ARUP

Parramatta City Council

Riverside Theatre SSDA

Water Management Plan

Reference: ARP-RST-CI-RPT-001

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Executive Summary

This Water Management Plan report has been prepared by Arup on behalf of Parramatta City Council to support a State Significant Development (SSD) Development Application (DA) for redevelopment of Riverside Theatres at 351-353 Church Street Parramatta.

This report has been prepared to address the Secretary's Environmental Assessment Requirements (SEARs) issued for the project. This report concludes that the proposed development is suitable and warrants approval subject to the implementation of the following mitigation measures.

- **On-site detention**: City of Parramatta have confirmed that on-site detention is not a requirement for this development, however a reduction of total discharge of stormwater from the site by 10% compared to the undeveloped state is required. This requirement is being achieved through capturing and collecting roof rainwater in rainwater harvesting tanks with 25kL capacity and reusing for non-potable water usages such as irrigation, wash downs and other greywater uses.
- **Water sensitive urban design**: The proposed development incorporates water sensitive urban design measures including rainwater harvesting, proprietary gross-pollutant traps and litter backets to improve the quality of stormwater discharged from the site.
- **Sediment and erosion control**: A preliminary sediment and erosion control plan has been prepared for the site with the aim to minimise environmental impacts on downstream waterways during construction. The Contractor will be responsible for preparing and implementing a detailed, staged Soil and Water Management Plan during construction.

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Glossary of Terms

Term	Meaning
Annual exceedance probability (AEP)	AEP (measured as a percentage) is a term used to describe flood size. It is a means of describing how likely a flood is to occur in a given year. For example, a 1% AEP flood is a flood that has a 1% chance of occurring, or being exceeded, in any one year.
Catchment	The area of land draining through the main river, as well as tributary systems.
Freeboard	A factor of safety expressed as the height above the design flood level. Freeboard provides a factor of safety to compensate for uncertainties in the estimation of flood levels across the floodplain, such as wave action, localised hydraulic behaviour and impacts that are specific event related, such as embankment settlement.
Local Environmental Plan (LEP)	A Local Environmental Plan is a plan prepared in accordance with the Environmental Planning and Assessment Act, 1979 that defines zones, permissible uses within those zones and specifies development standards and other special matters for consideration with regard to the use or development of land.
Overland Flow Path	The path that floodwaters can follow if they leave the confines of the main flow channel or surcharge from a piped stormwater system.
Probable Maximum Flood (PMF)	The largest flood likely to ever occur. The PMF defines the extent of flood prone land.

Abbreviations

Acronym	Definition
AEP	Annual Exceedance Probability
ARI	Average Recurrence Interval
AR&R	Australian Rainfall and Runoff
BoM	Bureau of Meteorology
CL	Continuing Loss
CoPC	City of Parramatta Council
DCP	Development Control Plan
DDA	Disability Discrimination Act
DPE	Department of Planning and Environment
ESCP	Erosion and Sediment Control Plan
FFL	Finished Floor Level
GPT	Gross Pollutant Trap
IL	Initial Loss
LEP	Local Environment Plan
LGA	Local Government Area
mAHD	Metres above Australian Height Datum
m/s	Metres per second. Unit used to describe the velocity of floodwater
m^3/s	Cubic metres per second. Unit measurement of flow rate
NSW	New South Wales
OSD	On-Site Detention
PMF	Probable Maximum Flood
SEARs	Secretary's Environmental Assessment Requirements
SSD	State Significant Development
SSDA	State Significant Development Application
TN	Total Nitrogen
TP	Total Phosphorous
TSS	Total Suspended Solids
WQT	Water Quality Treatment
WSUD	Water Sensitive Urban Design

1. Introduction

1.1 Proposal Overview

This report has been prepared on behalf of City of Parramatta Council (CoPC) to support a State Significant Development (SSD) Development Application (DA) for redevelopment of Riverside Theatres at 351-353 Church Street Parramatta.

The Riverside Theatres redevelopment project is Development for the purposes of an Entertainment Facility with an estimated development cost of more than $30 million. Such development is state significant development in accordance with Schedule 1, clause 13 of State Environmental Planning Policy (Planning Systems) 2021. The development is considered state significant as the proposed works are estimated to have a development cost exceeding $30 million.

1.2 Site Description

Riverside Theatres is situated upon the lands of the Dharug people. It is located within the City of Parramatta Council Local Government Area within Sydney's Central River City (refer to Figure 1-1).

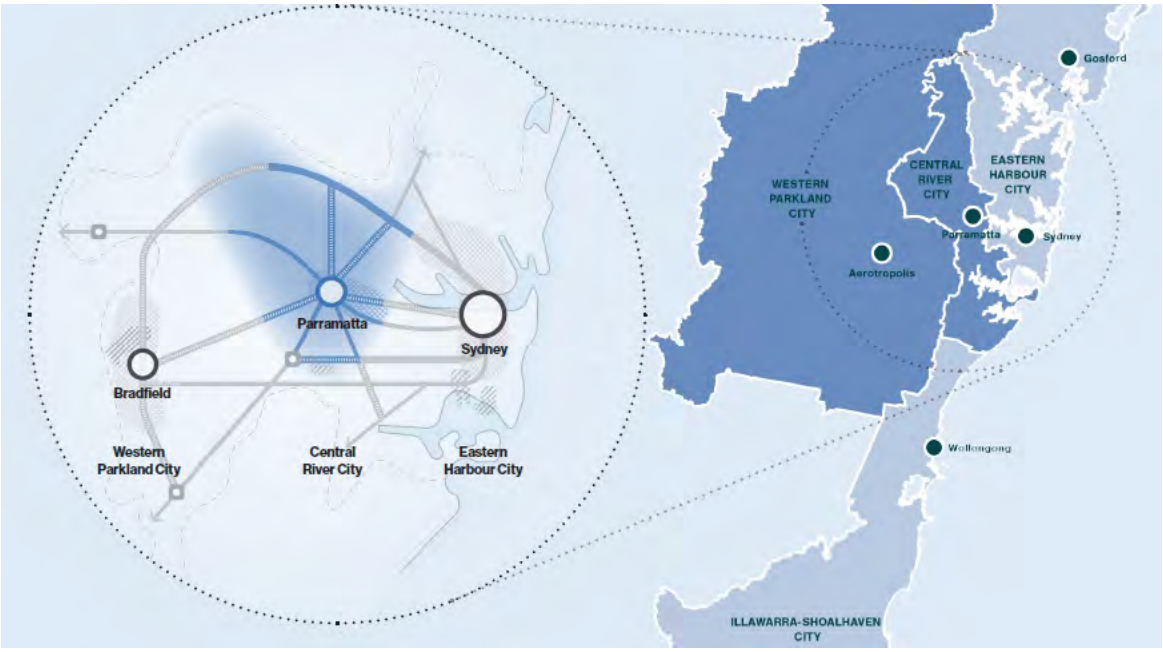


Figure 1-1: Context Plan

Located at 351-353 Church Street, Parramatta, the site comprises Lots 1 and 2 DP 740382. The site contains the existing Riverside Theatres, originally constructed in 1988 and modified since. The site also contains a small at-grade car park to the west adjacent to Marsden Street and accessed from Market Street.

The site is bordered by Church Street in the east, the Parramatta River in the south, Marsden Street to the west and Market Street to the north (refer to Figure 1-2).

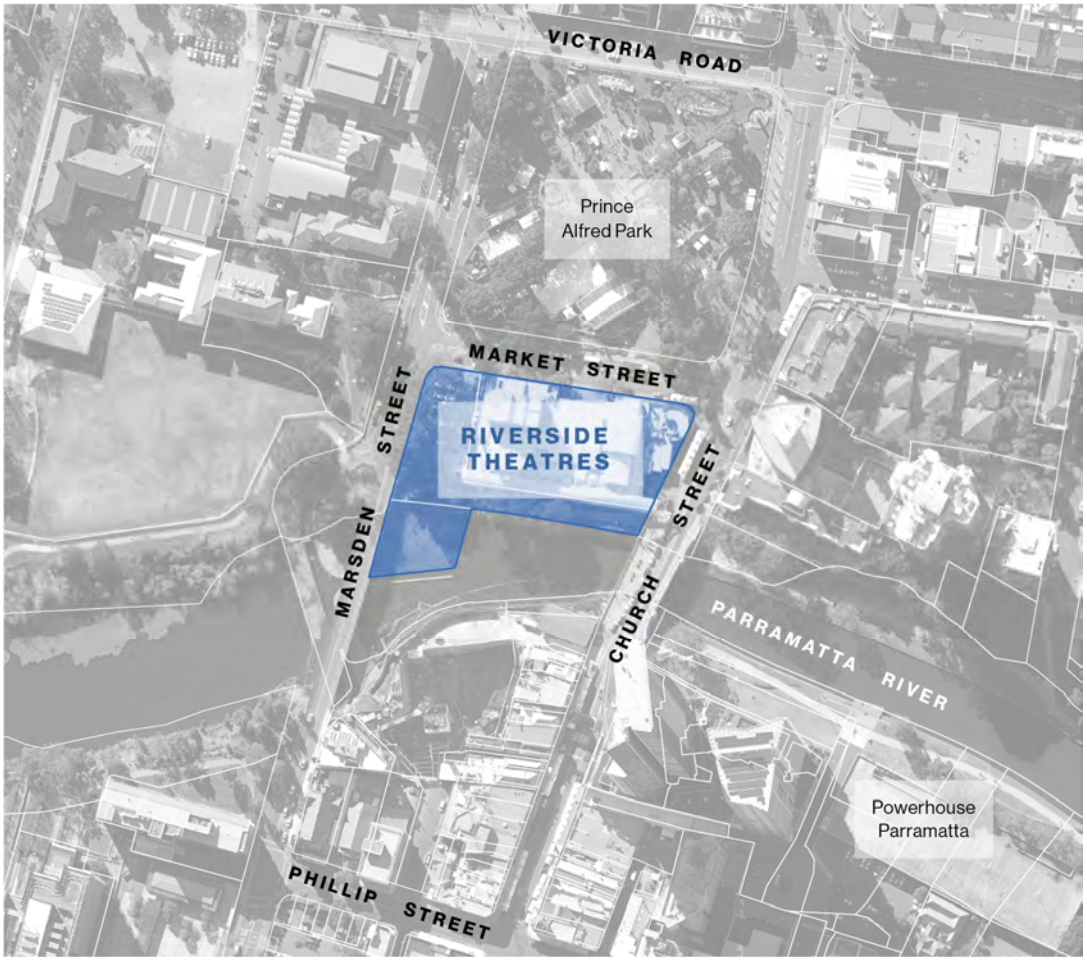


Figure 1-2: Riverside Theatres redevelopment site boundary (source: Arup)

1.3 Overview of Proposed Development

This SSD DA seeks consent for the design, construction and operation of the redeveloped Riverside Theatres. Specifically, approval is sought for the following:

- Site preparation works, including site services and infrastructure works, earthworks and the erection of site protection hoardings and fencing.
- Retention of the existing 761-seat Drama (Riverside) Theatre and demolition of all remaining buildings on the site.
- Construction of new front of house foyer spaces including:
  - New public entries facing Parramatta River and Church Street;
  - Food and beverage 'theatre' bars;
  - Arrival and gathering space;
  - Function spaces; and
  - Amenities.
- Construction of new theatre spaces including:
  - A 1,500 seat Lyric Theatre;
  - A 324 seat Studio Theatre with retractable seating; and
  - A 100 seat Cinema/Rehearsal space with dedicated entry from the public domain.
- Refurbishment of interiors to the 761 seat Drama (Riverside) Theatre.
- Construction of a new loading dock with access from Market Street.
- Construction of back of house spaces including:
  - Staff offices and amenities;
  - Central kitchen;
  - Dressing rooms;
  - Technical production spaces; and

- Storage, cleaning and support spaces.

- Landscaping and public domain works including:
  - A new landscape between Riverside Theatres and the river foreshore;
  - An enhanced upper level pedestrian connection between Church and Marsden Streets;
  - An enhanced landscape treatment to the Marsden street interface;
  - A new lower level pedestrian and cycle connection connecting to existing paths east and west; and
  - A riverfront café integrated within the landscape terraces.

Full details of the proposed development are set out in the Architectural Drawings and Landscape and Public Domain Drawings accompanying the DA.

1.4 Assessment Requirements

The Department of Planning, Housing and Infrastructure (DPHI) has issued Secretary's Environmental Assessment Requirements (SEARs) to the applicant for the preparation of an Environmental Impact Statement (EIS) for the proposed development. This report has been prepared having regard to the SEARs as follows:

Table 1-1: SEARs Compliance

Environmental Assessment Requirement	Where addressed in this report
14. Water Management	
Provide an Integrated Water Management Plan for the development that: • is prepared in consultation with the local council and any other relevant drainage or water authority. • outlines the water-related servicing infrastructure required by the development (informed by the anticipated annual and ultimate increase in servicing demand) and evaluates opportunities to reduce water demand (such as recycled water provision). • details the proposed drainage design (stormwater and wastewater) for the site including any on-site treatment, reuse and detention facilities, water quality management measures and nominated discharge points. • demonstrates compliance with the local council or other drainage or water authority requirements and avoids adverse downstream impacts.	Refer to Section 3.1. Refer to Section 5.5. Refer to *"Infrastructure Requirements and Utilities"* Report ([ARP-RST-MD-RPT-001-SSDA IDR Report-Rev 02, dated 11/02/2025). Refer to Section 5. Refer to Section 2 and 5.2.
• Where water and drainage infrastructure works are required that would be handed over to the local council, or other drainage or water authority, provide full hydraulic details and detailed plans and specification of proposed works that have been prepared in consultation with, and comply with the relevant standards of, the local council or other drainage or water authority.	Refer to Appendix A drawings.

1.5 Purpose

The purpose of this report is to identify the background conditions for water resources likely to be affected by the development and to outline the drainage and water quality strategies and objectives for the proposed development.

2. Policy and Planning Context

The development site is situated within the City of Parramatta Council (CoPC) Local Government Area (LGA). The following policies, guidelines and plans have been considered when undertaking the surface water impact assessment:

- City of Parramatta Development Engineering Design Guidelines (City of Parramatta, 2018)
- City of Parramatta Development Principles Part 3 (City of Parramatta, 2011)
- State Environmental Planning Policy (Infrastructure, 2007)
- NSW Flood Risk Management Manual (NSW Government, 2023)
- Managing Urban Stormwater: Soils & Construction Volume 1 (Landcom, 2004)
- Managing Urban Stormwater: Council Handbook Draft (EPA, 1997)
- Managing Urban Stormwater: Treatment Techniques (DECC, 2006)
- Managing Urban Stormwater: Source Control (NSW EPA, 1997)
- Technical Guidelines: Bunding & Spill Management (DECC, 1998)

The following are other policies, guidelines and plans that have also been considered within this assessment:

- Parramatta City Council Development Control Plan (City of Parramatta, 2023)
- AS 3500.3 Plumbing and Drainage – Stormwater Drainage (2021)
- Water Quality and Water Conservation – WSUD Developer's Handbook Part 4
- Australian Rainfall and Runoff: A Guide to Flood Estimation (Ball et al, 2019)
- NSW MUSIC Modelling Guidelines (BMT WBM, 2015)

The following sections describe the relevant requirements related to stormwater management in this report.

2.1 City of Parramatta

City of Parramatta requirements for the management of stormwater are defined by the following documents:

- "Development Control Plan" (DCP) 2023
- "Local Environment Plan" (LEP) 2023

2.1.1 Parramatta Development Control Plan (DCP) 2023

The Parramatta Development Control Plan 2014 (DCP) sets out the development controls applicable to all land within the City of Parramatta LGA. As state significant development, the requirements of the DCP are not relevant, however have been utilised to guide the assessment contained within this report. The applicable controls with respect to stormwater management are contained in Section 5.1 Water Management and are as follows:

Section 5.1.2 Water Sensitive Urban Design

Controls

C.01 All development must implement rainwater and a WSUD approach. The extent and types of this will be proportional to the scale of development.

C02. WSUD principles are to be integrated into the development through the design of stormwater drainage, on-site detention, and landscaping and in the orientation of the development rather than relying on 'end of pipe' treatment devices prior to discharge.

C.03 Impervious surfaces are to be minimised and soft landscaping used to promote infiltration and reduce stormwater run-off.

C.04 WSUD elements should be located and configured to treat as much impermeable area as possible.

C.05 Rainwater harvesting and use is encouraged in any water management system for individual lots and for the public domain. Development should maximise the capture and reuse of rainwater from roofs. Rainwater tanks must be connected to separate non-drinking water systems including irrigation, car washing, toilets, water features, washing machines and cooling towers.

C.06 Rainwater storage and tanks are encouraged for all developments including provision of greater capacity than minimum BASIX requirement for residential developments.

C.07 Council may require that rainwater tanks or other alternative water sources are designed to meet the following criterion:

- Rainwater or other alternative water sources need to meet 80% of demands for irrigation, car washing, toilets, water features, washing machines and cooling towers.

C.08 Use WSUD to ensure runoff water quality is within acceptable limits and only rely on mechanical treatment technology if necessary.

C.09 Run-off entering directly to waterways or neighbouring bushland is to be avoided. Options may exist where run-off is treated to reduce weed invasion, nutrient and seed dispersal, erosion and sedimentation, scour and altered flow regimes.

C.10 Unless otherwise advised by Council, WSUD systems shall generally be designed to treat storm events up to the 1 in 1.5 year average recurrence interval. Low flows of this frequency must be separated from higher flows that will be diverted into OSD and other stormwater quantitative management systems.

C.11 Developments of any size that would affect rainwater and stormwater behaviour must use a range of practical measures to achieve WSUD Objectives and Controls. Landscape based WSUD measures are preferred.

C.12 Utilise the Model for Urban Stormwater Improvement Conceptualisation (MUSIC) (or equivalent modelling tool) to determine total runoff quantity for pre and post development scenarios and pollution load reduction.

For a Major WSD response for a Commercial, Industrial and other non-residential land use, the WSUD measures include:

- A site-specific WSUD and management plan integrated with the site landscape design and stormwater system Annual outflow at least 10% less than pre-development outflow where practicable.
- Retention and WSUD measures to achieve the reduction targets listed in Table 2-1.
- Include a rainwater tank or a water reuse device connected to at least 90% of the roof area and with a minimum volume of 10,000 litres.

Table 2-1: Water Pollution reduction targets

Pollutant	Reduction Target
Total Suspended Solids (TSS)	85%
Gross Pollutants	90%
Total Nitrogen (TN)	45%
Total Phosphorus (TP)	60%
Hydrocarbons, motor oils, oil and grease	90% reduction in the post development mean annual load of hydrocarbons, oils, and grease.

No visible oils for flows up to 50% of the one-year ARI peak flow specific for service stations, depots, vehicle body repair workshops, vehicle repair stations, vehicle sales or hire premises, car parks associated with retail premises, places of public worship, tourist and visitor accommodation, registered clubs, and pubs.

C.09 The post development mean annual runoff volume from the entire site must be reduced by at least 10% from that pre-development. This may be achieved with rainwater tanks, infiltration into deep soil, minimising impervious areas, using permeable paving and other methods.

2.1.2 Parramatta Local Environmental Plan (LEP) 2023

The Parramatta Local Environmental Plan 2023 (LEP) is the City of Parramatta's principal planning document applying to developments in the City of Parramatta LGA. Requirements that are relevant to stormwater management are listed below:

6.4 Stormwater management

(1) The objective of this clause are as follows:

a. to minimise the impacts of urban stormwater on properties, native vegetation and receiving waters,

b. to avoid adverse impacts of stormwater on soil and land stability,

c. to protect the environmental and social values of water identified for urban waterways in the Sydney Harbour, Parramatta River and Lane Cove River catchments.

