Upgrade Works to FS Garside Park, Granville

Review of Environmental Factors

Part 5 of the *Environmental Planning & Assessment Act, 1979*

February 2022

ARPS

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Document Review

Version	Date	Revision Description
1.0	27/10/2021	Preliminary Draft Issued for Information
2.0	02/11/2021	Issued for Community Consultation
3.0	05/11/2021	Reissued for Community Consultation
4.0	02/02/2022	Issued for Approval following Community Consultation
5.0	11/02/2022	Reissued for Approval following minor edit

1 Executive Summary

The proposal

FS Garside Park, with an area of approx. 3 hectares, is bounded by Parramatta Road, Alfred Street, Gray Street, Onslow Street and Duck Creek in Granville and forms an important recreational resource for the local and wider community. The Park comprises multiple allotments including four (4) Crown Reserves (comprising 14 lots) for which the City of Parramatta has been appointed as Crown land manager, together with a further twenty five (25) lots under Council ownership, including the southern end of Onslow Street.

FS Garside Park is home to the 'Granville Rage' Soccer Club and has a non-irrigated natural turf playing field with player dugouts, spectator seating and a pavilion with change rooms and amenities, a local playground, 'unofficial' dog park and on-street parking in the surrounding streets. A community building in Onslow Street has recently been demolished.

The site is prone to regular flooding, with the playing field acting as a detention basin during flood events. In addition, the site was historically used as a landfill site and recent testing has confirmed that parts of the site are contaminated, leading to the NSW EPA designating F.S. Garside Park as James Hardie legacy site no. 49. As a precautionary safety measure, the 'unofficial' dog park, Park along Duck Creek and sections of the soccer field were fenced and closed to public access.

In early 2019, the NSW State Government provided funding to City of Parramatta Council to plan for and construct upgrade and improvement works to FS Garside Park, together with a new cycleway along Alfred Street, adjacent to the western side of the Park.

Irrespective of the upgrade and improvement works, the City of Parramatta has an obligation to remediate the site and a Remediation Action Plan (RAP) that complements the proposed upgrade works will ensure that the remediation is based on the future needs of the park and the Granville community. The remediation of the site constitutes Category 2 remediation works as defined under Clause 14 of *State Environmental Planning Policy No. 55 – Remediation of Land* and may be carried out without consent pursuant to Clause 8 of the SEPP.

The scope of the proposed works includes, but is not necessarily limited to, the following:

- Demolition of the existing playground, sportsfield and the amenities and seating on the western side of the playing field and bitumen sealed parking and road carriageway at the southern end of Onslow Street;
- Site remediation (Category 2 remediation work – SEPP 55) and Validation;
- Tree removal and protection;
- Flood mitigation works;
- Site preparation/bulk earthworks;
- Construction of a new playground with nature play, climbing structures and flying fox etc, together with new amenities buildings adjacent to the new playground;
- Construction of a new irrigated natural couch turfed sportsfield, including new irrigation

and drainage systems, including installation of an aboveground rainwater tank to service the irrigation system;

- Construction of an additional storage space to the eastern end of the existing amenities building at the southern end of the playing field;
- Installation of and connection to utility infrastructure;
- Landscaping works including mass tree planting and surface treatments;
- Installation of public domain furniture;
- Construction of various fences and balustrades;
- Installation of public domain lighting;
- Installation of information / regulatory and wayfinding signage;
- Stormwater management works;
- Returning the southern end of Onslow Street to open space with Youth Precinct and dog park and construction of a cul-de-sac at the new termination of Onslow Street;
- Construction of new parking along Onslow Street and Gray Street, including signage;
- Construction of a new raised threshold priority cyclist/pedestrian crossing on Gray Street, connecting to the Alfred Street cycleway.

Need for the proposal

The Parramatta Road Urban Amenities Improvement Program developed in 2013 identified the North Granville Master Plan site and its community facilities as key projects to improve North Granville's resident's liveability. During 2015, the NSW State Government conducted significant community consultation to identify key issues and opportunities for the North Granville Precinct in order to meet the anticipated 346% increase in precinct population to 2041.

Based on that community consultation, the State Government developed the Parramatta Road Urban Amenity Improvement Program projects, including F.S. Garside Park improvements and the adjacent Alfred Street cycleway.

To identify the future community and recreational facilities required for the North Granville Precinct, the North Granville Community Facilities Master Plan was prepared and provides a long term vision to plan for the community facilities for the North Granville Precinct. The Master Plan also provides certainty as to how the park will develop as Granville's population increases. The Precinct is bounded by Parramatta Road (south), Alfred Street (west), Gray Street (north), Onslow Street and Duck Creek (east).

In June 2019 Council conducted community consultation to inform high-level concepts for the Master Plan, and in mid-October to mid-November 2019, Council exhibited the draft Master Plan.

Stage 1 of the Master Plan was adopted by the City of Parramatta on 16 December 2019 and includes the upgrade and improvement works to FS Garside Park that are the subject of this Review of Environmental Factors, as well as the cycleway along Alfred Street that was separately approved.

Removal of the car parking on the southern end of Onslow Street provides an additional 2220m^2 of consolidated open space. The Master Plan will also enable public access to the playing field area (outside of formal game times), effectively providing a further 14,600m^2 of public open space for daily use that is not currently available.

Statutory and planning framework

The *Environmental Planning & Assessment Act, 1979* (EP&A Act) provides the statutory framework for planning and environmental assessment in NSW. Development consent is required to carry out development and/or works unless they fall within Section 4.1 of the EP&A Act.

Section 4.1 of the EP&A Act states that if an environmental planning instrument provides that specified development may be carried out without the need for development consent, then a person may carry the development out, in accordance with the instrument, on land to which the provisions apply. Environmental assessment of the development may nevertheless be required under Part 5 of the EP&A Act.

As noted earlier, the remediation of the site constitutes Category 2 remediation works as defined under Clause 14 of *State Environmental Planning Policy No. 55 – Remediation of Land* (SEPP 55). Clause 8 of SEPP 55 permits Category 2 remediation work to be carried out without consent, subject to compliance with the requirements of Clause 17 of the SEPP. Under Clause 17, the remediation work must be carried out in accordance with the contaminated land planning guidelines and any guidelines that may be in force under the *Contaminated Land Management Act, 1997*.

As FS Garside Park is a public reserve under the control of Council, clauses 20A, 50, 65, 66, 94, 97 and 111 of *State Environmental Planning Policy (Infrastructure) 2007* (ISEPP) apply to the proposed works at FS Garside Park. The City of Parramatta, as a public authority, is permitted to undertake the works without the need to obtain development consent.

Notwithstanding, the proposed works that do not require development consent are considered to be an "activity" within the meaning of Section 5.1 of the EP&A Act on the basis that subsection 5.1(1)(d) of the Act defines the *carrying out of a work* as an "activity". Section 5.5 of the EP&A Act states a determining authority in its consideration of an activity shall, notwithstanding any other provisions of this Act or the provisions of any other Act or of any instrument made under this or any other Act, examine and take into account to the fullest extent possible all matters affecting or likely to affect the environment by reason of that activity.

As such, the proposed works are being assessed under Part 5 of the EP&A Act and a Review of Environmental Factors (REF) has been prepared to satisfy this requirement.

Community and stakeholder consultation

As noted above, in June 2019 Council conducted community consultation to inform high-level concepts for the North Granville Community Facilities Master Plan, and in mid-October to mid-November 2019, Council exhibited the draft Master Plan. Stage 1 of the Master Plan was adopted by the City of Parramatta on 16 December 2019.

In March 2020, feedback was invited from the local surrounding Rosehill, Harris Park and North Granville community to inform the design of the FS Garside Park playground, picnic facilities, dog park and new youth recreation precinct.

The feedback from the community consultation assisted in informing the detailed design of the proposed facilities to ensure that the proposed design meets the community requirements and expectations. A further community consultation was held in late 2021 (closed for submissions on 3 December 2021) and some minor amendments have been made to the detailed design in response

to the submissions received from the community.

Environmental impacts

The main potential environmental impacts associated with the proposed upgrade works at FS Garside Park, Granville include:

- Contamination impacts;
- Flooding impacts;
- Tree removal and protection impacts;
- Traffic and parking impacts;
- Noise and vibration impacts;
- Air quality impacts;
- Water and stormwater quality impacts;
- Visual amenity impacts;
- Waste management and minimisation impacts.

The potential for impacts to Aboriginal heritage / archaeology and to flora and fauna have also been considered, concluding that adverse impacts are unlikely. Notwithstanding, environmental safeguards and mitigation measures have been recommended should any 'unexpected finds' eventuate during the works.

Justification and conclusion

The proposed works at FS Garside Park in Granville have the potential to result in some minor environmental impacts with respect to contamination, flooding, tree removal and protection, traffic and parking, noise and air quality, water and stormwater quality, visual impacts and waste storage and disposal. Notwithstanding, the safeguards and management measures that are detailed in this Review of Environmental Factors will ameliorate or minimise these expected impacts. The proposal will also realise a number of positive impacts, including remediation and ongoing environmental management of the site, improvements to localised flood management, the provision of a high quality flood lit turf sportsfield, new children's adventure playground with new amenities, a Youth Precinct with BMX Pump Track and multi-purpose court, formal dog parks and associated landscaping and upgrade works that will improve the recreational facilities for the local and wider community, as well as improving the aesthetic quality, public domain amenity and legibility of FS Garside Park. On balance the proposal is considered justified.

The environmental impacts of the proposal are not likely to be significant and therefore it is not necessary for approval to be sought for the proposal under Part 4 of the EP&A Act. There will be no significant impact on any threatened species, ecological communities or their habitats such that a Species Impact Statement (SIS) would be required or a need to apply the Biodiversity Offsets Scheme (BOS) under the *Biodiversity Conservation Act, 2016*. The proposal will not have a substantial impact on any matters of National environmental significance.

Contents

List of Figures

Appendices

1 Introduction

1.1 Site and proposal identification

FS Garside Park, with an area of approx. 3 hectares, is bounded by Parramatta Road, Alfred Street, Gray Street, Onslow Street and Duck Creek in Granville and forms an important recreational resource for the local and wider community. The Park comprises multiple allotments including four (4) Crown Reserves (comprising 14 lots) for which the City of Parramatta has been appointed as Crown land manager, together with a further twenty five (25) lots under Council ownership, including the southern end of Onslow Street.

FS Garside Park is home to the 'Granville Rage' Soccer Club and has a non-irrigated natural turf playing field with player dugouts, spectator seating and a pavilion with change rooms and amenities, a local playground, 'unofficial' dog park and on-street parking in the surrounding streets. A community building in Onslow Street has recently been demolished.

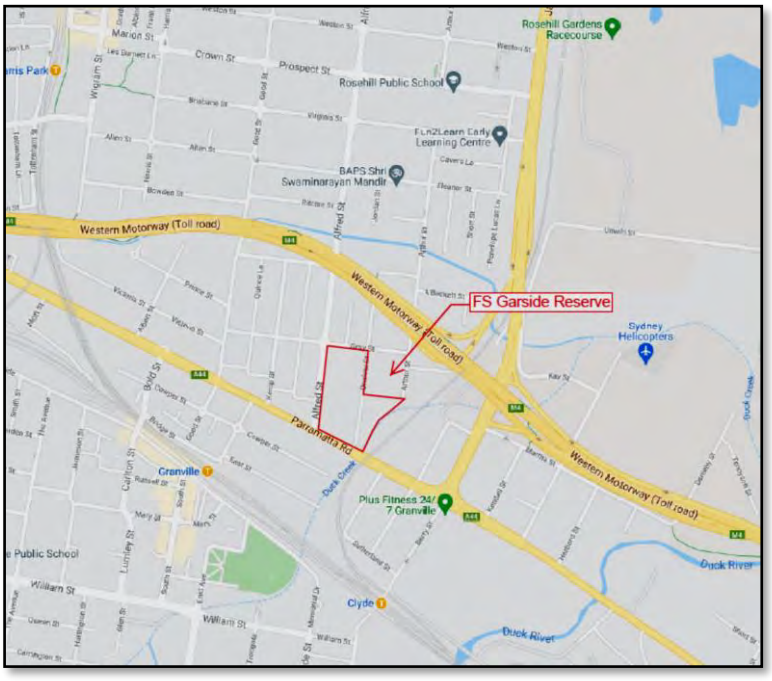
The site is prone to regular flooding, with the playing field acting as a detention basin during flood events. In addition, the site was historically used as a landfill site and recent testing has confirmed that parts of the site are contaminated, leading to the NSW EPA designating F.S. Garside Park as James Hardie Legacy Site No. 49. As a precautionary safety measure, the 'unofficial' dog park, Park along Duck Creek and sections of the soccer field were fenced and closed to public access.

In early 2019, the NSW State Government provided funding to City of Parramatta Council to plan for and construct upgrade and improvement works to FS Garside Park, together with a new cycleway along Alfred Street, adjacent to the western side of the Park.

Irrespective of the upgrade and improvement works, the City of Parramatta has an obligation to remediate the site and a Remediation Action Plan (RAP) that complements the proposed upgrade works will ensure that the remediation is based on the future needs of the park and the Granville community.

The location of FS Garside Park is shown in *Figure 1.1* below:

Figure 1.1 – FS Garside Park Location



Source: www.nearmap.com.au

An aerial view of FS Garside Park is provided in *Figure 1.2* below:

Figure 1.2 – Aerial view of FS Garside Park at Granville

Source: www.nearmap.com.au

FS Garside Park is a 'public Park' and the scope of works associated with the upgrades and associated landscaping works can be considered under Division 12 Parks and other public reserves of Part 3 of *State Environmental Planning Policy (Infrastructure) 2007* and are therefore subject to environmental assessment under Part 5 of the *Environmental Planning & Assessment Act, 1979*. Accordingly, this Review of Environmental Factors has been prepared to satisfy this requirement.

The works that are the subject of this Review of Environmental Factors include remediation of the site, improvements to flood management, construction of a new irrigated natural couch turfed sportsfield with player dug-outs and spectator seating, new children's adventure playground with new amenities, BMX pump track and multi-purpose court, formal dog parks and associated landscaping works. The works will also involve site preparation works / cut and fill, installation of public domain lighting and sportsfield flood lights, paving/concreting, landscaping and installation of electrical services and drainage / stormwater management works, including an aboveground rainwater tank.

1.2 Purpose of the report

This Review of Environmental Factors has been prepared by Andrew Robinson Planning Services Pty Ltd (ARPS) on behalf of the City of Parramatta. For the purposes of the proposed works, the City of Parramatta Council is the proponent and the determining authority under Part 5 of the *Environmental Planning and Assessment Act, 1979*.

The purpose of the Review of Environmental Factors is to describe the proposed works, to document the likely impacts of the proposed works on the environment, and to detail any necessary safeguards and management measures to be implemented in order to reduce or avoid potential environmental impacts as a result of the proposed works.

The description of the proposed works to be undertaken at FS Garside Park and the associated environmental impacts has been undertaken in context of Clause 228 of the *Environmental Planning and Assessment Regulation 2000*, the *Environmental Planning & Assessment Act, 1979* and other relevant environmental legislation including the Commonwealth's *Environment Protection and Biodiversity Conservation Act, 1999*. In doing so, the Review of Environmental Factors helps to fulfil the requirements of Section 5.5 of the *Environmental Planning & Assessment Act, 1979* that Parramatta City Council examine and take into account to the fullest extent possible, all matters affecting or likely to affect the environment by reason of the activity.

1.3 Structure of the Review of Environmental Factors

The Review of Environmental Factors is divided into the following sections:

- Introduction (Section 1) – introduces the proposal and purpose of the report;
- Need for the proposal (Section 2) – provides a description of the need for the project;
- Description of the proposal (Section 3) – provides a detailed description of the proposed works;
- Statutory and planning framework (Section 4) – provides information on the statutory and policy requirements for the proposed works;
- Community and stakeholder consultation (Section 5) – provides information on the stakeholder / community consultation that has been undertaken;
- Environmental assessment (Section 6) – describes the existing environment and potential environmental impacts, and identifies the corresponding impact safeguards and environmental management/mitigation measures;
- Environmental management (Section 7) – summarises the proposed safeguards and environmental management/mitigation measures associated with the works;
- Conclusion (Section 8) – provides justification for the proposed works and concluding remarks as to whether the adverse environmental impacts are balanced or outweighed by the beneficial effects of the proposal;
- Certification (Section 9) – certifies that the Review of Environmental Factors provides a true and fair review of the proposal in relation to its potential effects on the environment;
- References (Section 10) – contains a list of the documents used in the preparation of the Review of Environmental Factors; and
- Appendices – contains an assessment of the potential environmental impacts of the proposal in the context of Clause 228 of the *Environmental Planning and Assessment Regulation 2000* and the matters of National environmental significance under the *Environment Protection and Biodiversity Conservation Act, 1999*, as well as copies of the technical/specialist reports that have informed this Review of Environmental Factors.

2 Need for the proposal

2.1 Strategic need for the proposal

As described earlier, the Parramatta Road Urban Amenities Improvement Program developed in 2013 identified the North Granville Master Plan site and its community facilities as key projects to improve North Granville's resident's liveability. During 2015, the NSW State Government conducted significant community consultation to identify key issues and opportunities for the North Granville Precinct in order to meet the anticipated 346% increase in precinct population to 2041.

Based on that community consultation, the State Government developed the Parramatta Road Urban Amenity Improvement Program projects, including F.S. Garside Park improvements and the adjacent Alfred Street cycleway.

To identify the future community and recreational facilities required for the North Granville Precinct, the North Granville Community Facilities Master Plan was prepared and provides a long term vision to plan for the community facilities for the North Granville Precinct. The Master Plan also provides certainty as to how the park will develop as Granville's population increases. The Precinct is bounded by Parramatta Road (south), Alfred Street (west), Gray Street (north), Onslow Street and Duck Creek (east).

In June 2019 Council conducted community consultation to inform high-level concepts for the Master Plan, and in mid-October to mid-November 2019, Council exhibited the draft Master Plan.

Stage 1 of the Master Plan was adopted by the City of Parramatta on 16 December 2019 and includes the upgrade and improvement works to FS Garside Park that are the subject of this Review of Environmental Factors, as well as the cycleway along Alfred Street that was separately approved.

2.2 Proposal objective

The primary objective for the proposed upgrade and improvement works at FS Garside Park is to remediate the site and deliver high quality community facilities that effectively responds to the requirements of sporting user groups, as well as community expectations and use, in an attractive and sustainable landscape environment. The following photographs illustrate the context and existing condition of FS Garside Park:

Photograph 1: View looking south-east towards FS Garside Park from the intersection of Alfred Street and Gray Street.

Photograph 2: View looking south along Alfred Street.

Photograph 3: View looking east along Gray Street.

Photograph 4: View of the existing playground at the northern end of the Park.

Photograph 5: View looking south-east across Onslow Street towards Duck Creek and the location of the Youth Precinct.

Photograph 6: View looking south along Onslow Street towards Parramatta Road.

Photograph 7: View across the southern end of the playing field towards the existing amenities building.

Photograph 8: View looking north along the southern end of Onslow Street where the existing parking is to be removed and the land returned to public open space.

Photograph 9: View of the existing mature Weeping Figs along the Parramatta Road frontage of the Park.

Photograph 10: View of the western end of the existing amenities building that is to be extended at its eastern end.

Photograph 11: View of the existing playing field looking east towards Onslow Street.

Photograph 12: View of the northern end of the existing playing field and earth mound along the boundary with Alfred Street.

Photograph 13: View of the intersection of Gray Street and Alfred Street where the raised priority cyclist/pedestrian crossing is proposed.

3 Description of the proposal

3.1 The proposal

In accordance with the Stage 1 Implementation of the North Granville Community Facilities Master Plan, it is proposed to carry out site remediation and undertake significant upgrade and improvement works to FS Garside Park.

The proposal for FS Garside Park includes:

- site remediation and validation;
- a new irrigated natural couch turfed sportsfield to Football NSW 'NPL3' specification, with improved access and functionality and including player dugouts and spectator seating;
- an extension to the existing amenities building;
- a new nature-based adventure play space with facilities for different ages and abilities, as well as a new amenities building;
- provision of a range of outdoor gathering spaces, including picnic shelters, tables and seating;
- a new Youth Precinct with BMX pump track and multi-purpose court;
- fenced 'large dog' and 'small dog' parks with seating, lighting and drinking station;
- return of the southern end of Onslow Street to public open space;
- new parking arrangements in the northern end of Onslow Street and in Gray Street;
- replacement tree plantings and landscape embellishment works;
- improved pathways and lighting;
- flood mitigation / stormwater management works.

The scope of the proposed works includes, but is not necessarily limited to, the following:

Remediation

The site is to be remediated and validated in accordance with the Remediation Action Plan (RAP) prepared by Greencap, dated October 2021 in order for it to be suitable for ongoing public open space / recreational use without posing an unacceptable risk to human health or the environment. The remediation strategy is for a 'cap and contain' methodology, with material being excavated to base design levels and disposed of off-site; a marker layer being installed and the site capped with at least 300mm of imported approved materials (VENM clay and approved garden/turf underlay soils and turf).

The ongoing operation and management of the site to ensure the integrity of the remediation will need to be in accordance with a Long Term Environmental Management Plan (LTEMP).

Demolition

The existing amenities building and seating on the western side of the playing field, the sportsfield and its associated facilities and the existing playground are to be demolished. In addition, the bitumen surface and parking at the southern end of Onslow Street is to be removed and there will be modifications to the existing kerb and gutter in the northern end of Onslow Street and Gray Street to facilitate construction of the new parking arrangements.

Tree Removal

FS Garside Park contains a number of large, mature trees. Twelve (12) of the existing trees, including the six (6) mature Weeping Figs along the Parramatta Road frontage are the most significant and are to be retained. However, in order to effectively facilitate the site remediation and flood mitigation

requirements, the Project Arborist, in consultation with the Civil and Flood Modelling Engineers and the Project Manager, has determined that in consideration of long term tree health two hundred and forty nine (249) trees require removal.

Notwithstanding, compensatory planting of approximately one hundred and twenty six (126) new trees will be planted, realising a net loss of one hundred and twenty three (123) trees. In addition, there will be new plantings of one hundred and twenty eight (128) shrubs and twenty thousand, eight hundred and sixty six (20,866) groundcovers. Notwithstanding, in terms of canopy replacement, at maturity the new tree plantings will realise an urban tree canopy similar to the existing.

Site Preparation/Bulk Earthworks

Following the stripping of the existing surface, cut and fill works will then be required in order to establish the required base surface levels for the construction of the sportsfield. The extent of cut and fill across the site has been calculated by Northrop and is illustrated in Drawing No. C03.11 of the Civil Services Drawings provided at *Appendix C*. It is anticipated that the total amount of cut will be -512m^3 and the total required fill volume will be 9,506m^3.

Irrigated Natural Couch Turfed Sportsfield

The new 105m x 68m sportsfield is to be Football NSW 'NPL3' compliant natural couch turf playing field with rear ball screens and run-off areas. Irrigation and sand slit drainage infrastructure is to be installed below the playing surface. Portable pull-out barriers at strategic locations along the eastern and western playing field perimeter pedestrian pathways are proposed to restrict public access to sections of the pathway during certain fixtures;

Amenities Building Extension, storage cage/bin enclosure and accessible amenities building

A 7.43m x 6.5m (48.29m^2) extension to the eastern end of the existing amenities building at the southern end of the playing field is proposed in order to provide a new equipment store, in addition to the change rooms, amenities, kiosk and storerooms already provided in the building. Details of the Amenities Building Extension are provided in the architectural drawings prepared by Tim Farrell Pty Ltd at *Appendix B*.

In addition, a new hard stand area and accessible amenities building is to be built adjacent to the western end of the main amenities building and a chainwire mesh storage area and bin enclosure is to be erected behind the main amenities building.

Landscaping Works and Surface Treatments

Landscaping works across the site including extensive plantings of shade/feature trees, mass planting areas, retaining walls, concrete edges, various concrete paved pedestrian pathways, feature paving, mulch and turf. Details are provided in the drawing package at *Appendix B*.

Furniture

Throughout the site, a range of public domain furniture is to be installed, including seats, benches, covered and uncovered bleacher seating, picnic sets (each comprising 2 benches and a table), drinking fountains (bubblers), waste bins etc. The indicative locations of elements of the furniture to be installed are shown on the Detailed Concept Plan provided at *Appendix B*.

Fencing

A 1.8m high fence with sliding gates, maintenance access and one automated gate is to be erected around the perimeter of the playing field and warm-up area to the south of the existing amenities building. The multi-purpose court in the Youth Precinct and the dog parks are also to be fenced.

Public Domain Lighting

In order to light the new pedestrian pathways throughout the site, as well as the amenities building, Youth Precinct and dog parks the existing public domain lighting is to be supplemented with a series of new public domain lights.

The public domain lighting will need to meet the requirements of *AS/NZS 1158.3.1 – "Lighting for roads and public spaces": Pedestrian area (Category P) lighting – Performance and design requirements;* and *AS 4282 "Control of the obtrusive effects of outdoor lighting"*.

Signage

Information/Regulatory and Wayfinding signage is proposed to be installed at various locations across the Park, including the main public entry points.

Stormwater Management Works

Water is to be captured from the new turf playing field and will be directed via pipelines to an aboveground rainwater tank. Details of the stormwater infrastructure to be installed are provided in the Civil Services Drawings provided at *Appendix C*.

Full details of the proposed works are provided in the FS Garside Park drawing package prepared by City of Parramatta, Tim Farrell Pty Ltd, Total Irrigation Designers and Northrop are provided at *Appendices B & C* of this Review of Environmental Factors:

3.2 Construction Activities

3.2.1 Work methodology

Prior to the commencement of any work, 'construction zones' will need to be established around the perimeters of the work sites within FS Garside Park. The final details of the construction methodology are still under consideration and therefore were not available at the time of preparation of this Review of Environmental Factors. However, prior to any works commencing, the pedestrian and traffic management controls and other environmental controls recommended in this Review of Environmental Factors will need to be implemented.

Notwithstanding, given the 'contained' nature of the Park, the construction zones are unlikely to have a significant impact on traffic and pedestrian movements outside the Park.

Construction activities will vary throughout the works period, however, are anticipated to include (but not be limited to):

- Tree removal and protection;
- Site remediation and earthworks associated with cut and fill and site preparation works;
- Formwork and concreting and construction of pathways, stairs, ramps, retaining walls and custom concrete benches (spectator bleachers) etc;
- Construction of the Football NSW 'NPL3' compliant sportsfield, including drainage and irrigation infrastructure;
- Construction of the addition to the eastern end of the Amenities Pavilion;
- Construction/installation of the new playground equipment;
- Construction of the new amenities building adjacent to the new playground;

- Construction of the BMX pump track and Multi-purpose Court in the Youth Precinct;
- Removal of the existing bitumen seal and parking spaces at the southern end of Onslow Street and construction of the new parking spaces in Onslow Street and Gray Street;
- Construction of the raised threshold priority cyclist/pedestrian crossing in Gray Street;
- Electrical works associated with the electricity supply, installation of conduits, wiring, communications and the electrical systems etc and public domain lighting;
- Installation of the various types of fencing to the sportsfield, dog parks, Youth Precinct;
- Installation of furniture, including seating, benches, bleacher seating, waste bins, drinking fountains (bubblers) and picnic tables, etc;
- Works associated with the installation of upgraded stormwater management infrastructure;
- Installation of signage;
- Landscaping, including planting and mulching, paving, turfing etc.

3.2.2 Plant and equipment

The plant and equipment that will be required for the works will vary throughout the ongoing stages of the work activities. Typical equipment and plant will generally include (but not be limited to) the following:

- Construction and/or earthmoving equipment including bobcats, rollers, crane etc;
- Various trucks and trade vehicles;
- Various powered and unpowered hand tools.

During the course of the works various forms of environmental control equipment such as silt fences / socks, rubbish skips etc will be required.

3.2.3 Waste management

All waste material will need to be either removed from the site immediately, or stored on site in skip bins (or similar), sorted as per waste classification guidelines and either recycled or disposed of at a licensed waste management facility. As a principle, reuse and/or recycling should be maximised in order to minimise the need for disposal. All contaminated waste generated during the remediation works will need to be dealt with in accordance with the requirements of the Remediation Action Plan (RAP) provided at *Appendix E* of this Review of Environmental Factors.

3.2.4 Source of materials

Wherever possible, materials of construction should be sourced locally.

3.2.5 Traffic management and access

Where and when necessary, traffic and pedestrian management measures will need to be put into place prior to the commencement of works in order to provide a safe environment for road users, cyclists and pedestrians, and to manage access to the work site/s. Notwithstanding, it is anticipated that temporary traffic management arrangements on Alfred, Gray, Onslow and potentially Parramatta Road will only be necessary to assist with the arrival and/or departure of large vehicles to the site.

All changes to the existing traffic, cyclist and pedestrian conditions in the vicinity of the works area/s will need to be accompanied by appropriate signage etc to notify users of the temporary arrangements.

3.3 Public utility adjustment

All utilities, including water, sewer, electricity and communications infrastructure are currently available to the site. The proposed works are unlikely to require any adjustment to existing water, or sewer infrastructure beyond the site.

4 Statutory and planning framework

4.1 Commonwealth legislation

4.1.1 Environment Protection and Biodiversity Conservation Act 1999

Under the *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act) a referral is required to the Australian Government for proposed 'actions that have the potential to significantly impact on matters of national environmental significance or the environment of Commonwealth land.

The *Environment Protection and Biodiversity Conservation Act 1999* nominates any impact on listed threatened species or communities as a matter of national environmental significance (NES).

An assessment of the proposal's impact on matters of National environmental significance and the environment of Commonwealth land has been undertaken and is summarised in *Appendix A* of the REF.

This assessment concluded that there is unlikely to be a significant impact on relevant matters of National environmental significance. Accordingly, the proposal does not require referral to the Commonwealth Minister for the Environment.

4.1.2 Native Title Act, 1993

The Commonwealth Government enacted the *Native Title Act, 1993* (NT Act) in order to formally recognise and protect native title rights in Australia, following the decision of the High Court of Australia in *Mabo & Ors v Queensland (No. 2) (1992) 175 CLR 1 ("Mabo")*. This Act is the legal recognition of Indigenous Australians' rights and interests in land and waters, according to their own traditional laws and customs.

Although there is a presumption of Native Title in any area where an Aboriginal community or group can establish a traditional or customary connection with that area, there are a number of ways that Native Title is taken to have been extinguished. For example, land that was designated as having freehold title prior to 1 January 1994 extinguishes Native Title, as does any commercial, agricultural, pastoral or residential lease. Further, land that has been utilised for the construction or establishment of public works also extinguishes any Native Title rights and interests for as long as they are used for that purpose.

Native title rights and interests must be assumed to exist on Crown land unless they have been extinguished, surrendered or determined by a court to no longer exist. Any dealings on Crown land that potentially affect native title , through extinguishment or being inconsistent with the 'continued existence, enjoyment or exercise of native title rights and interests' are defined as 'future acts'.

Any 'future acts' undertaken by Council on Crown land must be valid under the 'future act' provisions of the NT Act, which also specifies procedures that must be followed to ensure compliance. These 'future acts' include:

- public buildings and other facilities
- major earthworks
- road and other public infrastructure
- vegetation clearing

Future Acts are valid under Subdivision J of the NT Act where the activities are undertaken in good faith in accordance with the reservation purpose. The proposed works are consistent with the 'public recreation' reservation purpose of the Crown land within FS Garside Park and is a valid 'future act' under the NT Act.

Where it is proposed to construct or establish a public work on reserved or dedicated Crown land (where Native Title is not extinguished), Council is required to notify representative Aboriginal and Torres Strait Islander bodies, registered Native Title bodies corporate and registered Native Title claimants in relation to the land in accordance with the NT Act.

A 'public work' is defined as any of the following that are constructed or established by or on behalf of the Crown, or a local government body or other statutory authority of the Crown, in any of its capacities:

- a building, or other structure (including a memorial), that is a fixture; or
- a road, railway or bridge; or
- a well, or bore, for obtaining water; or
- any major earthworks (being earthworks whose construction causes major disturbance to the land or to the bed or subsoil under waters).

A search of the Register of Native Title Claims on the National Native Title Tribunal website indicates that there have been no claims made in relation to the land on which FS Garside Park occupies.

As the proposed includes 'public works', the native title representative body (NTSCorp) should be notified and provided with an opportunity to comment in accordance with procedural rights under the NT Act.

4.2 State legislation

4.2.1 Environmental Planning & Assessment Act 1979

The *Environmental Planning & Assessment Act, 1979* (EP&A Act) provides the statutory framework for planning and environmental assessment in NSW. It contains two parts that impose requirements for planning approval:

- Part 4 generally provides for the control of local 'development' that requires development consent from local council.

- Part 5 provides for the control of 'activities' that do not require development consent and are undertaken or approved by a determining authority.

The applicable approval process under the EP&A Act is generally determined by reference to the relevant environmental planning instruments and other statutory planning instruments and controls. These include the *Environment Protection and Biodiversity Conservation Act 1999 (EPBC Act)*, *State Environmental Planning Policy (Infrastructure) 2007* (ISEPP), other relevant State Environmental Planning Policies (SEPPs) and local environmental plans (LEPs).

Development consent is required to carry out development and/or works unless they fall within Section 4.1 of the EP&A Act.

Section 4.1 of the EP&A Act states that if an environmental planning instrument provides that specified development may be carried out without the need for development consent, then a person may carry the development out, in accordance with the instrument, on land to which the provisions apply. Environmental assessment of the development may nevertheless be required under Part 5 of the Act.

Further, where an environmental planning instrument specifies that certain development may be carried out as *exempt development,* it may be carried out without the need for development consent under Part 4 of the EP&A Act or for assessment under Part 5 of the Act.

State Environmental Planning Policy (Infrastructure) 2007 (ISEPP) is the environmental planning instrument under which the proposed works at FS Garside Park may be carried out either as *exempt*

development, or *development without consent*. Further discussion on the provisions of the ISEPP is provided at 4.3.1 below.

Notwithstanding, those works that do not require development consent are considered to be an "activity" within the meaning of Section 5.1 of the EP&A Act on the basis that subclause 5.1(1)(d) of the Act defines the *carrying out of a work* as an "activity".

Section 5.1(1) of the EP&A Act defines an "activity" as being:

(a) the use of land, and
(b) the subdivision of land, and
(c) the erection of a building, and
(d) the carrying out of a works, and
(e) the demolition of a building or work, and
(f) any other act, matter or thing referred to in Section 26 that is prescribed by the regulations for the purposes of this definition,

but does not include:

(g) any act, matter or thing for which development consent under Part 4 is required or has been obtained, or
(h) any act matter or thing that is prohibited under an environmental planning instrument, or
(i) exempt development, or
(j) development carried out in compliance with an order under Division 2A of Part 6, or
(k) any development of a class or description that is prescribed by the regulations for the purposes of this definition.

The proposal involves the use of land and the carrying out of works and is therefore an "activity" for the purposes of Part 5 of the Act.

A determining authority is defined in Section 5.1 of the Act as "a Minister or public authority and, in relation to any activity, means the Minister or public authority by or on whose behalf the activity is or is to be carried out or any Minister or public authority whose approval is required in order to enable the activity to be carried out".

The term 'public authority' is defined in Section 1.4 of the EP&A Act as follows:

(a) a public or local authority constituted by or under an Act, or

(b) a Public Service Agency, or

(c) a statutory body representing the Crown, or

(d) a Public Service senior executive within the meaning of the *Government Sector Employment Act 2013*, or

(e) a statutory State owned corporation (and its subsidiaries) within the meaning of the *State Owned Corporations Act 1989*, or

(f) a chief executive officer of a corporation or subsidiary referred to in paragraph (e), or

(g) a person prescribed by the regulations for the purposes of this definition.

The City of Parramatta Council is a public authority constituted under the *Local Government Act 1993*. Accordingly, as the works will be undertaken either by or on behalf of the public authority, the City of Parramatta Council is deemed to be the determining authority for the proposed works at FS Garside Park in accordance with Part 5 of the Act.

Section 5.5 of the EP&A Act states a determining authority in its consideration of an activity shall, notwithstanding any other provisions of this Act or the provisions of any other Act or of any instrument made under this or any other Act, examine and take into account to the fullest extent possible all matters affecting or likely to affect the environment by reason of that activity.

In addition, the determining authority must also take into account the matters outlined in Clause 228 of the *Environmental Planning and Assessment Regulation 2000*, which provides as follows:

(1) For the purposes of Part 5 of the Act, the factors to be taken into account when consideration is being given to the likely impact of an activity on the environment include:

(a) for activities of a kind for which specific guidelines are in force under this clause, the factors referred to in those guidelines, or
(b) for any other kind of activity:
(i) the factors referred to in the general guidelines in force under this clause, or
(ii) if no such guidelines are in force, the factors referred to subclause (2).

(2) The factors referred to in subclause (1)(b)(ii) are as follows:

(a) any environmental impact on a community,
(b) any transformation of a locality,
(c) any environmental impact on the ecosystems of the locality,
(d) any reduction of the aesthetic, recreational, scientific or other environmental quality or value of a locality,
(e) any effect on a locality, place or building having aesthetic, anthropological, archaeological, architectural, cultural, historical, scientific or social significance or other special value for present or future generations,
(f) any impact on the habitat of protected animals (within the meaning of the Biodiversity Conservation *Act, 2016),*
(g) any endangering of any species of animal, plant or other form of life, whether living on land, in water or in the air,
(h) any long-term effects on the environment,
(i) any degradation of the quality of the environment,
(j) any risk to the safety of the environment,
(k) any reduction in the range of beneficial uses of the environment,
(l) any pollution of the environment,
(m) any environmental problems associated with the disposal of waste,
(n) any increased demands on resources (natural or otherwise) that are, or are likely to become, in short supply,
(o) any cumulative environmental effect with other existing or likely future activities,
(p) any impact on coastal processes and coastal hazards, including those under projected climate change conditions.

(3) For the purposes of this clause, the Planning Secretary may establish guidelines for the factors to be taken into account when consideration is being given to the likely impact of an activity on the environment, in relation to activities generally or in relation to any particular kind of activity.

These matters are discussed in ***Appendix A*** of this Review of Environmental Factors.

A general guideline "Is an EIS Required? – Best Practice Guidelines for Part 5 of the Environmental Planning and Assessment Act 1979" has been issued by the Secretary of the (formerly) Department of Planning and Environment. This Review of Environmental Factors has been prepared in accordance with these guidelines to enable the City of Parramatta to assess the environmental impacts of the proposed works associated with the upgrade works and associated landscaping works at FS Garside Park and to determine whether these activities are likely to have a significant impact on the environment.

As described previously, Section 5.5 of Part 5 of the EP&A Act relates to the duty to consider environmental impact and subclause (1) states:

> *(1) For the purpose of attaining the objects of this Act relating to the protection and enhancement of the environment, a determining authority in its consideration of an activity shall, notwithstanding any other provisions of this Act or the provisions of any other Act or of any instrument made under this or any other Act, examine and take into account to the fullest extent possible all matters affecting or likely to affect the environment by reason of that activity.*

4.2.2 Contaminated Land Management Act 1997

The *Contaminated Land Management Act 1997* (CLM Act) establishes a process for investigating and (where appropriate) remediating land that the NSW Environment Protection Authority (EPA) considers to be sufficiently contaminated as to warrant regulation for the management and/or remediation of that land.

Part 3 of the Act deals with the management of contaminated land and authorises the EPA to declare land to be significantly contaminated land and to serve orders to require actions in relation to the appropriate management of that land to minimise potential risks to human health and the environment.

In March 2020, the EPA declared FS Garside Park as James Hardie Legacy Site No. 49, following soil testing that identified contaminants including asbestos, that may pose a risk to public health and safety if disturbed. However, the Park is not the subject of an Order under the CLM Act.

4.2.3 Crown Land Management Act 2016

The *Crown Land Management Act 2016* (Crown LM Act) commenced on 1 July 2018 and introduced substantial changes to the ownership, use and management of Crown land in NSW. Prior to 1 July 2018, Crown land was managed under the *Crown Lands Act 1989* and at least ten (10) other separate pieces of legislation. When the Crown LM Act came into effect, eleven (11) Acts of the old Crown land regime were repealed, including the *Crown Lands Act, 1989*.

The objects of the Crown LM Act are:

> *(a) to provide for the ownership, use and management of the Crown land of New South Wales, and*
>
> *(b) to provide clarity concerning the law applicable to Crown land, and*
>
> *(c) to require environmental, social, cultural heritage and economic considerations to be taken into account in decision-making about Crown land, and*
>
> *(d) to provide for the consistent, efficient, fair and transparent management of Crown land for the benefit of the people of New South Wales, and*
>
> *(e) to facilitate the use of Crown land by the Aboriginal people of New South Wales because of the spiritual, social, cultural and economic importance of land to Aboriginal people and, where appropriate, to enable the co-management of dedicated or reserved Crown land, and*
>
> *(f) to provide for the management of Crown land having regard to the principles of Crown land management.*

Crown land is owned by the NSW Government and can be reserved or dedicated for a public purpose by the Minister under Part 2 of the Act. A Council can be appointed as 'Crown land manager' under the Act to manage the land as community land under the *Local Government Act 1993*.

Part 3 deals with the management of Crown land and requires Council Crown land managers to prepare a Plan of Management in accordance with the *Local Government Act 1993* for dedicated and reserved Crown land. Crown land must be managed consistent with the reservation purpose/s and applicable plan of management.

As described earlier, FS Garside Park comprises several allotments owned by the City of Parramatta. However, the Park also contains four (4) Crown reserves comprising 14 lots, for which Council has been appointed as Crown land manager. These are illustrated in the Table and *Figure 4.1* below:

Reserve #	Gazette	Purpose	Lots
65863	06/03/1936	Public recreation	Lot 8 Sec 3 DP 1250, Lot 15 Sec 3 DP 1250, Lot 17 Sec 3 DP 1250, Lot 19 Sec 3 DP 1250, Lot 1 DP 128571, Lot B DP 305546, Lot 1 DP 953837
67077	22/10/1937	Public recreation	Lot 21 Sec 3 DP 1250, Lot 23 Sec 3 DP 1250, Lot 25 Sec 3 DP 1250
68011	25/11/1938	Public recreation	Lots 7058-7059 DP 93889, Lot 7038 DP 93891
81053	19/09/1958	Public recreation	Lot 359 DP 752058

The proposed works are consistent with the 'public recreation' purpose of the Crown reserves within FS Garside Park.

Figure 4.1 – Location of Crown reserves within FS Garside Park

Source: City of Parramatta

4.2.4 Local Government Act 1993

The *Local Government Act 1993* (LG Act) requires that 'community land' be categorised consistent with its intended use/s. It must be managed in accordance with a Plan of Management which is required to identify:

- the category for the land
- objectives and performance targets for the management of the land
- the means by which Council proposes to achieve the objectives and performance targets
- measures by which Council proposes to assess its performance.

In 2014, the City of Parramatta prepared the Community Land Plan of Management in order to satisfy its obligations under the LG Act with respect to land classified as 'Community' land. This is a generic Plan of Management which applies to all community land in Parramatta LGA that is owned or vested under the care, control and management of Council (except land subject to a specific PoM). This generic Plan of Management consolidated and repealed a number of Plans of Management, including the FS Garside Park Plan of Management (2003).

The Community Land Plan of Management recognises that a number of parks and reserves throughout the Parramatta LGA include Crown land which has generally been reserved for 'public recreation' purposes. This Crown land is managed by Council on behalf of the State of New South Wales under the following provisions:

i. Council appointed as Trust Manager under Section 3.3 of the *Crown Land Management Act, 2016;*

ii. Care, control and management devolved under Section 48 of the *Local Government Act, 1993.*

Whilst Crown land is not classified as community land under the LG Act it is public land and involves similar management issues. To ensure a consistent approach to the management of all public land, Crown land that is managed by Council is managed in accordance with the Parramatta Community Land Plan of Management. However it has not been prepared or endorsed by the Minister in accordance with the (former) *Crown Land Act 1989*. The City of Parramatta works in partnership with the NSW Government to ensure the continued management of the Crown land within FS Garside Park, in accordance with the principles of Crown land management set out in the new *Crown Land Management Act 2016*.

As depicted in ***Figure 4.2***, under the current Community Land Plan of Management, FS Garside Park is categorised as Sportsground (S), Park (P) & General Community Use (G), which have the following core objectives:

Section 36F (Sportsground)

(a) to encourage, promote and facilitate recreational pursuits in the community involving organised and informal sporting activities and games, and

(b) to ensure that such activities are managed having regard to any adverse impact on nearby residences.

Section 36G (Park)

(a) to encourage, promote and facilitate recreational, cultural, social and educational pastimes and activities, and

(b) to provide for passive recreational activities or pastimes and for the casual playing of games, and

(c) to improve the land in such a way as to promote and facilitate its use to achieve the other core objectives for its management.

