriginal place of heritage significance.

(3) When consent not required

However, development consent under this clause is not required if:

(a) the applicant has notified the consent authority of the proposed development and the consent authority has advised the applicant in writing before any work is carried out that it is satisfied that the proposed development:

(i) is of a minor nature or is for the maintenance of the heritage item, Aboriginal object, Aboriginal place of heritage significance or archaeological site or a building, work, relic, tree or place within the heritage conservation area, and

(ii) would not adversely affect the heritage significance of the heritage item, Aboriginal object, Aboriginal place, archaeological site or heritage conservation area, or

(b) the development is in a cemetery or burial ground and the proposed development:

(i) is the creation of a new grave or monument, or excavation or disturbance of land for the purpose of conserving or repairing monuments or grave markers, and

(ii) would not cause disturbance to human remains, relics, Aboriginal objects in the form of grave goods, or to an Aboriginal place of heritage significance, or

(c) the development is limited to the removal of a tree or other vegetation that the Council is satisfied is a risk to human life or property, or

(d) the development is exempt development.

(8) Aboriginal places of heritage significance

The consent authority must, before granting consent under this clause to the carrying out of development in an Aboriginal place of heritage significance:

(a) consider the effect of the proposed development on the heritage significance of the place and any Aboriginal object known or reasonably likely to be located at the place by means of an adequate investigation and assessment (which may involve consideration of a heritage impact statement), and

(b) notify the local Aboriginal communities, in writing or in such other manner as may be appropriate, about the application and take into consideration any response received within 28 days after the notice is sent

(10) Conservation incentives

The consent authority may grant consent to development for any purpose of a building that is a heritage item or of the land on which such a building is erected, or for any purpose on an Aboriginal place of heritage significance, even though development for that purpose would otherwise not be allowed by this Plan, if the consent authority is satisfied that:

(a) the conservation of the heritage item or Aboriginal place of heritage significance is facilitated by the granting of consent, and

(b) the proposed development is in accordance with a heritage management document that has been approved by the consent authority, and

(c) the consent to the proposed development would require that all necessary conservation work identified in the heritage management document is carried out, and

(d) the proposed development would not adversely affect the heritage significance of the heritage item, including its setting, or the heritage significance of the Aboriginal place of heritage significance, and

(e) the proposed development would not have any significant adverse effect on the amenity of the surrounding area

2.3.2 Sydney Development Control Plan 2002

The Sydney Development Control Plan was prepared by the City of Sydney Council in 2012. Section 3; Chapter 3.9 deals with heritage of which subsection 3.9.3 archaeological assessments concerning Aboriginal Cultural Heritage;

3.9.3 Archaeological assessments

(1) An archaeological assessment is to be prepared by a suitably qualified archaeologist in accordance with the guidelines prepared by the NSW Office and Environment and Heritage.
(2) For development proposals in Central Sydney, refer to the Central Sydney Archaeological Zoning Plan to determine whether the development site has archaeological potential.

(3) An archaeological assessment is to be submitted as part of the Statement of Environmental Effects for development applications affecting an archaeological site or a place of Aboriginal heritage significance, or potential archaeological site that is likely to have heritage significance.

(4) An archaeological assessment is to include:

(a) an assessment of the archaeological potential of the archaeological site or place of Aboriginal heritage significance;

(b) the heritage significance of the archaeological site or place of Aboriginal heritage significance;

(c) the probable impact of the proposed development on the heritage significance of the archaeological site or place of Aboriginal heritage significance;

(d) the compatibility of the development with conservation policies contained within an applicable conservation management plan or conservation management strategy; and

(e) a management strategy to conserve the heritage significance of the archaeological site or place of Aboriginal heritage significance.

(5) If there is any likelihood that the development will have an impact on significant archaeological relics, development is to ensure that the impact is managed according to the assessed level of significance of those relics.

2.4 DUE DILIGENCE CODE OF PRACTICE FOR THE PROTECTION OF ABORIGINAL OBJECTS IN NEW SOUTH WALES

This assessment conforms to the parameters set out in *the Due Diligence Code of Practice for the Protection of Aboriginal Objects in New South Wales, Part 6 National Parks and Wildlife Act 1974,* (DECCW 2010).

The *Due Diligence Code of Practice for the Protection of Aboriginal Objects in New South Wales* states that if;

- a desktop assessment and visual inspection confirm that there are Aboriginal objects or that they are likely, then further archaeological investigation and impact assessment is necessary.

2.5 CODE OF PRACTICE FOR ARCHAEOLOGICAL INVESTIGATION OF ABORIGINAL OBJECTS IN NEW SOUTH WALES

Any further work resulting from recommendations should be carried out conforming to the Code of Practice for Archaeological Investigation of Aboriginal Objects in New South Wales, Part 6 National Parks and Wildlife Act 1974, (DECCW 2010).

2.6 GUIDELINES

This report has been carried out in consultation with the following documents which advocate best practice in New South Wales:

- Aboriginal Archaeological Survey, Guidelines for Archaeological Survey Reporting (NSW NPWS 1998);
- Due Diligence Code of Practice for the Protection of Aboriginal Objects in New South Wales, Part 6 National Parks and Wildlife Act 1974, (DECCW 2010);
- Code of Practice for Archaeological Investigation of Aboriginal Objects in New South Wales, Part 6 National Parks and Wildlife Act 1974, (DECCW 2010);
- Aboriginal Cultural Heritage Standards and Guidelines Kit (NPWS 1998);
- Australia ICOMOS 'Burra' Charter for the conservation of culturally significant places (Australia ICOMOS 1999);
- Part 6; National Parks and Wildlife Act Aboriginal Cultural Heritage Consultation Requirements for Proponents (DECCW 2010);
- Protecting Local Heritage Places: A Guide for Communities (Australian Heritage Commission 1999).
- Guide to Investigating, Assessing and Reporting on Aboriginal Cultural Heritage (DECCW 2010);

3.0 PROPOSED ACTIVITY

The project consists of the construction of a new permanent school on the Park Road Campus to combine both schools – previous and new – onto one campus. The new school will provide new learning spaces for 1000 primary school students and up to 1200 secondary school students.

The construction program as broken down by Extent Heritage Pty Ltd (2018) will consist of the following phases;

- Replacement of an existing two -storey school building on the western boundary of the study area, with a four-storey structure and hall (Block A);
- Replacement of existing structures on the southern boundary, with a three-storey structure (Block B – Block E);
- Construction of indoor sports facilities (within the hall), as well as new sports fields, and their associated infrastructure. The sports field has been extended to the east to include runoff and landscaping. The construction of the sports field will involve the demolition of standing structures and fill (RL 13810).
- General landscaping and water/drainage management facilities along the northern and southern boundaries and along Power Avenue and Park Road.

The construction of the new buildings will consist of piling to depths between 10m and 15m. The development footprint has significant soil contamination which will result in the general elevation of the site by approximately 50cm. Therefore, surface disturbance is considered minimal consisting of removal of current structures and services.

3.1 POTENTIAL HARM TO ABORIGINAL OBJECTS AND CULTURAL HERITAGE

Test excavations undertaken by Extent Heritage Pty Ltd in September 2018 and consisted of six 1m x 1m test pits, excavated into quadrants. Test excavations resulted in a single mudstone artefact recovered from test pit #13A. Archaeological investigations have indicated that the study area has Aboriginal objects and/or features of cultural and archaeological significance and registered site within the Aboriginal Heritage Information Management System (AHIMS) – Site Number pending. The A horizon was found to be present and *intac*t in areas of the site. Further investigation in order to ascertain the nature of the deposit and site structure including flooding events is discussed in Section 5.0 and 6.0 of this report. The proposed development will harm known and unknown Aboriginal objects and deposits of cultural value.

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Figure 3.1 **The proposed development footprint.**
Extent Heritage Pty Ltd (2018), Figure 2 in original report.

Figure 3.2 **The proposed screw piling locations, capping layer and pile caps for the Alexandria Park Community School.**
Extent Heritage Pty Ltd (2018), Figure 3 in original report.

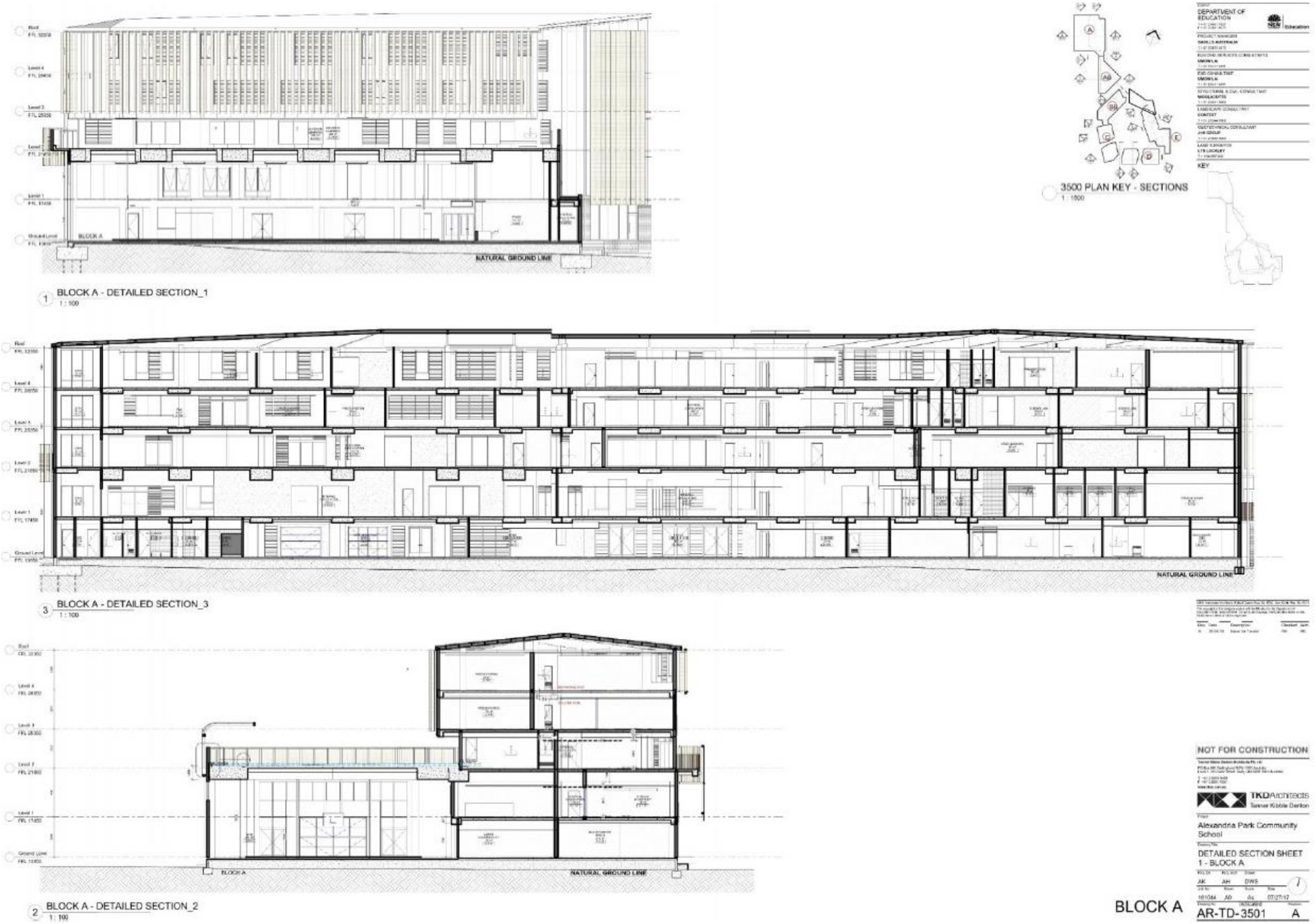


Figure 3.3 **Detailed section sheet 1 – Block A.**
TKD Architects (2017), Drawing No. AR-TD-3501 Rev. A.

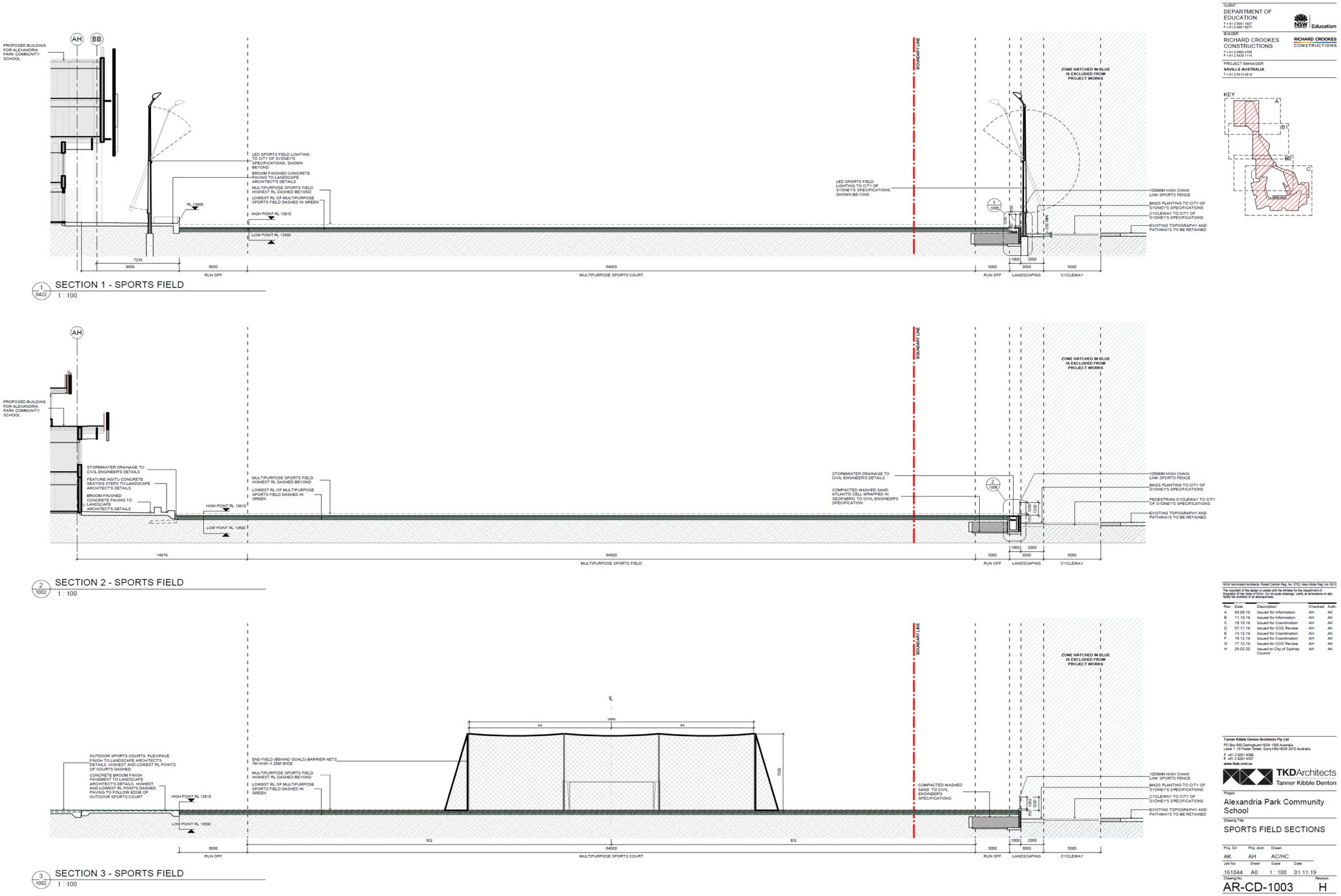


Figure 3.4 **Sports Field Sections**
TKD Architects (2020), Drawing No. AR-CD-1003 Rev. H.

4.0 Aboriginal Consultation

Extent Recommendation 10.2.(1) Processes, timing, and methods for maintaining Aboriginal community consultation through the remainder of the project

This section documents the requirements of the Aboriginal consultation process that should be undertaken as part of any Aboriginal archaeological and cultural heritage assessment. This process is undertaken where an Aboriginal Heritage Impact Permit (AHIP) or test excavation is required – as this management plan under the Development consent of SSD #8373 takes the place of an AHIP as the endorsed document by the Office of Environment and Heritage for the management of Aboriginal objects and heritage. These guidelines will form the basis for ongoing consultation as part of this project.

However, some deviation from these guidelines has occurred as a result of the implementation of Development Consent (Section 89E Environmental Planning and Assessment Act 1999), SSD # 8373.

The following Registered Aboriginal Parties (RAPs) are to be consulted for the duration of this project;

Organisation	Contact	Contact Detail
Darug Land Observation	Gordon Workman	daruglandobservations@gmail.com
Tocomwall	Scott Franks	scott@tocomwall.com.au
Wailwan Aboriginal Digging Group	Philip Boney	Waarlan12@outlook.com
Darug Aboriginal Landcare Incorporated	Des Dyer	Desmond4552@hotmail.com
DJMD Consultancy	Darren Duncan	darrenjohnduncan@gmail.com
Darug Aboriginal Cultural Heritage Assessment	Celestine Everingham	(02) 9410 3665
Biamanga	Janaya Smith	biamangachts@gmail.com
Kamilaroi-Yankuntjatjara Working Group	Phil Khan	Philipkhan.acn@live.com.au
Metropolitan Local Aboriginal Land Council	Selina Timothy	PO Box 1103 Strawberry Hills NSW 2016 culturalheritage@metrolalc.org.au

4.1 CONSULTATION REQUIREMENTS

Aboriginal Cultural Heritage Consultation Requirements for Proponents 2010 (DECCW 2010), referring to Part 6 Approvals under the NPW Act were released in April 2010. The responsibilities of the proponent when test excavation is to take place and/or permit under section 90 of the NPW Act are listed below.

http://www.environment.nsw.gov.au/resources/cultureheritage/commconsultation/09781ACHconsultreq.pdf

Stage 1 – Notification of project proposal and registration of interest

Stage 1 states that:

4.1.2- Proponents are responsible for ascertaining, from reasonable sources of information, the names of Aboriginal people who may hold cultural knowledge relevant to determining the significance of Aboriginal objects and/or places. Reasonable sources of information could include (a) to (g) below. Proponents must compile a list of Aboriginal people who may have an interest for the proposed project area and hold knowledge relevant to determining the cultural significance of Aboriginal objects and/or places by writing to:

(a) the relevant DECCW (sic) EPRG regional office

(b) the relevant Local Aboriginal Land Council(s)

(c) the Registrar, Aboriginal Land Rights Act 1983 for a list of Aboriginal owners

(d) the National Native Title Tribunal for a list of registered native title claimants, native title holders and registered Indigenous Land Use Agreements

(e) Native Title Services Corporation Limited (NTSCORP Limited)

(f) the relevant local council(s)

(g) the relevant catchment management authorities for contact details of any established Aboriginal reference group.

4.1.3- Proponents must write to the Aboriginal people whose names were obtained in step 4.1.2 and the relevant Local Aboriginal Land Council(s) to notify them of the proposed project. The proponent must also place a notice in the local newspaper circulating in the general location of the proposed project explaining the project and its exact location. The notification by letter and in the newspaper, must include:

(a) the name and contact details of the proponent

(b) a brief overview of the proposed project that may be the subject of an application for an AHIP, including the location of the proposed project

(c) a statement that the purpose of community consultation with Aboriginal people is to assist the proposed applicant in the preparation of an application for an AHIP and to assist the Director General of DECCW in his or her consideration and determination of the application

(d) an invitation for Aboriginal people who hold cultural knowledge relevant to determining the significance of Aboriginal object(s) and/or place(s) in the area of the proposed project to register an interest in a process of community consultation with the proposed applicant regarding the proposed activity

(e) a closing date for the registration of interests.

4.1.4- There must be a minimum of 14 days from the date the letter was sent, or notice published in the newspaper to register an interest. The time allowed to register an interest should reflect the project's size and complexity.

4.1.5- The proponent must advise Aboriginal people who are registering an interest that their details will be forwarded to DECCW and the Local Aboriginal Land Council (LALC) unless they specify that they do not want their details released.

4.1.6- The proponent must make a record of the names of each Aboriginal person who registered an interest and provide a copy of that record, along with a copy of the notification from 4.1.3 to the relevant DECCW EPRG regional office and LALC within 28 days from the closing date for registering an interest.

4.1.7- LALCs holding cultural knowledge relevant to determining the significance of Aboriginal objects and places in the proposed project area who wish to register an interest to be involved in consultation must register their interest as an Aboriginal organisation rather than as individuals.

4.1.8- Where an Aboriginal organisation representing Aboriginal people who hold cultural knowledge has registered an interest, a contact person for that organisation must be nominated. Aboriginal cultural knowledge holders who have registered an interest may indicate to the proponent they have appointed a representative to act on their behalf. Where this occurs, the registered Aboriginal party must provide written confirmation and contact details of those individuals to act on their behalf.

Stage 2 – Presentation of information about the proposed project

Stage 2 states that:

4.2.1- The proponent must initiate arrangements for presenting the proposed project information to the registered Aboriginal parties (from Stage 1).

4.2.2- The presentation of proposed project information should provide the opportunity for:

- *(a) the proponent to present the proposal, outline project details relevant to the nature, scope, methodology and environmental and other impacts*
- *(b) the proponent to outline the impact assessment process including the input points into the investigation and assessment activities*
- *(c) the proponent to specify critical timelines and milestones for the completion of assessment activities and delivery of reports*
- *(d) the proponent and registered Aboriginal parties to clearly define agreed roles, functions and responsibilities*
- *(f) the registered Aboriginal parties to identify raise and discuss their cultural concerns, perspectives and assessment requirements (if any).*

4.2.3- The proponent should record or document that the proposed project information has been presented. This record or documentation should include any agreed outcomes, and any contentious issues that may require further discussion to establish mutual resolution (where applicable). The proponent should provide a copy of this record or documentation to registered Aboriginal parties.

4.2.4- Depending on the nature, scale and complexity of the proponent's project, it may be reasonable and necessary for the proponent to:

(a) conduct additional project information sessions to ensure that all necessary information about the project is provided and enable registered Aboriginal parties to provide information about the cultural significance of Aboriginal object(s) and/or place(s) that may be present on the proposed project area

(b) create the opportunity for registered Aboriginal parties to visit the project site" (DECCW 2010).

Stage 3 – Drafting, review and finalisation of the Cultural Heritage Assessment Report

Stage 3 states that:

4.3.1- The proponent must present and/or provide the proposed methodology(s) for the cultural heritage assessment to the registered Aboriginal parties.

4.3.2- The registered Aboriginal parties must be given the opportunity to review and provide feedback to the proponent within a minimum of 28 days of the proponent providing the methodology. The review should identify any protocols that the registered Aboriginal parties wish to be adopted into the information gathering process and assessment methodology and any matters such as issues/areas of cultural significance that might affect, inform or refine the assessment methodology. Comments should be provided in writing or may be sought verbally by the proponent and accurately recorded.

4.3.3- As part of this consultation, the proponent must also seek cultural information from registered Aboriginal parties to identify:

(a) whether there are any Aboriginal objects of cultural value to Aboriginal people in the area of the proposed project

(b) whether there are any places of cultural value to Aboriginal people in the area of the proposed project (whether they are Aboriginal places declared under s.84 of the NPW Act or not). This will include places of social, spiritual and cultural value, historic places with cultural significance, and potential places/areas of historic, social, spiritual and/or cultural significance.

4.3.4- Some information obtained from registered Aboriginal parties may be sensitive or have restricted public access. The proponent must, in consultation with registered Aboriginal parties, develop and implement appropriate protocols for sourcing and holding cultural information. In some cases, the sensitive information may be provided to the proponent by an individual and the proponent should not share that information with all registered Aboriginal parties or others without the express permission of the individual.

4.3.5- Information obtained in 4.3.4 is used to understand the context and values of Aboriginal object(s) and/or place(s) located on the proposed project site. This information must be integrated with the scientific (archaeological) assessment of significance. Together the context, values, and scientific assessment provide the basis for assessing Aboriginal heritage values and recommending management options.
The information collected by the proponent during the consultation process must be used only to inform decision making for any application for an AHIP, unless the registered Aboriginal parties agree otherwise.

4.3.6- The proponent must seek the views of registered Aboriginal parties on potential management options. Management options will include ways to avoid or mitigate harm and/or conserve known Aboriginal object(s) and/or place(s). Management options should consider how Aboriginal people can continue their association with identified Aboriginal heritage values.

4.3.7- The proponent must document all feedback received in Stage 3 from registered Aboriginal parties in the final cultural heritage assessment report. This must include copies of any submissions received and the proponent's response to the issues raised. In some cases, this may require an acknowledgment of sensitive information and a list of Aboriginal people who should be contacted for permission to receive further details" (DECCW 2010).

Stage 4 – Review of draft cultural heritage assessment report.

Stage 4 states that:

4.4.1- The proponent must prepare a draft cultural heritage assessment report.

4.4.2- The proponent must provide a copy of the draft cultural heritage assessment report to registered Aboriginal parties for their review and comment.

4.4.3- The proponent must give registered Aboriginal parties a minimum of 28 days from sending the draft report to make submissions. The time allowed for comment on the draft report should reflect the project's size and complexity. Comments should be provided in writing or, where provided verbally, accurately recorded.

4.4.4- After considering the comments received on the draft report the proponent must finalise the report. The final report must include copies of any submissions received, including submissions on the proposed methodology and on the draft report. The final report must also include the proponent's response to each submission. The report must then be submitted to DECCW for consideration with the proponent's application for an AHIP.

4.4.5- The proponent must provide or make available copies of the final cultural heritage assessment report and the AHIP application to registered Aboriginal parties and the relevant LALC(s) (whether or not the LALC is registered in Stage 1). The report and application must be provided or made available within 14 days of the AHIP application being made" (DECCW 2010).

4.2 CONSULTATION LOG

STAGE 1					
Authority Letters, Advertisement & Registration Completed By Extent in 2018					
Registered Organisations/Individuals	**Contact Person**	**Email Address**	**Date**	**Method**	**Notes**
Metropolitan LALC	Selina Timothy	culturalheritage@metrolalc.org.au	29/08/2018	Email	
Darug Land Observations	Jamie Workman & Gordon Workman	daruglandobservations@gmail.com	16/03/2018	Mail	
Kamilaroi-Yankuntjatjara Working Group	Phil Khan	philipkhan.acn@live.com.au	24/04/2019	Phone	
Tocomwall	Scott Franks	scott@tocomwall.com.au	27/03/2018	Email	
Biamanga	Seli Storer	biamangachts@gmail.com	10/04/2018	Email	Janaya Smith is the new contact
Darug Aboriginal Cultural Heritage Assessments	Celestine Everingham	(02) 9410 3665	5/04/2018	Phone	
DJMD Consultancy	Darren Duncan	darrenjohnduncan@gmail.com	3/04/2018	Email	
Darug Aboriginal Landcare Inc.	Des Dyer	Desmond4552@hotmail.com	27/03/2018	Email	
Wailwan Aboriginal Digging Group	Phil Boney	Waarlan12@outlook.com	27/03/2018	Phone	
Project Handover Notification with Extent Heritage		**(02/04/2019)**			
Contacted Organisation/ Individuals	**Contacted by Organisation/ Individual**	**Subject**	**Date**	**Method**	**Notes**
Environment, Energy & Science Group (Formerly OEH)	AMAC/Steven J. Vasilakis	Notification of Project Handover	2/04/2019	Email	AMAC Group Commissioned to continue Project & Consultation from Extent Heritage Pty Ltd

All RAPs	AMAC/Steven J. Vasilakis	Notification of Project Handover & Site Meeting 11/04/2019	2/04/2019	Email	Phoned Celestine Everingham/DACHA
AMAC/Steven J. Vasilakis	Phil Khan/KYWG	Site Meeting Availability	2/04/2019	Email	Available for Site Meeting
AMAC/Steven J. Vasilakis	Scott Franks/Tocomwall	Site Meeting Availability	2/04/2019	Email	Unavailable for Site Meeting
AMAC/Steven J. Vasilakis	Selina Timothy/MLALC	Site Meeting Availability	8/04/2019	Email	Available for Site Meeting
Ricky Fields/DALI; Phil Boney/Wailwan; Anna O'Hara/DLO; Biamanga/Janaya Smith; DJMD Consultancy	AMAC/Steven J. Vasilakis	Site Meeting Availability	8/04/2019	Phone	RAPs called that did not respond for Site Meeting
All RAPs	AMAC/Steven J. Vasilakis	Site Meeting Availability	8/04/2019	Phone	Available for Site Meeting - Ricky Fields/DALI & Phil Boney/Wailwan - Darren Duncan/DJMD Not Available wants to be informed - Anna O'Hara/DLO & Biamanga/Janaya Smith No Response/Left Message
All RAPs	AMAC/Steven J. Vasilakis	Site Meeting Postponed Due to Scheduling Difficulties	9/04/2019	Email	Phoned Celestine Everingham/DACHA
STAGE 2 & 3					
ACHMP Methodology (/Test Excavation Methodology) Review		**Minimum 28 days to respond**	**(02/04/2018) - (30/04/2018)**		
Contacted Organisation/ Individuals	**Contacted by Organisation/ Individual**	**Subject**	**Date**	**Method**	**Notes**
All RAPs	AMAC/Steven J. Vasilakis	Dispatch ACHMP Research Design & Testing Methodology	2/04/2019	Email	Posted to Celestine Everingham/DACHA
AMAC/Steven J. Vasilakis	Des Dyer/DALC	ACHMP Methodology Review	15/04/2019	Email	Attached Letter - Supports ACHMP Methodology
AMAC/Steven J. Vasilakis	Anna O'Hara/DLO	ACHMP Methodology Review	22/04/2019	Email	Attached Letter - Supports ACHMP Methodology

AMAC/Steven J. Vasilakis	Scott Franks/Tocomwall	ACHMP Methodology Review	2/04/2019	Email	Rejects ACHMP Due to Outstanding Issues
Test Excavation	**(28/05/2019) - (30/05/2019) & 3/06/2019 & 6/06/2019**				
Contacted Organisation/ Individuals	**Contacted by Organisation/ Individual**	**Subject**	**Date**	**Method**	**Notes**
All RAPs	AMAC/Steven J. Vasilakis	Testing Roster/Availability	20/05/2019	Email	Phoned Gordon Morton/DACHA and confirmed availability for Testing
AMAC/Steven J. Vasilakis	Darug Land Observations/Anna O'Hara	Available for Testing	23/05/2019	Email	
AMAC/Steven J. Vasilakis	Kamilaroi-Yankuntjatjara/Phil Khan	Available for Testing	23/05/2019	Email	
AMAC/Steven J. Vasilakis	Tocomwall/Danny Franks	Available for Testing	23/05/2019	Email	
AMAC/Steven J. Vasilakis	Biamanga/Janaya Smith	Available for Testing	5/06/2019	Email	

Site Meeting	**(21/11/2019)**	
Organisation/ Individuals	**Contact**	**Attended**
Metropolitan LALC	Selina Timothy	Yes
Darug Land Observations	Jamie Workman & Gordon Workman	No
Kamilaroi-Yankuntjatjara Working Group	Phil Khan	Yes
Tocomwall	Scott Franks	No
Biamanga	Seli Storer	No
Darug Aboriginal Cultural Heritage Assessments	Celestine Everingham	Yes
DJMD Consultancy	Darren Duncan	No
Darug Aboriginal Landcare Inc.	Des Dyer	No
Wailwan Aboriginal Digging Group	Phil Boney	Yes

STAGE 4					
ACHMP Report Review		**Minimum 28 days to respond**		**(28/06/2019) - (26/07/2019)**	
Contacted Organisation/ Individuals	**Contacted by Organisation/ Individual**	**Subject**	**Date**	**Method**	**Notes**
All RAPs	AMAC/Steven J. Vasilakis	Dispatch ACHMP Report	28/06/2019	Email	Posted to Celestine Everingham/DACHA
AMAC/Steven J. Vasilakis	Kamilaroi-Yankuntjatjara/Phil Khan	ACHMP Report	23/07/2019	Email	Supports ACHMP Recommendations
All RAPs	AMAC/ Ben Streat	ACHMP Report amendment	15/05/2020	Email	Review and comment
Aboriginal Cultural Heritage Interpretation Strategy Review		**Minimum 28 days to respond**			**(20/11/2019) - (18/12/2019)**
Contacted Organisation/ Individuals	**Contacted by Organisation/ Individual**	**Subject**	**Date**	**Method**	**Notes**
All RAPs	AMAC/Steven J. Vasilakis	Dispatch Aboriginal Cultural Heritage Interpretation Strategy	20/11/2019	Email	Posted to Celestine Everingham/DACHA
Test Excavation Report - Stage 2 Fieldwork Review		**Minimum 28 days to respond**			**(27/11/2019) - (25/12/2019)**
Contacted Organisation/ Individuals	**Contacted by Organisation/ Individual**	**Subject**	**Date**	**Method**	**Notes**
All RAPs	AMAC/Steven J. Vasilakis	Dispatch Test Excavation Report of the Stage 2 Fieldworks	27/11/2019	Email	Posted to Celestine Everingham/DACHA
AMAC/Yolanda Pavincich	Kamilaroi-Yankuntjatjara/Phil Khan	Test Excavation Report Review	3/12/2019	Email	Supports Test Excavation Report

4.3 DOCUMENT REVIEW

Upon commissioning of this project of AMAC Group by Heritage 21 on behalf of Richard Crookes Constructions emails were sent to the OEH and all RAPs informing these individuals and organisations of this fact.

This document was sent in draft form to all RAPs identified as a result of the Extent RAP (Extent 2018) identification and registration process in line Aboriginal Cultural Heritage Consultation Requirements for Proponents 2010 (DECCW 2010), referring to Part 6 Approvals under the NPW Act were released in April 2010 and as such they were allowed 28 days to comment on this document. These comments are below:

The following RAPs did not submit any comments to this document

- Metropolitan LALC
- Kamilaroi - Yankuntjatjara Working Group
- Biamanga
- Darug Aboriginal Cultural Heritage Assessments
- DJMD Consultancy
- Wailwan Aboriginal Digging Group

4.3.1 Registered Stakeholder Comments

The following RAPs submitted comments to this document:

4.3.1.1 Darug Land Observations

DARUG LAND
OBSERVATIONS PTY LTD
ABN 27 602 765 453

EMAIL: DARUGLANDOBSERVATIONS@GMAIL.COM
PO BOX 173 ULLADULLA NSW 2539
MOBILE: 0413 687 279

22nd April, 2019

Steve Vasilakis
Archaeological Management & Consulting Group and
Streat Archaeological Services
122C Percival Road
STANMORE NSW 2048

Dear Steve,

RE: ALEXANDRIA PARK COMMUNITY SCHOOL, 7-11 PARK ROAD, ALEXANDRIA

Aboriginal Cultural Heritage Management Plan

Darug Land Observations Pty Ltd has reviewed the draft Aboriginal Cultural Heritage Management Plan and supports the methodology for the proposed redevelopment of Alexandria Park Community School of Lot 11 DP 615964, Lot 1 DP 74696, Lots 2 & 3 DP 69494, Lots A & B DP 109038, located at 7-11 Park Road, in Alexandria.

In relation to the long-term storage of recovered artefacts, if any, we strongly believe that recovered artefacts should be reburied on Country (study area).

Furthermore, we would like to be involved in the additional archaeological test excavations, topsoil removal and/or all other forms of works to be carried out on the site.

Look forward to working with you on this project.

Yours sincerely,

Jamie Workman
Darug Land Observations Pty Ltd

Uncle Gordon Workman
Darug Elder

4.3.1.2 Darug Aboriginal Landcare Incorporated

Darug Aboriginal Land care

Uncle Des Dyer

18 a Parigee Close
Doonside
NSW 2767
ABN 71 301 006 047

Steven. J. Vasilakis
Archaeologist
AMAC Group Pty Ltd
122c Percival Road
Stanmore 2048
NSW

Re: Alexandria Park School .

Dear Steven,

The Darug Aboriginal Land care/ Uncle Des Dyer, has no objections to the planned development.

We have read your report and agree with the recommendations, in your report. We agree with your Methodology.

We ask that native plants be used in the landscape .

We ask that while the development is in progress if any Artefacts are uncovered that work stops until the Artefacts can be salvaged and moved.

We make Recommendation that this is strongly heard to for projects !!!!!

We ask that all artefacts be reburied on site out of harm's way, or put on display in the new building. That any rock cravens, and scared tree be preserved, were possible, and be recorded.

If not Care and control of Artefacts are put in the local museum, or displayed in the foyer of new building with signage on where they came from. If not we would like to see them in the old Parramatta Goal....

The Darug Aboriginal Land care have and always will hold all land specific social, spiritual and have a responsibility to look after the plants , animals creeks rivers on Darug land has cultural values to our organisation.

We are Traditional Owner, our members have lived on Darug land for most of their lives and worked in the area. We have been doing Cultural Heritage Assessments for over 20 years and still do today.

Respectfully yours,
Uncle Des Dyer
Darug Elder
Darug Aboriginal Land Care
Mobile 0408 360 814

4.3.1.3 Tocomwall

Tue 2/04/2019 1:17 PM
Scott Franks <scott@tocomwall.com.au>
Re: Alexandria Park School - Consultation
To Steven John Vasilakis
Cc Danny Franks
You forwarded this message on 3/04/2019 9:34 AM.

Steve,

Thank you for the update.

I am aware of this project and it is in fact funded by the department of education (state Government) that being the case it seem there is no compliance with the mandatory IPEC policy. With regard to attending an unpaid meeting, Tocomwall Pty Limited in not a charity and all meetings are chargeable. Can you please confirm that your client has complied with the IPEC policy and that meetings will be payed for.

Regards
Scott Franks

Native Title & Environmental Services Consultant

Tocomwall Pty Ltd
PO Box 76
CARINGBAH NSW 1495
m: 0404 171544
p: 02 9542 7714

Tue 2/04/2019 5:21 PM
Scott Franks <scott@tocomwall.com.au>
Re: Alexandria Park School - ACHMP
To Steven John Vasilakis
Cc Benjamin Streat (AMAC); amacarch@gmail.com

Steve,

Would it be at all possible to respond to my earlier question. I reject the draft ACHMP as we have outstanding issues.

Regards
Scott Franks

Consultant
Tocomwall Pty Ltd
scott@tocomwall.com.au
0404 171544

4.3.2 Revised ACHMP Review

On the 28th June 2019 a revised draft of the ACHMP was emailed to all the RAPs and posted to Celestine Everingham of Darug Aboriginal Cultural Heritage Assessments for review and comments.

The following RAPs did not submit any comments to this document

- Metropolitan LALC
- Biamanga
- Darug Aboriginal Cultural Heritage Assessments
- DJMD Consultancy
- Wailwan Aboriginal Digging Group
- Tocomwall
- Darug Aboriginal Landcare Incorporated
- Darug Land Observations

The following RAP submitted comments to this document:

4.3.2.1 Kamilaroi-Yankuntjatjara Working Group

Tue 23/07/2019 12:23 PM
philip khan <philipkhan.acn@live.com.au>
RE: Alexandria Park School - ACHMP
To Steven John Vasilakis

Hi Steven,

Thank you for the ACHMP and update for the Alexandria Park Community school, we agree to the testing recommendations and look forward to work with AMAC Group in the near future

Kind regards

Stef

Kamilaroi Yankuntjatjara Working Group
Aboriginal Cultural Heritage Surveys, Lawn Mowing & Fencing
ABN 33 979 702 507
Not registered for GST
78 Forbes Street, Emu Plains NSW 2750
Mobile: 0434545982
Email: philipkhan.acn@live.com.au

4.3.4 Amended ACHMP Review

On the 15th May 2020, an amended version of the ACHMP was emailed to all the RAPs and posted to Celestine Everingham of Darug Aboriginal Cultural Heritage Assessments for comments. The amendments relate to the extension of the sporting field located at the north east of the study area. The results of this extension will not impact the recommendations or procedures outlined in this report. The works related to the proposed extension still consist of the same demolition of buildings with filling taking place to build up the sporting field and landscaping. This area has been dismissed from further archaeological testing due to the nature of the works, therefore, although this document has been dispersed to all RAPs for review, it is however not subject to the 28-day review period.

4.4 ABORIGINAL CULTURAL HERITAGE INTERPRETATION STRATEGY REVIEW

On the 20th November 2019 a draft of the Aboriginal Cultural Heritage Interpretation Strategy was emailed to all the RAPs and posted to Celestine Everingham of Darug Aboriginal Cultural Heritage Assessments for review and comments to be submitted by C.O.B 18th December 2019.

The following RAPs did not submit any comments to this document

- Metropolitan LALC
- Biamanga
- Kamilaroi-Yankuntjatjara Working Group
- Darug Aboriginal Cultural Heritage Assessments
- DJMD Consultancy
- Wailwan Aboriginal Digging Group
- Tocomwall
- Darug Aboriginal Landcare Incorporated
- Darug Land Observations

4.5 HERITAGE INTERPRETATION QUESTIONS

On the 29th November 2019 a draft of the Heritage Interpretation Strategy Questions (see below) was emailed to all the RAPs and posted to Celestine Everingham of Darug Aboriginal Cultural Heritage Assessments for review and comments.

Re: Alexandria Park Community School – 7-11 Park Road, Alexandria NSW. Heritage Interpretation Questions

The following is a list of questions with regards to the heritage interpretation of the project site at Alexandria Park Community School.

1. Does the study are hold any social, spiritual or cultural values to the participating Aboriginal stakeholders? If so, what are these values and are they confined to particular parts of the study area?
2. Why are these parts or the whole of the study area culturally significant to the participating Aboriginal stakeholders?
3. Are particular parts of the study area more important than others?
4. Are any previously unidentified known culturally significant places present within the study area? If so, where are they located?
5. Are any previously unidentified Aboriginal objects or Aboriginal places present within the study area? If so, where are they located?
6. Are any previously unidentified natural or archaeological resources present within the study area? If so, where are they located?
7. Are there any traditional stories or legends associated with the study area?
8. Are there any recollections of Aboriginal people living within the study area?

9. Is there any information to suggest the presence of burials within the study area?
10. Are any traditional flora or fauna resources associated with the study area?
11. Does the study area have any sensory scenic or creatively significant cultural values? If so, what are these values and are they confined to particular parts of the study area and where are they located?
12. In what way, if any, will the proposed development harm the identified cultural heritage and archaeological values of the study area?
13. Do the participants have suggestions on the mitigative strategies for the management of the cultural and archaeological values of the study area?
14. Are there any gender specific cultural values associated with the study are which cannot be raised in a male presence? If so, how would the Aboriginal stakeholders like these dealt with?
15. Are there any gender specific cultural values associated with the study are which cannot be raised in a female presence? If so, how would the Aboriginal stakeholders like these dealt with?
16. Does anyone have objections to the naming of the Gymnasium and Hall after Mr Terry Denzil?
17. What type of images would be appropriate to include in the display of the Covered Outdoor Learning Area (COLA)?
18. What type of original landscape features would RAPs like to see included in the COLA imagery and display?
19. Is it appropriate that these images be created by Aboriginal children attending the Alexandria Park School?
20. Do the stakeholders have any suggestions as to the name of an artist or artists to contribute to the proposed screen outlined in item 1 or any other imagery to be included in any other display?
21. Do the stakeholders have any plants they wish to see included on a list of endemic plants?
22. Do the stakeholders have any information of the type of material it may be culturally insensitive to display in the 'Park Road Cultural Walk'?
23. Do the stakeholders have suggestions for any type of imagery to be included in any of the displays such as animal totems from the area or handprints or other examples of imagery endemic or important to the area?
24. Would all stakeholders like the opportunity to review all text, imagery and language, either Aboriginal of European to be included in any display or signage?
25. What language is most appropriate to use for wayfinding signage and displays?
26. Would the stakeholders like an Indigenous language to be displayed first in all wayfinding signage, displays and text to be included in any display?
27. Do the stakeholders have any suggestions for list of words that may be appropriate to use in wayfinding signage within the APS?
28. Would the stakeholders like the opportunity to review all material to be included in the Heritage Interpretation Plan in a workshop environment either paid or unpaid?
29. Do the stakeholders have any suggestions for an appropriate person to write an 'Acknowledgement of Country" and would they like the opportunity to review this?
30. Do the stakeholders have any suggestions for an appropriate person to write a 'Definition of Country" and would they like the opportunity to review this?
31. Would the stakeholders like to see a timeline display within the signage, imagery or display in some place with the APS?

