MOLINO STEWART

ENVIRONMENT & NATURAL HAZARDS

a WATER TECHNOLOGY company

CITY OF PARRAMATTA

Sue Savage Reserve

Review of Environmental Factors

Final

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Client: City of Parramatta Council

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Document Approval

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1 | Introduction

1.1 Project Description and Background

City of Parramatta Council (Council) has been successful in a grant application to the NSW Government Western Sydney Infrastructure Grants Program for various projects, of which one is an upgrade to Sue Savage Reserve in Toongabbie. The upgrade would aim to activate the space and improve youth recreation opportunities by introducing a new skate park and BMX pump track along with amenities, improved picnic facilities and a car park. This Review of Environmental Factors (REF) is prepared for the proposed development as per Part 5 of the *Environmental Planning and Assessment Act 1979.*

Currently this public reserve is largely undeveloped except for a basketball court and a paved pathway leading through the area along Chanel Street. The development site has large grass fields and is backed by bushland associated with Toongabbie Creek riparian corridor with mature canopy trees that provide shade and potential habitat for wildlife. Adjacent to the site is Reynolds Park which has a playground and some barbecue shelters. All existing facilities in the reserve will be retained. The proposed development is based on the *Sue Savage and Reynolds Park Master Plan Report* adopted by Council in 2017.

The main trigger for the proposed development was the public request for an amenities block to be built next to the well-used playground. This amenities block would be placed between the existing playground and basketball court and would be accompanied by some landscape planting. A new skate park and BMX pump track would be built west of the existing basketball court, along with 90-degree parking along Chanel Street. This would improve the recreational useability to complement the otherwise more rarely used grass fields.

1.2 Project Location and Context

The development site is located in Toongabbie on Lots 89/-/DP237372, 13/-/DP246608 and 155/-/DP259861 within Sue Savage Reserve in the City of Parramatta Local Government Area (LGA). The reserve is located north of Chanel Street and west of Old Windsor Road and is backed by a bushland riparian corridor associated with Toongabbie Creek that runs from west to east just north of the site.

The reserve is a public reserve zoned RE1 – Public Recreation, W1 – Natural waterways and C2 – Environmental Conservation in the Parramatta Local Environmental Plan (LEP) 2023. Based on supplied plans the proposed development would only affect the RE1 zone of the reserve. The land surrounding the reserve is zoned R2 – Low Density Residential and IN1 – General Industrial. Old Windsor Road is zoned SP2 – Classified Road. The land zoning of the site and surrounding area is shown in Figure 2.

The development site is approximately 5 ha and is located on a grass field next to a street with detached residential houses and is backed by a bushland riparian corridor traversed by Toongabbie Creek. Currently the development site is covered by grass and some trees, with a paved pathway traversing the site on top of a flood levee. There are also overhead high voltage transmission lines on the southern side of the site which may limit the permissible height of any development and activities on the site. A map of the site can be seen in Figure 1, and a general overview of the site can be seen in the photographs in Appendix A. The detailed drawings for the pump track are not yet finalised and its footprint in Figure 1 is approximate. The surrounding park area consist of grass fields and bushland, a basketball court, and a playground.

Native vegetation communities present in the area include Cumberland Shale Plain Woodland, Sydney Turpentine-Ironbark Forest and Cumberland Riverflat Forest vegetation communities, all of which are

listed as threatened under the *Biodiversity Conservation Act* 2016. An integral part of the project is to maintain the ecological network and corridors in the area, of which the Sue Savage forms part. Toongabbie Creek is also an important part of the Sydney Metropolitan Green Grid and a core part of the 'Mountains To The Sea' link. The vegetation in the reserve also supports a high diversity of bird life and is highly valued by the local community for birdwatching activities.

The development site slopes north and drains into Toongabbie Creek. The area is relatively flat apart from the flood levee (Photo 4, Appendix A) along Chanel Street, starting roughly by the basketball court and running west. Large areas of the park itself are prone to flooding and the local residents have previously had issues with flooding on their properties. In case of flooding, the levee stops water rising from the creek and flooding the street and residential area and is therefore an important safety feature. This development aims to improve the drainage on Chanel Street in conjunction with building the new streetside parking lot.

An Aboriginal due diligence assessment has been undertaken as part of this REF, in accordance with the Due Diligence Code of Practice for the Protection of Aboriginal Objects in NSW (DECCW 2010) and the Guide to investigating, assessing and reporting on Aboriginal cultural heritage in New South Wales (Office of Environment & Heritage 2011). Based on the outcomes of the due diligence assessment, an Aboriginal Cultural Heritage Assessment Report (ACHAR) was undertaken as detailed in Section 4.4.

A Historical Archaeological Impact Assessment (HAIA) was also prepared (see Section 4.4).

The proposal must be assessed under Part 5 of the *Environmental Planning and Assessment Act 1979* (EP&A Act). This REF has been prepared by Molino Stewart, currently Water technology, to address potential environmental impacts and meet Council's statutory requirements under Division 5.1 of the EP&A Act.

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Project: Sue Savage Reserve REF
Projection: EPSG:3857
Produced by: Petra Arola

Pump track
Skatepark
Amenities and parking
Existing utilities line
New utilities line
Topography

Figure 1: Subject site

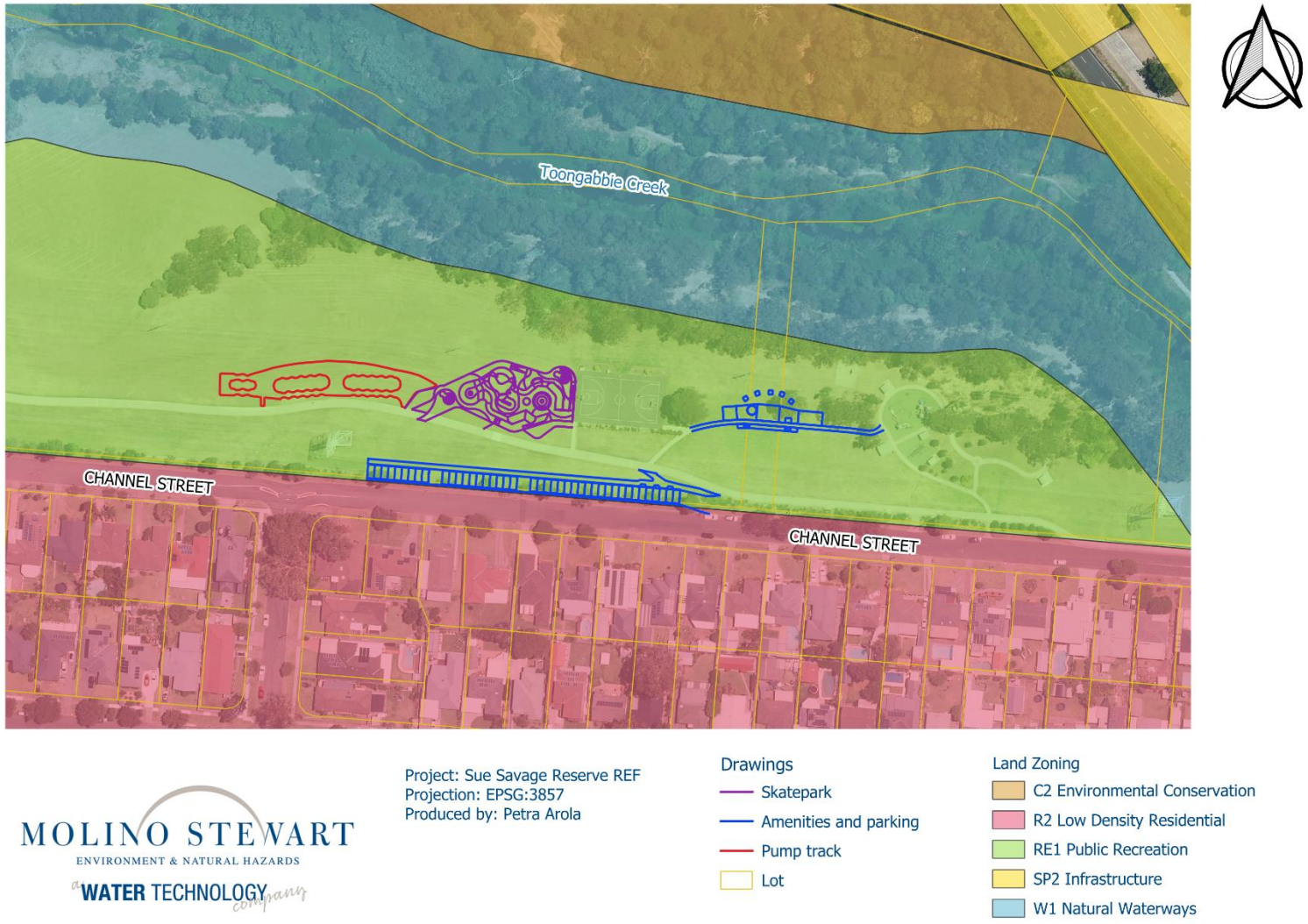

Figure 2: Land zoning

1.3 Detailed Scope of Works

Plans and designs have been drawn up for the different parts of the project and can be viewed in Appendix B of this report. The project includes the following parts:

- Amenities building including provision for 1 accessible cubicle/change room and 3 ambulant cubicles;
- Park shelters with picnic settings and feature planting surrounding the amenities building;
- New skate park to provide physical recreation opportunities for older children adjacent to existing multi-purpose court;
- Pump track adjacent to the proposed skate park; and
- 90-degree off-street car parking bays off Chanel Street for approximately 45 cars, inclusive of three accessible parking bays.

The location of each proposed structure is shown in the photographs in Appendix A.

Existing trees in the park would be retained and protected during the works. Eleven small trees (2-3 years old) that have been planted along Chanel Street would have to be removed for the construction of the parking lot, along with the garden beds they are planted in.

Works for the construction of the amenities building includes:

- Vegetation clearing: stripping existing turf and grass roots;
- Demolition: existing paved walkway for digging the trench for the sewerage line (narrow cross-section);
- Earthworks: digging trench that connects to existing sewerage, water and electrical utilities, regrading and levelling area for amenities block and barbecue facilities;
- Construction: amenities building, barbecue facilities, seats, and bike racks as per plans; and
- Landscape planting and returfing.

All proposed works in the vicinity of the new amenities building are to be finished flush with the existing surfaces and with sufficient crossfall as per construction drawings.

Work for the construction of the skatepark includes:

- Demolition: narrow section of the paved walkway;
- Earthworks: significant excavation of up to 2.5 m below existing levels into the main body, pushing out the northern slope of the flood levee making it wider, grading and shaping soil for the surfaces of the skatepark, excavating trench for new drainage line;
- Construction: installation of new drainage pits and line, laying of surface materials and paving, seating; and
- Landscape planting and returfing

Works for the construction of the pump track include:

- Removal of existing turf;
- Earthworks and regrading of the ground;
- Laying of asphalt as surface material; and
- Returfing.

Due to flood risks the pump track will have to be located on top of the flood levee which means that the available space is narrow. It is also subject to height restrictions due to the overhead powerlines.

Works for the construction of the car park includes:

- Vegetation clearing: 11 planted street trees to be removed along with an over 100 m section of garden bed, turf stripped from the new parking area and grass roots removed;

- Demolition: existing fence, kerb, gutters, pavement, stormwater drainage pipes and pits;
- Earthmoving: excavation for new drainage structures, regrading and levelling entire site for parking as required (excavation to be minimised where possible);
- Construction: installation of new drainage pipes and pits, road base, concrete and asphalt for the carpark; and
- Landscape planting and returfing.

Construction works were originally expected to commence in winter (June-August) 2023, however the timeline has now been revised to after the completion of this REF scheduled for late 2024. It is expected to take 2-3 months to complete the works, during which time the area would be fenced off and surrounding areas protected from dust and visual disturbance by dust screen fencing. All stockpiles and material will be stored on site in designated areas. Standard work hours for the construction work will be followed.

The works would not detract from the existing recreational use of the area as all existing facilities will be retained and there will still be plenty of space on the grass fields for ball games, picnics and nature exploration on the informal bush trails in the reserve.

1.4 Project Justification and Options

The development aims to activate and improve the appeal of the area, provide new services that cater for many age groups, and increase visitation and recreation in the area. In conjunction with the proposed development, the drainage of the otherwise flood prone Chanel Street would be improved, and further landscape planting would be done to improve shading and add to the existing ecological features of the area.

The skatepark and pump track would improve the recreational opportunities in the area and expand the user age group to include older children and teenagers. As it stands, the area only offers limited recreational options for these age groups as the playground mainly caters for younger children and their parents. The amenities would offer a necessary facility to reflect the higher level of use and longer stays associated with the district scale of new recreational facilities to be provided in the park. A new parking area would facilitate increased visitation from locations further away, and for those local residents that do not live within walking distance of the park.

In general, the development would complement the existing recreational facilities in the area. The park has both the space and the capacity for this scale of development.

Option 1 (Do Nothing) – not upgrading the area will maintain the area as it currently is. This would mean the space is potentially underutilised and the growing demand from local residents for public amenities and recreational options for older children and teenagers in the area is not met. However, this option incurs no additional cost and would keep the space available for other future development purposes.

Option 2 (Upgrade as Proposed) – the development would promote recreational use of the area and allow for more visitors from the surrounding areas to use the park. By adding a skatepark to the site it would provide more physical recreational options for children, especially for those of older age groups, where an existing gap in provision currently exists. The development would likely increase the use of Sue Savage Reserve and the adjoining Reynolds Park due to the availability of amenities, expanded barbecue and picnic facilities, and improved parking. The park upgrade would require a financial investment from Council, and it would cause temporary disturbance for local residents and park visitors for the duration of the construction and demolition works. Once the work is complete, the visitation rates would likely be higher, meaning there could be more noise and traffic in the area during day time, particularly weekends and afternoon/ evening peak use periods.

2 | Statutory Framework and Planning Context

2.1 Environmental Planning and Assessment Act 1979

The *Environmental Planning and Assessment Act 1979* (EP&A Act) and the *Environmental Planning and Assessment Regulation 2021* (EP&A Regulation) provide the framework for development and environmental assessment in NSW.

The proposed works are permitted without consent under the *State Environmental Planning Policy (Transport and Infrastructure) 2021* (TISEPP), as discussed further in Section 2.2. Where works do not require development consent but require approval by a public authority under any legislation then they are defined as an activity under Part 5 of the EP&A Act. Division 5.1 and Section 5.7 of the EP&A Act requires any such public authority to determine whether or not the impacts of the activity are likely to be significant. A review of environmental factors (REF) is used to document that determination.

Council is defined as a public authority under the EP&A Act, and is both a proponent and determining authority for works permitted without consent. This REF is intended to address Council's compliance with the EP&A Act including Division 5.1 and Section 5.7, and the requirements of Clause 171 of the EP&A Regulation.

2.2 State Environmental Planning Policy (Transport & Infrastructure) 2021

The TISEPP aims to facilitate the delivery of infrastructure across NSW by identifying whether certain types of infrastructure require consent, can be carried out without consent or are exempt development.

Under Division 12, Section 2.73 of the TISEPP, the following developments may be carried out by or on behalf of a public authority without consent on public reserve land:

- roads, pedestrian pathways, cycleways, single storey car parks, ticketing facilities, viewing platforms and pedestrian bridges;
- recreation areas and recreation facilities (outdoor);
- visitor information centres, information boards and other information facilities;
- lighting;
- landscaping;
- amenities for people using the reserve, including toilets and change rooms; and
- food preparation and related facilities for people using the reserve.

Construction of seats, picnic tables, barbecues, bins, shelters and shade structures, along with installation of play equipment, is exempt under the same circumstances (Section 2.74). The proposed works are to be carried out on public reserve land by Council and therefore can be undertaken without consent under the TISEPP. However, as explained in Section 2.1 they must be assessed under Part 5 of the EP&A Act.

2.3 Water Management Act 2000

The *Water Management Act 2000* (WM Act) provides for the sustainable and integrated management of the water sources of the State for the benefit of both present and future generations. The WM Act defines principles of water management, sets out water licensing laws and environmental water provisions.

Section 91 (2) states that: *A controlled activity approval confers a right on its holder to carry out a specified controlled activity at a specified location in, on or under waterfront land*. In accordance with Clause 41 of the *Water Management (General) Regulation 2018,* this project is being carried out by or on behalf of Council and therefore exempt from requiring a Controlled Activity Approval in accordance with the Act.

As detailed in section 4.2, a Water Supply Work Approval (WSWA) is required under Section 90(2) of the WM Act for activities that involve dewatering groundwater (e.g. dewatering an excavation such as a trench or wet well, or HDD), irrespective of volume. Therefore, it is anticipated that a WSWA from WaterNSW will be required to carry out the work.

2.4 Biodiversity Conservation Act 2016

The *Biodiversity Conservation Act 2016* (BC Act) includes the Biodiversity Offsets Scheme (BOS) that governs how biodiversity offsets will be used to ensure they offset the loss due to development and deliver conservation outcomes. The Act and Regulations also govern the Biodiversity Assessment Method (BAM) as a scientific method that assesses biodiversity losses from impacts at development sites and gains from conserving land at stewardship sites.

Authorities such as Council seeking to undertake an activity under Part 5 of the EP&A Act can voluntarily opt-in to the BOS and BAM scheme, or alternatively can elect to undertake an Assessment of Significance and proceed with a Part 5 approval. It will be required to:

- determine if the activity will be likely to significantly affect threatened species or ecological communities, or their habitats;
- take serious and irreversible impacts into consideration; and
- determine if there are any additional and appropriate measures that will minimise the impact if the activity is to be carried out or approved.

The potential ecological impacts of the proposal are discussed in section 4.3 of this REF. It is concluded that the proposal is not likely to have a significant impact on any threatened species, populations, or communities. Therefore, a Species Impact Statement or Biodiversity Development Assessment Report is not required.

2.5 Fisheries Management Act 1994

The provisions of the *Fisheries Management Act* 1994 relating to project development and approval processes operate similarly to the BC Act. The Act identifies threatened aquatic species, populations and ecological communities and requires a test of significance.

Toongabbie Creek is mapped as Key Fish Habitat and any direct or indirect impacts on the creek would trigger the need for a species impact statement for Part 5 projects. The potential ecological impacts of the proposal are discussed in Section 4.3 of this REF report. It is concluded that the proposal is not likely to have a significant impact on any threatened aquatic species, populations or communities.

2.6 Heritage Act 1977

The *Heritage Act 1977* provides for the protection of non-Aboriginal heritage in NSW.

Items listed on the State Heritage Register, including archaeological heritage, require consent of the Heritage Council to undertake work or development which alters, moves, despoils or damages any part of the heritage item, place, precinct, land, its relics or any vegetation.

The potential heritage impacts of the proposal are discussed in Section 4.4 of this REF. It is concluded that the proposal is not likely to have a significant impact on any heritage features or archaeology.

2.7 National Parks and Wildlife Act 1974

This Act provides, amongst other things, for the protection of Aboriginal heritage. All Aboriginal objects are protected under Section 90 of the *National Parks and Wildlife Act 1974* (NPW Act).

Under Section 90, it is an offence to destroy, deface, damage or desecrate an Aboriginal object or Aboriginal place without the prior issue of an Aboriginal Heritage Impact Permit (AHIP) by NSW Heritage. The amended Act requires that reasonable precautions and due diligence must be taken to avoid impacts on Aboriginal objects which includes:

- identifying whether there are, or likely to be any listed Aboriginal objects present in the area;
- determining whether the proposed activities are likely to harm Aboriginal objects (if present);
- determining whether an Aboriginal Heritage Impact Permit (AHIP) is required.

If an AHIP is required, then consultation must be undertaken with Aboriginal stakeholder groups in accordance with the requirements in cl.80C of the NPW Regulation and the Due Diligence Code of Practice for the Protection of Aboriginal Objects in New South Wales, Department of Environment, Climate Change and Water NSW, 2010.

The potential Aboriginal heritage impacts of the proposal are discussed in Section 4.4 of this REF. A registered Aboriginal site located within Sue Savage Reserve extends across much of Sue Savage Reserve, however the Aboriginal Cultural Heritage Assessment Report (ACHAR) and test excavations for the project indicated that the Aboriginal site does not extend into the development site.

2.8 Environmental Protection and Biodiversity Conservation Act 1999

Under the Commonwealth *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act), Commonwealth approval is required for certain actions. Actions which have or may have or are likely to have a significant impact on a Matters of National Environmental Significance (MNES). MNES include nationally threatened species or endangered ecological communities. Under the EPBC Act an assessment of the impact of a proposal on a MNES must be undertaken to determine whether there is likely to be a significant impact. If the assessment concludes there is a significant impact, then it will become a controlled action under the EPBC Act and the proposal must be referred to the Commonwealth. Approval from the relevant Federal Minister is also required for any actions that may have a significant impact on MNES, except in circumstances which are set out in the EPBC Act.

Approval from the Commonwealth is in addition to any approvals under NSW legislation.

The potential ecological impacts of the proposed works are discussed in Section 4.3 of this REF. It is concluded that the proposal is not likely to have a significant impact on any EPBC Act listed threatened

species, populations or communities and does not require referral to the Commonwealth under the EPBC Act.

2.9 Protection of the Environment Operations Act 1997

The *Protection of the Environment Operations Act 1997* (PoEO Act) is the primary piece of legislation regulating pollution control and waste disposal in NSW and is administered by the Environment Protection Authority (EPA).

The proposed works will be carried out with appropriate mitigation measures in place so that air, water, and noise pollution will be minimal.

Scheduled activities (as defined in Schedule 1 of the Act) require an Environment Protection License (EPL), as does development which is proposed to be carried out which would enable scheduled activities to occur. The proposed works are not considered a scheduled activity and therefore do not require an EPL.

2.10 Parramatta Local Environmental Plan 2023

Sue Savage Reserve follows the Parramatta Local Environmental Plan (LEP) 2023.

The Parramatta LEP aims to make local environmental planning provisions for land in the Parramatta LGA in accordance with the relevant standard environmental planning instrument.

The works are to be conducted in RE1 – Public Recreation zoned land. The objectives of this zone, relevant to this development, include:

- 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 and cultural heritage value of parks and open space in the zone; and
- To create opportunities to use riverfront land for public recreation.

The proposed works involves the construction of a skate park and pump track, amenities buildings, park shelters and parking. It also includes minor landscaping works. This is consistent with the objectives outlined in Parramatta LEP as it provides new recreational opportunities in the area.

2.11 Parramatta Development Control Plan 2023

The Parramatta Development Control Plan (DCP) accompanies the Parramatta LEP to prescribe detailed guidelines and environmental standards for new development within the Parramatta LGA. The aim of the DCP is to:

- Ensure that development contributes to the quality of the natural and built environments
- Encourage development that contributes to the quality of the public domain.
- Ensure that development is economically, environmentally and socially sustainable.
- Ensure future development has consideration for the needs of all members of the community.
- Ensure development positively responds to the qualities of the site and its context.
- Ensure development positively responds to the character of the surrounding area.

This assessment takes the objectives and design principles of the Parramatta DCP into account.

2.12 Local Government Act 1993

The *Local Government Act* 1993 (LG Act) provides the legal framework for local government and prescribes the responsibilities and powers of Councils.

Under Part 2 of the LG Act all public land is to be classified and categorised based upon its characteristics and intended use. Based upon the applicable land category, all community land is also to be managed under a plan of management in accordance with the core objectives of said land category.

The development areas within Sue Savage Reserve and Reynolds Reserve are categorised as 'Park' and managed under City of Parramatta's *Community and Crown Land Plan of Management* (2023) (see Figure 3). The core objectives for management of land categorised as a park are:

- encourage, promote and facilitate recreational, cultural, social and educational pastimes and activities;
- provide for passive recreational activities or pastimes and for the casual playing of games; and
- improve the land in such a way as to promote and facilitate its use to achieve the other core objectives for its management.

The upgraded proposed park development supports all of the above objectives.

Figure 3: Land categorisation map

2.13 Disability Discrimination Act 1992

The *Disability Discrimination Act 1992* (DD Act) is a federal Australian Act that makes it unlawful to discriminate against a person because of their disability. The DD Act is applicable in many areas of public life, including employment, education, getting or using services, renting or buying a house or unit, and accessing public places.

The DD Act has been included in the proposed works at Sue Savage Reserve by considering disabilities in the design to the degree possible.

2.14 Local Planning Instruments

This proposal is developed in line with local planning instruments within Parramatta as well as the Greater Sydney area. The relevant local planning instruments are detailed below.

Parramatta Local Strategic Planning Statement – City Plan 2036

The Parramatta Local Strategic Planning Statement provides strategic direction on how the City of Parramatta is planning for the next 20 years. The Statement draws together the needs and aspirations of the community and identifies priorities for jobs, homes and infrastructure. The Statement looks at the role of Parramatta as part of Greater Sydney and seeks to achieve a future which is sustainable, liveable and productive.

The Local Strategic Planning Statement has been prepared in accordance with clause 3.9 of the EP&A Act.

Our Greater Sydney 2056 - Central City District Plan

The Central City District Plan sets out planning priorities and actions for improving the quality of life for residents as the District grows and changes. Areas covered by the plan include Parramatta, The Hills, Blacktown, Merrylands, Granville, Auburn, and the parklands of Bicentennial park and Millennium Parklands.

The Plan considers community and cultural life and the environmental sustainability of the landscape.

Greater Sydney Region Plan

The Greater Sydney Region Plan sets a 40-year vision (to 2056) and establishes a 20-year plan to manage growth and change for Greater Sydney in the context of social, economic and environmental matters. It informs district and local plans and the assessment of planning proposals, and assists infrastructure agencies to plan and deliver for growth and change and to align their infrastructure plans to place-based outcomes. Finally, it informs the private sector and the wider community of the growth management and infrastructure investment intentions of government.

The Plan applies to the Greater Sydney Region and sets the planning framework for the five districts which make up the region.

3 | Consultation

3.1 Community consultation

Two rounds of community consultation have been carried out for the proposal, the first one during the development of the Sue Savage and Reynolds Park Master Plan in October 2016 and the second one in 2022.

The first round of consultation was undertaken during an open day at Sue Savage Reserve on 6th October 2016. The parties present included Council staff, Group GSA staff, and local residents. The public's opinions were collected through direct discussions, user surveys, and by giving votes to their preferred activities. A total of 48 visitor surveys were completed.

An online survey replicating the on-site survey was developed and was completed by a further 101 respondents. Overall, the attitudes towards the proposed development and improvements of the park were positive. The most popular among the suggested new features were the skate park and BMX track, and the public toilets. The consultation showed that the most popular activities in the park are walking, playground visits and cycling. The time visitors spend in the park could be increased by providing better facilities, for example by improving the existing playground precinct and providing a new youth facility as requested by the respondents.

Comments provided by the respondents included wishes for improved safety in the park (mainly in the playground), more shading, expanded parking area, and preservation of the natural features and bushland in the park. Concerns were also raised about motocross bikes using the park, and the possibility that the construction of skateboard and BMX facilities would encourage further use. Other concerns included parking issues, littering and graffiti, and teenagers loitering at night. The adopted masterplan was based on the results of this consultation in conjunction with the strategic priorities identified in Councils Community Infrastructure Strategy.

The second round of community consultation collected comments on the proposed pump track, which was added to the concept plans at a later stage. The survey was open on 'Participate Parramatta' for two weeks from 12th September until 26th September 2022. A total of 92 submissions were made at this stage. The plans were updated based on the outcomes of the first set of comments and another round of feedback was opened in November 2022. This stage of the consultation yielded 62 responses.

The outcome of the consultation was positive with 95 % of respondents supporting the design in stage two. Those opposing the development design had concerns about safety and attracting more visitors from other suburbs. Comments provided regarding the use and design of the pump track included ensuring the area is safe for riders of all skill levels, provision of amenities such as shade, drinking water and seating, and consideration of flood mitigation to the area.

3.2 TISEPP consultation

Part 2.2, Division 1 of the Transport and Infrastructure SEPP contains provisions for consultation with public authorities prior to the commencement of certain types of development. The relevant TISEPP consultations for this project are outlined below.

The proposed development is located on flood prone land. To ensure that the development would not negatively impact on flood patterns or increase flood hazards, a flood study was undertaken for the site (see Section 4.2). The study showed that the impacts on flooding would be negligible and that the

impacts on the integrity of the flood levee would not be significant provided the outlined recommendations were adhered to.

The proposed infrastructure will connect to existing stormwater, sewer and water infrastructure, for which consultation with and approval from relevant authorities is needed.

Traffic on Chanel Street may be disrupted during the work. The road is owned by Council and any impacts on traffic would be handled by Council internally. Residents on the street should be notified of the works ahead of commencement.

The park areas will need to be closed for the duration of the works. Since the land is Council owned, the impacts on area users would be handled by Council internally. Notification to area users of the construction works should be given ahead of commencement e.g. by erecting signage in the park.

Consultation for the easements within the site (Endeavour Energy, Ampol) has been undertaken by Council and the relevant approvals will be sought ahead of the works commencing. Ampol owns a high pressure oil pipeline on the eastern side of the site, and have been notified of the proposed works and, they have provided requirement of works and contact details to engage a spotter to oversee construction works. Endeavour Energy has provided an Approval of Works which the contractor is to adhere to.

4 | Environmental Assessment

4.1 Topography, Geology and Soils

4.1.1 Impact Assessment

The site sits within a South Creek Alluvial soil landscape with floodplains, valley flats and drainage depressions of the channels on the Cumberland Plain. The soil of this landscape type is often very deep layered sediments over bedrock or relict soils with Structured Plastic Clays (Uf6.13) or Structured Loams (Um6.1) in and immediately adjacent to drainage lines, and Red and Yellow Podzolic Soils (Dr5.11, Dy2.41, Dr2.21) on low terraces. Limitations for this soil landscape include flood hazard, seasonal waterlogging, localised permanently high water tables, localised water erosion hazard, and localised surface movement potential. (eSpade, 2023)

Acid sulphate soils contain naturally occurring iron sulphates and are common along the coastlines. When the soil is drained or disturbed these sulphates oxidise and turn into sulphuric acid. The NSW Department of Climate Change, Energy, Environment and Water (DCCEEWW) Acid Sulphate Soil Risk mapping indicates that the project site has not been assessed for acid sulphate soils (eSpade, 2023). The closest location with acid sulphate soil probability mapping is where Toongabbie Creek meets Parramatta River, which is 3.5 km away (6.5 km downstream). This location is mapped as low probability over 3 m below ground surface. Therefore, the site is deemed to have very low probability of acid sulphate soils.

Construction work can expose contaminated soils and groundwater, potentially leading to environmental, health and safety risks. A search of NSW EPA Contaminated Land Records and NSW EPA List of Contaminated Sites shows no know occurrences of contaminated soils on the site. The site is also not deemed to be in risk of soil or groundwater salinity as per the *Salinity potential in Western Sydney 2002* map.

During the works existing turf will be removed in and around the footprints of all parts of the development, leaving the soil exposed and at risk of erosion. Significant excavation will also be undertaken into the flood levee to make space for the skatepark and pump track. In the event of heavy rains during this period, there is a risk of significant soil erosion and the levee structure may be compromised. The level of erosion would be further augmented by subsequent flooding and ponding especially in the site for the new parking lot. A geotechnical survey (Appendix C) and a flood impact assessment (Appendix D) were undertaken to evaluate the risks involved and recommend mitigation measures to avoid soil erosion and avoid compromising the stability of the flood levee.

The flood levee on site mainly consists of silty sandy clay and has no signs of deterioration or erosion. However, the excavation for the skatepark and pump track could impact on the stability of the levee and any works cutting into the levee would need to follow the guidelines provided in the geotechnical report and flood impact assessment.

Recommendations from the geotechnical survey for ensuring the integrity of the flood levee include the following (Appendix C, Chapter 6.2):

- Minimising any excavation into the flood levee and limit any changes in its configuration to minor reductions in width without reducing its overall height;
- The levee batter slope should not exceed a ratio of 1:3;
- The skatepark should be shifted northward if possible to avoid any deep excavation immediately next to the main body of the levee;

- Any excavation into the levee is to be assessed by Council's flood engineers prior to finalisation of designs;
- General earthwork controls such as surface drainage measures (temporary drains, surface grading and sediment control) are to be implemented to prevent ponding and surface scouring during construction;
- Fills and surfaces are to be wet compacted to prevent dispersion; and
- Revegetation should be promoted through use of suitable thickness topsoils and planting.

The recommendations from the flood assessment are outlined in section 4.2 of this report.

The risks associated with the construction works can be managed by using sufficiently compacted materials, adjusting the slope to less than 1:3, and revegetating with plants with a high groundcover ratio and strong soil binding roots. The renewed subsoil drainage routes under the new parking lot should improve drainage along Chanel Street after the work is completed, making the area less prone to ponding.

Once at an operational stage the proposed development is expected to have a negligible impact on soils and erosion risks.

Table 1 – Impact assessment checklist for landform, geology and soils

Will the proposed works impact on erosion prone areas?	Yes ☐ No ☒
Will the proposed works impact on erosion sensitive structures?	Yes ☒ No ☐
Will the proposed works impact on areas containing acid sulphate soils?	Yes ☐ No ☒
Will the proposed works impact on areas with contaminated soil?	Yes ☐ No ☒
Does the project involve the disturbance of large areas (>2ha) for earthworks?	Yes ☒ No ☐
Does the site have constraints for erosion and sedimentation controls such as steep gradients, narrow corridors, flood protection or is located on private property?	Yes ☒ No ☐
Are there any sensitive receiving environments that are located in or nearby the likely project footprint or that would likely receive stormwater discharge from the project? Sensitive receiving environments include (but are not limited to) wetlands, state forests, national parks, nature reserves, rainforests, drinking water catchments.	Yes ☒ No ☐
Will there be any ongoing/maintenance/operational impacts associated with the project?	Yes ☐ No ☒

If yes to any of the above, detail impact:

The soil in this soil landscape profile is not usually prone to erosion, but the flood prone nature of the area increases the risk of significant erosion during the construction phase. The main concern is the impacts on the stability of the flood levee, and the effects of flood waters on soil erosion during the time the soil is exposed. The exposed areas will also be large, further increasing erosion risks.

The site backs onto Toongabbie Creek, being mapped as key fish habitat, and an area zoned for environmental conservation, which both are sensitive receivers. There is also ecologically valuable bushland surrounding the creek. Any sediment runoff from the site would end up in the creek, causing sedimentation and potential environmental damage in the waterways further downstream.

Seasonal variation in precipitation should be considered when planning the works and associated Erosion and Sediment Control Plans.

4.1.2 Mitigation Measures

Table 2 – Mitigation measures for landform, geology and soils.

Type of Impact	Safeguard/ Mitigation Measure	Timing
General construction impacts	Prepare a site-specific Erosion and Sediment Control Plan (ESCP) in accordance with Landcom's Managing Urban Stormwater: Soils and Construction (2004), also called the Blue Book, as part of the CEMP.	Pre-Construction
	Site management will incorporate best management erosion and sediment control practices such as those found in Landcom's Blue Book on erosion and sediment control, to minimise soil erosion and water pollution.	Construction
	The site specific ESCP must be included in the site induction.	Pre-Construction
	A copy of the site specific ESCP must be on site during any construction works and must be included in site induction.	Construction
Sedimentation and erosion	Erosion and sediment controls are to be installed prior to commencement of works to stabilise the ground. These are to be established and maintained in accordance with Landcom's Blue Book.	Construction
	Linear silt fencing or other sediment controls (earth/mulch bund etc.) to be installed downhill of all affected areas and stockpiles. These are to be installed before earth works begin.	Construction
	Rock check dams, sandbags, hay bales wrapped in geotextile fabric etc. will be used to slow water flow and trap sediment in runoff water.	Construction

	All erosion and silt control devices will be visually inspected weekly to ensure effectiveness as well as after each rainfall event.	Construction
	Design drawings and plans should be adjusted to ensure the integrity of the flood levee and minimise risks of flooding for the duration of the works and beyond.	Pre-Construction Operational
	Erosion and sediment control measures should be designed and implemented to ensure the integrity of the flood levee.	Pre-Construction Construction
	Slopes in the flood levee should not exceed a ratio of 1:3.	Construction
	Works are to be staged to minimise the area of disturbance, given the flood prone nature of the site.	Construction
Stockpile management	Materials are not to be stored below the Flood Planning Level (1% AEP plus 0.5m freeboard) as per Parramatta DCP.	Construction
Soil stabilisation and restoration	Erosion and sediment control measures are not to be removed until the works are completed and areas are stabilised.	Post-Construction
	The structural integrity of the flood levee is not to be compromised, and in areas of excavation the flood levee is to be re-established using stable compacted materials with a slope not exceeding 1:3 and revegetated with suitable plants.	Construction, Post-Construction
	The rehabilitation of disturbed areas will be carried out progressively as construction stages are completed, and in accordance with Landcom's Blue Book and Parramatta DCP.	Post-Construction
Contaminated land	Cease work, securely isolate the affected area and contact Project Supervisor immediately if suspected contaminated soil is uncovered.	Construction
Excavation	All excavation into the flood levee to be minimised and approved by a Council flood engineer prior to commencement of works.	Pre-Construction

4.2 Water Quality and Hydrology

4.2.1 Impact Assessment

a) Surface water

Runoff water from the site runs into Toongabbie Creek approximately 60 m north of the site. Toongabbie Creek then runs into Parramatta River and out into Sydney Harbour. The development site itself is grassy, and there is a vegetation buffer around the creek. The vegetation slows down the flow rates of overland runoff water and filters out some of the sediment and particles in the runoff water before it enters the creek.

Large parts of the development site and surrounding areas are subject to flooding from Toongabbie Creek, and high velocity and volume water flows present a major constraint for the proposed development. The main constraints relate to park user safety and soil erosion during flood events as described in section 4.1 of this report. The creek is fed by stormwater from the surrounding areas, and there is minimal warning time for flooding in case of heavy rains. This means that there is potential danger to park users in the more low-laying areas of the park.

However, the subject site itself is located on higher ground and is mainly mapped as low flood risk area, apart from a section of the proposed new parking area along Chanel Street which is mapped as medium flood risk (City of Parramatta, 2023).

This development proposal has been subject to a review by flood engineers to ensure the safety of park users is maximised, erosion risks minimised, and no new maintenance issues are created. A flood impact assessment was carried out in October 2020 to determine whether the proposed development would have any adverse impacts on flooding in the area. The results show that the new amenities area and skatepark are outside the flooding areas of 1% and 5% Annual Exceedance Probability (AEP) storm events (Figure 4). Meanwhile, ponding of up to 1.4 m in both flood events is expected in the proposed parking area. Based on these outcomes, a new drainage system will need to be designed to drain from Chanel Street into Toongabbie Creek to keep the ponding to a maximum depth of 200 mm as required by Council.

The pump track was added to the proposal at a later stage and was not part of the flood assessment. In the design stages for the pump track, the information and mapping data from the flood assessment was utilised to ensure that the pump track would be located above the 1% AEP flood level and therefore not be subject to flooding. Council's internal stormwater catchment engineers have also reviewed the proposed drainage infrastructure. The drainage pits and pipes for the pump track will connect to the skate park and proposed headwall, mitigating flooding. Council has also advised that the pump track will be built up and proposed levels will be higher than existing levels.

Special focus also needs to be placed on constructing sufficient drainage from the skatepark to avoid ponding in the depressions and to not worsen the flooding on Chanel Street.

b) Groundwater

Furthermore, the presence of groundwater on the site will need to be taken into consideration in the design and construction stages of this development. The geotechnical survey (Appendix C) found groundwater at 3-3.5 m below ground surface at the location of the proposed skatepark. The presence of groundwater could be problematic during the construction stage, and will therefore require the development of a Groundwater Management Plan (GMP). This GMP should also include the use of a dewatering plant.

Further to the above, a Water Supply Work Approval (WSWA) is required under Section 90(2) of the WM Act for activities that involve dewatering groundwater (e.g. dewatering an excavation such as a trench or wet well, or HDD), irrespective of volume. Therefore, it is anticipated that a WSWA from WaterNSW will be required to carry out the work.

The flood impact assessment concluded there was no significant difference in flooding impacts between the proposed development and the current park conditions. Therefore, the impact on hydrology in the park are expected to be low once at an operational stage.

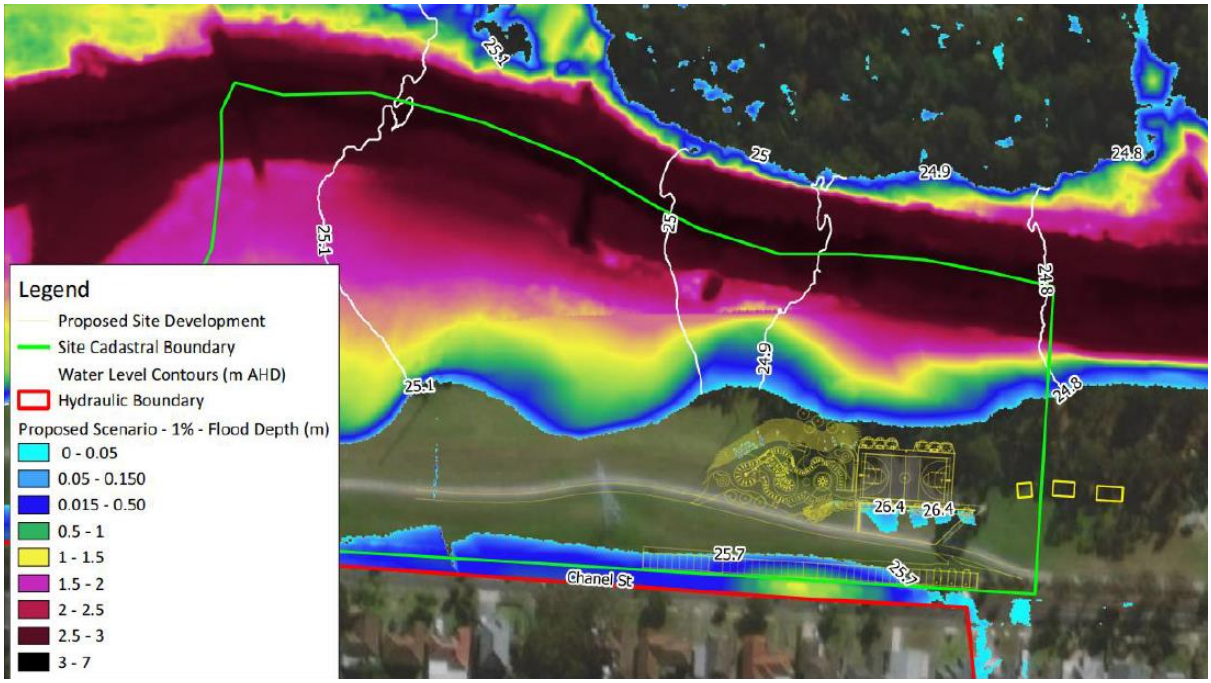

Figure 4: Water depth map for 1% AEP storm event under proposed conditions. Figure courtesy to SMEC, 2020 (Appendix D).

Table 3 – Impact assessment checklist for water quality and hydrology

Will the proposed works be located within 40 m of any watercourse, lake, lagoon, or wetland. If yes, the NSW DPIE Water should be notified and specific controls and assessments will be required to mitigate any potential impacts.	Yes ☐ No ☒
Will the proposed works involve excavating near a gutter, storm water channel, drain or inlet (within 40 m up stream)	Yes ☒ No ☐
Are the works likely to interfere with groundwater flows?	Yes ☒ No ☐
Will the proposed works be undertaken on a bridge?	Yes ☐ No ☒
Is the area mapped as flood prone?	Yes ☒ No ☐
Are the works likely to require the extraction of water from a local watercourse or the groundwater?	Yes ☐ No ☒
Will any water discharges be required for the works i.e. from sediment basins, or groundwater dewatering?	Yes ☐ No ☒
Will there be any ongoing/maintenance/operational impacts associated with the project?	Yes ☐ No ☒
If yes to any of the above detail impact: Due to the area being flood prone there is a significant risk of soil erosion in case of heavy or prolonged rainfall while the soil is exposed. Sediment laden runoff water would end up in the creek impacting water quality and clarity in downstream waterways. Potential pollutants could also affect the waterways. As a result of the proposed works and improved drainage, the hydrology of the area would be altered in that less water would be ponding on the street, increasing the safety and useability of the area. Altered landforms and park structures caused by the development has the potential to affect flood impacts in the surrounding area. A flood impact assessment with flood modelling was completed to estimate the risks involved. According to the flood modelling, the amenities building and skatepark would not have any impact on (and would not be impacted by) an 1% AEP flood event. The parking lot would be subject to significant ponding both before and after development, and in case of development new drainage lines would need to be installed to limit the ponding to a depth of 200 mm. The pump track was not part of the flood assessment, but it will be located above the 1% AEP flood level. Groundwater has been encountered on site, therefore a GMP will be required for the development.	

4.2.2 Mitigation Measures

The proposed work has potential to impact on the surrounding waterways via runoff. This risk can be minimised through implementation of the following safeguards.

Table 4 – Mitigation measures for water quality and hydrology

Type of Impact	Safeguard/ Mitigation Measure	Timing
Water quality -	Visual monitoring of local water quality (i.e. turbidity, hydrocarbon spills/slicks) is to be undertaken on a regular	Construction

impacts to surface and groundwater quality	basis to identify any potential spills or deficient erosion and sediment controls.	
	Water quality control measures are to be used to prevent any materials (e.g. concrete, grout, sediment, etc.) entering drain inlets or waterways.	Construction
	Natural flow paths within the site and the discharge points from the site should be retained and directed to their natural catchments.	Construction
	Vehicle wash down and/or cement truck washout is to occur in a designated area or offsite.	Construction
	If water discharges are required, an assessment will be required to identify water treatment requirements, water quality discharge criteria and discharge locations to ensure compliance with Section 120 of the POEO Act.	Construction
	Excavated spoil is to be stockpiled in a designated location on site, outside of the flood prone areas with erosion controls in accordance with the Erosion and Sediment Control Plan	Construction
Water pollution - fuel, chemical spills and hazardous materials	Store fuels, chemicals and hazardous materials in secure, bunded areas within temporary construction ancillary facilities, outside flood prone areas and at least 40 m from all waterways.	Construction
	Capture and dispose of spill and contaminated materials from temporary construction ancillary facilities at a licensed facility.	Construction
	Appropriate spill kits will be on located on site and deployed if required. Works personnel associated with the use and maintenance of plant should be trained with regard to the use and application of spill kits.	Construction
	Any spill will be reported to the supervisor immediately.	Construction
	Refuelling of plant and equipment is to occur in an area a minimum of 40 m away from watercourses, poorly drained areas and slopes above 10%.	Construction
	Plant and equipment will be inspected regularly to ensure there are no leakages of fuel, oil, or hydraulic fluid.	Construction
Flooding	Ensure the project has been designed to not increase flooding impacts or divert significant water away from natural flows.	Pre-construction
	As the works are within a flood prone area with little warning time, a flood management/evacuation plan must be implemented before construction commences. This should include flood preparedness and evacuation procedures.	Pre-construction

	Designs are to be made following the design principles and controls for flood management under Parramatta DCP section 2.4.2.1.	Pre-construction
	Plant and equipment to be stored on-site, as well as any materials and stockpiles should be located outside flood prone areas.	Construction
Groundwater	A Groundwater Management Plan (GMP) is to be developed and implemented for the works, including the use of a dewatering plant.	Pre-construction
	A WSWA from Water NSW is expected to be required to carry out the work.	Pre-Construction
Drainage	A new drainage system for the parking area will need to be designed to ameliorate significant ponding in Chanel Street and keep it within acceptable level.	Design

4.3 Biodiversity/Flora and Fauna

4.3.1 Existing Environment

Table 5 details the current biodiversity values/aspects present within the project area.

Table 5 – Existing environment of biodiversity

Vegetation communities	Exotic grass with a few native trees. The following PCTs are mapped in close or very close proximity to the site: **4024 - Cumberland Blue Box Riverflat Forest** **4025 - Cumberland Red Gum Riverflat Forest** **3262 - Sydney Turpentine Ironbark Forest** **3320 - Cumberland Shale Plains Woodland**
Is the vegetation on the site a Threatened Ecological Community (TEC) under the BC Act or EPBC Act	No
Condition	Disturbed and highly manicured with some native trees, the vast majority of which have been planted.
Any threatened vegetation species present	No
Native vegetation present	*Eucalyptus tereticornis* (Forest red gum), *Eucalyptus crebra* (Narrow-leaved ironbark), *Corymbia maculata* (Spotted gum), *Lophostemon confertus* (Queensland box), *Lomandra longifolia* (Spinyhead mat-rush) and *Callistemon* sp. (Bottlebrush).

	To be confirmed by an arborist: *Eucalyptus resinifera* (Red mahogany), *Eucalyptus melliodora* (Yellow box) and *Eucalyptus globoidea* (White stringybark).
Noxious weeds present	None identified
Exotic vegetation present	*Pennisetum clandestinum* (Kikuyu grass), *Agave attenuata* (Fox tail agave)
Describe the surrounding vegetation	Parkland with exotic grasses and planted garden beds and some trees, predominantly native species. Most trees are assumed to be planted as they are young trees in garden beds or appear in a line with even distances between. Four large forest red gums may be non-planted and will be retained. Adjacent to the site is bushland and Toongabbie Creek, which supports a higher level of biodiversity. This bushland will not be disturbed during the construction or operational stages of this development. Toongabbie Creek is mapped as Key Fish Habitat.
Fauna present	*Manorina melanocephala* (Noisy miner), *Manorina melanophrys* (Bell miner)
Are there any threatened fauna species present	No
Are there any fauna habitat features present e.g. nests, tree hollows, woody debris, bush rock	There is limited fauna habitat present as most of the site is open grass field. The forest red gums to be retained are mature and are likely to be hollow bearing. The other trees on the site are too young to have formed hollows. No rocks or underground habitat is present. No nests were spotted in the trees.

4.3.2 Impact Assessment

The development site is largely grassy without any tree cover, with the exception of four large forest red gums (*Eucalyptus tereticornis*) potentially classified as remnant vegetation, and four smaller red mahoganies (*Eucalyptus resinifera*) between the playground and basketball court. All of these trees will be retained in the development, and more trees will be planted around the amenities building.

Preliminary desktop assessments indicate that four PCTs are mapped as occurring in the immediate area surrounding the development:

- 4024 - Cumberland Blue Box Riverflat Forest is mapped as occurring immediately next to the development site. This PCT is part fit to River-Flat Eucalypt Forest on Coastal Floodplains of the New South Wales North Coast, Sydney Basin and South East Corner Bioregions listed as Endangered in the BC Act, and part fit with River-flat eucalypt forest on coastal floodplains of southern New South Wales and eastern Victoria listed as Critically Endangered in the EPBC Act.

- 4025 - Cumberland Red Gum Riverflat Forest is mapped as occurring in very close proximity to the site. This PCT is associated with the same Threatened Ecological Communities (TECs) as PCT 4024 above.
- 3262 - Sydney Turpentine Ironbark Forest is mapped as occurring in very close proximity to the site. This PCT is equivalent to Sydney Turpentine-Ironbark Forest in the Sydney Basin Bioregion listed as Critically Endangered in the BC Act, and part fit with Turpentine-Ironbark Forest of the Sydney Basin Bioregion listed as Critically Endangered in the EPBC Act.
- 3320 - Cumberland Shale Plains Woodland is mapped as occurring in very close proximity to the site. This PCT is part fit with Cumberland Plain Woodland in the Sydney Basin Bioregion and Shale Gravel Transition Forest in the Sydney Basin Bioregion listed as Critically Endangered and Endangered respectively in the BC Act, and part fit with Cumberland Plain Shale Woodlands and Shale-Gravel Transition Forest listed as Critically Endangered in the EPBC Act.

Forest red gum is one of the characteristic species of all above mentioned PCTs, and red mahogany is a characteristic species for PCT 3262 and PCT 3320. However, no tree felling or major disturbance of vegetation is planned close to the potential PCTs. Tree Protection Zones (TPZs) will be installed around each tree based on the tree's DBH (Diameter at Breast Height) as per AS4970 (Protection of Trees on Development Sites). No construction related activities will be allowed inside the TPZ.

According to Parramatta DCP, the works are also not to disturb the nearby bushland in any way. This includes root disturbance from vehicles, dust and sedimentation, stockpiling of material, or dumping of waste or material. A buffer 'no-go' zone should be installed in front of the bushland and is not to be entered by any construction related vehicles or workers. The easiest way to accomplish this is by erecting a fence along the buffer line.

Furthermore, there is a row of planted trees along Chanel Street of which 11 will need to be removed for the construction of the streetside parking lot. These trees occur in garden beds and are of different species, including narrow-leaved ironbark (*Eucalyptus crebra*), spotted gum (*Corymbia maculata*), and Queensland box (*Lophostemon confertus*). Other plants in the streetside planted garden beds include spinyhead mat-rush (*Lomandra longifolia*), bottlebrush (*Callistemon* sp.), and fox tail agave (*Agave attenuata*). The removal of any tree with a diameter larger than 10 cm is subject to Council approval.

All trees along Chanel Street, both those to be removed and those to be retained, are within the electricity transmission easement of the overhead high voltage powerlines and are therefore subject to pruning to limit their height to 4 m. This impacts on the general health and longevity of these trees.

Excavation works, grading and grass removal is expected to be limited to the footprints of each proposed structure. Trenches for electricity, water and sewage will be dug out to the closest connecting service line, and will require narrow sections of grass to be removed. These areas will be revegetated once the works are finished, and additional landscape planting will be carried out.

Noisy miners (*Manorina melanocephala*) were observed on site, and bell miners (*Manorina melanophrys*) were heard in the adjacent bushland. No other fauna was noted at the time of the site survey. No threatened fauna or potential habitat for threatened fauna species was observed on the site.

The Key Fish Habitat of Toongabbie Creek is at a sufficient distance from the proposed works that the direct and indirect impacts can be suitably mitigated with the safeguards outlined below. The vegetation buffer around the creek will also reduce runoff impacts into the creek. Erosion and sediment runoff, and pollution in case of heavy rains are the main risks to the creek. It is noted that the creek is flood prone and special mitigation measures are outlined to minimise impacts to the creek in case of flooding.

The grass fields on site have relatively low habitat value due to the high level of disturbance and lack of habitat structure. Native avifauna and small reptiles may use the grassy areas for occasional

foraging and refuge, but the proposed development is not expected to significantly impact any native species of fauna.

The main ecological features on site are the mature canopy bearing trees which will be retained, and the adjacent bushland. Neither of these are to be disturbed in the construction process. There are no Biodiversity Values, TECs, threatened species, MNES, Key Fish Habitat or other valuable ecological features mapped as occurring on the site itself, and none of these were identified during the site inspection.

Impacts of the development on biodiversity once at an operational scale are expected to be negligible.

Table 6 – Impact assessment checklist for biodiversity

Will the works require any vegetation clearing, removal and/or trimming?	Yes ☒ No ☐
Have the trees been planted by a community group, Landcare group or by council or is the tree a memorial or part of a memorial group e.g. has a plaque?	Yes ☒ No ☐
Will the works impact any remnant urban vegetation?	Yes ☒ No ☐
Will the works impact any aquatic habitats?	Yes ☐ No ☒
Do the trees form part of a heritage listing or have other heritage value?	Yes ☐ No ☒
Will the proposed works involve the removal or disturbance to fauna habitat (e.g. tree hollows, logs, timber bridges, bush rock)?	Yes ☐ No ☒
Are there any known Areas of Outstanding Biodiversity Value or Directory of Important Wetlands in Australia within the vicinity of the proposed works?	Yes ☒ No ☐
Are there any endangered ecological communities, populations, threatened flora and/or threatened or protected fauna within the vicinity of the proposed works?	Yes ☒ No ☐
Are there any significant weeds present?	Yes ☐ No ☒
Are the proposed works likely to impact on any vegetation including trees or shrubs?	Yes ☒ No ☐
Will there be any ongoing/maintenance/operational impacts associated with the project?	Yes ☐ No ☒
If yes detail impact: There are four TECs as described above that are mapped adjacent to the proposed development site. TECs in the bushland adjacent to the site will not be directly impacted on. Any indirect impacts can be minimised with the mitigation measures outlined below. Vegetation clearing for the works includes turf removal from the footprints of the development areas and tree removal along Chanel Street. Any tree removal on public land, irrespective of size, will require separate Council approval. These trees are within garden beds and are likely planted by Council. Eight mature canopy trees in the vicinity of the amenities building are to be retained, including four mature forest red gums which are possible remnant urban vegetation. Toongabbie Creek is mapped as having both Biodiversity Values and Key Fish Habitat present. However, no impact on the surrounding bushland and the nearby creek is to be expected from the construction works, provided the mitigation measures are followed. Aquatic habitats may be indirectly impacted by the development through sediment laden runoff water from the site in case of heavy or prolonged rains.	

Consideration was given to the potential impact of the proposed activity on each threatened flora and fauna species assessed as potentially occurring within and adjacent to the project area. See Appendix E for the full likelihood of occurrence assessment.

The MNES as per the EPBC Act can be found in Appendix F.

4.3.3 Mitigation Measures

Table 7 – Mitigation measures associated with biodiversity

Type of Impact	Safeguard/ Mitigation Measure	Timing
Flora and fauna - general	As part of the site induction process, provide all site personnel with information on the biodiversity values of the study area, including valuable ecological features, no-go areas and responsibilities under relevant environmental legislation.	Pre-Construction
	A buffer zone should be installed in front of the bushland and is not to be entered by any construction related vehicles or workers. The easiest way to accomplish this is by erecting a fence along the buffer line.	Pre-Construction
	Trees to be retained are to be fenced off within an appropriately sized Tree Protection Zone (TPZ) to avoid disturbance to the root zone.	Pre-Construction
	Should unexpected threatened fauna or flora be located at any time during construction, cease work immediately in the area to prevent further harm. Contact Council's Natural Areas Officer to determine if further assessment or management plans are required.	Pre-Construction and Construction
	No construction activities or other activity likely to disturb native vegetation and habitat shall occur outside the designated boundaries of the construction zone.	Construction
	Confine vehicle movements and avoid movement on undisturbed areas. Avoid storing or parking equipment and materials under or close to trees.	Construction
	At completion of works block off and rehabilitate any access tracks made during works.	Construction
Clearing of vegetation: pre-clearing	All vegetation to be retained is to be clearly marked out to ensure that no vegetation clearing is taking place within those areas.	Pre-Construction
Clearing of vegetation: general safeguards	Only trees approved by the Council and appropriately marked may be removed.	Construction
	If any damage occurs to vegetation outside of the boundaries of the work site as a result of the implementation of the proposal, the Project Manager will be notified and will establish strategies for mitigation of impacts and site restoration.	Construction
Aquatic habitats and riparian zones	Minimise sediment disturbance and erosion as per section 4.1.2 of this report to minimise impact on downstream riparian areas and aquatic habitats.	Construction
	All declared weeds must be treated according to requirements under the Biosecurity Act 2015 prior to the works commencing.	Construction

Type of Impact	Safeguard/ Mitigation Measure	Timing
Invasion by exotic species	Use weed-free topsoil in landscaping and revegetate disturbed sites with locally indigenous species.	Construction
	Construction machinery should be washed prior to entering and leaving site to ensure weed material is not transported.	Construction
	Weed-infested material (e.g. drain spoil containing pasture grasses) should not be stockpiled on land which has native vegetation populations.	Construction
Stockpiling	Only place stockpiles in low value vegetation, where cleared sites are unavailable.	Construction
	Use existing stockpiles before creating new ones.	Pre-Construction and Construction
Site restoration	The rehabilitation of disturbed areas will be carried out progressively as construction stages are completed, and in accordance with Parramatta DCP.	Construction and Post-Construction

4.4 Heritage

4.4.1 Impact Assessment

a) Aboriginal heritage

An Aboriginal due diligence assessment was undertaken as part of this REF, in accordance with the *Due diligence code of practice for the protection of Aboriginal Objects in NSW* (DECCW 2010) and the *Guide to investigating, assessing and reporting on Aboriginal cultural heritage in New South Wales* (Office of Environment & Heritage 2011).

In the assessment a registered Aboriginal site was found to be located in the vicinity of proposed works (AHIMS 45-5-0791). The aboriginal site is within an area that historically was highly utilised by Aboriginal people, close to Toongabbie Creek. The site extends across much of Sue Savage Reserve and artefacts have been previously recorded among other on the top and slopes of the flood levee. The site was recorded prior to the construction of the levee and the site was highly disturbed during the levee construction works.

As per the recommendations in the due diligence assessment, an ACHAR and accompanying Aboriginal Archaeological Technical Report and test excavations were prepared for the proposed works. The outcome shows that AHIMS Site 45-5-0791 does not extend into the study area and therefore no disturbance of objects and/or deposits of Aboriginal archaeological and cultural significance is anticipated. As such, an Aboriginal Heritage Impact Permit (AHIP) is not required.

Furthermore, the site may hold high cultural significance with intrinsic values to the Aboriginal community. The following recommendations were formulated after consultation with the proponent and Heritage NSW:

- To protect AHIMS registered site 45-5-0791 a heritage curtilage/no-go buffer is to be adopted for the duration of the proposed works.

- It is recommended that a steel frame panel fence is installed prior to the commencement of any works. It is to be installed at a minimum of 3 m away from the existing boundary (to be confirmed on site) off the southern part of the heritage item.
- The works can proceed with caution with the implementation of the Unexpected Finds Protocol developed by AMAC Archaeological as part of the ACHAR.
- All staff, contractors and workers on site should be briefed prior to works commencing as to the status of the area and its preservation, and their responsibilities regarding any Aboriginal archaeological deposits and objects located during the works.

b) European heritage

The following heritage database searches have been done:

- NSW Heritage database
- Commonwealth EPBC heritage list
- Australian Heritage Places Inventory
- Local Environmental Plan(s) heritage items

Based on these searches there are no heritage listed items on the site or close to the site.

A Historical Archaeological Impact Assessment (HAIA) was also prepared for the proposal. The site has nil to low potential to contain undocumented archaeological remains relating to the former farm on the site, and the site is not considered of State or local heritage significance. The proposed works will have nil heritage impact to known archaeological relics and can proceed without historical archaeological supervision. No further application is required under Section 139 of the *Heritage Act 1977*, and no permit required from Heritage NSW.

Table 8 – Impact assessment checklist for heritage

Does the project pose any potential risk to any identified Aboriginal heritage?	Yes ☒ No ☐
Will the project excavate large areas of undisturbed (virgin) land?	Yes ☐ No ☒
Will the works remove large stands of vegetation which could potentially contain scar trees.	Yes ☐ No ☒
Will the works be located within or in the vicinity of waterways?	Yes ☒ No ☐
Has an Aboriginal Due Diligence Assessment been completed?	Yes ☒ No ☐
Does the project pose any potential risk to any identified Non-Aboriginal heritage?	Yes ☐ No ☒
Will there be any ongoing/maintenance/operational impacts associated with the project?	Yes ☐ No ☒
Are there any items of Non-Aboriginal heritage located within the vicinity of the proposed works?	Yes ☐ No ☒
Does the project pose any potential risk to Non-Aboriginal heritage?	Yes ☐ No ☒
If yes detail impact: A registered site is found to be present in the area, but not within the development site. An Aboriginal Cultural Heritage Assessment Report (ACHAR) was prepared along with undertaking test excavations in accordance with the *Code of Practice for the Investigation of Aboriginal Objects in NSW*. Following the test excavations, it weas determined that an AHIP would not be required. The recommended measures are listed as mitigation measures below.	

4.4.2 Mitigation Measures

Table 9 – Mitigation measures associated with heritage

Type of Impact	Safeguard/ Mitigation Measure	Timing
Aboriginal heritage - management of existing heritage items	To protect AHIMS registered site 45-5-0791 a heritage curtilage/no-go buffer is to be adopted for the duration of the proposed works. A steel frame panel fence should be installed prior to the works commencing at least 3 m away from the existing boundary to the heritage site.	Pre-Construction
	If any impact to AHIMS registered site 45-5-0791 was to occur an AHIP issued by Heritage NSW would be required.	Pre-Construction
Aboriginal heritage - awareness	All staff, contractors and workers on site should be briefed prior to works commencing as to the status of the area and its preservation, and their responsibilities regarding any Aboriginal archaeological deposits and objects located during the works.	Pre-Construction
Heritage - unexpected finds	The works can proceed with caution with the implementation of the Unexpected Finds Protocol developed by AMAC Archaeological as part of the ACHAR.	Construction

4.5 Noise and Vibration

4.5.1 Impact Assessment

The project is located next to an area zoned Medium Density Residential and there are approximately 35 residential houses within a 100 m radius of the site. In addition, there is an Environmental Conservation zoned area across Toongabbie Creek. The remaining areas surrounding the site are parkland with recreational facilities, and an industrial area.

Noise from the construction works would temporarily impact the local area and would mainly include delivery and work vehicle noise, and construction machinery noise.

Once at an operational scale, the noise impact on the local area is expected to be low. An increase in noise due to higher numbers of visitation and noise carrying from the new skatepark and pump track would be expected, especially during after school hours and on the weekends. More traffic is also to be expected, adding to the noise generated in the area. The park would mainly be used during daylight hours so the potential increase in noise would only extend to these hours. This noise level is not expected to be significantly more than at current levels.

Table 10 – Impact assessment checklist for noise and vibration

Will the works involve use of high noise generating plant/equipment in an urban area.	Yes ☒ No ☐
Are there any noise sensitive areas near the location of the proposed works that may be affected by the works? (i.e. church, school, hospital, residences)?	Yes ☒ No ☐
Would operation of the proposal alter the noise environment for sensitive receiver's long term? This might include changing traffic flow, increasing traffic speeds by more than 10km/hr or installing audio-tactile line markings.	Yes ☒ No ☐
Will any vibration intensive plant and equipment be used in the vicinity of structures including bridges, buildings or other structures?	Yes ☒ No ☐
Are the proposed works going to be undertaken outside of standard working hours? Standard working hours Monday – Friday 7:00am to 6:00pm Saturday 8:00am to 1:00pm Sunday and Public Holidays No work	Yes ☐ No ☒
If yes detail impact: High noise generating and vibration intensive plant/equipment may be used during demolition and construction works. The site is located next to a residential area and local residents would be impacted by the construction noise from the site for the 2-3 months duration of the works. As a result of the development more traffic is to be expected in the area, contributing to an increase in noise generated. Higher levels of visitation, particularly to the new youth facilities, may also generate a higher level of noise than previously. NSW EPA Construction Noise Guideline (2020) should be followed to minimise impact of noise on the surrounding area during the construction stage of the project.	

4.5.2 Mitigation Measures

Table 11 – Mitigation measures associated with noise and vibration.

Type of Impact	Safeguard/ Mitigation Measure	Timing
Noise and vibration - minimisation	Contractor should include mitigation measures to be applied to minimise construction noise as part of the CEMP.	Pre-Construction
Noise and vibration - notification	Residents and/or occupants within the vicinity of the proposed works are to be notified in advance of the commencement of the construction works.	Pre-Construction
Noise and vibration - hours	Works are to be carried out during standard construction hours with no works on Sundays or public holidays. If out of hours works are required, additional noise assessments and additional mitigation measures may be required in	Construction

	accordance with the NSW EPA Construction Noise Guideline.	
Vibration	Where specific vibration intensive plant is located within minimum working distances of structures, additional vibration controls may be required e.g. vibration monitoring, use different plant/equipment.	Construction
Noise and vibration	Plant operators are to operate equipment in a manner that does not generate unnecessary noise, such as by avoiding excessive revving and minimising impacts with solid objects where possible.	Construction
	Machines/equipment are to be turned off when not in use, or throttle-down to a minimum	Construction
	All plant will be maintained in good condition, with all reasonable and feasible acoustic treatments (i.e. residential mufflers and plant enclosures) installed and maintained.	Construction
	Noise complaints and impacts are to be monitored and to be passed onto the Work Supervisor, and recorded in a complaints register.	Construction

4.6 Air Quality

4.6.1 Impact Assessment

Impacts on air quality are expected to be low and limited to the duration of the works (2-3 months). The main sources of air pollution will be vehicle exhaust fumes and dust from the earth works. As the ground cover will be removed and soil exposed, there could be an increase in airborne sediment and dust in the area on windy days.

Once at an operational stage the impact on air quality from the development is expected to be negligible, and at a similar level as with the current use.

Table 12 – Impact assessment checklist for air quality

Are the proposed works likely to result in large areas (>2ha) of exposed soils?	Yes ☒ No ☐
Are there any dust sensitive receivers located within the vicinity of the proposed works during the construction period (i.e. church, school, hospital, residences)?	Yes ☒ No ☐
Is there likely to be any dust, smoke, steam or vehicle emissions?	Yes ☒ No ☐
Will there be any ongoing/maintenance/operational impacts associated with the project?	Yes ☐ No ☒

If yes detail impact: A moderate amount of dust may be generated as part of the works. There will be vehicles and machinery on site for the duration of the works, causing an increase in emissions in the local area. The turf will be stripped in the footprint area for all three development sections, and the area of soil exposed is considerable. On dry and windy days, the amounts of airborne dust from these areas may be significant.

4.6.2 Mitigation Measures

As the project will require removal of ground cover there is potential for dust impacts on the surrounding residents. This risk can be minimised through implementation of the following safeguards.

Table 13 – Mitigation measures for air quality

Type of Impact	Safeguard/ Mitigation Measure	Timing
Air quality	Measures to minimise or prevent air pollution or dust are to be used including watering or covering exposed areas.	Construction
	Works are not to be carried out during strong winds or in weather conditions where high levels of dust or air borne particulates are likely.	Construction
	Vegetation or other materials are not to be burnt on site.	Construction
	Vehicles and vessels transporting waste or other materials that may produce odours or dust are to be covered during transportation.	Construction
	Vehicles and equipment are to be maintained in good working order.	Construction
	Monitor work areas and stockpiles for dust generation and seed/cover/spray to suppress.	Construction
		Construction
	Do not leave vehicles idling.	Construction
	Trucks travelling over exposed areas will travel at reduced speed.	Construction
	Minimise ground disturbance, and progressively revegetate disturbed areas.	Construction Operation

4.7 Waste and Chemical Management/Hazardous Materials

4.7.1 Impact Assessment

The project may generate various types of waste, the main ones being the removed turf, soil, pavement, excavation materials, and drainage structures. Construction waste associated with the

project would be managed in accordance with the *Waste Avoidance and Resource Recovery Act* 2001. Other waste generated during construction would include:

- construction waste, including packaging, concrete, bricks, crushed rock, steel, timber, etc;
- general litter from site personnel such as food scraps, plastic and glass containers and packages; and,
- liquid waste such as oils and chemicals from equipment maintenance, in addition to sewage from construction site facilities.

A Waste Management Plan should be prepared in accordance with Council guidelines and submitted with the construction environmental management plan. This plan should include, among other mitigation measures, an estimate of the amount of waste and recyclables to be generated, and a site plan for waste storage and bins, and access paths for collection vehicles.

The incorrect disposal of construction wastes could potentially result in contamination of local soils and water resources. Prior to the disposal of any waste material, it would be classified in accordance with NSW Waste Classification Guidelines (EPA 2014) and taken to an appropriately licensed waste management facility.

A formal waste classification for soils in accordance with the EPA Waste Classification Guidelines has not been completed. Therefore, prior to the removal of any soil material from site, a waste classification will be required. The geotechnical survey completed for the development (Appendix C) indicates that the soils encountered on site would be classified as General Solid Waste (non-putrescible). However, the sampling was not done in accordance with guideline densities and additional sampling and analysis is required prior to removing any material from the site.

Any excess material would be classified and disposed of as above. It is anticipated that construction works would not require the use of or result in the production of any hazardous materials apart from standard machinery fuel and oil.

Once at an operational stage, the number of visitors to the reserve is expected to increase. This will require more rubbish and recycling bins be installed, particularly in the vicinity of the barbecue and picnic shelters, the amenities building, and the new parking, skatepark and pump track.

Table 14 – Impact assessment checklist for waste and chemical management

Are the proposed works likely to generate large (>200 tonnes) amounts of waste material?	Yes ☒ No ☐
Are the proposed works likely to require a licence from EPA/OEH?	Yes ☐ No ☒
Does the project pose any potential risk to the surrounding environment as a result of waste generated?	Yes ☐ No ☒
Will the works require the removal of spoil/soil from site?	Yes ☒ No ☐
Will the works require the importation of material in large quantities e.g. topsoil, roadbase/DGB, sand, general fill?	Yes ☒ No ☐
Is there likely to be any transport or disposal of contaminated waste?	Yes ☐ No ☒
Will there be any ongoing/maintenance/operational impacts associated with the project?	Yes ☒ No ☐
Will the works require the storage of large quantities of chemicals or fuels?	Yes ☐ No ☒

If yes detail impact: The waste from the site is expected to mainly consist of removed turf, soil, pavement, excavation materials, and drainage structures, along with some general rubbish such as packaging and containers. Spoil will also likely need to be removed. Ongoing waste impacts from the development includes larger amount of waste being generated due to the higher number of visitors. Additional rubbish and recycling bins will need to be installed to accommodate for this.

If YES to any of these items, a Waste Management Plan will need to be prepared as part of the CEMP

4.7.2 Mitigation Measures

Table 15 – Mitigation measure for waste and chemical management

Type of Impact	Safeguard/ Mitigation Measure	Timing
Site waste management	A Waste Management Plan will need to be prepared as part of the CEMP.	Pre-Construction
	Any waste oils or contaminated soils encountered on site will be properly disposed of, according to NSW EPA Waste Classifications Guidelines (2014).	Construction
	All surplus material, off cuts, and other debris resulting from the work shall be removed from site and disposed of at a licensed waste management facility. All waste is to be covered during transportation.	Construction
	Waste material, other than vegetation and tree mulch, is not to be left on site once the works have been completed.	Construction
	Working areas are to be maintained, kept free of rubbish (including cigarette butts) and cleaned up at the end of each working day.	Construction
	Designated waste collection and storage points are not to be located within 40 metres of a watercourse or within the floodzone.	Construction
	The site compound will have a designated waste storage area on hardstand and a spill kit located nearby.	Construction
	Waste must be stored in appropriate waste receptacles i.e. skip bins.	Construction
	Skip bins must have lids which can be closed during windy or wet periods.	Construction
	No waste storage is permitted in high conservation areas.	Construction
	Liquid waste must be stored in suitable waste receptacles which cannot leak and within a bunded and enclosed area.	Construction

	Work areas must be kept generally clean and tidy and free of litter.	Construction
	Excavated spoil is to be stockpiled in a designated location on site, outside of the drainage swale with erosion controls in accordance with the Erosion and Sediment Control Plan	Construction
Waste disposal	Waste must be classified in accordance with the NSW EPA Waste Classification Guidelines.	Construction Operation
	Waste must only be disposed at suitably licensed waste facilities.	Construction Operation
	Waste disposal records, such as weighbridge dockets must be kept and recorded.	Construction
	Prior to transporting off site or disposal of any spoil, it must be classified in accordance with the NSW EPA Waste Classification Guidelines.	Construction

4.8 Traffic, Access and Services

4.8.1 Impact Assessment

Access for construction vehicles to the site will be via Chanel Street and may impact those local residents whose driveways enter onto Chanel Street. The development site stretches for over 200 m along the street so access will not be restricted, making it easier to manage traffic flow to and from the site. At times of high numbers of deliveries or material removal from the site, there may be a queue of trucks waiting to enter or exit the site, potentially blocking residential traffic on the street. A detailed Traffic Management Plan with active traffic control will be needed to manage residential and construction traffic flows.

It is likely that on-street parking on Chanel Steet in the vicinity of the development will need to be prohibited for the duration of construction works for there to be enough space for vehicles to pass the parking construction. If there are times during the construction works when no trucks or other large vehicles are accessing the site needing sufficient space, on-street parking next to the site can be allowed. The street section does not seem to be a popular parking area based on satellite imagery and on the day of the site survey, around 2:00 pm in the afternoon, there was only one car parked along this section of the street. However, this may be different in the evening and night time and on the weekends. All surrounding residential streets offer plentiful on street parking.

The work site is located in park land and is traversed by a popular walking and cycling track. This track and all other pedestrian, bicycle and other recreation traffic in the area would be cut off and light traffic redirected for the duration of the works. Particular focus needs to be placed on safety and signage during the time of the works to ensure all pedestrians are vigilant and aware of the safety risks of moving in close proximity to a construction site.

Site services in the area include overhead high voltage electrical transmission lines and electricity lines, an underground high pressure oil pipe, and two underground easements for transmission of which only one has visible transmission structures built (Figure 5). Other services within the park but not within the development site include underground power mains and sewerage. As per State

Environmental Planning Policy (Transport and Infrastructure) 2021, Chapter 2, Division 1, Endeavour Energy and Ampol as the easement asset owners have been consulted and they have approved of the work and provided conditions for the contractor to adhere to.

Once the development is at an operational stage, the effects on both pedestrian and vehicle traffic flows is expected to be negligible. The new parking lot will ensure parking pressure on the surrounding streets is kept low.

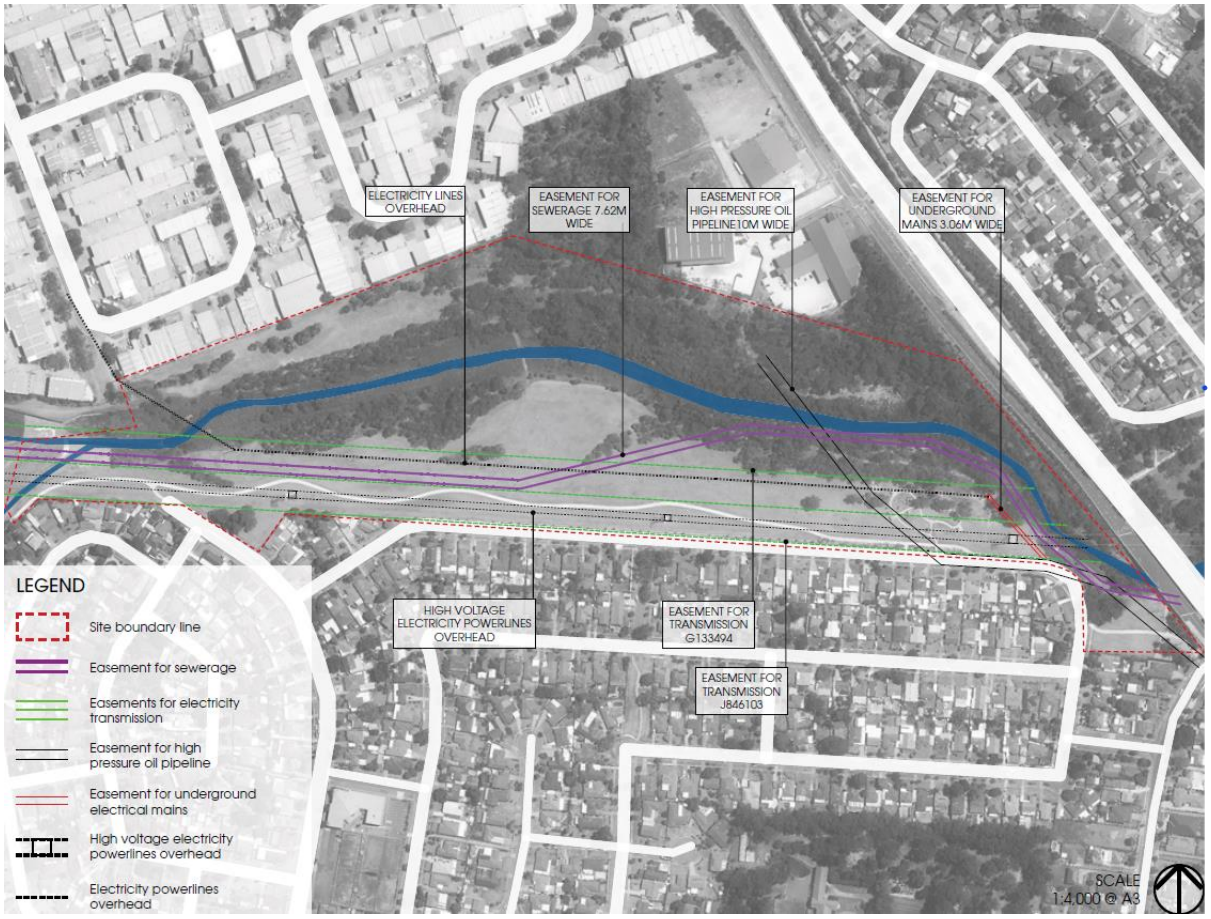

Figure 5: Easements in Sue Savage Reserve. Figure courtesy to City of Parramatta, 2017 (Sue Savage and Reynolds Parks Master Plan Report 2017, p.11).

Table 16 – Impact assessment checklist for traffic

Are the works located in on or near major transport corridors (e.g. highways, railways, airports)?	Yes ☐ No ☒
Are the works located in on or near major pedestrian routes (e.g. walking tracks, near sporting venues etc.)?	Yes ☒ No ☐
Are the proposed works likely to result in detours, disruptions or delays to traffic flow (vehicular, cycle and pedestrian)?	Yes ☒ No ☐
Are the proposed works likely to impact access to properties or businesses?	Yes ☒ No ☐
Are the proposed works likely to alter any on-street parking arrangements (either temporarily or permanently)?	Yes ☒ No ☐

If yes detail impact:

For the duration of the works, access to and parking in Chanel Steet is expected to be disrupted. Heavy vehicle access to the site is expected to cause some waiting time for other passing traffic, and on-street parking is likely to be prohibited for the duration of the works. A detailed Traffic Management Plan with active traffic control will be required to mitigate the impacts on traffic and parking.

The works are expected to disrupt the local pedestrian and bicycle routes, which would have to be redirected to keep everyone at a safe distance from the construction works.

4.8.2 Mitigation Measures

Table 17 – Mitigation measures for traffic, access and services management

Type of Impact	Safeguard/ Mitigation Measure	Timing
Traffic and transport	A detailed Traffic Management Plan will be prepared with details of active and passive measures to control pedestrian and vehicle traffic and on and off-street parking.	Construction
	Where possible, current traffic movements and property access are to be maintained during the works. Any disturbance is to be minimised to prevent unnecessary traffic delays.	Construction
	Signage will be used to advise pedestrians and motorists of the worksite. Appropriate measures would be implemented to direct people around and through the work site.	Pre-Construction
	Comply with Council requirements regarding traffic control, access and road/ pedestrian access (Parramatta DCP).	Construction
	Erect signs regarding proposed works, temporary road closures, diversions etc.	Construction
	All work vehicles and machinery when not in actual use for the proposed activity will be stored off road.	Construction
	Operators to drive to conditions.	Construction
	The contractor is to adhere to the conditions provided by the easement asset owners (Endeavour Energy, Ampol) during construction.	Construction

4.9 Lighting and Visual Amenity

4.9.1 Impact Assessment

The visual amenity would be altered by the development, both during construction and in the long term. While the construction is underway, there would be fences erected, construction machinery

and excavation works disrupting the landscape views. Once the works are completed, the new skatepark and pump track would take up part of what used to be a relatively undisturbed grass field, and the amenities block and barbecue shelters will disrupt the currently unobstructed views of the bushland.

After development the landscape would be in a less natural state, and some might consider the new structures an eyesore. To ameliorate this, landscape plantings will be done around the new structures so that in time they will be less visible and soften the interface.

No light installations have been proposed and as such there will be no impact of increased lighting on either local residents or native wildlife.

As the proposed development sits within a parkland with a small recreation field, play area, picnic shelters and manicured gardens, the new development is expected to fit in with the existing infrastructure.

Table 18 – Impact assessment checklist for any visual amenity or landscape impacts.

Are the works located in an area of high aesthetic or scenic value?	Yes ☒ No ☐
Do the proposed works have the potential to permanently impact or change visual amenity of the area?	Yes ☒ No ☐
Will the works involve the removal of large trees in a public place?	Yes ☐ No ☒
Will the works involve the erection or installation of structures in a public place?	Yes ☒ No ☐
If yes detail impact: The work includes construction of an amenities building, car park, skatepark and pump track, and will be completed with landscape planting. These will all impact on the local landscape, particularly the new skatepark and pump track which will be the biggest new addition. The new structures should be designed in a way that minimises negative impact on the visual amenity of the area and complements the existing features and topography. To maintain a natural look and landscape, the landscape planting should be done in a way that helps the new structures blend in with the bushland backdrop. Natural colour tones are preferable over bright colours.	

4.9.2 Mitigation Measures

Table 19 – Mitigation measures for visual amenity/landscape

Type of Impact	Safeguard/ Mitigation Measure	Timing
Social and visual	Contain all work within the boundaries designated on the site plan.	Construction
	Restore work sites to as close to their original condition as possible.	Post-Construction
	Minimise spread of stockpiles, waste and parking.	Construction
	Complaints and impacts are to be monitored and to be passed on to the Works Supervisor, and recorded in a complaints register.	Construction

	The works area is to be kept free from rubbish and the site managed to reduce dust.	Construction
	Minimise disturbance or removal of trees, particularly if they are providing visual screening for sensitive receivers.	Construction
Design	Ensure the works are designed to complement the existing landscape by using appropriate materials, finishes, paint colours and other urban design elements.	Pre-Construction Design

4.10 Socio-economic

4.10.1 Impact Assessment

The site is located in a parkland with existing recreational infrastructure, and long-term disturbance to this area is expected to be minimal. In the long-term the useability of the space for general recreational outdoor activities will increase. Considering the surrounding park areas offer plenty of opportunities for these activities the intensification of use will not retract from the recreational useability of Sue savage Reserve.

In the short-term the recreational use of the local area will be temporarily affected by disturbance from construction work, mainly in the form of noise and traffic.

Based on community consultation the proposed development will add enhanced features to the reserve and increase the socio-economic value of the area to the local residents and other park users.

Table 20 – Impact assessment checklist for socio-economic factors

Are the proposed works likely to impact on local business?	Yes ☐ No ☒
Are the proposed works likely to require any property acquisition?	Yes ☐ No ☒
Are the proposed works likely to impact on any items or places of social value to the community (either temporarily or permanently)?	Yes ☒ No ☐
If yes detail impact: The use of the subject site as passive recreational fields will halt as the long-term use for the area changes. However, the local park area provides sufficient opportunity to relocate these activities to compensate for that loss. Once operational, the park will provide recreation for a broader age group, adding value to the local area as a social place for all ages. In the short-term, the area surrounding the site will suffer some temporary disturbance from the construction work (noise, traffic safety, parking, air pollution) and the site will be closed off temporarily to accommodate for construction related needs.	