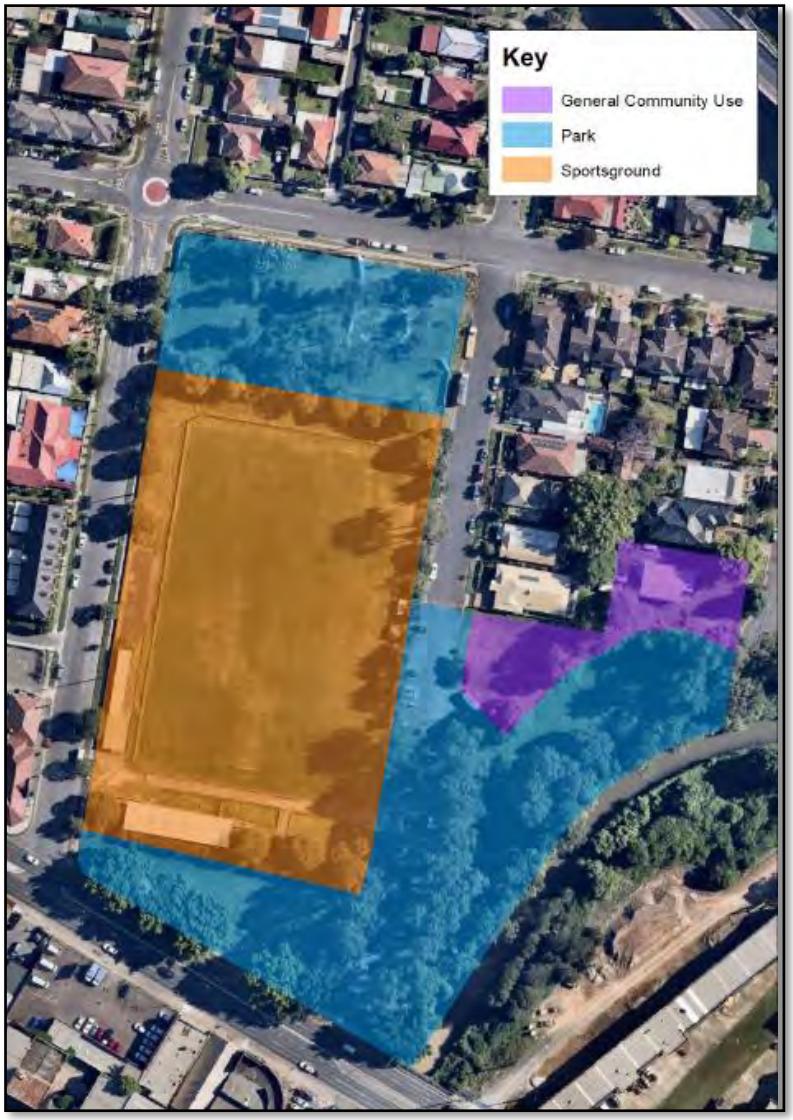
Section 36I (General Community Use)

To promote, encourage and provide for the use of the land, and to provide facilities on the land, to meet the current and future needs of the local community and of the wider public–

(a) in relation to public recreation and the physical, cultural, social and intellectual welfare or development of individual members of the public, and

(b) in relation to purposes for which a lease, licence or other estate may be granted in respect of the land (other than the provision of public utilities and works associated with or ancillary to public utilities).

Figure 4.2 – FS Garside Park Community Land Categorisation



Source: City of Parramatta

The remediation of the Park and construction of the upgrade and improvement works are compatible with the above purposes of the park for a variety of public recreation pursuits.

The Community Land Plan of Management recognises that a proportion of the community land in the Parramatta LGA is contaminated due to previous land uses and as such, requires careful management and regulation to ensure risks to public health and the environment are minimised.

In order to ensure that community land affected by contamination is appropriately managed the Plan of Management identifies the need for the Council to proactively conduct risk assessments and investigations of known contaminated sites and illegal dumping incidents. Further, that appropriate Council policies and procedures need to be implemented to ensure known contaminated community land is managed (investigated, remediated, monitored and recorded) in accordance with the regulatory requirements including SEPP 55 - Remediation of Land and Managing Land Contamination: Planning Guidelines.

The proposed remediation and upgrade works at FS Garside Park are considered to be consistent with the performance targets and actions prescribed in the Community Land Plan of Management.

4.2.5 Roads Act 1993

Section 138 (Works and Structures) of the *Roads Act 1993* requires the consent of the roads authority to be obtained prior to any works occurring within a road reserve. Although the City of Parramatta is the local roads authority, the provisions of Section 138 apply to any employee of the roads authority as it applies to any other person.

Section 138 is reproduced below:

> *(1) A person must not–*
>
> > *(a) erect a structure or carry out a work in, on or over a public road, or*
> > *(b) dig up or disturb the surface of a public road, or*
> > *(c) remove or interfere with a structure, work or tree on a public road, or*
> > *(d) pump water into a public road from any land adjoining the road, or*
> > *(e) connect a road (whether public or private) to a classified road,*
> >
> > *otherwise than with the consent of the appropriate roads authority.*

As works associated with the cyclist (priority) and pedestrian raised threshold crossing and the new on-street parking arrangements are to occur in the Gray Street and Onslow Street road reserves, the approval of the roads authority will need to be obtained prior to the commencement of any works within the road reserve.

4.2.6 Aboriginal Land Rights Act 1983

The *Aboriginal Land Rights Act 1983* (ALR Act) recognises the traditional ownership of land by Aboriginal people and seeks to compensate them for past dispossession, and to support their social and economic development. Crown land that is not being lawfully used or occupied, and is not needed for an essential public purpose or impacted by Native Title claim under the NT Act is potentially 'claimable land'. The Act empowers Aboriginal Land Councils to lodge claims over Crown land creating an inchoate (unformed) interest.

Any activities on Crown land should not significantly impact the current physical condition of the land or prevent it being transferred should a claim be successful. Whilst it is unlikely that the Crown land within FS Garside Park would be claimable under the Act, as it is lawfully used and occupied by Council for public recreation purposes, advice should be sought from Crown lands as to due diligence requirements associated with any undetermined Aboriginal land claims.

4.3 State Environmental Planning Policies

4.3.1 State Environmental Planning Policy (Infrastructure) 2007

State Environmental Planning Policy (Infrastructure) 2007 (ISEPP) aims to facilitate the effective delivery of infrastructure across the State and in particular, by identifying the environmental assessment category into which different types of infrastructure and services development fall. The provisions of the ISEPP prevail over any provisions within a local environmental plan that relate to the development of infrastructure facilities identified in the ISEPP.

Division 7 Flood mitigation work, Division 12 Parks and other public Parks, Division 17 Roads and traffic, Division 20 Stormwater management systems of the ISEPP, allows the City of Parramatta Council, as a public authority, to undertake certain works associated with the upgrade and associated landscaping works at FS Garside Park without the need to obtain development consent under Part 4 of the EP&A Act. The remainder of the proposed works are considered to constitute 'exempt development' under Clause 20A and *Schedule 1* of the ISEPP, such that they don't require either development consent, or environmental impact assessment under the provisions of Section 4.1 of the EP&A Act.

A discussion on the relevant provisions of the ISEPP is provided below:

Division 7 Flood mitigation work

Under Clause 50(1) of Division 7 Flood mitigation work, of Part 3 of the ISEPP, development for the purpose of flood mitigation work may be carried out by or on behalf of a public authority without consent on any land.

Division 12 Parks and other public Parks

Pedestrian Pathways, Turf Sportsfield, Playground, Amenities Building, BMX Pump Track and Multi-purpose Court, Extension to the existing Amenities Building, Landscaping and Public Domain Lighting

Under Clause 65(3) of Division 12 - Parks and other public Parks, of Part 3 of the ISEPP, the following works are able to be undertaken *by or on behalf of a council without consent on a public Park under the control of or vested in the council:*

(a) Development for any of the following purposes:

(i) roads, pedestrian pathways, cycleways, single storey car parks, ticketing facilities, viewing platforms and pedestrian bridges,

(ii) recreational areas and recreational facilities (outdoor), but not including grandstands,

(iii) visitor information centres, information boards and other information facilities,

(iv) lighting, if light spill and artificial sky glow is minimised in accordance with the Lighting for Roads and Public Spaces Standard,

(v) landscaping, including landscape structures or features (such as art work) and irrigation schemes,

(vi) amenities for people using the Park, including toilets and change rooms,

(vii) food preparation and related facilities for people using the Park,

(viii) maintenance depots,

(ix) portable lifeguard towers,

(b) environmental management works.

(c) demolition of buildings (other than any building that is, or is part of, a State or local heritage item or is within a heritage conservation area).

Clause 64 of the ISEPP provides the following definition of a public Park:

> *public Park has the same meaning as it has in the Local Government Act, 1993, but does not include a Crown Park that is dedicated or Parkd for a public cemetery.*

The *Local Government Act, 1993* defines a public Park as follows:

> *public Park means:*
>
> *(a) a public park, or*
>
> *(b) any land conveyed or transferred to the council under section 340A of the Local Government Act, 1919, or*
>
> *(c) any land dedicated or taken to be dedicated as a public Park under section 340C or 340D of the Local Government Act, 1919, or*
>
> *(d) any land dedicated or taken to be dedicated under section 49 or 50, or*
>
> *(e) any land vested in the council, and declared to be a public Park, under section 37AAA of the Crown Lands Consolidation Act, 1913, or*
>
> *(f) any land vested in the council, and declared to be a public Park, under section 76 of the Crown Lands Act, 1989, or*
>
> *(g) Crown managed land that is dedicated or reserved:*
>
> *(i) for public recreation or for a public cemetery, or*
>
> *(ii) for a purpose that is declared to be a purpose that falls within the scope of this definition by means of an order published in the Gazette by the Minister administering the 2016, being Crown managed land in respect of which a council has been appointed as its Crown land manager under that Act or for which no Crown land manager has been appointed, or*
>
> *(h) land declared to be a public Park and placed under the control of a council under section 159 of the Roads Act, 1993, or*
>
> *(i) land dedicated as a public Park and placed under the control of a council under section 159 of the Roads Act, 1993, and includes a public Park of which a council has the control under section 344 of the Local Government Act, 1919 (repealed) or section 48, but does not include a common.*

The land on which FS Garside Park is located is partly owned by the City of Parramatta, but also contains four (4) Crown reserves (Parks 65863, 67077, 68011 and 81053). The land has been reserved for public recreation, with the City of Parramatta appointed as the Crown Park Manager. Therefore, having regard to item (a) in the above definition, FS Garside Park is classified as a public Park for the purposes of the LG Act and accordingly, the components of the works associated with the construction of pedestrian pathways, the turf sportsfield, playground, amenities building, BMX pump track and multi-purpose court, extension to the existing amenities building, landscaping and public domain lighting at FS Garside Park described above will fall within the criteria under subclause 65(3)(a) of the ISEPP and may be carried out without development consent.

<u>Seating, Picnic Tables, Bins and Fences</u>

Clause 66 of the ISEPP sets out what development for the purpose of parks and other public Parks is

exempt development:

Subclause 66(1) in Division 12 Parks and other public Parks of the ISEPP states:

> *66 Exempt development*
>
> *(1) Development for any of the following purposes that is carried out in the prescribed circumstances is exempt development:*
>
> *(a) Construction or maintenance of:*
>
> *(i) walking tracks, raised walking paths (including boardwalks), ramps, stairways or gates,*
>
> *(ii) bicycle-related storage facilities, including bicycle racks and other bicycle parking facilities (except for bicycle paths), or*
>
> *(iii) handrail barriers or vehicle barriers, or*
>
> *(iv) ticketing machines or park entry booths, or*
>
> *(v) viewing platforms with an area not exceeding 100m^2, or*
>
> *(vi) sporting facilities, including goal posts, sight screens and fences, if the visual impact of the development on surrounding land uses is minimal, or*
>
> *(vii) play equipment if adequate safety measures (including soft landing surfaces) are provided, and in the case of the construction of such equipment, so long as the equipment is situated at least 1.2m away from any fence, or*
>
> *(viii) seats, picnic tables, barbeques, bins (including frames and screening), shelters or shade structures, or*
>
> *(ix) portable lifeguard towers if the footprint of the tower covers an area no greater than 20 square metres.*
>
> *(b) routine maintenance of playing fields and other infrastructure, including landscaping.*
>
> *(c) routine maintenance of roads that provide access to or within those playing fields, including landscaping.*

Therefore, the seating, picnic tables, bins and fencing, would fall into categories 66(1)(a) above.

Subclause 66(2)(a) states:

> *(2) Development is carried out in the prescribed circumstances if the development is carried out:*
>
> *(a) on land referred to in clause 65(1), or on behalf of a public authority.*

Subclause 66(3) states:

> *(3) Development is exempt development under this clause only if the development:*
>
> *(a) complies with clause 20, and*
>
> *(b) involves no greater disturbance of native vegetation than necessary, and*

(c) does not result in an increase in stormwater run-off or erosion, and

In relation to (a), the requirements of Clause 20 are discussed below:

To *be exempt development, the development:*

(a) must meet the relevant deemed-to-satisfy provisions of the Building Code of Australia, or if there are no such relevant provisions, must be structurally adequate, and

Comment: The proposed works will need to be constructed in accordance with the applicable requirements of the BCA and it will be the responsibility of the selected contractor/s to ensure compliance.

(b) must not, if it relates to an existing building:

(i) cause the building to contravene the Building Code of Australia, or

(ii) compromise the fire safety of the building or affect access to any fire exit, and

Comment: The works do not relate to an existing building.

(c) must be carried out in accordance with all relevant requirements of the Blue Book, and

Comment: It will be the responsibility of the contractor/s to ensure that all requirements (as necessary) of the Blue Book are followed.

(d) must not be designated development, and

Note. *Designated development is defined in section 77A of the Act as development that is declared to be designated development by an environmental planning instrument or the regulations.*

Comment: The proposed works do not constitute designated development.

(e) if it is likely to affect a State or local heritage item or a heritage conservation area, must involve no more than minimal impact on the heritage significance of the item or area, and

(e1) must not involve the demolition of a building or work that is, or is part of, a State or local heritage item, and

(e2) if it involves the demolition of a building, must be carried out in accordance with Australian Standard AS 2601-2001, The demolition of structures, and

Comment: FS Garside Park is not a heritage item or within a heritage conservation area. As such, the proposed works associated with the construction of the new sportsfield, amenities pavilion and associated landscape/upgrade works will not have any heritage impact.

The existing storage and amenities building on the western side of the Park is to be demolished and demolition will need to be carried out in accordance with *Australian Standard AS 2601-2001, The demolition of structures.*

(f) must be installed in accordance with the manufacturer's specifications, if applicable, and

Comment: It will be the responsibility of the contractor/installer to ensure that each component of the proposed works will be installed in accordance with the manufacturer's specifications.

(g) must not involve the removal or pruning of a tree or other vegetation that requires a permit or development consent for removal or pruning, unless that removal or pruning is undertaken in accordance with a permit or development consent.

Comment: Twelve (12) trees of high significance are to be retained. However, in order to effectively remediate the site and carry out flood mitigation works, the Project Arborist, in consultation with the Flood and Civil design Engineers and Project Manager have recommended the removal of two hundred and forty nine (249) trees. Compensatory planting of one hundred and twenty six (126) new trees at selected locations will provide for shade amenity and habitat.

State Environmental Planning Policy (Vegetation in Non-Rural Areas) 2017 prescribes that consent or permit requirements for tree removal or pruning is to be regulated under the applicable development control plan. Trees on land under Council management are exempt from are exempt from permit or development consent.

(h) must not involve the removal of asbestos, unless that removal is undertaken in accordance with Working with Asbestos: Guide 2008 (ISBN 0 7310 5159 9) published by the WorkCover Authority.

Comment: The remediation works will require the removal of asbestos. However, this will be undertaken in accordance with the requirements of the Remediation Action Plan provided at ***Appendix E*** of this Review of Environmental Factors.

In relation to (b) and (c), the works associated with the construction of the new sporting and recreational facilities will not cause any greater disturbance to native vegetation than necessary and will not cause an increase to stormwater run-off or erosion.

<u>Division 17 Roads and traffic</u>

<u>Road resumed for public recreation (Lot 1, DP1153514), on-street parking in Onslow Street and Gray Street and raised threshold cyclist/pedestrian priority crossing on Gray Street</u>

Clause 94 of Division 17 – Roads and traffic of the ISEPP states that development for the purpose of a road or road infrastructure facilities may be carried out by or on behalf of a public authority without consent on any land. In addition, Clause 97 of the ISEPP provides that certain other development carried out by or on behalf of a public authority in connection with a road or road infrastructure facilities is exempt development if it complies with Clause 20 of the ISEPP. In relation to the proposed works, exempt development would include the installation of pedestrian and cyclist facilities, pavement and road surface markings, kerb and guttering, directional or advisory signs relating to the use of road infrastructure facilities, culverts, drains and other works to improve the quality or control of stormwater runoff and any associated landscaping.

As such, the new parking arrangements in Onslow Street and Gray Street, the priority cyclist and pedestrian crossing and the associated signage may be carried out as either ***development without consent*** or ***exempt development***: under Clauses 94 and 97 of the ISEPP, subject to compliance with Clause 20.

The requirements of Clause 20 are discussed below:

20 General requirements for exempt development

To be exempt development, the development:

(a) must meet the relevant deemed-to-satisfy provisions of the Building Code of Australia, or if there are no such relevant provisions, must be structurally adequate, and

Comment: The proposed works are not subject to the provisions of the NCC/BCA but will

need to be structurally adequate.

(b) must not, if it relates to an existing building:

(i) cause the building to contravene the Building Code of Australia, or

(ii) compromise the fire safety of the building or affect access to any fire exit, and

Comment: The works do not relate to an existing building.

(c) must be carried out in accordance with all relevant requirements of the Blue Book, and

Comment: It will be the responsibility of the contractor/s to ensure that all requirements (as necessary) of the Blue Book are followed.

(d) must not be designated development, and

Note. *Designated development is defined in section 77A of the Act as development that is declared to be designated development by an environmental planning instrument or the regulations.*

Comment: The proposed works do not constitute designated development.

(e) if it is likely to affect a State or local heritage item or a heritage conservation area, must involve no more than minimal impact on the heritage significance of the item or area, and

(e1) must not involve the demolition of a building or work that is, or is part of, a State or local heritage item, and

(e2) if it involves the demolition of a building, must be carried out in accordance with Australian Standard AS 2601-2001, The demolition of structures, and

Comment: The site is not a heritage item or within a Heritage Conservation Area and there are no heritage items within the vicinity. As such, the proposed works will not have any heritage impact.

(f) must be installed in accordance with the manufacturer's specifications, if applicable, and

Comment: It will be the responsibility of the contractor/installer to ensure that each component of the proposed works will be installed in accordance with the manufacturer's specifications.

(g) must not involve the removal or pruning of a tree or other vegetation that requires a permit or development consent for removal or pruning, unless that removal or pruning is undertaken in accordance with a permit or development consent.

Comment: The removal of trees within the road reserve will require a Permit to be issued under Section 138 of the Roads Act 1993 by the City of Parramatta as the local roads authority.

(h) must not involve the removal of asbestos, unless that removal is undertaken in accordance with Working with Asbestos: Guide 2008 (ISBN 0 7310 5159 9) published by the WorkCover Authority.

Comment: The works within Onslow Street and Gray Street are outside the confines of the Park where the contaminated (asbestos containing) materials are located and these works do not require the removal of any asbestos.

Division 20 Stormwater management systems

Stormwater Drainage / Management Works

Clause 111(1) of Division 20 – Stormwater management systems of Part 3 of the ISEPP states that development for the purpose of stormwater management systems may be carried out by or on behalf of a public authority without consent on any land.

The ISEPP defines stormwater management systems as being:

> *(a) works for the collection, detention, distribution or discharge of stormwater (such as channels, aqueducts, pipes, drainage works, embankments, detention basins and pumping stations), and*
>
> *(b) stormwater quality control devices (such as waste entrapment facilities, artificial wetlands, sediment ponds and riparian management), and*
>
> *(c) stormwater reuse schemes.*

Based on the above definition, the stormwater drainage / management works associated with the works at FS Garside Park comprise a stormwater management system for the purposes of Division 20 of the ISEPP and therefore can be undertaken as ***development without consent*** under Clause 111 of the ISEPP.

Clauses 13 to 17 in Part 2 of the ISEPP contain provisions for public authorities to consult with local councils and other public authorities prior to the commencement of certain types of development. Table 4-1 below outlines the issues to be considered when determining whether consultation is required, and their applicability to this proposal.

Table 4-1: Requirements for consultation under the Infrastructure SEPP

Issue		Consultation Required?
Clause 13 - Consultation with Councils – impacts on Council related infrastructure or services		
1(a)	Will the development have a substantial impact on Council stormwater services?	Yes. However, the works will improve the existing infrastructure. As the City of Parramatta is the proponent for the works, consultation is not required. Notwithstanding, internal stakeholder consultation was undertaken with Council's stormwater and traffic engineers.
1(b)	Is the development likely to generate traffic to an extent that will constrain the capacity of the road system?	No.
1(c)	Does the development involve connection to, and a substantial impact on a sewerage system?	No.
1(d)	Does the development involve connection to, and use of a substantial volume of water from a council-owned water supply system?	No.
1(e)	Does the development involve the installation of a temporary structure on, or the enclosing of, a council-managed / controlled public place that is likely to cause disruption to pedestrian or vehicular traffic that is not minor or inconsequential?	No. There will be temporary disruption to public and vehicular access to parts of FS Garside Park during the works period. However, as the City of Parramatta is the proponent for the works, there is no need for consultation.
1(f)	Does the development involve excavation that is not minor or inconsequential of the surface	No.

	of, or a footpath adjacent to, a road for which council is the roads authority?	
Clause 14 - Consultation with Councils – impacts on local heritage		
1(a)	Is the development likely to have an impact that is not minor or inconsequential on a local heritage item or a heritage conservation area?	No. FS Garside Park is not a local heritage item or within a Heritage Conservation Area. There are no heritage items or Heritage Conservation Areas in the vicinity of the Park. Nevertheless, as the City of Parramatta is the proponent for the works, there is no need for consultation.
Clause 15 - Consultation with Councils – impacts on flood liable land		
2	Is the development on flood liable land and will it change flood patterns other than to a minor extent?	Yes. However, as the City of Parramatta is the proponent for the works, no consultation is necessary. Notwithstanding, internal stakeholder consultation was undertaken with Council's stormwater engineers.
Clause 15AA - Consultation with State Emergency Service – development with impacts on flood liable land		
2	Is the development on flood liable land? (Susceptible to PMF event)	Yes. The Project Civil Engineers, Northrop have advised that consideration has been given in the concept design to maintaining flood storage across the site and configuring the interfaces to minimise flood levels in existing commercial and residential areas. Maintenance of flood storage on-site, and the type of development proposed, minimises the potential for cumulative impacts from similar developments. In addition, the City of Parramatta has advised that a Site Emergency Response Plan (SERP) is not required due to the recreational use of the site and that and the risk to life is not expected to be fundamentally altered by the proposal. As such, consultation with the State Emergency Service is not necessary.
Clause 15A - Consultation with Councils – development with impacts on certain land within the coastal zone		
2	Is the development on land within a coastal vulnerability area?	No.
Clause 16 - Consultation with public authorities other than Councils		
2(a)	Is the development adjacent to land under the *National Parks and Wildlife Act 1974*?	No.
2(b)	Is the development on land in Zone E1 National Parks and Nature Parks or land in an equivalent zone?	No.
2(c)	Is the development adjacent to an aquatic Park declared under the *Marine Estate Management Act 2014*?	No.
2(d)	Is the development within the foreshore area within the meaning of the *Sydney Harbour Foreshore Authority Act 1998*?	No.

2(e)	Does the development comprise a fixed or floating structure in or over navigable waters?	No.
2(f)	Is the development for the purposes of a health services facility, correctional centre or group home, or for residential purposes, in an area that is bush fire prone land?	No.
2(g)	Is the development on land within the dark sky region as identified on the dark sky region map?	No.
2(h)	Is the development on defence communications facility buffer land within the meaning of clause 5.15 of the Standard Instrument?	No.
2(i)	Is the development within a mine subsidence district within the meaning of the Mine Subsidence Compensation Act 1961?	No.

Having regard to the table above, there is no requirement for consultation with other public authorities under the ISEPP.

4.3.2 State Environmental Planning Policy No. 55 – Remediation of Land

State Environmental Planning Policy No. 55 – Remediation of Land (SEPP 55) provides for a consistent State-wide planning approach to the remediation of contaminated land.

The objectives of SEPP 55 are to:

- *Provide for a state wide planning approach to the remediation of contaminated land; and*
- *Promote the remediation of contaminated land for the purpose of reducing the risk of harm to human health or any other aspect of the environment.*

Clause 7(1) of the SEPP states that:

A consent authority must not consent to the carrying out of any development on land unless:

(a) it has considered whether the land is contaminated, and

(b) if the land is contaminated, it is satisfied that the land is suitable in its contaminated state (or will be suitable, after remediation) for the purpose for which the development is proposed to be carried out, and

(c) if the land requires remediation to be made suitable for the purpose for which the development is proposed to be carried out, it is satisfied that the land will be remediated before the land is used for that purpose.

Although the proposed remediation works at FS Garside Park do not require consent under Part 4 of the EP&A Act, the issue of contamination is a relevant consideration in order to ensure that any works requiring disturbance to the surface of the public domain are undertaken in a manner that protects the health of workers and members of the public.

It is noted that the land on which FS Garside Park is contaminated due to historical land use and has been designated by the NSW EPA as James Hardie Legacy Site No. 49.

Investigations undertaken by Greencap in June 2020 identified Asbestos Containing Materials (ACM), in the form of fibre cement sheet fragments (Non-friable) and Asbestos Fines/Fibrous

Asbestos (AF/FA) (friable) was present in fill material across the investigation area. In addition, exceedances of the adopted Environmental Site Levels (ESL) and Health Based Investigation Level (HIL) acceptance criteria for Polycyclic Aromatic Hydrocarbons (PAH) contamination risk were recorded at a number of locations across the site.

Greencap concluded that the site requires remediation to meet the adopted criteria in order to be suitable for use as recreational public open space. Based on the findings of the previous investigations and this assessment, it was considered that the site can be made suitable for the current land use and potentially any proposed re-development for the same land use subject to the development of a suitable RAP and the implementation of appropriate site remediation strategies.

Under the SEPP, remediation works are classed as either Category 1 or Category 2 remediation works and Clause 8 of the SEPP states that Category 1 remediation work must not be carried out except with the consent of the consent authority. However, Category 2 remediation work may be carried out without consent, subject to compliance with the requirements of Clause 17 of the SEPP. Under Clause 17, the remediation work must be carried out in accordance with the contaminated land planning guidelines and any guidelines that may be in force under the *Contaminated Land Management Act, 1997.*

Clause 9 of the SEPP defines Category 1 remediation work as being:

(a) designated development, or

(b) carried out or to be carried out on land declared to be a critical habitat, or

(c) likely to have a significant effect on a critical habitat or a threatened species, population or ecological community, or

(d) development for which another State environmental planning policy or a regional environmental plan requires development consent, or

(e) carried out or to be carried out in an area or zone to which any classifications to the following effect apply under an environmental planning instrument—

(i) coastal protection,
(ii) conservation or heritage conservation,
(iii) habitat area, habitat protection area, habitat or wildlife corridor,
(iv) environment protection,
(v) escarpment, escarpment protection or escarpment preservation,
(vi) floodway,
(vii) littoral rainforest,
(viii) nature reserve,
(ix) scenic area or scenic protection,
(x) wetland, or

(f) carried out or to be carried out on any land in a manner that does not comply with a policy made under the contaminated land planning guidelines by the council for any local government area in which the land is situated (or if the land is within the unincorporated area, the Minister).

The land on which the works are to be carried out and the proposed scope of works do not fall within any of the above criteria and as such, do not constitute Category 1 remediation work that requires consent.

Therefore, the remediation of the site constitutes Category 2 remediation works as defined under Clause 14 of SEPP 55, being a remediation work that is not a work of a kind described in Clause 9(a)-(f), as set out above.

A Remediation Action Plan (RAP) for the site has been prepared by Greencap and sets out the strategy and methodology for the remediation and subsequent validation of the site to ensure that it is suitable for ongoing use a public open space.

The recommended remediation strategy is to undertake a 'cap and contain' hybrid remediation which involves the following:

- Demolition of existing surface features and excavation of contaminated soils (where raising site levels is unpractical) to achieve project levels, prior to placement of the imported soils and capping layer construction;

- Onsite management of contaminated soils by construction of cover soil layers over contaminated soils and landfill wastes (capping / containment); and

- Preparation of a site environmental management plan (long term EMP) and notification on the land title. The site EMP can also be appended to the existing Council asbestos sites register and City of Parramatta EMP.

Offsite disposal of additional contaminated soils and wastes will be required in circumstances such as:

- Unexpected contamination encountered after completion of capping layer construction (including during future site excavations / maintenance works); and

- Disposal of excavated contaminated materials that cannot be placed under the capping layer due to unsuitable geotechnical properties such as insufficient compaction.

All excavated materials to be removed from the site will undergo waste classification for disposal at a licensed landfill. It is anticipated that all soils will classify as "Special Waste – asbestos" under the NSW EPA's Waste Classification guidelines 2014.

A copy of the Remediation Action Plan (RAP) prepared by Greencap is provided at *Appendix E* of this Review of Environmental Factors.

4.3.3 State Environmental Planning Policy (Vegetation in Non-Rural Areas) 2017

State *Environmental Planning Policy (Vegetation in Non-rural Areas) 2017* (Vegetation SEPP) aims to protect the biodiversity value of trees and other vegetation in non-rural areas and to preserve the amenity of non-rural areas through the preservation of trees and other vegetation. The clearing or removal of trees and vegetation that is ancillary to development requiring consent must be assessed as part of the development assessment process and may require further assessment and approval under the *Biodiversity Conservation Act 2016*. Similarly, while the proposed works may be carried out without the need for consent, the removal of vegetation must be given due consideration with respect to the potential impact on the biodiversity value or amenity of the locality.

The Vegetation SEPP prescribes that consent or permit requirements for tree removal or pruning is to be regulated under the applicable development control plan. Notwithstanding, trees on land under Council management are exempt from are exempt from permit or development consent.

The site contains many trees that have established over the past seventy or so years. The most notable features are the row of six (6) mature Weeping Figs (Ficus microcarpa var. Hillii) across the Parramatta Road frontage of the Park, as well as the relatively densely planted embankment and area on the western side of Duck Creek.

In addition to the Weeping Figs, the project Arborist has identified the trees across the site as consisting of large mature Spotted gums (*Corymbia maculata*), Brushbox (*Lophostemon confertus*),

Tallowwood (*Eucalyptus microcorys*) and various Eucalyptus species including Spotted gums (*Corymbia maculata*), Grey gums (*Eucalyptus punctata*) and Grey Ironbark (*Eucalyptus paniculata*). Other native species noted were Rough Bark Apple (*Angophora floribunda*), Silky oak (*Grevillea robusta*), Prickly Paperbark (*Melaleuca styphelioides)*, Brushbox (*Lophostemon confertus*) and Forest Oak (*Allocasurina torulosa*). Along the creek edge are several Casuarina and Eucalyptus that are struggling under the dense weed infestations. The general the landscape character comprises a mix of mature and newer sapling plantings of the above species.

As noted previously, all of the vegetation on the site has either been planted or self-seeded since 1943, as evidenced by the 1943 aerial photograph in the Arboricultural Development Impact Assessment Report that indicates that the site was fully cleared at this time.

Twelve (12) of the existing trees, including the six (6) mature Hill's Weeping Fig trees along the Parramatta Road frontage of the Park that are of high significance are to be retained and protected and will maintain the tree lined street edge to Parramatta Road. However, in order to most effectively facilitate the site remediation, the retention of the majority of the trees across the site is not possible and two hundred and forty nine (249) trees are proposed to be removed. It is noted that many of these trees have been planted, or have self-seeded, close to other trees so that the project Arborist has deemed them to be of low to medium significance due to competing canopies and poor form and health.

The remediation of the site is a key priority to minimise risk to human health and ensure that the Park is suitable for ongoing public open space / recreation use. However, in consultation with the project civil and flood modelling Engineers, the project Arborist has advised that the proposed 'cap and contain' remediation strategy, together with the flood mitigation design requirements cannot be effectively carried out around the trees and their long term health would be compromised if they were to be retained.

Section 5.4 in Part 5 of Parramatta Development Control Plan 2011 (DCP) sets out objectives and controls with respect to the preservation of trees or vegetation. The DCP objectives seek to maintain and enhance the amenity of the Parramatta Local Government Area through the preservation of appropriate trees and vegetation and retain the urban forest cover. However, the objectives also acknowledge the need to appropriately manage trees and vegetation in order to ensure their health and long term retention.

The DCP provisions apply to:

- Any tree or palm - whether indigenous, endemic, exotic or introduced species with a height equal to or exceeding 5 metres.

- Any tree or mangrove vegetation located on public land, irrespective of size.

- Any tree or plant, irrespective of size:

  a. that is listed in a Register of Significant Trees; or
  b. that is or forms part of a heritage item, or that is within a heritage conservation area; or
  c. that is or forms part of an Aboriginal object, or that is within an Aboriginal place of heritage significance.

In relation to the pruning or removal of trees on publicly owned land, including Council Parks, Reserves and Road Reserves, the DCP provides that Council, or its duly authorised servants or agents, may carry out the pruning or removal of a tree/s including bushland vegetation from Council owned or controlled land, subject to the following:

1. All tree works conducted by Council will comply with relevant Australian standards and specifications as determined by the Council policies. The cost of all non-essential tree works for trees located on public land will be the responsibility of the applicant. Council or an

authorised agent will carry out any such approved works.

2. Where a Council Public Works project requires tree/s to be pruned or removed, consent must be sought at the planning stage in consultation with Council's Open Space and Natural Resources Unit.

Unless and exemption applies, a Tree Permit (or development consent) is required before any tree works are carried out on a tree to which the DCP applies. However, 5.4.3 of the DCP sets out those tree works that are exempt from the need for a Permit or Development Application approval.

Tree works on a tree on land owned or under the care, control and management of Council where the tree works are carried out by Council are exempt. Notwithstanding, public consultation must be undertaken prior to the removal of any trees.

The proposed removal of two hundred and forty nine (249) trees across the site will have a significant impact on the existing tree canopy and landscape character of the Park. However, this is to be offset by the planting of one hundred and twenty six (126) new trees across the site. Although the replacement trees are not being replaced at a 1:1 rate, the species and proposed planting locations / spacing have been approved by the project Arborist, to ensure optimal tree growth and canopy spread. As noted earlier, although there is a numerical disparity between the number of trees to be removed and the replacement plantings, many of the existing trees are clumped together, which compromises their canopy spread, health and longevity. It is anticipated that the new tree plantings will realise a similar canopy spread when mature. The new trees will be planted from pot sizes ranging between 25L and 100L, depending on availability. It is noted that when planted, smaller trees will establish and grow quicker than larger specimens.

It is also noted that where possible, Council intends to reuse removed native trees for on-site mulching and reuse appropriate tree trunks in the new playspace.

The proposed new tree plantings will compensate for the loss of these trees and will embellish the landscape quality and character of the local area.

In addition, remediation, bush regeneration and embankment stabilisation will be undertaken along the Duck Creek culvert corridor.

As such, it is considered that the removal of the existing trees and the subsequent new plantings and bush generation will not have an unacceptable impact on the biodiversity value or amenity of the locality.

4.4 Local Environmental Plans

4.4.1 Parramatta Local Environmental Plan 2011

The land on which FS Garside Park is located, including the southern portion of Onslow Street is zoned RE1 Public Recreation under *Parramatta Local Environmental Plan 2011* (LEP).

The stated objectives for the RE1 Public Recreation zone are as follows:

- *To enable land to be used for public open space or recreational purposes;*
- *To provide a range of recreational settings and activities and compatible land uses;*
- *To protect and enhance the natural environment for recreational purposes;*
- *To conserve, enhance and promote the natural assets and cultural heritage significance of Parramatta Park;*
- *To create a riverfront recreational opportunity that enables a high quality*

relationship between the built and natural environment.

The continued use of the land at FS Garside Park for recreational purposes is commensurate with these objectives and the proposed works will provide for active (and to a lesser extent) passive recreational activities for the benefit of the local and wider community. The works within FS Garside Park are consistent with the first three objectives and will assist in facilitating the delivery of high quality recreational facilities that will benefit the local and wider community.

Gray Street and Onslow Street, where works to create new on-street parking, as well as the raised threshold cyclist/pedestrian crossing are proposed are zoned R2 Low Density Residential. Roads are listed as permissible with consent in the Land Use Table for the R2 Low Density Residential zone.

Ordinarily, development consent under Part 4 of the EP&A Act would be required prior to undertaking the proposed works.

Notwithstanding, as identified at Clause 1.9 of the LEP, the provisions of the ISEPP prevails over the provisions of *Parramatta Local Environmental Plan 2011* and pursuant to Divisions 7, 12, 17 and 20, together with Clause 20A and Schedule 1 of the ISEPP, the works may be carried out as either *development without consent* or *exempt development*.

4.5 Confirmation of statutory position

All relevant statutory planning instruments have been examined with respect to the proposal.

The remediation of the site constitutes Category 2 remediation works as defined under Clause 14 of *State Environmental Planning Policy No. 55 – Remediation of Land*. Clause 8 of SEPP 55 permits Category 2 remediation work to be carried out without consent, subject to compliance with the requirements of Clause 17 of the SEPP. Under Clause 17, the remediation work must be carried out in accordance with the contaminated land planning guidelines and any guidelines that may be in force under the *Contaminated Land Management Act, 1997*.

The proposed works at FS Garside Park as described in this REF have been assessed as being either ***exempt development*** or ***development without consent*** under the relevant environmental planning instrument (ISEPP). This position relies on the operation of the ISEPP to remove the otherwise applicable consent requirements under the LEP.

Accordingly, the proposed works do not require approval under Part 4 of the *Environmental Planning & Assessment Act, 1979*.

Notwithstanding, the proposed works fall within the definition of an 'activity' as defined under Section 5.1 of the EP&A Act on the basis that subclause 5.1(1)(d) of the EP&A Act defines the *carrying out of a work* as an "activity".

Section 5.5 of the EP&A Act states a determining authority in its consideration of an activity shall, notwithstanding any other provisions of this Act or the provisions of any other Act or of any instrument made under this or any other Act, examine and take into account to the fullest extent possible all matters affecting or likely to affect the environment by reason of that activity.

Therefore, as the works are being proposed by a public authority (the City of Parramatta) and they do not require development consent, they are subject to an environmental impact assessment under Part 5 of the EP&A Act.

5 Stakeholder and community consultation

5.1 Consultation

In June 2019 Council conducted community consultation to inform high-level concepts for the North Granville Community Facilities Master Plan, and in mid-October to mid-November 2019, Council exhibited the draft Master Plan. Stage 1 of the Master Plan was adopted by the City of Parramatta on 16 December 2019.

Between 4 and 26 March 2020, feedback was invited from the local Rosehill, Harris Park and North Granville community to inform the design of the FS Garside Park playground, picnic facilities, dog park and new youth recreation precinct.

A mix of face-to-face and online methods were utilised to capture feedback and the following platforms were used to promote and encourage feedback from the community relating to the F.S. Garside Park upgrade:

- Social media posts:
- Active Parramatta Facebook page
- Our City Your Say Facebook page
- City of Parramatta – City Engagement Electronic Direct Mail (EDM):
- Follow up to previous masterplan respondents
- Active Parramatta – Open Space and Recreation Electronic Direct Email (EDM)
- Autumn 2020 Edition Newsletter
- Our City Your Say Panel
- Panel email
- Community Engagement - Have Your Say page
- Letters inviting feedback were sent to local residents who live ~3km from the park

More specifically, the following methods/activities were utilised to engage with the community:

1. A flyer inviting the local community to participate was circulated to 4150 households,

2. Email invitation sent to:

    a) local schools (Rosehill Public School and St Oliver's Primary School) site stakeholders;
    b) local day care centres (Granville World of Learning and Twinklestar day care);
    c) 152 respondents who provided feedback to the draft North Granville Community Facilities Masterplan.

3. Park signage was installed around FS Garside Park inviting feedback via online or at drop-in sessions.

4. Social media posts from Active Parramatta and City of Parramatta Facebook. A total of 509 people viewed these posts.

5. Three drop-in sessions held at the below times and dates:

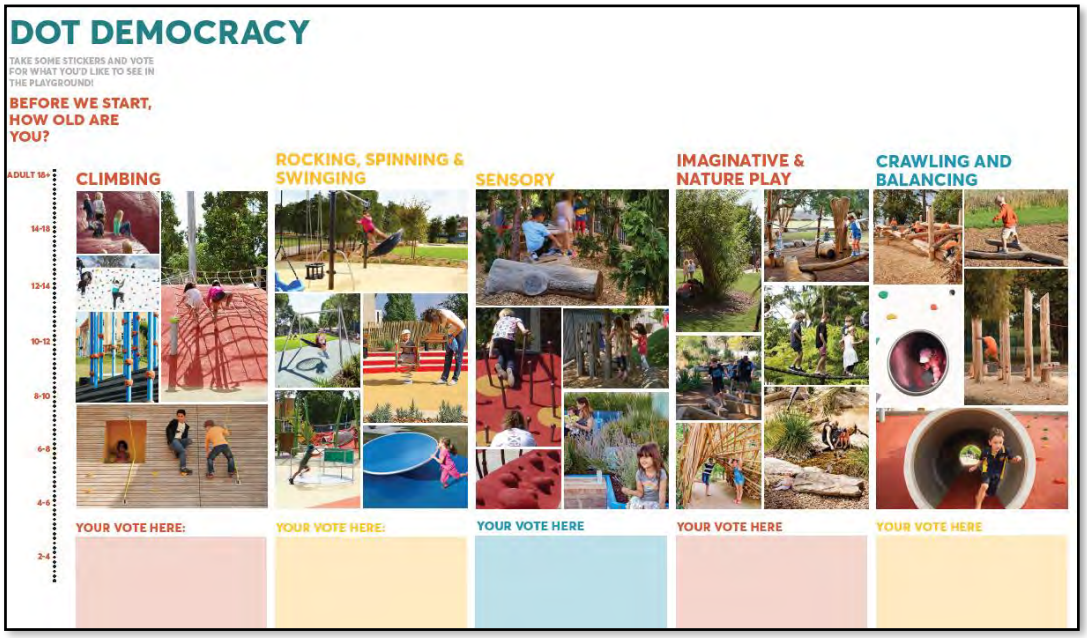
    5 March 2020, 3pm-4pm at Biplane Park, Rosehill
    5 March 2020, 4.30pm-6pm at F.S. Garside Park, Gray Street, Granville
    7 March 2020, 2pm-4pm at F.S. Garside Park, Gray Street, Granville

A dot democracy (dot voting) was used to collect preferences from the community to describe park features that they preferred. The dot democracy activity was available for participation:

- Online via the oursay.org/cityofparramatta/northgranville webpage
- Drop in sessions 5 March 2020 at Biplane Park, Rosehill and 5 and 7 March 2020 at FS Garside Park, Granville.
- At local daycare centres Granville World of Learning and Twinkle star daycare.

Participants placed dots/stickers next to their 5 preferred options relating to activities, play equipment and amenities. For the online version, participants selected the top five images that they would like to see in the new park. The dot democracy board used for the Dot Voting is reproduced in *Figure 5.1* below:

Figure 5.1 – Dot democracy board used for the Dot Voting



Source: City of Parramatta

A summary of the participation and reach of the engagement methods and platforms is provide below:

Activity	Number of Participants
Active Parramatta social media	509
Facebook	6,676
Flyer distribution	4,150
Direct emails to previous respondents	152
Drop in session attendance	60
Day care dot democracy participation	30
Online dot democracy	13
TOTAL Reach	11,590 participants

Key findings of the dot democracy voting community consultation were that the top five (5) votes for activities / amenities and play equipment to be included were:

1) Sensory play – 114 votes
2) Imaginative and nature play – 106 votes
3) Crawling and balancing –105 votes
4) Outdoor fitness equipment – 86 votes
5) Social spaces – 85 votes

Other suggestions from the community for the facilities to be provided that were not captured by the dot democracy activity included:

1) A café
2) Sheltered play
3) More trees and heat mitigation applications
4) Solar powered lighting
5) Park lighting for security
6) Community friendly and diversity inclusive
7) Dog park with drinking fountain, waste bag dispenser, seating, bins, lighting
8) Reasonably challenging and adventurous
9) Big Chess board

The feedback from the community consultation has assisted in informing the detailed design of the proposed facilities and 2021to ensure that the proposed design meets the community requirements and expectations.

A further community consultation on the proposed Park improvements and parking change via public exhibition was held in late 2021, with submission closing on 3 December 2021. A number of minor design amendments have been made to the detailed design in response to the feedback received from the community.

These changes include the addition of portable pull-out barriers at strategic locations along the eastern and western playing field perimeter pedestrian pathway that can be used to restrict public access to sections of the pathway during certain fixtures; the addition of a hard stand area and accessible amenities building adjacent to the western end of the main amenities building; and the inclusion of a chainwire mesh storage area and bin enclosure behind the main amenities building.