(2) Development consent must not be granted to development unless the consent authority is satisfied that the development –

(a) is designed to maximise the use of water permeable surfaces, having regard to the soil characteristics affecting on-site infiltration of water, and

(b) includes, if practicable, on-site stormwater retention for use as an alternative supply to mains water, groundwater or river water, and

(c) avoids any significant adverse impacts of stormwater runoff on adjoining properties, native bushland, receiving waters and land used for water-based recreation or, if the impacts cannot be reasonably avoided, minimises and mitigates the impacts.

3. Design Criteria

Design criteria adopted for the civil design are outlined in the sections below. These criteria are in accordance with the relevant standards and guidelines of the authorities with jurisdiction over the Site.

Item	Standard	Adopted
Hydrological Model	City of Parramatta Council	DRAINS
Minor Design Storm	Development Engineer Design Guidelines	20 yr Average Recurrence Interval (5% AEP)
Major Design Storm	Development Engineer Design Guidelines	100 yr Average Recurrence Interval (1% AEP)
Design Rainfall	Development Engineer Design Guidelines	AR&R 2019 values
Urban Rainfall Losses	ARR Datahub	Pervious IL = 5mm Pervious CL = 2.5mm/hr Impervious IL = 1mm Impervious CL = 0.0mm/hr
Maximum Pipe Depth	Austroads Guide to Road Design Part 5A Table 6.1	Footpaths: Rigid pipes = 450mm Flexible pipes = 600mm Carriageway: Rigid pipes = 600mm Flexible pipes = 750mm
Pipe Size	Development Engineer Design Guidelines AS 3500.3	Minimum 100mm diameter
Minimum Pipe Grade	Austroads Guide to Road Design Part 5A Supplement Clause 6.5.4	Table 6.3
Pit Losses	AR&R 2019 Development Engineer Design Guidelines	DRAINS using QUDM charts Missouri Charts
Pit Blockage Factors	AGRD05-13: Table 5.4	Sag: Kerb Inlet – 80% Grated – 50% On-grade: Kerb Inlet – 80% Longitudinal Bar Grated – 60% Transverse Bar Grated – 50%
Overland Flow Safety Criteria	AR&R 2019	Max Depth x Velocity 0.4 m^2/s

3.1 Consultation

Mott Macdonald confirm that the proposed stormwater drainage design was developed in accordance with the City of Parramatta Council (DCP) and other relevant guidelines, including consultation with the development engineering team to confirm OSD requirements and water quality catchments.

Preliminary consultation with Council is included in Appendix B.

4. Methodology

This Section outlines the methodology used to assess the proposed design and consider potential impacts on surface water. Both the construction and operational phases have been considered in this assessment.

The assessment considers the baseline topography. The following actions were undertaken to complete this assessment:

Topography and Earthworks:

- Review of the baseline site environment including but not limited to the topography and utility connections.
- Identify any changes that are required to suit the proposed development.
- Develop a bulk earthworks and site grading plan.
- Develop an erosion and sediment control plan in accordance with Soils and Construction (Landcom, 2004).

Surface Water:

- Review the interaction between the proposed site and site stormwater infrastructure.
- Develop a drainage strategy to minimise the impacts on receiving watercourses and riparian land.
- Develop a water sensitive urban design system for the subject site and use MUSIC modelling software to assess performance and compliance with relevant water quality guidelines. To demonstrate compliance, model the mean annual pollutant loads in MUSIC in accordance with the City of Parramatta Council Water Sensitive Urban Design Guidelines.
- Develop a hydraulic model of the pre-developed site to understand base line conditions.
- Develop a proposed case hydraulic model to assess the development impacts with respect to stormwater infrastructure requirements and overland flows within the site and on adjacent land.

Water Cycle Management:

- Review water recycling and re-use opportunities for the development.
- Calculate the site water balance to account for stormwater, mains water supply and sewage discharge.
- Develop a strategy to minimise the water use on site.

Flood Risk Management:

- Review the available information with respect to flooding and flood risk available for the site
- Update the existing flood model to develop an existing (pre-development) scenario to understand base line flooding conditions and existing flood risk
- Develop a proposed case flood model to assess flood impacts to the proposed development and assess predicted flood impacts on external receptors
- Review flood emergency response considerations for the proposed development.

A separate Flood Risk Assessment report has been prepared for this proposed development site. Refer to Riverside Theatre Flood Impact and Risk Assessment, dated 19/02/2025.

The groundwater impacts in relation to the proposed development are detailed within the Geotechnical report (GE-RP-0001, dated 19 December 2024). The drinking water, wastewater and recycled water arrangements

are detailed within the Infrastructure Requirement and Utilities Report (ARP-RST-MD-RPT-001-SSDA Report-Rev 02, dated 11/02/2025). Existing Site

This section describes the existing site characteristics including location, hydrology, drainage and flooding.

4.1 Development Site Location

The proposed site is located at Riverside Theatres at 351-353 Church Street Parramatta as shown in Figure 4-1. The Riverside Theatre site is located within the City of Parramatta Local Government Area (LGA). The site contains the existing Riverside Theatres, originally constructed in 1988 and modified since. The site also contains a small at-grade car park to the west adjacent to Marsden Street and accessed from Market Street.

The site is bordered by Church Street in the east, the Parramatta River in the south, Marsden Street to the west and Market Street to the north.

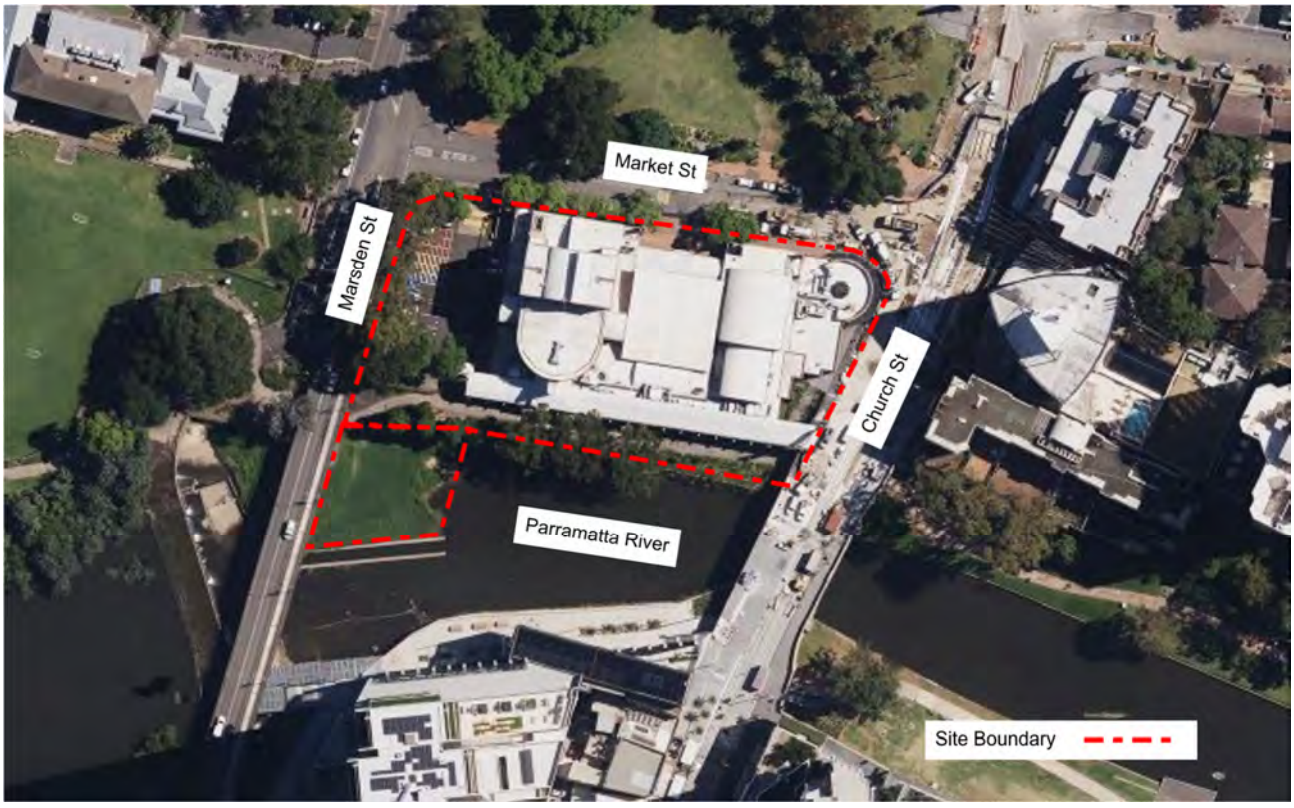


Figure 4-1: Proposal Site Location *(Source: Six Maps)*

4.2 Existing Site Topography

Figure 4-2 shows an extract of the topographical survey provided by Veris, dated 31/07/2024. As shown, the existing site generally grades from north to south towards the Parramatta River. The highest point is located at the northern extent of the site adjacent to Market Street at 8.80m AHD and the lowest point is along the southern extent of the site at 3.80m AHD adjacent to the Parramatta River. There is an existing river retaining wall at the southernmost extent of the site.

The site is currently occupied by the existing Riverside Theatres. There is an existing at grade car park to the west of the existing building. There is an existing footpath/cycleway to the south of the theatre building with underpasses at the south-western and south-eastern extents of the site passing beneath Marsden Street and Church Street.

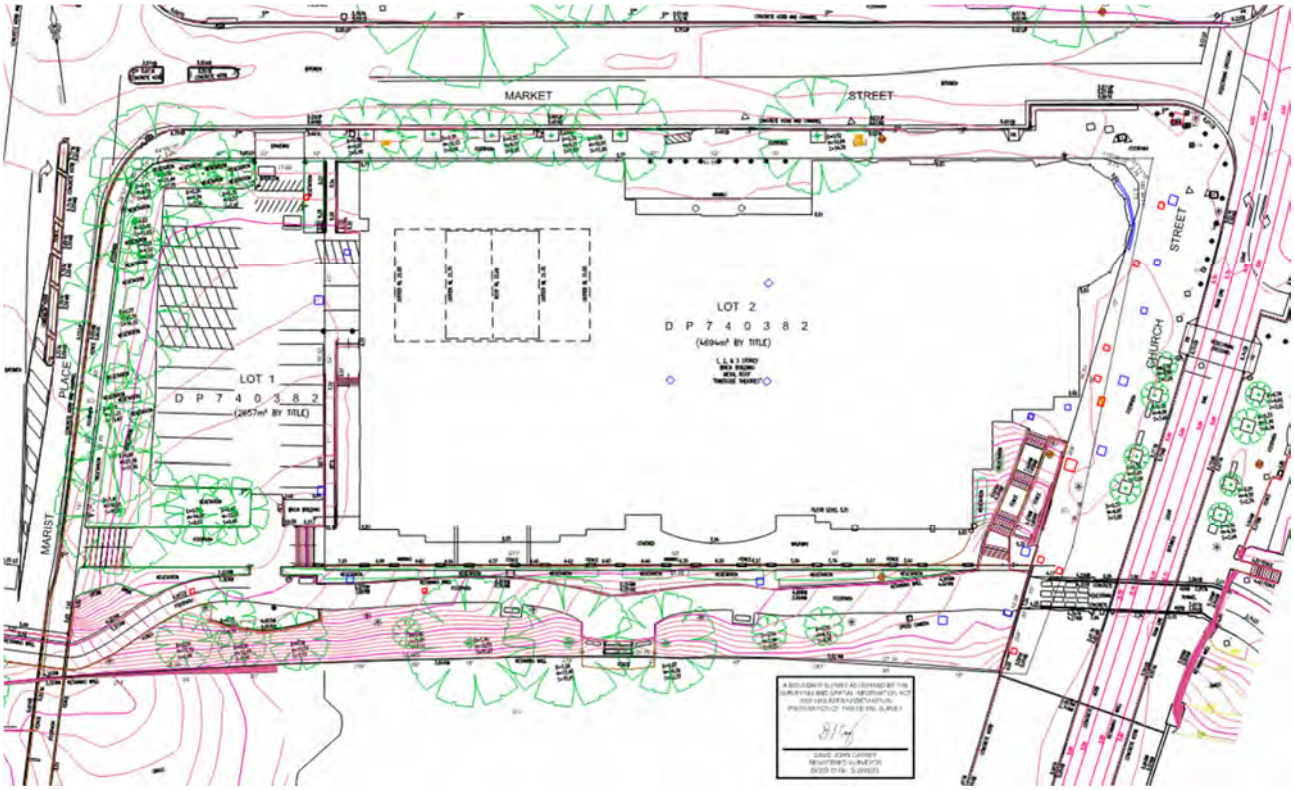


Figure 4-2: Topographical Survey *(Source: Veris)*

4.3 Existing Stormwater Infrastructure

Existing stormwater pits have been identified on the survey information (Figure 4-2, Source: Veris, dated 31/07/2024) and sub-surface utility information provided (, Source: Veris, dated 18/11/2024). Survey of existing in-ground stormwater is incomplete and/or inconsistent with as-built drawings. As-built drawings indicate that the entire site drains to a single 300mm diameter connection to the south-east of the site.

Survey information indicates the 300mm diameter outfall, as well as additional 375mm, 225mm and 300mm diameter outfalls. It is suspected that the original network shown on as-built drawings has been modified. There are existing stormwater pits denoted on the survey which will be potential discharge points for the site, additional survey information is required to further confirm the invert levels of the existing stormwater pits.

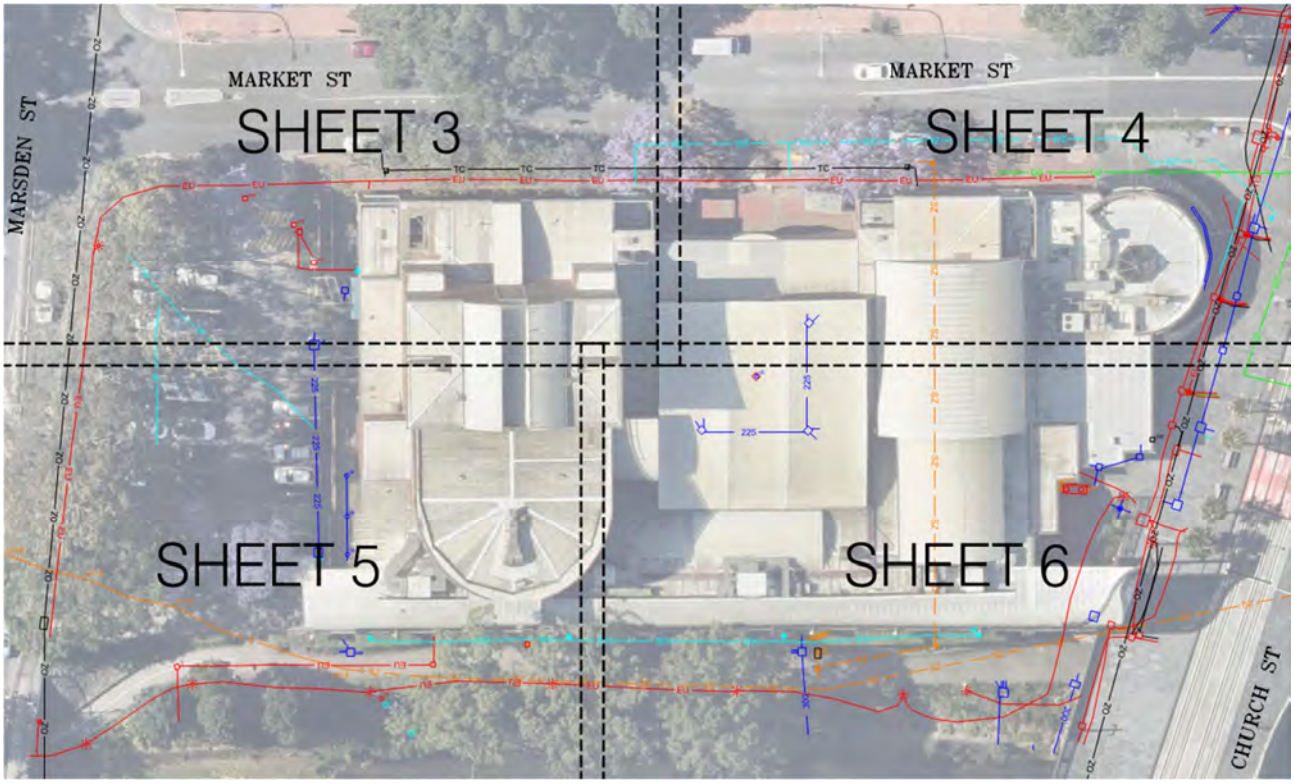


Figure 4-3: Excerpt of sub-surface utility plan *(Source: Veris)*

4.4 Flooding

The Riverside Theatres site is located adjacent to Parramatta River and is therefore subject to a degree of flood risk, which is managed through various Flood Emergency Response Plans.

The reach of Parramatta River is located within an incised channel where it passes the Riverside Theatres site. Mainstream flooding from the upstream catchment is relatively concentrated within the river corridor adjacent to the site (that is, is contained within this incised channel between the Riverside Theatres and The Lennox on the opposite bank of the river) in all events up to and including the 1% AEP. In extreme flood events (e.g. the PMF), floodwaters breach the upper banks of the channel further upstream of the site and inundate the entirety of the site area.

Figure 4-4 and Figure 4-5 illustrate the extent of flooding around the site in the 1% AEP and PMF flood events respectively.