4.10.2 Mitigation Measures

Table 21 – Mitigation measures for socio-economic factors

Type of Impact	Safeguard/ Mitigation Measure	Timing
Social and visual	Notify the local community 2-4 weeks ahead of the works commencing.	Pre-Construction
	All personnel will exercise courtesy in dealing with the community.	Construction
	Onsite signage to be used, incorporating project details attached to temporary fencing (including site supervisor and/or project manager details).	Construction

5 | Assessment of Environmental Factors

Section 171 of the EP&A Regulation lists the environmental factors to be investigated when consideration is being given to the likely impact of an activity on the environment under Part 5 of the EP&A Act. An assessment of the proposed activity against these environmental factors has been undertaken and is included in

Table 22: Assessment of section 171 (EP&A Regulation) environmental factors

In accordance with Section 171(2) of the EP&A Regulation, Council has considered the following environmental factors:	Assessment of impact	Reason
a. the environmental impact on the community	Negative/Positive	The subject site is located within a park and is frequently used by the public for social and recreational activities. The long term impacts on the recreational use of the site will be improved. Temporary negative impact is expected while the works are undertaken in the form of noise, dust and visual disturbances. Chapter 4.10 provides a full assessment of potential socio-economic impacts.
b. the transformation of the locality	Negative	The subject site consists of parkland adjacent to bushland. Part of the open grassy areas will be used to construct a pump track, amenities and barbecue facilities. A roadside parking lot will also be added. The impact on the natural appearance of the landscape will be negatively impacted with increased developed areas. However, the site is located adjacent to a residential area and will fit in with the local landscape.
c. the environmental impact on the ecosystems of the locality	Negative	The biodiversity of the development site itself consists of grasses and some planted park trees. The grass will be removed where features are being constructed, and some small street trees will be removed where the parking is constructed. The impacts on biodiversity within the development footprint will be moderate, however on a landscape scale the impacts are small as the impacted sections are manicured parkland. There will be temporary disturbance during the construction works. No impacts are expected in the adjacent bushland or any remnant vegetation. No threatened species are known to occur on the site. Refer to Section 4.3 for further information on this analysis.

In accordance with Section 171(2) of the EP&A Regulation, Council has considered the following environmental factors:	Assessment of impact	Reason
d. reduction of the aesthetic, recreational, scientific or other environmental quality or value of the locality	Negative/Positive	There would be negative impacts on the aesthetics of the site from machinery and plant (noise, access restrictions etc.) while the works are undertaken. These impacts are temporary. Once completed the aesthetic values will have changed from natural grassy area to built surfaces. Long term, the project will improve the recreational use of the site.
e. the effects on any locality, place or building that has – f. aesthetic, anthropological, archaeological, architectural, cultural, historical, scientific or social significance, or g. other special value for present or future generations?	Negligible	The subject site has no significant aesthetic, architectural, cultural, historical, scientific or social values likely to be impacted on by this activity. An ACHAR report with test excavations was prepared for the project, showing that while there are Aboriginal sites within Sue Savage Reserve, no artefacts or other features of cultural significance were recorded within the development footprint.
h. the impact on the habitat of protected animals, within the meaning of the *Biodiversity Conservation Act 2016*	Negligible	Impacts on habitat will be limited to removal of some grass and small street trees. None of these habitat impacts are expected to affect threatened species. No threatened species are likely to be dependant on the site for habitat. No habitat of protected species that occur in the vicinity of the site are expected to be significantly impacted on by the proposed activity. Refer to Section 4.3 and Appendix E for details.
i. the endangering of a species of animal, plant or other form of life, whether living on land, in water or in the air?	Negligible	The impact on threatened flora and fauna have been considered in association with the proposed activity. No threatened species are known to occur on the site. While threaten species may use the site for foraging or passing through, they are unlikely to be dependant on the site. Therefore, the proposal's impact on endangering of animals and plants is negligible. Refer to Section 4.3 for details.

In accordance with Section 171(2) of the EP&A Regulation, Council has considered the following environmental factors:	Assessment of impact	Reason
j. long term effects on the environment	Negative/Negligible	The long term impacts on the environment may be negative within the immediate footprint of the development. However, the site is already heavily disturbed recreational land so the total impacts would be minimal. The impacts in the park outside the development footprint would be limited to increased visitation to the area and resulting impacts (noise, litter, grass trampling etc.)
k. degradation of the quality of the environment	Negative/Positive	Aspects of environmental degradation include construction work impacts, the changed land use, and potential impacts from increased visitation to the site. The positive impacts include improved recreational facilities.
l. risk to the safety of the environment	Negligible	While the proposed future recreational use of the site brings some safety risks, these are well within the acceptable limits and will be suitably mitigated as part of the site design.
m. reduction in the range of beneficial uses of the environment	Positive	The existing uses of the area will be maintained, and new recreational uses will be added. Therefore, the proposal will result in an increase in beneficial uses of the environment.
n. pollution of the environment	Negative/Negligible	The proposed activity is not expected to result in pollution of the environment. The increased visitation may increase noise in the area during daytime, however this would not impact significantly on nearby residential properties. Rubbish bins would be provided to prevent littering. The proposed activity is not expected to result in the oxidation of acid sulfate soils and subsequent leaching back into the waterways.
o. environmental problems associated with the disposal of waste	Negligible	The proposed activity would not result in the generation of trackable waste, hazardous waste, liquid waste, or restricted solid waste as described in the POEO Act.
p. increased demands on resources (natural or otherwise) which are, or are likely to become, in short supply	Negligible	No natural or other resources that are, or are likely to become, in short supply will have increasing demands in response to the proposed activity.

In accordance with Section 171(2) of the EP&A Regulation, Council has considered the following environmental factors:	Assessment of impact	Reason
q. the cumulative environmental effect with other existing or likely future activities	Negligible	The proposed works are located in a parkland for which no other future plans are known. The adjacent areas are conservation areas and residential areas, neither of which are likely to undergo development. Therefore, the cumulative impacts in the close area are unlikely to be significant.
r. Any impact on coastal processes and coastal hazards, including those under projected climate change conditions	Negligible	The site is not located close to the coast and so there will be no impacts on coastal aspects.
s. Applicable local strategic planning statements, regional strategic plans or district strategic plans made under the Act, Division 3.1	Negligible	The proposed activity is consistent with: • Parramatta Local Strategic Planning Statement; • Central City District Plan; and • Greater Sydney Region Plan
t. other relevant environmental factors	Negligible	There are no other relevant environmental factors pertaining to the proposed activity.

6 | Conclusion and Recommendations

6.1 Summary of Findings

The REF has been prepared in accordance with all the relevant legislative requirements and regulations. The REF has ensured that Council has examined and considered to the fullest extent possible, all matters that have the potential to affect or are likely to affect the existing environment as a result of the project.

Earthworks will be required during the project and for this reason the groundcover will be removed from the footprints of each of the new structures. This will potentially result in erosion and sediment impacts, including the generation of sediment laden water, particularly if there is heavy rain during the construction phase. This risk is augmented by the site being mapped as flood prone. Sediment from the site may be washed away by rain and flood waters and taken downstream into Toongabbie Creek and Parramatta River. To manage soil and water related risks, an Erosion and Sediment Control Plan will be developed and implemented throughout the project.

Due to the risk of flooding, there are restrictions for excavation and soil disturbance in the flood levee. The height of the levee is not to be altered, and it is recommended any changes in its width are minor. The parking lot is the only part of the development that is subject to flooding, and due to significant ponding will require an improved drainage system be installed. The development itself is not likely to impact flooding in the area.

Groundwater was also found on the site during the geotechnical survey and will need to be considered in the work planning and budgeting for the proposed works. A Groundwater Management Plan (GMP) will need to be developed, including the use of a dewatering plant.

Four PCTs have been mapped in close proximity to the development site, and the nearby Toongabbie Creek is mapped as Biodiversity Values area and Key Fish Habitat. These will not affect the development per se, but there will need to be sufficient mitigation measures in place to protect the bushland and associated creek riparian corridor next to the site. The four mature canopy trees on site will be retained and protected with a sufficient TPZ to avoid root zone disturbance.

Traffic and parking on Chanel Street will be affected for the duration of the works, with parking potentially overflowing onto nearby streets. Delays are to be expected for passing traffic at times when there is a line-up of vehicles waiting to access the site. Parking on Chanel Street along the section of the works is expected to be prohibited on both sides of the road for the duration of the works. A Traffic Management Plan with active traffic control will be required to mitigate the impacts on traffic and parking.

A registered Aboriginal site located within Sue Savage Reserve extends across much of Sue Savage Reserve, however the Aboriginal Cultural Heritage Assessment Report (ACHAR) and test excavations for the project indicated that the Aboriginal site does not extend into the development site. No other heritage features have been noted or is expected to be encountered on the site. Therefore, there are no expected significant impacts on heritage.

All remaining impacts of the project are expected to be low or negligible and can be managed with the mitigation measures outlined within this document.

The constraints found to be present on site, apart from the Aboriginal site, are shown in the map below (Figure 6).

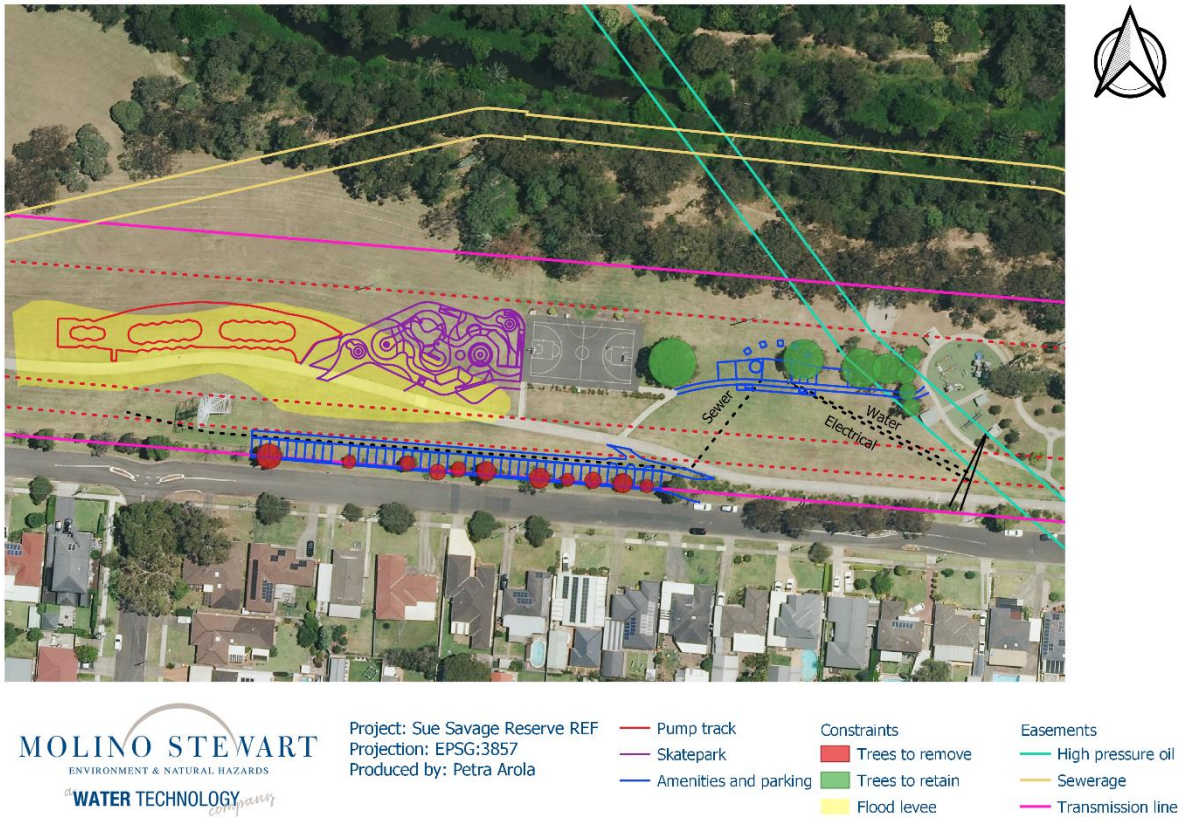

Figure 6: Constraints within the development site. The registered Aboriginal site is not mapped herein as the exact extent is unknown.

6.2 Construction Environmental Management Plan (CEMP)

A CEMP is to be prepared by the contractor and reviewed by Council prior to works commencing. The CEMP will include relevant sub-plans and mitigation measures as detailed throughout this REF and for high-risk area aspects. The CEMP will describe how activities undertaken during the project will be managed. This should be implemented prior to the commencement of works and adhered to for the duration of works.

It is recommended that this REF be incorporated into the contract conditions for the undertaking of the proposed works.

6.3 Concluding Statement

The REF has examined and considered the available information on matters likely to affect the environment by reason of the activity. It has established that the proposal described will have low environmental impact, provided all recommendations and safety measures are followed. By implementing the above listed mitigation measures most of these impacts are expected to be negligible and the others will be kept within reasonable and safe limits.

The REF has concluded that with appropriate mitigation measures implemented, there will be no significant impacts on the local biodiversity, including Biodiversity Values, threatened species, TECs, PCTs, fauna habitats or MNES.

The proposal would be unlikely to cause a significant impact on the environment. Therefore, it is not necessary for an environmental impact statement to be prepared and approval to be sought from the Minister for Planning under the EP&A Act.

7 | Certification & Determination

As per DPE Division 5.1 Assessment Guidelines (2022), this REF is certified and determined as follows:

I certify that I have reviewed and endorsed the contents of this REF document and, to the best of my knowledge, it is in accordance with the EP&A Act, the EP&A Regulation and the Guidelines approved under clause 170 of the EP&A Regulation, and the information it contains is neither false nor misleading.

Certification

Troy Holbrook

Troy Holbrook

Senior Open Space Planner

Determination

Terry Johnson

Group Manager Parks and Open Spaces

8 | References

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Appendix A | Photos from the site

Photo 1: Subject site facing northeast

Photo 2: Subject site facing northeast.

Photo 3: Subject site facing northwest. Basketball court to be retained.

Photo 4: Subject site including the flood levee, facing west. Proposed site for the skatepark and beyond that the pump track.

Photo 5: The proposed site for the amenities building and barbecue and picnic facilities in between the tree in the lawn area.

Photo 6: The proposed site for the parking lot.

Appendix B | Sue Savage Reserve Plans and Drawings

CITY OF PARRAMATTA

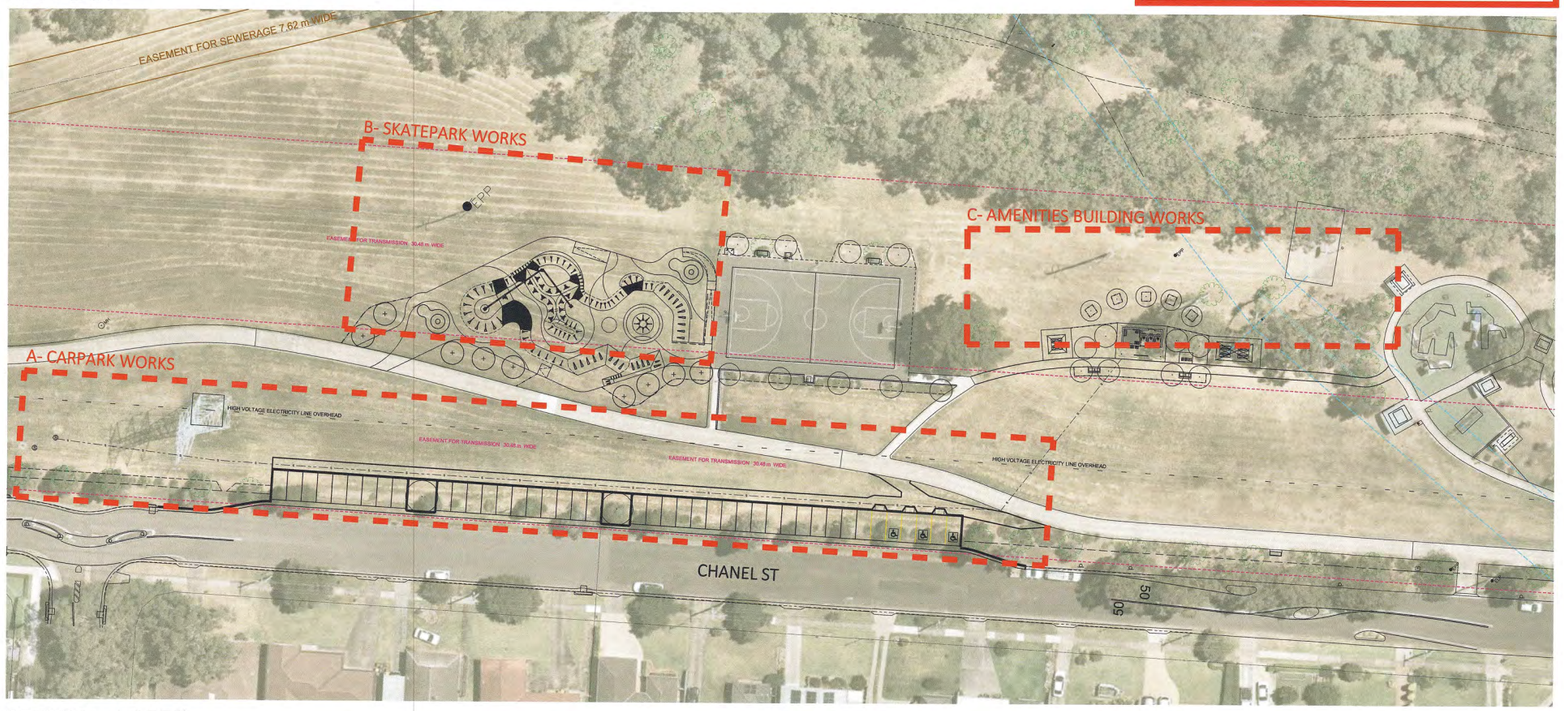
CHANEL STREET, TOONGABBIE

SUE SAVAGE RESERVE
PARK IMPROVEMENT WORKS

Plan No.17809

NOTE:
PLEASE REFER TO ENDEAVOUR ENERGY'S "CONDITION OF WORKS". REFER TO SPECIFICATION NOTES.

KEY PLAN



GENERAL NOTES

1. DO NOT SCALE FROM THE DRAWINGS. LARGER SCALE DETAIL DRAWINGS AND WRITTEN DIMENSIONS TAKE PREFERENCE. DRAWINGS SHOULD BE READ IN CONJUNCTION WITH SCHEDULE OF RATES.
2. ANY DISCREPANCIES OR OMISSIONS SHALL BE REFERRED TO COUNCILS SUPERINTENDENT FOR A DECISION BEFORE PROCEEDING WITH THE WORKS.
3. SURVEY MARKS SHOWN THUS SHALL BE RETAINED AT ALL TIMES. WHERE RETENTION IS NOT POSSIBLE THE SUPERINTENDENT MUST BE NOTIFIED AND CONSENT RECEIVED PRIOR TO THEIR REMOVAL.
4. PROTECT ALL EXISTING DRAINAGE OUTLETS, SERVICE PITS / UTILITY FEATURES AND EXISTING TREES FROM ALL DEMOLITION AND LANDSCAPE WORKS UNLESS DIRECTED OTHERWISE, BY THE SUPERINTENDENT.
5. TRAFFIC AND PEDESTRIAN MANAGEMENT, SEDIMENT AND EROSION CONTROL AND TEMPORARY TREE PROTECTION MEASURES SHALL BE UNDERTAKEN BY THE CONTRACTOR TO THE SATISFACTION OF THE SUPERINTENDENT.
6. REMOVE ANY UNWANTED MATTER INCLUDING STONES EXCEEDING 50mm, BUILDING RUBBISH AND WEEDS, ETC.
7. THE CONTRACTOR SHALL MAINTAIN SERVICES AND ALL WEATHER ACCESS AT ALL TIMES TO THE ADJOINING PROPERTIES.
8. THE CONTRACTOR SHALL NOT ENTER UPON NOR DO ANY WORK WITHIN ADJACENT LANDS WITHOUT PRIOR WRITTEN PERMISSION FROM THE LAND OWNER AND / OR DIRECT INSTRUCTION FROM THE SUPERINTENDENT.
9. DAMAGE TO EXISTING PROPERTY SERVICES, FENCES, TREES AND OTHER ELEMENTS TO BE RETAINED SHALL BE RECTIFIED AT THE CONTRACTORS EXPENSE. CONTACT THE SUPERINTENDENT IMMEDIATELY.
10. THE LOCATIONS OF SERVICES SHOWN ON THESE DRAWINGS HAVE BEEN PLOTTED FROM DIAGRAMS PROVIDED BY SERVICE AUTHORITIES. THIS INFORMATION HAS BEEN PREPARED SOLELY FOR THE AUTHORITY'S OWN USE AND MAY NOT NECESSARILY BE UPDATED OR ACCURATE.
11. COUNCILS CAPITAL PROJECTS SECTION DOES NOT GUARANTEE THAT THE SERVICES INFORMATION SHOWN ON THESE DRAWINGS SHOW MORE THAN THE PRESENCE OR ABSENCE OF SERVICES, AND WILL ACCEPT NO LIABILITY FOR INACCURACIES IN THE INFORMATION SHOWN FROM ANY CAUSE WHATSOEVER.
12. EROSION AND SEDIMENTATION CONTROL DEVICES SHALL BE ACCORDING TO THE STANDARD RECOMMENDED BY NSW DEPARTMENT OF HOUSING 'BLUE BOOK', TITLED "MANAGING URBAN STORM WATER – SOILS AND CONSTRUCTION", VOLUME 1, 4th EDITION, JULY, 2006.

DESIGN DOCUMENTATION

SURVEY:	CITY OF PARRAMATTA ENGINEERING SURVEY
DESIGN BY:	MICHELLE WANG/ KRISHNA
DRAWN BY:	MICHELLE WANG/ KRISHNA
DESIGN CHECKED/APPROVED:	ADAM COOK/ DARIUSZ
APPROVED FOR CONSTRUCTION:	PETER LICHAA
RELEASE DATE:	APRIL 2021

A - CARPARK WORKS

CP_01	DEMOLITION PLAN - SHEET 01
CP_02	DEMOLITION PLAN - SHEET 02
CP_03	EXCAVATION PLAN - SHEET 01
CP_04	EXCAVATION PLAN - SHEET 02
CP_05	HARDWORKS PLAN - SHEET 01
CP_O6	HARDWORKS PLAN - SHEET 02
CP_07	SOFTWORKS, FURNITURE & LINEMARKING PLAN SHEET 01
CP_08	SOFTWORKS, FURNITURE & LINEMARKING PLAN SHEET 02
CP_09	UNDERGROUND SERVICE PLAN
CP_10	PLAN VIEW AND GENERAL NOTES
CP_11	SETOUT PLAN, SURVEY CONTROL MARKS AND CO-ORDINATE TABLES - KR1, KR2 AND FP1
CP_12	LONGITUDINAL SECTIONS - KR1 AND KR2
CP_13	LONGITUDINAL SECTIONS - FP1 AND CL1
CP_14	CROSS SECTIONS - CL1
CP_15	DRAINAGE PLAN 1- LAYOUT PLAN, SETOUT TABLE, BENCHING AND SKETCH DETAILS
CP_16	DRAINAGE PLAN 2- PLAN VIEW AND LONGITUDINAL SECTIONS - DRAINAGE LINE 1 AND 2
CP_17	TRAFFIC MANAGEMENT PLAN
CP_18	STANDARD DRAWINGS -1
CP_19	STANDARD DRAWINGS -2

B - SKATEPARK WORKS

1910_CD000	DRAWING INDEX
1910_CD001	GENERAL NOTES
1910_CD002	EXISTING CONDITIONS PLAN
1910_CD003	DEMOLITION PLAN
1910_CD004	SITE PLAN
1910_CD006a	SURFACE FINISHES PLAN
1910_CD006b	SURFACE PAINTING PLAN
1910_CD007	LEVELS PLAN
1910_CD008	DRAINAGE PLAN
1910_CD009	SETOUT PLAN
1910_CD010	DIMENSION PLAN
1910_CD011	STEEL PLAN
1910_CD012	CONCRETE JOINTS PLAN
1910_CD100	SECTION KEY PLAN
1910_CD101	SECTIONS 01
1910_CD102	SECTIONS 02
1910_CD200	ENGINEERING DETAILS 01
1910_CD201	ENGINEERING DETAILS 02
1910_CD210	DRAINAGE DETAILS
1910_CD300	SEATING DETAILS 01
1910_CD301	SEATING DETAILS 02
1910_CD310	BALUSTRADE DETAILS 01
1910_CD320	HANDRAIL DETAILS 01

C - AMENITIES BUILDING & LANDSCAPE WORKS

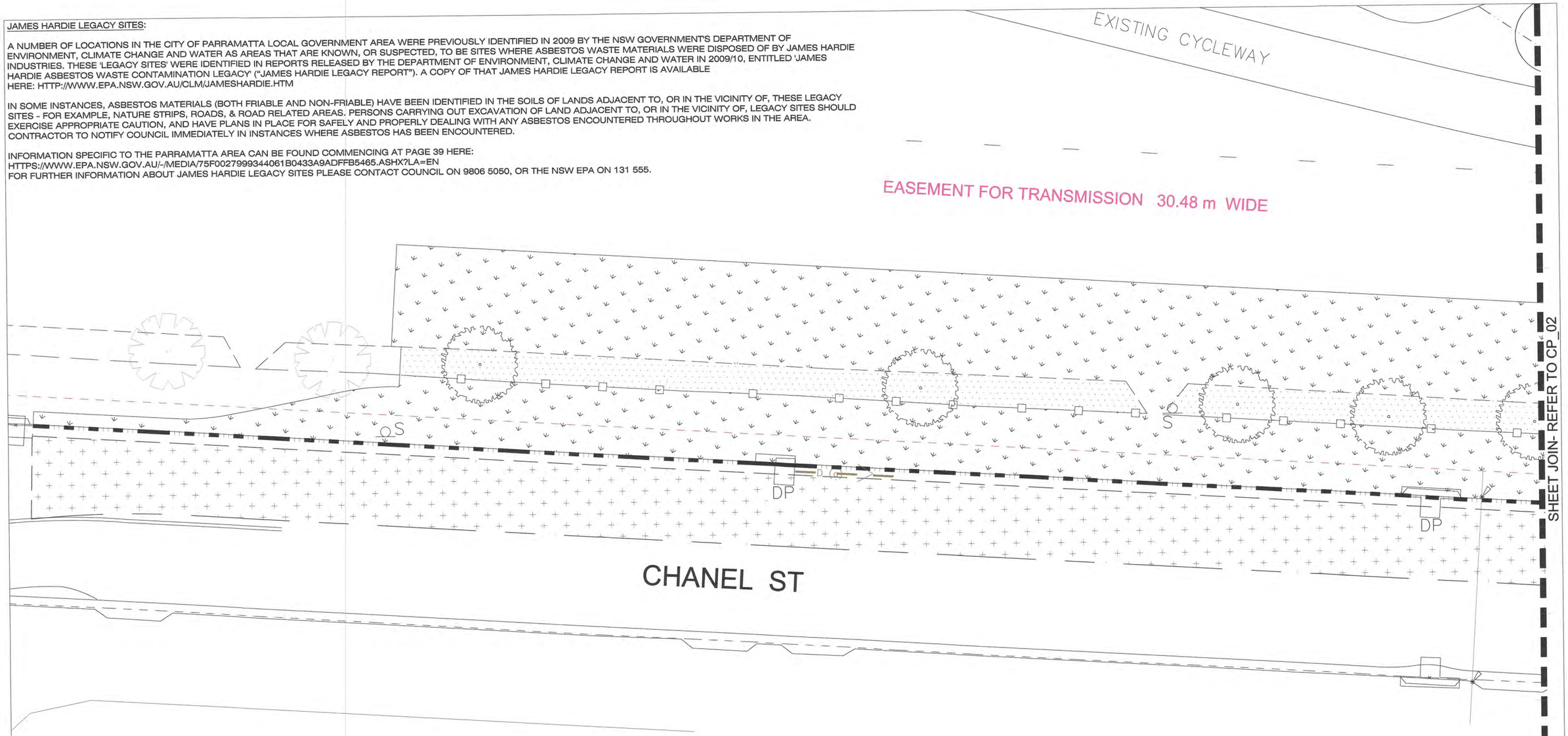
SP_01	SOFTWORKS PLAN
AB_01	DEMOLITION PLAN
AB_02	EXCAVATION PLAN
AB_03	HARDWORKS PLAN
AB_04	SOFTWORKS, FURNITURE & FIXTURES PLAN
AB_05	SETOUT PLAN
AB_06	DETAILS SHEET 01
AB_07	DETAILS SHEET 02

JAMES HARDIE LEGACY SITES:

A NUMBER OF LOCATIONS IN THE CITY OF PARRAMATTA LOCAL GOVERNMENT AREA WERE PREVIOUSLY IDENTIFIED IN 2009 BY THE NSW GOVERNMENT'S DEPARTMENT OF ENVIRONMENT, CLIMATE CHANGE AND WATER AS AREAS THAT ARE KNOWN, OR SUSPECTED, TO BE SITES WHERE ASBESTOS WASTE MATERIALS WERE DISPOSED OF BY JAMES HARDIE INDUSTRIES. THESE 'LEGACY SITES' WERE IDENTIFIED IN REPORTS RELEASED BY THE DEPARTMENT OF ENVIRONMENT, CLIMATE CHANGE AND WATER IN 2009/10, ENTITLED 'JAMES HARDIE ASBESTOS WASTE CONTAMINATION LEGACY' ("JAMES HARDIE LEGACY REPORT"). A COPY OF THAT JAMES HARDIE LEGACY REPORT IS AVAILABLE HERE: HTTP://WWW.EPA.NSW.GOV.AU/CLM/JAMESHARDIE.HTM

IN SOME INSTANCES, ASBESTOS MATERIALS (BOTH FRIABLE AND NON-FRIABLE) HAVE BEEN IDENTIFIED IN THE SOILS OF LANDS ADJACENT TO, OR IN THE VICINITY OF, THESE LEGACY SITES - FOR EXAMPLE, NATURE STRIPS, ROADS, & ROAD RELATED AREAS. PERSONS CARRYING OUT EXCAVATION OF LAND ADJACENT TO, OR IN THE VICINITY OF, LEGACY SITES SHOULD EXERCISE APPROPRIATE CAUTION, AND HAVE PLANS IN PLACE FOR SAFELY AND PROPERLY DEALING WITH ANY ASBESTOS ENCOUNTERED THROUGHOUT WORKS IN THE AREA. CONTRACTOR TO NOTIFY COUNCIL IMMEDIATELY IN INSTANCES WHERE ASBESTOS HAS BEEN ENCOUNTERED.

INFORMATION SPECIFIC TO THE PARRAMATTA AREA CAN BE FOUND COMMENCING AT PAGE 39 HERE:
HTTPS://WWW.EPA.NSW.GOV.AU/-/MEDIA/75F0027999344061B0433A9ADFFB5465.ASHX?LA=EN
FOR FURTHER INFORMATION ABOUT JAMES HARDIE LEGACY SITES PLEASE CONTACT COUNCIL ON 9806 5050, OR THE NSW EPA ON 131 555.



LEGEND

- Retain and protect existing trees
- ITEM 2.1: Demolish and remove existing small trees including stump and rootball. Remove demolition material from site. Refer to Specification Notes.
- ITEM 2.2: Demolish and remove existing garden bed including planting, soil and mulch to allow for proposed works. Remove demolition/excavation material from site. Refer to Specification Notes.
- ITEM 2.3: Strip and remove existing grass only to allow for proposed works. Ensure grass roots are removed during demolition works. Remove demolition/excavation material from site. Refer to Specification Notes.
- ITEM 2.4: Demolish and remove existing timber koppers log fence including maintenance gate chain and concrete footings. Remove demolition material/excavation material from site. Refer to Specification Notes.
- ITEM 2.5: Sawcut, demolish and remove existing kerb and gutter including 500mm width road pavement. Remove demolition/excavation material from site. Refer to Specification Notes.
- ITEM 2.6: Mill existing road pavement to minimum 50mm depth for proposed asphalt re-sheeting works. Remove demolition/excavation material from site. Refer to Specification Notes.
- ITEM 2.7: Sawcut, demolish and remove existing concrete stormwater drainage pipe (825 diameter) in preparation for new drainage works. Backfill and compact with existing excess site soil as required for proposed works. Remove demolition/excess excavation material from site. Refer to Specification Notes.
- ITEM 2.8: Sawcut, demolish and remove existing concrete stormwater drainage pits in preparation for new drainage works. Backfill and compact with existing excess site soil as required for proposed works. Remove demolition/excess excavation material from site. Refer to Specification Notes.
- ITEM 2.9: Demolish and remove existing parking signs, posts and fittings including concrete footing. Remove demolition material from site. Refer to Specification Notes.

CITY OF PARRAMATTA

Issue:	Date:	Description:

DIAL 1100 BEFORE YOU DIG

N 0 1 2 5m

Co-ords: MGA | Datum: AHD

UNLESS DETAILED ON THIS DRAWING ALL WORK SHALL CONFORM TO AUS SPEC

Designed:	MW	Date: 21/4/21
Drawn:	MW	Date: 21/4/21
Design Approved:	AC	Date: 21/4/21

Client Accepted: Date: 27/4/21

Approved for Construction: Service Manager Capital Projects Date: 28/4/21

Date: APRIL 2021

Scale: 1:100 @ A1

Drawing Status: FINAL

Project: SUE SAVAGE RESERVE PARK IMPROVEMENT WORKS
CHANEL ST, TOONGABBIE
A - CARPARK WORKS

Title: DEMOLITION PLAN - SHEET 01

Plan No: 17809

Sheet No: CP_01

Revision: –

JAMES HARDIE LEGACY SITES:

A NUMBER OF LOCATIONS IN THE CITY OF PARRAMATTA LOCAL GOVERNMENT AREA WERE PREVIOUSLY IDENTIFIED IN 2009 BY THE NSW GOVERNMENT'S DEPARTMENT OF ENVIRONMENT, CLIMATE CHANGE AND WATER AS AREAS THAT ARE KNOWN, OR SUSPECTED, TO BE SITES WHERE ASBESTOS WASTE MATERIALS WERE DISPOSED OF BY JAMES HARDIE INDUSTRIES. THESE 'LEGACY SITES' WERE IDENTIFIED IN REPORTS RELEASED BY THE DEPARTMENT OF ENVIRONMENT, CLIMATE CHANGE AND WATER IN 2009/10, ENTITLED 'JAMES HARDIE ASBESTOS WASTE CONTAMINATION LEGACY' ("JAMES HARDIE LEGACY REPORT"). A COPY OF THAT JAMES HARDIE LEGACY REPORT IS AVAILABLE HERE: HTTP://WWW.EPA.NSW.GOV.AU/CLM/JAMESHARDIE.HTM

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INFORMATION SPECIFIC TO THE PARRAMATTA AREA CAN BE FOUND COMMENCING AT PAGE 39 HERE:
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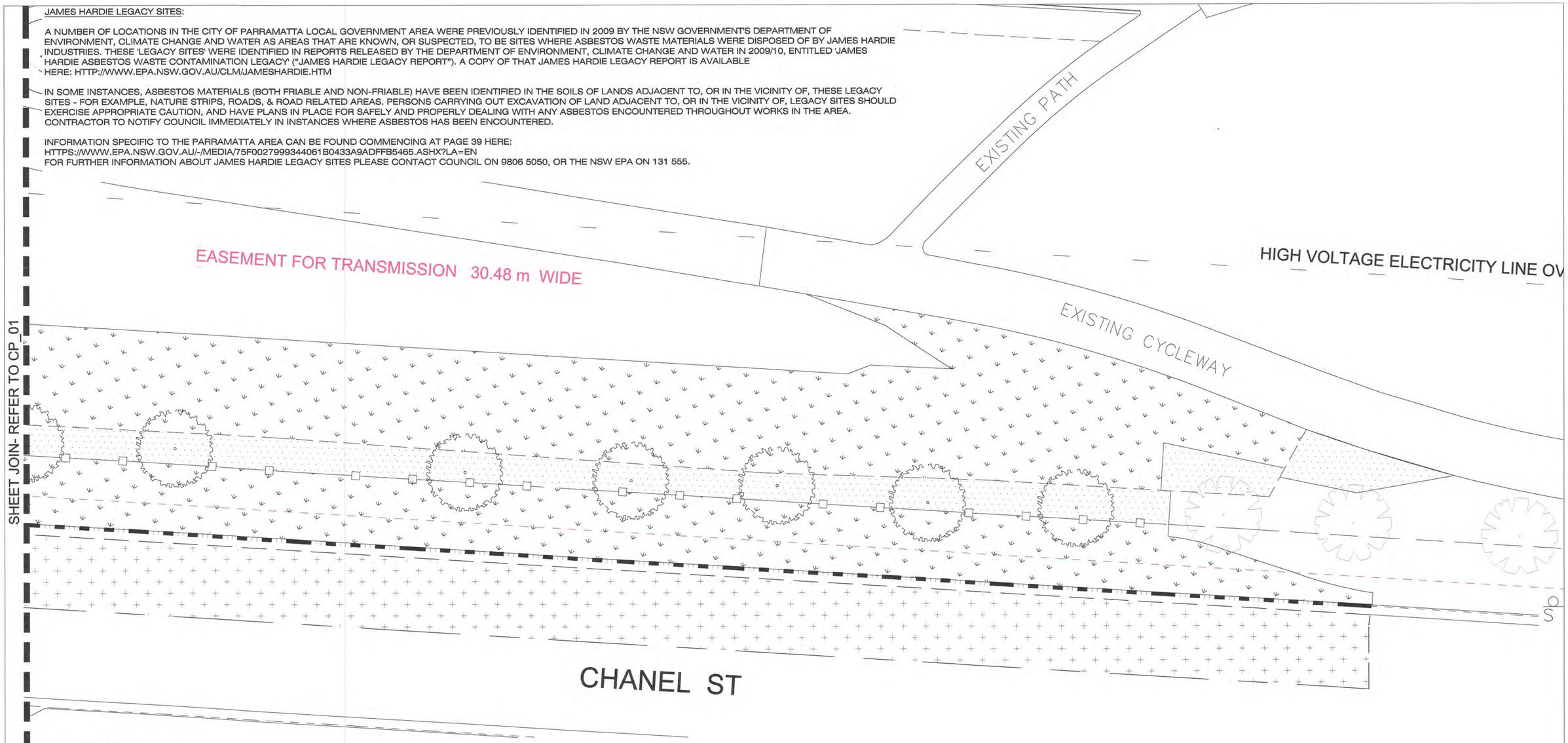


LEGEND

Retain and protect existing trees

ITEM 2.1: Demolish and remove existing small trees including stump and rootball. Remove demolition material from site. Refer to Specification Notes.

ITEM 2.2: Demolish and remove existing garden bed including planting, soil and mulch to allow for proposed works. Remove demolition/excavation material from site. Refer to Specification Notes.

ITEM 2.3: Strip and remove existing grass only to allow for proposed works. Ensure grass roots are removed during demolition works. Remove demolition/excavation material from site. Refer to Specification Notes.

ITEM 2.4: Demolish and remove existing timber koppers log fence including maintenance gate chain and concrete footings. Remove demolition material/excavation material from site. Refer to Specification Notes.

ITEM 2.5: Sawcut, demolish and remove existing kerb and gutter including 500mm width road pavement. Remove demolition/excavation material from site. Refer to Specification Notes.

ITEM 2.6: Mill existing road pavement to minimum 50mm depth for proposed asphalt re-sheeting works. Remove demolition/excavation material from site. Refer to Specification Notes.

ITEM 2.7: Sawcut, demolish and remove existing concrete stormwater drainage pipe (825 diameter) in preparation for new drainage works. Backfill and compact with existing excess site soil as required for proposed works. Remove demolition/excess excavation material from site. Refer to Specification Notes.

ITEM 2.8: Sawcut, demolish and remove existing concrete stormwater drainage pits in preparation for new drainage works. Backfill and compact with existing excess site soil as required for proposed works. Remove demolition/excess excavation material from site. Refer to Specification Notes.

ITEM 2.9: Demolish and remove existing parking signs, posts and fittings including concrete footing. Remove demolition material from site. Refer to Specification Notes.

CITY OF PARRAMATTA

Issue:	Date:	Description:

DIAL 1100 BEFORE YOU DIG

N 0 1 2 5m

Co-ords: MGA | Datum: AHD

UNLESS DETAILED ON THIS DRAWING ALL WORK SHALL CONFORM TO AUSPEC

Designed:	MW	Date: 21/4/21
Drawn:	MW	Date: 21/4/21
Design Approved:	AC	Date: 21/4/21

Client Accepted: Date: 27/4/21

Approved for Construction: Date: 28/4/21
Service Manager Capital Projects

Date: APRIL 2021

Scale: 1:100 @ A1

Drawing Status: FINAL

Project: SUE SAVAGE RESERVE PARK IMPROVEMENT WORKS
CHANEL ST, TOONGABBIE
A - CARPARK WORKS

Title: DEMOLITION PLAN - SHEET 02

Plan No: 17809

Sheet No: CP_02

Revision: –

MH

ELEC
PYLON

HIGH VOLTAGE ELECTRICITY LINE OVERHEAD

EXISTING DRAINAGE PIPE Ø825

EXISTING CYCLEWAY

EASEMENT FOR TRANSMISSION 30.48 m WIDE

S

S

Ø375

Ø375

Ø450

EXISTING DRAINAGE PIPE

SHEET JOIN- REFER TO CP_04

Ø525

CHANEL ST

Ø450

GORINSKI ST

EXISTING DRAINAGE PIPE

LEGEND

ITEM 3.1: Excavate, regrade, cut, fill, bench and compact over entire site to suit proposed levels and works. Salvage and stockpile on site for reuse excess clean fill not required for benching works. Confirm on site with Superintendent. Refer to Civil Engineers Drawings and Specification Notes.

ITEM 3.2: Excavate and trim (including shoring) for proposed drainage pipe, pits and structures. Excavation to suit proposed levels and car park civil works. Salvage and stockpile on site for reuse excess clean fill not required for backfilling works. Confirm on site with Superintendent. Refer to Civil Engineers Drawings and Specification Notes.

CITY OF PARRAMATTA

Issue:	Date:	Description:

DIAL 1100 BEFORE YOU DIG

N 0 1.5 3 7.5m

Co-ords: MGA | Datum: AHD

UNLESS DETAILED ON THIS DRAWING ALL WORK SHALL CONFORM TO AUSPEC

Designed: MW	Date: 21/4/21	
Drawn: MW	Date: 21/4/21	
Design Approved: AC	Date: 21/4/21	

Client Accepted: Date: 27/4/21

Approved for Construction: Date: 28/4/21

Service Manager Capital Projects

Date: APRIL 2021

Scale: 1:150 @ A1

Drawing Status: FINAL

Project: SUE SAVAGE RESERVE
PARK IMPROVEMENT WORKS
CHANEL ST, TOONGABBIE
A - CARPARK WORKS

Title: EXCAVATION PLAN - SHEET 01

Plan No: 17809

Sheet No: CP_03

Revision: _

EXISTING BASKETBALL COURT

PROPOSED AMENITIES BUILDING

EXISTING PATH

EXISTING PATH

EASEMENT FOR TRANSMISSION 30.48 m WIDE

HIGH VOLTAGE ELECTRICITY LINE OVERHEAD

EXISTING CYCLEWAY

SHEET JOIN- REFER TO CP_03

SHEET JOIN- REFER TO AB_02

EXISTING DRAINAGE PIPE Ø450

CHANEL ST

50

50

LEGEND

ITEM 3.1: Excavate, regrade, cut, fill, bench and compact over entire site to suit proposed levels and works. Salvage and stockpile on site for reuse excess clean fill not required for benching works. Confirm on site with Superintendent. Refer to Civil Engineers Drawings and Specification Notes.

ITEM 3.2: Excavate and trim (including shoring) for proposed drainage pipe, pits and structures. Excavation to suit proposed levels and car park civil works. Salvage and stockpile on site for reuse excess clean fill not required for backfilling works. Confirm on site with Superintendent. Refer to Civil Engineers Drawings and Specification Notes.

CITY OF PARRAMATTA

Issue:	Date:	Description:

DIAL 1100 BEFORE YOU DIG

N 0 1.5 3 7.5m

Co-ords: MGA | Datum: AHD

UNLESS DETAILED ON THIS DRAWING ALL WORK SHALL CONFORM TO AUSPEC

Designed:	MW	Date: 21/4/21
Drawn:	MW	Date: 21/4/21
Design Approved:	AC	Date: 21/4/21

Client Accepted: Date: 27/4/21

Approved for Construction: Service Manager Capital Projects Date: 28/4/21

Date: APRIL 2021

Scale: 1:150 @ A1

Drawing Status: FINAL

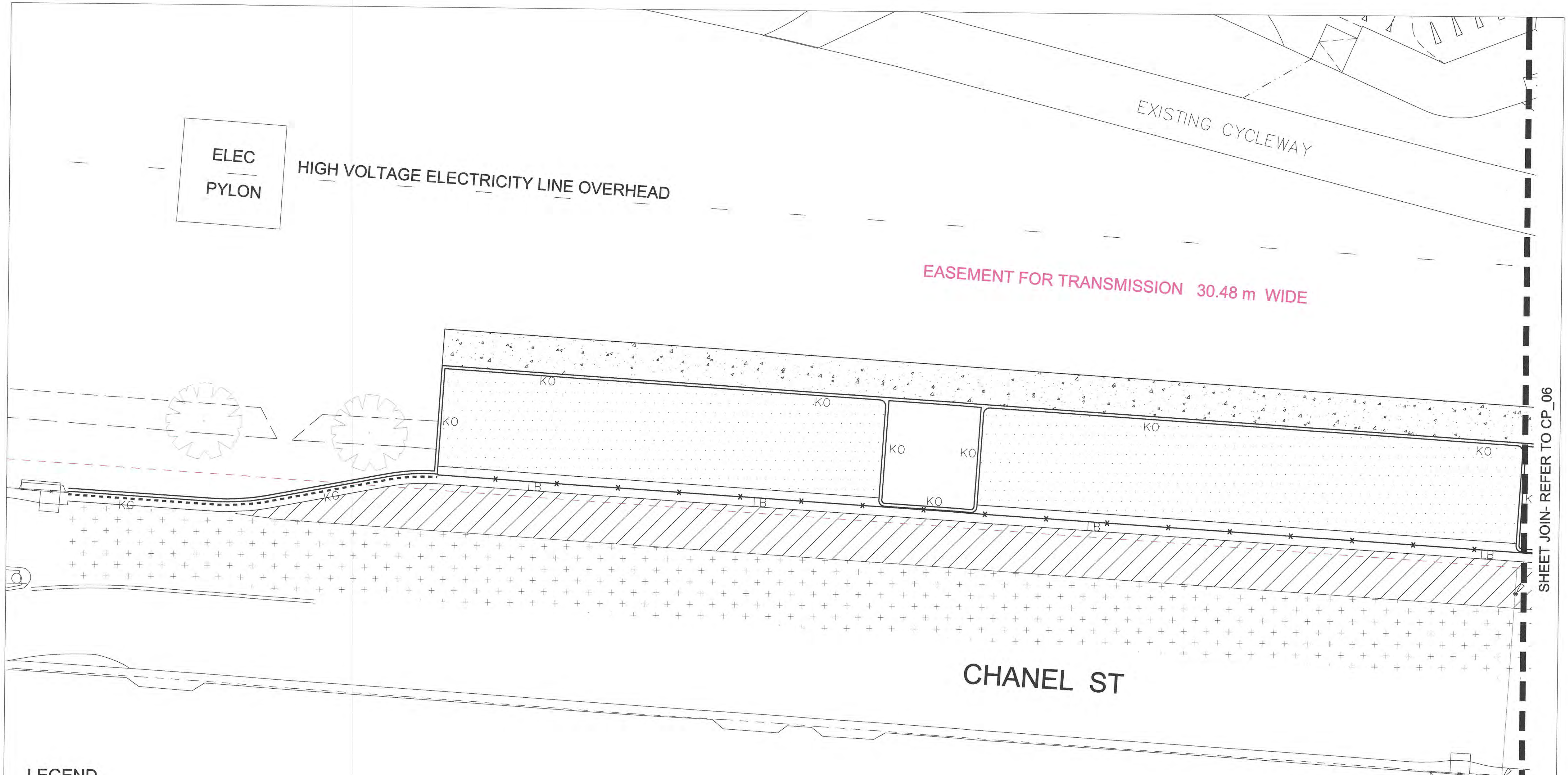
Project: SUE SAVAGE RESERVE PARK IMPROVEMENT WORKS
CHANEL ST, TOONGABBIE
A - CARPARK WORKS

Title: EXCAVATION PLAN - SHEET 02

Plan No: 17809

Sheet No: CP_04

Revision: –



LEGEND

ITEM 4.1: Supply and install 100mm depth reinforced plain concrete pavement. Includes compaction, subgrade preparation, base course, concrete, reinforcement, formwork, joints and finishes. Refer to CoP Standard Drawings DS6 'Type 1' and Specification Notes.

ITEM 4.2: Supply and install 1.5m wide plain concrete kerb ramp including 500mm width road pavement restoration. Includes subgrade preparation, base course, compaction, formwork, concrete, asphaltic concrete, joints and finishes. Refer to CoP Standard Detail DS4, DS1 'Notes' and Specification Notes.

ITEM 4.3: Supply and install 150mm high concrete kerb and gutter including 500mm wide road pavement restoration. Includes subgrade preparation, base course, compaction, formwork, reinforcement, dowels, concrete, asphaltic concrete, joints and finishes. Refer to CoP Standard Drawing DS1 'Type 1', DS1 'Notes' and Specification Notes.

ITEM 4.4: Supply and install max. 150mm high concrete kerb (only) including 500mm wide road pavement restoration. Includes subgrade preparation, base course, compaction, formwork, reinforcement, dowels, concrete, asphaltic concrete, joints and finishes. Refer to CoP Standard Drawing DS1 'Type 1', DS1 'Notes', Civil Engineers Drawings and Specification Notes.

ITEM 4.5: Supply and install min. 175mm depth x min.500mm width AC14 deep lift road restoration. Refer to CoP Standard Drawing DS1 'Note 5', Civil Engineers Drawings and Specification Notes.

ITEM 4.6: Supply and install road pavement including 40mm depth AC10 bidden 450, 120mm depth AC20, 150mm depth DGB20, geotextile fabric (if required) and proof rolling. Refer to Civil Engineers Drawings, General Notes and Specification Notes.

ITEM 4.7: Supply and install 50mm depth AC10 asphaltic concrete resheet/overlay to suit levels of proposed carpark works. Includes compaction, preparation and finishes. Refer to Civil Engineers Drawings and Specification Notes.

ITEM 4.8: Supply and install reinforced heavy duty plain concrete vehicular layback and gutter including 500mm width road pavement restoration. Includes subgrade preparation, base course, compaction, formwork, concrete, asphaltic concrete, joints and finishes. Refer to CoP Standard Drawing DS1 'Type 3' and Specification Notes.

CITY OF PARRAMATTA

Issue:	Date:	Description:

DIAL 1100 BEFORE YOU DIG

Co-ords: MGA	Datum: AHD	
UNLESS DETAILED ON THIS DRAWING ALL WORK SHALL CONFORM TO AUS-SPEC		

Designed: MW	Date: 21/4/21	
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Client Accepted: [signature]	Date: 27/4/21	
Approved for Construction: [signature] Service Manager Capital Projects	Date: 28/4/21	

Date:	APRIL 2021
Scale:	1:100 @ A1
Drawing Status:	FINAL

Project: SUE SAVAGE RESERVE PARK IMPROVEMENT WORKS
CHANEL ST, TOONGABBIE
A - CARPARK WORKS

Title: HARDWORKS PLAN - SHEET 01

Plan No:	17809
Sheet No:	CP_05
Revision:	–

EXISTING PATH

EXISTING PATH

EASEMENT FOR TRANSMISSION 30.48 m WIDE

HIGH VOLTAGE ELECTR

EXISTING CYCLEWAY

SHEET JOIN- REFER TO CP_05

KO KO KO KO KO KR KR KR KO KO KO KO

LB LB LB

CHANEL ST

LEGEND

ITEM 4.1: Supply and install 100mm depth reinforced plain concrete pavement. Includes compaction, subgrade preparation, base course, concrete, reinforcement, formwork, joints and finishes. Refer to CoP Standard Drawings DS6 'Type 1' and Specification Notes.

ITEM 4.2: Supply and install 1.5m wide plain concrete kerb ramp including 500mm width road pavement restoration. Includes subgrade preparation, base course, compaction, formwork, concrete, asphaltic concrete, joints and finishes. Refer to CoP Standard Detail DS4, DS1 'Notes' and Specification Notes.

ITEM 4.3: Supply and install 150mm high concrete kerb and gutter including 500mm wide road pavement restoration. Includes subgrade preparation, base course, compaction, formwork, reinforcement, dowels, concrete, asphaltic concrete, joints and finishes. Refer to CoP Standard Drawing DS1 'Type 1', DS1 'Notes' and Specification Notes.

ITEM 4.4: Supply and install max. 150mm high concrete kerb (only) including 500mm wide road pavement restoration. Includes subgrade preparation, base course, compaction, formwork, reinforcement, dowels, concrete, asphaltic concrete, joints and finishes. Refer to CoP Standard Drawing DS1 'Type 1', DS1 'Notes', Civil Engineers Drawings and Specification Notes.

ITEM 4.5: Supply and install min. 175mm depth x min.500mm width AC14 deep lift road restoration. Refer to CoP Standard Drawing DS1 'Note 5', Civil Engineers Drawings and Specification Notes.

ITEM 4.6: Supply and install road pavement including 40mm depth AC10 bidden 450, 120mm depth AC20, 150mm depth DGB20, geotextile fabric (if required) and proof rolling. Refer to Civil Engineers Drawings, General Notes and Specification Notes.

ITEM 4.7: Supply and install 50mm depth AC10 asphaltic concrete resheet/overlay to suit levels of proposed carpark works. Includes compaction, preparation and finishes. Refer to Civil Engineers Drawings and Specification Notes.

ITEM 4.8: Supply and install reinforced heavy duty plain concrete vehicular layback and gutter including 500mm width road pavement restoration. Includes subgrade preparation, base course, compaction, formwork, concrete, asphaltic concrete, joints and finishes. Refer to CoP Standard Drawing DS1 'Type 3' and Specification Notes.

CITY OF PARRAMATTA

DIAL 1100 BEFORE YOU DIG

Issue:	Date:	Description:

N 0 1 2 5m

Co-ords: MGA | Datum: AHD

UNLESS DETAILED ON THIS DRAWING ALL WORK SHALL CONFORM TO AUS SPEC

Designed:	MW	Date: 21/4/21
Drawn:	MW	Date: 21/4/21
Design Approved:	AC	Date: 21/4/21

Client Accepted: Date: 27/4/21

Approved for Construction: Date: 28/4/21
Service Manager Capital Projects

Date: APRIL 2021

Scale: 1:100 @ A1

Drawing Status: FINAL

Project: SUE SAVAGE RESERVE PARK IMPROVEMENT WORKS
CHANEL ST, TOONGABBIE
A - CARPARK WORKS

Title: HARDWORKS PLAN - SHEET 02

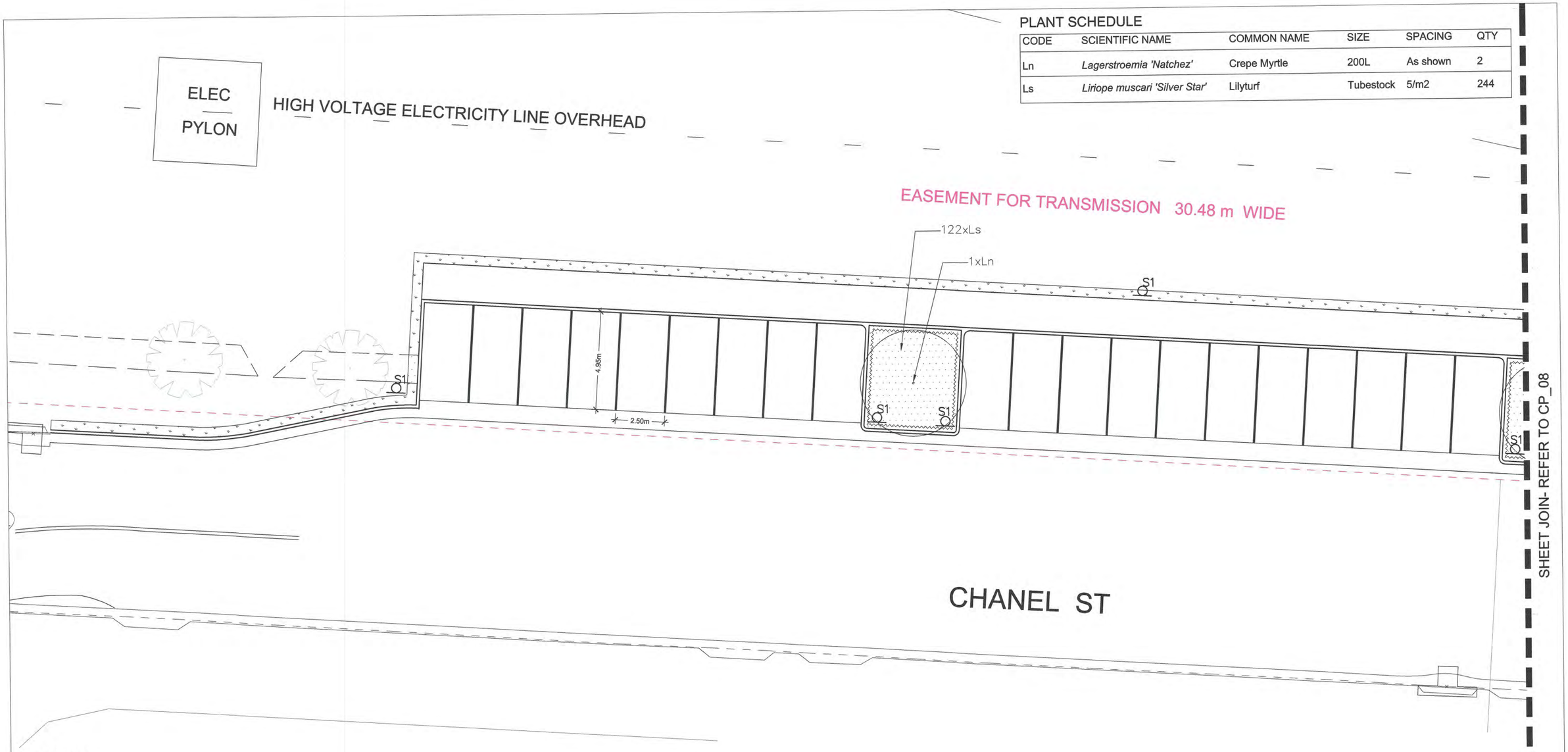
Plan No: 17809

Sheet No: CP_06

Revision: –

PLANT SCHEDULE

CODE	SCIENTIFIC NAME	COMMON NAME	SIZE	SPACING	QTY
Ln	*Lagerstroemia 'Natchez'*	Crepe Myrtle	200L	As shown	2
Ls	*Liriope muscari 'Silver Star'*	Lilyturf	Tubestock	5/m2	244



LEGEND

ITEM 6.1: Supply and install surface mounted flexible bollard to asphalt carpark pavement. Refer to Specification Notes and Manufacturer's Specifications for installation.

ITEM 7.1: Cultivate/rotary hoe existing site soil to min.200mm depth and incorporate 'Terracottem' soil conditioner at rates recommended by the manufacturer. Refer to Details and Specification Notes.
ITEM 7.2: Supply and install min. 50mm depth organic garden mix soil for new garden beds and tree pits. Lightly compact to minimise voids and depressions. Refer to Details and Specification Notes.
ITEM 7.5: Supply and install 100mm depth leaf litter mulch. Refer to Details and Specification Notes.

ITEM 7.3: Supply and install tubestock sized plants. Refer to Plant Schedule, Details and Specification Notes.

ITEM 7.4: Supply and install 200L bag sized trees including additional imported soil mix. Refer to Plant Schedule, Details and Specification Notes.

ITEM 7.6.1: Supply and install min. 50mm depth turf underlay. Lightly compact to minimise voids and depressions. Excess turf underlay shall be spread over existing grass to fill voids and depressions. Refer to Details and Specification Notes.
ITEM 7.6.2: Supply and install turf (Kikuyu) as required to match existing grass. Lightly roll turf to minimise voids and depressions. Refer to Details and Specification Notes.

ITEM 9.1: Supply and apply 100mm wide white waterborne line marking paint to carpark to meet Australian Standards. Refer to Softworks, Furniture and Linemarking Plan, RMS Standards and Specification Notes.

ITEM 9.2: Supply and apply 100mm wide yellow waterborne line marking paint to disabled carpark spaces to meet Australian Standards. Refer to Softworks, Furniture and Linemarking Plan, RMS Standards and Specification Notes.

ITEM 9.3: Supply and apply 100mm wide yellow waterborne diagonal 'shared zone' line marking paint to carpark to meet Australian Standards. Refer to Softworks, Furniture and Linemarking Plan, RMS Standards and Specification Notes.

ITEM 9.4: Supply and apply blue and yellow waterborne painted disabled logo to carpark disabled parking spaces. Refer to Softworks, Furniture and Linemarking Plan, RMS Standards and Specification Notes.

ITEM 9.5: Supply and install black powder coated steel sign post including concrete footing and 'V' lock supports (in pavement). Refer to Traffic Management Plan, RMS Standards, Cop Standard Drawing DS11, DS11B and Specification Notes.

S1 ITEM 9.6: Supply and install traffic signs to sign post to meet Australian and RMS Standards. Refer to Traffic Management Plan, RMS Standards, CoP Standard Drawing DS11, DS11B and Specification Notes.

S2 ITEM 9.7: Supply and install disabled parking sign to meet Australian and RMS Standards. Refer to Traffic Management Plan, RMS Standards, Cop Standard Drawing DS11, DS11B and Specification Notes.

CITY OF PARRAMATTA

Issue:	Date:	Description:

DIAL 1100 BEFORE YOU DIG

N 0 1 2 5m

Co-ords: MGA | Datum: AHD

UNLESS DETAILED ON THIS DRAWING ALL WORK SHALL CONFORM TO AUSPEC

Designed:	MW	Date: 21/4/21
Drawn:	MW	Date: 21/4/21
Design Approved:	AC	Date: 21/4/21

Client Accepted: Date: 27/4/21

Approved for Construction: Service Manager Capital Projects Date: 28/4/21

Date: APRIL 2021

Scale: 1:100 @ A1

Drawing Status: FINAL

Project: SUE SAVAGE RESERVE PARK IMPROVEMENT WORKS
CHANEL ST, TOONGABBIE
A - CARPARK WORKS

Title: SOFTWORKS, FURNITURE & LINEMARKING PLAN - SHEET 01

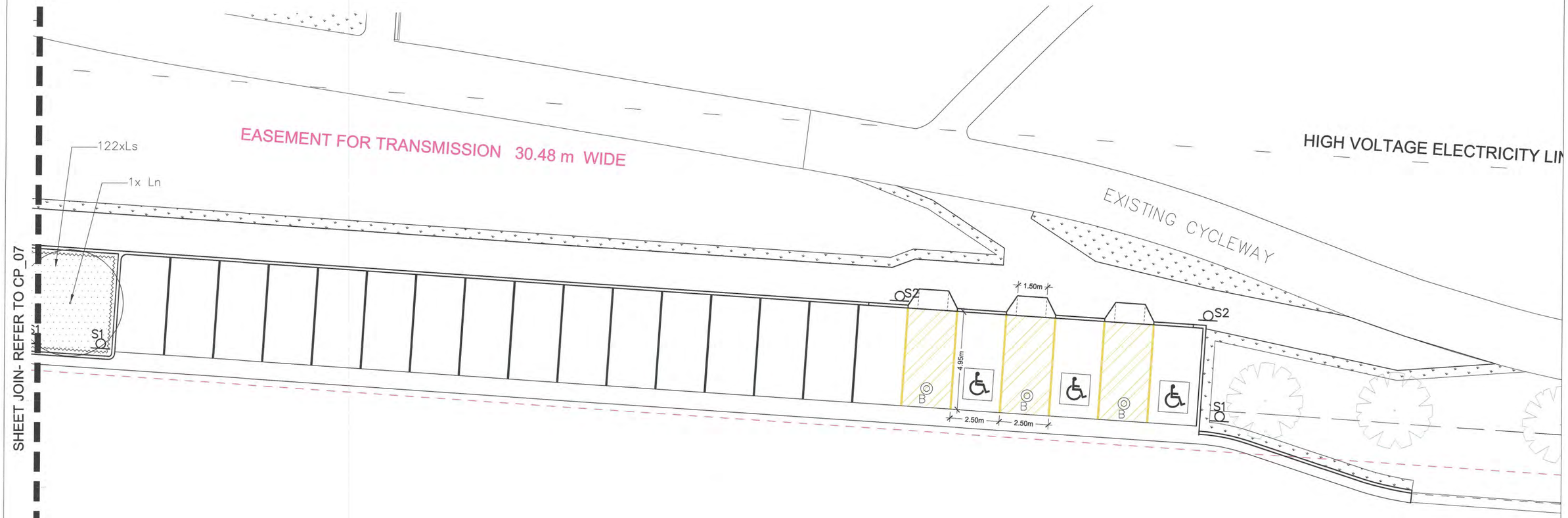
Plan No: 17809

Sheet No: CP_07

Revision: –

PLANT SCHEDULE

CODE	SCIENTIFIC NAME	COMMON NAME	SIZE	SPACING	QTY
Ln	*Lagerstroemia 'Natchez'*	Crepe Myrtle	200L	As shown	2
Ls	*Liriope muscari 'Silver Star'*	Lilyturf	Tubestock	5/m2	244



LEGEND

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CITY OF PARRAMATTA

Issue:	Date:	Description:

DIAL 1100 BEFORE YOU DIG

N 0 1 2 5m

Co-ords: MGA | Datum: AHD

UNLESS DETAILED ON THIS DRAWING ALL WORK SHALL CONFORM TO AUSPEC

Designed: MW Date: 21/4/21
Drawn: MW Date: 21/4/21
Design Approved: AC Date: 21/4/21

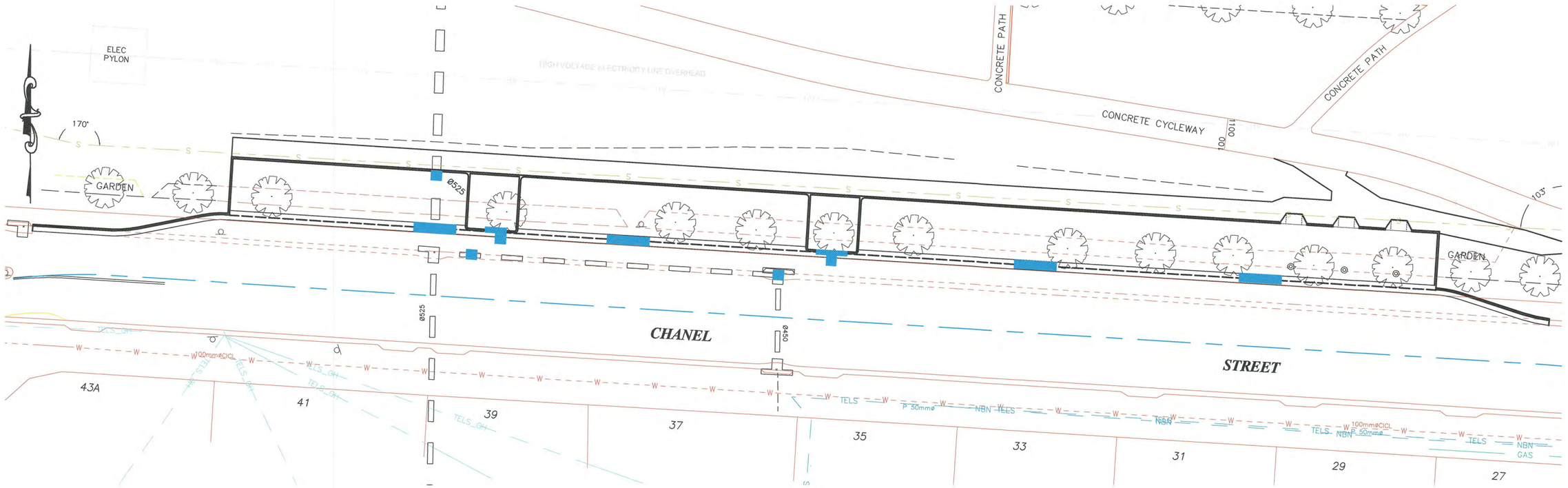
Client Accepted: Date: 27/4/21
Approved for Construction: Date: 28/4/21
Service Manager Capital Projects

Date: APRIL 2021
Scale: 1:100 @ A1
Drawing Status: FINAL

Project: SUE SAVAGE RESERVE PARK IMPROVEMENT WORKS
CHANEL ST, TOONGABBIE
A - CARPARK WORKS

Title: SOFTWORKS, FURNITURE & LINEMARKING PLAN - SHEET 02

Plan No: 17809
Sheet No: CP_08
Revision: —



PLAN VIEW
SCALE 1:200

NOTE:
ALL UNDERGROUND SERVICE DATA HAS BEEN PLOTTED FROM RELEVANT SERVICE AUTHORITIES PLANS. THIS HAS BEEN PREPARED SOLELY FOR THE SERVICE AUTHORITIES OWN USE AND MAY NOT NECESSARILY BE UPDATED OR ACCURATE.

NOTE:
CAUTION TO BE TAKEN WHEN EXCAVATING IN THE VICINITY OF UNDERGROUND SERVICES.

NOTE:
CONTACT RELEVANT SERVICE AUTHORITIES FOR PROPOSED TREATMENT / PROTECTION TO THEIR ASSETS.

NOTE
1 ONLY VISIBLE SERVICES AT THE TIME OF SURVEY ARE SHOWN
2 INDICATIVE BOUNDARIES SHOWN AND THE RELATIONSHIP TO THE FIELD FEATURES IS APPROXIMATE ONLY
3 NO INVESTIGATION HAS BEEN MADE FOR EASEMENTS, ENCUMBRANCES, RESTRICTIVE COVENANTS, OWNERSHIP THAT A CURRENT TITLE SEARCH MAY DISCLOSE
4 ANY WORKS WITHIN 1M OF A BOUNDARY MUST BE SETOUT BY A REGISTERED SURVEYOR
5 HORIZONTAL DATUM – MGA
6 VERTICAL DATUM – AHD
7 DATE OF SURVEY – 09/07/2019

NOTICE:
A NUMBER OF LOCATIONS IN THE CITY OF PARRAMATTA LOCAL GOVERNMENT AREA WERE PREVIOUSLY IDENTIFIED IN 2009 BY THE NSW GOVERNMENT'S DEPARTMENT OF ENVIRONMENT, CLIMATE CHANGE AND WATER AS AREAS THAT ARE KNOWN, OR SUSPECTED, TO BE SITES WHERE ASBESTOS WASTE MATERIALS WERE DISPOSED OF BY JAMES HARDIE INDUSTRIES. THESE 'LEGACY SITES' WERE IDENTIFIED IN REPORTS RELEASED BY THE DEPARTMENT OF ENVIRONMENT, CLIMATE CHANGE AND WATER IN 2009/10, ENTITLED 'JAMES HARDIE ASBESTOS WASTE CONTAMINATION LEGACY' ("JAMES HARDIE LEGACY REPORT") A COPY OF THAT JAMES HARDY LEGACY REPORT IS AVAILABLE HERE: http://www.epa.nsw.gov.au/clm/jameshardie.htm

IN SOME INSTANCES, ASBESTOS MATERIALS (BOTH FRIABLE AND NON FRIABLE) HAVE BEEN IDENTIFIED IN THE SOILS OF LANDS ADJACENT TO, OR IN THE VICINITY OF, LEGACY SITES - FOR EXAMPLE, NATURE STRIPS, ROADS AND ROAD RELATED AREAS. PERSONS CARRYING OUT EXCAVATION OF LAND ADJACENT TO, OR IN THE VICINITY OF, LEGACY SITES SHOULD EXERCISE APPROPRIATE CAUTION, AND HAVE PLANS IN PLACE FOR SAFELY AND PROPERLY DEALING WITH ANY ASBESTOS ENCOUNTERED THROUGHOUT WORKS IN THE AREA.

INFORMATION SPECIFIC TO THE PARRAMATTA AREA CAN BE FOUND COMMENCING AT PAGE 39 HERE: http://www.epa.nsw.gov.au/resources/clm/JamesHardie/120919JamesHardieReportAtt3.pdf FOR FURTHER INFORMATION ABOUT JAMES HARDIE LEGACY SITES PLEASE CONTACT COUNCIL ON 9806 5050, OR THE NSW EPA ON 131 555

4 3 2 1 0 4 8 12 16 20
SCALE OF METRES 1:200

DIAL 1100 BEFORE YOU DIG

UNLESS DETAILED ON THIS DRAWING ALL WORK SHALL CONFORM TO AUSPEC

PLAN FEATURES		PUBLIC UTILITIES	
EXISTING/MISCELLANEOUS	PROPOSED	ABOVEGROUND	U/GROUND
KERB AND GUTTER:	KERB AND GUTTER:	TELSTRA:	
EDGE OF BITUMEN:	EDGE OF BITUMEN:	ELECTRICITY:	
ROAD ℄/CROWN:	ROAD ℄/CROWN:	GAS & MISC.:	
EARTH BATTERS:	EARTH BATTERS:	SEWER:	
PIPE DRAINS:	PIPE DRAINS:	WATER:	
DRAINAGE PITS:	DRAINAGE PITS:	POLES:	
TREES & SHRUBS:	SUB-SOIL DRAIN:	OVERHEAD:	
SPOT LEVELS:	SET-OUT LINE:	SURVEY:	

No.	DETAIL	CHECKED	DATE
	AMENDMENTS		

DESIGN CHECKED AND APPROVED 26.04.21
APPROVED Manager Capital Projects 26.4.21
ACCEPTED Client 27/5/21
DESIGNED 26/04/21
DRAWN 26/04/21
DRAWING REVIEW ...../...../.....

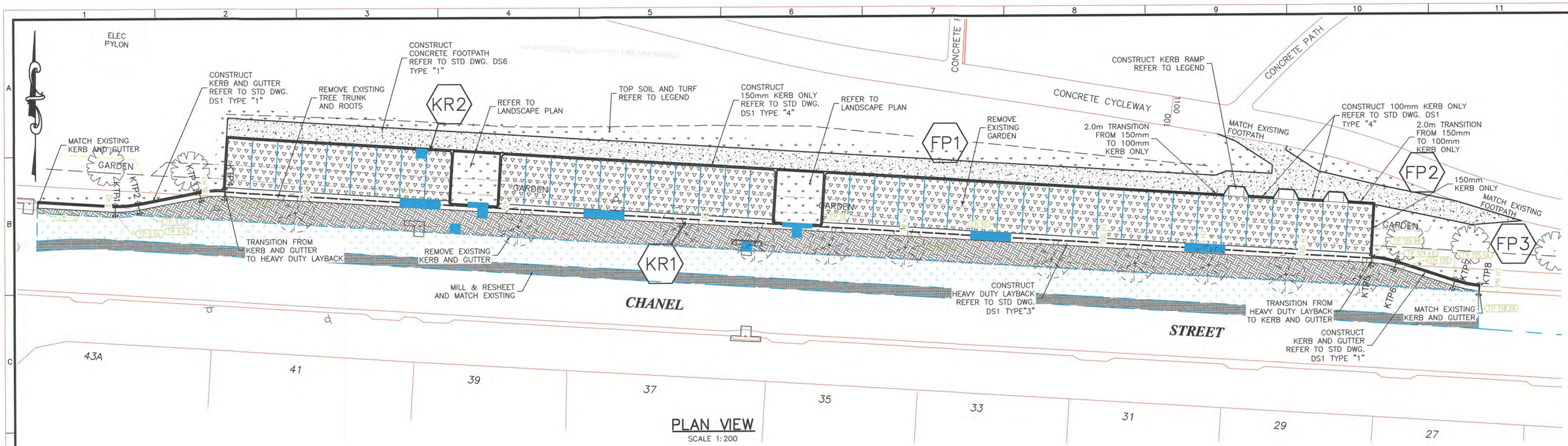
DATUM: A.H.D.
CO-ORDS: M.G.A.
RATIO: 1:200
TRIM No: F2019/02533
STATUS: FINAL

CITY OF PARRAMATTA COUNCIL

SUE SAVAGE RESERVE
CHANEL STREET, TOONGABBIE
CAR PARK CONSTRUCTION AND ASSOCIATED WORKS
UNDERGROUND SERVICE PLAN

PLAN NUMBER 17809
Sheet No : CP_09
Revision :

26, April, 2021 10:03:49 a.m.
Drawing: SUE SAVAGE PARK_17 KT.DWG



PLAN VIEW
SCALE 1:200

GENERAL NOTES:

1. DO NOT SCALE FROM THE DRAWINGS. LARGER SCALE DETAIL DRAWINGS AND WRITTEN DIMENSIONS TAKE PREFERENCE. DRAWINGS SHOULD BE READ IN CONJUNCTION WITH EACH OTHER (IN THIS SET).
2. ANY DISCREPANCIES OR OMISSIONS SHALL BE REFERRED TO THE COUNCIL'S CIVIL DESIGNER FOR A DECISION BEFORE PROCEEDING WITH THE WORKS (PH. 9806 8213).
3. ALL WORK SHALL BE CARRIED OUT IN ACCORDANCE WITH AUSPEC CONSTRUCTION SPECIFICATION, OR AS DIRECTED BY THE SUPERINTENDENT.
4. SURVEY MARKS SHOWN THUS ▲ SHALL BE RETAINED AT ALL TIMES. WHERE RETENTION IS NOT POSSIBLE THE SUPERINTENDENT MUST BE NOTIFIED AND CONSENT RECEIVED PRIOR TO THEIR REMOVAL.
5. ALL UTILITY SERVICES TO BE CHECKED FOR LEVEL AND LOCATION PRIOR TO COMMENCEMENT OF EXCAVATION WORKS.
6. ALL UTILITY FEATURES, e.g. HYDRANTS, TELECOMMUNICATION PITS, SHALL BE RAISED OR LOWERED TO SUIT FINISHED SURFACE.
7. THE CONTRACTOR SHALL MAINTAIN SERVICES AND ALL WEATHER ACCESS AT ALL TIMES TO THE ADJOINING PROPERTIES.
8. THE CONTRACTOR SHALL NOT ENTER UPON NOR DO ANY WORK WITHIN ADJACENT LANDS WITHOUT PRIOR WRITTEN PERMISSION FROM THE LAND OWNER AND/OR DIRECT INSTRUCTION FROM THE SUPERINTENDENT.
9. NEW INTEGRAL KERB AND GUTTER SHALL BE CONSTRUCTED TO COUNCIL'S STANDARD DRAWING DS1.
10. ALL NEW WORKS SHALL MAKE A SMOOTH JUNCTION WITH EXISTING CONDITIONS.
11. REGRADE FOOTWAY AREA TO MATCH NEW KERB ALIGNMENT.
12. THE CONTRACTOR SHALL PROVIDE ANY NECESSARY MEASURES IN ACCORDANCE WITH AUSPEC, THE DRAWINGS AND AS DEEMED APPROPRIATE TO PREVENT SOIL EROSION OF EXPOSED AREAS, DURING THE COURSE OF CONSTRUCTION, OR AS DIRECTED BY THE SUPERINTENDENT.
13. ALL DISTURBED UNPAVED FOOTWAY AREAS SHALL BE TOPSOILED WITH 75mm OF APPROVED LOAM AND TURFED OR SEEDED AS SOON AS PRACTICABLE TO ENCOURAGE REVEGETATION AND MINIMISE SOIL EROSION FROM SITE. GRASSES AND PLANTS ON PRIVATE LAND TO BE APPROVED BY THE OWNERS.
14. ALL NEW PITS TO COUNCIL'S STANDARD DRAWINGS AND SHALL BE CONSTRUCTED AS INSTRUCTED ON PLAN VIEW. LINTEL SIZES AND LOCATION AS SHOWN ON PLAN VIEW. DRAINAGE GRATES TOGETHER WITH FRAMES TO BE APPROVED HEAVY DUTY BIKE SAFE.
15. MINIMUM PIPE GRADES TO BE 1%.
16. ALL DP AND LOT INFORMATION IS INDICATIVE ONLY.
17. ALL REDUNDANT PITS WITHIN LIMIT OF WORKS TO BE CLEANED OF DEBRIS AND CONVERTED INTO JUNCTION PITS WITH HEAVY DUTY CONCRETE REINFORCED LIDS. ALL DAMAGED LINTELS TO BE REMOVED FROM SITE.
18. SUBGRADE IS TO BE PROOF ROLLED USING A VEHICLE SUITABLY LOADED TO IMPOSE A 10 TONNE AXLE LOAD. THE SUPERINTENDENT MAY DIRECT THE CONTRACTOR TO TEST ANY SOFT AND YIELDING AREAS USING A DYNAMIC CONE PENETROMETER (DCP). SUBGRADE AREAS WHERE THE DCP READING IS>85mm/BLOW (CBR<=2%) SHALL BE EXCAVATED TO A DEPTH AS DIRECTED BY THE SUPERINTENDENT.
19. ALL NON-BIKE SAFE PIT GRATES AND FRAMES TO BE REPLACED WITH BIKE SAFE TO LOAD TYPE CLASS "D" AS PER AS3996:2019 (LOAD CLASSIFICATION). GRATES TO BE "DURHAM – MEDIUM TRAFFICABLE" OR SIMILAR.
20. THE LOCATIONS OF SERVICES SHOWN ON THESE DRAWINGS HAVE BEEN PLOTTED FROM DIAGRAMS PROVIDED BY SERVICE AUTHORITIES. THIS INFORMATION HAS BEEN PREPARED SOLELY FOR THE AUTHORITY'S OWN USE AND MAY NOT NECESSARILY BE UPDATED OR ACCURATE.
21. COUNCIL'S CIVIL DESIGN DOES NOT GUARANTEE THAT THE SERVICES INFORMATION SHOWN ON THE DRAWINGS SHOW MORE THAN THE PRESENCE OR ABSENCE OF SERVICES, AND WILL ACCEPT NO LIABILITY FOR INACCURACIES IN THE INFORMATION SHOWN FROM ANY CAUSE WHATSOEVER.

NOTE:
ROOT BARRIERS ARE TO BE INSTALLED 1.0m OUTSIDE DRIP LINE OF TREES OR MINMUM 3.0m FROM TRUNK ON EACH SIDE.

LEGEND:

- NEW KERB RAMPS. MATCH INTO EXISTING CYCLE PATH WHERE APPLICABLE. REFER TO COUNCIL'S STD DWG. DS4
- SAW CUT ROAD PAVEMENT
- DEEPLIFT AC14 WHERE INDICATED, IN FRONT OF GUTTER 175mm DEPTH REFER TO COUNCIL'S STD DWG DS1 NOTES
- PAVEMENT WORKS RESHEET 50mm AC10 AT CENTRE OF ROAD 1.0m WIDE MILL AND RESHEET
- NEW ROAD PAVEMENT 40mm AC10 BIDDEN 450 120 AC20 150 DGB 20 GEOTEXTILE (IF REQUIRED), PROOF ROLL AS PER GENERAL NOTE:18
- 100mm DEPTH CONCRETE FOOTPATH TO BE CONSTRUCTED TO NEW LEVELS OR MATCH EXISTING AS SHOWN ON PLANS REFER TO COUNCIL'S STD DWG. DS6 TYPE "1"
- REFER TO LANDSCAPE PLAN.
- EXISTING TREE STUMP AND ROOTS FOR REMOVAL

SCALE OF METRES 1:200

DIAL 1100 BEFORE YOU DIG

UNLESS DETAILED ON THIS DRAWING ALL WORK SHALL CONFORM TO AUSPEC

PLAN FEATURES		PUBLIC UTILITIES	
EXISTING/MISCELLANEOUS	PROPOSED	ABOVEGROUND	U/GROUND
KERB AND GUTTER:	KERB AND GUTTER:	TELSTRA:	
EDGE OF BITUMEN:	EDGE OF BITUMEN:	ELECTRICITY:	
ROAD ℄/CROWN:	ROAD ℄/CROWN:	GAS & MISC.:	GAS
EARTH BATTERS:	EARTH BATTERS:	SEWER:	
PIPE DRAINS:	PIPE DRAINS:	WATER:	
DRAINAGE PITS:	DRAINAGE PITS:	POLES:	
TREES & SHRUBS:	SUB-SOIL DRAIN:	OVERHEAD:	
SPOT LEVELS:	SET-OUT LINE:	SURVEY:	

No.	AMENDMENTS DETAIL	CHECKED	DATE

DESIGN CHECKED AND APPROVED	26/04/21	DESIGNED	26/04/21
APPROVED Manager Capital Projects	26/4/21	DRAWN	26/04/21
ACCEPTED Client	27/4/21	DRAWING REVIEW	...../...../.....