5.2 ISEPP consultation

As identified in Table 4-1 in the previous Chapter, consultation in accordance with the ISEPP is not required. Notwithstanding, internal stakeholder consultation with Council's stormwater and traffic engineers was undertaken throughout design development.

5.3 Government agency involvement

There is no requirement for involvement from other government agencies.

5.4 Ongoing or future consultation

There is no requirement for any ongoing or future consultation. Notwithstanding, the City of Parramatta should notify nearby businesses and residents or sporting/community user groups of FS Garside Park prior to the commencement of any works.

Further, once works commence, the community should be provided with a contact name and number that they can contact should any complaints wish to be registered.

6 Environmental assessment

This section of the REF provides a detailed description of the potential environmental impacts associated with the construction and operation of the proposed new facilities at FS Garside Park. All aspects of the environment potentially impacted upon by the proposal are considered. This includes consideration of the factors specified in the guideline *Is an EIS required?* (DUAP 1999) as required under Clause 228(1)(b) of the *Environmental Planning and Assessment Regulation 2000*. The factors specified in clause 228(2) of the *Environmental Planning and Assessment Regulation 2000* are also considered at *Appendix A*. Site-specific safeguards and management measures are provided to ameliorate or minimise the identified potential environmental impacts.

The proposal has been assessed on both the construction phase and the project outcome / operational phase of the project (i.e. once the new and upgrade facilities are in use).

Construction Phase

6.1 Contamination

6.1.1 Existing environment

Historic records show that FS Garside Park operated as a local landfill / tip during the 1920s and early 1930s. In order to convert the site for use as a soccer field, a deep compacted soil layer was placed over the landfill and a grass layer was provided over the capped landfill site.

As part of the preliminary investigations associated with the proposal to upgrade the community and recreational facilities, in 2019, the City of Parramatta commissioned Douglas Partners to prepare a geotechnical investigation and contamination assessment for FS Garside Park.

Consistent with its former use as a municipal tip, previous investigations indicated some areas of the Park contains asbestos, polycyclic aromatic hydrocarbons (PAH), and lead. As a result of this investigation further investigation was recommended for groundwater and ground gas.

Greencap were engaged in 2019 to undertake a landfill gas, groundwater and lead delineation investigation at FS Garside Park, concluding that based on the investigation, the site requires to be remediated to be made suitable for recreational public open space land use.

Results of this assessment did not identify any issues with hazardous ground gases. Lead contamination delineation investigations undertaken at the north-west corner of the site identified an in-depth lead hotspot, which was contained by shallower soils with lead concentrations below relevant health criteria. It was concluded that the risk associated with the identified lead hotspot can be managed under a Long Term Environmental Management Plan (LTEMP). Should this area be excavated or developed in the future, further remedial actions may be required. The groundwater investigation undertaken did not identify any groundwater contamination sourced from the site. Faecal contamination was identified in the confined aquifer on site, which is deemed to be sourced from upstream off-site sources (dissolved urban contamination and Duck Creek). This trigger would management requirements in the event of any potential future groundwater extraction activities or similar.

In June 2020, the City of Parramatta engaged Greencap to undertake a Contamination Assessment at FS Garside Park. Based on the sampling and analysis completed, Greencap concluded that the site requires remediation to meet the adopted criteria to be suitable for recreational public open space land use. Asbestos Containing Materials (ACM), in the form of fibre cement sheet fragments (Non-friable) and Asbestos Fines/Fibrous Asbestos (AF/FA) (friable) was observed to be present in fill material across the investigation area. Exceedances of the adopted ESL and HIL acceptance criteria for PAH contamination risk were recorded at a number of locations across the site. Based on the findings of the previous investigations and this assessment, it was considered that the site can be made suitable for the current land use and potentially any proposed re-development for the same

land use subject to the development of a suitable RAP and the implementation of appropriate site remediation strategies.

6.1.2 Potential impacts

As described above, contamination investigations undertaken at the site have identified soil impacted predominantly by hydrocarbons, lead and asbestos. This is likely to be associated with the previous use of the site as a Municipal rubbish tip. As such, the site surface fill layer soil is currently not suitable for the proposed development, without remediation to address the impacted fill material.

Groundwater remediation is not considered necessary based on the fact that:

- *The groundwater investigation undertaken (Greencap 2019) did not identify any groundwater contamination sourced from the site.*
- *Faecal contamination was identified in the confined aquifer on site, which is deemed to be sourced from upstream off-site sources (dissolved urban contamination and Duck Creek).*

Due to the known contamination status of FS Garside Park, a Remediation Action Plan (RAP) has been prepared by Greencap, with the primary objective of reducing the human health and environmental risk posed by the contamination to an acceptable level and ensuring that the site is suitable for ongoing use as public open space.

The remedial strategy proposed under the RAP is for the implementation of a hybrid 'cap and contain' strategy that combines excavation and disposal of contaminated material to achieve the project levels and then capping and containing the remaining contaminated material by installing a non-woven geofabric marker layer, topped by a minimum 200mm of certified Virgin Excavated Natural Material (VENM), 50mm of certified organic garden bed soil mix, a certified turf underlay and turf layer. This will provide for a minimum of 300mm of clean capping material over the marker layer and will be sufficient to minimise the risk of human exposure. This strategy has been assessed by the project Environmental Consultant to be sustainable, economically viable, commensurate with the level of risk posed by the contaminants and technically achievable to implement concurrently with the proposed development works. On this basis, Greencap are of the opinion that the site can be made suitable for the proposed development provided the RAP is implemented.

Seven (7) options for the approach to the site remediation strategy were considered prior to the Hybrid Remediation 'cap and contain' and ongoing management via a LTEMP strategy being determined as the preferred option. These included Do Nothing; On-site Treatment; Off-site Treatment; Removal and Disposal; On-site Containment by Engineered Containment Cell Construction; Cap & Contain In-Situ by Raising Site Levels; and Hybrid Remediation 'Cap & Contain'.

The RAP sets out the rationale for why this strategy was considered the preferred option and this is reproduced below:

The preferred option for remediation is considered to be appropriate on the basis that it entails *a combination of the above suitable methods for remediation can be combined to achieve the proposed remediation goals. This approach assists achieving desired project levels and design. The remediation option limits material export costs and is considered a sustainable solution as it incorporates cap & contain, therefore this approach is the most preferred.*

The RAP provided at ***Appendix E*** of this REF should be referred to for further details on the remediation strategy discussion.

Based on field and laboratory data collected to date, the excavation required for removal is not expected to extend deeper than 300mm across the site. Laterally the extent is expected to encompass the whole site.

Following remediation, a Site Validation Report (SVP) will need to be prepared to demonstrate that the site has been made suitable for the proposed works and recreational use.

Further, a Site Audit Statement (SAS) is to be obtained from a NSW EPA Accredited Site Auditor and submitted to the determining authority / City of Parramatta. The SAS must confirm that the site has been remediated in accordance with the Remediation Action Plan and clearly state that the site is suitable for the proposed use as a public park.

In addition, a Long-Term Environmental Management Plan (LTEMP) must be prepared in order to provide an ongoing passive management approach that will not impose any constraints on the day to day use of the site as a public park.

6.1.3 Safeguards and management measures

- The site is to be remediated in accordance with the 'cap and contain' strategy set out in the Remediation Action Plan for Proposed FS Garside Park prepared by Greencap. All remediation work shall be carried out in accordance with the guidelines made or approved by the NSW EPA under s.105 of the Contaminated Land Management Act, 1997.

- Prior to remediation works commencing, the following preparatory items are to be undertaken:

    - Notification to SafeWork NSW to undertake the remediation must be submitted by the nominated licenced asbestos removal contractor (LARC). All persons undertaking the asbestos removal/remediation must be competent and appropriately trained, with training records available on-site;
    - In addition to notifying the relevant regulatory authorities and in accordance with current legislation, any neighbouring properties and persons within and surrounding an area that may be affected by the asbestos works, must be informed of the works prior to their commencement;
    - Sufficient and appropriate warning signs (e.g. "caution: asbestos removal") are to be erected at regular intervals around the boundaries and at entry points to the work area exclusion zone during the works (the exclusion zone is required in areas where there is known ACM contamination to be disturbed). During site establishment and setting up activities, an exclusion (buffer) zone will be established designating the areas where contractors, occupants, customers and unauthorised personnel must be excluded.
    - A dedicated decontamination area is to be established at the boundary of the exclusion zone, i.e. exit point. The decontamination area shall contain all necessary Personal Protective Equipment (PPE) and decontamination equipment, i.e. masks, respirators, disposable coveralls, gloves (Type 5, Category 3 minimum), gloves, and 200μm polythene labelled asbestos waste bags for disposal of waste PPE. A mobile decontamination unit with wash facilities is required for any asbestos works deemed as friable;
    - Fencing or barricading must be in place around the boundaries of the exclusion zone and its integrity maintained for the duration of the works;
    - An inspection by the supervising licensed asbestos assessor/hygienist is to be undertaken prior to the commencement of any works to confirm that the asbestos work area has been adequately set up; and
    - A site induction must inform workers of the presence of asbestos, the related risks and controls in place to manage the risks and any other general information relating to asbestos as seen appropriate. A more detailed induction / training process must be implemented for all workers expected to come in direct contact with and/or disturbance of asbestos.

- Any variations to the Remediation Action Plan must be approved in writing by the Accredited Site Auditor and the City of Parramatta prior to the commencement of such

work.

- The remediation and construction works are to be undertaken under the supervision of a suitably experienced and accredited environmental consultant

- Following completion of the remediation works a Site Validation Report is to be prepared by a suitably experienced and accredited environmental consultant (CEnvP SC or equivalent as approved by the NSW EPA and in accordance with the NSW EPA Guidelines for Consultants Reporting on Contaminated Sites) and submitted to the determining authority / City of Parramatta to demonstrate that the site is suitable for the ongoing recreational use.

- Following completion of the remediation works a Site Audit Statement (SAS) is to be obtained from a NSW EPA Accredited Site Auditor and submitted to the determining authority / City of Parramatta. The SAS must confirm that the site has been remediated in accordance with the Remediation Action Plan and clearly state that the site is suitable for the proposed use as a public park, subject to implementation of the LTEMP.

- In the event of an unexpected discovery of any residual hazard such as stained, odorous material, or unidentified infrastructure such as underground storage tanks (USTs), the unexpected finds procedure set out in the Remediation Action Plan prepared by Greencap is to be implemented.

6.2 Flood Management

6.2.1 Existing environment

FS Garside Park, together with the surrounding streets, is currently significantly impacted by flooding and the sportsfield acts as a detention basin during significant rain events. The Duck River and Duck Creek Flood Study Review prepared in November 2012 by WMA Water indicates that in the worst case, FS Garside Reserve is affected by the 5% AEP (1 in 20 year) flood event. However, the existing amenities building at the southern end of the playing field that is to be retained and extended is located above the 1% AEP (1 in 100 year flood event) plus 500mm freeboard, allowing goods to be moved there if necessary. There is currently an earth mound / bund at the north-western corner of the playing field and a low brick retaining wall below the perimeter fence along Alfred Street that currently impedes the flow of stormwater across the site and impacts properties at the south-western end of Alfred Street.

As advised by the project Engineers, the Park is affected by flooding from two (2) mechanisms: tailwater from Duck Creek, and local catchment runoff. These have been studied in three separate models.

- Council's Duck Creek and Duck River models have been provided for use and modified to represent the developed case.

- A local TUFLOW model has been prepared to represent the local catchment runoff. Inflow hydrographs have been generated from DRAINS using ARR 2019 rainfall data.

- A local DRAINS model has been prepared to provide inflow hydrographs for the TUFLOW model and provide an indication of the pipe capacity for the existing network.

6.2.2 Potential impacts

There is the potential that the proposed works will increase flood risk across the site, as well as to the surrounding properties, the majority of which are residential premises. However, the modelling for both Duck Creek and the local catchment confirms that there will be no significant impact to the surrounding commercial and residential properties as a result of the proposed works.

Further, the retention of the riverbank vegetation, to be managed through bush regeneration and embankment stabilisation, is unlikely to cause additional erosion or siltation downstream that might otherwise impact the flow and velocity of water in Duck Creek during severe storm events. The project Engineers, Northrop have advised that the design for the flood mitigation works has considered no worsening in the 1% AEP event and it is expected climate change would increase the tailwater level and reduce the impacts from the development compared to the existing situation. The development considers the existing flood behaviour and maintains flood storage on-site to minimise the cumulative impacts on flood behaviour in the vicinity.

6.2.3 Safeguards and management measures

No safeguards or management measures are considered necessary.

6.3 Tree Removal and Protection

6.3.1 Existing environment

There are several trees across the site that have established over the past seventy or so years. The most notable features are the row of six (6) mature Weeping Figs (Ficus microcarpa var. Hillii) across the Parramatta Road frontage of the Park, as well as the relatively densely planted embankment and area on the western side of Duck Creek.

In addition to the Weeping Figs, the project Arborist has identified the trees across the site as consisting of large mature Spotted gums (*Corymbia maculata*), Brushbox (*Lophostemon confertus*), Tallowwood (*Eucalyptus microcorys*) and various other Eucalyptus species including Grey gums (*Eucalyptus punctata*) and Grey Ironbark (*Eucalyptus paniculata*). Other native species noted were Rough Bark Apple (*Angophora floribunda*), Silky oak (*Grevillea robusta*), Prickly Paperbark (*Melaleuca styphelioides)* and Forest Oak (*Allocasurina torulosa*). Along the creek edge are several Casuarina and Eucalyptus that are struggling under the dense weed infestations. The general the landscape character comprises a mix of mature and newer sapling plantings of the above species. The project Arborist has deemed many of these to be of low to medium significance as they have been planted or have self-seeded close to other trees resulting in competing canopies, poor form and health.

As noted previously, all of the vegetation on the site has either been planted or self-seeded since 1943, as evidenced by the 1943 aerial photograph in the Arboricultural Development Impact Assessment Report and provided at *Figure 6.1* below, that indicates that the site was fully cleared at this time.

Figure 6.1 – 1943 Aerial Photograph of FS Garside Park

Source: City of Parramatta

6.3.2 Potential impacts

Twelve (12) of the existing trees, including the six (6) significant mature Hill's Weeping Fig trees along the Parramatta Road frontage of the Park are to be retained and protected and will maintain the tree lined street edge to Parramatta Road. However, as detailed earlier in the REF, in order to most effectively facilitate the site remediation and flood management, the retention of the majority of the trees across the site is not possible due to extensive excavation and capping requirements. As such, two hundred and forty nine (249) trees require removal. An Arboricultural Development Impact Assessment Report has been prepared by Moore Trees Arboricultural Services (Moore Trees) in order to determine the impact of the proposed works on the trees and with respect to the trees proposed to be retained, make recommendations for the use of sensitive construction methods and tree protection measures to minimise adverse impacts. In accordance with Council policy, the Arborist identified one hundred and fifty five (155) on the site with a height of 3m or more, including all street trees which required assessment with respect to vegetation management on development sites. These trees were identified by genus and species and were assessed for Safe Useful Life Expectancy (SULE) and the potential for adverse impacts due to the proposed works. A Tree Protection Zone (TPZ) for each tree was also calculated.

A copy of the Arboricultural Development Impact Assessment Report is provided at *Appendix D* of this REF.

Based on the Arboricultural assessment, of the one hundred and fifty five (155) trees assessed, seventy seven (77) trees are considered to be of low Retention Value, thirty nine (39) trees of medium Retention Value and thirty nine (39) trees of high Retention Value.

Of the twelve (12) trees to be retained and protected, two (2) trees were assessed to be of medium Retention Value and ten (10) trees of high Retention Value.

A range of tree protection measures and sensitive construction methods to minimise adverse impacts during construction works have been recommended by the Arborist. In addition, further safeguards and management measures as set out below are recommended.

In order to renew the tree canopy and potential habitat for local fauna, compensatory tree planting of one hundred and twenty six (126) new trees is proposed. Although the ratio for the proposed replacement planting is less than 1:1, as discussed earlier, although there is a numerical disparity between the number of trees to be removed and the replacement plantings, many of the existing trees are clumped together, which compromises their canopy spread, health and longevity. The species and proposed planting locations / spacing have been approved by the project Arborist, to ensure optimal tree growth and canopy spread. And it is anticipated that the new tree plantings will realise a similar canopy spread when mature. The new trees will be planted from pot sizes ranging between 25L and 100L, depending on availability. It is noted that when planted, smaller trees will establish and grow quicker than larger specimens. The location of the new plantings are indicated on the Detailed Concept Plan prepared by the City of Parramatta provided at *Appendix B* and (subject to availability) will include the following:

- *Angophora floribunda* (Rough Barked Apple)
- *Angophora costata* (Smooth Barked Apple)
- *Eucalyptus crebra* (Narrow Leaved Ironbark)
- *Eucalyptus microcorys* (Tallowood)
- *Eucalyptus sideroxylon* (Red Ironbark)
- *Corymbia maculata* (Spotted Gum)
- *Lophostemon confertus* (Brush Box)
- *Jacaranda mimosifolia* (Jacaranda)
- *Tristaniopsis laurina* 'Luscious' (Watergum)
- *Acer rubrum sp.* (Maple)
- *Fraxinus pennsylvanida sp.* (Ash)
- *Lagerstroemia indica sp.* (Crepe Myrtle)

6.3.3 Safeguards and management measures

- All tree removal is to be undertaken under the direct supervision of an arborist with minimum AQF Level 5 qualifications, appointed by the City of Parramatta / Project Manager.

- The twelve trees as shown in blue on the Tree Removal and Retention Plan prepared by the City of Parramatta are to be retained and protected in accordance with the requirements of *AS4970 Protection of Trees on Development Sites (2009)*.

- Before the commencement of works, Tree Protection Zones (TPZs) must be established around all trees to be retained. Tree protection must be installed and maintained in accordance with *AS 4970 Protection of Trees on Development Sites*.

- Each TPZ must be:

  (i) Enclosed with a 1.8m high fully supported chainmesh protective fencing. The fencing must be secure and fastened to prevent movement. The fencing must have a lockable opening for access. Woody roots must not be damaged or destroyed during the establishment or maintenance of the fencing; where TPZ merge together a single fence encompassing a group of trees is suitable;

  (ii) Kept free of weed and grass for the duration of works;

  (iii) Mulch maintained to a depth of 75mm for the duration of works;

  (iv) Have two signs identifying the name and contact details of the site Arborist attached facing outwards in a visible position. All signs must remain in place throughout all work on site.

- In the event that any works are required within the TPZ of any tree to be retained, and has been approved by the Project Arborist, ground surface protection must be installed as follows (unless existing hard surfaces are maintained):

  (i) Protected with boarding (ie scaffolding board or plywood sheeting or similar material), placed over a layer of mulch to a depth of at least 75mm and geotextile fabric;

  (ii) The protective boarding must be left in place for the duration of the construction and development.

- In the event that any works are required within the TPZ of any tree to be retained, and has been approved by the Project Arborist, trunk protection must be installed. As a minimum, the trunk protection shall consist of wrapping of trunks with hessian and two-metre lengths of hardwood timber planks (100 x 50mm) spaced at 100-150mm intervals strapped around the trunk and secured with 2mm galvanised wire. The hessian and timber planks must not be fixed to the tree in any fashion or in any instance.

- The following works must be excluded from within any TPZs:

  (i) Soil cut or fill including excavation and trenching;

  (ii) Soil cultivation, disturbance or compaction;

  (iii) Stockpiling, storage or mixing of materials;

  (iv) The parking, storing, washing and repairing of tools, equipment and machinery;

(v) The disposal of liquids and refuelling;

(vi) The disposal of building materials;

(i) The siting of offices or sheds;

(ii) Any action leading to the impact on tree health or structure.

- The excavation works within the TPZ should be supervised by the Project Arborist and undertaken using compact machinery fitted with a flat bladed bucket. The excavator should work in a radial direction away from the tree with the levels lowered in small increments. The works should be guided by a spotter who is to look for and prevent damage to roots (>25mmø). Root pruning should be undertaken by the Project Arborist only. Localised modification of the levels may be required if significant roots are identified by the Project Arborist which cannot be pruned.

- Demolition works within TPZ areas should be supervised by the Project Arborist and utilise tree sensitive methods, ensuring demolition machinery/equipment does not contact with any part of a tree.

- Underground services should be located outside of the TPZ areas. Where this is not possible, services should be installed using tree sensitive excavation (hand/hydrovac etc) methods with the services located around/below roots (>25mmø) as required by the Project Arborist. Excavation using compact machinery (<2T) fitted with a flat bladed bucket is permissible where approved by the Project Arborist. Excavation using compact machinery should be undertaken in small increments, guided by a spotter who is to look for and prevent damage to roots (>25mmø). Alternatively, boring methods may be used for underground service installation where the obvert level (highest interior level of pipe) is greater than 1000mm below existing grade. Excavations for starting and receiving pits for boring equipment should be located outside of the TPZ areas or located to avoid roots (>25mmø) as required by the Project Arborist. OSD tanks (where required) should be located outside of the TPZ areas.

- The installation of plants/turf within the TPZ areas should be undertaken using hand tools and roots (>25mmø) should be protected. No mechanical cultivation/ripping of soils should be undertaken within the TPZ areas. Excavation and installation of imported soil mixes should be excluded from the TPZ areas other than the installation of soil conditioners to a maximum depth of 50mm above the existing soil profile.

- Pruning works should be carried out by a Practising Arborist. The Practising Arborist should hold a minimum qualification equivalent (using the Australian Qualifications Framework) of Level 3 or above in Arboriculture or its recognised equivalent. The Practising Arborist should have a minimum of 3 years' experience in practical Arboriculture. Pruning work should be undertaken in accordance with *AS 4373: Pruning of Amenity Trees (2007)*, *Safe Work Australia Guide for Managing Risks of Tree Trimming and Removal Work (2016)* and other applicable legislation and codes.

- In order to renew the tree canopy and potential habitat for local fauna, compensatory tree planting of one hundred and twenty six (126) new trees is to be undertaken. The location of the new plantings are indicated on the Detailed Concept Plan prepared by the City of Parramatta provided at ***Appendix B*** and include the following:

  - *Angophora floribunda* (Rough Barked Apple)
  - *Angophora costata* (Smooth Barked Apple)
  - *Eucalyptus crebra* (Narrow Leaved Ironbark)
  - *Eucalyptus microcorys* (Tallowood)
  - *Eucalyptus sideroxylon* (Red Ironbark)
  - *Corymbia maculata* (Spotted Gum)

- *Lophostemon confertus* (Brush Box)
- *Jacaranda mimosifolia* (Jacaranda)
- *Tristaniopsis laurina* 'Luscious' (Watergum)
- *Acer rubrum sp.* (Maple)
- *Fraxinus pennsylvanida sp.* (Ash)
- *Lagerstroemia indica sp.* (Crepe Myrtle)

- New trees should be grown in accordance with *AS 2303 Tree Stock for Landscape Use (2018).*

6.4 Traffic and Parking

6.4.1 Existing environment

Construction access to the site will primarily be via Alfred Street, Gray Street and Onslow Street, which carry relatively low volumes of daily vehicles and to a lesser extent, cyclists and pedestrians. It is not anticipated that there will be any direct access to the site from Parramatta Road.

6.4.2 Potential impacts

Impacts during the works would primarily occur when traffic flows and/or pedestrian movements in the vicinity of the site may need to be temporarily disrupted to allow for construction vehicles and/or equipment to access or leave the work site/s. There may also be short term impacts associated with truck movements during the remediation works, as well as an additional demand for on-street parking from worker's vehicles. Notwithstanding, these impacts would be minimised through the implementation of appropriate traffic / pedestrian control measures in the vicinity of the works.

6.4.3 Safeguards and management measures

- Where required, appropriate traffic management measures on Alfred Street, Gray Street, Onslow Street and Parramatta Road, such as temporary speed restrictions, precautionary signs, illuminated warning devices and manual and/or electronic traffic control to control access of construction vehicles etc to the park will need to be implemented (as necessary) and maintained throughout the works period.

6.5 Noise and Vibration

6.5.1 Existing environment

The existing noise environment is typical of a public open space facility within an established urban area adjacent to low density residential uses and a major road corridor and further to the north, the Western Motorway (M4). Existing background noise levels mainly comprise traffic noise, with minimal noise expected to be generated by the adjoining residential uses.

6.5.2 Potential impacts

There will be some noise impacts associated with the remediation and construction activities. However, general construction noise associated with the works is not likely to cause a significant disturbance above existing noise levels associated with nearby major roads. All works will occur during the daytime period when background noise levels are higher and there is sufficient separation distance from nearby sensitive land uses to assist in minimising or ameliorating any significant noise impacts.

6.5.3 Safeguards and management measures

- Work is to be restricted to the following working hours and noisy work should be undertaken during less sensitive periods where possible:
    - Monday to Friday – 07:00 to 17:00; and
    - Saturday – 08:00 to 17:00.

No work is to be undertaken on:

- Sundays;
- Saturdays and Sundays that form part of public holiday weekends; and
- Public Holidays.

- Noise from construction activities shall comply with the *Protection of the Environment Operations (Noise Control) Regulation 2008*.
- All plant, machinery and noise generating equipment should be maintained in good working order. Where practical / possible machinery should be fitted with exhaust silencers and / or noise reduction devices.
- Plant and machinery will need to be turned off when not in use.
- The construction noise levels shall not reach or exceed the exposure levels, including peak exposure (140dB[C]) and daily average (85dB[A]), as detailed in Clause 56 of the WH&S Regulation 2017. Work planning and preparation shall be considered to ensure noisy activities are minimised. The control measures developed shall meet the requirements of *AS2436 – 2010 – 'Guide to Noise and Vibration Control on Construction, Maintenance and Demolition Sites'* i.e. localised noise boxes or barriers. Appropriate tools and equipment shall be used to ensure noise levels are reduced and controlled.

6.6 Air Quality

6.6.1 Existing environment

The air quality at FS Garside Park is typical of an established urban environment. The main sources of air pollution are air borne pollutants from vehicle exhausts, as well as dust and debris during periods of high winds.

6.6.2 Potential impacts

There is the potential for some adverse air quality impacts as a consequence of the proposed works such as air borne dust during the removal of the playing field surface, playground equipment, existing pavements / kerb and guttering etc and general construction / installation associated with the upgrade works. Some minor additional air quality impacts may result from the equipment and vehicles being used during works. However, the likely cumulative impact is considered to be negligible.

6.6.3 Safeguards and management measures

- The Contractor is required to monitor and manage dust / air quality during the works.
- All plant, machinery and noise generating equipment is to be maintained in good working order and is to be turned off when not in use for prolonged periods.
- Where possible, all construction plant and machinery should be fitted with emission control devices complying with Australian Design Standards.
- All vehicles leaving the site that are carrying waste or other materials are to have their loads covered.
- Any dust generating works should be stopped during periods of high wind.
- Plastic sheeting shall be available to cover excavation faces and stockpiles.

6.7 Water Quality

6.7.1 Existing Environment

The south-eastern side of the Park adjoins Duck Creek and the surrounding street have kerb and guttering that directs stormwater to the street stormwater drainage system.

6.7.2 Potential impacts

There is the potential for soil and other pollutants disturbed during the works, or through localised erosion to enter the stormwater drainage system in the surrounding roads and/or Duck Creek, particularly if there is heavy rain during the course of works.

6.7.3 Safeguards and management measures

- Erosion and sedimentation controls such as silt fences / bags, sediment traps, diversion drains, berms, sumps etc will need to be installed across the works site and in particular along the eastern perimeter of the work site adjacent to Duck Creek and around any stockpiles before the commencement of works to prevent sediment-laden runoff entering the local stormwater system.

- A Construction Soil and Water Management Plan and/or Erosion and Sedimentation Control Plan is to be prepared in accordance with the Blue Book to detail processes, responsibilities and measures to manage potential impacts during construction. Any cleared areas are to be revegetated or stabilised as soon as practicable to prevent erosion of soil surfaces.

- All chemicals must be stored in appropriately bunded and secure areas and not be located within or directly adjacent to drainage pits.

- Spill kits are to be available to ensure any spills are appropriately managed.

- Regular inspection and maintenance of the erosion and sedimentation controls is to be undertaken. Sediment build up is to be cleared from behind barriers where required and all controls are to be maintained in working order sufficient for a 10 year Average Recurrence Interval (ARI) rainfall event.

- Building operations and stockpiles must not be located on the public footway or any other locations which could lead to the discharge of materials into the stormwater system.

6.8 Visual Amenity

6.8.1 Existing environment

The existing visual amenity is typical of an urban environment comprising a large area of public open space bounded by trafficable streets and surrounded by a predominantly low density residential neighbourhood.

6.8.2 Potential impacts

The likely short terms visual impacts associated with the works include the presence of temporary safety fencing, plant and equipment, stockpiles etc at the site. However, this visual impact is likely to be minimal and will only exist for the duration of the works.

The long term changes to this visual environment will primarily be the improved appearance of the Park as a consequence of the upgraded facilities. This is not considered to be a negative visual impact. The removal of trees across the site will have an initial significant visual impact. However, the remediation of the site is a priority having regard to the public health risk and effectively treatment of significant contamination throughout the site, which cannot be effectively undertaken without the removal of the majority of the trees across the site. Notwithstanding, substantial new plantings will

create a new landscape character that will improve visual amenity as the trees mature and the canopy develops.

Temporary perimeter fencing will be used to ensure members of the public cannot access the Park during remediation and construction works. This should incorporate shade cloth (or similar) with details of the proposed works to minimise visual impacts during remediation and construction works. Other than this requirement and that all parts of the construction site are kept in a clean and tidy manner, no additional safeguards are proposed with respect to visual amenity.

6.8.3 Safeguards and management measures

- All parts of the work areas are to be kept clean and tidy at all times.

- Shade cloth (or similar) incorporating project details should be used on temporary perimeter fencing to improve visual amenity during remediation and construction works.

6.9 Waste Management and Minimisation

6.9.1 Potential impacts

The remediation and construction activities associated with the upgrade works will generate a variety of waste material including, but not necessarily limited to demolition waste, waste soil and vegetation, packaging, surplus materials and general litter.

Waste soil generated during remediation works will need to be classified and disposed of at a licensed facility, in accordance with the Remediation Action Plan. It is anticipated that all soils will classify as "Special Waste – asbestos" under the NSW EPA's Waste Classification guidelines 2014.

There is the potential for asbestos containing materials to be discovered / disturbed during remediation and/or demolition works. If this occurs, it will need to be handled, stored and removed in accordance with the relevant safe practice standards.

All waste will need to be collected, sorted and stored on site in appropriate skips / containers etc and if not to be reused on site, collected and disposed of at a licenced recycling or waste facility.

6.9.2 Safeguards and management measures

- Should any asbestos or asbestos containing material be discovered / disturbed during demolition works, its handling, storage and removal shall be carried out in accordance with the National WH&S Committee – Code of Practice for the management and control of asbestos in the workplace.

- A Waste Management Plan will need to be prepared to detail the procedures for waste minimisation and management, including the likely waste generation, method of on-site collection and storage and details of the intended method of recycling or disposal.

- All areas of the construction site/s will need to be kept free of rubbish and cleaned at the end of each work day.

- The resource management hierarchy principles of the *Waste Avoidance and Resource Recovery Act 2001* (WARR Act) should be adopted as follows:

  – Avoid unnecessary resource consumption as a priority.
  – Avoidance is followed by resource recovery (including reuse of materials, reprocessing, recycling, and energy recovery).

  – Disposal is undertaken as a last resort.

6.10 Flora & Fauna

6.10.1 Existing environment

Site investigations identified planted native and exotic vegetation, as well as three (3) native fauna species including the Australian Magpie, Rainbow Lorikeet, Noisy Minor and Ibis. However, no threatened flora and fauna, or significant habitat features such as hollow-bearing trees were identified during site investigations. Further, no threatened ecological communities were mapped or found to be present at the site. There is the potential for the mature Weeping Figs along Parramatta Road to provide habitat for a variety of birds and potentially Microchiropteran bats. However, these trees are to be retained and protected and any impacts to this potential habitat will be minor and relatively short term, with no long term impacts expected.

Cumberland Plain Woodland (CPW), listed as an Endangered Ecological Community under the provisions of the *Biodiversity Conservation Act, 2016* would have covered this area prior to European colonisation. Although there are remnant species characteristic of CPW present on the site, it has been highly disturbed and what trees are present are regrowth or have been planted in the last sixty (60) years, having regard to a 1943 photograph at ***Figure 6.1*** and in the Arboricultural Development Impact Assessment Report at ***Appendix F*** that shows the site as being fully cleared. It is also noted that the section of Duck Creek adjoining the south-eastern side of the Park is a highly modified and artificial environment consisting of a concrete channel.

6.10.2 Potential impacts

The proposed removal of two hundred and forty nine (249) trees from the site constitutes a direct impact to the flora at the site. However, none of the trees to be removed are part of a Threatened Ecological Community (TEC). Therefore, as no TEC will be directly or indirectly impacted and no threatened flora will be directly impacted by the proposed works, no direct impacts to threatened fauna within the site are anticipated.

Potential indirect impacts to flora and fauna at the site may include:

- Rubbish dumping.
- Noise and vibration that may affect local fauna.
- Surface and stormwater runoff from increased impervious areas associated with construction and any associated landscaped areas.
- Pathogens such as Phythophthora and Myrtle Rust causing dieback to retained vegetation. Caused through transportation of soil, water or plant materials.

However, these are considered to be short term and unlikely to significantly impact flora. Any fauna is expected to be highly mobile given the urban environment and would relocate if required.

A formal assessment of any TECs or threatened species in the form of a Referral under the EPBC Act is not required for the proposed works due to a lack of suitable habitat.

Notwithstanding, in order to minimise the potential for any impacts to flora or fauna, a number of safeguards and management measures are recommended, as outlined below:

6.10.1 Safeguards and management measures

- If injured or abandoned fauna is found, WIRES should be contacted to hand over the animal for care, or the animal would be taken to the vet, whichever is the most appropriate option for the fauna species.

- Equipment must not be used if there are any signs of fuel, oil or hydraulic leaks. Leaks must be repaired immediately, or the equipment must be removed from the site until it is repaired or replaced with a leak-free item.

- Reschedule works during and after periods of heavy rainfall.

- Chemicals and rubbish must not be stockpiled near native vegetation or the waterways.
- No vegetation with signs of disease, pathogens or fungus should be planted on site.
- Any fill brought on to site must be from a reputable supplier and be certified fill.
- Do not allow dirty vehicles to enter the site, ensure vehicles are clean and all mud, dirt or soil is removed before entering the site.

6.11 Aboriginal Heritage

6.11.1 Potential impacts

In order to identify if Aboriginal objects are likely to be located within the area of the proposed works and, if so, whether the proposed works have the potential to harm those objects, the City of Parramatta's Senior Open Space & Natural Area Planner prepared an Aboriginal Heritage Due Diligence Assessment of FS Garside Park.

The Council's Geographic Information System (GIS) data indicates the site is mapped as low sensitivity due to high levels of past disturbance and that there are no records for Aboriginal heritage objects within the vicinity of the proposed works. A Heritage NSW (HNSW) Aboriginal Heritage Information Management System (AHIMS) search was also undertaken to confirm the presence or absence of known Aboriginal heritage within or in proximity to the works site. The AHIMS search shows there are no Aboriginal places and no recorded Aboriginal sites within a 200m radius of the site.

The assessment was prepared in accordance with the Due Diligence Code of Practice for the protection of Aboriginal Objects in New South Wales guidelines (DECCW 2010a). The Due Diligence Assessment determined that the proposed activity would not likely harm any Aboriginal heritage due to the following:

- No Aboriginal objects or places known to be located within or near the project site (AHIMS); and
- The Project site is 'disturbed land' due to previous infrastructure construction, landfill activities and associated contamination; and
- An 'Unexpected Finds Protocol' will be required as a condition of approval under Part 5 of the *Environmental Planning & Assessment Act 1979* (Review of Environmental Factors).

Accordingly, the Aboriginal Heritage Due Diligence Assessment concludes that there is negligible potential for the survival of in situ Aboriginal objects or soil deposits and an Aboriginal Heritage Impact Permit (AHIP) is not required.

A copy of the Aboriginal Heritage Due Diligence Assessment is provided at ***Appendix F*** of this REF.

Notwithstanding, Aboriginal objects are protected under the *National Parks & Wildlife Act 1974* (NP&W Act) regardless if they are registered on AHIMS or not. If suspected Aboriginal objects, such as stone artefacts are located during future works, works must cease in the affected area and an archaeologist called in to assess the finds. If the finds are found to be Aboriginal objects, Heritage NSW must be notified under section 89A of the NPW Act. Appropriate management and avoidance or approval under a section 90 AHIP should then be sought if Aboriginal objects are to be moved or harmed.

Therefore, it is recommended that an environmental safeguards with respect to any 'Unexpected Finds' be imposed.

6.11.2 Safeguards and management measures

- In the unlikely event that during works any objects are discovered that are suspected to be Aboriginal objects, Heritage NSW must be notified under section 89A of the NPW Act. Appropriate management and avoidance or approval under a section 90 AHIP should then be sought if Aboriginal objects are to be moved or harmed.

- In the extremely unlikely event that human remains are found, works should immediately cease, and the NSW Police should be contacted. If the remains are suspected to be Aboriginal, Heritage NSW may also be contacted at this time to assist in determining appropriate management.

6.12 Social and economic

6.12.1 Potential impacts

In the short term, there will be temporary negative social impacts associated with a restriction on public access to the Park and its facilities during the works period. However, it is noted that there are nearby parks and facilities that the public will have access to during this time, such as Biplane Park, John Irving Park, Robin Thomas Reserve, James Ruse Reserve and Water Playground etc.

Nevertheless, there are likely to be long term positive social and economic impacts associated with the proposed works such as the improved appearance, function and useability of the facilities at the Park for user groups and the wider community.

6.12.2 Safeguards and management measures

No safeguards or management measures are considered necessary.

6.13 Community Enquiries and Complaints

6.13.1 Potential impacts

During the course of remediation and construction works there is the potential that affected businesses, residents or other members of the community may wish to make enquiries or complaints in relation to the works.

6.13.2 Safeguards and management measures

- A dedicated 'Community Liaison Officer' (Council's Project Manager or representative) should be contactable and available to respond to enquiries and address complaints or other issues during the works period.

- Signage on the temporary perimeter fencing is to include the Community Liaison Officer contact details for any enquiries or complaints.

- Surrounding properties are to be provided with a minimum of three (3) days notification (letterbox drop) prior to the commencement of works.

- A Register to record complaints from local residents, businesses or other members of the community is to be prepared and maintained by the appointed Community Liaison Officer.

6.14 Summary of construction phase beneficial effects

The main benefits of the proposed works at FS Garside Park include:

- The provision of high quality sporting facilities, amenities and recreational facilities for the local and wider community, together with a significant improvement to the public safety,

aesthetic quality, public domain amenity and legibility of FS Garside Park.

- The provision of new sporting and recreational facilities in keeping with the community's desires and expectations and identified strategic needs; and
- Improvement to the aesthetic, recreational and long term value of the Park.

6.15 Summary of construction phase environmental impacts

The main potential environmental impacts likely to arise during the works include:

- Contamination impacts;
- Flooding impacts;
- Tree removal impacts;
- Traffic and parking impacts;
- Noise and vibration impacts;
- Air quality impacts;
- Water and stormwater quality impacts;
- Visual amenity impacts;
- Waste management and minimisation impacts.

As discussed above, the potential for impacts to Aboriginal heritage and/or to flora and fauna at the site have also been considered and adverse impacts are unlikely. Notwithstanding, environmental safeguards and management measures have been recommended should any 'unexpected finds' eventuate during the works.

Project Outcome / Operational Phase

6.16 Contamination

6.16.1 Existing environment

As described earlier, due to the known contamination status of FS Garside Park, the site requires remediation and validation in accordance with the Remediation Action Plan (RAP) prepared by Greencap. The preferred remediation strategy is a 'cap and contain' strategy. Following remediation, a Site Validation Report (SVR) will need to be prepared to demonstrate that the site has been made suitable for the ongoing recreational use of the Park.

Further, a Site Audit Statement (SAS) confirming that the site has been remediated in accordance with the Remediation Action Plan and clearly stating that the site is suitable for the proposed use as a public park, is to be obtained from a NSW EPA Accredited Site Auditor and submitted to the determining authority / City of Parramatta.

6.16.2 Potential impacts

Considering the contaminants of concern and the 'simplicity' of the remediation strategy, the potential for the remediation strategy to fail is considered to be negligible. Notwithstanding, in order to ensure the ongoing management and integrity of the remedial works (i.e. that the capping layer is maintained to minimise the potential for exposure to the underlying contaminated material), a

Long Term Environmental Management Plan (LTEMP) must be prepared and implemented. The Park must be operated and maintained in accordance with the LTEMP.

6.16.3 Safeguards and management measures

- In order to ensure the ongoing management and integrity of the remedial works, a Long-Term Environmental Management Plan (LTEMP) is to be prepared and implemented and is to include, but not necessarily be limited to:
    - Requirements for the passive management of the capping system, focusing on maintaining the capping layers to minimise the potential of exposure to the underlying fill;
    - Contingencies for managing intrusive works in the event that the capping layers are breached.
- The LTEMP must operate independently from the CEMP and in order to ensure compliance with the notification and enforcement mechanisms:
    - The LTEMP is to be the subject of an 'environmental hazard' notation on the Planning Certificate under Section 10.7(2) & (5) of the *Environmental Planning and Assessment Act, 1979*. The notation must identify that the site is subject to and being operated and maintained in accordance with a LTEMP.
    - The City of Parramatta must accept and agree that FS Garside Park will be operated and maintained in accordance with the LTEMP and any other conditions or requirements imposed on the Site Audit Statement (SAS).
- At the completion of the remediation work, as the site will be subject to a LTEMP, which must be registered as an asset on the Dial-Before-You-Dig Database to ensure adequate public notification of the LTEMP measures required for future subsurface excavations.

6.17 Traffic and Parking

6.17.1 Existing environment

There are approximately eighty eight (88) on-street parking spaces in Onslow Street and Gray Street, with a combination of 90 degree parking spaces and parallel to kerb spaces.

6.17.2 Potential impacts

The proposed on-street parking arrangements will provide twenty (20) x 90 degree parking spaces on the southern side of Gray Street and thirty eight (38) x 90 degree parking spaces, including six (6) designated accessible spaces in the northern end of Onslow Street. Conversion of the existing Onslow Street car park to open space fulfils Council's adopted North Granville Community Facilities Masterplan and a requirement set by the NSW Government's Parramatta Road Urban Amenity Improvement Program (PRUAIP). The PRUAIP is accompanied by a strict funding arrangement and timeframes for completion. These requirements are non-negotiable and carry the statutory weight of a Section 9.1 Ministerial Direction under the *Environmental Planning & Assessment Act, 1979* in relation to the implementation of the Parramatta Road Corridor Urban Transformation Strategy. A timed parking restriction of 2P 8.00am -6.00pm Mon-Fri is proposed. The parking restrictions will allow equitable use / visitation to FS Garside Park whilst supporting sports training sessions and weekend game attendance. The new parking arrangements are also aimed at reducing the occurrence of anti-social behaviour and dumping of rubbish etc that currently occurs in the existing carparking area in Onslow Street. The impact of the proposed new parking arrangements is an overall loss of thirty (30) spaces.

The proposed new parking arrangements and timed restriction for Onslow Street and Gray Street were placed on community consultation from 5 November to 3 December 2021 and the new parking arrangements will be provided to the Parramatta Traffic Committee for endorsement.

6.17.3 Safeguards and management measures

- Subject to endorsement by the Parramatta Traffic Committee, a timed parking restriction of 2P 8.00am -6.00pm Mon-Fri is to be implemented for the new parking arrangements.

6.18 Acoustic amenity impacts

6.18.1 Potential impacts

The continued evening use of the sportsfield has the potential to impact on the acoustic amenity of nearby residents, particularly those residents on Onslow Street to the east of the playing field.

Notwithstanding, noise emissions from participants and spectators are an integral part of the use of sporting and recreational facilities and noise impacts are generally tolerated by residents who live close to such facilities. Although no specific acoustic testing has been undertaken, it is anticipated that noise levels from training and competitive fixtures are generally likely to achieve the recommended assessment criteria for weekend and evening operations. However, minor exceedances of the intrusiveness criteria (Background+5dBA) are possible when players and/or spectators interact near the eastern side of the sportsfield, in closest proximity to the residential receivers.

It is acknowledged that there will be an increased acoustic environment resulting from the resumption of the sporting and recreational facilities at FS Garside Park following a period of closure of the playing field. However, on balance, it is considered that this will not result in unreasonable adverse acoustic impacts to the nearest residential receivers who are located in Alfred Street, Gray Street and Onslow Street.

6.18.2 Safeguards and management measures

No safeguards or management measures are considered necessary.

6.19 Visual impacts

6.19.1 Potential impacts

The long term change to this visual environment will be the extent of tree removal, the physical form of the upgraded sportsfield and playground, new amenities, new youth precinct and dog park facilities, new parking, new landscaping and other improvement works. However, this is not considered to be a negative visual impact given the existing and intended sporting and recreational usage of FS Garside Park.