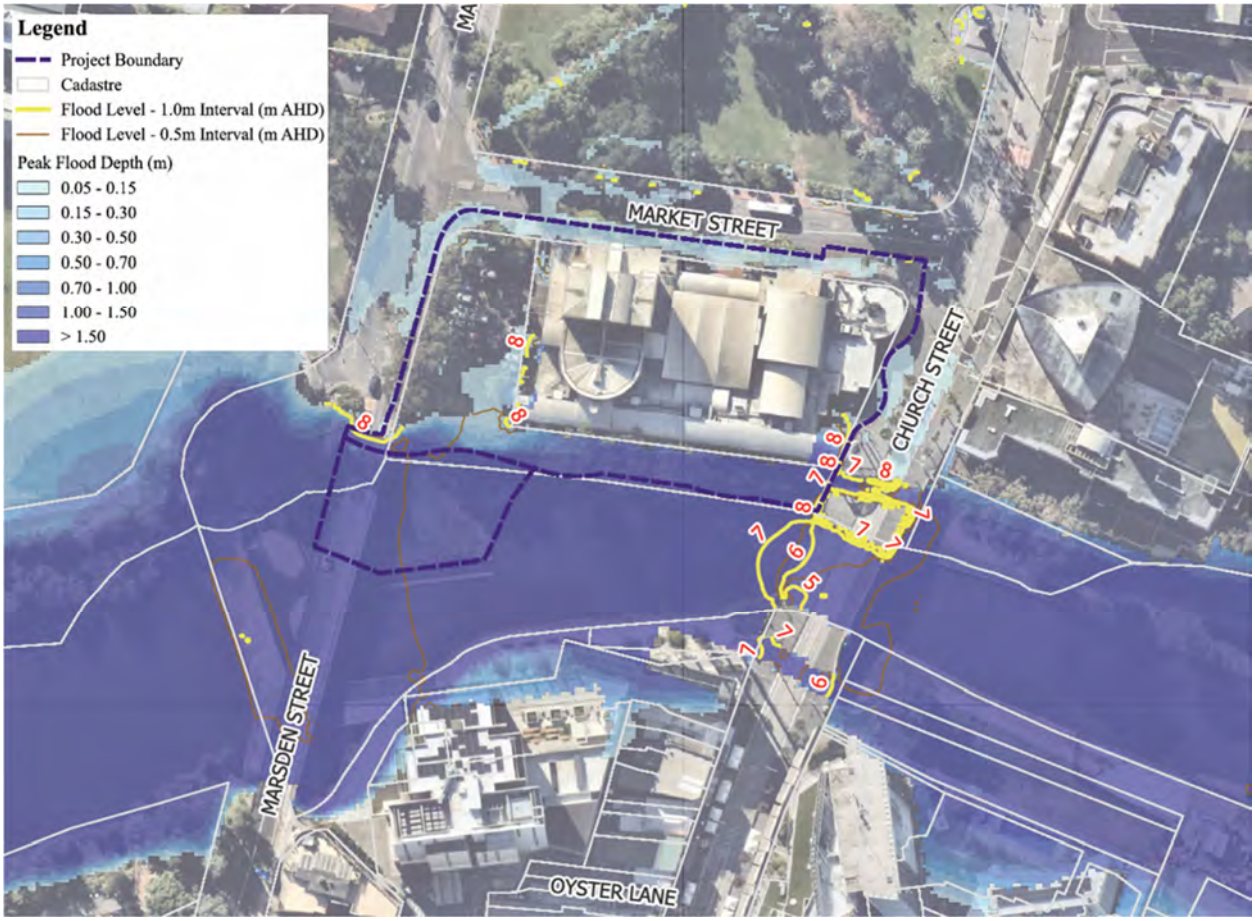


Figure 4-4: 1% AEP flood extent at existing site

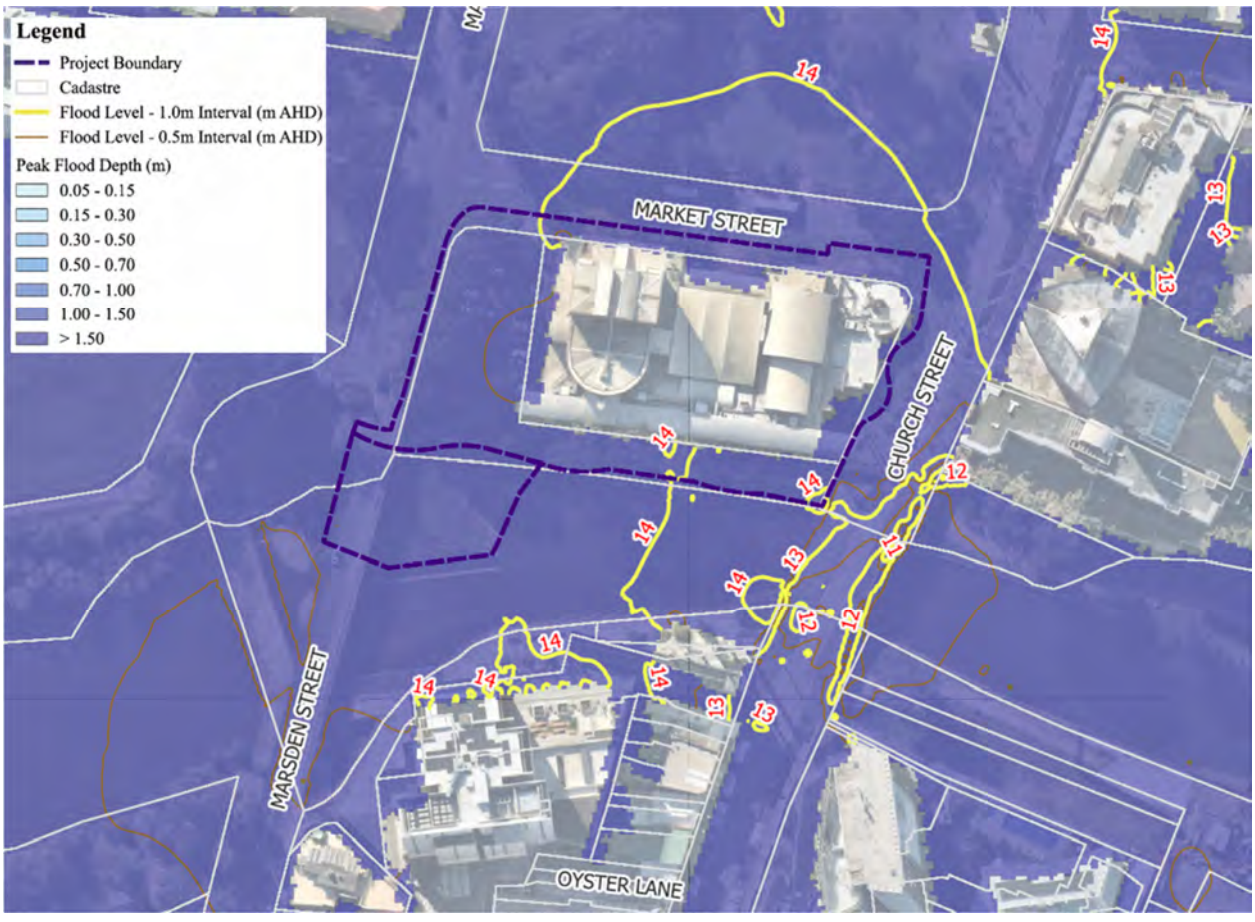


Figure 4-5: PMF flood extent at existing site

The Riverside Theatres site is also potentially subject to overland flooding. There are overland flow paths draining towards the Riverside Theatres site which can result in ponding on the northern, western and eastern sides of the building once flows off the local catchment exceed the capacity of the stormwater infrastructure.

Peak flood levels adjacent to the existing building are provided in Table 4-1. Figure 4-6 illustrates the locations of the reporting points.

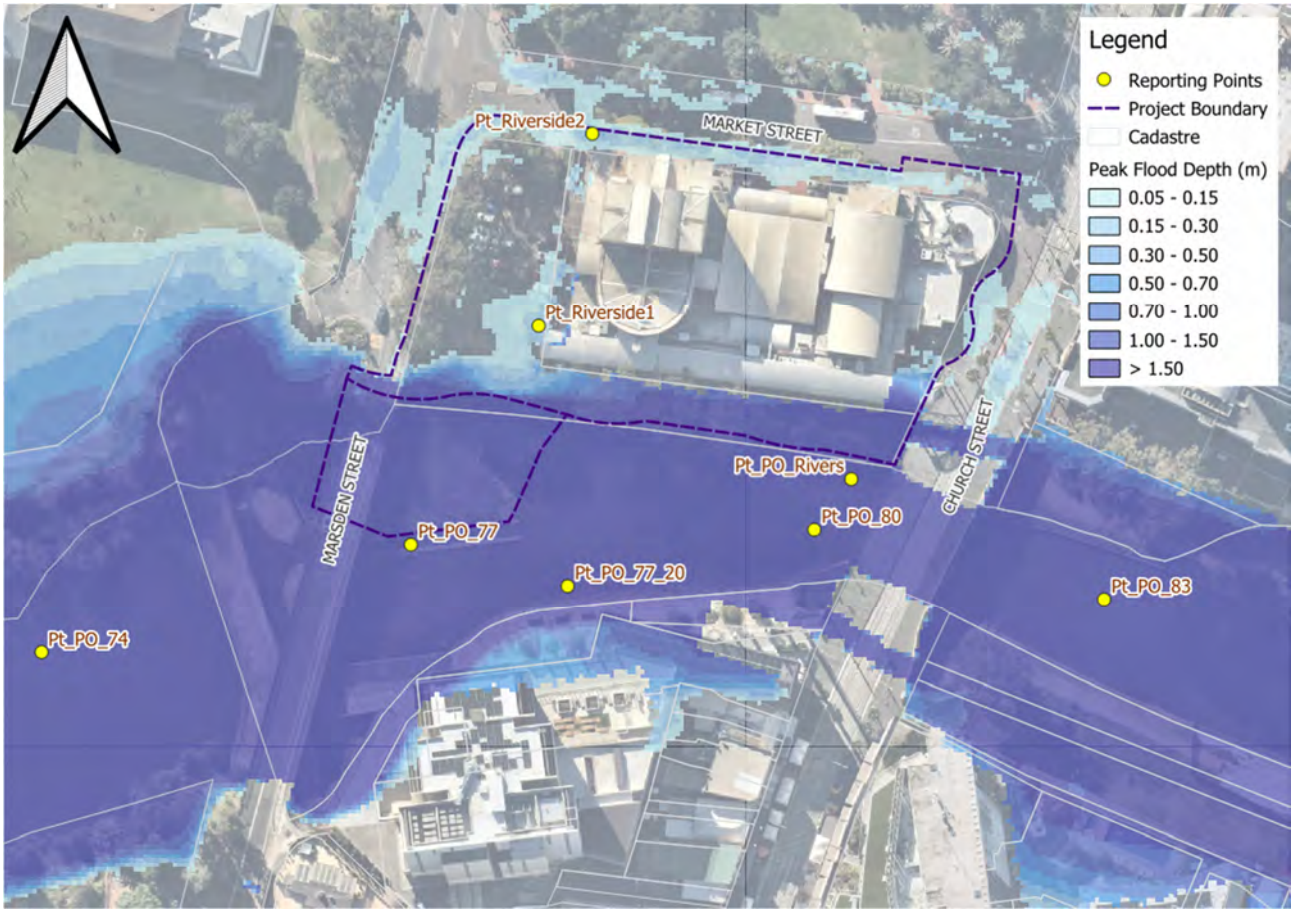


Figure 4-6: Reporting Points - Riverside Theatre

Table 4-1: Peak Water Levels at Reporting Points

Reporting Point	FFA_1pc	PMF
Pt_PO_74	7.70	14.49
Pt_PO_77	7.51	14.28
Pt_PO_77_20	7.28	14.06
Pt_PO_80	7.09	13.93
Pt_PO_Rivers	7.11	13.94
Pt_PO_83	5.72	12.49
Pt_PO_Riverside1	7.55	14.55
Pt_PO_Riverside2	8.72	13.69

In the 1% AEP event, the peak flood levels on the northern, western and eastern sides of the building result from overland flow from the upstream catchment. In the 1% AEP event, the peak flood level on the northern side of the existing building, which results from overland flooding, is notably higher (8.72m AHD) than the

peak flood levels within Parramatta River, which result from mainstream flooding. In the PMF, all peak flood levels result from mainstream flooding.

A separate Flood Risk Assessment report (Riverside Theatre Flood Impact and Risk Assessment, dated 19/02/2025) has been prepared for this proposed development. Reference can be made to this report for further information regarding existing flood behaviour.

5. Civil Engineering Design

5.1 Levels and Grading

Public domain works are proposed around the building, the extent of works is shown in Figure 5-1. New pavements are to be designed in accordance with the City of Parramatta's Public Domain Manual. The key focuses through the design and construction process are:

- Retaining existing kerbs, where possible
- Retaining existing trees
- Maintaining the existing theatre floor level

Key items for Marsden Street footpath improvements include retaining existing kerbs where possible, retaining existing trees and maintaining existing theatre floor levels, whilst reducing the existing steep crossfalls.

Key items for Market Street footpath improvements include replacing existing stone kerb with new variable height kerb and gutter, and retaining building finishes floor levels to reduce impact to trees and solve pavement ponding.

A preliminary bulk earthworks assessment has been undertaken by Mott MacDonald, included in the concept engineering design drawings in Appendix A.

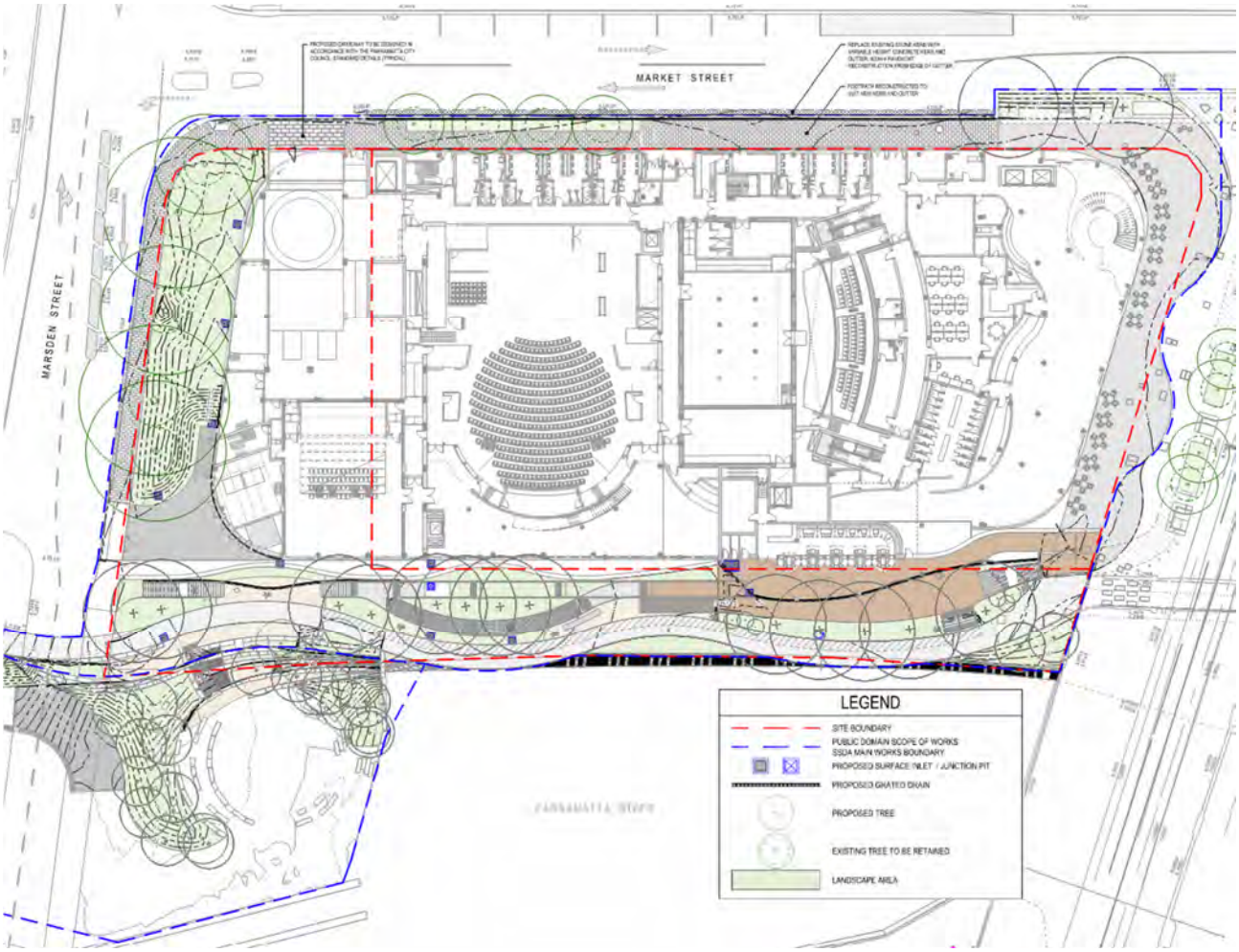


Figure 5-1: General Arrangement Plan ***(Source: Mott MacDonald, dated 22/01/2025)***

As part of subsequent design stages, pavement designs, and calculations will be undertaken to provide designs to suit each proposed pavement detailed by the landscape architect.

5.2 Stormwater Drainage

5.2.1 Proposed Stormwater Drainage

The proposed site stormwater drainage network is documented in the design drawings in Appendix A. The key considerations for the proposed stormwater drainage strategy for the site, include:

- Removal of redundant stormwater infrastructure
- Provision to receive the hydraulic connections from the building stormwater drainage network.
- Capture surface water run-off from the external public domain areas.
- Incorporation of rainwater tank capturing roof drainage for water reuse within the building, for irrigation, wash downs and other greywater uses.
- Incorporation of water sensitive urban design initiatives as developed in coordination with the landscape architect. Refer Section 5.3 for further details.

5.2.2 Stormwater Design

A hydrologic and hydraulic model was produced using DRAINS software to verify pipe sizing and performance using Australian Rainfall and Runoff 2019 (AR&R 2019) guidelines. Table 5-1 summarises the hydrological assumptions made in the DRAINS analysis.

Table 5-1: DRAINS Hydrological Assumptions

Rainfall Data	AR&R 2019 (Extracted from BoM 2022)
Pre Burst Data	AR&R 2019 (Extracted from BoM 2022)
Hydrological Model	ILSAX
Impervious area depression storage	1mm
Pervious area depression storage	5mm
Soil Type	3

Figure 5-2 shows the proposed stormwater design.

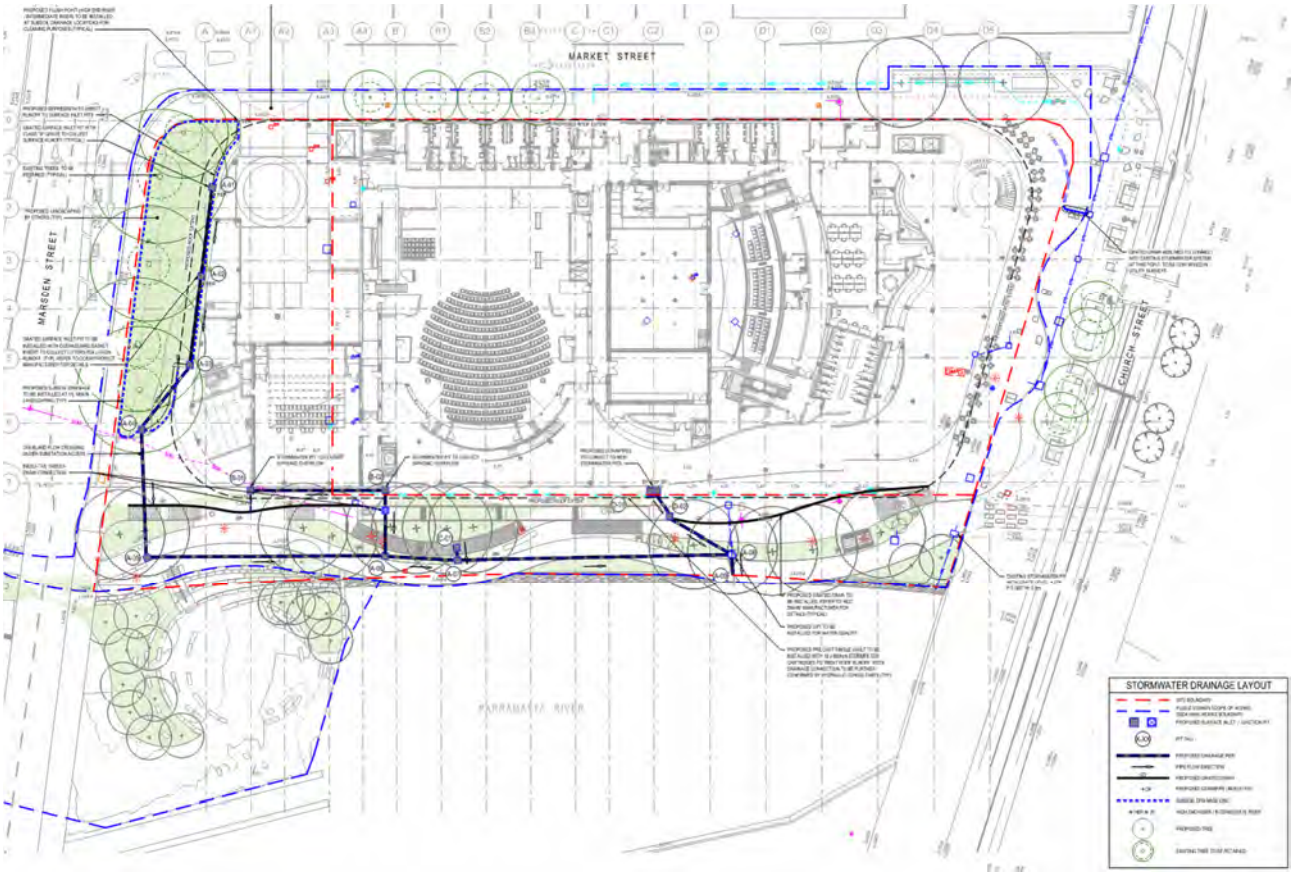


Figure 5-2: Proposed Stormwater Layout ***(Source: Mott MacDonald, dated 22/01/2025)***

5.2.3 On-site Stormwater Retention and Detention System

Stormwater detention systems are used to restrict the rate of stormwater runoff discharged during large storm events. It was confirmed by City of Parramatta on 17th December 2024, that no on-site detention is required for the site, provided the below requirements are met:

- Reduction of total discharge of stormwater from the site by 10% compared to the site in an undeveloped/natural (not predevelopment) state
- Complying with the DCP WSUD requirements

The requirement for reduction of total discharge by 10% is being achieved through capturing and collecting roof rainwater in rainwater harvesting tanks with 25kL capacity and reusing for non-potable water usages such as irrigation, wash down and other greywater uses.