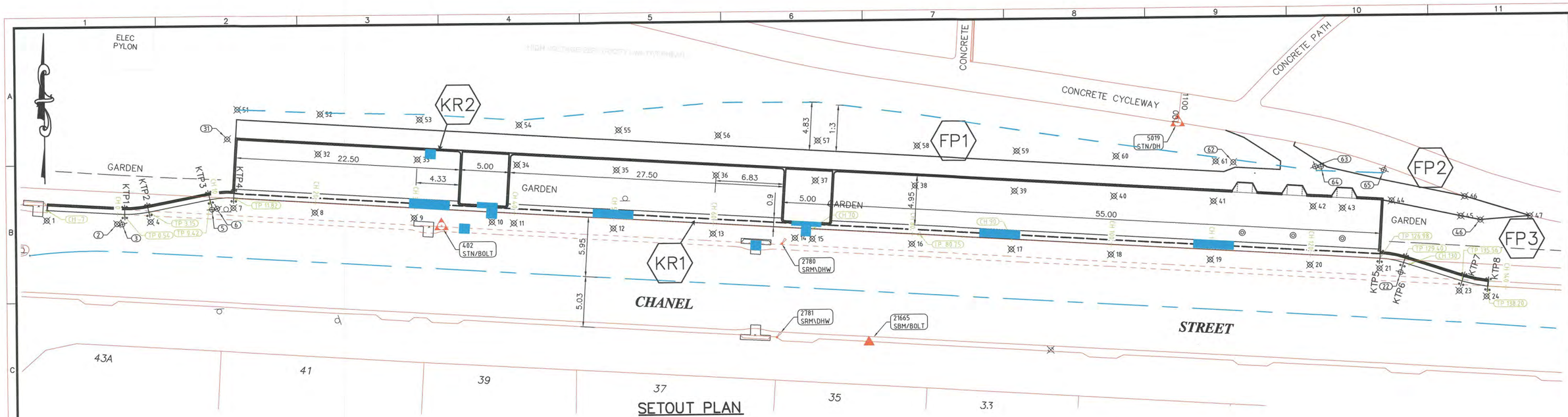
DATUM: A.H.D.
CO-ORDS: M.G.A.
RATIO: 1:200
TRIM No: F2019/02533
STATUS: FINAL

CITY OF PARRAMATTA COUNCIL

SUE SAVAGE RESERVE
CHANEL STREET, TOONGABBIE
CAR PARK CONSTRUCTION AND ASSOCIATED WORKS
PLAN VIEW AND GENERAL NOTES

PLAN NUMBER 17809
Sheet No : CP_10
Revision :

26, April, 2021 1:05:07 p.m.
Drawing: SUE SAVAGE PARK_17 KT.DWG



SETOUT PLAN
SCALE 1:200

SETOUT POINTS – KR1
OFFSET 1.00m FROM LIP LINE

POINT	CHAINAGE	EASTING	NORTHING	DESIGN LIP LEVEL	REMARKS
1	−7.066	311307.879	6260265.210	24.899	MATCH EXISTING KERB AND GUTTER
2	0.000	311314.931	6260264.778	24.963	IP 10.0m VC
3	0.540	311315.471	6260264.745	24.969	KTP1
4	3.152	311318.308	6260264.958	24.996	KTP2
5	9.420	311324.475	6260266.139	25.061	KTP3
6	10.000	311324.988	6260266.221	25.066	IP 10.0m VC
7	11.820	311326.614	6260266.275	25.079	KTP4
8	20.000	311334.779	6260265.768	25.123	
9	30.000	311344.759	6260265.148	25.167	
10	37.810	311352.554	6260264.663	25.115	IP 20.0MVC
11	40.000	311354.740	6260264.528	25.079	
12	50.000	311364.721	6260263.907	24.806	
13	60.000	311374.702	6260263.287	24.474	
14	68.246	311382.932	6260262.776	24.269	IP 10.0m VC LOW POINT NEW PIT
15	70.000	311384.682	6260262.667	24.267	
16	80.000	311394.663	6260262.047	24.476	IP 10.0m VC
17	90.000	311404.644	6260261.428	24.831	
18	100.000	311414.625	6260260.808	25.205	
19	110.000	311424.606	6260260.189	25.580	
20	120.000	311434.586	6260259.569	25.920	IP 10.0m VC
21	126.984	311441.557	6260259.137	26.022	KTP5
22	129.397	311443.674	6260258.733	26.045	KTP6
23	135.563	311449.548	6260256.821	26.105	KTP7
24	138.197	311452.281	6260256.227	26.130	KTP8 MATCH EXISTING KERB AND GUTTER

SETOUT POINTS – KR2
OFFSET 1.00m FROM INVERT LINE

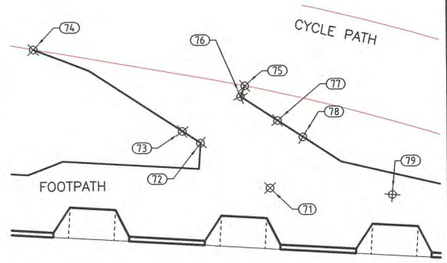
POINT	CHAINAGE	EASTING	NORTHING	DESIGN iVERT LEVEL	REMARKS
31	11.826	311326.054	6260273.174	25.392	
32	20.000	311335.149	6260271.606	25.352	IP 10.0m VC
33	30.000	311345.130	6260270.986	25.330	
34	40.000	311355.111	6260270.366	25.276	IP 10.0m VC
35	50.000	311365.091	6260269.746	25.001	
36	60.000	311375.072	6260269.126	24.694	IP 10.0m VC
37	70.000	311385.053	6260268.505	24.485	IP 10.0m VC LOW POINT
38	80.000	311395.034	6260267.885	24.697	IP 10.0m VC
39	90.000	311405.015	6260267.266	25.043	
40	100.000	311414.995	6260266.646	25.399	
41	110.000	311424.976	6260266.027	25.755	IP 5.0m VC
42	120.000	311434.957	6260265.407	26.095	IP 3.0m VC
43	122.941	311437.892	6260265.225	26.151	IP 3.0m VC
44	127.000	311442.829	6260265.921	26.288	FOOTPATH LEVELS
45	134.932	311449.760	6260264.309	26.662	
46	136.932	311451.717	6260263.896	26.680	
47	138.701	311456.697	6260264.263	26.697	MATCH EXISTING CYCLEWA

SETOUT POINTS – FPI
OFFSET 1.00m FROM EDGE OF FOOTPATH

POINT	CHAINAGE	EASTING	NORTHING	DESIGN LIP FOOTPATH LEVEL	REMARKS
51	11.676	311327.089	6260276.115	25.565	
52	20.000	311335.397	6260275.598	25.548	
53	30.000	311345.378	6260274.978	25.527	
54	40.000	311355.358	6260274.358	25.473	IP 5.0m VC
55	50.000	311365.339	6260273.738	25.197	
56	60.000	311375.320	6260273.118	24.890	
57	70.000	311385.301	6260272.498	24.681	IP 10.0m VC LOW POINT
58	80.000	311395.281	6260271.878	24.890	
59	90.000	311405.262	6260271.258	25.218	
60	100.000	311415.243	6260270.639	25.553	
61	110.000	311425.224	6260270.019	25.901	IP 10.0m VC
62	118.879	311426.996	6260269.909	26.212	IP 3.0m VC
63	120.000	311435.205	6260269.400	26.241	
64	122.911	311435.786	6260269.364	26.298	IP 3.0m VC
65	126.888	311442.079	6260268.973	26.338	
66	135.222	311450.174	6260266.266	26.702	MATCH EXISTING CYCLEWAY

SETOUT POINTS
FOOTPATH CONNECTIONI

POINT	EASTING	NORTHING	DESIGN LIP FOOTPATH LEVEL
71	311434.029	6260268.471	26.213
72	311431.742	6260269.970	26.428
73	311431.145	6260270.361	26.477
74	311426.256	6260273.093	26.539
75	311433.222	6260271.841	26.544
76	311433.077	6260271.486	26.478
77	311434.289	6260270.692	26.375
78	311435.125	6260270.144	26.304
79	311438.060	6260268.221	26.298



SETOUT PLAN
FOOTPATH CONNECTION
SCALE 1:100

SURVEY CONTROL MARKS

POINT No:	DESCRIPTION	EASTING	NORTHING	R.L.	REMARKS
402	STN/BOLT	311347.487	6260264.323	25.275	ON KERB OPPOSITE TO HOUSE No 39 (NORTH)
2780	SRM\DHW	311381.627	6260262.210	24.358	ON KERB OPPOSITE TO HOUSE No 35 (NORTH)
2781	SRM\DHW	311381.056	6260252.846	24.371	ON KERB FRONT OF HOUSE No 35
5019	STN/DH	311421.450	6260273.964	26.533	ON CYCLE PATH IN THE RESERVE
21665	SBM/BOLT	311390.291	6260252.254	24.511	ON KERB FRONT OF HOUSE No 35

SCALE OF METRES 1:200

DIAL 1100 BEFORE YOU DIG

UNLESS DETAILED ON THIS DRAWING ALL WORK SHALL CONFORM TO AUSPEC

PLAN FEATURES		PUBLIC UTILITIES	
EXISTING/MISCELLANEOUS	PROPOSED	ABOVEGROUND	U/GROUND
KERB AND GUTTER:	KERB AND GUTTER:	TELSTRA:	
EDGE OF BITUMEN:	EDGE OF BITUMEN:	ELECTRICITY:	
ROAD ℄/CROWN:	ROAD ℄/CROWN:	GAS & MISC.:	
EARTH BATTERS:	EARTH BATTERS:	SEWER:	
PIPE DRAINS:	PIPE DRAINS:	WATER:	
DRAINAGE PITS:	DRAINAGE PITS:	POLES:	
TREES & SHRUBS:	SUB-SOIL DRAIN:	OVERHEAD:	
SPOT LEVELS:	SET-OUT LINE:	SURVEY:	

No.	AMENDMENTS DETAIL	CHECKED	DATE

DESIGN CHECKED AND APPROVED	26/04/21	DESIGNED	26.04.21
APPROVED Manager Capital Projects	26/4/21	DRAWN	26.04.21
ACCEPTED Client	27/4/21	DRAWING REVIEW	...../...../.....

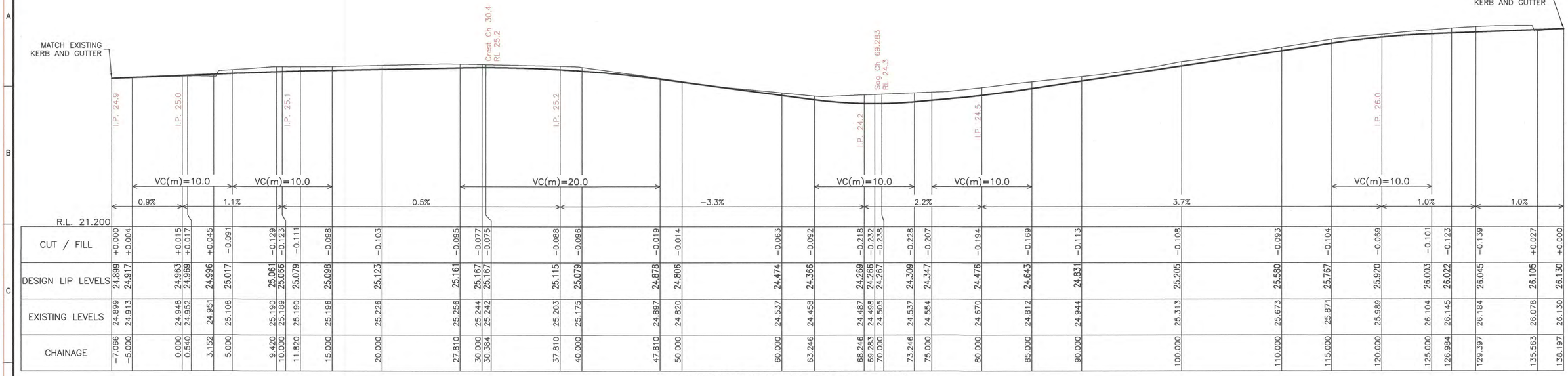
DATUM: A.H.D.
CO-ORDS: M.G.A.
RATIO: 1:200
TRIM No: F2019/02533
STATUS: FINAL

CITY OF PARRAMATTA COUNCIL

SUE SAVAGE RESERVE
CHANEL STREET, TOONGABBIE
CAR PARK CONSTRUCTION AND ASSOCIATED WORKS
SETOUT PLAN, SURVEY CONTROL MARKS AND CO-ORDINATE TABLES – KR1, KR2 AND FP1

PLAN NUMBER 17809
Sheet No : CP_11
Revision :

26, April, 2021 10:31:39 a.m.
Drawing: SUE SAVAGE PARK_17 KT.DWG



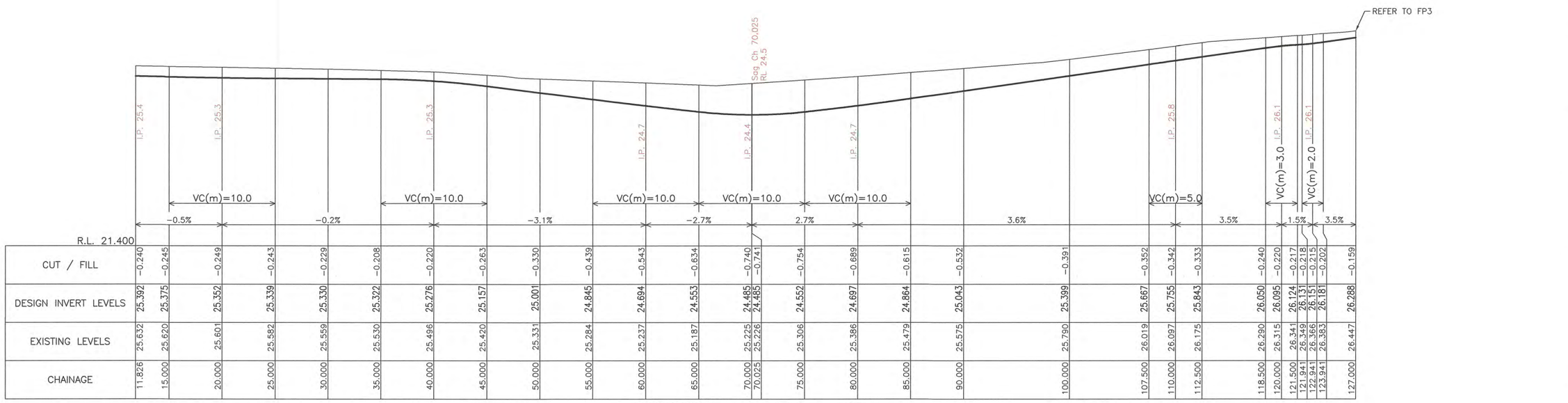
R.L. 21.200

CHAINAGE	−7.066	−5.000	0.000	0.540	3.152	5.000	9.420	10.000	11.820	15.000	20.000	27.810	30.000	30.384	37.810	40.000	47.810	50.000	60.000	63.246	68.246	69.283	70.000	73.246	75.000	80.000	85.000	90.000	100.000	110.000	115.000	120.000	125.000	126.984	129.397	135.563	138.197
EXISTING LEVELS	24.899	24.913	24.948	24.952	24.951	25.108	25.190	25.189	25.190	25.196	25.226	25.256	25.244	25.242	25.203	25.175	24.897	24.820	24.537	24.458	24.487	24.498	24.505	24.537	24.554	24.670	24.812	24.944	25.313	25.673	25.871	25.989	26.104	26.145	26.184	26.078	26.130
DESIGN LIP LEVELS	24.899	24.917	24.963	24.969	24.996	25.017	25.061	25.066	25.079	25.098	25.123	25.161	25.167	25.167	25.115	25.079	24.878	24.806	24.474	24.366	24.269	24.266	24.267	24.309	24.347	24.476	24.643	24.831	25.205	25.580	25.767	25.920	26.003	26.022	26.045	26.105	26.130
CUT / FILL	+0.000	+0.004	+0.015	+0.017	+0.045	−0.091	−0.129	−0.123	−0.111	−0.098	−0.103	−0.095	−0.077	−0.075	−0.088	−0.096	−0.019	−0.014	−0.063	−0.092	−0.218	−0.232	−0.238	−0.228	−0.207	−0.194	−0.169	−0.113	−0.108	−0.093	−0.104	−0.069	−0.101	−0.123	−0.139	+0.027	+0.000

LONGITUDINAL SECTION – KR1

FROM CH −7.066 TO CH 129.397

SCALES: H 1 in 200 V 1 in 50



R.L. 21.400

CHAINAGE	11.826	15.000	20.000	25.000	30.000	35.000	40.000	45.000	50.000	55.000	60.000	65.000	70.000	70.025	75.000	80.000	85.000	90.000	100.000	107.500	110.000	112.500	118.500	120.000	121.500	121.941	122.941	123.941	127.000
EXISTING LEVELS	25.632	25.620	25.601	25.582	25.559	25.530	25.496	25.420	25.331	25.284	25.237	25.187	25.225	25.226	25.306	25.386	25.479	25.575	25.790	26.019	26.097	26.175	26.290	26.315	26.341	26.349	26.366	26.383	26.447
DESIGN INVERT LEVELS	25.392	25.375	25.352	25.339	25.330	25.322	25.276	25.157	25.001	24.845	24.694	24.553	24.485	24.485	24.552	24.697	24.864	25.043	25.399	25.667	25.755	25.843	26.050	26.095	26.124	26.131	26.151	26.181	26.288
CUT / FILL	−0.240	−0.245	−0.249	−0.243	−0.229	−0.208	−0.220	−0.263	−0.330	−0.439	−0.543	−0.634	−0.740	−0.741	−0.754	−0.689	−0.615	−0.532	−0.391	−0.352	−0.342	−0.333	−0.240	−0.220	−0.217	−0.218	−0.215	−0.202	−0.159

LONGITUDINAL SECTION – KR2

FROM CH 11.826 TO CH 127.000

SCALES: H 1 in 200 V 1 in 50

SCALE OF METRES 1:50

SCALE OF METRES 1:200

AMENDMENTS			
No.	DETAIL	CHECKED	DATE

DESIGN CHECKED AND APPROVED 26/04/21

APPROVED Manager Capital Projects 26.4.21

ACCEPTED Client 27/4/21

DESIGNED 26/04/21

DRAWN 26/04/21

DRAWING REVIEW ...../...../.....

DATUM: A.H.D.

CO-ORDS: M.G.A.

RATIO: AS SHOWN

TRIM No: F2019/02533

STATUS: FINAL

CITY OF PARRAMATTA COUNCIL

SUE SAVAGE RESERVE

CHANEL STREET, TOONGABBIE

CAR PARK CONSTRUCTION AND ASSOCIATED WORKS

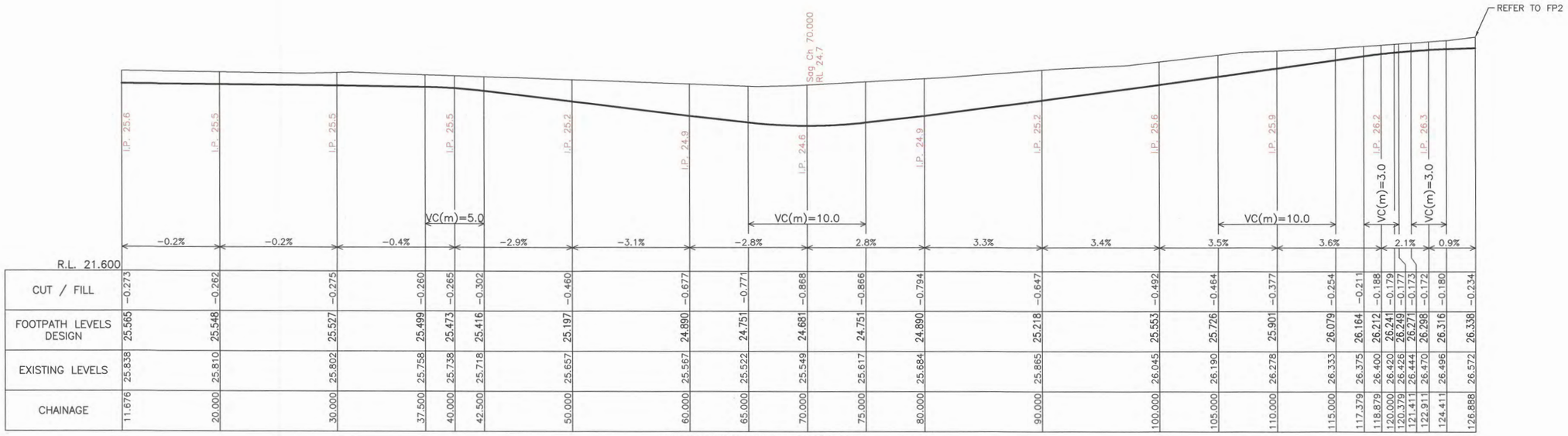
LONGITUDINAL SECTIONS – KR1 AND KR2

PLAN NUMBER 17809

Sheet No : CP_12

Revision :

26, April, 2021 10:07:53 a.m.
Drawing: SUE SAVAGE PARK_17 KT.DWG



R.L. 21.600

CUT / FILL	-0.273	-0.262	-0.275	-0.260	-0.265	-0.302	-0.460	-0.677	-0.771	-0.868	-0.866	-0.794	-0.647	-0.492	-0.464
FOOTPATH LEVELS DESIGN	25.565	25.548	25.527	25.499	25.473	25.416	25.197	24.890	24.751	24.681	24.751	24.890	25.218	25.553	25.726
EXISTING LEVELS	25.838	25.810	25.802	25.758	25.738	25.718	25.657	25.567	25.522	25.549	25.617	25.684	25.865	26.045	26.190
CHAINAGE	11.676	20.000	30.000	37.500	40.000	42.500	50.000	60.000	65.000	70.000	75.000	80.000	90.000	100.000	105.000

CUT / FILL	-0.377	-0.254	-0.211	-0.188	-0.179	-0.177	-0.173	-0.172	-0.180	-0.234
FOOTPATH LEVELS DESIGN	25.901	26.079	26.164	26.212	26.241	26.249	26.271	26.298	26.316	26.338
EXISTING LEVELS	26.278	26.333	26.375	26.400	26.420	26.426	26.444	26.470	26.496	26.572
CHAINAGE	110.000	115.000	117.379	118.879	120.000	120.379	121.411	122.911	124.411	126.888

LONGITUDINAL SECTION – FP1

FROM CH 11.676 TO CH 126.888

SCALES: H 1 in 200 V 1 in 50

R.L. 24.000

CUT / FILL	-0.237	-0.151	+0.000
FOOTPATH LEVELS DESIGN	26.338	26.471	26.702
EXISTING LEVELS	26.575	26.622	26.702
CHAINAGE	126.976	130.000	135.222

LONGITUDINAL SECTION – FP2

FROM CH 126.976 TO CH 135.222

SCALES: H 1 in 200 V 1 in 50

R.L. 24.500

CUT / FILL	-0.157	+0.100	+0.094	+0.000
FOOTPATH LEVELS DESIGN	26.288	26.662	26.680	26.697
EXISTING LEVELS	26.445	26.562	26.586	26.697
CHAINAGE	126.980	134.932	136.932	138.701

LONGITUDINAL SECTION – FP3

FROM CH 126.980 TO CH 138.701

SCALES: H 1 in 200 V 1 in 50

1 0.5 0 1 2 3 4 5
SCALE OF METRES 1:50

4 3 2 1 0 4 8 12 16 20
SCALE OF METRES 1:200

AMENDMENTS

No.	DETAIL	CHECKED	DATE

DESIGN CHECKED AND APPROVED 26.04.21

APPROVED
Manager Capital Projects 26.4.21

ACCEPTED
Client 27.4.21

DESIGNED 26.04.21

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DRAWING REVIEW ..../..../....

DATUM: A.H.D.
CO-ORDS: M.G.A.
RATIO: AS SHOWN
TRIM No: F2019/02533
STATUS:
FINAL

CITY OF PARRAMATTA COUNCIL

SUE SAVAGE RESERVE
CHANEL STREET, TOONGABBIE
CAR PARK CONSTRUCTION AND ASSOCIATED WORKS
LONGITUDINAL SECTIONS – FP1 AND CL1

PLAN NUMBER
17809
Sheet No : CP_13
Revision :

26, April, 2021 10:08:36 a.m.
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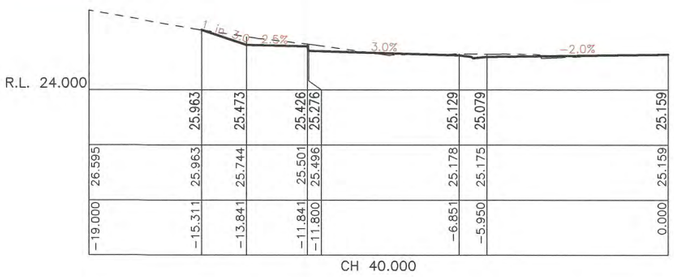
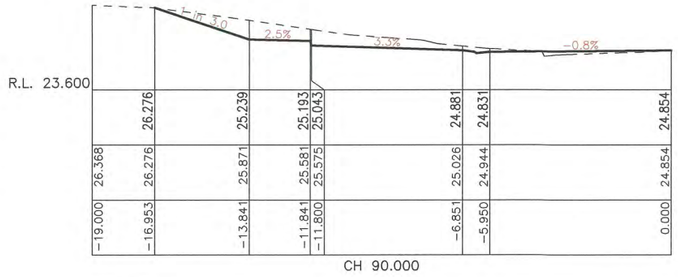
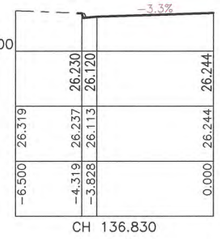


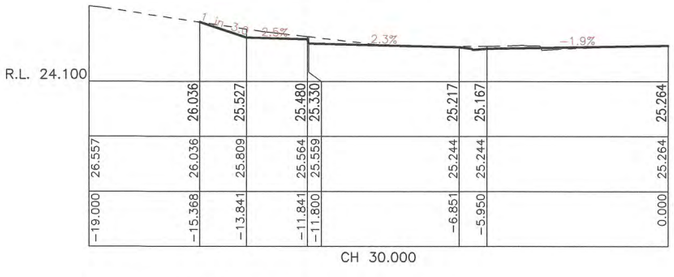
CH 40.000



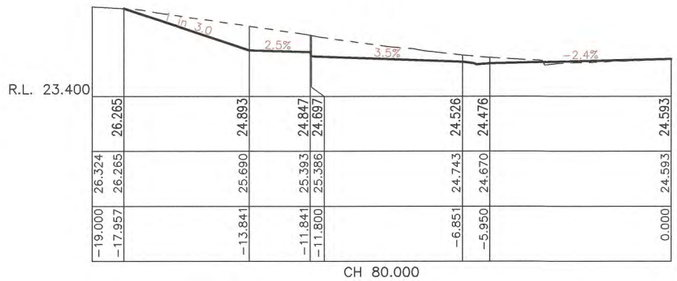
CH 90.000



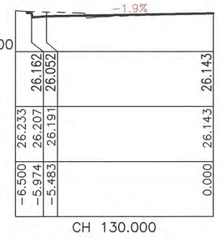
CH 136.830



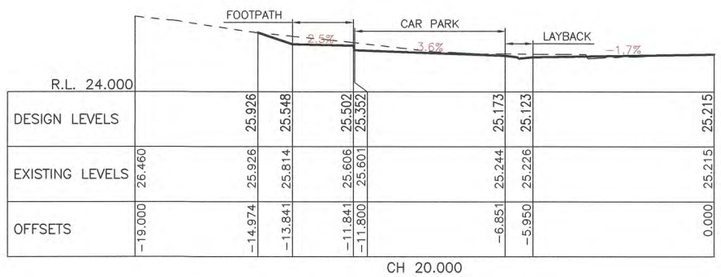
CH 30.000



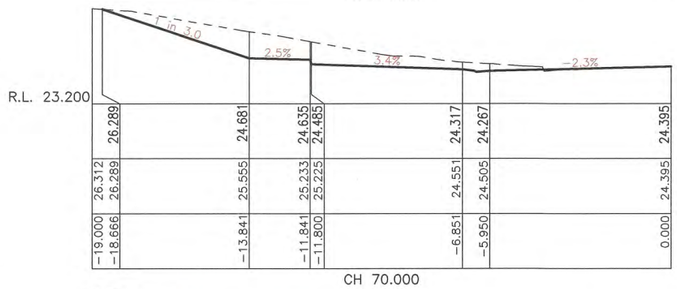
CH 80.000



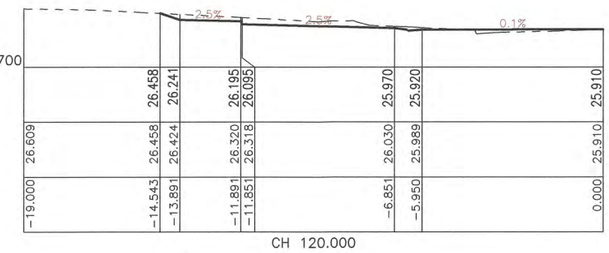
CH 130.000



CH 20.000



CH 70.000



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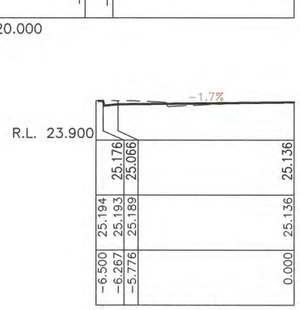
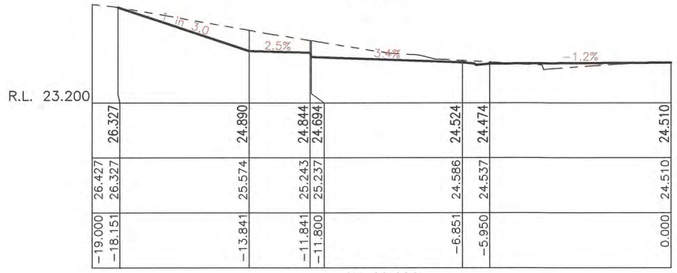


CH 10.000



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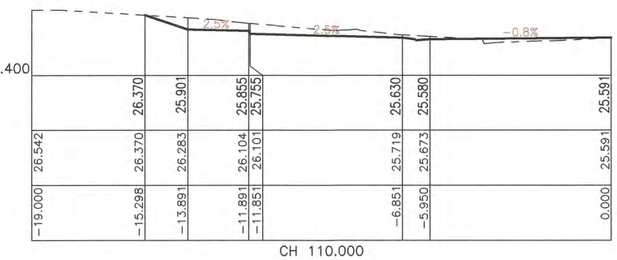

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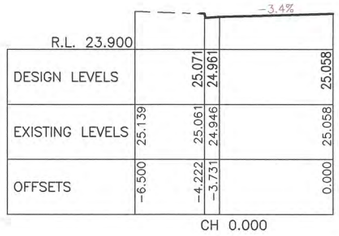
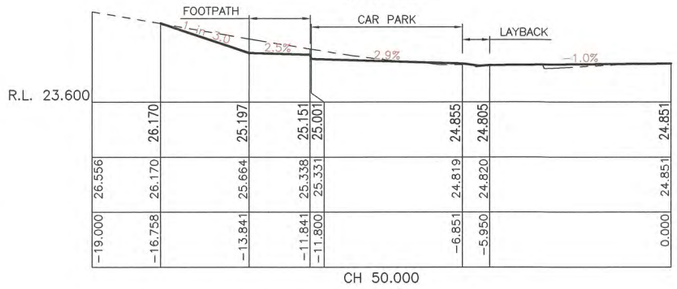


CH 0.000



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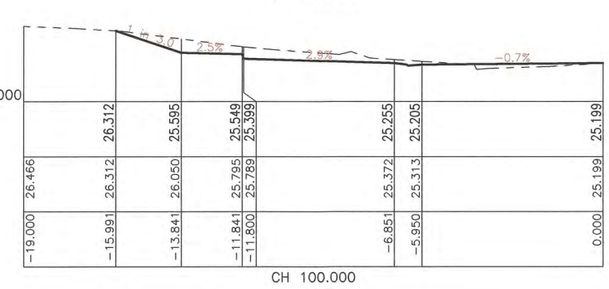


CH 100.000

CROSS SECTIONS – CL1

SCALES: 1 in 100 (NATURAL)

2 1 0 2 4 6 8 10

SCALE OF METRES 1:100

AMENDMENTS			
No.	DETAIL	CHECKED	DATE

DESIGN CHECKED AND APPROVED 26/04/21

APPROVED Manager Capital Projects 26/4/21

ACCEPTED Client 27/4/21

DESIGNED 26/04/21

DRAWN 26/04/21

DRAWING REVIEW ...../...../.....

DATUM: A.H.D.

CO-ORDS: M.G.A.

RATIO: 1:100

TRIM No: F2019/02533

STATUS: FINAL

CITY OF PARRAMATTA COUNCIL

SUE SAVAGE RESERVE

CHANEL STREET, TOONGABBIE

CAR PARK CONSTRUCTION AND ASSOCIATED WORKS

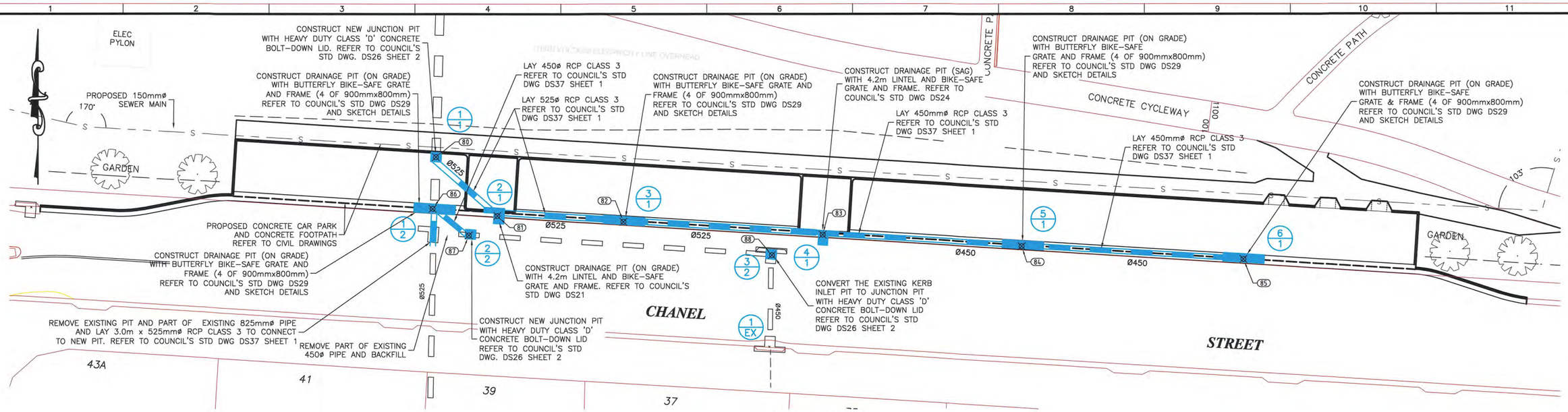
CROSS SECTIONS – CL1

PLAN NUMBER 17809

Sheet No : CP_14

Revision :

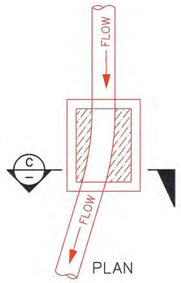
26, April, 2021 12:46:34 p.m.
Drawing: SUE SAVAGE PARK_17 KT.DWG



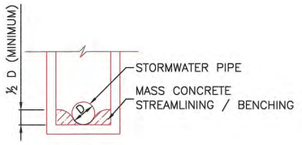
PLAN VIEW
SCALE 1:200

STORMWATER NOTES

1. THE CONTRACTOR IS RESPONSIBLE TO SUBMIT THE WORK–AS–EXUCATED DRAWINGS PREPARED BY A REGISTERED SURVEYOR FOLLOWING COMPLETION OF WORK.
2. THE INTERNAL JUNCTION SHALL BE SMOOTHLY FINISHED WITH 3:1 CEMENT MORTAR SO AS TO PRESENT NO OBSTRUCTION WITHIN THE INTERNAL SURFACE OF THE R.C. STORMWATER PIT.
3. THE HOLE IN COUNCIL'S PIT TO BE FORMED BY USING A ROTARY DRILL / JACK HAMMER. TO MINIMISE DAMAGE TO PIT MAKE HOLE TO ALLOW PIPE TO FIT IN, THEN RENDER AROUND PIPE INSIDE AND OUT WITH 3:1 CEMENT MORTAR MIX.
4. EXCAVATED TRENCH WALL WILL BE AT LEAST 150mm AWAY FROM EACH SIDE OF THE PIPE TO BE LAID. PIPES ARE TO BE LAID ALONG THE CENTRE LINE OF TRENCH. REFER TO COUNCIL'S STD DWG DS37 SHT1
5. MATERIAL FOR BEDDING TO BE 20mm ROAD BASE GRADED ACCORDING TO AS. 3500.3 AND AS. 3725 (REFER TO COUNCIL'S STD DWG DS37 SHT1 FOR DRAINAGE PIPES AND DS37 SHT2 FOR SERVICE PIPE – RESIDENTIAL STREETS) MATERIAL FOR HAUNCH ZONES AND FILL AROUND THE PIPE TO BE 20mm NO FINES AGGREGATE MATERIAL FOR BED AND HAUNCH ZONES MUST CONSIST OF TYPE BH SELECT FILL. TYPE BH SELECT FILL MUST HAVE:
   a) A PARTICLE SIZE DISTRIBUTION, DETERMINED BY RMS T201, WITHIN THE LIMITS SET OUT IN TABLE 3 IN AS3725 AND
   b) A PLASTICITY INDEX, DETERMINED BY RMS T109, OF NOT MORE THAN 6
6. A FINE GRANULAR MATERIAL HAS TO BE USED FOR BACKFILLING. BACKFILLING MATERIAL SHOULD BE COMPACTED TO AT LEAST 95% OF THE MAXIMUM DRY DENSITY AND GRADED ACCORDING TO AS 3500.3 AND AS 3725.
7. COMPACTION OF BACKFILLING MATERIALS FOR STORMWATER DRAINAGE WORKS IS TO BE CARRIED OUT IN LAYERS NOT EXCEEDING 200mm LOOSE THICKNESS.
8. PRIOR TO PLACEMENT AND COMPACTION OF BACKFILLING MATERIAL INSPECTION AND APPROVAL OF SUPERVISING ENGINEER WILL BE REQUIRED.
9. ALL GRATES ON STORMWATER INLET PITS SHALL BE CYCLE PROOF GALVANIZED MILD STEEL UNLESS IT IS SPECIFIED OTHERWISE.
10. ALL STORMWATER DRAINAGE WORKS MUST BE LEFT UNCOVERED UNTIL CHECKING HAS BEEN DONE.
11. ALL STORMWATER DRAINAGE PIPES TO BE REINFORCED CONCRETE SPIGOT AND SOCKET RUBBER RING JOINTED PIPES TO THE CLASS NOMINATED ON DRAWINGS.
12. THE CONTRACTOR IS RESPONSIBLE TO OBTAIN DENSITY TESTS OF THE PIPE BEDDING & BACKFILL FROM A NATA REGISTERED LABORATORY. TESTS ARE TO BE PERFORMED ACCORDING TO AS 1289 (E1.1 & E1.2). TEST RESULTS SHALL BE SUBMITTED IN WRITING TO THE SUPERVISING ENGINEER.
13. THE CONTRACTOR SHALL ENSURE PROTECTION AGAINST ANY DAMAGE FROM EXISTING STRUCTURES LOCATED ADJACENT TO EXCAVATED TRENCHES. PARTICULAR CARE SHALL BE TAKEN NEAR THE FOOTING OF EXISTING STRUCTURES. CONSULTATION WITH AN EXPERIENCED GEOTECHNICAL ENGINEER SHALL BE UNDERTAKEN TO DETERMINE THE EXACT EXTENT OF EXCAVATION IN THE VICINITY OF EXISTING FOOTINGS.
14. CONTRACTOR WILL BEAR THE EXPENSES OF ALL TESTS TO BE CARRIED OUT.
15. THE EXACT LOCATION OF ALL SERVICES AND CONNECTIONS MUST BE VERIFIED BY THE CONTRACTOR BEFORE PROCEEDING WITH THE WORK.



PLAN

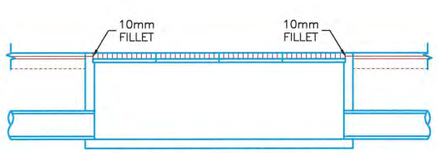


SECTION C

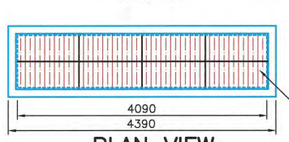
STREAMLINING / BENCHING
TYPICAL DETAILS
SCALE: N.T.S.

BENCHING NOTE:

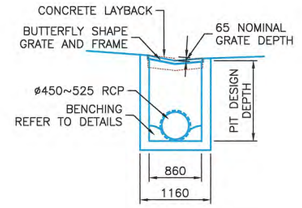
ALL STORMWATER PITS ARE TO BE PROVIDED WITH MASS CONCRETE STREAMLINING / BENCHING TO ENSURE SMOOTH / LAMINAR FLOW. REFER TO STREAMLINING / BENCHING TYPICAL DETAILS.



SECTIONAL FRONT VIEW
SCALE 1:50



PLAN VIEW
SCALE 1:50



CROSS SECTION VIEW
SCALE 1:50

PIT WITH BUTTERFLY GRATE
SKETCH DETAILS
SCALE: 1:50

SETOUT POINTS FOR PITS

POINT	EASTING	NORTHING	REMARKS
80	311346.423	6260271.510	PIT 1 OF 1 – JUNCTION PIT WITH CONCRETE LID
81	311352.394	6260265.795	PIT 2 OF 1 – ON–GRADE PIT WITH 4.2m LINTEL AND BIKE–SAFE GRATE & FRAME
82	311364.650	6260265.230	PIT 3 OF 1 – ON–GRADE PIT WITH 4x900x800 BUTTERFLY BIKE–SAFE GRATE & FRAME
83	311384.024	6260263.972	PIT 4 OF 1 – SAG PIT WITH 4x900x800 BUTTERFLY BIKE–SAFE GRATE & FRAME
84	311403.367	6260262.844	PIT 5 OF 1 – ON–GRADE PIT WITH 4x900x800 BUTTERFLY BIKE–SAFE GRATE & FRAME
85	311424.926	6260261.588	PIT 6 OF 1 – ON–GRADE PIT WITH 4x900x800 BUTTERFLY BIKE–SAFE GRATE & FRAME
86	311346.109	6260266.486	PIT 1 OF 2 – ON–GRADE PIT WITH 4x900x800 BUTTERFLY BIKE–SAFE GRATE & FRAME
87	311349.629	6260263.911	PIT 2 OF 2 – JUNCTION PIT WITH CONCRETE LID
88	311379.091	6260261.989	PIT 3 OF 2 – JUNCTION PIT WITH CONCRETE LID

1 0.5 0 1 2 3 4 5
SCALE OF METRES 1:50

4 3 2 1 0 4 8 12 16 20
SCALE OF METRES 1:200

DIAL 1100 BEFORE YOU DIG

UNLESS DETAILED ON THIS DRAWING ALL WORK SHALL CONFORM TO AUSPEC

PLAN FEATURES		PUBLIC UTILITIES	
EXISTING/MISCELLANEOUS	PROPOSED	ABOVEGROUND	U/GROUND
KERB AND GUTTER:	KERB AND GUTTER:	TELSTRA:	
EDGE OF BITUMEN:	EDGE OF BITUMEN:	ELECTRICITY:	
ROAD ℄/CROWN:	ROAD ℄/CROWN:	GAS & MISC.:	GAS
EARTH BATTERS:	EARTH BATTERS:	SEWER:	
PIPE DRAINS:	PIPE DRAINS:	WATER:	
DRAINAGE PITS:	DRAINAGE PITS:	POLES:	
TREES & SHRUBS:	SUB–SOIL DRAIN:	OVERHEAD:	
SPOT LEVELS:	SET–OUT LINE:	SURVEY:	

AMENDMENTS			
No.	DETAIL	CHECKED	DATE

DESIGN CHECKED AND APPROVED	26/04/21	DESIGNED	26/04/21
APPROVED Manager Capital Projects	26/4/21	DRAWN	26/04/2021
ACCEPTED Client	27/4/21	DRAWING REVIEW	26/04/21

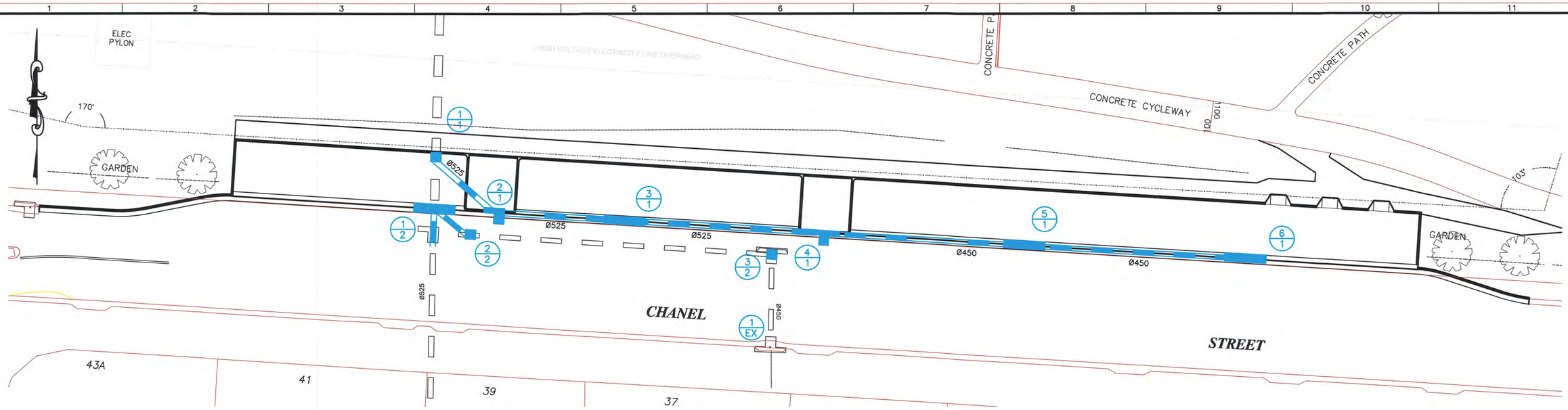
DATUM: A.H.D.
CO–ORDS: M.G.A.
RATIO: 1:200
TRIM No: F2019/02533
STATUS: **FINAL**

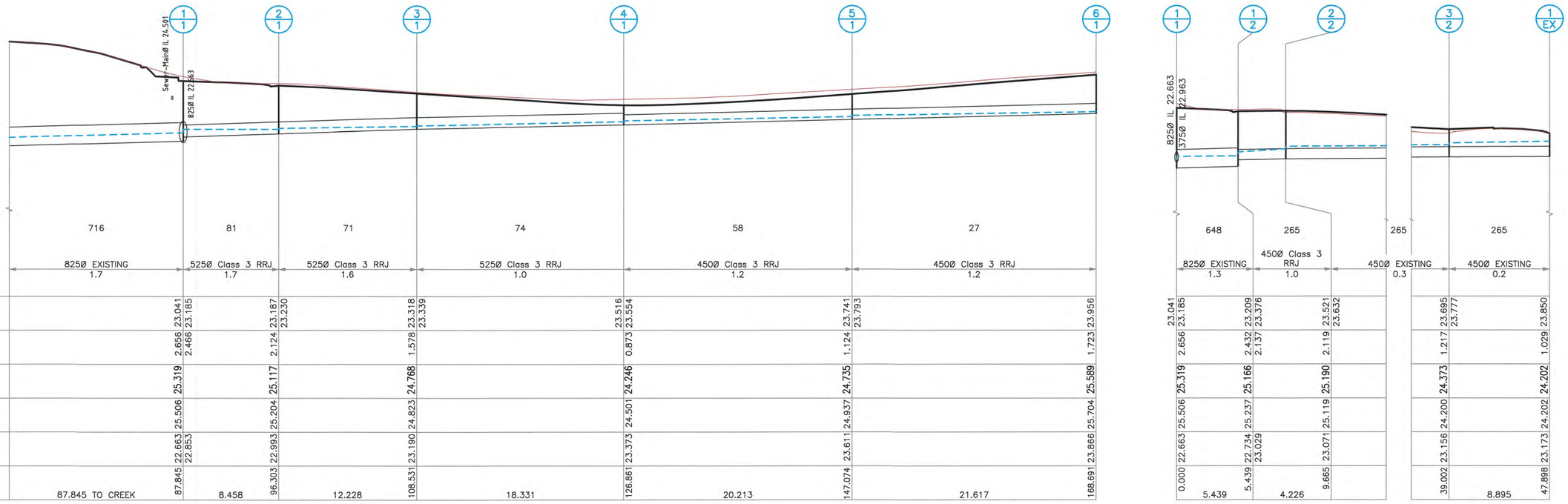
CITY OF PARRAMATTA COUNCIL

SUE SAVAGE RESERVE
CHANEL STREET, TOONGABBIE
CAR PARK CONSTRUCTION AND ASSOCIATED WORKS
DRAINAGE PLAN 1 – LAYOUT PLAN, SETOUT TABLE, BENCHING AND SKETCH DETAILS

PLAN NUMBER 17682
Sheet No : CP_15
Revision :

26, April, 2021 1:05:07 p.m.
Drawing: SUE SAVAGE PARK_17 KT.DWG





PLAN VIEW

SCALE 1:200

FLOW (L/S)	716		81		71		74		58		27	
PIPE DETAILS SLOPE/GRADE	825Ø EXISTING 1.7		525Ø Class 3 RRJ 1.7		525Ø Class 3 RRJ 1.6		525Ø Class 3 RRJ 1.0		450Ø Class 3 RRJ 1.2		450Ø Class 3 RRJ 1.2	
DATUM RL 15.8												
HGL – 20 YR ARI		23.041 23.185		23.187 23.230		23.318 23.339		23.516 23.554		23.741 23.793		23.956
DEPTH TO INVERT		2.656 2.466		2.124		1.578		0.873		1.124		1.723
FINISHED SURFACE		25.319		25.117		24.768		24.246		24.735		25.589
EXISTING SURFACE		25.506		25.204		24.823		24.501		24.937		25.704
INVERT LEVEL		22.663 22.853		22.993		23.190		23.373		23.611		23.866
CHAINAGE	87.845 TO CREEK	87.845	8.458	96.303	12.228	108.531	18.331	126.861	20.213	147.074	21.617	168.691

LONGITUDINAL SECTION – DRAINAGE LINE 1

CHAINAGE 87.845 TO 168.691

SCALE: H 1:200; V 1:100

FLOW (L/S)		648		265		265		265	
PIPE DETAILS SLOPE/GRADE		825Ø EXISTING 1.3		450Ø Class 3 RRJ 1.0		450Ø EXISTING 0.3		450Ø EXISTING 0.2	
HGL – 20 YR ARI	23.041 23.185		23.209 23.376		23.521 23.632		23.695 23.777		23.850
DEPTH TO INVERT	2.656		2.432 2.137		2.119		1.217		1.029
FINISHED SURFACE	25.319		25.166		25.190		24.373		24.202
EXISTING SURFACE	25.506		25.237		25.119		24.200		24.202
INVERT LEVEL	22.663		22.734 23.029		23.071		23.156		23.173
CHAINAGE	0.000	5.439	5.439	4.226	9.665		39.002	8.895	47.898

LONGITUDINAL SECTION – DRAINAGE LINE 2

CHAINAGE 0.000 TO 47.898

SCALE: H 1:200; V 1:100

1 0.5 0 1 2 3 4 5

SCALE OF METRES 1:50

4 3 2 1 0 4 8 12 16 20

SCALE OF METRES 1:200

DIAL 1100 BEFORE YOU DIG

UNLESS DETAILED ON THIS DRAWING ALL WORK SHALL CONFORM TO AUS SPEC

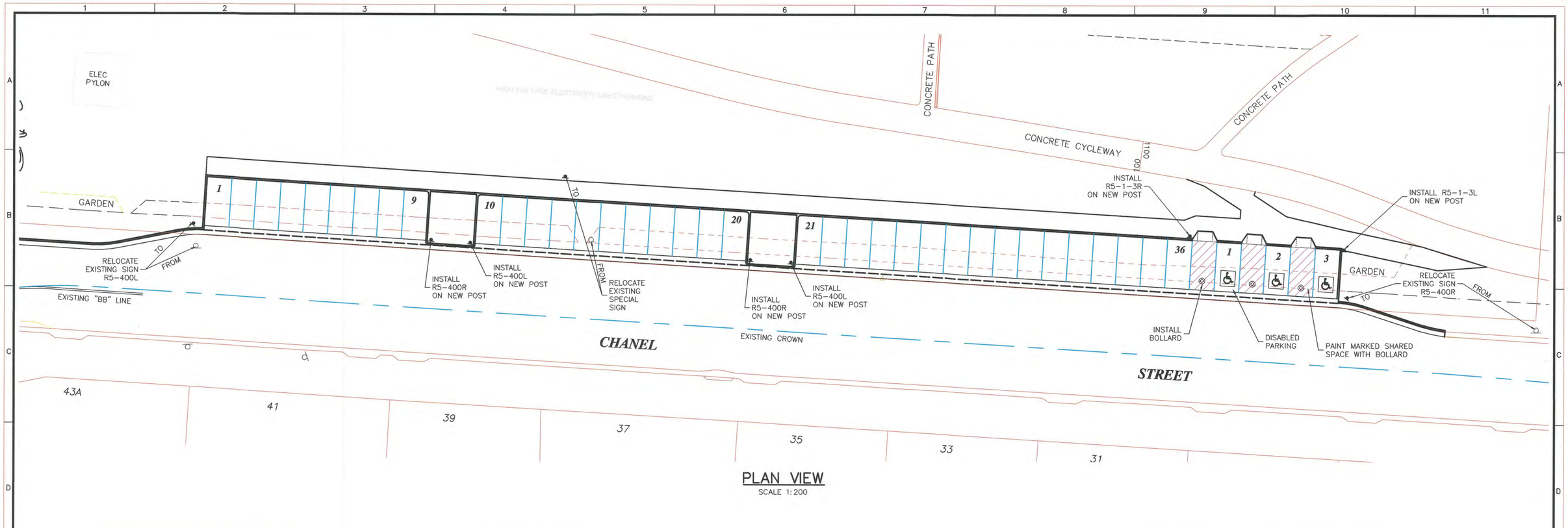
PLAN FEATURES				PUBLIC UTILITIES		
EXISTING/MISCELLANEOUS		PROPOSED		ABOVEGROUND		U/GROUND
KERB AND GUTTER:		KERB AND GUTTER:		TELSTRA:	☒ TPIL	— — T — — —
EDGE OF BITUMEN:		EDGE OF BITUMEN:		ELECTRICITY:	☐ SUB. STATION	
ROAD ℄/CROWN:		ROAD ℄/CROWN:		GAS & MISC.:	G AV LH	— GAS —
EARTH BATTERS:		EARTH BATTERS:		SEWER:	MH	—S— — —S—
PIPE DRAINS:		PIPE DRAINS:		WATER:	H SV	-W- - - -W- - -
DRAINAGE PITS:		DRAINAGE PITS:		POLES:	● LPP ● LP ● PPT	
TREES & SHRUBS:		SUB-SOIL DRAIN:		OVERHEAD:	—0—H—	
SPOT LEVELS:	20.00 25.000 25.000	SET-OUT LINE:		SURVEY:	STN PM S.C.P.M MARK DHW_IN_KERB	

AMENDMENTS			
No.	DETAIL	CHECKED	DATE

26, April, 2021 1:05:07 p.m.
Drawing: SUE SAVAGE PARK_17 KT.DWG

DESIGN CHECKED AND APPROVED 26/04/21	DESIGNED 26/04/21	DATUM: A.H.D.	**CITY OF PARRAMATTA COUNCIL**
APPROVED Manager Capital Projects 26/4/21	DRAWN 26/04/2021	CO–ORDS: M.G.A.	SUE SAVAGE RESERVE CHANEL STREET, TOONGABBIE CAR PARK CONSTRUCTION AND ASSOCIATED WORKS
ACCEPTED Client 27/4/21	DRAWING REVIEW 26/04/21	RATIO: 1:200 TRIM No: F2019/02533 STATUS: **FINAL**	DRAINAGE PLAN 1 – LAYOUT PLAN, SETOUT TABLE, BENCHING AND SKETCH DETAILS

PLAN NUMBER
17682
Sheet No : CP_16
Revision :



PLAN VIEW
SCALE 1:200

PAVEMENT CYCLEWAY SYMBOL SCHEDULE

GRAPHIC SYMBOL	NAME / TYPE	N° REQUIRED	REMARKS
	S22	3	PAVEMENT SYMBOL AS PER AS 1428.1 AS INDICATED ON PLAN

TRAFFIC NEW SIGNS SCHEDULE

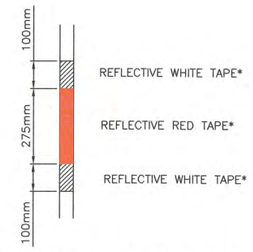
GRAPHIC SYMBOL	NAME / TYPE	N° REQUIRED	REMARKS
P ONLY →	R5-1-3R	1	NEW SIGN AS SHOWN ON PLAN
P ONLY ←	R5-1-3L	1	NEW SIGN AS SHOWN ON PLAN

EXISTING TRAFFIC SIGNS SCHEDULE

GRAPHIC SYMBOL	NAME / TYPE	N° REQUIRED	REMARKS
NO STOPPING ←	R5-400L	3	RELOCATE AS SHOWN ON PLAN
NO STOPPING →	R5-400R	3	RELOCATE AS SHOWN ON PLAN
DOGS MUST BE ON LEASH IN THIS RESERVE	SPECIAL SIGN	1	RELOCATE AS SHOWN ON PLAN

TRAFFIC MANAGEMENT NOTES:

1. ALL PAVEMENT MARKING AND SIGNPOSTING TO BE IN ACCORDANCE WITH ROADS AND MARITIME SERVICES SUPPLEMENTS, RMS DELINEATION MANUAL, AUSTROADS GUIDES, AUSTRALIAN STANDARDS (AS1742) AND RMS SPECIFICATIONS R141 AND R143.
2. ALL RETROREFLECTIVE RAISED PAVEMENT MARKERS TO BE IN ACCORDANCE WITH RMS SPECIFICATION R142 AND "RMS DELINEATION" SECTION 15 – RAISED PAVEMENT MARKERS.
3. ALL CONCRETE ISLAND KERB FACES ARE TO BE PAINTED WITH APPROVED REFLECTIVE WHITE PAINT IN ACCORDANCE WITH RMS SPECIFICATION R141.
4. STREET SIGNS TO BE PLACED AS DIRECTED BY SUPERVISING ENGINEER.
5. ENSURE ALL SIGNPOSTS ARE PLACED CLEAR OF EXISTING OR PROPOSED DRIVEWAYS AND CLEAR OF TREES AND OTHER STREET FURNITURE.
6. TRAFFIC CONTROL MEASURES ARE TO BE CARRIED OUTPRIOR, DURING AND AFTER CONSTRUCTION IN ACCORDANCE WITH A.S.1742.3
7. ALL PAVEMENT MARKING AND SIGNPOSTING IS TO BE APPROVED BY CITY OF PARRAMATTA COUNCIL TRAFFIC ENGINEER.
8. ALL SIGN POSTS IN CONCRETE TO BE HELD IN POSITION WITH V-LOCKS.
9. ALL PAINTWORK TO BE COMPLETED ON DAY OF INSTALLATION.
10. ALL LINEMARKING TO BE APPROVED WHITE THERMOPLASTIC PAINT.
11. ALL REDUNDANT LINEMARKING WITHIN LIMIT OF WORKS TO BE REMOVED AS REQUIRED.



REFLECTIVE TAPE DETAIL 'E'
NOT TO SCALE

*TAPE TO BE CLASS 1 (AS 1906.1) UNLESS LOCAL REGULATIONS SPECIFY OTHERWISE.

NOTE:
SHARED AREA TO BE PAINTED AS PER AS 2890.6:2009. SECT 3 CLAUSE 3.2 INSTALL BOLLARD WITH REFLECTIVE TAPE AS PER DETAIL 'E' THIS SHEET.

SCALE OF METRES 1:200

DIAL 1100 BEFORE YOU DIG

UNLESS DETAILED ON THIS DRAWING ALL WORK SHALL CONFORM TO AUS SPEC

PLAN FEATURES		PUBLIC UTILITIES	
EXISTING/MISCELLANEOUS	PROPOSED	ABOVEGROUND	U/GROUND
KERB AND GUTTER:	KERB AND GUTTER:	TELSTRA:	
EDGE OF BITUMEN:	EDGE OF BITUMEN:	ELECTRICITY:	
ROAD ℄/CROWN:	ROAD ℄/CROWN:	GAS & MISC.:	GAS
EARTH BATTERS:	EARTH BATTERS:	SEWER:	
PIPE DRAINS:	PIPE DRAINS:	WATER:	
DRAINAGE PITS:	DRAINAGE PITS:	POLES:	
TREES & SHRUBS:	SUB-SOIL DRAIN:	OVERHEAD:	
SPOT LEVELS:	SET-OUT LINE:	SURVEY:	

No.	AMENDMENTS DETAIL	CHECKED	DATE

DESIGN CHECKED AND APPROVED	26/04/21	DESIGNED	26/04/21
APPROVED Manager Capital Projects	26/4/21	DRAWN	26/04/21
ACCEPTED Client	27/4/21	DRAWING REVIEW	...../...../.....

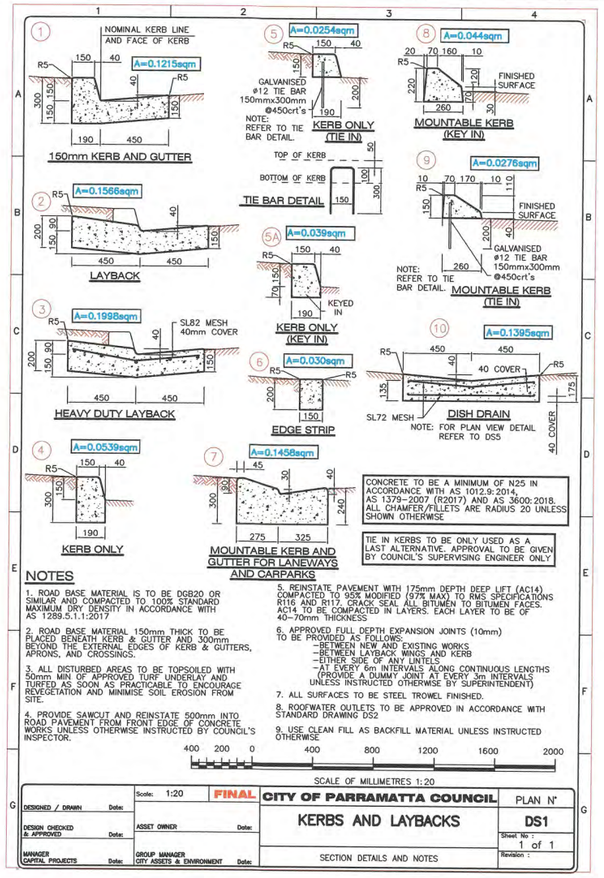
DATUM:	A.H.D.
CO-ORDS:	M.G.A.
RATIO:	1:200
TRIM No:	F2019/02533
STATUS:	FINAL

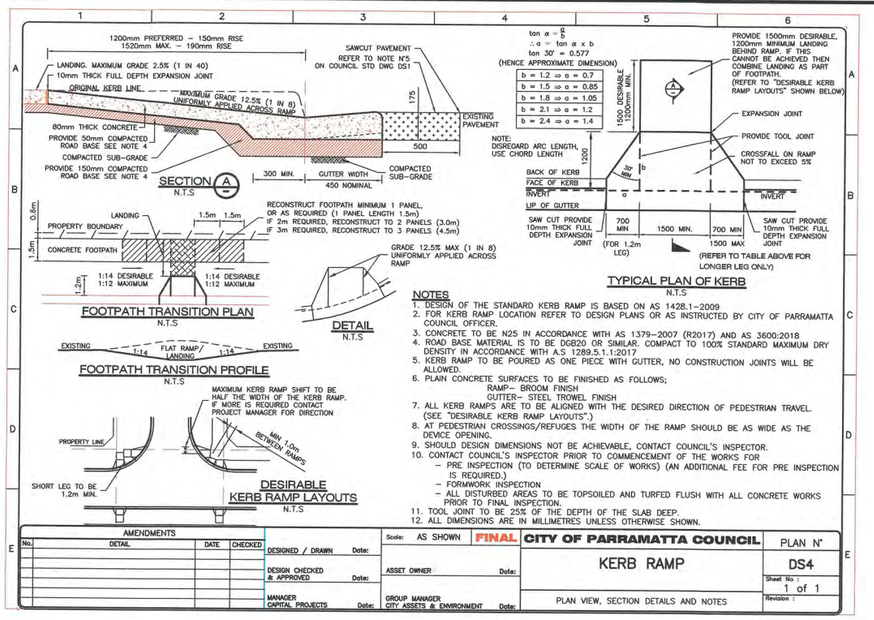
CITY OF PARRAMATTA COUNCIL

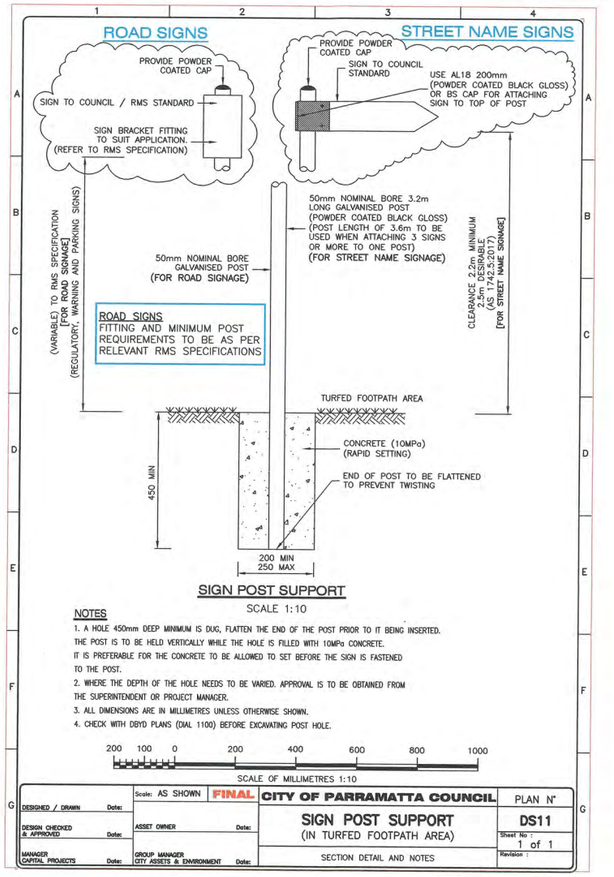
SUE SAVAGE RESERVE
CHANEL STREET, TOONGABBIE
CAR PARK CONSTRUCTION AND ASSOCIATED WORKS
TRAFFIC MANAGEMENT PLAN

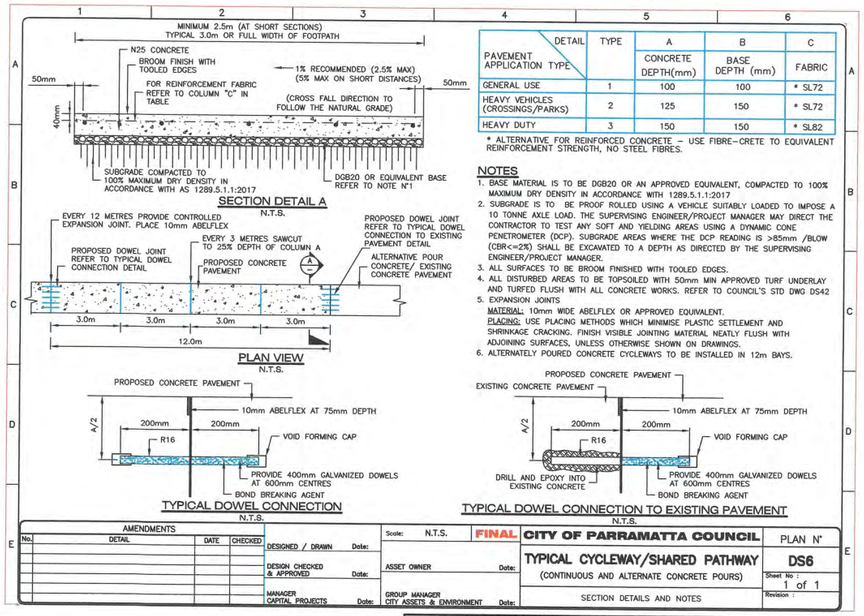
PLAN NUMBER 17809
Sheet No : CP_17
Revision :

26, April, 2021 10:11:51 a.m.
Drawing: SUE SAVAGE PARK_17 KT.DWG







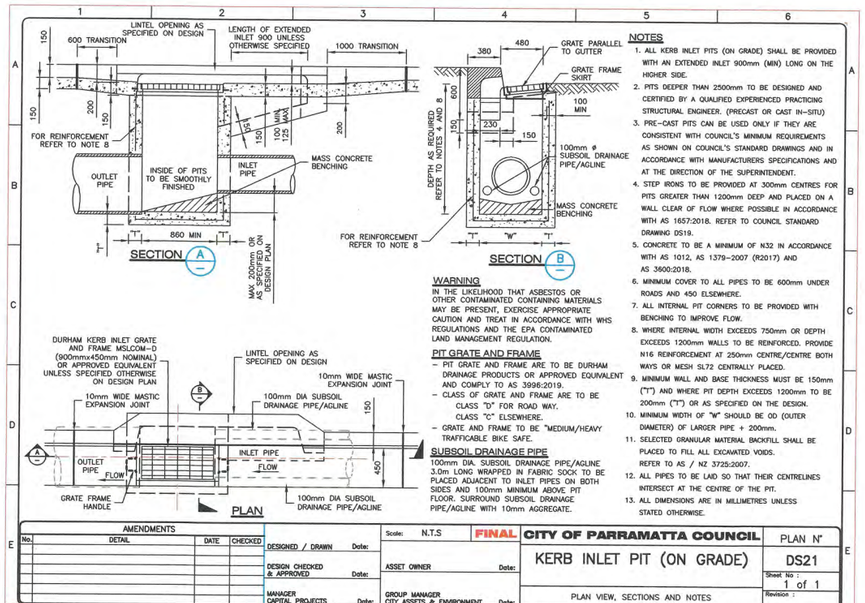


DETAIL / PAVEMENT APPLICATION TYPE	TYPE	A CONCRETE DEPTH(mm)	B BASE DEPTH (mm)	C FABRIC
GENERAL USE	1	100	100	* SL72
HEAVY VEHICLES (CROSSINGS/PARKS)	2	125	150	* SL72
HEAVY DUTY	3	150	150	* SL82

* ALTERNATIVE FOR REINFORCED CONCRETE – USE FIBRE–CRETE TO EQUIVALENT REINFORCEMENT STRENGTH, NO STEEL FIBRES.

NOTES
1. BASE MATERIAL IS TO BE DGB20 OR AN APPROVED EQUIVALENT, COMPACTED TO 100% MAXIMUM DRY DENSITY IN ACCORDANCE WITH 1289.5.1.1:2017
2. SUBGRADE IS TO BE PROOF ROLLED USING A VEHICLE SUITABLY LOADED TO IMPOSE A 10 TONNE AXLE LOAD. THE SUPERVISING ENGINEER/PROJECT MANAGER MAY DIRECT THE CONTRACTOR TO TEST ANY SOFT AND YIELDING AREAS USING A DYNAMIC CONE PENETROMETER (DCP). SUBGRADE AREAS WHERE THE DCP READING IS >85mm /BLOW (CBR<=2%) SHALL BE EXCAVATED TO A DEPTH AS DIRECTED BY THE SUPERVISING ENGINEER/PROJECT MANAGER.
3. ALL SURFACES TO BE BROOM FINISHED WITH TOOLED EDGES.
4. ALL DISTURBED AREAS TO BE TOPSOILED WITH 50mm MIN APPROVED TURF UNDERLAY AND TURFED FLUSH WITH ALL CONCRETE WORKS. REFER TO COUNCIL'S STD DWG DS42
5. EXPANSION JOINTS
MATERIAL: 10mm WIDE ABELFLEX OR APPROVED EQUIVALENT.
PLACING: USE PLACING METHODS WHICH MINIMISE PLASTIC SETTLEMENT AND SHRINKAGE CRACKING. FINISH VISIBLE JOINTING MATERIAL NEATLY FLUSH WITH ADJOINING SURFACES, UNLESS OTHERWISE SHOWN ON DRAWINGS.
6. ALTERNATELY POURED CONCRETE CYCLEWAYS TO BE INSTALLED IN 12m BAYS.

AMENDMENTS
No. DETAIL DATE CHECKED
DESIGNED / DRAWN Date:
DESIGN CHECKED & APPROVED Date:
MANAGER CAPITAL PROJECTS Date:
Scale: N.T.S FINAL
ASSET OWNER Date:
GROUP MANAGER CITY ASSETS & ENVIRONMENT Date:
CITY OF PARRAMATTA COUNCIL
TYPICAL CYCLEWAY/SHARED PATHWAY (CONTINUOUS AND ALTERNATE CONCRETE POURS)
SECTION DETAILS AND NOTES
PLAN N° DS6
Sheet No : 1 of 1
Revision :



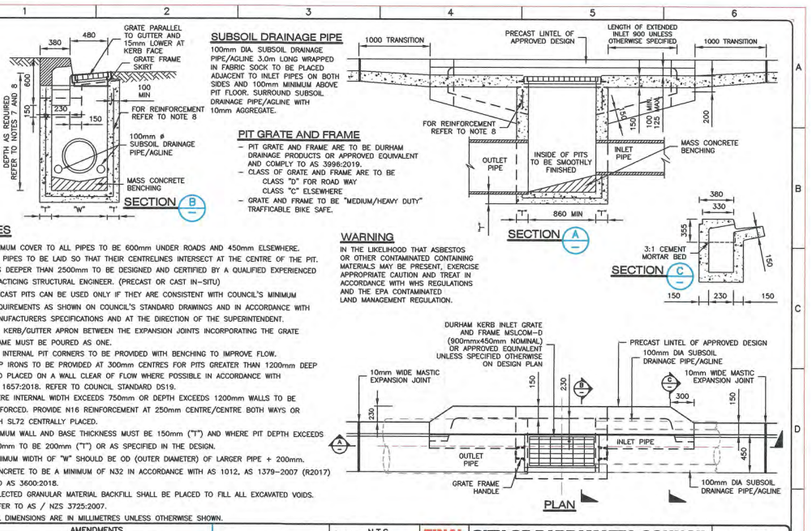
DESIGN CHECKED AND APPROVED
26/04/21
APPROVED
Manager Capital Projects 26/4/21
ACCEPTED
Client 27/4/21
DESIGNED ...../...../.....
DRAWN 26/04/21
DRAWING REVIEW ...../...../.....
DATUM: A.H.D.
CO–ORDS: M.G.A.
RATIO: N.T.S.
TRIM No: F2019/02533
STATUS: FINAL

CITY OF PARRAMATTA COUNCIL

SUE SAVAGE RESERVE
CHANEL STREET, TOONGABBIE
CAR PARK CONSTRUCTION AND ASSOCIATED WORKS
STANDARD DRAWINGS – 1

PLAN NUMBER 17809
Sheet No : CP_18
Revision :

26, April, 2021 10:12:32 a.m.
Drawing: SUE SAVAGE PARK_17 KT.DWG



SUBSOIL DRAINAGE PIPE

100mm DIA. SUBSOIL DRAINAGE PIPE/AGLINE 3.0m LONG WRAPPED IN FABRIC SOCK TO BE PLACED ADJACENT TO INLET PIPES ON BOTH SIDES AND 100mm MINIMUM ABOVE PIT FLOOR. SURROUND SUBSOIL DRAINAGE PIPE/AGLINE WITH 10mm AGGREGATE.

PIT GRATE AND FRAME

- PIT GRATE AND FRAME ARE TO BE DURHAM DRAINAGE PRODUCTS OR APPROVED EQUIVALENT AND COMPLY TO AS 3996:2019.
- CLASS OF GRATE AND FRAME ARE TO BE CLASS "D" FOR ROAD WAY CLASS "C" ELSEWHERE.
- GRATE AND FRAME TO BE "MEDIUM/HEAVY DUTY" TRAFFICABLE BIKE SAFE.

WARNING

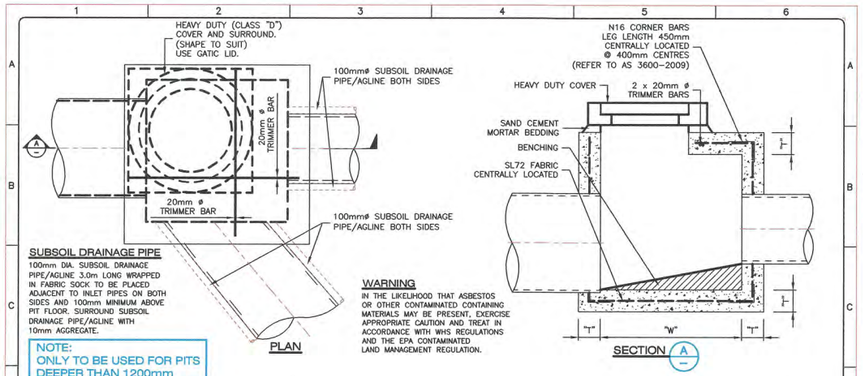
IN THE LIKELIHOOD THAT ASBESTOS OR OTHER CONTAMINATED CONTAINING MATERIALS MAY BE PRESENT, EXERCISE APPROPRIATE CAUTION AND TREAT IN ACCORDANCE WITH WHS REGULATIONS AND THE EPA CONTAMINATED LAND MANAGEMENT REGULATION.

NOTES

1. MINIMUM COVER TO ALL PIPES TO BE 600mm UNDER ROADS AND 450mm ELSEWHERE.
2. ALL PIPES TO BE LAID SO THAT THEIR CENTRELINES INTERSECT AT THE CENTRE OF THE PIT.
3. PITS DEEPER THAN 2500mm TO BE DESIGNED AND CERTIFIED BY A QUALIFIED EXPERIENCED PRACTICING STRUCTURAL ENGINEER. (PRECAST OR CAST IN-SITU)
4. PRECAST PITS CAN BE USED ONLY IF THEY ARE CONSISTENT WITH COUNCIL'S MINIMUM REQUIREMENTS AS SHOWN ON COUNCIL'S STANDARD DRAWINGS AND IN ACCORDANCE WITH MANUFACTURERS SPECIFICATIONS AND AT THE DIRECTION OF THE SUPERINTENDENT.
5. THE KERB/GUTTER APRON BETWEEN THE EXPANSION JOINTS INCORPORATING THE GRATE FRAME MUST BE POURED AS ONE.
6. ALL INTERNAL PIT CORNERS TO BE PROVIDED WITH BENCHING TO IMPROVE FLOW.
7. STEP IRONS TO BE PROVIDED AT 300mm CENTRES FOR PITS GREATER THAN 1200mm DEEP AND PLACED ON A WALL CLEAR OF FLOW WHERE POSSIBLE IN ACCORDANCE WITH AS 1657:2018. REFER TO COUNCIL STANDARD DS19.
8. WHERE INTERNAL WIDTH EXCEEDS 750mm OR DEPTH EXCEEDS 1200mm WALLS TO BE REINFORCED. PROVIDE N16 REINFORCEMENT AT 250mm CENTRE/CENTRE BOTH WAYS OR MESH SL72 CENTRALLY PLACED.
9. MINIMUM WALL AND BASE THICKNESS MUST BE 150mm ("T") AND WHERE PIT DEPTH EXCEEDS 1200mm TO BE 200mm ("T") OR AS SPECIFIED IN THE DESIGN.
10. MINIMUM WIDTH OF "W" SHOULD BE OD (OUTER DIAMETER) OF LARGER PIPE + 200mm.
11. CONCRETE TO BE A MINIMUM OF N32 IN ACCORDANCE WITH AS 1012, AS 1379–2007 (R2017) AND AS 3600:2018.
12. SELECTED GRANULAR MATERIAL BACKFILL SHALL BE PLACED TO FILL ALL EXCAVATED VOIDS. REFER TO AS / NZS 3725:2007.
13. ALL DIMENSIONS ARE IN MILLIMETRES UNLESS OTHERWISE SHOWN.

AMENDMENTS					
No.	DETAIL	DATE	CHECKED		
				DESIGNED / DRAWN Date:	Scale: N.T.S. FINAL
				DESIGN CHECKED & APPROVED Date:	ASSET OWNER Date:
				MANAGER CAPITAL PROJECTS Date:	GROUP MANAGER CITY ASSETS & ENVIRONMENT Date:

CITY OF PARRAMATTA COUNCIL	PLAN N°
GRATED SAG PIT USING PRECAST LINTEL	DS24
PLAN SECTIONS AND NOTES	Sheet No : 1 of 1
	Revision :



SUBSOIL DRAINAGE PIPE

100mm DIA. SUBSOIL DRAINAGE PIPE/AGLINE 3.0m LONG WRAPPED IN FABRIC SOCK TO BE PLACED ADJACENT TO INLET PIPES ON BOTH SIDES AND 100mm MINIMUM ABOVE PIT FLOOR. SURROUND SUBSOIL DRAINAGE PIPE/AGLINE WITH 10mm AGGREGATE.

NOTE:
ONLY TO BE USED FOR PITS DEEPER THAN 1200mm

WARNING

IN THE LIKELIHOOD THAT ASBESTOS OR OTHER CONTAMINATED CONTAINING MATERIALS MAY BE PRESENT, EXERCISE APPROPRIATE CAUTION AND TREAT IN ACCORDANCE WITH WHS REGULATIONS AND THE EPA CONTAMINATED LAND MANAGEMENT REGULATION.

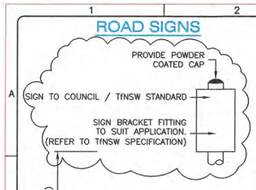
NOTES

1. MINIMUM COVER TO ALL PIPES TO BE 600mm UNDER ROADS AND 450mm ELSEWHERE.
2. ALL PIPES TO BE LAID SO THAT THEIR CENTRELINES INTERSECT AT THE CENTRE OF THE PIT.
3. PITS DEEPER THAN 2500mm TO BE DESIGNED AND CERTIFIED BY A QUALIFIED EXPERIENCED PRACTICING STRUCTURAL ENGINEER. (PRECAST OR CAST IN-SITU)
4. PRECAST PITS CAN BE USED ONLY IF THEY ARE CONSISTENT WITH COUNCIL'S MINIMUM REQUIREMENTS AS SHOWN ON COUNCIL'S STANDARD DRAWINGS AND IN ACCORDANCE WITH MANUFACTURERS SPECIFICATIONS AND AT THE DIRECTION OF THE SUPERINTENDENT.
5. PROVIDE CONCRETE BENCHING ACROSS PIT TO SUIT INLET AND OUTLET PIPES AS DETAILED.
6. STEP IRONS TO BE PROVIDED AT 300mm CENTRES FOR PITS GREATER THAN 1200mm DEEP AND PLACED ON A WALL CLEAR OF FLOW WHERE POSSIBLE IN ACCORDANCE WITH AS 1657:2018. REFER TO COUNCIL STANDARD DS19.
7. WHERE INTERNAL WIDTH EXCEEDS 750mm OR DEPTH EXCEEDS 1200mm WALLS TO BE REINFORCED. PROVIDE N16 REINFORCEMENT AT 250mm CENTRE/CENTRE BOTH WAYS OR MESH SL72 CENTRALLY PLACED.
8. MINIMUM WALL AND BASE THICKNESS MUST BE 150mm ("T") AND WHERE PIT DEPTH EXCEEDS 1200mm TO BE 200mm ("T") OR AS SPECIFIED IN THE DESIGN.
9. MINIMUM WIDTH OF "W" SHOULD BE OD (OUTER DIAMETER) OF LARGER PIPE + 200mm.
10. CONCRETE TO BE A MINIMUM BE OF N32 IN ACCORDANCE WITH AS 1012, AS 1379–2007 (R2017) AND AS 3600:2018.
11. SELECTED GRANULAR MATERIAL BACKFILL SHALL BE PLACED TO FILL ALL EXCAVATED VOIDS. REFER TO AS / NZS 3725:2007.
12. ALL DIMENSIONS ARE IN MILLIMETRES UNLESS OTHERWISE SHOWN.

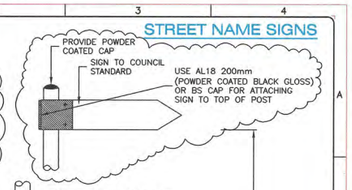
AMENDMENTS					
No.	DETAIL	DATE	CHECKED		
				DESIGNED / DRAWN Date:	Scale: N.T.S. FINAL
				DESIGN CHECKED & APPROVED Date:	ASSET OWNER Date:
				MANAGER CAPITAL PROJECTS Date:	GROUP MANAGER CITY ASSETS & ENVIRONMENT Date:

CITY OF PARRAMATTA COUNCIL	PLAN N°
HEAVY DUTY JUNCTION PIT	DS26
PLAN, SECTION AND NOTES	Sheet No : 2 of 2
	Revision :

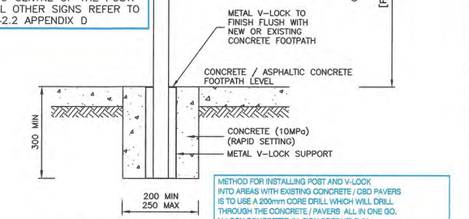
ROAD SIGNS



STREET NAME SIGNS



SIGN INSTALLATION
STOP SIGNS, "NO STOPPING", "NO PARKING" OR SIMILAR TO BE INSTALLED 450mm FROM FACE OF KERB TO CENTRE OF THE POST. FOR ALL OTHER SIGNS REFER TO AS 1742.2 APPENDIX D



METHOD FOR INSTALLING POST AND V-LOCK INTO AREAS WITH EXISTING CONCRETE / OBD PAVERS IS TO USE A 200mm CORE DRILL WHICH WILL DRILL THROUGH THE CONCRETE / PAVERS ALL IN ONE GO. V-LOCK CONCRETED IN. SIGN POST HELD IN PLACE BY THE WEDGE OF THE V-LOCK.

SIGN POST SUPPORT

SCALE 1:10

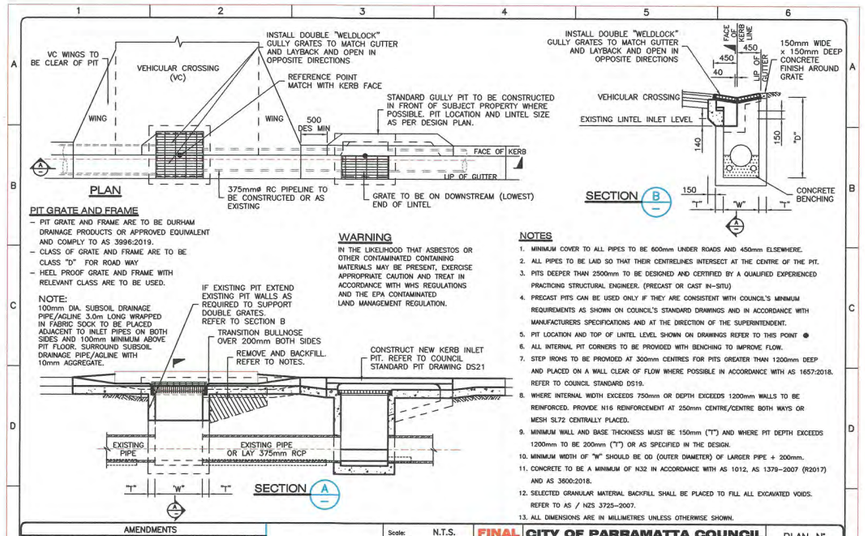
NOTES

1. A HOLE 300mm DEEP IS DUG AND A 300mm LONG V–LOCK INSERTED AND CONCRETED IN. CONCRETE IS TO BE 10MPa. THE POST IS INSERTED INTO THE V–LOCK AND IS HELD IN PLACE BY THE WEDGE OF THE V–LOCK. IT IS PREFERABLE FOR THE CONCRETE TO BE ALLOWED TO SET BEFORE THE SIGN IS FASTENED TO THE POST.
2. WHERE A V–LOCK CANNOT BE USED APPROVAL FOR ALTERNATE METHODS TO BE OBTAINED FROM SUPERINTENDENT OR PROJECT MANAGER.
3. ALL DIMENSIONS ARE IN MILLIMETRES UNLESS OTHERWISE SHOWN.
4. CHECK WITH DBYD PLANS (DIAL 1100) BEFORE EXCAVATING POST HOLE.

200 100 0 200 400 600 800 1000

SCALE OF MILLIMETRES 1:10

Scale: AS SHOWN FINAL	CITY OF PARRAMATTA COUNCIL	PLAN N°
DESIGNED / DRAWN Date:	SIGN POST SUPPORT	DS11B
DESIGN CHECKED & APPROVED Date:	ASSET OWNER Date:	Sheet No : 1 of 1
MANAGER CAPITAL PROJECTS Date:	GROUP MANAGER CITY ASSETS & ENVIRONMENT Date:	SECTION DETAIL AND NOTES
		Revision :



PIT GRATE AND FRAME

- PIT GRATE AND FRAME ARE TO BE DURHAM DRAINAGE PRODUCTS OR APPROVED EQUIVALENT AND COMPLY TO AS 3996:2019.
- CLASS OF GRATE AND FRAME ARE TO BE CLASS "D" FOR ROAD WAY
- HEEL PROOF GRATE AND FRAME WITH RELEVANT CLASS ARE TO BE USED.