32. Is it appropriate to display replica artefacts from on country but not specifically from the APS site in any proposed display?
33. Are there any other suggestions for material, displays, imagery, text, stories, legends, traditional information, songlines, totems and depiction of events or any other form of information that the stakeholders would like to be considered for inclusion within any part of the Heritage Interpretation Plan?
34. Are there any connections between the Redfern Rugby League Club and the APS?
35. Are the stakeholders aware of any members of the Redfern Rugby League Club attending the APS?
36. Do the participants have any concerns not yet raised in this questionnaire?

If you have any questions or would like to discuss the questions further please contact us.

Look forward to hearing from you.

Yours sincerely,

Benjamin Streat
Senior Archaeologist
(Aboriginal Heritage)

Archaeological **Management & Consulting Group and Streat Archaeological Services Pty Ltd**
122c Percival Road, Stanmore NSW 2048
(02) 9568 6093
Consulting@archaeological.com.au

The following RAPs did not submit any comments to this document

- Metropolitan LALC
- Biamanga
- Kamilaroi-Yankuntjatjara Working Group
- Darug Aboriginal Cultural Heritage Assessments
- DJMD Consultancy
- Wailwan Aboriginal Digging Group
- Tocomwall
- Darug Aboriginal Landcare Incorporated
- Darug Land Observations

4.6 STAGE TWO TEST EXCAVATION REPORT REVIEW

On the 27th November 2019 a draft of the Stage Two Test Excavation Report was emailed to all the RAPs and posted to Celestine Everingham of Darug Aboriginal Cultural Heritage Assessments for review and comments to be submitted by C.O.B. 25th December 2019.

The following RAPs did not submit any comments to this document

- Metropolitan LALC
- Biamanga
- Darug Aboriginal Cultural Heritage Assessments
- DJMD Consultancy
- Wailwan Aboriginal Digging Group
- Tocomwall
- Darug Aboriginal Landcare Incorporated
- Darug Land Observations

4.6.1 Registered Stakeholder Comments

The following RAP submitted comments to this document:

4.6.1.1 Kamilaroi-Yankuntjatjara Working Group

Tue 3/12/2019 10:41 AM
philip khan <philipkhan.acn@live.com.au>
RE: Alexandria Park Community School - Draft Stage 2: Test Excavation Report
To Consultation

Hi Yolanda,

Thank you for your test excavation report, I agree and support all your recommendations regarding Alexandria Park Community School.

Kind Regards
Stef

Kamilaroi Yankuntjatjara Working Group
Aboriginal Cultural Heritage Surveys, Lawn Mowing & Fencing
ABN 33 979 702 507
Not registered for GST
78 Forbes Street, Emu Plains NSW 2750
Mobile: 0434545982
Email: philipkhan.acn@live.com.au

4.7 MEETINGS AND DOCUMENT REVIEW

In order to ensure all Aboriginal Stakeholders remain updated, they are kept informed with the various stages of development and management program. Regular meetings will be arranged at varying intervals of the process in particular when the following agendas will be addressed including interpretation, additional investigation, curation, etc.

4.7.1 Milestone Meetings and Review

- Phase One Excavations Completed by Extent
- Pre - Phase Two Excavation
- An unpaid site meeting was scheduled for the 3rd May 2019 between Ben Streat of AMAC Group and representatives of all the Registered Aboriginal Parties who were all unavailable for the time/date scheduled though they were supportive of the process so far.
- Post Phase Two Excavations: This will occur immediately after the Phase Two excavations have been completed.
- An unpaid site meeting was scheduled for the 27th June 2019 between Ben Streat of AMAC Group and representatives of all the Registered Aboriginal Parties only four RAPs responded.
  - Darug Land Observations stated they could not attend.
  - Tocomwall stated they were choosing not to attend until matters raised with DoPE were finalised.
  - Kamilaroi-Yankuntjatjara Working Group stated they would be attending.
  - Darug Aboriginal Landcare Incorporated stated they may attend if available, however, became unavailable on the day.
  - As only one RAP (Kamilaroi-Yankuntjatjara Working Group) could attend a teleconference was arranged and carried out.
- Further unpaid site meetings were scheduled for the 21st August 2019, 4th September 2019, 11th September 2019, 25th September 2019, 9th October 2019, between Ben Streat of AMAC Group and representatives of all the Registered Aboriginal Parties and were subsequently cancelled/postponed due to scheduling difficulties.
- A paid site meeting was scheduled for the 21st November 2019 to discuss the Aboriginal Cultural Heritage Interpretation Strategy between Ben Streat and representatives of all the Registered Aboriginal Parties with the following RAPs confirming availability and attending the meeting.
  - Metropolitan Local Aboriginal Land Council
  - Kamilaroi-Yankuntjatjara Working Group
  - Darug Aboriginal Cultural Heritage Assessments
  - Darug Aboriginal Landcare Incorporated
  - Wailwan Aboriginal Digging Group
- The following RAPs did not respond
  - Darug Land Observations

- Tocomwall
- Biamanga
- DJMD Consultancy

- Pre-Phase Three Excavations: This will occur immediately prior to Phase Three excavations.
- Post Phase Three Excavations: This will occur immediately after the Phase Two excavations have been completed.

The ACHMP will/has been reviewed at the following junctures.

- 28 day review period prior to Phase Two excavations
- 28 day review period of Post Phase Two excavations including test excavation summary.
- 3 monthly updates in between excavation phases.
- 28 day review of updated ACHMP prior to Phase Three excavations.
- 28 day review period of Post Phase Three excavations including full test excavation report.

5.0 POST EXCAVATION METHODOLOGY

Extent Recommendations 10.2. (2) Description and methods of additional post-excavation analysis of chronological, soil, and environmental samples that were recovered during the test excavations undertaken as part of the ACHA process and were required to inform the interpretation strategy.

The handover of all samples and material from Extent Heritage Pty Ltd has not yet taken place and therefore this section cannot be appropriately addressed until the sample and materials have been reviewed and their quality and quantity assessed in order to ascertain the level of analysis that can take place.

Additional samples will be collected throughout the additional excavations and will be carried out as described (section 6.0).

However, the purpose of the collection of such samples is to inform and contribute to the understanding of pre and post contact Aboriginal settlement patterns. For this excavation to contribute to pre and post contact Aboriginal settlement patterns it is necessary to have some form of Aboriginal archaeological assemblage to be analysed that would contribute to and understanding of pre and post contact Aboriginal settlement patterns at either a locally or regional significance level and at present no such assemblage exists.

At present this assemblage consists of one stone artefact of undetermined quality and significance and as such any additional post-excavation analysis of chronological, soil, and environmental samples that were/will be recovered during the test excavations may be used to inform the interpretation strategy of which is premature.

The material collected from the Extent excavation was collected from Extent offices on 26/06/19 these soil samples can be used (if viable) to identify vegetation that was indigenous to the area and this information can be used in replanting planning.

Soil samples were also taken during the AMAC excavations and as such if the Extent from these soil samples cannot be used to identify vegetation that was indigenous to the area and this information can be used in replanting planning.

AMAC is yet to assess the nature and content of these samples.

If none of these samples prove viable for the above purposes research as part of the interpretation strategy could also be used to identify the native vegetation of the area.

6.0 ADDITIONAL EXCAVATION

Extent Recommendation 10.2 (3): Descriptions and methods of any additional archaeological excavation and/or cultural monitoring that may be required, including location/s, methods, personnel, and timing. This should include the footprint of Building A, and areas on the periphery of the site where archaeological investigations have been sparse to date.

The number one priority in archaeological excavations, and the recording of Aboriginal objects, must always be to avoid or minimise, as far practicable, the risk of harm to the objects under investigation. This means due care must be taken when excavating and collecting objects.

The proposed additional test excavation will consist of two phases (Phases Two & Three) of excavation in addition to the original phase (Phase One) of excavation carried out by Extent Heritage in 2017. This will allow exploration of any features identified and significant deposits either located through the Phase One (Extent 2017) test excavations and previous reporting Extent 2017a 2017b) conducted by Extent Heritage. This test excavation program aims to ascertain the nature and extent of the study area and its features.

6.1 DISPERSED AREA EXCAVATION METHODOLOGY

The following excavation parameters are proposed:

- All introduced fills and soil horizons will be excavated using plant machinery with a flat edge (mud) bucket until natural soil horizons are encountered.
- If depths are too great to allow access (1.5 metres in depth) the fill be benched out to allow access and meetings with the contractors (Richard Crookes Construction) established that 3m x 3m benching exceeded the minimum safe working conditions
- All natural intact pre settlement soil horizons will be excavated by hand using hand tools
- Excavation units must be excavated in 100cm x 100cm;
- Areas of concentrated artefact activity and/or features which have been identified as a result of the Phase Two or Phase: dispersed testing, shall be investigated by extending test excavation trenches by 1sqm units to understand the nature and extent of the area and/or feature;
- Test excavations units will be combined and excavated as necessary in order to understand the site characteristic for each excavation area;
- Identifiable features if apparent shall be excavated in full if appropriate and practicable;
- The minimum surface area of a combination of open area excavation will be based on whether there is enough data gained to form a representative sample of the study area;
- The first excavation unit for each area being investigated will be excavated and documented in 5cm spits. After first excavation unit 10cm spits or sediment profile/stratigraphic excavation (whichever is smaller) will then be implemented;

- All material collected will be issued with the following information pertaining to its recovery - job title, excavation unit, spit number and date.
- All material excavated from the test excavation units will be wet sieved using 3mm aperture, wire-mesh sieves;
- Excavation units will be excavated to at least the base of the identified Aboriginal object-bearing units, and will continue another two spits below said deposit to confirm the soils below are culturally sterile;
- Photographic and scale-drawn records of the stratigraphy/soil profile, features and informative Aboriginal objects will be made for each single excavation point;
- Each excavation (trench/pit) unit will have a separate excavation record sheet, upon which the characteristics and nature of the spits and any features will be recorded;
- Should archaeological and cultural material with potential for scientific dating in particular, material suitable for carbon dating (C14), thermoluminescence dating (TL) and optical luminescence (OSL) dating, be encountered the relevant samples shall be taken. These shall include but not be limited to charcoal deposits; material with apparent contemporary association with intact deposits and archaeological and cultural material as well as suitable sand/soil deposits with apparent contemporary association with intact deposits and archaeological and cultural material. The dating of specific assemblages will occur if appropriate charcoal samples are located and sand soil cores shall be taken at appropriate intervals or points in the stratigraphic layers from the section face of any given excavation unit;
- Soil samples shall also to be taken to allow soil analysis to take place, if appropriate, these shall include pH measurements and pollen analysis. Analysis of specific assemblages will occur if appropriate soil samples are located and sand/soil cores shall be taken at appropriate intervals or points in the stratigraphic layers from the section face of any given excavation unit.
- Use wear and residue analysis samples shall take place if appropriate and if any material exhibiting any evidence of use wear or residue is identified at any stage during the recovery process, these items shall be bagged separately with the following information: job title, excavation unit, spit number and date.

6.1.1 Excavation of Archaeological Features

Any archaeological features including but not limited to hearths, shell middens and/or knapping floors if discovered shall be subject to the following.

- Identifiable features, if apparent, shall be excavated in full if the excavation director in consultation with the Aboriginal stakeholders are of the opinion that the excavation of the feature can contribute substantially to the cultural and archaeological knowledge of the study area and/or the region;
- Once the nature and location of the feature has been established during Phase Two/Three excavations, preliminary recording will be carried out (photographs, profile and plan drawings and GPS location).
- The excavation of any feature shall not extend outside any given excavation square. If needed open excavation units will be combined and excavated as necessary to understand the features characteristics and extent, and to expose the feature in entirety if possible;
- The significance of the feature being investigated is clearly understood and it has been adequately investigated and recorded;

- The first excavation unit for each area being investigated will be excavated and documented in 5cm spits. After first excavation unit 10cm spits or sediment profile/stratigraphic excavation (whichever is smaller) will then be implemented;
- In feature excavation, a new spit and/or a new stratigraphic unit will be recorded photographically, with scale -drawn plans of the features if appropriate and noticeable changes have occurred. Information will be recorded on the relevant excavation record sheet and if necessary, within the excavation site diary;
- All material collected will be issued with the following information pertaining to its recovery - job title, excavation unit, spit number and date.
- All material excavated from the test excavation units will be wet sieved using 3mm aperture, nested wire-mesh sieves;
- Should archaeological and cultural material with potential for scientific dating in particular, material suitable for carbon dating (C14), thermoluminescence dating (TL) and optical luminescence (OSL) dating, be encountered the relevant samples shall be taken. These shall include but not be limited to charcoal deposits; material with apparent contemporary association with intact deposits and archaeological and cultural material as well as suitable sand/soil deposits with apparent contemporary association with intact deposits and archaeological and cultural material. The dating of specific assemblages will occur if appropriate charcoal samples are located and sand soil cores shall be taken at appropriate intervals or points in the stratigraphic layers from the section face of any given excavation unit;
- Soil samples shall also to be taken to allow soil analysis to take place, if appropriate, these shall include pH measurements and pollen analysis. Analysis of specific assemblages will occur if appropriate soil samples are located and sand/soil cores shall be taken at appropriate intervals or points in the stratigraphic layers from the section face of any given excavation unit.
- Use wear and residue analysis samples shall take place if appropriate and if any material exhibiting any evidence of use wear or residue is identified at any stage during the recovery process, these items shall be bagged separately with the following information: job title, excavation unit, spit number and date.

6.2 ADDITIONAL EXCAVATION PROTOCOLS

The following section outlines additional excavation activities that may take place or factors and/or limitations that may need to be addressed.

6.2.1 Flooding/ Inundation

The following measure has been put in place to address disturbance factors such as flooding/ inundation that the study area may be subject to and which has the potential to impact heritage items and/or deposits;

- In the event of a trench section collapse from rainfall the following protocol should take place;
    - The collapsed material from the test trench unit will be excavated as a separate context in order to avoid cross contamination of silt material;
    - The collapsed material will be wet sieved using 3mm and 5mm aperture, nested wire-mesh sieves, for cultural material;
    - A photographic record will be observed with both before and after photographs taken;

- Depending on the severity of the section collapse a 1m exclusion zone shall be in place and demarcated if trench wall instability is observed and the trench wall instability protocol will take place as outlined in section 6.2.2 of this report;

- Past excavations have illustrated the permeability of the Botany sand sheet and the highly erosional nature of the deposit. In the event of the site being inundated the first priority is containment, in order to prevent run off being exposed to the public and environment. Impact to the soil profile as a result of the study area being inundated and the containment of run off, should be exempt as harm. The following measures should take place;
  - Areas of pooling should be demarcated with a 1m exclusion zone and silt fencing and/or run off buffers should be set up to avoid further erosion of the study area in the event the sand terrace is present;
  - In severe cases, trenching may be necessary to contain run off. This will be at the discretion of the director of the test excavation program and in consultation with OEH – full documentation and photographic record will be taken of the events if they proceed;
  - If possible, the water should be pumped or sponged out;

6.2.2 Trench Wall Instability

Past excavations have experienced significant trench wall instability due to the nature of the soil landscape which is very sandy. The following measures shall be in place to deal with trench wall instability;

- A 1m exclusion zone shall be in place and demarcated for all baulks to prevent wall collapse from undue pressure.
- Access points between and into trenches will be strictly demarcated to prevent wall collapse from undue pressure.
- Trench edges shall be covered with boards to prevent wall collapse from undue pressure.
- All new persons to site shall be informed as part of SWMS as to the nature of the instability of trench walls and informed of their responsibilities with regard to this matter.
- Any weekly or daily toolbox talks shall reiterate the conditions under which the site is to operate with regard to SWMS conditions about trench instability.
- Machines shall not operate within 10m of and open area excavation unit and within 5m of dispersed test trenches where possible.
- Where necessary plywood boards and braces shall be in place to prevent wall collapse.
- Trench wall shall be damped down to increase instability.
- All trenches shall be covered overnight.
- If trench walls collapse the material shall be collected and marked as to the locale of the collapse and sieved as with all other material.

6.2.3 Soil Contamination

Past excavations have experienced significant soil contamination due to the permeability of the sand terrace and alluvial soils. The following measures shall be taken to deal with soil contamination within archaeological/ cultural deposits;

- Test excavation in identified contaminated areas will cease. The area will be demarcated with a 1m exclusion zone in place;
- Excavated contaminated soil should be dry sieved using a 3mm and 5mm aperture, nested wire-mesh sieves and wearing required PPE. This sieved material should be separated from all other spoil piles, if removed by machine, this material should be placed on bidum before dry sieving;
- All cultural material recovered from contaminated soils should be double bagged and given a separate context number. The material should be clearly labelled as having come from a contaminated context and gloves are required for handling;
- This should be allowed to take place under the test excavation AHIP;
- Excavation and sieving of contaminated material shall only occur if deemed safe by an appropriate person or organisation.

6.2.4 Excavation Schedule

- Phase One Excavations: Extent Heritage, Completed September 2017.
- Phase Two Excavations: AMAC Group, Scheduled May/June 2019.
- Phase Three Excavations: AMAC Group, Scheduled June/July 2021.

6.2.5 Excavation Staffing and Contact Details

Organisation	Contact	Contact Details
Archaeological Management & Consulting Group	Mr. Benjamin Streat or Mr. Steven J. Vasilakis	122c-d Percival Road Stanmore NSW 2048 Ph:(02) 9568 6093 Fax:(02) 9568 6093 Mob: 0405 455 869 Mob: 0411 727 395 benjaminstreat@archaeological.com.au
Darug Land Observation	Jamie Workman or Representative	daruglandobservations@gmail.com
Tocomwall	Scott Franks or Representative	scott@tocomwall.com.au
Wailwan Aboriginal Digging Group	Philip Boney or Representative	Waarlan12@outlook.com
Darug Aboriginal Landcare Incorporated	Des Dyer or Representative	Desmond4552@hotmail.com
DJMD Consultancy	Darren Duncan or Representative	darrenjohnduncan@gmail.com
Darug Aboriginal Cultural Heritage Assessment	Celestine Everingham or Representative	(02)9410 3665
Biamanga	Janaya Smith or Representative	biamangachts@gmail.com
Kamilaroi-Yankuntjatjara Working Group	Phil Khan or Representative	Philipkhan.acn@live.com.au
Metropolitan Local Aboriginal Land Council	Selina Timothy or Representative	PO Box 1103 Strawberry Hills NSW 2016 culturalheritage@metrolalc.org.au

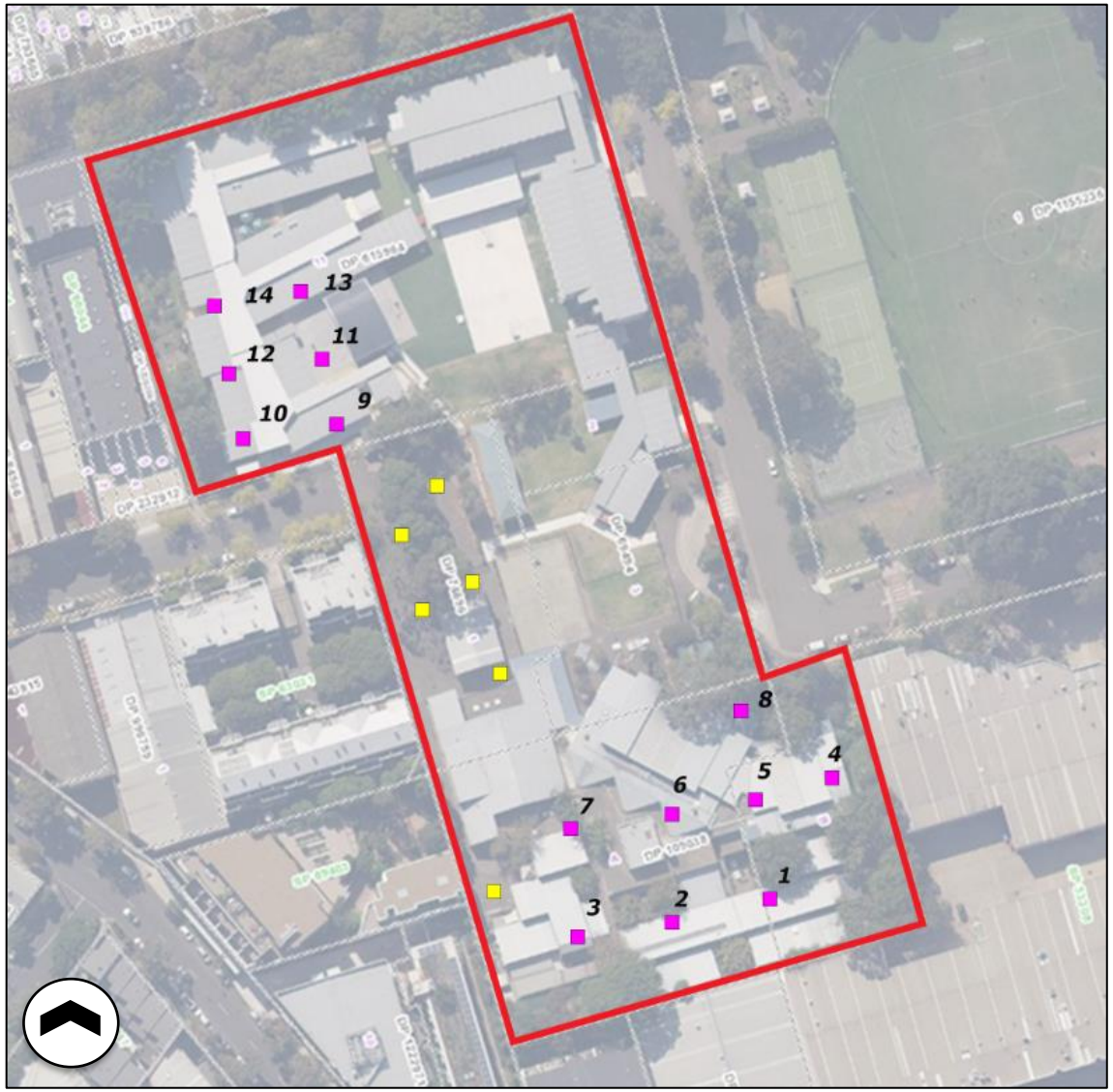


Figure 6.1 AMAC proposed test trench location.
Study area indicated in red outline with AMAC test trenches indicated in pink, Extent past test trenches indicated in yellow. AMAC (2019) Six Maps (Accessed 23.05.19).

Figure 6.2 **Extent interpolated distribution of cultural deposits (APCS PAD) overlain by the proposed development activities, including the building footprint and pile location.**
Extent (2019:74).

7.0 NATIVE PLANTING AND VEGETATION

Extent Recommendation 10.2. (4) Descriptions and methods of the recovery, relocation and/or re-use of plantings and vegetation of contemporary cultural value in the southeast of the study area.

AMAC Group is not qualified to address this recommendation and would refer to the Arborist report (Redgum 2018).

Redgum Horticultural: A) Arboricultural Impact Assessment and B) Tree Management Plan: (Trees to be retained and protected) Alexandria Park Community School 7-11 Park Road, Alexandria NSW. December 2018 (Appendix Two).

The material collected from the Extent excavation was collected from Extent offices on 26/06/19 these soil samples can be used (if viable) to identify vegetation that was indigenous to the area and this information can be used in replanting planning.

Soil samples were also taken during the AMAC excavations and as such if the Extent from these soil samples cannot be used to identify vegetation that was indigenous to the area and this information can be used in replanting planning.

If none of these samples prove viable for the above purposes research as part of the interpretation strategy could also be used to identify the native vegetation of the area.

7.1 ARBORIST REPORT SUMMARY (REDGUM, 2018)

An arborist and tree management report were prepared by Redgum (2018) in order to assess the existing growing environment including condition of the current specimens within the study area and surrounding environment as well as a visual tree assessment and the impact the proposed development and associated construction works may have. Of the 116 Trees marked up approximately 67 will be subject to removal due to decline or obstruction to the development in addition a further minor encroachment will be seen to impact six trees and three trees will be subject to major encroachment by the development but will be retained and protected as part of the Tree Protection Zone. It is recommended that the specimens being removed are replaced with a vigorous specimen with a straight trunk, not bound to a volume container and maintained by a qualified landscape contractor for one year after planting. A condition report has been included in the Arborist report of each specimen and can be found in appendix one of this report.

7.2 PALYNOLOGICAL TESTING SUMMARY (PENNY, 2019)

Palynological testing of four samples from the Alexandria Park Test Excavation Programme completed by Extent Heritage were undertaken by Associate Professor at Sydney University, Mr. Dan Penny. Each sample represented a different natural deposit encountered and resulted in the following;

Sample 1 - Test Pit 5 'Peat sample
Contained 48% paperbark and 22% tea-tree as well as pollen and spore assemblage from rushes implying a wetland/ swamp environment along a riparian fringe.

Sample 2 – Test Pit 1 'A1 horizon'

Contained Monotoca, and probably M. elliptica or M. scoparia shrubs commonly associated with scherophyll forest and coastal dune hearths. Exotic plants were also noted included oak and pine indicating post colonisation species.

Sample 3 – Test Pit 1 ‘ B horizon’
Were barren of pollen and spores – no further analysis could take place.

Sample 4 – Test Pit 1 ‘A2 horizon’
Were barren of pollen and spores – no further analysis could take place.

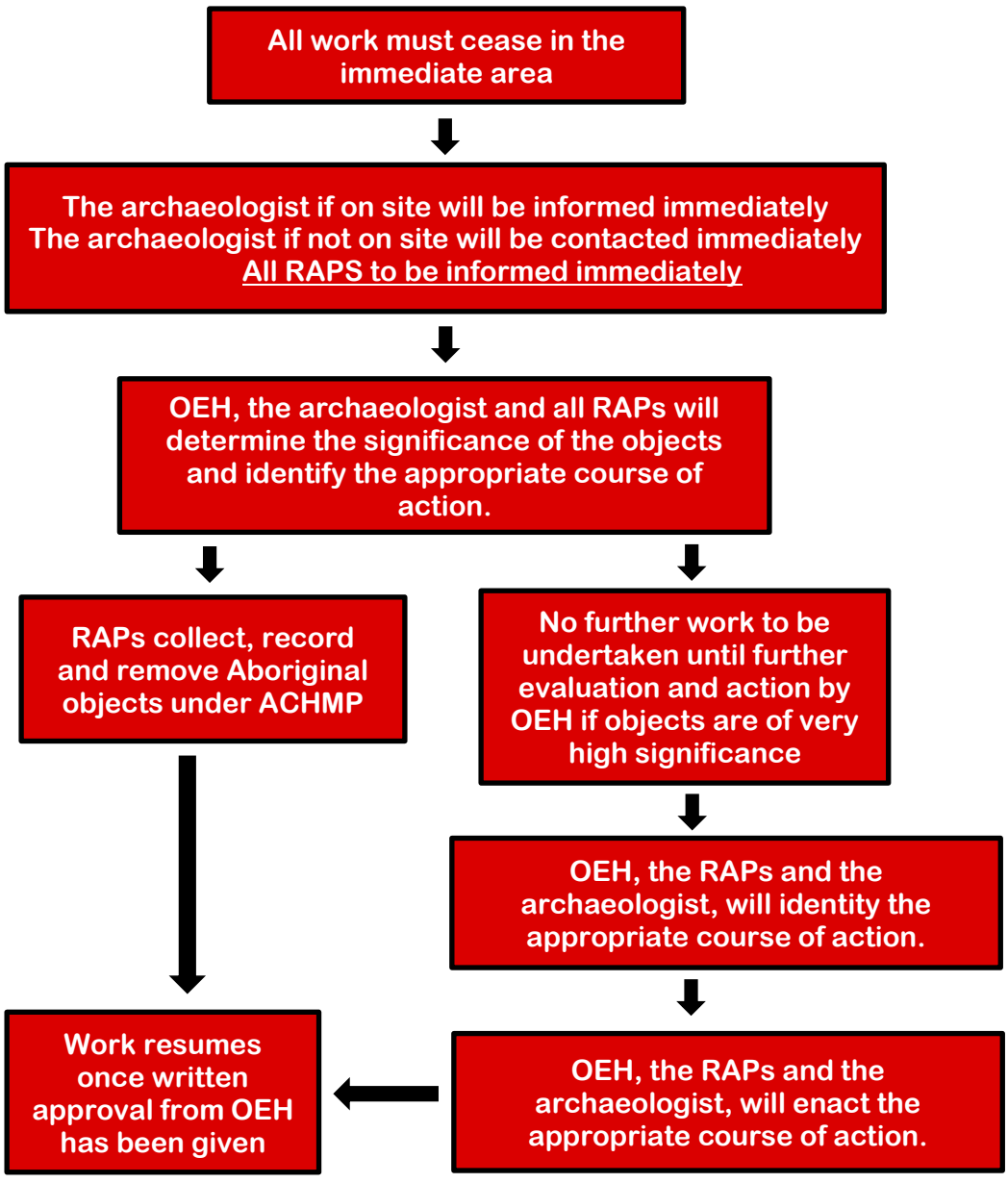
The pollen analysis observed European species within the A horizon indicating a level of disturbance within the natural soil profile. These specimens likely associated with the early decades of the 19th century.

8.0 UNEXPECTED FINDS AND HUMAN REMAINS PROTOCOL

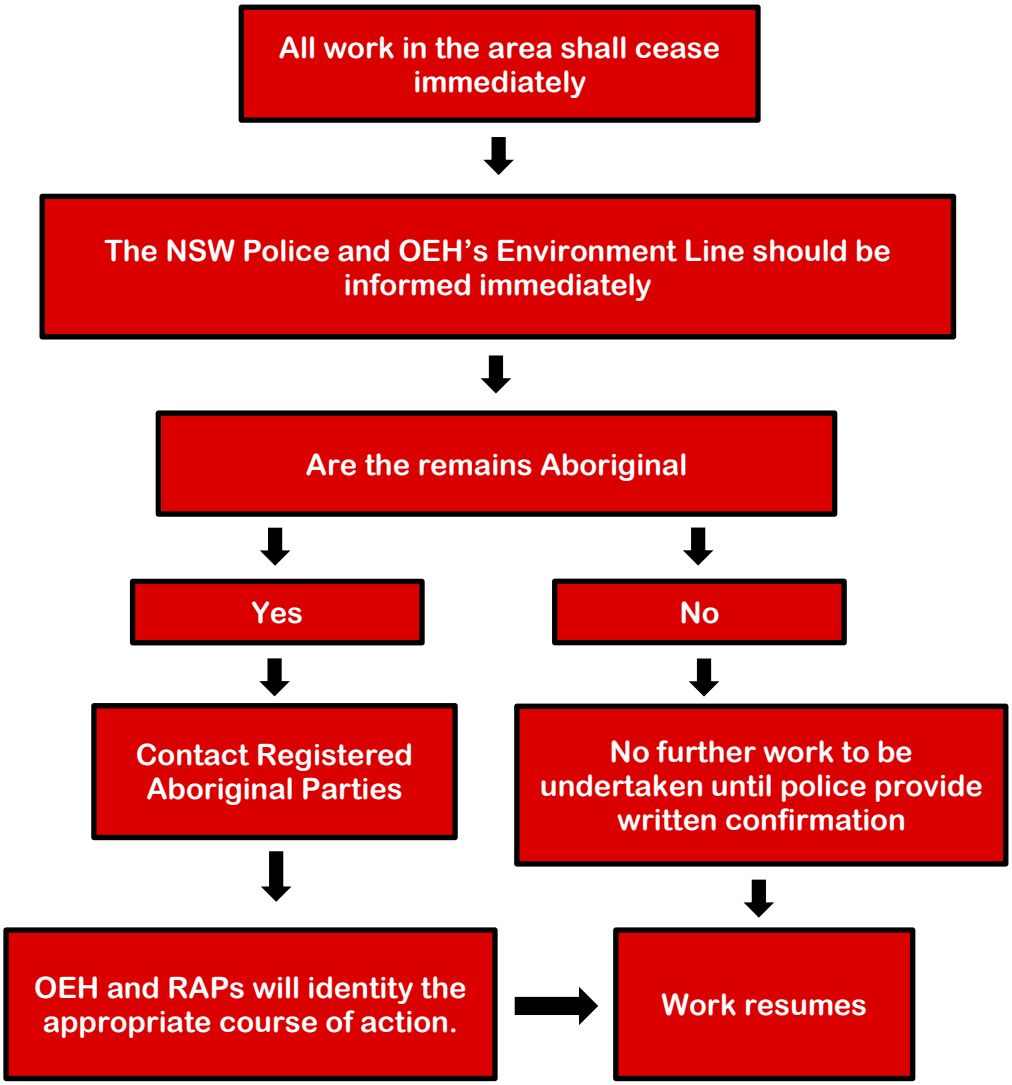
Extent Recommendation 10.2. (5): Procedures for managing the unexpected discovery of Aboriginal objects and/or human remains during the project.

The following are flow charts for the course of action for the listed potential archaeological constraints that have been reviewed and agreed to.

8.1 FLOW CHART FOR THE DISCOVERY OF UNEXPECTED ABORIGINAL ARCHAEOLOGICAL MATERIAL



8.2 FLOW CHART FOR THE PROCEDURE FOR THE DISCOVRY OF HUMAN REMAINS



8.3 CONTACT DETAILS

The contact details for the following archaeologist, NSW Police, OEH and Registered Aboriginal Parties are as follows:

Organisation	Contact	Contact Details
NSW Environment Line		131 555
NSW Redfern Police Area Command		PAC Office: 1 Lawson Street Redfern 2016 **Phone:** 02 8303 5199 **Fax:** 02 8303 5333
Archaeological Management & Consulting Group	Mr. Benjamin Streat or Mr. Martin Carney	122c-d Percival Road Stanmore NSW 2048 Ph:(02) 9568 6093 Fax:(02) 9568 6093 Mob: 0405 455 869 Mob: 0411 727 395 benjaminstreat@archaeological.com.au
Department of Planning, Industry and Environment	Archaeologist – Head Office	PO Box A290 Sydney South NSW 1232 Ph: (02) 9995 5000 info@environment.nsw.gov.au
Darug Land Observation	Gordon Workman	daruglandobservations@gmail.com
Tocomwall	Scott Franks	scott@tocomwall.com.au
Wailwan Aboriginal Digging Group	Philip Boney	Waarlan12@outlook.com
Darug Aboriginal Landcare Incorporated	Des Dyer	Desmond4552@hotmail.com
DJMD Consultancy	Darren Duncan	darrenjohnduncan@gmail.com
Darug Aboriginal Cultural Heritage Assessment	Celestine Everingham	(02)9410 3665
Biamanga	Janaya Smith	biamangachts@gmail.com
Kamilaroi-Yankuntjatjara Working Group	Phil Khan	Philipkhan.acn@live.com.au
Metropolitan Local Aboriginal Land Council	Selina Timothy	PO Box 1103 Strawberry Hills NSW 2016 culturalheritage@metrolalc.org.au

9.0 CURATION OF SIGNIFICANT MATERIAL

Extent Recommendation 10.2.(6): Procedures for the curation of Aboriginal objects and other cultural materials recovered as part of the ACHA process and at any subsequent stages of excavation required as part of the HMP.

All archaeological material recovered from the project site including material stored by Extent Heritage Pty Ltd, shall be subject to a care and control agreement established after the nature and significance of the archaeological or cultural material is understood as well as the nature and extent of the site.

Any artefacts recovered shall be reburied as soon as practicable. They will be temporarily secured in a storage location (AMAC Office, 122c Percival Road Stanmore) in accordance with requirement 26 of the *Code of Conduct for the investigation of Archaeological objects in NSW*, pending any agreement reached as to the long-term management of the recovered Aboriginal objects.

The excavation director is responsible for ensuring that procedures are put in place so that Aboriginal object(s) that are reburied are not harmed. The location of the secure temporary storage location must be submitted to AHIMS with a site update record card for the site(s) in question.

If long term management of any object(s) recovered is not decided upon (in consultation with the RAPs) then the objects must be lodged with the Australian Museum.

10.0 REPORTING AND REVIEW PROCEDURES

10.2.(7). Processes for reviewing, monitoring, and updating the HMP as the project progresses.

All ACHMP works carried out during the Alexandria Park Community School project will be documented to a standard comparable to that required by the *Code of Practice for Archaeological Investigation of Aboriginal Objects* 2010 and in consultation with Registered Aboriginal Parties as listed in Section 4.0. All reporting works will be carried out to an Aboriginal Heritage Impact Permit (AHIP) standard as detailed in:

- Aboriginal Archaeological Survey, Guidelines for Archaeological Survey Reporting (NSW NPWS 1998);
- Code of Practice for Archaeological Investigation of Aboriginal Objects in New South Wales, Part 6 National Parks and Wildlife Act 1974, (DECCW 2010);
- Aboriginal Cultural Heritage Standards and Guidelines Kit (NPWS 1998);
- Part 6; National Parks and Wildlife Act Aboriginal Cultural Heritage Consultation Requirements for Proponents (DECCW 2010);

Once the ACHMP has been reviewed by all parties. No alteration of procedures shall take place without the involvement of all parties. All RAPs and their organisations shall be informed in writing of the proposed review and all RAPs and their respective organisations must be given 28 days to review and comment on any changes.

11.0 HERITAGE INTERPRETATION STRATEGY METHODOLOGY OUTLINE

Extent Recommendation 10.2.(7): A heritage-interpretation strategy must be developed by a heritage specialist to identify the interpretive values of the study area, and specifically Aboriginal heritage values across the study area, and to provide direction for potential interpretive installations and devices. This strategy should be made available for consultation and feedback with relevant stakeholders and RAPs. Following consultation and feedback on the strategy, a heritage interpretation plan will refine the strategy with content (visual and textual) and design details in order to allow the implementation stage. The outcomes of these reports must be undertaken prior to the issue of the occupation certificate (or equivalent). the interpretation strategy and interpretation plan must include consideration of three main components identified though the ACHAR process:

- input and feedback from the RAPs, which to date include the contemporary connections of the Redfern Football club to the region, the use of Darug language in any outputs, and the use (or re-use) of endemic plants in any landscaping for the project.
- the historical record of the study and its immediate environs, which has documented associations with Aboriginal people, dating to the early and mid-twentieth century.
- the past cultural and environmental landscape, once informed by further analyses recommended to be undertaken as part of the HMP.

The following interpretation strategy methodology is outlined in this section with the aim to include the following components as the framework of the plan;

Focal Points

- input and feedback from the RAPs, which to date include the contemporary connections of the Redfern Football club to the region, the use of Darug language in any outputs, and the use (or re-use) of endemic plants in any landscaping for the project.
- the historical record of the study and its immediate environs, which has documented associations with Aboriginal people, dating to the early and mid-twentieth century.
- the past cultural and environmental landscape, once informed by further analyses recommended to be undertaken as part of the HMP.

The following strategy contains sources that are to be referred to in order to obtain the relevant information that addresses the focal points;

Step 1: Background Research
Local libraries and online resources such as DECCW AHIMS reports and site cards and local council heritage sources;

- Historical and contemporary maps;
- Local historical literature;
- Surrounding archaeological excavations, site cards and corresponding reports.

Step 2: Oral history

Prior to the engagement of collecting oral history. The following privacy and information collected guidelines will be adhered to;

- Completion of a Privacy Notification Form in order to explain why we are collecting the information, how we will use and manage it, and any access conditions, especially as the information is to be held within the Aboriginal Heritage Information Management System (AHIMS). A copy will be given to any informants;
- Keep the information for only as long as necessary for the purposes for which it was originally collected and used;
- only use the information for the purposes for which it was originally collected unless the individual has given their permission and the new purpose relates to the old purpose, or it is used to prevent or lessen a threat to the life and health of any individual;
- protect the information against misuse and unauthorised access;
- dispose of the information securely in accordance with requirements for retention and disposal of information (see Records Management guidelines);
- be accessible to allow individuals to find out whether information is held on them, what that information is and the purposes for which the information is used;
- give individuals access to information held about them without excessive delay or expense;
- check personal information to ensure that it is accurate, up to date, relevant, complete and not misleading;
- not disclose information unless the reason directly relates to the purpose it was collected for, and the person to whom it relates is aware that the disclosure usually occurs, or it is disclosed to prevent or lessen a threat to the life and health of any individual. not disclose information relating to ethnicity, political opinions, religious or philosophical beliefs, trade union membership, health or sexual activities except to prevent death or injury;
- not disclose the personal information to any person or organisation outside NSW unless a privacy law exists in that state/territory or the disclosure is permitted under a privacy code of practice;
- Consultation with RAPs;
- Consultation with Redfern Football Club.

Step 3. Establish the significance

Compile information attained through the background research and oral history to ascertain certain significant events, history, landscape features of the site in order to identify theme.

Step 4: Establish Theme

The items of significance in association with the three focal points will be explored further in order to establish a theme which will be adopted for the presentation and media used in expressing the interpretation of the site, one which will engage and provide context to the site.

APPENDICES

APPENDIX ONE: STATE SIGNIFICANT DEVELOPMENT CONSENT #8373

Development Consent

Section 4.38 of the Environmental Planning and Assessment Act 1979

As delegate of the Minister for Planning under delegation executed on 11 October 2017, I approve the Development Application referred to in Schedule 1, subject to the conditions specified in Schedule 2.

These conditions are required to:

- prevent, minimise, or offset adverse environmental impacts;
- set standards and performance measures for acceptable environmental performance;
- require regular monitoring and reporting; and
- provide for the ongoing environmental management of the development.

David Gainsford
Executive Director
Priority Projects

Sydney 11th February 2019

SCHEDULE 1

Application Number:	SSD 8373
Applicant:	NSW Department of Education
Consent Authority:	Minister for Planning
Site:	Lot 11 DP 615964; Lot 1 DP 74696; Lots 2 and 3 DP 69494 and Lots A and B DP 109038, 7 – 11 Park Road, Alexandria

Development:	Redevelopment and operation of Alexandria Park Community School, comprising:
	• site preparation works including demolition of existing all existing buildings and structures, including temporary pop-up schools
	• site remediation works
	• construction of multiple school buildings up to five storeys in height accommodating:
	  ○ a childcare centre
	  ○ a community centre
	• construction of a sports hall, multiple outdoor sports courts and all-weather multipurpose sports field
	• construction of 28 on-site car parking spaces and ancillary vehicular access
	• associated site landscaping and ancillary infrastructure services.