Although the sportsfield is currently flood lit, it is proposed to upgrade the flood lighting to provide lighting levels of up to 200 lux for competitions. As such, there is the potential for increased impacts from light glow to nearby residential properties during night time competition events. Generally for training and non-competition events, lighting levels of 50 lux are sufficient. In order to minimise the potential impacts from increased lux levels, the hours of operation for the sportsfield flood lighting should be restricted to 10pm nightly and a restriction on lighting levels of either 100 lux or 200 lux should be restricted to competition events only, with a limit of 50 lux on all training and non-competition events.

The flood lights will need to be installed to comply with the technical parameters of *AS 4282-2019 Control of the Obtrusive Effects of Outdoor Lighting* and in doing so, will not have an unreasonable impact in terms of light spill and glare on the adjacent properties.

Flood lighting levels are to be in accordance with *AS 2560.1: 2018 Sports Lighting General Principles*.

- 200 lux for semi-professional competitions;
- 100 lux for local competitions; and
- 50 lux for training.

6.19.2 Safeguards and management measures

- The hours of operation for the sportsfield flood lighting is to be restricted to no later than 10pm nightly.

- The use of higher lighting levels of 100 lux and 200 lux are restricted to competition events only. A maximum lighting level of 50 lux is to be used for all training and non-competition events.

6.20 Social and economic

6.20.1 Potential impacts

The ongoing use of the sportsfield and other recreational facilities at FS Garside Park will have a generally positive socio-economic impact and the sporting and recreational facilities available to the principal user, other user groups and the wider community will be improved.

6.20.2 Safeguards and management measures

No environmental safeguards or management measures are proposed.

6.21 Summary of operational phase environmental impacts

The main environmental impacts to potentially arise during the operational phase of the sporting and recreational facilities at FS Garside Park include:

- Contamination impacts;
- Traffic and parking impacts;
- Acoustic amenity impacts;
- Visual and lighting impacts;
- Social and economic impacts.

However, it is considered that these potential impacts can be adequately mitigated and will not have an unreasonable impact.

7 Environmental management

7.1 Environmental management plans

Environmental safeguards and management measures outlined in Table 7-1 below will minimise the identified potential adverse environmental impacts of the proposal on the surrounding environment.

A Construction Environmental Management Plan (CEMP) that incorporates all of the safeguards and management measures associated with the identified potential impacts and other construction management related issues will need to be prepared by the contractor/s prior to the commencement of works. The CEMP must be site specific and provide details on how the principal contractor will implement the Remediation Action Plan during construction activities. The CEMP must be reviewed and approved by the Site Auditor (from a contamination perspective) prior to the commencement of works on the site.

The CEMP will form the framework for establishing how the safeguards and management measures will be implemented and who will be responsible for their implementation. The environmental management of this proposal will need to be in accordance with this plan. In addition to the CEMP, a Long-Term Environmental Management Plan (LTEMP) must be prepared and the Park must be operated and maintained in accordance with the LTEMP in order to ensure the ongoing management and integrity of the 'cap and contain' remedial works.

7.2 Summary of safeguards and management measures

The environmental safeguards and management measures outlined in this document will need to be incorporated into the detailed design and implemented prior to and/or maintained throughout the duration of the works at FS Garside Park. These safeguards and management measures are aimed at minimising any potential adverse impacts on the surrounding environment and land uses arising from the proposed works. All safeguards and management measures described in the REF will also need to be incorporated into the CEMP. These are summarised in Table 7-1.

Table 7-1: Summary of impact specific environmental safeguards

No.	Impact	Environmental safeguards & management measures
1	Contamination	• The site is to be remediated in accordance with the 'cap and contain' strategy set out in the Remediation Action Plan for Proposed FS Garside Park prepared by Greencap. All remediation work shall be carried out in accordance with the guidelines made or approved by the NSW EPA under s.105 of the *Contaminated Land Management Act, 1997*. • Prior to remediation works commencing, the following preparatory items are to be undertaken: - Notification to SafeWork NSW to undertake the remediation must be submitted by the nominated licenced asbestos removal contractor (LARC). All persons undertaking the asbestos removal/remediation must be competent and appropriately trained, with training records available on-site;

No.	Impact	Environmental safeguards & management measures
		- In addition to notifying the relevant regulatory authorities and in accordance with current legislation, any neighbouring properties and persons within and surrounding an area that may be affected by the asbestos works, must be informed of the works prior to their commencement; - Sufficient and appropriate warning signs (e.g. "caution: asbestos removal") are to be erected at regular intervals around the boundaries and at entry points to the work area exclusion zone during the works (the exclusion zone is required in areas where there is known ACM contamination to be disturbed). During site establishment and setting up activities, an exclusion (buffer) zone will be established designating the areas where contractors, occupants, customers and unauthorised personnel must be excluded. - A dedicated decontamination area is to be established at the boundary of the exclusion zone, i.e. exit point. The decontamination area shall contain all necessary Personal Protective Equipment (PPE) and decontamination equipment, i.e. masks, respirators, disposable coveralls, gloves (Type 5, Category 3 minimum), gloves, and 200μm polythene labelled asbestos waste bags for disposal of waste PPE. A mobile decontamination unit with wash facilities is required for any asbestos works deemed as friable; - Fencing or barricading must be in place around the boundaries of the exclusion zone and its integrity maintained for the duration of the works; - An inspection by the supervising licensed asbestos assessor/hygienist is to be undertaken prior to the commencement of any works to confirm that the asbestos work area has been adequately set up; and - A site induction must inform workers of the presence of asbestos, the related risks and controls in place to manage the risks and any other general information relating to asbestos as seen appropriate. A more detailed induction / training process must be implemented for all workers expected to come in direct contact with and/or disturbance of asbestos. • Any variations to the Remediation Action Plan must be approved in writing by the Accredited Site Auditor and the City of Parramatta prior to the commencement of such work.

No.	Impact	Environmental safeguards & management measures
		• The remediation works are to be undertaken under the supervision of a suitably experienced and accredited environmental consultant. • Following completion of the remediation works a Site Validation Report is to be prepared by a suitably experienced and accredited environmental consultant (CEnvP SC or equivalent as approved by the NSW EPA and in accordance with the NSW EPA Guidelines for Consultants Reporting on Contaminated Sites) and submitted to the determining authority / City of Parramatta to demonstrate that the site is suitable for the ongoing recreational use. • Following completion of the remediation works and prior to commencing any works associated with the upgrade works (excluding any works directly relating to remediation) a Site Audit Statement (SAS) is to be obtained from a NSW EPA Accredited Site Auditor and submitted to the determining authority / City of Parramatta. The SAS must confirm that the site has been remediated in accordance with the Remediation Action Plan and clearly state that the site is suitable for the proposed use as a public park, subject to implementation of the LTEMP. • In the event of an unexpected discovery of any residual hazard such as stained, odorous material, or unidentified infrastructure such as underground storage tanks (USTs), the unexpected finds procedure set out in the Remediation Action Plan prepared by Greencap is to be implemented. • In order to ensure the ongoing management and integrity of the remedial works, a Long-Term Environmental Management Plan (LTEMP) is to be prepared and implemented and is to include, but not necessarily be limited to: ➢ Requirements for the passive management of the capping system, focusing on maintaining the capping layers to minimise the potential of exposure to the underlying fill; ➢ Contingencies for managing intrusive works in the event that the capping layers are breached. • The LTEMP must operate independently from the CEMP and in order to ensure compliance with the notification and enforcement mechanisms: ➢ The LTEMP is to be the subject of an 'environmental hazard' notation on the

No.	Impact	Environmental safeguards & management measures
		Planning Certificate under Section 10.7(2) & (5) of the *Environmental Planning and Assessment Act, 1979*. The notation must identify that the site is subject to and being operated and maintained in accordance with a LTEMP. ➢ The City of Parramatta must accept and agree that FS Garside Park will be operated and maintained in accordance with the LTEMP and any other conditions or requirements imposed on the Site Audit Statement (SAS). • At the completion of the remediation work, as the site will be subject to a LTEMP, in accordance with the City of Parramatta's Environmental Management System, the site and LTEMP must be registered as an asset on the Dial-Before-You-Dig Database to ensure adequate public notification of the LTEMP measures required for future subsurface excavations.
2	Tree Removal and Protection	• All tree removal is to be undertaken under the direct supervision of an arborist with minimum AQF Level 5 qualifications, appointed by the City of Parramatta / Project Manager. • The twelve trees shown on the Tree Removal and Retention Plan (Revision C) prepared by the City of Parramatta are to be retained and protected in accordance with the requirements of *AS4970 Protection of Trees on Development Sites (2009)*. • Before the commencement of works, Tree Protection Zones (TPZs) must be established around all trees to be retained. Tree protection must be installed and maintained in accordance with AS 4970 Protection of Trees on Development Sites. • Each TPZ must be: (i) Enclosed with a 1.8m high fully supported chainmesh protective fencing. The fencing must be secure and fastened to prevent movement. The fencing must have a lockable opening for access. Woody roots must not be damaged or destroyed during the establishment or maintenance of the fencing; where TPZ merge together a single fence encompassing a group of trees is suitable; (ii) Kept free of weed and grass for the duration of works; (iii) Mulch maintained to a depth of 75mm for the duration of works; (iv) Have two signs identifying the name and contact details of the site Arborist attached facing outwards in

No.	Impact	Environmental safeguards & management measures
		a visible position. All signs must remain in place throughout all work on site. • In the event that any works are required within the TPZ of any tree to be retained, and has been approved by the Project Arborist, ground surface protection must be installed as follows (unless existing hard surfaces are maintained): (i) Protected with boarding (ie scaffolding board or plywood sheeting or similar material), placed over a layer of mulch to a depth of at least 75mm and geotextile fabric; (ii) The protective boarding must be left in place for the duration of the construction and development. • In the event that any works are required within the TPZ of any tree to be retained, and has been approved by the Project Arborist, trunk protection must be installed. As a minimum, the trunk protection shall consist of wrapping of trunks with hessian and two-metre lengths of hardwood timber planks (100 x 50mm) spaced at 100-150mm intervals strapped around the trunk and secured with 2mm galvanised wire. The hessian and timber planks must not be fixed to the tree in any fashion or in any instance. • The following works must be excluded from within any TPZs: (i) Soil cut or fill including excavation and trenching; (ii) Soil cultivation, disturbance or compaction; (iii) Stockpiling, storage or mixing of materials; (iv) The parking, storing, washing and repairing of tools, equipment and machinery; (v) The disposal of liquids and refuelling; (vi) The disposal of building materials; (iii) The siting of offices or sheds; (iv) Any action leading to the impact on tree health or structure. • The excavation works within the TPZ should be supervised by the Project Arborist and undertaken using compact machinery fitted with a flat bladed bucket. The excavator should work in a radial direction away from the tree with the levels lowered in small increments. The works should be guided by a spotter who is to look for and prevent damage to roots (>25mmø). Root pruning

No.	Impact	Environmental safeguards & management measures
		should be undertaken by the Project Arborist only. Localised modification of the levels may be required if significant roots are identified by the Project Arborist which cannot be pruned. • Demolition works within TPZ areas should be supervised by the Project Arborist and utilise tree sensitive methods, ensuring demolition machinery/equipment does not contact with any part of a tree. • Underground services should be located outside of the TPZ areas. Where this is not possible, services should be installed using tree sensitive excavation (hand/hydrovac etc) methods with the services located around/below roots (>25mmø) as required by the Project Arborist. Excavation using compact machinery (<2T) fitted with a flat bladed bucket is permissible where approved by the Project Arborist. Excavation using compact machinery should be undertaken in small increments, guided by a spotter who is to look for and prevent damage to roots (>25mmø). Alternatively, boring methods may be used for underground service installation where the obvert level (highest interior level of pipe) is greater than 1000mm below existing grade. Excavations for starting and receiving pits for boring equipment should be located outside of the TPZ areas or located to avoid roots (>25mmø) as required by the Project Arborist. OSD tanks (where required) should be located outside of the TPZ areas. • The installation of plants/turf within the TPZ areas should be undertaken using hand tools and roots (>25mmø) should be protected. No mechanical cultivation/ripping of soils should be undertaken within the TPZ areas. Excavation and installation of imported soil mixes should be excluded from the TPZ areas other than the installation of soil conditioners to a maximum depth of 50mm above the existing soil profile. • Pruning works should be carried out by a Practising Arborist. The Practising Arborist should hold a minimum qualification equivalent (using the Australian Qualifications Framework) of Level 3 or above in Arboriculture or its recognised equivalent. The Practising Arborist should have a minimum of 3 years' experience in practical Arboriculture. Pruning work should be undertaken in accordance with *AS 4373: Pruning of Amenity Trees (2007)*, *Safe Work Australia Guide for Managing Risks of Tree Trimming and Removal Work (2016)* and other applicable legislation and codes. • In order to renew the tree canopy and potential habitat for local fauna, compensatory tree planting of one hundred and twenty six (126) new trees is to be undertaken. The location of the new plantings are indicated on the Detailed

No.	Impact	Environmental safeguards & management measures
		Concept Plan prepared by the City of Parramatta provided at *Appendix B* and include the following: - *Angophora floribunda* (Rough Barked Apple) - *Angophora costata* (Smooth Barked Apple) - *Eucalyptus crebra* (Narrow Leaved Ironbark) - *Eucalyptus microcorys* (Tallowood) - *Eucalyptus sideroxylon* (Red Ironbark) - *Corymbia maculata* (Spotted Gum) - *Lophostemon confertus* (Brush Box) - *Jacaranda mimosifolia* (Jacaranda) - *Tristaniopsis laurina* 'Luscious' (Watergum) - *Acer rubrum sp.* (Maple) - *Fraxinus pennsylvanida sp.* (Ash) - *Lagerstroemia indica sp.* (Crepe Myrtle) • New trees should be grown in accordance with *AS 2303 Tree Stock for Landscape Use (2018)*.
3	Traffic and parking	• Where required, appropriate traffic management measures on Alfred Street, Gray Street, Onslow Street and Parramatta Road, such as temporary speed restrictions, precautionary signs, illuminated warning devices and manual and/or electronic traffic control to control access of construction vehicles etc to the park will need to be implemented (as necessary) and maintained throughout the works period. • Subject to endorsement by the Parramatta Traffic Committee, a timed parking restriction of 2P 8.00am - 6.00pm Mon-Fri is to be implemented for the new parking arrangements.
4	Noise & Vibration	• Work is to be restricted to the following working hours and noisy work should be undertaken during less sensitive periods where possible: ▪ Monday to Friday – 07:00 to 17:00; and ▪ Saturday – 08:00 to 17:00. No work is to be undertaken on: ▪ Sundays; ▪ Saturdays and Sundays that form part of public holiday weekends; and ▪ Public Holidays. • Noise from construction activities shall comply with the *Protection of the Environment Operations (Noise Control) Regulation 2008*. • All plant, machinery and noise generating equipment should be maintained in good working order. Where

No.	Impact	Environmental safeguards & management measures
		practical / possible machinery should be fitted with exhaust silencers and / or noise reduction devices. • Plant and machinery will need to be turned off when not in use. • The construction noise levels shall not reach or exceed the exposure levels, including peak exposure (140dB[C]) and daily average (85dB[A]), as detailed in Clause 56 of the WH&S Regulation 2017. Work planning and preparation shall be considered to ensure noisy activities are minimised. The control measures developed shall meet the requirements of *AS2436 – 2010 – 'Guide to Noise and Vibration Control on Construction, Maintenance and Demolition Sites'* i.e. localised noise boxes or barriers. Appropriate tools and equipment shall be used to ensure noise levels are reduced and controlled.
5	Air Quality	• The Contractor is required to monitor and manage dust / air quality during the works. • All plant, machinery and noise generating equipment is to be maintained in good working order and is to be turned off when not in use for prolonged periods. • Where possible, all construction plant and machinery should be fitted with emission control devices complying with Australian Design Standards. • Any dust generating works should be stopped during periods of high wind. • Plastic sheeting shall be available to cover excavation faces and stockpiles.
6	Water Quality and Stormwater Drainage	• Erosion and sedimentation controls such as silt fences / bags, sediment traps, diversion drains, berms, sumps etc will need to be installed across the works site and in particular along the eastern perimeter of the work site adjacent to Duck Creek and around any stockpiles before the commencement of works to prevent sediment-laden runoff entering the local stormwater system. • A Construction Soil and Water Management Plan and/or Erosion and Sedimentation Control Plan is to be prepared in accordance with the Blue Book to detail processes, responsibilities and measures to manage potential impacts during construction. Any cleared areas are to be revegetated or stabilised as soon as practicable to prevent erosion of soil surfaces. • All chemicals must be stored in appropriately bunded and secure areas and not be located within or directly adjacent to drainage pits.

No.	Impact	Environmental safeguards & management measures
		• Spill kits are to be available to ensure any spills are appropriately managed. • Regular inspection and maintenance of the erosion and sedimentation controls is to be undertaken. Sediment build up is to be cleared from behind barriers where required and all controls are to be maintained in working order sufficient for a 10 year Average Recurrence Interval (ARI) rainfall event. • Building operations and stockpiles must not be located on the public footway or any other locations which could lead to the discharge of materials into the stormwater system.
7	Visual Amenity	• All parts of the work areas are to be kept clean and tidy at all times. • Shade cloth (or similar) incorporating project details should be used on temporary perimeter fencing to improve visual amenity during remediation and construction works. • The hours of operation for the sportsfield flood lighting is to be restricted to no later than 10pm nightly. • The use of higher lighting levels of 100 lux and 200 lux are restricted to competition events only. A maximum lighting level of 50 lux is to be used for all training and non-competition events.
8	Waste Minimisation and Management	• A Waste Management Plan will need to be prepared to detail the procedures for waste minimisation and management, including the likely waste generation, method of on-site collection and storage and details of the intended method of recycling or disposal. • All areas of the site will need to be kept free of rubbish and cleaned at the end of each work day. • The resource management hierarchy principles of the Waste Avoidance and Resource Recovery Act 2001(WARR Act) should be adopted as follows: – Avoid unnecessary resource consumption as a priority. – Avoidance is followed by resource recovery (including reuse of materials, reprocessing, recycling, and energy recovery). – Disposal is undertaken as a last resort.
9	Flora and Fauna	• If injured or abandoned fauna is found, WIRES should be contacted to hand over the animal for care, or the animal would be taken to the vet, whichever is the most appropriate option for the fauna species.

No.	Impact	Environmental safeguards & management measures
10	Aboriginal Heritage	• In the unlikely event that during works any objects are discovered that are suspected to be Aboriginal objects, Heritage NSW must be notified under section 89A of the NPW Act. Appropriate management and avoidance or approval under a Section 90 AHIP should then be sought if Aboriginal objects are to be moved or harmed. • In the extremely unlikely event that human remains are found, works should immediately cease, and the NSW Police should be contacted. If the remains are suspected to be Aboriginal, Heritage NSW may also be contacted at this time to assist in determining appropriate management.
11	Community Enquiries and Complaints	• A dedicated 'Community Liaison Officer' (The City of Parramatta's Project Manager or representative) should be contactable and available to respond to enquiries and address complaints or other issues during the works period. • Signage on the temporary perimeter fencing is to include the Community Liaison Officer contact details for any enquiries or complaints. • Surrounding properties are to be provided with a minimum of three (3) days notification (letterbox drop) prior to the commencement of works. • A Register to record complaints from local residents, businesses or other members of the community is to be prepared and maintained by the appointed Community Liaison Officer.

8 Conclusion

8.1 Justification

The proposed works associated with the remediation and upgrade of FS Garside Park have the potential to result in some minor and/or temporary environmental impacts with respect to contamination, flooding, tree removal and management, traffic and parking, noise and air quality, water quality, visual impacts and waste storage and disposal. Notwithstanding, the safeguards and management measures that are detailed in this Review of Environmental Factors will ameliorate or minimise these expected impacts.

The operational phase of the facilities at FS Garside Park is not expected to result in any unacceptable environmental impacts with respect to traffic and parking and acoustics. However, in order to ensure the ongoing management and integrity of the 'cap and contain' remedial works, the Park must be operated and maintained in accordance with the LTEMP.

The proposal will also realise a number of positive impacts, including the including the remediation of the site, the provision of high quality sporting facilities, amenities and recreational facilities for the local and wider community, together with a significant improvement to the public safety, aesthetic quality, public domain amenity and legibility of FS Garside Park. On balance the proposal is considered justified.

The environmental impacts of the proposal are not likely to be significant and therefore an Environmental Impact Statement (EIS) is not required for the proposal under Section 5.7 of the *Environmental Planning & Assessment Act 1979*. It is not likely to significantly affect threatened species, populations, ecological communities, or critical habitat and therefore a Species Impact Statement or Biodiversity Development Assessment Report is not required. The proposal will not have be likely to significantly impact on any matters of National environmental significance and referral to the Commonwealth Government is not required.

8.2 Objects of the Environmental Planning & Assessment Act, 1979

Decisions made under the *Environmental Planning & Assessment Act, 1979* must have regard to the objects of the Act, as set out in Section 1.3. The Objects are:

(a) to promote the social and economic welfare of the community and a better environment by the proper management, development and conservation of the State's natural and other resources,

(b) to facilitate ecologically sustainable development by integrating relevant economic, environmental and social considerations in decision-making about environmental planning and assessment,

(c) to promote the orderly and economic use and development of land,

(d) to promote the delivery and maintenance of affordable housing,

(e) to protect the environment, including the conservation of threatened and other species of native animals and plants, ecological communities and their habitats,

(f) to promote the sustainable management of built and cultural heritage (including Aboriginal cultural heritage),

(g) to promote good design and amenity of the built environment,

(h) to promote the proper construction and maintenance of buildings, including the protection of the health and safety of their occupants,

(i) to promote the sharing of the responsibility for environmental planning and assessment between the different levels of government in the State,

(j) to provide increased opportunity for community participation in environmental planning and assessment.

The proposed remediation and upgrade works at FS Garside Park are consistent with the Objects of the Act, in particular, the outcome following completion of the works represents the proper management of the public domain and promotes the social and welfare of the community by providing improved public recreational facilities and amenities at this location and encourages the use of the public open space for recreational pursuits, which in turn improves the value of the place.

8.3 Ecologically sustainable development

The National Strategy for Ecologically Sustainable Development (NSESD) has been formulated to ensure ESD is accounted for in all proposals. There are three core objectives:

- *Enhance the well-being and welfare of individuals and the community by following a path of economic development that safeguards the welfare of future generations;*
- *Provide for equity within and between generations;*
- *Protect biological diversity and maintain essential ecological processes and life-support systems.*

The *Environmental Planning & Assessment Act, 1979* acknowledges that ecologically sustainable development (ESD) should be considered in the assessment and approval of proposed development.

The proposed works at FS Garside Park that are the subject of this REF have been assessed against the following four principles and programs of ecologically sustainable development (ESD) listed in the *Protection of the Environment Administration Act 1991*:

- *The precautionary principle;*
- *The principle of inter-generational equity;*
- *The principle of biological diversity and ecological integrity; and*
- *The principle of improved valuation, pricing and incentive mechanisms.*

A discussion on the degree to which the proposed works comply with these principles is provided below.

8.3.1 Precautionary principle

The precautionary principle states that:

> *if there are threats of serious or irreversible environmental damage, lack of full scientific certainty should not be used as a reason for postponing measures to prevent environmental degradation.*
>
> *In the application of the precautionary principle, public and private decisions should be guided by:*

(i) careful evaluation to avoid, wherever practicable, serious or irreversible damage to the environment, and

(ii) an assessment of the risk weighted consequences of various options

A range of investigations have been undertaken in order to inform the preparation of this REF and to ensure that the potential environmental impacts are able to be understood with a high degree of certainty. The proposal is not likely to result in any substantial environmental impacts. Where the potential for environmental impacts has been identified, a range of safeguards and management measures have been recommended in order to minimise these adverse impacts. No management measures have been deferred due to a lack of scientific certainty. The proposal is therefore considered to be consistent with the precautionary principle.

8.3.2 Intergenerational equity

The principle of intergenerational equity states that:

> *the present generation should ensure that the health, diversity and productivity of the environment are maintained or enhanced for the benefit of future generations.*

Subject to the implementation and ongoing management of the Park in accordance with the LTEMP, the proposed remediation and upgrade works at FS Garside Park and ongoing recreational use will not result in any impacts that are likely to adversely impact on the health, diversity or productivity of the environment for the future generations.

8.3.3 Conservation of biological diversity and ecological integrity

The principle of biological diversity and ecological integrity states that:

> *conservation of biological diversity and ecological integrity should be a fundamental consideration.*

The proposed works at FS Garside Park are unlikely to have a significant impact on biological diversity and ecological integrity. The proposed works are contained within a modified urban environment and the use of the Park for active and passive recreational pursuits will not impact on any endangered flora or fauna or threaten biological or ecological diversity.

8.3.4 Improved valuation, pricing and incentive mechanisms

The principle of improved valuation of environmental resources states that:

> *environmental factors should be included in the valuation of assets and services, such as:*
>
> *(i) polluter pays – that is, those who generate pollution and waste should bear the cost of containment, avoidance or abatement,*
>
> *(ii) the users of goods and services should pay prices based on the full life cycle of costs of providing goods and services, including the use of natural resources and assets and the ultimate disposal of any waste,*
>
> *(iii) environmental goals, having been established, should be pursued in the most cost effective way, by establishing incentive structures, including market mechanisms that enable those best placed to maximise benefits or minimise costs to develop their own solutions and responses to environmental problems.*

The cost of environmental resources includes those costs that are incurred in order to protect the environment. In this way, any environmental safeguards that are imposed in order to minimise adverse impacts, result in economic costs to the construction and operation of the project. This indicates that the valuation of environmental resources has been assigned.

The implementation of appropriate safeguards and management measures (as recommended in this REF) where environmental impacts are expected will ensure that the proposed works at FS Garside Park are undertaken with minimal impact on the environment.

8.4 Conclusion

The proposed works associated with the remediation and upgrade of FS Garside Park have been the subject of an assessment under Part 5 of the *Environmental Planning & Assessment Act 1979*. The REF has examined and taken into account to the fullest extent possible all matters affecting or likely to affect the environment by reason of the proposed activity. The proposed works, as described in the REF, will meet the project objectives but will still result in some minor and/or temporary impacts during construction with respect to contamination, flooding, tree removal and protection, traffic and parking, noise and air quality, water quality, visual amenity and waste storage and disposal. Notwithstanding, the implementation and effective management of the safeguards and management measures that are detailed in this REF will ameliorate or minimise these expected impacts, such that they will have no more than a minor impact.

The operational phase of the sporting and recreational facilities at FS Garside Park is not expected to result in any unacceptable environmental impacts with respect to traffic and parking, visual impacts and acoustics. However, in order to ensure the ongoing management and integrity of the 'cap and contain' remedial works, the Park must be operated and maintained in accordance with the LTEMP. The LTEMP is to be included as a notation on the Planning Certificate under Section 10.7 of the *Environmental Planning & Assessment Act, 1979*.

The proposal will realise a number of positive impacts, including the remediation of the site, the provision of high quality sporting facilities, amenities and recreational facilities for the local and wider community, together with a significant improvement to the aesthetic quality, public domain amenity and legibility of FS Garside Park.

On balance the proposal is considered justified and may proceed subject to implementation of the recommended safeguards and management measures to mitigate or reduce potential environmental impacts identified in the REF.

The environmental impacts of the proposal are not likely to be significant and therefore an Environmental Impact Statement (EIS) is not required for the proposal under Section 5.7 of the *Environmental Planning & Assessment Act 1979*. It is not likely to significantly affect threatened species, populations, ecological communities, or critical habitat and therefore a Species Impact Statement or Biodiversity Development Assessment Report is not required. The proposal will not be likely to significantly impact on any matters of National environmental significance and referral to the Commonwealth Government is not required.

Having regard to the above, it is concluded that the proposal is not likely to significantly affect the environment within the meaning of Section 5.7 of the *Environmental Planning & Assessment Act 1979*.

9 Certification

This Review of Environmental Factors provides a true and fair review of the proposal in relation to its potential effects on the environment. It addresses to the fullest extent possible all matters affecting or likely to affect the environment as a result of the proposal.

Andrew Robinson MPIA
Director
Andrew Robinson Planning Services Pty Ltd
Date: 2 February 2022

I have examined this review of environmental factors and the certification by Andrew Robinson Planning Services Pty Ltd and accept the review of environmental factors on behalf of the City of Parramatta Council.

Signature:

Name: John Warburton

Position: Executive Director City Assets and Operations

Date: 24 February 2022

10 References

The following publications and documents have been used in the preparation of this REF:

City of Parramatta website *(www.cityofparramatta.nsw.gov.au)*

City of Parramatta, *Parramatta Local Environmental Plan 2011*

City of Parramatta, July 2021, *Aboriginal Heritage Due Diligence Assessment, FS Garside Park*

Appendix A

Consideration of clause 228(2) factors and matters of National environmental significance

Clause 228(2) Checklist

The factors that need to be taken into consideration when reviewing the likely environmental impact of a proposed activity are listed in clause 228(2) of the *Environmental Planning and Assessment Regulation 2000*. The table below provides a summary of the consideration of these factors.

Factor	Impact
a. Any environmental impact on a community? Minor environmental impacts may occur during the works period. Notwithstanding, any impacts would be minimised through the implementation of the safeguards described in Table 7-1.	Short term: Negligible
b. Any transformation of a locality? The proposed works at FS Garside Park will provide a high quality new turf sportsfield, playground with amenities, youth precinct with BMX pump track and multi-purpose court and formal dog parks that will benefit the local and wider community and will provide a substantial improvement to the quality, useability and accessibility of the Park.	Long term: Positive
c. Any environmental impact on the ecosystems of the locality? The proposed works at FS Garside Park will not have an unreasonable impact on any ecosystems in the locality.	Nil
d. Any reduction of the aesthetic, recreational, scientific or other environmental quality or value of a locality? The works at FS Garside Park will significantly improve the recreational value and scenic quality of the Park to benefit the local and wider community.	Short Term: Minor Long Term: Positive
e. Any effect on a locality, place or building having aesthetic, anthropological, archaeological, architectural, cultural, historical, scientific or social significance or other special value for present or future generations? The land on which FS Garside Park is located is not of heritage significance and there is no evidence to suggest that the land is of particular archaeological, cultural, scientific or social significance.	Nil
f. Any impact on the habitat of protected fauna (within the meaning of the Biodiversity Conservation Act 2016)? FS Garside Park is in an urban environment that has been highly modified and is not known to provide specific habitat for any protected fauna.	Nil

Factor	Impact
g. Any endangering of any species of animal, plant or other form of life, whether living on land, in water or in the air? FS Garside Park is in an urban environment that has been highly modified and is not known to provide specific habitat for any endangered flora or fauna.	Nil
h. Any long-term effects on the environment? The proposal will not result in any substantial long-term adverse effects on the environment.	Negligible
i. Any degradation of the quality of the environment? The works will not result in any degradation of the quality of the environment.	Nil
j. Any risk to the safety of the environment? Provided that the proposed works are carried out in accordance with the methodologies and safeguards and management measures detailed in this REF, they will not generate any significant risk to the safety of the environment.	Nil
k. Any reduction in the range of beneficial uses of the environment? There will be no reduction in the range of beneficial uses of the environment as a result of the proposal.	Nil
l. Any pollution of the environment? There is the potential for some minor noise, air and water pollution during the works. However, due to the relatively short term nature of the works, these impacts are considered to be negligible and can be suitably ameliorated through appropriate site and environmental management measures.	Short term: Negative
m. Any environmental problems associated with the disposal of waste? The proposed works will not generate a substantial quantity of waste. However, all waste will need to be appropriately stored, sorted and disposed of / recycled. Where possible, waste material is to be reused / recycled. All waste that is not able to be reused or recycled will need to be collected and disposed of at a licenced waste facility.	Negligible

Factor	Impact
n. Any increased demands on resources (natural or otherwise) that are, or are likely to become, in short supply? The proposed works will not place an undue demand on resources that are, or are likely to become in short demand.	Nil
o. Any cumulative environmental effect with other existing or likely future activities? There will be no cumulative impacts or environmental effects and the proposed works will realise a generally positive impact on the locality and will deliver a significant public benefit through the remediation of the site and the provision of upgraded sporting and recreational facilities at FS Garside Park.	Nil

Matters of National environmental significance

Under the environmental assessment provisions of the *Environment Protection and Biodiversity Conservation Act 1999*, the following matters of National environmental significance and impacts on Commonwealth land are required to be considered to assist in determining whether the proposal should be referred to the Australian Government Department of Agriculture, Water and the Environment.

Factor	Impact
a. Any impact on a World Heritage property? The proposal will not have an impact on a World Heritage property.	Nil
b. Any impact on a National Heritage place? The proposal will not have an impact on a National Heritage place.	Nil
c. Any impact on a wetland of international importance? The proposal will not have an impact on a wetland of international importance.	Nil
d. Any impact on a listed threatened species or communities? The proposal will not have an impact on a threatened species or community.	Nil
e. Any impacts on listed migratory species? The proposal will not have an impact on a listed migratory species.	Nil
f. Any impact on a Commonwealth marine area? The proposal will not have an impact on a Commonwealth marine area.	Nil
g. Does the proposal involve a nuclear action (including uranium mining)? The proposal does not involve a nuclear action.	Nil
Additionally, any impact (direct or indirect) on Commonwealth land? The proposal will not have an impact (either direct or indirect) on Commonwealth Land.	Nil

Appendix B

FS Garside Park Landscape and Architectural Design Drawing Package

F.S. GARSIDE PARK, GRANVILLE

DETAILED CONCEPT PLAN

F.S GARDSIDE KEY FACTS

PLAYING FIELD/STADIUM

- 105m x 68m line marked natural 'Couch' turf playing field with sand slit drainage and irrigation
- Playing field with 3.45m runoff to 1.2m high field boundary fence
- 30m length x 6m high ball screens behind both goal posts
- 1.8m high stadium fencing with sliding gates, maintenance access and one automated locking gate
- Home and away dugouts accommodating 10 players each
- Covered spectator bleacher seating for 200
- Un-covered spectator bleacher seating for 260
- Two enclosed 8m long x 1.8m wide x 2.4m high storage cages behind western bleacher stands
- Standard seating, shade tree planting and spectator seat walls on the eastern and western sides of playing field
- Natural turfed hill to northern end of field
- LED field floodlighting up to 200LUX
- Electronic scoreboard in the north-eastern corner
- Provisions for future ticket booths to the main east and west entry points to stadium
- Provisions for future PA system within stadium
- Provisions for future lighting of kick 'a' bout area to the south of the existing pavilion
- Storage room extension to the eastern side of the existing pavilion

PROPOSED TREE PLANTING SPECIES LIST
(SUBJECT TO AVAILABILITY)

- Angophora floribunda (Rough Barked Apple)
- Angophora costata (Smooth Barked Apple)
- Eucalyptus crebra (Narrow Leaved Ironbark)
- Eucalyptus microcorys (Tallowood)
- Eucalyptus sideroxylon (Red Ironbark)
- Corymbia maculata (Spotted Gum)
- Lophostemon confertus (Brush Box)
- Jacaranda mimosifolia (Jacaranda)
- Tristaniopsis laurina 'Luscious' (Watergum)
- Acer rubrum sp. (Maple)
- Fraxinus pennsylvanida sp. (Ash)
- Lagerstroemia indica sp. (Crepe Myrtle)

LEGEND

1	Irrigated natural couch turfed playing field with perimeter fencing, soccer dugouts and ball screen fencing
2	Open air spectator bleachers
3	Portable pullout barriers
4	Covered spectator bleachers
5	Public amenities building
6	Electronic scoreboard
7	Turfed spectator hill with access to district playground
8	Stadium entry areas
9	1.8m high stadium perimeter fencing with manual sliding access gates
10	Council controlled remote access electronic gate
11	Maintenance and emergency vehicular access gates
12	Above ground water tank for park and field irrigation
13	Turfed soccer warm up / kick 'a' bout area
14	Designated disabled parking spaces
15	Restricted 2 hour parking Monday to Friday 8am to 6pm to parking bays in Onslow and Gray Street
16	District size playground with nature play, climbing structures, flying fox, swings and play tower. Includes picnic facilities and BBQs
17	Provisions for future pop-up canteen/cafe
18	Separated two-way off road cycleway with turfed median, pedestrian pathway, tree planting and lighting
19	Cyclist (priority) and pedestrian raised threshold crossing
20	Fenced dog park (large dogs) with seating, lighting and drinking station
21	Fenced dog park (small dogs) with seating, lighting and drinking station
22	Pavilion storage room extension
23	Table tennis table and basketball / mini-soccer partially fenced multi-use sports court with lighting, seating, shelters and drinking station
24	Temporary pathway link from Onslow Street to Arthur Street
25	Pedestrian access pathway with lighting
26	Proposed finess equipment
27	Proposed fencing and planted buffer to road
28	Chainwire mesh storage area and bin enclosure
29	Accessible amenities building
30	Hardstand area
	CONSTRUCTION OF DASHED AREA SUBJECT TO AVAILABLE FUNDS
31	Precast concrete BMX pump track
32	Creek embankment stabilisation works and bush regeneration including native tree, shrub and groundcover planting
33	Permanent pathway link from Onslow Street to Arthur Street

Proudly funded by

NSW GOVERNMENT

F.S Garside Park Concept Design
SCALE 1:600 @ A1

CAPITAL PROJECTS
LANDSCAPE ARCHITECTURE

CITY OF PARRAMATTA

50

NO 40

NO 38

GRAY STREET

DISTRICT PLAYGROUND

NATURAL TURF HILL

ALFRED STREET

ONSLOW STREET

ONSLOW STREET

ONSLOW STREET

ARTHUR STREET

NATURAL COUCH TURF PLAYING FIELD

TEMPORARY PATHWAY LINK

TEMPORARY PATHWAY LINK

CONSTRUCTION OF THIS DASHED AREA SUBJECT TO AVAILABLE FUNDS

INDICATIVE BMX PUMP TRACK

BUSH REGENERATION & EMBANKMENT STABILISATION

YOUTH PRECINCT

EXISTING PAVILION

WATER TANK

NATURAL TURF KICKABOUT AREA

DOG PARK (LARGE DOGS)

DOG PARK (SMALL DOGS)

PARRAMATTA ROAD

Preliminary

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CITY OF PARRAMATTA

Project
PROPOSED EXTENSION TO AMENITIES BUILDING

Location
F.S. GARSIDE RESERVE - ONSLOW STREET GRANVILLE

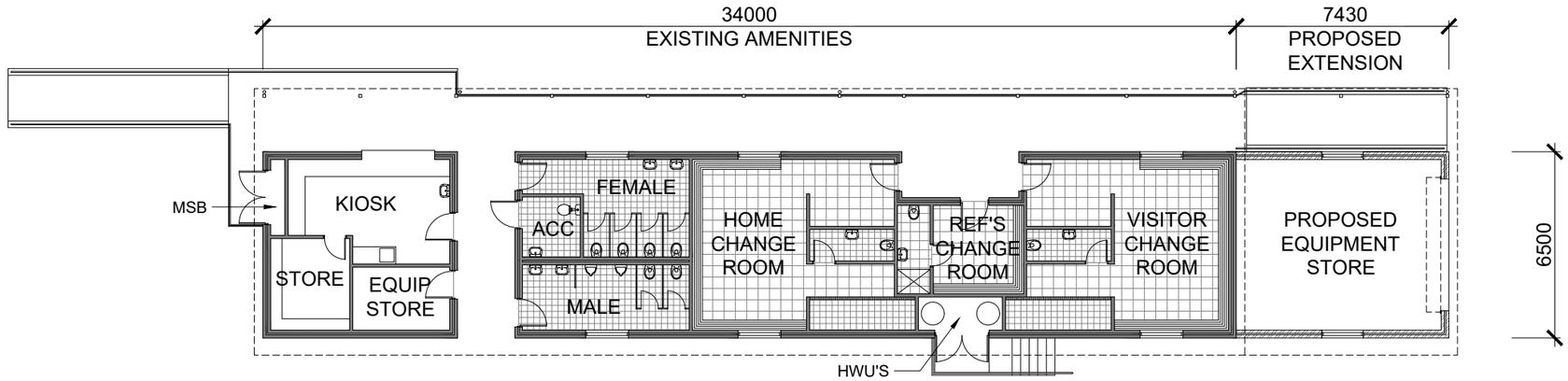
Project Number
2110

Scale
1:1000 @ A3

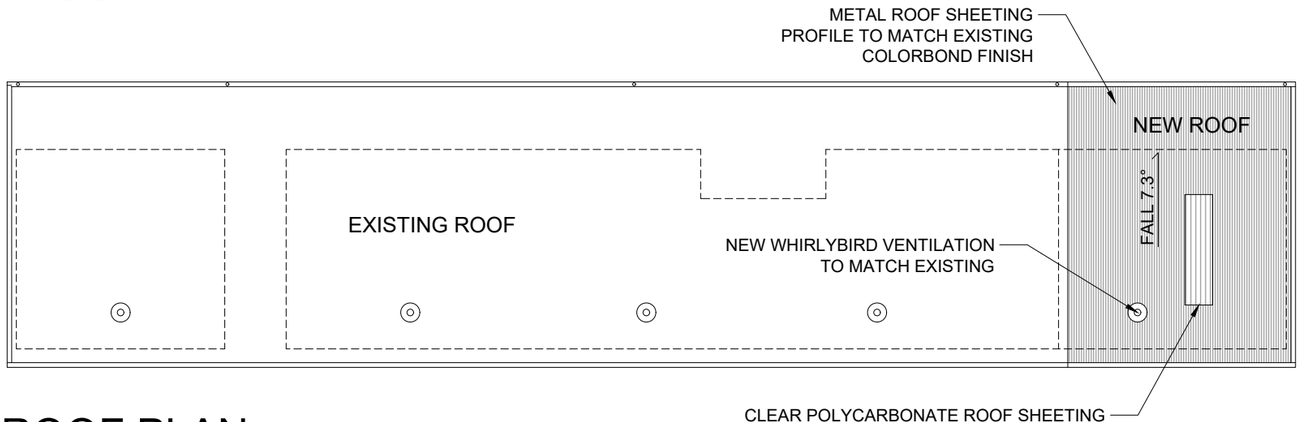
Drawing Title
LOCATION PLAN

Date
6 OCTOBER 2021

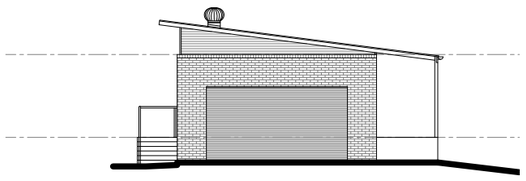
Drawing Number
DA-01(P1)



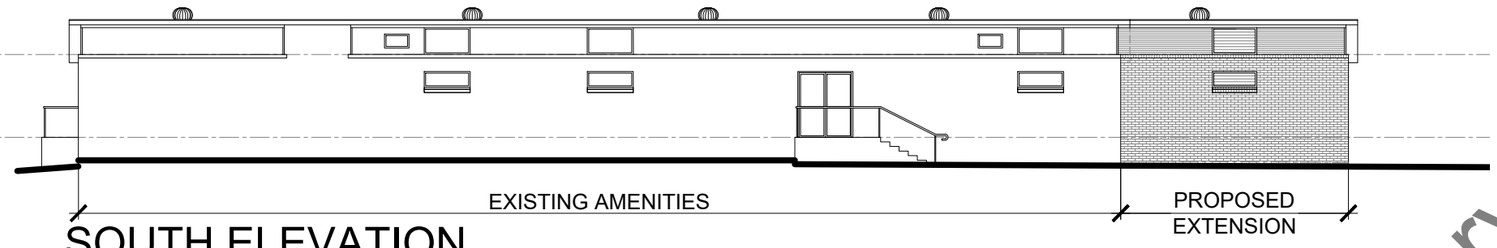
FLOOR PLAN



ROOF PLAN



EAST ELEVATION



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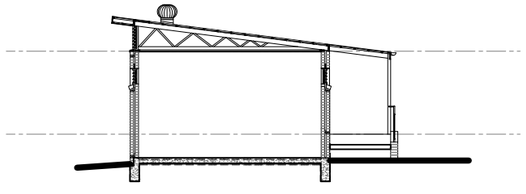
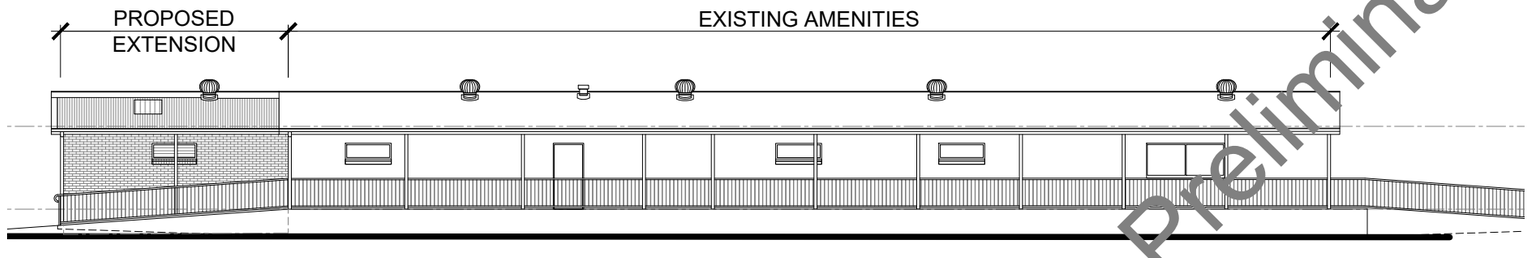