NOTE:
100mm DIA. SUBSOIL DRAINAGE PIPE/AGLINE 3.0m LONG WRAPPED IN FABRIC SOCK TO BE PLACED ADJACENT TO INLET PIPES ON BOTH SIDES AND 100mm MINIMUM ABOVE PIT FLOOR. SURROUND SUBSOIL DRAINAGE PIPE/AGLINE WITH 10mm AGGREGATE.

WARNING

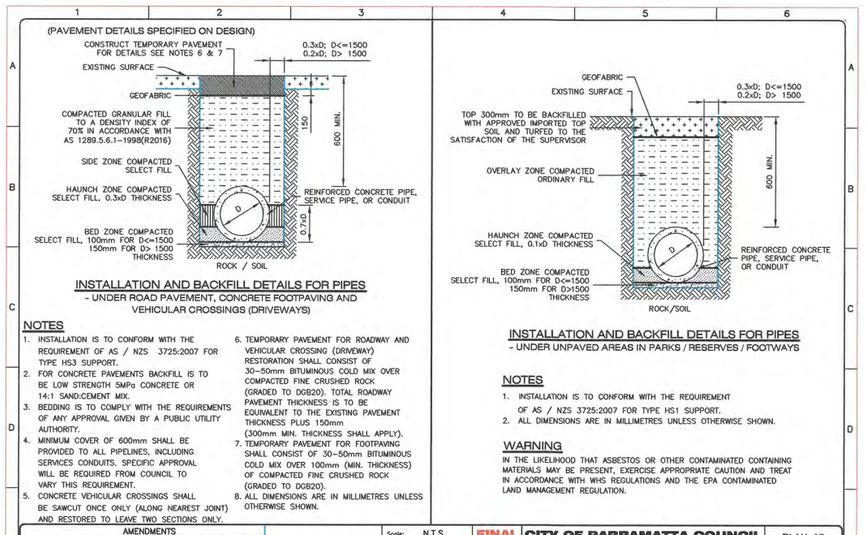
IN THE LIKELIHOOD THAT ASBESTOS OR OTHER CONTAMINATED CONTAINING MATERIALS MAY BE PRESENT, EXERCISE APPROPRIATE CAUTION AND TREAT IN ACCORDANCE WITH WHS REGULATIONS AND THE EPA CONTAMINATED LAND MANAGEMENT REGULATION.

NOTES

1. MINIMUM COVER TO ALL PIPES TO BE 600mm UNDER ROADS AND 450mm ELSEWHERE.
2. ALL PIPES TO BE LAID SO THAT THEIR CENTRELINES INTERSECT AT THE CENTRE OF THE PIT.
3. PITS DEEPER THAN 2500mm TO BE DESIGNED AND CERTIFIED BY A QUALIFIED EXPERIENCED PRACTICING STRUCTURAL ENGINEER. (PRECAST OR CAST IN-SITU)
4. PRECAST PITS CAN BE USED ONLY IF THEY ARE CONSISTENT WITH COUNCIL'S MINIMUM REQUIREMENTS AS SHOWN ON COUNCIL'S STANDARD DRAWINGS AND IN ACCORDANCE WITH MANUFACTURERS SPECIFICATIONS AND AT THE DIRECTION OF THE SUPERINTENDENT.
5. PIT LOCATION AND TOP OF LINTEL LEVEL SHOWN ON DRAWINGS REFER TO THIS POINT ●
6. ALL INTERNAL PIT CORNERS TO BE PROVIDED WITH BENCHING TO IMPROVE FLOW.
7. STEP IRONS TO BE PROVIDED AT 300mm CENTRES FOR PITS GREATER THAN 1200mm DEEP AND PLACED ON A WALL CLEAR OF FLOW WHERE POSSIBLE IN ACCORDANCE WITH AS 1657:2018. REFER TO COUNCIL STANDARD DS19.
8. WHERE INTERNAL WIDTH EXCEEDS 750mm OR DEPTH EXCEEDS 1200mm WALLS TO BE REINFORCED. PROVIDE N16 REINFORCEMENT AT 250mm CENTRE/CENTRE BOTH WAYS OR MESH SL72 CENTRALLY PLACED.
9. MINIMUM WALL AND BASE THICKNESS MUST BE 150mm ("T") AND WHERE PIT DEPTH EXCEEDS 1200mm TO BE 200mm ("T") OR AS SPECIFIED IN THE DESIGN.
10. MINIMUM WIDTH OF "W" SHOULD BE OD (OUTER DIAMETER) OF LARGER PIPE + 200mm.
11. CONCRETE TO BE A MINIMUM OF N32 IN ACCORDANCE WITH AS 1012, AS 1379–2007 (R2017) AND AS 3600:2018.
12. SELECTED GRANULAR MATERIAL BACKFILL SHALL BE PLACED TO FILL ALL EXCAVATED VOIDS. REFER TO AS / NZS 3725–2007.
13. ALL DIMENSIONS ARE IN MILLIMETRES UNLESS OTHERWISE SHOWN.

AMENDMENTS					
No.	DETAIL	DATE	CHECKED		
				DESIGNED / DRAWN Date:	Scale: N.T.S. FINAL
				DESIGN CHECKED & APPROVED Date:	ASSET OWNER Date:
				MANAGER CAPITAL PROJECTS Date:	GROUP MANAGER CITY ASSETS & ENVIRONMENT Date:

CITY OF PARRAMATTA COUNCIL	PLAN N°
SURFACE INLET PIT FOR DRIVEWAYS	DS29
PLAN, SECTION, DETAIL AND NOTES	Sheet No : 1 of 1
	Revision :



INSTALLATION AND BACKFILL DETAILS FOR PIPES

- UNDER ROAD PAVEMENT, CONCRETE FOOTPAVING AND VEHICULAR CROSSINGS (DRIVEWAYS)

NOTES

1. INSTALLATION IS TO CONFORM WITH THE REQUIREMENT OF AS / NZS 3725:2007 FOR TYPE HS3 SUPPORT.
2. FOR CONCRETE PAVEMENTS BACKFILL IS TO BE LOW STRENGTH 5MPa CONCRETE OR 14:1 SAND:CEMENT MIX.
3. BEDDING IS TO COMPLY WITH THE REQUIREMENTS OF ANY APPROVAL GIVEN BY A PUBLIC UTILITY AUTHORITY.
4. MINIMUM COVER OF 600mm SHALL BE PROVIDED TO ALL PIPELINES, INCLUDING SERVICES CONDUITS. SPECIFIC APPROVAL WILL BE REQUIRED FROM COUNCIL TO VARY THIS REQUIREMENT.
5. CONCRETE VEHICULAR CROSSINGS SHALL BE SAWCUT ONCE ONLY (ALONG NEAREST JOINT) AND RESTORED TO LEAVE TWO SECTIONS ONLY.
6. TEMPORARY PAVEMENT FOR ROADWAY AND VEHICULAR CROSSING (DRIVEWAY) RESTORATION SHALL CONSIST OF 30–50mm BITUMINOUS COLD MIX OVER COMPACTED FINE CRUSHED ROCK (GRADED TO DGB20). TOTAL ROADWAY PAVEMENT THICKNESS IS TO BE EQUIVALENT TO THE EXISTING PAVEMENT THICKNESS PLUS 150mm (300mm MIN. THICKNESS SHALL APPLY).
7. TEMPORARY PAVEMENT FOR FOOTPAVING SHALL CONSIST OF 30–50mm BITUMINOUS COLD MIX OVER 100mm (MIN. THICKNESS) OF COMPACTED FINE CRUSHED ROCK (GRADED TO DGB20).
8. ALL DIMENSIONS ARE IN MILLIMETRES UNLESS OTHERWISE SHOWN.

INSTALLATION AND BACKFILL DETAILS FOR PIPES

- UNDER UNPAVED AREAS IN PARKS / RESERVES / FOOTWAYS

NOTES

1. INSTALLATION IS TO CONFORM WITH THE REQUIREMENT OF AS / NZS 3725:2007 FOR TYPE HS1 SUPPORT.
2. ALL DIMENSIONS ARE IN MILLIMETRES UNLESS OTHERWISE SHOWN.

WARNING

IN THE LIKELIHOOD THAT ASBESTOS OR OTHER CONTAMINATED CONTAINING MATERIALS MAY BE PRESENT, EXERCISE APPROPRIATE CAUTION AND TREAT IN ACCORDANCE WITH WHS REGULATIONS AND THE EPA CONTAMINATED LAND MANAGEMENT REGULATION.

AMENDMENTS					
No.	DETAIL	DATE	CHECKED		
				DESIGNED / DRAWN Date:	Scale: N.T.S FINAL
				DESIGN CHECKED & APPROVED Date:	ASSET OWNER Date:
				MANAGER CAPITAL PROJECTS Date:	GROUP MANAGER CITY ASSETS & ENVIRONMENT Date:

CITY OF PARRAMATTA COUNCIL	PLAN N°
INSTALLATION OF PIPELINES AND RESTORATION OF TRENCHES	DS37
DRAINAGE – SECTIONS AND NOTES	Sheet No : 1
	Revision :

AMENDMENTS			
No.	DETAIL	CHECKED	DATE

DESIGN CHECKED AND APPROVED 26/04/21
APPROVED Manager Capital Projects 26/4/21
ACCEPTED Client 27/4/21
DESIGNED ...../...../.....
DRAWN 26/04/21
DRAWING REVIEW ...../...../.....

DATUM: A.H.D.
CO-ORDS: M.G.A.
RATIO: N.T.S.
TRIM No: F2019/02533
STATUS: FINAL

CITY OF PARRAMATTA COUNCIL	PLAN NUMBER
SUE SAVAGE RESERVE CHANEL STREET, TOONGABBIE CAR PARK CONSTRUCTION AND ASSOCIATED WORKS	17809
STANDARD DRAWINGS – 2	Sheet No : CP_19
	Revision :

26, April, 2021 10:13:14 a.m.
Drawing: SUE SAVAGE PARK_17 KT.DWG

LEGEND

ITEM 7.7: Cultivate/rotary hoe existing site soil to min.200mm depth and incorporate 'Terracottem' soil conditioner at rates recommended by the manufacturer. Refer to Details and Specification Notes.
ITEM 7.8: Supply and install min. 50mm depth organic garden mix soil for new garden beds and tree pits. Lightly compact to minimise voids and depressions. Refer to Details and Specification Notes.
ITEM 7.11: Supply and install 100mm depth leaf litter mulch. Refer to Details and Specification Notes.

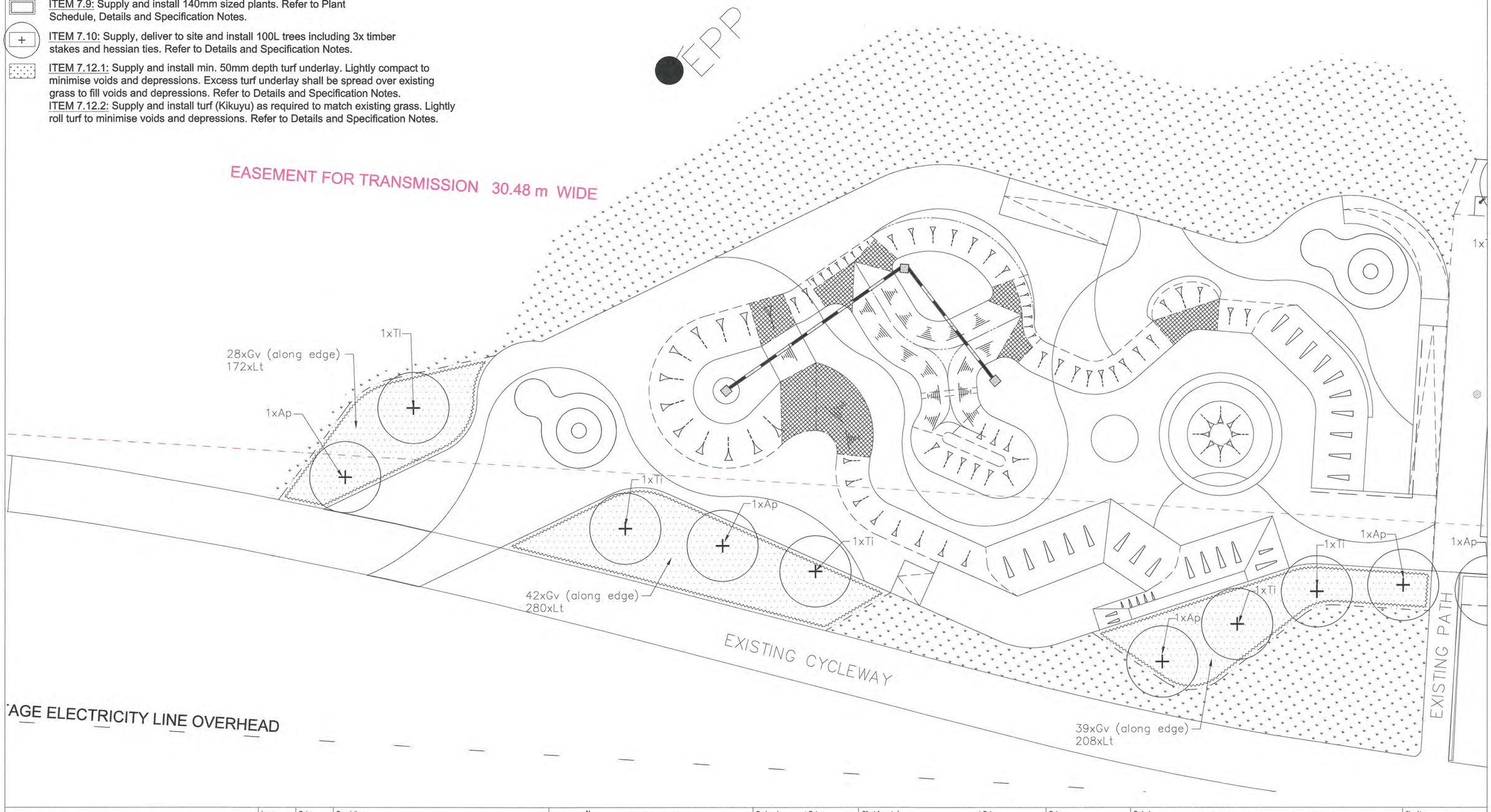
ITEM 7.9: Supply and install 140mm sized plants. Refer to Plant Schedule, Details and Specification Notes.

ITEM 7.10: Supply, deliver to site and install 100L trees including 3x timber stakes and hessian ties. Refer to Details and Specification Notes.

ITEM 7.12.1: Supply and install min. 50mm depth turf underlay. Lightly compact to minimise voids and depressions. Excess turf underlay shall be spread over existing grass to fill voids and depressions. Refer to Details and Specification Notes.
ITEM 7.12.2: Supply and install turf (Kikuyu) as required to match existing grass. Lightly roll turf to minimise voids and depressions. Refer to Details and Specification Notes.

PLANT SCHEDULE

CODE	SCIENTIFIC NAME	COMMON NAME	SIZE	SPACING	QTY
Tl	*Tristaniopsis laurina 'Luscious'*	Water Gum	100L	As shown	5
Ap	*Acer palmatum 'Osakazuki'*	Japanese Maple	100L	As shown	4
Gv	*Grevillea 'Crimson Villea'*	Crimson Villea	140mm	1/lin.m	109
Lt	*Lomandra 'Tanika'*	Lomandra	140mm	4/m2	660



CITY OF PARRAMATTA

DIAL 1100 BEFORE YOU DIG

Issue:	Date:	Description:

N 0 1 2 5m

Co-ords: MGA | Datum: AHD

UNLESS DETAILED ON THIS DRAWING ALL WORK SHALL CONFORM TO AUS-SPEC

Designed: MW	Date: 21/4/21	
Drawn: MW	Date: 21/4/21	
Design Approved: AC	Date: 21/4/21	
Client Accepted:	Date: 27/4/21	
Approved for Construction: Service Manager Capital Projects	Date: 18/4/21	
Date: APRIL 2021	Scale: 1:100 @ A1	Drawing Status: FINAL

Project: SUE SAVAGE RESERVE PARK IMPROVEMENT WORKS
CHANEL ST, TOONGABBIE
B - SKATEPARK WORKS

Title: SOFTWORKS PLAN

Plan No: 17809
Sheet No: SP_01
Revision: –

LEGEND

ITEM 2.12: Strip and remove existing grass only to allow for proposed works. Ensure grass roots are removed during demolition works. Remove demolition/excavation material from site. Refer to Specification Notes.

ITEM 2.13: Sawcut, demolish and remove existing concrete pavement including base course material for proposed trenching works. Remove demolition/excavation material from site. Refer to Specification Notes.

ITEM 2.14: Demolish and remove existing tree guards around existing playground trees. Remove demolition/excavation material from site. Refer to Specification Notes.

NOTE:
PROPOSED FITNESS EQUIPMENT UNDERTAKEN BY OTHERS IS NOT SHOWN ON DRAWINGS.
FINAL LOCATION TO BE CONFIRMED PRIOR TO CONSTRUCTION.

EXISTING BASKETBALL HALF COURT

EPP

HIGH PRESSURE OIL PIPELINE EASEMENT 10m WIDE

EXISTING PLAYGROUND

EXISTING PATH

EXISTING PATH

HIGH VOLTAGE ELECTRICITY LINE OVERHEAD

EXISTING CYCLEWAY

CITY OF PARRAMATTA

DIAL 1100 BEFORE YOU DIG

Issue:	Date:	Description:

N 0 1.5 3 7.5m

Co-ords: MGA | Datum: AHD

UNLESS DETAILED ON THIS DRAWING ALL WORK SHALL CONFORM TO AUSPEC

Designed: MW	Date: 21/4/21	
Drawn: MW	Date: 21/4/21	
Design Approved: AC	Date: 21/4/21	

Client Accepted: | Date: 27/4/21

Approved for Construction: Service Manager Capital Projects | Date: 28/4/21

Date: APRIL 2021

Scale: 1:150 @ A1

Drawing Status: FINAL

Project: SUE SAVAGE RESERVE
PARK IMPROVEMENT WORKS
CHANEL ST, TOONGABBIE
C - AMENITIES BUILDING & LANDSCAPE WORKS

Title: DEMOLITION PLAN

Plan No: 17809

Sheet No: AB_01

Revision: –

SHEET JOIN- REFER TO CP_04

EXISTING PLAYGROUND

HIGH PRESSURE OIL PIPELINE EASEMENT 10m WIDE

HIGH VOLTAGE ELECTRICITY LINE OVERHEAD

EXISTING WATER LINE (INDICATIVE ONLY)

EXISTING ELECTRICAL LINE (INDICATIVE ONLY)

EPP

LEGEND

ITEM 3.1: Excavate, regrade, cut, fill, bench and compact over entire site to suit proposed levels and works. Salvage and stockpile on site for reuse excess clean fill not required for benching works. Confirm on site with Superintendent. Refer to Civil Engineers Drawings and Specification Notes.

ITEM 3.2: Excavate and trim (including shoring) for proposed drainage pipe, pits and structures. Excavation to suit proposed levels and car park civil works. Salvage and stockpile on site for reuse excess clean fill not required for backfilling works. Confirm on site with Superintendent. Refer to Civil Engineers Drawings and Specification Notes.

CITY OF PARRAMATTA

Issue:	Date:	Description:

DIAL 1100 BEFORE YOU DIG

N 0 1.5 3 7.5m

Co-ords: MGA | Datum: AHD

UNLESS DETAILED ON THIS DRAWING ALL WORK SHALL CONFORM TO AUS-SPEC

Designed:	MW	Date: 21/4/21
Drawn:	MW	Date: 21/4/21
Design Approved:	AC	Date: 21/4/21

Client Accepted: Date: 27/4/21

Approved for Construction: Date: 28/4/21

Service Manager Capital Projects

Date: APRIL 2021

Scale: 1:150 @ A1

Drawing Status: FINAL

Project: SUE SAVAGE RESERVE PARK IMPROVEMENT WORKS
CHANEL ST, TOONGABBIE
C - AMENITIES BUILDING & LANDSCAPE WORKS

Title: EXCAVATION PLAN- SHEET 03

Plan No: 17809

Sheet No: AB_02

Revision: –

LEGEND

ITEM 4.23: Supply and install 100mm depth reinforced plain concrete pavement. Includes compaction, subgrade preparation, base course, concrete, reinforcement, formwork, joints and finishes. Refer to CoP Standard Drawings DS6 'Type 1' and Specification Notes.

ITEM 4.24: Supply and install 3mm wide x 150mm depth duragal steel edge. Refer to Details and Specification Notes.

ITEM 4.25: Connect, supply and install 100mm diameter uPVC private sewer service line from existing Sydney Water sewer line to proposed amenities building service duct. Cap underground service 600mm depth from finished pavement levels and in location of proposed amenities building service duct for future connection by amenities building installer. Includes Sydney Water approvals as required, excavation, connections, backfilling works and end commissioning of sewer supply. Refer to Specification Notes.

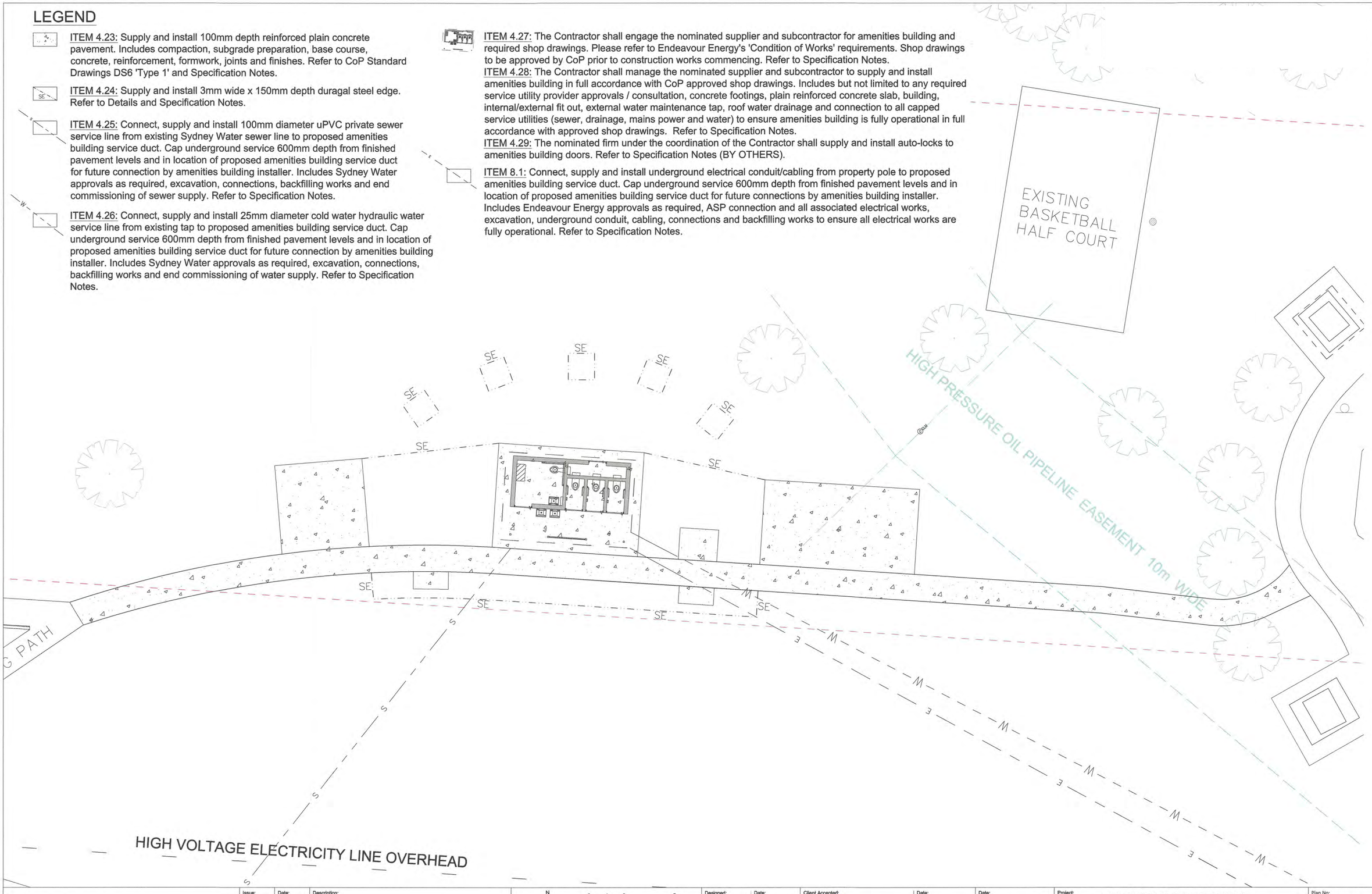
ITEM 4.26: Connect, supply and install 25mm diameter cold water hydraulic water service line from existing tap to proposed amenities building service duct. Cap underground service 600mm depth from finished pavement levels and in location of proposed amenities building service duct for future connection by amenities building installer. Includes Sydney Water approvals as required, excavation, connections, backfilling works and end commissioning of water supply. Refer to Specification Notes.

ITEM 4.27: The Contractor shall engage the nominated supplier and subcontractor for amenities building and required shop drawings. Please refer to Endeavour Energy's 'Condition of Works' requirements. Shop drawings to be approved by CoP prior to construction works commencing. Refer to Specification Notes.

ITEM 4.28: The Contractor shall manage the nominated supplier and subcontractor to supply and install amenities building in full accordance with CoP approved shop drawings. Includes but not limited to any required service utility provider approvals / consultation, concrete footings, plain reinforced concrete slab, building, internal/external fit out, external water maintenance tap, roof water drainage and connection to all capped service utilities (sewer, drainage, mains power and water) to ensure amenities building is fully operational in full accordance with approved shop drawings. Refer to Specification Notes.

ITEM 4.29: The nominated firm under the coordination of the Contractor shall supply and install auto-locks to amenities building doors. Refer to Specification Notes (BY OTHERS).

ITEM 8.1: Connect, supply and install underground electrical conduit/cabling from property pole to proposed amenities building service duct. Cap underground service 600mm depth from finished pavement levels and in location of proposed amenities building service duct for future connections by amenities building installer. Includes Endeavour Energy approvals as required, ASP connection and all associated electrical works, excavation, underground conduit, cabling, connections and backfilling works to ensure all electrical works are fully operational. Refer to Specification Notes.



CITY OF PARRAMATTA

DIAL 1100 BEFORE YOU DIG

Issue:	Date:	Description:

N 0 1 2 5m

Co-ords: MGA | Datum: AHD

UNLESS DETAILED ON THIS DRAWING ALL WORK SHALL CONFORM TO AUS-SPEC

Designed: MW	Date: 21/4/21	
Drawn: MW	Date: 21/4/21	
Design Approved: AC	Date: 21/4/21	

Client Accepted: | Date: 27/4/21

Approved for Construction: Service Manager Capital Projects | Date: 28/4/21

Date: APRIL 2021

Scale: 1:100 @ A1

Drawing Status: FINAL

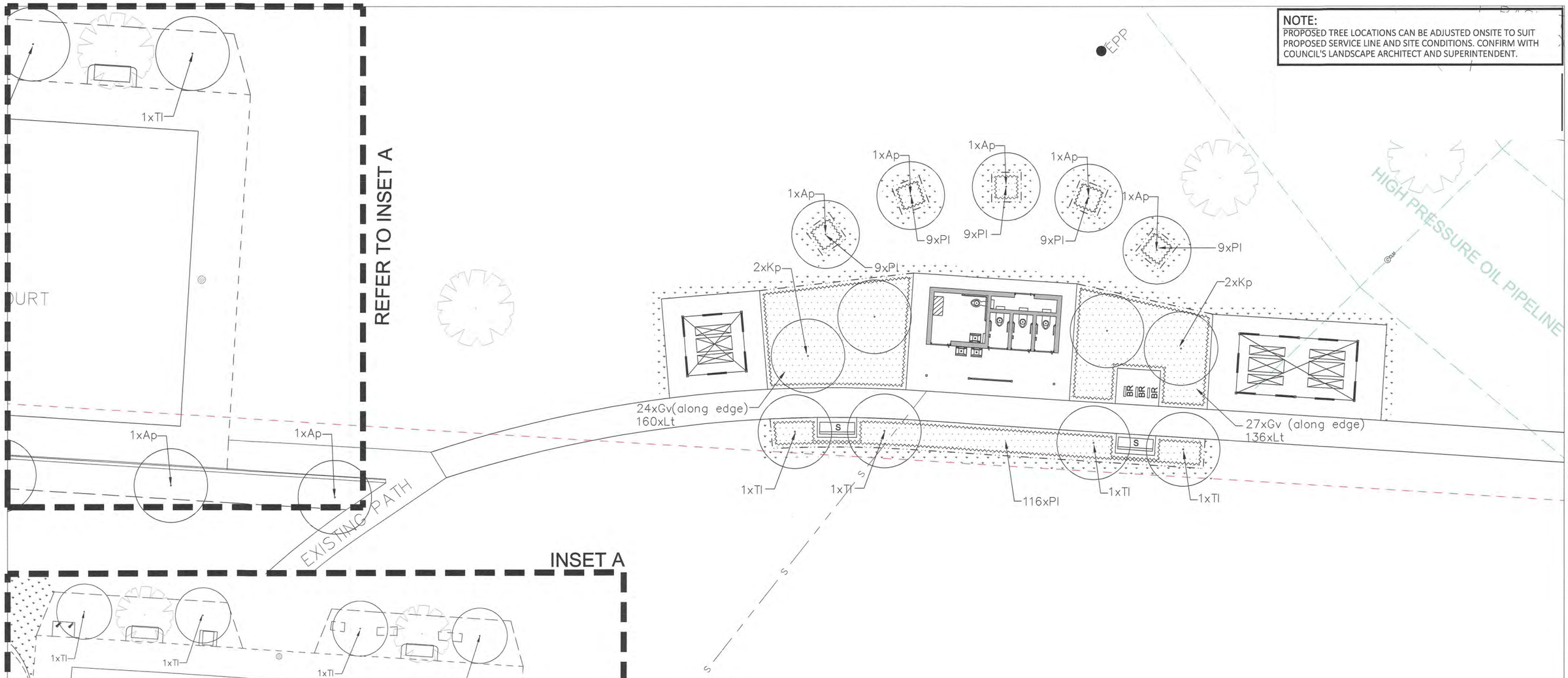
Project: SUE SAVAGE RESERVE PARK IMPROVEMENT WORKS
CHANEL ST, TOONGABBIE
C - AMENITIES BUILDING & LANDSCAPE WORKS

Title: HARDWORKS PLAN

Plan No: 17809

Sheet No: AB_03

Revision: _



NOTE:
PROPOSED TREE LOCATIONS CAN BE ADJUSTED ONSITE TO SUIT PROPOSED SERVICE LINE AND SITE CONDITIONS. CONFIRM WITH COUNCIL'S LANDSCAPE ARCHITECT AND SUPERINTENDENT.

LEGEND

ITEM 6.7: Supply and install surface mounted picnic setting. Refer to Details and Specification Notes.

ITEM 6.8: Supply and install surface mounted 3.0m x 6.0m picnic shelter. Refer to Details and Specification Notes.

ITEM 6.9: Supply and install surface mounted 3.0m x 3.0m picnic shelter. Refer to Details and Specification Notes.

ITEM 6.10: Supply and install surface mounted seat unit. Refer to Details and Specification Notes.

ITEM 6.11.1: Pick up from Council's Brodie Street Rydalmere depot surface mounted bike rack. Refer to Details and Specification Notes.
ITEM 6.11.2: Install surface mounted bike rack to concrete slab. Refer to Details and Specification Notes.

ITEM 7.13: Cultivate/rotary hoe existing site soil to min.200mm depth and incorporate 'Terracottem' soil conditioner at rates recommended by the manufacturer. Refer to Details and Specification Notes.
ITEM 7.14: Supply and install min. 50mm depth organic garden mix soil for new garden beds and tree pits. Lightly compact to minimise voids and depressions. Refer to Details and Specification Notes.
ITEM 7.17: Supply and install 100mm depth leaf litter mulch. Refer to Details and Specification Notes.

PLANT SCHEDULE

CODE	SCIENTIFIC NAME	COMMON NAME	SIZE	SPACING	QTY
Tl	*Tristaniopsis laurina 'Luscious'*	Water Gum	100L	As shown	8
Kp	*Koelreuteria paniculata*	Golden Rain Tree	100L	As shown	4
Ap	*Acer palmatum 'Osakazuki'*	Japanese Maple	100L	As shown	10
Pl	*Poa labillardieri 'Eskdale'*	Tussock Grass	140mm	4/m2	161
Gv	*Grevillea 'Crimson Villea'*	Crimson Villea	140mm	1/lin.m	51
Lt	*Lomandra 'Tanika'*	Lomandra	140mm	4/m2	296

ITEM 7.15: Supply and install 140mm sized plants. Refer to Plant Schedule, Details and Specification Notes.
ITEM 7.16: Supply, deliver to site and install 100L trees including 3x timber stakes and hessian ties. Refer to Details and Specification Notes.
ITEM 7.18.1: Supply and install min. 50mm depth turf underlay. Lightly compact to minimise voids and depressions. Excess turf underlay shall be spread over existing grass to fill voids and depressions. Refer to Details and Specification Notes.
ITEM 7.18.2: Supply and install turf (Kikuyu) as required to match existing grass. Lightly roll turf to minimise voids and depressions. Refer to Details and Specification Notes.

CITY OF PARRAMATTA

Issue:	Date:	Description:

DIAL 1100 BEFORE YOU DIG

N 0 1 2 5m

Co-ords: MGA | Datum: AHD

UNLESS DETAILED ON THIS DRAWING ALL WORK SHALL CONFORM TO AUS-SPEC

Designed: MW	Date: 21/4/21	
Drawn: MW	Date: 21/4/21	
Design Approved: AC	Date: 21/4/21	
Client Accepted:	Date: 27/4/21	
Approved for Construction: Service Manager Capital Projects	Date: 28/4/21	

Date: APRIL 2021
Scale: 1:100 @ A1
Drawing Status: FINAL

Project: SUE SAVAGE RESERVE
PARK IMPROVEMENT WORKS
CHANEL ST, TOONGABBIE
C - AMENITIES BUILDING & LANDSCAPE WORKS

Plan No: 17809
Sheet No: AB_04
Revision: –

Title: SOFTWORKS, FURNITURE & FIXTURES PLAN

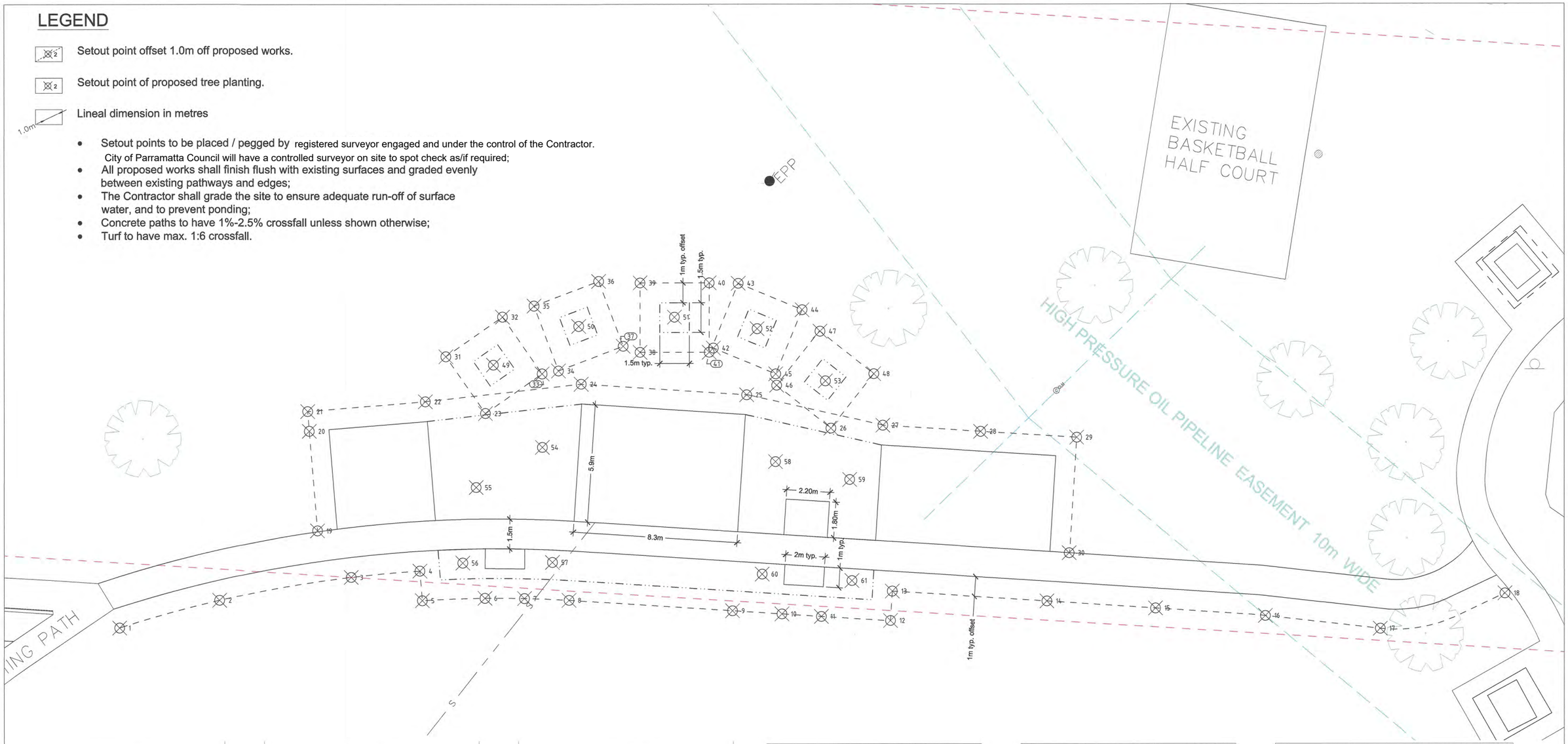
LEGEND

Setout point offset 1.0m off proposed works.

Setout point of proposed tree planting.

Lineal dimension in metres

- Setout points to be placed / pegged by registered surveyor engaged and under the control of the Contractor. City of Parramatta Council will have a controlled surveyor on site to spot check as/if required;
- All proposed works shall finish flush with existing surfaces and graded evenly between existing pathways and edges;
- The Contractor shall grade the site to ensure adequate run-off of surface water, and to prevent ponding;
- Concrete paths to have 1%-2.5% crossfall unless shown otherwise;
- Turf to have max. 1:6 crossfall.



Point Table

Point #	Eastings	Northings	Levels	Codes
1	311444.20	6260286.91		DESIGN POINT
2	311449.26	6260288.30		DESIGN POINT
3	311455.93	6260289.46		DESIGN POINT
4	311459.41	6260289.78		DESIGN POINT
5	311459.53	6260288.29		DESIGN POINT
6	311462.70	6260288.41		DESIGN POINT
7	311464.70	6260288.40		DESIGN POINT
8	311466.96	6260288.31		DESIGN POINT
9	311475.24	6260287.77		DESIGN POINT
10	311477.74	6260287.61		DESIGN POINT
11	311479.74	6260287.48		DESIGN POINT
12	311483.24	6260287.26		DESIGN POINT

Point Table

Point #	Eastings	Northings	Levels	Codes
13	311483.33	6260288.75		DESIGN POINT
14	311491.16	6260288.25		DESIGN POINT
15	311496.66	6260287.88		DESIGN POINT
16	311502.22	6260287.49		DESIGN POINT
17	311508.04	6260286.84		DESIGN POINT
18	311514.35	6260288.61		DESIGN POINT
19	311454.22	6260291.81		DESIGN POINT
20	311453.80	6260296.84		DESIGN POINT
21	311453.72	6260297.83		DESIGN POINT
22	311459.69	6260298.33		DESIGN POINT
23	311462.73	6260297.73		DESIGN POINT
24	311467.58	6260299.22		DESIGN POINT

Point Table

Point #	Eastings	Northings	Levels	Codes
25	311475.96	6260298.67		DESIGN POINT
26	311480.22	6260296.98	0.00	DESIGN POINT
27	311482.85	6260297.12		DESIGN POINT
28	311487.80	6260296.81		DESIGN POINT
29	311492.67	6260296.51		DESIGN POINT
30	311492.29	6260290.68		DESIGN POINT
31	311460.73	6260300.60		DESIGN POINT
32	311463.60	6260302.61		DESIGN POINT
33	311465.60	6260299.74		DESIGN POINT
34	311466.43	6260299.89		DESIGN POINT
35	311465.19	6260303.16		DESIGN POINT
36	311468.46	6260304.40		DESIGN POINT

Point Table

Point #	Eastings	Northings	Levels	Codes
37	311469.70	6260301.13		DESIGN POINT
38	311470.56	6260300.82		DESIGN POINT
39	311470.56	6260304.32		DESIGN POINT
40	311474.06	6260304.32		DESIGN POINT
41	311474.06	6260300.82		DESIGN POINT
42	311474.27	6260301.03		DESIGN POINT
43	311475.53	6260304.30		DESIGN POINT
44	311478.77	6260302.96		DESIGN POINT
45	311477.43	6260299.73		DESIGN POINT
46	311477.48	6260299.15		DESIGN POINT
47	311479.68	6260301.88	0.00	DESIGN POINT
48	311482.40	6260299.72		DESIGN POINT

Point Table

Point #	Eastings	Northings	Levels	Codes
49	311463.13	6260300.18	0.00	DESIGN POINT
50	311467.45	6260302.14	0.00	DESIGN POINT
51	311472.30	6260302.60	0.00	DESIGN POINT
52	311476.49	6260302.01	0.00	DESIGN POINT
53	311479.95	6260299.37	0.00	DESIGN POINT
54	311465.61	6260296.03		DESIGN POINT
55	311462.26	6260294.00		DESIGN POINT
56	311461.58	6260290.19		DESIGN POINT
57	311466.12	6260290.22		DESIGN POINT
58	311477.42	6260295.29		DESIGN POINT
59	311481.17	6260294.39		DESIGN POINT
60	311476.74	6260289.62		DESIGN POINT

Point Table

Point #	Eastings	Northings	Levels	Codes
61	311481.29	6260289.28		DESIGN POINT
401	311522.28	6260253.44	26.86	STATE SURVEY MARK
421	311380.49	6260340.54	24.02	SURVEY STATION
5019	311421.45	6260273.96	26.53	SURVEY STATION
5069	311523.07	6260277.24	26.29	SURVEY STATION
20190	311466.87	6260330.60	24.32	SURVEY STATION

CITY OF PARRAMATTA

DIAL 1100 BEFORE YOU DIG

Issue:	Date:	Description:

N 0 1 2 5m

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Approved for Construction: Date: 28/4/21

Service Manager Capital Projects

Date: APRIL 2021

Scale: 1:100 @ A1

Drawing Status: FINAL

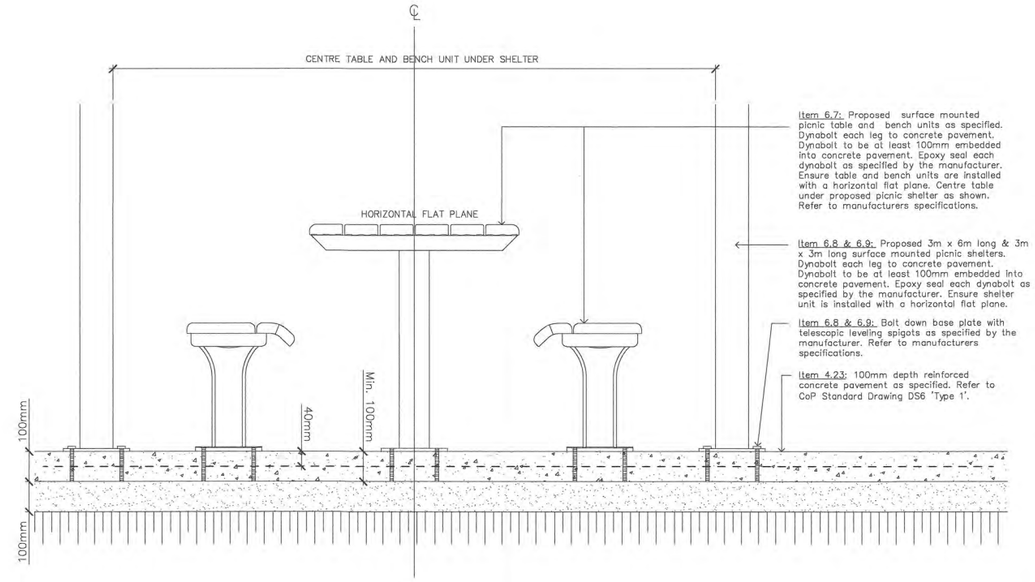
Project: SUE SAVAGE RESERVE PARK IMPROVEMENT WORKS
CHANEL ST, TOONGABBIE
C - AMENITIES BUILDING & LANDSCAPE WORKS

Title: SETOUT PLAN

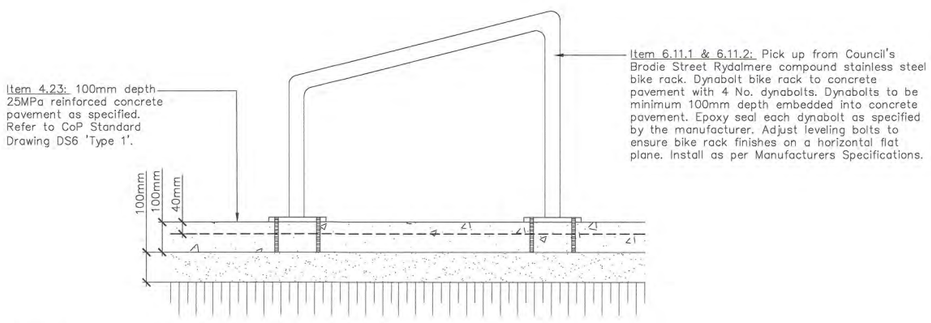
Plan No: 17809

Sheet No: AB_05

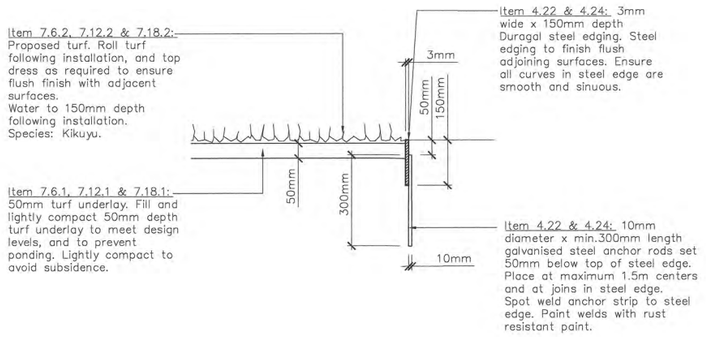
Revision: –



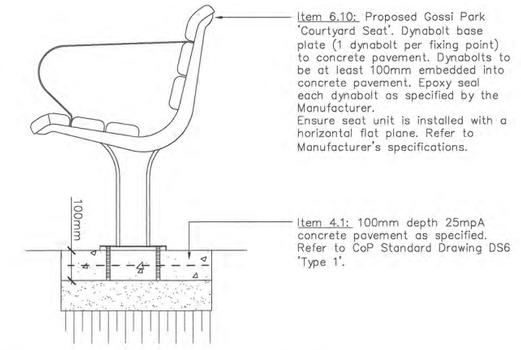
DETAIL – SURFACE MOUNTED PICNIC SETTING & SHELTER STRUCTURES
Scale: 1:10



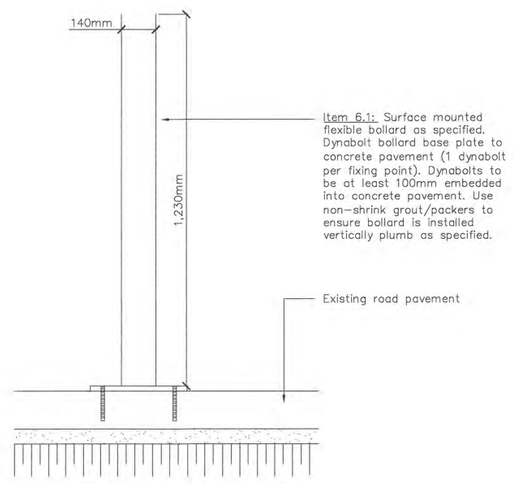
DETAIL – SURFACE MOUNTED BIKE RACK
Scale: 1:10



DETAIL – STEEL EDGE & TURF
Scale: 1:10



DETAIL – SURFACE MOUNTED SEAT UNIT
Scale: 1:10



DETAIL – SURFACE MOUNTED BOLLARD
Scale: 1:10

CITY OF PARRAMATTA

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Co-ords: MGA | Datum: AHD

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Designed: MW | Date: 21/4/21
Drawn: MW | Date: 21/4/21
Design Approved: AC | Date: 21/4/21

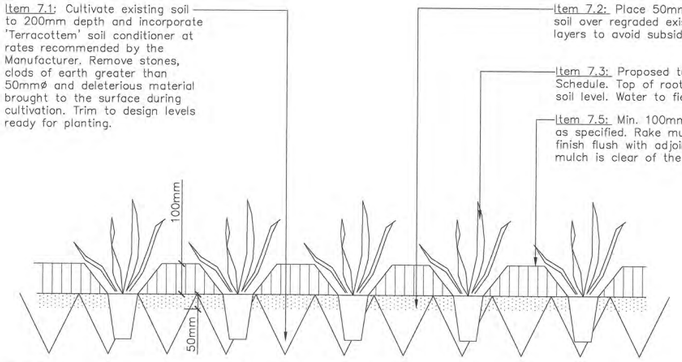
Client Accepted: | Date:
Approved for Construction: | Date: 20/4/21
Service Manager Capital Projects

Date: APRIL 2021
Scale: AS SHOWN
Drawing Status: FINAL

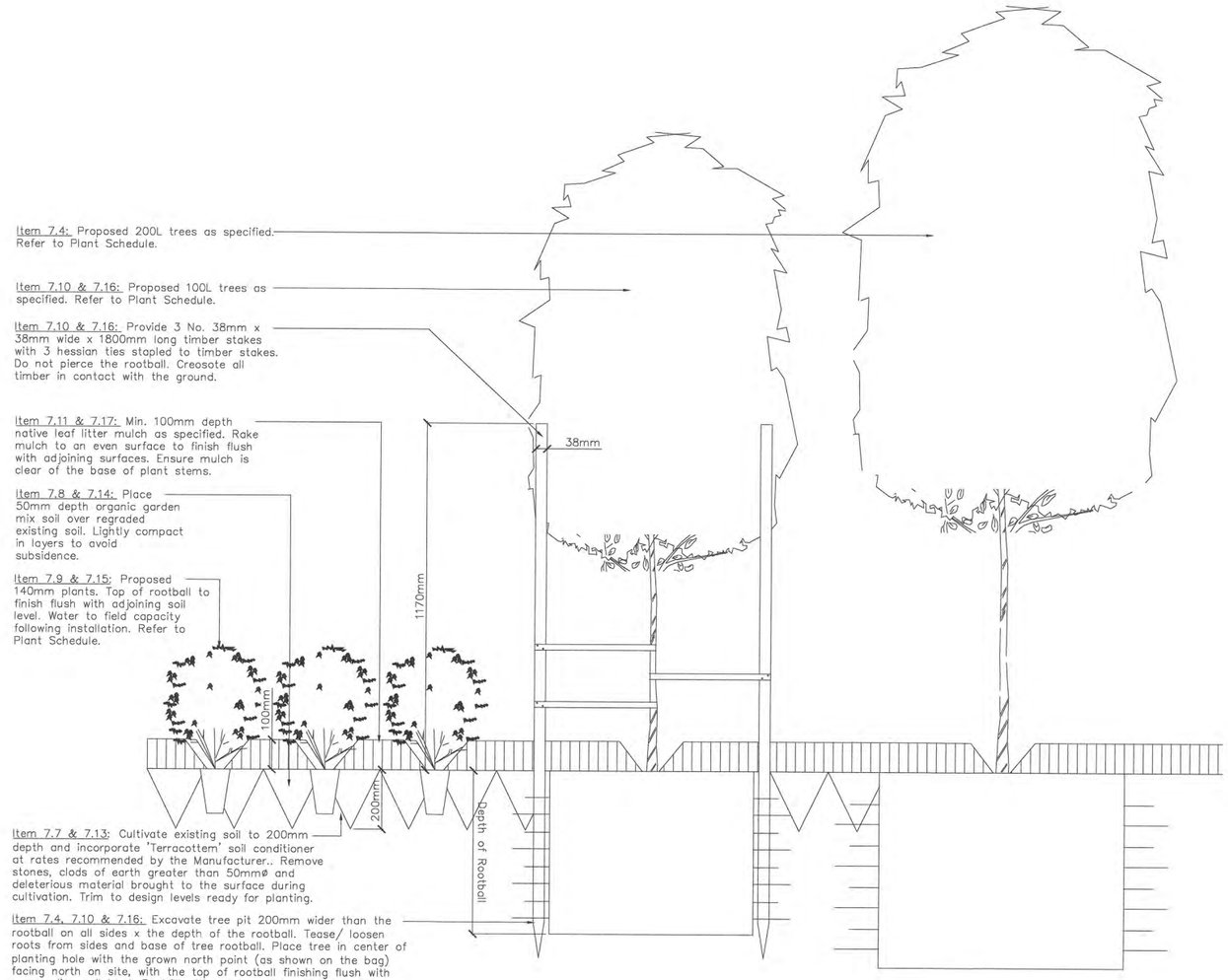
Project: SUE SAVAGE RESERVE
PARK IMPROVEMENT WORKS
CHANEL ST, TOONGABBIE
C - AMENITIES BUILDING & LANDSCAPE WORKS

Title: DETAILS SHEET 01

Plan No: 17809
Sheet No: AB_06
Revision: –



DETAIL – TUBESTOCK PLANTING
Scale: 1:10



DETAIL – SURFACE MOUNTED BIKE RACK
Scale: 1:10

CITY OF PARRAMATTA

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Service Manager Capital Projects

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Drawing Status: FINAL

Project: SUE SAVAGE RESERVE
PARK IMPROVEMENT WORKS
CHANEL ST, TOONGABBIE
C - AMENITIES BUILDING & LANDSCAPE WORKS

Title: DETAILS SHEET 02

Plan No: 17809
Sheet No: AB_07
Revision: _

SUE SAVAGE TOONGABBIE SKATEPARK FOR CONSTRUCTION DRAWINGS //

// Sue Savage Reserve, Chanel Street, Toongabbie, NSW 2146

DRAWING STATUS:

FOR CONSTRUCTION

REVISION STATUS:

C	For Construction Issue	19.04.21
B	100% Issue	01.12.20
A	Preliminary Issue	11.11.20

LANDSCAPE ARCHITECT CONSULTANT:

enlocus
ENLOCUS
Level 1, 151 St Georges Rd,
Fitzroy North, Victoria 3066
T : 03 9482 2202
W : www.enlocus.com

CONSULTANTS:

STRUCTURAL ENGINEER
MATRIX ENGINEERING GROUP P/L
24/37 Keilor Park Drive
Keilor Park, Victoria 3042
Tel : +613 9331 7522
www.matrixgroup.net.au

DRAWING LIST:

CLIENT NAME:

CITY OF PARRAMATTA
126 Church Street, Parramatta
NSW 2150

PROJECT NAME:

SUE SAVAGE TOONGABBIE SKATEPARK
Sue Savage Reserve, Chanel St, Toongabbie
NSW 2146

DRAWING TITLE:

Drawing Index

SCALE:		**DATE OF ISSUE:**	19.04.2021
FORMAT / SIZE:	A1	**REFERENCE NO:**	1910
DESIGN REVIEW:	CM	**APPROVAL:**	JM

DRAWING NUMBER: 1910_CD 000

REVISION: C

GENERAL NOTES // ON SITE WORKS

G01 ALL WORKS TO BE PERFORMED TO COMPLY WITH THE OCCUPATIONAL HEALTH AND SAFETY ACT 2004 AND THE OCCUPATIONAL HEALTH AND SAFETY REGULATIONS

.

G02 TRAFFIC / PEDESTRIAN MANAGEMENT PLANS AS REQUIRED FOR WORKS - ON SITE ONLY - TO BE SUBMITTED TO SUPERINTENDENT PRIOR TO THE COMMENCEMENT OF WORKS. REFER TO G32. G03 ALL SERVICE AUTHORITIES TO BE NOTIFIED AND RELEVANT PERMITS RECEIVED PRIOR TO THE COMMENCEMENT OF ANY WORKS.

G04 SETOUT AS PER DETAILS SHOWN ON SET OUT DRAWINGS.

G05 ALL CO-ORDINATES ARE TO A LOCAL GRID SET OUT USING THE TRIANGULATION OF 3 KNOWN MGA GRID POINTS. REFER TO SITE PLAN CD004. ALL LEVELS TO AHD.

G07 ALL SIDE ENTRY & JUNCTION PIT LIDS, VALVE COVERS, ETC WITHIN THE WORK AREA ARE TO BE ADJUSTED TO SUIT NEW DESIGN LEVELS.

G08 ROAD CONSTRUCTION AND LANDSCAPING MATERIALS TO BE IN ACCORDANCE WITH THE SPECIFICATION.

G09 ALL SOFT LANDSCAPING MATERIALS TO BE IN ACCORDANCE WITH THE SPECIFICATION. CONSULTANTS DRAWINGS, THE SPECIFICATION AND WITH SUCH OTHER WRITTEN INSTRUCTIONS AS MAY BE ISSUED DURING THE COURSE OF THE CONTRACT.

G10 ALL LINEMARKING TO BE THERMOPLASTIC PRODUCT AND METHOD TO BE SUPPLIED TO SUPERINTENDENT FOR APPROVAL.

G12 ANY DISCREPANCIES BETWEEN THE DRAWINGS OR THE DRAWINGS AND/OR SPECIFICATION AND/OR THE SPECIFIED STANDARDS MUST BE REPORTED TO THE SUPERINTENDENT AND A WRITTEN

G11 THESE DRAWINGS SHALL BE READ IN CONJUNCTION WITH ALL ENGINEERING AND OTHER

INSTRUCTION RECEIVED PRIOR TO PROCEEDING WITH THE WORKS. DURING THE TENDERING PROCESS TENDERS SHALL ASSUME THE LARGER OR GREATER CRITERIA IN TERMS OF COST IN THE ABSENCE OF THE OTHER INSTRUCTION.

G13 THE CONTRACTOR SHALL REPORT TO THE SUPERINTENDENT ANY DIFFERENCE IN SITE CONDITIONS TO THOSE INDICATED ON THE DRAWINGS.

G14 THE DRAWINGS DO NOT SHOW ALL DETAILS OF FIXTURES, INSERTS, SLEEVES, OPENING ETC, REQUIRED BY THE VARIOUS TRADES. ALL SUCH DETAILS, INCLUDING OPENINGS FOR CONSTRUCTION PURPOSES, MUST BE APPROVED BY THE SUPERINTENDENT AND A WRITTEN INSTRUCTION RECEIVED PRIOR TO PROCEEDING WITH THE WORKS.

G15 ALL WORKMANSHIP AND MATERIALS SHALL BE IN ACCORDANCE WITH THE RELEVANT CURRENT AUSTRALIAN STANDARD INCLUDING ALL AMENDMENTS, AND THE REQUIREMENTS OF THE LOCAL STATUTORY AUTHORITY, EXCEPT WHERE VARIED BY THE CONTRACT DOCUMENTS. ANY DISCREPANCIES BETWEEN THE DRAWINGS/SPECIFICATION AND THE SPECIFIED STANDARDS MUST BE REPORTED TO THE SUPERINTENDENT AND A WRITTEN INSTRUCTION RECEIVED PRIOR TO PROCEEDING WITH THE WORKS.

G16 ALL DIMENSION ARE IN MILLIMETERS UNLESS NOTED OTHERWISE. ALL LEVELS ARE IN METERS UNLESS OTHERWISE NOTED.

G17 ALL DIMENSIONS RELEVANT TO SETTING OUT AND OFF-SITE WORKS SHALL BE VERIFIED BY THE CONTRACTOR BEFORE CONSTRUCTION OR FABRICATION IS COMMENCED. THE ENGINEER'S DRAWINGS SHALL NOT BE SCALED.

G18 THE CONTRACTOR MUST MAINTAIN THE CONSTRUCTION AREA IN A SAFE CONDITION AND MUST ENSURE THAT ADEQUATE BARRIERS, LIGHT AND SIGNS ARE INSTALLED AND MAINTAINED WHERE NECESSARY IN ACCORDANCE WITH AS1742,3-1996.

G19 TRENCHES THROUGH NATURE STRIPS AND SOFT LANDSCAPED AREAS TO BE FINISHED WITH MIN 100MM TOPSOIL AND GRASSED TO MATCH ADJACENT SURFACE LEVELS.

G20 THE FULL WIDTH AND DEPTH OF TRENCH ABOVE OVERLAY ZONE AS DEFINED BY AS 3725 TO BE BACKFILLED AND COMPACTED TO 98% MODIFIED DRY DENSITY (SMDD).

G21 ALL CONCRETE PIPES TO BE STEEL REINFORCED CLASS 2, RRJ UNLESS NOTED OTHERWISE.

G22 ALL EXISTING AREAS OF PAVEMENT, PAVING, K&C, FOOTPATH MUST BE SAW-CUT NEATLY BEFORE EXCAVATION.

G23 LOCATION OF UNDERGROUND SERVICES SHOWN ON PLAN ARE INDICATIVE ONLY. NO GUARANTEE IS GIVEN THAT ALL EXISTING SERVICES ARE SHOWN. CONSTRUCTION IS TO CONFIRM DEPTH OF ALL SERVICES CROSSING PROPOSED UNDERGROUND DRAINS PRIOR TO CONSTRUCTION, AND NOTIFY COUNCIL'S SUPERVISING OFFICER OF ANY CONFLICT IMMEDIATELY. CONTRACTOR IS TO ALLOW ADEQUATE TIME IN THEIR WORK PROGRAM FOR COUNCIL TO MODIFY THE DESIGN / ARRANGE MODIFICATIONS OF SERVICE.

FOR ON SITE WORKS (EXCLUDING SUPPLY ONLY CONTRACTS) THE LOCATION OF ALL EXISTING PITS, VALVE COVERS, ETC SHOWN ON DRAWINGS HAVE BEEN REPRODUCED FROM SURVEY. THE LOCATIONS OF UNDERGROUND SERVICES HAVE BEEN NOTED FROM EXISTING RECORDS.

G24 TACTILE PAVER TO BE 300MMX300MM POLYURETHANE WARNING TACTILE INDICATOR TILE, COLOUR GREY TO MATCH PREVIOUS PRAM CROSSING TACTILE PAVER, BY GUARDIAN TACTILE SYSTEMS (08) 9240 1888 OR APPROVED EQUIVALENT.

G25 ANY VEGETATION TO BE REMOVED OR TRIMMED SHALL BE IN ACCORDANCE WITH PLANNING PERMIT REQUIREMENTS AND SUBJECT TO SUPERINTENDENTS APPROVAL.

G26 EXISTING TREES TO BE RETAINED, UNLESS WHERE SPECIFIED OTHERWISE. CONTRACTOR TO TAKE CARE TO ENSURE THAT NO DAMAGES OCCUR TO TREES TO BE RETAINED AS PER TREE PROTECTION STANDARD AS 4970 2009. CONTRACTOR NOT TO PLACE SPOIL FROM EXCAVATIONS, BULK MATERIALS, HARMFUL MATERIALS OR PARKING/STORAGE MACHINERY WITHIN TREE DRIP LINES.

G27 TREE REMOVAL: CONTRACTOR TO CONFIRM AND MARK WITH SPRAY PAINT ALL TREES TO BE REMOVED WITH DESIGNATED COUNCIL SUPERVISING OFFICER ON SITE PRIOR TO COMMENCING ANY WORK. STUMP GRINDING ALL TREES TO A DEPTH OF 500MM, REMOVE ALL DEBRIS OFF SITE AND REINSTATE NATURE STRIP. CONTRACTOR TO TAKE EXTREME CARE NOT TO DAMAGE OTHER RETAINED TREES, SERVICES OR OTHER INFRASTRUCTURE DURING TREE REMOVAL WORKS.

G28 WORKS NEAR TREES: WITHIN THE TREE DRIP LINE OR 3 METERS FROM THE TREE TRUNK OR WHICHEVER IS GREATER, THE CONTRACTOR SHALL SEEK APPROVAL FROM THE COUNCIL SUPERVISING OFFICER FOR WORKS INCLUDING CUT AND FILL OPERATIONS. PRIOR TO MACHINE EXCAVATION, USE HAND EXCAVATION TO LOCATE ROOTS IN THE VICINITY OF TREES TO BE RETAINED. CONTRACTOR TO SUBMIT A WORKS METHODS STATEMENT TO COUNCIL FOR APPROVAL PRIOR TO COMMENCEMENT OF CONSTRUCTION.

G29 ALL AREA OF PAVEMENTS, K&C AND FOOTPATHS DISTURBED BY CONTRACTOR DURING CONSTRUCTION OF DRAIN MUST BE REINSTATED TO THE ORIGINAL CONDITION.

G30 ALL ADJACENT DISTURBED VALVES, PITS, MANHOLES, SERVICES COVERS ETC TO MATCH NEW FINISHED SURFACE LEVEL.

G31 ALL SERVICES ARE TO BE PROTECTED DURING CONSTRUCTION. ATTENTION IS DRAWN TO MINIMUM COVER REQUIREMENTS OVER EXISTING SERVICES. FOR ON SITE WORKS (EXCLUDING SUPPLY ONLY CONTRACTS)

G32 WHERE INTERRUPTION OR DIVERSION OF LOCAL TRAFFIC IS REQUIRED TO COMPLETE WORKS, CONTRACTOR TO SUBMIT TRAFFIC MANAGEMENT PLAN TO SUPERINTENDED FOR WRITTEN APPROVAL BY ROAD AUTHORITY - RMS OR RTA- PRIOR T0 PROCEEDING.

CONCRETE NOTES

C01 ALL WORKMANSHIP AND MATERIALS SHALL BE IN ACCORDANCE WITH AS3600-2009 CONCRETE STRUCTURES EXCEPT WHERE VARIED BY THE CONTRACT DOCUMENTS.

C02 BEAM DEPTHS ARE WRITTEN FIRST AND INCLUDED SLAB THICKNESS. BEAMS AND SLABS ARE TO BE POURED TOGETHER UNLESS NOTED OTHERWISE.

C03 SIZE OF CONCRETE ELEMENTS DO NOT INCLUDE THICKNESS OF APPLIED FINISHES.

C04 NO HOLES, CHASES OR EMBEDMENT OF PIPES OTHER THAN THOSE SHOWN ON THE STRUCTURAL DRAWINGS SHALL BE MADE IN CONCRETE MEMBERS WITHOUT PRIOR APPROVAL OF THE SUPERINTENDENT.

C05 CONSTRUCTION JOINTS SHALL BE PROPERLY FORMED AND USED ONLY WHERE SHOWN ON THE DRAWINGS OR SPECIFICALLY APPROVED BY THE SUPERINTENDENT.

C06 ALL EXPOSED CONCRETE CORNERS TO HAVE 15MM CHAMFER U.N.O.

C07 CAMBER OF SUSPENDED SLABS SHALL BE POSITIVE UPWARD CAMBER OF 3MM PER 1000MM SPAN UNLESS OTHERWISE STATED. BEAMS SHALL BE CAMBERED AS SHOWN ON DRAWINGS. NO CAMBER IS REQUIRED TO POST-TENSIONED BEAMS AND SLAB.

C08 FORMWORK AND BACK PROPPING SHALL BE DESIGNED, CONSTRUCTED AND STRIPPED IN ACCORDANCE WITH AS3610. REFER TO DRAWINGS AND SPECIFICATION FOR CLASS OF SURFACE FINISHES.

C09 UNO CONCRETE COMPONENTS AND QUALITY SHALL BE AS FOLLOWS:

PRECAST CROSSING UNITS	40MPa
PRECAST PAVERS	40MPa
CONCRETE KERB AND CHANNEL	32MPa
CONCRETE SLAB NOMINATED FOR SPORTS FACILITY	32MPa
CONNECTING ROADSIDE PATHWAYS	25MPa

(MAXIMUM AGGREGATE SIZE SHALL BE 20MM)
OR AS NOTED.

C10 CONCRETE DESIGN STRENGTH (f'c AT 28 DAYS) AND BASIC MIX DETAILS UNO SHALL BE AS FOLLOWS:
GRADE N32 SLUMP 100MM AGGREGATE 20MM FOR FOOTINGS.
GRADE N32 SLUMP 80MM AGGREGATE 20MM FOR PAVEMENT SLABS/WALLS.

C11 ALL CEMENT IS TO BE GENERAL PURPOSE "PORTLAND GREY CEMENT" UNLESS OTHERWISE STATED IN THE DRAWINGS AND SPECIFICATION.

C12 CONCRETE SLUMP TO BE A MAXIMUM OF 80MM UNLESS OTHERWISE STATED ON THE DRAWINGS.

C13 FREE DROPPING OF CONCRETE FROM A HEIGHT GREATER THAN 1000MM IS NOT PERMITTED.

C14 SURFACES RECEIVING GROUT SHALL BE LEFT ROUGH AND FREE OF LAITANCE.

C15 CONCRETE MUST BE CURED BY AN APPROVED METHOD IN ACCORDANCE WITH THE SPECIFICATION FOR SEVEN DAYS AFTER POURING.

C16 REINFORCEMENT IS REPRESENTED DIAGRAMMATICALLY AND NOT NECESSARILY SHOWN IN TRUE PROJECTION OF SCALE.

C17 REINFORCEMENT SYMBOLS:
N = NORMAL DUCTILITY CLASS HOT ROLLED DEFORMED BARS 500N GRADE OR MESH TO AS1302 & AS/NZS 4671 WITH FSY EQUAL TO 500MPA.
R = NORMAL DUCTILITY CLASS 250N PLAIN ROUND BAR TO AS/NZS 4671 WITH FSY EQUAL TO 250MPA.
L = LOW DUCTILITY CLASS 500L REINFORCING MESH OR BAR TO AS/NZS 4671 WITH FSY EQUAL TO 500MPA.

C18 WELDING OF REINFORCEMENT SHALL NOT BE PERMITTED WITHOUT THE APPROVAL OF THE SUPERINTENDENT.

C19 MINIMUM CONCRETE COVER TO ALL REINFORCEMENT (FINISHES NOT INCLUDED):

SLABS (TOP)	30MM
SLABS (BOTTOM)	50MM
WALLS AND FOOTINGS	50MM

C20 ALL REINFORCEMENT SHALL BE SECURELY SUPPORTED IN ITS CORRECT POSITION DURING CONCRETING BY APPROVED BAR CHAIRS, SPACERS OR SUPPORT BARS AT 1000MM MAXIMUM CENTRES. THE CHAIR MATERIAL SHALL SUIT THE EXPOSURE CONDITIONS.

C21 REINFORCEMENT FOR ANY ONE POUR SHALL BE PLACED AND TIED PRIOR TO INSPECTION BY SUPERINTENDENT PRIOR TO PROCEEDING WITH POURING OF SLAB OR WALL. CONTRACTOR SHALL NOTIFY SUPERINTENDENT 24HOURS PRIOR TO POURING OF SLAB OF PLANNED OR LIKELY REQUIREMENT FOR INSPECTION. CONTRACTOR SHALL NOTIFY SUPERINTENDENT 3HRS PRIOR TO POURING OF SLAB CONFIRMATION OF INSPECTION.

C22 2 X N12 DIAGONAL CORNER BARS 1200MM LONG ARE REQUIRED AT ALL RE-ENTRANT CORNERS OF OPENINGS IN SLABS AND WALLS.

C23 REINFORCEMENT LENGTHS ARE IN MILLIMETRES AND ARE PLAN LENGTH ONLY. TURN DOWNS AND CRANKS ARE NOT INCLUDED IN THE DIMENSION.

C24 BARS SHOWN STAGGERED ON PLAN SHALL BE PLACED ALTERNATELY.

C25 BARS SHALL BE EVENLY DISTRIBUTED OVER THE WIDTH OF THE STRIP INDICATED ON THE DRAWINGS UNLESS NOTED OTHERWISE.

C26 ALL EMBEDMENT'S SHALL BE HOT DIP GALVANISED.

C27 DURING THE CONSTRUCTION OF SUSPENDED OR CANTI-LEVERED CONCRETE ELEMENTS THE CONTRACTOR SHALL BE RESPONSIBLE FOR MAINTAINING THE STRUCTURE IN A STABLE CONDITION AND ENSURING NO PART SHALL BE OVERSTRESSED UNDER CONSTRUCTION ACTIVITIES.

C28 THE STRUCTURAL WORK SHOWN ON THESE DRAWINGS HAVE BEEN DESIGNED FOR MINIMUM LIVE LOADS AS FOLLOWS:

PAVEMENT	3.0KPa
SHADE STRUCTURES/SHELTERS	0.25KPa

C29 CONCRETE SKATEPARK SURFACE TOLERANCES :

RADIUS SKATE ELEMENTS:	MAX. +/- 4 MM DEVIATION OVER A 2 M LONG MACHINE ROLLED STEEL RADIUS.
FLAT SKATE ELEMENTS:	MAX. +/- 4MM DEVIATION OVER A 2 M STRAIGHT EDGE AS PER CLASS A.

SITE DRAINAGE

SD1 SITES SHOULD BE DRAINED SO THAT WATER CANNOT POND AGAINST OR NEAR PAVED AREAS. THE GROUND IMMEDIATELY ADJACENT TO ANY PAVEMENT OF CONCRETE STRUCTURES SHOULD BE GRADED TO FALL 50MM OVER THE FIRST METRE. WHERE THIS IS IMPRACTICABLE (I.E.: ON SEVERAL SLOPING SITES) USE A.G. DRAINS ADJACENT TO THESE AREAS WHERE THE GROUND FALLS TOWARDS THE PAVEMENT OR STRUCTURE.

SD2 DISCHARGE FROM ANY DRAINAGE MUST BE DIRECTED AWAY FROM THE CONSTRUCTION AREAS DURING CONSTRUCTION PROCESS TO ENSURE WATER DOES POND ADJACENT TO AREA OF EXCAVATION OR BUILDING.

SD3 FOR ALL SITES THE NATURAL GROUND IMMEDIATELY ADJACENT TO THE CONSTRUCTION AREA SHALL BE GRADED TO A UNIFORM FALL OF 50MM MIN. AWAY FROM THE PAVEMENT AND STRUCTURE OVER THE FIRST METRE. THE SURFACE WATER AND SUB-SURFACE WATER IS TO BE DRAINED TO AN APPROPRIATE LEGAL POINT OF DISCHARGE. REFER TO THE ATTACHED SKETCH

SD4 WATERING AND LANDSCAPE BEDS ARE NOT PERMITTED ADJACENT TO BUILDING(S) AND ADJACENT TO THE PERIMETER CONCRETE PAVING SLAB. SHALLOW (300MM MAX.) AGRICULTURAL DRAIN IS TO BE INSTALLED BELOW GROUND LEVEL AT THE OUTER PERIMETER OF THE CONCRETE PAVING SLAB CONNECTED TO A GRAVITY FEED LEGAL POINT OF DISCHARGE. SUB-SURFACE WATER IN THE FORM OF PERCHED WATER TABLE MAY OCCUR WHERE SILTY CLAYS AND SANDS OVERLY IMPERMEABLE CLAY. WHERE THIS OCCURS AND AGRICULTURAL DRAIN MUST BE PROVIDED TO DIVERT THE FLOW OF WATER AWAY FROM THE CONCRETE PAVING SLAB & STRUCTURES. THIS DRAIN SHOULD BE EMBEDDED INTO IMPERMEABLE CLAY. SPECIAL ATTENTION SHOULD BE MADE NOT TO UNDERMINE THE FOOTINGS/STRUCTURES

SD5 PROVIDE SITE DRAINAGE TO PREVENT SURFACE SOIL SATURATION OR WATER PONDING NEAR PAVEMENT & STRUCTURES

SD6 CARE SHALL BE TAKEN WITH SURFACE DRAINAGE OF THE ALLOTMENT FROM THE START OF CONSTRUCTION. THE DRAINAGE SYSTEM SHALL BE COMPLETED BY THE FINISH OF CONSTRUCTION

SD7 PLUMBING TRENCHES SHALL BE SLOPED AWAY FROM THE BUILDING AND SHALL BE BACKFILLED WITH CLAY IN THE TOP 300MM WITHIN 1.5M OF THE BUILDING. THE CLAY USED FOR BACKFILLING SHALL BE COMPACTED. WHERE PIPES PASS UNDER THE FOOTING & PAVEMENT SYSTEM, THE TRENCH SHALL BE BACKFILLED WITH CLAY OR CONCRETE TO RESTRICT THE INGRESS OF WATER BENEATH

SD8 SUBSURFACE DRAINS SHALL BE FREE DRAINING AND SHALL BE ABLE TO BE INSPECTED AND MAINTAINED. SUBSURFACE DRAINS SHALL BE PROTECTED BY FILTERS AND GEOTEXTILE.NOTE: WHEREVER PRACTICABLE, SUBSURFACE DRAINS SHOULD BE AVOIDED NEAR ANY CONCRETE STRUCTURE OR PAVEMENT.

SD9 REFER TO SECTION 5 AND 6 AS2870-1996 AND AS2870-2011 FOR FULL SET OF DETAILING AND CONSTRUCTION REQUIREMENTS

SD10 REFER TO SOIL TEST AND DETAIL SHEETS FOR ADDITIONAL CONSTRUCTION AND MAINTENANCE REQUIREMENTS WHICH FORM PART OF THIS DESIGN

SD11 THE FOOTING & CONCRETE PAVEMENT DESIGN IS BASED ON A SITE HAVING PROPER SITE DRAINAGE. IF THE ABOVE DRAINAGE REQUIREMENTS CANNOT BE ACHIEVED CONTACT LANDSCAPE ARCHITECT FOR FURTHER ADVICE.

PREPARATION OF SUB-BASE FOR SLABS ON GROUND

P1 ALL PAVEMENT SLABS TO BE POURED OVER AN APPROPRIATE SUBGRADE MATERIAL IN COMPLIANCE WITH THE RECOMMENDATIONS PREPARED BY THE GEOTECHNICAL REPORT SUPPLIED BY - REPORT NO. . EARTHWORKS SHALL BE COMPLETED IN ACCORDANCE WITH REQUIREMENTS OF AS 3798 - "GUIDELINES ON EARTHWORKS FOR COMMERCIAL AND RESIDENTIAL DEVELOPMENTS"

P2 PROVIDE FILL UNDER SLAB WHERE REQUIRED TO PRODUCE FINISHED LEVELS AS SHOWN ON PLANS

P3 CLEAR AREA UNDER SLAB OF ALL TOP SOIL CONTAINING HUMUS AND VEGETABLE MATTER 100MM MIN

P4 PIPELINES, PREVIOUS CONSTRUCTION AND OTHER MATERIALS UNSUITABLE FOR INCORPORATION IN THE WORKS. TOP SOIL MAY BE STOCKPILED FOR LATER USE. ALL OTHER MATERIAL TO BE REMOVED FROM SITE OTHER THAN BEST OF FILL, SUFFICIENT OF WHICH SHALL BE RETAINED TO BALANCE EARTHWORKS.

P5 PRIOR TO PLACEMENT OF ANY FILL MATERIAL, THE EXPOSED SURFACE IS TO BE PROOF ROLLED WITH FULLY LOADED TANDEM TIPPER WITH TYRES INFLATED TO APPROX. 550 KPA. ALL 'SOFT SPOTS' OR AREAS SHOWING MOVEMENT TO BE EXCAVATED AND REPLACED WITH CONTROLLED FILL - IN LAYERS NOT EXCEEDING 150MM FOR LEVEL PAVEMENT AND 200MM FOR BUILT UP AREAS - FOR RETESTING.

P6 RELATIVE COMPACTION OF COMPLETED WORKS SHALL BE AS FOLLOWS:
ROAD, DRIVEWAY AND PAVEMENT AREAS > 0.3 M BELOW PAVEMENT SUBGRADE COMPACTED IN 150MM MAX LAYERS TO 98% OF THE MAXIMUM MODIFIED DRY DENSITY (M.M.D.D.) WHEN TESTED IN ACCORDANCE WITH AS 1289. < 0.3 BELOW PAVEMENT SURFACE SHALL BE WITHIN 85% TO 115% OF OPTIMUM MOISTURE CONTENT AND TO BE PROPERLY COMPACTED TO 98% M.M.D.D

P7 FILL MATERIAL SHALL BE IMPORTED GRANULAR MATERIAL, SANDSTONE, MUDSTONE OR STABLE SILURIAN CLAY. SAMPLES AND SOURCE SHALL BE PROVIDED FOR APPROVAL OF CONSULTING ENGINEER. MATERIAL IN STOCKPILES MAY BE USED

P8 ALLOW FOR THREE COMPACTION TESTS ON COMPLETED WORKS

P9 ENSURE THAT WORKS ARE KEPT FREE DRAINING ALL TIMES. CONSTRUCT TEMPORARY SURFACE DRAINS AS REQUIRED

P10 UNLESS NOTED ON PLAN, NO TREES TO BE REMOVED WITHOUT THE CONSENT OF THE SUPERINTENDENT.

P11 EXTERNAL PAVEMENT AREA ARE SUBJECTED TO VARYING MOISTURE CONDITIONS, MOVEMENT OF THE PAVEMENT IS TO BE EXPECTED OVER TIME. IN AREAS WHERE MOVEMENT IS BEYOND EXPECTABLE SERVICEABLE LEVELS, ADJACENT PORTION OF THE CONCRETE PAVEMENT IS EITHER TO BE REPAIRED OR REMOVED AND REPLACE TO RETURN THE AFFECTED AREA TO AN EXPECTABLE CONDITION.

TREE NOTES

T1 CAREFUL AND CONTINUOUS ATTENTION SHOULD BE PAID IN THE PLACEMENT OF TREES, GARDENING AND RELATED ACTIVITIES WITHIN A BUILDING LOT AS WELL AS ITS IMMEDIATE ADJOINING PROPERTIES. THE OWNER'S ATTENTION IS DRAWN TO APPENDIX B OF AS 2870 (PERFORMANCE REQUIREMENTS AND FOUNDATION MAINTENANCE)

BULK EXCAVATION AND PAVEMENT NOTES

B01 TOPSOIL (NOMINAL DEPTH 150MM) SHALL BE STRIPPED WITHIN THE LIMITS OF EARTHWORKS. QUANTITIES OF SELECTED TOPSOIL MATERIAL FOR FUTURE LANDSCAPE WORKS SHALL BE STOCKPILED AS DIRECTED BY THE SUPERINTENDENT.

B02 AFTER BULK EXCAVATION HAS BEEN COMPLETED THE FORMED SURFACE SHALL BE PROOF ROLLED AND TESTED IN ACCORDANCE WITH THE SPECIFICATION.

B03 ALL FILLING IS TO BE CARRIED OUT IN 150MM LAYERS UNLESS OTHERWISE STATED & COMPACTED TO 98% OF MAXIMUM MODIFIED DRY DENSITY. FILLING IN ROAD RESERVES IS TO BE CARRIED OUT USING APPROVED CLAY FILL. TOPSOIL & ALL VEGETATION MATTER TO BE STRIPPED FROM SITE PRIOR TO FILLING. ALL FILLING TO COMPLY WITH AS3798.

B04 EARTHWORKS WITHIN ROAD RESERVES AND LOTS SHALL BE TESTED BY A NATA REGISTERED GEOTECHNICAL LABORATORY IN ACCORDANCE WITH AS3798 AND AS1289 AND MEET THE REQUIREMENTS OF COUNCIL.

B05 COMPACTION TESTING AND PROOF ROLLING OF EACH PAVEMENT LAYER TO BE IN ACCORDANCE WITH AS 3798 AND AS 1289 AND SHALL MEET THE FOLLOWING STANDARDS, UNLESS OTHERWISE SPECIFIED:
I - SUB GRADE 98% MODIFIED DRY DENSITY
II - BASE COURSE LAYERS 98% MODIFIED DRY DENSITY
III - ASPHALT 100% MODIFIED DRY DENSITY

B06 SOFT SPOTS OR HEAVE AREAS IN SUB GRADE SHALL BE EXCAVATED TO A SUITABLE FOUNDATION APPROVED BY SUPERINTENDENT, BACKFILLED WITH APPROVED GRANULAR MATERIAL OR CONTROLLED FILL IN 150MM LAYERS FOR LEVEL SLAB AND 200MM FOR BUILT UP AREAS AND COMPACTED TO 98% M.M.D.D.

B07 REFER TO RC WALLS AND MINOR STRUCTURE TYPICAL DETAILS FOR MINIMUM BEARING CAPACITY. FOUNDATION MATERIAL FOR RC FOOTINGS TO BE 90KPa UNO.

B08 ON COMPLETION OF WORKS THE CONTRACTOR IS RESPONSIBLE FOR THE REMOVAL AND DISPOSAL OF EXCESS SPOIL FROM THE SITE, AS DIRECTED BY THE SUPERINTENDENT.

B09 ANY SOFT, WET OR UNSUITABLE SUB GRADE MATERIALS AS DEFINED IN THE SPECIFICATION, SHALL BE REMOVED AND REPLACED WITH AN APPROVED MATERIAL AND PROPERLY COMPACTED TO COUNCIL REQUIREMENTS.

B10 APPROVED FILL MATERIALS SHALL BE PLACED IN UNIFORMED LAYERS. COMPACTED. TESTED AND PROOF ROLLED IN ACCORDANCE WITH THE SPECIFICATION. THE FINISHED EARTHWORKS LEVELS SHALL BE PROOF ROLLED AND TESTED AS SPECIFIED PRIOR TO PAVEMENT CONSTRUCTION.

B11 DURING CONSTRUCTION THE CONTRACTOR SHALL BE RESPONSIBLE FOR CONSTRUCTING AND MAINTAINING A TEMPORARY SITE DRAINAGE SYSTEM AND TO MAINTAIN THE SITE IN A DRY AND STABLE CONDITION. DETAILS OF THE DRAINAGE SYSTEM SHALL BE SUBMITTED FOR THE APPROVAL OF THE SUPERINTENDENT.

B12 UNLESS OTHERWISE STATED ALL BATTERS SHAPED TO FINAL PROFILE SHALL BE CONSTRUCTED AT A MAXIMUM BATTER/SLOPE OF 1 IN 4 IN ACCORDANCE WITH COUNCIL STANDARDS. TEMPORARY CONSTRUCTION BATTER TO BE LIMITED TO A MAXIMUM OF 1 IN 1.5. STEEPER BATTERS/SLOPES SHALL NOT BE CONSTRUCTED UNLESS APPROVED BY THE SUPERINTENDENT. STABILIZATION AND EROSION PROTECTION SHALL BE PROVIDED AS DIRECTED BY THE SUPERINTENDENT, AT THE CONTRACTOR'S EXPENSES. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE STABILITY OF HIS TEMPORARY WORKS.