NSW Government
Department of Planning and Environment

DEFINITIONS

Aboriginal object	Has the same meaning as the definition of the term in section 5 of the *National Parks and Wildlife Act 1974*
Aboriginal place	Has the same meaning as the definition of the term in section 5 of the *National Parks and Wildlife Act 1974*
Advisory Notes	Advisory information relating to the consent but do not form a part of this consent
Applicant	NSW Department of Education, or any person carrying out any development to which this consent applies
BCA	Building Code of Australia
CEMP	Construction Environmental Management Plan
Certifying Authority	Professionals that are accredited by the Building Professionals Board to issue construction, occupation, subdivision, strata, compliance and complying development certificates under the EP&A Act, *Strata Schemes (Freehold Development) Act 1973* and *Strata Schemes (Leasehold Development) Act 1986* or in the case of Crown development, a person qualified to conduct a Certification of Crown Building works.
Conditions of this consent	Conditions contained in Schedule 2 of this document
Construction	All physical works to enable operation, including but not limited to the demolition and removal of buildings, the carrying out of works for the purposes of the development, including bulk earthworks, and erection of buildings and other infrastructure permitted by this consent, but excluding the following: • building and road dilapidation surveys; • investigative drilling, investigative excavation or Archaeological Salvage; • establishing temporary site offices (in locations identified by the conditions of this consent); • installation of environmental impact mitigation measures, fencing, enabling works; and • minor adjustments to services or utilities.
Council	City of Sydney
Day	The period from 7am to 6pm on Monday to Saturday, and 8am to 6pm on Sundays and Public Holidays
Demolition	The deconstruction and removal of buildings, sheds and other structures on the site
Department	NSW Department of Planning and Environment
Development	The development described in the EIS and Response to Submissions, including the works and activities comprising the redevelopment and operation of Alexandria Park Community School, as modified and/or limited by the conditions of this consent
Earthworks	Bulk earthworks, site levelling, import and compaction of fill material, excavation for installation of drainage and services, to prepare the site for construction
EIS	Environmental Impact Statement titled *Environmental Impact Statement for SSD 17_8373 Alexandria Park Community School*, prepared by Urbis and dated 11 December 2017, submitted with the application for consent for the development, including any additional information provided by the Applicant in support of the application
ENM	Excavated Natural Material
Environment	Includes all aspects of the surroundings of humans, whether affecting any human as an individual or in his or her social groupings
EPA	NSW Environment Protection Authority

EP&A Act	*Environmental Planning and Assessment Act 1979*
EP&A Regulation	*Environmental Planning and Assessment Regulation 2000*
EPL	Environment Protection Licence under the POEO Act
Evening	The period from 6pm to 10pm.
Feasible	Means what is possible and practical in the circumstances
Heritage	Encompasses both Aboriginal and historic heritage including sites that predate European settlement, and a shared history since European settlement
Heritage Item	An item as defined under the *Heritage Act 1977*, and assessed as being of local, State and/ or National heritage significance, and/or an Aboriginal Object or Aboriginal Place as defined under the *National Parks and Wildlife Act 1974'*, the World Heritage List, or the National Heritage List or Commonwealth Heritage List under the *Environment Protection and Biodiversity Conservation Act 1999* (Cth), or anything identified as a heritage item under the conditions of this consent
Incident	An occurrence or set of circumstances that causes or threatens to cause material harm and which may or may not be or cause a non-compliance *Note: "material harm" is defined in this consent*
Land	Has the same meaning as the definition of the term in section 1.4 of the EP&A Act
Management and mitigation measures	The management and mitigation measures set out in Section 8 of the Applicant's EIS
Material harm	Is harm that: a) involves actual or potential harm to the health or safety of human beings or to the environment that is not trivial; or b) results in actual or potential loss or property damage of an amount, or amounts in aggregate, exceeding $10,000, (such loss includes the reasonable costs and expenses that would be incurred in taking all reasonable and practicable measures to prevent, mitigate or make good harm to the environment)
Minister	NSW Minister for Planning (or delegate)
Mitigation	Activities associated with reducing the impacts of the development prior to or during those impacts occurring
Monitoring	Any monitoring required under this consent must be undertaken in accordance with section 9.40 of the EP&A Act
Night	The period from 10pm to 7am on Monday to Saturday, and 10pm to 8am on Sundays and Public Holidays
Non-compliance	An occurrence, set of circumstances or development that is a breach of this consent
OEH	NSW Office of Environment and Heritage
OEMP	Operational Environmental Management Plan
Operation	The carrying out of the approved purpose of the development upon completion of construction.
PA	Means a planning agreement within the meaning of the term in section 7.4 of the EP&A Act.
Planning Secretary	Planning Secretary under the EP&A Act, or nominee
POEO Act	*Protection of the Environment Operations Act 1997*
Reasonable	Means applying judgement in arriving at a decision, taking into account: mitigation benefits, costs of mitigation versus benefits provided, community views, and the nature and extent of potential improvements.

Rehabilitation	The restoration of land disturbed by the development to a good condition, to ensure it is safe, stable and non-polluting.
Remediation	Site remediation works as set out in the report titled *Alexandria Park Community School Remediation Action, Park Road, Alexandria NSW* prepared by Coffey, dated 8 December 2017
RtS	Response to Submissions titled *SSD 17_8373 Alexandria Park Community School Response to Submissions*, prepared by Urbis and dated 3 October 2018 submitted with the application for consent for the development, including any additional information provided by the Applicant in support of the application
RMS	NSW Roads and Maritime Services
SA NSW	Subsidence Advisory NSW (formerly the Mine Subsidence Board)
Sensitive receivers	A location where people are likely to work, occupy or reside, including a dwelling, school, hospital, office or public recreational area.
Site	The land defined in Schedule 1
Site Auditor	As defined in section 4 of the *Contaminated Land Management Act 1997*
Site Audit Report	As defined in section 4 of the *Contaminated Land Management Act 1997*
Site Audit Statement	As defined in section 4 of the *Contaminated Land Management Act 1997*
TfNSW	Transport for New South Wales
VENM	Virgin Excavated Natural Material
Waste	Has the same meaning as the definition of the term in the Dictionary to the POEO Act
Year	A period of 12 consecutive months

SCHEDULE 2

PART A ADMINISTRATIVE CONDITIONS

Obligation to Minimise Harm to the Environment

A1. In addition to meeting the specific performance measures and criteria in this consent, all reasonable and feasible measures must be implemented to prevent, and if prevention is not reasonable and feasible, minimise, any material harm to the environment that may result from the construction and operation of the development.

Terms of Consent

A2. The development may only be carried out:

(a) in compliance with the conditions of this consent;

(b) in accordance with all written directions of the Planning Secretary;

(c) generally in accordance with the EIS and Response to Submissions;

(d) in accordance with the approved plans in the table below:

Architectural Drawings prepared by *Tanner Kibble Denton Architects*			
Dwg No.	**Rev.**	**Name of Plan**	**Date**
AR.DA. 1001	P1	Existing Site Plan	08.12.17
AR.DA. 1101	P2	Proposed Site Plan	20.04.18
AR.DA. 1201	P2	Existing and Proposed Site Plans	20.04.18
AR.DA. 1202	P2	Phase 1 – Construction Extent	20.04.18
AR.DA. 1203	P2	Phase 2 – Construction Extent	20.04.18
AR.DA. 2001	P5	Campus Plans – Ground and First Floors	28.11.18
AR.DA. 2002	P4	Campus Plans – Second and Third Floors	24.04.18
AR.DA. 2003	P4	Campus Plans – Fourth Floor and Roof	29.11.18
AR.DA. 2010	P2	Key Plan	20.04.18
AR.DA. 2011	P2	Key Plan – Building References	20.04.18
AR.DA. 2101	P3	Ground Floor Plan – Northern Hubs	20.04.18
AR.DA. 2102	P3	Ground Floor Plan – Southern Hubs	20.04.18
AR.DA. 2201	P3	First Floor Plan – Northern Hubs	20.04.18
AR.DA. 2202	P4	First Floor Plan – Southern Hubs	24.04.18
AR.DA. 2301	P3	Second Floor Plan – Northern Hubs	20.04.18
AR.DA. 2302	P4	Second Floor Plan – Southern Hubs	24.04.18
AR.DA. 2401	P3	Third Floor Plan – Northern Hubs	20.04.18
AR.DA. 2402	P3	Third Floor Plan – Southern Hubs	20.04.18
AR.DA. 2501	P3	Fourth Floor Plan – Northern Hubs	20.04.18
AR.DA. 2601	P2	Roof Plan – Northern Hubs	20.04.18
AR.DA. 2602	P2	Roof Plan – Southern Hubs	20.04.18
AR.DA. 3001	P2	Elevations 1	20.04.18
AR.DA. 3002	P1	Detailed Elevations 1	08.12.17
AR.DA. 3003	P2	Detailed Elevations 2	20.04.18
AR.DA. 3004	P2	Detailed Elevations 3	20.04.18
AR.DA. 3005	P2	Detailed Elevations 3 – Screen	20.04.18
AR.DA. 3101	P2	Sections 1	20.04.18
AR.DA. 3111	P2	Detailed Section Sheet 1	20.04.18

AR.DA. 4001	P1	External Material Finishes	08.12.17
Landscape Drawings prepared by *Context Landscape Design Pty Ltd*			
Dwg No.	**Rev.**	**Name of Plan**	**Date**
L-SD-101-00	P8	Overall Landscape Plan Ground Floor	03.12.18
L-SD-200-00	P6	Landscape Detail Plan – Entry Plaza	03.12.18
L-SD-201-00	P4	Landscape Section – Entry Plaza	30.11.17
L-SD-210-00	P5	Landscape Detail Plan – Learning Lawn	23.04.18
L-SD-211-00	P4	Landscape Section – Learning Lawn	30.11.17
L-SD-220-00	P5	Landscape Detail Plan – Canopy Classroom East	19.04.18
L-SD-221-00	P4	Landscape Section – Canopy Classroom East	30.11.17
L-SD-230-00	P5	Landscape Detail Plan – Canopy Classroom West	19.04.18
L-SD-231-00	P4	Landscape Section – Canopy Classroom West	30.11.17
L-SD-250-00	P4	Landscape Detail Plan – Northern Roof	30.11.17
L-SD-251-00	P4	Landscape Detail Plan – Southern Roof	30.11.17
L-SD-260-00	P7	Fencing Strategy Plan	23.04.18
L-SD-261-00	P7	Fencing Strategy Plan School Hours	23.04.18
L-SD-262-00	P7	Fencing Strategy Plan After Hours + Weekends	23.04.18
L-SD-263	P5	Fencing Strategy Sports Fence (Park Rd Interface) Elevation	09.03.18
L-SD-301-00	P6	Existing Tree Plan and Schedule Sheet 1 of 2	03.12.18
L-SD-302-00	P6	Existing Tree Plan and Schedule Sheet 2 of 2	03.12.18
L-SD-303-00	P6	Proposed Trees	03.12.18
L-SD-304-00	P3	Indicative Planting Palette	30.11.17
Stormwater/Drainage Drawings prepared by *Woolacotts Consulting Engineers*			
Dwg No.	**Rev.**	**Name of Plan**	**Date**
SW1	A	Stormwater Management Plan – Sheet 1	14.09.17
SW2	A	Stormwater Management Plan – Sheet 1	14.09.17
ES1	A	Erosion and Sediment Control Plan	14.09.17
ES2	A	Erosion and Sediment Control Plan	14.09.17

A3. Consistent with the requirements in this consent, the Planning Secretary may make written directions to the Applicant in relation to:

(a) the content of any strategy, study, system, plan, program, review, audit, notification, report or correspondence submitted under or otherwise made in relation to this consent, including those that are required to be, and have been, approved by the Planning Secretary; and

(b) the implementation of any actions or measures contained in any such document referred to in (a) above.

A4. The conditions of this consent and directions of the Planning Secretary prevail to the extent of any inconsistency, ambiguity or conflict between them and a document listed in condition A2(c) or A2(d). In the event of an inconsistency, ambiguity or conflict between any of the documents listed in condition A2(c) and A2(d), the most recent document prevails to the extent of the inconsistency, ambiguity or conflict.

Design Amendments

A5. To ensure that adverse privacy impacts are not generated, the southern and western elevations of the upper levels of the development, being levels three, four and five, are to be fitted with privacy screens and/or louvres to restrict direct overlooking into adjoining residential flat building

developments. Details must be provided to the satisfaction of the Certifying Authority prior to the commencement of construction.

A6. All approved Architectural Drawings must be updated to reflect the amended location of the rooftop shade structure from the western edge to the inner eastern edge of the Southern Hub rooftop play area as shown on the approved Drawing No. AR.DA. 2003, Revision P4 Campus Plans – Fourth Floor and Roof, dated 29 November 2018. Details must be provided to the satisfaction of the Certifying Authority prior to the commencement of construction.

Limits of Consent

A7. This consent lapses five years after the date of consent unless the works associated with the development have physically commenced.

Prescribed Conditions

A8. The Applicant must comply with all relevant prescribed conditions of development consent under Part 6, Division 8A of the EP&A Regulation.

Planning Secretary as Moderator

A9. In the event of a dispute between the Applicant and a public authority, in relation to an applicable requirement in this approval or relevant matter relating to the Development, either party may refer the matter to the Planning Secretary for resolution. The Planning Secretary's resolution of the matter must be binding on the parties.

Long Service Levy

A10. For work costing $25,000 or more, a Long Service Levy must be paid. For further information please contact the Long Service Payments Corporation Helpline on 131 441.

Legal Notices

A11. Any advice or notice to the consent authority must be served on the Planning Secretary.

Evidence of Consultation

A12. Where conditions of this consent require consultation with an identified party, the Applicant must:

(a) consult with the relevant party prior to submitting the subject document for information or approval; and

(b) provide details of the consultation undertaken including:

(i) the outcome of that consultation, matters resolved and unresolved; and

(ii) details of any disagreement remaining between the party consulted and the Applicant and how the Applicant has addressed the matters not resolved.

Staging, Combining and Updating Strategies, Plans or Programs

A13. With the approval of the Planning Secretary, the Applicant may:

(a) prepare and submit any strategy, plan or program required by this consent on a staged basis (if a clear description is provided as to the specific stage and scope of the development to which the strategy, plan or program applies, the relationship of the stage to any future stages and the trigger for updating the strategy, plan or program);

(b) combine any strategy, plan or program required by this consent (if a clear relationship is demonstrated between the strategies, plans or programs that are proposed to be combined); and

(c) update any strategy, plan or program required by this consent (to ensure the strategies, plans and programs required under this consent are updated on a regular basis and incorporate additional measures or amendments to improve the environmental performance of the development).

A14. If the Planning Secretary agrees, a strategy, plan or program may be staged or updated without consultation being undertaken with all parties required to be consulted in the relevant condition in this consent.

A15. If approved by the Planning Secretary, updated strategies, plans or programs supersede the previous versions of them and must be implemented in accordance with the condition that requires the strategy, plan or program.

Demolition

A16. Demolition work must comply with *Australian Standard AS 2601-2001 The demolition of structures* (Standards Australia, 2001). The work plans required by AS 2601-2001 must be accompanied by a written statement from a suitably qualified person that the proposals contained in the work plan comply with the safety requirements of the Standard. The work plans and the statement of compliance must be submitted to the Certifying Authority before the commencement of works.

Structural Adequacy

A17. All new buildings and structures, and any alterations or additions to existing buildings and structures, that are part of the development, must be constructed in accordance with the relevant requirements of the BCA.

Notes:

- *Part 8 of the EP&A Regulation sets out the requirements for the certification of the development.*
- *Under section 21 of the Coal Mine Subsidence Compensation Act 2017, the Applicant is required to obtain the Chief Executive of Subsidence Advisory NSW's approval before carrying out certain development in a Mine Subsidence District.*

External Walls and Cladding

A18. The external walls of all buildings including additions to existing buildings must comply with the relevant requirements of the BCA.

Applicability of Guidelines

A19. References in the conditions of this consent to any guideline, protocol, Australian Standard or policy are to such guidelines, protocols, Standards or policies in the form they are in as at the date of this consent.

However, consistent with the conditions of this consent and without altering any limits or criteria in this consent, the Planning Secretary may, when issuing directions under this consent in respect of ongoing monitoring and management obligations, require compliance with an updated or revised version of such a guideline, protocol, Standard or policy, or a replacement of them.

Monitoring and Environmental Audits

A20. Any condition of this consent that requires the carrying out of monitoring or an environmental audit, whether directly or by way of a plan, strategy or program, is taken to be a condition requiring monitoring or an environmental audit under Division 9.4 of Part 9 of the EP&A Act. This includes conditions in respect of incident notification, reporting and response, non-compliance notification, compliance reporting and independent auditing.

Note: *For the purposes of this condition, as set out in the EP&A Act, "monitoring" is monitoring of the development to provide data on compliance with the consent or on the environmental impact of the development, and an "environmental audit" is a periodic or particular documented evaluation of the development to provide information on compliance with the consent or the environmental management or impact of the development.*

Access to Information

A21. At least 48 hours before the commencement of construction until the completion of all works under this consent, or such other time as agreed by the Planning Secretary, the Applicant must:

(a) make the following information and documents (as they are obtained or approved) publicly available on its website:

(i) the documents referred to in condition A2 of this consent;

(ii) all current statutory approvals for the development;

(iii) all approved strategies, plans and programs required under the conditions of this consent;

(iv) regular reporting on the environmental performance of the development in accordance with the reporting arrangements in any plans or programs approved under the conditions of this consent;

(v) a comprehensive summary of the monitoring results of the development, reported in accordance with the specifications in any conditions of this consent, or any approved plans and programs;

(vi) a summary of the current stage and progress of the development;

(vii) contact details to enquire about the development or to make a complaint;

(viii) a complaints register, updated monthly;

(ix) audit reports prepared as part of any independent environmental audit of the development and the Applicant's response to the recommendations in any audit report;

(x) any other matter required by the Planning Secretary; and

(b) keep such information up to date, to the satisfaction of the Planning Secretary.

Compliance

A22. The Applicant must ensure that all of its employees, contractors (and their sub-contractors) are made aware of, and are instructed to comply with, the conditions of this consent relevant to activities they carry out in respect of the development.

ADVISORY NOTES

AN1. All licences, permits, approvals and consents as required by law must be obtained and maintained as required for the development. No condition of this consent removes any obligation to obtain, renew or comply with such licences, permits, approvals and consents.

PART B PRIOR TO COMMENCEMENT OF CONSTRUCTION

Notification of Commencement

B1. The Department must be notified in writing of the dates of commencement of physical work and operation at least 48 hours before those dates.

If the construction or operation of the development is to be staged, the Department must be notified in writing at least 48 hours before the commencement of each stage, of the date of commencement and the development to be carried out in that stage.

Certified Drawings

B2. Prior to the commencement of construction, the Applicant must submit to the satisfaction of the Certifier structural drawings prepared and signed by a suitably qualified practising Structural Engineer that demonstrates compliance with:

(a) the relevant clauses of the BCA; and

(b) this development consent.

External Walls and Cladding

B3. Prior to the commencement of construction, the Applicant must provide the Certifying Authority with documented evidence that the products and systems proposed for use in the construction of external walls including finishes and claddings such as synthetic or aluminium composite panels comply with the requirements of the BCA.

The Applicant must provide a copy of the documentation given to the Certifying Authority to the Planning Secretary within seven days after the Certifying Authority accepts it.

Protection of Public Infrastructure

B4. Before the commencement of construction, the Applicant must:

(a) consult with the relevant owner and provider of services that are likely to be affected by the development to make suitable arrangements for access to, diversion, protection and support of the affected infrastructure;

(b) prepare a dilapidation report identifying the condition of all public infrastructure in the vicinity of the site (including roads, gutters and footpaths); and

(c) submit a copy of the dilapidation report to the Certifying Authority and Council.

Aboriginal Cultural Heritage

B5. Prior to the commencement of any works involving ground disturbance, the Applicant must engage a suitably qualified heritage consultant to prepare a Heritage Management Plan addressing the HMP requirements in the report titled *Aboriginal Cultural Heritage Assessment: Alexandria Park Community School*, prepared by Extent Heritage Pty Ltd and dated 7 November 2018 have been complied with in full. A copy of the HMP must be submitted to the satisfaction of the Certifying Authority.

Flooding

B6. Prior to the commencement of any works (excluding demolition and remediation works), details must be submitted to the satisfaction of the Certifying Authority that demonstrated the finished floor levels of the approved development are 0.5m above the 1% AEP flood event level.

Site Contamination

B7. Following the completion of demolition works but prior to the commencement of building works or vegetation clearing, additional site investigation for contaminants across previously untested areas of the site must be undertaken in accordance with:

(a) NSW EPA Sampling Design Guidelines;

(b) Guidelines for the NSW Site Auditor Scheme (3rd edition) 2017;

(c) https://www.epa.nsw.gov.au/publications/contaminatedland/17p0269-guidelines-for-thensw-site-auditor-scheme-third-edition;

(d) Guidelines for Consultants Reporting on Contaminated Sites, 2011 www.epa.nsw.gov.au/resources/clm/20110650consultantsglines.pdf;

(e) The National Environment Protection (assessment of contamination) Measures 2013 as amended Testing must include assessment of both the soil and groundwater profile.

B8. The Remediation Action Plan, titled *Alexandria Park Community School Remediation Action Plan*, prepared by Coffey, dated 8 December 2017, must be updated to reflect the findings of the additional site investigations required by condition B7. The updated Remediation Action Plan must be approved by a NSW EPA Accredited Site Auditor and submitted to the Planning Secretary prior to commencement of remediation works.

B9. Prior to the commencement of remediation works, an asbestos works management plan must be prepared and submitted for review by a NSW EPA accredited Site Auditor. The asbestos works management plan must be implemented following the receipt of confirmation from the NSW EPA accredited Site Auditor that the asbestos works management plan is considered appropriate.

B10. Remediation works approved as part of this development consent must be carried out in accordance with the report titled, as required to be updated by condition B8, *Alexandria Park Community School Remediation Action Plan*, prepared by Coffey, dated 8 December 2017 (as amended as required by Condition B8).

B11. Upon completion of remedial works, the Applicant must submit a Site Audit Report and Section A Site Audit Statement for the relevant part of the site prepared by a NSW EPA accredited Site Auditor. The Site Audit Report and Section A Site Audit Statement must verify the relevant part of the site is suitable for the educational land use and be provided to the satisfaction of the Certifying Authority.

B12. Upon completion of remedial works and prior to the commencement of construction (excluding demolition), a Long Term Environmental Management Plan (LTEMP) must be prepared and submitted to a NSW EPA accredited Site Auditor for review. The LTEMP must:

(a) identify the location and requirements for ongoing management of asbestos impacted soil and other contaminated soil contained on the site;

(b) detail the expected limitations on the site land use;

(c) identify relevant environmental, and health and safety processes and procedures;

(d) identify management processes, procedures and responsibilities to be adopted by future site users within the site;

(e) detail the location and extent of placed or residual asbestos impacted soil and other contaminated fill materials, capping layers and marker barriers within the site.

Unexpected Contamination Procedure

B13. Prior to the commencement of earthworks, the Applicant must prepare an unexpected contamination procedure to ensure that potentially contaminated material is appropriately managed. The procedure must form part of the of the CEMP in accordance with condition B20 and must ensure any material identified as contaminated must be disposed off-site, with the disposal location and results of testing submitted to the Planning Secretary, prior to its removal from the site.

Utilities and Services

B14. Before the construction of any utility works associated with the development, the Applicant must obtain relevant approvals from service providers.

B15. Prior to the commencement of above ground works written advice must be obtained from the electricity supply authority, an approved telecommunications carrier and an approved gas carrier (where relevant) stating that satisfactory arrangements have been made to ensure provisions of adequate services.

Community Communication Strategy

B16. A Community Communication Strategy must be prepared to provide mechanisms to facilitate communication between the Applicant, Council and the community (including adjoining affected

landowners and businesses, and others directly impacted by the development), during the design and construction of the development and for a minimum of 12 months following the completion of construction.

The Community Communication Strategy must:

(a) identify people to be consulted during the design and construction phases;

(b) set out procedures and mechanisms for the regular distribution of accessible information about or relevant to the development;

(c) provide for the formation of community-based forums, if required, that focus on key environmental management issues for the development;

(d) set out procedures and mechanisms:

  (i) through which the community can discuss or provide feedback to the Applicant;

  (ii) through which the Applicant will respond to enquiries or feedback from the community; and

  (iii) to resolve any issues and mediate any disputes that may arise in relation to construction and operation of the development, including disputes regarding rectification or compensation.

The Community Communication Strategy must be submitted to the Planning Secretary for approval no later than two weeks before the commencement of any work.

Work for the purposes of the development must not commence until the Community Communication Strategy has been approved by the Planning Secretary, or within another timeframe agreed with the Planning Secretary.

Ecologically Sustainable Development

B17. Prior to the commencement of construction, the Applicant must register for a minimum 4 star Green Star rating with the Green Building Council Australia, unless otherwise agreed by the Planning Secretary and submit evidence of registration to the Certifying Authority.

Outdoor Lighting

B18. Prior to commencement of construction, all outdoor lighting within the site must comply with AS 1158.3.1:2005 Lighting for roads and public spaces – Pedestrian area (Category P) lighting – Performance and design requirements and AS 4282-1997 Control of the obtrusive effects of outdoor lighting. Details demonstrating compliance with these requirements must be submitted to the satisfaction of the Certifying Authority.

Access for People with Disabilities

B19. The works that are the subject of this application must be designed and constructed to provide access and facilities for people with a disability in accordance with the BCA. Prior to the commencement of construction, the Certifying Authority must ensure that evidence of compliance with this condition from an appropriately qualified person is provided and that the requirements are referenced on any certified plans.

Construction Environmental Management Plan

B20. Prior to commencement of construction, the Applicant must prepare a Construction Environmental Management Plan (CEMP) and it must include, but not be limited to, the following:

(a) Details of:

  (i) hours of work;

  (ii) 24-hour contact details of site manager;

  (iii) management of dust and odour to protect the amenity of the neighbourhood;

  (iv) stormwater control and discharge;

  (v) measures to ensure that sediment and other materials are not tracked onto the roadway by vehicles leaving the site;

  (vi) groundwater management plan including measures to prevent groundwater contamination;

(vii) external lighting in compliance with AS 4282-1997 Control of the obtrusive effects of outdoor lighting;

(viii) community consultation and complaints handling;

(b) Construction Traffic and Pedestrian Management Sub-Plan (see condition B22);

(c) Construction Noise and Vibration Management Sub-Plan (see condition B23);

(d) Construction Waste Management Sub-Plan (see condition B24);

(e) Construction Soil and Water Management Sub-Plan (see condition B25);

(f) an unexpected finds protocol for contamination and associated communications procedure;

(g) an unexpected finds protocol for Aboriginal and non-Aboriginal heritage and associated communications procedure; and

(h) waste classification (for materials to be removed) and validation (for materials to remain) be undertaken to confirm the contamination status in these areas of the site.

B21. The Applicant must not commence construction of the development until the CEMP is approved by the Certifying Authority and a copy submitted to the Planning Secretary.

B22. The Construction Traffic and Pedestrian Management Sub-Plan (CTPMSP) must address, but not be limited to, the following:

(a) be prepared by a suitably qualified and experienced person(s);

(b) be prepared in consultation with Council and RMS;

(c) detail the measures that are to be implemented to ensure road safety and network efficiency during construction in consideration of potential impacts on general traffic, cyclists and pedestrians and bus services;

(d) detail heavy vehicle routes, access and parking arrangements;

(e) include a Driver Code of Conduct to:

(i) minimise the impacts of earthworks and construction on the local and regional road network;

(ii) minimise conflicts with other road users;

(iii) minimise road traffic noise; and

(iv) ensure truck drivers use specified routes;

(f) include a program to monitor the effectiveness of these measures; and

(g) if necessary, detail procedures for notifying residents and the community (including local schools), of any potential disruptions to routes.

B23. The Construction Noise and Vibration Management Sub-Plan must address, but not be limited to, the following:

(a) be prepared by a suitably qualified and experienced noise expert;

(b) describe procedures for achieving the noise management levels in EPA's *Interim Construction Noise Guideline* (DECC, 2009);

(c) describe the measures to be implemented to manage high noise generating works such as piling, in close proximity to sensitive receivers;

(d) include strategies that have been developed with the community for managing high noise generating works;

(e) describe the community consultation undertaken to develop the strategies in condition B23(d); and

(f) include a complaints management system that would be implemented for the duration of the construction.

B24. The Construction Waste Management Sub-Plan (CWMSP) must address, but not be limited to, the following:

(a) detail the quantities of each waste type generated during construction and the proposed reuse, recycling and disposal locations;

(b) removal of hazardous materials, particularly the method of containment and control of emission of fibres to the air, and disposal at an approved waste disposal facility in accordance with the requirements of the relevant legislation, codes, standards and guidelines, prior to the commencement of any building works.

B25. The Applicant must prepare a Construction Soil and Water Management Plan (CSWMSP) and the plan must address, but not be limited to the following:

(a) be prepared by a suitably qualified expert, in consultation with Council;

(b) describe all erosion and sediment controls to be implemented during construction;

(c) provide a plan of how all construction works will be managed in a wet-weather events (i.e. storage of equipment, stabilisation of the Site);

(d) detail all off-Site flows from the Site; and

(e) describe the measures that must be implemented to manage stormwater and flood flows for small and large sized events, including, but not limited to 1 in 1-year ARI, 1 in 5-year ARI and 1 in 100-year ARI).

Construction Parking

B26. The Applicant must provide sufficient parking facilities on-site for heavy vehicles (unless alternative parking is agreed to in writing by the relevant road authority), to ensure that construction traffic associated with the development does not utilise on-street parking or public parking facilities.

Stormwater Management System

B27. Prior to the commencement of construction, the Applicant must design an operational stormwater management system for the development and submit it to the satisfaction of the Certifying Authority. The system must:

(a) be designed by a suitably qualified and experienced person(s);

(b) be generally in accordance with the conceptual design in the EIS;

(c) be in accordance with applicable Australian Standards;

(d) ensure that the system capacity has been designed in accordance with *Australian Rainfall and Runoff* (Engineers Australia, 2016) and *Managing Urban Stormwater: Council Handbook* (EPA, 1997) guidelines;

Operational Noise – Design of Mechanical Plant and Equipment

B28. Prior to commencement of construction, the Applicant must incorporate the noise mitigation recommendations in the report titled *Alexandria Park Community School Development Application Acoustic Assessment*, prepared by Wilkinson Murray and dated 19 April 2019, into the detailed design drawings. The Certifying Authority must verify that all reasonable and feasible noise mitigation measures have been incorporated into the design to ensure the development will not exceed the project noise trigger levels established based on the more conservative Rating Background Noise levels identified in the report titled *Alexandria Park Community School Development Application Acoustic Assessment*, prepared by Wilkinson Murray and dated 19 April 2019.

Construction and Demolition Waste Management

B29. The Applicant must notify the RMS Traffic Management Centre of the truck route(s) to be followed by trucks transporting waste material from the site, prior to the commencement of the removal of any waste material from the site.

Operational Waste Storage and Processing

B30. Prior to the commencement of construction, the Applicant must obtain agreement from Council for the design of the operational waste storage area where waste removal is undertaken by Council.

Mechanical Ventilation

B31. All mechanical ventilation systems must be designed in accordance with Part F4.5 of the BCA and must comply with the AS 1668.2-2012 *The use of air-conditioning in buildings – Mechanical*

ventilation in buildings and AS/NZS 3666.1:2011 *Air handling and water systems of buildings–Microbial control* to ensure adequate levels of health and amenity to the occupants of the building and to ensure environment protection. Details must be submitted to the satisfaction of the Certifying Authority prior to the commencement of construction.

Rainwater Harvesting

B32. Prior to the commencement of construction, the Applicant must ensure that a rainwater reuse/harvesting system for the development is developed for the site. A rainwater re-use plan must be prepared and certified by an experienced hydraulic engineer.

Car Parking and Service Vehicle Layout

B33. Compliance with the following requirements must be submitted to the satisfaction of the Certifying Authority prior to the commencement of construction:

(a) all vehicles must enter and leave the Site in a forward direction;

(b) minimum of 28 on-site car parking spaces for use during operation of the development and designed in accordance with the latest version of AS2890.1;

(c) the swept path of the longest vehicle entering and exiting the Site in association with the new work, as well as manoeuvrability through the Site, must be in accordance with AUSTROADS; and

(d) the safety of vehicles and pedestrians accessing adjoining properties, where shared vehicle and pedestrian access occurs, is to be addressed.

Bicycle Parking and End-of-Trip Facilities

B34. Compliance with the following requirements for secure bicycle parking and end-of-trip facilities must be submitted to the satisfaction of the Certifying Authority prior to the commencement of construction:

a) the provision of a minimum 144 bicycle parking spaces, comprising a minimum 20 staff, 100 secondary student and 30 primary school student bicycle parking spaces;
b) the provision of details identifying the suitable relocation of the 15 student bicycle parking spaces clear of the Belmont Street staff car park/indoor sports hall, to minimise the risk of conflict between motor vehicles and student cyclists;
c) the provision details of the proposed lightweight canopy to ensure a minimum 50 per cent of student bicycle parking spaces (i.e. 75 spaces) are suitably weather protected;
d) details of any proposed staged delivery of bicycle parking spaces to ensure the demand generated during staged redevelopment is met;
e) the layout, design and security of bicycle facilities must comply with the minimum requirements of AS 2890.3:2015 *Parking facilities - Bicycle parking*, and be located in easy to access, well-lit areas that incorporate passive surveillance;
f) the provision of end-of-trip facilities for staff in accordance with the ESD Design & As Built rating tool, including a minimum 2 staff shower facilities;
g) appropriate pedestrian and cyclist advisory signs are to be provided; and
h) all works/regulatory signposting associated with the proposed developments shall be at no cost to the relevant roads authority.

Public Domain Works

B35. Prior to the commencement of any footpath or public domain works, the Applicant must consult with Council and demonstrate to the Certifying Authority that the streetscape design and treatment meets the requirements of Council, including addressing pedestrian management. The Applicant must submit documentation of approval for each stage from Council to the Certifying Authority.

Compliance Reporting

B36. No later than two weeks before the date notified for the commencement of construction, a Compliance Monitoring and Reporting Program prepared in accordance with the Compliance Reporting Post Approval Requirements (Department 2018) must be submitted to the Department and the Certifying Authority.

Compliance Reports of the project must be carried out in accordance with the Compliance Reporting Post Approval Requirements (Department 2018).

The Applicant must make each Compliance Report publicly available 60 days after submitting it to the Department and notify the Department and the Certifying Authority in writing at least seven days before this is done.

B37. Notwithstanding the requirements of the Compliance Reporting Post Approval Requirements (Department 2018), the Planning Secretary may approve a request for ongoing annual operational compliance reports to be ceased, where it has been demonstrated to the Planning Secretary's satisfaction that an operational compliance report has demonstrated operational compliance

Landscaping

B38. Prior to commencement of construction of the building, the Applicant must prepare a Landscape Management Plan to manage the approved landscaping works on-site, to the satisfaction of the Certifying Authority. The plan must:

(a) be generally in accordance with the approved landscape plan outlined in condition A2 prepared by Context Landscape Design Pty Ltd;

(b) ensure that no more than 69 trees are removed from the site and identifies all existing trees to be retained (i.e. a minimum 47 trees);

(c) detail the species to be planted on-site, including the 69 advanced compensatory trees 75 L to 100 L in size;

(d) describe the monitoring and maintenance measures to manage revegetation and landscaping works;

(e) be consistent with the Applicant's Management and Mitigation Measures in the EIS;

(f) provide for the planting of trees and vegetation to soften the visual impact of the approved built form from the public domain and provide shade.

Unencumbered Outdoor Play Space

B39. Prior to the commencement of construction, plans are to be submitted to the Certifying Authority demonstrating that a minimum of 273 square metres of unencumbered outdoor play space is be provided for the use of the pre-school/Out of School Hours service in accordance with regulation 108 of the *Education and Care Services National Regulations*.

PART C DURING CONSTRUCTION

Interpretation Strategy

C1. Within 6 months of commencement of construction, a Heritage Interpretation Strategy (HIS) must be prepared by a suitably qualified heritage consultant identifying the interpretive values of the site, and specifically Aboriginal heritage values across the site, and to provide direction for potential interpretive installations. A copy of the HIS must be submitted to the Certifying Authority.

Approved Plans to be On-site

C2. A copy of the approved and certified plans, specifications and documents incorporating conditions of approval and certification must be kept on the Site at all times and must be readily available for perusal by any officer of the Department, Council or the Certifying Authority.

Site Notice

C3. A site notice(s):

(a) must be prominently displayed at the boundaries of the site for the purposes of informing the public of project details including, but not limited to the details of the Builder, Certifying Authority and Structural Engineer.

(b) is to satisfy all but not be limited to, the following requirements:

(i) minimum dimensions of the notice must measure 841 mm x 594 mm (A1) with any text on the notice to be a minimum of 30-point type size;

(ii) the notice is to be durable and weatherproof and is to be displayed throughout the works period;

(iii) the approved hours of work, the name of the site/ project manager, the responsible managing company (if any), its address and 24-hour contact phone number for any inquiries, including construction/ noise complaint must be displayed on the site notice; and

(iv) the notice(s) is to be mounted at eye level on the perimeter hoardings/fencing and is to state that unauthorised entry to the site is not permitted.

Operation of Plant and Equipment

C4. All plant and equipment used on site, or to monitor the performance of the development must be:

a) maintained in a proper and efficient condition; and
b) operated in a proper and efficient manner.

Demolition

C5. Demolition work must comply with *Australian Standard AS 2601-2001* The demolition of structures (Standards Australia, 2001). The work plans required by AS 2601-2001 must be accompanied by a written statement from a suitably qualified person that the proposals contained in the work plan comply with the safety requirements of the Standard. The work plans and the statement of compliance must be submitted to the Certifying Authority before the commencement of works.

Construction Hours

C6. Construction, including the delivery of materials to and from the site, may only be carried out between the following hours:

(a) between 7 am and 6 pm, Mondays to Fridays inclusive; and

(b) between 7:30 am and 3:30 pm, Saturdays.

No work may be carried out on Sundays or public holidays.

C7. Activities may be undertaken outside of the hours in condition C6 if required:

(a) by the Police or a public authority for the delivery of vehicles, plant or materials; or

(b) in an emergency to avoid the loss of life, damage to property or to prevent environmental harm; or

(c) where the works are inaudible at the nearest sensitive receivers; or

(d) where a variation is approved in advance in writing by the Planning Secretary or her nominee if appropriate justification is provided for the works.

Notification of such activities must be given to affected residents before undertaking the activities or as soon as is practical afterwards.

C8. Rock breaking, rock hammering, sheet piling, pile driving and similar activities may only be carried out between the following hours:

(a) 9 am to 12 pm, Monday to Friday;

(b) 2 pm to 5 pm Monday to Friday; and

(c) 9 am to 12 pm, Saturday.

Implementation of Management Plans

C9. The Applicant must carry out the construction of the development in accordance with the most recent version of the approved CEMP (including Sub-Plans).

Construction Traffic

C10. All construction vehicles (excluding worker vehicles) are to be contained wholly within the site, except if located in an approved on-street work zone, and vehicles must enter the site before stopping.

Road Occupancy Licence

C11. A Road Occupancy Licence must be obtained from the relevant road authority for any works that impact on traffic flows during construction activities.

SafeWork Requirements

C12. To protect the safety of work personnel and the public, the work site must be adequately secured to prevent access by unauthorised personnel, and work must be conducted at all times in accordance with relevant SafeWork requirements.

Hoarding Requirements

C13. The following hoarding requirements must be complied with:

(a) no third-party advertising is permitted to be displayed on the subject hoarding/ fencing;

(b) the construction site manager must be responsible for the removal of all graffiti from any construction hoardings or the like within the construction area within 48 hours of its application; and

(c) the Applicant must submit a hoarding application to Council for the installation of any hoardings over Council footways or road reserve.

No Obstruction of Public Way

C14. The public way (outside of any approved construction works zone) must not be obstructed by any materials, vehicles, refuse, skips or the like, under and circumstances. Non-compliance with this requirement will result in the issue of a notice by the relevant Authority to stop all works on site.

Construction Noise Limits

C15. The development must be constructed to achieve the construction noise management levels detailed in *the Interim Construction Noise Guideline* (DECC, 2009). All feasible and reasonable noise mitigation measures must be implemented and any activities that could exceed the construction noise management levels must be identified and managed in accordance with the management and mitigation measures identified in the approved Construction Noise and Vibration Management Plan.

C16. The Applicant must ensure construction vehicles (including concrete agitator trucks) do not arrive at the site or surrounding residential precincts outside of the construction hours of work outlined under condition C6.

C17. The Applicant must implement, where practicable and without compromising the safety of construction staff or members of the public, the use audible movement alarms of a type that would minimise noise impacts on surrounding noise sensitive receivers.

C18. Any noise generated during construction of the development must not be offensive noise within the meaning of the *Protection of the Environment Operations Act 1997* or exceed approved noise limits for the site.

Vibration Criteria

C19. Vibration caused by construction at any residence or structure outside the site must be limited to:

(a) for structural damage, the latest version of *DIN 4150-3 (1992-02) Structural vibration - Effects of vibration on structures* (German Institute for Standardisation, 1999); and

(b) for human exposure, the acceptable vibration values set out in the *Environmental Noise Management Assessing Vibration: a technical guideline* (DEC, 2006) (as may be updated or replaced from time to time).

C20. Vibratory compactors must not be used closer than 30 metres from residential buildings unless vibration monitoring confirms compliance with the vibration criteria specified in condition C19.

C21. The limits in conditions C19 and C20 apply unless otherwise outlined in a Construction Noise and Vibration Management Plan, approved as part of the CEMP required by condition B23 of this consent.

Tree Protection

C22. For the duration of the construction works:

(a) street trees must not be trimmed or removed unless it forms a part of this development consent or prior written approval from Council is obtained or is required in an emergency to avoid the loss of life or damage to property;

(b) all street trees must be protected at all times during construction. Any tree on the footpath, which is damaged or removed during construction due to an emergency, must be replaced, to the satisfaction of Council;

(c) all trees on the site must be suitably protected during construction as per recommendations of the report titled *Report: A) Arboricultural Impact Assessment and B) Tree Management Plan*, prepared by Redgum Horticultural and dated 2 December 2018; and

(d) if access to the area within any protective barrier is required during the works, it must be carried out under the supervision of a qualified arborist. Alternative tree protection measures must be installed, as required. The removal of tree protection measures, following completion of the works, must be carried out under the supervision of a qualified arborist and must avoid both direct mechanical injury to the structure of the tree and soil compaction within the canopy or the limit of the former protective fencing, whichever is the greater.

Flora and Fauna Protection

C23. During construction works, the Applicant must comply with the recommendations in the report titled *Technical Studies: Flora & Fauna Survey for the Proposed Redevelopment of Alexandria Park Community School, Alexandria*, prepared by UBM Ecological and dated 24 April 2018.

Dust Minimisation

C24. The Applicant must take all reasonable steps to minimise dust generated during all works authorised by this consent.

C25. During construction, the Applicant must ensure that:

(a) exposed surfaces and stockpiles are suppressed by regular watering;

(b) all trucks entering or leaving the site with loads have their loads covered;

(c) trucks associated with the development do not track dirt onto the public road network;

(d) public roads used by these trucks are kept clean; and

(e) land stabilisation works are carried out progressively on site to minimise exposed surfaces.

Air Quality Discharges

C26. The Applicant must install and operate equipment in line with best practice to ensure that the development complies with all load limits, air quality criteria/air emission limits and air quality monitoring requirements as specified in the EPL applicable to the site.

Erosion and Sediment Control

C27. All erosion and sediment control measures, must be effectively implemented and maintained at or above design capacity for the duration of the construction works and until such time as all ground disturbed by the works have been stabilised and rehabilitated so that it no longer acts as a source of sediment.

Imported Soil

C28. The Applicant must:

(a) ensure that only VENM, ENM, or other material approved in writing by EPA is brought onto the site;

(b) keep accurate records of the volume and type of fill to be used; and

(c) make these records available to the Certifying Authority upon request.