SECTION A-A



NORTH ELEVATION

Preliminary

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CITY OF PARRAMATTA

Project
PROPOSED EXTENSION TO AMENITIES BUILDING

Location
F.S. GARSIDE RESERVE - ONSLOW STREET GRANVILLE

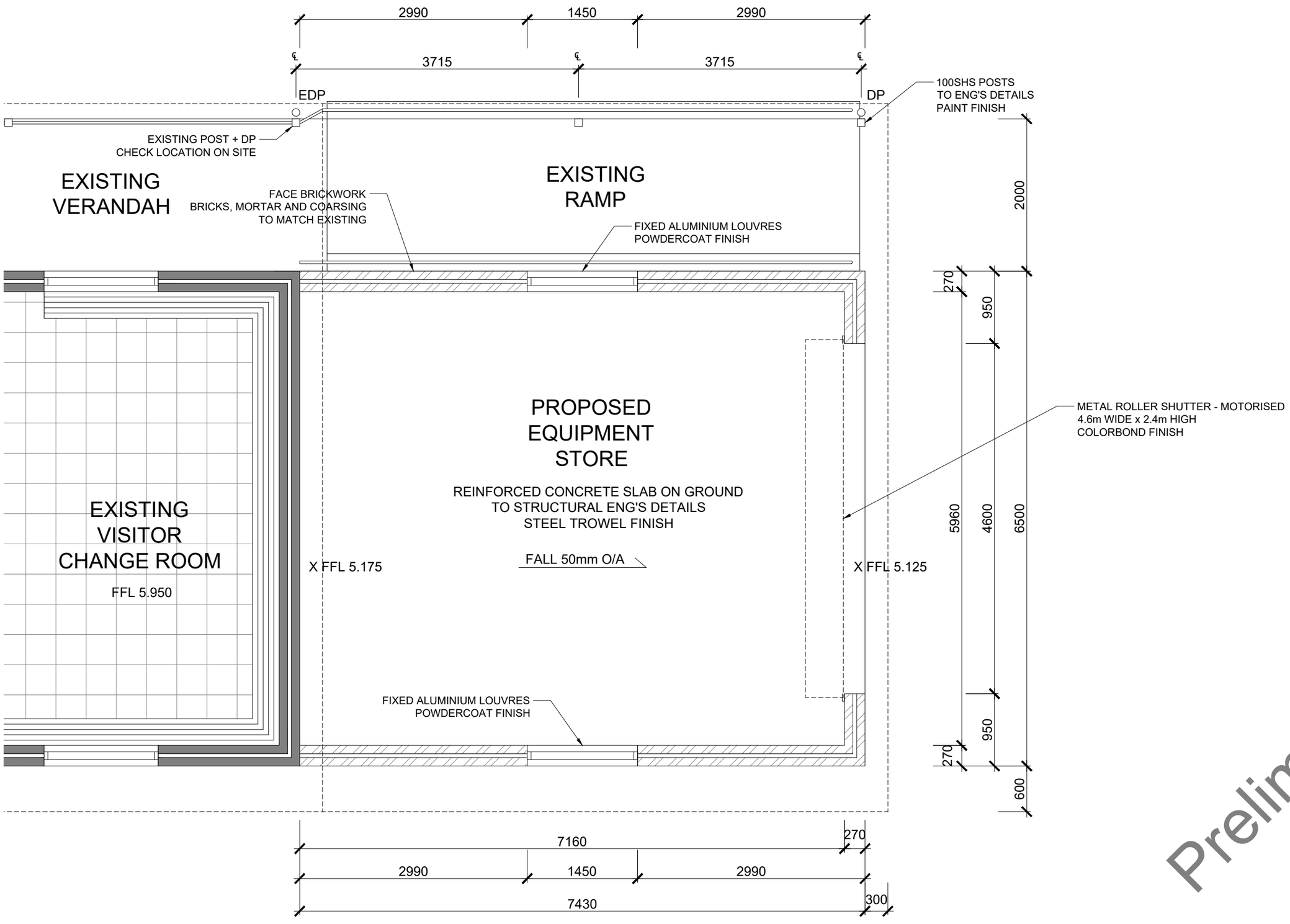
Project Number
2110

Scale
1:200 @ A3

Drawing Title
PLANS + ELEVATIONS

Date
6 OCTOBER 2021

Drawing Number
DA-02(P1)



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CITY OF PARRAMATTA

Project
PROPOSED EXTENSION TO AMENITIES BUILDING

Location
F.S. GARSIDE RESERVE - ONSLOW STREET GRANVILLE

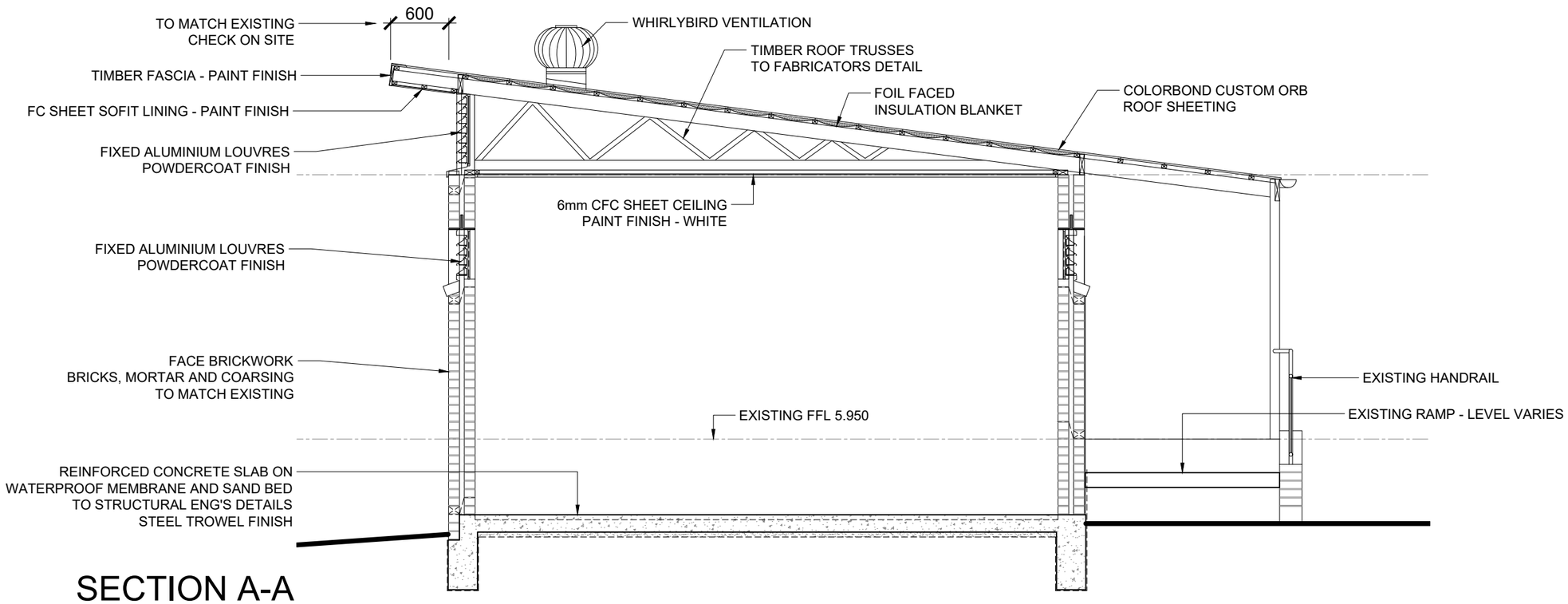
Project Number
2110

Scale
1:50 @ A3

Drawing Title
FLOOR PLAN

Date
6 OCTOBER 2021

Drawing Number
DA-03(P1)



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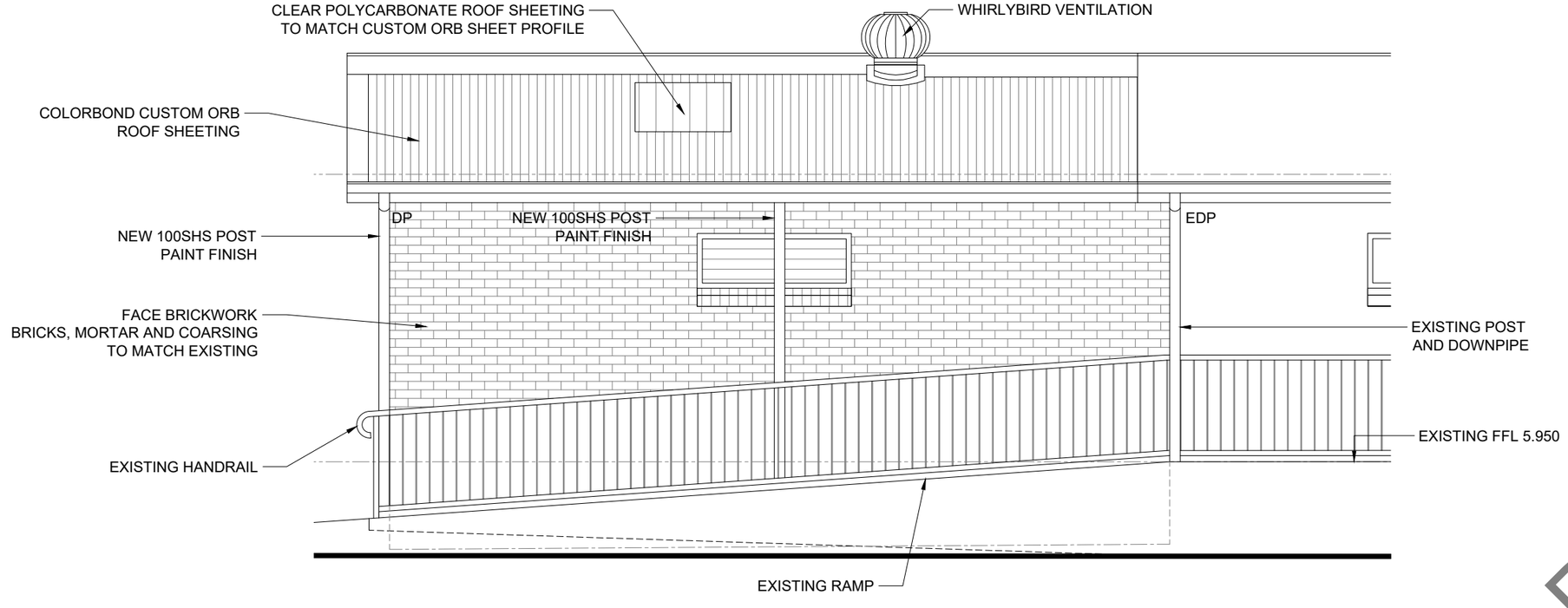

NORTH ELEVATION

Preliminary

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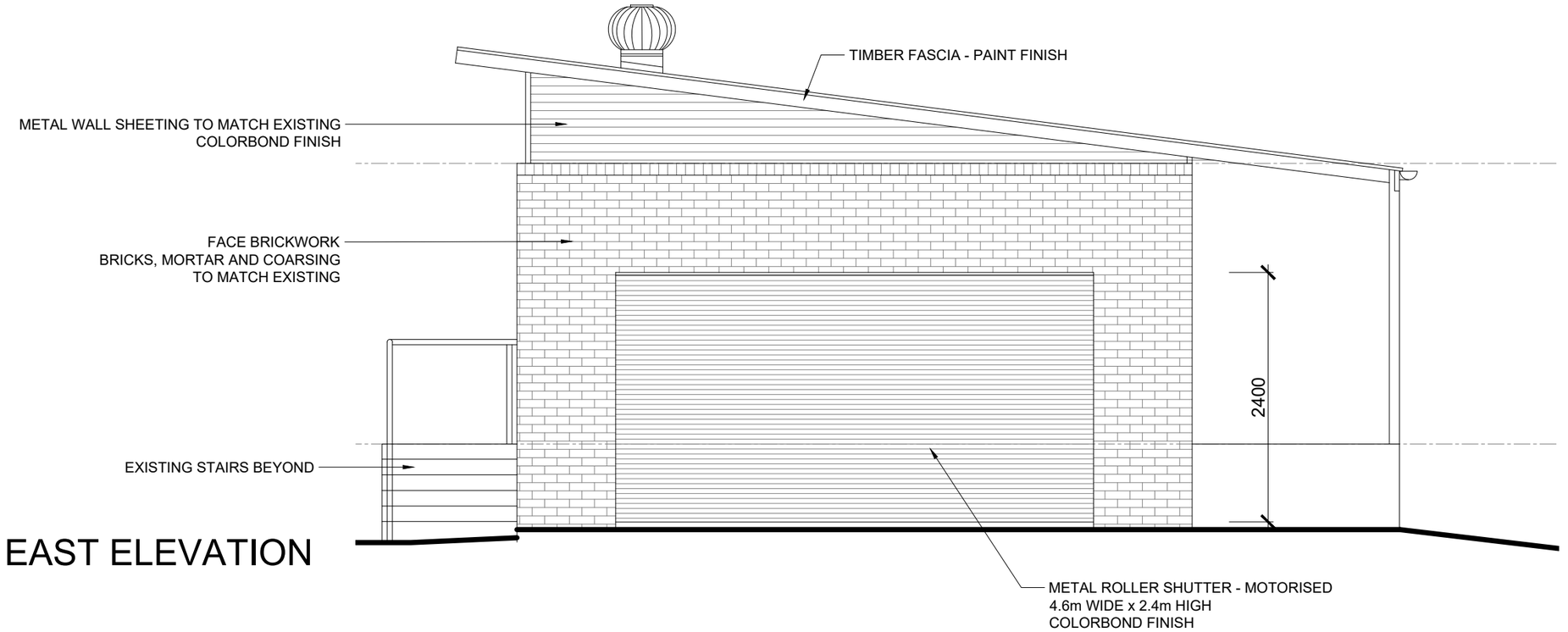
Project Number
2110

Scale
1:50 @ A3

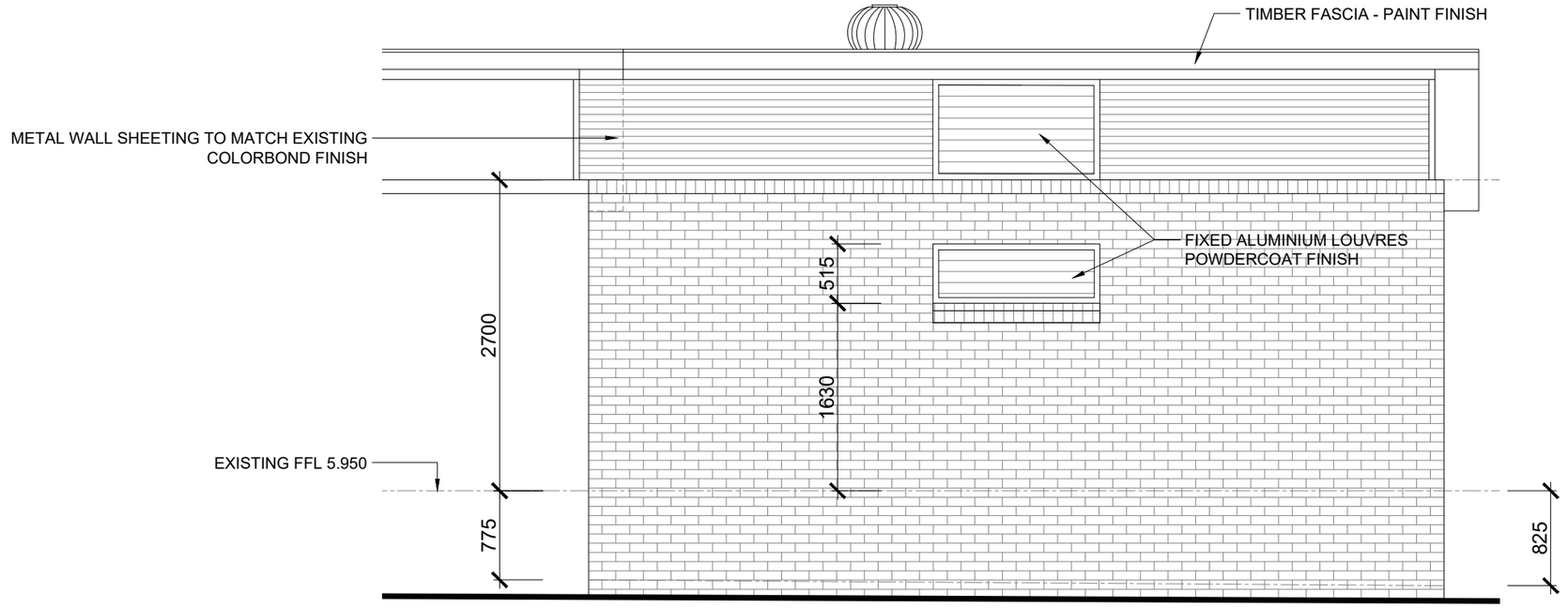
Drawing Title
SECTION + ELEVATIONS

Date
6 OCTOBER 2021

Drawing Number
DA-04(P1)



EAST ELEVATION



SOUTH ELEVATION

Preliminary

TIM FARRELL PTY LTD

Tim Farrell Pty Ltd
T: +61 2 9614 4500
Nominated Architect

ABN 92 138 300 740
tf@tfa.co www.tfa.co
Tim Farrell No.6257

CITY OF PARRAMATTA

Project
PROPOSED EXTENSION TO AMENITIES BUILDING

Location
F.S. GARSIDE RESERVE - ONSLOW STREET GRANVILLE

Project Number
2110

Scale
1:50 @ A3

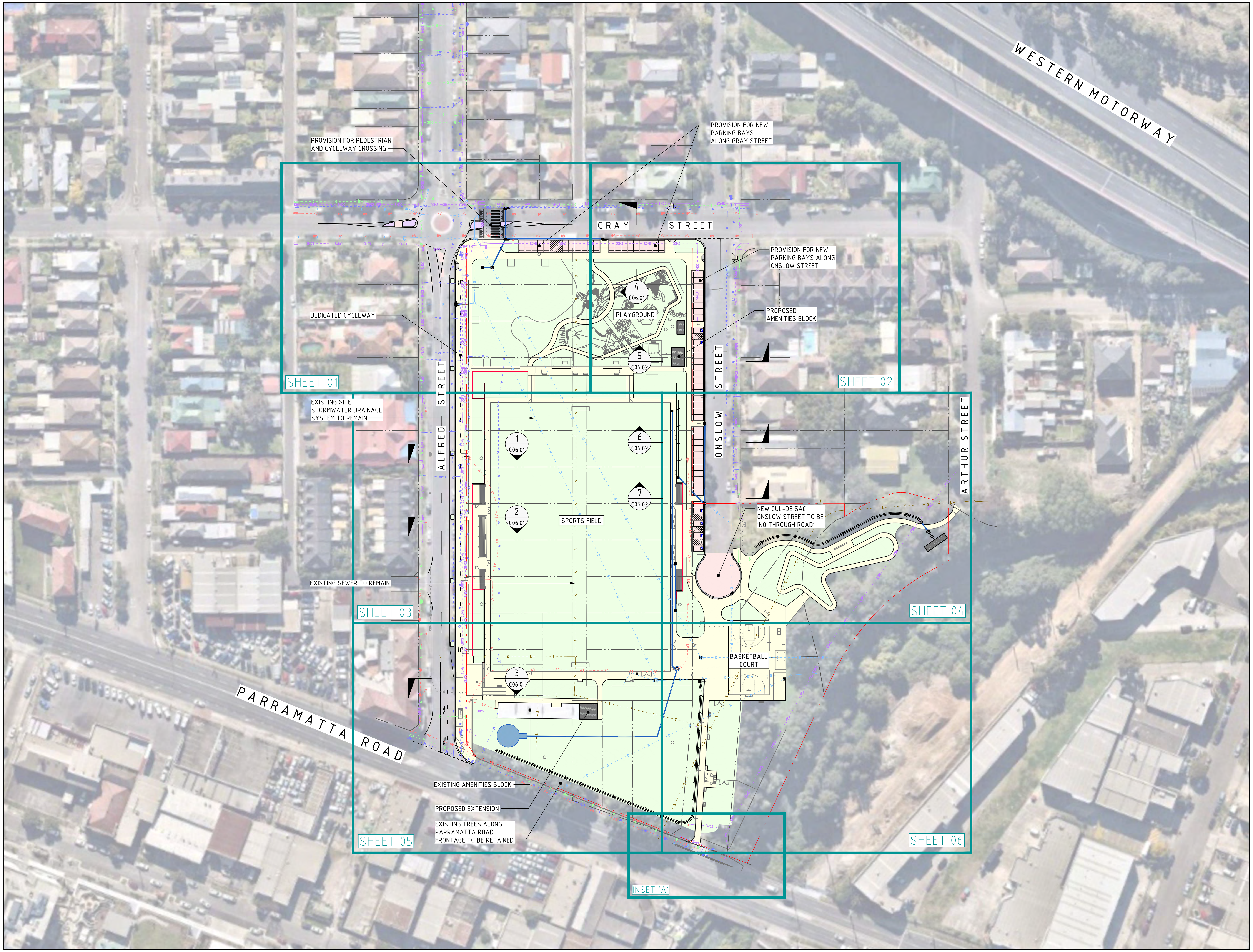
Drawing Title
ELEVATIONS

Date
6 OCTOBER 2021

Drawing Number
DA-05(P1)

Appendix C

Civil Services Drawing Package



LEGEND

- SITE WORKS BOUNDARY LINE
- ADJACENT BOUNDARY LINE
- EXISTING TELECOMS
- EXISTING WATER
- EXISTING ELECTRICAL (HIGH VOLTAGE)
- EXISTING ELECTRICAL (LOW VOLTAGE)
- EXISTING SEWER
- EXISTING DRAINAGE
- EXISTING GAS
- UNKNOWN SERVICE LINE (EXISTING)
- SHEET EXTENTS

GENERAL NOTES:

1. SURVEY SUPPLIED BY:
   1.1. NAME: CITY OF PARRAMATTA COUNCIL
   1.2. DATE: AUG 2018
   1.3. REVISION:
2. ALL UTILITY SERVICES INDICATED ON THE DRAWINGS ORIGINATE FROM SUPPLIED DATA OR DIAL BEFORE YOU DIG SEARCHES, THEREFORE THEIR ACCURACY AND COMPLETENESS IS NOT GUARANTEED. IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO DETERMINE AND CONFIRM THE LOCATION AND LEVEL OF ALL EXISTING SERVICES PRIOR TO THE COMMENCEMENT OF ANY WORK. ANY DISCREPANCIES SHALL BE REPORTED TO THE SUPERINTENDENT. CLEARANCES SHALL BE OBTAINED FROM THE RELEVANT SERVICE AUTHORITY.
   NOTE SERVICE AUTHORITY REQUIREMENTS FOR LOCATING OF SERVICES PRIOR TO COMMENCEMENT OF WORKS.
3. NORTHROP TAKE NO RESPONSIBILITY FOR THE ACCURACY AND/OR USE OF THIS SURVEY AND ITS CONTENTS

NOT FOR CONSTRUCTION

DRAWN: A.SUYO
DESIGNED: W.WU
JOB MANAGER: W.WU
VERIFIER:

REVISION	DESCRIPTION	ISSUED	VER'D	APP'D	DATE
01	ISSUED FOR FINAL CONCEPT	JO		DL	07.10.21

CLIENT: CITY OF PARRAMATTA

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ARCHITECT: CITY OF PARRAMATTA

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THIS DRAWING MAY HAVE BEEN PREPARED USING COLOUR, AND MAY BE INCOMPLETE IF COPIED TO BLACK & WHITE

SCALE 1:800@ A1 — 0 10 20 30 40m

NORTHROP
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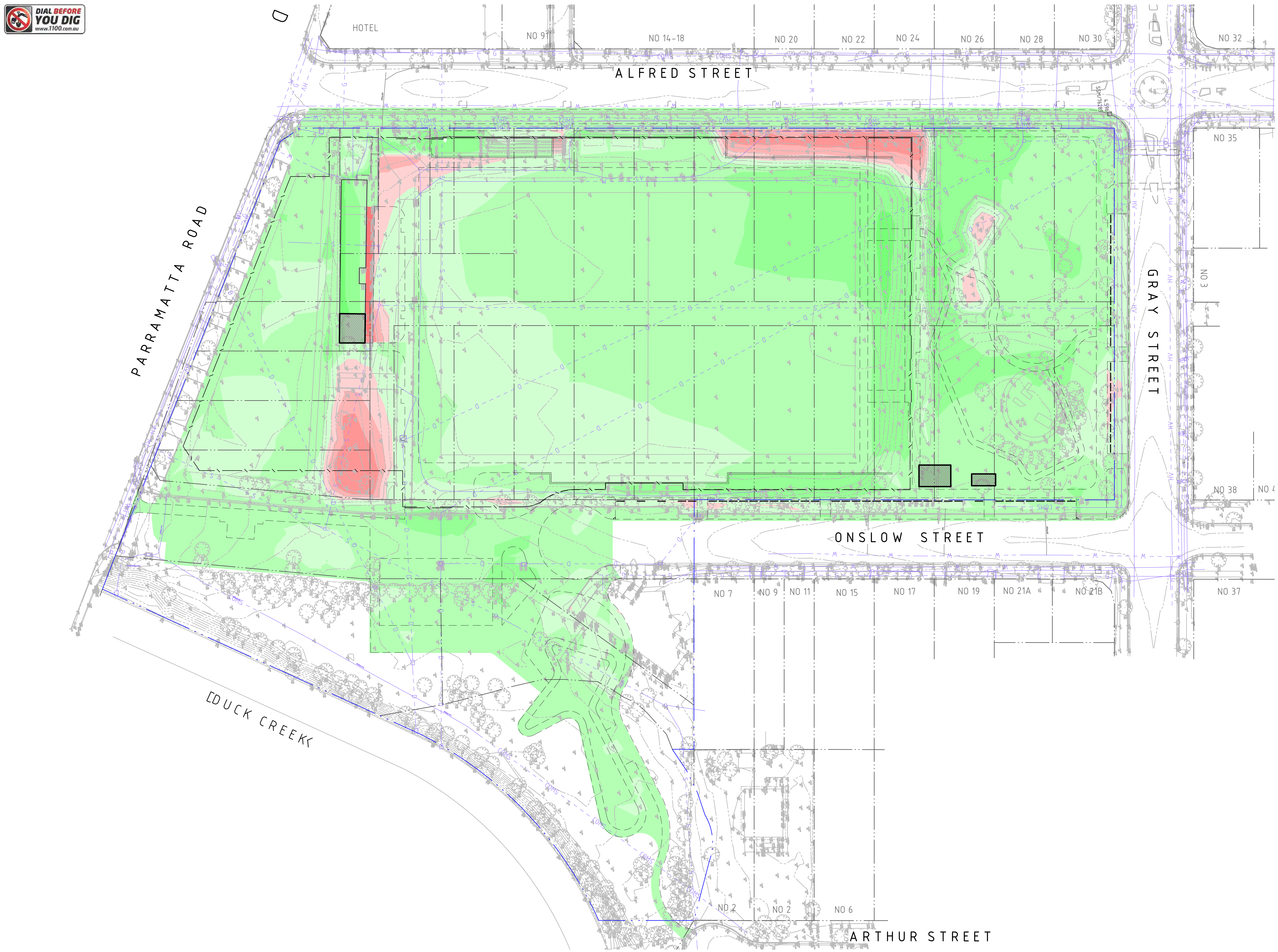
Email sydney@northrop.com.au ABN 81 094 433 100

PROJECT: F.S. GARSIDE RESERVE
1 ONSLOW STREET
GRANVILLE, NSW 2142

DRAWING TITLE: CIVIL ENGINEERING PACKAGE
GENERAL ARRANAGEMENT PLAN

JOB NUMBER: 211527
DRAWING NUMBER: C01.21
REVISION: 01
DRAWING SHEET SIZE = A1



LEGEND

- PROPOSED BOUNDARY LINE
- EXISTING BOUNDARY LINE
- PROPOSED LAYOUT

DEPTH OF CUT

- 2.5m	TO - 2.0m
- 2.0m	TO - 1.5m
- 1.5m	TO - 1.25m
- 1.25m	TO - 1.0m
- 1.0m	TO - 0.75m
- 0.75m	TO - 0.5m
- 0.5m	TO - 0.25m
- 0.25m	TO - 0.0m

DEPTH OF FILL

0.0m	TO 0.25m
0.25m	TO 0.5m
0.5m	TO 0.75m
0.75m	TO 1.0m
1.0m	TO 1.25m
1.25m	TO 1.5m
1.5m	TO 2.0m
2.0m	TO 3.5m

GENERAL NOTES:

1. REFER SPECIFICATIONS NOTES FOR EARTHWORKS GENERAL REQUIREMENTS.
2. ALL WORKS TO BE CARRIED OUT IN ACCORDANCE WITH COUNCIL / RELEVANT AUTHORITY SPECIFICATIONS AND DETAILS.
3. CAD FILES / DTM FILES TO BE SUPPLIED IN AUTOCAD FORMAT FOR SETOUT PURPOSES (UPON REQUEST).
4. STRIP EXISTING TOPSOIL IN CONSULTATION WITH THE GEOTECHNICAL ENGINEER / REPORT. FOR THE PURPOSES OF EARTHWORKS CALCULATIONS A TOPSOIL STRIPPING DEPTH OF 300MM HAS BEEN ASSUMED.
5. NO ALLOWANCE HAS BEEN MADE FOR BULKING FACTORS. NOTE ALL VOLUMES DEPICTED ARE SOLID VOLUMES ONLY AND MAY NOT REFLECT DETAILED EARTHWORKS.
6. NO ALLOWANCE HAS BEEN MADE FOR DETAILED EARTHWORKS; IE SERVICE TRENCHING, DETAILED EXCAVATION, FOOTINGS, RETAINING WALLS AND THE LIKE. CONTRACTOR IS TO ALLOW FOR REMOVAL OF ALL EXCESS MATERIAL GENERATED BY THE WORKS.
7. THE CONTRACTOR SHALL USE FINAL SURFACE LEVELS AND TYPICAL PAVEMENT DETAILS FOR ACTUAL EARTHWORKS LEVELS.
8. APPROXIMATE BULK EARTHWORK VALUES AS FOLLOWS;
   - 8.1. CUT 512 CU.M
   - 8.2. FILL 9506 CU.M
   - 8.3. BALANCE 8994 CU.M
   - 8.4. NOTE: SITE STRIPPING VOLUMES HAVE NOT BEEN INCLUDED IN ABOVE CALCULATIONS.

THE ABOVE VOLUMES HAVE BEEN CALCULATED USING FINISHED CONCEPTUAL LEVELS Vs A STRIPPED 300mm TOPSOIL SURFACE FROM EXISTING SURFACE.

DRAWN: A.SUYO
DESIGNED: W.WU
JOB MANAGER: W.WU
VERIFIER:

NOT FOR CONSTRUCTION

REVISION	DESCRIPTION	ISSUED	VER'D	APP'D	DATE
01	ISSUED FOR FINAL CONCEPT	JO		DL	07.10.21

CLIENT: CITY OF PARRAMATTA

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ARCHITECT: CITY OF PARRAMATTA

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SCALE 1:500@ A1 — 0 5 10 15 20 25m

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Email sydney@northrop.com.au ABN 81 094 433 100

PROJECT: F.S. GARSIDE RESERVE
1 ONSLOW STREET
GRANVILLE, NSW 2142

DRAWING TITLE: CIVIL ENGINEERING PACKAGE
BULK EARTHWORKS CUT AND FILL PLAN

JOB NUMBER: 211527
DRAWING NUMBER: C03.11
REVISION: 01
DRAWING SHEET SIZE = A1

CONSTRUCT RAISED CENTRAL CONCRETE MEDIAN IN ACCORDANCE WITH COUNCIL STANDARD DS17

EXISTING PIT LIDS TO BE ADJUSTED TO SUIT PROPOSED KERB ALIGNMENT

RAISED CONCRETE THRESHOLD FLUSH WITH ADJOINING VERGE. PROVIDE HEEL SAFE GRATED DRAINS

CONSTRUCT KERB INLET PIT WITH 1.8m LINTEL. TO BE INSTALLED IN ACCORDANCE WITH COUNCIL STANDARD DRAWING DS21 (TYP). PITS TO BE INSTALLED WITH PIT INSERT

VEHICULAR ACCESS FOR MAINTENANCE VEHICLES IN ACCORDANCE WITH COUNCIL STANDARD DRAWINGS 'DS8' (TYP)

CAR PARKING SPACE WITH WHEELSTOP IN ACCORDANCE WITH AS2890.5 5.4 LONG x 2.6 WIDE (TYP)

FORM DISH DRAIN ALONG EDGE OF PARKING BAYS (TYPICAL)

CONSTRUCT RAISED CENTRAL CONCRETE MEDIAN IN ACCORDANCE WITH COUNCIL STANDARD DS17

EXISTING RAISED MEDIAN AND SIGN POST TO BE REMOVED AND ROAD ASPHALT TO BE REINSTATED TO MATCH EXISTING

BREAK INTO EXISTING STORMWATER LINE AND CONSTRUCT NEW 900x900 JUNCTION PIT IN ACCORDANCE WITH COUNCIL STANDARD DS26-1

PROVIDE TREE BLISTERS WITH KERB ONLY SURROUND (TYP)

CONSTRUCT NEW 2.4m LINTEL KERB INLET SAG PIT WITH EXTENDED CHAMBER ON TOP OF EXISTING STORMWATER LINE WITH PIT INSERT INSTALLED. PIT TO BE IN ACCORDANCE WITH COUNCIL STANDARDS DS22. PIT TO BE INSTALLED WITH PIT INSERT.

CONVERT EXISTING KERB INLET PIT TO 900x900 JUNCTION PIT IN ACCORDANCE WITH COUNCIL STANDARD DS26-1

PROVIDE INTERFACE TO EXISTING PAVEMENT WITH 600mm SAWCUT AND REINSTATE ASPHALT (TYP)

FOR CONTINUATION REFER TO SHEET 02

FOR CONTINUATION REFER TO SHEET 03

LEGEND

- SITE WORKS BOUNDARY LINE
- ADJACENT BOUNDARY LINE
- PROPOSED KERB
- EXISTING KERB
- SAWCUT AND PAVEMENT INFILL
- eXX EXISTING KERB 'TYPE AS BELOW'
- KO KERB ONLY
- KG KERB AND GUTTER
- DD DISH DRAIN
- IK INTEGRAL KERB
- VC VEHICULAR CROSSING IN ACCORDANCE WITH COUNCIL DRAWING 'DS9'
- KR KERB RAMP IN ACCORDANCE WITH CITY OF PARRAMATTA COUNCIL STANDARDS DRAWINGS 'DS4'
- B BOLLARD
- RW RETAINING WALL – REFER TO CITY OF PARRAMATTA COUNCIL LANDSCAPE ARCHITECT
- WS WHEEL STOP
- MTE MATCH TO EXISTING
- RL XX.XX PROPOSED SPOT HEIGHT
- eRL XX.XX EXISTING SPOT HEIGHT
- DIRECTION OF GRADE
- XX.XX CONTOURS
- EXISTING CONTOURS
- STORMWATER DRAINAGE PIPE
- SSD SUBSOIL DRAINAGE LINE
- EXISTING DRAINAGE STRUCTURE
- NEW DRAINAGE STRUCTURE
- DRAINAGE SWALE
- STREET SIGNS
- FLEXIBLE PAVEMENT
- FOOTPATH AND CYCLEWAY IN ACCORDANCE WITH CITY OF PARRAMATTA COUNCIL DRAWINGS DS6
- SPLITTER ISLAND IN ACCORDANCE WITH CITY OF PARRAMATTA COUNCIL DRAWINGS DS17
- LANDSCAPE IN ACCORDANCE WITH CITY OF PARRAMATTA COUNCIL LANDSCAPE ARCHITECTS

GENERAL NOTES:

1. REFER SPECIFICATIONS NOTES FOR STORMWATER AND SITEWORKS GENERAL REQUIREMENTS.
2. ALL WORKS TO BE CARRIED OUT IN ACCORDANCE WITH COUNCIL / RELEVANT AUTHORITY SPECIFICATIONS AND DETAILS.
3. CAD FILES TO BE SUPPLIED IN AUTOCAD FORMAT FOR SETOUT PURPOSES (UPON REQUEST).
4. SUBSOIL DRAINAGE TO RETAINING WALLS, KERBS AND SWALE DRAINS NOT SHOWN FOR CLARITY – REFER RELEVANT DETAILS.
5. CONTRACTOR TO ALLOW TO ADJUST AND LIAISE WITH RELEVANT SERVICE AUTHORITIES IN RELATION TO EXISTING SERVICE ADJUSTMENT AND MODIFICATIONS.
6. WHEEL STOPS TO BE INSTALLED TO ALL CAR SPACES AS SHOWN AND INSTALLED IN ACCORDANCE WITH AUSTRALIAN STANDARDS AND MANUFACTURERS SPECIFICATIONS.
7. KERBS TO BE IN ACCORDANCE WITH CITY OF PARRAMATTA COUNCIL DRAWINGS 'DS1'

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DRAWN: A.SUYO DESIGNED: W.WU JOB MANAGER: W.WU VERIFIER:

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01	ISSUED FOR FINAL CONCEPT	JO		DL	07.10.21

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Email sydney@northrop.com.au ABN 81 094 433 100

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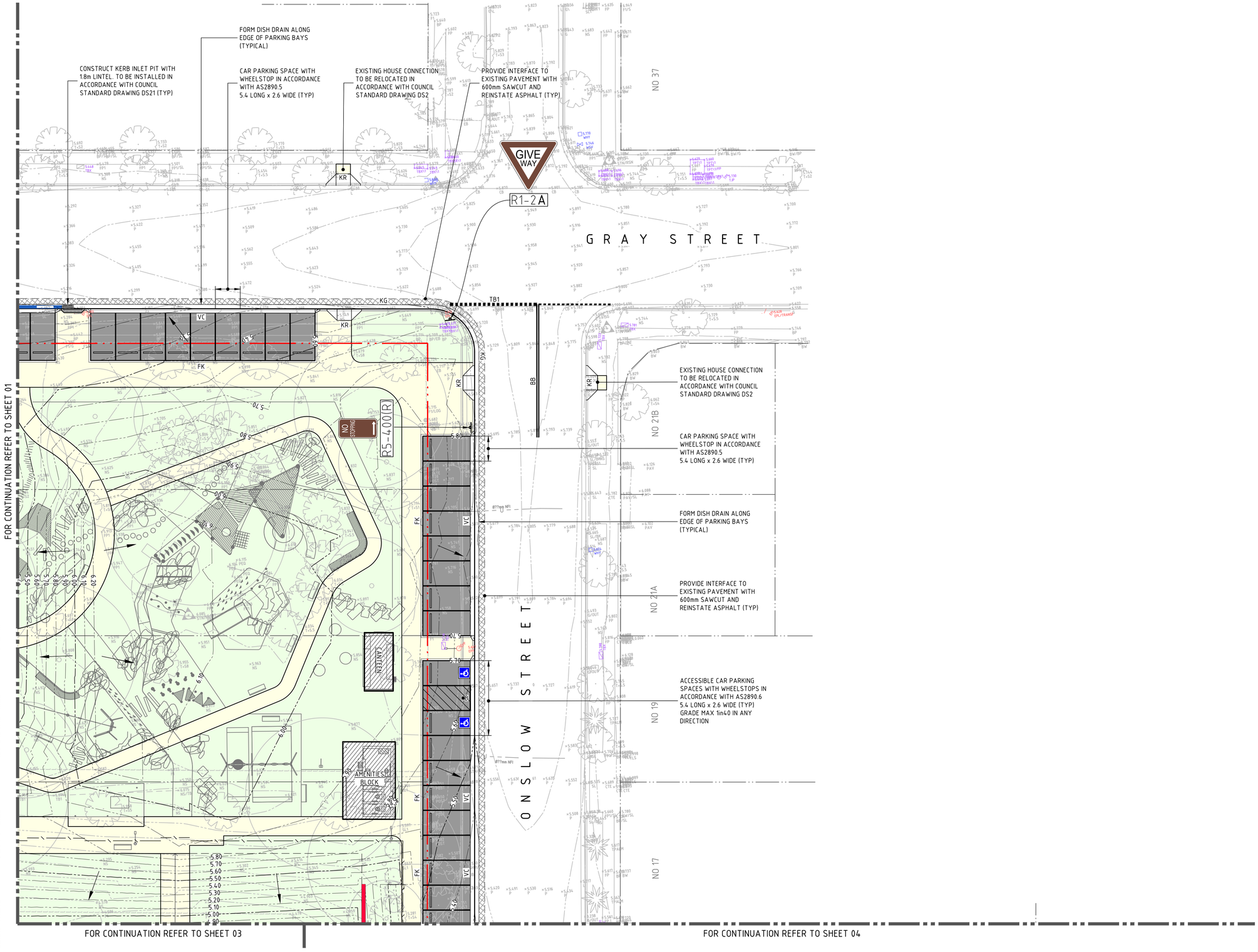
1 ONSLOW STREET GRANVILLE, NSW 2142

DRAWING TITLE: CIVIL ENGINEERING PACKAGE
SITEWORKS AND STORMWATER MANAGEMENT PLAN - SHEET 01

JOB NUMBER 211527
DRAWING NUMBER C04.01
REVISION 01
DRAWING SHEET SIZE = A1



LEGEND

- SITE WORKS BOUNDARY LINE
- ADJACENT BOUNDARY LINE
- PROPOSED KERB
- EXISTING KERB
- SAWCUT AND PAVEMENT INFILL
- eXX — EXISTING KERB 'TYPE AS BELOW'
- KO — KERB ONLY
- KG — KERB AND GUTTER
- DD — DISH DRAIN
- IK — INTEGRAL KERB
- VC — VEHICULAR CROSSING IN ACCORDANCE WITH COUNCIL DRAWING 'DS9'
- KR — KERB RAMP IN ACCORDANCE WITH CITY OF PARRAMATTA COUNCIL STANDARDS DRAWINGS 'DS4'
- B — BOLLARD
- RW — RETAINING WALL – REFER TO CITY OF PARRAMATTA COUNCIL LANDSCAPE ARCHITECT
- WS — WHEEL STOP
- MTE — MATCH TO EXISTING
- RL XX.XX — PROPOSED SPOT HEIGHT
- eRL XX.XX — EXISTING SPOT HEIGHT
- DIRECTION OF GRADE
- XX.XX — CONTOURS
- EXISTING CONTOURS
- STORMWATER DRAINAGE PIPE
- SSD — SUBSOIL DRAINAGE LINE
- EXISTING DRAINAGE STRUCTURE
- NEW DRAINAGE STRUCTURE
- DRAINAGE SWALE
- STREET SIGNS
- FLEXIBLE PAVEMENT
- FOOTPATH AND CYCLEWAY IN ACCORDANCE WITH CITY OF PARRAMATTA COUNCIL DRAWINGS DS6
- SPLITTER ISLAND IN ACCORDANCE WITH CITY OF PARRAMATTA COUNCIL DRAWINGS DS17
- LANDSCAPE IN ACCORDANCE WITH CITY OF PARRAMATTA COUNCIL LANDSCAPE ARCHITECTS

GENERAL NOTES:

1. REFER SPECIFICATIONS NOTES FOR STORMWATER AND SITEWORKS GENERAL REQUIREMENTS.
2. ALL WORKS TO BE CARRIED OUT IN ACCORDANCE WITH COUNCIL / RELEVANT AUTHORITY SPECIFICATIONS AND DETAILS.
3. CAD FILES TO BE SUPPLIED IN AUTOCAD FORMAT FOR SETOUT PURPOSES (UPON REQUEST).
4. SUBSOIL DRAINAGE TO RETAINING WALLS, KERBS AND SWALE DRAINS NOT SHOWN FOR CLARITY – REFER RELEVANT DETAILS.
5. CONTRACTOR TO ALLOW TO ADJUST AND LIAISE WITH RELEVANT SERVICE AUTHORITIES IN RELATION TO EXISTING SERVICE ADJUSTMENT AND MODIFICATIONS.
6. WHEEL STOPS TO BE INSTALLED TO ALL CAR SPACES AS SHOWN AND INSTALLED IN ACCORDANCE WITH AUSTRALIAN STANDARDS AND MANUFACTURERS SPECIFICATIONS.
7. KERBS TO BE IN ACCORDANCE WITH CITY OF PARRAMATTA COUNCIL DRAWINGS 'DS1'