B13 ALL UNDERGROUND SERVICES SHALL BE LAID PRIOR TO FINAL SEALING OF ANY PAVEMENTS.

B14 ALL TRENCHES UNDER PAVED SURFACES ARE TO BE BACKFILLED WITH 20MM NOMINAL SIZE CLASS 2 CRUSHED ROCK & COMPACTED TO 98% MAXIMUM MODIFIED DRY DENSITY. REFER TO GEOTECHNICAL REPORT RECOMMENDATIONS.

B15 DRAINAGE BEDDING TYPE IS TO BE 'HS2' IN ACCORDANCE WITH AS 3725 UNLESS OTHERWISE SPECIFIED.

SIGNAGE AND ROAD LINEMARKING NOTES

L01 ALL SIGNAGE TO BE MANUFACTURED IN ACCORDANCE WITH AS1742 "MANUAL OF UNIFORM TRAFFIC CONTROL DEVICES"

L02 UNLESS OTHERWISE SHOWN. ALL SIGNS AND LINEMARKINGS TO BE INSTALLED IN ACCORDANCE WITH RMS TRAFFIC ENGINEERING MANUAL VOLUME 2 "SIGN AND LINEMARKING"

L03 ALL LINEMARKINGS TO BE CARRIED OUT BY A CONTRACTOR APPROVED BY COUNCIL SUPERINTENDENT REPRESENTATIVE.

L04 ALL REDUNDANT LINEMARKING TO BE REMOVED BY GRINDING PRIOR TO THE INSTALLATION ON NEW LINEMARKING.

L05 ALL LINEMARKING MATERIALS TO BE THERMOPLASTIC IN ACCORDANCE WITH RMS STANDARDS SPECIFICATIONS FOR ROADWORKS AND BRIDGEWORKS SECTION 722 PART D - LONGLIFE PAVEMENT MARKINGS.

L06 ALL EXISTING LINEMARKING PARTIALLY AFFECTED BY THE WORKS SHALL BE FULLY REFRESHED.

L07 THE EXISTING SIGN POSTS ARE TO BE USED FOR THE REINSTATEMENT OF THE SIGNS IN LOCATIONS AS SHOWN ALL POSTS ARE TO BE CUT TO A STANDARD LENGTH TO MAINTAIN 2040MM BELOW THE BOTTOM OF THE SIGN BEFORE REINSTATEMENT.

FOOTING NOTES

F01 THE ASSUMED FOUNDING LEVELS OF THE FOOTINGS IS TO BE AS INDICATED ON THE DRAWING. BEFORE ANY REINFORCEMENT OR CONCRETE IS PLACED, THE SAFE BEARING CAPACITY OF THE GROUND IS TO BE VERIFIED BY THE GEOTECHNICAL ENGINEER. EXCAVATION SHALL CONTINUE UNTIL THE REQUIRED BEARING CAPACITY IS FOUND. THE OVER- EXCAVATION SHALL BE BACK FILLED WITH BLINDING CONCRETE TO THE ASSUMED FOUNDING LEVEL.

F02 THE CONTRACTOR IS TO ALLOW FOR THE ENGAGEMENT OF THE GEOTECHNICAL ENGINEER TO VERIFY THE FOUNDING MATERIAL.

F03 OVER-EXCAVATION WITHIN THE INFLUENCE ZONE (45DEGREE LINE DOWN FROM BASE OF THE WALL) OF ANY RETAINING WALL IS NOT ALLOWED WITHOUT THE PRIOR APPROVAL OF THE APPROVAL OF THE EXCAVATION SEQUENCE BY THE SUPERINTENDENT.

PRECAST CONCRETE

PC1 IF CRANES ARE TO BE LOCATED ON SLAB DURING ERECTION, DETAILS SHALL BE SUBMITTED TO THE ENGINEER PRIOR TO POURING GROUND FLOOR SLAB. PRIOR TO LIFTING OF ANY WALL PANELS THE MANUFACTURER OR CONTRACTOR SHALL PROVIDE TO THE ENGINEER ALL RELEVANT CRANE WHEEL AND OUTRIGGER LOADING TO BE APPLIED ON THE FLOOR SLAB AND SHALL PROVIDE LOAD SPREADING AS DIRECTED BY THE ENGINEER.

PC2 LEVEL AND POSITION PANELS IN THEIR FINAL POSITION USING PATENTED PLASTIC SHIMS AND 20mm THICK CONTINUOUS GROUT BED.

PC3 APPLY STIFF NON-SHRINK GROUT TO ALL HORIZONTAL JOINTS AND FERRULE HOLES AS REQUIRED.

PC4 GROUT TO BE USED SHALL BE NON SHRINK, NON-STAINING, HAVE A 28 DAY CHARACTERISTIC STRENGTH OF 40 MPa. DETAILS OF THE PROPOSED GROUT USED SHALL BE SUBMITTED TO THE ENGINEER FOR APPROVAL.

PC5 ALL SEALANTS SHALL BE AS SPECIFIED BY THE ARCHITECT.

PC6 ALL PANELS TO ACHIEVE CONCRETE GRADE N25 MINIMUM AT TIME OF LIFTING. REFER ALSO TO NOTE PC4.

STEEL FABRICATION

S1 ALL WORKMANSHIP AND MATERIALS SHALL BE IN ACCORDANCE WITH AS4100, AS 4600, AS1554 AND AS HB63 EXCEPT WHERE VARIED BY THE CONTRACT DOCUMENTS.

S2 UNLESS NOTED OTHERWISE, ALL STEEL SHALL BE:
GRADE 300 PLUS FOR HOT ROLLED SECTIONS
GRADE 300 PLUS FOR WELDED SECTIONS
GRADE 300 PLUS FOR MERCHANT BAR
GRADE 250 PLUS FOR PLATE
GRADE C350 FOR RHS, CHS AND SHS

S3 CONTRACTOR TO PROVIDE PREFERRED METHOD OF FABRICATION AND ASSEMBLY, MATERIALS, DIMENSIONS, LIFTING POINTS, FIXINGS, PENETRATIONS ETC FOR SUPERINTENDENT APPROVAL. ALLOWANCE TO PREPARE SHOP DRAWINGS AS REQUIRED BY FABRICATOR TO COMPLETE WORKS AS DOCUMENTED.

S4 ALL DIMENSIONS SHALL BE VERIFIED ON SITE PRIOR TO FABRICATION.

S5 ALL BOLTS, NUTS AND WASHERS SHALL BE HOT DIP GALVANISED.

S6 ALL STEELWORK [STRUCTURAL] BELOW GROUND SHALL BE IN CASED IN 50MM MINIMUM CONCRETE ALL ROUND. REFER CD200 FOR MINIMUM COVER FOR REINFORCEMENT STEEL.

S7 THE ENDS OF ALL TUBULAR MEMBERS ARE TO BE SEALED WITH THE MEMBER'S NOMINAL THICKNESS PLATES AND CONTINUOUS FILLET WELDED UNLESS NOTED OTHERWISE.

S8 ALL HOT DIPPED GALVANISED MEMBERS SHALL BE PROVIDED WITH VENT AND DRAINAGE HOLES IN ACCORDANCE WITH THE GALVANISER'S RECOMMENDATIONS AND TO THE ACCEPTANCE OF THE SUPERINTENDENT.

S9 WHERE MEMBER OR STEEL WORKS SHOWN ON THE STRUCTURAL OR ARCHITECTURAL DRAWINGS ARE REQUIRED TO BE CURVED, BENT OR ROLLED, THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE METHODS REQUIRED TO ACHIEVE THE REQUIRED SHAPE WITHOUT LOCALISED DISTORTION OF THE MEMBERS.

S10 THE CONTRACTOR SHALL PROVIDE AND LEAVE IN PLACE, UNTIL PERMANENT BRACING ELEMENTS ARE CONSTRUCTED, SUCH TEMPORARY BRACING AS IS NECESSARY TO STABILISE THE STRUCTURE DURING ERECTION.

S11 THE CONTRACTOR SHALL PROVIDE ALL CLEATS AND DRILL ALL HOLES NECESSARY FOR FIXING STEEL, TIMBER AND OTHER ELEMENTS TO STEEL WHETHER OR NOT DETAILED ON THE STRUCTURAL DRAWINGS.

S12 THE FABRICATION AND ERECTION OF THE STRUCTURAL STEELWORK SHALL BE SUPERVISED BY QUALIFIED PERSONNEL EXPERIENCED IN SUCH SUPERVISION TO ENSURE THAT ALL REQUIREMENTS OF OH& S AND THE DESIGN ARE MET. DETAILS OF ERECTION SEQUENCE SHALL BE SUBMITTED TO THE SUPERINTENDENT FOR REVIEW PRIOR TO THE COMMENCEMENT OF ERECTION. THE APPROVED ERECTION SEQUENCE SHALL NOT BE VARIED DURING THE ERECTION PROCESS WITHOUT THE APPROVAL OF THE SUPERINTENDENT.

S13 STRUCTURAL STEELWORK SHALL HAVE THE FOLLOWING SURFACE TREATMENT IN ACCORDANCE WITH THE SPECIFICATION AND SHOWN ON THE DRAWINGS. ANY DISCREPANCIES IN THE DRAWINGS AND SPECIFICATION* SHALL BE REPORTED TO THE SUPERINTENDENT.

S14 ALL STEEL WORK (EXPECT PAINTED STEELWORK AS SPECIFIED BY THE ARCHITECTS) TO BE HOT DIPPED GALVANISED IN ACCORDANCE WITH THE SPECIFICATION, INCLUDING ALL BOLTS AND FIXINGS.

WELDING NOTES

W1 ALL SHOP WELDS SHALL BE IN ACCORDANCE WITH AS 1554 UNLESS NOTED OTHERWISE. ALL WELDING SHALL COMPLY WITH AS 1554 AND AS 4100.

W2 BEFORE COMMENCEMENT OF FABRICATION, CONTRACTOR TO SUBMIT DETAILS OF PROPOSED WELDING PROCEDURES TO THE SUPERINTENDENT. FABRICATOR TO PROCEED AT OWN RISK PRIOR TO ACCEPTANCE OF WELDING PROCEDURE.

W3 OTHER THAN SITE WELDS, IF ANY, SHOWN ON THE SHOP DRAWINGS, DO NOT WELD ON SITE WITHOUT PRIOR APPROVAL FROM THE SUPERINTENDENT WHEREVER POSSIBLE, LOCATE SITE WELDS IN POSITIONS FOR DOWN HAND WELDING.

W4 WELDING SHALL BE CARRIED OUT UNDER THE IMMEDIATE AND CONTINUOUS SUPERVISION OF A SUPERVISOR EMPLOYED BY THE FABRICATOR. THIS PERSON SHALL HAVE QUALIFICATION AS DESCRIBED IN AS1554 AND THESE QUALIFICATION SHALL BE SUBMITTED TO THE SUPERINTENDENT ON REQUEST.

W5 TESTING OF WELDS 100% OF WELD TO BE VISUALLY INSPECTED.

- WARNING -
CONTRACTOR TO VERIFY LOCATION; DEPTH/CLEARANCE AND ALIGNMENT OF OVERHEAD AND UNDERGROUND SERVICES. CONTRACTOR TO ACQUIRE CURRENT AND RELEVANT 'DIAL BEFORE YOU DIG/ONE CALL' SERVICES DRAWINGS AND ADHERE TO ALL REQUIREMENTS FOR WORKS NEAR SERVICES INCLUDING CLEARANCES, EASEMENTS AND INFORMING SERVICE AUTHORITIES PRIOR TO COMMENCEMENT OF WORKS. THE LOCATIONS OF UNDERGROUND SERVICES INDICATED IN THIS SET OF DRAWINGS ARE INDICATIVE ONLY. PIT LOCATIONS HAVE BEEN SURVEYED BY A LICENSED SURVEYOR.

- SITE DIMENSIONS -
CONTRACTOR TO SATISFY THEMSELVES OF SITE CONDITIONS, CHANGES IN LEVEL AND DIMENSIONS PRIOR TO FABRICATION OF SITE SPECIFIC ITEMS OR PRIOR TO ORDERING/PURCHASING MATERIALS. WHERE DISCREPANCIES EXIST BETWEEN DRAWINGS AND SITE CONDITIONS CONTRACTOR TO NOTIFY SUPERINTENDENT PRIOR TO COMMENCEMENT OF WORKS.

- COPYRIGHT AND INTELLECTUAL PROPERTY RIGHTS -
ENLOCUS RETAINS THE INTELLECTUAL PROPERTY RIGHT IN RELATION TO THE CONTRACT MATERIAL. THE DESIGN AS REPRESENTED BY THE DRAWING SET AND ALL DETAILS, INGENUITY AND INNOVATION REMAIN THE PROPERTY OF ENLOCUS. REFER TO CONTRACT FOR IRREVOCABLE LICENSE GRANTED TO THE CLIENT AND COPYRIGHT ARRANGEMENT.

DRAWING STATUS:

FOR CONSTRUCTION

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B	100% Issue	01.12.20
A	Preliminary Issue	11.11.20

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NOTES / LEGEND:

SITE SPECIFIC NOTES:

01. REFER TO GEOTECHNICAL REPORT SUPPLIED BY [REPORT NO:]

CLIENT NAME:

CITY OF PARRAMATTA
126 Church Street, Parramatta
NSW 2150

PROJECT NAME:

SUE SAVAGE TOONGABBIE SKATEPARK
Sue Savage Reserve, Chanel St, Toongabbie
NSW 2146

DRAWING TITLE:

General Notes

SCALE: N/A
DATE OF ISSUE: 19.04.2021
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CONTRACTOR TO CROSS REFERENCE ALL PLANS TO ENSURE ALL INFORMATION MATCHES. DESIGNER (ENLOCUS PTY LTD) TO BE CONTACTED WITH ANY DISCREPANCIES OR REQUIRED CLARITY FOR APPROVAL IN WRITING PRIOR TO WORKS COMMENCING/CONTINUING.

NOTE:
1. CONTRACTOR TO VERIFY DEPTH/CLEARANCE AND ALIGNMENT OF ALL ABOVE AND UNDERGROUND SERVICES PRIOR TO COMMENCEMENT OF WORKS AND ADHERE TO ALL REQUIREMENTS FOR WORKS NEAR SERVICES AS PER EACH PROVIDER.
2. CONTRACTOR TO RETAIN AND PROTECT ALL SERVICES OUTSIDE OF SCOPE OF WORKS. MAKE GOOD ANY DAMAGES OCCURRED DURING CONSTRUCTION.
3. CONTRACTOR IS TO VISUALLY INSPECT EACH EXISTING PIT AND SERVICES IN THE PROPOSED SCOPE TO ENSURE IT IS IN GOOD CONDITION PRIOR TO PROCEEDING WITH WORKS.

SUE SAVAGE PARK

EASEMENT FOR SEWERAGE 7.62 m WIDE

EASEMENT FOR TRANSMISSION 30.48m Wide

HIGH VOLTAGE ELECTRICITY LINE OVERHEAD

EXISTING BASKETBALL COURT

EXISTING CONCRETE CYCLEWAY

EXISTING CONCRETE CYCLEWAY

EXISTING CONCRETE CYCLEWAY

EASEMENT FOR TRANSMISSION 30.48m Wide

GARDEN

GARDEN

CHANEL ST

- **WARNING -**
CONTRACTOR TO VERIFY LOCATION; DEPTH/CLEARANCE AND ALIGNMENT OF OVERHEAD AND UNDERGROUND SERVICES. CONTRACTOR TO ACQUIRE CURRENT AND RELEVANT 'DIAL BEFORE YOU DIG/ONE CALL' SERVICES DRAWINGS AND ADHERE TO ALL REQUIREMENTS FOR WORKS NEAR SERVICES INCLUDING CLEARANCES, EASEMENTS AND INFORMING SERVICE AUTHORITIES PRIOR TO COMMENCEMENT OF WORKS. THE LOCATIONS OF UNDERGROUND SERVICES INDICATED IN THIS SET OF DRAWINGS ARE INDICATIVE ONLY. PIT LOCATIONS HAVE BEEN SURVEYED BY A LICENSED SURVEYOR.

- **SITE DIMENSIONS -**
CONTRACTOR TO SATISFY THEMSELVES OF SITE CONDITIONS, CHANGES IN LEVEL AND DIMENSIONS PRIOR TO FABRICATION OF SITE SPECIFIC ITEMS OR PRIOR TO ORDERING/PURCHASING MATERIALS. WHERE DISCREPANCIES EXIST BETWEEN DRAWINGS AND SITE CONDITIONS CONTRACTOR TO NOTIFY SUPERINTENDENT PRIOR TO COMMENCEMENT OF WORKS.

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NOTES / LEGEND:

EXISTING CONDITIONS NOTES:

DIGITAL SURVEY PREPARED BY:

1. SITE ACCESS TO BE CONDUCTED FROM ADJACENT CAR PARK. ANY DAMAGE INCURRED BY SITE ACCESS TO BE REPAIRED AT CONTRACTORS EXPENSE.

EXISTING CONDITIONS LEGEND:

- EXISTING BASKETBALL COURT. ENSURE EXISTING SURFACE AND FIXTURES ARE PROTECTED FOR THE DURATION OF WORKS ON SITE. NO STOCKPILING OR STORAGE OF MATERIALS ON EXISTING SURFACE.
- EXISTING CONCRETE CYCLEWAY. ENSURE EXISTING CONCRETE SURFACE AND FIXTURES ARE PROTECTED FOR THE DURATION OF WORKS ON SITE. NO STOCKPILING OR STORAGE OF MATERIALS ON EXISTING SURFACE.
- PROTECT AND RETAIN ALL NOMINATED VEGETATION (TREES AND SHRUBS) FOR THE DURATION OF WORKS ON SITE. CONTRACTOR TO SUBMIT A WORKS METHOD STATEMENT FOR THE PROTECTION OF TREES AND ROOT ZONES MARKED ON SITE PLAN AS 'SIGNIFICANT'.
- 62.150 EXISTING SPOT LEVEL
- 74.000 PROPOSED SPOT LEVEL
- 411.00 EXISTING CONTOUR - MAJOR
- 74.00 PROPOSED CONTOUR - MAJOR
- EXISTING CONTOUR - MINOR
- 74.20 PROPOSED CONTOUR - MINOR
- EXTENT OF WORKS.
- OUTLINE OF PROPOSED SKATEPARK
- T UNDERGROUND TELECOM
- W WATER MAIN
- POWER LINE
- OVERHEAD POWER LINE
- S STORMWATER LINE
- Sewer SEWER MAIN
- G GAS LINE
- TPIT TELECOM PIT
- TPIL TELECOM PILLAR
- EPIT ELECTRICAL PIT
- EP POWER POLE
- EL LIGHT POLE
- FENCE LINE
- SW STORMWATER MANHOLE
- LOT BOUNDARY
- 35000 SET OUT OF GRID POINT 1&2 FROM KNOWN B.M OR CORNER OF NOMINATED PERMANENT INFRASTRUCTURE.

CLIENT NAME:

CITY OF PARRAMATTA
126 Church Street, Parramatta
NSW 2150

PROJECT NAME:

SUE SAVAGE TOONGABBIE SKATEPARK
Sue Savage Reserve, Chanel St, Toongabbie
NSW 2146

DRAWING TITLE:

EXISTING CONDITIONS PLAN

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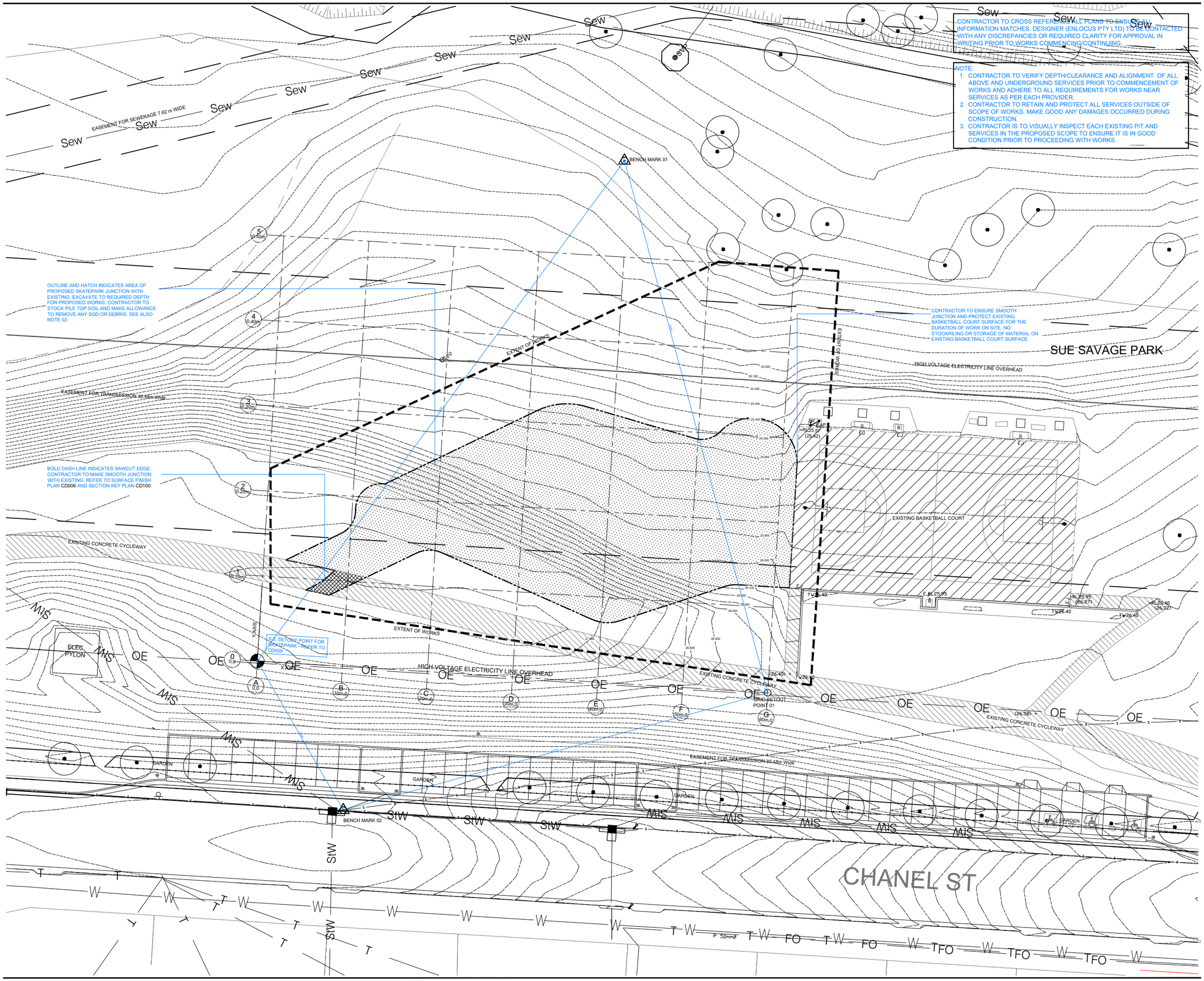

- WARNING -
CONTRACTOR TO VERIFY LOCATION, DEPTH/CLEARANCE AND ALIGNMENT OF OVERHEAD AND UNDERGROUND SERVICES. CONTRACTOR TO ACQUIRE CURRENT AND RELEVANT 'DIAL BEFORE YOU DIG/ONE CALL' SERVICES DRAWINGS AND ADHERE TO ALL REQUIREMENTS FOR WORKS NEAR SERVICES INCLUDING CLEARANCES, EASEMENTS AND INFORMING SERVICE AUTHORITIES PRIOR TO COMMENCEMENT OF WORKS. THE LOCATIONS OF UNDERGROUND SERVICES INDICATED IN THIS SET OF DRAWINGS ARE INDICATIVE ONLY. PIT LOCATIONS HAVE BEEN SURVEYED BY A LICENSED SURVEYOR.

- SITE DIMENSIONS -
CONTRACTOR TO SATISFY THEMSELVES OF SITE CONDITIONS, CHANGES IN LEVEL AND DIMENSIONS PRIOR TO FABRICATION OF SITE SPECIFIC ITEMS OR PRIOR TO ORDERING/PURCHASING MATERIALS. WHERE DISCREPANCIES EXIST BETWEEN DRAWINGS AND SITE CONDITIONS CONTRACTOR TO NOTIFY SUPERINTENDENT PRIOR TO COMMENCEMENT OF WORKS.

- COPYRIGHT AND INTELLECTUAL PROPERTY RIGHTS -
ENLOCUS RETAINS THE INTELLECTUAL PROPERTY RIGHT IN RELATION TO THE CONTRACT MATERIAL. THE DESIGN AS REPRESENTED BY THE DRAWING SET AND ALL DETAILS, INGENUITY AND INNOVATION REMAIN THE PROPERTY OF ENLOCUS. REFER TO CONTRACT FOR IRREVOCABLE LICENSE GRANTED TO THE CLIENT AND COPYRIGHT ARRANGEMENT.

DRAWING STATUS:

FOR CONSTRUCTION

N

REVISION STATUS:

C	For Construction Issue	19.04.21
B	100% Issue	01.12.20
A	Preliminary Issue	11.11.20

LANDSCAPE ARCHITECT CONSULTANT:

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Tel : +613 9331 7522
www.matrixgroup.net.au

NOTES / LEGEND:

DEMOLITION NOTES:

01. CONTRACTOR TO VERIFY LOCATION, DEPTH/CLEARANCE AND ALIGNMENT OF ALL OVERHEAD AND UNDERGROUND SERVICES INDICATED ON CURRENT AND RELEVANT 'DIAL BEFORE YOU DIG/ONE CALL' SERVICES DRAWINGS.CONTRACTOR TO REQUEST ADDITIONAL SERVICES RECORDS FROM COUNCIL. WHERE SERVICES ACCESS PITS, LIGHT POLES, METREVALVES ETC EXIST ON SITE CONTRACTOR TO ASSUME GENERAL ALIGNMENT OF UNDERGROUND PIPES, CONDUITS, CABLES ETC AND VERIFY ALIGNMENT AND MARK ON SITE PRIOR TO COMMENCEMENT OF WORKS.

02. LICENSED SURVEYOR TO BE USED TO LOCATE HEIGHT DATUM & SET OUT POINT AS SHOWN ON DRAWINGS PRIOR TO COMMENCEMENT OF WORKS. CONTRACTOR TO INFORM SUPERINTENDENT OF ANY DISCREPANCIES PRIOR TO COMMENCING WORKS.

03. 150MM (MINIMUM) SITE SCRAPE TO AREA OF SKATEPARK. EXCAVATED TOP SOIL TO BE CLEARED OF VEGETATIVE MATTER AND STOCKPILED ON SITE FOR PLACEMENT ON EMBANKMENTS PRIOR TO LANDSCAPE TREATMENT.

04. RETAIN & PROTECT EXISTING TREES WHERE NOMINATED AS PER SPECIFICATIONS.

DEMOLITION LEGEND:

- HATCH INDICATES OUTLINE OF PROPOSED SKATEPARK. EXCAVATE TO REQUIRED DEPTH FOR PROPOSED WORKS. SEE ALSO NOTE 02.
- EXISTING BASKETBALL COURT. ENSURE EXISTING BASKETBALL COURT SURFACE AND FIXTURES ARE PROTECTED FOR THE DURATION OF WORKS ON SITE. NO STOCKPILING OR STORAGE OF MATERIALS ON EXISTING SURFACE.
- EXISTING CONCRETE PATH/PAVEMENT TO BE DEMOLISHED AND REMOVED
- EXISTING CONCRETE PATH/PAVEMENT TO BE RETAINED AND PROTECTED.
- PROTECT AND RETAIN ALL NOMINATED VEGETATION (TREES AND SHRUBS) FOR THE DURATION OF WORKS ON SITE. CONTRACTOR TO SUBMIT A WORKS METHOD STATEMENT FOR THE PROTECTION OF TREES AND ROOT ZONES MARKED ON SITE PLAN AS 'SIGNIFICANT'.
- 62.150 EXISTING SPOT LEVEL
- 74.000 PROPOSED SPOT LEVEL
- 411.00 EXISTING CONTOUR - MAJOR
- 74.00 PROPOSED CONTOUR - MAJOR
- EXISTING CONTOUR - MINOR
- 74.20 PROPOSED CONTOUR - MINOR
- EXTENT OF WORKS.
- OUTLINE OF PROPOSED SKATEPARK
- T UNDERGROUND TELECOM
- W WATER MAIN
- POWER LINE
- OVERHEAD POWER LINE
- S STORMWATER LINE
- Sewer SEWER MAIN
- G GAS LINE
- TPIT TELECOM PIT
- TP/L TELECOM PILLAR
- EPIT ELECTRICAL PIT
- FENCE LINE
- EP POWER POLE
- EL LIGHT POLE
- LOT BOUNDARY
- SW STORMWATER MANHOLE
- 35000 SET OUT OF GRID POINT 182 FROM KNOWN B.M OR CORNER OF NOMINATED PERMANENT INFRASTRUCTURE.

CLIENT NAME:

CITY OF PARRAMATTA
126 Church Street, Parramatta
NSW 2150

PROJECT NAME:

SUE SAVAGE TOONGABBIE SKATEPARK
Sue Savage Reserve, Chanel St, Toongabbie
NSW 2146

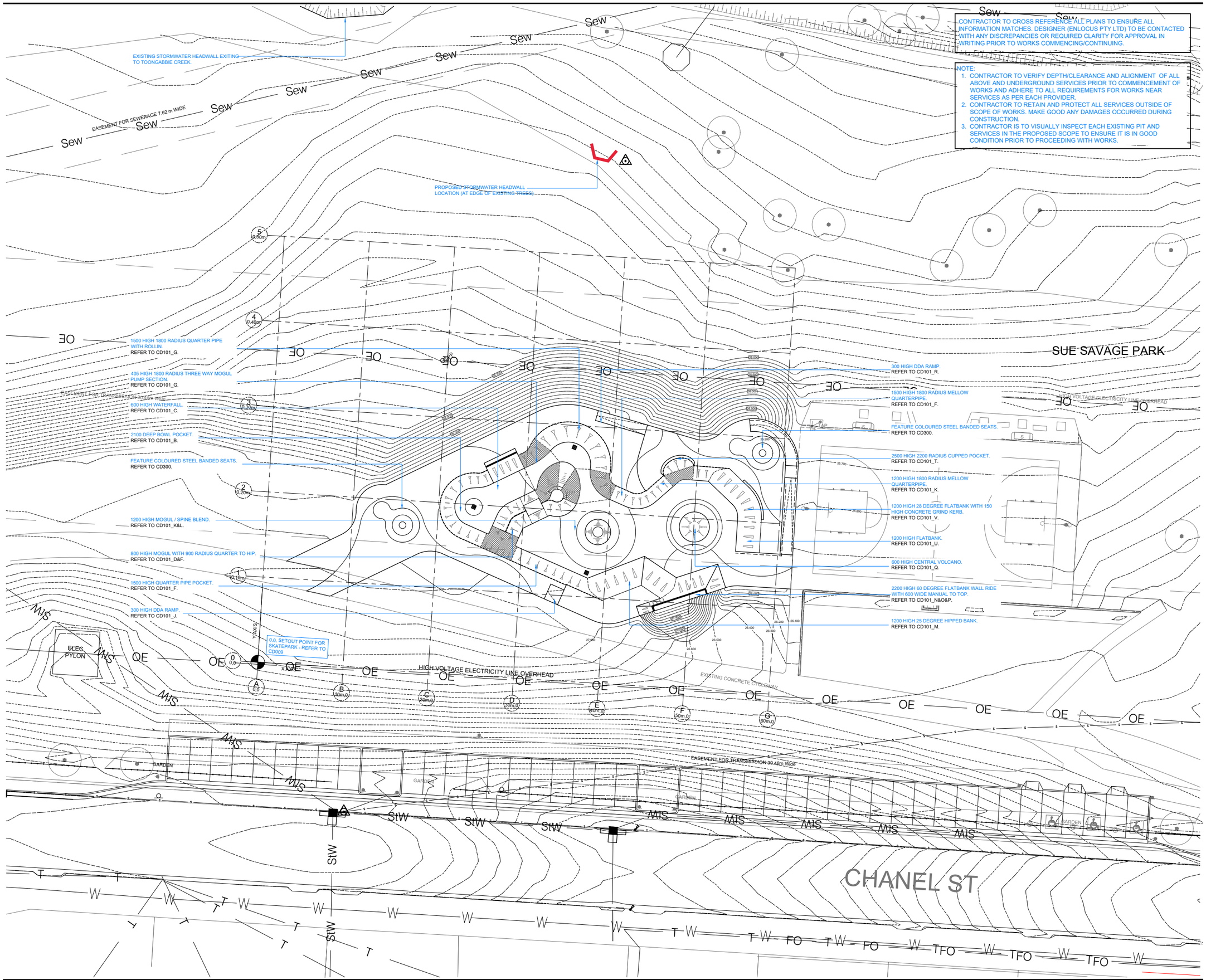
DRAWING TITLE:

Demolition Plan

SCALE:	1:200	**DATE OF ISSUE:**	19.04.2021
FORMAT / SIZE:	A1	**REFERENCE NO:**	1910
DESIGN REVIEW:	CM	**APPROVAL:**	JM

DRAWING NUMBER: 1910_CD 003

REVISION: C



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FOR CONSTRUCTION

REVISION STATUS:

C	For Construction Issue	19.04.21
B	100% Issue	01.12.20
A	Preliminary Issue	11.11.20

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NOTES / LEGEND:

SITE NOTES:

01. CONTRACTOR TO VERIFY LOCATION, DEPTH/CLEARANCE AND ALIGNMENT OF ALL OVERHEAD AND UNDERGROUND SERVICES INDICATED ON CURRENT AND RELEVANT 'DIAL BEFORE YOU DIG/ONE CALL' SERVICES DRAWINGS CONTRACTOR TO REQUEST ADDITIONAL SERVICES RECORDS FROM COUNCIL, WHERE SERVICES ACCESS PITS, LIGHT POLES, METRES/VALVES ETC EXIST ON SITE CONTRACTOR TO ASSUME GENERAL ALIGNMENT OF UNDERGROUND PIPES, CONDUITS, CABLES ETC AND VERIFY ALIGNMENT AND MARK ON SITE PRIOR TO COMMENCEMENT OF WORKS.

02. LICENSED SURVEYOR TO BE USED TO LOCATE HEIGHT DATUM & SET OUT POINT AS SHOWN ON DRAWINGS PRIOR TO COMMENCEMENT OF WORKS. CONTRACTOR TO INFORM SUPERINTENDENT OF ANY DISCREPANCIES PRIOR TO COMMENCING WORKS.

03. 150MM (MINIMUM) SITE SCRAPE TO AREA OF SKATEPARK. EXCAVATED TOP SOIL TO BE CLEARED OF VEGETATIVE MATTER AND STOCKPILED ON SITE FOR PLACEMENT ON EMBANKMENTS PRIOR TO LANDSCAPE TREATMENT.

SITE LEGEND:

- PROPOSED AREA OF SKATEPARK..
- 1:4 BATTERS INDICATED BY HATCH TO BE CONSISTENT AND FREE OF DEBRIS. FINISH WITH 50MM MIN. APPROVED TOP SOIL IN PREPARATION FOR LANDSCAPE TREATMENT. STOCK PILED SITE TOPSOIL TO BE USED WHERE APPROVED BY SUPERINTENDENT. REFER TO CD400.
- REPRESENTS CONCRETE BLEND BETWEEN VARYING TRANSITIONS. ALL BLEND AREAS TO BE APPROVED BY ENLOCUS PRIOR TO CONCRETE POUR. TO INCLUDE AND NOT LIMITED TO SHAPE OF REQUIRED EARTHWORKS, REINFORCEMENT AND PROPOSED SHAPE AND METHOD OF CONSTRUCTION. BLENDS NEED TO BE CONSISTENT AND TO HAVE SEAMLESS CONNECTION TO ADJOINING TRANSITIONS. ANY FINISHED BLENDS OUTSIDE OF THESE TOLERANCES WILL BE DEMOLISHED AND REPOURED AT CONTRACTORS EXPENSE.
- PROPOSED SKATEPARK - FLAT BANK.
- PROPOSED SKATEPARK - TRANSITION (QUARTER PIPE).
- PROPOSED SKATEPARK - ROLL OVER.
- PROTECT AND RETAIN ALL NOMINATED VEGETATION (TREES AND SHRUBS) FOR THE DURATION OF WORKS ON SITE. CONTRACTOR TO SUBMIT A WORKS METHOD STATEMENT FOR THE PROTECTION OF TREES AND ROOT ZONES MARKED ON SITE PLAN AS 'SIGNIFICANT'.

+ 62.150	EXISTING SPOT LEVEL
74.000	PROPOSED SPOT LEVEL
411.00	EXISTING CONTOUR - MAJOR
74.00	PROPOSED CONTOUR - MAJOR
	EXISTING CONTOUR - MINOR
74.20	PROPOSED CONTOUR - MINOR
	EXTENT OF WORKS.
	OUTLINE OF PROPOSED SKATEPARK
T	UNDERGROUND TELECOM
W	WATER MAIN
OE	POWER LINE
OE	OVERHEAD POWER LINE
S	STORMWATER LINE
Sewer	SEWER MAIN
G	GAS LINE
TPIT	TELECOM PIT
TPIL	TELECOM PILLAR
	FENCE LINE
EPIT	ELECTRICAL PIT
EP	POWER POLE
	LOT BOUNDARY
EL	LIGHT POLE
SW	STORMWATER MANHOLE
35000	SET OUT OF GRID POINT 182 FROM KNOWN B.M OR CORNER OF NOMINATED PERMANENT INFRASTRUCTURE.

CLIENT NAME:

CITY OF PARRAMATTA
126 Church Street, Parramatta
NSW 2150

PROJECT NAME:

SUE SAVAGE TOONGABBIE SKATEPARK
Sue Savage Reserve, Chanel St, Toongabbie
NSW 2146

DRAWING TITLE:

SITE PLAN

SCALE:	1:200	**DATE OF ISSUE:**	19.04.2021
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DRAWING NUMBER: 1910_CD 004

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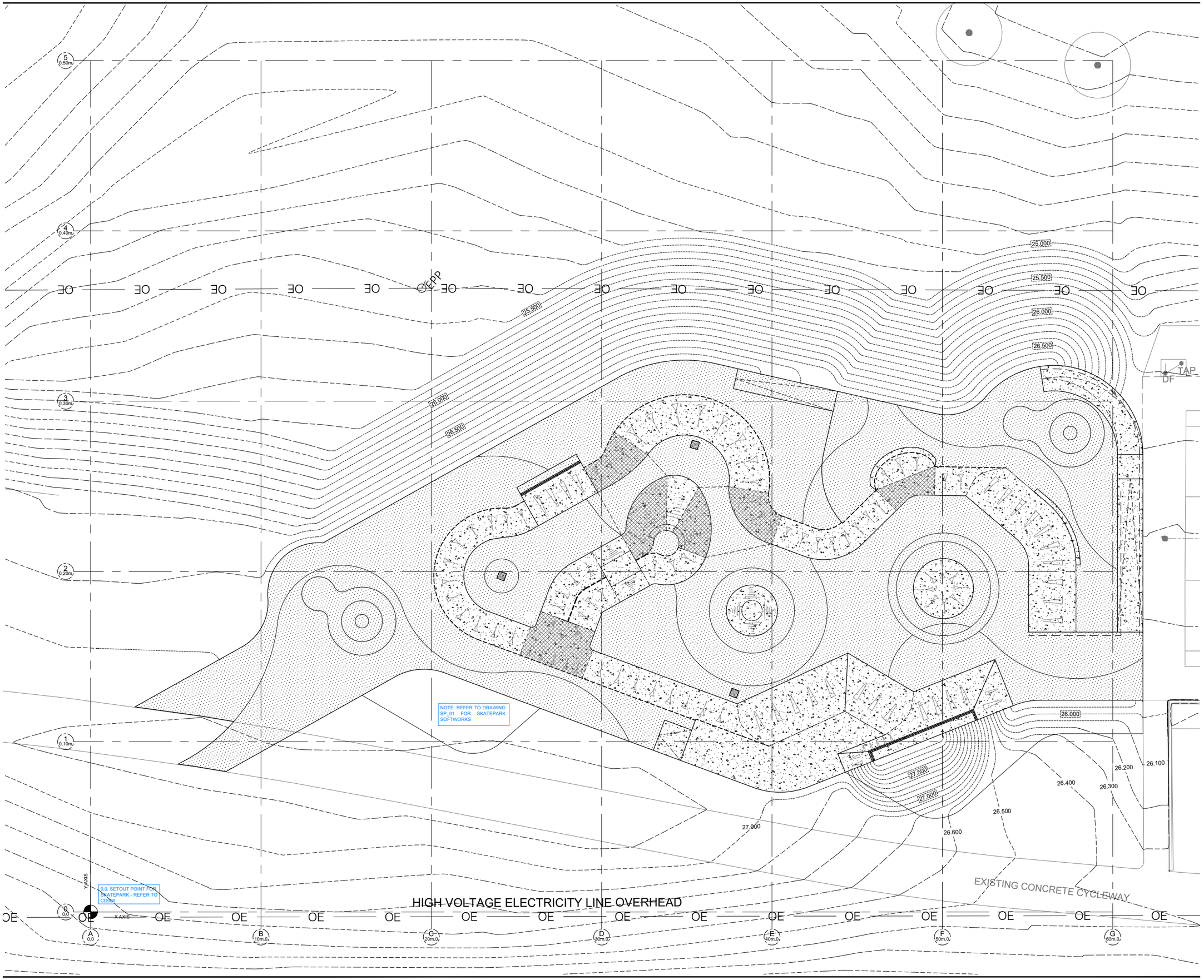

- WARNING -
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FOR CONSTRUCTION

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REVISION STATUS:

C	For Construction Issue	19.04.21
B	100% Issue	01.12.20
A	Preliminary Issue	11.11.20

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NOTES / LEGEND:

SURFACE FINISHES NOTES:

01. TEST PANELS REQUIRED FOR EACH PAVEMENT SURFACE FINISH TYPE. WRITTEN APPROVAL AND ACCEPTANCE OF SURFACE TOLERANCE, COLOUR, FINISH TYPE ETC BY SUPERINTENDENT REQUIRED PRIOR PROCEEDING WITH WORKS. REFER TO ENGINEERING DETAILS AND SPECIFICATION. TEST PANELS APPROVED BY SUPERINTENDENT CAN FORM PART OF FINAL WORKS.

02. ALL FURTHER WORKS TO MATCH STANDARD, COLOUR AND FINISH OF APPROVED TEST PANEL.

03. UNLESS OTHERWISE STATED ALL CONCRETE PAVEMENT TO BE 32MPa. ALL WORKMANSHIP AND MATERIALS SHALL BE IN ACCORDANCE WITH AS3600

SURFACE FINISHES LEGEND:

TYPICAL 100MM DEPTH (125MM TO RC SLAB AT TOP OF TRANSITIONS, FLAT BANKS AND STEPS. ALL TRANSITIONS AND FLAT BANKS 150MM THICK) 32 MPa PORTLAND GREY REINFORCED CONCRETE PAVEMENT - COLOUR OXIDE 'ABILOX - MOONLIGHT GREY 8.30% OC' OR APPROVED EQUIVALENT. STEEL FLOAT CLASS 1 FINISH. APPLY AVISTA CONCRETE SEALER PRIMER & AVISTA CONCRETE SEALER GENERAL PURPOSE "MATT" FINISH x2 COATS AS PER MANUFACTURER'S SPECIFICATION OR APPROVED EQUIVALENT. CONTRACTOR TO APPLY SURFACE HARDENER TO 2MX2M TEST PANEL FOR APPROVAL BY SUPERINTENDENT PRIOR TO PROCEEDING WITH WORKS. REFER CD200_D.

TYPICAL 100MM DEPTH (125MM TO RC SLAB AT TOP OF TRANSITIONS, FLAT BANKS AND STEPS. ALL TRANSITIONS AND FLAT BANKS 150MM THICK) 32 MPa PORTLAND GREY REINFORCED CONCRETE PAVEMENT. STEEL FLOAT CLASS 1 FINISH. APPLY AVISTA CONCRETE SEALER PRIMER & AVISTA CONCRETE SEALER GENERAL PURPOSE "MATT" FINISH x2 COATS AS PER MANUFACTURER'S SPECIFICATION OR APPROVED EQUIVALENT. CONTRACTOR TO APPLY SURFACE HARDENER TO 2MX2M TEST PANEL FOR APPROVAL BY SUPERINTENDENT PRIOR TO PROCEEDING WITH WORKS. REFER CD200_D.

CLIENT NAME:

CITY OF PARRAMATTA
126 Church Street, Parramatta
NSW 2150

PROJECT NAME:

SUE SAVAGE TOONGABBIE SKATEPARK
Sue Savage Reserve, Chanel St, Toongabbie
NSW 2146

DRAWING TITLE:

Surface Finishes Plan

SCALE:	1:100	**DATE OF ISSUE:**	19.04.2021
FORMAT / SIZE:	A1	**REFERENCE NO:**	1910
DESIGN REVIEW:	CM	**APPROVAL:**	JM

DRAWING NUMBER: 1910_CD 006a

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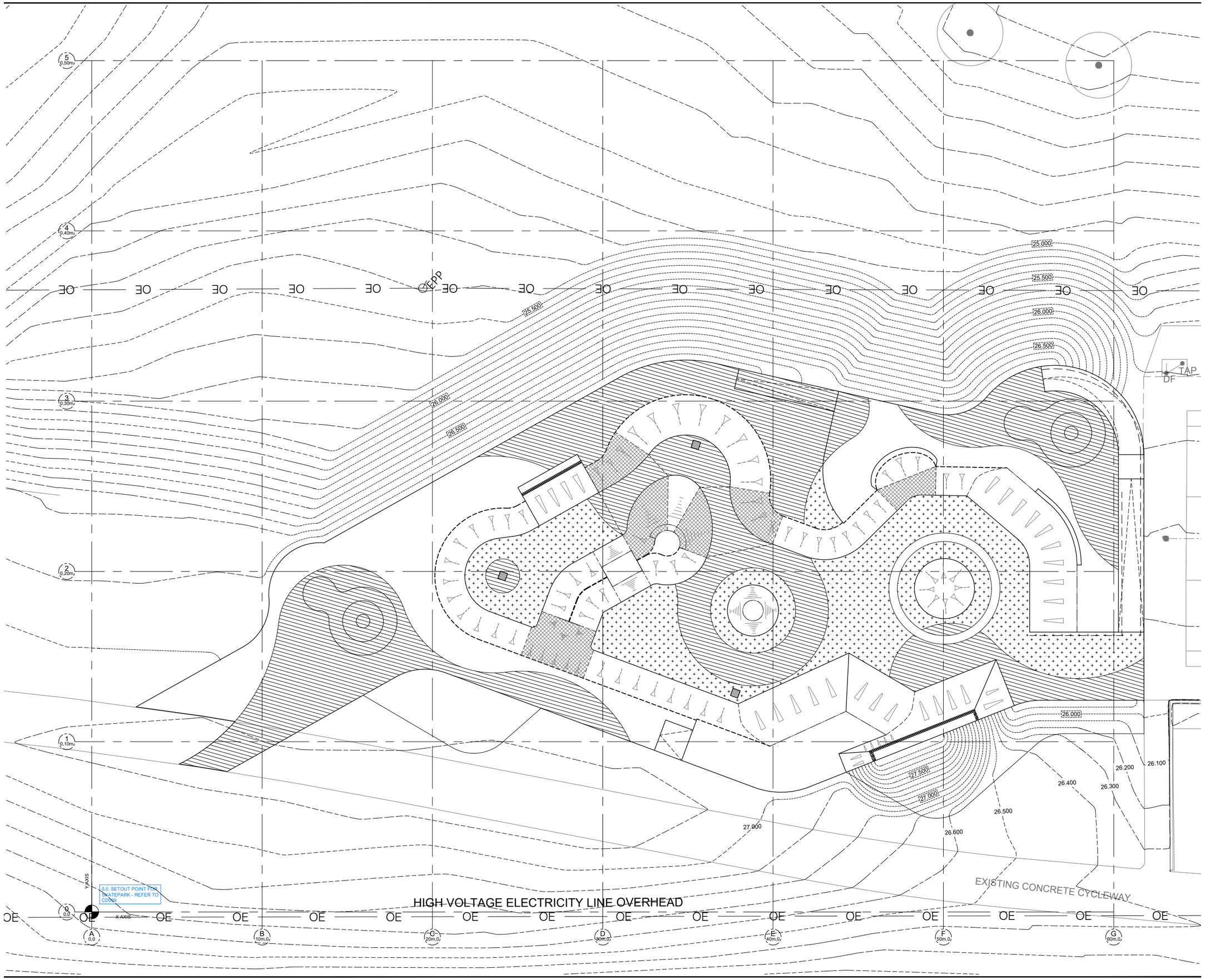

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DRAWING STATUS:

FOR CONSTRUCTION

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REVISION STATUS:

C	For Construction Issue	19.04.21
B	100% Issue	01.12.20
A	Preliminary Issue	11.11.20

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NOTES / LEGEND:

SURFACE FINISHES NOTES:

01. TEST PANELS REQUIRED FOR EACH PAVEMENT SURFACE FINISH TYPE. WRITTEN APPROVAL AND ACCEPTANCE OF SURFACE TOLERANCE, COLOUR, FINISH TYPE ETC BY SUPERINTENDENT REQUIRED PRIOR PROCEEDING WITH WORKS. REFER TO ENGINEERING DETAILS AND SPECIFICATION. TEST PANELS APPROVED BY SUPERINTENDENT CAN FORM PART OF FINAL WORKS.

02. ALL FURTHER WORKS TO MATCH STANDARD, COLOUR AND FINISH OF APPROVED TEST PANEL.

03. UNLESS OTHERWISE STATED ALL CONCRETE PAVEMENT TO BE 32MPa. ALL WORKMANSHIP AND MATERIALS SHALL BE IN ACCORDANCE WITH AS3600

SURFACE PAINTING LEGEND:

HATCHED AREA INDICATES PAINTED SURFACE FINISH. CONTRACTOR TO ALLOW FOR ONE (1) COAT OF DULUX DURABILD STE AND TWO (2) COATS OF DULUX WEATHERMAX HBR TINTED TO MATCH DULUX COLOUR A374 INTERNATIONAL BLUE. CLEANING OF SURFACE AND APPLICATION OF PAINTED FINISH TO MEET MANUFACTURES SPECIFICATION. CONTRACTOR TO APPLY PAINTED FINISH TO 1MX1M TEST PANEL FOR APPROVAL BY SUPERINTENDENT PRIOR TO PROCEEDING WITH WORKS (REFER TO ABOVE NOTES).

HATCHED AREA INDICATES PAINTED SURFACE FINISH. CONTRACTOR TO ALLOW FOR ONE (1) COAT OF DULUX DURABILD STE AND TWO (2) COATS OF DULUX WEATHERMAX HBR TINTED TO MATCH DULUX COLOUR A26 WATERMELON PINK. CLEANING OF SURFACE AND APPLICATION OF PAINTED FINISH TO MEET MANUFACTURES SPECIFICATION. CONTRACTOR TO APPLY PAINTED FINISH TO 1MX1M TEST PANEL FOR APPROVAL BY SUPERINTENDENT PRIOR TO PROCEEDING WITH WORKS (REFER TO ABOVE NOTES).

CLIENT NAME:

CITY OF PARRAMATTA
126 Church Street, Parramatta
NSW 2150

PROJECT NAME:

SUE SAVAGE TOONGABBIE SKATEPARK
Sue Savage Reserve, Chanel St, Toongabbie
NSW 2146

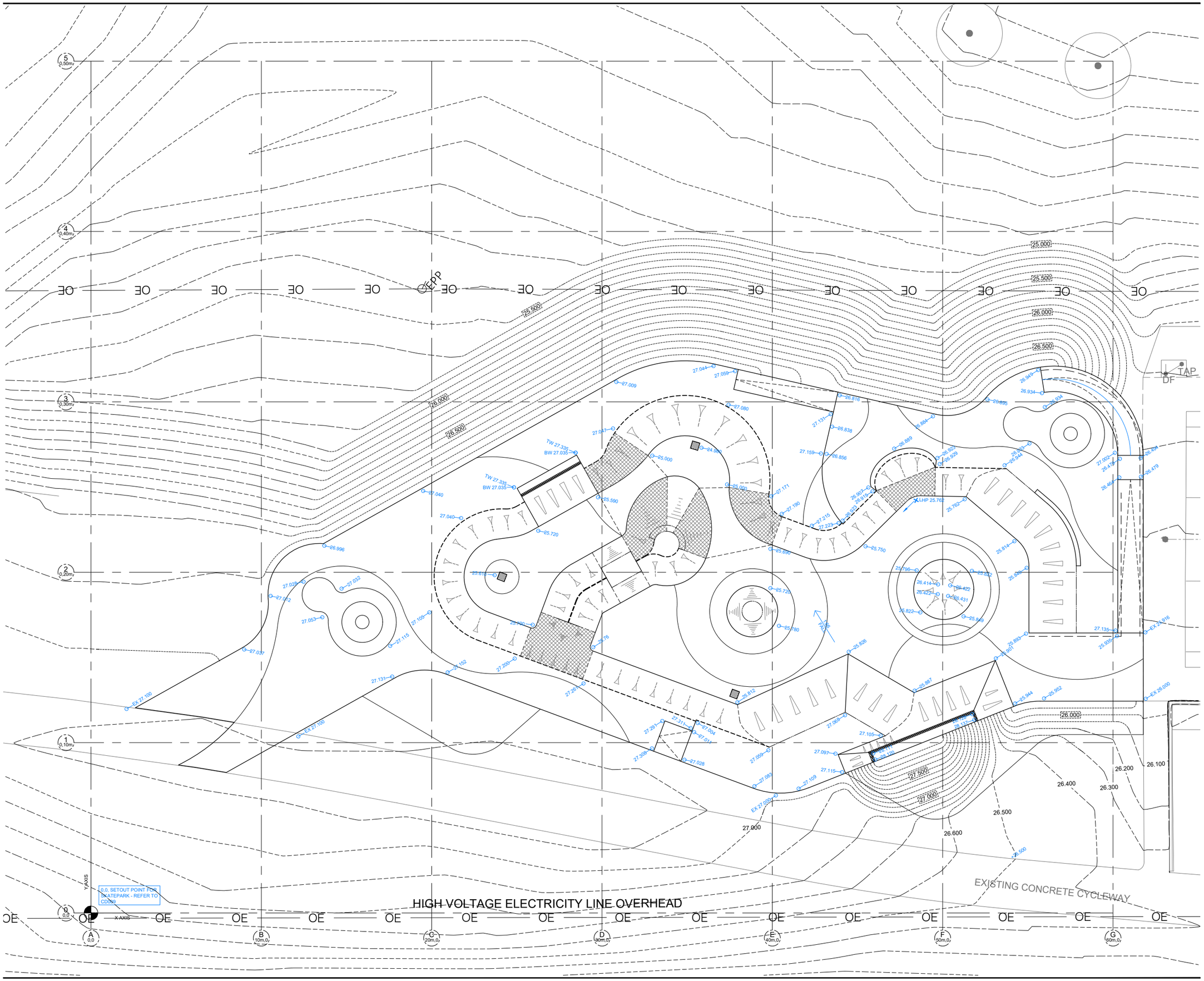
DRAWING TITLE:

Surface Painting Plan

SCALE:	1:100	**DATE OF ISSUE:**	19.04.2021
FORMAT / SIZE:	A1	**REFERENCE NO:**	1910
DESIGN REVIEW:	CM	**APPROVAL:**	JM

DRAWING NUMBER: 1910_CD 006b

REVISION: C



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NOTES / LEGEND:

LEVEL NOTES:

01. ALL LEVELS TO BE READ IN CONJUNCTION WITH SITE & GRADING PLANS AND SECTIONS. DESIGNER (ENLOCUS PTY LTD) TO BE CONTACTED WITH ANY DISCREPANCIES OR REQUIRED CLARITY FOR APPROVAL IN WRITING PRIOR TO WORKS COMMENCING/CONTINUING.

LEVELS LEGEND:

- 75X125 X 4MM M/S RHS 'DURAGAL' COPING.
- 50MM N.B. GALVANISED CHS COPING. ALL DIMENSIONS TO FRONT FACE OF COPING.
- 50MM ROLL-OVER RADIUS TO TOP OF TRANSITION OR BANK.
- 200MM ROLL-OVER RADIUS TO TOP OF BANK.
- RC TRANSITION (QUARTER PIPE). REFER TO SECTIONS CD100.
- RC FLAT BANK. REFER TO SECTIONS CD100.
- 74.000 PROPOSED LEVELS SHOWN IN METRES — BOTTOM / TOP OF WALL (BW / TW) BOTTOM / TOP OF LEDGE (BL / TL) BOTTOM / TOP OF STEP (BS / TS) C ENTRE POINT OF LEVEL OF RAIL UPRIGHT (CP).
- SKATE DRAINAGE PIT. REFER TO CD008
- DRAINAGE PIT. REFER TO CD008
- TP 5.45 TOP OF PIT (TP) REFER TO CD008
- INDICATES SPOT LOCATION FOR ISOLATED HIGH POINT AND DIRECTION (ARROW) OF FALL.

CLIENT NAME:

CITY OF PARRAMATTA
126 Church Street, Parramatta
NSW 2150

PROJECT NAME:

SUE SAVAGE TOONGABBIE SKATEPARK
Sue Savage Reserve, Chanel St, Toongabbie
NSW 2146

DRAWING TITLE:

Levels Plan

SCALE:	1:100	**DATE OF ISSUE:**	19.04.2021
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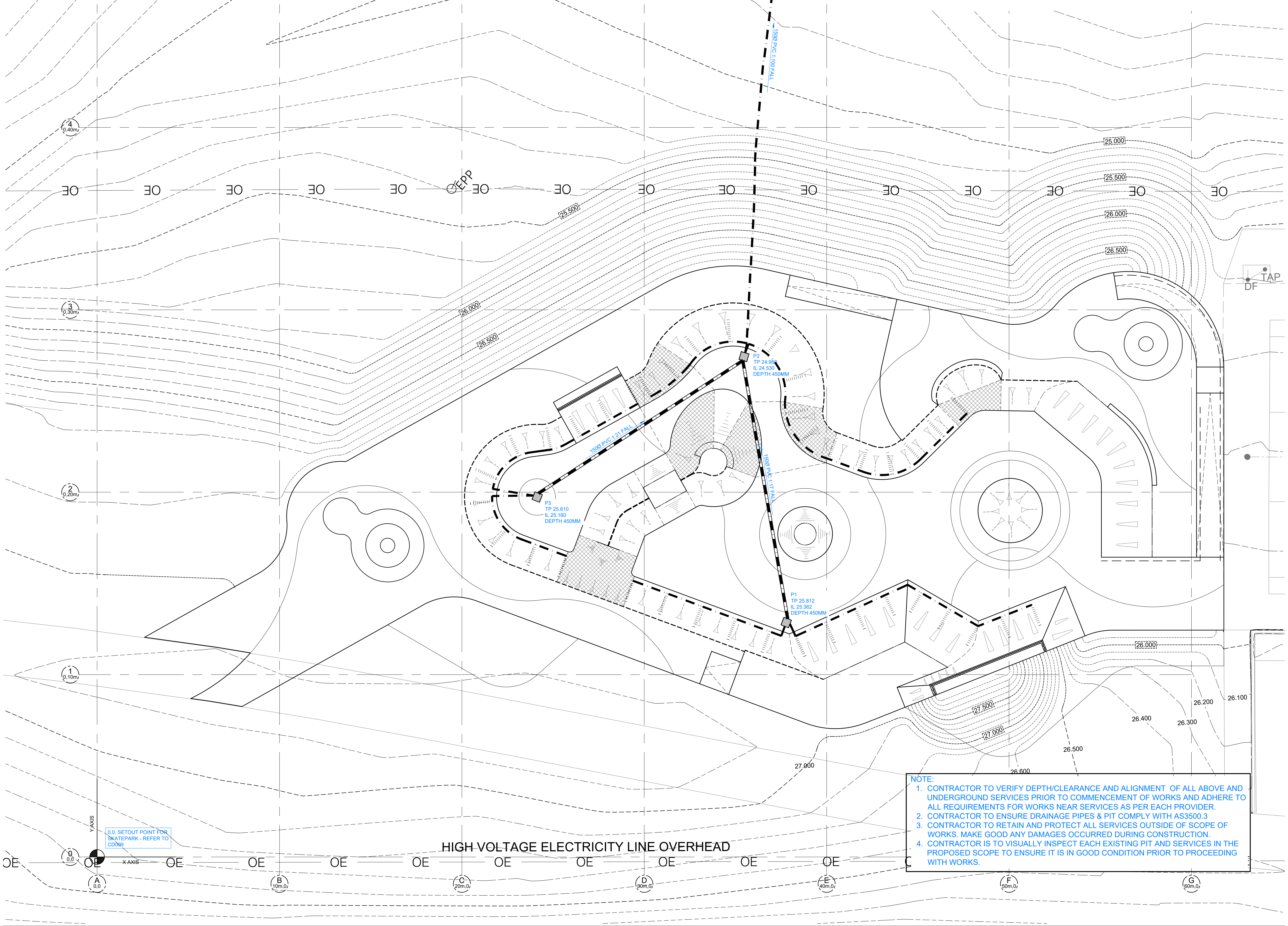
DRAWING NUMBER: 1910_CD 007

REVISION: C

DRAINAGE PLAN - PIT / OUTLET SCHEDULE

REF No.	TYPE // LOCATION	PIT SIZE WID.	PIT SIZE LEN.	INLET DIA. Ø	INLET INV R.L.	OUTLET DIA. Ø	OUTLET INV R.L.	TOP OF PIT LEVEL	PIPE LENGTH (OUTLET)	PIT DEPTH	COMMENTS
P1	PERFORATED PIT LID - SKATE SURFACE	450 MM	450 MM	100Ø AGI	N/A	150 MM	25.362 M	25.812 M	14.400 M	0.450 M	REFER TO CD217_A SKATE SURFACE DRAINAGE PIT
P2	PERFORATED PIT LID - SKATE SURFACE	450 MM	450 MM	100Ø AGI & 150Ø PVC	24.540 M	150 MM	24.530 M	24.980 M	13.300 M	0.450 M	REFER TO CD217_A SKATE SURFACE DRAINAGE PIT
P3	PERFORATED PIT LID - SKATE SURFACE	450 MM	450 MM	100Ø AGI	N/A	150 MM	25.160 M	25.610 M	APPROX. 56.500 M	0.450 M	REFER TO CD217_A SKATE SURFACE DRAINAGE PIT
EX H1	HEADWALL / RC PIPE OUTLET	N/A	N/A	150Ø PVC & TBC	TBC	N/A	N/A	23.900 M (TBC ON SITE)	N/A	TBC	OUTSIDE SURVEY BOUNDARY. ESTIMATED RL - TBC ON SITE. REFER CD004 FOR LOCATION.



NOTE:
1. CONTRACTOR TO VERIFY DEPTH/CLEARANCE AND ALIGNMENT OF ALL ABOVE AND UNDERGROUND SERVICES PRIOR TO COMMENCEMENT OF WORKS AND ADHERE TO ALL REQUIREMENTS FOR WORKS NEAR SERVICES AS PER EACH PROVIDER.
2. CONTRACTOR TO ENSURE DRAINAGE PIPES & PIT COMPLY WITH AS3500.3
3. CONTRACTOR TO RETAIN AND PROTECT ALL SERVICES OUTSIDE OF SCOPE OF WORKS. MAKE GOOD ANY DAMAGES OCCURRED DURING CONSTRUCTION.
4. CONTRACTOR IS TO VISUALLY INSPECT EACH EXISTING PIT AND SERVICES IN THE PROPOSED SCOPE TO ENSURE IT IS IN GOOD CONDITION PRIOR TO PROCEEDING WITH WORKS.

- WARNING -
CONTRACTOR TO VERIFY LOCATION; DEPTH/CLEARANCE AND ALIGNMENT OF OVERHEAD AND UNDERGROUND SERVICES. CONTRACTOR TO ACQUIRE CURRENT AND RELEVANT 'DIAL BEFORE YOU DIG/ONE CALL' SERVICES DRAWINGS AND ADHERE TO ALL REQUIREMENTS FOR WORKS NEAR SERVICES INCLUDING CLEARANCES, EASEMENTS AND INFORMING SERVICE AUTHORITIES PRIOR TO COMMENCEMENT OF WORKS. THE LOCATIONS OF UNDERGROUND SERVICES INDICATED IN THIS SET OF DRAWINGS ARE INDICATIVE ONLY. PIT LOCATIONS HAVE BEEN SURVEYED BY A LICENSED SURVEYOR.

- SITE DIMENSIONS -
CONTRACTOR TO SATISFY THEMSELVES OF SITE CONDITIONS, CHANGES IN LEVEL AND DIMENSIONS PRIOR TO FABRICATION OF SITE SPECIFIC ITEMS OR PRIOR TO ORDERING/PURCHASING MATERIALS. WHERE DISCREPANCIES EXIST BETWEEN DRAWINGS AND SITE CONDITIONS CONTRACTOR TO NOTIFY SUPERINTENDENT PRIOR TO COMMENCEMENT OF WORKS.

DRAWING STATUS:

FOR CONSTRUCTION

N

REVISION STATUS:

C	For Construction Issue	19.04.21
B	100% Issue	01.12.20
A	Preliminary Issue	11.11.20

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www.matrixgroup.net.au

NOTES / LEGEND:

DRAINAGE NOTES:

01. CONTRACTOR TO VERIFY LOCATION; DEPTH/CLEARANCE AND ALIGNMENT OF ALL OVERHEAD AND UNDERGROUND SERVICES INDICATED ON CURRENT AND RELEVANT 'DIAL BEFORE YOU DIG/ONE CALL' SERVICES DRAWINGS.CONTRACTOR TO REQUEST ADDITIONAL SERVICES RECORDS FROM COUNCIL. WHERE SERVICES ACCESS PITS, LIGHT POLES, METRES/VALVES ETC EXIST ON SITE CONTRACTOR TO ASSUME GENERAL ALIGNMENT OF UNDERGROUND PIPES, CONDUITS, CABLES ETC AND VERIFY ALIGNMENT AND MARK ON SITE PRIOR TO COMMENCEMENT OF WORKS.

02. LICENSED SURVEYOR TO BE USED TO LOCATE HEIGHT DATUM & SET OUT POINT AS SHOWN ON DRAWINGS PRIOR TO COMMENCEMENT OF WORKS. CONTRACTOR TO INFORM SUPERINTENDENT OF ANY DISCREPANCIES PRIOR TO COMMENCING WORKS.

DRAINAGE LEGEND:

150 / 225 Ø PVC — INDICATES 150mm or 225mm Ø STORMWATER PIPE - ENSURE EVEN FALL FROM DRAINS / PITS TO OUTLET PIPE TO STEP INSIDE PERIMETER TO AVOID EDGE BEAM. REFER TO ENGINEERING DETAILS AND SPECIFICATION.

100mmØ PVC AGFLO HEAVY (AH) SLOTTED FLEXIBLE STORMWATER PIPE BY POLYFABRICS. PIPE TO BE CONNECTED TO DRAINAGE OUTLET. CONTRACTOR TO SET LEVELS AND ENSURE DRAINAGE.

150mm FREDRAIN STRIP FILTER BY POLYFABRICS. STRIP FILTER TO EXTEND 3/4 UP TRANSITION FACE AND CONNECT TO 100Ø AH PVC PIPE. CONTRACTOR TO SET LEVELS AND ENSURE DRAINAGE.

SKATE DRAINAGE PIT. REFER TO CD203_A AND SCHEDULE.

P1 TP 74.45 IL 74.00 — PIT NUMBER (P1) TOP OF PIT (TP) AND INVERT LEVELS (IL).

H1 TH 74.45 IL 74.00 — DRAINAGE OUTLET NUMBER (H1) TOP OF HEADWALL (TH) AND INVERT LEVELS (IL).

PROTECT AND RETAIN ALL NOMINATED VEGETATION (TREES AND SHRUBS) FOR THE DURATION OF WORKS ON SITE. CONTRACTOR TO SUBMIT A WORKS METHOD STATEMENT FOR THE PROTECTION OF TREES AND ROOT ZONES MARKED ON SITE PLAN AS 'SIGNIFICANT'.

+ 62.150	EXISTING SPOT LEVEL	74.000	PROPOSED SPOT LEVEL
411.00	EXISTING CONTOUR - MAJOR	74.00	PROPOSED CONTOUR - MAJOR
	EXISTING CONTOUR - MINOR	74.20	PROPOSED CONTOUR - MINOR
	EXTENT OF WORKS.		OUTLINE OF PROPOSED SKATEPARK
T	UNDERGROUND TELECOM	W	WATER MAIN
	POWER LINE		OVERHEAD POWER LINE
S	STORMWATER LINE	Sewer	SEWER MAIN
G	GAS LINE	TPIT	TELECOM PIT
		TPIL	TELECOM PILLAR
	FENCE LINE	EPIT	ELECTRICAL PIT
		EP	POWER POLE
		EL	LIGHT POLE
	LOT BOUNDARY	SW	STORMWATER MANHOLE

35000 — SET OUT OF GRID POINT 1&2 FROM KNOWN B.M OR CORNER OF NOMINATED PERMANENT INFRASTRUCTURE.

CLIENT NAME:

CITY OF PARRAMATTA
126 Church Street, Parramatta
NSW 2150

PROJECT NAME:

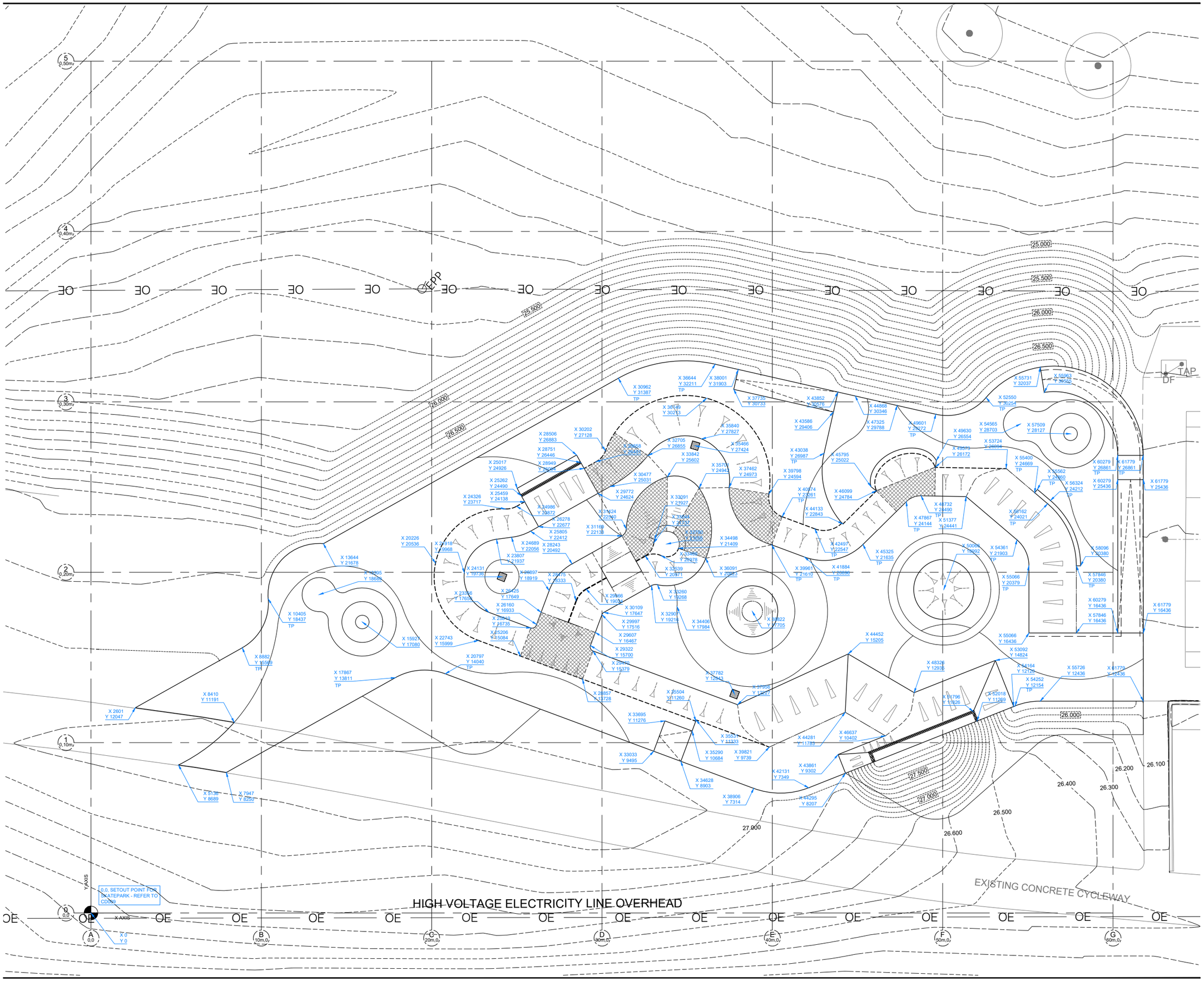
SUE SAVAGE TOONGABBIE SKATEPARK
Sue Savage Reserve, Chanel St, Toongabbie
NSW 2146

DRAWING TITLE:

Drainage Plan

SCALE: 1:100		**DATE OF ISSUE:** 19.04.2021	
FORMAT / SIZE:	A1	**REFERENCE NO:**	1910
DESIGN REVIEW:	CM	**APPROVAL:**	JM

DRAWING NUMBER: 1910_CD 008 **REVISION:** C



- WARNING -
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- SITE DIMENSIONS -
CONTRACTOR TO SATISFY THEMSELVES OF SITE CONDITIONS, CHANGES IN LEVEL AND DIMENSIONS PRIOR TO FABRICATION OF SITE SPECIFIC ITEMS OR PRIOR TO ORDERING/PURCHASING MATERIALS. WHERE DISCREPANCIES EXIST BETWEEN DRAWINGS AND SITE CONDITIONS CONTRACTOR TO NOTIFY SUPERINTENDENT PRIOR TO COMMENCEMENT OF WORKS.

DRAWING STATUS:

FOR CONSTRUCTION

N

REVISION STATUS:

C	For Construction Issue	19.04.21
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www.matrixgroup.net.au

NOTES / LEGEND:

SETOUT AND DIMENSION NOTES:

01. CONTRACTOR TO VERIFY ALL DIMENSIONS AND SITE DIMENSIONS. ANY DISCREPANCIES TO BE REPORTED TO SUPERINTENDENT PRIOR TO PROCEEDING WITH WORKS.

02. LICENSED SURVEYOR TO BE USED TO LOCATE HEIGHT DATUM & SET OUT POINT AS SHOWN ON DRAWINGS PRIOR TO COMMENCEMENT OF WORKS. CONTRACTOR TO INFORM SUPERINTENDENT OF ANY DISCREPANCIES PRIOR TO COMMENCING WORKS.

03. GENERAL ARRANGEMENT OF SITE TO BE PEGGED OUT AND APPROVAL BY SUPERINTENDENT RECEIVED PRIOR TO PROCEEDING WITH WORKS.

SETOUT AND DIMENSION LEGEND:

- 75X125 X 4MM M/S RHS 'DURAGAL' COPING.
- 50MM N.B. GALVANISED CHS COPING. ALL DIMENSIONS TO FRONT FACE OF COPING.
- 50MM ROLL-OVER RADIUS TO TOP OF TRANSITION OR BANK.
- 200MM ROLL-OVER RADIUS TO TOP OF BANK.
- RC TRANSITION (QUARTER PIPE). REFER TO SECTIONS CD100.
- RC FLAT BANK. REFER TO SECTIONS CD100.
- 1000 GENERAL WORKS DIMENSIONS.
- X 2206 / Y 1686 / TP GENERAL WORKS SET OUT. X & Y CO-ORDINATES. REFER DEMOLITION PLAN CD003 FOR SITE CONSTRUCTION GRID SET OUT. CP POST ANNOTATION REFERS TO CENTER POINT OF POST OR UPRIGHT.
- RADIUS TANGENT POINT.

CLIENT NAME:

CITY OF PARRAMATTA
126 Church Street, Parramatta
NSW 2150

PROJECT NAME:

SUE SAVAGE TOONGABBIE SKATEPARK
Sue Savage Reserve, Chanel St, Toongabbie
NSW 2146

DRAWING TITLE:

Setout Plan

SCALE:	1:100	**DATE OF ISSUE:**	19.04.2021
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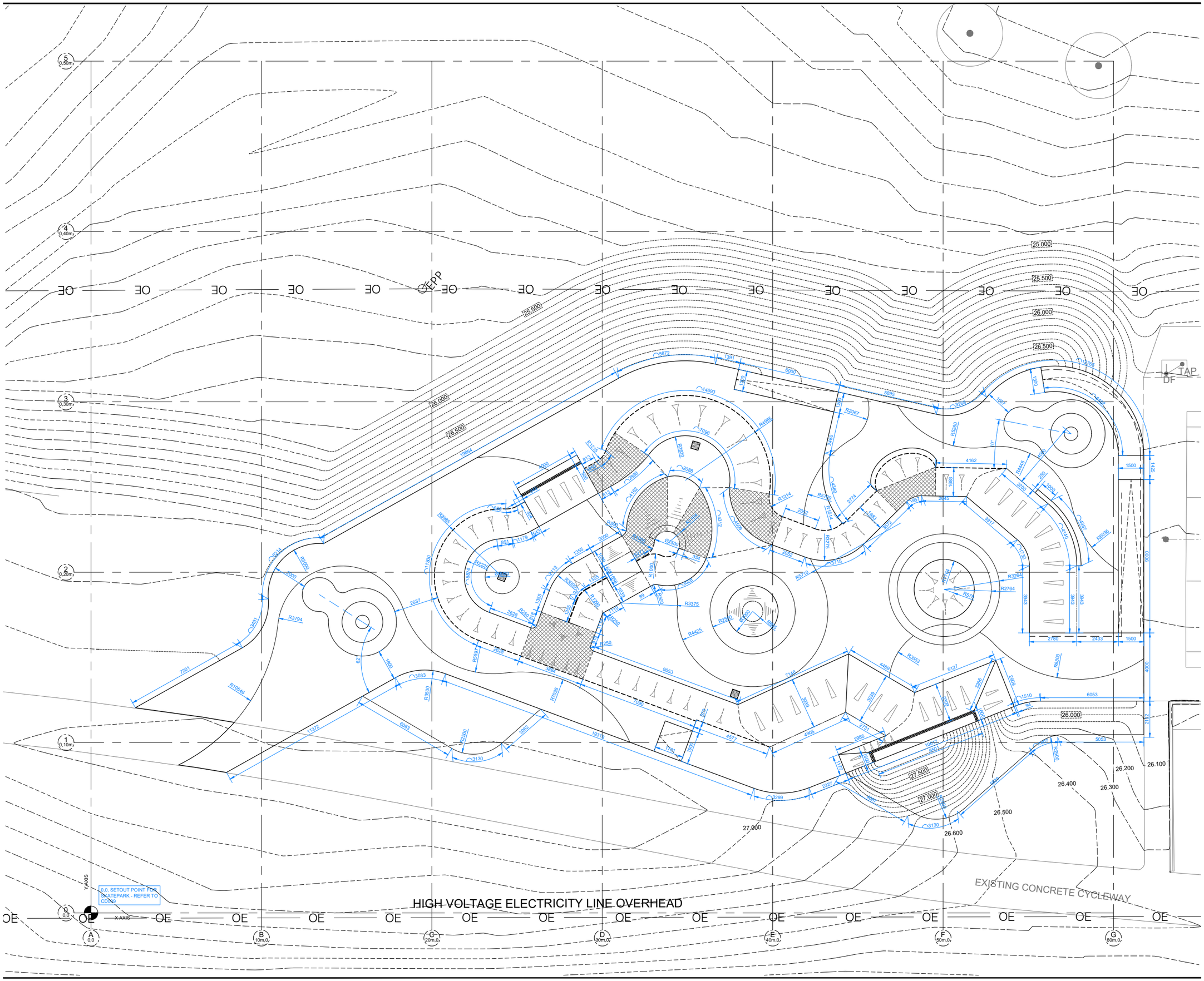
DESIGN REVIEW:	CM	**APPROVAL:**	JM

DRAWING NUMBER: 1910_CD 009

REVISION: C



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DRAWING STATUS:

FOR CONSTRUCTION

REVISION STATUS:

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NOTES / LEGEND:

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- 50MM ROLL-OVER RADIUS TO TOP OF TRANSITION OR BANK.
- 200MM ROLL-OVER RADIUS TO TOP OF BANK.
- RC TRANSITION (QUARTER PIPE). REFER TO SECTIONS CD100.
- RC FLAT BANK. REFER TO SECTIONS CD100.
- 1000 — GENERAL WORKS DIMENSIONS.
- X 2206 / Y 1686 / TP — GENERAL WORKS SET OUT X & Y CO-ORDINATES. REFER DEMOLITION PLAN CD003 FOR SITE CONSTRUCTION GRID SET OUT. CP POST ANNOTATION REFERS TO CENTER POINT OF POST OR UPRIGHT.
- RADIUS TANGENT POINT.

CLIENT NAME:

CITY OF PARRAMATTA
126 Church Street, Parramatta
NSW 2150

PROJECT NAME:

SUE SAVAGE TOONGABBIE SKATEPARK
Sue Savage Reserve, Chanel St, Toongabbie
NSW 2146

DRAWING TITLE:

Dimension Plan

SCALE:	1:100	**DATE OF ISSUE:**	19.04.2021
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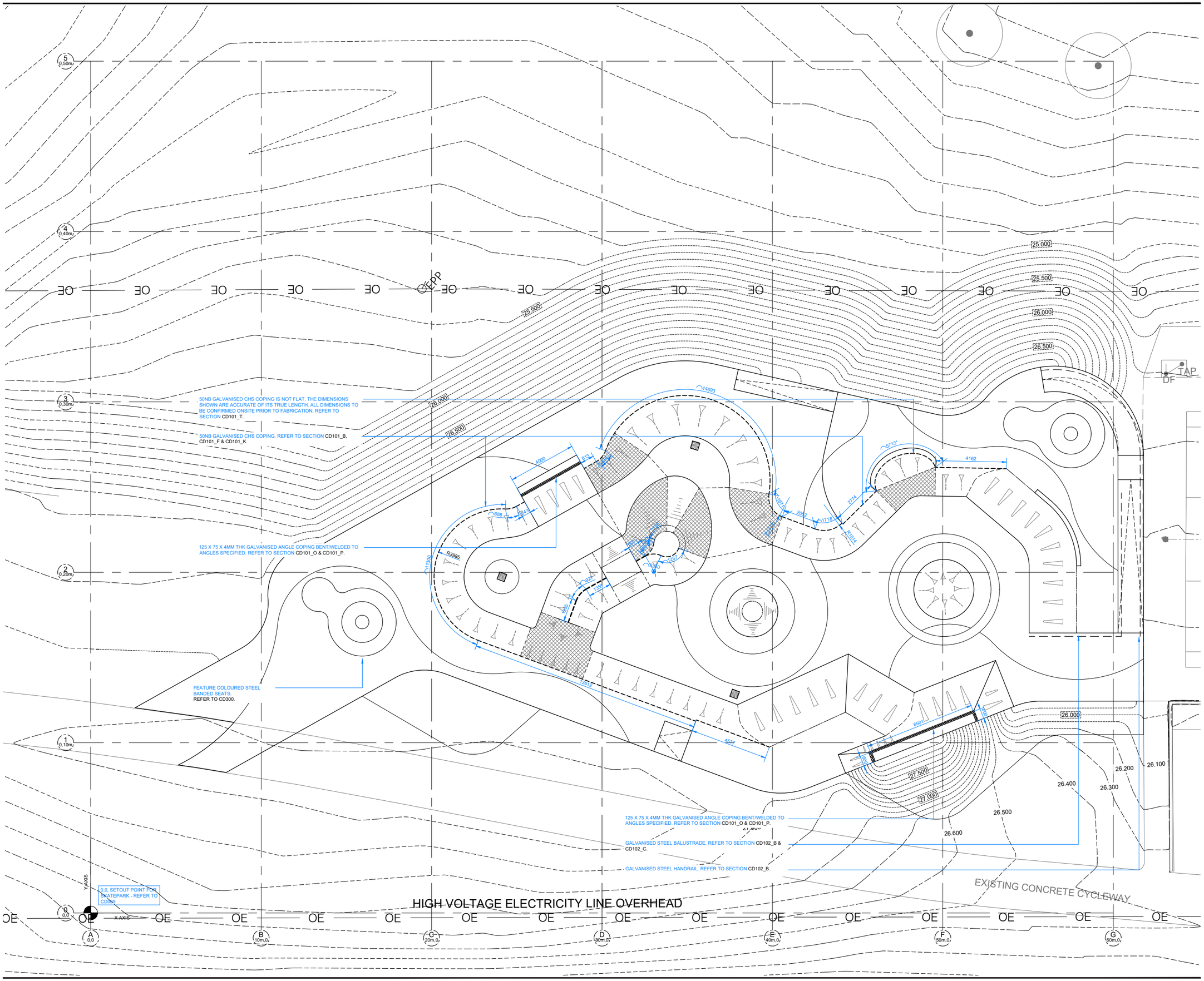

- WARNING -
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FOR CONSTRUCTION

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NOTES / LEGEND:

STEEL NOTES:

01. CONTRACTOR TO VERIFY ALL DIMENSIONS AND SITE DIMENSIONS. ANY DISCREPANCIES TO BE REPORTED TO SUPERINTENDENT PRIOR TO PROCEEDING WITH WORKS.

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03. GENERAL ARRANGEMENT OF SITE TO BE PEGGED OUT AND APPROVAL BY SUPERINTENDENT RECEIVED PRIOR TO PROCEEDING WITH WORKS.

STEEL LEGEND:

- 75X125 X 4MM M/S RHS 'DURAGAL' COPING REFER TO SETOUT PLAN CD009.
- GALVANISED 50MM N.B. CHS COPING FRONT FACE. REFER SETOUT PLAN CD009.
- TP — FRONT FACE TANGENT POINT
- 1400 — FRONT FACE OF COPING LENGTH SHOWN IN MILLIMETRES
- 2199 — FRONT FACE OF COPING ARC LENGTH SHOWN IN MILLIMETRES
- R200 — FRONT FACE OF COPING RADIUS SHOWN IN MILLIMETRES
- 600 X 1250 FABRICATED STEEL SEAT. ZINC PLATED & POWDER COATED. EPOXY FIXED TO RC CONCRETE SLAB. REFER TO DETAILS ON CD300 & CD301.