Disposal of Seepage and Stormwater

C29. Any seepage or rainwater collected on-site during construction or groundwater must not be pumped to the street stormwater system unless separate prior approval is given in writing by the EPA in accordance with the *Protection of the Environment Operations Act 1997*.

Unexpected Finds Protocol – Aboriginal Heritage

C30. In the event that surface disturbance identifies a new Aboriginal object, all works must halt in the immediate area to prevent any further impacts to the object(s). A suitably qualified archaeologist and the registered Aboriginal representatives must be contacted to determine the significance of the objects. The site is to be registered in the Aboriginal Heritage Information Management System (AHIMS) which is managed by OEH and the management outcome for the site included in the information provided to AHIMS. The Applicant must consult with the Aboriginal community representatives, the archaeologists and OEH to develop and implement management strategies for all objects/sites. Works shall only recommence with the written approval of OEH.

Unexpected Finds Protocol – Historic Heritage

C31. If any unexpected archaeological relics are uncovered during the work, then all works must cease immediately in that area and the OEH Heritage Division contacted. Depending on the possible significance of the relics, an archaeological assessment and management strategy may be required before further works can continue in that area. Works may only recommence with the written approval of Heritage Division of the OEH.

Waste Storage and Processing

C32. Waste must be secured and maintained within designated waste storage areas at all times and must not leave the site onto neighbouring public or private properties.

C33. All waste generated during construction must be assess, classified and managed in accordance with the Waste Classification Guidelines Part 1: Classifying Waste (EPA, 2014).

C34. The body of any vehicle or trailer used to transport waste or excavation spoil must be covered before leaving the premises to prevent any spillage or escape of any dust, waste of spoil. Mud, splatter, dust and other material likely to fall from or be cast off the wheels, underside or body of any vehicle, trailer or motorised plant leaving the site must be removed before leaving the premises.

C35. The Applicant must ensure that concrete waste and rinse water are not disposed of on the site and are prevented from entering any natural of artificial watercourse.

Handling of Asbestos

C36. The Applicant is to consult with SafeWork NSW concerning the handling of any asbestos waste that may be encountered during construction. The requirements of the Protection of the Environment Operations (Waste) Regulation 2014 with particular reference to Part 7 – 'Transportation and management of asbestos waste' must also be complied with.

Community Engagement

C37. The Applicant must consult with the community regularly throughout construction, including consultation with the nearby sensitive receivers identified in the EIS, relevant regulatory authorities, Registered Aboriginal Parties and other interested stakeholders.

Independent Environmental Audit

C38. Proposed independent auditors must be agreed to in writing by the Planning Secretary prior to the preparation of an Independent Audit Program or commencement of an Independent Audit.

C39. No later than four weeks after the date notified for the commencement of construction, an Independent Audit Program prepared in accordance with the Independent Audit Post Approval Requirements (Department 2018) must be submitted to the Department and the Certifying Authority.

C40. Table 1 of the Independent Audit Post Approval Requirements (Department 2018) is amended so that the frequency of audits required in the construction phase is:

(a) an initial construction Independent Audit must be undertaken within 8 weeks of the notified commencement date of construction; and

(b) a subsequent Independent Audit of construction must be undertaken no later than 26 weeks from the date of the initial construction Independent Audit.

C41. Independent Audits of the development must be carried out in accordance with:

(a) the Independent Audit Program submitted to the Department and the Certifying Authority under condition C38 of this consent; and

(b) the requirements for an Independent Audit Methodology and Independent Audit Report in the Independent Audit Post Approval Requirements (Department 2018).

C42. In accordance with the specific requirements in the Independent Audit Post Approval Requirements (Department 2018), the Applicant must:

(a) review and respond to each Independent Audit Report prepared under condition C41 of this consent;

(b) submit the response to the Department and the Certifying Authority; and

(c) make each Independent Audit Report and response to it publicly available within 60 days after submission to the Department and notify the Department and the Certifying Authority in writing at least seven days before this is done.

C43. Notwithstanding the requirements of the Independent Audit Post Approval Requirements (Department 2018), the Planning Secretary may approve a request for ongoing annual operational audits to cease, where it has been demonstrated to the Planning Secretary's satisfaction that ongoing operational audits are no longer required.

Incident Notification, Reporting and Response

C44. The Department must be notified in writing to compliance@planning.nsw.gov.au immediately after the Applicant becomes aware of an incident. The notification must identify the development (including the development application number and the name of the development if it has one), and set out the location and nature of the incident.

Subsequent notification must be given and reports submitted in accordance with the requirements set out in **Appendix 1**.

Non-Compliance Notification

C45. The Department must be notified in writing to compliance@planning.nsw.gov.au within seven days after the Applicant becomes aware of any non-compliance. The Certifying Authority must

also notify the Department in writing to compliance@planning.nsw.gov.au within seven days after they identify any non-compliance.

The notification must identify the development and the application number for it, set out the condition of consent that the development is non-compliant with, the way in which it does not comply and the reasons for the non-compliance (if known) and what actions have been, or will be, undertaken to address the non-compliance.

A non-compliance which has been notified as an incident does not need to also be notified as a non-compliance.

Revision of Strategies, Plans and Programs

C46. Within three months of:

(a) the submission of a compliance report under condition B36;

(b) the submission of an incident report under condition C44;

(c) the submission of an Independent Audit under condition C41;

(d) the issue of a direction of the Planning Secretary under condition A2 which requires a review,

the strategies, plans and programs required under this consent must be reviewed, and the Department and the Certifying Authority must be notified in writing that a review is being carried out.

C47. If necessary to either improve the environmental performance of the development, cater for a modification or comply with a direction, the strategies, plans and programs required under this consent must be revised, to the satisfaction of the Certifying Authority. Where revisions are required, the revised document must be submitted to the Certifying Authority for approval within six weeks of the review.

Note: *This is to ensure strategies, plans and programs are updated on a regular basis and to incorporate any recommended measures to improve the environmental performance of the development.*

PART D PRIOR TO OCCUPATION OR COMMENCEMENT OF USE

Notification of Occupation

D1. The date of commencement of the occupation of the development must be notified to the Department in writing, at least one month before occupation. If the operation of the development is to be staged, the Department must be notified in writing at least one month before the commencement of each stage, of the date of commencement and the development to be carried out in that stage.

External Walls and Cladding

D2. Prior to the occupation of the building, the Applicant must provide the Certifying Authority with documented evidence that the products and systems used in the construction of external walls including finishes and claddings such as synthetic or aluminium composite panels comply with the requirements of the BCA.

D3. The Applicant must provide a copy of the documentation given to the Certifying Authority to the Planning Secretary within seven days after the Certifying Authority accepts it.

Post-construction Dilapidation Report

D4. Prior to occupation of the building, the Applicant must engage a suitably qualified person to prepare a post-construction dilapidation report at the completion of construction. This report is:
- a) to ascertain whether the construction created any structural damage to adjoining buildings or infrastructure.
- b) to be submitted to the Certifying Authority. In ascertaining whether adverse structural damage has occurred to adjoining buildings or infrastructure, the Certifying Authority must:
  - i) compare the post-construction dilapidation report with the pre-construction dilapidation report required by these conditions; and
  - ii) have written confirmation from the relevant authority that there is no adverse structural damage to their infrastructure and roads.
- c) to be forwarded to Council.

Protection of Public Infrastructure

D5. Unless the Applicant and the applicable authority agree otherwise, the Applicant must:
- (a) repair, or pay the full costs associated with repairing, any public infrastructure that is damaged by carrying out the development; and
- (b) relocate, or pay the full costs associated with relocating any infrastructure that needs to be relocated as a result of the development.

Note: This condition does not apply to any damage to roads caused as a result of general road usage or otherwise addressed by contributions required by ***Error! Reference source not found.*** *of this consent.*

Utilities and Services

D6. Prior to occupation of the building, a compliance certificate under the section 307 of the *Water Management Act 2000* must be obtained from Council and submitted to the Certifying Authority.

Works as Executed Plans

D7. Prior to occupation of the building, works-as-executed drawings signed by a registered surveyor demonstrating that the stormwater drainage and finished ground levels have been constructed as approved, must be submitted to the Certifying Authority.

Operational Transport and Access Management Plan

D8. An OTAMP is to be prepared for the school (or separately for each school) by a suitably qualified person, in consultation with Council, Transport for NSW and RMS, to the satisfaction of the Secretary, and must address the following:
- (a) Detailed pedestrian analysis including the identification of safe route options – to identify the need for management measures such as staggered school start and finish times to ensure students and staff are able to access and leave the Site in a safe and efficient manner during school start and finish;

(b) the location of all car parking spaces on the school campuses and their allocation (i.e. staff, visitor, accessible, emergency, etc.);

(c) the location and operational management procedures of the pick-up and drop-off parking, including staff management/traffic controller arrangements;

(d) the location and operational management procedures for the pick-up and drop-off of students by buses and coaches for excursions and sporting activities during the hours of bus lane operations, including staff management/traffic controller arrangements;

(e) delivery and services vehicle and bus access and management arrangements;

(f) management of approved access arrangements;

(g) potential traffic impacts on surrounding road networks and mitigation measures to minimise impacts, including measures to mitigate queuing impacts associated with vehicles accessing pick-up and drop-off parking;

(h) car parking arrangements and management associated with the proposed use of school facilities by community members; and

(i) a monitoring and review program.

The OTAMP(s) must be submitted to the Secretary for approval prior to operation of the development.

The OTAMP(s) (as revised from time to time) must be implemented by the Applicant for the life of the development.

Green Travel Plan

D9. Prior to the commencement of operation, a Green Travel Plan (GTP), must be prepared and be submitted to the Secretary to promote the use of active and sustainable transport modes. The plan must:

(a) be prepared by a suitably qualified traffic consultant in consultation with Council and Transport for NSW;

(b) include objectives and modes share targets (i.e. Site and land use specific, measurable and achievable and timeframes for implementation) to define the direction and purpose of the GTP;

(c) include specific tools and actions to help achieve the objectives and mode share targets;

(d) include measures to promote and support the implementation of the plan, including financial and human resource requirements, roles and responsibilities for relevant employees involved in the implementation of the GTP; and

(e) include details regarding the methodology and monitoring/review program to measure the effectiveness of the objectives and mode share targets of the GTP, including the frequency of monitoring and the requirement for travel surveys to identify travel behaviours of students and staff to and from both schools at appropriate times throughout the academic year.

Parking Restrictions

D10. Prior to the commencement of operations of Phase 1, the Applicant must submit to Council, for approval from Council's Pedestrian Cycling and Traffic Calming Committee, documentation for the installation of '15P Parking' and associated 'No Parking' restrictions on the southern side of Buckland Street in accordance with the Transport Assessment titled *Alexandria Park Community School*, prepared by ARUP and dated 29 November 2018. The restrictions are to apply on a part-time basis on School Days only between 8 am to 9.30 am and 2.30 pm – 4 pm. Any fees associated with reporting to the Pedestrian Cycling and Traffic Calming Committee must be paid by the Applicant prior to processing the application. The installation of the signs must be at no cost to Council. Evidence of approval and installation of relevant signage must be submitted to the Planning Secretary prior to the commencement of operations of Phase 1.

Evacuation and Emergency Management Plan

D11. No later than six weeks prior to the commencement of operations, an Operational Flood Evacuation and Emergency Management Plan (OFEMP) must be prepared by a suitably qualified person in consultation with the NSW State Emergency Services (SES) and Council and in accordance with Floodplain Risk Management Guideline (OEH, 2007). The plan should detail specific flood emergency measures required to be incorporated into the detailed design to mitigate impacts of a range of flood events up to and including the PMF and include measures to manage flood impacts outside the site to ensure accessibility is maintained. The plan must include details of:

(a) predicted flood levels;

(b) flood warning time and flood notification;

(c) assembly points and evacuation routes;

(d) shelter in place, evacuation and refuge protocols; and

(e) awareness training for employees and contractors.

A copy of the Plan must be submitted to the NSW SES, Council and the Planning Secretary.

Mechanical Ventilation

D12. Following completion, installation and testing of all mechanical ventilation systems, the Applicant must provide evidence to the satisfaction of the Certifying Authority, prior to the final occupation, that the installation and performance of the mechanical systems complies with:

(a) the BCA;

(b) *AS 1668.2-2012 The use of air-conditioning in buildings – Mechanical ventilation in buildings* and other relevant codes;

(c) the development consent and any relevant modifications; and

(d) any dispensation granted by the NSW Fire Brigade.

Road Damage

D13. The cost of repairing any damage caused to Council or other Public Authority's assets in the vicinity of the Subject Site as a result of construction works associated with the approved development is to be met in full by the Applicant prior to commencement of use of any stage of the development.

Fire Safety Certification

D14. Prior to the final occupation, a Fire Safety Certificate must be obtained for all the Essential Fire or Other Safety Measures forming part of this consent. A copy of the Fire Safety Certificate must be submitted to the relevant authority and Council. The Fire Safety Certificate must be prominently displayed in the building.

Structural Inspection Certificate

D15. A Structural Inspection Certificate or a Compliance Certificate must be submitted to the satisfaction of the Certifying Authority prior to the occupation of the relevant parts of any new or refurbished buildings. A copy of the Certificate with an electronic set of final drawings (contact approval authority for specific electronic format) must be submitted to the approval authority and the Council after:

(a) the site has been periodically inspected and the Certifying Authority is satisfied that the structural works is deemed to comply with the final design drawings; and

(b) the drawings listed on the Inspection Certificate have been checked with those listed on the final Design Certificate/s.

(c) person/s authorised to, for the life of the development.

Compliance with Food Code

D16. The Applicant is to obtain a certificate from a suitably qualified tradesperson, certifying that the kitchen, food storage and food preparation areas have been fitted in accordance with the AS 4674 *Design, construction and fit-out of food premises*. The Applicant must provide evidence of receipt of the certificate to the satisfaction of the Certifying Authority prior to occupation.

Stormwater Quality Management Plan

D17. Prior to occupation of the building, an Operation and Maintenance Plan (OMP) is to be prepared to ensure proposed stormwater quality measures remain effective. The OMP must contain the following:

(a) maintenance schedule of all stormwater quality treatment devices;

(b) record and reporting details;

(c) relevant contact information; and

(d) Work Health and Safety requirements.

D18. Details demonstrating compliance must be submitted to the Certifying Authority prior to occupation.

Rainwater Harvesting

D19. A signed works-as-executed Rainwater Re-use Plan must be provided to the Certifying Authority prior to occupation of the building.

Outdoor Lighting

D20. The Applicant must ensure the installed lighting associated with the development achieves the objective of minimising light spillage to any adjoining or adjacent sensitive receivers. Outdoor lighting must:

(a) comply with the latest version of AS 4282-1997 - *Control of the obtrusive effects of outdoor lighting* (Standards Australia, 1997); and

(b) be mounted, screened and directed in such a manner that it does not create a nuisance to surrounding properties or the public road network.

Upon installation of outdoor lighting, but before it is finally commissioned, the Applicant must submit to the Certifier evidence from a qualified practitioner demonstrating compliance in accordance with this condition.

Warm Water Systems and Cooling Systems

D21. The installation, operation and maintenance of warm water systems and water cooling systems (as defined under the *Public Health Act 2010*) must comply with the *Public Health Act 2010*, Public Health Regulation 2012 and Parts 1 and 2 (or Part 3 if a Performance-based water cooling system) of *AS/NZS 3666.2:2011 Air handling and water systems of buildings – Microbial control – Operation and maintenance* and the NSW Health Code of Practice for the Control of Legionnaires' Disease.

Signage

D22. Way-finding signage and signage identifying the location of staff car parking must be installed prior to occupation.

D23. Bicycle way-finding signage must be installed within the site to direct cyclists from footpaths to designated bicycle parking areas prior to occupation.

D24. 'Do not drink' signage on non-potable water used for toilet flushing and to new hose taps and irrigation systems for landscaped areas must be installed within the site prior to occupation.

Operational Waste Management Plan

D25. Prior to the commencement of operation, the Applicant must prepare a Waste Management Plan for the development and submit it to the Certifying Authority. The Waste Management Plan must:

(a) detail the type and quantity of waste to be generated during operation of the development;

(b) describe the handling, storage and disposal of all waste streams generated on site, consistent with the *Protection of the Environment Operations Act 1997, Protection of the Environment Operations (Waste) Regulation 2014* and the *Waste Classification Guideline* (Department of Environment, Climate Change and Water, 2009);

(c) detail the materials to be reused or recycled, either on or off site; and

(d) include the Management and Mitigation Measures included in RtS.

Validation Report

D26. The Applicant must prepare a Validation Report for the development. The Validation Report must:

(a) be prepared by an appropriately qualified environmental consultant and reviewed by an EPA accredited Site Auditor;

(b) be submitted to EPA, the Planning Secretary and the Certifying Authority for information one month after the completion of remediation works;

(c) be prepared in accordance with the RAP, as required to be updated in accordance with condition B9, and the *Contaminated Sites: Guidelines for Consultants Reporting on Contaminated Sites* (OEH, 2011);

(d) include, but not be limited to:

(i) comment on the extent and nature of the remediation undertaken;

(ii) describe the location, nature and extent of any remaining contamination on site;

(iii) results of sampling of treated material, compared with the treatment criteria in the report titled *Detailed Site Investigation, Alexandria Park Community School, Park Road, Alexandria NSW*, prepared by Coffey and dated 26 October 2017 or as agreed by the site auditor;

(iv) results of any validation sampling, compared to relevant guidelines/criteria;

(v) discussion of the suitability the remediated areas for the intended land use; and

(vi) any other requirement relevant to the project.

Site Audit Report and Site Audit Statement

D27. Prior to occupation of the building, the Applicant must obtain from an EPA accredited Site Auditor, a Site Audit Statement and a Site Audit Report which demonstrates that the site is suitable for its intended use(s).

D28. Within three months of submission of the Validation Report required by condition D26, the Applicant must demonstrate to the satisfaction of the Certifying Authority that the Site Auditor has submitted a Site Audit Report and Site Audit Statement to EPA in accordance with the requirements of EPA's *Guidelines for the NSW Site Auditor Scheme* (DEC, 2006).

Landscaping

D29. Following completion of all demolition work, the Applicant must undertake all landscape works detailed in the Landscape Management Plan required by condition B38 to the satisfaction of the Certifying Authority.

Ecologically Sustainable Development

D30. Within 6 months of commencement of operation, Green Star certification must be obtained demonstrating the development achieves a minimum 4 star Green Star As Built rating, unless otherwise agreed by the Planning Secretary. Evidence of the certification must be provided to the Certifying Authority and the Planning Secretary

PART E POST OCCUPATION

Operation of Plant and Equipment

E1. All plant and equipment used on site, or to monitor the performance of the development must be:

(a) maintained in a proper and efficient condition; and

(b) operated in a proper and efficient manner.

Community Communication Strategy

E2. The Community Communication Strategy, as approved by the Planning Secretary, must be implemented for a minimum of 12 months following the completion of construction.

Out of Hours Event Management Plan

E3. The Applicant is to prepare an Out of Hours Event Management Plan for out of hours events run by the school that involve 100 or more people. The plan must be prepared in consultation with Council, and include the following:

(a) the number of attendees, time and duration;

(b) arrival and departure times and modes of transport;

(c) where relevant, a schedule of all annual events;

(d) demonstrate measures to encourage non-vehicular travel to the school and promote and support the use of alternate travel modes (i.e. public transport);

(e) measures to minimise localised traffic and parking impacts; and

(f) include measures to minimise noise impacts on any sensitive residential receivers, including the preparation of acoustic management plan.

The Applicant must submit a copy of the Out of Hours Event Management Plan to the Department and to the Council, prior to commencement of the first event.

The Out of Hours Event Management Plan must be implemented by the Applicant for the duration of the identified events or use.

E4. The Applicant is to prepare an Out of Hours Event Management Plan for out of hours events run by external parties that involve 100 or more people. The plan must be prepared prior to each relevant event, in consultation with Council, and include the following:

(a) the number of attendees, time and duration;

(b) arrival and departure times and modes of transport;

(c) where relevant, a schedule of all annual events;

(d) demonstrate measures to encourage non-vehicular travel to the school and promote and support the use of alternate travel modes (i.e. public transport);

(e) measures to minimise localised traffic and parking impacts; and

(f) include measures to minimise noise impacts on any sensitive residential receivers, including the preparation of acoustic management plan.

The Applicant must submit a copy of the Out of Hours Event Management Plan to the Department and to the Council, prior to commencement of each relevant event.

The Out of Hours Event Management Plan must be implemented by the Applicant for the duration of the identified community event or use.

Operational Noise Limits

E5. The Applicant must ensure that noise generated by operation of the development does not exceed the project noise trigger levels established based on the more conservative Rating Background Noise levels as detailed in the report titled *Alexandria Park Community School Development Application Acoustic Assessment*, prepared by Wilkinson Murray and dated 19 April 2018.

E6. The Applicant must undertake short term noise monitoring in accordance with the *Noise Policy for Industry* where valid data is collected following the commencement of use of each stage of the development. The monitoring program must be carried out by an appropriately qualified person and a monitoring report must be submitted to the Planning Secretary within two months of commencement use of each stage of the development to verify that operational noise levels do not exceed the recommended noise levels for mechanical plant identified in the report titled *Alexandria Park Community School Development Application Acoustic Assessment*, prepared by Wilkinson Murray and dated 19 April 2018. Should the noise monitoring program identify any exceedance of the recommended noise levels referred to above, the Applicant is required to implement appropriate noise attenuation measures so that operational noise levels do not exceed the recommended noise levels or provide attenuation measures at the affected noise sensitive receivers.

After Hours Use of Outdoor Sports Courts and Playing Fields

E7. The use of the outdoor sports courts and playing fields is restricted as follows:

(a) between 7:00 am and 10:00 pm, Mondays to Fridays for training and social recreation activities;

(b) between 8:00 am to 6:00 pm, Saturdays and Sundays for organised events and competitions; and

(c) no organised events on public holidays.

E8. Notwithstanding E7 above, the outdoor sports courts and playing fields may operate between 6.00 pm to 10.00 pm, Saturdays and 6.00 pm to 8.00 pm on Sundays and public holidays for training and social recreation activities for a trial period of 6 months from the date of commencement of school operations. Notification of the commencement of use is to be submitted in writing to the Planning Secretary.

E9. Use of the outdoor sports courts and playing fields must be undertaken in accordance with the recommended noise mitigation measures detailed in the report titled *Alexandria Park Community School Development Application Acoustic Assessment* prepared by Wilkinson Murray and dated 19 April 2018.

E10. If investigation of complain(s), through appropriate noise testing, establishes that offensive noise has occurred or use of the outdoor sports courts and playing fields is in breach of conditions E7 to E9, and the complaint is justified, the Department may require by notice to the applicant, that the use and operation of the outdoor sports courts and playing fields revert to the hours as detailed in condition E7.

E11. A further application may be lodged to continue the operating hours in E8 above, before the end of the trial period. The Department's consideration of a proposed continuation of the hours permitted by the trial will be based on, among other things, performance of the school in managing the use of the outdoor courts and playing fields in relation to compliance with development consent conditions and any substantiated complaints.

Unobstructed Driveways and Parking Areas

E12. All driveways, footways and parking areas must be unobstructed at all times. Driveways, footways and car spaces must not be used for the manufacture, storage or display of goods, materials, refuse, skips or any other equipment and must be used solely for vehicular and/or pedestrian access and for the parking of vehicles associated with the use of the premises.

Green Travel Plan

E13. The Green Travel Plan required by condition D9 of this consent must be updated annually and implemented.

Outdoor Lighting

E14. Notwithstanding Condition D20, should outdoor lighting result in any residual impacts on the amenity of surrounding sensitive receivers, the Applicant must provide mitigation measures in consultation with affected landowners to reduce the impacts to an acceptable level.

Fire Safety Certificate

E15. The owner must submit to Council an Annual Fire Safety Statement, each 12 months after the final Safety Certificate is issued. The certificate must be on, or to the effect of, Council's Fire Safety Statement.

Landscaping

E16. The Applicant must maintain the landscaping and vegetation on the site in accordance with the approved Landscape Management Plan required by condition B38 for the duration of occupation of the development.

APPENDIX 1 WRITTEN INCIDENT NOTIFICATION AND REPORTING REQUIREMENTS

Written Incident Notification Requirements

1. A written incident notification addressing the requirements set out below must be emailed to the Department at the following address: compliance@planning.nsw.gov.au within seven days after the Applicant becomes aware of an incident. Notification is required to be given under this condition even if the Applicant fails to give the notification required under condition C44 or, having given such notification, subsequently forms the view that an incident has not occurred.
2. Written notification of an incident must:
   (a) identify the development and application number;
   (b) provide details of the incident (date, time, location, a brief description of what occurred and why it is classified as an incident);
   (c) identify how the incident was detected;
   (d) identify when the applicant became aware of the incident;
   (e) identify any actual or potential non-compliance with conditions of consent;
   (f) describe what immediate steps were taken in relation to the incident;
   (g) identify further action(s) that will be taken in relation to the incident; and
   (h) identify a project contact for further communication regarding the incident.
3. Within 30 days of the date on which the incident occurred or as otherwise agreed to by the Planning Secretary, the Applicant must provide the Planning Secretary and any relevant public authorities (as determined by the Planning Secretary) with a detailed report on the incident addressing all requirements below, and such further reports as may be requested.
4. The Incident Report must include:
   (a) a summary of the incident;
   (b) outcomes of an incident investigation, including identification of the cause of the incident;
   (c) details of the corrective and preventative actions that have been, or will be, implemented to address the incident and prevent recurrence; and
   (d) details of any communication with other stakeholders regarding the incident.

APPENDIX TWO: ARBORICULTURAL REPORT

REDGUM Horticultural
Arboriculture & Horticulture Consultants

REPORT:

A): ARBORICULTURAL IMPACT ASSESSMENT

and

B). TREE MANAGEMENT PLAN

(Trees to be retained and protected)

Alexandria Park Community School
7-11 Park Road,
Alexandria NSW

Prepared 14 August 2017
Revised 1 September & 4 December 2017
Amended 9 March 2018
Reviewed 2 December 2018
Ref: 2781.2

PH/FAX 02 8847 3586 PO Box 3687, Rouse Hill NSW 2155 ABN 28116465304 E info@redgumhrt.com.au

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1.0 PREFACE

Redgum Horticultural has prepared this report for TKD Architects Pty Ltd (*the architect*), on behalf of Alexandria Park Community School (the client) PO Box 660, Darlinghurst NSW 1300. Mr. Neville Shields *(the author)* attended 7-11 Park Road, Alexandria (*the site*), on 24 & 25 July 2017 and the report reviewed 2 December 2018, the trees and their growing environment were examined. The site is subject to a Development Application and this report and any works recommended herein, that require approval from the consenting authority, forms part of that Development application. This report takes into consideration trees within the site and within five metres of the common boundary affected by the development.

2.0 INTRODUCTION

The land is situated in the Council of the City of Sydney (*the Council)* Local Government Area (*LGA*) and the trees are protected under Councils Development Control Plan. The Council is the consenting authority for development works on the site. This report involves 118 trees (*the trees*), as indicated on Site Plan A - Survey of Subject Trees (Appendix C) and considers the removal of sixty-nine (69) trees within the property and the retention of forty-seven (47) tree/s including fourteen (14) trees within the adjacent road reserves. Two trees (Trees 24 & 25) were assessed as part of this report which have since been removed as part of Stage 2 – Pop-up School works and are not included in the above recommendations. The trees will be considered as 2 stands to encompass all trees within and immediately adjacent to the site, where appropriate, as marked on Appendix C, Survey of Subject Trees. ***Tree Protection Zone*** fencing, or works are marked on the Appendix F, Trees to be Retained and Tree Protection Zones.

The site is comprised of an existing school precinct where the existing structures are to be demolished and are to be replaced with a new multi-level school development. As part of the Landscape Plan where appropriate, the tree cover on the site will be enhanced by planting with advanced specimens/s of appropriate tree species for the space available above and below ground being soil volumes available and to prevent future conflict between trees and built structures. The proposed building design, its configuration and associated infrastructure were arrived at prior to the undertaking of an arboricultural assessment of the trees on the site to determine their significance by Redgum Horticultural. The plans provided do not show the location of sewer, water or electricity supply to the proposed development.

Setbacks for the new works and associated infrastructure should provide sufficient space to protect the existing growing environments both above and below ground for trees to be retained, and so that trees within the property and on adjoining properties will not be adversely affected. The proposed design has considered the spatial requirements for the trees to be retained based on the information available or provided at the time of compiling this report, and those areas to be protected will be discussed further. The Summary lists the general condition of trees and a summary of works in Table 1.0. In section 8.0 each individual tree is described in greater detail including protective or remedial works. Tree maintenance works including pruning, removal or transplantation are detailed in section 14.0.

3.0 SUMMARY

This report considers 118 trees, 102 trees within the site including 16 street trees with Trees 11 to 23, 33 to 38, 42 to 44, 79x8, 82 to 90, 94, 100 & 104 to 109 are to be retained and protected and Trees 1 to 10, 26 to 32, 39 to 41, 45 to 78, 80 to 81, 91 to 93, 95 to 99 & 101 to 103, 110 & 111 are recommended to be removed due to decline or position within the current proposal. For Tree/s 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 33, 34, 35, 36, 37, 38, 79x8, 82, 83, 84, 85, 86, 90, 94, 100, 104, 105, 106, 107, 108 & 109; the alignment of the development is sufficiently setback to not affect these specimens. Tree/s 21, 22, 23, 42, 43 & 44; the alignment of the building/s will be a minor encroachment to these specimen/s. The section/s of the building/s within the TPZ of these specimen/s are to be constructed using tree sensitive excavation and construction techniques such as pier and beam construction with a suspended slab to reduce any impact on stability. Tree/s 87, 88 & 89; these specimens are impacted by the section of the outdoor learning areas within the TPZ of these specimen/s which is to be constructed using tree sensitive excavation and construction techniques. Root Mapping may be required to ascertain root plates and potential impact on their stability.

If associated infrastructure (pipe works) are to be installed within the Tree Protection Zone of any retained specimen, they are to be installed by hand with non-motorised machinery. If structural roots are found within the trench, they are to be left intact and dug around retaining this specimen's structural integrity. Works are to be undertaken in consultation with the project arborist.

There will be no impact to Tree/s 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 33, 34, 35, 36, 37, 38, 79x8, 82, 83, 84, 85, 86, 90, 94, 100, 104, 105, 106, 107, 108 & 109 with a minor encroachment for Tree/s 21, 22, 23, 42, 43 & 44 while Trees 87, 88 & 89 will be subject to major encroachment which are to be retained and protected as per AS 4970 (2009) Section 3, 3.3.3 *Major Encroachments* from development works within >10% of the area of the Tree Protection Zone and as per discussion points in section 14 in part B of this report. Any excavations must be supervised and certified by the Project Arborist in accordance with AS4970 (2009).

4.0 AIMS

Part A: (AIA) Arboricultural Impact Assessment

4.1 Detail the condition of the trees or large shrubs on the site or on adjoining sites where such trees or large shrubs may be affected by the proposed works, by assessment of individual specimens or stands.

4.2 Provide as an outcome of the visual tree assessment (VTA), the following: a description of the trees or large shrubs, observations made, discussion of the effects the location of the proposed building works may have on the trees or large shrubs and make recommendations required for remedial or other works to the trees or large shrubs, if and where appropriate.

Part B: (TPP) Tree Protection Specification & Tree Protection Plan

4.3 Provide a detailed specification for remedial works or protection measures for their retention in a safe and healthy condition, or a condition not less than that at the time of initial inspection for this report, or in a reduced but sustainable condition due to the impact of the development but ameliorated through tree protection measures able to be applied, and will consider the location and condition of the trees or large shrubs in relation to the proposed building works, or recommend removal and replacement where appropriate.

4.4 Determine from the assessment the works or measures required to ameliorate the impact upon the trees or large shrubs to be retained, by the proposed building works or future impacts the trees or large shrubs may have upon the new building works if and where appropriate, or the benefits of removal and replacement if appropriate for the medium to long term safety and amenity of the site.

5.0 OBJECTIVES

Part A: Arboricultural Assessment Report

5.1 Assess the condition of the subject trees.
5.2 Determine impact of development on the subject trees.
5.3 Provide recommendations for retention or removal of the subject trees.

Part B: Tree Protection Plan

5.3 Provide recommendations for retention or removal of the subject trees or large shrubs.

6.0 METHODOLOGY (This Methodology where utilised is applied to both Parts A and B).

6.1 The method of assessment of tree/s applied is adapted from the principles of visual tree assessment undertaken from the ground, which considers:

- Tree health and subsequent stability, both long and short term
- Sustainable Retention Index Value (SRIV) Version 4 (IACA 2010) ©
- Hazard potential to people and property
- Amenity values
- Habitat values
- Significance

6.2 This assessment is undertaken using standard tree assessment criteria for each tree based on the values above and is implemented because of at least one comprehensive and detailed site inspection to undertake a visual tree assessment from the ground of each individual tree, or stand of trees, or a representative population sample. Any dimensions recorded as averages, or by approximation are noted accordingly.

6.3 This report adopts Australian Standard AS4970 2009 *Protection of trees on development sites* as a point of reference and guide for the recommended minimum setbacks (Table 2 – Part B) from the centre of a tree's trunk to development works and the distances may be increased or decreased by the author in accordance with AS4970 – Section 3.3.4 because of other factors providing mitigating circumstances or constraints as indicated by but not restricted to the following:

1. Condition of individual trees,
2. Tolerance of individual species to disturbance,
3. Geology e.g. physical barriers in soil, rock floaters, bedrock to surface
4. Topography e.g. slope, drainage,
5. Soil e.g. depth, drainage, fertility, structure,
6. Microclimate e.g. due to landform, exposure to dominant wind,
7. Engineering e.g. techniques to ameliorate impact on trees such as structural soil, gap graded fill, lateral boring,
8. Construction e.g. techniques to ameliorate impact on trees such as pier and beam, bridge footings, suspended slabs,
9. Root mapping,
10. Physical limitations - existing modifications to the environment and any impact to tree/s by development e.g. property boundaries, built structures, houses, swimming pools, road reserves, utility services easements, previous impact by excavation, or construction in other directions, soil level changes by cutting or filling, existing landscaping works within proximity, modified drainage patterns,
11. Extraneous factors e.g. potential future impacts from development on adjoining land when the tree is located on or near to a property boundary.

6.4 Trees in groups may be referred to as stands and a stand may exclusively contain specimens to be either retained or removed or a combination of both. A stand may be used to discuss all the trees on a given site to expedite their assessment or refer to trees growing proximate to one another or within a defined space. Stands may be comprised by mass boundary or screen plantings, to form a group of the same or a mixture of taxa. Each stand is considered as a single unit with each component tree assessed and expressed in tabular form or indicated by a given percentage as a population sample of each stand. Where it is appropriate for a stand of trees to be retained in full or part, the location and setback of Tree Protection Zone fences or works, are prescribed to provide for the preservation of the stand or selected component trees, in a condition not less than that at the time of initial inspection for its incorporation into the landscape works for the site, or in a reduced but sustainable condition due to the impact of the development but ameliorated through tree protection measures.

6.5 The meanings for terminology used herein are taken from the IACA Dictionary for Managing Trees in Urban Environments 2009. An extract from the IACA Dictionary forms a glossary of terms included as Appendix E.

Table 1.0 General condition and Schedule of works of trees or large shrubs. Trees described in greater detail in section 4.0.

Tree / Stand No.	*Genus and species*	Common name	Condition G = Good, F = Fair P = Poor, D = Dead W= Weed	Description of work to be done
1	*Eucalyptus saligna*	Sydney Blue Gum	G	Remove and replace with new plantings within the development.
2	*Eucalyptus scoparia*	Wallangarra White Gum	G	Remove and replace with new plantings within the development.
3	*Eucalyptus scoparia*	Wallangarra White Gum	G	Remove and replace with new plantings within the development.
4	*Eucalyptus scoparia*	Wallangarra White Gum	G	Remove and replace with new plantings within the development.
5	*Eucalyptus scoparia*	Wallangarra White Gum	G	Remove and replace with new plantings within the development.
6	*Eucalyptus botryoides*	Bangalay Gum	G	Remove and replace with new plantings within the development.
7	*Eucalyptus robusta*	Swamp Mahogany	G	Remove and replace with new plantings within the development.
8	*Eucalyptus robusta*	Swamp Mahogany	G	Remove and replace with new plantings within the development.
9	*Angophora costata*	Sydney Red Gum	G	Remove and replace with new plantings within the development.
10	*Eucalyptus robusta*	Swamp Mahogany	G	Remove and replace with new plantings within the development.
11	*Ficus microcarpa*	Curtain Fig	G	Retain and protect within a Tree Protection Zone (TPZ) as per the Tree Protection Plan.
12	*Eucalyptus robusta*	Swamp Mahogany	G	Retain and protect within a Tree Protection Zone (TPZ) as per the Tree Protection Plan.
13	*Eucalyptus robusta*	Swamp Mahogany	G	Retain and protect within a Tree Protection Zone (TPZ) as per the Tree Protection Plan.
14	*Ficus microcarpa*	Curtain Fig	G	Retain and protect within a Tree Protection Zone (TPZ) as per the Tree Protection Plan.
15	*Platanus x hispanica*	London Plane Tree	G	Retain and protect within a Tree Protection Zone (TPZ) as per the Tree Protection Plan – *Street tree specimen*
16	*Platanus x hispanica*	London Plane Tree	G	Retain and protect within a Tree Protection Zone (TPZ) as per the Tree Protection Plan – *Street tree specimen*

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Tree / Stand No.	*Genus and species*	Common name	Condition G = Good, F = Fair P = Poor, D = Dead W= Weed	Description of work to be done
17	*Ficus benjamina*	Weeping Fig	G	Retain and protect within a Tree Protection Zone (TPZ) as per the Tree Protection Plan.
18	*Ficus microcarpa*	Curtain Fig	G	Retain and protect within a Tree Protection Zone (TPZ) as per the Tree Protection Plan.
19	*Ficus microcarpa*	Curtain Fig	G	Retain and protect within a Tree Protection Zone (TPZ) as per the Tree Protection Plan.
20	*Ficus microcarpa*	Curtain Fig	G	Retain and protect within a Tree Protection Zone (TPZ) as per the Tree Protection Plan.
21	*Ficus microcarpa*	Curtain Fig	G	Retain and protect within a Tree Protection Zone (TPZ) as per the Tree Protection Plan.
22	*Ficus microcarpa*	Curtain Fig	G	Retain and protect within a Tree Protection Zone (TPZ) as per the Tree Protection Plan.
23	*Ficus microcarpa*	Curtain Fig	G	Retain and protect within a Tree Protection Zone (TPZ) as per the Tree Protection Plan.
24	*Angophora bakeri*	Narrow Leaved Apple	G	Removed as part of Stage 2 Pop-up School
25	*Angophora bakeri*	Narrow Leaved Apple	G	Removed as part of Stage 2 Pop-up School
26	*Eucalyptus sideroxylon*	Flowering Ironbark	G	Remove and replace with new plantings within the development.
27	*Eucalyptus sideroxylon*	Flowering Ironbark	G	Remove and replace with new plantings within the development.
28	*Eucalyptus sideroxylon*	Flowering Ironbark	G	Remove and replace with new plantings within the development.
29	*Eucalyptus sideroxylon*	Flowering Ironbark	G	Remove and replace with new plantings within the development.
30	*Eucalyptus sideroxylon*	Flowering Ironbark	G	Remove and replace with new plantings within the development.
31	*Eucalyptus saligna*	Sydney Blue Gum	G	Remove and replace with new plantings within the development.
32	*Angophora costata*	Sydney Red Gum	G	Remove and replace with new plantings within the development.
33	*Platanus x hispanica*	London Plane Tree	G	Retain and protect within a Tree Protection Zone (TPZ) as per the Tree Protection Plan – *Street tree specimen*

Tree / Stand No.	*Genus and species*	Common name	Condition G = Good, F = Fair P = Poor, D = Dead W= Weed	Description of work to be done
34	*Platanus x hispanica*	London Plane Tree	G	Retain and protect within a Tree Protection Zone (TPZ) as per the Tree Protection Plan – *Street tree specimen*
35	*Platanus x hispanica*	London Plane Tree	G	Retain and protect within a Tree Protection Zone (TPZ) as per the Tree Protection Plan – *Street tree specimen*
36	*Platanus x hispanica*	London Plane Tree	G	Retain and protect within a Tree Protection Zone (TPZ) as per the Tree Protection Plan – *Street tree specimen*
37	*Platanus x hispanica*	London Plane Tree	G	Retain and protect within a Tree Protection Zone (TPZ) as per the Tree Protection Plan – *Street tree specimen*
38	*Platanus x hispanica*	London Plane Tree	G	Retain and protect within a Tree Protection Zone (TPZ) as per the Tree Protection Plan – *Street tree specimen*
39	*Corymbia maculata*	Spotted Gum	F	Remove and replace with new plantings within the development.
40	*Corymbia maculata*	Spotted Gum	F	Remove and replace with new plantings within the development.
41	*Corymbia maculata*	Spotted Gum	G	Remove and replace with new plantings within the development.
42	*Ulmus parvifolia*	Chinese Elm	G	Retain and protect within a Tree Protection Zone (TPZ) as per the Tree Protection Plan - *Road Reserve Specimen*
43	*Ulmus parvifolia*	Chinese Elm	G	Retain and protect within a Tree Protection Zone (TPZ) as per the Tree Protection Plan - *Road Reserve Specimen*
44	*Ulmus parvifolia*	Chinese Elm	G	Retain and protect within a Tree Protection Zone (TPZ) as per the Tree Protection Plan - *Road Reserve Specimen*
45	*Ulmus parvifolia*	Chinese Elm	G	Remove and replace with new plantings within the development. - *Road Reserve Specimen*
46	*Ulmus parvifolia*	Chinese Elm	G	Remove and replace with new plantings within the development. - *Road Reserve Specimen*
47	*Ulmus parvifolia*	Chinese Elm	G	Remove and replace with new plantings within the development. - *Road Reserve Specimen*
48	*Ulmus parvifolia*	Chinese Elm	G	Remove and replace with new plantings within the development. - *Road Reserve Specimen*

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Tree / Stand No.	*Genus and species*	Common name	Condition G = Good, F = Fair P = Poor, D = Dead W= Weed	Description of work to be done
49	*Ulmus parvifolia*	Chinese Elm	G	Remove and replace with new plantings within the development. - *Road Reserve Specimen*
50	*Ulmus parvifolia*	Chinese Elm	G	Remove and replace with new plantings within the development. - *Road Reserve Specimen*
51	*Ulmus parvifolia*	Chinese Elm	G	Remove and replace with new plantings within the development.
52	*Corymbia citriodora*	Lemon Scented Gum	G	Remove and replace with new plantings within the development.
53	*Corymbia citriodora*	Lemon Scented Gum	G	Remove and replace with new plantings within the development.
54	*Corymbia citriodora*	Lemon Scented Gum	G	Remove and replace with new plantings within the development.
55	*Corymbia citriodora*	Lemon Scented Gum	G	Remove and replace with new plantings within the development.
56	*Corymbia citriodora*	Lemon Scented Gum	G	Remove and replace with new plantings within the development.
57	*Corymbia citriodora*	Lemon Scented Gum	G	Remove and replace with new plantings within the development.
58	*Corymbia citriodora*	Lemon Scented Gum	G	Remove and replace with new plantings within the development.
59	*Casuarina cunninghamiana*	River She Oak	G	Remove and replace with new plantings within the development.
60	*Casuarina cunninghamiana*	River She Oak	G	Remove and replace with new plantings within the development.
61	*Casuarina cunninghamiana*	River She Oak	G	Remove and replace with new plantings within the development.
62	*Casuarina cunninghamiana*	River She Oak	G	Remove and replace with new plantings within the development.
63	*Corymbia citriodora*	Lemon Scented Gum	F	Remove and replace with new plantings within the development.
64	*Casuarina cunninghamiana*	River She Oak	F	Remove and replace with new plantings within the development.
65	*Casuarina cunninghamiana*	River She Oak	F	Remove and replace with new plantings within the development.
66	*Corymbia citriodora*	Lemon Scented Gum	F	Remove and replace with new plantings within the development.
67	*Casuarina cunninghamiana*	River She Oak	F	Remove and replace with new plantings within the development.
68	*Corymbia citriodora*	Lemon Scented Gum	F	Remove and replace with new plantings within the development.