On-site detention was considered for this site however, it was not recommended for the following reasons:

- The detention basin structure would be located below the 1% AEP flood level to integrate with the existing structures and the space available, and as such would displace flood storage volume.
- Detaining stormwater at this site would increase the probability that it is discharged closer to the flood peak as compared to the unattenuated discharge.

5.3 Water Quality

Water Sensitive Urban Design (WSUD) aims to manage the effects of urban development on the urban water cycle. The objectives of WSUD are to:

- Protect and enhance natural water systems
- Treat urban stormwater to meet water quality objectives

- Integrate stormwater management into the landscape.

The proposed development seeks to meet the objectives of WSUD where possible and practical. The following sections describe the proposed WSUD strategy in detail.

5.3.1 Constraints and Opportunities

The site is flood affected and therefore presents difficulties for water treatment devices to be used due to the backflow into devices making them ineffective. There are opportunities for natural WSUD treatment devices such as raingardens and natural swales to achieve target reductions, however this would be limited to the higher levels of the site to avoid the flood impacts. The major WSUD opportunity is to collect roof drainage in a rainwater tank and re-use for greywater uses, and to incorporate a GPT and filtration devices to treat runoff from external impervious areas. Opportunity is being explored for a network of passive irrigation subsoil pipes integrated in the landscaped areas to direct stormwater runoff from adjacent pits, directly to the rootzone of the proposed landscaping.

5.3.2 Stormwater Quality

To verify compliance with City of Parramatta stormwater pollutant reduction targets, modelling has been undertaken in the software package MUSIC (Model for Urban Stormwater Improvement Conceptualisation) Version 6.3. MUSIC was developed by the Cooperative Research Centre for Catchment Hydrology (CRCCH) and is used industry wide to assess the water quality performance of urban catchments. MUSIC is appropriate for the assessment of catchment areas of up to 100km^2 using a continuous simulation approach. The water quality modelling was undertaken in accordance with the current NSW MUSIC Modelling Guidelines 2015. The monthly Potential Evapotranspiration (PET) and Rainfall data values for the Parramatta area have been used for the modelling.

5.3.3 Catchment Areas & Treatment Train

A MUSIC water quality model has been prepared to develop a concept water quality strategy that meets the pollutant reduction targets identified in the preceding section. The site has been split into sub-catchments to appropriately represent the proposed stormwater drainage network, as shown in the civil engineering design drawings contained within Appendix A. Impervious and pervious fractions for each sub-catchment have also been estimated from the current concept landscape drawings. The sub-catchment areas are tabulated in Table 5-2.

The public domain elements are at the lower river level and include an upgrade to the existing riverside walk and public domain. These areas are constrained due to flood levels and are within the watercourse area, and therefore formalised WSUD functions in these areas would be challenging due to the flood constraints. It has therefore been assumed that the riverside walk and Casuarina Clearing are exempt from the water quality requirements as shown in Figure 5-3. A clarification has been issued to the City of Parramatta to confirm this assumption, refer to correspondence in Appendix B. The public domain elements do however aim to improve the watercourse health and value in a number of ways including, by enhancing vegetation in the landscape, minimising soil loss through planting, maximising recreation and amenity, improving access to the watercourse, and enhancing habitat.

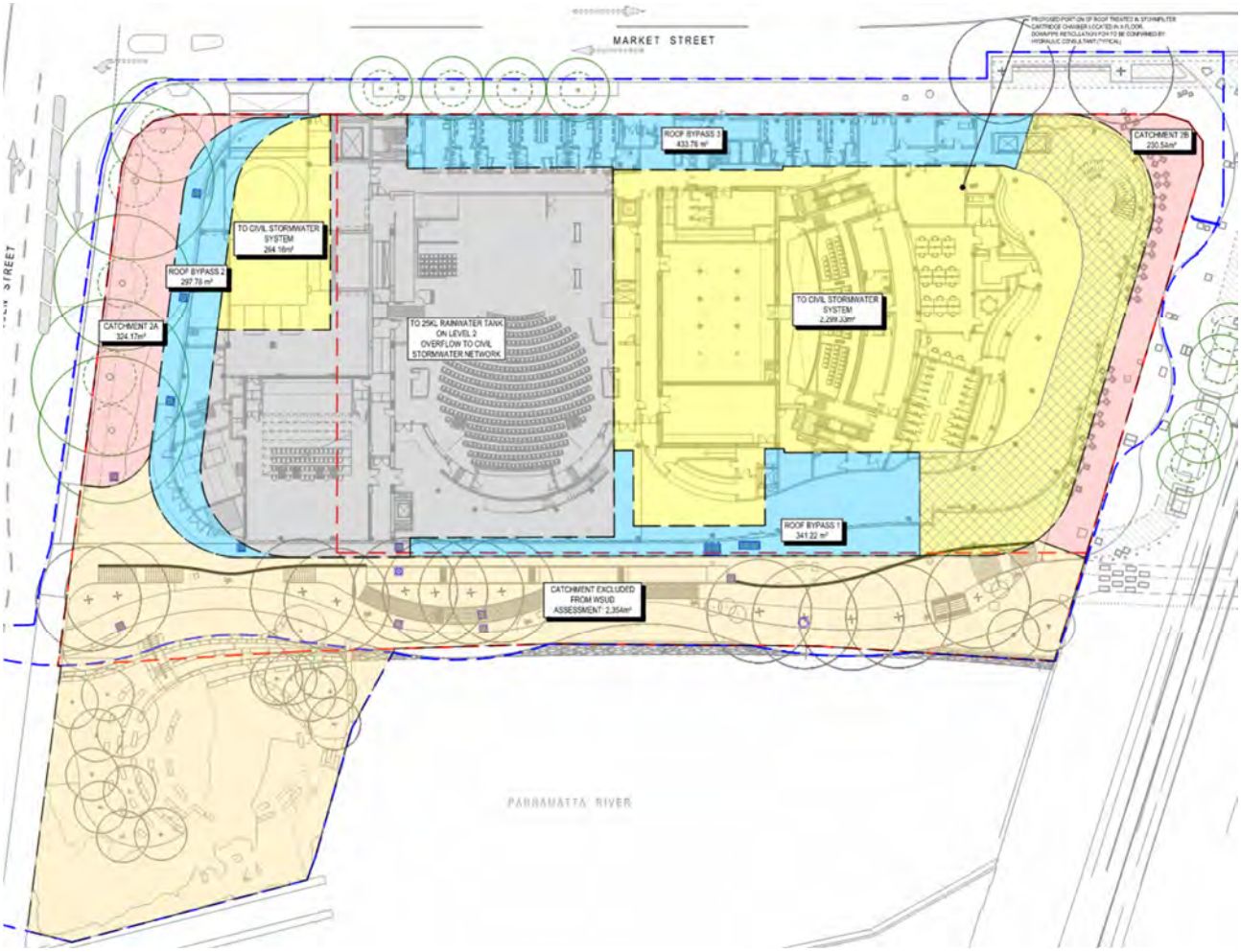


Figure 5-3: Water quality catchment plan *(Source: Mott MacDonald, dated 22/01/25)*

Table 5-2: Proposed Site sub-catchments

Catchment Name	Surface Type	Area (ha)	Impervious Fraction (%)
1A (Roof)	Roof	0.0278	100
1B (Roof)	Roof	0.2298	100
RWT	Roof	0.1811	100
2A	Mixed	0.0327	100
2B	Mixed	0.0230	100
Roof Bypass 1	Bypass	0.0331	100
Roof Bypass 2	Bypass	0.0202	100
Roof Bypass 3	Bypass	0.0443	100
Total Area		**0.592**	

The subsequent treatment of rainfall on, and runoff from, these catchments are represented as treatment nodes. The strategy to treat rainfall and runoff in this development includes: a portion of stormwater captured on the roof will be directed to a 25kL rainwater tank, the provision of Ocean Guard litter baskets in selected inlet pits to treat pollutants as best practice, and Ocean Protect Stormfilters or similar approved upstream of

the proposed outfall to the Parramatta River. Consideration has been given to the location of the Ocean Guard litter baskets to maximise the volume of runoff which is treated by these devices.

The MUSIC model schematisation is shown in Figure 5-4.

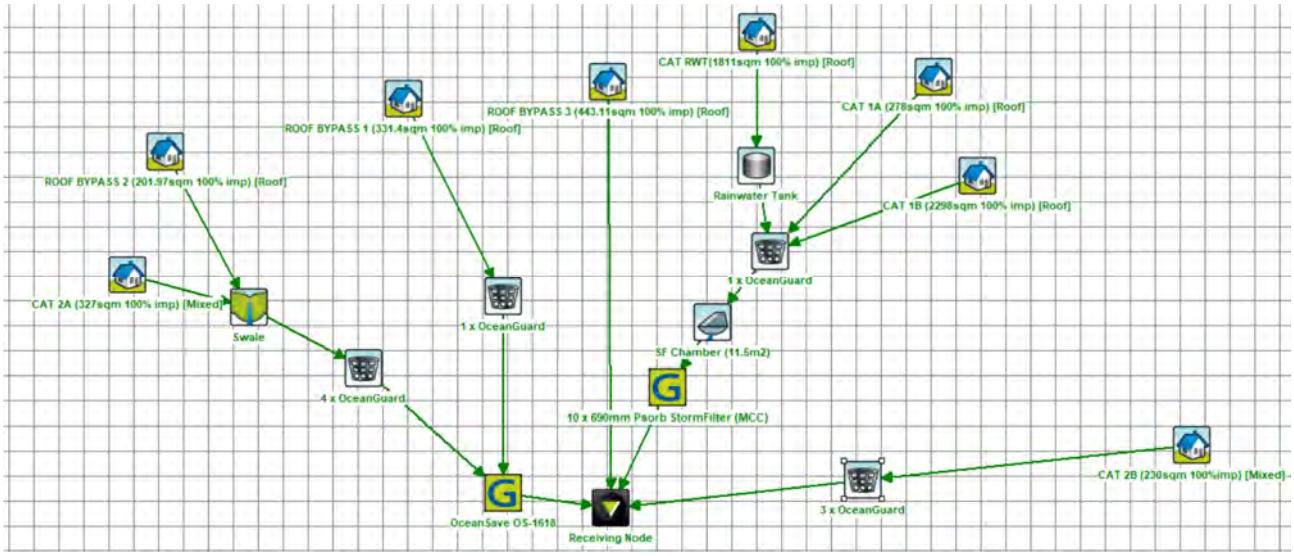


Figure 5-4: MUSIC Model Output *(Source: Mott Macdonald, dated January 2025)*

5.3.4 MUSIC Modelling Results

The MUSIC model water quality treatment results are summarised in Table 5-3 below. Water quality treatment modelling demonstrates that the minimum treatment target requirements of City of Parramatta DCP are achieved. Opportunity exists to refine and optimise the water quality treatment strategy in the next design phase.

Table 5-3: MUSIC Model Pollution reduction results

Pollutant	Source Load (kg/year)	Residual Load (kg/year)	Reduction Achieved (%)	Target (%)	Target Achieved
Gross Pollutants (GP)	121	9.03	92.6	90	Yes
Total Suspended Solids (TSS)	199	27.1	86.6	85	Yes
Total Phosphorous (TP)	0.815	0.238	70.7	60	Yes
Total Nitrogen (TN)	10.4	4.49	57	45	Yes

No oils are expected to be present due to the operational usage of the development.

5.3.5 Operation and Maintenance

Stormwater infrastructure assets within the site boundary will be privately owned and maintained by Council. In addition to any specific maintenance requirements specified in the relevant Operating and Maintenance (O&M) manuals provided by the manufacturers, the general maintenance tasks are summarised in Table 5-4. Council will oversee the maintenance of the stormwater drainage and water quality infrastructure. The locations of the treatment devices have been proposed with consideration to accessibility.

Table 5-4: General Maintenance Schedule Summary

Item	Maintenance Task	Frequency	Procedure
Inlet & Junction Pits	Inside of pits	6 months	Remove grate and inspect internal walls and base, repair where required. Remove any collected sediment, debris and litter.
	Outside of pits	4 months and after heavy rainfall	Clean the grate of any collected sediment, debris, litter and vegetation.
General Stormwater System	General inspections of the complete stormwater drainage system	2 years	Inspect all drainage infrastructure recording any dilapidation in structures and carry out repairs that are required.
OceanGuard Litter Baskets	Minor Service: Filter bag inspection and evaluation, removal of captured pollutants and disposal of material	1-6 Times Annually (3 -4 typical)	Remove access cover/grate, lift and empty contents of filtration bag into disposal container. Inspect and evaluate the filtration bag and the Ocean Guard components. Rejuvenate filtration bag by cleaning with stiff bush or wash using high pressure water.
	Major Service: Filter bag replacement and/or support frame rectification	As required (reactionary process based on outcomes of minor service)	Replace the filtration bag and/or perform rectification works to components
Gross Pollutant Traps	Minor Service: Cleaning and removal of sediment build-up in sump.	Every 4-6 months or as required.	Remove pit lid and mechanically lift waste removal basket. Alternatively, remove pit lid and use vacuum truck to suction clean sump.
	Major Service: Removal of accumulated sediment and gross pollutants.	Inspection of screening element and cleaning every 2 years.	Remove access cover. Using a vacuum unit remove any floatable pollutants. Remove accumulated sediment and gross pollutants with vacuum unit. Inspect screening element.

5.4 Public Utility Potable Water and Sewer Connections

The potable water connection is from the existing Sydney Water main in Market Street. Sewer connections will be made to the existing Sydney Water sewer main that runs to the south of the existing building.

Roof rainwater is proposed to be collected in rainwater harvesting tank with 25kL capacity and reused for non-potable water usage such as toilet flushing and the evaporative cooling process.

It has been assumed that the majority of the existing services will be retained and protected as part of the redevelopment works. As part of the subsequent design stages, further coordination is required with the project Water Services Coordinator (WSC) to confirm any amplifications required for water/wastewater servicing and protection requirements for existing assets.

Refer to Infrastructure Requirement and Utilities Report ([ARP-RST-MD-RPT-001-SSDA IDR Report-Rev 02], dated [11/02/2025]) for further detail.

5.5 Water Balance

A water balance assessment has been undertaken for the site to estimate annual potable water demands, sewage discharges and stormwater runoff from the site. More detail regarding utility demands and

connections is included in the Infrastructure Requirement and Utilities Report ([ARP-RST-MD-RPT-001-SSDA IDR Report-Rev 02], dated [11/02/2025]).

5.5.1 Water demand

Potable Water

The potable water demand for staff facilities such as bathrooms, kitchens and cleaning is estimated to be 71.69 kL/day. The make-up water to the cooling towers is included in this potable water supply.

Irrigation

The estimated flow rate for irrigation on site is 2 L/s, equating to 7.2 kL/day assuming irrigation time of 1 hour per day.

5.5.2 Water supply

Rainwater tank

A 25kL rainwater tank is incorporated in the design, which will collect runoff from the roof for re-use.

5.5.3 Water discharge

Sewer

The sewer discharge from the site will be equal to the staff and public facilities and site maintenance/washdown demand of 17.747 kL/day.

Site Stormwater Discharge

The site stormwater runoff will be conveyed to the existing 300mm diameter outfalls to the Parramatta River.

5.5.4 Results summary

A summary of the results of the site water balance in the final configuration is included in Table 5-5.

Table 5-5: Site Water Balance Summary

Water source/demand	Average annual total (ML)	
	Inflow	**Outflow**
Potable water supply	71.69	
Cooling tower demand		2.59
Discharge to sewer		17.747

In summary, potable water will be supplied from the Sydney Water network and sewer flows discharged to the Sydney Water sewer. Measures have been taken to reduce the potable water demand where possible. Sydney Water have indicated that there is sufficient potable and wastewater capacity in the network. A Section 73 application is in progress which will confirm connection requirements.

5.6 Erosion and Sediment Control

Erosion and sediment control measures are designed to minimise the risk of scour, erosion, sedimentation and impacts to water quality, watercourses and riparian areas. The design has been provided in accordance with Landcom's *"Managing Urban Stormwater – Soils and Construction Manual"* (commonly known as the Blue Book), Volume 1, March 2004.

During dry windy weather, dust from unsealed roads and other exposed surfaces, such as unprotected earth or stockpiles, can become airborne and contribute to erosion. Upon settling, the eroded material may also contribute to sediment runoff and pollutants to downstream waterways such as the Parramatta River. Unmitigated runoff from the project during construction would place increased pressure on Parramatta River estuary. Mitigation measures would be required to avoid or reduce the potential for environmental impact during construction. Consequently, during the construction process, dust control measures must be implemented. Dust control measures include, but are not limited to:

- Application of dust suppression measures such as promptly watering exposed areas when dust is observed. Surfaces must be kept moist rather than wet;
- Pave and water roads/ driveways;
- Installation of wind fences where feasible and appropriate;
- Covering temporary stockpiles and locate away from stormwater pits/waterways; and
- Washing vehicles' wheels before they leave the construction site.

During the construction process the inspection and monitoring of the dust control measures should be included in the site monitoring process. A concept soil and water management plan for the site has been developed in accordance with the Blue Book. The proposed soil and water management control strategy in included in Appendix A with an extract shown in Figure 5-5. The proposal includes:

- Construction vehicle exit to enable debris to be removed from vehicles prior to leaving site.
- Sediment fence
- Stormwater pit sediment traps

The erosion and sediment control measures that have been proposed will need to be reviewed during the construction process and adjusted for various staging requirements.