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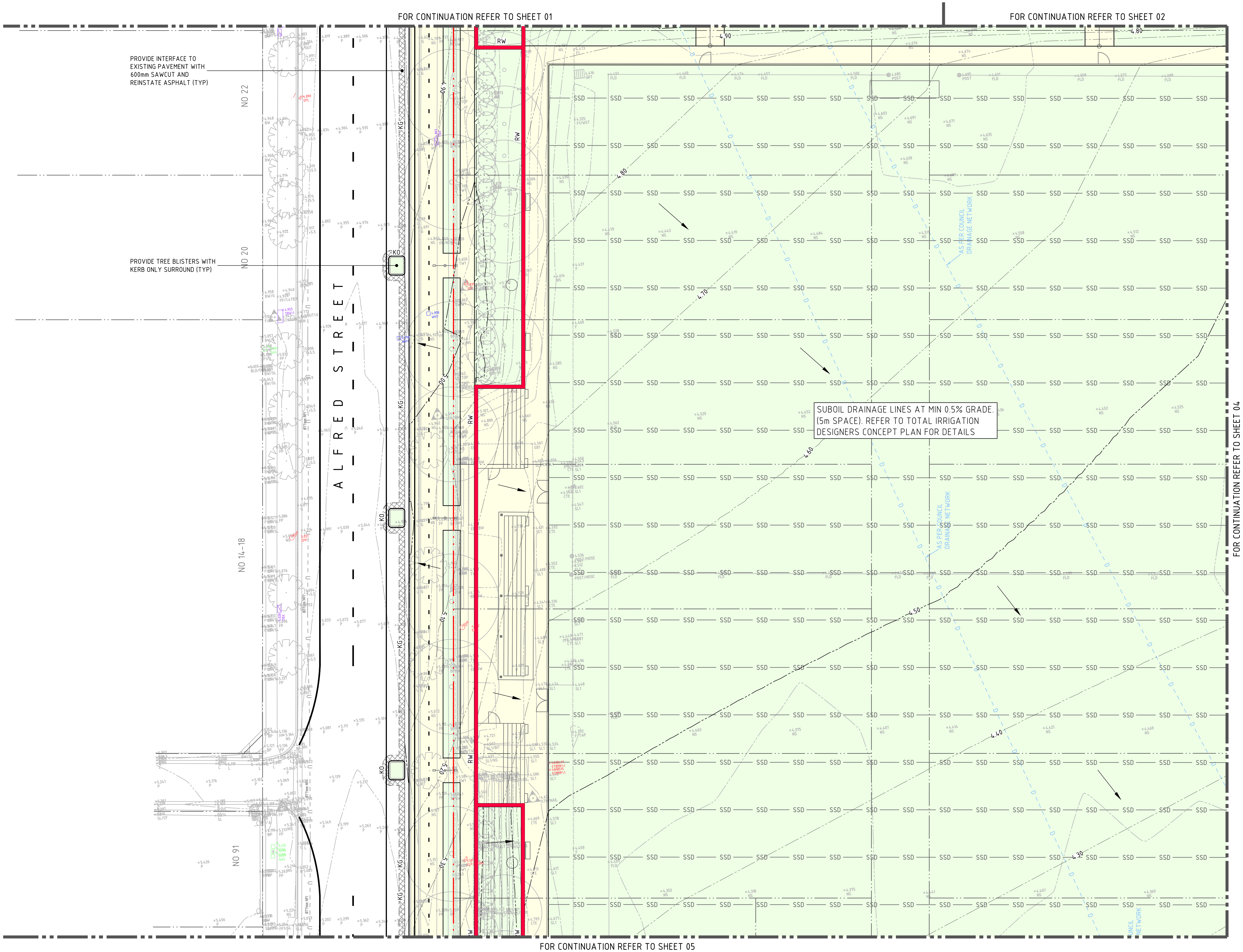
Email sydney@northrop.com.au ABN 81 094 433 100

PROJECT: F.S. GARSIDE RESERVE
1 ONSLOW STREET GRANVILLE, NSW 2142

DRAWING TITLE: CIVIL ENGINEERING PACKAGE
SITEWORKS AND STORMWATER MANAGEMENT PLAN - SHEET 02

JOB NUMBER: 211527
DRAWING NUMBER: C04.02
REVISION: 01
DRAWING SHEET SIZE = A1



LEGEND

	SITE WORKS BOUNDARY LINE
	ADJACENT BOUNDARY LINE
	PROPOSED KERB
	EXISTING KERB
	SAWCUT AND PAVEMENT INFILL
eXX	EXISTING KERB 'TYPE AS BELOW'
KO	KERB ONLY
KG	KERB AND GUTTER
DD	DISH DRAIN
IK	INTEGRAL KERB
VC	VEHICULAR CROSSING IN ACCORDANCE WITH COUNCIL DRAWING 'DS9'
KR	KERB RAMP IN ACCORDANCE WITH CITY OF PARRAMATTA COUNCIL STANDARDS DRAWINGS 'DS4'
•B	BOLLARD
RW	RETAINING WALL - REFER TO CITY OF PARRAMATTA COUNCIL LANDSCAPE ARCHITECT
WS	WHEEL STOP
MTE	MATCH TO EXISTING
• RLXX.XX	PROPOSED SPOT HEIGHT
× eRLXX.XX	EXISTING SPOT HEIGHT
	DIRECTION OF GRADE
XX.XX	CONTOURS
XX.XX	EXISTING CONTOURS
	STORMWATER DRAINAGE PIPE
SSD	SUBSOIL DRAINAGE LINE
	EXISTING DRAINAGE STRUCTURE
	NEW DRAINAGE STRUCTURE
	DRAINAGE SWALE
	STREET SIGNS
	FLEXIBLE PAVEMENT
	FOOTPATH AND CYCLEWAY IN ACCORDANCE WITH CITY OF PARRAMATTA COUNCIL DRAWINGS DS6
	SPLITTER ISLAND IN ACCORDANCE WITH CITY OF PARRAMATTA COUNCIL DRAWINGS DS17
	LANDSCAPE IN ACCORDANCE WITH CITY OF PARRAMTTA COUNCIL LANDSCAPE ARCHITECTS

GENERAL NOTES:

1. REFER SPECIFICATIONS NOTES FOR STORMWATER AND SITEWORKS GENERAL REQUIREMENTS.
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4. SUBSOIL DRAINAGE TO RETAINING WALLS, KERBS AND SWALE DRAINS NOT SHOWN FOR CLARITY - REFER RELEVANT DETAILS.
5. CONTRACTOR TO ALLOW TO ADJUST AND LIAISE WITH RELEVANT SERVICE AUTHORITIES IN RELATION TO EXISTING SERVICE ADJUSTMENT AND MODIFICATIONS.
6. WHEEL STOPS TO BE INSTALLED TO ALL CAR SPACES AS SHOWN AND INSTALLED IN ACCORDANCE WITH AUSTRALIAN STANDARDS AND MANUFACTURERS SPECIFICATIONS.
7. KERBS TO BE IN ACCORDANCE WITH CITY OF PARRAMATTA COUNCIL DRAWINGS 'DS1'

DRAWN: A.SUYO DESIGNED: W.WU JOB MANAGER: W.WU VERIFIER:

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REVISION	DESCRIPTION	ISSUED	VER'D	APP'D	DATE
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CLIENT: CITY OF PARRAMATTA

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ARCHITECT: CITY OF PARRAMATTA

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GRANVILLE, NSW 2142

DRAWING TITLE: CIVIL ENGINEERING PACKAGE
SITEWORKS AND STORMWATER MANAGEMENT PLAN - SHEET 03

JOB NUMBER: 211527
DRAWING NUMBER: C04.03
REVISION: 01
DRAWING SHEET SIZE = A1

FOR CONTINUATION REFER TO SHEET 02

FOR CONTINUATION REFER TO SHEET 03

FOR CONTINUATION REFER TO SHEET 06

CONSTRUCT KERB INLET PIT WITH 0.9m LINTEL IN ACCORDANCE WITH COUNCIL STANDARD DRAWING DS21 (TYP)

PROVIDE INTERFACE TO EXISTING PAVEMENT WITH 600mm SAWCUT AND REINSTATE ASPHALT (TYP)

PROVIDE ABOVE GROUND SWALE BEHIND RETAINING WALL TO CAPTURE STORMWATER RUN-OFF

CAR PARKING SPACE WITH WHEELSTOP IN ACCORDANCE WITH AS2890.5 5.4 LONG x 2.6 WIDE (TYP)

EXISTING STORMWATER DRAINAGE PIT TO BE DEMOLISHED AND NEW PIT TO BE PROVIDED WITHIN NEW DISH DRAIN WITH BUTTERFLY GRATE

ACCESSIBLE CAR PARKING SPACES WITH WHEELSTOPS IN ACCORDANCE WITH AS2890.6 5.4 LONG x 2.6 WIDE (TYP) GRADE MAX 1in40 IN ANY DIRECTION

PROPOSED KERB TO TIE INTO EXISTING. MAKE SMOOTH CONNECTION WITH EXISTING WORKS

CONSTRUCT KERB INLET PIT WITH 2.4M LINTEL. TO BE INSTALLED IN ACCORDANCE WITH COUNCIL STANDARD DRAWING DS32. LOW POINT TO BE FORMED IN CUL-DE-SAC. PIT TO BE INSTALLED WITH PIT INSERT.

VEHICULAR ACCESS FOR MAINTENANCE VEHICLES.

BREAK INTO EXISTING STORMWATER LINE AND CONSTRUCT NEW 900x900 SURFACE INLET PIT IN ACCORDANCE WITH COUNCIL STANDARD DS25

LEGEND

- SITE WORKS BOUNDARY LINE
- ADJACENT BOUNDARY LINE
- PROPOSED KERB
- EXISTING KERB
- SAWCUT AND PAVEMENT INFILL
- eXX — EXISTING KERB 'TYPE AS BELOW'
- KO — KERB ONLY
- KG — KERB AND GUTTER
- DD — DISH DRAIN
- IK — INTEGRAL KERB
- VC — VEHICULAR CROSSING IN ACCORDANCE WITH COUNCIL DRAWING 'DS9'
- KR — KERB RAMP IN ACCORDANCE WITH CITY OF PARRAMATTA COUNCIL STANDARDS DRAWINGS 'DS4'
- B — BOLLARD
- RW — RETAINING WALL – REFER TO CITY OF PARRAMATTA COUNCIL LANDSCAPE ARCHITECT
- WS — WHEEL STOP
- MTE — MATCH TO EXISTING
- RL XX.XX — PROPOSED SPOT HEIGHT
- eRL XX.XX — EXISTING SPOT HEIGHT
- DIRECTION OF GRADE
- CONTOURS
- EXISTING CONTOURS
- STORMWATER DRAINAGE PIPE
- SSD — SUBSOIL DRAINAGE LINE
- EXISTING DRAINAGE STRUCTURE
- NEW DRAINAGE STRUCTURE
- DRAINAGE SWALE
- STREET SIGNS
- FLEXIBLE PAVEMENT
- FOOTPATH AND CYCLEWAY IN ACCORDANCE WITH CITY OF PARRAMATTA COUNCIL DRAWINGS DS6
- SPLITTER ISLAND IN ACCORDANCE WITH CITY OF PARRAMATTA COUNCIL DRAWINGS DS17
- LANDSCAPE IN ACCORDANCE WITH CITY OF PARRAMATTA COUNCIL LANDSCAPE ARCHITECTS

GENERAL NOTES:

1. REFER SPECIFICATIONS NOTES FOR STORMWATER AND SITEWORKS GENERAL REQUIREMENTS.
2. ALL WORKS TO BE CARRIED OUT IN ACCORDANCE WITH COUNCIL / RELEVANT AUTHORITY SPECIFICATIONS AND DETAILS.
3. CAD FILES TO BE SUPPLIED IN AUTOCAD FORMAT FOR SETOUT PURPOSES (UPON REQUEST).
4. SUBSOIL DRAINAGE TO RETAINING WALLS, KERBS AND SWALE DRAINS NOT SHOWN FOR CLARITY - REFER RELEVANT DETAILS.
5. CONTRACTOR TO ALLOW TO ADJUST AND LIAISE WITH RELEVANT SERVICE AUTHORITIES IN RELATION TO EXISTING SERVICE ADJUSTMENT AND MODIFICATIONS.
6. WHEEL STOPS TO BE INSTALLED TO ALL CAR SPACES AS SHOWN AND INSTALLED IN ACCORDANCE WITH AUSTRALIAN STANDARDS AND MANUFACTURERS SPECIFICATIONS.
7. KERBS TO BE IN ACCORDANCE WITH CITY OF PARRAMATTA COUNCIL DRAWINGS 'DS1'

NOT FOR CONSTRUCTION

DRAWN: A.SUYO DESIGNED: W.WU JOB MANAGER: W.WU VERIFIER:

REVISION	DESCRIPTION	ISSUED	VER'D	APP'D	DATE
01	ISSUED FOR FINAL CONCEPT	JO		DL	07.10.21

CLIENT: CITY OF PARRAMATTA

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ARCHITECT: CITY OF PARRAMATTA

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Email sydney@northrop.com.au ABN 81 094 433 100

PROJECT: F.S. GARSIDE RESERVE

1 ONSLOW STREET GRANVILLE, NSW 2142

DRAWING TITLE: CIVIL ENGINEERING PACKAGE

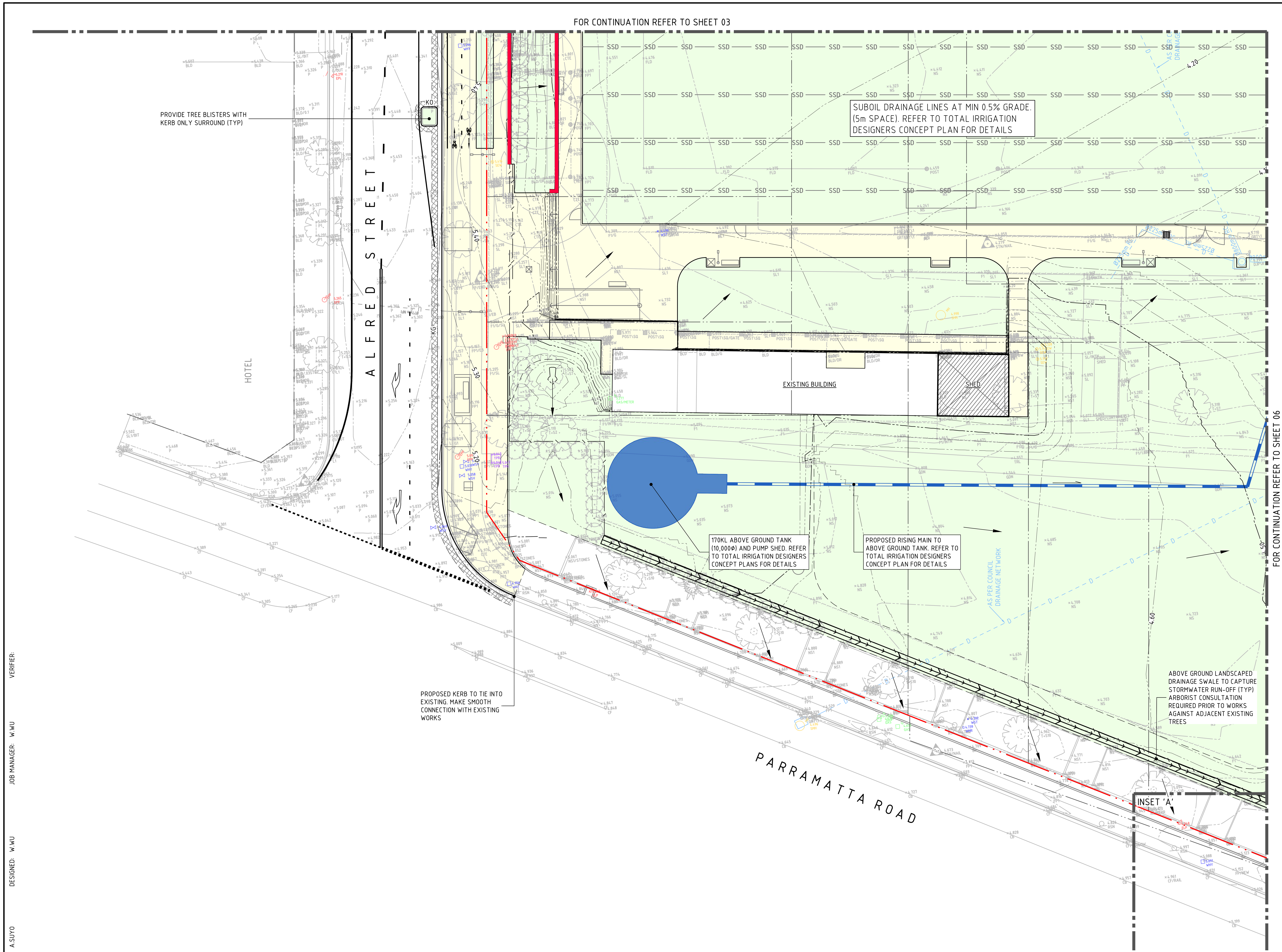
SITEWORKS AND STORMWATER MANAGEMENT PLAN - SHEET 04

JOB NUMBER: 211527

DRAWING NUMBER: C04.04

REVISION: 01

DRAWING SHEET SIZE = A1



LEGEND

	SITE WORKS BOUNDARY LINE
	ADJACENT BOUNDARY LINE
	PROPOSED KERB
	EXISTING KERB
	SAWCUT AND PAVEMENT INFILL
eXX	EXISTING KERB 'TYPE AS BELOW'
KO	KERB ONLY
KG	KERB AND GUTTER
DD	DISH DRAIN
IK	INTEGRAL KERB
VC	VEHICULAR CROSSING IN ACCORDANCE WITH COUNCIL DRAWING 'DS9'
KR	KERB RAMP IN ACCORDANCE WITH CITY OF PARRAMATTA COUNCIL STANDARDS DRAWINGS 'DS4'
•B	BOLLARD
RW	RETAINING WALL - REFER TO CITY OF PARRAMATTA COUNCIL LANDSCAPE ARCHITECT
WS	WHEEL STOP
MTE	MATCH TO EXISTING
• RLXX.XX	PROPOSED SPOT HEIGHT
× eRLXX.XX	EXISTING SPOT HEIGHT
	DIRECTION OF GRADE
XX.XX	CONTOURS
XX.XX	EXISTING CONTOURS
D	STORMWATER DRAINAGE PIPE
SSD	SUBSOIL DRAINAGE LINE
	EXISTING DRAINAGE STRUCTURE
	NEW DRAINAGE STRUCTURE
	DRAINAGE SWALE
	STREET SIGNS
	FLEXIBLE PAVEMENT
	FOOTPATH AND CYCLEWAY IN ACCORDANCE WITH CITY OF PARRAMATTA COUNCIL DRAWINGS DS6
	SPLITTER ISLAND IN ACCORDANCE WITH CITY OF PARRAMATTA COUNCIL DRAWINGS DS17
	LANDSCAPE IN ACCORDANCE WITH CITY OF PARRAMTTA COUNCIL LANDSCAPE ARCHITECTS

GENERAL NOTES:

1. REFER SPECIFICATIONS NOTES FOR STORMWATER AND SITEWORKS GENERAL REQUIREMENTS.
2. ALL WORKS TO BE CARRIED OUT IN ACCORDANCE WITH COUNCIL / RELEVANT AUTHORITY SPECIFICATIONS AND DETAILS.
3. CAD FILES TO BE SUPPLIED IN AUTOCAD FORMAT FOR SETOUT PURPOSES (UPON REQUEST).
4. SUBSOIL DRAINAGE TO RETAINING WALLS, KERBS AND SWALE DRAINS NOT SHOWN FOR CLARITY - REFER RELEVANT DETAILS.
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7. KERBS TO BE IN ACCORDANCE WITH CITY OF PARRAMATTA COUNCIL DRAWINGS 'DS1'

DRAWN: A.SUYO
DESIGNED: W.WU
JOB MANAGER: W.WU
VERIFIER:

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Email sydney@northrop.com.au ABN 81 094 433 100

PROJECT: F.S. GARSIDE RESERVE
1 ONSLOW STREET
GRANVILLE, NSW 2142

DRAWING TITLE: CIVIL ENGINEERING PACKAGE
SITEWORKS AND STORMWATER MANAGEMENT PLAN - SHEET 05

JOB NUMBER: 211527
DRAWING NUMBER: C04.05
REVISION: 01
DRAWING SHEET SIZE = A1

FOR CONTINUATION REFER TO SHEET 04

FOR CONTINUATION REFER TO SHEET 05

REMOVE EXISTING KERB INLET PIT AND REPLACE WITH NEW 900X900 JUNCTION PIT IN ACCORDANCE WITH COUNCIL STANDARD DS26-1

BREAK INTO EXISTING STORMWATER LINE AND CONSTRUCT NEW 900x900 SURFACE INLET PIT WITH EXTENDED CHAMBER IN ACCORDANCE WITH COUNCIL STANDARD DS25-2

BREAK INTO EXISTING STORMWATER LINE AND CONSTRUCT NEW 900x900 SURFACE INLET PIT WITH EXTENDED CHAMBER IN ACCORDANCE WITH COUNCIL STANDARD DS25

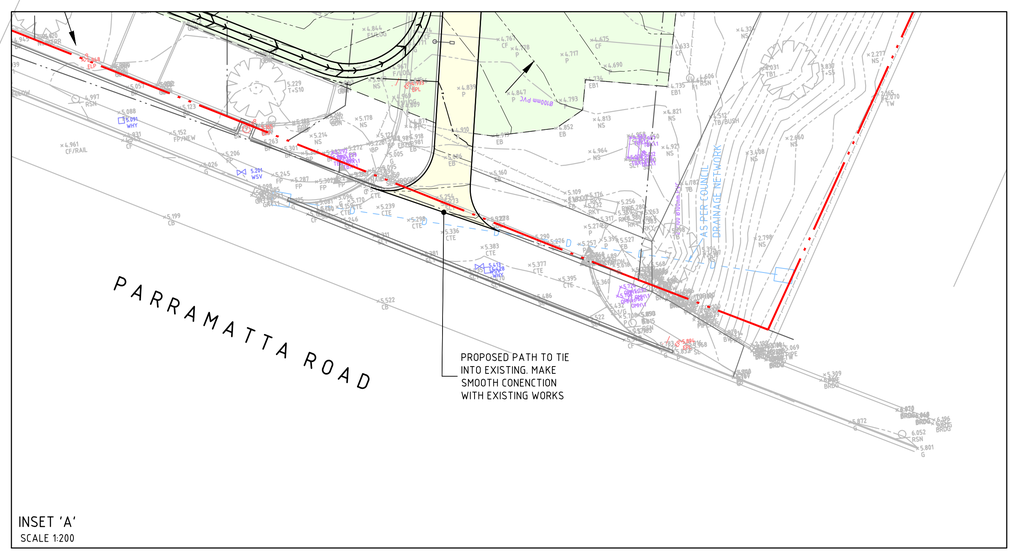
6KL HARVEST WELL (2380ø) REFER TO TOTAL IRRIGATION DESIGNERS CONCEPT PLAN FOR DETAILS

ABOVE GROUND LANDSCAPED DRAINAGE SWALE TO CAPTURE STORMWATER RUN-OFF (TYP)

ARBORIST CONSULTATION REQUIRED PRIOR TO WORKS AGAINST ADJACENT EXISTING TREES

PROVIDE INTEGRAL RAISED KERB EDGE TO CHANNEL RUNOFF TO STORMWATER PIT

INSET 'A'



INSET 'A'
SCALE 1:200

LEGEND

- SITE WORKS BOUNDARY LINE
- ADJACENT BOUNDARY LINE
- PROPOSED KERB
- EXISTING KERB
- SAWCUT AND PAVEMENT INFILL
- eXX — EXISTING KERB 'TYPE AS BELOW'
- KO — KERB ONLY
- KG — KERB AND GUTTER
- DD — DISH DRAIN
- IK — INTEGRAL KERB
- VC — VEHICULAR CROSSING IN ACCORDANCE WITH COUNCIL DRAWING 'DS9'
- KR — KERB RAMP IN ACCORDANCE WITH CITY OF PARRAMATTA COUNCIL STANDARDS DRAWINGS 'DS4'
- B — BOLLARD
- RW — RETAINING WALL – REFER TO CITY OF PARRAMATTA COUNCIL LANDSCAPE ARCHITECT
- WS — WHEEL STOP
- MTE — MATCH TO EXISTING
- RLXX.XX — PROPOSED SPOT HEIGHT
- eRLXX.XX — EXISTING SPOT HEIGHT
- DIRECTION OF GRADE
- XX.XX — CONTOURS
- EXISTING CONTOURS
- STORMWATER DRAINAGE PIPE
- SSD — SUBSOIL DRAINAGE LINE
- EXISTING DRAINAGE STRUCTURE
- NEW DRAINAGE STRUCTURE
- DRAINAGE SWALE
- STREET SIGNS
- FLEXIBLE PAVEMENT
- FOOTPATH AND CYCLEWAY IN ACCORDANCE WITH CITY OF PARRAMATTA COUNCIL DRAWINGS DS6
- SPLITTER ISLAND IN ACCORDANCE WITH CITY OF PARRAMATTA COUNCIL DRAWINGS DS17
- LANDSCAPE IN ACCORDANCE WITH CITY OF PARRAMATTA COUNCIL LANDSCAPE ARCHITECTS

GENERAL NOTES:

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2. ALL WORKS TO BE CARRIED OUT IN ACCORDANCE WITH COUNCIL / RELEVANT AUTHORITY SPECIFICATIONS AND DETAILS.
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7. KERBS TO BE IN ACCORDANCE WITH CITY OF PARRAMATTA COUNCIL DRAWINGS 'DS1'

NOT FOR CONSTRUCTION

DRAWN: A.SUYO
DESIGNED: W.WU
JOB MANAGER: W.WU
VERIFIER:

REVISION	DESCRIPTION	ISSUED	VER'D	APP'D	DATE
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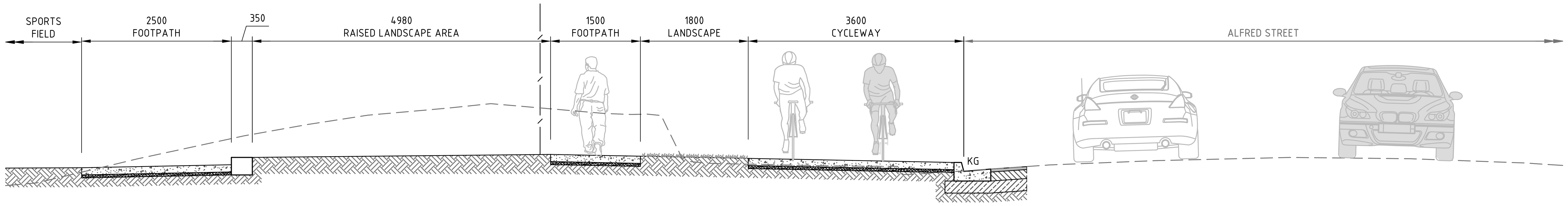
PROJECT: F.S. GARSIDE RESERVE
1 ONSLOW STREET
GRANVILLE, NSW 2142

DRAWING TITLE: CIVIL ENGINEERING PACKAGE
SITEWORKS AND STORMWATER MANAGEMENT PLAN - SHEET 06

JOB NUMBER: 211527
DRAWING NUMBER: C04.06
REVISION: 01
DRAWING SHEET SIZE = A1



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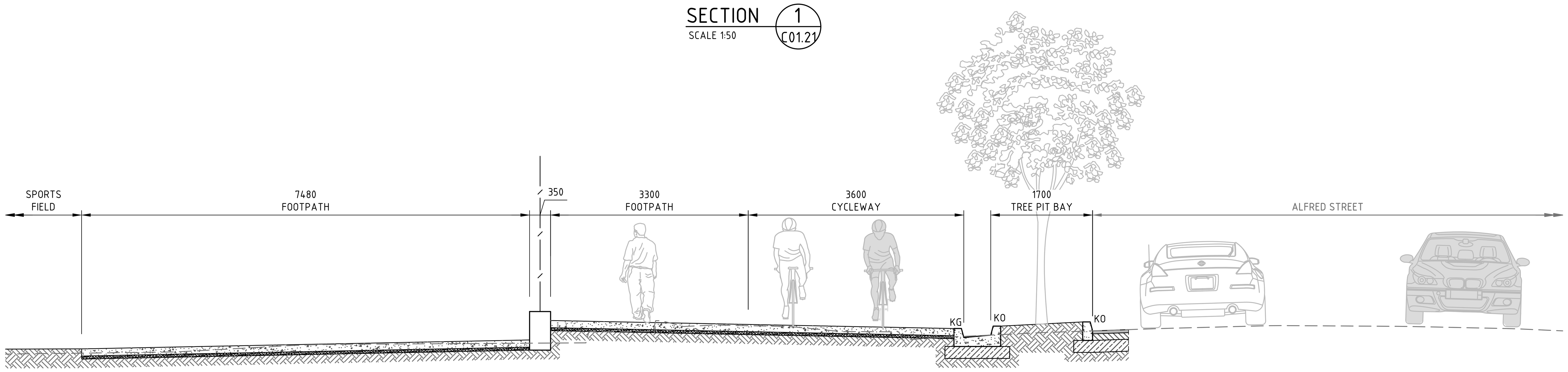
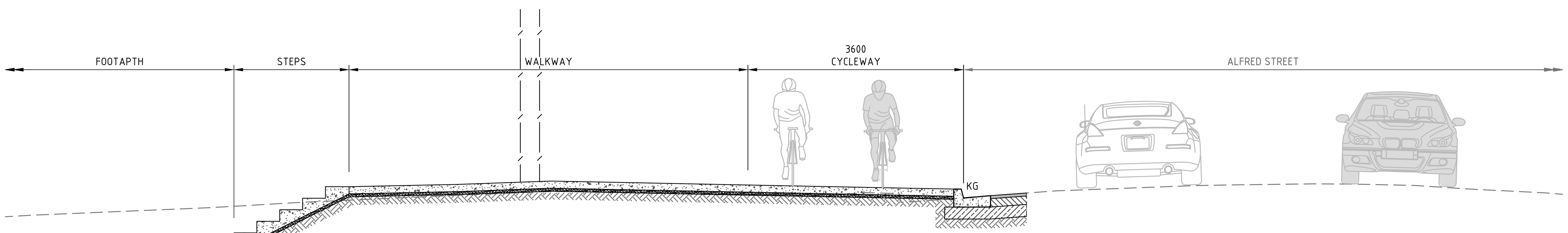


SECTION 2 / C01.21



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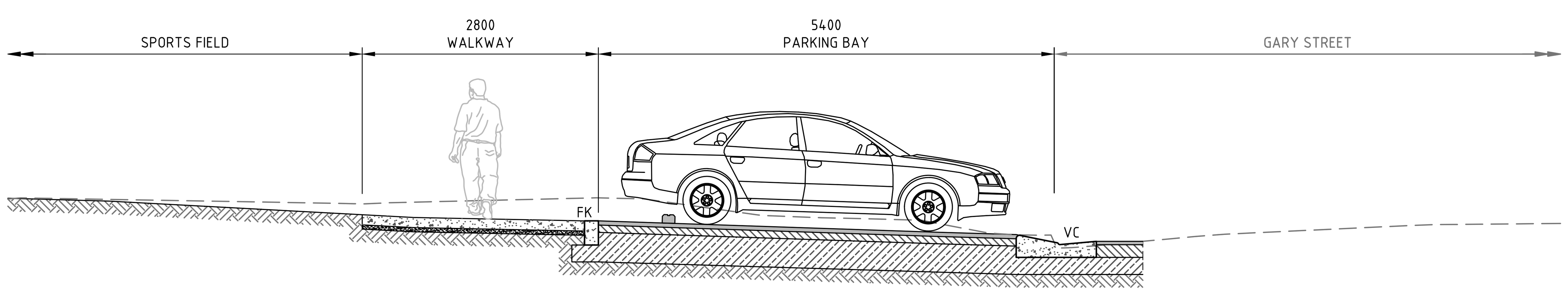

SECTION 4 / C01.21

DRAWN: A.SUYO
DESIGNED: W.WU
JOB MANAGER: W.WU
VERIFIER:

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REVISION	DESCRIPTION	ISSUED	VER'D	APP'D	DATE
01	ISSUED FOR FINAL CONCEPT	JO		DL	07.10.21

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SCALE 1:50@ A1
0.0 0.5 1.0 1.5 2.0 2.5m

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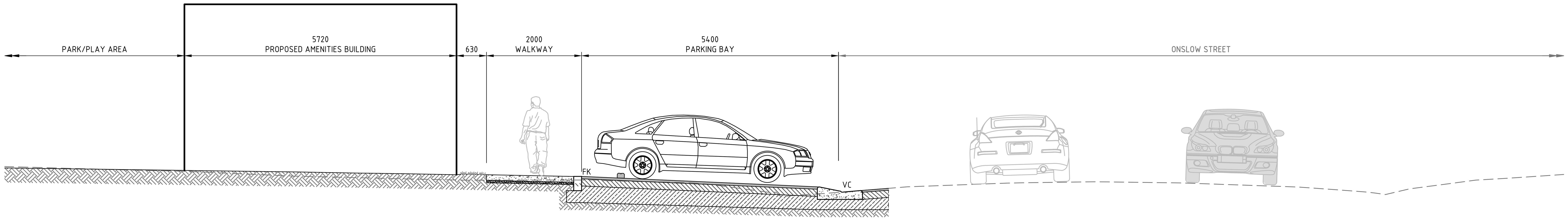
Email sydney@northrop.com.au ABN 81 094 433 100

PROJECT: F.S. GARSIDE RESERVE
1 ONSLOW STREET
GRANVILLE, NSW 2142

DRAWING TITLE: CIVIL ENGINEERING PACKAGE
TYPICAL SITE SECTIONS - SHEET 01

JOB NUMBER: 211527
DRAWING NUMBER: C06.01
REVISION: 01
DRAWING SHEET SIZE = A1



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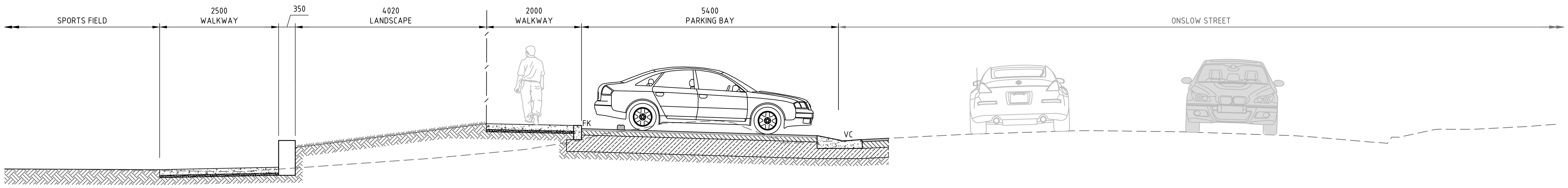

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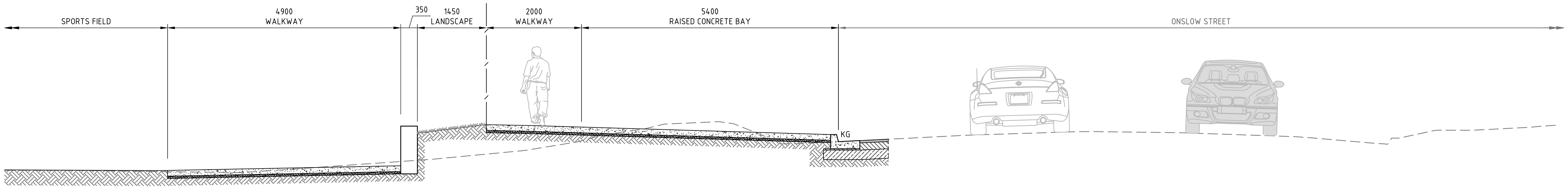

SECTION 7 C01.21

DRAWN: A.SUYO
DESIGNED: W.WU
JOB MANAGER: W.WU
VERIFIER:

NOT FOR CONSTRUCTION

REVISION	DESCRIPTION	ISSUED	VER'D	APP'D	DATE
01	ISSUED FOR FINAL CONCEPT	JO		DL	07.10.21

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SCALE 1:50@ A1 — 0.0 0.5 1.0 1.5 2.0 2.5m

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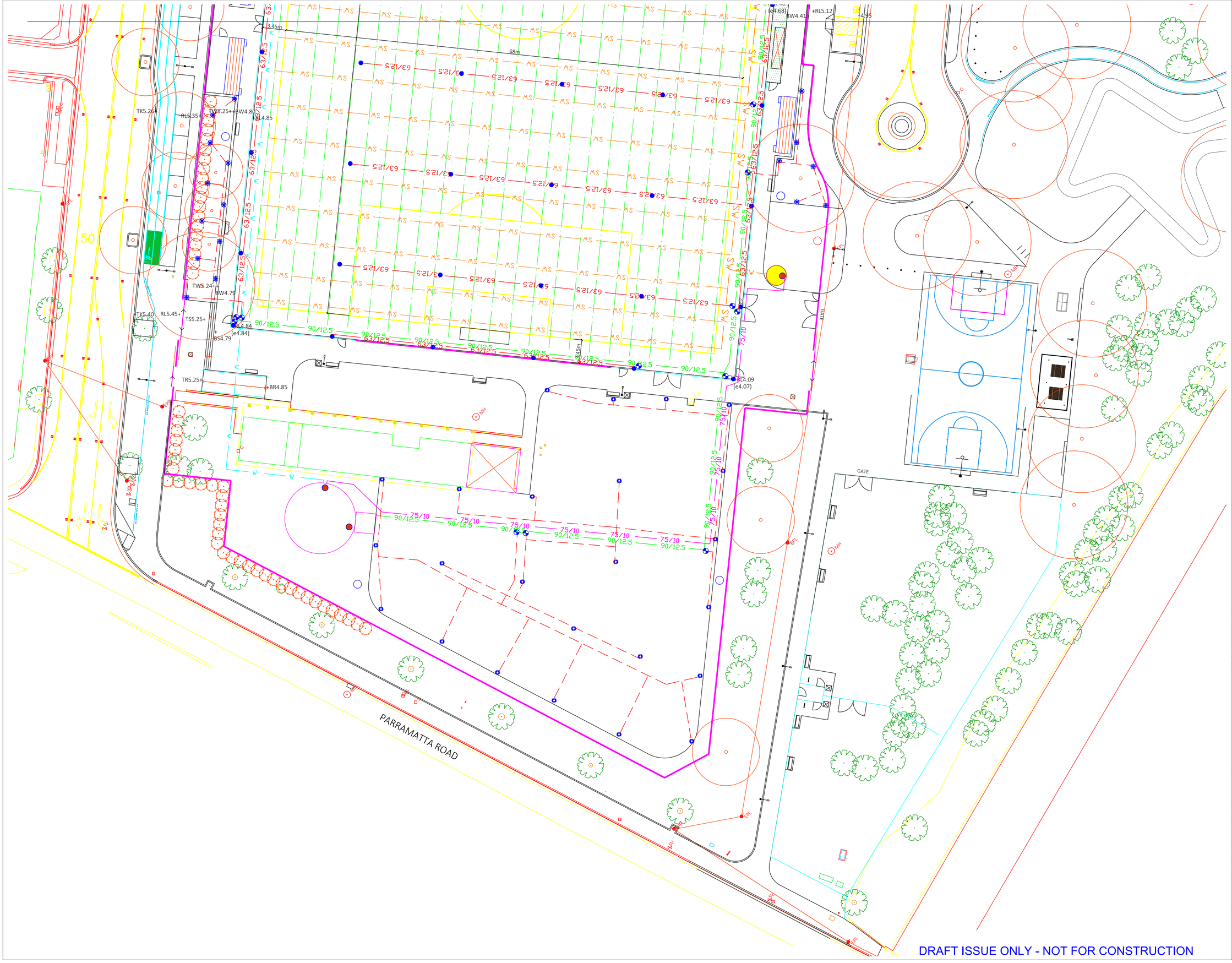
Email sydney@northrop.com.au ABN 81 094 433 100

PROJECT: F.S. GARSIDE RESERVE
1 ONSLOW STREET
GRANVILLE, NSW 2142

DRAWING TITLE: CIVIL ENGINEERING PACKAGE
TYPICAL SITE SECTIONS - SHEET 02

JOB NUMBER: 211527
DRAWING NUMBER: C06.02
REVISION: 01
DRAWING SHEET SIZE = A1



DRAFT ISSUE ONLY - NOT FOR CONSTRUCTION

GENERAL NOTE:

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- THE CONTRACTOR SHALL BE FULLY SATISFIED WITH THE NATURE AND INTENT OF ALL WORK TO BE PERFORMED AND SHALL GUARANTEE THE THE FINAL SYSTEM PERFORMANCE AND ALL WORKMANSHIP
- THE CONTRACTOR SHALL NOTIFY THE CLIENT AND/OR THE DESIGNER IN WRITING IMMEDIATELY IF ANY DISCREPENCIES ARE FOUND AND PRIOR TO COMMENCING WORK.
- THIS PLAN IS TO BE READ IN CONJUNCTION WITH OTHER LANDSCAPE, SITE AND SERVICES PLANS AS MAY BE AVAILABLE BY THE CLIENT
- THE CONTRACTOR IS TO ALLOW TO COORDINATE ALL WORK WITH ANY OTHER TRADES REQUIRED
- THE CONTRACTOR IS TO RECEIVE WRITTEN APPROVAL FOR ANY VARIATIONS TO BE PERFORMED.
- ALL ITEMS OF EQUIPMENT ARE INDICATIVE OF LOCATION AND SHALL BE ADJUSTED AS NECESSARY ACCORDING TO FINAL SITE CONDITIONS.

- AS BUILT RECORDS ARE TO BE KEPT AND UPDATED DAILY. FINAL AS BUILT PLANS ARE TO BE SUPPLIED & APPROVED PRIOR TO FINAL COMPLETION.