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Tree / Stand No.	*Genus and species*	Common name	Condition G = Good, F = Fair P = Poor, D = Dead W= Weed	Description of work to be done
69	*Corymbia citriodora*	Lemon Scented Gum	F	Remove and replace with new plantings within the development.
70	*Casuarina glauca*	Swamp Oak	F	Remove and replace with new plantings within the development.
71	*Casuarina glauca*	Swamp Oak	F	Remove and replace with new plantings within the development.
72	*Lophostemon confertus*	Queensland Brush Box	F	Remove and replace with new plantings within the development.
73	*Lophostemon confertus*	Queensland Brush Box	F	Remove and replace with new plantings within the development.
74	*DEAD*	DEAD	D	Remove and replace with new plantings within the development.
75	*Eucalyptus microcorys*	Tallowwood	F	Remove and replace with new plantings within the development.
76	*Eucalyptus sp.*	Eucalypt	F	Remove and replace with new plantings within the development.
77	*Eucalyptus microcorys*	Tallowwood	F	Remove and replace with new plantings within the development.
78	*Corymbia citriodora*	Lemon Scented Gum	G	Remove and replace with new plantings within the development.
79 /2	*Syzygium smithii x8*	Lilly Pilly x8	G	Retain and protect within a Tree Protection Zone (TPZ) as per the Tree Protection Plan.
80	*Eucalyptus microcorys*	Tallowwood	G	Remove and replace with new plantings within the development.
81	*Corymbia citriodora*	Lemon Scented Gum	F	Remove and replace with new plantings within the development.
82	*Corymbia citriodora*	Lemon Scented Gum	F	Retain and protect within a Tree Protection Zone (TPZ) as per the Tree Protection Plan.
83	*Eucalyptus microcorys*	Tallowwood	F	Retain and protect within a Tree Protection Zone (TPZ) as per the Tree Protection Plan.
84	*Eucalyptus microcorys*	Tallowwood	F	Retain and protect within a Tree Protection Zone (TPZ) as per the Tree Protection Plan.
85	*Eucalyptus scoparia*	Wallangarra White Gum	F	Retain and protect within a Tree Protection Zone (TPZ) as per the Tree Protection Plan.
86	*Corymbia citriodora*	Lemon Scented Gum	F	Retain and protect within a Tree Protection Zone (TPZ) as per the Tree Protection Plan.
87	*Eucalyptus microcorys*	Tallowwood	G	Retain and protect within a Tree Protection Zone (TPZ) as per the Tree Protection Plan.

Tree / Stand No.	*Genus and species*	Common name	Condition G = Good, F = Fair P = Poor, D = Dead W= Weed	Description of work to be done
88	*Eucalyptus microcorys*	Tallowwood	G	Retain and protect within a Tree Protection Zone (TPZ) as per the Tree Protection Plan.
89	*Eucalyptus scoparia*	Wallangarra White Gum	F	Retain and protect within a Tree Protection Zone (TPZ) as per the Tree Protection Plan.
90	*Afrocarpus falcatus*	Yellowwood	G	Retain and protect within a Tree Protection Zone (TPZ) as per the Tree Protection Plan.
91	*Acer negundo*	Box Elder Maple	F	Remove and replace with new plantings within the development.
92	*Sapium sebiferum*	Chinese Tallow wood	F	Remove and replace with new plantings within the development.
93	*Acer negundo*	Box Elder Maple	F	Remove and replace with new plantings within the development.
94	*Callistemon viminalis 'Hanna Ray'*	Hanna Ray Bottlebrush	G	Retain and protect within a Tree Protection Zone (TPZ) as per the Tree Protection Plan.
95	*Acer negundo*	Box Elder Maple	F	Remove and replace with new plantings within the development.
96	*Platanus x hispanica*	London Plane Tree	F	Remove and replace with new plantings within the development.
97	*Acer negundo*	Box Elder Maple	F	Remove and replace with new plantings within the development.
98	*Celtis sp. occidentalis*	Hackberry	F	Remove and replace with new plantings within the development.
99	*Corymbia citriodora*	Lemon Scented Gum	G	Remove and replace with new plantings within the development.
100	*Acacia floribunda*	Gossamer Wattle	G	Retain and protect within a Tree Protection Zone (TPZ) as per the Tree Protection Plan.
101	*Ulmus parvifolia*	Chinese Elm	G	Remove and replace with new plantings within the development.
102	*Ulmus parvifolia*	Chinese Elm	G	Remove and replace with new plantings within the development.
103	*Acer negundo*	Box Elder Maple	G	Remove and replace with new plantings within the development.
104	*Gleditsia triacanthos 'Sunburst'*	Honey Locust	G	Retain and protect within a Tree Protection Zone (TPZ) as per the Tree Protection Plan – *Street tree specimen*
105	*Platanus x hispanica*	London Plane Tree	G	Retain and protect within a Tree Protection Zone (TPZ) as per the Tree Protection Plan – *Street tree specimen*

Tree / Stand No.	*Genus and species*	Common name	Condition G = Good, F = Fair P = Poor, D = Dead W= Weed	Description of work to be done
106	*Platanus x hispanica*	London Plane Tree	G	Retain and protect within a Tree Protection Zone (TPZ) as per the Tree Protection Plan – *Street tree specimen*
107	*Platanus x hispanica*	London Plane Tree	G	Retain and protect within a Tree Protection Zone (TPZ) as per the Tree Protection Plan – *Street tree specimen*
108	*Platanus x hispanica*	London Plane Tree	G	Retain and protect within a Tree Protection Zone (TPZ) as per the Tree Protection Plan – *Street tree specimen*
109	*Ficus microcarpa*	Curtain Fig	G	Retain and protect within a Tree Protection Zone (TPZ) as per the Tree Protection Plan – *Street tree specimen*
110	*Gleditsia triacanthos 'Sunburst'*	Honey Locust	G	Remove and replace due to the required access for the staff parking area with new plantings within the development.
111	*Gleditsia triacanthos 'Sunburst'*	Honey Locust	G	Remove and replace due to the required access for the staff parking area with new plantings within the development.

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7.0 TREE ASSESSMENT – 7.1 - Assessment of a stand of Trees

Tree / Stand No.	Genus & Species Common Name	Age Y = Young M = Mature O = Overmature	Vigour GV = Good Vigour LV = Low Vigour	Condition G = Good F = Fair P = Poor D = Dead	1. SRIV Age, Vigour, Condition / Index Rating www.iaca.org.au / 2. Estimated Life Expectancy 1. Long 2. Medium 3. Short	Crown Form D = Dominant C = Co-dominant I = Intermediate S = Suppressed F = Forest E = Emergent	Ht. Approx. metres	Crown Spread approx. metres / Orientation D = Diameter, or other	Crown Symmetry 1 = symmetrical 2 = asymmetrical / Orientation	Crown Cover % / Crown Density % / D = dormant	DBH in mm @ 1.4m, or other, as indicated / Trunk Orientation other than R = radial, e.g. N/S q = qround # = average	Trunk Lean 1 = Upright-Slight 2 = Moderate 3 = Severe 4 = Critical. 5 = Acaulescent / Orientation / ST = Static P = Progressive Sc = Self-correcting	Roots Evident at Root Crown 1. = None 2. = Adventitious 3. = Basal Flare 4. = Buttresses 5. = First Order Roots (FOR), No. & distribution e.g. R = radial, or one each to N, S, E and W	Pests, Diseases & Damage No or Yes If Yes see comments	Branch Bark Included No or Yes or N/A	Form G = Good Form F = Fair Form P = Poor Form	Significance scale 1=High 2=Medium 3=Low / Retention Value 1=High 2=Medium 3=Low 4=Remove
1	*Eucalyptus saligna*	M	GV	G	MGVG - 10	D	12	6	1	70	240	1/R	1	NO	NO	G	1
					1			D		70	R	ST					1
	Sydney Blue Gum	Comment: Trunk erect, straight gradually tapering and continuous, crown excurrent.															
2	*Eucalyptus scoparia*	M	GV	G	MGVG - 10	C	10	7	1	70	290	1/R	1	NO	NO	G	1
					1			D		70	R	ST					1
	Wallangarra White Gum	Comment: Trunk erect, straight gradually tapering and continuous, crown excurrent.															
3	*Eucalyptus scoparia*	M	GV	G	MGVG - 10	C	13	4	1	70	210	1/R	1	NO	NO	G	1
					1			D		70	R	ST					1
	Wallangarra White Gum	Comment: Trunk erect, straight gradually tapering and continuous, crown excurrent.															
4	*Eucalyptus scoparia*	M	GV	G	MGVG - 10	C	13	6	1	70	370	1/R	1	NO	NO	G	1
					1			D		70	R	ST					1
	Wallangarra White Gum	Comment: Trunk to 1metre, crown deliquescent, orientation radial, symmetrical.															
5	*Eucalyptus scoparia*	M	GV	G	MGVG -10	C	12	8	1	70	390	1/R	1	NO	NO	G	1
					1			D		70	R	ST					1
	Wallangarra White Gum	Comment: Trunk erect, straight gradually tapering and continuous, crown excurrent.															
6	*Eucalyptus botryoides*	M	GV	G	MGVG - 10	C	10	8	1	70	330	1/R	1	NO	NO	G	1
					1			D		70	R	ST					1
	Bangalay Gum	Comment: Trunk erect, straight gradually tapering and continuous, crown excurrent.															
7	*Eucalyptus robusta*	M	GV	G	MGVG -10	C	12	12	1	70	585	1/R	1	NO	NO	G	1
					1			D		70	R	ST					1
	Swamp Mahogany	Comment: Trunk to 1metre, crown deliquescent, orientation radial, symmetrical.															
8	*Eucalyptus robusta*	M	GV	G	MGVG - 10	C	13	14	1	70	490	1/R	1	NO	NO	G	1
					1			D		70	R	ST					1
	Swamp Mahogany	Comment: Trunk erect, straight gradually tapering and continuous, crown excurrent.															
9	*Angophora costata*	M	GV	F	MGVF - 9	D	14	10	1	70	490	1/R	1	NO	NO	G	1
					2			D		70	R	ST					3
	Sydney Red Gum	Comment: Trunk erect, straight gradually tapering and continuous, crown excurrent.															
10	*Eucalyptus robusta*	M	GV	G	MGVG - 10	D	9	8	1	70	340	1/R	1	NO	NO	G	1
					1			D		70	R	ST					1
	Swamp Mahogany	Comment: Trunk erect, straight gradually tapering and continuous, crown excurrent.															

Tree / Stand No.	Genus & Species Common Name	Age Y = Young M = Mature O = Overmature	Vigour GV = Good Vigour LV = Low Vigour	Condition G = Good F = Fair P = Poor D = Dead	1. SRIV Age, Vigour, Condition / Index Rating www.ilaca.org.au / 2. Estimated Life Expectancy 1. Long 2. Medium 3. Short	Crown Form D = Dominant C = Co-dominant I = Intermediate S = Suppressed F = Forest E = Emergent	Ht. Approx. metres	Crown Spread approx. metres / Orientation D = Diameter, or other	Crown Symmetry 1 = symmetrical 2 = asymmetrical / Orientation	Crown Cover % / Crown Density % / D = dominant	DBH in mm @ 1.4m, or other, as indicated / Trunk Orientation other than R = radial, e.g. N/S e = espalier a = around # = espalier	Trunk Lean 1 = Upright-Slight 2 = Moderate 3 = Severe 4 = Critical 5 = Acquiescent / Orientation ST = Static P = Progressive Sc = Self-correcting	Roots Evident at Root Crown 1 = None 2 = Adventitious 3 = Basal Flare 4 = Buttresses 5 = Post-Outer Roots (ROR), No. & distribution e.g. R = radial, or one each to N, S, E and W	Pests, Diseases & Damage No or Yes If Yes see comments	Branch Bark Included No or Yes or N/A	Form G = Good Form F = Fair Form P = Poor Form	Significance scale 1=High 2=Medium 3=Low / Retention Value 1=High 2=Medium 3=Low 4=Remove
11	*Ficus microcarpa*	M	GV	G	MGVG - 10 1	D	12	12 D	1	70 70	520 R	1/R ST	1	NO	NO	G	1 1
	Curtain Fig	Comment: Trunk erect, straight gradually tapering and continuous, crown excurrent.															
12	*Eucalyptus robusta*	Y	GV	F	MGVF - 9 2	C	6	6 D	1	70 70	130 R	2/NE ST	1	NO	NO	G	2 2
	Swamp Mahogany	Comment: Trunk erect, straight gradually tapering and continuous, crown excurrent.															
13	*Eucalyptus robusta*	M	GV	G	MGVG - 10 1	C	15	15 D	1	70 70	580 R	1/R ST	1	NO	NO	G	1 1
	Swamp Mahogany	Comment: Trunk to 1.5 metres, crown deliquescent, orientation radial, symmetrical.															
14	*Ficus microcarpa*	M	GV	G	MGVG - 10 1	C	18	18 D	1	70 70	520 R	1/R ST	4	NO	NO	G	1 1
	Curtain Fig	Comment: Trunk erect, straight gradually tapering and continuous, crown excurrent.															
15	*Platanus x hispanica*	M	GV	G	MGVG - 10 1	C	18	14 D	1	70 70	850 R	1/R ST	1	NO	NO	G	1 1
	London Plane Tree	Comment: Trunk erect, straight gradually tapering and continuous, crown excurrent. – *Street tree*															
16	*Platanus x hispanica*	M	GV	G	MGVG - 10 1	C	18	14 D	1	70 70	700 R	1/R ST	1	NO	NO	G	1 1
	London Plane Tree	Comment: Trunk erect, straight gradually tapering and continuous, crown excurrent. – *Street tree*															
17	*Ficus benjamina*	M	GV	G	MGVG - 10 1	D	7	6 D	1	70 70	280 R	1/R ST	1	NO	NO	G	1 1
	Weeping Fig	Comment: Acaulescent or short trunk @ or near ground, crown deliquescent, orientation radial, symmetrical.															
18	*Ficus microcarpa*	M	GV	G	MGVG - 10 1	C	17	15 D	1	70 70	600 R	1/R ST	4	NO	NO	G	1 1
	Curtain Fig	Comment: Trunk erect, straight gradually tapering and continuous, crown excurrent.															
19	*Ficus microcarpa*	M	GV	G	MGVG - 10 1	C	12	9 D	1	70 70	430 R	1/R ST	4	NO	NO	G	1 1
	Curtain Fig	Comment: Trunk erect, straight gradually tapering and continuous, crown excurrent.															
20	*Ficus microcarpa*	M	GV	G	MGVG - 10 1	C	15	10 D	1	70 70	420 R	1/R ST	4	NO	NO	G	1 1
	Curtain Fig	Comment: Trunk erect, straight gradually tapering and continuous, crown excurrent.															

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21	*Ficus microcarpa*	M	GV	G	MGVG - 10	S	18	14x7 N/S	1	70	750	R	1/R	ST	4	NO	NO	G	1
	Curtain Fig	Comment: Trunk erect, straight gradually tapering and continuous to 5 metres then acutely divergent to the south, crown deliquescent, orientation N/S, asymmetrical to the south.																	1
22	*Ficus microcarpa*	M	GV	G	MGVG - 10	C	14	12 D	1	70	680	R	1/R	ST	4	NO	NO	G	1
	Curtain Fig	Comment: Trunk erect, straight gradually tapering and continuous, crown excurrent.																	
23	*Ficus microcarpa*	M	GV	G	MGVG - 10	C	17	12 D	1	70	720	R	1/R	ST	4	NO	NO	G	1
	Curtain Fig	Comment: Trunk erect, straight gradually tapering and continuous, crown excurrent.																	1
24	*Angophora bakeri*	M	GV	G	MGVG - 10	D	13	5 D	1	70	280	R	1/R	ST	1	NO	NO	G	1
	Narrow Leaved Apple	Comment: Trunk erect, straight gradually tapering and continuous, crown excurrent.																	1
25	*Angophora bakeri*	M	GV	F	MGVF - 9	D	5	6 D	1	70	450	R	1/R	ST	1	NO	NO	G	2
	Narrow Leaved Apple	Comment: Trunk erect, straight gradually tapering and continuous, crown excurrent.																	3
26	*Eucalyptus sideroxylon*	M	GV	G	MGVG - 10	C	11	6 D	1	70	330	R	1/R	ST	1	NO	NO	G	1
	Flowering Ironbark	Comment: Trunk erect, straight gradually tapering and continuous, crown excurrent.																	1
27	*Eucalyptus sideroxylon*	M	GV	G	MGVG - 10	C	15	6 D	1	70	340	R	1/R	ST	1	NO	NO	G	1
	Flowering Ironbark	Comment: Trunk erect, straight gradually tapering and continuous, crown excurrent.																	1
28	*Eucalyptus sideroxylon*	M	GV	G	MGVG - 10	C	14	6 D	1	70	280	R	1/R	ST	1	NO	NO	P	2
	Flowering Ironbark	Comment: Acaulescent or short trunk @ or near ground, crown deliquescent, orientation radial, symmetrical.																	3
29	*Eucalyptus sideroxylon*	M	GV	G	MGVG - 10	C	9.5	7 D	1	70	285	R	1/R	ST	1	NO	NO	P	2
	Flowering Ironbark	Comment: Acaulescent or short trunk @ or near ground, crown deliquescent, orientation radial, symmetrical.																	3
30	*Eucalyptus sideroxylon*	M	GV	G	MGVG - 10	C	7.5	4 D	1	70	180	R	1/R	ST	1	NO	NO	G	1
	Flowering Ironbark	Comment: Trunk erect, straight gradually tapering and continuous, crown excurrent.																	1

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31	*Eucalyptus saligna*	M	GV	G	MGVG - 10 1	D	8	5 D	1	70 70	140 R	1/R ST	1	NO	NO	G	1 1
	Sydney Blue Gum	Comment: Trunk erect, straight gradually tapering and continuous, crown excurrent.																
32	*Angophora costata*	M	GV	G	MGVG - 10 1	D	11.5	4 D	1	70 70	220 R	1/R ST	1	NO	NO	G	1 1
	Sydney Red Gum	Comment: Trunk erect, straight gradually tapering and continuous, crown excurrent.																
33	*Platanus x hispanica*	M	GV	G	MGVG - 10 1	D	14	12 D	1	70 70	700 R	1/R ST	3	NO	NO	G	1 1
	London Plane Tree	Comment: Trunk erect, straight gradually tapering and continuous, crown excurrent. – *Street tree*																
34	*Platanus x hispanica*	M	GV	G	MGVG - 10 1	C	15	12 D	1	70 70	730 R	1/R ST	3	NO	NO	G	1 1
	London Plane Tree	Comment: Trunk erect, straight gradually tapering and continuous, crown excurrent. – *Street tree*																
35	*Platanus x hispanica*	M	GV	G	MGVG - 10 1	C	14	11 D	1	70 70	770 R	1/R ST	3	NO	NO	G	1 1
	London Plane Tree	Comment: Trunk erect, straight gradually tapering and continuous, crown excurrent. – *Street tree*																
36	*Platanus x hispanica*	M	GV	G	MGVG - 10 1	C	12	12 D	1	70 70	700 R	1/R ST	3	NO	NO	G	1 1
	London Plane Tree	Comment: Trunk erect, straight gradually tapering and continuous, crown excurrent. – *Street tree*																
37	*Platanus x hispanica*	M	GV	G	MGVG - 10 1	C	13	11 D	1	70 70	540 R	1/R ST	3	NO	NO	G	1 1
	London Plane Tree	Comment: Trunk erect, straight gradually tapering and continuous, crown excurrent. – *Street tree*																
38	*Platanus x hispanica*	M	GV	G	MGVG - 10 1	C	14	12 D	1	70 70	890 R	1/R ST	3	NO	NO	G	1 1
	London Plane Tree	Comment: Trunk erect, straight gradually tapering and continuous, crown excurrent. – *Street tree*																
39	*Corymbia maculata*	Comment: Epicormic regrowth, remove specimen.																
	Spotted Gum																	
40	*Corymbia maculata*	Y	LV	F	YLVF - 3 2	D	6	2 D	1	20 20	110 R	1/R ST	1	YES	NO	G	2 2
	Spotted Gum	Comment: Trunk erect, straight, gradually tapering & continuous, crown excurrent.																

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41	*Corymbia maculata*	Y	GV	G	YGVG - 9 1	D	9	6 D	1	70 70	200 R	1/R ST	1	NO	NO	G	2 2
	Spotted Gum	Comment: Trunk erect, straight, gradually tapering & continuous, crown excurrent.															
42	*Ulmus parvifolia*	Y	GV	G	YGVG - 9 1	D	5	4 D	1	N/A D	180 R	1/R ST	1	NO	NO	G	1 1
	Chinese Elm	Comment: Trunk to 1.8 metres, crown deliquescent, orientation radial, symmetrical. Outside boundary fence within 1m garden bed. - *Road Reserve Specimen*															
43	*Ulmus parvifolia*	Y	GV	G	YGVG - 9 1	D	5	5 D	1	N/A D	170 R	1/R ST	1	NO	NO	G	1 1
	Chinese Elm	Comment: Trunk to 1.5 metres, crown deliquescent, orientation radial, symmetrical. Outside as above. - *Road Reserve Specimen*															
44	*Ulmus parvifolia*	Y	GV	G	YGVG - 9 1	D	4	4 D	1	N/A D	150 R	1/R ST	1	NO	NO	G	1 1
	Chinese Elm	Comment: Trunk to 1.5 metres, crown deliquescent, orientation radial, symmetrical. - *Road Reserve Specimen*															
45	*Ulmus parvifolia*	Y	GV	G	YGVG - 9 1	D	4	3 D	1	N/A D	100 R	1/R ST	1	NO	NO	G	1 1
	Chinese Elm	Comment: Trunk to 1 metre, crown deliquescent, orientation radial, symmetrical. - *Road Reserve Specimen*															
46	*Ulmus parvifolia*	M	GV	G	MGVG - 10 1	D	6	6 D	1	N/A D	200 R	1/R ST	1	NO	NO	G	1 1
	Chinese Elm	Comment: Trunk to 2 metres, crown deliquescent, orientation radial, symmetrical. - *Road Reserve Specimen*															
47	*Ulmus parvifolia*	M	GV	G	MGVG - 10 1	D	6	3x2 NE/SW	2E	N/A D	190 R	1/R ST	1	NO	NO	G	1 1
	Chinese Elm	Comment: Trunk to 1.5 metres, crown deliquescent, orientation NE/SW, asymmetrical bias to east. - *Road Reserve Specimen*															
48	*Ulmus parvifolia*	M	GV	G	MGVG - 10 1	D	6	4x3 E/W	2N	N/A D	240 R	1/R ST	1	NO	NO	G	1 1
	Chinese Elm	Comment: Trunk to 1.5 metres, crown deliquescent, orientation E/W, asymmetrical bias to north. - *Road Reserve Specimen*															
49	*Ulmus parvifolia*	M	GV	G	MGVG - 10 1	D	7	6 D	1	N/A D	210 R	1/R ST	1	NO	NO	G	1 1
	Chinese Elm	Comment: Trunk to 2 metres, crown deliquescent, orientation radial, symmetrical. - *Road Reserve Specimen*															
50	*Ulmus parvifolia*	M	GV	G	MGVG - 10 1	D	7	6 D	1	N/A D	190 R	1/R ST	1	NO	NO	G	1 1
	Chinese Elm	Comment: Trunk to 2 metres, crown deliquescent, orientation radial, symmetrical. - *Road Reserve Specimen*															

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51	*Ulmus parvifolia*	M	GV	G	MGVG - 10 1	D	7	6 D D	1	N/A D	230 R	1/R ST	1	NO	NO	G	1 1
	Chinese Elm	Comment: Trunk to 2 metres, crown deliquescent, orientation radial, symmetrical															
52	*Corymbia citriodora*	Y	GV	G	YGVG - 9 1	C	10	4 D D	1	70 70	200 R	1/R ST	1	NO	NO	G	1 2
	Lemon Scented Gum	Comment: Trunk erect, straight, gradually tapering & continuous, crown excurrent. Small dead FOSB @ 3m to south – remove															
53	*Corymbia citriodora*	M	GV	G	MGVG - 10 1	C	12	8 D D	1	70 70	280 R	1/R ST	1	NO	NO	G	1 2
	Lemon Scented Gum	Comment: Trunk erect, straight, gradually tapering & continuous, crown excurrent.															
54	*Corymbia citriodora*	M	GV	G	MGVG - 10 1	C	12	8 D D	1	70 70	280 R	1/R ST	1	NO	NO	G	2 2
	Lemon Scented Gum	Comment: Trunk erect, straight, gradually tapering & continuous, crown excurrent. -															
55	*Corymbia citriodora*	Y	GV	G	YGVG - 9 1	C	8	4 D D	1	70 70	140 R	1/R ST	1	NO	NO	G	2 2
	Lemon Scented Gum	Comment: Trunk erect, straight, gradually tapering & continuous, crown excurrent.															
56	*Corymbia citriodora*	M	GV	G	MGVG - 10 1	C	8	4 D D	1	70 70	230 R	1/R ST	1	NO	NO	G	2 2
	Lemon Scented Gum	Comment: Trunk erect, straight, gradually tapering & continuous, crown excurrent.															
57	*Corymbia citriodora*	Y	GV	G	YGVG - 9 1	C	8	4 D D	1	70 70	140 R	1/R ST	1	NO	NO	G	2 2
	Lemon Scented Gum	Comment: Trunk erect, straight, gradually tapering & continuous, crown excurrent.															
58	*Corymbia citriodora*	M	GV	G	MGVG - 10 1	D	15	14 D D	1	70 70	770 R 820	1/R ST	1	NO	NO	G	2 2
	Lemon Scented Gum	Comment: Trunk to 7 metres, crown deliquescent, orientation radial, symmetrical. 20% deadwood throughout crown															
59	*Lagerstroemia indica*	M	GV	G	MGVG - 10 1	D	6	3 D D	1	N/A D	160 R	1/R ST	1	NO	NO	G	3 3
	Crepe Myrtle	Comment: Trunk to 500 millimetres, crown deliquescent, orientation radial, symmetrical. Growing in Garden bed in asphalt															
60	*Lagerstroemia indica*	M	GV	G	MGVG - 10 1	D	5	2 D D	1	N/A D	150 R	1/R ST	1	NO	NO	G	3 3
	Crepe Myrtle	Comment: Trunk to 500 millimetres, crown deliquescent, orientation radial, symmetrical															

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61	*Lagerstroemia indica*	M	GV	G	MGVG - 10 / 1	D	5	4 / D	1	N/A / D	110 / R	1/R / ST	1	NO	NO	G	3 / 3
	Crepe Myrtle	Comment: Trunk to 1 metre, crown deliquescent, orientation radial, symmetrical																
62	*Lagerstroemia indica*	Y	GV	G	YGVG - 9 / 1	D	4	2 / D	1	N/A / D	100 / R	1/R / ST	1	NO	NO	G	3 / 3
	Crepe Myrtle	Comment: Trunk to 2 metres, crown deliquescent, orientation radial, symmetrical																
63	*Corymbia citriodora*	M	LV	F	MLVF - 4 / 2.5	C	15	9x7 / N/S	2W	30 / 30	680 # / 200 R	1/R / ST	1	YES	NO	G	3 / 4
	Lemon Scented Gum	Comment: Trunk to 3 metres, crown deliquescent, orientation N/S, asymmetrical bias to west. Black plastic evident under mulch with approx. 30% deadwood throughout canopy. Build up to approx. 600mm with evidence of *Phytophthora sp.* - Root rot at base of trunk to west.																
64	*Casuarina cunninghamiana*	Y	GV	F	YGVF - 8 / 2	C	15	9x7 / E/W	2W	60 / 70	200 / R	1/R / ST	1	YES	NO	P	3 / 4
	River She Oak	Comment: Trunk erect, straight, gradually tapering & continuous, crown excurrent. Within garden bed, soil build up with contaminated soil.																
65	*Casuarina cunninghamiana*	M	GV	F	MGVF - 9 / 2	C	9	7x5 / N/S	2S	60 / 70	750 @ / 150 R	1/R / ST	1	YES	NO	P	3 / 4
	River She Oak	Comment: Trunk to 500mm then bifurcate, crown deliquescent, orientation N/S asymmetrical bias to south. Within garden bed, soil build up with contaminated soil.																
66	*Corymbia citriodora*	M	GV	F	MGVF - 9 / 2	C	12	4 / D	1	60 / 60	150 / R	1/R / ST	1	YES	NO	G	3 / 4
	Lemon Scented Gum	Comment: Trunk erect, straight, gradually tapering & continuous, crown excurrent. Within garden bed, soil build up with contaminated soil.																
67	*Casuarina cunninghamiana*	M	GV	F	MGVF - 9 / 2	C	9	6 / D	1	70 / 70	200 / R	1/R / ST	1	YES	NO	G	3 / 4
	River She Oak	Comment: Trunk erect, straight, gradually tapering & continuous, crown excurrent. Within garden bed, soil build up with contaminated soil.																
68	*Corymbia citriodora*	M	GV	F	MGVF - 9 / 2	C	7	7x3 / N/S	2S	60 / 60	200 / R	2/S / SC	1	YES	NO	G	3 / 4
	Lemon Scented Gum	Comment: Trunk with moderate lean to south correcting in mid crown, gradually tapering and continuous, crown excurrent. Within garden bed, soil build up with contaminated soil.																
69	*Corymbia citriodora*	O	LV	F	OLVF - 2 / 2.5	C	7	5x3 / E/W	2E	30 / 50	220 / R	1/R / ST	1	YES	NO	P	3 / 4
	Lemon Scented Gum	Comment: Trunk to 2 metres, crown deliquescent, orientation E/W, asymmetrical bias to east. Within garden bed, soil build up with contaminated soil.																
70	*Casuarina glauca*	M	GV	F	MGVF - 9 / 1	C	10	5x3 / N/S	2E	70 / 70	210 / R	1/R / ST	1	NO	NO	P	3 / 3
	Swamp Oak	Comment: Trunk to 2 metres, then bifurcate crown deliquescent, orientation N/S, asymmetrical bias to east. Within garden bed, soil build up with contaminated soil.																

Tree / Stand No.	Genus & Species Common Name	Age Y = Young M = Mature O = Overmature	Vigour GV = Good Vigour LV = Low Vigour	Condition G = Good F = Fair P = Poor D = Dead	1. SRIV Age, Vigour, Condition / Index Rating www.isa.org.au / 2. Estimated Life Expectancy 1. Long 2. Medium 3. Short	Crown Form D = Dominant C = Co-dominant I = Intermediate S = Suppressed F = Forest E = Emergent	Ht. Approx. metres	Crown Spread approx. metres / Orientation D = Diameter, or other	Crown Symmetry 1 = symmetrical 2 = asymmetrical / Orientation	Crown Cover % / / Crown Density % D = dormant	DBH in mm @ 1.4m, or other, as indicated / Trunk Orientation other than R = radial, e.g. N/S g = ground	Trunk Lean 1 = Upright-Slight 2 = Moderate 3 = Severe 4 = Critical 5 = Accelerant / Orientation / ST = Static P = Progressive Sc = Self-correcting	Roots Evident at Root Crown 1. = None 2 = Adventitious 3 = Basal Flare 4 = Buttresses 5 = First Order Roots (FOR), No. & distribution e.g. R = radial, or one each to N, S, E and W	Pests, Diseases & Damage No or Yes If Yes see comments	Branch Bark Included No or Yes or N/A	Form G = Good Form P = Poor Form	Significance scale 1=High 2=Medium 3=Low / Retention Value 1=High 2=Medium 3=Low 4=Remove
71	*Casuarina glauca*	M	GV	F	MGVF - 9 1	C	10	8 D	1	70 70	190 R	1/R ST	1	NO	NO	G	2 2
	Swamp Oak	Comment: Trunk erect, straight, gradually tapering & continuous, crown excurrent.															
72	*Lophostemon confertus*	M	GV	F	MGVF - 9 1	C	7	5x3 E/W	2W	70 70	190 R	1/R ST	1	NO	NO	P	2 3
	Queensland Brush Box	Comment: Trunk to 1 metre, then bifurcate, crown deliquescent, orientation E/W, asymmetrical bias to west.															
73	*Lophostemon confertus*	M	GV	F	MGVF - 9 1	C	7	4 D	1	70 70	170 R	1/R ST	1	NO	NO	G	2 2
	Queensland Brush Box	Comment: Trunk to 5 metres then bifurcate, crown deliquescent, orientation radial, symmetrical.															
74	DEAD	Comment: Remove specimen.															
75	*Eucalyptus microcorys*	M	GV	F	MGVF - 9 1	C	10	7x5 E/W	2N	70 70	320 R	1/R ST	1	NO	NO	G	2 2
	Tallowwood	Comment: Trunk to 3 metres, crown deliquescent, orientation E/W, asymmetrical bias to north. Growing in garden bed in bitumen carpark.															
76	*Eucalyptus sp.*	M	GV	F	MGVF - 9 1	C	12	10 D	1	60 70	320 R	1/R ST	1	YES	NO	G	2 2
	Eucalypt	Comment: Trunk to 1.8 metres, crown deliquescent, orientation radial, symmetrical. 5% deadwood															
77	*Eucalyptus microcorys*	M	GV	F	MGVF - 9 1	C	10	8x8 NE/SW	2NE	70 70	410 R	1/R ST	1	NO	NO	G	2 2
	Tallowwood	Comment: Trunk erect, straight, gradually tapering & continuous, crown excurrent.															
78	*Corymbia citriodora*	M	GV	G	MGVG - 10 1	D	15	14 D	1	70 70	450 R	1/R ST	1	YES	NO	G	1 2
	Lemon Scented Gum	Comment: Trunk erect, straight, gradually tapering & continuous, crown excurrent. 20% deadwood															
79 /2	*Syzygium smithii(x8)*	M	GV	G	MGVG - 10 1	C	6	4 D	1	80 80	190 # R	1/R ST	1	NO	NO	G	2 1
	Lilly Pilly	Comment: Trunk to 1.5 metres, crown deliquescent, orientation radial, symmetrical. Hedge along boundary															
80	*Eucalyptus microcorys*	M	GV	G	MGVG - 10 1	D	15	15x12 E/W	2W	80 80	970 R	1/R ST	1	NO	NO	P	1 2
	Tallowwood	Comment: Trunk to 7 metres, crown deliquescent, orientation E/W, asymmetrical bias to west. Causing flooding issue due to position.															

Tree / Stand No.	Genus & Species Common Name	Age Y = Young M = Mature O = Overmature	Vigour GV = Good Vigour LV = Low Vigour	Condition G = Good F = Fair P = Poor D = Dead	1. SRIV Age, Vigour, Condition / Index Rating www.iaga.org.au / 2. Estimated Life Expectancy 1. Long 2. Medium 3. Short	Crown Form D = Dominant C = Co-dominant I = Intermediate S = Suppressed F = Forest E = Emergent	Ht. Approx. metres	Crown Spread approx. metres / Orientation D = Diameter, or other	Crown Symmetry 1 = symmetrical 2 = asymmetrical / Orientation	Crown Cover % / Crown Density % / D = dormant	DBH in mm @ 1.4m, or other, as indicated / Trunk Orientation other than R = radial, e.g. N/S g = ground	Trunk Lean 1 = Upright/Slight 2 = Moderate 3 = Severe 4 = Critical 5 = Acculessent / Orientation ST = Static P = Progressive Sc = Self-correcting	Roots Evident at Root Crown 1 = None 2 = Adventitious 3 = Basal Flare 4 = Buttresses 5 = First Order Roots (FOR), No. & distribution e.g. R = radial, or one each to N, S, E and W	Pests, Diseases & Damage No or Yes If Yes see comments	Branch Bark Included No or Yes or N/A	Form G = Good Form P = Poor Form	Significance scale 1=High 2=Medium 3=Low / Retention Value 1=High 2=Medium 3=Low 4=Remove
81	*Corymbia citriodora*	M	GV	F	MGVF - 9	C	12	12x9 E/W	2W	80	320	2/W	1	YES	NO	P	2
	Lemon Scented Gum	Comment: Trunk to 4 metres, crown deliquescent, orientation E/W, asymmetrical bias to west. 5% deadwood			1					70	R	ST					2
82	*Corymbia citriodora*	M	GV	F	MGVF - 9	C	15	9x7 E/W	2N	80	380	1/R	1	YES	NO	G	2
	Lemon Scented Gum	Comment: Trunk to 6 metres, crown deliquescent, orientation E/W, asymmetrical bias to north. 5% deadwood			1					80	R	ST					1
83	*Eucalyptus microcorys*	M	GV	F	MGVF - 9	C	15	9x7 E/W	2NW	70	520	2/NW	1	NO	NO	G	1
	Tallowwood	Comment: Trunk with moderate lean to northwest correcting in mid-crown, crown deliquescent, orientation E/W, asymmetrical bias to northwest.			1					70	R	SC					2
84	*Eucalyptus microcorys*	M	GV	F	MGVF - 9	C	15	10x7 E/W	2N	70	450	1/R	1	NO	NO	G	1
	Tallowwood	Comment: Trunk erect, straight, gradually tapering & continuous, crown excurrent. 20% deadwood			1					70	R	ST					1
85	*Eucalyptus scoparia*	M	GV	F	MGVF - 9	C	15	9x7 E/W	2S	70	430	1/R	1	NO	NO	G	1
	Wallangarra White Gum	Comment: Trunk erect, straight, gradually tapering & continuous, crown excurrent. 20% deadwood			1					70	R	ST					1
86	*Corymbia citriodora*	M	GV	F	MGVF - 9	C	15	10x7 NW/SE	2SE	70	530	1/R	1	NO	NO	G	1
	Lemon Scented Gum	Comment: Trunk erect, straight, gradually tapering & continuous, crown excurrent. 20% deadwood			1					70	R	ST					1
87	*Eucalyptus microcorys*	M	GV	G	MGVG - 10	C	15	14 D	1	80	1100	1/R	1	NO	NO	G	1
	Tallowwood	Comment: Trunk erect, straight, gradually tapering & continuous, crown excurrent.			1					80	R	ST					1
88	*Eucalyptus microcorys*	M	GV	G	MGVG - 10	C	15	14 D	1	80	970	1/R	1	NO	NO	G	1
	Tallowwood	Comment: Trunk to 3 metres, crown deliquescent, orientation radial, symmetrical			1					80	R	ST					1
89	*Eucalyptus scoparia*	M	GV	F	MGVF - 9	D	12	9x7 N/S	2N	70	680	1/R	1	YES	NO	G	1
	Wallangarra White Gum	Comment: Trunk with moderate lean to northwest correcting in mid-crown, crown deliquescent, orientation N/S, asymmetrical bias to north.			2					70	R	ST					2
90	*Afrocarpus falcatus*	M	GV	G	MGVG - 10	C	9	6 D	1	70	240	1/R	1	NO	NO	G	1
	Yellowwood	Comment: Trunk erect, straight, gradually tapering & continuous, crown excurrent.			1					70	R	ST					1

Tree / Stand No.	Genus & Species Common Name	Age Y = Young M = Mature O = Overmature	Vigour G/ = Good Vigour L/ = Low Vigour	Condition G = Good F = Fair P = Poor D = Dead	1. SRIV Age, Vigour, Condition / Index Rating www.iacaa.com.au / 2. Estimated Life Expectancy 1. Long 2. Medium 3. Short	Crown Form D = Dominant C = Co-dominant I = Intermediate S = Suppressed F = Forest E = Emergent	Ht. Approx. metres	Crown Spread approx. metres / Orientation D = Diameter, or other	Crown Symmetry 1 = symmetrical 2 = asymmetrical / Orientation	Crown Cover % / / Crown Density % D = dormant	DBH in mm @ 1.4m, or other, as indicated / Trunk Orientation other than R = radial, e.g. N/S, g = ground	Trunk Lean 1 = Upright-Slight 2 = Moderate 3 = Severe 4 = Critical 5 = Acaulescent / Orientation ST = Static P = Progressive Sc = Self correcting	Roots Evident at Root Crown 1 = None 2 = Adventitious 3 = Basal Flare 4 = Buttresses 5 = First Order Roots (FOR), No. & distribution e.g. R = radial, or one each to N, S, E and W	Pests, Diseases & Damage No or Yes If Yes see comments	Branch Bark Included No or Yes or N/A	Form G = Good Form P = Poor Form	Significance scale 1=High 2=Medium 3=Low / Retention Value 1=High 2=Medium 3=Low 4=Remove
91	*Acer negundo*	M	GV	F	MGVF - 9 2	D	15	14 D	1	N/A D	280 R	1/R ST	1	NO	NO	G	2 2
	Box Elder Maple	Comment: Trunk to 1.8 metres, crown deliquescent, orientation radial, symmetrical. Astro turf to trunk.															
92	*Sapium sebiferum*	M	GV	F	MGVF - 9 2	D	8	8 D	1	N/A D	240 R	1/R ST	1	YES	NO	P	2 3
	Chinese Tallow wood	Comment: Due to selective pruning this specimen has become excurrent in crown shape. It has become senescent due to a metal grate ringbarking the specimen with 95% of its drip zone taken up by concrete surface.															
93	*Acer negundo*	O	LV	F	OLVF - 2 2	D	9	9x7 N/S	2N	N/A D	320 R	1/R ST	1	YES	NO	P	3 4
	Box Elder Maple	Comment: Trunk to 1.8 metres, crown deliquescent, orientation N/S, asymmetrical bias to north. Concrete surrounding. Rot evident on centre FOSB.															
94	*Callistemon viminalis 'Hanna Ray'*	M	GV	G	MGVG - 10 1	C	5	4 D	1	70 70	200 # @ G	5/R ST	1	NO	NO	G	2 2
	Hanna Ray Bottlebrush	Comment: Acaulescent or short trunk @ or near ground, crown deliquescent, orientation radial.															
95	*Acer negundo*	M	GV	F	MGVF - 9 1	D	10	10 D	1	N/A D	320 R	1/R ST	1	NO	NO	G	2 2
	Box Elder Maple	Comment: Trunk to 2 metres, crown deliquescent, orientation radial, symmetrical. Growing in 1m wide garden surrounded by concrete courtyard															
96	*Platanus x hispanica*	M	GV	F	MGVF - 9 1	D	12	9x7 N/S	2N	N/A D	510 R	1/R ST	1	NO	NO	P	3 3
	London Plane Tree	Comment: Trunk to 1.8 metres, crown deliquescent, orientation N/S, asymmetrical bias to north. It has become senescent due to a metal grate ringbarking the specimen with 95% of its drip zone taken up by concrete surface.															
97	*Acer negundo*	O	GV	F	OGVF - 5 1	D	9	14 D	1	N/A D	470 R	1/R ST	1	YES	NO	P	3 4
	Box Elder Maple	Comment: Trunk to 1.5 metres, crown deliquescent, orientation radial, symmetrical. Borer damage evident in old branch stubs. It has become senescent due to a metal grate ringbarking the specimen with 95% of its drip zone taken up by concrete surface.															
98	*Celtis sp. occidentalis*	M	GV	F	MGVF - 9 1	D	15	15x12 E/W	2S	N/A D	320 R	1/R ST	1	NO	NO	G	3 4
	Hackberry	Comment: Trunk to 3 metres, crown deliquescent, orientation E/W, asymmetrical bias to south. Causing flooding issue and damage.															
99	*Corymbia citriodora*	M	GV	G	MGVG - 10 1	C	12	4 D	1	70 70	220 R	1/R ST	1	NO	NO	G	2 1
	Lemon Scented Gum	Comment: Trunk erect, straight, gradually tapering & continuous, crown excurrent.															
100	*Acacia floribunda*	M	GV	G	MGVG - 10 1	D	9	7x5 N/S	2N	70 70	280 R	1/R ST	1	NO	NO	G	2 1
	Gossamer Wattle	Comment: Trunk to 2 metres, crown deliquescent, orientation N/S, asymmetrical bias to north.															