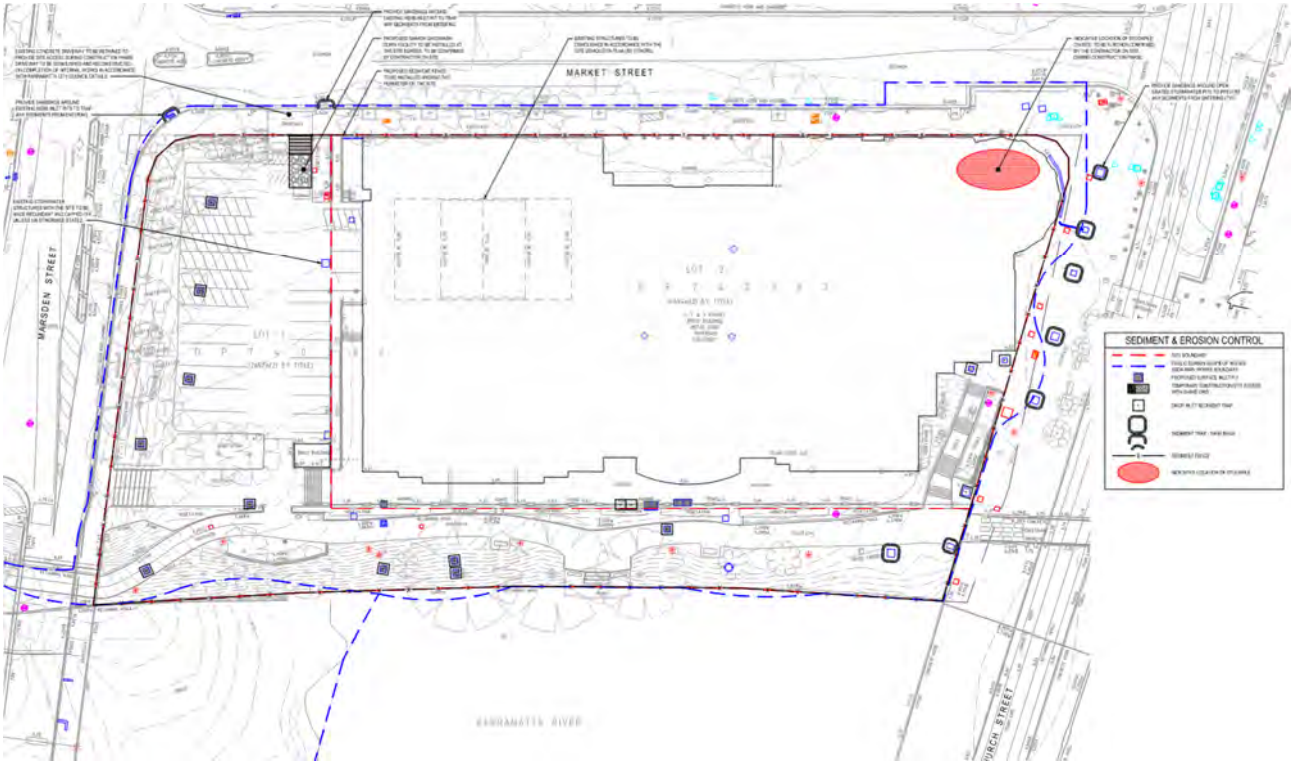


Figure 5-5: Proposed Soil and Water Management Plan *(Source: Mott Macdonald, dated 22/01/25)*

6. Assessment of Potential Construction Impacts

6.1 Erosion and Sediment Control

Potential for poor stormwater quality at site discharge points due to the discharge of sediment and other pollutants from construction bulk earthworks and work areas causing pollution of downstream waterways, has been assessed.

During construction, a Soil and Water Management Plan must be implemented to prevent scouring and the displacement of exposed soils and construction wastes such as sedimentation, hydrocarbons, litter and other pollutants entering the receiving waterways via overland flow or the drainage network. To mitigate these impacts, in addition to implementing the erosion and sediment controls described in the Soil and Water Management Plan, site facilities should be located away from any temporary overland flow paths at the site.

The Contractor shall ensure that site entrances (temporary or permanent) include shaker pads or wheel wash to prevent sediments being transported onto Market Street or beyond.

6.2 Existing Stormwater Network

There is existing stormwater infrastructure located within the site boundary, which may be made redundant as part of the development.

During construction stages, measures will be implemented to avoid damage to stormwater infrastructure constructed during initial stages of work.

7. Assessment of Potential Operational Impacts

7.1 Stormwater Management

7.1.1 Water Quantity

Potential operational impacts of flooding on downstream watercourses have been assessed. A rainwater harvesting tank has been provided within the design which is proposed to reuse water on site and therefore reduce the discharge flows from the site in the post-developed case. It is such that there is a reduction of total discharge of stormwater from the site by 10% compared to the undeveloped state. This will mitigate the risk of impacts on the capacity of the downstream drainage network and waterways.

7.1.2 Water Quality

Potential for poor stormwater quality at site discharge point during operational stage causing pollution of downstream waterways has been assessed.

The development includes filter baskets, a Gross Pollutant Trap and OceanProtect Stormfilter devices to improve the quality of stormwater discharge for the site. MUSIC modelling has been completed which demonstrates that the proposed measures comply with Council's requirements. The site includes a rainwater harvesting tank for water cycle management, which will further reduce the stormwater pollutant load discharged from the site. These items will require inspection and maintenance in accordance with the manufacturer's recommendation to ensure their effectiveness in the long term. This will mitigate impacts on downstream waterways.

The public domain elements are at the lower river level and include an upgrade to the existing riverside walk and public domain. These areas are constrained due to flood levels and are within the watercourse area, and therefore formalised WSUD functions in these areas would be challenging due to the flood constraints. It has therefore been assumed that the riverside walk and Casuarina Clearing are exempt from the water quality requirements. The public domain elements do however aim to improve the watercourse health and value in a number of ways including, by enhancing vegetation in the landscape, minimising soil loss through planting, maximising recreation and amenity, improving access to the watercourse, and enhancing habitat.

8. Environmental Management Measures

This section will provide a summary of the construction and operational risks without the mitigation measures described in Sections 7 and 8, along with the proposed mitigation measures to manage these risks. These are summarised in Table 8-1 below.

Table 8-1: Environmental Management Measures for Surface Water Impacts

ID	Impacts	Mitigation	Responsibility	Timing
SW1	Poor stormwater quality at site discharge point due to the potential discharge of sediment and other pollutants from construction bulk earthworks and work areas causing pollution of downstream waterways.	Soil and Water Management Plan will be prepared in accordance with the Blue Book. The Plan will identify all reasonably foreseeable risks relating to soil erosion associated with the various construction activities involved and describe how these risks will be mitigated and minimised during the construction phase. This includes provisions for managing the pollution risks associated with spillage or contamination on the site and surrounding areas. The plan will incorporate controls such as: • Stockpiles • Earth bank collection and diversion drains • Bunding to contain untreated stormwater • Stabilised site entry/exits • Sediment fencing • Check dams • Mesh and gravel & geotextile inlet filters	Proponent / Contractor	Pre-construction / Detailed Design
SW2	Poor stormwater quality at site discharge point during operational stage causing pollution of downstream waterways.	Incorporation of WSUD treatment train, including GPT and implementation of litter baskets will be adopted to manage stormwater quality. These items will require inspection and maintenance in accordance with the manufacturer's recommendation to ensure their effectiveness in the long term. The public domain elements are at the lower river level and include an upgrade to the existing riverside walk and public domain. These areas are constrained due to flood levels and are within the watercourse area, and therefore formalised WSUD functions in these areas would be challenging due to the flood constraints. It has therefore been assumed that the riverside walk and Casuarina Clearing are exempt from the water quality requirements. The public domain elements do however aim to improve the watercourse health and value in a number of ways including, by enhancing vegetation in the landscape, minimising soil loss through planting, maximising recreation and amenity, improving access to the watercourse, and enhancing habitat.	Proponent	Detailed Design / Operation

9. Summary of Residual Impacts

This section provides a summary of the construction and operational risks both pre-mitigation and any residual impacts remaining after the implementation of the management measures described in Section 9. Pre-mitigation and residual impacts are summarised in Table 9-1 below.

Table 9-1: Summary of Pre-mitigation and Residual Impacts

Stage	Potential Pre-Mitigation Adverse Impact	Relevant Management Measures	Potential Residual Impact After Implementation of Management Measures	Comment on How Any Residual Impacts Would Be Managed
Construction	Poor stormwater quality at site discharge point due to the potential discharge of sediment and other pollutants from construction bulk earthworks and work areas causing pollution of downstream waterways.	Implementation of the approved Erosion and Sediment Control Plan (ESCP).	Water pollution may occur if the Erosion and Sediment Control Plan (ESCP) is not implemented correctly.	The implementation of the Erosion and Sediment Control Plan (ESCP) will be monitored through the construction phase.
Operation	Poor stormwater quality at site discharge point during operational stage causing pollution of downstream waterways.	Incorporation of WSUD treatment train, including GPT and implementation of litter baskets will be adopted to manage stormwater quality. These items will require inspection and maintenance in accordance with the manufacturer's recommendation to ensure their effectiveness in the long term.	Water pollution may occur if stormwater quality / WSUD treatment train infrastructure is not maintained appropriately.	Stormwater quality infrastructure maintenance plans will be appropriately implemented, monitored, reviewed and updated as necessary in accordance with the manufacturer's recommendations throughout the operation phase.
Operation	Poor stormwater quality at site discharge point during operational stage causing pollution of downstream waterways.	The public domain elements are at the lower river level and include an upgrade to the existing riverside walk and public domain. These areas are constrained due to flood levels and therefore formalised WSUD functions in these areas would be challenging due to the flood constraints. It has therefore been assumed that the riverside walk and Casuarina Clearing are exempt from the water quality requirements.	The public domain elements aim to improve the watercourse health and value in a number of ways by enhancing vegetation in the landscape, minimising soil loss through planting, maximising recreation and amenity, improving access to the watercourse, and enhancing habitat.	Improvements to watercourse health will be appropriately implemented, monitored, reviewed and updated to improve the values of this reach of the Parramatta River.

10. Conclusion

In summary, this Water Management Plan report was prepared to support the development application for Riverside Theatres. The report demonstrates that consideration has been given to the following in accordance with the relevant controls and guidelines:

- Proposed stormwater drainage infrastructure: the proposed pit and pipe network has been sized to safely capture and convey runoff in the subsurface network for all events up to the 5% AEP event.
- City of Parramatta have confirmed that OSD is not a requirement for this development, however a reduction of total discharge of stormwater from the site by 10% compared to the undeveloped state is required. This requirement is being achieved through capturing roof rainwater, collecting in rainwater harvesting tanks with 25kL capacity and reusing for non-potable water usages such as irrigation, wash downs and other greywater uses.
- Water quality devices have been proposed and integrated with the urban design to form an effective treatment train which exceed pollutant reduction targets set by Council. The public domain elements adjacent to the Parramatta River aim to improve the watercourse health and value in a number of ways, including enhancing vegetation in the landscape, minimising soil loss through planting, maximising recreation and amenity, improving access to the watercourse, and enhancing habitat.
- A site water balance assessment has been completed for the proposed development. Roof rainwater is proposed to be collected in rainwater harvesting tanks with 25kL capacity and reused for non-potable water usage such as irrigation, wash downs and other greywater uses.
- A preliminary sediment and erosion control plan has been prepared for the site with the aim to minimise environmental impacts on downstream waterways during construction.

11. References

Australian Standards, 2009. AS 1428.1 Design for access and mobility, Part 1: General Requirements for access – New Building work.

BMT WBM Pty Ltd, 2015, NSW MUSIC Modelling Guidelines

Ball et al, 2019. Australian Rainfall and Runoff: A Guide to Flood Estimation.

Department of Planning and Environment, Controlled activities – Guidelines for riparian corridors on waterfront land – Fact Sheet.

Landcom, 2004. Managing Urban Stormwater: Soils & Construction Volume 1. (Referred to as the Blue Book)

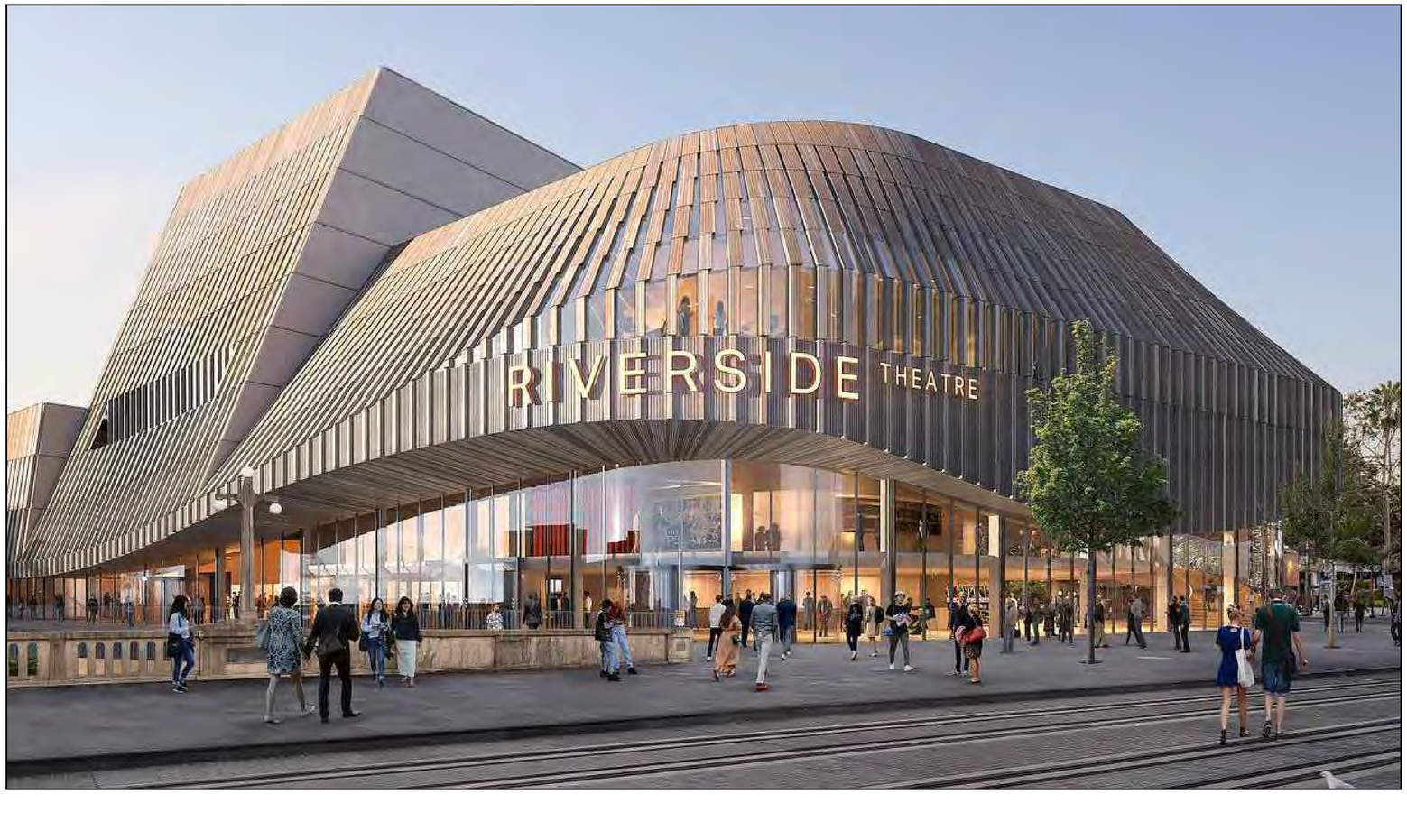
Appendix A

Civil Drawings

RIVERSIDE THEATRES

CORNER MARKET & CHURCH STREET, PARRAMATTA

CIVL ENGINEERING



CIVIL DRAWING LIST	
DRAWING No.	DRAWING TITLE
103054-MMD-01-DD-DR-C-0001	COVER SHEET
103054-MMD-01-DD-DR-C-0002	GENERAL NOTES SHEET 01
103054-MMD-01-DD-DR-C-0003	GENERAL NOTES SHEET 02

CIVIL DRAWING LIST	
DRAWING No.	DRAWING TITLE
103054-MMD-01-DD-DR-C-0010	EROSION & SEDIMENT CONTROL PLAN
103054-MMD-01-DD-DR-C-0015	EROSION & SEDIMENT CONTROL DETAILS
103054-MMD-01-DD-DR-C-0020	BULK EARTHWORKS CUT/FILL PLAN

CIVIL DRAWING LIST	
DRAWING No.	DRAWING TITLE
103054-MMD-01-DD-DR-C-0030	GENERAL ARRANGEMENT PLAN
103054-MMD-01-DD-DR-C-0050	STORMWATER DRAINAGE LAYOUT PLAN
103054-MMD-01-DD-DR-C-0051	STORMWATER DRAINAGE LONGITUDINAL SECTIONS - SHEET 01

CIVIL DRAWING LIST	
DRAWING No.	DRAWING TITLE
103054-MMD-01-DD-DR-C-0060	STORMWATER CATCHMENT PLAN
103054-MMD-01-DD-DR-C-0100	COMBINED SERVICES PLAN

COLOUR PRINTING REQUIRED

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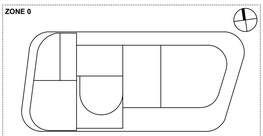
Always take figured dimensions in preference to scaling

Rev	Description	By	Date
01	DRAFT 30% DETAILED DESIGN	DF	19.12.2024
02	30% DETAILED DESIGN	JHN	22.01.2025

ZONE 0



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Project No. 703103054

Project
RIVERSIDE THEATRES
CORNER MARKET & CHURCH ST, PARRAMATTA 2150

Acknowledgement
In the language of the Darug people, this site is known as Burramattagal.

Document Control Status: PRELIMINARY

Drawing Title: COVER SHEET

Designed: S. SAIARA | J. NELSON	**Drawn:** J. O
Checked:	**Scale:** N/A
Approved: D. FETTELL	**Date:** 22.01.2025
Drawing Number: 103054-MMD-01-DD-DR-C-0001	**Revision:** 02

CIVIL ENGINEERING

PLOT STAMP DATE: 19/12/2024

GENERAL NOTES

GN1 ALL WORKMANSHIP AND MATERIALS SHALL COMPLY WITH THE NATIONAL CONSTRUCTION CODE OF AUSTRALIA AND THE RELEVANT CURRENT AUSTRALIAN STANDARDS.

GN2 ANY DISCREPANCIES, OMISSIONS OR ERRORS SHALL BE REPORTED TO THE SUPERINTENDENT FOR CLARIFICATION BEFORE PROCEEDING WITH THE WORK.

GN3 DO **NOT** SCALE MEASUREMENTS FROM THE DRAWINGS.

SITEWORKS NOTES

SN1 DATUM : Australian Height Datum (AHD)
ORIGIN OF LEVELS : SS 76668 SCIMS 11/07/2024
ORIGIN OF CO-ORDINATES : Mapping Grid Of Australia (MGA)
SURVEY PREPARED BY : Veris
Suite 604, level 6, 45 Jones St.
Ultimo, NSW 2007

SN2 THE CONTRACTOR MUST VERIFY ALL DIMENSIONS AND EXISTING LEVELS ON SITE PRIOR TO COMMENCEMENT OF WORK, AND REPORT ANY DISCREPANCIES TO THE SUPERINTENDENT.

SN3 ALL EXISTING SERVICES (INCLUDING ANY NOT SHOWN ON THE PLANS) MUST BE ACCURATELY LOCATED IN POSITION AND LEVEL PRIOR TO ANY EXCAVATION. ANY DISCREPANCIES SHALL BE REPORTED TO THE SUPERINTENDENT. MINIMUM SERVICE CLEARANCES SHALL BE MAINTAINED FROM THE RELEVANT SERVICE AUTHORITY.

SN4 THE CONTRACTOR SHALL ARRANGE FOR ALL SETTING OUT BY A REGISTERED SURVEYOR.

SN5 IT IS THE CONTRACTORS RESPONSIBILITY TO NOTIFY THE DEPARTMENT OF LAND AND PROPERTY INFORMATION NSW, OF ANY SURVEY MARKS THAT WILL BE DESTROYED IN THE CONSTRUCTION OF WORKS.
CONTACT HEAD OFFICE ON 1300 052 637 www.lpi.nswgov.au AND http://scims.lpi.nsw.gov.au/status_report_frames.html

SN6 THE CONTRACTOR SHALL OBTAIN ALL REGULATORY AUTHORITY APPROVALS AT THEIR OWN EXPENSE.

SN7 WHERE NEW WORKS ABUT EXISTING, THE CONTRACTOR MUST ENSURE THAT A SMOOTH AND EVEN PROFILE, FREE FROM ABRUPT CHANGES IS OBTAINED.

SN8 ALL DISTURBED AREAS SHALL BE RESTORED TO THEIR ORIGINAL CONDITION, UNLESS SPECIFIED OTHERWISE.

SN9 EXCAVATED TRENCHES SHALL BE COMPACTED TO THE SAME DENSITY AS THE ADJACENT NATURAL MATERIAL. ANY SUBSIDENCE'S DURING THE PERIOD TO BE RECTIFIED AS DIRECTED BY THE SUPERINTENDENT.