CLIENT NAME:

CITY OF PARRAMATTA
126 Church Street, Parramatta
NSW 2150

PROJECT NAME:

SUE SAVAGE TOONGABBIE SKATEPARK
Sue Savage Reserve, Chanel St, Toongabbie
NSW 2146

DRAWING TITLE:

Steel Plan

SCALE:	1:100	**DATE OF ISSUE:**	19.04.2021
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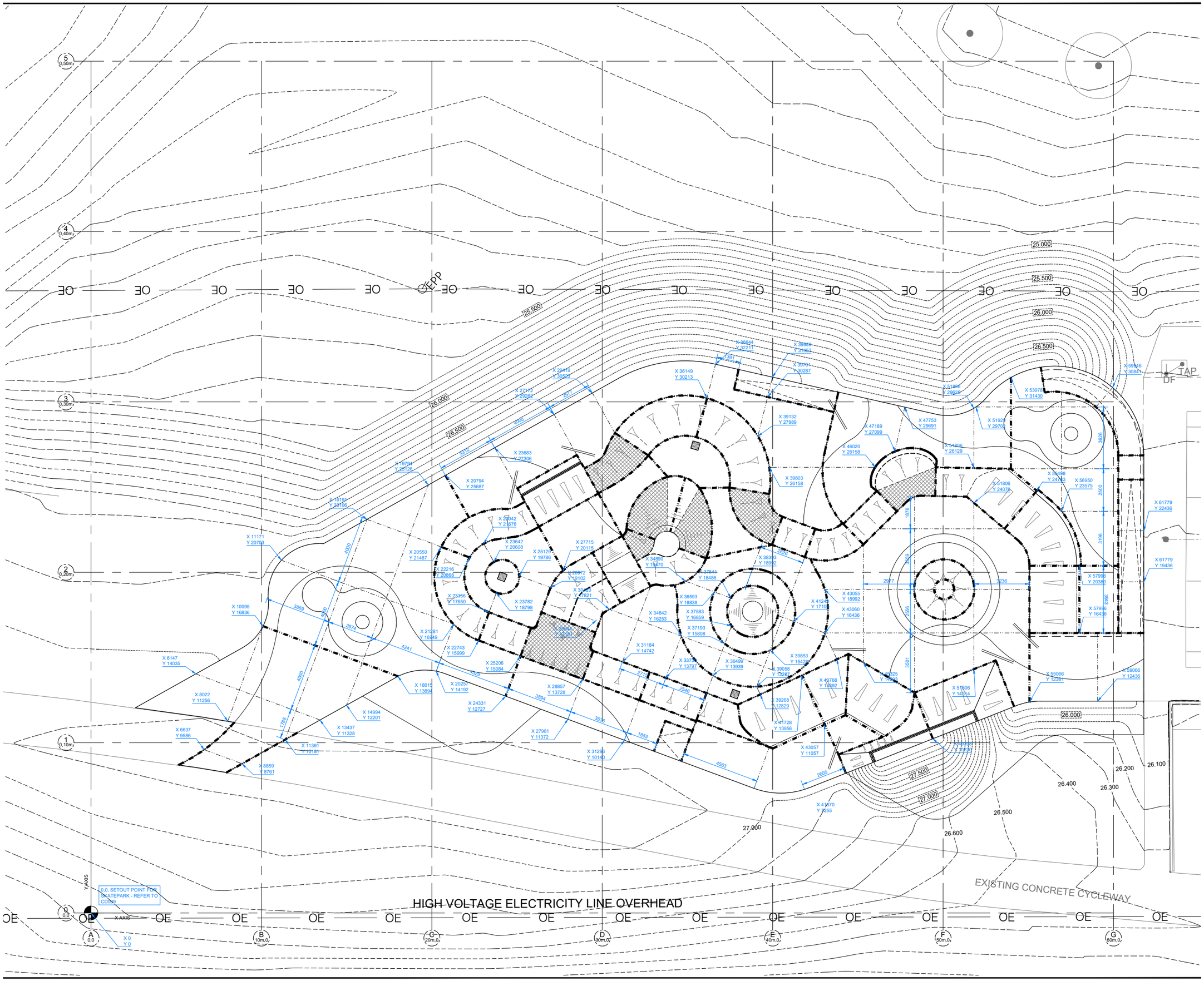

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DRAWING STATUS:

FOR CONSTRUCTION

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NOTES / LEGEND:

CONCRETE JOINTS NOTES:

01. REFER TO GEOTECHNICAL REPORT SUPPLIED BY CIVIL TEST [REPORT NO: 1141196 DATED JANUARY 2015] FOR ALL SUBGRADE PREPARATIONS.

02. SAW CUT TO 32MPa RC SLABS MIN 24 AND MAX 48 HRS AFTER POUR.

03. 4MM WIDE SAWCUT. 40MM DEPTH. MACHINE CUT ONLY FOLLOWING CHALKED LINE. CONTRACTOR TO ENSURE STRAIGHT CUTS AS SHOWN.

04. PRIOR TO CONCRETE POUR CUT EVERY SECOND 8MM WIRE IN LOCATION SHOWN FOR SAW CUT. SUPERINTENDENT TO INSPECT CUT WIRE PRIOR TO PROCEEDING WITH WORKS

CONCRETE JOINTS LEGEND:

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- 50MM N.B. GALVANISED CHS COPING. ALL DIMENSIONS TO FRONT FACE OF COPING.
- 50MM ROLL-OVER RADIUS TO TOP OF TRANSITION OR BANK.
- 200MM ROLL-OVER RADIUS TO TOP OF BANK.
- RC TRANSITION (QUARTER PIPE). REFER TO SECTIONS CD100.
- RC FLAT BANK. REFER TO SECTIONS CD100.
- CONTROL JOINT 30MM DEPTH SAWCUT AS DIMENSIONED. MACHINE CUT ONLY (NOT HANDHELD CUT SAW). REFER CD200_P.
- CONSTRUCTION JOINT 300MM THICKENING WITH REINFORCING STEEL AS DETAILED. REFER TO SECTIONS CD100.
- RE-ENTRANT BARS 2/S12 BARS 2000MM LONG @45° TIED TO REINFORCEMENT MESH - IN LOCATIONS SHOWN
- 1000 — SET OUT DIMENSIONS FOR SAW CUTS.
- X 2086 Y 1625 — X & Y CO-ORDINATES FOR SAW CUT SETOUT.
- REPRESENTS CONCRETE BLEND BETWEEN VARYING TRANSITIONS. ALL BLEND AREAS TO BE APPROVED BY ENLOCUS PRIOR TO CONCRETE POUR. TO INCLUDE AND NOT LIMITED TO SHAPE OF REQUIRED EARTHWORKS, REINFORCEMENT AND PROPOSED SHAPE AND METHOD OF CONSTRUCTION. BLENDS NEED TO BE CONSISTENT AND TO HAVE SEAMLESS CONNECTION TO ADJOINING TRANSITIONS. ANY FINISHED BLENDS OUTSIDE OF THESE TOLERANCES WILL BE DEMOLISHED AND REPOURED AT CONTRACTORS EXPENSE.

CLIENT NAME:

CITY OF PARRAMATTA
126 Church Street, Parramatta
NSW 2150

PROJECT NAME:

SUE SAVAGE TOONGABBIE SKATEPARK
Sue Savage Reserve, Chanel St, Toongabbie
NSW 2146

DRAWING TITLE:

Concrete Joints Plan

SCALE:	1:100	**DATE OF ISSUE:**	19.04.2021
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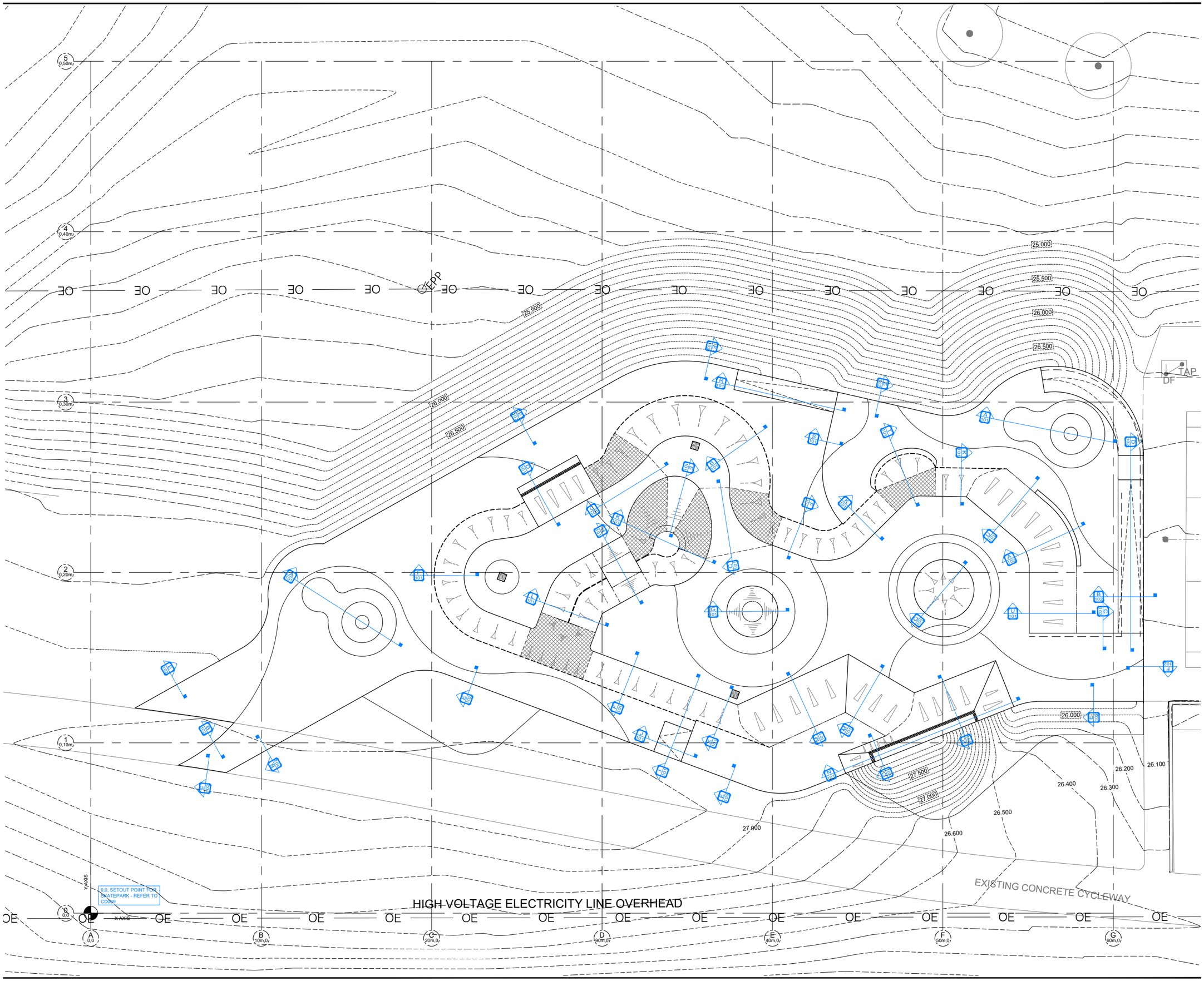

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DRAWING STATUS:

FOR CONSTRUCTION

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NOTES / LEGEND:

SECTION KEY NOTES:

01. CONTRACTOR TO VERIFY ALL DIMENSIONS AND SITE DIMENSIONS. ANY DISCREPANCIES TO BE REPORTED TO SUPERINTENDENT PRIOR TO PROCEEDING WITH WORKS.

SECTION KEY LEGEND:

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- 50MM ROLL-OVER RADIUS TO TOP OF TRANSITION OR BANK.
- 200MM ROLL-OVER RADIUS TO TOP OF BANK.
- RC TRANSITION (QUARTER PIPE). REFER TO SECTIONS CD100.
- RC FLAT BANK. REFER TO SECTIONS CD100.
- REFER TO SECTIONS CD101 & 102.
- REPRESENTS CONCRETE BLEND BETWEEN VARYING TRANSITIONS. ALL BLEND AREAS TO BE APPROVED BY ENLOCUS PRIOR TO CONCRETE POUR. TO INCLUDE AND NOT LIMITED TO SHAPE OF REQUIRED EARTHWORKS, REINFORCEMENT AND PROPOSED SHAPE AND METHOD OF CONSTRUCTION. BLENDS NEED TO BE CONSISTENT AND TO HAVE SEAMLESS CONNECTION TO ADJOINING TRANSITIONS. ANY FINISHED BLENDS OUTSIDE OF THESE TOLERANCES WILL BE DEMOLISHED AND REPOURED AT CONTRACTORS EXPENSE.

CLIENT NAME:

CITY OF PARRAMATTA
126 Church Street, Parramatta
NSW 2150

PROJECT NAME:

SUE SAVAGE TOONGABBIE SKATEPARK
Sue Savage Reserve, Chanel St, Toongabbie
NSW 2146

DRAWING TITLE:

Section Key Plan

SCALE:	1:100	**DATE OF ISSUE:**	19.04.2021
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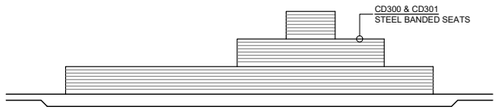
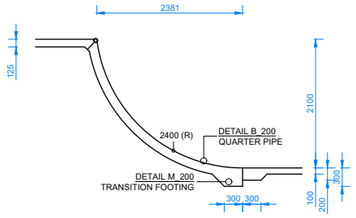
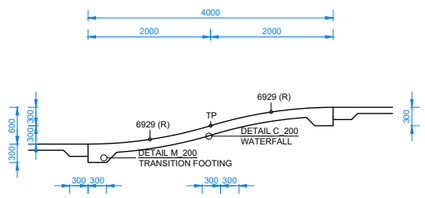


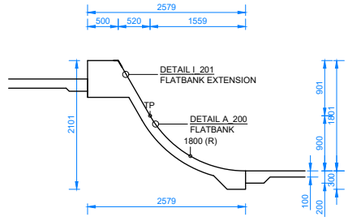
A 101 SEATING ELEVATION
SCALE 1:50



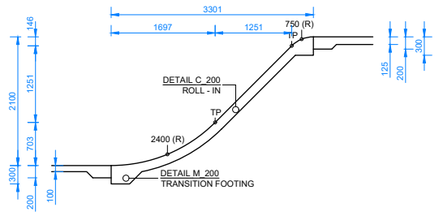
B 101 2100 HIGH QUARTER PIPE
SCALE 1:50



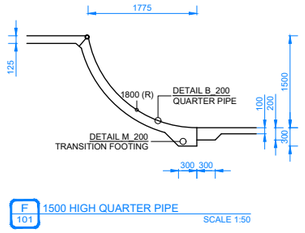
C 101 WATERFALL
SCALE 1:50



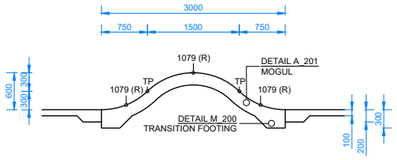
D 101 2100 HIGH BANK WALL
SCALE 1:50



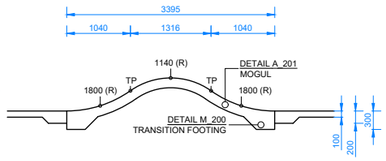
E 101 2100 HIGH ROLL IN BANK
SCALE 1:50



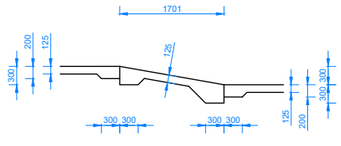
F 101 1500 HIGH QUARTER PIPE
SCALE 1:50



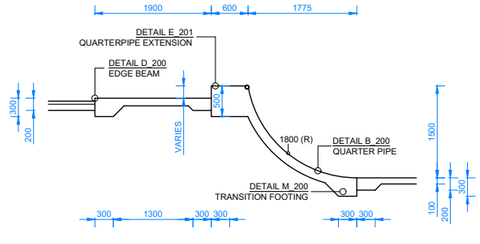
G 101 600 HIGH MOGUL
SCALE 1:50



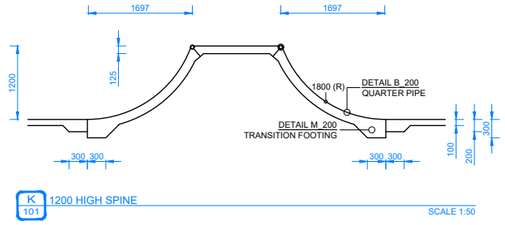
H 101 540 HIGH MOGUL
SCALE 1:50



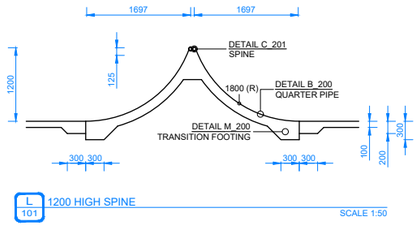
J 101 300 DDA RAMP
SCALE 1:50



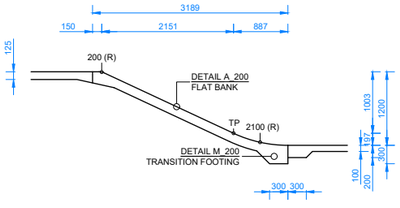
I 101 1500 HIGH QUARTER PIPE WITH STEP DOWN WALL
SCALE 1:50



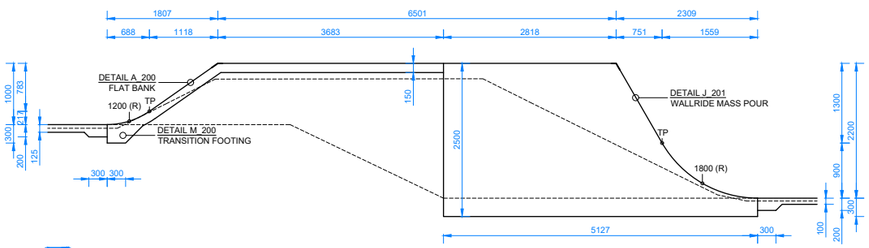
K 101 1200 HIGH SPINE
SCALE 1:50



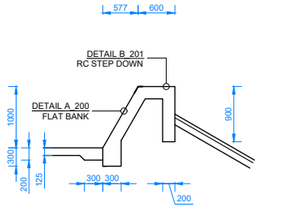
L 101 1200 HIGH SPINE
SCALE 1:50



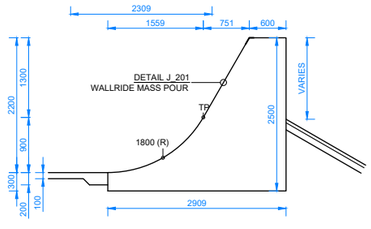
M 101 1000 HIGH BANK
SCALE 1:50



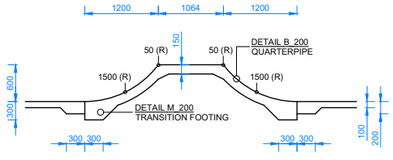
N 101 1000 HIGH BANK AND WALL RIDE RELATIONSHIP
SCALE 1:50



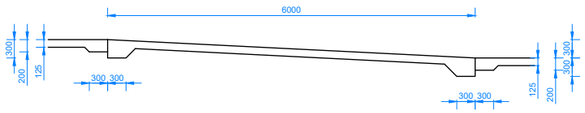
O 101 1000 HIGH OUT WALLRIDE
SCALE 1:50



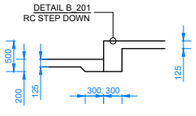
P 101 2200 HIGH BANK WALL
SCALE 1:50



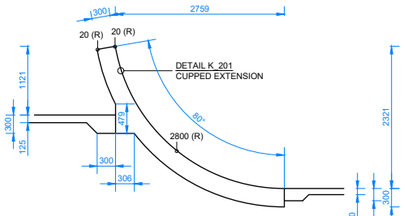
Q 101 600 HIGH VOLCANO
SCALE 1:50



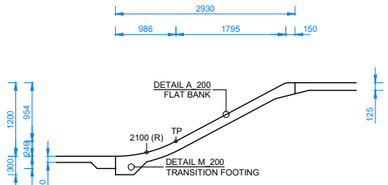
R 101 RAMP
SCALE 1:50



S 101 STEP
SCALE 1:50



T 101 BACKLESS QUARTER PIPE
SCALE 1:50



U 101 1200 HIGH BANK
SCALE 1:50

- WARNING -
CONTRACTOR TO VERIFY LOCATION, DEPTH/CLEARANCE AND ALIGNMENT OF OVERHEAD AND UNDERGROUND SERVICES. CONTRACTOR TO ACQUIRE CURRENT AND RELEVANT 'DIAL BEFORE YOU DIG/ONE CALL' SERVICES DRAWINGS AND ADHERE TO ALL REQUIREMENTS FOR WORKS NEAR SERVICES INCLUDING CLEARANCES, EASEMENTS AND INFORMING SERVICE AUTHORITIES PRIOR TO COMMENCEMENT OF WORKS. THE LOCATIONS OF UNDERGROUND SERVICES INDICATED IN THIS SET OF DRAWINGS ARE INDICATIVE ONLY. PIT LOCATIONS HAVE BEEN SURVEYED BY A LICENSED SURVEYOR.

- SITE DIMENSIONS -
CONTRACTOR TO SATISFY THEMSELVES OF SITE CONDITIONS, CHANGES IN LEVEL AND DIMENSIONS PRIOR TO FABRICATION OF SITE SPECIFIC ITEMS OR PRIOR TO ORDERING/PURCHASING MATERIALS. WHERE DISCREPANCIES EXIST BETWEEN DRAWINGS AND SITE CONDITIONS CONTRACTOR TO NOTIFY SUPERINTENDENT PRIOR TO COMMENCEMENT OF WORKS.

DRAWING STATUS:

FOR CONSTRUCTION

REVISION STATUS:

C	For Construction Issue	19.04.21
B	100% Issue	01.12.20
A	Preliminary Issue	11.11.20

LANDSCAPE ARCHITECT CONSULTANT:

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CONSULTANTS:

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MATRIX ENGINEERING GROUP P/L
24/37 Keilor Park Drive
Keilor Park, Victoria 3042
Tel : +613 9331 7522
www.matrixgroup.net.au

NOTES / LEGEND:

SECTION NOTES:

1.
ALL SECTIONS TO BE READ IN CONJUNCTION WITH DIMENSION PLAN, DETAILS, ENGINEERING DETAILS AND LEVELS PLANS AS APPROPRIATE. DESIGNER (ENLOCUS PTY LTD) TO BE CONTACTED WITH ANY DISCREPANCIES OR REQUIRED CLARITY FOR APPROVAL IN WRITING PRIOR TO WORKS COMMENCING/CONTINUING.

2.
CLASS 1 FINISH TO ALL VERTICAL SURFACES. STEEL TROWEL FINISH TO PLATFORMS, FLAT BANKS, TRANSITIONS ETC. REFER TO SPECIFICATIONS FOR FURTHER INFORMATION.

3.
CONCRETE 32MPa THROUGHOUT, LIMIT MOISTURE CONTENT. SAW CUT ALL SLABS MIN 24 - MAX 48 HRS AFTER POUR. SAW CUTS TO BE ACCURATE, STRAIGHT AND TRUE.

4.
ENSURE ADEQUATE VIBRATION OF CONCRETE IS ACHIEVED. REFER TO SPECIFICATIONS FOR FURTHER INFORMATION.

5.
SLUMP OF CONCRETE 90MM -100MM. REFER TO SPECIFICATIONS FOR FURTHER INFORMATION.

6.
ALL HANDRAILS, RAILS & STEEL LEDGES IN SKATEPARK TO BE CHECK MEASURED ON SITE PRIOR TO FABRICATION (AFTER CAST IN PLATE INSTALLATION). ANY DISCREPANCIES OR LACK OF CLARITY SHALL BE INDICATED BY CONTRACTOR TO DESIGNER (ENLOCUS PTY LTD) FOR CLARIFICATION IN WRITING PRIOR TO WORKS COMMENCING/CONTINUING.

7.
REFER TO ENGINEERING DETAILS FOR FURTHER INFORMATION.

CLIENT NAME:

CITY OF PARRAMATTA
126 Church Street, Parramatta
NSW 2150

PROJECT NAME:

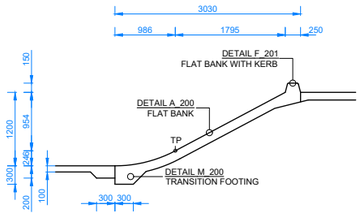
SUE SAVAGE TOONGABBIE SKATEPARK
Sue Savage Reserve, Chanel St, Toongabbie
NSW 2146

DRAWING TITLE:

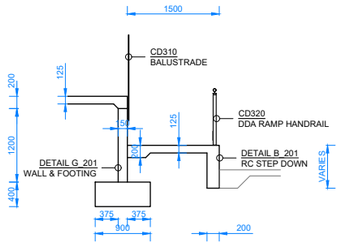
Sections 01

SCALE: 1:50
FORMAT / SIZE: A1
DESIGN REVIEW: CM
DATE OF ISSUE: 19.04.2021
REFERENCE NO: 1910
APPROVAL: JM

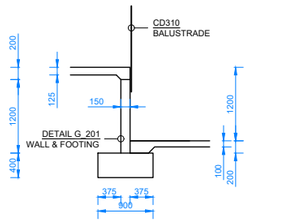
DRAWING NUMBER: 1910_CD 101
REVISION: C



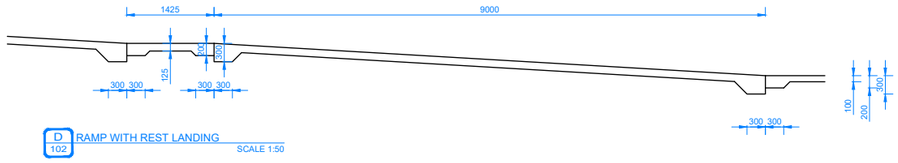
A 102 1200 HIGH BANK WITH KERB SCALE 1:50



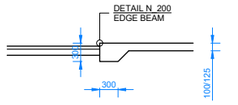
B 102 RAMP WITH HAND RAIL SCALE 1:50



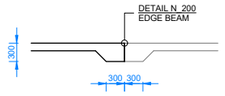
C 102 WALL SCALE 1:50



D 102 RAMP WITH REST LANDING SCALE 1:50



E 102 EDGE OF CONCRETE SLAB SCALE 1:50



F 102 CONCRETE SLAB MARRYING INTO EXISTING SLAB SCALE 1:50

DRAWING STATUS:

FOR CONSTRUCTION

REVISION STATUS:

C	For Construction Issue	19.04.21
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2.
CLASS 1 FINISH TO ALL VERTICAL SURFACES. STEEL TROWEL FINISH TO PLATFORMS, FLAT BANKS, TRANSITIONS ETC. REFER TO SPECIFICATIONS FOR FURTHER INFORMATION.

3.
CONCRETE 32MPa THROUGHOUT, LIMIT MOISTURE CONTENT. SAW CUT ALL SLABS MIN 24 - MAX 48 HRS AFTER POUR. SAW CUTS TO BE ACCURATE, STRAIGHT AND TRUE.

4.
ENSURE ADEQUATE VIBRATION OF CONCRETE IS ACHIEVED. REFER TO SPECIFICATIONS FOR FURTHER INFORMATION.

5.
SLUMP OF CONCRETE 90MM -100MM. REFER TO SPECIFICATIONS FOR FURTHER INFORMATION.

6.
ALL HANDRAILS, RAILS & STEEL LEDGES IN SKATEPARK TO BE CHECK MEASURED ON SITE PRIOR TO FABRICATION (AFTER CAST IN PLATE INSTALLATION). ANY DISCREPANCIES OR LACK OF CLARITY SHALL BE INDICATED BY CONTRACTOR TO DESIGNER (ENLOCUS PTY LTD) FOR CLARIFICATION IN WRITING PRIOR TO WORKS COMMENCING/CONTINUING.

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CITY OF PARRAMATTA
126 Church Street, Parramatta
NSW 2150

PROJECT NAME:

SUE SAVAGE TOONGABBIE SKATEPARK
Sue Savage Reserve, Chanel St, Toongabbie
NSW 2146

DRAWING TITLE:

Sections 02

SCALE:	1:50	**DATE OF ISSUE:**	19.04.2021
FORMAT / SIZE:	A1	**REFERENCE NO:**	1910
DESIGN REVIEW:	CM	**APPROVAL:**	JM

DRAWING NUMBER: 1910_CD 102

REVISION: C

NOTE:
1. CONTRACTOR TO APPLY AVISTA CONCRETE SEALER PRIMER & AVISTA CONCRETE SEALER GENERAL PURPOSE "MATT" FINISH x2 COATS AS PER MANUFACTURER'S SPECIFICATION OR APPROVED EQUIVALENT TO CONCRETE SURFACE. SAMPLE TEST PANEL REQUIRED. CONTRACTOR TO ADHERE TO HOLD POINT AS SPECIFIED AND TO RECEIVE WRITTEN APPROVAL OF TEST PANEL - ENGINEERING, FINISHES AND TOLERANCE - PRIOR TO PROCEEDING WITH WORKS.

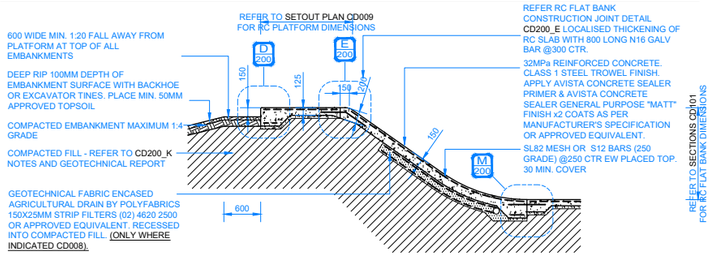
2. ANY VARIATION IN COLOUR, WORKS NOT CONSTRUCTED AS DOCUMENTED, PUDDLING, FAULTS, AND DEVIATION OF +/- 4MM OVER 2.0M FOR TRANSITION AND ADJACENT RC SLABS ETC TO BE RECTIFIED AT THE CONTRACTORS EXPENSE.

3. ALL RC SLABS AT TOP OF FLAT BANKS AND TRANSITIONS 125MM THK. RC SLABS AT GROUND LEVEL AND FLOOR OF BOWLS/STREETCOURSE 100MM THK.

4. S12 BARS (250 GRADE) TO BE USED AS AN ALTERNATIVE ONLY IN TRANSITIONS.

5. HORIZONTAL SURFACES TO DRAIN AWAY FROM CHS COPING.

6. RC FOOTING AND CONSTRUCTION JOINT APPLIES TO RADIUS AT BOTTOM OF FLAT BANKS AND TRANSITIONS.

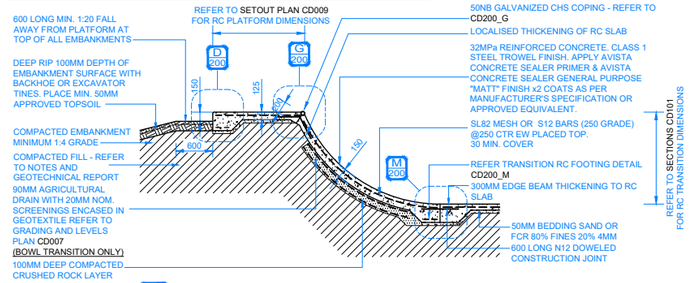


A 200 RC FLAT BANK - TYPICAL DETAIL — SCALE 1:50

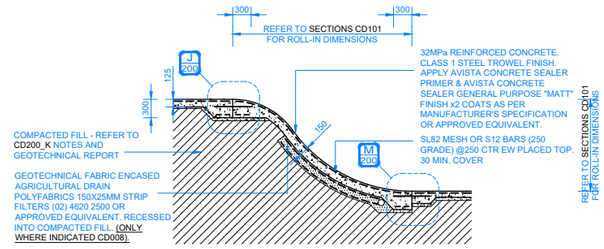
1. CONTRACTOR TO APPLY AVISTA CONCRETE SEALER PRIMER & AVISTA CONCRETE SEALER GENERAL PURPOSE "MATT" FINISH x2 COATS AS PER MANUFACTURER'S SPECIFICATION OR APPROVED EQUIVALENT TO TEST PANEL FOR APPROVAL PRIOR TO PROCEEDING WITH WORKS

2. ANY VARIATION OR DEVIATION OF +/- 4MM OVER 2.0M FOR TRANSITION AND FLAT SURFACES WILL BE DEMOLISHED AND RECTIFIED AT THE CONTRACTORS EXPENSE

3. HORIZONTAL SURFACES TO DRAIN AWAY FROM CHS COPING



B 200 RC TRANSITION - TYPICAL DETAIL — SCALE 1:50

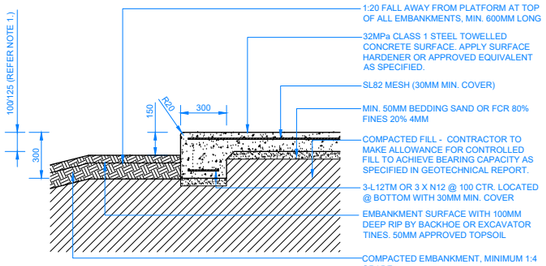


C 200 ROLL - IN - TYPICAL DETAIL — SCALE 1:50

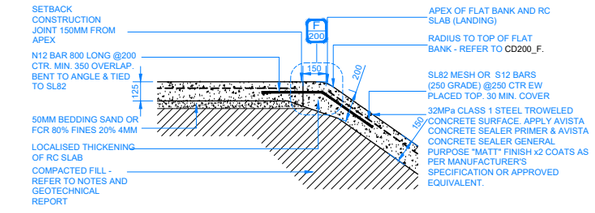
NOTE:
1. ALL RC SLABS AT TOP OF FLAT BANKS AND TRANSITIONS 125MM THK. RC SLABS AT GROUND LEVEL AND FLOOR OF BOWLS/STREETCOURSE 100MM THK.

2. S12 BARS (250 GRADE) TO BE USED AS AN ALTERNATIVE ONLY IN TRANSITION RC SLABS.

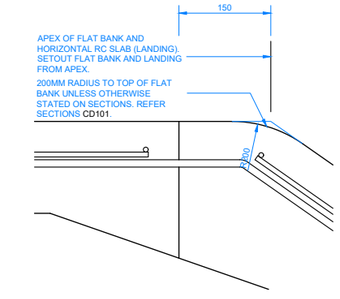
3. CONTRACTOR TO APPLY AVISTA CONCRETE SEALER PRIMER & AVISTA CONCRETE SEALER GENERAL PURPOSE "MATT" FINISH x2 COATS AS PER MANUFACTURERS SPECIFICATION OR APPROVED EQUIVALENT TO TEST PANEL FOR APPROVAL PRIOR TO PROCEEDING WITH WORKS.



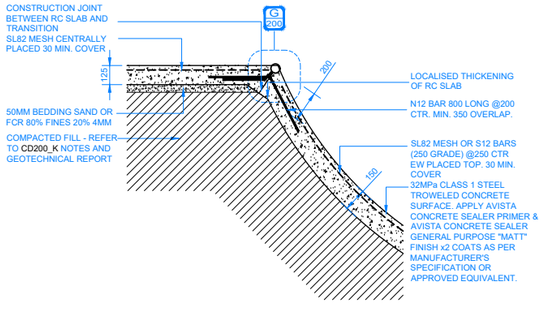
D 200 RC EDGE BEAM - TYPICAL DETAIL — SCALE 1:20



E 200 TOP OF FLAT BANK - TYPICAL CONSTRUCTION JOINT — SCALE 1:20



F 200 SETOUT OF FLAT BANK - DETAIL — SCALE 1:5



G 200 TRANSITION COPING - TYPICAL DETAIL — SCALE 1:20

NOTE:
1. ALL WELDS GROUND SMOOTH

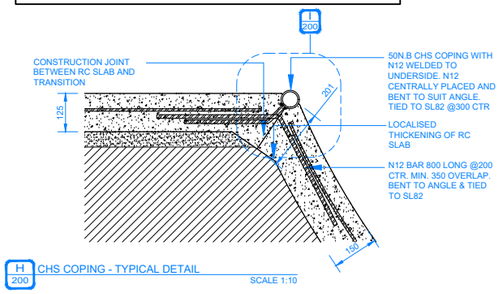
2. ADJACENT SURFACES BETWEEN WELDED CHS SECTIONS TO BE FLUSH WITHOUT DISTORTION OR DEVIATION

3. 5MM M/S END CAP TO ALL OUTSIDE ENDS

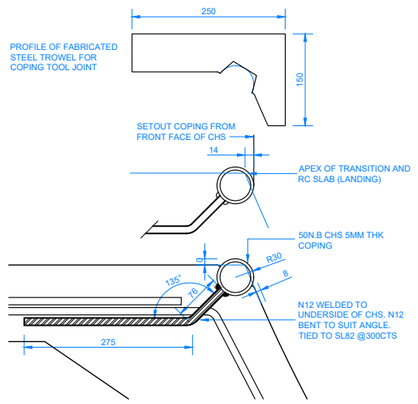
4. ON-SITE WELDS FINISHED WITH GALVANISED PAINT 'GALMET' OR APPROVED EQUIVALENT

5. TOOLED JOINT WITH PURPOSE FABRICATED STEEL TROWEL ONLY. REFER TO DETAIL CD200_I

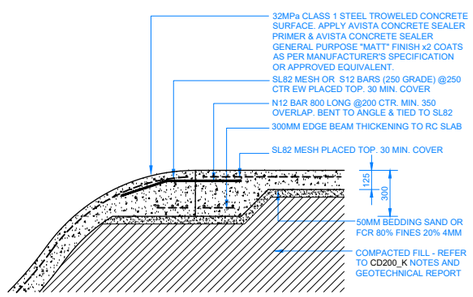
6. ANY DEVIATION FROM COPING NOT WITHIN SPECIFIED TOLERANCES TO BE RECTIFIED AT THE CONTRACTORS EXPENSE



H 200 CHS COPING - TYPICAL DETAIL — SCALE 1:10



I 200 CHS COPING SETOUT, OFFSET AND TOOL JOINT - DETAIL — SCALE 1:5

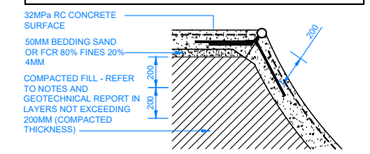


J 200 ROLL-IN TYPICAL CONSTRUCTION JOINT — SCALE 1:20

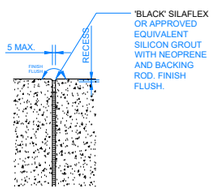
NOTE:
1. CONTRACTOR TO REVIEW GEOTECHNICAL ASSESSMENT AND RECOMMENDATIONS SUPPLIED AT TENDER AND MAKE ALLOWANCES TO ACHIEVE SPECIFIED BEARING CAPACITY.

2. EXCAVATED AND STOCK PILED FILL FROM SITE CAN BE USED AS CONTROLLED FILL IF ALL REQUIREMENTS OUTLINED IN THE GEOTECHNICAL ASSESSMENT ARE MET.

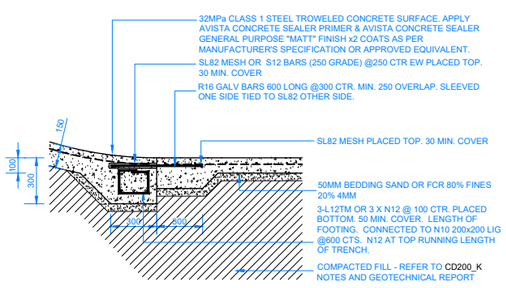
3. CONTROLLED FILL DETAIL AND SPECIFICATION APPLIES TO ALL CONCRETE STRUCTURES INCLUDING FLAT BANKS, TRANSITIONS, WALLS, STEPS ETC



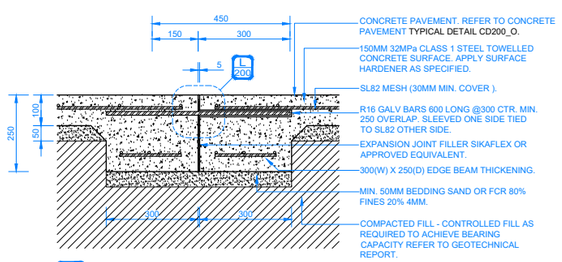
K 200 CONTROLLED FILL - TYPICAL DETAIL — SCALE 1:20



L 200 CONSTRUCTION JOINT REBATE — SCALE 1:5

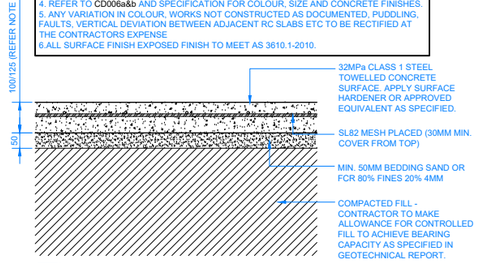


M 200 TRANSITION AND FLAT BANK RC FOOTING WITH CONSTRUCTION JOINT — SCALE 1:20

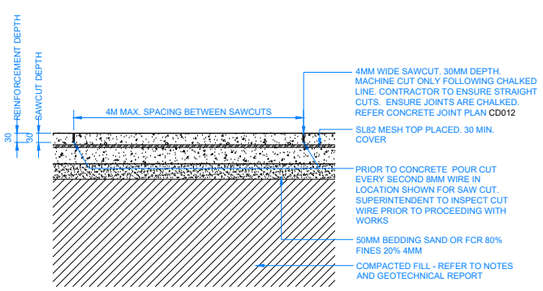


N 200 RC CONSTRUCTION JOINT - TYPICAL DETAIL — SCALE 1:10

NOTE:
1. ALL RC SLABS AT TOP OF FLAT BANKS, TRANSITIONS AND STEPS TO BE 125mm THK . ALL RC SLABS AT GROUND LEVEL AND FLOOR OF BOWLS/STREETCOURSE TO BE 100MM THK .
2. ONLY SL82 REINFORCING STEEL IN FLAT RC SLABS. DO NOT USE S12 BARS (250 GRADE).
3. PRIOR TO PROCESSING WITH WORKS, SAMPLE TEST PANEL REQUIRED. CONTRACTOR TO APPLY SURFACE HARDENER (OR APPROVED EQUIVALENT) AND TO ADHERE TO SPECIFIED HOLD POINT AND TO RECEIVE WRITTEN APPROVAL OF TEST PANEL(ENGINEERING, TOLERANCE AND FINISHES).
4. REFER TO CD006a&b AND SPECIFICATION FOR COLOUR, SIZE AND CONCRETE FINISHES.
5. ANY VARIATION IN COLOUR, WORKS NOT CONSTRUCTED AS DOCUMENTED, PUDDLING, FAULTS, VERTICAL DEVIATION BETWEEN ADJACENT RC SLABS ETC TO BE RECTIFIED AT THE CONTRACTORS EXPENSE.
6.ALL SURFACE FINISH EXPOSED FINISH TO MEET AS 3610.1-2010.



O 200 REINFORCED SKATE PARK CONCRETE SLAB - TYPICAL DETAIL — SCALE 1:10



P 200 RC SLAB SAWCUT - TYPICAL DETAIL — SCALE 1:10

- WARNING -
CONTRACTOR TO VERIFY LOCATION; DEPTH/CLEARANCE AND ALIGNMENT OF OVERHEAD AND UNDERGROUND SERVICES. CONTRACTOR TO ACQUIRE CURRENT AND RELEVANT 'DIAL BEFORE YOU DIG/ONE CALL' SERVICES DRAWINGS AND ADHERE TO ALL REQUIREMENTS FOR WORKS NEAR SERVICES INCLUDING CLEARANCES, EASEMENTS AND INFORMING SERVICE AUTHORITIES PRIOR TO COMMENCEMENT OF WORKS. THE LOCATIONS OF UNDERGROUND SERVICES INDICATED IN THIS SET OF DRAWINGS ARE INDICATIVE ONLY. PIT LOCATIONS HAVE BEEN SURVEYED BY A LICENSED SURVEYOR.

- SITE DIMENSIONS -
CONTRACTOR TO SATISFY THEMSELVES OF SITE CONDITIONS, CHANGES IN LEVEL AND DIMENSIONS PRIOR TO FABRICATION OF SITE SPECIFIC ITEMS OR PRIOR TO ORDERING/PURCHASING MATERIALS. WHERE DISCREPANCIES EXIST BETWEEN DRAWINGS AND SITE CONDITIONS CONTRACTOR TO NOTIFY SUPERINTENDENT PRIOR TO COMMENCEMENT OF WORKS.

DRAWING STATUS:

FOR CONSTRUCTION

REVISION STATUS:

C	For Construction Issue	19.04.21
B	100% Issue	01.12.20
A	Preliminary Issue	11.11.20

LANDSCAPE ARCHITECT CONSULTANT:

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CONSULTANTS:

STRUCTURAL ENGINEER
MATRIX ENGINEERING GROUP P/L
24/37 Kellor Park Drive
Kellor Park, Victoria 3042
Tel : +613 9331 7522
www.matrixgroup.net.au

NOTES / LEGEND:

ENGINEERING NOTES:

CONCRETE:

1. CONCRETE STRENGTH N32 MPA.
2. CONCRETE THICKNESS 150MM SLOPES, 100MM PLATFORMS AND FLAT BOTTOM, UNO.
3. CONSTRUCTION JOINTS SHALL BE AT CONSTRUCTED MAXIMUM 6.0M OR AS PER DETAIL.
4. SAW CUTS TO BE SAWN AS SHOWN ON PLANS. SAW CUT DEPTH TO BE 30MM DEEP. CHECK REINFORCEMENT DETAIL CD200_P FOR SAW CUT JOINT DETAILS.
5. FOR CURING, COVER FOR SEVEN DAYS WITH PLASTIC, OR BY LIQUID MEMBRANE, TO THE APPROPRIATE AUSTRALIAN STANDARD. APPLY WITHIN 1 HOUR OF CONCRETE FINISHING.
6. FINISH TO BE CLASS 1 METAL TROWEL TO ALL VERTICAL SURFACES. STEEL TROWEL FINISH TO PLATFORMS, FLAT BANKS, TRANSITIONS, ETC.
7. REFER TO A.S.3600 - CONCRETE STRUCTURES AND A.S.2870-2011 - RESIDENTIAL SLABS AND FOOTINGS.

REINFORCEMENT:

1. AS SHOWN.
2. TRIMMERS - 2 OF N12x2000 LONG TO ALL INTERNAL CORNERS.
3. BASE SLAB - SL82 MESH OR S12 (250 GRADE) @ 250 CRS EW.
4. VERTICAL WALLS - REFER TO RC WALL - REINFORCEMENT DETAILS ON CD201.
5. BLOCKS - AS SHOWN.
6. GRIND RAILS - SHALL BE 75X75X5MM 'DURAGAL' RHS (UNLESS OTHERWISE STATED ON PLANS). ENDS MITRED AND ALL WELDS GROUND SMOOTH AND COLD GALVANISED. ALL COLD GALVANISED AREAS TO HAVE 'GALMET' DURAGAL SILVER PAINT APPLIED. APPLICATION TO BE NEAT AND CONSISTENT.

EARTHWORKS:

1. STABLE CLEAN FILL COMPACTED TO 98 % (MMDD) PLACED AND COMPACTED IN 200MM LAYERS.
2. REFER TO SOIL REPORT FOR FURTHER DETAILS.

   ALL SUBGROUND PREPARATION WORKS UNDER ALL CONCRETE PAVEMENTS AREAS AND LOW PROFILE RETAINING WALLS ARE TO BE PROTECTED, ROLLED AND COMPACTED AS PER RECOMMENDATIONS SET OUT IN THE GEOTECHNICAL REPORT SUPPLIED BY [REPORT NO:]
3. ALL SOFT SPOTS TO BE EXCAVATED DOWN TO APPROPRIATE DEPTH AND REPLACED WITH COMPACTED FILL TO 98% MMDD IN 200MM LAYERS.
4. FURTHER GEOTECHNICAL ADVICE MAY BE REQUIRED.

CLIENT NAME:

CITY OF PARRAMATTA
126 Church Street, Parramatta
NSW 2150

PROJECT NAME:

SUE SAVAGE TOONGABBIE SKATEPARK
Sue Savage Reserve, Chanel St, Toongabbie
NSW 2146

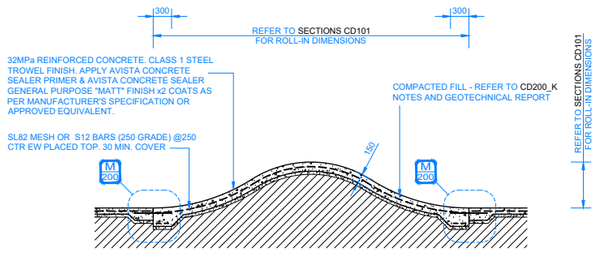
DRAWING TITLE:

Engineering Details 01

SCALE:	N/A	**DATE OF ISSUE:**	19.04.2021
FORMAT / SIZE:	A1	**REFERENCE NO:**	1910
DESIGN REVIEW:	CM	**APPROVAL:**	JM

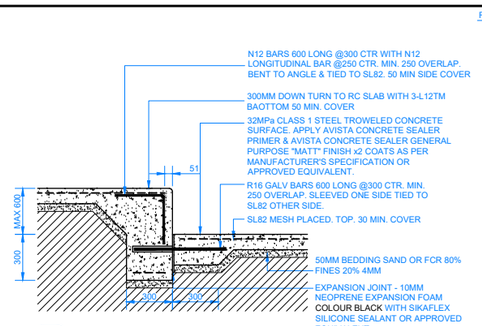
DRAWING NUMBER: 1910_CD 200

REVISION: C



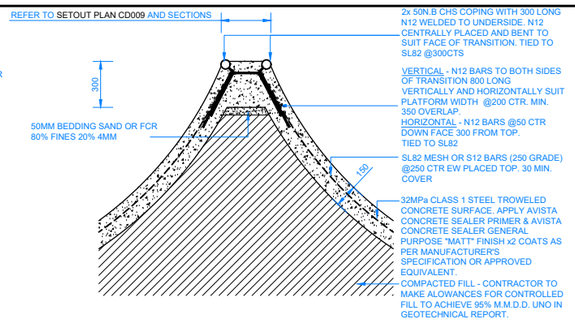
A 201 RC MOGUL - TYPICAL DETAIL

SCALE 1:50



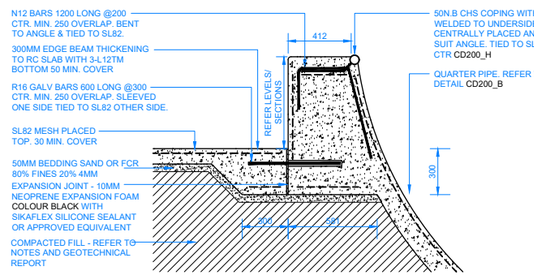
B 201 RC STEP DOWN - TYPICAL DETAIL

SCALE 1:20



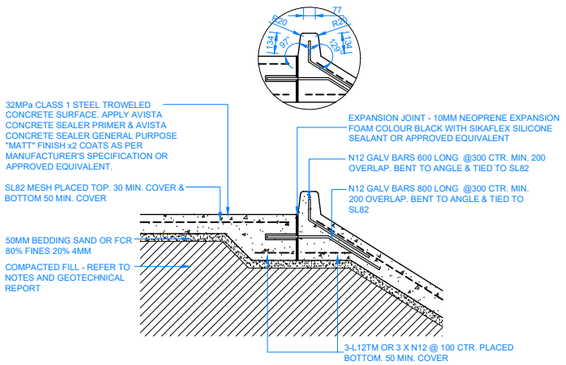
C 201 TRANSITION (SPINE) COPING - TYPICAL DETAIL

SCALE 1:20



E 201 QUATER PIPE EXTENSION - TYPICAL DETAIL

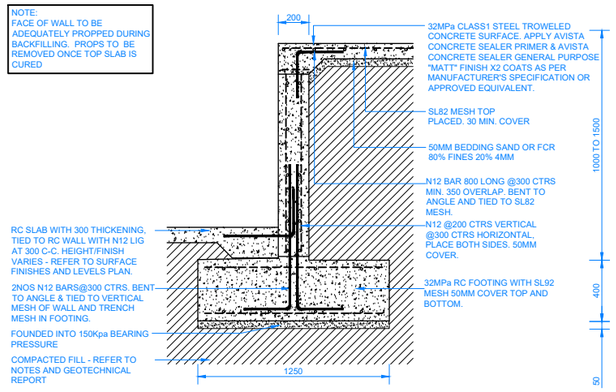
SCALE 1:20



F 201 QUATER PIPE EXTENSION - TYPICAL DETAIL

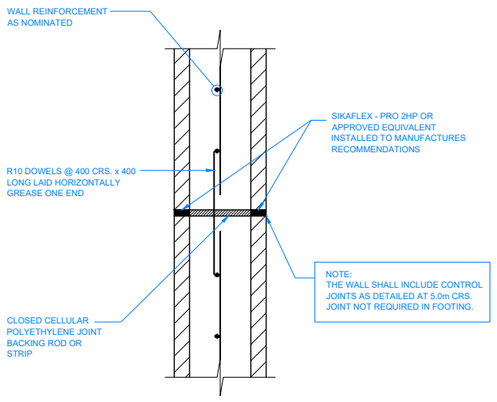
SCALE 1:20

NOTE:
FACE OF WALL TO BE ADEQUATELY PROPPED DURING BACKFILLING. PROPS TO BE REMOVED ONCE TOP SLAB IS CURED



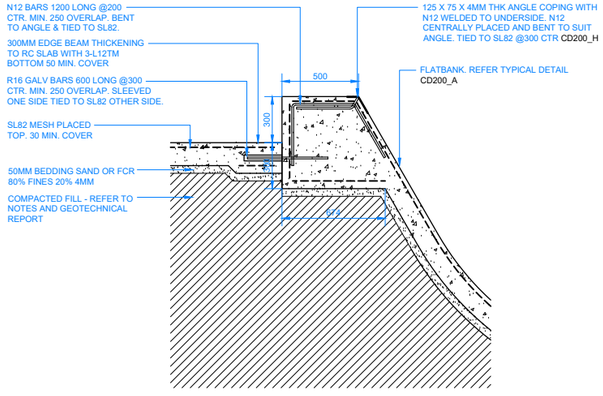
G 201 INFILL WALL TO RC SLAB - TYPICAL DETAIL

SCALE 1:20



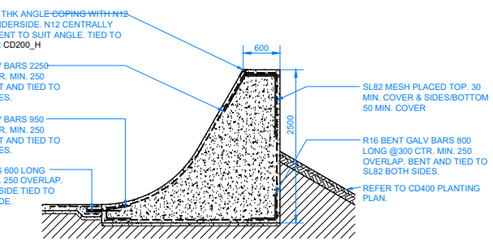
H 201 RETAINING WALL CONTROL JOINT (WCJ) - PLAN DETAIL

SCALE 1:10



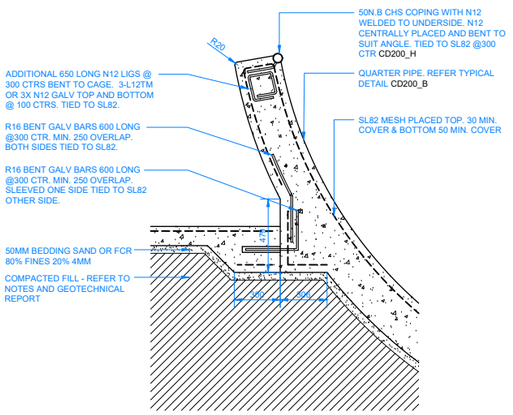
I 201 FLATBANK EXTENSION - TYPICAL DETAIL

SCALE 1:20



J 201 RC WALLRIDE - MASS POUR

SCALE 1:50



K 201 QUATERPIPE CUPPED EXTENSION - TYPICAL DETAIL

SCALE 1:20

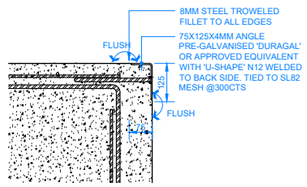
NOTE:
1. RADIUS TO ALL EDGES 8MM. 'DURAGAL' OR APPROVED EQUIVALENT.

2. ALL WELDS GROUND SMOOTH.

3. APPLY COLD GALVANISED PAINT WITH STENCIL TO ENSURE NEAT AND EVEN COVERAGE.

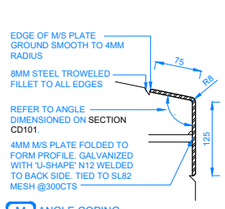
4. GALVANISED PAINT SILVER TO MATCH PREGALVANISED STEEL.

5. TOP OF ALL BLOCKS TO HAVE A LOCAL HIGH POINT OR GRADIENT TO ENSURE FREE DRAINAGE.



L 201 ANGLE COPING DETAIL

SCALE 1:10



M 201 ANGLE COPING

SCALE 1:5

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DRAWING STATUS:

FOR CONSTRUCTION

REVISION STATUS:

C	For Construction Issue	19.04.21
B	100% Issue	01.12.20
A	Preliminary Issue	11.11.20

LANDSCAPE ARCHITECT CONSULTANT:

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Level 1, 151 St Georges Rd,
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W : www.enlocus.com

CONSULTANTS:

STRUCTURAL ENGINEER
MATRIX ENGINEERING GROUP P/L
24/37 Kellor Park Drive
Kellor Park, Victoria 3042
Tel : +613 9331 7522
www.matrixgroup.net.au

NOTES / LEGEND:

ENGINEERING NOTES:

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CLIENT NAME:

CITY OF PARRAMATTA
126 Church Street, Parramatta
NSW 2150

PROJECT NAME:

SUE SAVAGE TOONGABBIE SKATEPARK
Sue Savage Reserve, Chanel St, Toongabbie
NSW 2146

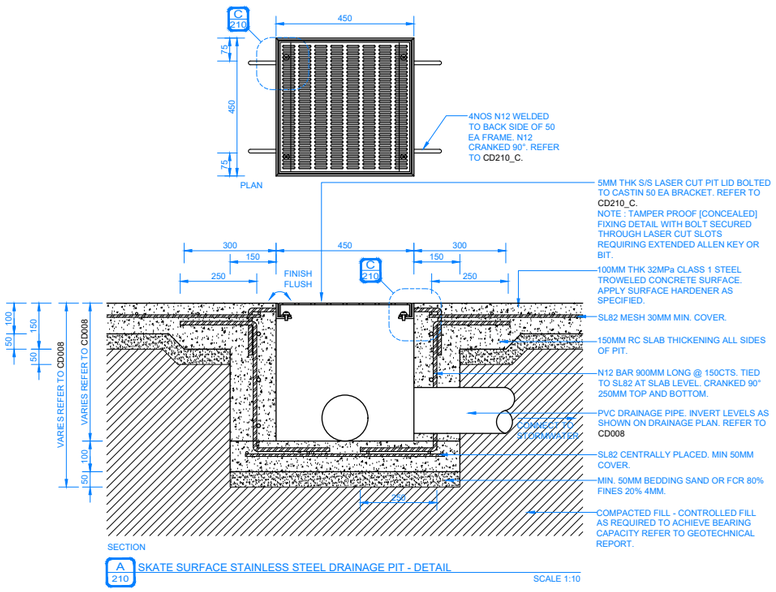
DRAWING TITLE:

Engineering Details 02

SCALE:	N/A	**DATE OF ISSUE:**	19.04.2021
FORMAT / SIZE:	A1	**REFERENCE NO:**	1910
DESIGN REVIEW:	CM	**APPROVAL:**	JM

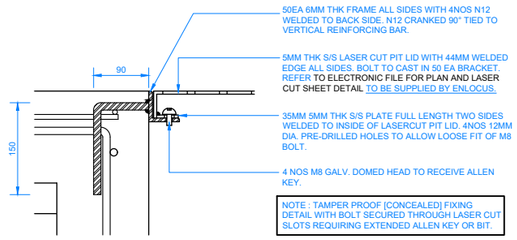
DRAWING NUMBER: 1910_CD 201

REVISION: C



A 210 SKATE SURFACE STAINLESS STEEL DRAINAGE PIT - DETAIL

SCALE 1:10



B 210 SKATE SURFACE STAINLESS STEEL PIT LID FIXING - TYPICAL DETAIL

SCALE 1:5

DRAWING STATUS:

FOR CONSTRUCTION

REVISION STATUS:

C	For Construction Issue	19.04.21
B	100% Issue	01.12.20
A	Preliminary Issue	11.11.20

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NOTES / LEGEND:

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REINFORCEMENT:

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5. BLOCKS - AS SHOWN.
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EARTHWORKS:

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4. FURTHER GEOTECHNICAL ADVICE MAY BE REQUIRED.

CLIENT NAME:

CITY OF PARRAMATTA
126 Church Street, Parramatta
NSW 2150

PROJECT NAME:

SUE SAVAGE TOONGABBIE SKATEPARK
Sue Savage Reserve, Chanel St, Toongabbie
NSW 2146

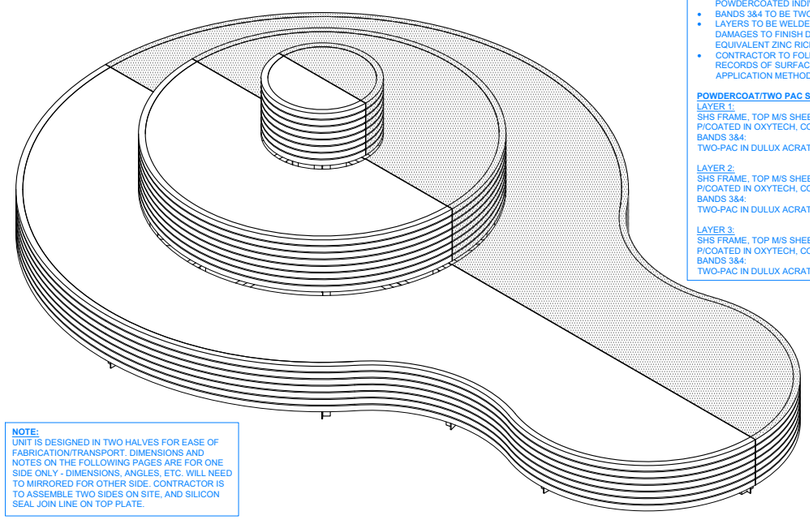
DRAWING TITLE:

Drainage Details

SCALE:	N/A	**DATE OF ISSUE:**	19.04.2021
FORMAT / SIZE:	A1	**REFERENCE NO:**	1910
DESIGN REVIEW:	CM	**APPROVAL:**	JM

DRAWING NUMBER: 1910_CD 210

REVISION: C



NOTE:
UNIT IS DESIGNED IN TWO HALVES FOR EASE OF FABRICATION/TRANSPORT. DIMENSIONS AND NOTES ON THE FOLLOWING PAGES ARE FOR ONE SIDE ONLY - DIMENSIONS, ANGLES, ETC. WILL NEED TO MIRRORED FOR OTHER SIDE. CONTRACTOR IS TO ASSEMBLE TWO SIDES ON SITE, AND SILICON SEAL JOIN LINE ON TOP PLATE.

POWDERCOAT/TWO PAC SEQUENCE:
- SEAT TO BE ASSEMBLED (SHS FRAME, ROLLED SHS BANDS (EXCEPT BANDS 3&4), FIXING PLATES, TOP PLATE, ETC.) IN 'LAYERS' AND POWDERCOATED INDIVIDUALLY.
- BANDS 3&4 TO BE TWO-PAC PAINTED AND ATTACHED TO LAYERS.
- LAYERS TO BE WELDED TOGETHER INTERNALLY. ANY EXTERNAL DAMAGES TO FINISH DURING THIS PROCESS TO BE TOUCHED UP WITH EQUIVALENT ZINC RICH GALVANISED TWO-PAC PAINT.
- CONTRACTOR TO FOLLOW MANUFACTURER'S SPECIFICATION. RECORDS OF SURFACE PREPARATION, TEMPERATURE AND APPLICATION METHOD TO BE SUBMITTED PRIOR TO DELIVERY OF SITE.

POWDERCOAT/TWO PAC SCHEDULE:

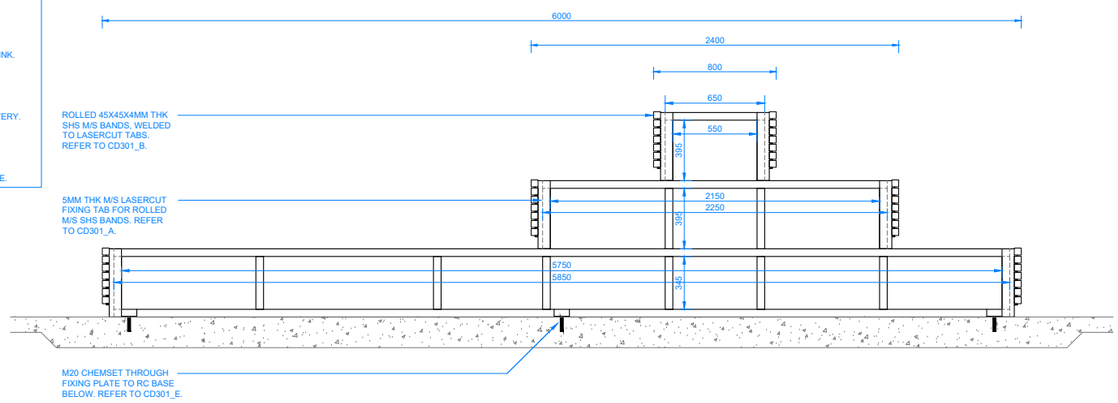
LAYER 1:
SHS FRAME, TOP M/S SHEET AND WELDED BANDS:
P/COATED IN OXYTECH, COLOUR: P31 DUSTY PINK GLOSS.
BANDS 3&4:
TWO-PAC IN DULUX ACRATHANE IF, COLOUR: A26 WATERMELON PINK.

LAYER 2:
SHS FRAME, TOP M/S SHEET AND WELDED BANDS:
P/COATED IN OXYTECH, COLOUR: P23 LILAC SATIN.
BANDS 3&4:
TWO-PAC IN DULUX ACRATHANE IF, COLOUR: S45G7 PURPLE MYSTERY.

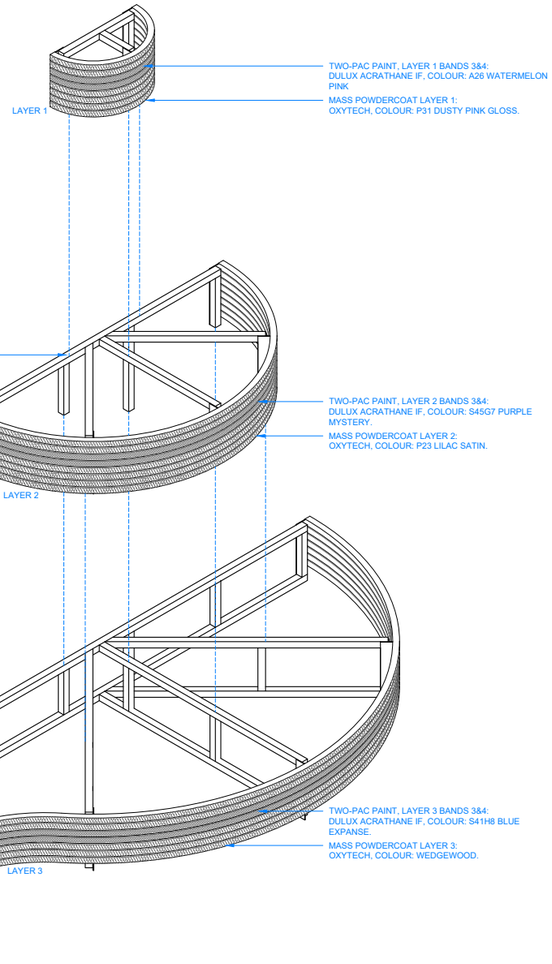
LAYER 3:
SHS FRAME, TOP M/S SHEET AND WELDED BANDS:
P/COATED IN OXYTECH, COLOUR: WEDGEWOOD.
BANDS 3&4:
TWO-PAC IN DULUX ACRATHANE IF, COLOUR: S41H8 BLUE EXPANSE.

A 300 SEATING 3D ILLUSTRATIVE VIEW
SCALE 1:20

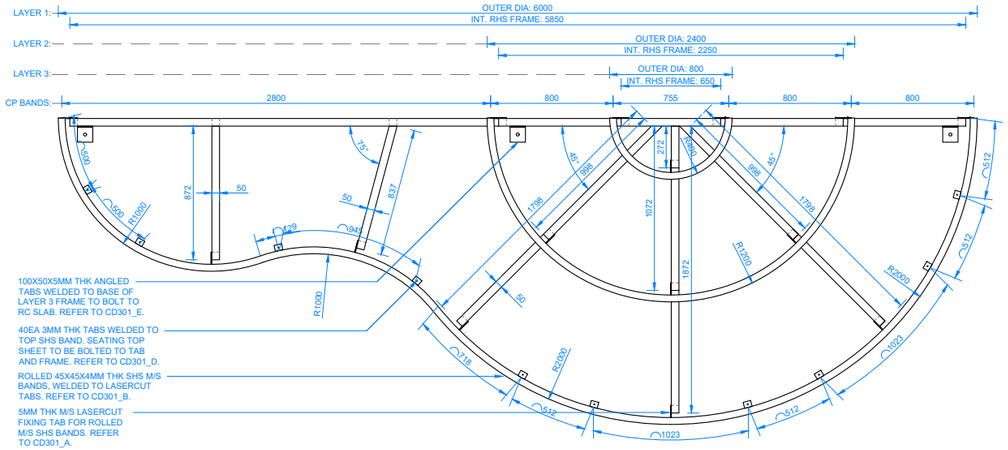
NOTE:
CONTRACTOR IS REQUIRED TO PROVIDE SHOP DRAWINGS TO SUPERINTENDENT FOR APPROVAL PRIOR TO FABRICATION.



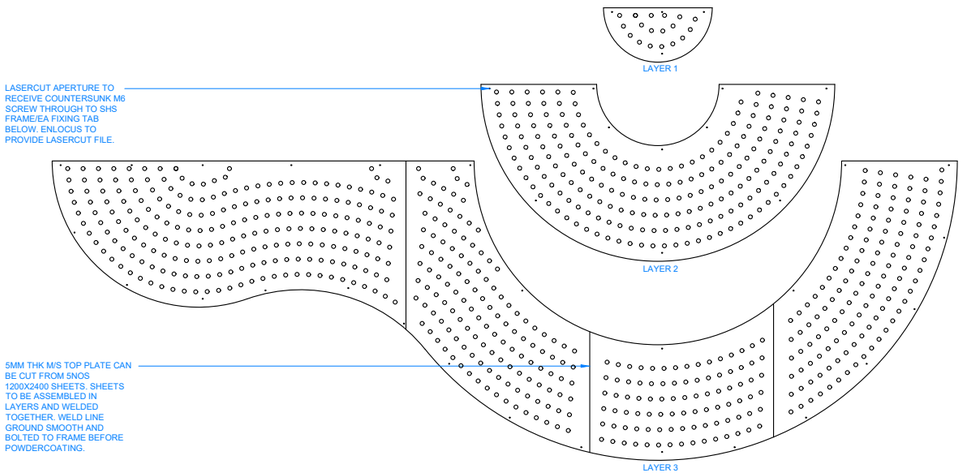
C 300 SEATING DETAIL SECTION
SCALE 1:20



B 300 SEATING EXPLODED AXONOMETRIC VIEW
SCALE 1:20



D 300 SEATING DETAIL PLAN
SCALE 1:20



E 300 SEATING TOP M/S SHEET
SCALE 1:20

- WARNING -
CONTRACTOR TO VERIFY LOCATION, DEPTH/CLEARANCE AND ALIGNMENT OF OVERHEAD AND UNDERGROUND SERVICES. CONTRACTOR TO ACQUIRE CURRENT AND RELEVANT 'DIAL BEFORE YOU DIG/ONE CALL' SERVICES DRAWINGS AND ADHERE TO ALL REQUIREMENTS FOR WORKS NEAR SERVICES INCLUDING CLEARANCES, EASEMENTS AND INFORMING SERVICE AUTHORITIES PRIOR TO COMMENCEMENT OF WORKS. THE LOCATIONS OF UNDERGROUND SERVICES INDICATED IN THIS SET OF DRAWINGS ARE INDICATIVE ONLY. PIT LOCATIONS HAVE BEEN SURVEYED BY A LICENSED SURVEYOR.

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DRAWING STATUS:

FOR CONSTRUCTION

REVISION STATUS:

C	For Construction Issue	19.04.21
B	100% Issue	01.12.20
A	Preliminary Issue	11.11.20

LANDSCAPE ARCHITECT CONSULTANT:

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CONSULTANTS:

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Tel : +613 9331 7522
www.matrixgroup.net.au

NOTES / LEGEND:

ENGINEERING NOTES:

CONCRETE:

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2. CONCRETE THICKNESS 150MM SLOPES, 100MM PLATFORMS AND FLAT BOTTOM, UNO.
3. CONSTRUCTION JOINTS SHALL BE AT CONSTRUCTED MAXIMUM 6.0M OR AS PER DETAIL.
4. SAW CUTS TO BE SAWN AS SHOWN ON PLANS. SAW CUT DEPTH TO BE 30MM DEEP. CHECK REINFORCEMENT DETAIL CD200_P FOR SAW CUT JOINT DETAILS.
5. FOR CURING, COVER FOR SEVEN DAYS WITH PLASTIC, OR BY LIQUID MEMBRANE, TO THE APPROPRIATE AUSTRALIAN STANDARD. APPLY WITHIN 1 HOUR OF CONCRETE FINISHING.
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7. REFER TO A.S.3600 - CONCRETE STRUCTURES AND A.S.2870-2011 - RESIDENTIAL SLABS AND FOOTINGS.

REINFORCEMENT:

1. AS SHOWN.
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2. REFER TO SOIL REPORT FOR FURTHER DETAILS.

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4. FURTHER GEOTECHNICAL ADVICE MAY BE REQUIRED.

CLIENT NAME:

CITY OF PARRAMATTA
126 Church Street, Parramatta
NSW 2150

PROJECT NAME:

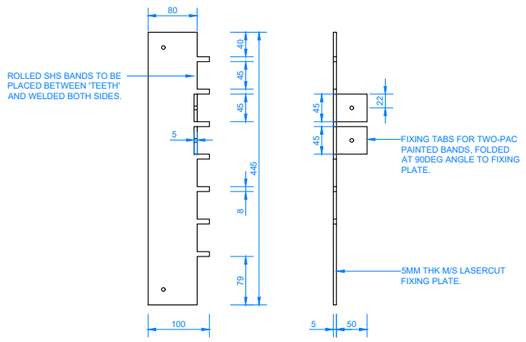
SUE SAVAGE TOONGABBIE SKATEPARK
Sue Savage Reserve, Chanel St, Toongabbie
NSW 2146

DRAWING TITLE:

Seating Details 01

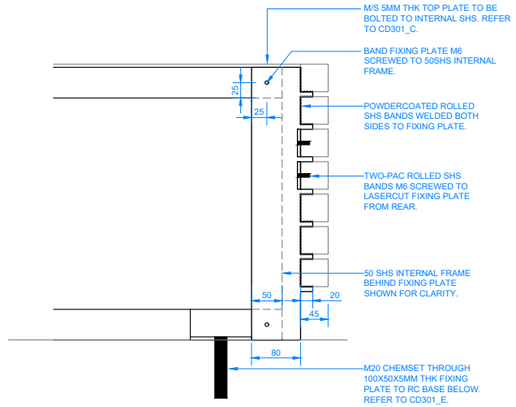
SCALE:	N/A	**DATE OF ISSUE:**	19.04.2021
FORMAT / SIZE:	A1	**REFERENCE NO:**	1910
DESIGN REVIEW:	CM	**APPROVAL:**	JM

DRAWING NUMBER: 1910_CD 300
REVISION: C



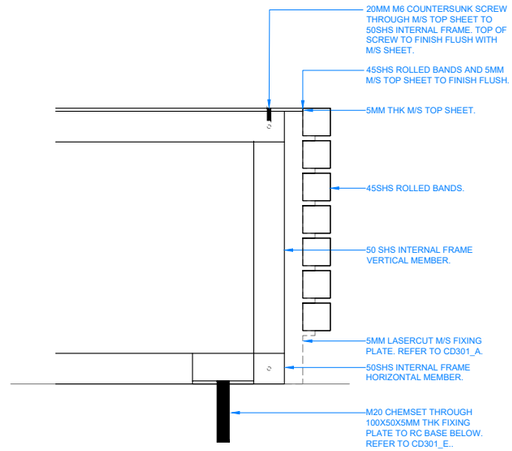
A 301 SHS BAND FIXING PLATE DETAIL

SCALE 1:5



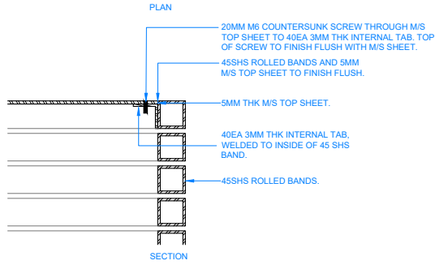
B 301 SHS BAND / FIXING DETAIL

SCALE 1:5



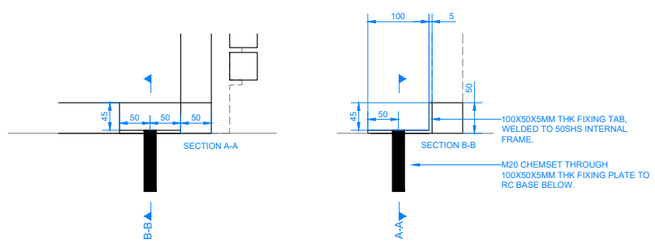
C 301 M/S TOP PLATE TO 50SHS FRAME

SCALE 1:5



D 301 M/S TOP PLATE TO 40EA FIXING TAB

SCALE 1:5



E 301 RC SLAB FIXING TAB

SCALE 1:5

DRAWING STATUS:

FOR CONSTRUCTION

REVISION STATUS:

C	For Construction Issue	19.04.21
B	100% Issue	01.12.20
A	Preliminary Issue	11.11.20

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126 Church Street, Parramatta
NSW 2150

PROJECT NAME:

SUE SAVAGE TOONGABBIE SKATEPARK
Sue Savage Reserve, Chanel St, Toongabbie
NSW 2146

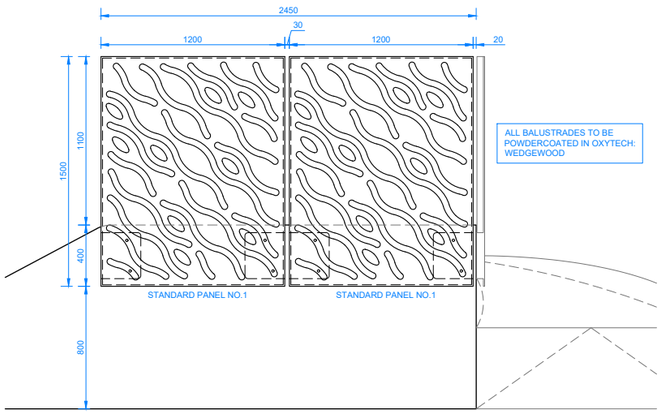
DRAWING TITLE:

Seating Details 02

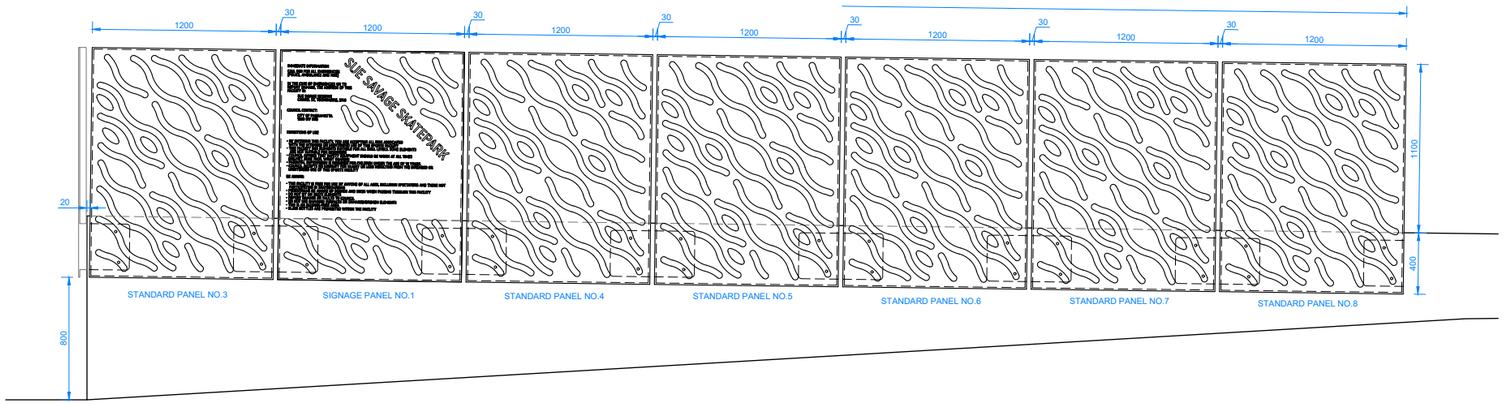
SCALE:	N/A	**DATE OF ISSUE:**	19.04.2021
FORMAT / SIZE:	A1	**REFERENCE NO:**	1910
DESIGN REVIEW:	CM	**APPROVAL:**	JM

DRAWING NUMBER: 1910_CD 301

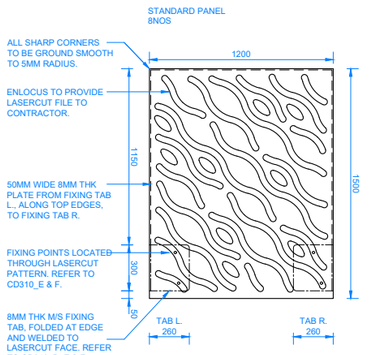
REVISION: C



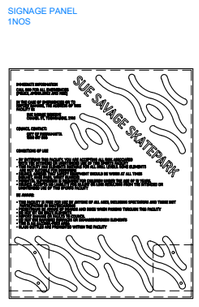
A 310 BALUSTRADE - SOUTHERN FACE
SCALE 1:20

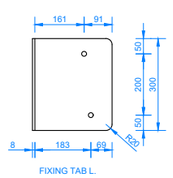


B 310 BALUSTRADE - EASTERN FACE
SCALE 1:20

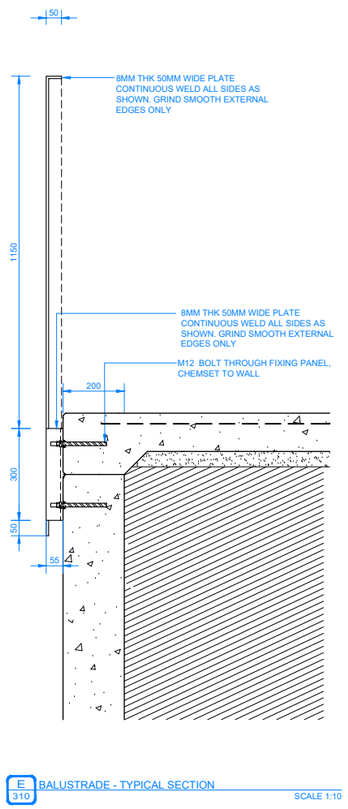


C 310 BALUSTRADE - INDIVIDUAL PANELS
SCALE 1:20

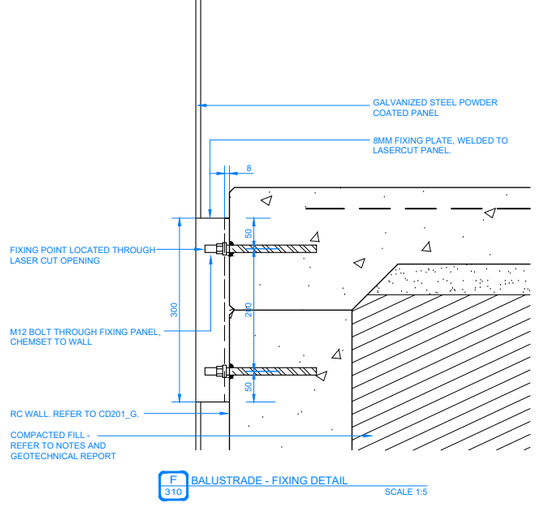




D 310 BALUSTRADE - FIXING TABS
SCALE 1:10



E 310 BALUSTRADE - TYPICAL SECTION
SCALE 1:10



F 310 BALUSTRADE - FIXING DETAIL
SCALE 1:5

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DRAWING STATUS:

FOR CONSTRUCTION

REVISION STATUS:

C	For Construction Issue	19.04.21
B	100% Issue	01.12.20
A	Preliminary Issue	11.11.20

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NOTES / LEGEND:

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CLIENT NAME:

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126 Church Street, Parramatta
NSW 2150

PROJECT NAME:

SUE SAVAGE TOONGABBIE SKATEPARK
Sue Savage Reserve, Chanel St, Toongabbie
NSW 2146

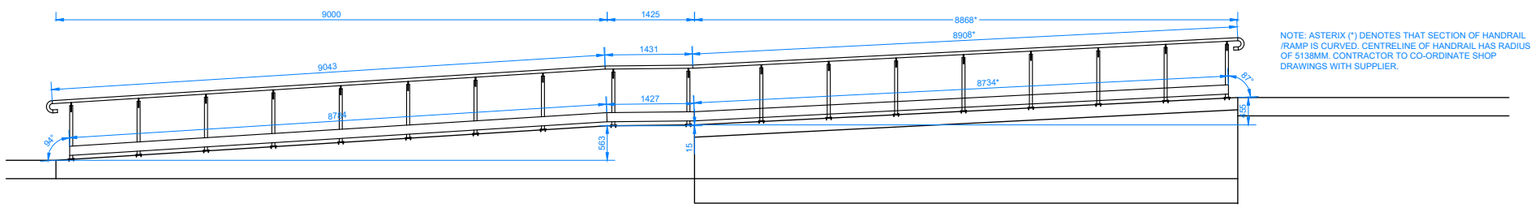
DRAWING TITLE:

Balustrade Details 01

SCALE:	N/A	**DATE OF ISSUE:**	19.04.2021
FORMAT / SIZE:	A1	**REFERENCE NO:**	1910
DESIGN REVIEW:	CM	**APPROVAL:**	JM

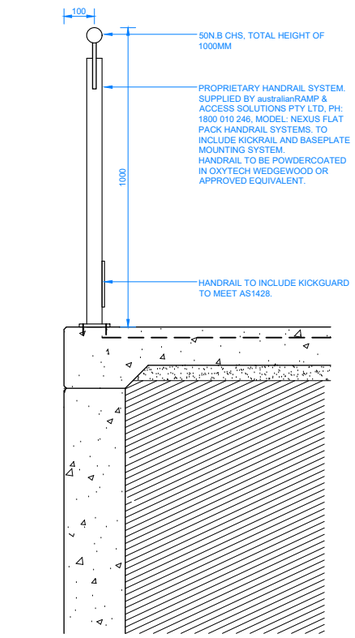
DRAWING NUMBER: 1910_CD 310

REVISION: C



A 320 DDA RAMP HANDRAIL SECTION

SCALE 1:50



B 320 HANDRAIL - TYPICAL SECTION

SCALE 1:10

- WARNING -
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DRAWING STATUS:

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PROJECT NAME:

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Sue Savage Reserve, Chanel St, Toongabbie
NSW 2146

DRAWING TITLE:

Handrail Details 01

SCALE:	N/A	**DATE OF ISSUE:**	19.04.2021
FORMAT / SIZE:	A1	**REFERENCE NO:**	1910
DESIGN REVIEW:	CM	**APPROVAL:**	JM

DRAWING NUMBER: 1910_CD 320

REVISION: C


EPP
EPP
STN/END
4xTI
150ø x 8.2m
450x450 PIT
RL 27.00
IL 26.31
450x450 PIT
RL 27.00
IL 26.20
150ø x 11.3m
450x450 PIT
RL 26.99
IL 26.07
150ø x 20.4m
450x450 PIT
RL 26.99
IL 25.84
150ø x 10.0m
450x450 PIT
RL 26.96
IL 25.72
150ø x 8.2m
450x450 PIT
RL 26.93
IL 25.49
150ø x 28.2m
CONCRETE CYCLEWAY
EXISTING CYCLEWAY
EXISTING PATH
ELEC PYLON
HIGH VOLTAGE ELECTRICITY LINE OVERHEAD
GARDEN
GARDEN
GARDEN
GARDEN
GARDEN
GARDEN
CHANEL ST
CHANEL ST
GORINSKI ST
Ø525
Ø450
Ø375

Appendix C | Geotechnical Investigation

Report on Geotechnical Investigation - Toongabbie

Sue Savage Reserve

80020079

Prepared for
City of Parramatta

22 April 2020

Cardno

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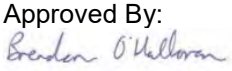

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Job title: Senior Geotechnical Engineer

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Rev0	27/03/2020	Draft - Issue for Internal Review	AC	BOH
Rev1	22/04/2020	First Issue for Client Review	AC	BOH

Table of Contents

Appendices

Tables

Figures

1 Introduction

This report presents the findings of a geotechnical investigation carried out by Cardno (NSW/ACT) Pty Ltd, aimed at informing proposed upgrades and the construction of public utilities at Sue Savage Reserve on Chanel Street, Toongabbie. The report includes geotechnical interpretations of conditions encountered and analysis based on investigation findings.