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101	*Ulmus parvifolia* Chinese Elm	Y	GV	F	YGVF - 8 1	C	5	2 D	1	N/A D	40 R	1/R ST	1	NO	NO	G	2 2
	Comment: Trunk erect, straight, gradually tapering & continuous, crown excurrent. Self-sown specimen																
102	*Ulmus parvifolia* Chinese Elm	Y	GV	F	YGVF - 8 2	C	6	3x2 E/W	2W	N/A D	220av. @g R	5/R ST	1	NO	NO	G	2 3
	Comment: Acaulescent or short trunk @ or near ground, crown deliquescent, orientation E/W, asymmetrical bias to west. Self-sown specimen																
103	*Acer negundo* Box Elder Maple	M	GV	F	MGVF - 9 2	D	7	14 D	1	N/A D	400 @ 200 R	5/R ST	1	No	NO	G	3 4
	Comment: Acaulescent or short trunk @ or near ground, crown deliquescent, orientation radial, symmetrical.																
104	*Robinia pseudoacacia 'Frisia'* Honey Locust	M	GV	G	MGVG - 10 1	D	7	6 D	1	N/A D	220 R	1/R ST	1	NO	NO	G	1 1
	Comment: Trunk to 1.8 metres, crown deliquescent, orientation radial, symmetrical – *Street tree*																
105	*Platanus x hispanica* London Plane Tree	M	GV	G	MGVG - 10 1	D	7	6 D	1	N/A D	240 R	1/R ST	1	NO	NO	G	1 1
	Comment: Think to 5 metres then bifurcated, crown deliquescent, orientation radial, symmetrical – *Street tree*																
106	*Platanus x hispanica* London Plane Tree	M	GV	G	MGVG - 10 1	D	7	6X5 N/S	2E	N/A D	290 R	1/R ST	1	NO	NO	P	1 1
	Comment: Trunk to 1 metre, crown deliquescent, orientation N/S asymmetrical bias to east. – *Street tree*																
107	*Platanus x hispanica* London Plane Tree	M	GV	G	MGVG - 10 1	D	7	6 D	1	N/A D	220 R	1/R ST	1	NO	NO	G	1 1
	Comment: Trunk to 1 metre, crown deliquescent, orientation radial, symmetrical. – *Street tree*																
108	*Platanus x hispanica* London Plane Tree	M	GV	G	MGVG - 10 1	D	7	8 D	1	N/A D	300 R	1/R ST	1	NO	NO	G	1 1
	Comment: Trunk erect, straight gradually tapering and continuous, crown excurrent. – *Street tree*																
109	*Ficus microcarpa* Curtain Fig	M	GV	G	MGVG - 10 1	D	9	12x9 N/S	2S	80 80	490 R	1/R ST	1	NO	NO	G	1 1
	Comment: Trunk erect, straight gradually tapering and continuous, crown excurrent. – *Street tree*																

Tree / Stand No.	Genus & Species Common Name	Age Y = Young M = Mature O = Overmature	Vigour GV = Good Vigour LV = Low Vigour	Condition G = Good F = Fair P = Poor D = Dead	1. SRV Age, Vigour, Condition / Index Rating www.isaca.org.au 2. Estimated Life Expectancy 1. Long 2. Medium 3. Short	Crown Form D = Dominant C = Co-dominant I = Intermediate S = Suppressed F = Forest E = Emergent	Ht. Approx. metres	Crown Spread approx. metres / Orientation D = Diameter, or other	Crown Symmetry 1 = symmetrical 2 = asymmetrical / Orientation	Crown Cover % / Crown Density % D = dormant	DBH in mm @ 1.4m, or other, as indicated / Trunk Orientation other than R = radial, e.g. N/S g = ground	Trunk Lean 1 = Upright-Slight 2 = Moderate 3 = Severe 4 = Critical 5 = Acute/recent / Orientation ST = Static P = Progressive Sc = Self-correcting	Roots Evident at Root Crown 1 = None 2 = Adventitious 3 = Basal Flare 4 = Buttresses 5 = First Order Roots (FOR), No. & distribution e.g. R = radial, N, S, E and W	Pests, Diseases & Damage No or Yes If Yes see comments	Branch Bark Included No or Yes or N/A	Form G = Good Form P = Poor Form	Significance scale 1=High 2=Medium 3=Low / Retention Value 1=High 2=Medium 3=Low 4=Remove
110	*Robinia pseudoacacia 'Frisia'* Honey Locust	Y	GV	G	YGVG - 9 1	D	6	5x2 E/W	1	70 70	140 R	1/R ST	1	NO	NO	G	2 2
Comment: Trunk to 1 metre, crown deliquescent, orientation east/west, asymmetrical bias to west.																		
111	*Robinia pseudoacacia 'Frisia'* Honey Locust	Y	GV	G	YGVG - 9 2	D	6	3x2 E/W	2/W	N/A D	220av. @g R	5/R ST	1	NO	NO	G	2 2
Comment: Trunk to 800mm, crown deliquescent, orientation east/west, asymmetrical bias to east.																		

Observations

7.2 The site has a stand of young, mature or senescent, planted endemic and non-locally indigenous or exotic evergreen and deciduous taxa within the current proposal. There are a number of specimens considered significant for their contribution as landscape elements to the property. The retention of these fifty-seven (57) tree/s allows them as components of the current curtilage to be transferred to the current proposal, maintaining elements of a continuous landscape, providing a more harmonious integration and transition of the use of the land. The other specimens were within the proposed building envelope or declining and are not able to be retained within the current proposal. They are recommended for removal and replacement with super advanced specimens in 75 or 100 litre bags size stock within more appropriate positions within the development. Replacement of these specimens needs to be mindful of their spatial requirements to allow them to grow to maturity and not be impeded by the built structure.

Tree Significance

7.3 Significant Trees as established by the Rating System for Tree Significance – IACA Stars (2010), Appendix A.

Significance Scale
1 – High
2 – Medium
3 – Low

Significance Scale	1	2	3
Redgum Tree No.	1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 26, 27, 30, 31, 32, 33, 34, 35, 36, 37, 38, 42, 43, 44, 45, 46, 47, 48, 49, 50, 51, 52, 53, 78, 79, 80, 83, 84, 85, 86, 87, 88, 89, 90, 104, 105, 106, 107, 108, 109	12, 28, 29, 40, 41, 54, 55, 56, 57, 58, 71, 72, 73, 75, 76, 77, 79, 81, 82, 91, 92, 94, 95, 99, 100, 101, 102, 110, 111	59, 60, 61, 62, 63, 64, 65, 66, 67, 68, 69, 70, 74, 93, 96, 97, 98, 103

Tree Retention Value

7.4 See Appendix A for Retention Value Matrix.
Retention Value
High – Priority for Retention
Medium – Consider for Retention
Low – Consider for Removal
Remove - Priority for Removal

Retention Value	High – Priority for. Retention	Medium – Consider for Retention	Low – Consider for Removal	Remove – Priority for. Removal
Redgum Tree No.	42*, 43*, 44*, 45*, 46*, 47*, 48*, 49*, 50*, 51*, 79, 82, 84, 85, 86, 87, 88, 90, 99, 100, 104, 105, 106, 107, 108, 109	40, 41, 52, 53, 54, 55, 56, 57, 58, 71, 73, 75, 76, 77, 78, 80, 81, 83, 89, 91, 94, 95, 101, 110, 111	59, 60, 61, 62, 70, 72, 92, 96, 102	63, 64, 65, 66, 67, 68, 69, 74, 93, 97, 98, 103

7.5 AS4970 (2009) section 3, 3.3.3 requires the Project Arborist to demonstrate that where a retained tree is subject to a major encroachment (>10% of area of TPZ) it can be protected to remain viable

7.6 Tree/s 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 33, 34, 35, 36, 37, 38, 79^{x8}, 82, 83, 84, 85, 86, 90, 94, 100, 104, 105, 106, 107, 108 & 109, these specimens were found in fair health & good vigour at time of assessment.

- *Development Impacts: AS4970 (2009) section 3 requires a Tree Protection Zone (TPZ) setbacks for each specimen from centre of trunk (COT) and can be found in table 2 of this report. These specimens are sufficiently setback from the development to not be affected.*

7.7 Tree/s 21, 22, 23 & 42 to 44, all specimens were found in fair health & good vigour at time of assessment.

- *Development Impacts: AS4970 (2009) section 3 requires a Tree Protection Zone (TPZ) setbacks for each specimen from centre of trunk (COT) and can be found in table 2 of this report. The alignment of the building/s will be a minor encroachment to these specimens. The section/s of the building/s within the TPZ of these specimens are to be constructed using tree sensitive excavation and construction techniques such as pier and beam construction with a suspended slab to reduce any impact on stability.*

7.8 Tree/s 87, 88 & 89, all specimens were found in fair health & good vigour at time of assessment.

- *Development Impacts: AS4970 (2009) section 3 requires a Tree Protection Zone (TPZ) setbacks for each specimen from centre of trunk (COT) and can be found in table 2 of this report. these specimens are impacted by the section of the outdoor learning areas within the TPZ of these specimen/s which is to be constructed using tree sensitive excavation and construction techniques. Root Mapping may be required to ascertain root plates and potential impact on their stability.*

If associated infrastructure (pipe works) are to be installed within the Tree Protection Zone of any retained specimen, they are to be installed by hand with non-motorised machinery. If structural roots are found within the trench, they are to be left intact and dug around retaining this specimen's structural integrity. Works are to be undertaken in consultation with the project arborist.

Demolition and Tree Removal/s

7.9 Trees 1 to 10, 26 to 32, 39 to 41, 45 to 78, 80 to 81, 91 to 93, 95 to 99 & 101 to 103, 110 & 111 are to be removed as they are located within the site in a position where they cannot be retained due to the proposed building footprints and associated infrastructure where encroachment will have an adverse impact on its roots and crown for viability and stability. They are recommended for removal and replacement with super advanced specimens in 75 or 100 litre bags size stock within more appropriate positions within the development. Replacement of these specimens needs to be mindful of their spatial requirements to allow them to grow to maturity and not be impeded by the built structure.

- Tree/s 63, 64, 65, 66, 67, 68 & 69; positioned within a brick raised garden bed. This garden was installed after the canopy specimen/s which are suffering from soil build up and soil borne pathogens, e.g.; *Phytophthora sp*. as shown around the basal area of the trunk on tree 63. This garden bed needs to be removed separately from the rest of the development to contain these soil pathogens from infecting other areas of the development.

- All other specimens are positioned within or directly adjacent to the current proposed building envelope/s and require removal and replacement if approved. They are recommended for removal and replacement with super advanced specimens in 75 or 100 litre bags size stock within more appropriate positions within the development. Replacement of these specimens needs to be mindful of their spatial requirements to allow them to grow to maturity and not be impeded by the built structure.

7.10 Removal of a tree within 6 m of a tree to be retained should be undertaken only by cutting down such a tree without damaging the trees to be retained, and by grinding out its stump. Where possible the structural roots of 20 mm diameter or greater of the tree to be cut down should not be removed, to minimise soil disturbance and to reduce the impact on the roots of any tree to be retained nearby. Where structural roots are to be removed, this should be undertaken manually using non-motorized hand tools after the stump has been ground out when such roots are often easier to locate from the site of the stump from which they have been severed.

Specific - Tree works – Post Construction

7.11 Trees to be removed are to be replaced with advanced specimens being mindful of the space limitations of the new use of the site. The advanced trees should be situated in areas along the boundaries of the site. The planting in these locations will provide the maximum benefit to the surrounding properties by screening views to and from the site and the plantings included in the proposed landscape plan. The replacement trees will be situated in positions where they may grow to maturity unhindered and will not conflict with built structures or utility services and in greater numbers than the trees removed should provide a net increase in the local amenity.

8.0 CONCLUSION

Sixty-nine (69) trees are nominated for removal and replacement with species in accordance with the associated Landscape documentation for the development. The forty-seven (47) trees to be preserved will be retained and protected through the implementation of adequate measures for their integration into the development by the application of appropriate technology as detailed in this report. Where appropriate, the Landscape Plan will include planting with new trees including street tree/s. Two trees (Trees 24 & 25) were assessed as part of this report which have since been removed as part of Stage 2 – Pop-up School works and are not included in the above recommendations.

The recommendations made in this report are subject to approval by the consent authority.

9.0 RECOMMENDATIONS

9.1 Trees 11 to 23, 33 to 38, 42 to 44, 79[x8], 82 to 90, 94, 100 & 104 to 109 are to be retained in situ within the site and are to be protected as detailed in 7.5 – 7.8 and Section 14 of part B of this report. Tree protection fences, or works, to be situated in accordance with *Site Plan B - Trees to be Retained and Tree Protection Zones* (Appendix F). *See Tree Protection Plan for additional protection measures for the management of retained specimens.*

9.2 Trees 1 to 10, 26 to 32, 39 to 41, 45 to 78, 80 to 81, 91 to 93, 95 to 99 & 101 to 103, 110 & 111 are to be removed which is to be undertaken in accordance with 7.9 - 7.10 and section 13 of Part B of this report.

9.3 Each of the replacement are to be a vigorous specimen with a straight trunk, gradually tapering and continuous, crown excurrent, symmetrical, with roots established but not pot bound in a volume container or approved similar and be maintained by an appropriately qualified and experienced landscape contractor for up to one (1) year after planting, or as appropriate.

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DISCLAIMER
The author and Redgum Horticultural take no responsibility for actions taken and their consequences, contrary to those expert and professional instructions given as recommendations pertaining to safety by way of exercising our responsibility to our client and the public as our duty of care commitment, to mitigate or prevent hazards from arising, from a failure moment in full or part, from a structurally deficient or unsound tree or a tree likely to be rendered thus by its retention and subsequent modification/s to its growing environment either above or below ground contrary to our advice.

REFERENCES

- Draper BD and Richards PA 2009, *Dictionary for Managing Trees in Urban Environments*, Institute of Australian Consulting Arboriculturists (IACA), CSIRO Publishing, Collingwood, Victoria, Australia.
- IACA 2005, Sustainable Retention Index Value, *Institute of Australian Consulting Arboriculturists*, Australia, www.isca.org.au .
- Standards Australia 2007, *Australian Standard 4373 Pruning of amenity trees*, Standards Australia, Sydney, Australia.
- Standards Australia 2009, *Australian Standard 4970 Protection of trees on development sites*, Standards Australia, Sydney, Australia.
- Work Cover NSW 2007, *Code of Practice Tree Work*, New South Wales Government, Australia.

Appendix A

IACA Significance of a Tree, Assessment Rating System (STARS) © (IACA 2010) ©

In the development of this document IACA acknowledges the contribution and original concept of the Footprint Green Tree Significance & Retention Value Matrix, developed by Footprint Green Pty Ltd in June 2001.

The landscape significance of a tree is an essential criterion to establish the importance that a tree may have on a site. However, rating the significance of a tree becomes subjective and difficult to ascertain in a consistent and repetitive fashion due to assessor bias. It is therefore necessary to have a rating system utilising structured qualitative criteria to assist in determining the retention value for a tree. To assist this process all definitions for terms used in the *Tree Significance - Assessment Criteria* and *Tree Retention Value - Priority Matrix*, are taken from the IACA Dictionary for Managing Trees in Urban Environments 2009.

This rating system will assist in the planning processes for proposed works, above and below ground where trees are to be retained on or adjacent a development site. The system uses a scale of *High*, *Medium* and *Low* significance in the landscape. Once the landscape significance of an individual tree has been defined, the retention value can be determined.

Tree Significance - Assessment Criteria

1. High Significance in landscape

- The tree is in good condition and good vigour;
- The tree has a form typical for the species;
- The tree is a remnant or is a planted locally indigenous specimen and/or is rare or uncommon in the local area or of botanical interest or of substantial age;
- The tree is listed as a Heritage Item, Threatened Species or part of an Endangered Ecological Community or listed on Councils Significant Tree Register;
- The tree is visually prominent and visible from a considerable distance when viewed from most directions within the landscape due to its size and scale and makes a positive contribution to the local amenity;
- The tree supports social and cultural sentiments or spiritual associations, reflected by the broader population or community group or has commemorative values;
- The tree's growth is unrestricted by above and below ground influences, supporting its ability to reach dimensions typical for the taxa *in situ* - tree is appropriate to the site conditions.

2. Medium Significance in landscape

- The tree is in fair-good condition and good or low vigour;
- The tree has form typical or atypical of the species;
- The tree is a planted locally indigenous or a common species with its taxa commonly planted in the local area
- The tree is visible from surrounding properties, although not visually prominent as partially obstructed by other vegetation or buildings when viewed from the street,
- The tree provides a fair contribution to the visual character and amenity of the local area,
- The tree's growth is moderately restricted by above or below ground influences, reducing its ability to reach dimensions typical for the taxa *in situ*.

3. Low Significance in landscape

- The tree is in fair-poor condition and good or low vigour;
- The tree has form atypical of the species;
- The tree is not visible or is partly visible from surrounding properties as obstructed by other vegetation or buildings,
- The tree provides a minor contribution or has a negative impact on the visual character and amenity of the local area,
- The tree is a young specimen which may or may not have reached dimension to be protected by local Tree Preservation orders or similar protection mechanisms and can easily be replaced with a suitable specimen,
- The tree's growth is severely restricted by above or below ground influences, unlikely to reach dimensions typical for the taxa *in situ* - tree is inappropriate to the site conditions,
- The tree is listed as exempt under the provisions of the local Council Tree Preservation Order or similar protection mechanisms,
- The tree has a wound or defect that has potential to become structurally unsound.

Environmental Pest / Noxious Weed Species

- The tree is an Environmental Pest Species due to its invasiveness or poisonous/ allergenic properties,
- The tree is a declared noxious weed by legislation.

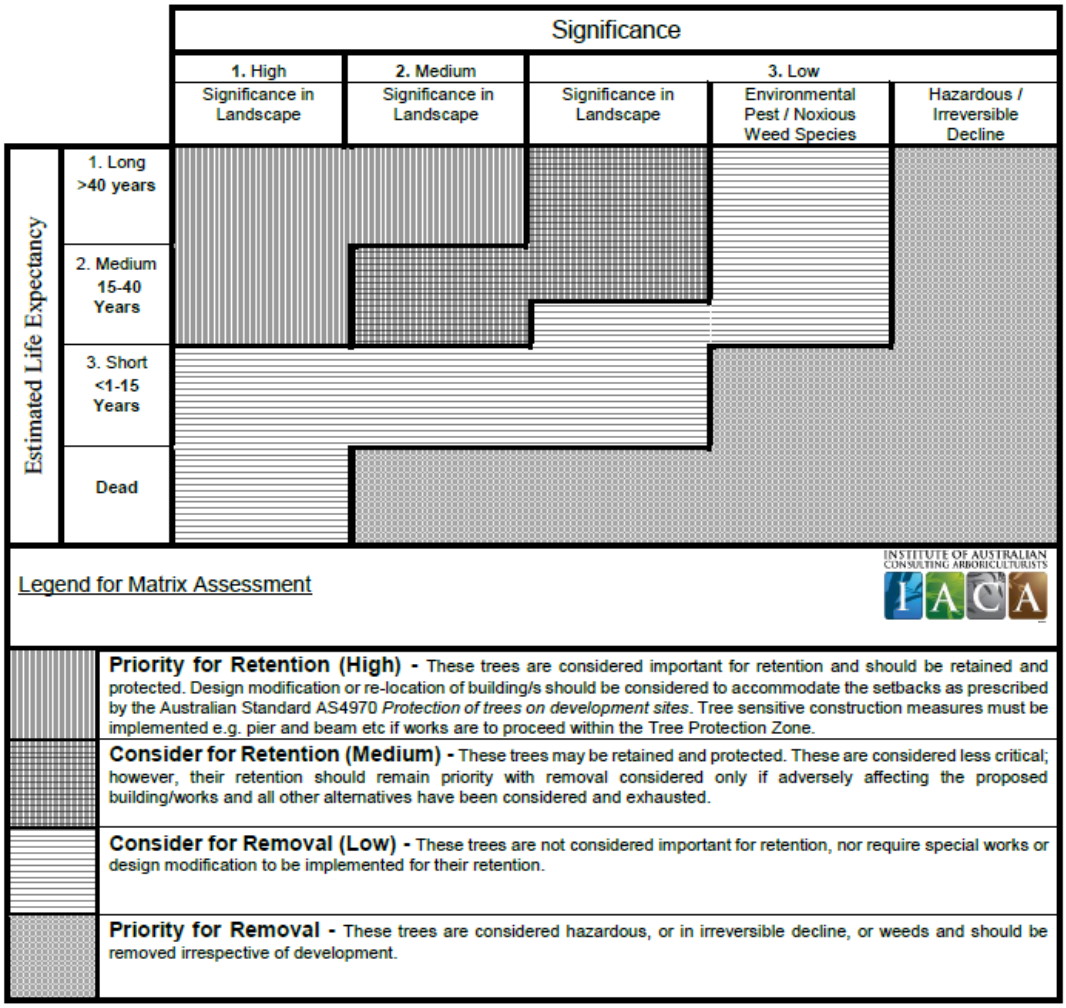
Hazardous/Irreversible Decline

- The tree is structurally unsound and/or unstable and is considered potentially dangerous,
- The tree is dead, or is in irreversible decline, or has the potential to fail or collapse in full or part in the immediate to short term.

The tree is to have a minimum of three (3) criteria in a category to be classified in that group.

Note: The assessment criteria are for individual trees only, however, can be applied to a monocultural stand in its entirety e.g. hedge.

Table 1.0 Tree Retention Value - Priority Matrix.



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Australia ICOMOS Inc. 1999, *The Burra Charter – The Australian ICOMOS Charter for Places of Cultural Significance*, International Council of Monuments and Sites, www.icomos.org/australia

Draper BD and Richards PA 2009, *Dictionary for Managing Trees in Urban Environments*, Institute of Australian Consulting Arboriculturists (IACA), CSIRO Publishing, Collingwood, Victoria, Australia.

Footprint Green Pty Ltd 2001, *Footprint Green Tree Significance & Retention Value Matrix*, Avalon, NSW Australia, www.footprintgreen.com.au

Appendix B

Matrix - Sustainable Retention Index Value (S.R.I.V.) ©

Version 4, 2010

Developed by IACA – Institute of Australian Consulting Arboriculturists www.iaca.org.au

The matrix is to be used with the value classes defined in the Glossary for Age / Vigour / Condition.
An index value is given to each category where ten (10) is the highest value.

Age Class	Vigour Class and Condition Class					
	Good Vigour & Good Condition (GVG)	Good Vigour & Fair Condition (GVF)	Good Vigour & Poor Condition (GVP)	Low Vigour & Good Condition (LVG)	Low Vigour & Fair Condition (LVF)	Low Vigour & Poor Condition (LVP)
	Able to be retained if sufficient space available above and below ground for future growth. No remedial work or improvement to growing environment required. May be subject to high vigour. Retention potential - Medium – Long Term.	Able to be retained if sufficient space available above and below ground for future growth. Remedial work may be required or improvement to growing environment may assist. Retention potential - Medium Term. Potential for longer with remediation or favourable environmental conditions.	Able to be retained if sufficient space available above and below ground for future growth. Remedial work unlikely to assist condition, improvement to growing environment may assist. Retention potential - Short Term. Potential for longer with remediation or favourable environmental conditions.	May be able to be retained if sufficient space available above and below ground for future growth. No remedial work required, but improvement to growing environment may assist vigour. Retention potential - Short Term. Potential for longer with remediation or favourable environmental conditions.	May be able to be retained if sufficient space available above and below ground for future growth. Remedial work or improvement to growing environment may assist condition and vigour. Retention potential - Short Term. Potential for longer with remediation or favourable environmental conditions.	Unlikely to be able to be retained if sufficient space available above and below ground for future growth. Remedial work or improvement to growing environment unlikely to assist condition or vigour. Retention potential - Likely to be removed immediately or retained for Short Term. Potential for longer with remediation or favourable environmental conditions.
(Y) Young	YGVG - 9 Index Value 9 Retention potential - Long Term. Likely to provide minimal contribution to local amenity if height <5 m. High potential for future growth and adaptability. Retain, move or replace.	YGVF - 8 Index Value 8 Retention potential - Short – Medium Term. Potential for longer with improved growing conditions. Likely to provide minimal contribution to local amenity if height <5 m. Medium-high potential for future growth and adaptability. Retain, move or replace.	YGVP - 5 Index Value 5 Retention potential - Short Term. Potential for longer with improved growing conditions. Likely to provide minimal contribution to local amenity if height <5 m. Low-medium potential for future growth and adaptability. Retain, move or replace.	YLVG - 4 Index Value 4 Retention potential - Short Term. Potential for longer with improved growing conditions. Likely to provide minimal contribution to local amenity if height <5 m. Medium potential for future growth and adaptability. Retain, move or replace.	YLVF - 3 Index Value 3 Retention potential - Short Term. Potential for longer with improved growing conditions. Likely to provide minimal contribution to local amenity if height <5m. Low-medium potential for future growth and adaptability. Retain, move or replace.	YLVP - 1 Index Value 1 Retention potential - Likely to be removed immediately or retained for Short Term. Likely to provide minimal contribution to local amenity if height <5 m. Low potential for future growth and adaptability.
(M) Mature	MGVG - 10 Index Value 10 Retention potential -Medium - Long Term.	MGVF - 9 Index Value 9 Retention potential - Medium Term. Potential for longer with improved growing conditions.	MGVP - 6 Index Value 6 Retention potential - Short Term. Potential for longer with improved growing conditions.	MLVG - 5 Index Value 5 Retention potential - Short Term. Potential for longer with improved growing conditions.	MLVF - 4 Index Value 4 Retention potential - Short Term. Potential for longer with improved growing conditions.	MLVP - 2 Index Value 2 Retention potential - Likely to be removed immediately or retained for Short Term.
(O) Over-mature	OGVG - 6 Index Value 6 Retention potential - Medium - Long Term.	OGVF - 5 Index Value 5 Retention potential - Medium Term.	OGVP - 4 Index Value 4 Retention potential - Short Term.	OLVG - 3 Index Value 3 Retention potential - Short Term. Potential for longer with improved growing conditions.	OLVF - 2 Index Value 2 Retention potential - Short Term.	OLVP - 0 Index Value 0 Retention potential - Likely to be removed immediately or retained for Short Term.

Appendix C

Survey of Subject Tree/s

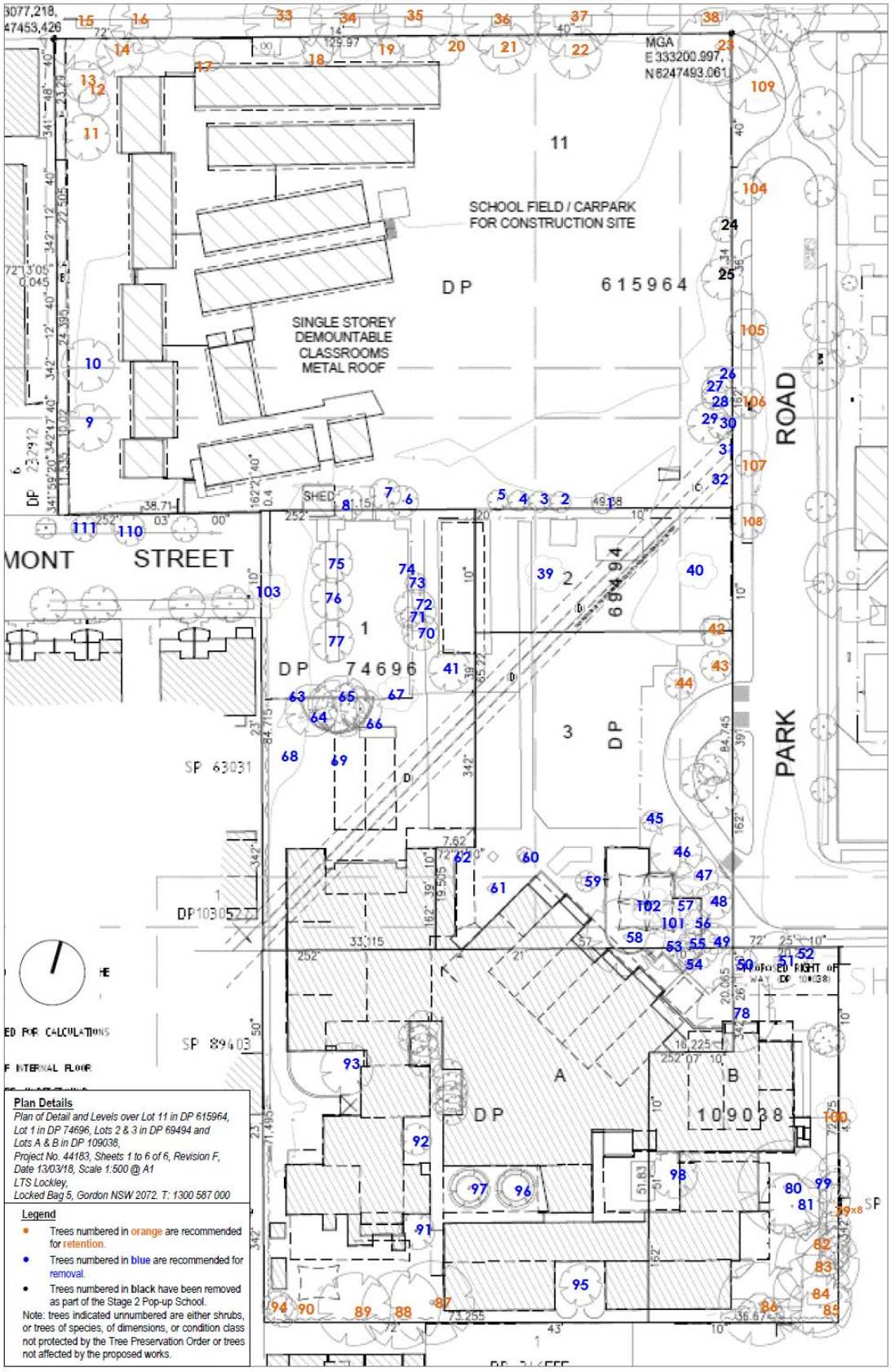
Trees the subject of this report are marked on the plans in the following appendices and are numbered as listed below. This report has relied upon the following plan/s and documents which have been reproduced from electronic transmission and no longer to original scale.

Redgum Tree / Stand No.	*Genus and species*	Common name	Recommendation
1	*Eucalyptus saligna*	Sydney Blue Gum	Remove and replace
2	*Eucalyptus scoparia*	Wallangarra White Gum	Remove and replace
3	*Eucalyptus scoparia*	Wallangarra White Gum	Remove and replace
4	*Eucalyptus scoparia*	Wallangarra White Gum	Remove and replace
5	*Eucalyptus scoparia*	Wallangarra White Gum	Remove and replace
6	*Eucalyptus botryoides*	Bangalay Gum	Remove and replace
7	*Eucalyptus robusta*	Swamp Mahogany	Remove and replace
8	*Eucalyptus robusta*	Swamp Mahogany	Remove and replace
9	*Angophora costata*	Sydney Red Gum	Remove and replace
10	*Eucalyptus robusta*	Swamp Mahogany	Remove and replace
11	*Ficus microcarpa*	Curtin fig	Retain and protect
12	*Eucalyptus robusta*	Swamp Mahogany	Retain and protect
13	*Eucalyptus robusta*	Swamp Mahogany	Retain and protect
14	*Ficus microcarpa*	Curtin Fig	Retain and protect
15	*Platanus x hispanica*	London Plane Tree	Retain and protect – Street tree
16	*Platanus x hispanica*	London Plane Tree	Retain and protect – Street tree
17	*Ficus benjamina*	Weeping Fig	Retain and protect
18	*Ficus microcarpa*	Curtin Fig	Retain and protect
19	*Ficus microcarpa*	Curtin Fig	Retain and protect
20	*Ficus microcarpa*	Curtin Fig	Retain and protect
21	*Ficus microcarpa*	Curtin Fig	Retain and protect
22	*Ficus microcarpa*	Curtin Fig	Retain and protect
23	*Ficus microcarpa*	Curtin Fig	Retain and protect
24	*Angophora bakeri*	Narrow Leaved Apple	Removed as part of Stage 2 Pop-up School
25	*Angophora bakeri*	Narrow Leaved Apple	Removed as part of Stage 2 Pop-up School
26	*Eucalyptus sideroxylon*	Flowering Ironbark	Remove and replace
27	*Eucalyptus sideroxylon*	Flowering Ironbark	Remove and replace
28	*Eucalyptus sideroxylon*	Flowering Ironbark	Remove and replace
29	*Eucalyptus sideroxylon*	Flowering Ironbark	Remove and replace
30	*Eucalyptus sideroxylon*	Flowering Ironbark	Remove and replace
31	*Eucalyptus saligna*	Sydney Blue Gum	Remove and replace
32	*Angophora costata*	Sydney Red Gum	Remove and replace
33	*Platanus x hispanica*	London Plane Tree	Retain and protect – Street tree
34	*Platanus x hispanica*	London Plane Tree	Retain and protect – Street tree
35	*Platanus x hispanica*	London Plane Tree	Retain and protect – Street tree
36	*Platanus x hispanica*	London Plane Tree	Retain and protect – Street tree
37	*Platanus x hispanica*	London Plane Tree	Retain and protect – Street tree
38	*Platanus x hispanica*	London Plane Tree	Retain and protect – Street tree
39	*Corymbia maculata*	Spotted Gum	Remove and replace
40	*Corymbia maculata*	Spotted Gum	Remove and replace
41	*Corymbia maculata*	Spotted Gum	Remove and replace
42	*Ulmus parvifolia*	Chinese Elm	Retain and protect – Road reserve
43	*Ulmus parvifolia*	Chinese Elm	Retain and protect – Road reserve
44	*Ulmus parvifolia*	Chinese Elm	Retain and protect – Road reserve
45	*Ulmus parvifolia*	Chinese Elm	Remove and replace – Road reserve

Redgum Tree / Stand No.	*Genus and species*	Common name	Recommendation
46	*Ulmus parvifolia*	Chinese Elm	Remove and replace – Road reserve
47	*Ulmus parvifolia*	Chinese Elm	Remove and replace – Road reserve
48	*Ulmus parvifolia*	Chinese Elm	Remove and replace – Road reserve
49	*Ulmus parvifolia*	Chinese Elm	Remove and replace – Road reserve
50	*Ulmus parvifolia*	Chinese Elm	Remove and replace – Road reserve
51	*Ulmus parvifolia*	Chinese Elm	Remove and replace
52	*Corymbia citriodora*	Lemon Scented Gum	Remove and replace
53	*Corymbia citriodora*	Lemon Scented Gum	Remove and replace
54	*Corymbia citriodora*	Lemon Scented Gum	Remove and replace
55	*Corymbia citriodora*	Lemon Scented Gum	Remove and replace
56	*Corymbia citriodora*	Lemon Scented Gum	Remove and replace
57	*Corymbia citriodora*	Lemon Scented Gum	Remove and replace
58	*Corymbia citriodora*	Lemon Scented Gum	Remove and replace
59	*Casuarina cunninghamiana*	River She Oak	Remove and replace
60	*Casuarina cunninghamiana*	River She Oak	Remove and replace
61	*Casuarina cunninghamiana*	River She Oak	Remove and replace
62	*Casuarina cunninghamiana*	River She Oak	Remove and replace
63	*Corymbia citriodora*	Lemon Scented Gum	Remove and replace
64	*Casuarina cunninghamiana*	River She Oak	Remove and replace
65	*Casuarina cunninghamiana*	River She Oak	Remove and replace
66	*Corymbia citriodora*	Lemon Scented Gum	Remove and replace
67	*Casuarina cunninghamiana*	River She Oak	Remove and replace
68	*Corymbia citriodora*	Lemon Scented Gum	Remove and replace
69	*Corymbia citriodora*	Lemon Scented Gum	Remove and replace
70	*Casuarina glauca*	Swamp Oak	Remove and replace
71	*Casuarina glauca*	Swamp Oak	Remove and replace
72	*Lophostemon confertus*	Queensland Brush Box	Remove and replace
73	*Lophostemon confertus*	Queensland Brush Box	Remove and replace
74	*DEAD*	DEAD	Remove and replace
75	*Eucalyptus microcorys*	Tallowwood	Remove and replace
76	*Eucalyptus sp.*	Eucalypt	Remove and replace
77	*Eucalyptus microcorys*	Tallowwood	Remove and replace
78	*Corymbia citriodora*	Lemon Scented Gum	Remove and replace
79 /2	*Syzygium smithii (x8)*	Lilly Pilly	Retain and protect
80	*Eucalyptus microcorys*	Tallowwood	Remove and replace
81	*Corymbia citriodora*	Lemon Scented Gum	Remove and replace
82	*Corymbia citriodora*	Lemon Scented Gum	Retain and protect
83	*Eucalyptus microcorys*	Tallowwood	Retain and protect
84	*Eucalyptus microcorys*	Tallowwood	Retain and protect
85	*Eucalyptus scoparia*	Wallangarra White Gum	Retain and protect
86	*Corymbia citriodora*	Lemon Scented Gum	Retain and protect
87	*Eucalyptus microcorys*	Tallowwood	Retain and protect
88	*Eucalyptus microcorys*	Tallowwood	Retain and protect
89	*Eucalyptus scoparia*	Wallangarra White Gum	Retain and protect
90	*Afrocarpus falcatus*	Yellowwood	Retain and protect

Redgum Tree / Stand No.	*Genus and species*	Common name	Recommendation
91	*Acer negundo*	Box Elder Maple	Remove and replace
92	*Sapium sebiferum*	Chinese Tallow wood	Remove and replace
93	*Acer negundo*	Box Elder Maple	Remove and replace
94	*Callistemon viminalis 'Hanna Ray'*	Hanna Ray Bottlebrush	Retain and protect
95	*Acer negundo*	Box Elder Maple	Remove and replace
96	*Platanus x hispanica*	London Plane Tree	Remove and replace
97	*Acer negundo*	Box Elder Maple	Remove and replace
98	*Celtis occidentalis*	Hackberry	Remove and replace
99	*Corymbia citriodora*	Lemon Scented Gum	Remove and replace
100	*Acacia floribunda*	Gossamer Wattle	Retain and protect
101	*Ulmus parvifolia*	Chinese Elm	Remove and replace
102	*Ulmus parvifolia*	Chinese Elm	Remove and replace
103	*Acer negundo*	Box Elder Maple	Remove and replace
104	*Robinia pseudoacacia 'Frisia'*	Honey Locust	Retain and protect – Street tree
105	*Platanus x hispanica*	London Plane Tree	Retain and protect – Street tree
106	*Platanus x hispanica*	London Plane Tree	Retain and protect – Street tree
107	*Platanus x hispanica*	London Plane Tree	Retain and protect – Street tree
108	*Platanus x hispanica*	London Plane Tree	Retain and protect – Street tree
109	*Ficus microcarpa*	Curtin Fig	Retain and protect – Street tree
110	*Robinia pseudoacacia 'Frisia'*	Honey Locust	Remove and replace – Street tree
111	*Robinia pseudoacacia 'Frisia'*	Honey Locust	Remove and replace – Street tree

Appendix C - Site Plan A – Survey of Subject Trees



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Arboricultural Impact Assessment: 7-11 Park Road, Alexandria NSW

REDGUM Horticultural
Arboriculture & Horticulture Consultants

Part B:
TREE PROTECTION PLAN
(Trees to be retained and protected)

for

Alexandria Park Community School
7-11 Park Road,
Alexandria NSW

Prepared 14 August 2017
Revised 9 March 2018
Reviewed 2 December 2018
Our Reference 2781.2

10.0 PREFACE

Retention of Significant Tree/s within the continual landscape of a development is recommended to minimise the impact of the built landscape within the overall local amenity. This section of the report highlights the required specifications within the Tree Protection Plan (Tree Management Plan) and is to be read in conjunction with Part A: Arboricultural Impact Assessment of this report.

11.0 INTRODUCTION

11.1 This section of the report provides the specification/s for all tree/s to be retained (on subject site) as detailed in Part A – Arboricultural Impact Assessment.

11.2 The trees to be retained are indicated on the Site Plan - Survey of Subject Trees to be retained & Tree Protection Zones. The minimum setback for protective fencing from development works per tree to be retained is summarized in Table 1.0. Tree Protection Specifications including - Site maintenance, Site Arboricultural service, Periodic inspections, Mulching, Irrigation, Weed control / suppression, Provision of services.

11.3 Tree maintenance works including pruning, removal or transplantation are detailed in section 2.0. Works for Tree Protection on Construction Sites are detailed in section 3.0 and Tree Protection Zones a Standard Procedure as detailed in section 13.0 to be applied, or further detailed, or additional or alternative works added where appropriate.

12.0 METHODOLOGY

This Methodology where utilised is applied to both Part A – Arboricultural Impact Assessment and B – Tree Protection Plan.

12.1 The method of assessment of tree/s applied is adapted from the principles of visual tree assessment undertaken from the ground, which considers:

- Tree health and subsequent stability, both long and short term
- Sustainable Retention Index Value (SRIV) Version 4 (IACA 2010) ©
- Hazard potential to people and property
- Amenity values
- Habitat values
- Significance

12.2 This assessment is undertaken using standard tree assessment criteria for each tree based on the values above and is implemented because of at least one comprehensive and detailed site inspection to undertake a visual tree assessment from the ground of each individual tree, or stand of trees, or a representative population sample. Any dimensions recorded as averages, or by approximation are noted accordingly.

13.0 PRUNING STANDARDS

13.1 Any pruning recommended in this report is to be to the Australian Standard® AS4373 *Pruning of amenity trees*, and conducted in accordance with the NSW Work Cover Authority Code of Practice, Tree Work, 2007.

13.2 All pruning or removal works are to be in accordance with the appropriate Tree Management Policy where applicable, or Tree Management Order (TMO), or Tree Preservation Order (TPO).

13.3 Tree maintenance work is specialised and in order to be undertaken safely to ensure the works carried out are not detrimental to the survival of a tree being retained, and to assist in the safe removal of any tree, should be undertaken by a qualified arboriculturist with appropriate competencies recognised within the Australian Qualification Framework, with a minimum of 5 years of continual experience within the industry of operational amenity arboriculture, and covered by appropriate and current types of insurance to undertake such works.