SN10 ANY EXISTING TREES WHICH FORM PART OF THE FINAL LANDSCAPING PLAN WILL BE PROTECTED FROM CONSTRUCTION ACTIVITIES IN ACCORDANCE WITH THE LANDSCAPE ARCHITECT'S DETAILS AND / OR BY -

PROTECTING THEM WITH BARRIER FENCING OR SIMILAR MATERIALS INSTALLED OUTSIDE THE DRIP LINE, ENSURING THAT NOTHING IS NAILED TO THEM,
PROHIBITING PAVING, GRADING, SEDIMENT WASH OR PLACING OF STOCKPILES WITHIN THE DRIP LINE EXCEPT UNDER THE FOLLOWING CONDITIONS -
ENCROACHMENT ONLY OCCURS ON ONE SIDE AND NO CLOSER TO THE TRUNK THAN EITHER 1.5m OR HALF THE DISTANCE BETWEEN THE OUTER EDGE OF THE DRIP LINE AND THE TRUNK, WHICH EVER IS THE GREATER,
A DRAINAGE SYSTEM THAT ALLOWS AIR AND WATER TO CIRCULATE THROUGH THE ROOT ZONE (eg A GRAVEL BED) IS PLACED UNDER ALL FILL LAYERS OF MORE THAN 300mm CARE IS TAKEN NOT TO CUT ROOTS UNNECESSARILY NOR TO COMPACT THE SOIL AROUND THEM.

SN11 RECEPTORS FOR CONCRETE AND MORTAR SLURRIES, PAINTS, ACID WASHINGS, LIGHT-WEIGHT WASTE MATERIALS AND LITTER ARE TO BE EMPTIED AS NECESSARY. DISPOSAL OF WASTE SHALL BE IN A MANNER APPROVED BY THE SUPERINTENDENT OR AS SPECIFIED IN THE WORKS CONTRACT.

EARTHWORKS NOTES

EW1 ALL WORK SHALL COMPLY WITH AS3798 (2007) - GUIDELINES ON EARTHWORKS FOR COMMERCIAL AND RESIDENTIAL DEVELOPMENTS.

EW2 ALL WORK SHALL COMPLY WITH THE PROJECT GEOTECHNICAL REPORT -
-
-
-

EW3 STRIP TOPSOIL TO EXPOSE NATURALLY OCCURRING ENGINEERING MATERIAL AND STOCKPILE ON SITE FOR REUSE AS DIRECTED BY THE SUPERINTENDENT.

EW4 ALL SOFT, WET OR UNSUITABLE MATERIAL TO BE REMOVED AS DIRECTED BY THE SUPERINTENDENT AND REPLACED WITH APPROVED FILL MATERIAL.

EW5 ALL FILL MATERIAL SHALL BE FROM A SOURCE APPROVED BY THE SUPERINTENDENT AND SHALL COMPLY WITH THE FOLLOWING -
A) FREE FROM ORGANIC AND PERISHABLE MATTER,
B) MAXIMUM PARTICLE SIZE 75mm,
C) PLASTICITY INDEX - BETWEEN 2% AND 15%.

EW6 ALL FILL MATERIAL SHALL BE PLACED IN MAXIMUM 200mm THICK LAYERS AND COMPACTED AT OPTIMUM MOISTURE CONTENT (+ OR - 2%) TO ACHIEVE A DRY DENSITY DETERMINED IN ACCORDANCE WITH AS1289.5.1.1 - 2003 - METHODS OF TESTING SOILS FOR ENGINEERING PURPOSES, OF NOT LESS THAN THE FOLLOWING STANDARD MINIMUM DRY DENSITY -

LOCATION	STANDARD DRY DENSITY
UNDER BUILDING SLABS	98%
VEHICULAR PAVED AREAS	100%
NON-VEHICULAR PAVED AREAS	98%
LANDSCAPED AREAS	95%

EW7 THE CONTRACTOR SHALL PROGRAM THE EARTHWORKS OPERATION SO THAT THE WORKING AREAS ARE ADEQUATELY DRAINED DURING THE PERIOD OF CONSTRUCTION. THE SURFACE SHALL BE GRADED AND SEALED OFF TO REMOVE DEPRESSIONS, ROLLER MARKS AND SIMILAR WHICH WOULD ALLOW WATER TO POND AND PENETRATE THE UNDERLYING MATERIAL. ANY DAMAGE RESULTING FROM THE CONTRACTOR NOT OBSERVING THESE REQUIREMENTS SHALL BE RECTIFIED BY THE CONTRACTOR AT THEIR OWN EXPENSE.

EW8 TESTING OF THE FILL MATERIAL SHALL BE CARRIED OUT BY AN APPROVED NATA REGISTERED LABORATORY AT THE CONTRACTORS EXPENSE.

EW9 WHERE THE SUBGRADE IS UNABLE TO SUPPORT CONSTRUCTION EQUIPMENT, OR IT IS NOT POSSIBLE TO COMPACT OVERLYING PAVEMENT LAYERS, ONLY BECAUSE OF THE SUBGRADE MOISTURE CONTENT, THEN THE CONTRACTOR SHALL CONDITION OR REPLACE THE MATERIAL AT THE CONTRACTORS DISCRETION AND EXPENSE.

EW10 EARTHWORKS CALCULATIONS ARE VOLUMETRIC ONLY AND DO NOT ALLOW FOR BULKING OF EXCAVATED MATERIAL. IT IS THE CONTRACTORS RESPONSIBILITY TO MAKE ALLOWANCES FOR THESE ITEMS AS PART OF THE TENDER / WORKS.

EW11 NO ALLOWANCE HAS BEEN MADE FOR FOOTINGS OR FOUNDATIONS, RETAINING WALLS OR TRENCHING. IT IS THE CONTRACTORS RESPONSIBILITY TO MAKE ALLOWANCES FOR THESE ITEMS AS PART OF THE TENDER / WORKS.

EXISTING SERVICES NOTES

ES1 EXISTING SERVICES HAVE BEEN PLOTTED FROM SUPPLIED DATA AND AS SUCH THEIR ACCURACY CANNOT BE GUARANTEED. IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO ESTABLISH THE LOCATION AND LEVEL OF ALL EXISTING SERVICES PRIOR TO THE COMMENCEMENT OF ANY WORK. ANY DISCREPANCIES SHALL BE REPORTED TO THE SUPERINTENDENT.

ES2 THE CONTRACTOR SHALL ALLOW FOR THE CAPPING OFF, EXCAVATION AND REMOVAL IF REQUIRED OF ALL REDUNDANT EXISTING SERVICES IN AREAS AFFECTED BY WORKS WITHIN THE CONTRACT AREA, AS SHOWN ON THE DRAWINGS UNLESS DIRECTED OTHERWISE BY THE SUPERINTENDENT.

ES3 THE CONTRACTOR SHALL ENSURE THAT AT ALL TIMES SERVICES TO ALL BUILDINGS NOT AFFECTED BY THE WORKS ARE NOT DISRUPTED.

ES4 IF REQUIRED, THE CONTRACTOR SHALL CONSTRUCT TEMPORARY SERVICES TO MAINTAIN EXISTING SUPPLY TO BUILDINGS REMAINING IN OPERATION DURING WORKS TO THE SATISFACTION AND APPROVAL OF THE SUPERINTENDENT. ONCE DIVERSION IS COMPLETE AND COMMISSIONED THE CONTRACTOR SHALL REMOVE ALL SUCH TEMPORARY SERVICES AND MAKE GOOD TO THE SATISFACTION OF THE SUPERINTENDENT AND THE RELEVANT SERVICE AUTHORITY.

ES5 INTERRUPTION TO SUPPLY OF EXISTING SERVICES SHALL BE DONE SO AS NOT TO CAUSE ANY INCONVENIENCE TO THE PRINCIPAL. THE CONTRACTOR IS TO GAIN APPROVAL FROM THE SUPERINTENDENT FOR TIME OF INTERRUPTION - THE CONTRACTOR IS RESPONSIBLE FOR ALL LIAISON.

ES6 ALL BRANCH GAS AND WATER SERVICES UNDER DRIVEWAYS AND BRICK PAVING SHALL BE LOCATED IN Ø80mm uPVC SEWER GRADE CONDUITS EXTENDING A MINIMUM OF 500mm BEYOND THE EDGE OF PAVING.

ES7 CLEARANCE AND COVER REQUIREMENTS SHALL BE OBTAINED FROM THE RELEVANT SERVICE AUTHORITY BEFORE COMMENCEMENT OF WORKS AND SHALL BE ADHERED TO AT ALL TIMES.

ES8 CARE IS TO BE TAKEN WHEN EXCAVATING NEAR EXISTING SERVICES. NO MECHANICAL EXCAVATIONS ARE TO BE UNDERTAKEN OVER TELECOM OR ELECTRICAL SERVICES. HAND EXCAVATE IN THESE AREAS ONLY.

STORMWATER NOTES

SW1 FOR RESIDENTIAL SUBDIVISIONS AND PUBLIC ROADS -

ALL Ø375mm TO Ø600mm DRAINAGE PIPES SHALL BE CLASS 4 APPROVED SPIGOT AND SOCKET REINFORCED CONCRETE PIPES WITH RUBBER RING JOINTS (UNO). ALL Ø675mm OR LARGER DRAINAGE PIPES SHALL BE CLASS 3 APPROVED SPIGOT AND SOCKET REINFORCED CONCRETE PIPES WITH RUBBER RING JOINTS (UNO).

ALL PVC-u DRAINAGE PIPES IN FOOTWAYS OR ACCESS WAYS SHALL BE DWV GRADE CLASS SN8 IN ACCORDANCE WITH AS/NZS 1260:2009 - PVC-u PIPES AND FITTINGS FOR DRAIN, WASTE AND VENT APPLICATION. HEAVY DUTY PVC-u PIPES TO BE IN ACCORDANCE WITH AS/NZS 1254 : 2010 - PVC PIPES AND FITTINGS FOR STORM AND SURFACE WATER APPLICATIONS MAY BE USED WITHIN ALLOTMENTS.

SW2 FOR COMMERCIAL OR INDUSTRIAL SITES -

ALL Ø300mm TO Ø600mm DRAINAGE PIPES SHALL BE CLASS 4 APPROVED SPIGOT AND SOCKET REINFORCED CONCRETE PIPES WITH RUBBER RING JOINTS (UNO). ALL Ø675mm OR LARGER DRAINAGE PIPES SHALL BE CLASS 3 APPROVED SPIGOT AND SOCKET REINFORCED CONCRETE PIPES WITH RUBBER RING JOINTS (UNO).

ALL DRAINAGE PIPES LESS THAN OR EQUAL TO Ø225mm SHALL BE PVC-u DWV GRADE CLASS SN8 IN ACCORDANCE WITH AS/NZS 1260 : 2009 - PVC-u PIPES AND FITTINGS FOR DRAIN, WASTE AND VENT APPLICATION WITH SOLVENT WELDED JOINTS.

SW3 EQUIVALENT STRENGTH FIBROUS REINFORCED CONCRETE (F.R.C.) AND / OR HIGH DENSITY POLYETHYLENE (H.D.P.E.) MAY BE USED SUBJECT TO APPROVAL BY THE SUPERINTENDENT.

SW4 ALL PIPE JUNCTIONS UP TO AND INCLUDING Ø450mm AND TAPERS, SHALL BE VIA PURPOSE MADE FITTINGS (UNO).

SW5 MINIMUM GRADE TO STORMWATER LINES TO BE 1% (UNO).

SW6 CONTRACTOR TO SUPPLY AND INSTALL ALL FITTINGS AND SPECIALS INCLUDING VARIOUS PIPE ADAPTORS TO ENSURE PROPER CONNECTION BETWEEN DISSIMILAR PIPEWORK.

SW7 ALL CONNECTIONS TO EXISTING DRAINAGE PITS SHALL BE MADE IN A TRADESMAN-LIKE MANNER AND THE INTERNAL WALL OF THE PIT AT THE POINT OF ENTRY SHALL BE CEMENT RENDERED TO ENSURE A SMOOTH FINISH WITH NO PROTRUSIONS.

SW8 ALL IN-SITU CONCRETE PITS TO BE 32Mpa MINIMUM AT 28 DAYS.

SW9 PITS AND PIPES IN AREAS OF SALINITY HAZARD SHALL HAVE INCREASED COVER TO ANY REINFORCEMENT.

SW10 Precast concrete pits may be installed in lieu of cast in-situ pits, when pipe junctions are accommodated within the overall dimensions of the pit, and approved by the superintendent.

SW11 PITS DEEPER THAN 1000mm SHALL HAVE STEP IRONS INSTALLED IN ACCORDANCE WITH THE LOCAL OR STATUTORY AUTHORITY REQUIREMENTS.

SW12 BEDDING SHALL BE TYPE H2 (UNO) FOR PIPES NOT UNDER PAVEMENTS, AND TYPE HS2 FOR PIPES UNDER PAVEMENTS IN ACCORDANCE WITH AS/NZS 3725 : 2007 - DESIGN FOR INSTALLATION OF BURIED CONCRETE PIPES.

SW13 BACKFILL TRENCH WITH SAND OR APPROVED GRANULAR BACKFILL TO 300mm (MIN) ABOVE THE PIPE. WHERE THE PIPE IS UNDER PAVEMENTS BACKFILL REMAINDER OF TRENCH TO PAVEMENT SUBGRADE WITH SAND OR APPROVED GRAVEL SUB-BASE COMPACTED IN 150mm LAYERS TO 98% STANDARD MAXIMUM DRY DENSITY. THE CONTRACTOR IS TO ENSURE COMPACTION EQUIPMENT IS APPROPRIATE FOR THE PIPE CLASS USED.

SW14 WHERE STORMWATER LINES PASS UNDER FLOOR SLABS DWV GRADE PVC-U RUBBER RING JOINTS ARE TO BE USED (UNO).

SW15 WHERE SUBSOIL DRAINAGE LINES PASS UNDER FLOOR SLABS AND VEHICULAR PAVEMENTS, UNSLOTTED PVC-U DWV GRADE CLASS SN8 PIPE SHALL BE USED.

SW16 PROVIDE 3m LENGTH OF Ø100mm SUBSOIL DRAINAGE LINE OR 200 'NYLEX' STRIP DRAIN SURROUNDED WITH 150mm OF 20mm BLUE METAL OR GRAVEL, AND WRAPPED IN 'BIDIM' A24 GEOTEXTILE FILTER FABRIC OR APPROVED EQUIVALENT, AT INVERT OF INCOMING UPSTREAM PIPE ON EACH PIT.

SOIL AND WATER MANAGEMENT NOTES

GENERAL INSTRUCTIONS

SWM01 THESE PLANS PRESENT A CONCEPTUAL SOIL AND WATER MANAGEMENT PLAN (SWMP) ONLY AND SHOWS A POSSIBLE WAY OF MANAGING SOIL AND EROSION. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE ESTABLISHMENT AND MANAGEMENT OF THE SITE AND PREPARING A DETAILED PLAN AND OBTAINING APPROVAL FROM THE RELEVANT AUTHORITY PRIOR TO THE COMMENCEMENT OF ANY WORKS.

SWM02 THIS PLAN IS TO BE READ IN CONJUNCTION WITH THE ENGINEERING PLANS AND ANY OTHER PLANS, WRITTEN INSTRUCTIONS, SPECIFICATION OR DOCUMENTATION THAT MAY BE ISSUED AND RELATING TO DEVELOPMENT OF THE SUBJECT SITE.

SWM03 THE CONTRACTOR WILL ENSURE THAT ALL SOIL AND WATER MANAGEMENT WORKS ARE CONSISTENT WITH 'MANAGING URBAN STORMWATER - SOILS AND CONSTRUCTION' - ALSO KNOWN AS 'THE BLUE BOOK'.

SWM04 ALL BUILDERS AND SUB-CONTRACTORS SHALL BE INFORMED OF THEIR RESPONSIBILITIES IN MINIMISING THE POTENTIAL FOR SOIL EROSION AND POLLUTION TO DOWNSLOPE LANDS AND WATERWAYS.

EROSION CONTROL

SWM05 WATER SHALL BE PREVENTED FROM ENTERING THE PERMANENT DRAINAGE SYSTEM UNTIL SEDIMENT CONCENTRATION IS LESS THEN OR EQUAL TO 50mg/L, ie THE CATCHMENT AREA HAS BEEN PERMANENTLY LANDSCAPED AND / OR ANY LIKELY SEDIMENT HAS BEEN FILTERED THROUGH AN APPROVED STRUCTURE.

SWM06 ANY SAND USED IN THE CONCRETE CURING PROCESS (SPREAD OVER THE SURFACE) WILL BE REMOVED AS SOON AS POSSIBLE AND WITHIN 10 WORKING DAYS FROM PLACEMENT.

SWM07 ACCEPTABLE RECEPTORS WILL BE CONSTRUCTED FOR CONCRETE AND MORTAR SLURRIES, PAINTS, ACID WASHINGS, LIGHT-WEIGHT WASTE MATERIALS AND LITTER.

SWM08 'SEDIMENT' FENCING WILL BE INSTALLED AS INDICATED ON THE PLANS AND AT THE DIRECTION OF SITE SUPERINTENDENT TO ENSURE CONTAINMENT OF SEDIMENT. THE SEDIMENT FENCING WILL OUTLET OR OVERFLOW UNDER STABILISED CONDITIONS INTO THE SEDIMENT BASIN, TO SAFELY CONVEY WATER INTO A SUITABLE FILTERING SYSTEM SHOULD THE PORES IN THE FABRIC BLOCK.

SWM09 THE SEDIMENT BASINS WILL BE CONSTRUCTED WITH THE MINIMUM WET SEDIMENT CAPACITY OF XX CUBIC METRES AND DESIGNED TO REMAIN STABLE IN AT LEAST THE 1 IN XX YEAR CRITICAL DURATION STORM EVENT. ARTIFICIAL FLOCCULATION OF THE FINER PARTICLES MAY NOT BE NECESSARY IN THIS INSTANCE.

SWM10 STOCKPILES SHOULD NOT BE LOCATED WITHIN 5m OF TREES AND HAZARD AREAS, INCLUDING LIKELY AREAS OF CONCENTRATED OR HIGH VELOCITY FLOWS SUCH AS WATERWAYS, DRAINAGE LINES, PAVED AREAS AND DRIVEWAYS. WHERE THEY ARE WITHIN 5M FROM SUCH AREAS, SPECIAL SEDIMENT CONTROL MEASURES SHOULD BE TAKEN TO MINIMISE POSSIBLE POLLUTION TO DOWNSTREAM WATERS. MEASURES SHOULD ALSO BE APPLIED TO PREVENT THE EROSION OF THE STOCKPILE.

SWM11 ALL CUT AND FILL BATTERS ARE TO BE SEEDED AND MULCHED WITHIN 14 DAYS OF COMPLETION OF FORMATION.

SWM12 ANY EXISTING TREES WHICH FORM PART OF THE FINAL LANDSCAPING PLAN WILL BE PROTECTED FROM CONSTRUCTION ACTIVITIES BY-

a. PROTECTING THEM WITH BARRIER FENCING OR SIMILAR MATERIALS INSTALLED OUTSIDE THE DRIP LINE,
b. ENSURING THAT NOTHING IS NAILED TO THEM,
c. PROHIBITING PAVING, GRADING, SEDIMENT WASH OR PLACING OF STOCKPILES WITHIN THE DRIP LINE EXCEPT UNDER THE FOLLOWING CONDITIONS,

(i) ENCROACHMENT ONLY OCCURS ON ONE SIDE AND NO CLOSER TO THE TRUNK THAN EITHER 1.5 METRES OR HALF THE DISTANCE BETWEEN THE OUTER EDGE OF THE DRIP LINE AND THE TRUNK, WHICH EVER IS THE GREATER,

(ii) A DRAINAGE SYSTEM THAT ALLOWS AIR AND WATER TO CIRCULATE THROUGH THE ROOT ZONE (E.G. A GRAVEL BED) IS PLACED UNDER ALL FILL LAYERS OF MORE THAN 300 MILLIMETRES DEPTH

(iii) CARE IS TAKEN.