CERTIFIED IRRIGATION DESIGN:

CERTIFIED IRRIGATION DESIGNER — IRRIGATION AUSTRALIA — LTD#774 — LANDSCAPE FUTURE GOLD

MATTHEW WILSON

DIAL BEFORE YOU DIG www.1100.com.au

REV	DATE:	AMENDMENT:	BY:
B	5-10-2021	IRRIGATION AND DRAINAGE FINAL MASTER PLAN	MW
A	14-09-2021	IRRIGATION AND DRAINAGE CONCEPTS	MW

CLIENT:

CITY OF PARRAMATTA

PROJECT:
F.S GARSIDE RESERVE REDEVELOPMENT

TITLE:
PROPOSED COMBINED LAYOUT

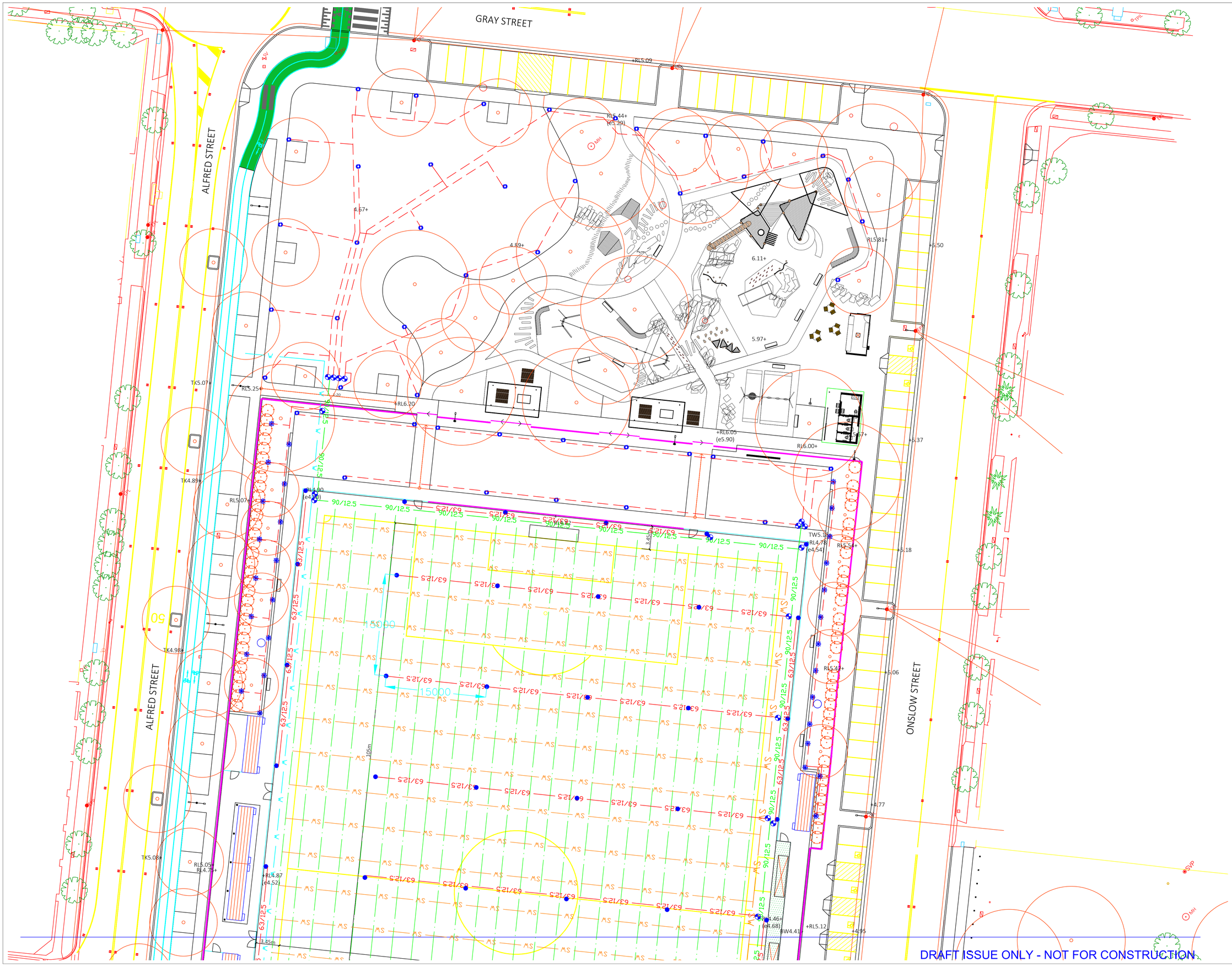
CAD BY:	DESIGN BY:	CHECKED BY:
M.W.	M.W.	
DATE:	DATE:	DATE:
31-08-21	31-08-21	

BASE BY: Council — DATE: 31-08-2021

SHEET: 05 of 07 — SCALE: 1:250 @A1

DRAWING No: 2248-I-01- — REV: B — SHEET No.: - 05

TOTAL IRRIGATION DESIGNERS
P.O. BOX 577
BATHURST, NSW, 2795
PH: 0415 672204
email: admin@irrigationdesign.com.au



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CERTIFIED IRRIGATION DESIGN:

MATTHEW WILSON

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REV	DATE:	AMENDMENT:	BY:
B	5-10-2021	IRRIGATION AND DRAINAGE FINAL MASTER PLAN	MW
A	14-09-2021	IRRIGATION AND DRAINAGE CONCEPTS	MW

CLIENT: CITY OF PARRAMATTA

PROJECT: F.S GARSIDE RESERVE REDEVELOPMENT

TITLE: PROPOSED COMBINED LAYOUT

CAD BY:	DESIGN BY:	CHECKED BY:
M.W.	M.W.	
DATE:	DATE:	DATE:
31-08-21	31-08-21	

BASE BY: Council — DATE: 31-08-2021

SHEET: 06 of 07 — SCALE: 1:250 @A1

DRAWING No: 2248-I-01- — REV: B — SHEET No.: - 06

TOTAL IRRIGATION DESIGNERS
P.O. BOX 577
BATHURST, NSW, 2795
PH: 0415 672204
email: admin@irrigationdesign.com.au

Appendix D

Arboricultural Development Impact Assessment Report

Moore Trees
Arboricultural Services
ABN 90887347745

ARBORICULTURAL DEVELOPMENT IMPACT ASSESSMENT REPORT

F.S. Garside Park, 1 Onslow Street,
Granville NSW 2142

October 2021
FINAL

Prepared for: City of Parramatta Council

Prepared by: Paul Vezgoff
Consulting Arborist
ISA, AA
Arboriculture Australia
Registered Consultant

PO Box 3114 Austinmer NSW 2515
Ph: 0242 680 425
Mob: 0411 712 887
Email: enquiries@mooretrees.com.au
Web: www.mooretrees.com.au

Summary

This report has been compiled for City of Parramatta Council. The report concerns a proposed Development Application for F.S. Garside Park, Granville. This Arborist Report refers to one hundred and fifty five (155) trees.

This report contains the following information required in City of Parramatta Council Development guidelines:-

1) All trees were assessed for Safe Useful Life Expectancy (SULE).
2) Genus and species identification of each tree.
3) Impact of the proposed works on each tree.
4) Impact of retaining tree on the proposed development.
5) The Tree Protection Zone (TPZ) calculated for each tree.
6) Any branch or root pruning that may be required for trees.

The removal of large mature tree trees within public open spaces is not taken lightly and every effort has been explored in order to limit tree loss in order to retain trees where their long term viability will not be impacted. Unfortunately, due to the site's history as a dumping ground for a highly dangerous redundant building material many of the site trees will require removal to allow the park to be made safe for future generations. For the purpose of this project however, with good design and long term planning the proposed new park will allow a new start for public urban trees that will ensure the next 50 years of canopy cover, visual and ecological amenity in this area is guaranteed.

Due to remediation and flooding design requirements and long term tree health and assessment of the *REVISION C Landscape Concept Plan,* two hundred and forty nine (249) trees are to be removed along with the creek weed infested vegetation. Nine (9) trees are to be retained (Trees 1-8 and Tree 10) and approximately one hundred and twenty eight (128) new trees are to be planted depending on further detailed design and tree availability. Tree removal and retention numbers can be seen in Plan 2 (Appendix 1).

Table of Contents

VERSION CONTROL

Date of Issue	Details
13th September 2021	Draft 1 issued
30th October 2021	Final issue

1 INTRODUCTION

1.1 This report has been conducted to assess the health and condition of one hundred and fifty five (155) trees located at F.S. Garside Park, 1 Onslow Street, Granville NSW 2142. This report has been prepared for Ron Piddock, Portfolio Manager, City Assets and Operations, City of Parramatta Council, of 126 Church Street, Parramatta NSW 2124 as required for development works at this site.

The purpose of this report is to collect the appropriate tree related data on the subject trees and to provide advice on the categorization of the site trees in order to assist in potential design layouts and to determine which trees are possible to retain based on the project requirements.

As specified in the City of Parramatta Council Development Application guidelines the following data was collected for each tree:

1) A site plan locating all trees over three (3) metres in height, including all street trees.
2) All trees were assessed for Safe Useful Life Expectancy (SULE), health and amenity value.
3) Genus and species identification of each tree.
4) Impact of the proposed development on each tree.
5) The Tree Protection Zone (TPZ) calculated for each tree.

Also noted for the purpose of this report were:

- Health and Vigour; using foliage colour and size, extension growth, presence of deadwood, dieback and epicormic growth throughout the tree.
- Structural condition using visible evidence of bulges, cracks, leans and previous pruning.
- The suitability of the tree taking into consideration the proposed development.
- Age rating; Over-mature (>80% life expectancy), Mature (20-80% life expectancy), Young, Sapling (<20% life expectancy).

1.2 Location: The proposed development site is located at F.S. Garside Park, Granville. The proposed development site from herein will be referred to as "the Site".

Diagram 1: Location of subject site, F.S. Garside Park, Granville (Red arrow) (whereis.com.au, 2021)

Diagram 2: Location of the study area for this report. (Google earth, 2021)

Diagram 3: Image showing the site in 1943 (Six maps 2021)

1.3 The tree data for the site trees can be seen in Appendix 2 (Tree Health and Condition Schedule). They were also part of a categorization process that rated them into a High, Medium or Low retention rating.

The Tree Significance & Retention Value used in this PTA Report is known as the Significance of a Tree Assessment Rating System, or STARS© system, created by the Australian Institute of Consulting Arboriculturists (IACA). As noted by IACA, this system is a free to use system by Arboriculturists, as at the date of this report. This system allows 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 (Draper and Richards 2009). 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. The Retention Value is selected between *High, Medium, Low and Priority for removal.*

2 METHODOLOGY

2.1 To record the health and condition of the trees, a Visual Tree Assessment (VTA) was undertaken on the subject trees on 27th August 2021. This method of tree evaluation is adapted from Matheny and Clark, 1994 and is recognised by The International Society of Arboriculture, Arboriculture Australia and The Institute Australian of Consulting Arborists (IACA).

2.2 This report is only concerned with trees on the site that come under the Tree Preservation Order that is part of the City of Parramatta Council Development Control Plan). Under this policy, a person must not ringbark, cut down, top, lop, remove, injure or wilfully destroy any prescribed tree or other vegetation, without development consent or a permit being granted by Council. *Part 5, 5.4 Preservation of Trees or Vegetation* outlines the trees or vegetation to which Clause 5.9 of the City of Parramatta, Council Local Environmental Plan 2011 (LEP 2011) and Clause 34 Parramatta City Centre Local Environmental Plan 2007 applies by reference to species, size, or location.

2.3 **Height:** The heights and distances within this report have been measured with a Bosch DLE 50 laser measure.

2.4 **Tree Protection Zone (TPZ):** The 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. TPZ's have been calculated for each tree to determine construction impacts. The TPZ calculation is based on the Australian Standard *Protection of trees on development sites*, AS 4970, 2009.

2.5 **Structural Root Zone (SRZ)**: The SRZ is a specified distance measured from the trunk that is set aside for the protection of tree roots, both structural and fibrous. The woody root growth and soil cohesion in this area are necessary to hold the tree upright. The TPZ and SRZ are measured as a radial measurement from the trunk. No roots should be

severed within the SRZ area. A detailed methodology on the TPZ and SRZ calculations can be found in Appendix 4.

2.6 Safe Useful Life Expectancy (SULE): The subject trees were assessed for a Safe Useful Life Expectancy (SULE). The SULE rating for each tree can be seen in the Tree Assessment Schedule (Appendix 2). A detailed explanation of SULE can be found in Appendix 4.

2.7 Plans and information provided: For this Arboricultural Report I was supplied the following documents:

- Site survey plan and Concept Plan with Contours, supplied unmarked and undated.

2.8 Impact Assessment: An impact assessment was conducted on the site trees. This was conducted by assessing the site survey and plans provided by City of Parramatta Council. The plans provided were assessed for the following:

- Reduced Level (R.L.) at base of tree.
- Incursions into the Tree Protection Zone (TPZ).
- Assessment of the likely impact of the works.

2.9 Terms: The following terms have been used in this report and due the extent of various disciplines involved on a project of this size; basic terminologies have been used as described below;

***Foot print*:** The term footprint will relate to any proposed structure located above Ground Level (GL) that may potentially affect the root zone of any tree or tree itself. The structure may be as small as a rubbish bin or as large as an area of paving.

***Excavation*:** This includes trenching, trenching and batters, footings for walls, trenching for services, pipes, lighting telecommunications.

***Hand dig*:** Excavation to occur by hand so as not to damage or sever any roots associated with nearby trees. In general, the Project Arborist inspects or supervises this work.

***TPZ encroachments*:** The Australian Standard *Protection of trees on development sites,* (AS 4970) recommends no more than 10% encroachment unless the TPZ can be compensated elsewhere and contiguous with the TPZ. Any encroachment greater than 10% is considered a major encroachment. In this instance the Project Arborist is required to demonstrate that the tree would still remain viable due to the >10% encroachment.

2.10 Tree Significance & Retention Value: The Tree Significance & Retention Value used in this report is known as the Significance of a Tree, Assessment Rating System or STARS© system created by the Australian Institute of Consulting Arboriculturists (IACA). As noted by IACA, this system is a free to use system by Arboriculturists as at the date of this report. This system allows 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 (Draper and Richards 2009). 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. The Retention Value is selected between *High, Medium, Low and Priority for removal.* The Matrix can be seen in Appendix 3.

2.11 Tree Retention Value Plans: All trees have been allocated a Tree Retention Value. These values have been applied to the colour coded plan in Appendix 1 (Tree Retention Plan 1).

2.12 Report limitations: This report does not constitute a Tree Protection Plan. Once the designs have been finalised, in conjunction with the findings of this report, a final Tree Protection Plan and Tree Protection Specification can then be produced.

3 RELEVANT BACKGROUND INFORMATION

3.1 F.S. Garside sporting field is located on the northern side of the Great Western Highway between Onslow Street, Grace Street and Alfred Street. Another smaller reserve is located to the east of Onslow Street between Arthur Street and Onslow Streets and to the east is bounded by a man-made canal named as Duck Creek canal.

3.2 Frank Sidney Garside (1903-1963) was President of Granville Soccer Club from 1940 until 1958. He was instrumental in developing this park as a home ground for the soccer club in the mid-1940s. This involved construction of the seating, dressing sheds and other facilities as well as improving the ground, a former garbage tip.

3.3 **Soils:** The site would be classed as highly disturbed, with little to no natural soils present. Site history states that the site was used a rubbish tip and more specifically for the dumping of asbestos. As seen in Diagram 3, the site was devoid of trees and vegetation in 1943.

3.4 **Environmental Significance**: A Tree Preservation Order (TPO) applies to the whole of the Parramatta Local Government Area. This TPO applies to any tree or palm, whether indigenous, endemic, exotic or introduced species which has a height equal to or exceeding five (5) metres, not being a cycad palm or mangrove; any cycad or mangrove irrespective of dimensions, or any bushland.

3.5 **Ecological amenity:** The trees in the study area are less than seventy (70) years old and as such no hollow-bearing trees were recorded. The Park is well maintained and there were no fallen logs or timbers at ground level in the garden beds. Many of the trees are from the *Myrtaceae* family and as such have long stamens that attract many native bird species. The Fig trees (Trees 5-8, 10 and 121) in the park may support birds and potentially microchiropteran bats, however this fauna detail is outside the scope of this report.

3.6 Cumberland Plain Woodland would have covered this area prior to European colonisation. Cumberland Plain Woodland, a forest classification that once covered most of western Sydney (Benson & Howell, 1990). Cumberland Plain Woodland (CPW) is listed as an Endangered Ecological Community under the provisions of the Threatened Species Conservation Act 1995 (NSW). It should be noted that although some CPW species are present, the site has been highly disturbed and what trees are present are regrowth or have been planted in the last sixty (60) years. Diagram 2 shows the site in 1943 as being fully cleared.

3.7 **The Site Trees:** The site was inspected on 27th August 2021. Each tree has been given a unique number for this site and can be viewed on the Tree Protection Plan (Appendix 1). This plan is based on the plan provided by City of Parramatta Council.

3.8 Trees 1 to 15 are located on the southern side of the oval fronting the Great Western Highway. These trees consist of large mature Spotted gum *(Corymbia maculata)* and Hill's weeping fig *(Ficus microcarpa var. Hillii).* Most of these trees are in good health and condition. The Fig trees numbered as Trees 5 - 8 and 10 are large dominant specimens that provide a degree of visual amenity to the Great Western Highway frontage. Large woody surface roots were noted and some of these have suffered mechanical damage from lawn maintenance practices (Plate 2).

Plate 1: Image showing Trees 5-10 along the main road. P. Vezgoff.

Plate 2: Image showing woody surface tree roots from Trees 5 - 10. P. Vezgoff.

3.9 Trees 13 - 21 are growing as street trees along Alfred Street. These trees are all Brushbox *(Lophostemon confertus)* with some being mature specimens (Plate 3). Trees 15, 17, 20 and 21 are newer sapling plantings that have also been planted along this area and appear to have been replacement plantings from previous removals.

Plate 3: Brushbox along Alfred Street. P. Vezgoff.

3.10 Trees 22 - 32 are located in the north-eastern corner of the side that is a playground. The species in this area are a mixture of Brushbox *(Lophostemon confertus)*, Grey box *(Eucalyptus moluccana)*, Tallowwood *(Eucalyptus microcorys)*. Trees 24 and 25 are the largest trees in this area. These two (2) trees, that have been heavily pruned for power line clearance purposes, are generally in good health and condition with the exception of the lopsided canopies. Trees 22, 23, 26 through to 30, are smaller semi mature *Eucalyptus* specimens around the playground area.

Plate 4: Image showing some of the playground trees. P. Vezgoff.

3.11 Trees 33 to 54 are growing along the Onslow Street road verge. These tree and shrub specimens are mixed exotic and native species that appear to have possibly been planted by locals over time. None of these trees would be considered particularly significant (Plate 5).

Plate 5: Onslow Street vegetation east of the soccer field. P. Vezgoff.

3.12 Trees 54, 55, 56, 57 and 89 are mature Brush box specimens growing along the southern boundary of the soccer field (Plate 6). These trees are in good health and condition and growing on a raised portion of the site. Tree 58 is possibly a self seeded Spotted gum growing on the eastern edge of the soccer field. Trees 59 - 79 are scattered native specimens that vary in size and height they are mixed species consisting of Brush box and various *Eucalyptus* species (Plate 7). These trees are located at the northern end of the park, west of the playground.

Plate 6: Trees 54, 55, 56, 57 and 89. P. Vezgoff.

Plate 7: Trees 59 to79 located at the northern end of the park, west of the playground. P. Vezgoff

3.13 Trees 92 -120 are all located on the eastern side of Onslow Street (Plate 8). These trees are all large mature Spotted gums that have generally been planted at the same time possibly in order to beautify the car park area. These trees are quite large and potentially have been over planted in terms of their proximity to each other. Most of these trees are in good health and condition with some minor scattered deadwood.

Plate 8: Trees 92 to 120 are all located on the eastern side of Onslow Street. P. Vezgoff.

3.14 Tree 121 is a large mature Hill's weeping fig *(Ficus microcarpa var. Hillii)* growing on the edge of the canal. Trees 122 through to 155 are growing in a small reserve that consists of lawn area and scattered plantings (Plate 9). These specimens are mostly *Eucalyptus* species and consist of Grey gum *(Eucalyptus punctata)* and Grey Ironbark *(Eucalyptus paniculata).* Other native species noted were Rough bark apple *(Angophora floribunda),* Silky oak *(Grevillea robusta),* Spotted gum *(Corymbia maculata), Melaleuca styphelioides,* Brushbox *(Lophostemon confertus),* Forest Oak *(Allocasurina torulosa).* Along the the canal edge are several *Casuarina* and *Eucalyptus* that are struggling under the dense weed infestations along the creek.

Plate 9: Trees along the canal edge. P. Vezgoff.

3.15 F. S. Garside Park has no particular planting theme or plan, with most trees appear to have been planted in an ad hoc system. Many of the site trees will have grafted root zones which is good for stability issues should root loss be necessary. However, root loss due to designs should try to be avoided where possible should a tree be prioritised for retention.

3.16 With regards to the TPZ and SRZ distances calculated for the site trees, these will need to be taken into consideration with potential designs. The Australian Standard *Protection of trees on development sites,* (AS 4970) recommends no more than 10% encroachment unless the TPZ can be compensated elsewhere and contiguous with the TPZ. Breaches of the TPZ greater than 10% are considered a major encroachment. Root mapping (nondestructive exploration for roots) could also be undertaken in order to confirm, or not, the presence of roots in a particular location.

3.17 The trees were assessed as below for the Significance of a Tree, Assessment Rating System or STARS©. The STARS© Matrix can be seen in Appendix 3.

Significance Scale	**High (Priority for retention)**	**Medium (Consider for retention)**	**Low (Consider for removal)**
Tree No.	1-8, 10, 92-120	13-15, 17, 20, 21, 24, 25, 54-57, 59, 60, 62-69, 77-79, 89, 133, 134-143, 145-155	9, 11, 12, 16, 18, 19, 22, 23, 26-53, 58, 61, 70-76, 80-88, 121-132, 144

Table 1: Significance Scale of STARS©

These Retention Values have been applied to the colour coded plan in Appendix 1 (Tree Retention Plan, Plan 1).

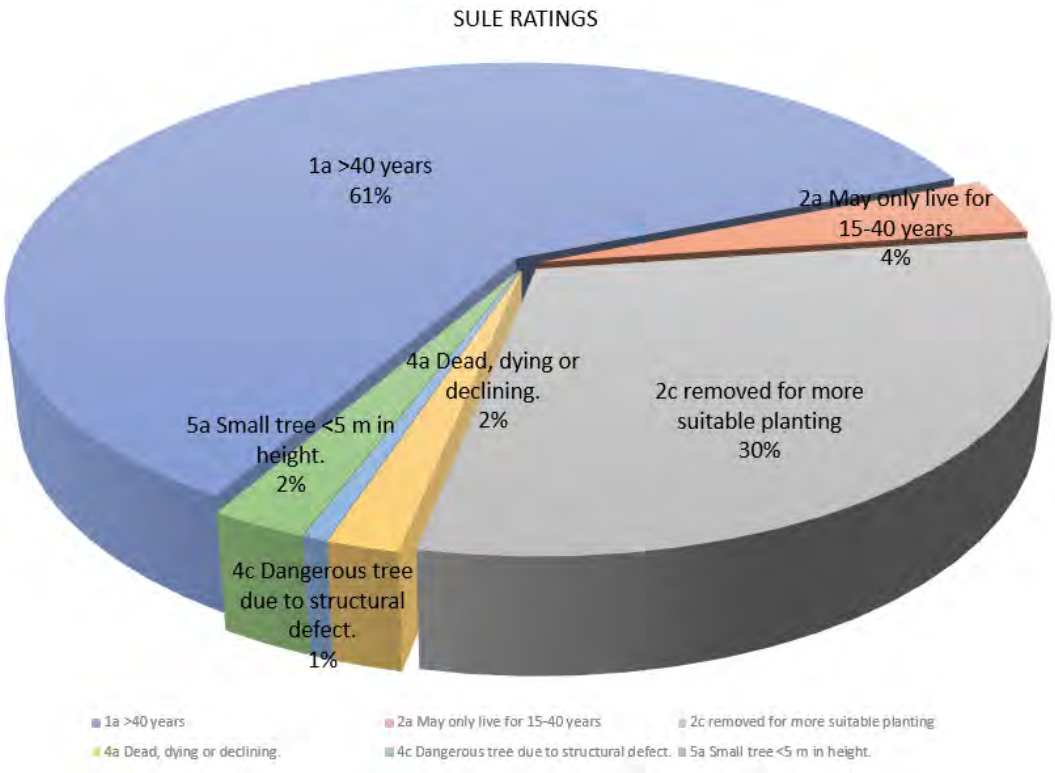
The site trees vary in terms of their retention values. The row of Fig Trees along the Great Western Highway would be considered as quite significant and should be possible to retain. These trees will have extensive woody roots and as such design levels will need to be carefully reviewed in order to minimise impacts to these trees.

The Spotted gums along Onslow Street are also of a high value however these trees may be more difficult to retain if new kerb, guttering and road works are to occur around these trees as large impacts to the roots (within the TPZ) will occur.

Trees within the northern section of the park are either quite young and could be readily replaced or have a history of over pruning due to be near power lines.

The trees within the small reserve adjacent to the canal have some good specimens that may be possible to retain however many trees in this area are either overplanted or have become suppressed by larger, more dominant specimens.

3.18 **Safe Useful Life Expectancy (SULE)** is a method of evaluating individual trees. The evaluation is a subjective assessment, not an absolute judgement, because the nature of trees and opinions on trees can vary greatly. SULE assessments are made only by those who are experienced and knowledgeable in tree management. SULE is generally accepted and used world-wide as a method of evaluating trees. Each category has a number of sub-categories. These sub-categories should always be recorded to help future users of the information appreciate the reason for each allocation decision. It is normal to have instances where trees will not fit neatly into a single SULE category. The assessment of the site trees can be seen in Graph 1. In general, the trees were mostly assessed as being in good health. SULE results show that 61% of the site's tree population has a life expectancy of greater than forty (40) years and 4% had a medium life expectancy. Trees that have a short life expectancy total 35%. It should be noted that a SULE rating assess the tree as it currently is, and not impacts due to the proposed works.



Graph 1: SULE ratings for the site.

3.19 **Impacts:** It is known that the site will contain asbestos and soil remediation will be required. Asbestos soil remediation often involves either capping of the contaminated soil or total soil removal. When trees are involved, this can often slow if not stop construction whilst remediation processes are undertaken. Remediation also involves altering the soil up to the base of the tree which in turn can affect the health and or structure of the tree.

3.20 Section 7 within the Greencap Remediation Action Plan (RAP) details the stripping of soil and the installation of a capping layer. These works will extend to a depth of 300mm and includes compacted clay based soils for the capping layer. Three options have been provided for the works around trees, those being;

Option 1: Certified mulch capping (100-300 mm),
Option 2: 50mm-200mm sandstone rip-rap capping mix (100-300 mm), or
Option 3: Porous pavement capping.
Or any relevant & practical combination of above.

The impacts of implementing these recommendations to manage the site contamination will be the driving factor in which trees will be retained and removed.

3.21 Root systems support trees, store energy reserves and absorb water. Tree root systems are made up of woody structural support roots that taper down to the finer feeder roots (Shigo, 2002), they are essential to the ongoing health and structural stability of a tree. Root growth is opportunistic; that is, roots proliferate in areas conducive to root growth. In fertile soils, in the absence of competition, individual roots may extend in more or less a symmetrical manner. Roots of most plants, including large trees, grow primarily in the top one (1) metre of soil (Diagram 4). For this reason, it will be the impacts to the fine surface feeder roots that will have the greatest impacts on the site trees. It should be noted that Diagram 2 shows a tree growing in ideal ground conditions, the roots from the site trees are most likely to be similar to the growth patterns shown in Diagram 4.

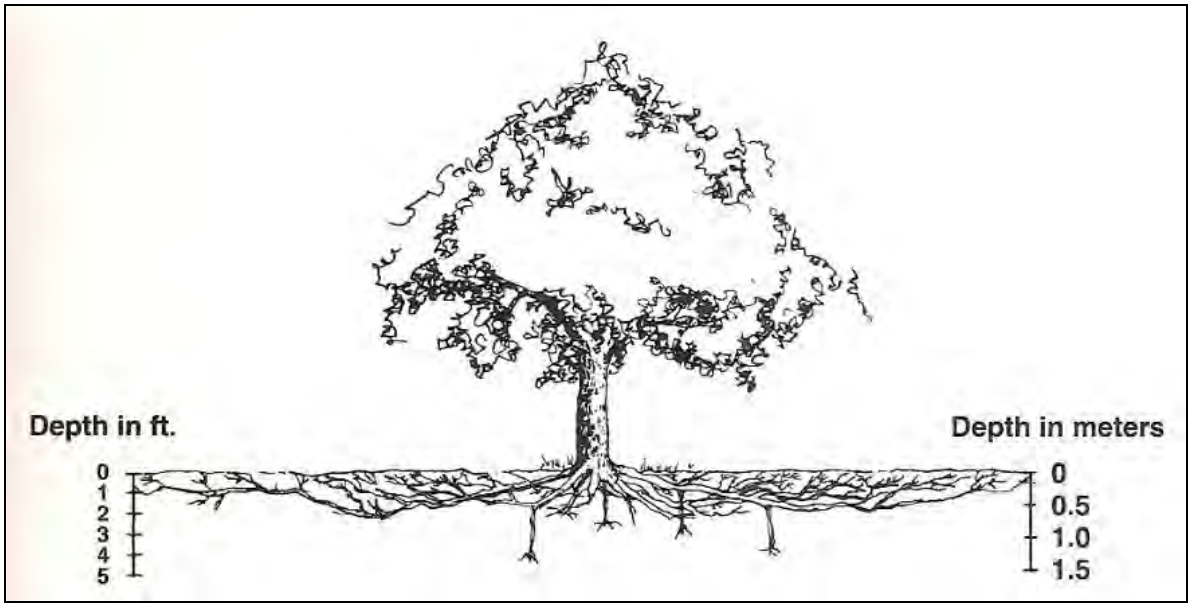


Diagram 4: In the mature tree the tap root is either lost or reduced in size. The vast majority of the root system is composed of horizontally oriented lateral roots (Harris, Clark, Matheny, 1999). It should be noted that this image is of a tree in an ideal situation not an urban environment.

3.22 A combination of factors will impact on the site trees and their ability to be retained. Along with the soil remediation are flooding issues and finished levels however it is the sites unfortunate history and the required soil remediation that has the greatest impact to the site trees. Diagram 5 shows a red portion indicating the 300mm capping layer that entails the removal of the trees non-woody fibrous roots along the surface which will have a sudden impact on the site trees overall long term health. The removal of these fine roots will not destabilise the trees but will cause the trees to begin a long slow decline from which they will not be able to recover.

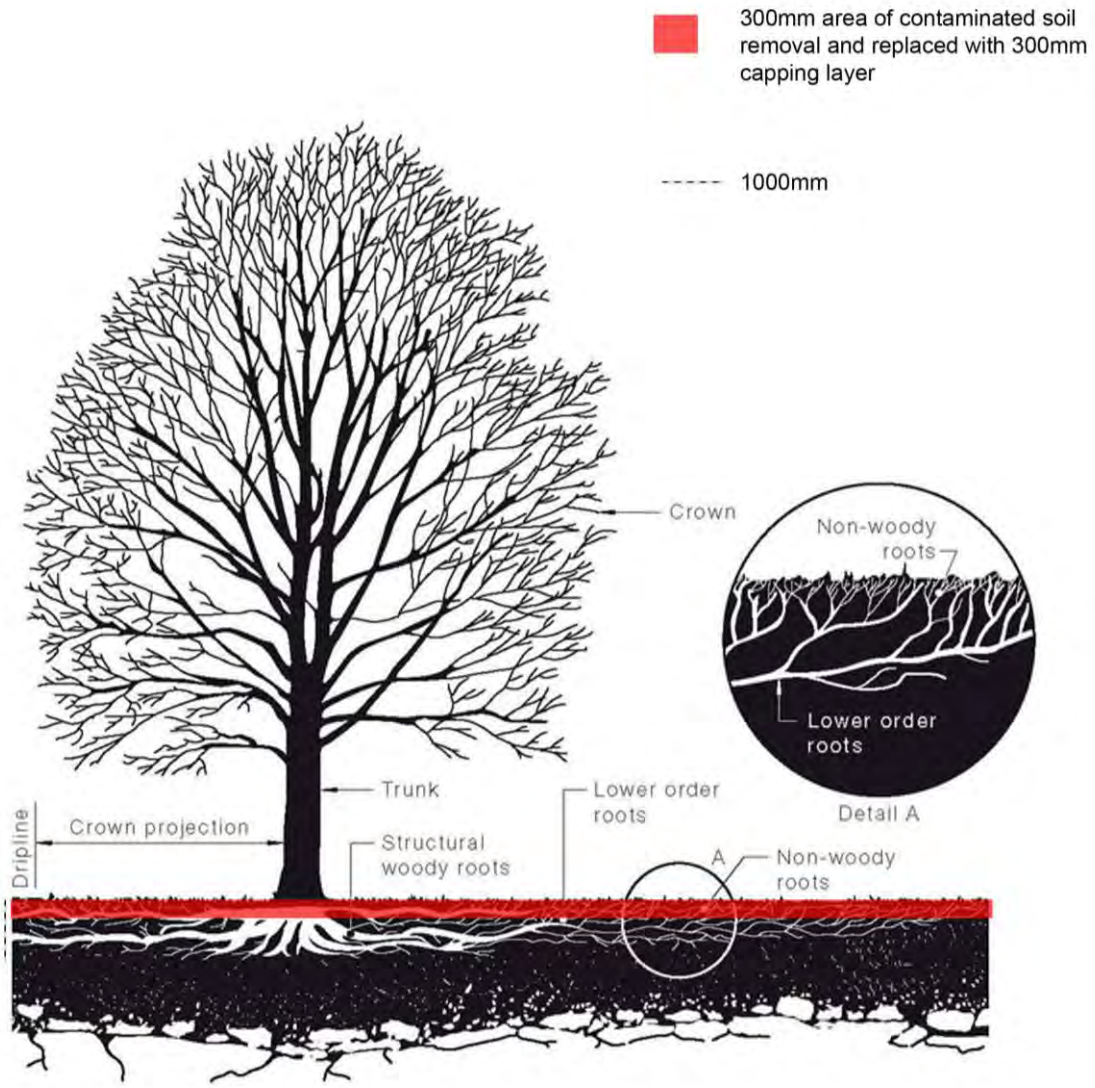


Diagram 5: This diagram from AS4970, 2009 has been adapted to include a scale bar and a red portion indicating the 300mm capping layer that entails the removal of the trees non-woody fibrous roots along the surface which will have a sudden impact on overall tree health.

3.23 Based on the assessment of the various reports provided, Trees numbered as 1-8 and Tree 10 appear possible to retain. All other trees will be removed and replacement trees will form part of the proposed landscape plans.

4 RECOMMENDATIONS

4.1 The removal of large mature tree trees within public open spaces is not taken lightly and every effort has been explored in order to limit tree loss in order to retain trees where their long term viability will not be impacted. Unfortunately, due to the site's history as a dumping ground for a highly dangerous redundant building material many of the site trees will require removal to allow the park to be made safe for future generations. For the purpose of this project however, with good design and long term planning the proposed new park will allow a new start for public urban trees that will ensure the next 50 years of canopy cover, visual and ecological amenity in this area is guaranteed.

4.2 Due to remediation and flooding design requirements and long term tree health and assessment of the *REVISION C Landscape Concept Plan* two hundred and forty nine (249) trees are to be removed along with the creek weed infested vegetation. Nine (9) trees are to be retained (Trees 1-8 and Tree 10) and approximately one hundred and twenty eight (128) new trees are to be planted depending on further detailed design and tree availability. Tree removal and retention numbers can be seen in Plan 2 (Appendix 1).

4.3 The site survey does not show tree canopies to scale and as such would not be considered accurate in terms of what is actually on site. The tree canopies spreads in this report could be used to update the survey. It should be remembered that the distances in Appendix 1 are radial distances.

4.4 **Root mapping:** In routine works within a TPZ area, where roots are required to be located, normally two methods of root mapping can be undertaken those being;

(a) Mechanised excavation: A flat bucket attachment on the excavator can be used within the TPZ areas near the site trees, provided levels are reduced by small increments so as not to damage any roots found. Should any roots >40mm be

located hand excavation will follow. This is to ensure that no roots within the TPZ are to be cut or damaged that are >40mm in diameter.

(b) Hydrovac: When undertaking hydro-vacuum excavation the water pressure shall be calibrated so as to not damage, remove bark, or sever roots over 40mm in diameter. Canopy clearance will require assessment based on the size of the truck that will be supplied. This method is normally an excellent way to expose roots without damaging them (Plate 10).

It should be noted that based on the history of the site and the presence of asbestos these methods are not recommended to be used and the assessment of the projected damage to the site tree root zones will have to be based on theoretical TPZ and SRZ calculations.

Plate 10: Example of Hydro excavation and the extent of roots that can sometimes be encountered. P. Vezgoff.

4.5 **Building material storage:** Areas on the site shall have to be set aside for the exclusive use of:

- Construction access points
- Position of site sheds and latrines and temporary services
- Storage of materials

These points are to be outside of any TPZ area of a tree to be retained. Any area set aside for the stockpiling of soil and waste shall have the appropriate erosion control measures around this area as specified by an engineer. These erosion control measures shall be monitored and maintained regularly throughout the construction period of the site. These measures are to restrict any waste material entering the TPZ areas of the trees to be retained.

4.6 Once designs have been finalised a site specific Tree Protection Plan and Tree Protection specification will be required for this site. This report will be used as a reference.

If you have any questions in relation to this report please contact me.

Paul Vezgoff
Consulting Arborist
Dip Arb (Dist), Arb III, Hort cert, AA, ISA

29th October 2021

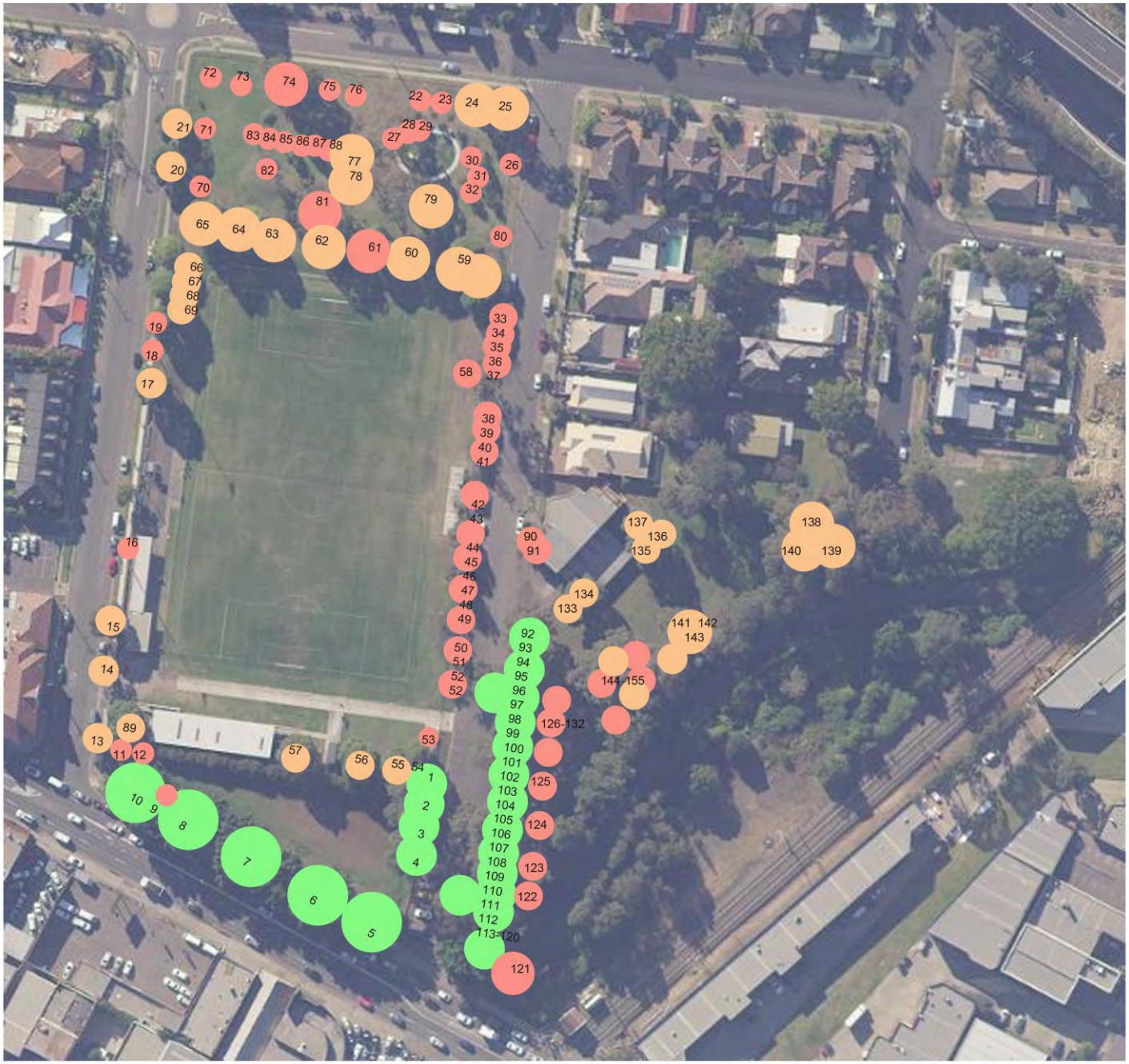
Appendix 1

Plan 1

Tree Retention Values

Plan 2

Tree Removal & Retention



Tree Retention Values

MOORE TREES

Moore Trees

Plan 1

High

Medium

Low

Note: The tree condition plan is seperate to the SULE categories that have been allocated to the site trees.

The Tree Significance & Retention Value used in this report is known as the Significance of a Tree, Assessment Rating System or STARS© system created by the Australian Institute of Consulting Arboriculturists (IACA). See Appendix 3 within the report for the full assessment specification.