14.0 SUMMARY: Tree Management Plan

This Tree Protection Plan recommends; Trees 11 to 23, 33 to 38, 42 to 44, 79[x8], 82 to 90, 94, 100 & 104 to 109 are to be retained and protected within or adjacent to the development for the duration of construction works. For Tree/s 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 33, 34, 35, 36, 37, 38, 79[x8], 82, 83, 84, 85, 86, 90, 94, 100, 104, 105, 106, 107, 108 & 109; the alignment of the development is sufficiently setback to not affect these specimens. Tree/s 21, 22, 23, 42, 43 & 44; the alignment of the building/s will be a minor encroachment to these specimen/s. The section/s of the building/s within the TPZ of these specimen/s are to be constructed using tree sensitive excavation and construction techniques such as pier and beam construction with a suspended slab to reduce any impact on stability. Tree/s 87, 88 & 89; these specimens are impacted by the section of the outdoor learning areas within the TPZ of these specimen/s which is to be constructed using tree sensitive excavation and construction techniques. Root Mapping may be required to ascertain root plates and potential impact on their stability.

Discussion

14.1 *AS4970 (2009) section 3, 3.3.3 requires the Project Arborist to demonstrate that where a retained tree is subject to a major encroachment (>10% of area of TPZ) it can be protected to remain viable*

14.2 Tree/s 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 33, 34, 35, 36, 37, 38, 79[x8], 82, 83, 84, 85, 86, 90, 94, 100, 104, 105, 106, 107, 108 & 109, these specimens were found in fair health & good vigour at time of assessment.

- *Trees viability to development; these specimens are not impacted by the proposed development. The project arborist is to certify that installation of protection measures have been installed as per D/A conditions prior to commencement and works are to be monitored throughout the project at approx. 3 mthly intervals depending on the length of the development or as prescribed by the consenting authority. These specimens should remain viable beyond completion of development provided recommended installation & protection measures are adhered to.*

- *Development Impacts: AS4970 (2009) section 3 requires a Tree Protection Zone (TPZ) setbacks for each specimen from centre of trunk (COT), and can be found in table 2 of this report. These specimens are sufficiently setback from the development to not be affected.*

14.3 Tree/s 21, 22, 23 & 42 to 44, all specimens were found in fair health & good vigour at time of assessment.

- *Trees viability to development; these specimens are impacted by the proposed development. The project arborist is to certify that installation of protection measures have been installed as per D/A conditions prior to commencement and works are to be monitored throughout the project at approx. 3 mthly intervals depending on the length of the development. These specimens should remain viable beyond completion of development provided recommended installation & protection measures are adhered to.*

- *Development Impacts: AS4970 (2009) section 3 requires a Tree Protection Zone (TPZ) setbacks for each specimen from centre of trunk (COT), and can be found in table 2 of this report. The alignment of the building/s will be a minor encroachment to these specimens. The section/s of the building/s within the TPZ of these specimens are to be constructed using tree sensitive excavation and construction techniques such as pier and beam construction with a suspended slab to reduce any impact on stability.*

14.4 Tree/s 87, 88 & 89, all specimens were found in fair health & good vigour at time of assessment.

- *Trees viability to development; these specimens are impacted by the proposed development. The project arborist is to certify that installation of protection measures have been installed as per D/A conditions prior to commencement and works are to be monitored throughout the project at approx. 3 mthly intervals depending on the length of the development. These specimens should remain viable beyond completion of development provided recommended installation & protection measures are adhered to.*

- *Development Impacts: AS4970 (2009) section 3 requires a Tree Protection Zone (TPZ) setbacks for each specimen from centre of trunk (COT), and can be found in table 2 of this report. these specimens are impacted by the section of the outdoor learning areas within the TPZ of these specimen/s which is to be constructed using tree sensitive excavation and construction techniques. Root Mapping may be required to ascertain root plates and potential impact on their stability.*

If associated infrastructure (pipe works) are to be installed within the Tree Protection Zone of any retained specimen, they are to be installed by hand with non-motorised machinery. If structural roots are found within the trench, they are to be left intact and dug around retaining this specimen's structural integrity. Works are to be undertaken in consultation with the project arborist.

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There will be no impact to Tree/s 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 33, 34, 35, 36, 37, 38, 79x8, 82, 83, 84, 85, 86, 90, 94, 100, 104, 105, 106, 107, 108 & 109 with a minor encroachment for Tree/s 21, 22, 23, 42, 43 & 44 while Trees 87, 88 & 89 will be subject to major encroachment which are to be retained and protected as per AS 4970 (2009) Section 3, 3.3.3 *Major Encroachments* from development works within >10% of the area of the Tree Protection Zone and as per discussion points in section 14 in part B of this report. Any excavations must be supervised and certified by the Project Arborist in accordance with AS4970 (2009).

General – Tree Protection works – Prior to Demolition

14.7 *Milestones* – Prior to demolition works, a site arborist shall be appointed to supervise all tree protection procedures detailed in this specification. The Site Arborist shall have a minimum level 5 AQF qualification in Arboriculture. Milestones are to be adhered to throughout the duration of this development and all relevant documentation is to be submitted to the local authority.

14.8 The Tree Protection Zone for each tree/s is to be incorporated into the construction works for the site and the protection fencing or works to be situated as indicated on the Appendix F – Tree Protection Plan. The setbacks from building works on the side closest to each tree are to be carried out as indicated in Table 2.0, and Tree Protection Zones be constructed as described here and detailed in Appendix D. The trees will be sustained within the constraints of the modifications to the site by the proposed development works.

14.9 Trees 11 to 23, 33 to 38, 42 to 44, 79x8, 82 to 90, 94, 100 & 104 to 109, 110 & 111 are to be retained and protected and incorporated into the landscape works for the site, and Tree Protection Zone fencing to be marked accordingly on the Landscape Plan, where appropriate and installed prior to any demolition or construction.

14.10 Ground protection - If temporary access for machinery is required within the TPZ ground protection measures will be required. The purpose of ground protection is to prevent root damage and soil compaction within the TPZ. Measures may include a permeable membrane such as geotextile fabric beneath a layer of mulch or crushed rock below rumble boards. These measures may be applied to root zones beyond the TPZ.

14.11 Where applicable, any excavation for the establishment of a batter slope or benching for reasons of safety and to comply with Work Cover Authority safety regulations should be restricted as far as is safely possible near to trees to be retained to prevent root damage. If the excavations cannot be undertaken near to vertical the stability of these trees and their long-term viability may be compromised and their retention in a safe and healthy condition jeopardized and they may need to be revised and possibly removed.

Specific - Tree Protection Works - Prior to Demolition and Tree Removal

14.12 All other trees/shrubs; prior to demolition and tree removal works these tree/s are to be placed within a Tree Protection Zone with protective fencing and maintained and retained until the completion of all building works. Protective fencing is to be installed as shown in Appendix F - Tree Protection Plan.

- *The Protective fencing where required may delineate the **Tree Protection Zone (TPZ)** and should be situated as determined by the project arborist in accordance with AS4970 Protection of trees on development sites, Section 4, 4.3. "Fencing should be erected before any machinery or materials are brought onto the site and before the commencement of works including demolition. Once erected, protective fencing must not be removed or altered without approval by the project arborist. The TPZ must be secured to restrict access. AS4687 Temporary fencing and hoardings specifies applicable fencing requirements. Shade cloth or similar should be attached to reduce the transport of dust, other particulate matter and liquids into the protected area. Fence posts and supports should have a diameter greater than 20 mm and be located clear of roots. Existing perimeter fencing and other structures may be suitable as part of the protective fencing" or similar.*
- *Tree Protection signage is to be attached to each **TPZ** and displayed from within the development site in accordance with AS4970 2009 Protection of trees on development sites*
- *The area of the Tree Protection Zone to be mulched to a depth of 100 mm with organic material being 75% leaf litter and 25% wood, and this being composted material preferably from the same genus and species of tree as that to where the mulch is to be applied, i.e. species-specific mulch. The depth of mulch and type as indicated, to be maintained for the duration of the project. Where deep excavation will expose the soil profile to drying out the root plate is to be protected by pegging jute matting across the ground surface 2 m back from the edge of the profile and 2 m down the face of the profile and is to be in one continuous sheet or layers up to 5 mm thick and overlapped 300 mm and pegged. Pegs are to be a minimum length of 200 mm and spaced at 500 mm increments in a grid pattern. Once installed mulch is to be placed on top of the jute matting previously described.*

14.13 There is to be no storage of materials, rubbish, soil, equipment, structures or goods of any type to be kept or placed within 5 metres from the trunk or within the dripline of any tree for the duration of the development. This will ensure protection of the tree/s to be retained on or adjacent to site.

14.14 *Milestone* - Project/Site arborist is to inspect/assess all retained specimens prior to demolition to inspect tree protection measures have been carried out as per the approved D/A conditions for the site. Documentation is to be submitted to the consenting authority after each inspection.

Demolition and Tree Removal/s

14.15 Removal of a tree within 6 m of a tree to be retained should be undertaken only by cutting down such a tree without damaging the trees to be retained, and by grinding out its stump. Where possible the structural roots of 20 mm diameter or greater of the tree to be cut down should not be removed, to minimise soil disturbance and to reduce the impact on the roots of any tree to be retained nearby. Where structural roots are to be removed this should be undertaken manually using non-motorized hand tools after the stump has been ground out when such roots are often easier to locate from the site of the stump from which they have been severed.

14.16 Ground protection in accordance with AS4970 section 4, 4.5.3 may require steel plates to protect the ground surface from compaction to protect roots between the stages of demolition and construction of the new pavement.

Specific - Tree Protection works – Post Demolition and Prior to Construction

14.17 *Milestone* - Project/Site arborist is to inspect/assess all retained specimens prior to construction in relation to tree protection measures have been carried out as per the approved D/A conditions for the site. Documentation is to be submitted to the consenting authority after each inspection.

14.18 Location of underground utilities within a Tree Protection Zone of a retained specimen.
Any utility services to be situated underground within the TPZ are to be undertaken utilising excavation techniques that prevent or minimise damage to structural roots (roots greater than >20 mm diameter). To prevent soil compaction and root damage these works should be conducted with non-motorised hand tools, air knife or directional drilling.

14.19 Re-grading of site near retained trees; Grading &/or re-grading of sites/slopes within Tree Protection Zones or near retained specimens is to be undertaken **only** if at all, after consultation with the Project Arborist. This is to protect all structural roots systems from damage or compaction from machinery.

14.20 Placement of relocatable buildings; consideration should be given to tree sensitivity such as the buildings being placed on pier and beam or skids construction as they are to be positioned now on the eastern side of their driplines within the Tree Protection Zone (TPZ). The area of the Tree Protection Zone under the buildings is to be mulched to a depth of 200 mm (*if installed on skids*) with organic material to further reduce compaction. The mulch is to be composted material, i.e. species-specific mulch. Alternatively, if installed on a pier & beam construction, piers are to be undertaken manually by using non-motorized hand tools to determine the location of first order and lower order structural roots with a diameter of 20 mm (*structural woody roots*) or greater, without damaging them.

Specific - Tree Protection works – During Construction

14.21 *Milestone* - Project/Site arborist is to inspect/assess all retained specimens during construction in relation to tree protection measures have been carried out as per the approved D/A conditions for the site. Documentation is to be submitted to the consenting authority after each inspection.

14.22 Where any structural roots (roots with a diameter of greater than >20 mm) encountered by excavation are to be pruned and it is to be undertaken with clean sharp pruning tools, with a final cut to undamaged wood to prevent infestation by pathogens and assist continued root growth and undertaken in consultation with the Consulting Arboriculturist. Tree Protection Zone fences are to be maintained during these works. Ground protection in accordance with AS4970 section 4, 4.5.3 may require steel plates to protect the ground surface from compaction to protect roots between the stages of demolition and construction of the new pavement.

14.23 All Tree Protection Zones of retained trees are to be monitored for the duration of the construction phase of the development. The three main areas requiring monitoring are; *mulching* - mulch must be maintained to a depth of 50–100 mm using material that complies with AS 4454. Where the existing landscape within the TPZ is to remain unaltered (e.g. garden beds or turf) mulch may not be required, *watering* - soil moisture levels should be regularly monitored by the project arborist. Temporary irrigation or watering may be required within the TPZ. An above-ground irrigation system could be installed and maintained by a competent individual and *weeding* - weeds should be removed by hand without disturbing soil or should be controlled with weedicide.

14.24 Trees to be removed are to be replaced with advanced specimens being mindful of the space limitations of the new use of the site. The advanced trees should be situated in areas along the boundaries of the site. The planting in these locations will provide the maximum benefit to the surrounding properties by screening views to and from the site and the plantings included in the proposed landscape plan. The replacement trees will be situated in positions where they may grow to maturity unhindered and will not conflict with built structures or utility services and in greater numbers than the trees removed should provide a net increase in the local amenity.

Specific - Tree Protection works – Post Construction

14.25 *Milestone* - At completion of construction work the Site/Project Arborist should carry out an assessment of all trees retained &/or affected by works. This assessment is to document and any required on-going remedial care needed to ensure viable retention of trees affected. Documentation is to be submitted to the consenting authority.

15.0 CONCLUSION

Sixty-nine (69) trees are nominated for removal and replacement with species in accordance with the associated Landscape documentation for the development. The forty-seven (47) trees to be preserved will be retained and protected through the implementation of adequate measures for their integration into the development by the application of appropriate technology as detailed in this report. Where appropriate, the Landscape Plan will include planting with new trees including street tree/s. Two trees (Trees 24 & 25) were assessed as part of this report which have since been removed as part of Stage 2 – Pop-up School works and are not included in the above recommendations.

It is often a consequence of redevelopment, and subject to the nature of the proposed land use that some or all the trees present on the site prior to that redevelopment may be required to be removed and replaced with new tree plantings in different locations. This may be dependent upon the type of development and its design constraints and the requirements of the local planning instruments and any Landscape Design Codes if existing. Where tree removal is required for this development, it is considered that those trees identified within this report are not sustainable within the context of the proposed development. Where tree retention has been considered, those trees are expected to survive the redevelopment process and remain stable and viable. The retention and protection of existing trees on site is a significant aspect of the development process, allowing those trees as components of the current curtilage to be transferred to the new development for incorporation into the landscaping works for the site. The retention of some or all the existing trees contributes to: the preservation of local amenity, screening of views to and from the site, and a balance to the scale and bulk of buildings, while maintaining elements of a continuous landscape, providing a more harmonious integration and transition of the use of the land.

If all the recommendations and procedures detailed herein are adhered to, some or all the trees the subject of this report will continue, or will be replaced with more appropriate plantings in suitable locations, or enhanced by additional new plantings, and will grow to develop as important landscape components providing elements of long term amenity for the property and its owners or occupants, and the local community.

The recommendations made in this report are subject to approval by the consent authority.

As a renewable and dynamic natural resource, the urban tree and the growing environment essential for its survival must be understood and carefully managed to balance its needs with those of people. It is crucial that as required: this resource be planned for, planted, nurtured, protected, maintained and replaced, to ensure appropriateness and suitability of new plantings and trees retained, for safety and viability, so that it remains vital, and is sustainable in continuity.

16.0 RECOMMENDATIONS – Retention.

16.1 Trees 11 to 23, 33 to 38, 42 to 44, 79x8, 82 to 90, 94, 100 & 104 to 109 are to be retained in situ within the site and are to be protected as detailed in 14.2 - 14.25 of Part B of this report. Tree protection fences, or works, to be located in accordance with *Site Plan B – Trees to be Retained and Tree Protection Zones* (Appendix F).

16.2 Where Tree Protection Zone fences are to be moved or relocated this must be undertaken in consultation with the Consultant Arboriculturist for the project to ensure that tree protection is maintained. If the fences are relocated areas are to be mulched in accordance with 14.12 of this report to reduce compaction to the root system of the retained specimens.

16.3 To minimise damage to retained crowns, all Tree Protection Zones are to be adhered to. This must be undertaken in consultation with the Consultant Arboriculturist for the project to ensure that tree protection is maintained. Minor pruning may be required if damage occurs, work to undertaken in accordance with section 4 of this report.

16.4 *Milestones* - Project/Site arborist is to inspect/assess all retained specimens prior to Demolition and Tree Removal, Post Demolition, Prior to Construction during Construction and on completion in relation to trees protected and the protection measures have been carried out as per the approved D/A conditions for the site. Documentation is to be submitted to the consenting authority after each inspection.

16.5 Any work to be undertaken within Tree Protection Zones is to be undertaken in accordance with 16.2 of this report.

16.6 Tree removal near retained specimens is to be undertaken in accordance with 14.15 of this report.

16.7 There is to be no storage of materials, rubbish, soil, equipment, structures or goods of any type to be kept or placed within 5 metres from the trunk or within the dripline of any tree for the duration of the development. This will ensure protection of the tree/s to be retained on or adjacent to site.

16.8 Each of the replacement are to be a vigorous specimen with a straight trunk, gradually tapering and continuous, crown excurrent, symmetrical, with roots established but not pot bound in a volume container or approved similar and be maintained by an appropriately qualified and experienced landscape contractor for up to one (1) year after planting, or as appropriate.

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& Arboriculture Australia (AA) 2005 - 2011 & 2015 - 2018

Appendix D

Extract from Australian Standard AS4970 2009 Protection of trees on development sites

Section 3, Determining the tree protection zones of the selected trees

3.1 Tree protection zone (TPZ)

"The tree protection zone (TPZ) is the principal means of protecting trees on development sites. The TPZ is a combination of the root area and crown area requiring protection. It is an area isolated from construction disturbance, so that the tree remains viable.

The TPZ incorporates the structural root zone (SRZ)

3.2 Determining the TPZ

The radius of the TPZ is calculated for each tree by multiplying its DBH x 12.

TPZ = DBH x 12

where

DBH = trunk diameter measured at 1.4 m above ground

Radius is measured from the centre of the stem at ground level.

3.3.5 Structural root zone (SRZ)

"The SRZ is the area required for street stability. A larger area is required to maintain a viable tree. The SRZ only needs to be calculated when a major encroachment into a TPZ is proposed. Root investigation may provide more information on the extent of these roots."

Determining the SRZ

The radius of the TPZ is calculated for each tree by multiplying its DBH x 12.

SRZ radius = $(D \times 50)^{0.42} \times 0.64$

where

D = trunk diameter, in metres, measured above the root buttress.

Note: The SRZ for trees with trunk diameters less than 0.15 m will be 1.5 m.

Appendix E

Glossary

From

Dictionary for Managing Trees in Urban Environments by Draper BD and Richards PA 2009,
Institute of Australian Consulting Arboriculturists (IACA), CSIRO Publishing, Collingwood, Victoria, Australia.

Age of Trees

Age Most trees have a stable biomass for the major proportion of their life. The estimation of the age of a tree is based on the knowledge of the expected lifespan of the taxa in situ divided into three distinct stages of measurable biomass, when the exact age of the tree from its date of cultivation or planting is unknown and can be categorized as *Young*, *Mature* and *Over-mature* (British Standards 1991, p. 13, Harris *et al*, 2004, p. 262).

Young Tree aged less than <20% of life expectancy, *in situ*.

Mature Tree aged 20-80% of life expectancy, *in situ*.

Over-mature Tree aged greater than >80% of life expectancy, *in situ*, or *senescent* with or without reduced *vigour*, and declining gradually or rapidly but irreversibly to death.

Condition of Trees

Condition A tree's *crown form* and growth habit, as modified by its *environment* (aspect, suppression by other trees, soils), the *stability* and *viability* of the *root plate*, trunk and structural branches (first (1st) and possibly second (2nd) order branches), including structural defects such as wounds, cavities or hollows, *crooked* trunk or weak trunk/branch junctions and the effects of predation by pests and diseases. These may not be directly connected with *vigour* and it is possible for a tree to be of *normal vigour* but in *poor condition*. Condition can be categorized as *Good Condition*, *Fair Condition*, *Poor Condition* and *Dead*.

Good Condition Tree is of good habit, with *crown form* not severely restricted for space and light, physically free from the adverse effects of *predation* by pests and diseases, obvious instability or structural weaknesses, fungal, bacterial or insect infestation and is expected to continue to live in much the same condition as at the time of inspection provided conditions around it for its basic survival do not alter greatly. This may be independent from, or contributed to by vigour.

Fair Condition Tree is of good habit or *misshapen*, a form not severely restricted for space and light, has some physical indication of *decline* due to the early effects of *predation* by pests and diseases, fungal, bacterial, or insect infestation, or has suffered physical injury to itself that may be contributing to instability or structural weaknesses, or is faltering due to the modification of the *environment* essential for its basic survival. Such a tree may recover with remedial works where appropriate, or without intervention may stabilise or improve over time, or in response to the implementation of beneficial changes to its local environment. This may be independent from, or contributed to by vigour.

Poor Condition Tree is of good habit or *misshapen*, a form that may be severely restricted for space and light, exhibits symptoms of advanced and *irreversible decline* such as fungal, or bacterial infestation, major die-back in the branch and *foliage crown*, *structural deterioration* from insect damage e.g. termite infestation, or storm damage or lightning strike, ring barking from borer activity in the trunk, root damage or instability of the tree, or damage from physical wounding impacts or abrasion, or from altered local environmental conditions and has been unable to adapt to such changes and may decline further to death regardless of remedial works or other modifications to the local *environment* that would normally be sufficient to provide for its basic survival if in *good* to *fair* condition. Deterioration physically, often characterised by a gradual and continuous reduction in vigour but may be independent of a change in vigour, but characterised by a proportionate increase in susceptibility to, and *predation* by pests and diseases against which the tree cannot be sustained. Such conditions may also be evident in trees of advanced senescence due to normal phenological processes, without modifications to the growing environment or physical damage having been inflicted upon the tree. This may be independent from, or contributed to by vigour.

Senescent / Moribund Advanced state of decline, dying or nearly dead.

Dead Tree is no longer capable of performing any of the following processes or is exhibiting any of the following symptoms;
Processes
Photosynthesis via its foliage crown (as indicated by the presence of moist, green or other coloured leaves);
Osmosis (the ability of the root system to take up water);
Turgidity (the ability of the plant to sustain moisture pressure in its cells);
Epicormic shoots or *epicormic strands* in Eucalypts (the production of new shoots as a response to stress, generated from latent or adventitious buds or from a *lignotuber*);
Symptoms
Permanent leaf loss;
Permanent wilting (the loss of turgidity which is marked by desiccation of stems leaves and roots);
Abscission of the *epidermis* (bark desiccates and peels off to the beginning of the sapwood).

Removed No longer present, or tree not able to be located or having been cut down and retained on a site, or having been taken away from a site prior to site inspection.

Branch

Branch An elongated woody structure arising initially from the trunk to support leaves, flowers, fruit and the development of other branches. A branch may itself fork and continue to divide many times as successive *orders of branches* with the length and taper decreasing incrementally to the *outer extremity* of the *crown*. These may develop initially as a gradually tapering continuation of the *trunk* with minimal division as in a *young* tree or a tree of *excurrent habit*, or in a *sapling*, or may arise where the trunk terminates at or some distance from the *root crown*, dividing into *first order branches* to form and support the *foliage crown*. In an *acaulescent* tree, branches arise at or near the *root crown*. Similarly, branches may arise from a *sprout mass* from damaged *roots*, *branches* or *trunk*.

Orders of branches the marked divisions between successively smaller branches (James 2003, p. 168) commencing at the initial division where the trunk terminates on a *deliquescent* tree or from *lateral* branches on an *excurrent* tree. Successive branching is generally characterised by a gradual reduction in branch diameters at each division, and each gradation from the trunk can be categorised numerically, e.g. first order, second order, third order etc. (See Figure 21.)

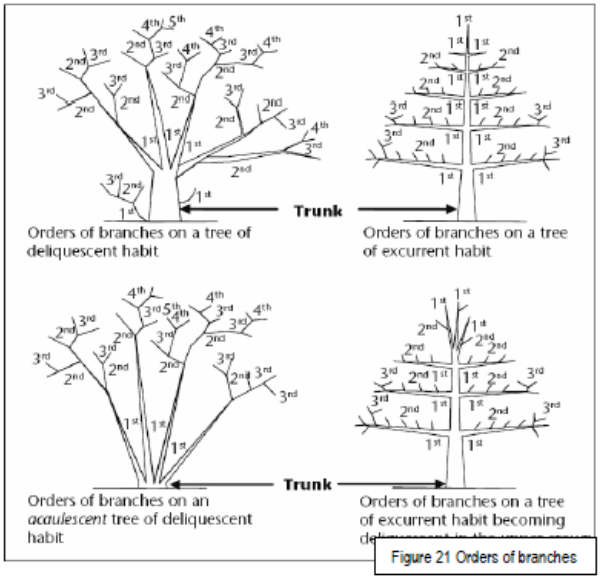


Figure 21 Orders of branches

Crown

Canopy 1. Of multiple trees, the convergence, or merging in full or part, of the crowns of two or more trees due to their proximity, or where competition for light and space available in a forest environment is limited as each tree develops forming a continuous layer of foliage. 2. Used as a plural for crown. 3. Sometimes synonymously used for crown (USA).

Crown Of an individual tree all the parts arising above the trunk where it terminates by its division forming branches, e.g. the branches, leaves, flowers and fruit; or the total amount of foliage supported by the branches. The crown of any tree can be divided vertically into three sections and can be categorised as *lower crown*, *mid crown* and *upper crown* (Figure 8). For a *leaning* tree these can be divided evenly into crown sections of one-third from the *base* to *apex*. The volume of a crown can be categorised as the *inner crown*, *outer crown* and *outer extremity of crown*.

Lower crown The *proximal* or lowest section of a crown when divided vertically into one-third (⅓) increments. See also *Crown*, *Mid crown* and *Upper crown*.

Mid crown The middle section of a crown when divided vertically into one-third (⅓) increments. See also *Crown*, *Lower crown* and *Upper crown*.

Upper crown The *distal* or highest section of a crown when divided vertically into one-third (⅓) increments. See also *Crown*, *Mid crown* and *Lower crown*.

Crown Projection (CP) Area within the *dripline* or beneath the lateral extent of the *crown* (Geiger 2004, p. 2). See also *Crown spread* and *Dripline*.

Dripline A line formed around the edge of a tree by the lateral extent of the *crown*. Such a line may be evident on the ground with some trees when exposed soil is displaced by rain shed from the crown. See also *Crown Projection*.

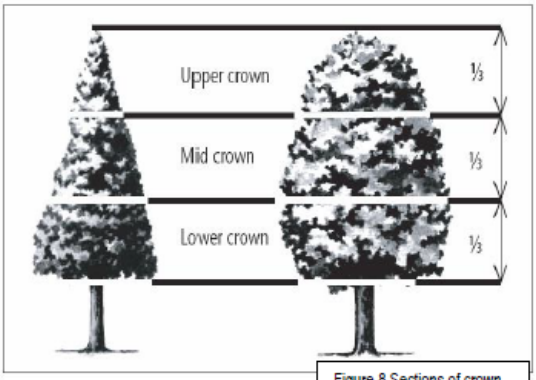


Figure 8 Sections of crown.

Crown Form of Trees

Crown Form The shape of the crown of a tree as influenced by the availability or restriction of space and light, or other contributing factors within its growing environment. Crown Form may be determined for tree shape and habit generally as *Dominant*, *Codominant*, *Intermediate*, *Emergent*, *Forest* and *Suppressed*. The habit and shape of a *crown* may also be considered qualitatively and can be categorized as *Good Form* or *Poor Form*.

Good Form Tree of *typical* crown shape and habit with proportions representative of the taxa considering constraints such as origin e.g. indigenous or exotic, but does not appear to have been adversely influenced in its development by environmental factors in situ such as *soil water* availability, prevailing wind, or cultural practices such as lopping and competition for space and light.

Poor Form Tree of *atypical* crown shape and habit with proportions not representative of the species considering constraints and appears to have been adversely influenced in its development by environmental factors in situ such as *soil water* availability, prevailing wind, cultural practices such as lopping and competition for space and light; causing it to be *misshapen* or disfigured by disease or vandalism.

Crown Form Codominant Crowns of trees restricted for space and light on one or more sides and receiving light primarily from above e.g. constrained by another tree/s or a building.

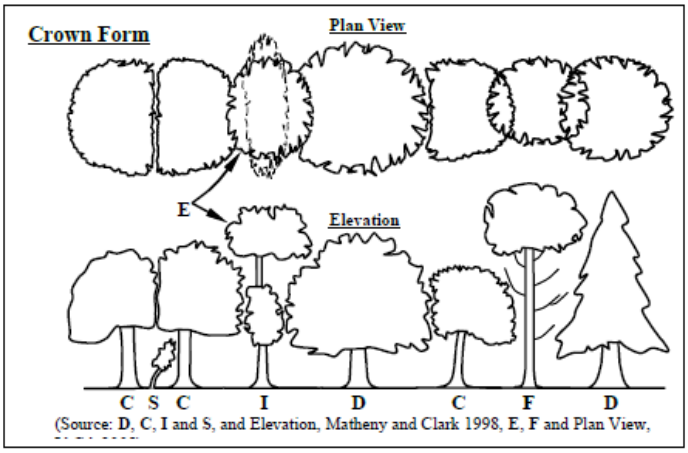
Crown Form Dominant Crowns of trees generally not restricted for space and light receiving light from above and all sides.

Crown Form Emergent Crowns of trees restricted for space on most sides receiving most light from above until the *upper crown* grows to protrude above the canopy in a stand or forest environment. Such trees may be *crown form dominant* or transitional from *crown form intermediate* to *crown form forest* asserting both *apical dominance* and *axillary dominance* once free of constraints for space and light.

Crown Form Forest Crowns of trees restricted for space and light except from above forming tall trees with narrow spreading crowns with foliage restricted generally to the top of the tree. The trunk is usually erect, straight and continuous, tapering gradually, crown often excurrent, with first order branches becoming structural, supporting the live crown concentrated towards the top of the tree, and below this point other first order branches arising radially with each *inferior* and usually temporary, divergent and ranging from horizontal to ascending, often with internodes exaggerated due to competition for space and light in the *lower crown*.

Crown Form Intermediate Crowns of trees restricted for space on most sides with light primarily from above and on some sides only.

Crown Form Suppressed Crowns of trees generally not restricted for space but restricted for light by being *overtopped* by other trees and occupying an understorey position in the canopy and growing slowly.



(Source: D, C, I and S, and Elevation, Matheny and Clark 1998, E, F and Plan View,

Deadwood

Deadwood Dead branches within a tree's crown and considered quantitatively as separate to *crown cover* and can be categorised as *Small Deadwood* and *Large Deadwood* according to diameter, length and subsequent *risk* potential. The amount of dead branches on a tree can be categorized as *Low Volume Deadwood*, *Medium Volume Deadwood* and *High Volume Deadwood*. See also *Dieback*.

Deadwooding Removing of dead branches by *pruning*. Such pruning may assist in the prevention of the spread of *decay* from *dieback* or for reasons of safety near an identifiable target.

Small Deadwood A dead branch up to 10mm diameter and usually <2 metres long, generally considered of low *risk* potential.
Large Deadwood A dead branch >10mm diameter and usually >2 metres long, generally considered of high *risk* potential.
High Volume Deadwood High Volume Deadwood Where >10 dead branches occur that may require *removal*.
Medium Volume Deadwood Where 5-10 dead branches occur that may require *removal*.
Low Volume Deadwood Where <5 dead branches occur that may require *removal*.

Dieback

Dieback The death of some areas of the *crown*. Symptoms are leaf drop, bare twigs, dead branches and tree death, respectively. This can be caused by root damage, root disease, bacterial or fungal canker, severe bark damage, intensive grazing by insects, *abrupt changes* in growth conditions, drought, water-logging or over-maturity. Dieback often implies reduced *resistance*, *stress* or *decline* which may be temporary. Dieback can be categorized as *Low Volume Dieback*, *Medium Volume Dieback* and *High Volume Dieback*.

High Volume Dieback Where >50% of the *crown cover* has died.
Medium Volume Dieback Where 10-50% of the *crown cover* has died.
Low Volume Dieback Where <10% of the *crown cover* has died. See also *Dieback*, *High Volume Dieback* and *Medium Volume Dieback*.

Epicormic shoots

Epicormic Shoots Juvenile shoots produced at branches or trunk from *epicormic strands* in some Eucalypts (Burrows 2002, pp. 111-131) or sprouts produced from dormant or latent buds concealed beneath the bark in some trees. Production can be triggered by fire, pruning, wounding, or root damage but may also be as a result of *stress* or *decline*. Epicormic shoots can be categorized as *Low Volume Epicormic Shoots*, *Medium Volume Epicormic Shoots* and *High Volume Epicormic Shoots*.

High Volume Epicormic Shoots Where >50% of the *crown cover* is comprised of live *epicormic shoots*.
Medium Volume Epicormic Shoots Where 10-50% of the *crown cover* is comprised of live *epicormic shoots*.
Low Volume Epicormic Shoots Where <10% of the *crown cover* is comprised of live *epicormic shoots*.

General Terms

Cavity A usually shallow void often localized initiated by a *wound* and subsequent *decay* within the trunk, branches or roots, or beneath bark, and may be enclosed or have one or more opening.

Decay Process of degradation of wood by microorganisms (Australian Standard 2007, p. 6) and fungus.

Hazard The threat of danger to people or property from a tree or tree part resulting from changes in the physical condition, growing environment, or existing physical attributes of the tree, e.g. included bark, soil erosion, or thorns or poisonous parts, respectively.

Included bark 1. The bark on the inner side of the *branch union*, or is within a concave *crotch* that is unable to be lost from the tree and accumulates or is trapped by *acutely divergent* branches forming a *compression fork*. 2. Growth of bark at the interface of two or more branches on the inner side of a branch union or in the crotch where each branch forms a branch collar and the collars roll past one another without forming a graft where no one collar is able to subsume the other. Risk of failure is worsened in some taxa where branching is *acutely divergent* or *acutely convergent* and ascending or erect.

Hollow A large void initiated by a *wound* forming a *cavity* in the trunk, branches or roots and usually increased over time by *decay* or other contributing factors, e.g. fire, or fauna such as birds or insects e.g. ants or termites. A hollow can be categorized as an *Ascending Hollow* or a *Descending Hollow*.

Risk The random or potentially foreseeable possibility of an episode causing harm or damage.

Significant Important, weighty or more than ordinary.

Significant Tree A tree considered important, weighty or more than ordinary. Example: due to prominence of location, or *in situ*, or contribution as a component of the overall landscape for *amenity* or aesthetic qualities, or *curtilage* to structures, or importance due to uniqueness of taxa for species, subspecies, variety, *crown form*, or as an historical or cultural planting, or for age, or substantial dimensions, or habit, or as *remnant vegetation*, or habitat potential, or a rare or threatened species, or uncommon in cultivation, or of aboriginal cultural importance, or is a commemorative planting.

Substantial A tree with large dimensions or proportions in relation to its place in the landscape.

Sustainable Retention Index Value (SRIV) A visual tree assessment method to determine a qualitative and numerical rating for the viability of urban trees for development sites and management purposes, based on general tree and landscape assessment criteria using classes of *age*, *condition* and *vigour*. SRIV is for the professional manager of urban trees to consider the tree *in situ* with an assumed knowledge of the *taxon* and its growing environment. It is based on the physical attributes of the tree and its response to its environment considering its position in a matrix for age class, vigour class, condition class and its sustainable retention with regard to the safety of people or damage to property. This also factors the ability to retain the tree with remedial work or beneficial modifications to its growing environment or removal and replacement. SRIV is supplementary to the decision made by a tree management professional as to whether a tree is retained or removed (IACA - Institute of Australian Consulting Arboriculturists 2005).

Visual Tree Assessment (VTA) A visual inspection of a tree from the ground based on the principle that, when a tree exhibits apparently superfluous material in its shape, this represents repair structures to rectify *defects* or to reinforce weak areas in accordance with the *Axiom of Uniform Stress* (Mattheck & Breloer 1994, pp. 12-13, 145). Such assessments should only be undertaken by suitably competent practitioners.

Leaning Trees

Leaning A tree where the *trunk* grows or moves away from upright. A lean may occur anywhere along the *trunk* influenced by a number of contributing factors e.g. genetically predetermined characteristics, competition for space or light, prevailing winds, aspect, slope, or other factors. A *leaning* tree may maintain a *static lean* or display an increasingly *progressive lean* over time and may be hazardous and prone to *failure* and *collapse*. The degrees of leaning can be categorized as *Slightly Leaning*, *Moderately Leaning*, *Severely Leaning* and *Critically Leaning*.

Slightly Leaning A leaning tree where the trunk is growing at an angle within 0^{o}-15^{o} from upright.
Moderately Leaning A leaning tree where the trunk is growing at an angle within 15^{o}-30^{o} from upright.
Severely Leaning A leaning tree where the trunk is growing at an angle within 30^{o}-45^{o} from upright.
Critically Leaning A leaning tree where the trunk is growing at an angle greater than $>45^{o}$ from upright.
Progressively Leaning A tree where the degree of *leaning* appears to be increasing over time.
Static Leaning A leaning tree whose lean appears to have stabilized over time.

Periods of Time

Periods of Time The life span of a tree in the urban environment may often be reduced by the influences of encroachment and the dynamics of the environment and can be categorized as *Immediate*, *Short Term*, *Medium Term* and *Long Term*.

Immediate An *episode* or occurrence, likely to happen within a twenty-four (24) hour period, e.g. tree failure or collapse in full or part posing an imminent danger.
Short Term A period of time less than <1 – 15 years.
Medium Term A period of time 15 – 40 years.
Long Term A period of time greater than >40 years.

Roots

First Order Roots (FOR) Initial woody roots arising from the *root crown* at the base of the *trunk*, or as an *adventitious root mass* for structural support and *stability*. Woody roots may be buttressed and divided as a marked gradation, gradually tapering and continuous or tapering rapidly at a short distance from the root crown. Depending on soil type these roots may descend initially and not be evident at the root crown, or become buried by changes in soil levels. Trees may develop 4-11 (Perry 1982, pp. 197-221), or more first order roots which may radiate from the trunk with a relatively even distribution, or be prominent on a particular aspect, dependent upon physical characteristics e.g. leaning trunk, *asymmetrical* crown; and constraints within the growing *environment* from topography e.g. slope, soil depth, rocky outcrops, exposure to predominant wind, soil moisture, depth of *water table* etc.

Orders of Roots The marked divisions between woody roots, commencing at the initial division from the base of the trunk, at the *root crown* where successive branching is generally characterised by a gradual reduction in root diameters and each gradation from the trunk and can be categorized numerically, e.g. *first order roots*, second order roots, third order roots etc. Roots may not always be evident at the *root crown* and this may be dependent on species, age class and the growing environment. Palms at maturity may form an adventitious root mass.

Root Plate The entire root system of a tree generally occupying the top 300-600mm of soil including roots at or above ground and may extend laterally for distances exceeding twice the height of the tree (Perry 1982, pp. 197-221). Development and extent is dependent on water availability, soil type, *soil depth* and the physical characteristics of the surrounding landscape.

Root Crown Roots arising at the base of a trunk.

Zone of Rapid Taper The area in the *root plate* where the diameter of *structural roots* reduces substantially over a short distance from the *trunk*. Considered to be the minimum radial distance to provide structural support and *root plate* stability. See also *Structural Root Zone (SRZ)*.

Structural Roots Roots supporting the infrastructure of the *root plate* providing strength and *stability* to the tree. Such roots may taper rapidly at short distances from the *root crown* or become large and woody as with gymnosperms and dicotyledonous angiosperms and are usually 1st and 2nd order roots, or form an *adventitious root mass* in monocotyledonous angiosperms (palms). Such roots may be crossed and grafted and are usually contained within the area of *crown projection* or extend just beyond the *dripline*.

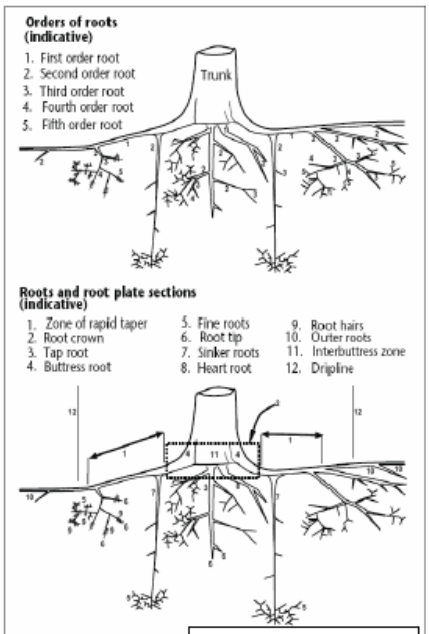


Figure 22 Orders of Roots.

Symmetry

Symmetry Balance within a *crown*, or *root plate*, above or below the *axis* of the trunk of branch and foliage, and root distribution respectively and can be categorized as *Asymmetrical* and *Symmetrical*.

Asymmetrical Imbalance within a crown, where there is an uneven distribution of branches and the foliage *crown* or *root plate* around the vertical *axis* of the trunk. This may be due to *Crown Form Codominant* or *Crown Form Suppressed* as a result of natural restrictions e.g. from buildings, or from competition for space and light with other trees, or from exposure to wind, or artificially caused by pruning for clearance of roads, buildings or power lines. An example of an expression of this may be, crown asymmetrical, bias to west.

Symmetrical Balance within a crown, where there is an even distribution of branches and the *foliage crown* around the vertical *axis* of the trunk. This usually applies to trees of *Crown Form Dominant* or *Crown Form Forest*. An example of an expression of this may be crown symmetrical.

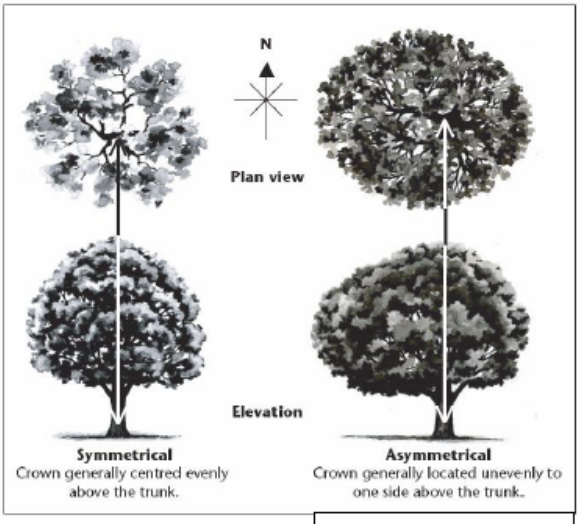


Figure 27 Symmetry within crown

Trunk

Trunk A single stem extending from the *root crown* to support or elevate the *crown*, terminating where it divides into separate *stems* forming *first order branches*. A trunk may be evident at or near ground or be absent in *acaulescent* trees of *deliquescent* habit, or may be continuous in trees of *excurrent* habit. The trunk of any *caulescent* tree can be divided vertically into three (3) sections and can be categorized as *Lower Trunk*, *Mid Trunk* and *Upper Trunk*. For a *leaning* tree these may be divided evenly into sections of one third along the trunk.

Acaulescent A *trunkless* tree or tree growth forming a very short *trunk*. See also *Caulescent*. (See Fig. 21)

Caulescent Tree grows to form a *trunk*. See also *Acaulescent*. (See Fig. 21)

Lower trunk Lowest, or *proximal* section of a trunk when divided into one-third (⅓) increments along its *axis*. See also *Trunk*, *Mid trunk* and *Upper trunk*.

Mid trunk A middle section of a trunk when divided into one-third (⅓) increments along its *axis*. See also *Trunk*, *Lower trunk* and *Upper trunk*.

Upper trunk Highest, or *distal* section of a trunk when divided into one-third (⅓) increments along its *axis*. See also *Trunk*, *Lower trunk* and *Mid trunk*.