SWM13 DURING WINDY WEATHER, LARGE DISTURBED UNPROTECTED AREAS SHOULD BE KEPT MOIST (NOT WET) BY SPRINKLING WITH WATER TO KEEP DUST UNDER CONTROL.

SWM14 TEMPORARY PROTECTION FROM EROSIVE FORCES WILL BE UNDERTAKEN ON LANDS WHERE FINAL SHAPING HAS NOT BEEN COMPLETED BUT WORKS ARE UNLIKELY TO PROCEED FOR PERIODS OF TWO MONTHS OR MORE (EG. ON TOPSOIL STOCKPILES). THIS MAY BE ACHIEVED WITH A VEGETATIVE COVER. A RECOMMENDED LISTING OF PLANT SPECIES FOR TEMPORARY COVER IS -

i) AUTUMN / WINTER SOWING
- OATS / RYECORN AT 20 kg/ha
- JAPANESE MILLET AT 10 kg/ha
ii) SPRING / SUMMER SOWING
- JAPANESE MILLET AT 20 kg/ha
- OATS / RYECORN AT 10 kg/ha

SWM15 DIVERSION BANKS / CHANNELS WILL BE REHABILITATED AS SOON AS POSSIBLE AND WITHIN 5 WORKING DAYS FROM THEIR FINAL SHAPING. OTHER THAN IN THE WINTER MONTHS, SUITABLE MATERIALS INCLUDE TURF GRASSES SUCH AS COUCH OR KIKUYU. DURING WINTER, OR AT OTHER TIMES WHEN TEMPORARY REHABILITATION (MORE THAN 3 MONTHS) IS REQUIRED, IT IS SUGGESTED THAT HESSIAN CLOTH IS USED BUT ONLY IF TACKED WITH APPROPRIATE PEGS AND AN ANIONIC BITUMEN EMULSION. FOOT AND VEHICULAR TRAFFIC SHOULD BE KEPT AWAY FROM THESE AREAS.

SWM16 UNDERTAKE SITE DEVELOPMENT WORKS IN ACCORDANCE WITH THE ENGINEERING PLANS. WHERE POSSIBLE, PHASE DEVELOPMENT SO THAT LAND DISTURBANCE IS CONFINED TO AREAS OF WORKABLE SIZE.

CONSTRUCTION SEQUENCE

SWM17 WHERE PRACTICAL, THE SOIL EROSION HAZARD ON THE SITE SHOULD BE KEPT AS LOW AS POSSIBLE. TO THIS END, WORKS SHOULD BE UNDERTAKEN IN THE **FOLLOWING SEQUENCE** -

(i) INSTALL INLET SEDIMENT TRAPS TO ALL GULLY PITS FRONTING THE SITE,

(iii) INSTALL A 1.8m CHAIN WIRE FENCE AROUND THE BOUNDARIES AND ATTACH HESSIAN CLOTH OR SIMILAR TO IT ON THE WINDWARD SIDE (TIES AT THE TOP, CENTRE AND BOTTOM AND AT 1M INTERVALS OR AS INSTRUCTED BY THE SUPERINTENDENT),

(iii) INSTALL GEOFABRIC SEDIMENT FENCE AND SEDIMENT TRAPS AROUND ALL PERMANENT STORMWATER RETICULATION STRUCTURES AS SHOWN ON THE PLAN,

(ii) CONSTRUCT STABILISED CONSTRUCTION ENTRANCE AS SHOWN ON THE PLAN OR TO LOCATION AS DETERMINED BY SUPERINTENDENT,

(v) INSTALL DIVERSION BANKS ALONG THE BOUNDARY WHERE REQUIRED, REHABILITATE DISTURBED LANDS DOWNSLOPE FROM THE BASINS WITHIN 20 WORKING DAYS,

(vi) ENSURE THAT THE SEDIMENT BASIN IS DIRECTED ONTO A TURFED AREA AND DRAINS TO A SUITABLE LOCATION. A TEMPORARY STORMWATER LINE MAY BE NECESSARY TO CONVEY THE FLOWS TO THIS LOCATION. CONSTRUCT DIVERSION CHANNELS AT THE BOUNDARY TO DRAIN INTO THE SEDIMENT BASIN AS SHOWN ON PLANS,

(vii) AT COMPLETION STABILISE SITE AND DECOMMISSION SEDIMENT BASIN AND ALL EROSION CONTROL DEVICES.

SWM18 TEMPORARY SOIL AND WATER MANAGEMENT STRUCTURES WILL BE REMOVED ONLY AFTER THE LANDS THEY ARE PROTECTING ARE REHABILITATED.

SWM19 FINAL SITE LANDSCAPING WILL BE UNDERTAKEN AS SOON AS POSSIBLE AND WITHIN 20 WORKING DAYS FROM COMPLETION OF CONSTRUCTION ACTIVITIES.

SITE INSPECTION AND MAINTENANCE

SWM20 AT LEAST WEEKLY AND AFTER EVERY RAIN FALL EVENT, THE CONTRACTOR WILL INSPECT THE SITE AND ENSURE THAT -

(i) DRAINS AND ALL SEDIMENT CONTROL DEVICES OPERATE EFFECTIVELY AND INITIATE REPAIR OR MAINTENANCE AS REQUIRED,

(ii) RECEPTORS FOR CONCRETE AND MORTAR SLURRIES, PAINTS, ACID WASHINGS, LIGHT-WEIGHT WASTE MATERIALS AND LITTER ARE TO BE EMPTIED AS NECESSARY. DISPOSAL OF WASTE SHALL BE IN A MANOR APPROVED BY THE SUPERINTENDENT,

(iii) SPILLED SAND (OR OTHER MATERIALS) IS REMOVED FROM HAZARD AREAS, INCLUDING LIKELY AREAS OF CONCENTRATED OR HIGH VELOCITY
FLOWS SUCH AS WATERWAYS, GUTTERS, PAVED AREAS AND DRIVEWAYS,

(iv) SEDIMENT IS REMOVED FROM BASINS AND / OR TRAPS WHEN LESS THAN 20m^3 OF TRAPPING CAPACITY REMAIN PER 1000m^2 OF DISTURBED LANDS, AND / OR LESS THAN 500mm DEPTH REMAINS IN THE SETTLING ZONE. ANY COLLECTED SEDIMENT WILL BE DISPOSED IN AREAS WHERE FURTHER POLLUTION TO DOWN SLOPE LANDS AND WATERWAYS IS UNLIKELY,

(v) REHABILITATED LANDS HAVE EFFECTIVELY REDUCED THE EROSION HAZARD AND INITIATE UPGRADING OR REPAIR AS APPROPRIATE.

SWM21 THE CONTRACTOR SHALL PROVIDE ALL MONITORING CONTROL AND TESTING.

ASPHALTIC CONCRETE NOTES

GENERAL

AC1 ASPHALTIC CONCRETE MIX DESIGN, MANUFACTURE, PLACING AND COMPACTION SHALL BE IN ACCORDANCE WITH RMS SPECIFICATION R116-ASPHALT (DENSE GRADED AND OPEN GRADED) AND AS2150- 2005 - HOT MIX ASPHALT - A GUIDE TO GOOD PRACTICE. ANNEXURE R116/1 TO BE COMPLETED BY SUBCONTRACTOR AND SUBMITTED FOR APPROVAL BY SUPERINTENDENT 7 DAYS PRIOR TO AC WORKS.

AC2 MINERAL FILLER TO COMPLY WITH AS2150 - 2005 - HOT MIX ASPHALT - A GUIDE TO GOOD PRACTICE.

MIX PROPORTIONS

AC3 JOB MIX - 7mm NOMINAL SIZE AGGREGATE. MINIMUM BITUMEN CONTENT (%) BY (MASS OF TOTAL MASS) - 5.1%.

AC4 MIX STABILITY - BETWEEN 16kn and 36kn AS DETERMINED BY RMS TEST METHOD T601 - COMPACTION OF TEST SPECIMENS OF DENSE GRADE BITUMINOUS MIXTURES AND T603 - STABILITY OF DENSE GRADE BITUMINOUS MIXTURES.

AC5 AIR VOIDS IN COMPACTED MIX - BETWEEN 4% OF VOLUME AND 7% OF THE MIX. VOIDS FILLED IN BINDER. 65-80% OF AIR VOIDS IN THE TOTAL MINERAL AGGREGATE FILLED BY BINDER IN ACCORDANCE WITH RMS TEST METHOD T601 - COMPACTION OF TEST SPECIMENS OF DENSE GRADE BITUMINOUS MIXTURES, T605 - MAXIMUM DENSITY OF BITUMINOUS PLANT MIX AND T606 - BULK DENSITY OF COMPACTED DENSE GRADED BITUMINOUS MIXTURES.

PAVEMENT PREPARATION

AC6 THE EXISTING SURFACE TO BE SEALED, SHALL BE DRY AND BROOMED BEFORE COMMENCEMENT OF WORK TO ENSURE COMPLETE REMOVAL OF ALL SUPERFICIAL FOREIGN AND LOOSE MATTER.

AC7 ALL DEPRESSIONS OR UNEVEN AREAS ARE TO BE TACK-COATED AND BROUGHT UP TO GENERAL LEVEL OF PAVEMENT WITH ASPHALTIC CONCRETE BEFORE LAYING OF MAIN COURSE.

TACK COAT

AC8 THE WHOLE OF THE AREA TO BE SHEETED WITH ASPHALTIC CONCRETE SHALL BE LIGHTLY AND EVENLY COATED WITH RAPID SETTING BITUMEN. APPLICATION RATE FOR RESIDUAL BITUMEN SHALL BE 0.15 TO 0.30 LITRES/SQUARE METRE. APPLICATION SHALL BE BY MEANS OF A MECHANICAL SPRAYER WITH SPRAY BAR.

SPREADING

AC9 ALL ASPHALTIC CONCRETE SHALL BE SPREAD WITH A SELF PROPELLED PAVING MACHINE.

AC10 THE ASPHALTIC CONCRETE SHALL BE LAID AT A MIX TEMPERATURE AS SHOWN BELOW -

ROAD SURFACE TEMP IN SHADE (°C)	MIX TEMPERATURES (°C)
5 - 10	NOT PERMITTED
10 - 15	150
15 - 25	145
25+	140

AC11 ASPHALTIC CONCRETE SHALL NOT BE LAID WHEN THE ROAD SURFACE IS WET OR WHEN COLD WINDS CHILL THE MIX TO ADVERSELY AFFECT TEMPERATURE OF MIX DURING SPREADING AND COMPACTION OPERATIONS.

AC12 THE MINIMUM COMPACTED THICKNESS IS 50mm IN TWO (2) LAYERS.

JOINTS

AC13 THE NUMBER OF JOINTS BOTH LONGITUDINAL AND TRANSVERSE SHALL BE KEPT TO A MINIMUM.

AC14 THE DENSITY AND SURFACE FINISH AT JOINTS SHALL BE SIMILAR TO THOSE OF THE REMAINDER OF THE LAYER.

COMPACTION

AC15 ALL COMPACTION SHALL BE UNDERTAKEN USING SELF PROPELLED ROLLERS.

AC16 INITIAL ROLLING SHALL BE COMPLETED BEFORE THE MIX TEMPERATURE FALLS BELOW 105°C.

AC17 SECONDARY ROLLING SHALL BE COMPLETED BEFORE THE MIX TEMPERATURE FALLS BELOW 60°C.

AC18 MINIMUM CHARACTERISTIC VALUE OF RELATIVE COMPACTION OF A LOT WHEN TESTED IN ACCORDANCE WITH AS2150 - 2005 - HOT MIX ASPHALT - A GUIDE TO GOOD PRACTICE, SHALL BE 95%.

FINISHED PAVEMENT PROPERTIES

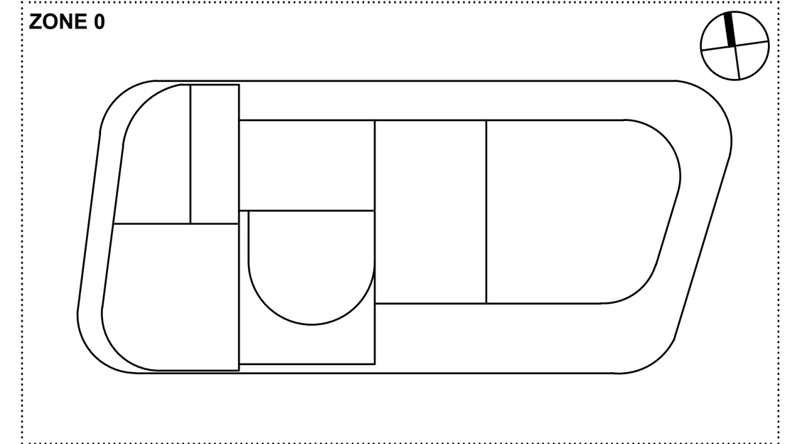
AC19 FINISHED SURFACES SHALL BE SMOOTH, DENSE AND TRUE TO SHAPE AND SHALL NOT VARY MORE THAN 10mm FROM THE SPECIFIED PLAN LEVEL AT ANY POINT AND SHALL NOT DEVIATE FROM THE BOTTOM OF A 3m STRAIGHT EDGE LAID IN ANY DIRECTION BY MORE THAN 5mm.

COLOUR PRINTING REQUIRED

If this drawing is printed or plotted at a size other than B1 - DO NOT SCALE DIMENSIONS FROM DRAWING
Always take figured dimensions in preference to scaling.

Rev	Description	By	Date
01	DRAFT 30% DETAILED DESIGN	DF	19.12.2024
02	30% DETAILED DESIGN	JHN	22.01.2025

ZONE 0



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Project No. 703103054

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Acknowledgement
In the language of the Darug people, this site is known as Burramattagal.

Document Control Status: PRELIMINARY

Drawing Title: GENERAL NOTES SHEET 01

Designed: S. SAIARA | J. NELSON	**Drawn:** J. O
Checked: -	**Scale:** N/A
Approved: D. FETTELL	**Date:** 22.01.2025
Drawing Number: 103054-MMD-01-DD-DR-C-0002	**Revision:** 02

CIVIL ENGINEERING

PLOT STAMP DATE: 18/12/2024

BITUMEN SEALING NOTES

PAVEMENT PREPARATION

BS1 THE SURFACE TO BE SEALED SHALL BE DRY AND BROOMED BEFORE COMMENCEMENT OF WORK TO ENSURE COMPLETE REMOVAL OF ALL SUPERFICIAL, FOREIGN AND LOOSE MATTER.

BS2 IF APPROVED BY THE SUPERINTENDENT, ALL DEPRESSIONS OR UNEVEN AREAS ARE TO BE TACK-COATED AND BROUGHT TO GENERAL LEVEL OF PAVEMENT WITH ASPHALTIC CONCRETE BEFORE SEALING COMMENCES.

MATERIAL

BS3 BINDER SHALL BE CLASS 170 TO AS2008 -1997 - RESIDUAL BITUMEN FOR PAVEMENTS, OR APPROVED PROPRIETARY MATERIAL FOR PRIMING AND PRIME-SEALING.

BS4 AGGREGATE SHAPE, DURABILITY AND WET TO DRY STRENGTH SHALL COMPLY TO AS2758.2 - 2009 - AGGREGATES AND ROCK FOR ENGINEERING PURPOSES FOR CLASS "N" AGGREGATES.

BS5 A 20kg SAMPLE OF AGGREGATE PROPOSED FOR USE SHALL BE APPROVED BY THE SUPERINTENDENT PRIOR TO USE.

BS6 AGGREGATES SHALL BE DELIVERED UNIFORMLY PRECOATED, EXCESSIVE OR UNEVEN PRECOATING MAY RESULT IN AGGREGATES BEING REJECTED.

BS7 FOR TWO COAT FLUSH SEALS, THE SIZE OF THE AGGREGATE FOR THE SECOND COAT, WHILE NORMALLY HALF THAT OF THE FIRST COAT, SHALL BE DIMENSIONALLY COMPATIBLE WITH THAT OF THE FIRST COAT.

BS8 PRECOATING AGENTS SHALL BE COMPATIBLE WITH THE AGGREGATES AND BINDER TO BE USED.

DESIGN

BS9 DESIGN OF SPRAYED BITUMINOUS SEALS SHALL BE CARRIED OUT IN ACCORDANCE WITH THE AUSTROADS (NAASRA) PUBLICATION, "PRINCIPLES AND PRACTICE OF BITUMINOUS SURFACING, VOLUME 1 - SPRAYED WORK".

BS10 WHERE NOT INDICATED ON THE DRAWINGS, PRIMERS AND PRIMER-SEALS SHALL BE DESIGNED TO REMAIN INTACT UNTIL FINAL SEALING TAKES PLACE, HAVING REGARD FOR THE TRAFFIC AND CLIMATIC CONDITIONS PERTAINING.

BS11 UNLESS OTHERWISE SPECIFIED, BINDER APPLICATION RATES SHALL BE SELECTED TO FILL 85% OF THE THEORETICAL VOIDS OF THE MAT.

PRIMER-SEALING

BS12 A SINGLE COAT PRIMER-SEAL USING A SUITABLE CUT-BACK OR PROPRIETARY BINDER SHALL BE APPLIED TO BASECOURSE MATERIAL FOR PROTECTION OF PAVEMENT DURING CONSTRUCTION.

BITUMEN FLUSH SEALING

BS13 BITUMEN FLUSH SEALS SHALL BE EITHER SINGLE OR DOUBLE COAT AS SHOWN ON THE DRAWINGS, eg 20/10 INDICATES A DOUBLE COAT FLUSH SEAL USING TWO APPLICATIONS OF BITUMEN AND AGGREGATE, THE FIRST AGGREGATE LAYER BEING OF 20mm NOM. SIZE, THE SECOND 10mm.

BS14 COVER AGGREGATE SHALL BE SPREAD IMMEDIATELY AFTER SPRAYING OF BINDER. IN NO CASE SHALL SPREADING BE DELAYED MORE THAN 8 MINUTES (OR SO THAT BITUMEN HAS COOLED SUCH THAT ADHESION OF AGGREGATE IS COMPROMISED).

BS15 ALL SPRAY RECORDS, AGGREGATE SUPPLY TONNAGE AND RECEIPTS SHALL BE RETAINED AND PASSED ONTO THE SUPERINTENDENT AS PART OF THE QUALITY ASSURANCE PROCEDURES.

FLEXIBLE PAVEMENT NOTES

FP1 ALL SUB-BASE AND BASE COURSE MATERIALS SHALL CONFORM WITH RMS QA SPECIFICATION 3051 "UNBOUND AND MODIFIED BASE AND SUB-BASE MATERIALS FOR SURFACE ROAD PAVEMENTS.

FP2 ALL SUB-BASE AND BASE COURSE MATERIALS SHALL BE COMPACTED TO ACHIEVE THE FOLLOWING COMPACTION STANDARDS -

BASE COURSE
MINIMUM 98% MMDD AS1289.5.2.1 - 2003 - METHODS OF TESTING SOILS FOR ENGINEERING PURPOSES

SUB-BASE
MINIMUM 98% MMDD AS1289.5.2.1 - 2003 - METHODS OF TESTING SOILS FOR ENGINEERING PURPOSES

CONCRETE NOTES

GENERAL

CN1 USE "AS3972 - 2010 - GENERAL PURPOSE AND BLENDED CEMENTS - TYPE GP" CEMENT (UNO).