The proposed upgrades are understood to include:

- Car Parking: Construction of approximately 45 off-street parking spaces along Chanel Street;
- Skateboard Park: Construction of a new Skate/BMX/Scooter park to the west of the existing multipurpose court;
- Amenities Building: Construction of shelters, picnic settings, and a small amenities building to the east of the existing multi-purpose court.

Figure 1-1 Proposed upgrades at Sue Savage Reserve (supplied)

This report is aimed at assessing the following key items:

- An assessment of the sub-surface conditions across the site, with reference to the proposed constructions;
- Constructability constraints and opportunities for the three key elements of the proposed upgrades;
- Foundation recommendations for the proposed upgrades;
- Inputs for pavement design of parking bays; and
- Assessment of the existing flood levee, as well as potential impacts of the proposed construction.

The work was commissioned by City of Parramatta Council, under purchase order P00106213.

2 Site Description

2.1 Site Location and Identification

Sue Savage Reserve is located on Chanel Street, Toongabbie. The existing reserve sits north of Chanel Street spanning across approximately 17 hectares of land. The existing elements consist of a multi-purpose court and a playground towards the east of the site. In addition, there are several overhead power lines that stretches across the reserve.

Sue Savage Reserve is bounded to the north by Toongabbie Creek, with the existing ground profile across the reserve falling toward the creek, forming a broad drainage channel that serves to contain and direct high flows during significant events.

Running along the southern boundary of the reserve is an earthen levee, which has been constructed to raise the catchment bounds, and reduce likelihood of significant events overtopping and impacting neighbouring residential property.

2.2 Geological Profile

Reference to the 1:100,000 Sydney Coastal Quaternary Geological Sheet indicates that the site is located within a significant Quaternary valley fill, known to comprise silt, clay, fluvial sand, and gravel.

Figure 2-1 Sydney 1:100,000 Coastal Quaternary Sheet

Reference to the 1:250,000 is located within the Hawkesbury Sandstone (Rh) formation, closely bounded by Shale deposits to both the north and south of the site.

Figure 2-2 1:250,000 Sydney Geological units mapped at Sue Savage Reserve

3 Site Investigation

3.1 Site Walkover

A preliminary site walkover was undertaken by an experienced Geotechnical Engineer, aimed at assessing the overall geometry and condition of the earthen levee, as well as key site features that may impact subsequent works. The site walkover also allowed exact investigation locations to be refined, with consideration of access, utilities, and features of interest that can be subsequently investigated

3.2 Utility Clearance

Prior to fieldwork commencing, a DBYD search was undertake to identify sub-surface utilities in the vicinity of the proposed works. Service location was facilitated by SureSearch, with services marked and appropriate test locations identified and cleared prior to commencement of fieldwork.

Due to the presence of a high-pressure asset owned by Caltex to the east of the proposed works, a Caltex representative was met on site to ensure Cardno's investigation was undertaken at an adequate offset.

3.3 Geotechnical Investigation

The geotechnical investigation was undertaken in accordance with Cardno's approved Geotechnical Investigation plan. Intrusive geotechnical investigations were undertaken on the 23rd March 2020 and comprised of drilling six (6) boreholes to a maximum depth of 5.0 m below ground surface (bgs). Drilling was undertaken using a tracked Commachio 205 drilling rig operated by Stratacore, and comprised:

- Drilling using a 125 mm Solid Flight Auger (SFA), to maximum depths of 5.0 m below existing ground surface;
- Standard Penetration Testing (SPT) was undertaken at 1.5 m intervals to assist in assessing material composition and consistency. Pocket Penetrometer (PP) testing was undertaken in recovered samples to assess consistency of fine-grained materials; and
- Engineering assessment and logging of the subsurface profiles encountered were undertaken in accordance with AS 1726-2017 by an experienced geotechnical engineer from Cardno, with geotechnical logs attached in Appendix C.
- Survey of test locations and the levee profile were undertaken with a Topcon Hyper 2 Series differential GPS survey rover, with H:10mm and V:15mm accuracies

3.4 Laboratory Testing

Following completion of logging and in-situ testing, samples were uniquely labelled, stored and subsequently scheduled for laboratory geotechnical testing at STS Testing Pty Ltd, and Eurofins Environment Testing Australia Pty Ltd, both of which are National Association of Testing Authorities (NATA) accredited laboratories. The scope of laboratory testing comprised;

- Particle Size Distribution (PSD) & Atterberg Limits testing to assist in material classification;
- California Bearing Ratio (CBR) to inform subsequent road pavement design;
- Emerson Class to assess material dispersivity in the earthen levee;
- Aggressivity Testing to inform an exposure classification for subsurface foundations.
- Acid Sulfate Soils Testing to determine any existing chemicals.

Samples collected during the fieldwork investigation were also subjected to a full suite of environmental testing to develop a preliminary waste classification in line with NEPM guidelines. The full details of the environmental testing undertaken and findings from the analysis are included within Appendix B.

4 Investigation Results

4.1 Test Locations

The following boreholes locations were identified by Cardno and agreed upon by City of Parramatta representatives:

Table 4-1 Borehole Locations

Borehole	Easting (m E)	Northing (m N)	Reduced Level (m AHD)	Final Depth (m)
BH01	311467.398	6260291.347	26.554	2.8
BH02	311389.43	6260298.445	25.829	3.8
BH03	311367.966	6260305.883	25.835	5.0
BH04	311348.388	6260300.086	26.949	4.0
BH05	311324.286	6260303.569	26.908	5.0
BH06	311382.527	6260253.441	24.39	1.5

4.2 Sub-surface Conditions

Geotechnical logs are located in Appendix B and a summary of sub-surface conditions are presented below:

UNIT	BH01	BH02	BH03	BH04	BH05	BH06
TOPSOIL	**0.0 – 0.2** Silty SAND	**0.0 - 0.2** Silty Clayey SAND	**0.0 – 0.2** Silty SAND	**0.0 – 0.2** Silty SAND	**0.0 – 0.2** Silty SAND	**0.0 – 0.2** Silty SAND
FILL	**0.2 – 0.8** Silty Sandy CLAY	**0.2 – 2.5** Sandy Gravelly CLAY	**0.2 – 3.0** Silty Sandy CLAY	**0.2 – 3.6** Silty Sandy CLAY	**0.2 – 4.9** Silty Sandy CLAY	N/E
ALLUVIAL	**0.8 – 1.2** Sandy CLAY	**2.5 – 3.0** Sandy CLAY	**3.0 – 5.0** Silty Sandy CLAY	**3.6 – 3.8** Sandy CLAY	**4.9 – 5.0** Silty SAND	**0.2 – 1.5** Silty Sandy CLAY
RESIDUAL	**1.2 – 2.2** Silt Sandy CLAY	**3.0 – 3.5** Sandy CLAY	N/E	**3.8 – 4.0** Sandy CLAY	N/E	N/E
INFERRED ROCK	**2.2 – 2.8** SANDSTONE	**3.5 – 3.8** SANDSTONE	N/E	N/E	N/E	N/E

Notes to table:
N/E – Not encountered

4.3 Groundwater

Groundwater was observed in both BH03 & BH04, at depths of 3.0 m and 3.5 m respectively (23.8 and 23.4 m AHD). Groundwater levels are expected to vary significantly due to the proximity to Toongabbie Creek, and the nature of the reserve as a drainage basin.

4.4 Geotechnical Laboratory Results

Table 4-2 Summary of Laboratory Material Classification Testing Results

Borehole	Depth (m)	Material description	MC (%)	LL (%)	PL (%)	PI (%)	LS (%)
BH01	1.4	Silty Sandy CLAY, Medium to High Plasticity	26.6	44	17	27	14
BH02	2.7	Sandy CLAY, Medium Plasticity	19.4	36	16	20	11
BH04	1.2	FILL: Silty Sandy CLAY, Low to Medium Plasticity	11.2	28	15	13	10
BH04	3.6	Sandy CLAY, Low to Medium Plasticity	20.2	33	15	18	10
BH05	1.2	FILL: Silty Sandy CLAY, Low Plasticity	14.5	30	15	15	10

Notes to table:
- MC: Moisture Content
- LL: Liquid Limit
- PL: Plastic Limit
- PI: Plasticity Index
- LS: Linear Shrinkage

Table 4-3 Summary of Laboratory CBR Testing Results

Borehole	Depth	Material Description	MC (%)	SOMC (%)	SMDD (t/m^3)	Swell (%)	CBR (%)
BH06	0.3-0.8	Silty Sandy CLAY, Medium to High Plasticity	20.7	18	1.782	0.4	7.0

Notes to table:
- MC: Moisture Content
- SOMC: Standard Optimum Moisture Content
- SMDD: Standard Maximum Dry Density
- CBR: California Bearing Ratio

Table 4-4 Summary of Emerson Dispersivity Testing

Borehole	Depth (m)	Material description	Emerson Class Number
BH01	1.4	Silty Sandy CLAY, Medium to High Plasticity	5
BH04	1.2	FILL: Silty Sandy CLAY, Low to Medium Plasticity	3

4.5 Chemical Laboratory Results

Table 4-5 Soil Aggressivity Testing Results

Borehole	Depth (m)	Soil description	pH	EC (uS/cm)	Resistivity (ohm.m)	Sulfate (mg/kg)	Chloride (mg/kg)
BH01	1.4	Silty Sandy CLAY	5.6	47	210	97	89
BH03	3.2	Silty Sandy CLAY	6.0	96	100	<30	130

Notes to table :
- EC: Electrical Conductivity

Table 4-6 Acid Sulfate Soil Screening Results

Borehole	Depth (m)	Soil description	pH_{Field}	pH_{Fox}	Reaction Rating
BH01	1.4	Silty Sandy CLAY	5.6	4.7	2.0
BH02	2.6	Sandy CLAY	6.8	5.7	3.0
BH03	3.2	Silty Sandy CLAY	5.7	5.0	2.0

4.6 Levee Geometry

Survey was undertaken, in accordance with methodology outlined in Section 3.5, during fieldwork to gain an understanding of the geometry and arrangement of the existing flood levee, as well as to assess the impact of the proposed construction on the integrity of the levee. Four sections were taken across the crest of the levee formation, with data used to inform geotechnical analysis in Section 6.

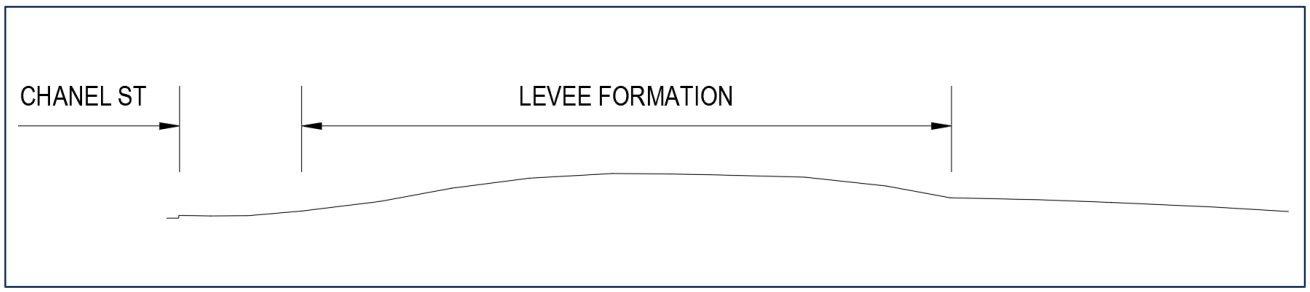

Figure 4-1 Typical section taken across the levee formation

5 Preliminary Waste Classification

Laboratory testing undertaken on samples collected during fieldwork were used to inform a preliminary waste classification for materials observed across the site. Appendix B provides a comprehensive analysis of these results and provides the preliminary classification, with an excerpt from the report as follows:

> Based on the background review, site observation and laboratory analysis of the materials from the Site soils described in Table 4-1, encountered between the soil surface to a maximum depth of 0.6 m BGL are classified as ***General Solid Waste (non-putrescible)*** due to:
>
> - Analytes being ≤ CT1 values for General Solid Waste (GSW); and
> - Asbestos results reported as less than LOR (Not-detected).
>
> However, as the sampling densities were not in accordance with the appropriate guidelines this waste classification report is indicative of the Site area and additional sampling and analysis is required prior to the removal of material from the site

The report in Appendix B shall be taken into consideration in its entirety, will particular attention drawn to the preliminary nature of the assessment. Additional testing shall be undertaken in accordance with the testing densities outlined in NEPM guidelines prior to a final classification being assigned to the site material.

6 Geotechnical Assessment

6.1 Proposed Earthworks

Based on information provided by Council, Cardno understands the key elements of the upgrades that will require significant earthworks are to comprise:

- Skatepark Excavation: Although a final design has not been supplied to Cardno at the time of writing, preliminary information and discussions with Council have indicated that a large fraction of the Skatepark will be constructed below existing levels, and will comprise two large “bowls” to form the central feature of the design. It is expected that base of excavation will be a maximum of 2.5 m below existing levels.
- Construction of Parking Spaces: In order to provide off street parking, Council have proposed to construct a series of perpendicular parks off Chanel Street. Although final proposed levels have not been supplied, it is expected that earthworks will be minimised wherever possible, with excavations only adequate to install the design pavement thickness.

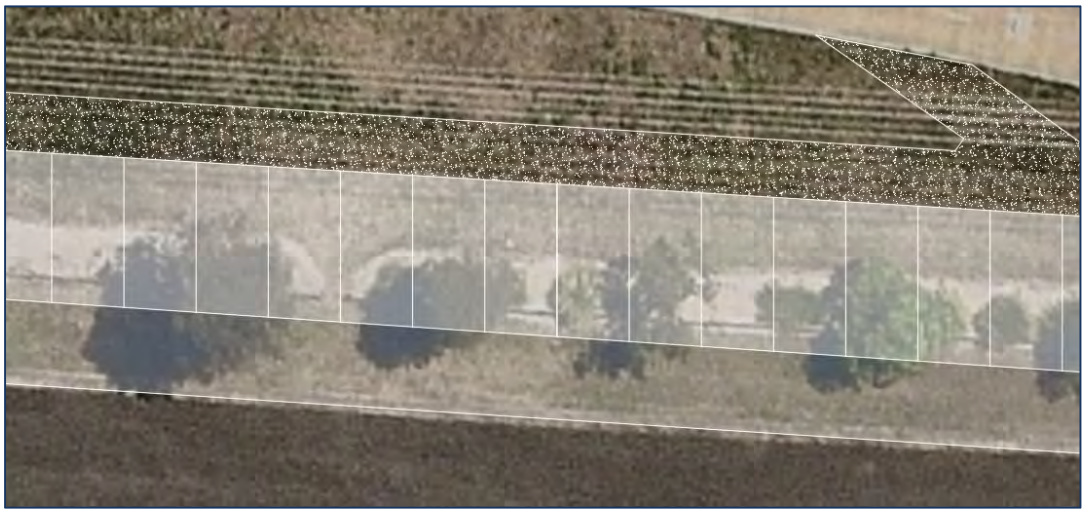

Figure 6-1 Typical arrangement of proposed parking

6.2 Levee Composition and Condition

6.2.1 Existing Condition

The composition of the levee formation was investigated with the inclusion of BH04 & BH05 during the investigation, with the following observations:

- The levee was primarily constructed material classified as Silty Sandy CLAY, with minor variations of the material across the test locations and with depth.
- The depth of the FILL material observed to be 4.9 m along the crest of the levee at BH05, however this depth of construction will vary significantly depending on the natural profile prior to construction and the level of stripping undertaken prior to placement of fill.
- A range of minor material inclusions such as concrete fragments, ceramic fragments, and organic matter through the levee materials indicating the construction was undertaken with a mass of mixed materials.
- Drilling resistance and Standard Penetration Testing (SPT) within the two boreholes generally identified well compacted material, with no indications of loose materials or voids at the two locations.
- The geotechnical profile identified during the investigation did not identify an engineered formation within the levee (such as a low permeability core); instead the construction appears to be a simple earth-mass levee.

Visual inspections along the region of levee of interest identified well shaped gradual slopes, with no clear signs of erosion of deterioration. Survey cross sections indicate slopes generally of up to 12° at the surveyed locations, with steepening of the embankment moving westward toward the body of the drainage basin.

6.2.2 Interaction with Proposed Construction

Based on preliminary arrangements provided by Council, both the proposed parking spaces and carpark are expected to impose on the existing flood levee. In order to maintain the integrity of the levee, the following recommendations should be adopted:

- The magnitude of excavation into the existing flood levee should be minimised wherever possible, and limited to minor reduction in relative width without reducing the overall height and capacity of the structure;
- The slopes of the levee should be cut at no steeper angle than 1V:3H, with surfacing of the final levee to match the existing including an adequate layer of topsoil and subsequent vegetation;
- Deep excavation should not be undertaken immediately adjacent to the main body of the existing levee, with deeper elements of the Skatepark to be shifted northward away from the existing levee wherever possible;
- Any excavation into the levee shall be also assessed by Council's flooding engineers prior to finalisation of design;

- Should any aspect of the proposed upgrade restrict surface water flow around the levee, additional scour protection such as a geosynthetic or rip-rap may need to be installed depending on the final arrangement;
- Construction of the parking spaces along Canal Road should ensure that excavation is minimised wherever possible, and that the grade of the levee bank is no steeper than 1V:3H as show below in Figure 6-2.

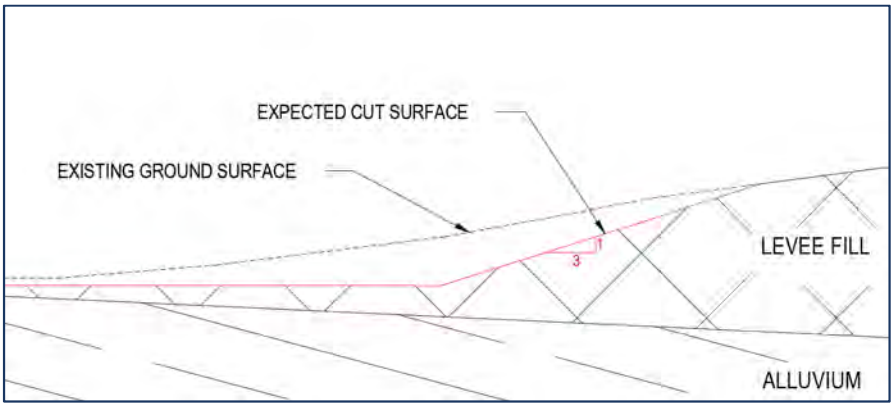

Figure 6-2 Recommended maximum cut geometry for the proposed carpark

6.3 Foundation Conditions and Footing Recommendations

6.3.1 Amenities Building

Investigation undertaken at the location for the proposed amenities building (BH01) identified a subsurface profile as follows:

- 0.0 – 0.2: TOPSOIL, Silty SAND
- 0.2 – 0.8: Uncontrolled FILL, Silty Sandy CLAY
- 0.8 – 1.2: ALLUVIUM, Sandy CLAY, Stiff
- 1.2 – 2.2: RESIDUAL, Silty Sandy CLAY and Silty SAND, Stiff & Medium Dense
- 2.2 – 2.8: SANDSTONE, highly weathered

It is recommended that prior to construction of the required foundations for the building, that both the topsoil and uncontrolled filling are stripped and replaced with controlled fill comprising suitable materials in accordance with AS3798-2007 or as specified by the structural engineer, to provide a uniform level from which to construct the building foundations. Council have not yet completed final design of the amenities building to develop an understanding for the magnitude of the loading, however it is expected that based on the subsurface profile encountered and the size of the proposed building, shallow foundations could likely be utilised to support the structure.

Based on classification within AS 2870-2011, it is recommended that an M classification of is assigned for the design of the amenities building should the above recommendations be implemented prior to construction.

6.3.2 Skate Park

Investigation undertaken within the footprint of the proposed Skate Park, with the subsurface profile at the centre of the construction (BH03) summarised as follows:

- 0.0 – 0.2: TOPSOIL, Silty SAND
- 0.2 – 3.6: FILL, Silty Sandy CLAY
- 3.6 – 3.8: ALLUVIUM, Sandy CLAY
- 3.8 - 4.0: RESIDUAL, Sandy CLAY

Ground treatment required for the Skate Park will need to align with the serviceability criteria developed by Council's design team. Investigation observations indicated the fill material varied in composition and consistency with depth, with the presence of a range of ancillary inclusions such as concrete cobbles and ceramic fragments across the footprint.

Depending on settlement criteria established for the Skate Park, excavations may need to extend to a substantial depth below the proposed shallow foundations to allow for excavation and re-compaction of the material to ensure a consistent platform from which to construct the foundations.

Alternatively, preload of the skate park area or dynamic compaction methods may be achieve the required design criteria while limiting excavation below foundation level.

6.4 Soil Aggressivity

Laboratory testing undertaken on two samples collected during the investigation have been compared with the criteria outlines in AS 2159-2009 for exposure classification and subsequent design. Comparison of these results have led to a **Non-Aggressive** classification for subsurface foundations. Testing results have also been compared with criteria outlined in AS 2870-2007, with results indicating an **A1** Classification for materials testing from both locations.

6.5 Groundwater Management

The presence of groundwater within two of the boreholes presents a critical construction stage constraint that will need to be incorporated into the design and construction management of the upgrades. At the time of investigation, groundwater was observed at 3.0 - 3.5 m bgs at BH03 and BH04, and is expected to fluctuate significantly with climatic variation. Groundwater in both of these locations was observed at a depth corresponding to the fill/natural interface, which may present a low-resistance flow path for groundwater, and prove problematic at the time of construction.

It is expected that groundwater will likely be encountered during construction, therefore a groundwater management plan should be developed prior to commencement, and financial allowance for dewatering plant and management incorporated into the planning of the project.

6.6 Parking Bays

Intrusive investigation was undertaken immediately adjacent Chanel Road (BH06), aimed at providing a preliminary understanding of the geotechnical profile for subsequent pavement design. The profile can be summarised as:

- 0.0 – 0.2: TOPSOIL, Silty SAND
- 0.2 – 1.5: ALLUVIUM, Silty Sandy CLAY and Silty CLAY

Testing on the sample recovered from subgrade level indicates a CBR value of 7%, which may be used in subsequent pavement design. It shall be noted that the subgrade along the proposed region of construction is likely to vary significantly, and as such allowance should be made for this during refinement of design.

It is recommended that topsoil and any uncontrolled filling is removed prior to preparation of subgrade, to ensure a consistent platform is established from which to construct the pavement.

Final pavement design for the parking bays will be dependent on Council's preferences around constructability and aesthetics, however a preliminary design undertaken for the parking bays in line with Austroads Guide to Pavement Technology Part 2; Pavement Structural Design (2012), is a follows:

- 35 mm AC10 wearing course, on
- 7 mm Low Cutter Seal, on
- 300 mm Class 2 DGB, on
- Minimum 3% CBR subgrade, compacted to 100% SMDD.

A reduction of overall pavement thickness may be feasible if confidence in subgrade uniformity along the alignment can be achieved.

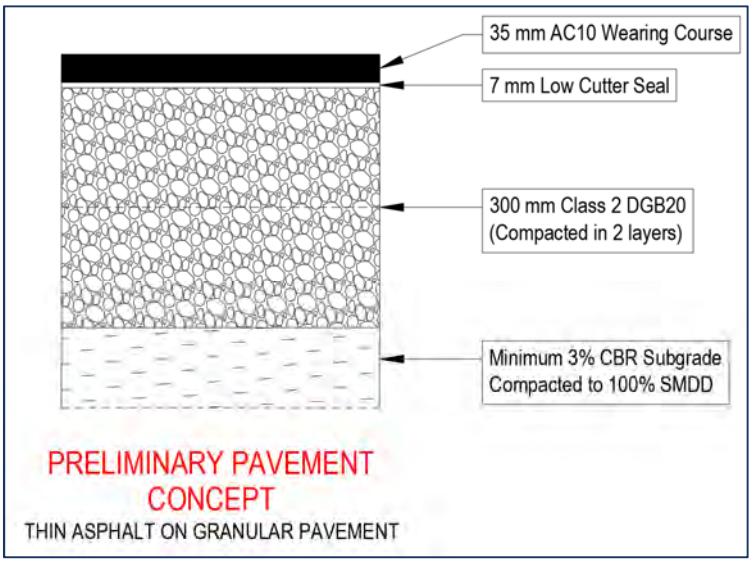

Figure 6-3 Concept pavement design for parking bays along Chanel St

6.7 General Earthworks Controls

6.7.1 Site Preparation

Prior to bulk earthworks, any fill, pavement or structure footings areas shall be cleared of any foreign matter or unsuitable material which includes but is not limited to the following:

- Vegetation or organic matter including root balls;
- Topsoil or soil significantly affected by roots or root fibres;
- Any scattered waste or dumped materials;
- Uncontrolled filling which would be subject to further assessment; or
- Loose or low strength (soft) soils or otherwise ‘unsuitable’ soils.

Deleterious materials that cannot be reused on site shall be disposed of at a licenced waste facility and classified in accordance with the NSW EPA Waste Classification Guidelines. Stripped topsoils shall be stockpiled for re-use where suitable.

Topsoils were generally assessed to be in the order of 200 mm in thickness, however this will vary across the site.

6.7.2 Drainage and Erosion Control

Prior to earthworks, appropriate site surface drainage and other measures shall be implemented to prevent ponding and scouring during the construction, and to minimise the risk of trafficability issues on site clays during and after inclement weather. These measures shall include temporary drains, surface grading along with erosion and sediment control, and shall be appropriately reinstated following the construction.

The soils are not considered highly dispersive based on the limited testing conduced (Emerson dispersivity results of 3 & 5); however in general, the dispersion potential can be managed with regimented compaction and moisture control during fill placement. A suitable thickness of topsoil (preferably >100 mm) shall also be provided to promote vegetation growth for longer term erosion control.

Suitable vegetation protection shall be established together with the provision of adequate drainage and where the soils are exposed other appropriate protection measures shall be employed. Appropriate surface drainage shall be installed to intercept and reduce the velocity of up-slope overland surface flows and to restrict overland surface flows from flowing onto adjacent areas where practical.

7 Closure

We appreciate the opportunity to work collaboratively with you on this project. Our team looks forward to bringing our high level of expertise to deliver successful outcomes in your future projects.

Your attention is drawn to the appended document titled "*Important Information about this Report"* in Appendix E. This document is intended to clarify to the reader what the realistic expectations of this report should be, and what is the correct use of the document. Misinterpretation of geotechnical information presents significant risk to projects: The document includes a discussion on general limitations of geotechnical services, which by nature, are based extensively on opinion and judgement.

The statements included in this document are not intended to be exculpatory clauses or to reduce the general responsibility accepted by Cardno, but rather to identify where Cardno and our Client's responsibilities lie. The statements ensure that all parties that may rely on the report are aware of their respective responsibilities.

For further enquiries, please do not hesitate to contact Cardno.

Sue Savage Reserve

APPENDIX A

SITE PLAN

DATE PLOTTED: 3 April 2020 4:17 PM BY: - ALEX CHAPPLE

XREFs: 80020079-+-SUE+SAVAGE
CAD File: \\cardno.corp\global\AU\NSW\Directory\Structure\Projects\800\PY20079_SUE_SAVAGE RESERV\ED\drawings\Build\00_Geo Sketches\00_Geo Sketches.dwg

Cardno (NSW/ACT) Pty Ltd | ABN 95 001 145 035
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Geotechnical Investigation Plan

Sue Savage Reserve

Datum	Date	Scale	Size
MGA-56	01/04/2020	NTS	A3

Drawing Number	Revision
GEO-SK01	Rev0

APPENDIX

B

PRELIMINARY WASTE CLASSIFICATION

Cardno Ref: 80020079_SueSavageReserve_IndicativeWasteClassification

9 April 2020

City of Parramatta
10 Footbridge Boulevard
Wentworth Point NSW 2124
Attention: City of Parramatta

Cardno (NSW/ACT) Pty Ltd
ABN 95 001 145 035

Level 9 - The Forum
203 Pacific Highway
St Leonards NSW 2065
Australia

Phone +61 2 9496 7700
Fax +61 2 9439 5170

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Dear City of Parramatta,

INDICATIVE WASTE CLASSIFICATION – SUE SAVAGE RESERVE REDEVELOPMENT

Cardno (NSW/ACT) Pty Ltd (Cardno) was commissioned by City of Parramatta to provide an indicative waste classification for approximately 17 hectares of land.

Preliminary investigation carried out by Cardno are for the proposed re-development located at Sue Savage Reserve on Chanel Street, Toongabbie. Which proposes three key elements of improvement:

- Car Parking: Construction of approximately 45 off-street parking spaces along Chanel Street;
- Skateboard Park: Construction of a new Skate/BMX/Scooter park to the west of the existing multipurpose court;
- Amenities Building: Construction of shelters, picnic settings, and a small amenity building to the east of the existing multi-purpose court.

Management of the materials encountered requires the material to be classified in accordance with regulatory guidelines. This letter provides an indicative in-situ waste classification as depicted on **Figure 1** in **Appendix A**

1 Objectives

The Objective of this work is to provide an indicative classification of the materials onsite in accordance with the NSW EPA *Waste Classification Guidelines* (2014).

2 Scope of Work

In order to address the objective detailed in **Section 1** Cardno undertook the following scope of work:

> Collected representative soil samples from five (5) sampling locations;

> Submitted three (3) sample for Acid Sulfate Soil screening;

> Submitted Five (5) samples for analytical testing of the Contaminants of Potential Concern (COPCs), at a NATA accredited laboratory. COPCs are as follows:

- Total Recoverable Hydrocarbons (TRH);
- Benzene, Toluene, Ethylbenzene, Xylene and Naphthalene (BTEXN);
- Polycyclic Aromatic Hydrocarbons (PAHs);
- Metals (As, Cd, Cr, Cu, Pb, Ni, Hg and Zn);

- Organochlorine Pesticides (OCPs)
- Polychlorinated Biphenyls (PCBs);
- Asbestos (weight/weight%)

> The results of the analytical testing were evaluated and waste classification presented in this letter report.

3 Site Description and Desktop Review

Sue Savage Reserve is located on Chanel Street, Toongabbie. The existing reserve sits north of Chanel Street spanning across approximately 17 hectares of land. The existing elements consist of a multi-purpose court and a playground towards the east of the site. In addition, there are several overhead power lines that stretches across the reserve.

Sue Savage Reserve is bounded to the north by Toongabbie Creek, with the existing ground profile across the reserve falling toward Toongabbie creek, forming a broad drainage channel that serves to contain and direct high flows during significant events.

Running along the southern boundary of the reserve is an earthen levee, which has been constructed to raise the catchment bounds, and reduce likelihood of significant events overtopping and impacting neighbouring residential property.

4 Fieldwork

Sampling of the onsite sub-surface materials was undertaken on 23 March 2020 by a Cardno Environmental Scientist. Samples for laboratory analysis were obtained from five locations, from depths varying between 0.3 m to 3.2 m below the surface. Descriptions of the material sampled are provided in **Table 4-1.**

Soil sampling was carried out in general accordance with AS4482.1 (2005): *Guide to the investigation and sampling of sites with potentially contaminated soil*, and Cardno's Standard Operating Procedures (SOPs). Boreholes were advanced into the sub-surface using a Ute Mounted Drill Rig, with samples collected directly from the auger using a gloved hand. A new pair of nitrile gloves was used for the collection of each sample. Samples were immediately transferred into laboratory supplied sample containers and stored in chilled containers for transport to the laboratory.

Table 4-1 Sample Register

Sample ID	Material Description	TRH/ BTEXN [1]	PAHs [2]	Metals [3]	OCP/ PCBs [4]	pH_{Field} pH_{FOX} [5]	Asbestos (w/w%) [6]
BH01_0.3	F: Brown Coarse-Grained Clayey Soil. Trace rocks/bitumen N: Sandy CLAY, Medium plasticity, fine – medium grained.	✔	✔	✔	✔	-	✔
BH01_1.4		-	-	-	-	✔	-
BH02_0.6		✔	✔	✔	✔	-	✔
BH02_2.6		-	-	-	-	✔	-
BH03_0.4		✔	✔	✔	✔	-	✔
BH03_3.2		-	-	-	-	✔	-
BH04_0.4		✔	✔	✔	✔	-	✔
BH05_0.5		✔	✔	✔	✔	-	✔

✔ = Analytes Tested

F = Fill

N = Natural

1) Total Recoverable Hydrocarbons Benzene, Toluene, Ethylbenzene, Xylene and Naphthalene
2) Polycyclic Aromatic Hydrocarbons (PAHs)
3) Metals (As, Cd, Cr, Cu, Pb, Ni, Hg and Zn)
4) Organochlorine Pesticides (OCPs) Polychlorinated Biphenyls (PCBs)
5) pH_{Field} pH_{FOX}
6) Asbestos (w/w%)

5 Analytical Results

A tabulated summary of Laboratory results is provided in **Appendix B**, Laboratory Reports are included in **Appendix C**. The analytical laboratory contracted to perform the testing services (Eurofins mgt NSW) is NATA accredited for the analyses undertaken. An interpretation of the data is summarised as follows:

- BTEX concentrations were reported below the Contaminant Threshold 1 (CT1) criteria for General Solid Waste (GSW) in all samples analysed.
- TRH concentrations were reported below the CT1 criteria for GSW in all samples analysed;
- PAHs concentrations were reported below the CT1 criteria for GSW in all samples analysed;
- Heavy Metals concentrations were reported below the CT1 criteria for GSW in all samples analysed;
- Moderately Harmful Pesticide concentrations were reported below the CT1 criteria for GSW in all samples analysed;
- Scheduled Chemical concentrations were reported below the CT1 criteria for GSW in all samples analysed;
- PCB concentrations were reported below the Contaminant Threshold 1 (CT1) criteria for General Solid Waste (GSW) in all samples analysed;
- Samples submitted for Acid Sulfate Soil screening had pH_{field} values of 5.6 (Moderately acidic) to 6.8 (Slightly Acidic) and $pH_{peroxide}$ values of 4.7 (Strongly acidic) to 5.7 (Moderately Acidic). Based on these values and the source of the material Cardno infer that the material is unlikely to be acid sulfate soils.
- Asbestos was not detected in any of the samples analysed.

6 Adopted Criteria

The NSW EPA (2014) *Waste Classification Guidelines* set out a six-step process for classifying waste. The following sets out the classification steps for the soil material:

Step 1: Is the waste 'special waste'? **NO.**

Step 2: Is the waste 'liquid waste'? **NO**.

Step 3: Is the waste 'pre-classified'? **NO**.

Step 4: Does the waste possess hazardous characteristics? **NO**.

Step 5: Determining a waste's classification using chemical assessment. Tables comparing analysed results to appropriate waste classification guidelines are contained in **Appendix B**. Waste Classification based on the analytical results is presented in **Section 7**.

Step 6: Is the waste putrescible? **NO**.

Adopted screening criteria values for relevant contaminants analysed are included in **Appendix B**.

7 Conclusions and Recommendations

Analytical results of were compared to the criteria detailed in the NSW EPA's *Waste Classification Guidelines* (2014). Analytical summary tables are presented in **Attachment B**. The results of the waste classification are discussed below:

Soil material encountered from the soil surface to approximately 0.6 mBGL could generally be described as Brown Coarse-Grained Clayey Soil with trace rocks/bitumen overlying Sandy CLAY, Medium plasticity, fine – medium grained.

Based on the background review, site observation and laboratory analysis of the materials from the Site soils described in **Table 4-1,** encountered between the soil surface to a maximum depth of 0.6 mBGL are classified as ***General Solid Waste (non-putrescible)*** due to:

- Analytes being ≤ CT1 values for General Solid Waste (GSW); and
- Asbestos results reported as less than LOR (Not-detected).

However, as the sampling densities were not in accordance with the appropriate guidelines this waste classification report is indicative of the Site area and additional sampling and analysis is required prior to the removal of material from the site.

Should you have any queries with the report, please do not hesitate to contact Joel Griffiths on (02) 9494 7873

Yours sincerely,

Michael Koerner

Environmental Scientist

Cardno (NSW/ACT)

Robert Campbell

Senior Environmental Scientist

Cardno (NSW/ACT)

Appendices

Appendix A – Figures

Appendix B – Waste Classification Results

Appendix C – Laboratory Reports

Limitations

This report does not provide a complete assessment of the environmental status of the site, and is limited to the scope defined above. The extent of soil sampling and laboratory analysis has been designed to address the project scope only and may not identify contamination occurring in other areas, or occurring after sampling was conducted.

The current assessment is focussed on the determination of the contamination status for offsite disposable. The report does not constitute an 'Environmental Site Assessment' as set out in the National Environment Protection (Assessment of Site Contamination) Measure 1999 (NEPM), nor a 'Site Audit Statement' under the meaning set out in the Contaminated Land Management Act 1997. No hydrogeological or groundwater assessment has been undertaken, and no geotechnical advice made or implied.

Appendix A – Figures

DATE PLOTTED: 3 April 2020 4:17 PM BY: - ALEX CHAPPLE

XREFs: 80020079-+-SUE+SAVAGE
CAD File: \\cardno.corp\global\AU\NSW\Directory\Structure\Projects\800\PY20079_SUE_SAVAGE RESERV\ED\drawings\Build\00_Geo Sketches\00_Geo Sketches.dwg

Cardno (NSW/ACT) Pty Ltd | ABN 95 001 145 035
Ground Floor, 16 Burelli Street
Wollongong NSW 2500
Tel: 02 4231 9600 Fax: 02 4228 6811
Web: www.cardno.com.au

Geotechnical Investigation Plan

Sue Savage Reserve

Datum	Date	Scale	Size
MGA-56	01/04/2020	NTS	A3

Drawing Number	Revision
GEO-SK01	Rev0

Appendix B – Waste Classification Results

Chemistry Name		LOR	NSW 2014 General Solid Waste CT1 (No Leaching)	NSW 2014 General Solid Waste SCC1 (with leached)	Indicative Waste Classification - Sue Savage Reserve							
					BH01-0.3	BH01-1.4	BH02-0.6	BH02-2.6	BH03-0.4	BH03-3.2	BH04-0.5	BH05-0.5
Benzene	**mg/kg**	0.1	10	18	<0.1	-	<0.1	-	<0.1	-	<0.1	<0.1
Toluene	**mg/kg**	0.1	288	518	<0.1	-	<0.1	-	<0.1	-	<0.1	<0.1
Ethylbenzene	**mg/kg**	0.1	600	1,080	<0.1	-	<0.1	-	<0.1	-	<0.1	<0.1
Xylene Total	**mg/kg**	0.3	1,000	1,800	<0.3	-	<0.3	-	<0.3	-	<0.3	<0.3
C6 - C9	**mg/kg**	20	650	650	<20	-	<20	-	<20	-	<20	<20
+C10 - C36 (Sum of total)	**mg/kg**	50	10,000	10,000	<50	-	<50	-	<50	-	<50	<50
Benzo(a)pyrene	**mg/kg**	0.5	0.8	10	<0.5	-	<0.5	-	<0.5	-	<0.5	<0.5
PAHs (Sum of total)	**mg/kg**	0.5	200	-	<0.5	-	<0.5	-	<0.5	-	<0.5	**1.2**
Asbestos Reported Result	**Comment**	-	Presence (D) / Absense (ND)	Presence (D) / Absense (ND)	**ND**	-	**ND**	-	**ND**	-	**ND**	**ND**
Arsenic	**mg/kg**	2	100	500	**11**	-	**5.1**	-	**12**	-	**11**	**16**
Cadmium	**mg/kg**	0.4	20	100	**0.4**	-	<0.4	-	<0.4	-	<0.4	<0.4
Chromium (III+VI)	**mg/kg**	5	100	1,900	**22**	-	**14**	-	**21**	-	**19**	**25**
Lead	**mg/kg**	5	100	1,500	**49**	-	**9.0**	-	**35**	-	**25**	**36**
Mercury	**mg/kg**	0.1	4	50	<0.1	-	<0.1	-	<0.1	-	<0.1	<0.1
Nickel	**mg/kg**	5	40	1,050	**16**	-	**35**	-	**22**	-	**14**	**18**
Endosulfan I	**mg/kg**	0.05	60	108	<0.05	-	<0.05	-	<0.05	-	<0.05	<0.05
Endosulfan II	**mg/kg**	0.05	60	108	<0.05	-	<0.05	-	<0.05	-	<0.05	<0.05
Endosulfan sulphate	**mg/kg**	0.05	60	108	<0.05	-	<0.05	-	<0.05	-	<0.05	<0.05
Scheduled Chemicals	**mg/kg**	0.05	<50	<50	ND	-	ND	-	ND	-	ND	ND
Chlorpyrifos	**mg/kg**	0.2	4	7.5	<0.2	-	<0.2	-	<0.2	-	<0.2	<0.2
PCBs (Sum of total)	**mg/kg**	0.5	50	50	<0.5	-	<0.5	-	<0.5	-	<0.5	<0.5
Resistivity	**OHM.M**	0.5	-	-	-	**210**	-	-	-	**100**	-	-
pH (Field)	**pH Unit**	0.1	-	-	-	**5.6**	-	**6.8**	-	**5.7**	-	-
pH (Fox)	**pH Unit**	0.1	-	-	-	**4.7**	-	**5.7**	-	**5.0**	-	-
Reaction Ratings			-	-	-	**2.0**	-	**3.0**	-	**2.0**	-	-

* Reaction rate of samples to peroxide were:
1.0 - No reaction to slight reaction
2.0 - Moderate reaction
3.0 - Strong reaction with persistent froth
4.0 - Extreme reaction

Exceeds NSW 2014 General Solid Waste CT1 (No Leaching)
Exceeds NSW 2014 General Solid Waste SCC1 (with leached)

LOR: Limit of Reporting
- Not Analysed/Not Calculated
mg/kg: milligram/kilogram
mg/L: milligram/Litre
µg/L: microgram/Litre

Appendix C – Laboratory Reports

CHAIN OF CUSTODY RECORD

Eurofins | mgt ABN 50 005 085 521

☑ **Sydney Laboratory** Unit F3 Bld.F 16 Mars Road Lane Cove West NSW 2066 02 9900 8400 EnviroSampleNSW@eurofins.com

☐ **Brisbane Laboratory** Unit 1 21 Smallwood Place Murarrie QLD 4172 07 3902 4600 EnviroSampleQLD@eurofins.com

☐ **Perth Laboratory** Unit 2 91 Leach Highway Kewdale WA 6105 08 9251 9600 EnviroSampleWA@eurofins.com

☐ **Melbourne Laboratory** 2 Kingston Town Close Oakleigh VIC 3166 03 8564 5000 EnviroSampleVic@eurofins.com

Company	Cardno	Project №	80020079	Project Manager	Alex Chapple
Address	L9 The Forum, 203 Pacific Highway, St Leonards, NSW, 2065	Project Name	Sue Savage Reserve	EDD Format (ESdat, EQuIS etc)	
Contact Name	Alex Chapple				
Phone №	(+61) 434000761				
Special Directions	Page 1 of 2				
Purchase Order	80020079				
Quote ID №	780903CDNA				

Sampler(s)	Alex Chapple, Jeff Lin
Handed over by	Jeff Lin
Email for Invoice	alexander.chapple@cardno.com.au
Email for Results	alexander.chapple@cardno.com.au

Analyses — Where metals are requested, please specify "Total" or "Filtered". SUITE code must be used to attract SUITE pricing.

№	Client Sample ID	Sampled Date/Time dd/mm/yy hh:mm	Matrix Solid (S) Water (W)	Aggressivity Soil Set (pH, SO4, Chloride, conductivity, resistivity)	pH/pHfox	Asbestos (weight/weight%)	B7	B15													Containers: 500mL Plastic	250mL Plastic	125mL Plastic	200mL Amber Glass	40mL VOA vial	500mL PFAS Bottle	Jar (Glass or HDPE)	Other (Asbestos AS4964, WA Guidelines)	Sample Comments / Dangerous Goods Hazard Warning
1	BH01 - 0.3	23/03/20	S			1	1	1																			1	1	
2	BH01-0.4	23/03/20	S																									1	
3	BH01-1.1	23/03/20	S																								1		
4	BH01-1.4	23/03/20	S	1	1																						1	1	
5	BH02- 0.3	23/03/20	S																								1	1	
6	BH02 - 0.6	23/03/20	S			1	1	1																			1	1	
7	BH02 - 1.6	23/03/20	S																								1	1	
8	BH02 - 2.6	23/03/20	S		1																							1	
9	BH02- 3.6	23/03/20	S																								1		
10	BH03 - 0.4	23/03/20	S			1	1	1																			1	1	
	Total Counts			1	2	3	3	3																			8	8	

Containers — Change container type & size if necessary.

Required Turnaround Time (TAT) — Default will be 5 days if not ticked.

♦Surcharge will apply

- ☐ Overnight (reporting by 9am)♦
- ☐ Same day♦ ☐ 1 day♦
- ☐ 2 days♦ ☐ 3 days♦
- ☑ 5 days (Standard)
- ☐ Other( )

Method of Shipment	☐ Courier (#)	☑ Hand Delivered	☐ Postal	Name	Jeff Lin	Signature		Date	23/03	Time	

Eurofins | mgt Laboratory Use Only									
	Received By	Suzanne Ford	(SYD) BNE | MEL | PER | ADL | NTL | DRW	Signature		Date	25/3/2020	Time	12:22PM	Temperature	9.83°C
	Received By		SYD | BNE | MEL | PER | ADL | NTL | DRW	Signature		Date		Time		Report №	710030

CHAIN OF CUSTODY RECORD

Eurofins | mgt ABN 50 005 085 521

☑ **Sydney Laboratory** Unit F3 Bld.F 16 Mars Road Lane Cove West NSW 2066 02 9900 8400 EnviroSampleNSW@eurofins.com

☐ **Brisbane Laboratory** Unit 1 21 Smallwood Place Murarrie QLD 4172 07 3902 4600 EnviroSampleQLD@eurofins.com

☐ **Perth Laboratory** Unit 2 91 Leach Highway Kewdale WA 6105 08 9251 9600 EnviroSampleWA@eurofins.com

☐ **Melbourne Laboratory** 2 Kingston Town Close Oakleigh VIC 3166 03 8564 5000 EnviroSampleVic@eurofins.com

Company	Cardno	Project №	80020079	Project Manager	Alex Chapple
Address	L9 The Forum, 203 Pacific Highway, St Leonards, NSW, 2065	Project Name	Sue Savage Reserve	EDD Format (ESdat, EQuIS etc)	
Contact Name	Alex Chapple				
Phone №	(+61) 434000761				
Special Directions	Page 2 of 2				
Purchase Order	80020079				
Quote ID №	780903CDNA				

Sampler(s)	Alex Chapple, Jeff Lin
Handed over by	Jeff Lin
Email for Invoice	alexander.chapple@cardno.com.au
Email for Results	alexander.chapple@cardno.com.au

Analyses Where multiple are requested, please specify "Total" or "Filtered". SUITE code must be used to attract SUITE pricing

Containers Change container type & size if necessary.

Required Turnaround Time (TAT) Default will be 5 days if not ticked.

♦Surcharge will apply

☐ Overnight (reporting by 9am)♦
☐ Same day♦ ☐ 1 day♦
☐ 2 days♦ ☐ 3 days♦
☑ 5 days (Standard)
☐ Other( )

№	Client Sample ID	Sampled Date/Time dd/mm/yy hh:mm	Matrix Solid (S) Water (W)	Aggressivity Soil Set (pH, SO4, Chloride, conductivity, resistivity)	pH/pHfox	Asbestos (weight/weight%)	B7	B15	500mL Plastic	250mL Plastic	125mL Plastic	200mL Amber Glass	40mL VOA vial	500mL PFAS Bottle	Jar (Glass or HDPE)	Other (Asbestos AS4964, WA Guidelines)	Sample Comments / Dangerous Goods Hazard Warning
1	BH03 - 1.6	23/03/20	S												1	1	
2	BH03 - 1.9	23/03/20	S												1		
3	BH03 - 3.2	23/03/20	S	1	1										1	1	
4	BH04 - 0.5	23/03/20	S			1	1	1							1	1	
5	BH05 - 0.5	23/03/20	S			1	1	1							1	1	
6															1	1	
7																	
8																	
9																	
10																	
	Total Counts			1	1	2	2	2							6	5	

Method of Shipment	☐ Courier (#)	☑ Hand Delivered	☐ Postal	Name		Signature		Date		Time	
Eurofins | mgt Laboratory Use Only	Received By	Suzanne Ford	SYD | BNE | MEL | PER | ADL | NTL | DRW	Signature		Date	25/3/2020	Time	12:22PM	Temperature	9.8 °C
	Received By		SYD | BNE | MEL | PER | ADL | NTL | DRW	Signature		Date		Time		Report №	710030

QS3006_R8 Modified by: S. Kojima Approved by: C. D Preez Approved on: 12 June 2018

eurofins | Environment Testing

Melbourne
6 Monterey Road
Dandenong South Vic 3175
Phone : +61 3 8564 5000
NATA # 1261
Site # 1254 & 14271

Sydney
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16 Mars Road
Lane Cove West NSW 2066
Phone : +61 2 9900 8400
NATA # 1261 Site # 18217

Brisbane
1/21 Smallwood Place
Murarrie QLD 4172
Phone : +61 7 3902 4600
NATA # 1261 Site # 20794

Perth
2/91 Leach Highway
Kewdale WA 6105
Phone : +61 8 9251 9600
NATA # 1261 Site # 23736

ABN – 50 005 085 521 e.mail : EnviroSales@eurofins.com web : www.eurofins.com.au

Sample Receipt Advice

Company name:	**Cardno (NSW/ACT) Pty Ltd**
Contact name:	Alex Chapple
Project name:	SUE SAVAGE RESERVE
Project ID:	80020079
COC number:	Not provided
Turn around time:	5 Day
Date/Time received:	Mar 25, 2020 12:22 PM
Eurofins reference:	**710030**

Sample information

☑ A detailed list of analytes logged into our LIMS, is included in the attached summary table.

☑ All samples have been received as described on the above COC.

☑ COC has been completed correctly.

☑ Attempt to chill was evident.

☑ Appropriately preserved sample containers have been used.

☑ All samples were received in good condition.

☑ Samples have been provided with adequate time to commence analysis in accordance with the relevant holding times.

☑ Appropriate sample containers have been used.

☒ Split sample sent to requested external lab.

☒ Some samples have been subcontracted.

N/A Custody Seals intact (if used).

Notes

Sample; BH01-0.4 not received - analysis cancelled.

Contact notes

If you have any questions with respect to these samples please contact:

Ursula Long on Phone : or by e.mail: UrsulaLong@eurofins.com

Results will be delivered electronically via e.mail to Alex Chapple - alexander.chapple@cardno.com.au.

eurofins | Environment Testing

ABN – 50 005 085 521 web : www.eurofins.com.au e.mail : EnviroSales@eurofins.com

Australia

Melbourne
6 Monterey Road
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Site # 1254 & 14271

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NATA # 1261 Site # 18217

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NATA # 1261 Site # 20794

Perth
2/91 Leach Highway
Kewdale WA 6105
Phone : +61 8 9251 9600
NATA # 1261
Site # 23736

New Zealand

Auckland
35 O'Rorke Road
Penrose, Auckland 1061
Phone : +64 9 526 45 51
IANZ # 1327

Christchurch
43 Detroit Drive
Rolleston, Christchurch 7675
Phone : 0800 856 450
IANZ # 1290

Company Name: Cardno (NSW/ACT) Pty Ltd
Address: Level 9, 203 Pacific Highway
St Leonards
NSW 2065

Project Name: SUE SAVAGE RESERVE
Project ID: 80020079

Order No.:
Report #: 710030
Phone: 0294967700
Fax: 02 9499 3902

Received: Mar 25, 2020 12:22 PM
Due: Apr 1, 2020
Priority: 5 Day
Contact Name: Alex Chapple

Eurofins Analytical Services Manager : Ursula Long

Sample Detail						Asbestos - WA guidelines	CANCELLED	HOLD	Acid Sulfate Soils Field pH Test	Eurofins | mgt Suite B15	Aggressivity Soil Set	Moisture Set	Eurofins | mgt Suite B7
Melbourne Laboratory - NATA Site # 1254 & 14271											X		
Sydney Laboratory - NATA Site # 18217						X	X	X	X	X	X	X	X
Brisbane Laboratory - NATA Site # 20794													
Perth Laboratory - NATA Site # 23736													
External Laboratory													
No	**Sample ID**	**Sample Date**	**Sampling Time**	**Matrix**	**LAB ID**								
1	BH01-0.3	Mar 23, 2020		Soil	S20-Ma39212	X				X		X	X
2	BH01-1.4	Mar 23, 2020		Soil	S20-Ma39213				X		X	X	
3	BH02-0.6	Mar 23, 2020		Soil	S20-Ma39214	X				X		X	X
4	BH02-2.6	Mar 23, 2020		Soil	S20-Ma39215				X				
5	BH03-0.4	Mar 23, 2020		Soil	S20-Ma39216	X				X		X	X
6	BH03-3.2	Mar 23, 2020		Soil	S20-Ma39217				X		X	X	
7	BH04-0.5	Mar 23, 2020		Soil	S20-Ma39218	X				X		X	X
8	BH05-0.5	Mar 23, 2020		Soil	S20-Ma39219	X				X		X	X
9	BH01-1.1	Mar 23, 2020		Soil	S20-Ma39220			X					
10	BH02-0.3	Mar 23, 2020		Soil	S20-Ma39221			X					

eurofins | Environment Testing

ABN – 50 005 085 521 web : www.eurofins.com.au e.mail : EnviroSales@eurofins.com

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NATA # 1261 Site # 18217

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1/21 Smallwood Place
Murarrie QLD 4172
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NATA # 1261 Site # 20794

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2/91 Leach Highway
Kewdale WA 6105
Phone : +61 8 9251 9600
NATA # 1261
Site # 23736

New Zealand

Auckland
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Penrose, Auckland 1061
Phone : +64 9 526 45 51
IANZ # 1327

Christchurch
43 Detroit Drive
Rolleston, Christchurch 7675
Phone : 0800 856 450
IANZ # 1290

Company Name: Cardno (NSW/ACT) Pty Ltd
Address: Level 9, 203 Pacific Highway
St Leonards
NSW 2065

Project Name: SUE SAVAGE RESERVE
Project ID: 80020079

Order No.:
Report #: 710030
Phone: 0294967700
Fax: 02 9499 3902

Received: Mar 25, 2020 12:22 PM
Due: Apr 1, 2020
Priority: 5 Day
Contact Name: Alex Chapple

Eurofins Analytical Services Manager : Ursula Long

Sample Detail						Asbestos - WA guidelines	CANCELLED	HOLD	Acid Sulfate Soils Field pH Test	Eurofins | mgt Suite B15	Aggressivity Soil Set	Moisture Set	Eurofins | mgt Suite B7
Melbourne Laboratory - NATA Site # 1254 & 14271											X		
Sydney Laboratory - NATA Site # 18217						X	X	X	X	X	X	X	X
Brisbane Laboratory - NATA Site # 20794													
Perth Laboratory - NATA Site # 23736													
11	BH02-1.6	Mar 23, 2020		Soil	S20-Ma39222			X					
12	BH02-3.6	Mar 23, 2020		Soil	S20-Ma39223			X					
13	BH03-1.6	Mar 23, 2020		Soil	S20-Ma39224			X					
14	BH03-1.9	Mar 23, 2020		Soil	S20-Ma39225			X					
15	BH01-0.4	Mar 23, 2020		Soil	S20-Ma39226		X						
Test Counts						5	1	6	3	5	2	7	5

Certificate of Analysis

eurofins | Environment Testing

NATA Accredited
Accreditation Number 1261
Site Number 18217

Accredited for compliance with ISO/IEC 17025–Testing
The results of the tests, calibrations and/or measurements included in this document are traceable to Australian/national standards.

Cardno (NSW/ACT) Pty Ltd
Level 9, 203 Pacific Highway
St Leonards
NSW 2065

Attention:	Alex Chapple
Report	710030-AID
Project Name	SUE SAVAGE RESERVE
Project ID	80020079
Received Date	Mar 25, 2020
Date Reported	Apr 01, 2020

Methodology:

Asbestos Fibre Identification	Conducted in accordance with the Australian Standard AS 4964 – 2004: Method for the Qualitative Identification of Asbestos in Bulk Samples and in-house Method LTM-ASB-8020 by polarised light microscopy (PLM) and dispersion staining (DS) techniques. *NOTE: Positive Trace Analysis results indicate the sample contains detectable respirable fibres.*
Unknown Mineral Fibres	Mineral fibres of unknown type, as determined by PLM with DS, may require another analytical technique, such as Electron Microscopy, to confirm unequivocal identity. *NOTE: While Actinolite, Anthophyllite and Tremolite asbestos may be detected by PLM with DS, due to variability in the optical properties of these materials, AS4964 requires that these are reported as UMF unless confirmed by an independent technique.*
Subsampling Soil Samples	The whole sample submitted is first dried and then passed through a 10mm sieve followed by a 2mm sieve. All fibrous matter greater than 10mm, greater than 2mm as well as the material passing through the 2mm sieve are retained and analysed for the presence of asbestos. If the sub 2mm fraction is greater than approximately 30 to 60g then a sub-sampling routine based on ISO 3082:2009(E) is employed. *NOTE: Depending on the nature and size of the soil sample, the sub-2 mm residue material may need to be sub-sampled for trace analysis, in accordance with AS 4964-2004.*
Bonded asbestos-containing material (ACM)	The material is first examined and any fibres isolated for identification by PLM and DS. Where required, interfering matrices may be removed by disintegration using a range of heat, chemical or physical treatments, possibly in combination.The resultant material is then further examined in accordance with AS 4964 - 2004. *NOTE: Even after disintegration it may be difficult to detect the presence of asbestos in some asbestos-containing bulk materials using PLM and DS. This is due to the low grade or small length or diameter of the asbestos fibres present in the material, or to the fact that very fine fibres have been distributed intimately throughout the materials. Vinyl/asbestos floor tiles, some asbestos-containing sealants and mastics, asbestos-containing epoxy resins and some ore samples are examples of these types of material, which are difficult to analyse.*
Limit of Reporting	The performance limitation of the AS 4964 (2004) method for non-homogeneous samples is around 0.1 g/kg (equivalent to 0.01% (w/w)). Where no asbestos is found by PLM and DS, including Trace Analysis, this is considered to be at the nominal reporting limit of 0.01% (w/w). The NEPM screening level of 0.001% (w/w) is intended as an on-site determination, not a laboratory Limit of Reporting (LOR), per se. Examination of a large sample size (e.g. 500 mL) may improve the likelihood of detecting asbestos, particularly AF, to aid assessment against the NEPM criteria. Gravimetric determinations to this level of accuracy are outside of AS 4964 and hence NATA Accreditation does not cover the performance of this service (non-NATA results shown with an asterisk). *NOTE: NATA News March 2014, p.7, states in relation to AS 4964: "This is a qualitative method with a nominal reporting limit of 0.01 % " and that currently in Australia "there is no validated method available for the quantification of asbestos".This report is consistent with the analytical procedures and reporting recommendations in the NEPM and the WA DoH.*

Project Name SUE SAVAGE RESERVE
Project ID 80020079
Date Sampled Mar 23, 2020
Report 710030-AID

Client Sample ID	Eurofins Sample No.	Date Sampled	Sample Description	Result
BH01-0.3	20-Ma39212	Mar 23, 2020	Approximate Sample 617g Sample consisted of: Brown coarse-grained clayey soil and rocks	No asbestos detected at the reporting limit of 0.001% w/w.* Organic fibre detected. No trace asbestos detected.
BH02-0.6	20-Ma39214	Mar 23, 2020	Approximate Sample 357g Sample consisted of: Brown coarse-grained clayey soil, bitumen and rocks	No asbestos detected at the reporting limit of 0.001% w/w.* Organic fibre detected. No trace asbestos detected.
BH03-0.4	20-Ma39216	Mar 23, 2020	Approximate Sample 603g Sample consisted of: Brown coarse-grained clayey soil and rocks	No asbestos detected at the reporting limit of 0.001% w/w.* Organic fibre detected. No trace asbestos detected.
BH04-0.5	20-Ma39218	Mar 23, 2020	Approximate Sample 405g Sample consisted of: Brown coarse-grained clayey soil and rocks	No asbestos detected at the reporting limit of 0.001% w/w.* Organic fibre detected. No trace asbestos detected.
BH05-0.5	20-Ma39219	Mar 23, 2020	Approximate Sample 456g Sample consisted of: Brown coarse-grained clayey soil and rocks	No asbestos detected at the reporting limit of 0.001% w/w.* Organic fibre detected. No trace asbestos detected.

Sample History

Where samples are submitted/analysed over several days, the last date of extraction and analysis is reported.
A recent review of our LIMS has resulted in the correction or clarification of some method identifications. Due to this, some of the method reference information on reports has changed. However, no substantive change has been made to our laboratory methods, and as such there is no change in the validity of current or previous results.

If the date and time of sampling are not provided, the Laboratory will not be responsible for compromised results should testing be performed outside the recommended holding time.

Description	Testing Site	Extracted	Holding Time
Asbestos - LTM-ASB-8020	Sydney	Mar 25, 2020	Indefinite

eurofins | Environment Testing

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Company Name: Cardno (NSW/ACT) Pty Ltd
Address: Level 9, 203 Pacific Highway
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NSW 2065

Project Name: SUE SAVAGE RESERVE
Project ID: 80020079

Order No.:
Report #: 710030
Phone: 0294967700
Fax: 02 9499 3902

Received: Mar 25, 2020 12:22 PM
Due: Apr 1, 2020
Priority: 5 Day
Contact Name: Alex Chapple

Eurofins Analytical Services Manager : Ursula Long

Sample Detail						Asbestos - WA guidelines	CANCELLED	HOLD	Acid Sulfate Soils Field pH Test	Eurofins | mgt Suite B15	Aggressivity Soil Set	Moisture Set	Eurofins | mgt Suite B7
Melbourne Laboratory - NATA Site # 1254 & 14271													
Sydney Laboratory - NATA Site # 18217						X	X	X	X	X	X	X	X
Brisbane Laboratory - NATA Site # 20794													
Perth Laboratory - NATA Site # 23736													
External Laboratory													
No	**Sample ID**	**Sample Date**	**Sampling Time**	**Matrix**	**LAB ID**								
1	BH01-0.3	Mar 23, 2020		Soil	S20-Ma39212	X				X		X	X
2	BH01-1.4	Mar 23, 2020		Soil	S20-Ma39213				X		X	X	
3	BH02-0.6	Mar 23, 2020		Soil	S20-Ma39214	X				X		X	X
4	BH02-2.6	Mar 23, 2020		Soil	S20-Ma39215				X				
5	BH03-0.4	Mar 23, 2020		Soil	S20-Ma39216	X				X		X	X
6	BH03-3.2	Mar 23, 2020		Soil	S20-Ma39217				X		X	X	
7	BH04-0.5	Mar 23, 2020		Soil	S20-Ma39218	X				X		X	X
8	BH05-0.5	Mar 23, 2020		Soil	S20-Ma39219	X				X		X	X
9	BH01-1.1	Mar 23, 2020		Soil	S20-Ma39220			X					
10	BH02-0.3	Mar 23, 2020		Soil	S20-Ma39221			X					

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Sample Detail						Asbestos - WA guidelines	CANCELLED	HOLD	Acid Sulfate Soils Field pH Test	Eurofins | mgt Suite B15	Aggressivity Soil Set	Moisture Set	Eurofins | mgt Suite B7
Melbourne Laboratory - NATA Site # 1254 & 14271													
Sydney Laboratory - NATA Site # 18217						X	X	X	X	X	X	X	X
Brisbane Laboratory - NATA Site # 20794													
Perth Laboratory - NATA Site # 23736													
11	BH02-1.6	Mar 23, 2020		Soil	S20-Ma39222			X					
12	BH02-3.6	Mar 23, 2020		Soil	S20-Ma39223			X					
13	BH03-1.6	Mar 23, 2020		Soil	S20-Ma39224			X					
14	BH03-1.9	Mar 23, 2020		Soil	S20-Ma39225			X					
15	BH01-0.4	Mar 23, 2020		Soil	S20-Ma39226		X						
Test Counts						5	1	6	3	5	2	7	5

Internal Quality Control Review and Glossary

General

1. QC data may be available on request.
2. All soil results are reported on a dry basis, unless otherwise stated.
3. Samples were analysed on an 'as received' basis.
4. Information identified on this report with blue colour, indicates data provided by customer, that may have an impact on the results.
5. This report replaces any interim results previously issued.

Holding Times

Please refer to 'Sample Preservation and Container Guide' for holding times (QS3001).

For samples received on the last day of holding time, notification of testing requirements should have been received at least 6 hours prior to sample receipt deadlines as stated on the Sample Receipt Advice.

If the Laboratory did not receive the information in the required timeframe, and regardless of any other integrity issues, suitably qualified results may still be reported.

Holding times apply from the date of sampling, therefore compliance to these may be outside the laboratory's control.

Units

% w/w: weight for weight basis	grams per kilogram
Filter loading:	fibres/100 graticule areas
Reported Concentration:	fibres/mL
Flowrate:	L/min

Terms

Dry	Sample is dried by heating prior to analysis
LOR	Limit of Reporting
COC	Chain of Custody
SRA	Sample Receipt Advice
ISO	International Standards Organisation
AS	Australian Standards
WA DOH	Reference document for the NEPM. Government of Western Australia, Guidelines for the Assessment, Remediation and Management of Asbestos-Contaminated Sites in Western Australia (2009), including supporting document Recommended Procedures for Laboratory Analysis of Asbestos in Soil (2011)
NEPM	National Environment Protection (Assessment of Site Contamination) Measure, 2013 (as amended)
ACM	Asbestos Containing Materials. Asbestos contained within a non-asbestos matrix, typically presented in bonded and/or sound condition. For the purposes of the NEPM, ACM is generally restricted to those materials that do not pass a 7mm x 7mm sieve.
AF	Asbestos Fines. Asbestos containing materials, including friable, weathered and bonded materials, able to pass a 7mm x 7mm sieve. Considered under the NEPM as equivalent to “non-bonded / friable”.
FA	Fibrous Asbestos. Asbestos containing materials in a friable and/or severely weathered condition. For the purposes of the NEPM, FA is generally restricted to those materials that do not pass a 7mm x 7mm sieve.
Friable	Asbestos-containing materials of any size that may be broken or crumbled by hand pressure. For the purposes of the NEPM, this includes both AF and FA. It is outside of the laboratory’s remit to assess degree of friability.
Trace Analysis	Analytical procedure used to detect the presence of respirable fibres in the matrix.

Comments

S20-Ma39214,S20-Ma39218, S20-Ma39219: Samples received were less than the nominal 500mL as recommended in Section 4.10 of the NEPM Schedule B1 - Guideline on Investigation Levels for Soil and Groundwater.

Sample Integrity

Custody Seals Intact (if used)	N/A
Attempt to Chill was evident	Yes
Sample correctly preserved	Yes
Appropriate sample containers have been used	Yes
Sample containers for volatile analysis received with minimal headspace	Yes
Samples received within HoldingTime	Yes
Some samples have been subcontracted	No

Qualifier Codes/Comments

Code	Description
N/A	Not applicable

Asbestos Counter/Identifier:

Laxman Dias	Senior Analyst-Asbestos (NSW)

Authorised by:

Sayeed Abu	Senior Analyst-Asbestos (NSW)

Glenn Jackson
General Manager

Final Report – this report replaces any previously issued Report

- Indicates Not Requested

* Indicates NATA accreditation does not cover the performance of this service

Measurement uncertainty of test data is available on request or please click here.

Cardno (NSW/ACT) Pty Ltd
Level 9, 203 Pacific Highway
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NATA Accredited
Accreditation Number 1261
Site Number 18217

Accredited for compliance with ISO/IEC 17025 – Testing
The results of the tests, calibrations and/or measurements included in this document are traceable to Australian/national standards.

Attention: **Alex Chapple**

Report **710030-S**
Project name SUE SAVAGE RESERVE
Project ID 80020079
Received Date Mar 25, 2020

Client Sample ID			**BH01-0.3**	**BH01-1.4**	**BH02-0.6**	**BH02-2.6**
Sample Matrix			**Soil**	**Soil**	**Soil**	**Soil**
Eurofins Sample No.			**S20-Ma39212**	**S20-Ma39213**	**S20-Ma39214**	**S20-Ma39215**
Date Sampled			**Mar 23, 2020**	**Mar 23, 2020**	**Mar 23, 2020**	**Mar 23, 2020**
Test/Reference	LOR	Unit				
Total Recoverable Hydrocarbons - 1999 NEPM Fractions						
TRH C6-C9	20	mg/kg	< 20	-	< 20	-
TRH C10-C14	20	mg/kg	< 20	-	< 20	-
TRH C15-C28	50	mg/kg	< 50	-	< 50	-
TRH C29-C36	50	mg/kg	< 50	-	< 50	-
TRH C10-C36 (Total)	50	mg/kg	< 50	-	< 50	-
BTEX						
Benzene	0.1	mg/kg	< 0.1	-	< 0.1	-
Toluene	0.1	mg/kg	< 0.1	-	< 0.1	-
Ethylbenzene	0.1	mg/kg	< 0.1	-	< 0.1	-
m&p-Xylenes	0.2	mg/kg	< 0.2	-	< 0.2	-
o-Xylene	0.1	mg/kg	< 0.1	-	< 0.1	-
Xylenes - Total*	0.3	mg/kg	< 0.3	-	< 0.3	-
4-Bromofluorobenzene (surr.)	1	%	86	-	105	-
Total Recoverable Hydrocarbons - 2013 NEPM Fractions						
Naphthalene[N02]	0.5	mg/kg	< 0.5	-	< 0.5	-
TRH C6-C10	20	mg/kg	< 20	-	< 20	-
TRH C6-C10 less BTEX (F1)[N04]	20	mg/kg	< 20	-	< 20	-
TRH >C10-C16	50	mg/kg	< 50	-	< 50	-
TRH >C10-C16 less Naphthalene (F2)[N01]	50	mg/kg	< 50	-	< 50	-
TRH >C16-C34	100	mg/kg	< 100	-	< 100	-
TRH >C34-C40	100	mg/kg	< 100	-	< 100	-
TRH >C10-C40 (total)*	100	mg/kg	< 100	-	< 100	-
Polycyclic Aromatic Hydrocarbons						
Benzo(a)pyrene TEQ (lower bound) *	0.5	mg/kg	< 0.5	-	< 0.5	-
Benzo(a)pyrene TEQ (medium bound) *	0.5	mg/kg	0.6	-	0.6	-
Benzo(a)pyrene TEQ (upper bound) *	0.5	mg/kg	1.2	-	1.2	-
Acenaphthene	0.5	mg/kg	< 0.5	-	< 0.5	-
Acenaphthylene	0.5	mg/kg	< 0.5	-	< 0.5	-
Anthracene	0.5	mg/kg	< 0.5	-	< 0.5	-
Benz(a)anthracene	0.5	mg/kg	< 0.5	-	< 0.5	-
Benzo(a)pyrene	0.5	mg/kg	< 0.5	-	< 0.5	-
Benzo(b&j)fluoranthene[N07]	0.5	mg/kg	< 0.5	-	< 0.5	-
Benzo(g.h.i)perylene	0.5	mg/kg	< 0.5	-	< 0.5	-
Benzo(k)fluoranthene	0.5	mg/kg	< 0.5	-	< 0.5	-
Chrysene	0.5	mg/kg	< 0.5	-	< 0.5	-

Client Sample ID			BH01-0.3	BH01-1.4	BH02-0.6	BH02-2.6
Sample Matrix			Soil	Soil	Soil	Soil
Eurofins Sample No.			S20-Ma39212	S20-Ma39213	S20-Ma39214	S20-Ma39215
Date Sampled			Mar 23, 2020	Mar 23, 2020	Mar 23, 2020	Mar 23, 2020
Test/Reference	LOR	Unit				
Polycyclic Aromatic Hydrocarbons						
Dibenz(a.h)anthracene	0.5	mg/kg	< 0.5	-	< 0.5	-
Fluoranthene	0.5	mg/kg	< 0.5	-	< 0.5	-
Fluorene	0.5	mg/kg	< 0.5	-	< 0.5	-
Indeno(1.2.3-cd)pyrene	0.5	mg/kg	< 0.5	-	< 0.5	-
Naphthalene	0.5	mg/kg	< 0.5	-	< 0.5	-
Phenanthrene	0.5	mg/kg	< 0.5	-	< 0.5	-
Pyrene	0.5	mg/kg	< 0.5	-	< 0.5	-
Total PAH*	0.5	mg/kg	< 0.5	-	< 0.5	-
2-Fluorobiphenyl (surr.)	1	%	117	-	93	-
p-Terphenyl-d14 (surr.)	1	%	110	-	91	-
Organochlorine Pesticides						
Chlordanes - Total	0.1	mg/kg	< 0.1	-	< 0.1	-
4.4'-DDD	0.05	mg/kg	< 0.05	-	< 0.05	-
4.4'-DDE	0.05	mg/kg	< 0.05	-	< 0.05	-
4.4'-DDT	0.05	mg/kg	< 0.05	-	< 0.05	-
a-BHC	0.05	mg/kg	< 0.05	-	< 0.05	-
Aldrin	0.05	mg/kg	< 0.05	-	< 0.05	-
b-BHC	0.05	mg/kg	< 0.05	-	< 0.05	-
d-BHC	0.05	mg/kg	< 0.05	-	< 0.05	-
Dieldrin	0.05	mg/kg	< 0.05	-	< 0.05	-
Endosulfan I	0.05	mg/kg	< 0.05	-	< 0.05	-
Endosulfan II	0.05	mg/kg	< 0.05	-	< 0.05	-
Endosulfan sulphate	0.05	mg/kg	< 0.05	-	< 0.05	-
Endrin	0.05	mg/kg	< 0.05	-	< 0.05	-
Endrin aldehyde	0.05	mg/kg	< 0.05	-	< 0.05	-
Endrin ketone	0.05	mg/kg	< 0.05	-	< 0.05	-
g-BHC (Lindane)	0.05	mg/kg	< 0.05	-	< 0.05	-
Heptachlor	0.05	mg/kg	< 0.05	-	< 0.05	-
Heptachlor epoxide	0.05	mg/kg	< 0.05	-	< 0.05	-
Hexachlorobenzene	0.05	mg/kg	< 0.05	-	< 0.05	-
Methoxychlor	0.2	mg/kg	< 0.2	-	< 0.2	-
Toxaphene	1	mg/kg	< 1	-	< 1	-
Aldrin and Dieldrin (Total)*	0.05	mg/kg	< 0.05	-	< 0.05	-
DDT + DDE + DDD (Total)*	0.05	mg/kg	< 0.05	-	< 0.05	-
Vic EPA IWRG 621 OCP (Total)*	0.1	mg/kg	< 0.2	-	< 0.2	-
Vic EPA IWRG 621 Other OCP (Total)*	0.1	mg/kg	< 0.2	-	< 0.2	-
Dibutylchlorendate (surr.)	1	%	113	-	114	-
Tetrachloro-m-xylene (surr.)	1	%	107	-	93	-
Organophosphorus Pesticides						
Azinphos-methyl	0.2	mg/kg	< 0.2	-	< 0.2	-
Bolstar	0.2	mg/kg	< 0.2	-	< 0.2	-
Chlorfenvinphos	0.2	mg/kg	< 0.2	-	< 0.2	-
Chlorpyrifos	0.2	mg/kg	< 0.2	-	< 0.2	-
Chlorpyrifos-methyl	0.2	mg/kg	< 0.2	-	< 0.2	-
Coumaphos	2	mg/kg	< 2	-	< 2	-
Demeton-S	0.2	mg/kg	< 0.2	-	< 0.2	-
Demeton-O	0.2	mg/kg	< 0.2	-	< 0.2	-
Diazinon	0.2	mg/kg	< 0.2	-	< 0.2	-
Dichlorvos	0.2	mg/kg	< 0.2	-	< 0.2	-

Client Sample ID			BH01-0.3	BH01-1.4	BH02-0.6	BH02-2.6
Sample Matrix			Soil	Soil	Soil	Soil
Eurofins Sample No.			S20-Ma39212	S20-Ma39213	S20-Ma39214	S20-Ma39215
Date Sampled			Mar 23, 2020	Mar 23, 2020	Mar 23, 2020	Mar 23, 2020
Test/Reference	LOR	Unit				
Organophosphorus Pesticides						
Dimethoate	0.2	mg/kg	< 0.2	-	< 0.2	-
Disulfoton	0.2	mg/kg	< 0.2	-	< 0.2	-
EPN	0.2	mg/kg	< 0.2	-	< 0.2	-
Ethion	0.2	mg/kg	< 0.2	-	< 0.2	-
Ethoprop	0.2	mg/kg	< 0.2	-	< 0.2	-
Ethyl parathion	0.2	mg/kg	< 0.2	-	< 0.2	-
Fenitrothion	0.2	mg/kg	< 0.2	-	< 0.2	-
Fensulfothion	0.2	mg/kg	< 0.2	-	< 0.2	-
Fenthion	0.2	mg/kg	< 0.2	-	< 0.2	-
Malathion	0.2	mg/kg	< 0.2	-	< 0.2	-
Merphos	0.2	mg/kg	< 0.2	-	< 0.2	-
Methyl parathion	0.2	mg/kg	< 0.2	-	< 0.2	-
Mevinphos	0.2	mg/kg	< 0.2	-	< 0.2	-
Monocrotophos	2	mg/kg	< 2	-	< 2	-
Naled	0.2	mg/kg	< 0.2	-	< 0.2	-
Omethoate	2	mg/kg	< 2	-	< 2	-
Phorate	0.2	mg/kg	< 0.2	-	< 0.2	-
Pirimiphos-methyl	0.2	mg/kg	< 0.2	-	< 0.2	-
Pyrazophos	0.2	mg/kg	< 0.2	-	< 0.2	-
Ronnel	0.2	mg/kg	< 0.2	-	< 0.2	-
Terbufos	0.2	mg/kg	< 0.2	-	< 0.2	-
Tetrachlorvinphos	0.2	mg/kg	< 0.2	-	< 0.2	-
Tokuthion	0.2	mg/kg	< 0.2	-	< 0.2	-
Trichloronate	0.2	mg/kg	< 0.2	-	< 0.2	-
Triphenylphosphate (surr.)	1	%	INT	-	133	-
Polychlorinated Biphenyls						
Aroclor-1016	0.5	mg/kg	< 0.5	-	< 0.5	-
Aroclor-1221	0.1	mg/kg	< 0.1	-	< 0.1	-
Aroclor-1232	0.5	mg/kg	< 0.5	-	< 0.5	-
Aroclor-1242	0.5	mg/kg	< 0.5	-	< 0.5	-
Aroclor-1248	0.5	mg/kg	< 0.5	-	< 0.5	-
Aroclor-1254	0.5	mg/kg	< 0.5	-	< 0.5	-
Aroclor-1260	0.5	mg/kg	< 0.5	-	< 0.5	-
Total PCB*	0.5	mg/kg	< 0.5	-	< 0.5	-
Dibutylchlorendate (surr.)	1	%	113	-	114	-
Tetrachloro-m-xylene (surr.)	1	%	107	-	93	-
Chloride	5	mg/kg	-	89	-	-
Conductivity (1:5 aqueous extract at 25°C as rec.)	10	uS/cm	-	47	-	-
pH (1:5 Aqueous extract at 25°C as rec.)	0.1	pH Units	-	5.6	-	-
Resistivity*	0.5	ohm.m	-	210	-	-
Sulphate (as SO4)	30	mg/kg	-	97	-	-
% Moisture	1	%	20	27	28	-
Heavy Metals						
Arsenic	2	mg/kg	11	-	5.1	-
Cadmium	0.4	mg/kg	0.4	-	< 0.4	-
Chromium	5	mg/kg	22	-	14	-
Copper	5	mg/kg	26	-	39	-
Lead	5	mg/kg	49	-	9.0	-

Client Sample ID			BH01-0.3	BH01-1.4	BH02-0.6	BH02-2.6
Sample Matrix			Soil	Soil	Soil	Soil
Eurofins Sample No.			S20-Ma39212	S20-Ma39213	S20-Ma39214	S20-Ma39215
Date Sampled			Mar 23, 2020	Mar 23, 2020	Mar 23, 2020	Mar 23, 2020
Test/Reference	LOR	Unit				
Heavy Metals						
Mercury	0.1	mg/kg	< 0.1	-	< 0.1	-
Nickel	5	mg/kg	16	-	35	-
Zinc	5	mg/kg	120	-	39	-
Acid Sulfate Soils Field pH Test						
pH-F (Field pH test)*	0.1	pH Units	-	5.6	-	6.8
pH-FOX (Field pH Peroxide test)*	0.1	pH Units	-	4.7	-	5.7
Reaction Ratings*[S05]		comment	-	2.0	-	3.0

Client Sample ID			BH03-0.4	BH03-3.2	BH04-0.5	BH05-0.5
Sample Matrix			Soil	Soil	Soil	Soil
Eurofins Sample No.			S20-Ma39216	S20-Ma39217	S20-Ma39218	S20-Ma39219
Date Sampled			Mar 23, 2020	Mar 23, 2020	Mar 23, 2020	Mar 23, 2020
Test/Reference	LOR	Unit				
Total Recoverable Hydrocarbons - 1999 NEPM Fractions						
TRH C6-C9	20	mg/kg	< 20	-	< 20	< 20
TRH C10-C14	20	mg/kg	< 20	-	< 20	< 20
TRH C15-C28	50	mg/kg	< 50	-	< 50	< 50
TRH C29-C36	50	mg/kg	< 50	-	< 50	< 50
TRH C10-C36 (Total)	50	mg/kg	< 50	-	< 50	< 50
BTEX						
Benzene	0.1	mg/kg	< 0.1	-	< 0.1	< 0.1
Toluene	0.1	mg/kg	< 0.1	-	< 0.1	< 0.1
Ethylbenzene	0.1	mg/kg	< 0.1	-	< 0.1	< 0.1
m&p-Xylenes	0.2	mg/kg	< 0.2	-	< 0.2	< 0.2
o-Xylene	0.1	mg/kg	< 0.1	-	< 0.1	< 0.1
Xylenes - Total*	0.3	mg/kg	< 0.3	-	< 0.3	< 0.3
4-Bromofluorobenzene (surr.)	1	%	113	-	116	100
Total Recoverable Hydrocarbons - 2013 NEPM Fractions						
Naphthalene[N02]	0.5	mg/kg	< 0.5	-	< 0.5	< 0.5
TRH C6-C10	20	mg/kg	< 20	-	< 20	< 20
TRH C6-C10 less BTEX (F1)[N04]	20	mg/kg	< 20	-	< 20	< 20
TRH >C10-C16	50	mg/kg	< 50	-	< 50	< 50
TRH >C10-C16 less Naphthalene (F2)[N01]	50	mg/kg	< 50	-	< 50	< 50
TRH >C16-C34	100	mg/kg	< 100	-	< 100	< 100
TRH >C34-C40	100	mg/kg	< 100	-	< 100	< 100
TRH >C10-C40 (total)*	100	mg/kg	< 100	-	< 100	< 100
Polycyclic Aromatic Hydrocarbons						
Benzo(a)pyrene TEQ (lower bound) *	0.5	mg/kg	< 0.5	-	< 0.5	< 0.5
Benzo(a)pyrene TEQ (medium bound) *	0.5	mg/kg	0.6	-	0.6	0.6
Benzo(a)pyrene TEQ (upper bound) *	0.5	mg/kg	1.2	-	1.2	1.2
Acenaphthene	0.5	mg/kg	< 0.5	-	< 0.5	< 0.5
Acenaphthylene	0.5	mg/kg	< 0.5	-	< 0.5	< 0.5
Anthracene	0.5	mg/kg	< 0.5	-	< 0.5	< 0.5
Benz(a)anthracene	0.5	mg/kg	< 0.5	-	< 0.5	< 0.5
Benzo(a)pyrene	0.5	mg/kg	< 0.5	-	< 0.5	< 0.5
Benzo(b&j)fluoranthene[N07]	0.5	mg/kg	< 0.5	-	< 0.5	< 0.5
Benzo(g.h.i)perylene	0.5	mg/kg	< 0.5	-	< 0.5	< 0.5
Benzo(k)fluoranthene	0.5	mg/kg	< 0.5	-	< 0.5	< 0.5

Client Sample ID			BH03-0.4	BH03-3.2	BH04-0.5	BH05-0.5
Sample Matrix			Soil	Soil	Soil	Soil
Eurofins Sample No.			S20-Ma39216	S20-Ma39217	S20-Ma39218	S20-Ma39219
Date Sampled			Mar 23, 2020	Mar 23, 2020	Mar 23, 2020	Mar 23, 2020
Test/Reference	LOR	Unit				
Polycyclic Aromatic Hydrocarbons						
Chrysene	0.5	mg/kg	< 0.5	-	< 0.5	< 0.5
Dibenz(a.h)anthracene	0.5	mg/kg	< 0.5	-	< 0.5	< 0.5
Fluoranthene	0.5	mg/kg	< 0.5	-	< 0.5	0.6
Fluorene	0.5	mg/kg	< 0.5	-	< 0.5	< 0.5
Indeno(1.2.3-cd)pyrene	0.5	mg/kg	< 0.5	-	< 0.5	< 0.5
Naphthalene	0.5	mg/kg	< 0.5	-	< 0.5	< 0.5
Phenanthrene	0.5	mg/kg	< 0.5	-	< 0.5	< 0.5
Pyrene	0.5	mg/kg	< 0.5	-	< 0.5	0.6
Total PAH*	0.5	mg/kg	< 0.5	-	< 0.5	1.2
2-Fluorobiphenyl (surr.)	1	%	92	-	51	69
p-Terphenyl-d14 (surr.)	1	%	87	-	93	81
Organochlorine Pesticides						
Chlordanes - Total	0.1	mg/kg	< 0.1	-	< 0.1	< 0.1
4.4'-DDD	0.05	mg/kg	< 0.05	-	< 0.05	< 0.05
4.4'-DDE	0.05	mg/kg	< 0.05	-	< 0.05	< 0.05
4.4'-DDT	0.05	mg/kg	< 0.05	-	< 0.05	< 0.05
a-BHC	0.05	mg/kg	< 0.05	-	< 0.05	< 0.05
Aldrin	0.05	mg/kg	< 0.05	-	< 0.05	< 0.05
b-BHC	0.05	mg/kg	< 0.05	-	< 0.05	< 0.05
d-BHC	0.05	mg/kg	< 0.05	-	< 0.05	< 0.05
Dieldrin	0.05	mg/kg	< 0.05	-	< 0.05	< 0.05
Endosulfan I	0.05	mg/kg	< 0.05	-	< 0.05	< 0.05
Endosulfan II	0.05	mg/kg	< 0.05	-	< 0.05	< 0.05
Endosulfan sulphate	0.05	mg/kg	< 0.05	-	< 0.05	< 0.05
Endrin	0.05	mg/kg	< 0.05	-	< 0.05	< 0.05
Endrin aldehyde	0.05	mg/kg	< 0.05	-	< 0.05	< 0.05
Endrin ketone	0.05	mg/kg	< 0.05	-	< 0.05	< 0.05
g-BHC (Lindane)	0.05	mg/kg	< 0.05	-	< 0.05	< 0.05
Heptachlor	0.05	mg/kg	< 0.05	-	< 0.05	< 0.05
Heptachlor epoxide	0.05	mg/kg	< 0.05	-	< 0.05	< 0.05
Hexachlorobenzene	0.05	mg/kg	< 0.05	-	< 0.05	< 0.05
Methoxychlor	0.2	mg/kg	< 0.2	-	< 0.2	< 0.2
Toxaphene	1	mg/kg	< 1	-	< 1	< 1
Aldrin and Dieldrin (Total)*	0.05	mg/kg	< 0.05	-	< 0.05	< 0.05
DDT + DDE + DDD (Total)*	0.05	mg/kg	< 0.05	-	< 0.05	< 0.05
Vic EPA IWRG 621 OCP (Total)*	0.1	mg/kg	< 0.2	-	< 0.2	< 0.2
Vic EPA IWRG 621 Other OCP (Total)*	0.1	mg/kg	< 0.2	-	< 0.2	< 0.2
Dibutylchlorendate (surr.)	1	%	113	-	119	100
Tetrachloro-m-xylene (surr.)	1	%	94	-	94	104
Organophosphorus Pesticides						
Azinphos-methyl	0.2	mg/kg	< 0.2	-	< 0.2	< 0.2
Bolstar	0.2	mg/kg	< 0.2	-	< 0.2	< 0.2
Chlorfenvinphos	0.2	mg/kg	< 0.2	-	< 0.2	< 0.2
Chlorpyrifos	0.2	mg/kg	< 0.2	-	< 0.2	< 0.2
Chlorpyrifos-methyl	0.2	mg/kg	< 0.2	-	< 0.2	< 0.2
Coumaphos	2	mg/kg	< 2	-	< 2	< 2
Demeton-S	0.2	mg/kg	< 0.2	-	< 0.2	< 0.2
Demeton-O	0.2	mg/kg	< 0.2	-	< 0.2	< 0.2
Diazinon	0.2	mg/kg	< 0.2	-	< 0.2	< 0.2

Client Sample ID			BH03-0.4	BH03-3.2	BH04-0.5	BH05-0.5
Sample Matrix			Soil	Soil	Soil	Soil
Eurofins Sample No.			S20-Ma39216	S20-Ma39217	S20-Ma39218	S20-Ma39219
Date Sampled			Mar 23, 2020	Mar 23, 2020	Mar 23, 2020	Mar 23, 2020
Test/Reference	LOR	Unit				
Organophosphorus Pesticides						
Dichlorvos	0.2	mg/kg	< 0.2	-	< 0.2	< 0.2
Dimethoate	0.2	mg/kg	< 0.2	-	< 0.2	< 0.2
Disulfoton	0.2	mg/kg	< 0.2	-	< 0.2	< 0.2
EPN	0.2	mg/kg	< 0.2	-	< 0.2	< 0.2
Ethion	0.2	mg/kg	< 0.2	-	< 0.2	< 0.2
Ethoprop	0.2	mg/kg	< 0.2	-	< 0.2	< 0.2
Ethyl parathion	0.2	mg/kg	< 0.2	-	< 0.2	< 0.2
Fenitrothion	0.2	mg/kg	< 0.2	-	< 0.2	< 0.2
Fensulfothion	0.2	mg/kg	< 0.2	-	< 0.2	< 0.2
Fenthion	0.2	mg/kg	< 0.2	-	< 0.2	< 0.2
Malathion	0.2	mg/kg	< 0.2	-	< 0.2	< 0.2
Merphos	0.2	mg/kg	< 0.2	-	< 0.2	< 0.2
Methyl parathion	0.2	mg/kg	< 0.2	-	< 0.2	< 0.2
Mevinphos	0.2	mg/kg	< 0.2	-	< 0.2	< 0.2
Monocrotophos	2	mg/kg	< 2	-	< 2	< 2
Naled	0.2	mg/kg	< 0.2	-	< 0.2	< 0.2
Omethoate	2	mg/kg	< 2	-	< 2	< 2
Phorate	0.2	mg/kg	< 0.2	-	< 0.2	< 0.2
Pirimiphos-methyl	0.2	mg/kg	< 0.2	-	< 0.2	< 0.2
Pyrazophos	0.2	mg/kg	< 0.2	-	< 0.2	< 0.2
Ronnel	0.2	mg/kg	< 0.2	-	< 0.2	< 0.2
Terbufos	0.2	mg/kg	< 0.2	-	< 0.2	< 0.2
Tetrachlorvinphos	0.2	mg/kg	< 0.2	-	< 0.2	< 0.2
Tokuthion	0.2	mg/kg	< 0.2	-	< 0.2	< 0.2
Trichloronate	0.2	mg/kg	< 0.2	-	< 0.2	< 0.2
Triphenylphosphate (surr.)	1	%	133	-	141	93
Polychlorinated Biphenyls						
Aroclor-1016	0.5	mg/kg	< 0.5	-	< 0.5	< 0.5
Aroclor-1221	0.1	mg/kg	< 0.1	-	< 0.1	< 0.1
Aroclor-1232	0.5	mg/kg	< 0.5	-	< 0.5	< 0.5
Aroclor-1242	0.5	mg/kg	< 0.5	-	< 0.5	< 0.5
Aroclor-1248	0.5	mg/kg	< 0.5	-	< 0.5	< 0.5
Aroclor-1254	0.5	mg/kg	< 0.5	-	< 0.5	< 0.5
Aroclor-1260	0.5	mg/kg	< 0.5	-	< 0.5	< 0.5
Total PCB*	0.5	mg/kg	< 0.5	-	< 0.5	< 0.5
Dibutylchlorendate (surr.)	1	%	113	-	119	100
Tetrachloro-m-xylene (surr.)	1	%	94	-	94	104
Chloride	5	mg/kg	-	130	-	-
Conductivity (1:5 aqueous extract at 25°C as rec.)	10	uS/cm	-	96	-	-
pH (1:5 Aqueous extract at 25°C as rec.)	0.1	pH Units	-	6.0	-	-
Resistivity*	0.5	ohm.m	-	100	-	-
Sulphate (as SO4)	30	mg/kg	-	< 30	-	-
% Moisture	1	%	24	22	19	17
Heavy Metals						
Arsenic	2	mg/kg	12	-	11	16
Cadmium	0.4	mg/kg	< 0.4	-	< 0.4	< 0.4
Chromium	5	mg/kg	21	-	19	25
Copper	5	mg/kg	22	-	26	24

Client Sample ID			BH03-0.4	BH03-3.2	BH04-0.5	BH05-0.5
Sample Matrix			**Soil**	**Soil**	**Soil**	**Soil**
Eurofins Sample No.			**S20-Ma39216**	**S20-Ma39217**	**S20-Ma39218**	**S20-Ma39219**
Date Sampled			**Mar 23, 2020**	**Mar 23, 2020**	**Mar 23, 2020**	**Mar 23, 2020**
Test/Reference	LOR	Unit				
Heavy Metals						
Lead	5	mg/kg	35	-	25	36
Mercury	0.1	mg/kg	< 0.1	-	< 0.1	< 0.1
Nickel	5	mg/kg	22	-	14	18
Zinc	5	mg/kg	210	-	60	140
Acid Sulfate Soils Field pH Test						
pH-F (Field pH test)*	0.1	pH Units	-	5.7	-	-
pH-FOX (Field pH Peroxide test)*	0.1	pH Units	-	5.0	-	-
Reaction Ratings*[S05]		comment	-	2.0	-	-

Sample History

Where samples are submitted/analysed over several days, the last date of extraction and analysis is reported.
A recent review of our LIMS has resulted in the correction or clarification of some method identifications. Due to this, some of the method reference information on reports has changed. However, no substantive change has been made to our laboratory methods, and as such there is no change in the validity of current or previous results.