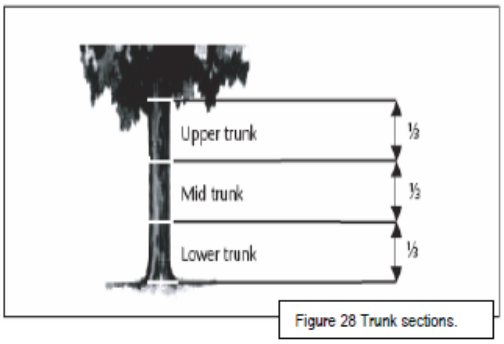


Figure 28 Trunk sections.

Diameter at Breast Height (DBH) Measurement of trunk width calculated at a given distance above ground from the base of the tree often measured at 1.4 m. The trunk of a tree is usually not a circle when viewed in cross section, due to the presence of *reaction wood* or *adaptive wood*, therefore an average diameter is determined with a *diameter tape* or by recording the trunk along its narrowest and widest axes, adding the two dimensions together and dividing them by 2 to record an average and allowing the orientation of the longest axis of the trunk to also be recorded. Where a tree is growing on a lean the distance along the top of the trunk is measured to 1.4m and the diameter then recorded from that point perpendicular to the edge of the trunk. Where a *leaning* trunk is *crooked* a vertical distance of 1.4m is measured from the ground. Where a tree branches from a trunk that is less than 1.4m above ground, the trunk diameter is recorded perpendicular to the length of the *trunk* from the point immediately below the base of the flange of the *branch collar* extending the furthest down the trunk, and the distance of this point above ground recorded as *trunk* length. Where a tree is located on sloping ground the DBH should be measured at half way along the side of the tree to average out the angle of slope. Where a tree is *acaulescent* or *trunkless* branching at or near ground an average diameter is determined by recording the radial extent of the trunk at or near ground and noting where the measurement was recorded e.g. at ground.

Vigour

Vigour Ability of a tree to sustain its life processes. This is independent of the *condition* of a tree but may impact upon it. Vigour can appear to alter rapidly with change of seasons (seasonality) e.g. *dormant*, deciduous or semi-deciduous trees. Vigour can be categorized as *Normal Vigour, High Vigour*, *Low Vigour* and *Dormant Tree Vigour*.

Normal Vigour Ability of a tree to maintain and sustain its life processes. This may be evident by the *typical* growth of leaves, *crown cover* and *crown density*, branches, roots and trunk and *resistance* to *predation*. This is independent of the *condition* of a tree but may impact upon it, and especially the ability of a tree to sustain itself against predation.

High Vigour *Accelerated growth* of a tree due to incidental or deliberate artificial changes to its growing *environment* that are seemingly beneficial, but may result in *premature aging* or failure if the favourable conditions cease, or promote *prolonged senescence* if the favourable conditions remain, e.g. water from a leaking pipe; water and nutrients from a leaking or disrupted sewer pipe; nutrients from animal waste, a tree growing next to a chicken coop, or a stock feed lot, or a regularly used stockyard; a tree subject to a stringent watering and fertilising program; or some trees may achieve an extended lifespan from continuous *pollarding* practices over the life of the tree.

Low Vigour Reduced ability of a tree to sustain its life processes. This may be evident by the *atypical* growth of leaves, reduced *crown cover* and reduced *crown density*, branches, roots and trunk, and a deterioration of their functions with reduced *resistance* to *predation*. This is independent of the *condition* of a tree but may impact upon it, and especially the ability of a tree to sustain itself against predation.

Appendix F

Survey of Subject Tree/s - retained

Trees the subject of this report are marked on the plans in the following appendices and are numbered as listed below.

Redgum Tree / Stand No.	*Genus and species*	Common name	Recommendation
1	*Eucalyptus saligna*	Sydney Blue Gum	Remove and replace
2	*Eucalyptus scoparia*	Wallangarra White Gum	Remove and replace
3	*Eucalyptus scoparia*	Wallangarra White Gum	Remove and replace
4	*Eucalyptus scoparia*	Wallangarra White Gum	Remove and replace
5	*Eucalyptus scoparia*	Wallangarra White Gum	Remove and replace
6	*Eucalyptus botryoides*	Bangalay Gum	Remove and replace
7	*Eucalyptus robusta*	Swamp Mahogany	Remove and replace
8	*Eucalyptus robusta*	Swamp Mahogany	Remove and replace
9	*Angophora costata*	Sydney Red Gum	Remove and replace
10	*Eucalyptus robusta*	Swamp Mahogany	Remove and replace
11	*Ficus microcarpa*	Curtin fig	Retain and protect
12	*Eucalyptus robusta*	Swamp Mahogany	Retain and protect
13	*Eucalyptus robusta*	Swamp Mahogany	Retain and protect
14	*Ficus microcarpa*	Curtin Fig	Retain and protect
15	*Platanus x hispanica*	London Plane Tree	Retain and protect – Street tree
16	*Platanus x hispanica*	London Plane Tree	Retain and protect – Street tree
17	*Ficus benjamina*	Weeping Fig	Retain and protect
18	*Ficus microcarpa*	Curtin Fig	Retain and protect
19	*Ficus microcarpa*	Curtin Fig	Retain and protect
20	*Ficus microcarpa*	Curtin Fig	Retain and protect
21	*Ficus microcarpa*	Curtin Fig	Retain and protect
22	*Ficus microcarpa*	Curtin Fig	Retain and protect
23	*Ficus microcarpa*	Curtin Fig	Retain and protect
24	*Angophora bakeri*	Narrow Leaved Apple	Removed as part of Stage 2 Pop-up School
25	*Angophora bakeri*	Narrow Leaved Apple	Removed as part of Stage 2 Pop-up School
26	*Eucalyptus sideroxylon*	Flowering Ironbark	Remove and replace
27	*Eucalyptus sideroxylon*	Flowering Ironbark	Remove and replace
28	*Eucalyptus sideroxylon*	Flowering Ironbark	Remove and replace
29	*Eucalyptus sideroxylon*	Flowering Ironbark	Remove and replace
30	*Eucalyptus sideroxylon*	Flowering Ironbark	Remove and replace
31	*Eucalyptus saligna*	Sydney Blue Gum	Remove and replace
32	*Angophora costata*	Sydney Red Gum	Remove and replace
33	*Platanus x hispanica*	London Plane Tree	Retain and protect – Street tree
34	*Platanus x hispanica*	London Plane Tree	Retain and protect – Street tree
35	*Platanus x hispanica*	London Plane Tree	Retain and protect – Street tree
36	*Platanus x hispanica*	London Plane Tree	Retain and protect – Street tree
37	*Platanus x hispanica*	London Plane Tree	Retain and protect – Street tree
38	*Platanus x hispanica*	London Plane Tree	Retain and protect – Street tree
39	*Corymbia maculata*	Spotted Gum	Remove and replace
40	*Corymbia maculata*	Spotted Gum	Remove and replace
41	*Corymbia maculata*	Spotted Gum	Remove and replace
42	*Ulmus parvifolia*	Chinese Elm	Retain and protect – Road reserve
43	*Ulmus parvifolia*	Chinese Elm	Retain and protect – Road reserve
44	*Ulmus parvifolia*	Chinese Elm	Retain and protect – Road reserve
45	*Ulmus parvifolia*	Chinese Elm	Remove and replace – Road reserve

Redgum Tree / Stand No.	*Genus and species*	Common name	Recommendation
46	*Ulmus parvifolia*	Chinese Elm	Remove and replace – Road reserve
47	*Ulmus parvifolia*	Chinese Elm	Remove and replace – Road reserve
48	*Ulmus parvifolia*	Chinese Elm	Remove and replace – Road reserve
49	*Ulmus parvifolia*	Chinese Elm	Remove and replace – Road reserve
50	*Ulmus parvifolia*	Chinese Elm	Remove and replace – Road reserve
51	*Ulmus parvifolia*	Chinese Elm	Remove and replace
52	*Corymbia citriodora*	Lemon Scented Gum	Remove and replace
53	*Corymbia citriodora*	Lemon Scented Gum	Remove and replace
54	*Corymbia citriodora*	Lemon Scented Gum	Remove and replace
55	*Corymbia citriodora*	Lemon Scented Gum	Remove and replace
56	*Corymbia citriodora*	Lemon Scented Gum	Remove and replace
57	*Corymbia citriodora*	Lemon Scented Gum	Remove and replace
58	*Corymbia citriodora*	Lemon Scented Gum	Remove and replace
59	*Casuarina cunninghamiana*	River She Oak	Remove and replace
60	*Casuarina cunninghamiana*	River She Oak	Remove and replace
61	*Casuarina cunninghamiana*	River She Oak	Remove and replace
62	*Casuarina cunninghamiana*	River She Oak	Remove and replace
63	*Corymbia citriodora*	Lemon Scented Gum	Remove and replace
64	*Casuarina cunninghamiana*	River She Oak	Remove and replace
65	*Casuarina cunninghamiana*	River She Oak	Remove and replace
66	*Corymbia citriodora*	Lemon Scented Gum	Remove and replace
67	*Casuarina cunninghamiana*	River She Oak	Remove and replace
68	*Corymbia citriodora*	Lemon Scented Gum	Remove and replace
69	*Corymbia citriodora*	Lemon Scented Gum	Remove and replace
70	*Casuarina glauca*	Swamp Oak	Remove and replace
71	*Casuarina glauca*	Swamp Oak	Remove and replace
72	*Lophostemon confertus*	Queensland Brush Box	Remove and replace
73	*Lophostemon confertus*	Queensland Brush Box	Remove and replace
74	*DEAD*	DEAD	Remove and replace
75	*Eucalyptus microcorys*	Tallowwood	Remove and replace
76	*Eucalyptus sp.*	Eucalypt	Remove and replace
77	*Eucalyptus microcorys*	Tallowwood	Remove and replace
78	*Corymbia citriodora*	Lemon Scented Gum	Remove and replace
79 /2	*Syzygium smithii (x8)*	Lilly Pilly	Retain and protect
80	*Eucalyptus microcorys*	Tallowwood	Remove and replace
81	*Corymbia citriodora*	Lemon Scented Gum	Remove and replace
82	*Corymbia citriodora*	Lemon Scented Gum	Retain and protect
83	*Eucalyptus microcorys*	Tallowwood	Retain and protect
84	*Eucalyptus microcorys*	Tallowwood	Retain and protect
85	*Eucalyptus scoparia*	Wallangarra White Gum	Retain and protect
86	*Corymbia citriodora*	Lemon Scented Gum	Retain and protect
87	*Eucalyptus microcorys*	Tallowwood	Retain and protect
88	*Eucalyptus microcorys*	Tallowwood	Retain and protect
89	*Eucalyptus scoparia*	Wallangarra White Gum	Retain and protect
90	*Afrocarpus falcatus*	Yellowwood	Retain and protect

Redgum Tree / Stand No.	*Genus and species*	Common name	Recommendation
91	*Acer negundo*	Box Elder Maple	Remove and replace
92	*Sapium sebiferum*	Chinese Tallow wood	Remove and replace
93	*Acer negundo*	Box Elder Maple	Remove and replace
94	*Callistemon viminalis 'Hanna Ray'*	Hanna Ray Bottlebrush	Retain and protect
95	*Acer negundo*	Box Elder Maple	Remove and replace
96	*Platanus x hispanica*	London Plane Tree	Remove and replace
97	*Acer negundo*	Box Elder Maple	Remove and replace
98	*Celtis occidentalis*	Hackberry	Remove and replace
99	*Corymbia citriodora*	Lemon Scented Gum	Remove and replace
100	*Acacia floribunda*	Gossamer Wattle	Retain and protect
101	*Ulmus parvifolia*	Chinese Elm	Remove and replace
102	*Ulmus parvifolia*	Chinese Elm	Remove and replace
103	*Acer negundo*	Box Elder Maple	Remove and replace
104	*Robinia pseudoacacia 'Frisia'*	Honey Locust	Retain and protect – Street tree
105	*Platanus x hispanica*	London Plane Tree	Retain and protect – Street tree
106	*Platanus x hispanica*	London Plane Tree	Retain and protect – Street tree
107	*Platanus x hispanica*	London Plane Tree	Retain and protect – Street tree
108	*Platanus x hispanica*	London Plane Tree	Retain and protect – Street tree
109	*Ficus microcarpa*	Curtin Fig	Retain and protect – Street tree
110	*Robinia pseudoacacia 'Frisia'*	Honey Locust	Remove and replace – Street tree
111	*Robinia pseudoacacia 'Frisia'*	Honey Locust	Remove and replace – Street tree

Table 2: Descriptors for modified setbacks in Column 5

1 Special conditions apply to protect the roots of trees generally. 2 Additional protective fencing information is detailed in attached plans. 3 Acceptable due to the good relative tolerance of the species to development impacts. 4 Range of setbacks for the trees at each end of a linear stand are to be calculated if required. 5 Acceptable as fence located at a substantial distance beyond dripline or may also include the location of a smaller tree in proximity to a larger tree to be retained and the smaller tree being protected well within the protective fencing for that larger tree. 6 Acceptable due to additional special protection works, see Section 5.0 for this tree. 7 Acceptable as pre-existing site conditions were conducive to having restricted the development of root growth in this direction. 8 Street trees with protective fencing of minimal width to allow for pedestrian access along road reserve. 9 Acceptable as tree transplanted reducing the area of the root zone. 10 Acceptable as not effected by development works. 11 Young trees not expected to have established a substantially expansive root system and able to re-establish or modify growth to be sustainable due to age and good vigour. 12 Set back prescribed by the consent authority.	13 Acceptable as tree growing on a lean and encroachment on compression wood side where root growth is of reduced structural importance. 14 Acceptable as root mapping has indicated extent of structural woody roots with a diameter of 20 mm or more. 15 Acceptable as a specimen of palm taxa tolerant of encroachment. 16 Acceptable as excavation on down slope or across slope side of tree. 17 Acceptable as encroachment into growing area below ground minor, with one corner of building or excavation works extending to within the radius of the dripline. 18 Acceptable as encroachment by pier, including screw piles, with minimal disturbance. 19 Acceptable as encroachment above grade without excavation or sub-base compaction. 20 Acceptable as located within 0.5 m from edge of dripline. 21 Acceptable as encroachment with gap graded fill that can accommodate gaseous exchange between roots/soil and the atmosphere and ongoing root growth. 22 Minimum setback 2 m, AS4970 (2009) section 3, 3.2. 23 Maximum setback 15 m, AS4970 (2009) section 3, 3.2. 24 Tree is a palm, other monocot, cycad or tree fern TPZ is to be 1 m outside crown projection AS4970 (2009) section 3, 3.2. 25 Minimum Structural Root Zone (SRZ) for trees less than 0.15 m diameter is 1.5 m, AS4970 (2009) section 3, 3.5.
Explanatory notes for Table 2.0. This table is based upon Australian Standard AS4970 2009 *Protection of trees on development sites*, Section 3 Determining the protection zone of the selected trees (see Appendix D), where the approved building works should be no closer, including excavation, than the dimensions stated above. *"3.3 Variations to the TPZ* ***3.3.2 Minor Encroachment** - If the proposed encroachment is less than 10% of the area of the TPZ and is outside the SRZ, detailed root investigations should not be required. The area lost to this encroachment should be compensated for elsewhere and contiguous with the TPZ.*	***3.3.3 Major Encroachment*** *If the proposed encroachment is greater than 10% of the area of the TPZ or inside the SRZ the project arborist must demonstrate that the tree(s) would remain viable. The area lost to this encroachment should be compensated for elsewhere and contiguous with the TPZ."*

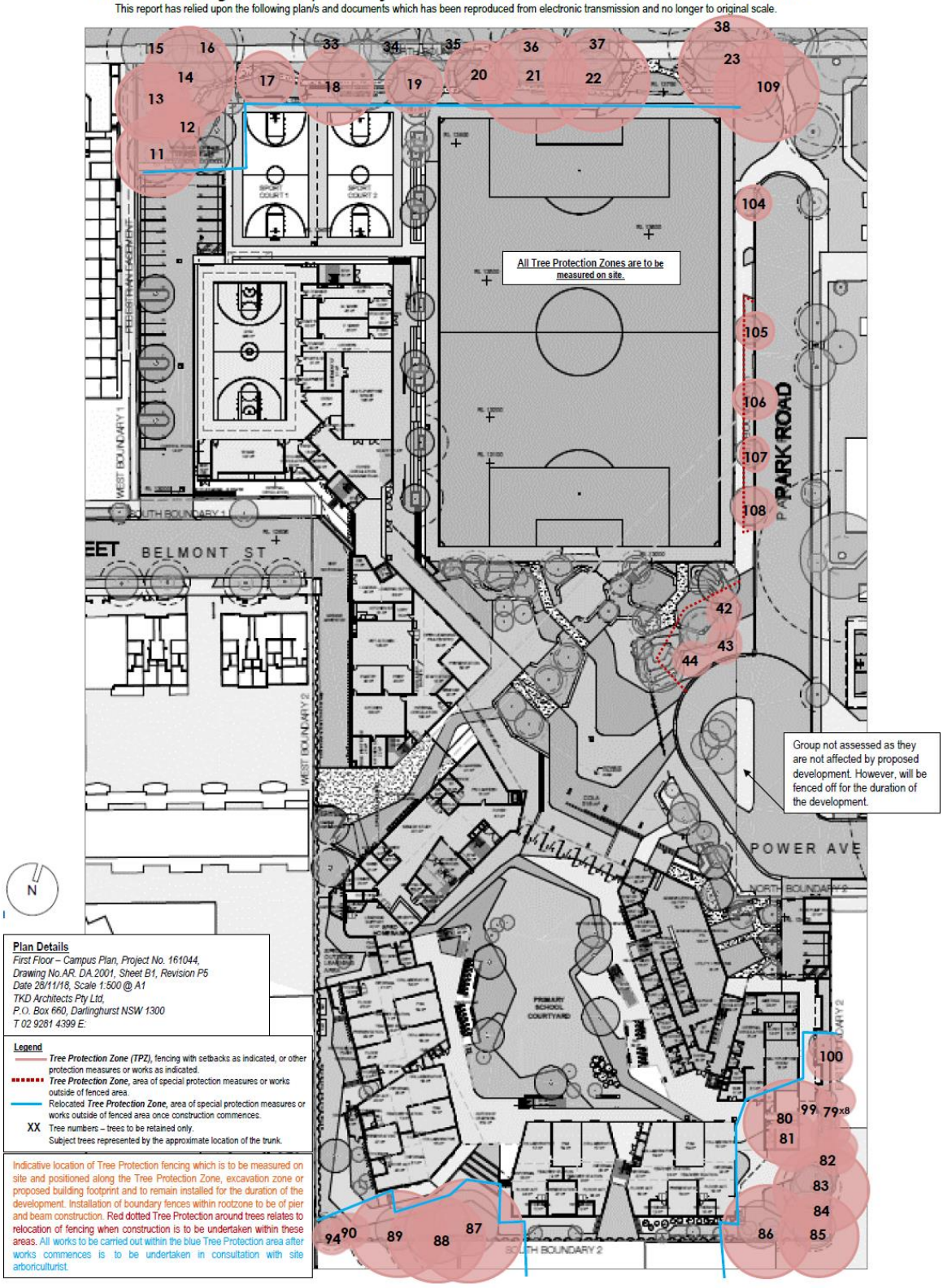
Table 2.0 This table only applies to trees being retained. Tree Protection Zone fencing locations as measured from the centre of each tree and the recommended distances for the side closest to the building construction works e.g. excavation (see explanatory notes below). Tree Protection Zone fences and setbacks where applicable are indicated in Appendix F.

1. Redgum Tree No. / Redgum Stand No.	2. Structural Root Zone **SRZ (DARB)** From centre of trunk (COT) Diameter Above Root Buttress AS4970 2009 Section 3, 3.3.5 (see Appendix D) where applicable (Minimum 1.5 metres)	3. Trunk Diameter at Breast Height **DBH** 1.4m above ground, AS4970 2009, or mm or m above ground where indicated. # = average. g = ground	4. Tree Protection Zone (TPZ) = **12 x DBH** From centre of trunk (COT) in metres AS4970 2009Section 3 (see Appendix D) (Minimum 2.0 metres)	5. Proposed distance of tree protection fence/works on the side closest to building construction[2], in metres by Redgum Horticultural.
11	2.5	520	6.2	6.2
12	1.5 [25]	130	2.0 [22]	>2.0 [22]
13	2.6	560	6.7	>6.7
14	2.5	520	6.2	>6.2
15	3.1	850	10.2	>10.2
16	2.8	700	8.4	>8.4
17	1.9	280	3.4	>3.4
18	2.7	600	7.2	7.2
19	2.3	430	5.2	>5.2
20	2.3	420	5.0	4.5
21	2.9	750	9.0	8.1
22	2.8	690	8.3	7.5
23	2.9	720	8.6	7.8
33	2.8	700	8.4	>8.4
34	2.9	730	8.8	>8.8
35	3.0	770	9.2	>9.2
36	2.8	700	8.4	>8.4
37	2.6	540	6.5	>6.5
38	3.2	890	10.7	>10.7
42	1.6	180	2.1	2.1
43	1.6	170	2.0	2.0
44	1.5 [25]	150	2.0 [22]	2.0
79/2	1.6	190#	2.3	>2.3
82	2.2	380	4.6	>4.6
83	2.5	520	6.2	>6.2
84	2.4	450	5.4	>5.4
85	2.3	430	5.2	>5.2
86	2.5	530	6.4	>6.4
87	3.4	1100	13.2	13.2
88	3.3	970	11.6	11.6
89	3.2	890	10.7	10.7
90	1.8	240	2.9	>2.9
94	1.7	200	2.4	>2.4
100	1.9	290	3.5	>3.5
104	1.8	220	2.6	2.6
105	1.8	240	2.9	2.9
106	1.9	290	3.5	3.5
107	1.8	220	2.6	2.6
108	2.0	300	3.6	3.6
109	2.5	490	5.9	5.9

Appendix F

Site Plan - Redgum Survey of Subject Trees to be Retained & Tree Protection Zones

This report has relied upon the following plan/s and documents which has been reproduced from electronic transmission and no longer to original scale.



Redgum Horticultural 2018, Reference 2781.2
Arboricultural Impact Assessment: 7-11 Park Road, Alexandria NSW

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APPENDIX THREE: PALYNOLOGICAL TESTING RESULTS (ASSOC. PROFESSOR D. PENNY -UNIVERSITY OF SYDNEY, 2019)

Method

Scope

This method is used to extract sporopolleiferous microfossils (pollen, spores, algae etc) from unconsolidated soil and sediment. The method iteratively removes unwanted components of the soil/sediment matrix through physical separation and/or chemical digestion, leaving a slurry that is enriched in the desired palynomorphs. These slurry samples are examined under high magnification and the results are used for biostratigraphic dating and palaeo-ecology.

Sampling, weighing of sample

- Samples were received in zip lock bags as large-volume unconsolidated samples (Table 1). Representative volumetric sub-samples were achieved by drying the samples at 40°C for 48 hours in a laboratory oven, gently grinding any soil aggregates using a mortar and pestle and pouring the dry and ground sample through a riffle splitter.
- Using a clean spatula, the representative sub-sample was transferred to a clean and labelled 10 cc sample pot, the mass of which had already been recorded.
- Mass of the sample (mass of sample and container less mass of container) was recorded (to 0.01 g) and bulk density calculated.
- The weighed 10 cm^3 sample was transferred to a clean 50 ml centrifuge tube, which had been labelled with the sample code.

Chemical and physical disaggregation

- 1 *Lycopodium clavatum* spore tablet (Lund University, batch 1031) was added to each sample.
- Approximately 30 ml of dilute dispersant (sodium hexametaphosphate, 'calgon') were added to each sample, and the samples mixed for 2 hours on a platform shaker at 120 rpm.
- Each sample was then washed, using DI water, through a 63 μm wire mesh sieve to remove the sand-sized fraction. The material retained in the wire mesh was discarded.
- The < 63 μm fraction was then sieved through a 5 μm fabric sieve to remove the clay-sized fraction. The material that passed through the sieve was discarded.
- The 5-63 μm fraction was then returned to the original 50 ml centrifuge tubes, centrifuged at 3000 rpm for 5 minutes and the supernatant decanted.

Removal of carbonates

- In a fume cabinet, 10 ml of 10% w.w HCl was added to each centrifuge tube and the samples mixed using a vortex mixer.
- Sample tubes containing the 10% HCl were placed in near-boiling water for approximately 10 minutes.
- Sample tubes centrifuged at 3000 rpm for 3 minutes, supernatant decanted into a waste acid bin.
- 10 ml distilled H_2O added, mixed and centrifuged at 3000 rpm for 3 minutes. Supernatant decanted.

Removal of unsaturated humic colloids

- In a fume cabinet 10 ml of 10% KOH was added to the sample tubes and mixed using a vortex mixer.
- Centrifuge tubes placed in a near-boiling water bath for 20 minutes.

- Samples centrifuged at 3000 rpm for 5 minutes and supernatant decanted.
- Previous 3 steps repeated until supernatant was clear of mobilized humic and fulvic acid.
- 10 ml distilled H_2O added, mixed and centrifuged at 3000 rpm for 3 minutes. Supernatant decanted.

Removal of Silicates

- In a fume cabinet, and wearing the appropriate safety equipment, 5 ml of ~ 48% HF was added to the sample tubes. Tubes were capped tightly and stirred with a vortex mixer.
- Sample tubes were place in a near-boiling hot water bath for 2 hours. After 2 hours, the water bath was turned off and the samples were left to digest overnight.
- 10 ml of 10% w.w HCl was added, samples were mixed and centrifuged at 3000 rpm for 10 minutes. Waste acid was decanted into a neutralizing vessel.
- 20 ml distilled H_2O added, mixed and centrifuged at 3000 rpm for 3 minutes. Supernatant decanted.

Removal of cellulose (Acetolysis)

- In a fume hood, 10 ml of glacial acetic acid was added to each sample tube. Samples mixed using a vortex mixer and centrifuged at 3000 rpm for 5 minutes. Supernatant decanted.
- A 9:1 mixture of acetic anhydride and sulphuric acid was prepared. 5 ml of the mixture was added to each sample tube, and sample tubes placed in a near-boiling hot water bath for 5 minutes.
- Samples centrifuge at 3000 rpm for 5 minutes. Supernatant decanted.
- 10 ml of glacial acetic acid was added to each sample tube. Samples mixed using a vortex mixer and centrifuged at 3000 rpm for 5 minutes. Supernatant decanted.
- 20 ml distilled H_2O added, mixed and centrifuged at 3000 rpm for 3 minutes. Supernatant decanted.

Preparation for mounting

- 10 ml of ethanol was added to each sample. The samples were mixed using a vortex mixer and centrifuged at 3000 rpm for 5 minutes. Supernatant decanted and ethanol wash repeated.
- Samples were transferred to clean and labelled 1.5 ml micro-centrifuge tube using glass pipettes. Micro-tubes were centrifuge at 1500 rpm for 3 minutes. Supernatant decanted.
- Glycerol was added to each sample to bring the total volume of the sample up to 1 ml.
- Each sample was thoroughly mixed with a clean capillary pipette and/or with the vortex mixer.
- Approximately 25 μl of the mixed sample was placed on a heated and labelled glass microscope slide. A glass coverslip was lowered onto the sample and the edges of the coverslip sealed with paraffin wax.

Analysis

Pollen analysis was undertaken under light microscopy at 400x magnification, using a Zeiss Axioskop microscope (Plan-NEOFLUAR 40x/0.75 objective). All microfossils encountered along a series of traverses were identified and recorded until a minimum of 100 pollen grains had been recorded. *Lycopodium* marker spores were also counted in this fashion. Samples with fewer than 1 pollen grain per 50 marker spores counted were considered barren of palynomorphs and no further analysis was undertaken.

Result

Table 1: Sample metadata

Sample Code	Sample name	Volume cm³	Mass g	Bulk Density g/cm³
1	APCS 18 TP5 Peat Sample 30-35 cm	10	12.16	1.216
2	APS19 ATT1 A1 Horizon	10	14.99	1.499
3	AMAC APS19 ATT1 B1 Horizon	10	9.98	0.998
4	AMC APS19 ATT1 A2 Horizon	10	10.66	1.066

Table 2: Result of palynological analysis for samples 1 and 2 (see Table 1). Results for each taxon are given as 'raw' (number of individuals counted, untransformed), % (of total assemblage less the introduced *Lycopodium* marker spores) and 'per cm³' (the calculated total number of pollen grains from each taxon for each cubic centimetre of sediment, based on the dilution of a known number of introduced *Lycopodium* marker spores).

			1			2		
			Raw	%	per cm³	Raw	%	per cm³
Family	**Genus**	**Notes**						
Asteraceae			0	0.0	0	3	2.3	54
Casuarinaceae	*Casuarina*		3	1.9	141	14	10.8	251
Chenopodiaceae			1	0.6	47	13	10.0	233
Cyperaceae			1	0.6	47	10	7.7	179
Dennstaedtiaceae	*Pteridium*	spore	0	0.0	0	1	0.8	18
Epacridaceae	*Epacris*	type	6	3.8	282	3	2.3	54
Epacridaceae	*Monotoca*		3	1.9	141	43	33.1	770
Fagaceae	*Quercus*	exotic	0	0.0	0	3	2.3	54
Haloragaceae	*Haloragis*		5	3.2	235	1	0.8	18
Lycopodiaceae	*Lycopodium*	marker	13			54		
Myrtaceae	*Angophora*	type	1	0.6	47	0	0.0	0
Myrtaceae	*Eucalyptus*	type	21	13.3	988	14	10.8	251
Myrtaceae	*Leptospermum*	type	34	21.5	1600	5	3.8	90
Myrtaceae	*Melaleuca*	type	75	47.5	3529	9	6.9	161
Pinaceae	*Pinus*	exotic	0	0.0	0	3	2.3	54
Poaceae			1	0.6	47	5	3.8	90
Polypodiaceae		spore	1	0.6	47	0	0.0	0
Proteceae	*Banksia*		0	0.0	0	1	0.8	18
Restionaceae			6	3.8	282	2	1.5	36
		SUM	158	100	7435	130	100	2327

Interpretation

Samples 3 (ATT1 B1 Horizon) and 4 (ATT1 A2 Horizon) were barren of pollen and spores, and no further analysis was undertaken. Samples 1 (TP5 'Peat Sample') and 2 (ATT1 A1) had an acceptable yield of pollen grains and spores and were analysed. In both cases, preservation was relatively poor

with a large proportion of the palynomorphs showing signs of physical and chemical (oxidative) degradation.

Sample 1 was dominated by pollen grains from the Myrtaceae, particularly *Melaleuca* (paperbark, 48% of the total pollen and spore assemblage) and *Leptospermum* (tea-tree, 22%). *Eucalyptus* was also common. A single individual derived from *Angophora* (probably *A. costata* based on the morphology of the individual) was observed. The presence of pollen from rushes (Restionaceae) and sedges (Cyperaceae) implies a proximal wetland, while genera from the Epacridaceae family (*Monotoca*, probably *M. elliptica*, and *Epacris* species, probably *E. microphylla* or the coral heath) may indicate swampy heath on damp. sandy soils. It is likely that the paperbark and tea-tree were occurring as a riparian fringe to more open, heath swamp. No pollen grains from exotic plants were observed.

Sample 2 was overwhelmingly dominated by *Monotoca*, again probably *M. elliptica* or *M. scoparia*. While this genus of shrubs is common in a range of community types, ranging from dry scherophyll forest to coastal dune heaths, the association with wetland plants (Restionaceae, Cyperaceae) and coastal heath taxa (*Epacris, Leptospermum, Melaleuca,* possibly *Casuarina/Allocasuarina* and *Banksia*) strongly implies the presence of a Sydney Coastal Heath community. Pollen grains from exotic plants (*Quercus*, oak, and *Pinus*, pine) were observed, indicating that these sediments were deposited after initial European colonisation, and most probably from the early decades of the 19th century.

APPENDIX FOUR: EXCAVATION RESULTS

This section is still in draft format and has not been reviewed by RAPs a full version will be issued to RAPs in due course containing context sheets (digitised) and full drawing and photographic record which are as yet incomplete.

TEST EXCAVATION

Test excavation was undertaken by Streat Archaeological Services Pty Ltd in association with AMAC Group in response to the proposed development of Alexandria Park Public and its impact on potential intact Aboriginal archaeological and cultural deposits and/or objects.

Test excavations were carried out by Benjamin Streat as director of Indigenous archaeology with archaeologists Prue Newton, Steven J. Vasilakis and representatives from the following Registered Aboriginal Parties;

Organisation
Mr. Paul Hunter of Kamilaroi-Yakuntjatjara Working Group
Ms. Jayda Hunter of Kamilaroi-Yakuntjatjara Working Group
Mr. Rob Hunter of Kamilaroi-Yakuntjatjara Working Group
Ms. Amethyst Downing of Biamanga
Mr. Danny Franks of Tocomwall
Mr. Kia Manser of Darug Land Observations
Mr. Dennis Patterson of Darug Aboriginal Cultural Heritage Assessments

All Raps were given the opportunity to participate in fieldworks although some were unavailable.

Test excavation was undertaken over 5 days from 28/05/2019 – 06/06/19. The programme was conducted at Lot 11/DP 615964, Lot 1/DP 74696, Lots 2 & 3/DP 69494, Lots A & B/DP 109038, Alexandria Park Community School, 7-11 Park Road Alexandria NSW (City of Sydney LGA).

The footprint of the proposed development will encompass the majority of the current school site. Including the incorporation of additional classrooms, multifunction hall, special program rooms as well as facilities and services including new footpaths and pool amenities building.

Test excavation identified a redeposited and disturbed soil profile, the A horizon was found to be present. The test pits were excavated to a significant depth to confirm their sterility and/or into the B horizon.

No Aboriginal objects and/or deposits or features of cultural significance were identified during the programme of test excavation.

AIMS

The purpose of subsurface test excavation is to identify the nature and extent of any intact archaeological deposit and/ or objects which may be situated within the study area and its significance.

It aims to collate additional information regarding any site characteristics which may enhance our understanding of the local and/or regional prehistory of the area. The results of the test excavation aid in the formalisation of appropriate management recommendations and conservation goals for the proposed development and any archaeological material recovered.

The methodology and recommendations presented in the following section of the report take into account the following:

- Legislation which protects Aboriginal cultural and archaeological objects and places in New South Wales;
- Research and assessment carried out by the author/s of this report and previous reports;
- Results of previous archaeological assessment and excavation in the vicinity of the study area;
- The impact of the proposed development on any Aboriginal archaeological material that may be present;

CARE AND CONTROL AGREEMENT

Any archaeological material recovered shall be subject to a care and control agreement established after the nature and significance of the archaeological or cultural material is understood as per requirement 26 of the *Code of Conduct for the investigation of Archaeological objects in NSW*. A secure temporary storage location in accordance with requirement 26 of the *Code of Conduct for the investigation of Archaeological objects in NSW*, shall be established (AMAC Offices) pending any agreement being reached as to the long-term management of the salvaged Aboriginal objects. The excavation director is responsible for ensuring that procedures are put in place so that Aboriginal objects are not harmed. The location of the secure temporary storage location will be submitted to AHIMS with a site update record card for the site(s) in question.

If long term management of any objects recovered has not been decided in a timely fashion, the objects will be lodged with the Australian Museum

No Aboriginal objects and/or deposits were located during the test excavation.

RESULTS

Test excavation was undertaken over 5 days from 28/05/2019 – 06/06/19. The programme was conducted at Lot 11/DP 615964, Lot 1/DP 74696, Lots 2 & 3/DP 69494, Lots A & B/DP 109038, Alexandria Park Community School, 7-11 Park Road Alexandria NSW (City of Sydney LGA).

The soil profile was found to be inconsistent throughout the study area. It is clear and observable that some A horizon was found to be present in the majority of the study area. The topsoil across the study area was found to be redeposited and heavily disturbed.

No excavation occurred when rain was falling and all pits were either closed, unopened or left covered and secure when inclement weather was forecast as such no recommendations from section 6.2.1 were required to be enacted

No Aboriginal objects and/or deposits or features of cultural significance were identified during the programme of test excavation.

Test Trench Summary

Test Trench No.	No. Spits	Final depth	Description	No. Artefacts
1	9	810 mm	A1 (tg1) Horizon (350 mm) overlays A2 (tg2) Horizon (390 mm) overlays B1 (tg4) Horizon (70 mm) of the Tuggerah Soil Landscape the entire deposit is overlaid by 1850 mm of introduced fill	0
2	10	900 mm	A1 (tg1) Horizon (350 mm) overlays A2 (tg2) Horizon (500mm) overlays B1 (tg4) Horizon (70 mm) of the Tuggerah Soil Landscape the entire deposit is overlaid by 1650 mm of introduced fill	0
3	11	1040 mm	A1 (tg1) Horizon is absent, A2 (tg2) Horizon (950 mm) overlays B (tg5) Horizon 950 mm) of the Tuggerah Soil Landscape the entire deposit is overlaid by (2350 mm) of introduced fill	0
4	N/A	3000 mm	No intact natural soil profile was located	0
5	5	340 mm	A1 (tg1) Horizon is absent, A2 (tg2) Horizon (140 mm) overlays B (tg5) Horizon 300 mm) of the Tuggerah Soil Landscape the entire deposit is overlaid by (2000 mm) of introduced fill	0
6	9	950 mm	A1 (tg1) Horizon is absent, A2 (tg2) Horizon (450 mm) overlays B (tg5) Horizon 500 mm) of the Tuggerah Soil Landscape the entire deposit is overlaid by (2250 mm) of introduced fill	0

TEST TRENCH PHOTOGRAPHS

Site works in progress.

Site Works in Progress.

ATT 6: Final – AMAC 2019.

ATT 5: Final – AMAC 2019.

ATT 5 Start Showing Fill – AMAC 2019.

ATT 3 Final – AMAC 2019.

ATT 1 Showing Fill – AMAC 2019.

ATT 1 Final – AMAC 2019.

DISCUSSION

A background analysis of the environmental and archaeological context revealed that parts of the study area were likely to contain Aboriginal archaeological material, however, test excavation revealed no Aboriginal objects.

As the proposed development is intending to impact the entirety of the study area, all landscape units both identified as potentially disturbed and/ or intact were tested as part of the programme of test excavation. All test trenches were found to contain evidence of disturbance and redeposited material. The test pits were excavated to a significant depth to confirm their sterility and/or into the B horizon.

The results of this exercise should form the basis of decisions for ongoing management and further action of which further investigation is not warranted however caution is necessary.

RESEARCH QUESTIONS

The research questions are based on the information that has been gathered from previous excavations within and within the vicinity of the study area as well as making an attempt to place the site in a regional context and offer some explanation for the activities that may have taken place within the study area.

Response to research questions

No artefacts were located as a result of the programme of test excavation and therefore the following research questions could not be addressed.

- Are archaeological or cultural materials present in the Holocene Age deposits?
- If so, how do these artefact densities compare at a local and regional level?
- Are rare or representative archaeological or cultural materials present?
- Are locally or regionally significant archaeological or cultural material present in the Holocene age deposits?
- Is it possible to assign a temporal framework to any of the excavated material?
- What was the nature and extent of the activity that took place within the study area and how does the study area compare with other sites in the immediate vicinity and similar landforms to the study area?
- What raw materials were chosen for the manufacture of stone implements?
- Is the area suitable to be set aside for preservation of Aboriginal archaeological material?

SIGNIFICANCE ASSESSMNET

The processes of assessing significance for items of cultural heritage value are set out in *The Australian ICOMOS Charter for the Conservation of Places of Cultural Significance: the Burra Charter* (amended 1999) formulated in 1979 and based largely on the Venice Charter of International Heritage established in 1966. Archaeological sites may be significant according to four criteria, including scientific or archaeological significance, cultural significance to Aboriginal people, representative significance which is the degree to which a site is representative of archaeological and/or cultural type, and value as an educational resource. In New South Wales the nature of significance relates to the

scientific, cultural, representative or educational criteria and sites are also assessed on whether they exhibit historic or cultural connections.

The criteria for formulating significance values are set out below:

a) An item is important in the course, or pattern, of NSW's cultural or natural history (or the cultural or natural history of the local area).

b) An item has strong or special association with the life or works of a person, or group of persons, of importance in the cultural or natural history of NSW (or the cultural or natural history of a local area).

c) An item is important in demonstrating aesthetic characteristics and/or a high degree of creative or technical achievement in NSW (or the local area).

d) An item has strong or special association with a particular community or cultural group in NSW (or the local area) for social, cultural or spiritual reasons.

e) An item has potential to yield information that will contribute to an understanding of NSW's cultural or natural history (or the cultural or natural history of the local area).

f) An item possesses uncommon, rare or endangered aspects of NSW's cultural or natural history (or the cultural or natural history of the local area).

g) An item is important in demonstrating the principal characteristics of a class of NSW's: cultural or natural places; or cultural or natural environments (or a class of the local areas' cultural or natural places; or cultural or natural environments).

ARCHAEOLOGICAL SIGNIFICANCE

Educational Significance

The educational value of any given location will depend on the importance of any archaeological material located, on its rarity, quality and the contribution this material can have on any educational process (Australia ICOMOS, 1999 p. 11).

No archaeological and/or Aboriginal cultural material was located as a result of the programme of test excavation. Therefore, no educational significance can be assigned to the study area.

Scientific Significance

The scientific value of any given location will depend on the importance of the data that can be obtained from any archaeological material located, on its rarity, quality and on the degree to which this may contribute further substantial information to a scientific research process. (Australia ICOMOS, 1999 p.11).

No archaeological and/or Aboriginal cultural material was located as a result of the programme of test excavation. Therefore, no scientific significance can be assigned to the study area.

Representative Significance

The representative value of any given location will depend on rarity and quality of any archaeological material located and on the degree to which this representativeness may contribute further substantial information to an educational or scientific research process. (Australia ICOMOS, 1999 p.11).

No archaeological and/or Aboriginal cultural material was located as a result of the programme of test excavation. Therefore, no representative significance can be assigned to the study area.

SOCIAL AND CULTURAL SIGNIFICANCE

As defined in the 'Burra Charter' (ICOMOS, 1999) cultural significance is broken into three parts: aesthetic, historic and scientific value for past, present or future generations. Cultural significance is a concept which assists in estimating the value of any given place. Places that are likely to be of significance are those which can contain information which may assist with the understanding of the past or enrich the present, and which will be of value to future generations. The meaning of these terms in the context of cultural significance is outlined below. It should be noted that they are not mutually exclusive, (Australia ICOMOS, 1999 p.12).

Historic Significance

A place may have historic value because it has influenced, or has been influenced by, an historic figure, event, phase or activity. It may also have historic value as the site of an important event. For any given place the significance will be greater where evidence of the association or event survives in situ, or where the settings are substantially intact, than where it has been changed or evidence does not survive. However, some events or associations may be so important that the place retains significance regardless of subsequent treatment. (Australia ICOMOS, 1999 p.11).

No historical significance has yet been assigned to the study area by any participating Aboriginal Stakeholders.

Scientific Significance

The scientific value of any given location will depend on the importance of the data that can be obtained from any archaeological material located, on its rarity, quality and on the degree to which this may contribute further substantial information to a scientific research process. (Australia ICOMOS, 1999 p.11).

No scientific significance has yet been assigned to the study area by any participating Aboriginal Stakeholders.

Aesthetic Significance

Aesthetic value includes aspects of sensory perception for which criteria can and should be stated. Such criteria may include consideration of the form, scale, colour, texture and material of the fabric; the smells and sounds associated with the place and its use. (Australia ICOMOS, 1999 p.11).

No aesthetic significance has yet been assigned to the study area by any participating Aboriginal Stakeholders.