Date:	10.09.2021
Drawn:	P.Vezgoff
Site Address:	Garside Park Grandville NSW

Moore Trees

Tree Retention and Removal

Plan 2

Tree to be retained

Tree to be removed

Date:	29.10.2021
Drawn:	P.Vezgoff
Site Address:	Garside Park Grandville NSW

Appendix 2

Tree health & condition assessment schedule

TREE HEALTH AND CONDITION ASSESSMENT SCHEDULE – ***F.S. Garside Park, Granville***

Tree	Species	Height (m)	Spread (m)	DBH (m)	SRZ basal	Live canopy %	Defects	SULE	Condition	Age	Comments	TPZ (m)	SRZ (m)
1	Spotted gum (Corymbia maculata)	20	8	0.59	0.69	95	No visual defects	1a >40 years	Good	Mature		7.1	2.7
2	Spotted gum (Corymbia maculata)	20	7	0.48	0.58	95	No visual defects	1a >40 years	Good	Mature		5.8	2.6
3	Spotted gum (Corymbia maculata)	20	7	0.48	0.58	95	No visual defects	1a >40 years	Good	Mature		5.8	2.6
4	Spotted gum (Corymbia maculata)	20	8	0.55	0.65	95	No visual defects	1a >40 years	Good	Mature		6.6	2.7
5	Hill's weeping fig (Ficus microcarpa var. Hillii)	15	9	0.95	1.2	100	No visual defects	1a >40 years	Good	Mature	Exposed surface roots	11.4	3.5
6	Hill's weeping fig (Ficus microcarpa var. Hillii)	15	9	0.95	1.2	100	No visual defects	1a >40 years	Good	Mature	Exposed surface roots	11.4	3.5
7	Hill's weeping fig (Ficus microcarpa var. Hillii)	15	9	0.95	1.2	100	No visual defects	1a >40 years	Good	Mature	Exposed surface roots	11.4	3.5
8	Hill's weeping fig (Ficus microcarpa var. Hillii)	15	9	0.85	1.1	100	No visual defects	1a >40 years	Good	Mature	Exposed surface roots	10.2	3.3
9	Date palm (Phoenix canariensis)	15	4	0.9	0.9	95	No visual defects	2c removed for more suitable planting	Good	Mature		10.8	3.1
10	Hill's weeping fig (Ficus microcarpa var. Hillii)	15	9	0.91	1.1	100	No visual defects	1a >40 years	Good	Mature	Exposed surface roots	10.9	3.3
11	Weeping bottle brush (Callistemon viminalis)	4.2	2	0.1	0.12	950	No visual defects	5a Small tree <5 m in height.	Good	Mature	Multi stemmed specimen	1.2	1.3
12	Weeping bottle brush (Callistemon viminalis)	4.2	2	0.1	0.12	950	No visual defects	5a Small tree <5 m in height.	Good	Mature	Multi stemmed specimen	1.2	1.3
13	Brushbox (Lophostemon confertus)	7	3.5	0.38	0.48	90	No visual defects	1a >40 years	Good	Mature		4.6	2.4
14	Brushbox (Lophostemon confertus)	7	3.5	0.42	0.52	90	No visual defects	1a >40 years	Good	Mature		5	2.4
15	Brushbox (Lophostemon	8.5	4.2	0.52	0.62	90	No visual defects	1a >40 years	Good	Mature		6.2	2.6

Tree	Species	Height (m)	Spread (m)	DBH (m)	SRZ basal	Live canopy %	Defects	SULE	Condition	Age	Comments	TPZ (m)	SRZ (m)
	confertus)												
16	Brushbox (Lophostemon confertus)	3.2	0.5	0.1	0.15	100	No visual defects	1a >40 years	Good	Sapling		1.2	1.4
17	No Value	7	3.5	0.38	0.48	90	No visual defects	1a >40 years	Good	Mature		4.6	2.4
18	Brushbox (Lophostemon confertus)	3.2	0.5	0.1	0.15	100	No visual defects	1a >40 years	Good	Sapling		1.2	1.4
19	Brushbox (Lophostemon confertus)	3.2	0.5	0.1	0.15	100	No visual defects	1a >40 years	Good	Sapling		1.2	1.4
20	No Value	9	5	0.55	0.65	90	No visual defects	1a >40 years	Good	Mature		6.6	2.7
21	No Value	8	5	0.61	0.71	90	No visual defects	1a >40 years	Good	Mature		7.3	2.8
22	Brushbox (Lophostemon confertus)	2.3	0.5	0.05	0.15	100	No visual defects	1a >40 years	Good	Sapling		0.6	1.4
23	Brushbox (Lophostemon confertus)	2.3	0.5	0.05	0.15	100	No visual defects	1a >40 years	Good	Sapling		0.6	1.4
24	Tallowwood (Eucalyptus microcorys)	14	5	0.48	0.58	95	No visual defects	1a >40 years	Good	Mature		5.8	2.6
25	Tallowwood (Eucalyptus microcorys)	17	6	0.52	0.58	95	No visual defects	1a >40 years	Good	Mature		6.2	2.6
26	Brushbox (Lophostemon confertus)	2.3	0.5	0.05	0.15	100	No visual defects	1a >40 years	Good	Sapling		0.6	1.4
27	Grey box (Eucalyptus moluccana)	7	2.5	0.12	0.15	100	No visual defects	1a >40 years	Good	Sapling		1.4	1.4
28	Grey box (Eucalyptus moluccana)	7	2.5	0.12	0.15	100	No visual defects	1a >40 years	Good	Sapling		1.4	1.4
29	Grey box (Eucalyptus moluccana)	7	2.5	0.12	0.15	100	No visual defects	1a >40 years	Good	Sapling		1.4	1.4
30	Grey box (Eucalyptus moluccana)	7.5	2.5	0.18	0.28	100	No visual defects	1a >40 years	Good	Sapling		2.2	1.9
31	Grey box (Eucalyptus moluccana)	7.5	2.5	0.18	0.28	100	Included codom stems	2c removed for more suitable planting	Poor	Sapling	Mechanical damage to lower stem	2.2	1.9

Tree	Species	Height (m)	Spread (m)	DBH (m)	SRZ basal	Live canopy %	Defects	SULE	Condition	Age	Comments	TPZ (m)	SRZ (m)
32	Grey box (Eucalyptus moluccana)	7.5	2.5	0.15	0.28	100	Stem wounds	1a >40 years	Good	Sapling	Mechanical damage to lower stem	1.8	1.9
33	Melaleuca styphelioides	6	3	0.2	0.3	95	No visual defects	2c removed for more suitable planting	Fair	Mature	Multi stemmed specimen	2.4	1.9
34	Melaleuca decora	6	3	0.2	0.3	95	No visual defects	2c removed for more suitable planting	Fair	Mature		2.4	1.9
35	Swamp mahogany (Eucalyptus robusta)	6	2	0.13	0.14	50	Stem wounds	2c removed for more suitable planting	Poor	Mature	Lopped	1.6	1.4
36	Melaleuca decora	5	2.5	0.2	0.3	95	No visual defects	2c removed for more suitable planting	Fair	Mature	Multi stemmed specimen	2.4	1.9
37	Melaleuca decora	3	2.5	0.2	0.3	95	No visual defects	2c removed for more suitable planting	Fair	Mature	Multi stemmed specimen	2.4	1.9
38	English oak (Quercus robur)	6	3.8	0.28	0.38	90	No visual defects	2c removed for more suitable planting	Fair	Mature	Under power lines	3.4	2.1
39	Washingtonia robusta	9	0.8	0.46	0.56	100	No visual defects	2c removed for more suitable planting	Good	Mature		5.5	2.5
40	Brushbox (Lophostemon confertus)	5	3	0.18	0.25	95	No visual defects	2c removed for more suitable planting	Good	Mature	Lopped. Under power lines	2.2	1.8
41	Willow Bottle brush (Callistemon salignus)	5	3	0.08	1.1	95	No visual defects	2c removed for more suitable planting	Good	Mature	Lopped. Under power lines	1	3.3
42	Magenta lilly pilly (Syzigium paniculatum)	5	3	0.08	1.1	95	No visual defects	2c removed for more suitable planting	Good	Mature	Lopped. Under power lines	1	3.3
43	Silky oak (Grevillea robusta)	7	3	0.26	0.36	95	No visual defects	2c removed for more suitable planting	Poor	Mature	Lopped. Under power lines	3.1	2.1
44	Native daphne (Pittosporum undulatum)	5	3	0.12	0.18	95	No visual defects	2c removed for more suitable planting	Good	Mature	Lopped. Under power lines	1.4	1.6
45	Weeping bottle brush (Callistemon viminalis)	4.3	2	0.15	0.25	95	No visual defects	2c removed for more suitable planting	Fair	Mature		1.8	1.8
46	Weeping bottle brush (Callistemon viminalis)	4.3	2	0.15	0.25	95	No visual defects	2c removed for more suitable planting	Fair	Mature		1.8	1.8
47	Broad leaved paperbark (Melaleuca quinquenervia)	9	4	0.7	0.8	95	No visual defects	2c removed for more suitable planting	Fair	Mature	Lopped for wires	8.4	2.9

Tree	Species	Height (m)	Spread (m)	DBH (m)	SRZ basal	Live canopy %	Defects	SULE	Condition	Age	Comments	TPZ (m)	SRZ (m)
48	Weeping bottle brush (Callistemon viminalis)	4.3	2	0.15	0.25	95	No visual defects	2c removed for more suitable planting	Fair	Mature		1.8	1.8
49	Broad leaved paperbark (Melaleuca quinquenervia)	9	4	0.7	0.8	95	No visual defects	2c removed for more suitable planting	Fair	Mature	Lopped for wires	8.4	2.9
50	Bahinia sp	5	3	0.15	0.28	95	No visual defects	2c removed for more suitable planting	Fair	Mature		1.8	1.9
51	Weeping bottle brush (Callistemon viminalis)	4.3	2	0.15	0.25	95	No visual defects	2c removed for more suitable planting	Fair	Mature		1.8	1.8
52	Silky oak (Grevillea robusta)	16	6	0.86	1.1	95	No visual defects	2c removed for more suitable planting	Fair	Mature		10.3	3.3
53	Weeping bottle brush (Callistemon viminalis)	3	2	0.15	0.25	95	No visual defects	2c removed for more suitable planting	Fair	Mature	Multi stemmed specimen	1.8	1.8
54	Brushbox (Lophostemon confertus)	8	3.8	0.26	0.36	95	No visual defects	2c removed for more suitable planting	Good	Mature		3.1	2.1
55	Brushbox (Lophostemon confertus)	13	5	0.45	0.55	95	No visual defects	2c removed for more suitable planting	Good	Mature		5.4	2.5
56	Brushbox (Lophostemon confertus)	13	5	0.45	0.55	95	No visual defects	2c removed for more suitable planting	Good	Mature		5.4	2.5
57	Brushbox (Lophostemon confertus)	12	5	0.38	0.48	95	No visual defects	2c removed for more suitable planting	Good	Mature		4.6	2.4
58	Lemon-scented gum tree (Corymbia citriodora)	19	8	0.43	0.53	100	No visual defects	2c removed for more suitable planting	Good	Mature		5.2	2.5
59	Brushbox (Lophostemon confertus)	10	4.5	0.35	0.45	95	No visual defects	1a >40 years	Good	Mature		4.2	2.3
60	Brushbox (Lophostemon confertus)	11	5	0.55	0.65	95	No visual defects	1a >40 years	Good	Mature		6.6	2.7
61	Brushbox (Lophostemon confertus)	10	4.5	0.35	0.45	30	No visual defects	4a Dead, dying or declining.	Poor	Mature		4.2	2.3
62	Brushbox (Lophostemon confertus)	9	4.5	0.35	0.45	95	No visual defects	1a >40 years	Good	Mature		4.2	2.3
63	Brushbox (Lophostemon confertus)	9	4.5	0.35	0.45	95	No visual defects	1a >40 years	Good	Mature		4.2	2.3

Tree	Species	Height (m)	Spread (m)	DBH (m)	SRZ basal	Live canopy %	Defects	SULE	Condition	Age	Comments	TPZ (m)	SRZ (m)
64	Brushbox (Lophostemon confertus)	11	5	0.55	0.65	95	No visual defects	1a >40 years	Good	Mature		6.6	2.7
65	Brushbox (Lophostemon confertus)	11	5	0.55	0.65	95	No visual defects	1a >40 years	Good	Mature		6.6	2.7
66	Brushbox (Lophostemon confertus)	9	4.5	0.42	0.52	95	No visual defects	1a >40 years	Good	Mature		5	2.4
67	Brushbox (Lophostemon confertus)	12	4.5	0.48	0.58	95	No visual defects	1a >40 years	Good	Mature		5.8	2.6
68	Brushbox (Lophostemon confertus)	9	4.5	0.32	0.42	95	No visual defects	1a >40 years	Good	Mature		3.8	2.2
69	Brushbox (Lophostemon confertus)	9	4.5	0.32	0.42	95	No visual defects	1a >40 years	Good	Mature		3.8	2.2
70	Brushbox (Lophostemon confertus)	4.5	1	0.12	0.15	100	No visual defects	2c removed for more suitable planting	Good	Sapling		1.4	1.4
71	Brushbox (Lophostemon confertus)	4.5	1	0.12	0.15	100	No visual defects	2c removed for more suitable planting	Good	Sapling		1.4	1.4
72	Brushbox (Lophostemon confertus)	4.5	1	0.12	0.15	100	No visual defects	2c removed for more suitable planting	Good	Sapling		1.4	1.4
73	Brushbox (Lophostemon confertus)	4.5	1	0.12	0.15	100	No visual defects	2c removed for more suitable planting	Good	Sapling		1.4	1.4
74	Tallowwood (Eucalyptus microcorys)	20	13	0.95	1.2	95	No visual defects	4c Dangerous tree due to structural defect.	Poor	Mature	Poor branching habit. Not long term viable	11.4	3.5
75	Brushbox (Lophostemon confertus)	1.8	0.5	0.05	0.15	100	No visual defects	2c removed for more suitable planting	Poor	Sapling		0.6	1.4
76	Brushbox (Lophostemon confertus)	4.5	1	0.12	0.15	100	No visual defects	2c removed for more suitable planting	Good	Sapling		1.4	1.4
77	Lemon-scented gum tree (Corymbia citriodora)	21	11	0.63	0.73	100	No visual defects	1a >40 years	Good	Mature		7.6	2.8
78	Lemon-scented gum tree (Corymbia citriodora)	19	9	0.48	0.58	100	No visual defects	1a >40 years	Good	Mature	Minor storm damage	5.8	2.6
79	Spotted gum (Corymbia maculata)	19	11	0.51	0.61	100	No visual defects	1a >40 years	Good	Mature		6.1	2.6

Tree	Species	Height (m)	Spread (m)	DBH (m)	SRZ basal	Live canopy %	Defects	SULE	Condition	Age	Comments	TPZ (m)	SRZ (m)
80	Brushbox (Lophostemon confertus)	4.5	1	0.12	0.15	100	No visual defects	2c removed for more suitable planting	Good	Sapling		1.4	1.4
81	Sydney blue gum (Eucalyptus saligna)	18	9	0.6	0.7	100	Stem wounds	2a May only live for 15-40 years	Poor	Mature	Lower stem wound within main union	7.2	2.8
82	Spotted gum (Corymbia maculata)	17	4.5	0.32	0.42	100	No visual defects	1a >40 years	Good	Mature		3.8	2.2
83	Spotted gum (Corymbia maculata)	17	4.5	0.25	0.35	100	No visual defects	1a >40 years	Good	Mature		3	2.1
84	Spotted gum (Corymbia maculata)	17	4.5	0.2	0.3	100	No visual defects	1a >40 years	Good	Mature		2.4	1.9
85	Spotted gum (Corymbia maculata)	8	2	0.12	0.15	100	No visual defects	1a >40 years	Good	Mature		1.4	1.4
86	Spotted gum (Corymbia maculata)	17	4.5	0.25	0.35	100	No visual defects	1a >40 years	Good	Mature		3	2.1
87	Grey box (Eucalyptus moluccana)	7	2.5	0.12	0.15	100	No visual defects	1a >40 years	Good	Sapling		1.4	1.4
88	Grey box (Eucalyptus moluccana)	9	2.5	0.16	0.17	100	No visual defects	1a >40 years	Good	Sapling		1.9	1.5
89	Brushbox (Lophostemon confertus)	12	5	0.38	0.48	95	No visual defects	2c removed for more suitable planting	Good	Mature		4.6	2.4
90	Weeping bottle brush (Callistemon viminalis)	3	2	0.12	0.15	95	No visual defects	5a Small tree <5 m in height.	Poor	Mature		1.4	1.4
91	Viburnum robusta	3	2	0.12	0.15	95	No visual defects	5a Small tree <5 m in height.	Poor	Mature		1.4	1.4
92	Spotted gum (Corymbia maculata)	18	7.5	0.58	0.68	100	No visual defects	1a >40 years	Good	Mature		7	2.7
93	Spotted gum (Corymbia maculata)	18	7.5	0.58	0.68	100	No visual defects	1a >40 years	Good	Mature		7	2.7
94	Spotted gum (Corymbia maculata)	18	7.5	0.35	0.45	100	No visual defects	1a >40 years	Good	Mature		4.2	2.3
95	Spotted gum (Corymbia maculata)	18	7.5	0.58	0.68	100	No visual defects	1a >40 years	Good	Mature		7	2.7

Tree	Species	Height (m)	Spread (m)	DBH (m)	SRZ basal	Live canopy %	Defects	SULE	Condition	Age	Comments	TPZ (m)	SRZ (m)
96	Spotted gum (Corymbia maculata)	18	7.5	0.55	0.65	100	No visual defects	1a >40 years	Good	Mature	Western bias	6.6	2.7
97	Melaleuca styphelioides	6	1.5	0.12	0.18	95	No visual defects	2c removed for more suitable planting	Good	Mature		1.4	1.6
98	Spotted gum (Corymbia maculata)	18	7.5	0.35	0.45	100	No visual defects	1a >40 years	Good	Mature		4.2	2.3
99	Spotted gum (Corymbia maculata)	18	7.5	0.42	0.52	100	No visual defects	1a >40 years	Good	Mature		5	2.4
100	Spotted gum (Corymbia maculata)	18	7.5	0.42	0.52	100	No visual defects	1a >40 years	Good	Mature		5	2.4
101	Spotted gum (Corymbia maculata)	18	7.5	0.6	0.7	100	No visual defects	1a >40 years	Good	Mature		7.2	2.8
101	Spotted gum (Corymbia maculata)	18	7.5	0.6	0.7	100	No visual defects	1a >40 years	Good	Mature		7.2	2.8
102	Spotted gum (Corymbia maculata)	18	7	0.34	0.44	100	No visual defects	1a >40 years	Good	Mature		4.1	2.3
103	Spotted gum (Corymbia maculata)	18	7	0.3	0.4	100	No visual defects	1a >40 years	Good	Mature		3.6	2.2
104	Spotted gum (Corymbia maculata)	18	7	0.39	0.49	100	No visual defects	1a >40 years	Good	Mature		4.7	2.4
105	Spotted gum (Corymbia maculata)	18	7	0.39	0.49	100	No visual defects	1a >40 years	Good	Mature		4.7	2.4
106	Swamp she oak (Casuarina glauca)	8	3.5	0.18	0.25	100	No visual defects	2c removed for more suitable planting	Good	Mature		2.2	1.8
107	Spotted gum (Corymbia maculata)	18	7	0.48	0.58	100	No visual defects	1a >40 years	Good	Mature		5.8	2.6
108	Spotted gum (Corymbia maculata)	18	7	0.48	0.58	100	No visual defects	1a >40 years	Good	Mature		5.8	2.6
109	Silky oak (Grevillea robusta)	10	4	0.28	0.38	95	No visual defects	2c removed for more suitable planting	Good	Mature		3.4	2.1
110	Spotted gum (Corymbia maculata)	18	7	0.3	0.4	100	No visual defects	2a May only live for 15-40 years	Poor	Mature	Large wound	3.6	2.2

Tree	Species	Height (m)	Spread (m)	DBH (m)	SRZ basal	Live canopy %	Defects	SULE	Condition	Age	Comments	TPZ (m)	SRZ (m)
111	Spotted gum (Corymbia maculata)	18	7	0.42	0.52	100	No visual defects	1a >40 years	Good	Mature		5	2.4
112	Spotted gum (Corymbia maculata)	18	7	0.35	0.45	100	No visual defects	1a >40 years	Good	Mature		4.2	2.3
113	Spotted gum (Corymbia maculata)	18	7	0.42	0.52	100	No visual defects	1a >40 years	Good	Mature		5	2.4
113	Spotted gum (Corymbia maculata)	18	7	0.42	0.52	100	No visual defects	1a >40 years	Good	Mature		5	2.4
114	Spotted gum (Corymbia maculata)	18	7	0.3	0.4	100	No visual defects	1a >40 years	Good	Mature		3.6	2.2
115	Spotted gum (Corymbia maculata)	18	7	0.3	0.4	100	No visual defects	1a >40 years	Good	Mature		3.6	2.2
116	Spotted gum (Corymbia maculata)	18	7	0.3	0.4	100	No visual defects	1a >40 years	Good	Mature		3.6	2.2
117	Spotted gum (Corymbia maculata)	11	5	0.18	0.25	100	No visual defects	1a >40 years	Good	Mature		2.2	1.8
118	Spotted gum (Corymbia maculata)	18	7	0.53	0.54	100	No visual defects	2a May only live for 15-40 years	Good	Mature	Poor stem development	6.4	2.5
119	Spotted gum (Corymbia maculata)	18	7	0.39	0.49	60	No visual defects	4a Dead, dying or declining.	Poor	Mature		4.7	2.4
120	Spotted gum (Corymbia maculata)	18	7	0.39	0.49	100	No visual defects	1a >40 years	Good	Mature		4.7	2.4
121	Hill's weeping fig (Ficus microcarpa var. Hillii)	13	13	0.85	0.95	100	No visual defects	1a >40 years	Good	Mature		10.2	3.1
122	Grey gum (Eucalyptus punctata)	11	5	0.24	0.34	90	No visual defects	2c removed for more suitable planting	Fair	Mature	Suppressed	2.9	2
123	Grey gum (Eucalyptus punctata)	11	5	0.24	0.34	90	No visual defects	2c removed for more suitable planting	Fair	Mature	Suppressed	2.9	2
124	Spotted gum (Corymbia maculata)	17	5	0.34	0.44	100	Fruiting body (Small)	3a May only live for 5-15 years.	Poor	Mature		4.1	2.3

Tree	Species	Height (m)	Spread (m)	DBH (m)	SRZ basal	Live canopy %	Defects	SULE	Condition	Age	Comments	TPZ (m)	SRZ (m)
125	Grey Ironbark (Eucalyptus paniculata)	11	3	0.18	0.28	0	Dead wood >50mm	2c removed for more suitable planting	Dead	Dead	Suppressed	2.2	1.9
126	Grey Ironbark (Eucalyptus paniculata)	11	3	0.18	0.28	90	No visual defects	2c removed for more suitable planting	Fair	Mature	Suppressed	2.2	1.9
127	Grey Ironbark (Eucalyptus paniculata)	11	3	0.18	0.28	90	No visual defects	2c removed for more suitable planting	Fair	Mature	Suppressed	2.2	1.9
128	Rough bark apple (Angophora floribunda)	18	8	0.44	0.45	90	No visual defects	1a >40 years	Fair	Mature	East lean	5.3	2.3
129	Rough bark apple (Angophora floribunda)	8	3.5	0.11	0.15	70	No visual defects	2c removed for more suitable planting	Fair	Mature	East lean	1.3	1.4
130	Silky oak (Grevillea robusta)	11	4	0.32	0.42	100	No visual defects	2c removed for more suitable planting	Good	Mature		3.8	2.2
131	Spotted gum (Corymbia maculata)	16	5	0.28	0.38	100	No Value	2a May only live for 15-40 years	Fair	Mature		3.4	2.1
132	Melaleuca styphelioides	5.5	1.5	0.12	0.15	95	No visual defects	2c removed for more suitable planting	Good	Mature		1.4	1.4
133	Brushbox (Lophostemon confertus)	11	4	0.37	0.47	95	No visual defects	1a >40 years	Good	Mature		4.4	2.3
134	Brushbox (Lophostemon confertus)	14	6	0.75	0.85	95	No visual defects	1a >40 years	Good	Mature		9	3
135	Brushbox (Lophostemon confertus)	14	6	0.75	0.85	95	No visual defects	1a >40 years	Good	Mature		9	3
136	Brushbox (Lophostemon confertus)	14	6	0.75	0.85	95	No visual defects	1a >40 years	Good	Mature		9	3
137	Brushbox (Lophostemon confertus)	14	6	0.75	0.85	95	No visual defects	1a >40 years	Good	Mature		9	3
138	Spotted gum (Corymbia maculata)	20	7	0.54	0.64	100	No visual defects	1a >40 years	Good	Mature	Part of a group of three	6.5	2.7
139	Spotted gum (Corymbia maculata)	20	7	0.49	0.59	100	No visual defects	1a >40 years	Good	Mature	Part of a group of three	5.9	2.6

Tree	Species	Height (m)	Spread (m)	DBH (m)	SRZ basal	Live canopy %	Defects	SULE	Condition	Age	Comments	TPZ (m)	SRZ (m)
140	Spotted gum (Corymbia maculata)	20	7	0.59	0.69	100	No visual defects	1a >40 years	Good	Mature	Part of a group of three	7.1	2.7
141	Grey Ironbark (Eucalyptus paniculata)	17	4.5	0.36	0.46	95	No visual defects	1a >40 years	Good	Mature		4.3	2.3
142	Grey Ironbark (Eucalyptus paniculata)	17	4.5	0.23	0.33	95	No visual defects	1a >40 years	Good	Mature		2.8	2
143	Grey Ironbark (Eucalyptus paniculata)	17	4.5	0.28	0.38	95	No visual defects	1a >40 years	Good	Mature		3.4	2.1
144	Spotted gum (Corymbia maculata)	8	2	0.15	0.25	50	Dead wood >50mm	4a Dead, dying or declining.	Poor	Mature		1.8	1.8
145	Spotted gum (Corymbia maculata)	14	4.5	0.32	0.42	100	No visual defects	1a >40 years	Good	Mature		3.8	2.2
146	Rough bark apple (Angophora floribunda)	15	4.5	0.42	0.52	100	No visual defects	1a >40 years	Good	Mature		5	2.4
147	Grey Ironbark (Eucalyptus paniculata)	15	4.5	0.54	0.64	100	No visual defects	1a >40 years	Good	Mature	West bias.	6.5	2.7
148	Grey Ironbark (Eucalyptus paniculata)	7	3.5	0.22	0.32	100	No visual defects	2a May only live for 15-40 years	Fair	Mature	Suppressed.	2.6	2
149	Grey Ironbark (Eucalyptus paniculata)	7	3.5	0.28	0.38	100	No visual defects	2a May only live for 15-40 years	Fair	Mature	Suppressed.	3.4	2.1
150	Spotted gum (Corymbia maculata)	17	4.5	0.46	0.56	100	No visual defects	1a >40 years	Good	Mature		5.5	2.5
151	Spotted gum (Corymbia maculata)	14	4.5	0.25	0.35	100	No visual defects	1a >40 years	Good	Mature		3	2.1
152	Forest Oak (Allocasurina torulosa)	5	2	0.11	0.15	100	No visual defects	2c removed for more suitable planting	Good	Sapling		1.3	1.4
153	Spotted gum (Corymbia maculata)	17	4.5	0.46	0.56	100	No visual defects	1a >40 years	Good	Mature		5.5	2.5
154	Spotted gum (Corymbia maculata)	17	4.5	0.46	0.56	100	No visual defects	1a >40 years	Good	Mature		5.5	2.5

Tree	Species	Height (m)	Spread (m)	DBH (m)	SRZ basal	Live canopy %	Defects	SULE	Condition	Age	Comments	TPZ (m)	SRZ (m)
155	Spotted gum (Corymbia maculata)	17	4.5	0.46	0.56	100	No visual defects	1a >40 years	Good	Mature		5.5	2.5

KEY

Tree No: Relates to the number allocated to each tree for the Tree Plan.

Height: Height of the tree to the nearest metre.

Spread: The average spread of the canopy measured from the trunk.

DBH: Diameter at breast height. An industry standard for measuring trees at 1.4 metres above ground level, this measurement is used to help calculate Tree Protection Zones.

Live Crown Ratio: Percentage of foliage cover for a particular species.

Age Class:	Young:	Recently planted tree	Semi-mature:< 20% of life expectancy
	Mature:	20-90% of life expectancy	Over-mature:>90% of life expectancy

SULE: See SULE methodology in the Appendix 3

Tree Protection Zone (TPZ): The minimum area set aside for the protection of the trees trunk, canopy and root system throughout the construction process. Breaches of the TPZ will be specified in the recommendations section of the report.

Structural Root Zone (SRZ): The SRZ is a specified distance measured from the trunk that is set aside for the protection of the trees roots both structural and fibrous.

Appendix 3

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

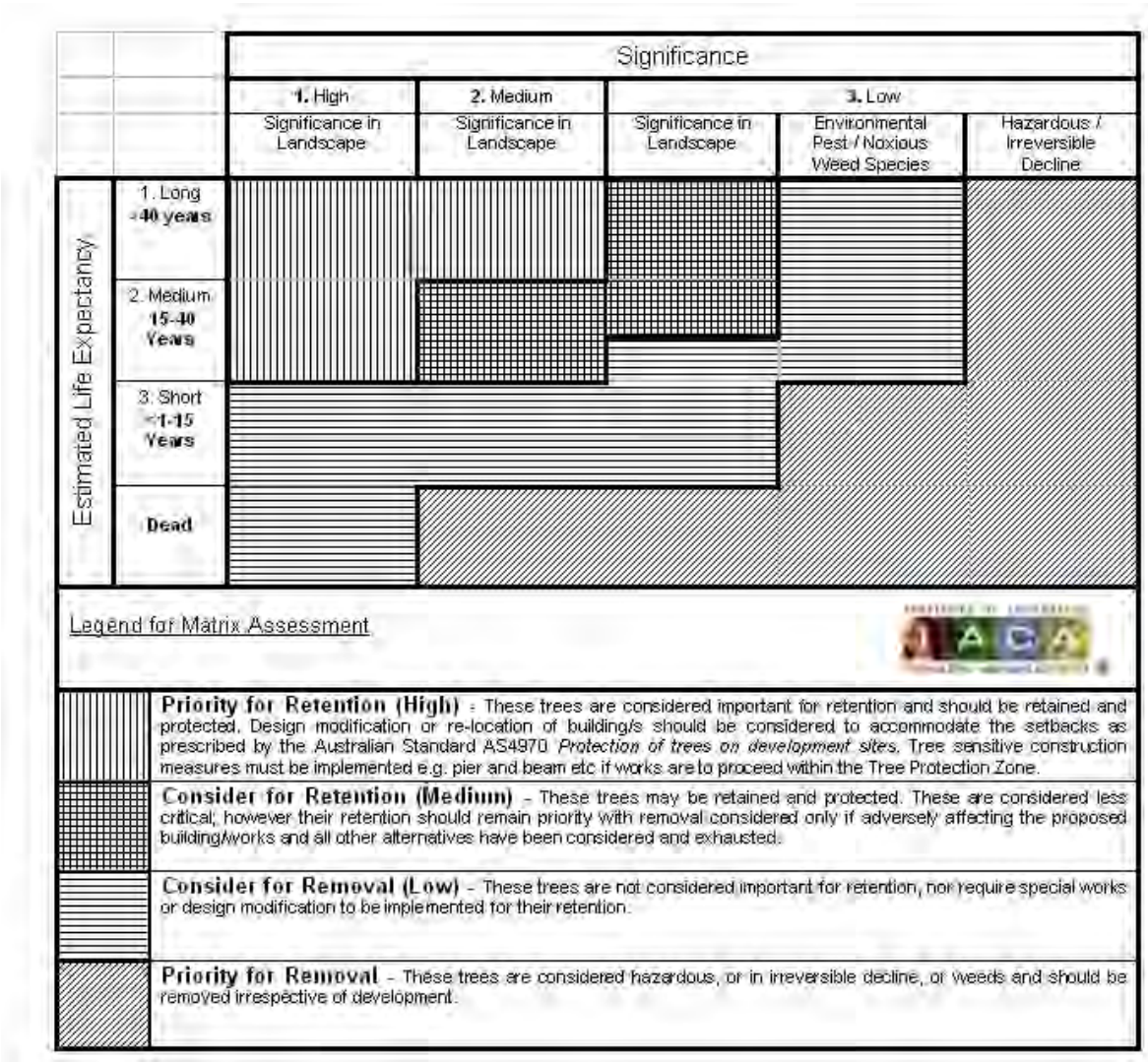
- The tree is an Environmental Pest Species due to its invasiveness or poisonous/ allergenic properties,
- The tree is a declared noxious weed by legislation.

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.



Legend for Matrix Assessment.

IACA, 2010, IACA Significance of a Tree, Assessment Rating System (STARS), Institute of Australian Consulting Arboriculturists, Australia, **www.iaca.org.au**

Appendix 4

SULE categories (after Barrell, 2001)[1]

SULE Category	Description
Long	*Trees that appeared to be retainable at the time of assessment for more than 40 years with an acceptable level of risk.*
1a	Structurally sound trees located in positions that can accommodate for future growth
1b	Trees that could be made suitable for retention in the long term by remedial tree care.
1c	Trees of special significance that would warrant extraordinary efforts to secure their long term retention.
Medium	*Trees that appeared to be retainable at the time of assessment for 15-40 years with an acceptable level of risk.*
2a	Trees that may only live for 15-40 years
2b	Trees that could live for more than 40 years but may be removed for safety or nuisance reasons
2c	Trees that could live for more than 40 years but may be removed to prevent interference with more suitable individuals or to provide for new planting.
2d	Trees that could be made suitable for retention in the medium term by remedial tree care.
Short	*Trees that appeared to be retainable at the time of assessment for 5-15 years with an acceptable level of risk.*
3a	Trees that may only live for another 5-15 years
3b	Trees that could live for more than 15 years but may be removed for safety or nuisance reasons.
3c	Trees that could live for more than 15 years but may be removed to prevent interference with more suitable individuals or to provide for a new planting.
3d	Trees that require substantial remedial tree care and are only suitable for retention in the short term.
Remove	*Trees that should be removed within the next five years.*
4a	Dead, dying, suppressed or declining trees because of disease or inhospitable conditions.
4b	Dangerous trees because of instability or loss of adjacent trees
4c	Dangerous trees because of structural defects including cavities, decay, included bark, wounds or poor form.
4d	Damaged trees that are clearly not safe to retain.
4e	Trees that could live for more than 5 years but may be removed to prevent interference with more suitable individuals or to provide for a new planting.
4f	Trees that are damaging or may cause damage to existing structures within 5 years.
4g	Trees that will become dangerous after removal of other trees for the reasons given in (a) to (f).
4h	Trees in categories (a) to (g) that have a high wildlife habitat value and, with appropriate treatment, could be retained subject to regular review.
Small	*Small or young trees that can be reliably moved or replaced.*
5a	Small trees less than 5m in height.
5b	Young trees less than 15 years old but over 5m in height.
5c	Formal hedges and trees intended for regular pruning to artificially control growth.

updated 01/04/01)

1 (Barrell, J. (2001) "SULE: Its use and status into the new millennium" in *Management of mature trees*, Proceedings of the 4th NAAA Tree Management Seminar, NAAA, Sydney.

Appendix 5

TPZ and SRZ methodology

Determining the Tree Protection Zone (TPZ)

The radium 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 metres above ground

Radius is measured from the centre of the stem at ground level.

A TPZ should not be less than 2 metres no greater than 15 metres (except where crown protection is required.). Some instances may require variations to the TPZ.

The TPZ of palms, other monocots, cycads and tree ferns should not be less than 1 metre outside the crown projection.

Determining the Structural Root Zone (SRZ)

The SRZ is the area required for tree stability. A larger area is required to maintain a viable tree.

The SRZ only needs to be calculated when major encroachment into a TPZ is proposed.

There are many factors that affect the size of the SRZ (e.g. tree height, crown area, soil type, soil moisture). The SRZ may also be influenced by natural or built structures, such as rocks and footings. An indicative SRZ radius can be determined from the trunk diameter measured immediately above the root buttress using the following formula or Figure 1. Root investigation may provide more information on the extent of these roots.

SRZ radius = $(D \times 50)^{0.42} \times 0.64$

Where

D = trunk diameter, in m, measured above the root buttress

NOTE: The SRZ for trees with trunk diameters less than 0.15m will be 1.5m (see Figure 1).

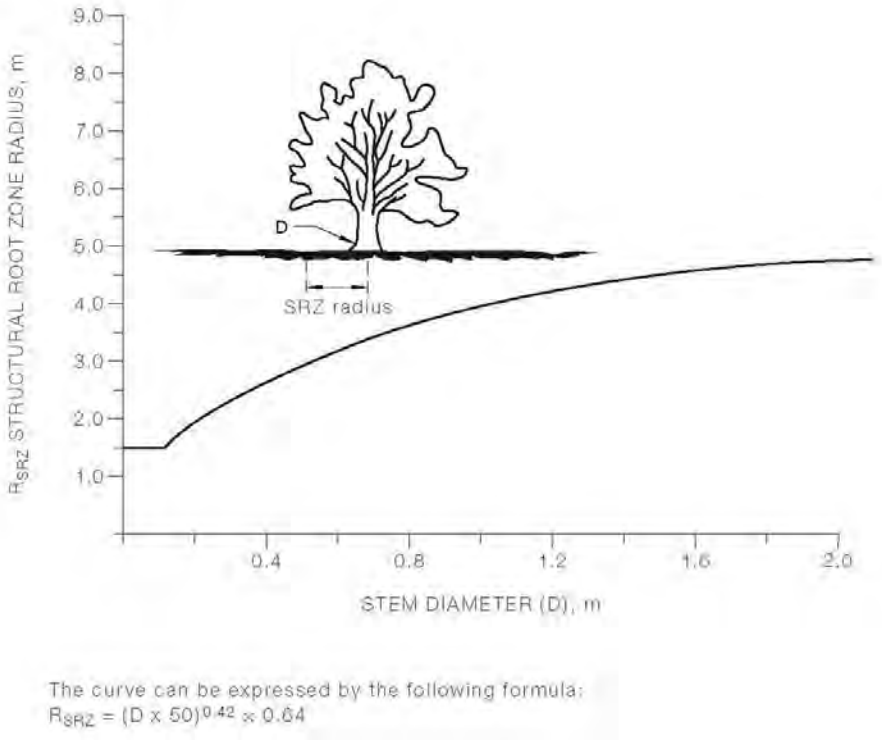


FIGURE 1 - STRUCTURAL ROOT ZONE

Notes:

1 R_{SRZ} is the structural root zone radius.
2 *D* is the stem diameter measured immediately above root buttress.
3 The SRZ for trees less than o.15 metres diameter is 1.5 metres.
4 The SRZ formula and graph do not apply to palms, other monocots, cycads and tree ferns.
5 This does not apply to trees with an asymmetrical root plate.

Appendix 6

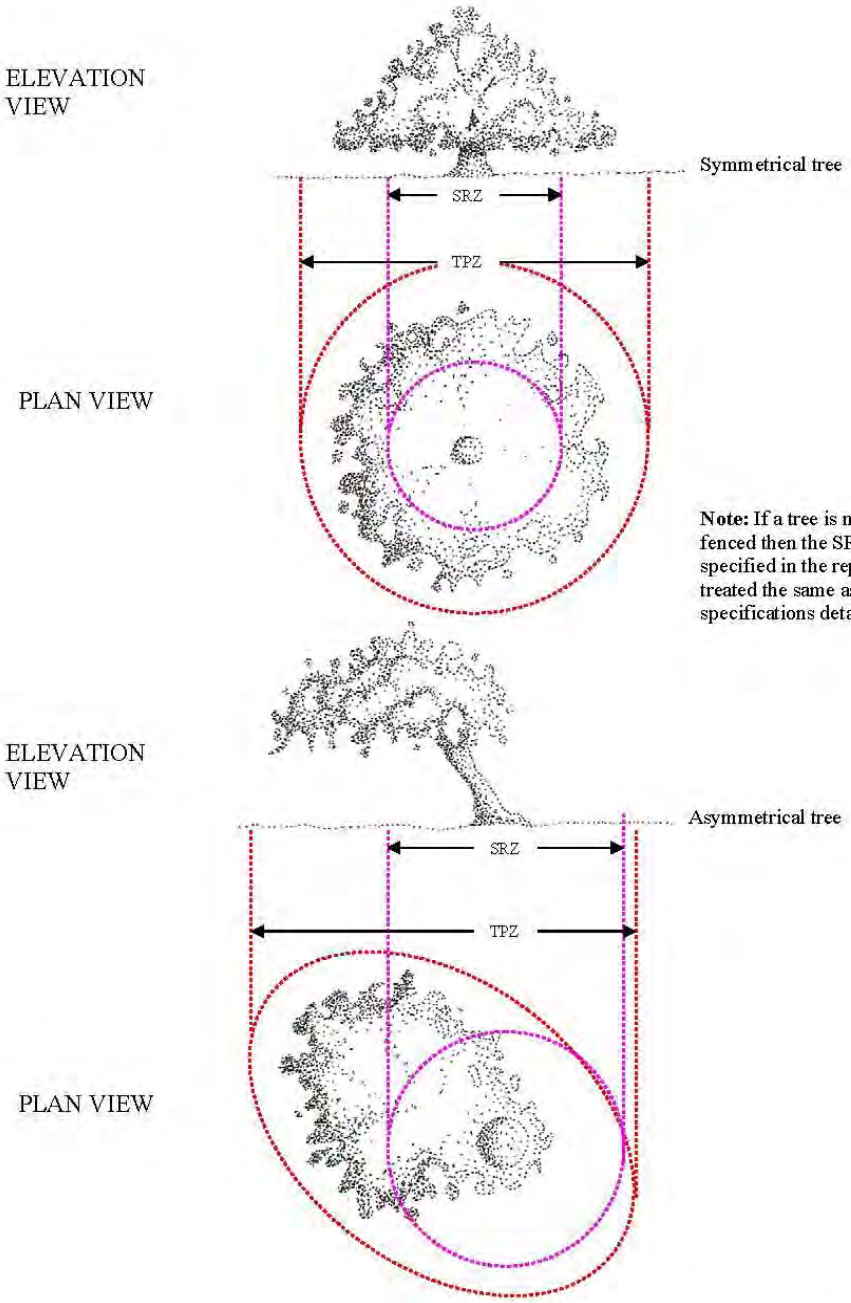


Figure 1: Indicative Tree Protection Zone (TPZ) and Root Protection Zone (SRZ)
Drawn: P. Vezgoff ©

Appendix 7

Tree structure information diagram

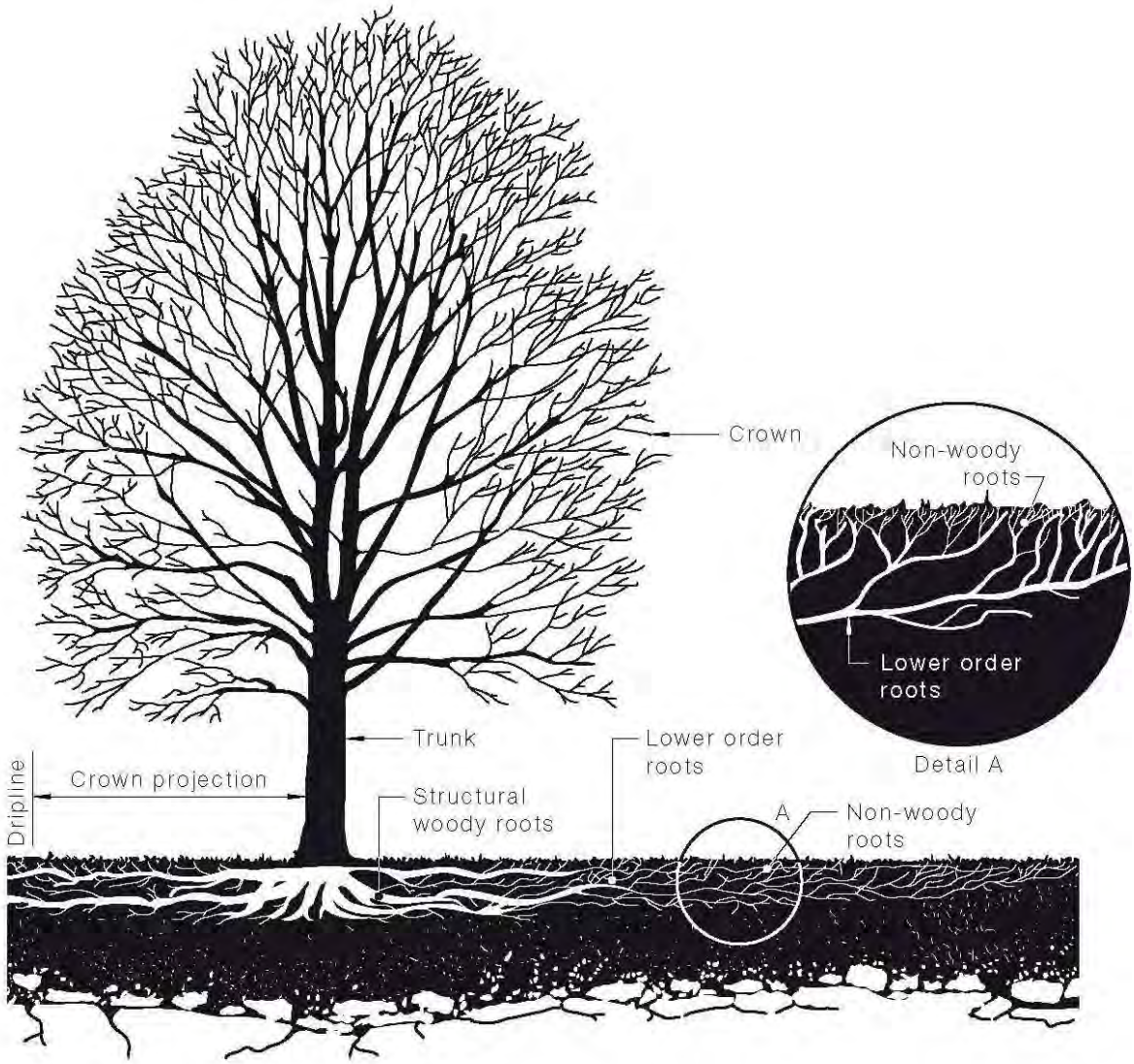


Figure 2: Structure of a tree in a normal growing environment (AS 4970, 2009.).

Appendix 8

Explanatory Notes

- **Mathematical abbreviations:** > = Greater than; < = Less than.

- **Measurements/estimates:** All dimensions are estimates unless otherwise indicated. Less reliable estimated dimensions are indicated with a '?'.

- **Species:** The species identification is based on visual observations and the common English name of what the tree appeared to be is listed first, with the botanical name after in brackets. In some instances, it may be difficult to quickly and accurately identify a particular tree without further detailed investigations. Where there is some doubt of the precise species of tree, it is indicated with a '?' after the name in order to avoid delay in the production of the report. The botanical name is followed by the abbreviation sp if only the genus is known. The species listed for groups and hedges represent the main component and there may be other minor species not listed.

- **Height:** Height is estimated to the nearest metre.

- **Spread:** The maximum crown spread is visually estimated to the nearest metre from the centre of the trunk to the tips of the live lateral branches.

- **Diameter:** These figures relate to 1.4m above ground level and are recorded in centimetres. If appropriate, diameter is measure with a diameter tape. 'M' indicates trees or shrubs with multiple stems.

- **Estimated Age:** Age is estimated from visual indicators and it should only be taken as a provisional guide. Age estimates often need to be modified based on further information such as historical records or local knowledge.

- **Distance to Structures:** This is estimated to the nearest metre and intended as an indication rather than a precise measurement.

Appendix 9

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EDUCATION and QUALIFICATIONS

- 2013 / 2018 – ISA TRAQ qualification
- 2007 – Diploma of Arboriculture (AQF Cert V) Ryde TAFE. (Distinction)
- 1997 – Completed Certificate in Crane and Plant Electrical Safety
- 1996 – Attained Tree Surgeon Certificate (AQF Cert II) at Ryde TAFE
- 1990 – Completed two month intensive course on garden design at the Inchbald School of Design, London, United Kingdom
- 1990 – Completed patio, window box and balcony garden design course at Brighton College of Technology, United Kingdom
- 1989 – Awarded the Big Brother Movement Award for Horticulture (a grant by Lady Peggy Pagan to enable horticulture training in the United Kingdom)
- 1989 – Attained Certificate of Horticulture (AQF Cert IV) at Wollongong TAFE

INDUSTRY EXPERIENCE

Moore Trees Arboricultural Services **January 2006 to date**
Tree Consultancy and tree ultrasound. Tree hazard and risk assessment, Arborist development application reports
Tree management plans.

Woollahra Municipal Council **Oct 1995 to February 2008**
ARBORICULTURE TECHNICAL OFFICER
August 2005 – February 2008
ACTING COORDINATOR OF TREES MAINTENANCE
June – July 2005, 2006
Responsible for all duties concerning park and street trees. Prioritising work duties, delegation of work and staff supervision.
TEAM LEADER
January 2003 – June 2005
September 2000 – January 2003
HORTICULTURALIST
October 1995 – September 2000

Northern Landscape Services **July to Oct 1995**
Tradesman for Landscape Construction business

Paul Vezgoff Garden Maintenance (London, UK) **Sept 1991 to April 1995**

CONFERENCES AND WORKSHOPS ATTENDED

- International Society of Arboriculture Conference (Canberra May 2017)
- QTRA Conference, Sydney Australia (November 2016)
- TRAQ Conference, Auckland NZ / Sydney (2013/2018)
- International Society of Arboriculture Conference (Brisbane 2008)
- Tree related hazards: recognition and assessment by Dr David Londsdale (Brisbane 2008)
- Tree risk management: requirements for a defensible system by Dr David Londsdale (Brisbane 2008)
- Tree dynamics and wind forces by Ken James (Brisbane 2008)
- Wood decay and fungal strategies by Dr F.W.M.R. Schwarze (Brisbane 2008)
- Tree Disputes in the Land & Environment Court – The Law Society (Sydney 2007)
- Barrell Tree Care Workshop- Trees on construction sites (Sydney 2005).
- Tree Logic Seminar- Urban tree risk management (Sydney 2005)
- Tree Pathology and Wood Decay Seminar presented by Dr F.W.M.R. Schwarze (Sydney 2004)
- Inaugural National Arborist Association of Australia (NAAA) tree management workshop- Assessing hazardous trees and their Safe Useful Life Expectancy (SULE) (Sydney 1997).

Appendix E

Remediation Action Plan (RAP)