If the date and time of sampling are not provided, the Laboratory will not be responsible for compromised results should testing be performed outside the recommended holding time.

Description	Testing Site	Extracted	Holding Time
Total Recoverable Hydrocarbons - 1999 NEPM Fractions	Sydney	Mar 31, 2020	14 Days
- Method: LTM-ORG-2010 TRH C6-C40			
BTEX	Sydney	Mar 31, 2020	14 Days
- Method: LTM-ORG-2010 TRH C6-C40			
Total Recoverable Hydrocarbons - 2013 NEPM Fractions	Sydney	Mar 31, 2020	14 Days
- Method: LTM-ORG-2010 TRH C6-C40			
Total Recoverable Hydrocarbons - 2013 NEPM Fractions	Sydney	Mar 31, 2020	
- Method: LTM-ORG-2010 TRH C6-C40			
Polycyclic Aromatic Hydrocarbons	Sydney	Mar 31, 2020	14 Days
- Method: LTM-ORG-2130 PAH and Phenols in Soil and Water			
Metals M8	Sydney	Mar 31, 2020	180 Days
- Method: LTM-MET-3040 Metals in Waters, Soils & Sediments by ICP-MS			
Organochlorine Pesticides	Sydney	Mar 31, 2020	14 Days
- Method: LTM-ORG-2220 OCP & PCB in Soil and Water			
Organophosphorus Pesticides	Sydney	Mar 31, 2020	14 Days
- Method: LTM-ORG-2200 Organophosphorus Pesticides by GC-MS			
Polychlorinated Biphenyls	Sydney	Mar 31, 2020	28 Days
- Method: LTM-ORG-2220 OCP & PCB in Soil and Water			
Chloride	Melbourne	Mar 31, 2020	28 Days
- Method: LTM-INO-4090 Chloride by Discrete Analyser			
Conductivity (1:5 aqueous extract at 25°C as rec.)	Sydney	Mar 31, 2020	7 Days
- Method: LTM-INO-4030 Conductivity			
pH (1:5 Aqueous extract at 25°C as rec.)	Sydney	Mar 31, 2020	7 Days
- Method: LTM-GEN-7090 pH in soil by ISE			
Sulphate (as SO4)	Melbourne	Mar 31, 2020	28 Days
- Method: LTM-INO-4110 Sulfate by Discrete Analyser			
% Moisture	Sydney	Mar 25, 2020	14 Days
- Method: LTM-GEN-7080 Moisture			
Acid Sulfate Soils Field pH Test	Sydney	Mar 31, 2020	7 Days
- Method: LTM-GEN-7060 Determination of field pH (pHF) and field pH peroxide (pHFOX) tests			

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Company Name: Cardno (NSW/ACT) Pty Ltd
Address: Level 9, 203 Pacific Highway
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NSW 2065

Project Name: SUE SAVAGE RESERVE
Project ID: 80020079

Order No.:
Report #: 710030
Phone: 0294967700
Fax: 02 9499 3902

Received: Mar 25, 2020 12:22 PM
Due: Apr 1, 2020
Priority: 5 Day
Contact Name: Alex Chapple

Eurofins Analytical Services Manager : Ursula Long

Sample Detail						Asbestos - WA guidelines	CANCELLED	HOLD	Acid Sulfate Soils Field pH Test	Eurofins | mgt Suite B15	Aggressivity Soil Set	Moisture Set	Eurofins | mgt Suite B7
Melbourne Laboratory - NATA Site # 1254 & 14271											X		
Sydney Laboratory - NATA Site # 18217						X	X	X	X	X	X	X	X
Brisbane Laboratory - NATA Site # 20794													
Perth Laboratory - NATA Site # 23736													
External Laboratory													
No	**Sample ID**	**Sample Date**	**Sampling Time**	**Matrix**	**LAB ID**								
1	BH01-0.3	Mar 23, 2020		Soil	S20-Ma39212	X				X		X	X
2	BH01-1.4	Mar 23, 2020		Soil	S20-Ma39213				X		X	X	
3	BH02-0.6	Mar 23, 2020		Soil	S20-Ma39214	X				X		X	X
4	BH02-2.6	Mar 23, 2020		Soil	S20-Ma39215				X				
5	BH03-0.4	Mar 23, 2020		Soil	S20-Ma39216	X				X		X	X
6	BH03-3.2	Mar 23, 2020		Soil	S20-Ma39217				X		X	X	
7	BH04-0.5	Mar 23, 2020		Soil	S20-Ma39218	X				X		X	X
8	BH05-0.5	Mar 23, 2020		Soil	S20-Ma39219	X				X		X	X
9	BH01-1.1	Mar 23, 2020		Soil	S20-Ma39220			X					
10	BH02-0.3	Mar 23, 2020		Soil	S20-Ma39221			X					

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Project Name: SUE SAVAGE RESERVE
Project ID: 80020079

Order No.:
Report #: 710030
Phone: 0294967700
Fax: 02 9499 3902

Received: Mar 25, 2020 12:22 PM
Due: Apr 1, 2020
Priority: 5 Day
Contact Name: Alex Chapple

Eurofins Analytical Services Manager : Ursula Long

Sample Detail						Asbestos - WA guidelines	CANCELLED	HOLD	Acid Sulfate Soils Field pH Test	Eurofins | mgt Suite B15	Aggressivity Soil Set	Moisture Set	Eurofins | mgt Suite B7
Melbourne Laboratory - NATA Site # 1254 & 14271											X		
Sydney Laboratory - NATA Site # 18217						X	X	X	X	X	X	X	X
Brisbane Laboratory - NATA Site # 20794													
Perth Laboratory - NATA Site # 23736													
11	BH02-1.6	Mar 23, 2020		Soil	S20-Ma39222			X					
12	BH02-3.6	Mar 23, 2020		Soil	S20-Ma39223			X					
13	BH03-1.6	Mar 23, 2020		Soil	S20-Ma39224			X					
14	BH03-1.9	Mar 23, 2020		Soil	S20-Ma39225			X					
15	BH01-0.4	Mar 23, 2020		Soil	S20-Ma39226		X						
Test Counts						5	1	6	3	5	2	7	5

Internal Quality Control Review and Glossary

General

1. Laboratory QC results for Method Blanks, Duplicates, Matrix Spikes, and Laboratory Control Samples follows guidelines delineated in the National Environment Protection (Assessment of Site Contamination) Measure 1999, as amended May 2013 and are included in this QC report where applicable. Additional QC data may be available on request.
2. All soil/sediment/solid results are reported on a dry basis, unless otherwise stated.
3. All biota/food results are reported on a wet weight basis on the edible portion, unless otherwise stated.
4. Actual LORs are matrix dependant. Quoted LORs may be raised where sample extracts are diluted due to interferences.
5. Results are uncorrected for matrix spikes or surrogate recoveries except for PFAS compounds.
6. SVOC analysis on waters are performed on homogenised, unfiltered samples, unless noted otherwise.
7. Samples were analysed on an 'as received' basis.
8. Information identified on this report with blue colour, indicates data provided by customer, that may have an impact on the results.
9. This report replaces any interim results previously issued.

Holding Times

Please refer to 'Sample Preservation and Container Guide' for holding times (QS3001).

For samples received on the last day of holding time, notification of testing requirements should have been received at least 6 hours prior to sample receipt deadlines as stated on the SRA.

If the Laboratory did not receive the information in the required timeframe, and regardless of any other integrity issues, suitably qualified results may still be reported.

Holding times apply from the date of sampling, therefore compliance to these may be outside the laboratory's control.

For VOCs containing vinyl chloride, styrene and 2-chloroethyl vinyl ether the holding time is 7 days however for all other VOCs such as BTEX or C6-10 TRH then the holding time is 14 days.

****NOTE:** pH duplicates are reported as a range NOT as RPD

Units

mg/kg: milligrams per kilogram

mg/L: milligrams per litre

ug/L: micrograms per litre

ppm: Parts per million

ppb: Parts per billion

%: Percentage

org/100mL: Organisms per 100 millilitres

NTU: Nephelometric Turbidity Units

MPN/100mL: Most Probable Number of organisms per 100 millilitres

Terms

Dry	Where a moisture has been determined on a solid sample the result is expressed on a dry basis.
LOR	Limit of Reporting.
SPIKE	Addition of the analyte to the sample and reported as percentage recovery.
RPD	Relative Percent Difference between two Duplicate pieces of analysis.
LCS	Laboratory Control Sample - reported as percent recovery.
CRM	Certified Reference Material - reported as percent recovery.
Method Blank	In the case of solid samples these are performed on laboratory certified clean sands and in the case of water samples these are performed on de-ionised water.
Surr - Surrogate	The addition of a like compound to the analyte target and reported as percentage recovery.
Duplicate	A second piece of analysis from the same sample and reported in the same units as the result to show comparison.
USEPA	United States Environmental Protection Agency
APHA	American Public Health Association
TCLP	Toxicity Characteristic Leaching Procedure
COC	Chain of Custody
SRA	Sample Receipt Advice
QSM	US Department of Defense Quality Systems Manual Version 5.3
CP	Client Parent - QC was performed on samples pertaining to this report
NCP	Non-Client Parent - QC performed on samples not pertaining to this report, QC is representative of the sequence or batch that client samples were analysed within.
TEQ	Toxic Equivalency Quotient

QC - Acceptance Criteria

RPD Duplicates: Global RPD Duplicates Acceptance Criteria is 30% however the following acceptance guidelines are equally applicable:

Results <10 times the LOR : No Limit

Results between 10-20 times the LOR : RPD must lie between 0-50%

Results >20 times the LOR : RPD must lie between 0-30%

Surrogate Recoveries: Recoveries must lie between 20-130% Phenols & 50-150% PFASs

PFAS field samples that contain surrogate recoveries in excess of the QC limit designated in QSM 5.3 where no positive PFAS results have been reported have been reviewed and no data was affected.

WA DWER (n=10): PFBA, PFPeA, PFHxA, PFHpA, PFOA, PFBS, PFHxS, PFOS, 6:2 FTSA, 8:2 FTSA

QC Data General Comments

1. Where a result is reported as a less than (<), higher than the nominated LOR, this is due to either matrix interference, extract dilution required due to interferences or contaminant levels within the sample, high moisture content or insufficient sample provided.
2. Duplicate data shown within this report that states the word "BATCH" is a Batch Duplicate from outside of your sample batch, but within the laboratory sample batch at a 1:10 ratio. The Parent and Duplicate data shown is not data from your samples.
3. Organochlorine Pesticide analysis - where reporting LCS data, Toxaphene & Chlordane are not added to the LCS.
4. Organochlorine Pesticide analysis - where reporting Spike data, Toxaphene is not added to the Spike.
5. Total Recoverable Hydrocarbons - where reporting Spike & LCS data, a single spike of commercial Hydrocarbon products in the range of C12-C30 is added and it's Total Recovery is reported in the C10-C14 cell of the Report.
6. pH and Free Chlorine analysed in the laboratory - Analysis on this test must begin within 30 minutes of sampling.Therefore laboratory analysis is unlikely to be completed within holding time. Analysis will begin as soon as possible after sample receipt.
7. Recovery Data (Spikes & Surrogates) - where chromatographic interference does not allow the determination of Recovery the term "INT" appears against that analyte.
8. Polychlorinated Biphenyls are spiked only using Aroclor 1260 in Matrix Spikes and LCS.
9. For Matrix Spikes and LCS results a dash " -" in the report means that the specific analyte was not added to the QC sample.
10. Duplicate RPDs are calculated from raw analytical data thus it is possible to have two sets of data.

Quality Control Results

Test	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Method Blank							
Total Recoverable Hydrocarbons - 1999 NEPM Fractions							
TRH C6-C9	mg/kg	< 20			20	Pass	
TRH C10-C14	mg/kg	< 20			20	Pass	
TRH C15-C28	mg/kg	< 50			50	Pass	
TRH C29-C36	mg/kg	< 50			50	Pass	
Method Blank							
BTEX							
Benzene	mg/kg	< 0.1			0.1	Pass	
Toluene	mg/kg	< 0.1			0.1	Pass	
Ethylbenzene	mg/kg	< 0.1			0.1	Pass	
m&p-Xylenes	mg/kg	< 0.2			0.2	Pass	
o-Xylene	mg/kg	< 0.1			0.1	Pass	
Xylenes - Total*	mg/kg	< 0.3			0.3	Pass	
Method Blank							
Total Recoverable Hydrocarbons - 2013 NEPM Fractions							
Naphthalene	mg/kg	< 0.5			0.5	Pass	
TRH C6-C10	mg/kg	< 20			20	Pass	
TRH >C10-C16	mg/kg	< 50			50	Pass	
TRH >C16-C34	mg/kg	< 100			100	Pass	
TRH >C34-C40	mg/kg	< 100			100	Pass	
Method Blank							
Polycyclic Aromatic Hydrocarbons							
Acenaphthene	mg/kg	< 0.5			0.5	Pass	
Acenaphthylene	mg/kg	< 0.5			0.5	Pass	
Anthracene	mg/kg	< 0.5			0.5	Pass	
Benz(a)anthracene	mg/kg	< 0.5			0.5	Pass	
Benzo(a)pyrene	mg/kg	< 0.5			0.5	Pass	
Benzo(b&j)fluoranthene	mg/kg	< 0.5			0.5	Pass	
Benzo(g.h.i)perylene	mg/kg	< 0.5			0.5	Pass	
Benzo(k)fluoranthene	mg/kg	< 0.5			0.5	Pass	
Chrysene	mg/kg	< 0.5			0.5	Pass	
Dibenz(a.h)anthracene	mg/kg	< 0.5			0.5	Pass	
Fluoranthene	mg/kg	< 0.5			0.5	Pass	
Fluorene	mg/kg	< 0.5			0.5	Pass	
Indeno(1.2.3-cd)pyrene	mg/kg	< 0.5			0.5	Pass	
Naphthalene	mg/kg	< 0.5			0.5	Pass	
Phenanthrene	mg/kg	< 0.5			0.5	Pass	
Pyrene	mg/kg	< 0.5			0.5	Pass	
Method Blank							
Organochlorine Pesticides							
Chlordanes - Total	mg/kg	< 0.1			0.1	Pass	
4.4'-DDD	mg/kg	< 0.05			0.05	Pass	
4.4'-DDE	mg/kg	< 0.05			0.05	Pass	
4.4'-DDT	mg/kg	< 0.05			0.05	Pass	
a-BHC	mg/kg	< 0.05			0.05	Pass	
Aldrin	mg/kg	< 0.05			0.05	Pass	
b-BHC	mg/kg	< 0.05			0.05	Pass	
d-BHC	mg/kg	< 0.05			0.05	Pass	
Dieldrin	mg/kg	< 0.05			0.05	Pass	
Endosulfan I	mg/kg	< 0.05			0.05	Pass	
Endosulfan II	mg/kg	< 0.05			0.05	Pass	

Test	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Endosulfan sulphate	mg/kg	< 0.05			0.05	Pass	
Endrin	mg/kg	< 0.05			0.05	Pass	
Endrin aldehyde	mg/kg	< 0.05			0.05	Pass	
Endrin ketone	mg/kg	< 0.05			0.05	Pass	
g-BHC (Lindane)	mg/kg	< 0.05			0.05	Pass	
Heptachlor	mg/kg	< 0.05			0.05	Pass	
Heptachlor epoxide	mg/kg	< 0.05			0.05	Pass	
Hexachlorobenzene	mg/kg	< 0.05			0.05	Pass	
Methoxychlor	mg/kg	< 0.2			0.2	Pass	
Toxaphene	mg/kg	< 1			1	Pass	
Method Blank							
Organophosphorus Pesticides							
Azinphos-methyl	mg/kg	< 0.2			0.2	Pass	
Bolstar	mg/kg	< 0.2			0.2	Pass	
Chlorfenvinphos	mg/kg	< 0.2			0.2	Pass	
Chlorpyrifos	mg/kg	< 0.2			0.2	Pass	
Chlorpyrifos-methyl	mg/kg	< 0.2			0.2	Pass	
Coumaphos	mg/kg	< 2			2	Pass	
Demeton-S	mg/kg	< 0.2			0.2	Pass	
Demeton-O	mg/kg	< 0.2			0.2	Pass	
Diazinon	mg/kg	< 0.2			0.2	Pass	
Dichlorvos	mg/kg	< 0.2			0.2	Pass	
Dimethoate	mg/kg	< 0.2			0.2	Pass	
Disulfoton	mg/kg	< 0.2			0.2	Pass	
EPN	mg/kg	< 0.2			0.2	Pass	
Ethion	mg/kg	< 0.2			0.2	Pass	
Ethoprop	mg/kg	< 0.2			0.2	Pass	
Ethyl parathion	mg/kg	< 0.2			0.2	Pass	
Fenitrothion	mg/kg	< 0.2			0.2	Pass	
Fensulfothion	mg/kg	< 0.2			0.2	Pass	
Fenthion	mg/kg	< 0.2			0.2	Pass	
Malathion	mg/kg	< 0.2			0.2	Pass	
Merphos	mg/kg	< 0.2			0.2	Pass	
Methyl parathion	mg/kg	< 0.2			0.2	Pass	
Mevinphos	mg/kg	< 0.2			0.2	Pass	
Monocrotophos	mg/kg	< 2			2	Pass	
Naled	mg/kg	< 0.2			0.2	Pass	
Omethoate	mg/kg	< 2			2	Pass	
Phorate	mg/kg	< 0.2			0.2	Pass	
Pirimiphos-methyl	mg/kg	< 0.2			0.2	Pass	
Pyrazophos	mg/kg	< 0.2			0.2	Pass	
Ronnel	mg/kg	< 0.2			0.2	Pass	
Terbufos	mg/kg	< 0.2			0.2	Pass	
Tetrachlorvinphos	mg/kg	< 0.2			0.2	Pass	
Tokuthion	mg/kg	< 0.2			0.2	Pass	
Trichloronate	mg/kg	< 0.2			0.2	Pass	
Method Blank							
Polychlorinated Biphenyls							
Aroclor-1016	mg/kg	< 0.5			0.5	Pass	
Aroclor-1221	mg/kg	< 0.1			0.1	Pass	
Aroclor-1232	mg/kg	< 0.5			0.5	Pass	
Aroclor-1242	mg/kg	< 0.5			0.5	Pass	
Aroclor-1248	mg/kg	< 0.5			0.5	Pass	
Aroclor-1254	mg/kg	< 0.5			0.5	Pass	

Test	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Aroclor-1260	mg/kg	< 0.5			0.5	Pass	
Total PCB*	mg/kg	< 0.5			0.5	Pass	
Method Blank							
Conductivity (1:5 aqueous extract at 25°C as rec.)	uS/cm	< 10			10	Pass	
Method Blank							
Heavy Metals							
Arsenic	mg/kg	< 2			2	Pass	
Cadmium	mg/kg	< 0.4			0.4	Pass	
Chromium	mg/kg	< 5			5	Pass	
Copper	mg/kg	< 5			5	Pass	
Lead	mg/kg	< 5			5	Pass	
Mercury	mg/kg	< 0.1			0.1	Pass	
Nickel	mg/kg	< 5			5	Pass	
Zinc	mg/kg	< 5			5	Pass	
LCS - % Recovery							
Total Recoverable Hydrocarbons - 1999 NEPM Fractions							
TRH C6-C9	%	102			70-130	Pass	
TRH C10-C14	%	95			70-130	Pass	
LCS - % Recovery							
BTEX							
Benzene	%	102			70-130	Pass	
Toluene	%	110			70-130	Pass	
Ethylbenzene	%	110			70-130	Pass	
m&p-Xylenes	%	115			70-130	Pass	
o-Xylene	%	114			70-130	Pass	
Xylenes - Total*	%	115			70-130	Pass	
LCS - % Recovery							
Total Recoverable Hydrocarbons - 2013 NEPM Fractions							
Naphthalene	%	126			70-130	Pass	
TRH C6-C10	%	103			70-130	Pass	
TRH >C10-C16	%	93			70-130	Pass	
LCS - % Recovery							
Polycyclic Aromatic Hydrocarbons							
Acenaphthene	%	90			70-130	Pass	
Acenaphthylene	%	102			70-130	Pass	
Anthracene	%	94			70-130	Pass	
Benz(a)anthracene	%	92			70-130	Pass	
Benzo(a)pyrene	%	95			70-130	Pass	
Benzo(b&j)fluoranthene	%	92			70-130	Pass	
Benzo(g.h.i)perylene	%	111			70-130	Pass	
Benzo(k)fluoranthene	%	97			70-130	Pass	
Chrysene	%	97			70-130	Pass	
Dibenz(a.h)anthracene	%	115			70-130	Pass	
Fluoranthene	%	90			70-130	Pass	
Fluorene	%	98			70-130	Pass	
Indeno(1.2.3-cd)pyrene	%	112			70-130	Pass	
Naphthalene	%	104			70-130	Pass	
Phenanthrene	%	96			70-130	Pass	
Pyrene	%	89			70-130	Pass	
LCS - % Recovery							
Organochlorine Pesticides							
Chlordanes - Total	%	104			70-130	Pass	
4.4'-DDD	%	100			70-130	Pass	
4.4'-DDE	%	99			70-130	Pass	

Test	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
4.4'-DDT	%	108			70-130	Pass	
a-BHC	%	105			70-130	Pass	
Aldrin	%	104			70-130	Pass	
b-BHC	%	106			70-130	Pass	
d-BHC	%	127			70-130	Pass	
Dieldrin	%	104			70-130	Pass	
Endosulfan I	%	105			70-130	Pass	
Endosulfan II	%	104			70-130	Pass	
Endosulfan sulphate	%	113			70-130	Pass	
Endrin	%	114			70-130	Pass	
Endrin aldehyde	%	99			70-130	Pass	
Endrin ketone	%	103			70-130	Pass	
g-BHC (Lindane)	%	105			70-130	Pass	
Heptachlor	%	102			70-130	Pass	
Heptachlor epoxide	%	105			70-130	Pass	
Hexachlorobenzene	%	103			70-130	Pass	
Methoxychlor	%	115			70-130	Pass	
Toxaphene	%	114			70-130	Pass	
LCS - % Recovery							
Organophosphorus Pesticides							
Diazinon	%	91			70-130	Pass	
Dimethoate	%	97			70-130	Pass	
Ethion	%	96			70-130	Pass	
Fenitrothion	%	96			70-130	Pass	
Methyl parathion	%	127			70-130	Pass	
Mevinphos	%	105			70-130	Pass	
LCS - % Recovery							
Polychlorinated Biphenyls							
Aroclor-1016	%	105			70-130	Pass	
Aroclor-1260	%	103			70-130	Pass	
LCS - % Recovery							
Conductivity (1:5 aqueous extract at 25°C as rec.)	%	110			70-130	Pass	
Resistivity*	%	110			70-130	Pass	
LCS - % Recovery							
Heavy Metals							
Arsenic	%	100			70-130	Pass	
Cadmium	%	104			70-130	Pass	
Chromium	%	101			70-130	Pass	
Copper	%	99			70-130	Pass	
Lead	%	101			70-130	Pass	
Mercury	%	95			70-130	Pass	
Nickel	%	102			70-130	Pass	
Zinc	%	101			70-130	Pass	

Test	Lab Sample ID	QA Source	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Spike - % Recovery									
Total Recoverable Hydrocarbons - 1999 NEPM Fractions				Result 1					
TRH C6-C9	S20-Ma39435	NCP	%	91			70-130	Pass	
TRH C10-C14	W20-Ma38109	NCP	%	91			70-130	Pass	
Spike - % Recovery									
BTEX				Result 1					
Benzene	S20-Ma39435	NCP	%	102			70-130	Pass	
Toluene	S20-Ma39435	NCP	%	107			70-130	Pass	
Ethylbenzene	S20-Ma39435	NCP	%	108			70-130	Pass	
m&p-Xylenes	S20-Ma39435	NCP	%	108			70-130	Pass	

Test	Lab Sample ID	QA Source	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
o-Xylene	S20-Ma39435	NCP	%	109			70-130	Pass	
Xylenes - Total*	S20-Ma39435	NCP	%	109			70-130	Pass	
Spike - % Recovery									
Total Recoverable Hydrocarbons - 2013 NEPM Fractions				Result 1					
Naphthalene	S20-Ma39435	NCP	%	109			70-130	Pass	
TRH C6-C10	S20-Ma39435	NCP	%	92			70-130	Pass	
TRH >C10-C16	W20-Ma38109	NCP	%	89			70-130	Pass	
Spike - % Recovery									
Polycyclic Aromatic Hydrocarbons				Result 1					
Acenaphthene	S20-Ma39473	NCP	%	91			70-130	Pass	
Acenaphthylene	S20-Ma39473	NCP	%	93			70-130	Pass	
Anthracene	S20-Ma39473	NCP	%	85			70-130	Pass	
Benz(a)anthracene	S20-Ma39473	NCP	%	92			70-130	Pass	
Benzo(a)pyrene	S20-Ma39473	NCP	%	87			70-130	Pass	
Benzo(b&j)fluoranthene	S20-Ma39473	NCP	%	98			70-130	Pass	
Benzo(g.h.i)perylene	S20-Ma39473	NCP	%	109			70-130	Pass	
Benzo(k)fluoranthene	S20-Ma39473	NCP	%	95			70-130	Pass	
Chrysene	S20-Ma39473	NCP	%	96			70-130	Pass	
Dibenz(a.h)anthracene	S20-Ma39473	NCP	%	106			70-130	Pass	
Fluoranthene	S20-Ma39473	NCP	%	91			70-130	Pass	
Fluorene	S20-Ma39473	NCP	%	95			70-130	Pass	
Indeno(1.2.3-cd)pyrene	S20-Ma39473	NCP	%	102			70-130	Pass	
Naphthalene	S20-Ma39473	NCP	%	100			70-130	Pass	
Phenanthrene	S20-Ma39473	NCP	%	94			70-130	Pass	
Pyrene	S20-Ma39473	NCP	%	91			70-130	Pass	
Spike - % Recovery									
Organochlorine Pesticides				Result 1					
Chlordanes - Total	S20-Ma39560	NCP	%	105			70-130	Pass	
4.4'-DDD	S20-Ma35399	NCP	%	123			70-130	Pass	
4.4'-DDE	S20-Ma39560	NCP	%	99			70-130	Pass	
4.4'-DDT	S20-Ma39354	NCP	%	93			70-130	Pass	
a-BHC	S20-Ma39560	NCP	%	107			70-130	Pass	
Aldrin	S20-Ma39560	NCP	%	104			70-130	Pass	
b-BHC	S20-Ma39560	NCP	%	101			70-130	Pass	
d-BHC	S20-Ma39560	NCP	%	130			70-130	Pass	
Dieldrin	S20-Ma39560	NCP	%	103			70-130	Pass	
Endosulfan I	S20-Ma39560	NCP	%	104			70-130	Pass	
Endosulfan II	S20-Ma39560	NCP	%	103			70-130	Pass	
Endosulfan sulphate	S20-Ma39560	NCP	%	111			70-130	Pass	
Endrin	S20-Ma39560	NCP	%	103			70-130	Pass	
Endrin aldehyde	S20-Ma39560	NCP	%	106			70-130	Pass	
Endrin ketone	S20-Ma39560	NCP	%	92			70-130	Pass	
g-BHC (Lindane)	S20-Ma39560	NCP	%	102			70-130	Pass	
Heptachlor	S20-Ma39560	NCP	%	87			70-130	Pass	
Heptachlor epoxide	S20-Ma39560	NCP	%	104			70-130	Pass	
Hexachlorobenzene	S20-Ma39560	NCP	%	108			70-130	Pass	
Methoxychlor	S20-Ma39354	NCP	%	100			70-130	Pass	
Toxaphene	S20-Ma39354	NCP	%	129			70-130	Pass	
Spike - % Recovery									
Organophosphorus Pesticides				Result 1					
Diazinon	S20-Ma39473	NCP	%	85			70-130	Pass	
Dimethoate	S20-Ma39473	NCP	%	71			70-130	Pass	
Ethion	S20-Ma39473	NCP	%	100			70-130	Pass	
Fenitrothion	S20-Ma39473	NCP	%	76			70-130	Pass	

Test	Lab Sample ID	QA Source	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Methyl parathion	S20-Ma39473	NCP	%	74			70-130	Pass	
Mevinphos	S20-Ma39473	NCP	%	79			70-130	Pass	
Spike - % Recovery									
Polychlorinated Biphenyls				Result 1					
Aroclor-1260	S20-Ma39643	NCP	%	93			70-130	Pass	
Spike - % Recovery									
Heavy Metals				Result 1					
Arsenic	W20-Ma38109	NCP	%	104			70-130	Pass	
Cadmium	W20-Ma38109	NCP	%	106			70-130	Pass	
Chromium	W20-Ma38109	NCP	%	95			70-130	Pass	
Copper	W20-Ma38109	NCP	%	116			70-130	Pass	
Lead	W20-Ma38109	NCP	%	102			70-130	Pass	
Mercury	W20-Ma38109	NCP	%	95			70-130	Pass	
Nickel	W20-Ma38109	NCP	%	89			70-130	Pass	
Zinc	W20-Ma38109	NCP	%	114			70-130	Pass	
Spike - % Recovery									
Polychlorinated Biphenyls				Result 1					
Aroclor-1016	S20-Ma39473	NCP	%	104			70-130	Pass	
Test	**Lab Sample ID**	**QA Source**	**Units**	**Result 1**			**Acceptance Limits**	**Pass Limits**	**Qualifying Code**
Duplicate									
Organochlorine Pesticides				Result 1	Result 2	RPD			
Toxaphene	S20-Ma39555	NCP	mg/kg	< 1	< 1	<1	30%	Pass	
Duplicate									
				Result 1	Result 2	RPD			
% Moisture	S20-Ma39459	NCP	%	12	12	2.0	30%	Pass	
Duplicate									
Heavy Metals				Result 1	Result 2	RPD			
Arsenic	S20-Ma40102	NCP	mg/kg	14	11	21	30%	Pass	
Cadmium	S20-Ma40102	NCP	mg/kg	< 0.4	< 0.4	<1	30%	Pass	
Chromium	S20-Ma40102	NCP	mg/kg	15	14	8.0	30%	Pass	
Copper	S20-Ma40102	NCP	mg/kg	11	9.4	20	30%	Pass	
Lead	S20-Ma40102	NCP	mg/kg	30	25	18	30%	Pass	
Mercury	S20-Ma40102	NCP	mg/kg	< 0.1	< 0.1	<1	30%	Pass	
Nickel	S20-Ma40102	NCP	mg/kg	5.8	5.3	9.0	30%	Pass	
Zinc	S20-Ma40102	NCP	mg/kg	41	40	2.0	30%	Pass	
Duplicate									
				Result 1	Result 2	RPD			
Conductivity (1:5 aqueous extract at 25°C as rec.)	S20-Ma39213	CP	uS/cm	47	51	7.7	30%	Pass	
pH (1:5 Aqueous extract at 25°C as rec.)	S20-Ma39213	CP	pH Units	5.6	5.6	Pass	30%	Pass	
Resistivity*	S20-Ma39213	CP	ohm.m	210	200	7.7	30%	Pass	
Duplicate									
Total Recoverable Hydrocarbons - 1999 NEPM Fractions				Result 1	Result 2	RPD			
TRH C6-C9	S20-Ma39216	CP	mg/kg	< 20	< 20	<1	30%	Pass	
TRH C10-C14	S20-Ma39216	CP	mg/kg	< 20	< 20	<1	30%	Pass	
TRH C15-C28	S20-Ma39216	CP	mg/kg	< 50	< 50	<1	30%	Pass	
TRH C29-C36	S20-Ma39216	CP	mg/kg	< 50	< 50	<1	30%	Pass	
Duplicate									
BTEX				Result 1	Result 2	RPD			
Benzene	S20-Ma39216	CP	mg/kg	< 0.1	< 0.1	<1	30%	Pass	
Toluene	S20-Ma39216	CP	mg/kg	< 0.1	< 0.1	<1	30%	Pass	
Ethylbenzene	S20-Ma39216	CP	mg/kg	< 0.1	< 0.1	<1	30%	Pass	
m&p-Xylenes	S20-Ma39216	CP	mg/kg	< 0.2	< 0.2	<1	30%	Pass	

Duplicate									
BTEX				Result 1	Result 2	RPD			
o-Xylene	S20-Ma39216	CP	mg/kg	< 0.1	< 0.1	<1	30%	Pass	
Xylenes - Total*	S20-Ma39216	CP	mg/kg	< 0.3	< 0.3	<1	30%	Pass	
Duplicate									
Total Recoverable Hydrocarbons - 2013 NEPM Fractions				Result 1	Result 2	RPD			
Naphthalene	S20-Ma39216	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
TRH C6-C10	S20-Ma39216	CP	mg/kg	< 20	< 20	<1	30%	Pass	
TRH >C10-C16	S20-Ma39216	CP	mg/kg	< 50	< 50	<1	30%	Pass	
TRH >C16-C34	S20-Ma39216	CP	mg/kg	< 100	< 100	<1	30%	Pass	
TRH >C34-C40	S20-Ma39216	CP	mg/kg	< 100	< 100	<1	30%	Pass	
Duplicate									
Polycyclic Aromatic Hydrocarbons				Result 1	Result 2	RPD			
Acenaphthene	S20-Ma39216	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Acenaphthylene	S20-Ma39216	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Anthracene	S20-Ma39216	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Benz(a)anthracene	S20-Ma39216	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Benzo(a)pyrene	S20-Ma39216	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Benzo(b&j)fluoranthene	S20-Ma39216	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Benzo(g.h.i)perylene	S20-Ma39216	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Benzo(k)fluoranthene	S20-Ma39216	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Chrysene	S20-Ma39216	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Dibenz(a.h)anthracene	S20-Ma39216	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Fluoranthene	S20-Ma39216	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Fluorene	S20-Ma39216	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Indeno(1.2.3-cd)pyrene	S20-Ma39216	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Naphthalene	S20-Ma39216	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Phenanthrene	S20-Ma39216	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Pyrene	S20-Ma39216	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Duplicate									
Organochlorine Pesticides				Result 1	Result 2	RPD			
Chlordanes - Total	S20-Ma39216	CP	mg/kg	< 0.1	< 0.1	<1	30%	Pass	
4.4'-DDD	S20-Ma39216	CP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
4.4'-DDE	S20-Ma39216	CP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
4.4'-DDT	S20-Ma39216	CP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
a-BHC	S20-Ma39216	CP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
Aldrin	S20-Ma39216	CP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
b-BHC	S20-Ma39216	CP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
d-BHC	S20-Ma39216	CP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
Dieldrin	S20-Ma39216	CP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
Endosulfan I	S20-Ma39216	CP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
Endosulfan II	S20-Ma39216	CP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
Endosulfan sulphate	S20-Ma39216	CP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
Endrin	S20-Ma39216	CP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
Endrin aldehyde	S20-Ma39216	CP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
Endrin ketone	S20-Ma39216	CP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
g-BHC (Lindane)	S20-Ma39216	CP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
Heptachlor	S20-Ma39216	CP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
Heptachlor epoxide	S20-Ma39216	CP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
Hexachlorobenzene	S20-Ma39216	CP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
Methoxychlor	S20-Ma39216	CP	mg/kg	< 0.2	< 0.2	<1	30%	Pass	

Duplicate									
Organophosphorus Pesticides				Result 1	Result 2	RPD			
Azinphos-methyl	S20-Ma39216	CP	mg/kg	< 0.2	< 0.2	<1	30%	Pass	
Bolstar	S20-Ma39216	CP	mg/kg	< 0.2	< 0.2	<1	30%	Pass	
Chlorfenvinphos	S20-Ma39216	CP	mg/kg	< 0.2	< 0.2	<1	30%	Pass	
Chlorpyrifos	S20-Ma39216	CP	mg/kg	< 0.2	< 0.2	<1	30%	Pass	
Chlorpyrifos-methyl	S20-Ma39216	CP	mg/kg	< 0.2	< 0.2	<1	30%	Pass	
Coumaphos	S20-Ma39216	CP	mg/kg	< 2	< 2	<1	30%	Pass	
Demeton-S	S20-Ma39216	CP	mg/kg	< 0.2	< 0.2	<1	30%	Pass	
Demeton-O	S20-Ma39216	CP	mg/kg	< 0.2	< 0.2	<1	30%	Pass	
Diazinon	S20-Ma39216	CP	mg/kg	< 0.2	< 0.2	<1	30%	Pass	
Dichlorvos	S20-Ma39216	CP	mg/kg	< 0.2	< 0.2	<1	30%	Pass	
Dimethoate	S20-Ma39216	CP	mg/kg	< 0.2	< 0.2	<1	30%	Pass	
Disulfoton	S20-Ma39216	CP	mg/kg	< 0.2	< 0.2	<1	30%	Pass	
EPN	S20-Ma39216	CP	mg/kg	< 0.2	< 0.2	<1	30%	Pass	
Ethion	S20-Ma39216	CP	mg/kg	< 0.2	< 0.2	<1	30%	Pass	
Ethoprop	S20-Ma39216	CP	mg/kg	< 0.2	< 0.2	<1	30%	Pass	
Ethyl parathion	S20-Ma39216	CP	mg/kg	< 0.2	< 0.2	<1	30%	Pass	
Fenitrothion	S20-Ma39216	CP	mg/kg	< 0.2	< 0.2	<1	30%	Pass	
Fensulfothion	S20-Ma39216	CP	mg/kg	< 0.2	< 0.2	<1	30%	Pass	
Fenthion	S20-Ma39216	CP	mg/kg	< 0.2	< 0.2	<1	30%	Pass	
Malathion	S20-Ma39216	CP	mg/kg	< 0.2	< 0.2	<1	30%	Pass	
Merphos	S20-Ma39216	CP	mg/kg	< 0.2	< 0.2	<1	30%	Pass	
Methyl parathion	S20-Ma39216	CP	mg/kg	< 0.2	< 0.2	<1	30%	Pass	
Mevinphos	S20-Ma39216	CP	mg/kg	< 0.2	< 0.2	<1	30%	Pass	
Monocrotophos	S20-Ma39216	CP	mg/kg	< 2	< 2	<1	30%	Pass	
Naled	S20-Ma39216	CP	mg/kg	< 0.2	< 0.2	<1	30%	Pass	
Omethoate	S20-Ma39216	CP	mg/kg	< 2	< 2	<1	30%	Pass	
Phorate	S20-Ma39216	CP	mg/kg	< 0.2	< 0.2	<1	30%	Pass	
Pirimiphos-methyl	S20-Ma39216	CP	mg/kg	< 0.2	< 0.2	<1	30%	Pass	
Pyrazophos	S20-Ma39216	CP	mg/kg	< 0.2	< 0.2	<1	30%	Pass	
Ronnel	S20-Ma39216	CP	mg/kg	< 0.2	< 0.2	<1	30%	Pass	
Terbufos	S20-Ma39216	CP	mg/kg	< 0.2	< 0.2	<1	30%	Pass	
Tetrachlorvinphos	S20-Ma39216	CP	mg/kg	< 0.2	< 0.2	<1	30%	Pass	
Tokuthion	S20-Ma39216	CP	mg/kg	< 0.2	< 0.2	<1	30%	Pass	
Trichloronate	S20-Ma39216	CP	mg/kg	< 0.2	< 0.2	<1	30%	Pass	
Duplicate									
Polychlorinated Biphenyls				Result 1	Result 2	RPD			
Aroclor-1016	S20-Ma39216	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Aroclor-1221	S20-Ma39216	CP	mg/kg	< 0.1	< 0.1	<1	30%	Pass	
Aroclor-1232	S20-Ma39216	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Aroclor-1242	S20-Ma39216	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Aroclor-1248	S20-Ma39216	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Aroclor-1254	S20-Ma39216	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Aroclor-1260	S20-Ma39216	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Total PCB*	S20-Ma39216	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Duplicate									
Total Recoverable Hydrocarbons - 1999 NEPM Fractions				Result 1	Result 2	RPD			
TRH C10-C14	S20-Ma39218	CP	mg/kg	< 20	< 20	<1	30%	Pass	
TRH C15-C28	S20-Ma39218	CP	mg/kg	< 50	< 50	<1	30%	Pass	
TRH C29-C36	S20-Ma39218	CP	mg/kg	< 50	< 50	<1	30%	Pass	
Duplicate									
Total Recoverable Hydrocarbons - 2013 NEPM Fractions				Result 1	Result 2	RPD			
TRH >C10-C16	S20-Ma39218	CP	mg/kg	< 50	< 50	<1	30%	Pass	
TRH >C16-C34	S20-Ma39218	CP	mg/kg	< 100	< 100	<1	30%	Pass	
TRH >C34-C40	S20-Ma39218	CP	mg/kg	< 100	< 100	<1	30%	Pass	

Comments

Sample Integrity

Custody Seals Intact (if used)	N/A
Attempt to Chill was evident	Yes
Sample correctly preserved	Yes
Appropriate sample containers have been used	Yes
Sample containers for volatile analysis received with minimal headspace	Yes
Samples received within HoldingTime	Yes
Some samples have been subcontracted	No

Qualifier Codes/Comments

Code	Description
N01	F2 is determined by arithmetically subtracting the "naphthalene" value from the ">C10-C16" value. The naphthalene value used in this calculation is obtained from volatiles (Purge & Trap analysis).
N02	Where we have reported both volatile (P&T GCMS) and semivolatile (GCMS) naphthalene data, results may not be identical. Provided correct sample handling protocols have been followed, any observed differences in results are likely to be due to procedural differences within each methodology. Results determined by both techniques have passed all QAQC acceptance criteria, and are entirely technically valid.
N04	F1 is determined by arithmetically subtracting the "Total BTEX" value from the "C6-C10" value. The "Total BTEX" value is obtained by summing the concentrations of BTEX analytes. The "C6-C10" value is obtained by quantitating against a standard of mixed aromatic/aliphatic analytes.
N07	Please note:- These two PAH isomers closely co-elute using the most contemporary analytical methods and both the reported concentration (and the TEQ) apply specifically to the total of the two co-eluting PAHs
S05	Field Screen uses the following fizz rating to classify the rate the samples reacted to the peroxide: 1.0; No reaction to slight. 2.0; Moderate reaction. 3.0; Strong reaction with persistent froth. 4.0; Extreme reaction.

Authorised By

Ursula Long	Analytical Services Manager
Andrew Sullivan	Senior Analyst-Organic (NSW)
Gabriele Cordero	Senior Analyst-Inorganic (NSW)
Gabriele Cordero	Senior Analyst-Metal (NSW)
Nibha Vaidya	Senior Analyst-Asbestos (NSW)
Scott Beddoes	Senior Analyst-Inorganic (VIC)

Glenn Jackson

General Manager

Final report - this Report replaces any previously issued Report

- Indicates Not Requested

* Indicates NATA accreditation does not cover the performance of this service

Measurement uncertainty of test data is available on request or please click here.

Sue Savage Reserve

APPENDIX C

GEOTECHNICAL LOGS

BOREHOLE LOG SHEET

Client: Parramatta City Council
Project: Sue Savage Reserve
Location: Toongabbie

Hole No: BH01

Job No: 80020079 **Sheet:** 1 of 1

Position: E311467.398 N6260291.347 56 MGA94 **Angle from Horizontal:** 90° **Surface Elevation:** 26.554 m AHD

Rig Type: Comacchio 205 **Mounting:** Track **Driller:** TR

Casing Diameter: N/A **Contractor:** Stratacore

Data Started: 23/3/20 **Date Completed:** 23/3/20 **Logged By:** AC **Checked By:** TH

Drilling: Method	Drilling: Resistance	Drilling: Casing	Water	Sampling & Testing: Sample or Field Test	RL (m AHD)	Depth (m)	Material Description: Graphic Log	Classification	SOIL TYPE, plasticity or particle characteristic, colour, secondary and minor components ROCK TYPE, grain size and type, colour, fabric & texture, strength, weathering, defects and structure	Moisture Condition	Consistency Relative Density	STRUCTURE & Other Observations
AD/T									Silty SAND: fine to coarse grained, dark brown, highly organic, with rootlets	M		TOPSOIL
				ES 0.30 m ES 0.40 m SPT 0.50 - 0.95 m 2, 4, 3 N=7	26				0.20m FILL: Silty Sandy CLAY: low to medium plasticity, dark brown, fine to coarse grained sand, with decomposed organics, with fine to coarse grained, rounded to angular gravel	M		FILL
	E		Not Encountered	ES 1.10 m		1		CL-CI	0.80m Sandy CLAY: low to medium plasticity, mottled grey, orange, & red, fine to medium grained sand, trace fine to medium grained, rounded to sub-angular gravel	M (<PL)	St	ALLUVIUM
				D 1.40 m ES 1.40 m SPT 1.50 - 1.95 m 4, 7, 14 N=21	25			CI-CH	1.20m Silty Sandy CLAY: medium to high plasticity, orange, fine to medium grained sand, trace fine grained, sub-rounded ironstone gravel	M (>PL)	St	RESIDUAL SOIL
						2		SM	1.70m Silty SAND: fine to medium grained, brown, orange, & white	D	MD	
	F								2.20m			
	H				24				SANDSTONE: fine to medium, red, orange, & pale grey, heavily weathered			BEDROCK 2.20 m: heavily weathered
									2.80m TERMINATED AT 2.80 m Refusal			
					23	3						
					22	4						
					21	5						

METHOD
- EX Excavator bucket
- R Ripper
- HA Hand auger
- PT Push tube
- SON Sonic drilling
- AH Air hammer
- PS Percussion sampler
- AS Short spiral auger
- AD/V Solid flight auger: V-Bit
- AD/T Solid flight auger: TC-Bit
- HFA Hollow flight auger
- WB Washbore drilling
- RR Rock roller

PENETRATION
- VE Very Easy (No Resistance)
- E Easy
- F Firm
- H Hard
- VH Very Hard (Refusal)

WATER
- Water Level on Date shown
- water inflow
- water outflow

FIELD TESTS
- SPT - Standard Penetration Test
- HP - Hand/Pocket Penetrometer
- DCP - Dynamic Cone Penetrometer
- PSP - Perth Sand Penetrometer
- MC - Moisture Content
- PBT - Plate Bearing Test
- IMP - Borehole Impression Test
- PID - Photoionisation Detector
- VS - Vane Shear; P=Peak, R=Resdual (uncorrected kPa)

SAMPLES
- B - Bulk disturbed sample
- D - Disturbed sample
- ES - Environmental sample
- U - Thin wall tube 'undisturbed'

MOISTURE
- D - Dry
- M - Moist
- W - Wet
- PL - Plastic limit
- LL - Liquid limit
- *w* - Moisture content

SOIL CONSISTENCY
- VS - Very Soft
- S - Soft
- F - Firm
- St - Stiff
- VSt - Very Stiff
- H - Hard

RELATIVE DENSITY
- VL - Very Loose
- L - Loose
- MD - Medium Dense
- D - Dense
- VD - Very Dense

Refer to explanatory notes for details of abbreviations and basis of descriptions

CARDNO (NSW/ACT) PTY LTD

BOREHOLE LOG SHEET

Client: Parramatta City Council
Project: Sue Savage Reserve
Location: Toongabbie

Hole No: BH02

Job No: 80020079 **Sheet:** 1 of 1

Position: E311389.430 N6260298.445 56 MGA94 **Angle from Horizontal:** 90° **Surface Elevation:** 25.829 m AHD

Rig Type: Comacchio 205 **Mounting:** Track **Driller:** TR

Casing Diameter: N/A **Contractor:** Stratacore

Data Started: 23/3/20 **Date Completed:** 23/3/20 **Logged By:** AC **Checked By:** TH

Drilling				Sampling & Testing			Material Description					
Method	Resistance	Casing	Water	Sample or Field Test	RL (m AHD)	Depth (m)	Graphic Log	Classification	SOIL TYPE, plasticity or particle characteristic, colour, secondary and minor components ROCK TYPE, grain size and type, colour, fabric & texture, strength, weathering, defects and structure	Moisture Condition	Consistency Relative Density	STRUCTURE & Other Observations
AD/T			Not Encountered	ES 0.30 m SPT 0.50 - 0.95 m 3, 5, 9 N=14 ES 0.60 m SPT 1.50 - 1.95 m 6, 4, 7 N=11 ES 1.60 m ES 2.60 m D 2.70 m SPT 3.00 - 3.45 m 9, 3, 5 N=8 ES 3.20 m	25 24 23 22 21 20	1 2 3 4 5			Silty Clayey SAND: fine to coarse grained, dark brown 0.20m	M		TOPSOIL
									FILL: Silty Clayey SAND: fine to coarse grained, grey & brown 0.50m			FILL
									FILL: Sandy Gravelly CLAY: medium plasticity, dark brown & grey, fine to medium grained sand, trace organics, ceramic fragments, glass	M (>PL)		
									1.60m FILL: Sandy Gravelly CLAY: medium plasticity, dark brown & grey, fine to medium grained sand, trace organics, ceramic fragments, glass, trace sandstone and shale gravel, fine to medium grained	M (≈PL)		
									2.50m Sandy CLAY: medium plasticity, mottled brown & grey, fine to medium grained sand, trace fine to medium grained, sub-rounded to rounded gravel	W	F	ALLUVIUM
								CI	3.00m			
								CI-CH	Sandy CLAY: medium to high plasticity, mottled grey & orange, fine to medium grained sand 3.30m		F	RESIDUAL SOIL
								SC	Clayey SAND: fine to medium grained, pale grey 3.50m	D	MD	
									SANDSTONE: fine to medium, pale grey, iron stained throughout 3.80m			
									TERMINATED AT 3.80 m Refusal			

METHOD
EX Excavator bucket
R Ripper
HA Hand auger
PT Push tube
SON Sonic drilling
AH Air hammer
PS Percussion sampler
AS Short spiral auger
AD/V Solid flight auger: V-Bit
AD/T Solid flight auger: TC-Bit
HFA Hollow flight auger
WB Washbore drilling
RR Rock roller

PENETRATION
VE Very Easy (No Resistance)
E Easy
F Firm
H Hard
VH Very Hard (Refusal)

WATER
Water Level on Date shown
water inflow
water outflow

FIELD TESTS
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PSP - Perth Sand Penetrometer
MC - Moisture Content
PBT - Plate Bearing Test
IMP - Borehole Impression Test
PID - Photoionisation Detector
VS - Vane Shear; P=Peak, R=Resdual (uncorrected kPa)

SAMPLES
B - Bulk disturbed sample
D - Disturbed sample
ES - Environmental sample
U - Thin wall tube 'undisturbed'

MOISTURE
D - Dry
M - Moist
W - Wet
PL - Plastic limit
LL - Liquid limit
w - Moisture content

SOIL CONSISTENCY
VS - Very Soft
S - Soft
F - Firm
St - Stiff
VSt - Very Stiff
H - Hard

RELATIVE DENSITY
VL - Very Loose
L - Loose
MD - Medium Dense
D - Dense
VD - Very Dense

Refer to explanatory notes for details of abbreviations and basis of descriptions

CARDNO (NSW/ACT) PTY LTD

Cardno

BOREHOLE LOG SHEET

Client: Parramatta City Council
Project: Sue Savage Reserve
Location: Toongabbie

Hole No: BH03

Job No: 80020079 **Sheet:** 1 of 1

Position: E311367.966 N6260305.883 56 MGA94 **Angle from Horizontal:** 90° **Surface Elevation:** 25.835 m AHD

Rig Type: Comacchio 205 **Mounting:** Track **Driller:** TR

Casing Diameter: N/A **Contractor:** Stratacore

Data Started: 23/3/20 **Date Completed:** 23/3/20 **Logged By:** AC **Checked By:** TH

Drilling			Water	Sampling & Testing	RL (m AHD)	Depth (m)	Material Description					
Method	Resistance	Casing		Sample or Field Test			Graphic Log	Classification	SOIL TYPE, plasticity or particle characteristic, colour, secondary and minor components ROCK TYPE, grain size and type, colour, fabric & texture, strength, weathering, defects and structure	Moisture Condition	Consistency Relative Density	STRUCTURE & Other Observations
AD/T	E		Not Encountered	ES 0.40 m SPT 0.50 - 0.95 m 2, 9, 20 N=29	25	1			Silty SAND: fine to coarse grained, dark brown, highly organic, with rootlets	M		TOPSOIL
									0.20m FILL: Silty Sandy CLAY: medium plasticity, brown & dark brown, fine to coarse grained sand, trace fine to medium grained, sub-rounded sandstone gravel, trace black carbonaceous fragments	M (≈PL)		FILL
	VH			SPT 1.50 - 1.95 m 4, 2, 13 N=15 ES 1.60 m	24	2			0.80m FILL: Silty Sandy CLAY: medium plasticity, brown & dark brown, fine to coarse grained sand, trace fine to medium grained, sub-rounded sandstone gravel, trace black carbonaceous fragments, trace concrete fragments, trace ceramic fragments, trace rootlets, trace decomposed timber fragments			
				JB 1.90 m					1.90-1.95m: black carbonaceous gravel, with sand	M (≈PL)		
	F		23/03/20 ▽	SPT 3.00 - 3.45 m 2, 2, 4 N=6 B 3.20 - 3.60 m ES 3.20 m PP 3.20 m =120 - 150 kPa	23	3			3.00m Silty Sandy CLAY: high plasticity, grey and dark brown, fine to medium grained sand			ALLUVIUM
				SPT 4.50 - 4.95 m 4, 3, 6 N=9	22	4		CH		W	F	
					21	5			5.00m TERMINATED AT 5.00 m Target depth			
					20							

METHOD
- EX Excavator bucket
- R Ripper
- HA Hand auger
- PT Push tube
- SON Sonic drilling
- AH Air hammer
- PS Percussion sampler
- AS Short spiral auger
- AD/V Solid flight auger: V-Bit
- AD/T Solid flight auger: TC-Bit
- HFA Hollow flight auger
- WB Washbore drilling
- RR Rock roller

PENETRATION
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- E Easy
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- VH Very Hard (Refusal)

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- water outflow

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- VL - Very Loose
- L - Loose
- MD - Medium Dense
- D - Dense
- VD - Very Dense

Refer to explanatory notes for details of abbreviations and basis of descriptions

CARDNO (NSW/ACT) PTY LTD

BOREHOLE LOG SHEET

Client: Parramatta City Council
Project: Sue Savage Reserve
Location: Toongabbie

Hole No: BH04

Job No: 80020079 **Sheet:** 1 of 1

Position: E311348.388 N6260300.086 56 MGA94 **Angle from Horizontal:** 90° **Surface Elevation:** 26.949 m AHD

Rig Type: Comacchio 205 **Mounting:** Track **Driller:** TR

Casing Diameter: N/A **Contractor:** Stratacore

Data Started: 23/3/20 **Date Completed:** 23/3/20 **Logged By:** AC **Checked By:** TH

Drilling			Water	Sampling & Testing	RL (m AHD)	Depth (m)	Material Description					
Method	Resistance	Casing		Sample or Field Test			Graphic Log	Classification	SOIL TYPE, plasticity or particle characteristic, colour, secondary and minor components ROCK TYPE, grain size and type, colour, fabric & texture, strength, weathering, defects and structure	Moisture Condition	Consistency Relative Density	STRUCTURE & Other Observations
AD/T	F		Not Encountered	ES 0.50 m SPT 0.50 - 0.95 m 4, 3, 4 N=7	26	1			Silty SAND: fine to coarse grained, dark brown, highly organic, with rootlets 0.20m	M		TOPSOIL
									FILL: Silty Sandy CLAY: low to medium plasticity, brown, grey, & orange, fine to coarse grained sand, trace fine to coarse grained gravel, trace black carbonaceous fragments	M (<PL)		FILL
	H			D 1.20 m SPT 1.50 - 1.85 m 4, 4, 12/50mm N=R PP 1.80 m >600 kPa	25	2			1.50m FILL: Silty Sandy CLAY: low to medium plasticity, brown, grey, & orange, fine to coarse grained sand, trace fine to coarse grained gravel, trace black carbonaceous fragments, trace concrete fragments, trace ceramic fragments	M (<PL)		
	VH								2.70m FILL: Silty Sandy CLAY: low to medium plasticity, brown, grey, & orange, fine to coarse grained sand, trace fine to coarse grained gravel, trace black carbonaceous fragments, trace concrete fragments, trace ceramic fragments, trace concrete cobbles	M (<PL)		3.00 m: SPT refusal due to bouncing
	F-VH		23/03/20	SPT 3.00 - 3.32 m 25/20mm HB N=R D 3.60 m D 3.80 m	24 23	3 4		CI CI	3.60m Sandy CLAY: medium plasticity, grey & dark grey, fine to coarse grained sand 3.80m Sandy CLAY: medium plasticity, orange & red, fine to coarse grained sand 4.00m	W M (>PL)		ALLUVIUM RESIDUAL SOIL
					22 21	5			TERMINATED AT 4.00 m Target depth			

METHOD
EX Excavator bucket
R Ripper
HA Hand auger
PT Push tube
SON Sonic drilling
AH Air hammer
PS Percussion sampler
AS Short spiral auger
AD/V Solid flight auger: V-Bit
AD/T Solid flight auger: TC-Bit
HFA Hollow flight auger
WB Washbore drilling
RR Rock roller

PENETRATION
VE Very Easy (No Resistance)
E Easy
F Firm
H Hard
VH Very Hard (Refusal)

WATER
Water Level on Date shown
water inflow
water outflow

FIELD TESTS
SPT - Standard Penetration Test
HP - Hand/Pocket Penetrometer
DCP - Dynamic Cone Penetrometer
PSP - Perth Sand Penetrometer
MC - Moisture Content
PBT - Plate Bearing Test
IMP - Borehole Impression Test
PID - Photoionisation Detector
VS - Vane Shear; P=Peak, R=Resdual (uncorrected kPa)

SAMPLES
B - Bulk disturbed sample
D - Disturbed sample
ES - Environmental sample
U - Thin wall tube 'undisturbed'

MOISTURE
D - Dry
M - Moist
W - Wet
PL - Plastic limit
LL - Liquid limit
w - Moisture content

SOIL CONSISTENCY
VS - Very Soft
S - Soft
F - Firm
St - Stiff
VSt - Very Stiff
H - Hard

RELATIVE DENSITY
VL - Very Loose
L - Loose
MD - Medium Dense
D - Dense
VD - Very Dense

Refer to explanatory notes for details of abbreviations and basis of descriptions

CARDNO (NSW/ACT) PTY LTD

Cardno

BOREHOLE LOG SHEET

Client: Parramatta City Council
Project: Sue Savage Reserve
Location: Toongabbie

Hole No: BH05

Job No: 80020079 **Sheet:** 1 of 1

Position: E311324.286 N6260303.569 56 MGA94 **Angle from Horizontal:** 90° **Surface Elevation:** 26.908 m AHD
Rig Type: Comacchio 205 **Mounting:** Track **Driller:** TR
Casing Diameter: N/A **Contractor:** Stratacore
Data Started: 23/3/20 **Date Completed:** 23/3/20 **Logged By:** AC **Checked By:** TH

Drilling: Method	Drilling: Resistance	Drilling: Casing	Water	Sampling & Testing: Sample or Field Test	RL (m AHD)	Depth (m)	Graphic Log	Classification	Material Description: SOIL TYPE, plasticity or particle characteristic, colour, secondary and minor components ROCK TYPE, grain size and type, colour, fabric & texture, strength, weathering, defects and structure	Moisture Condition	Consistency Relative Density	Material Description: STRUCTURE & Other Observations
AD/T			Not Encountered	ES 0.00 m					0.10m Silty SAND: fine to coarse grained, dark brown, highly organic, with rootlets	M		TOPSOIL
									0.30m FILL: Gravelly SAND: fine to coarse grained, grey & brown, fine to coarse grained gravel	D		FILL
	F			SPT 0.50 - 0.95 m 4, 7, 9 N=16	26	1			FILL: Silty Sandy CLAY: medium plasticity, brown & grey, fine to coarse grained sand, trace fine to coarse grained, angular to sub-rounded gravel, trace black carbonaceous fragments	M (<PL)		
				D 1.20 m					1.50m			
				SPT 1.50 - 1.95 m 7, 8, 8 N=16					FILL: Silty Sandy CLAY: medium plasticity, brown & grey, fine to coarse grained sand, trace fine to coarse grained, angular to sub-rounded gravel, trace black carbonaceous fragments, trace decomposed timber fragments, trace fine to coarse grained, sub-rounded sandstone gravel			
					25	2				M (<PL)		
	F-H			SPT 3.00 - 3.45 m 3, 4, 13 N=17	24	3			3.00m FILL: Silty Sandy CLAY: medium plasticity, brown & grey, fine to coarse grained sand, trace fine to coarse grained, angular to sub-rounded gravel, trace black carbonaceous fragments, trace decomposed timber fragments, trace fine to coarse grained, angular, sandstone and siltstone gravel			
					23	4				M (<PL)		
				SPT 4.50 - 4.95 m 2, 3, 7 N=10					4.90m			
					22	5			5.00m Silty SAND: fine to medium grained, pale orange	D		ALLUVIUM
									TERMINATED AT 5.00 m Target depth			
					21							

METHOD
EX Excavator bucket
R Ripper
HA Hand auger
PT Push tube
SON Sonic drilling
AH Air hammer
PS Percussion sampler
AS Short spiral auger
AD/V Solid flight auger: V-Bit
AD/T Solid flight auger: TC-Bit
HFA Hollow flight auger
WB Washbore drilling
RR Rock roller

PENETRATION
VE Very Easy (No Resistance)
E Easy
F Firm
H Hard
VH Very Hard (Refusal)

WATER
Water Level on Date shown
water inflow
water outflow

FIELD TESTS
SPT - Standard Penetration Test
HP - Hand/Pocket Penetrometer
DCP - Dynamic Cone Penetrometer
PSP - Perth Sand Penetrometer
MC - Moisture Content
PBT - Plate Bearing Test
IMP - Borehole Impression Test
PID - Photoionisation Detector
VS - Vane Shear; P=Peak, R=Resdual (uncorrected kPa)

SAMPLES
B - Bulk disturbed sample
D - Disturbed sample
ES - Environmental sample
U - Thin wall tube 'undisturbed'

MOISTURE
D - Dry
M - Moist
W - Wet
PL - Plastic limit
LL - Liquid limit
w - Moisture content

SOIL CONSISTENCY
VS - Very Soft
S - Soft
F - Firm
St - Stiff
VSt - Very Stiff
H - Hard

RELATIVE DENSITY
VL - Very Loose
L - Loose
MD - Medium Dense
D - Dense
VD - Very Dense

Refer to explanatory notes for details of abbreviations and basis of descriptions

CARDNO (NSW/ACT) PTY LTD

Cardno

BOREHOLE LOG SHEET

Client: Parramatta City Council
Project: Sue Savage Reserve
Location: Toongabbie

Hole No: BH06

Job No: 80020079 **Sheet:** 1 of 1

Position: E311382.527 N6260253.441 56 MGA94 **Angle from Horizontal:** 90° **Surface Elevation:** 24.390 m AHD

Rig Type: Comacchio 205 **Mounting:** Track **Driller:** TR

Casing Diameter: N/A **Contractor:** Stratacore

Data Started: 23/3/20 **Date Completed:** 23/3/20 **Logged By:** AC **Checked By:** TH

Drilling: Method	Drilling: Resistance	Drilling: Casing	Water	Sampling & Testing: Sample or Field Test	RL (m AHD)	Depth (m)	Material Description: Graphic Log	Classification	SOIL TYPE, plasticity or particle characteristic, colour, secondary and minor components ROCK TYPE, grain size and type, colour, fabric & texture, strength, weathering, defects and structure	Moisture Condition	Consistency Relative Density	STRUCTURE & Other Observations
AD/T			Not Encountered	B 0.30 - 0.80 m	24	1			Silty SAND: fine to coarse grained, dark brown, highly organic, with rootlets	M		TOPSOIL
									0.20m			
								CI-CH	Silty Sandy CLAY: medium to high plasticity, brown & orange, fine to medium grained sand, trace rounded gravel	M (<PL)	F	ALLUVIUM
					23				1.00m			
								CH	Silty CLAY: high plasticity, grey	W	F	
									1.50m			
									TERMINATED AT 1.50 m Target depth			
					22	2						
					21	3						
					20	4						
					19	5						

METHOD

EX	Excavator bucket
R	Ripper
HA	Hand auger
PT	Push tube
SON	Sonic drilling
AH	Air hammer
PS	Percussion sampler
AS	Short spiral auger
AD/V	Solid flight auger: V-Bit
AD/T	Solid flight auger: TC-Bit
HFA	Hollow flight auger
WB	Washbore drilling
RR	Rock roller

PENETRATION

VE	Very Easy (No Resistance)
E	Easy
F	Firm
H	Hard
VH	Very Hard (Refusal)

WATER

Water Level on Date shown
water inflow
water outflow

FIELD TESTS

SPT	-	Standard Penetration Test
HP	-	Hand/Pocket Penetrometer
DCP	-	Dynamic Cone Penetrometer
PSP	-	Perth Sand Penetrometer
MC	-	Moisture Content
PBT	-	Plate Bearing Test
IMP	-	Borehole Impression Test
PID	-	Photoionisation Detector
VS	-	Vane Shear; P=Peak, R=Resdual (uncorrected kPa)

SAMPLES

B	-	Bulk disturbed sample
D	-	Disturbed sample
ES	-	Environmental sample
U	-	Thin wall tube 'undisturbed'

MOISTURE

D	-	Dry
M	-	Moist
W	-	Wet
PL	-	Plastic limit
LL	-	Liquid limit
w	-	Moisture content

SOIL CONSISTENCY

VS	-	Very Soft
S	-	Soft
F	-	Firm
St	-	Stiff
VSt	-	Very Stiff
H	-	Hard

RELATIVE DENSITY

VL	-	Very Loose
L	-	Loose
MD	-	Medium Dense
D	-	Dense
VD	-	Very Dense

Refer to explanatory notes for details of abbreviations and basis of descriptions

CARDNO (NSW/ACT) PTY LTD

Sue Savage Reserve

APPENDIX D

LABORATORY RESULTS

STS Geotechnics Pty Ltd
14/1 Cowpasture Place, Wetherill Park NSW 2164
Phone: (02)9756 2166 | Email: enquiries@stsgeo.com.au

GEOTECHNICS PTY LTD
CONSULTING GEOTECHNICAL ENGINEERS

Atterberg Limits and Linear Shrinkage Report

Project: Sue Savage Reserve, Toongabbie — Project No.: 30388

Client: Cardno — Report No.: 20/1047

Address: Level 9 The Forum, 209 The Pacific Highway, St Leonards NSW 2065 — Report Date: 8/04/2020

Test Method: AS 1289 3.1.1, 3.2.1, 3.3.1, 3.4.1, 2.1.1 — Page: 1 of 1

Sampling Procedure: Samples Supplied By Client (Not covered under NATA Scope of Accreditation)

STS / Sample No.	3672D-L/ 1	3672D-L/ 2	3672D-L/ 4	3672D-L/ 5	3672D-L/ 7	
Sample Location	Borehole 1	Borehole 2	Borehole 4	Borehole 4	Borehole 5	
Material Description	Sandy Gravelly Clay, brown yellow	Sandy Gravelly Clay, brown yellow	Sandy Gravelly Clay, brown yellow	Sandy Gravelly Clay, brown yellow grey	Sandy Gravelly Clay, brown yellow	
Depth (m)	1.4	2.7	1.2	3.6	1.2	
Sample Date	24/03/2020	24/03/2020	24/03/2020	24/03/2020	24/03/2020	
Sample History	Oven Dried	Oven Dried	Oven Dried	Oven Dried	Oven Dried	
Method of Preparation	Dry Sieved	Dry Sieved	Dry Sieved	Dry Sieved	Dry Sieved	
Liquid Limit (%)	**44**	**36**	**28**	**33**	**30**	
Plastic Limit (%)	**17**	**16**	**15**	**15**	**15**	
Plasticity Index	**27**	**20**	**13**	**18**	**15**	
Linear Shrinkage (%)	**14**	**11**	**10**	**10**	**10**	
Mould Size (mm)	250	250	250	250	250	
Crumbing	N	N	N	N	N	
Curling	N	N	N	N	N	

Remarks:

NATA — Accredited for compliance with ISO/IEC 17025 - Testing
The results of the tests, calibrations and/or measurements included in this document are traceable to Australian/national standards
NATA Accreditation Number 2750

Approved Signatory.....

Technician: DH

Orlando Mendoza - Laboratory Manager

STS Geotechnics Pty Ltd
14/1 Cowpasture Place, Wetherill Park NSW 2164
Phone: (02)9756 2166 | Email: enquiries@stsgeo.com.au

GEOTECHNICS PTY LTD
CONSULTING GEOTECHNICAL ENGINEERS

Emerson Class No.

Project: Sue Savage Reserve, Toongabbie — Project No.: 30388
Client: Cardno — Report No.: 20/1049
Address: L9 The Forum, 203 Pacific Highway, St Leonards NSW 2065 — Report Date: 9/04/2020
Test Method: AS1289.3.8.1 — Page: 1 of 1

Sampling Procedure: Samples Supplied By Client (Not covered under NATA Scope of Accreditation)

STS / Sample No.	3672D-L/1	3672D-L/4				
Sample Location	Borehole 1	Borehole 4				
Material Description	Silty Clay, orange brown trace of gravel	Silty Clay, brown trace of gravel				
Depth (mm)	1.4m	1.2m				
Sample Date	23/03/2020	23/03/2020				
Date Tested	7/04/2020	7/04/2020				
Source of Material	Disturbed	Disturbed				
Water Temperature (°)	22	22				
Emerson Class No.	**5**	**3**				

Emerson Classification

Class 1: Slaking and complete dispersion before remoulding

Class 2: Slaking and some dispersion before remoulding

Class 3: Slaking and no dispersion before remoulding, dispersion after remoulding

Class 4: Slaking and no despersion before remoulding, no dispersion after remoulding, calcite or gypsum present

Class 5: Slaking and no dispersion before remoulding, no dispersion after remoulding, no calcite or gypsum present, dispersion after slaking in a 1:5 soil / water suspension

Class 6: Slaking and no dispersion before remoulding, no dispersion after remoulding, no calcite or gypsum present, flocculation after shaking in a 1:5 soil / water suspension

Class 7: No slaking, swelling occurs

Class 8: No slaking, swelling does not occur

NATA
Accredited for compliance with ISO/IEC 17025 - Testing
The results of the tests, calibrations and/or measurements included in this document are traceable to Australian/national standards
NATA Accreditation Number 2750

Remarks:

Approved Signatory.....

Technician: DL

Orlando Mendoza - Laboratory Manager

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GEOTECHNICS PTY LTD
CONSULTING GEOTECHNICAL ENGINEERS

Moisture Content of Soil and Aggregate Samples

Project: Sue Savage Reserve, Toongabbie — Project No.: 30388

Client: Cardno — Report No.: 20/1050

Address: L9 The Forum, 203 Pacific Highway, St Leonards NSW 2065 — Report Date: 9/04/2020

Test Method: AS1289.3.8.1 — Page: 1 of 1

Sampling Procedure: Samples Supplied By Client (Not covered under NATA Scope of Accreditation)

STS / Sample No.	3672D-L/1	3672D-L/2	3672D-L/4	3672D-L/5	3672D-L/7	
Sample Location	Borehole 1	Borehole 2	Borehole 4	Borehole 4	Borehole 5	
Material Description	Silty Clay, orange brown trace of gravel	Silty Clay, brown trace of gravel	Silty Clay, brown trace of gravel	Silty Clay, brown with gravel	Silty Clay, brown trace of gravel	
Depth (mm)	1.4m	2.7m	1.2m	3.6m	1.2m	
Sample Date	23/03/2020	23/03/2020	23/03/2020	23/03/2020	23/03/2020	
Moisture Content (%)	**26.6**	**19.4**	**11.2**	**20.2**	**14.5**	

Remarks:

NATA
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The results of the tests, calibrations and/or measurements included in this document are traceable to Australian/national standards
NATA Accreditation Number 2750

Approved Signatory.....

Technician: NP — Orlando Mendoza - Laboratory Manager

STS Geotechnics Pty Ltd
14/1 Cowpasture Place, Wetherill Park NSW 2164
Phone: (02)9756 2166 | Email: enquiries@smectesting.com.au

GEOTECHNICS PTY LTD
CONSULTING GEOTECHNICAL ENGINEERS

California Bearing Ratio Determination Report

Project: Sue Savage Reserve, Toongabbie
Client: Cardno
Address: Level 9 The Forum, 209 The Pacific Highway, St Leonards NSW 2065
Test Method: AS1289.6.1.1,5.1.1,2.1.1
No. of Days Soaked: 4

Project No.: 30388
Report No.: 20/1056
Report Date: 9/04/2020
Page: 1 of 1
Compactive Effort: Standard
Target Compaction (%): 100
Surcharge (Kg): 4.5

Sampling Procedure: Samples Supplied By Client (Not covered under NATA Scope of Accreditation)

STS / Sample No.		3672D-L/8					
Sample Location		Borehole 6					
Material Description		Silty Clay, brown trace of gravel					
Depth of Sample (m)		0.3-0.8					
Sample Date		23/03/2020					
Oversize on Wet Basis +19mm (%)		0.0					
Field Moisture Content (%)		20.7					
Optimum Moisture Content (%)		18					
Maximum Dry Density (t/m³)		1.782					
Dry Density (t/m³)	Before Soaking	1.781					
	After Soaking	1.774					
Relative Compaction (%)	Before Soaking	100					
	After Soaking	99.6					
Moisture Content (%)	Before Soaking	18.2					
	After Soaking	19.6					
Moisture Ratio Before Soaking (%)		101.2					
Moisture Content after test (%)	Top 30mm	20.2					
	Entire Depth	19.2					
Swell after Soaking (%)		0.4					
CBR Value (%)		**7.0**					
Penetration (mm)		**2.5**					

Remarks: +19mm material excluded from test

NATA
Accredited for compliance with ISO/IEC 17025 - Testing
The results of the tests, calibrations and/or measurements included in this document are traceable to Australian/national standards
NATA Accreditation Number 2750

Approved Signatory.....

Technician: BV

Orlando Mendoza - Laboratory Manager

APPENDIX

E

IMPORTANT INFORMATION

Important Information about this Report

Scope of Work

The purpose of this report and any associated documentation is expressly stated in the document. This document does not form a complete assessment of the site, and no implicit determinations about Cardno's scope can be taken if not specifically referenced. Whilst this report is intended to reduce geotechnical risk, no level of detail or scope of work can entirely eliminate risk.

The nature of geotechnical data typically precludes auxiliary environmental assessment without undertaking specific methods in the investigation. Therefore, unless it is explicitly stated in the scope of work, this report does not provide any contamination or environmental assessment of the site or adjacent sites, nor can it be inferred or implied from any component of the document.

The scope of work, geotechnical information, and assessments made by Cardno may be summarised in the report; however, all aspects of the document, including associated data and limitations should be reviewed in its entirety.

Standard of care

Cardno have undertaken investigations, performed consulting services, and prepared this report based on the Client's specific requirements, data that was available or was collected, and previous experience.

Cardno's findings and assessment represent its reasonable judgment, diligence, skill, with sound professional standards, within the time and budget constraints of its commission. No warranty, expressed or implied, is made as to the professional advice included in this report.

Data sources

In preparing this document, or providing any consulting services during the commission, Cardno may have relied on information from third parties including, but not limited to; sub-consultants, published data, and the Client including its employees or representatives. This data may not be verified and Cardno assumes no responsibility for the adequacy, incompleteness, inaccuracies, or reliability of this information.

Cardno does not assume any responsibility for assessments made partly, or entirely based on information provided by third parties.

Variability in conditions and limitations of data

Subsurface conditions are complex and can be highly variable; they cannot be accurately defined by discrete investigations. Geotechnical data is based on investigation locations which are explicitly representative of the specific sample or test points. Interpretation of conditions between such points cannot be assumed to represent actual subsurface information and there are unknowns or variations in ground conditions between test locations that cannot be inferred or predicted.

The precision and reliability of interpretive assessment between discrete points is dependent on the uniformity of the subsurface strata, as well as the frequency, detail, and method of sampling or testing.

Subsurface conditions are formed by various natural and anthropogenic processes and therefore are subject to change over time. This is particularly relevant with changes to the site ownership or usage, site boundary or layout, and design or planning modifications. Aspects of the site may also not be able to be determined due to physical or project related constraints and any information provided by Cardno cannot apply following modification to the site, regulations, standards, or the development itself.

It is important to appreciate that no level of detail in investigation, or diligence in assessment, can eliminate uncertainty related to subsurface conditions and thus, geotechnical risk. Cardno cannot and does not provide unqualified warranties nor does it assume any liability for site conditions not observed or accessible during the investigations.

Verification of opinions and recommendations

Geotechnical information, by nature, represents an opinion and is based extensively on judgment of both data and interpretive assessments or observation. This report and its associated documentation are provided explicitly based on Cardno's opinion of the site at the time of inspection, and cannot be extended beyond this.

Any recommendations or design are provided as preliminary until verified on site during project implementation or construction. Inspection and verification on site shall be conducted by a suitably qualified geotechnical consultant or engineer, and where subsurface conditions or interpretations differ from those provided in this document or otherwise anticipated, Cardno must be notified and be provided with an opportunity to review the recommendations.

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