CN2 ALL CONCRETE SHALL BE SUBJECT TO PROJECT CONTROL SAMPLE AND TESTING TO AS3600 - 2009 - CONCRETE STRUCTURES.

CN3 CONSOLIDATE ALL CONCRETE, INCLUDING FOOTINGS AND SLABS ON GROUND WITH MECHANICAL VIBRATORS.

CN4 CURE ALL CONCRETE AS FOLLOWS -
- KEEP SURFACES CONTINUOUSLY WET FOR 3 DAYS, THEN
- PREVENT MOISTURE LOSS FOR THE NEXT 4 DAYS USING POLYTHENE SHEETING OR WET HESSIAN PROTECTED FROM WIND AND TRAFFIC, AND THEN ALLOW DRYING OUT.
- CURING COMPOUNDS MAY BE USED PROVIDED THAT THEY COMPLY WITH AS3799 AND THEY DO NOT AFFECT FLOOR FINISHES.
- PVA-BASED CURING COMPOUNDS ARE **NOT** ACCEPTABLE.

CN5 FIX REINFORCEMENT AS SHOWN ON DRAWINGS. THE TYPE AND GRADE IS INDICATED BY A SYMBOL AS SHOWN BELOW -

N	HOT ROLLED DEFORMED BAR, GRADE 500
R	PLAIN ROUND BAR, GRADE 250
SL / RL	HARD DRAWN WIRE FABRIC SQUARE OR RECTANGULAR

FOLLOWING THIS SYMBOL A NUMERAL INDICATES THE SPECIFIED DIAMETER.

CN6 PROVIDE BAR SUPPORTS OR SPACERS TO PROVIDE CONCRETE COVER AS DETAILED TO ALL REINFORCEMENT.

CONCRETE PAVEMENTS

CN7 CONCRETE MIX PARAMETERS -
MAXIMUM AGGREGATE SIZE 20mm
FLEXURAL STRENGTH AT 28 DAYS = 3.5 MPa, F'c= 32 MPa, (UNO)
FLEXURAL STRENGTH AT 90 DAYS = 3.85 MPa
MAX WATER/CEMENT RATIO = 0.55
MAX SHRINKAGE LIMIT = 650 MICRON STRAINS (AS1012.13-1992)
MIN CEMENT CONTENT = 300kg/m³
CEMENT TO BE TYPE "SL" (NORMAL CEMENT) TO AS3972-2010
SLUMP = 80mm

CN8 EARLY AGE SAW CUTTING ('SOFTCUT') OR SIMILAR SHALL BE USED FOR INITIAL SAW CUT. IT IS TO BE PERFORMED AS SOON AS THE CONCRETE HAS HARDENED SUFFICIENTLY, TO PREVENT EXCESSIVE CHIPPING, SPALLING, OR TEARING REGARDLESS OF TIME OR WEATHER CONDITIONS.

CN9 JOINT LAYOUT SHALL BE AS DETAILED ON THE PLANS.

CN10 PROVIDE 10mm WIDE EXPANSION JOINTS BETWEEN ALL BUILDINGS, OTHER STRUCTURES AND PAVEMENTS.

CN11 BOND BREAKER TO BE TWO (2) UNIFORM COATS OF BITUMEN EMULSION ALL OVER THE EXPOSED SURFACE AND ON END.

CN12 DOWELS AND TIE BARS TO MEET STRENGTH REQUIREMENTS OF STRUCTURAL GRADE STEEL IN ACCORDANCE WITH AS ISO 1302 - 2005 - GEOMETRICAL PRODUCT SPECIFICATIONS.
DOWELS AND TIE BARS SHALL BE -
STRAIGHT,
TO LENGTH SPECIFIED,
ALL DOWELS TO BE HOT DIP GALVANISED,
SAWN TO LENGTH NOT CROPPED.

CN13 DIMENSIONS OF SEALANT RESERVOIR DEPENDANT ON THE SEALANT TYPE ADOPTED. SUPERINTENDENT APPROVAL TO BE OBTAINED FOR SEALANT AND RESERVOIR DIMENSIONS AND DETAIL PROPOSED BY THE CONTRACTOR. REFER TO PLANS FOR TYPICAL ARRANGEMENT AND SEALANT.

CN14 PRIOR TO THE PLACEMENT OF CONCRETE IN THE ADJACENT SLAB, 'ABLEFLEX' FILLER SHALL BE ADHERED TO THE ALREADY CAST AND CLEANED CONCRETE FACE USING AN APPROVED WATERPROOF ADHESIVE. ADHESIVE SHALL BE LIBERALLY APPLIED TO THE FULL FACE OF THE CONCRETE SLAB TO BE COVERED BY THE FILLER, AND ON THE FULL FACE OF THE FILLER TO BE ADHERED.

CN15 THE BASE COURSE SHALL BE KEPT MOIST (NOT WET) BY SPRINKLING WITH WATER IMMEDIATELY PRIOR TO POURING THE CONCRETE.

CN16 ALL WORK TO BE FINISHED TO SATISFY ITS INTENDED USE AS SHOWN ON THE PLANS, AND / OR IN ACCORDANCE WITH THE SPECIFICATION.

KERBING NOTES

CN17 ALL CONCRETE KERBS TO HAVE A MINIMUM CHARACTERISTIC COMPRESSIVE STRENGTH F'C=25MPA (UNO).

CN18 ALL KERBS, DISH DRAINS, ETC. TO BE CONSTRUCTED ON 75mm MINIMUM BASE COURSE. (UNO ON THE DRAWINGS)

CN19 KERB EXPANSION JOINTS SHALL BE FORMED FROM 10mm 'ABELFLEX' (OR APPROVED EQUIVALENT) FOR THE FULL DEPTH OF THE SECTION.

CN20 EXPANSION JOINTS SHALL BE LOCATED AT DRAINAGE PITS, TANGENT POINTS OF CURVES AND ELSEWHERE AT 12m MAXIMUM SPACING (UNO).

CN21 TOOLED JOINTS SHALL BE MIN 3mm WIDE AND LOCATED AT MAXIMUM 3m SPACING.

CN22 INTEGRAL KERB JOINTS SHALL MATCH THE LOCATION OF THE PAVEMENT JOINTING.

LINEMARKING NOTES

LM1 ALL LINEMARKING WORKS TO BE IN ACCORDANCE WITH EITHER THE CURRENT AUSTRALIAN STANDARD AS1742.2-2009-MANUAL UNIFORM TRAFFIC CONTROL DEVICES, OR AS SHOWN ON THE PLANS OR AS DIRECTED BY THE SUPERINTENDENT.

LM2 THE SCOPE OF WORK SHALL INCLUDE ALL PAVEMENT MARKINGS TO ROADS AND CARPARKS.

LM3 THE WORK CARRIED OUT AND TESTING PERFORMED SHALL COMPLY WITH THE CURRENT, RELEVANT AUSTRALIAN STANDARDS AND RMS STANDARDS WHERE NECESSARY.

LM4 ALL MARKINGS SHALL BE SPOTTED OUT AND VERIFIED BY THE CONTRACTORS REPRESENTATIVE PRIOR TO APPLICATION.

LM5 PAINT SHALL BE APPLIED AT A WET THICKNESS OF BETWEEN 0.35mm - 0.45mm.

LM6 PAINT SHALL ONLY BE APPLIED TO CLEAN AND DRY SURFACES.

LM7 ALL LONGITUDINAL LINES SHALL BE APPLIED BY A SELF-PROPELLED MACHINE.

LM8 LINEMARKING REMOVAL SHALL BE CARRIED OUT BY GRINDING OR SANDBLASTING. REMOVAL BY BURNING WILL NOT BE PERMITTED.

LM9 THE EXTENT OF LINEMARKING TO BE ERADICATED SHALL BE CONFIRMED ON SITE PRIOR TO REMOVAL. ANY MARKINGS INCORRECTLY REMOVED SHALL BE REINSTATED AT THE CONTRACTOR'S EXPENSE.

LM10 ALL MARKINGS SHALL BE COMPLETED IN A WORKMANLIKE MANNER AND BE STRAIGHT, SMOOTH AND WITH EVEN CURVES. ANY NON-CONFORMING WORK, SHALL BE REMOVED AND REINSTATED AT THE DIRECTION OF THE SUPERINTENDENT AT THE CONTRACTOR'S EXPENSE.

LM11 LINEMARKING ON AC PAVEMENTS TO BE PROVIDED NO SOONER THAN 7-10 DAYS ONCE THE ASPHALT HAS SET.

COLOUR PRINTING REQUIRED

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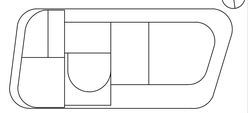
Rev	Description	By	Date
01	DRAFT 30% DETAILED DESIGN	DF	19.12.2024
02	30% DETAILED DESIGN	JHN	22.01.2025

ZONE 0



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Acknowledgement
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Document Control Status: PRELIMINARY

Drawing Title:
GENERAL NOTES SHEET 02

Designed: S. SAIARA	J. NELSON **Drawn:** J. O
Checked: -	**Scale:** N/A
Approved: D. FETTELL	**Date:** 22.01.2025

Drawing Number: 103054-MMD-01-DD-DR-C-0003 **Revision:** 02

CIVIL ENGINEERING

PLOT STAMP DATE - 19/12/2024

PROVIDE SANDBAGS AROUND EXISTING KERB INLET PIT TO TRAP ANY SEDIMENTS FROM ENTERING.

PROPOSED SHAKER GRID/WASH DOWN FACILITY TO BE INSTALLED AT THE SITE EGRESS. TO BE CONFIRMED BY CONTRACTOR ON SITE.

PROPOSED SEDIMENT FENCE TO BE INSTALLED AROUND THE PERIMETER OF THE SITE

EXISTING STRUCTURES TO BE DEMOLISHED IN ACCORDANCE WITH THE SITE DEMOLITION PLAN (BY OTHERS).

EXISTING CONCRETE DRIVEWAY TO BE RETAINED TO PROVIDE SITE ACCESS DURING CONSTRUCTION PHASE. DRIVEWAY TO BE DEMOLISHED AND RECONSTRUCTED ON COMPLETION OF INTERNAL WORKS IN ACCORDANCE WITH PARRAMATTA CITY COUNCIL DETAILS.

PROVIDE SANDBAGS AROUND EXISTING KERB INLET PITS TO TRAP ANY SEDIMENTS FROM ENTERING.

EXISTING STORMWATER STRUCTURES WITH THE SITE TO BE MADE REDUNDANT AND CAPPED OFF UNLESS OR OTHERWISE STATED.

INDICATIVE LOCATION OF STOCKPILE ON-SITE. TO BE FURTHER CONFIRMED BY THE CONTRACTOR ON SITE DURING CONSTRUCTION PHASE

PROVIDE SANDBAGS AROUND OPEN GRATED STORMWATER PITS TO PREVENT ANY SEDIMENTS FROM ENTERING (TYP).

PRINCE ALFRED SQUARE

MARKET STREET

MARSDEN STREET

CHURCH STREET

PARRAMATTA RIVER

LOT 1 D P 7 4 0 3 7 8 2 (2657m2) BY TITLE)

LOT 2 D P 7 4 0 3 8 2 (4694m2) BY TITLE)

1, 2, & 3 STOREY BRICK BUILDING METAL ROOF "RIVERSIDE THEATRES"

SEDIMENT & EROSION CONTROL

- SITE BOUNDARY
- PUBLIC DOMAIN SCOPE OF WORKS
- SSDA MAIN WORKS BOUNDARY
- PROPOSED SURFACE INLET PIT
- TEMPORARY CONSTRUCTION SITE ACCESS WITH SHAKE GRID
- DROP INLET SEDIMENT TRAP
- SEDIMENT TRAP - SAND BAGS
- SEDIMENT FENCE
- INDICATIVE LOCATION OF STOCKPILE

GENERAL NOTES

1. CONTRACTORS TO CONFIRM PUMP-OUT FROM DEEP BASEMENT EXCAVATION.
2. UPON INSTALLATION OF NEW STORMWATER PITS, SAND BAGS ARE TO BE PLACED AROUND THE PROPOSED PITS TO PREVENT ANY SEDIMENT RUNOFF TO THE PITS.
3. EROSION AND SEDIMENT CONTROL MEASURES TO BE INSTALLED IN ACCORDANCE WITH THE PUBLICATION ' URBAN STORMWATER SOILS AND CONSTRUCTION "THE BLUE BOOK" 2004 (4TH EDITION)' PRIOR TO THE COMMENCEMENT OF ANY DEMOLITION, EXCAVATION OR CONSTRUCTION WORKS UPON THE SITE.
4. BUILDERS SHALL PROVIDE SEDIMENT FENCING MATERIAL DURING CONSTRUCTION TO THE LOW SIDE BOUNDARIES. SEDIMENT CONTROL FABRICSHALL BE AN APPROVED MATERIAL (Eg. PROFAB SILT FENCE, OR SIMILAR) STANDING MINIMUM 500mm ABOVE GROUND AND EXTENDING 200mm BELOW GROUND.
5. GRASS VERGES AND VEGETATION SHALL BE MAINTAINED AS MUCH AS PRACTICAL AND SHALL NOT BE CLEARED FROM NEIGHBORING SITES TO PROVIDE A BUFFER ZONE TO THE CONSTRUCTION SITE.
6. NO PARKING OR STOCK PILING OF MATERIALS IS PERMITTED ON THE LOWER SIDE OF THE SEDIMENT FENCE.
7. VEHICLE ACCESS SHALL BE RESTRICTED TO ONE DESIGNATED POINT AS SHOWN, AND VEHICLE CROSSINGS ARE TO BE ADEQUATELY COVERED AT ALL TIMES WITH BLUE METAL OR THE LIKE.
8. TEMPORARY CONSTRUCTION ENTRY/EXIT SHALL BE AS PER DRAWING ON DRAWING 0021. BUILDER TO ENSURE ALL DROPPABLE SOIL AND SEDIMENT IS REMOVED PRIOR TO CONSTRUCTION TRAFFIC EXITING SITE USING VEHICLE WHEEL WASH, CATTLE GRID, WHEEL SHAKER OR OTHER APPROPRIATE DEVICE. BUILDER SHALL ENSURE ALL CONSTRUCTION TRAFFIC ENTERING AND LEAVING THE SITE, DO SO, IN A FORWARD DIRECTION.
9. ALL STORMWATER INCIDENT ON THE CONSTRUCTION SITE MUST BE COLLECTED AND APPROPRIATELY DISPOSED OF IN A MANNER THAT DOES NOT INCREASE THE FLOOD RISK FOR THE CATCHMENT AREA OR DEGRADE THE QUALITY OF WATER BEING DISPOSED OF TO COUNCIL STORMWATER INFRASTRUCTURE.
10. MEASURES OUTLINED IN THE EROSION AND SEDIMENT CONTROL PLAN MUST BE IMPLEMENTED PRIOR TO AND MAINTAINED DURING AND AFTER THE CONSTRUCTION WORKS.
11. ALL DISTURBED AREAS AND STOCKPILES TO BE STABILISED WITHIN 5 DAYS.
12. TOPSOIL TO BE STRIPPED STOCKPILED AND RE-SPREAD ON COMPLETION OF EARTHWORKS. NONE TO BE REMOVED.
13. NO DISTURBANCE OF THE SITE OTHER THAN IMMEDIATE AREA OF WORKS.

COLOUR PRINTING REQUIRED

1:200 0 10m 20m

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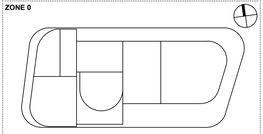
Rev	Description	By	Date
01	DRAFT 30% DETAILED DESIGN	DF	19.12.2024
02	30% DETAILED DESIGN	JHN	22.01.2025

GENERAL NOTE:

1. THIS PLAN IS A CONCEPT ONLY. IT IS CREATED TO HIGHLIGHT SOME OF THE SEDIMENT AND EROSION CONTROL MEASURES WHICH MAY APPEAR. THE CONTRACTOR IS RESPONSIBLE FOR THE FINAL DESIGN AND ENSURING ALL MEASURES ARE TAKEN TO PROTECT THE ENVIRONMENT.

ZONE 0



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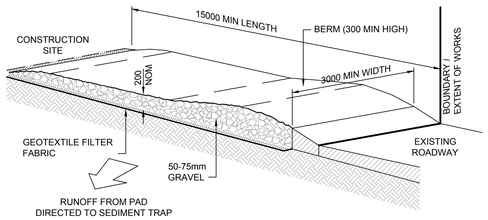
Document Control Status: PRELIMINARY

Drawing Title:
EROSION & SEDIMENT CONTROL PLAN

Designed: S. SAIARA | J. NELSON	**Drawn:** J. O
Checked: -	**Scale:** 1:200 @ B1
Approved: D. FETTELL	**Date:** 22.01.2025
Drawing Number: 103054-MMD-01-DD-DR-C-0010	**Revision:** 02

CIVIL ENGINEERING

PLOT STAMP DATE - 19/12/2024

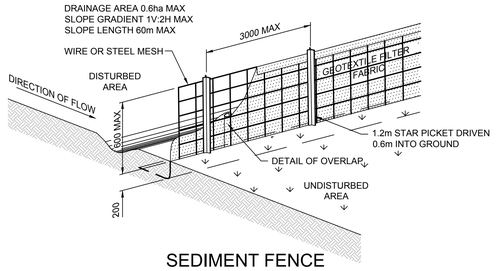


TEMPORARY SITE ENTRANCE

NTS

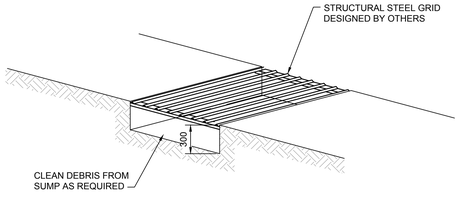
MAINTENANCE

- THE TEMPORARY ACCESS SHALL BE MAINTAINED IN A CONDITION THAT PREVENTS TRACKING OR FLOWING OF SEDIMENT ONTO PUBLIC RIGHTS OF WAY,
- THIS MAY REQUIRE PERIODIC TOP DRESSING WITH ADDITIONAL GRAVEL AS CONDITIONS DEMAND AND REPAIR AND/OR CLEANOUT OF ANY MEASURES USED TO TRAP SEDIMENT,
- ALL SEDIMENT SPILLED, DROPPED, WASHED OR TRACKED ONTO PUBLIC RIGHTS OF WAY MUST BE REMOVED IMMEDIATELY.



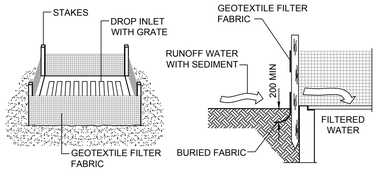
SEDIMENT FENCE (GEOTEXTILE FILTER FABRIC)

NTS



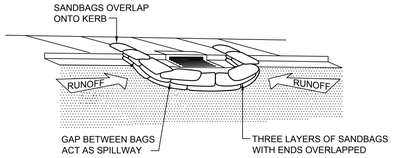
SHAKER PAD

NTS



SEDIMENT TRAP FOR DROP INLET (GEOTEXTILE FILTER FABRIC)

NTS



SEDIMENT TRAP FOR KERB INLET (AT LOW POINT - SANDBAG)

NTS

COLOUR PRINTING REQUIRED

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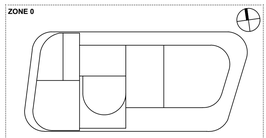
Rev	Description	By	Date
-	-	-	-
02	30% DETAILED DESIGN	JHN	22.01.2025

ZONE 0



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Project No.

703103054

Project

RIVERSIDE THEATRES
CORNER MARKET & CHURCH ST, PARRAMATTA 2150

Acknowledgement

In the language of the Darug people, this site is known as Burramattagal.

Document Control Status:

PRELIMINARY

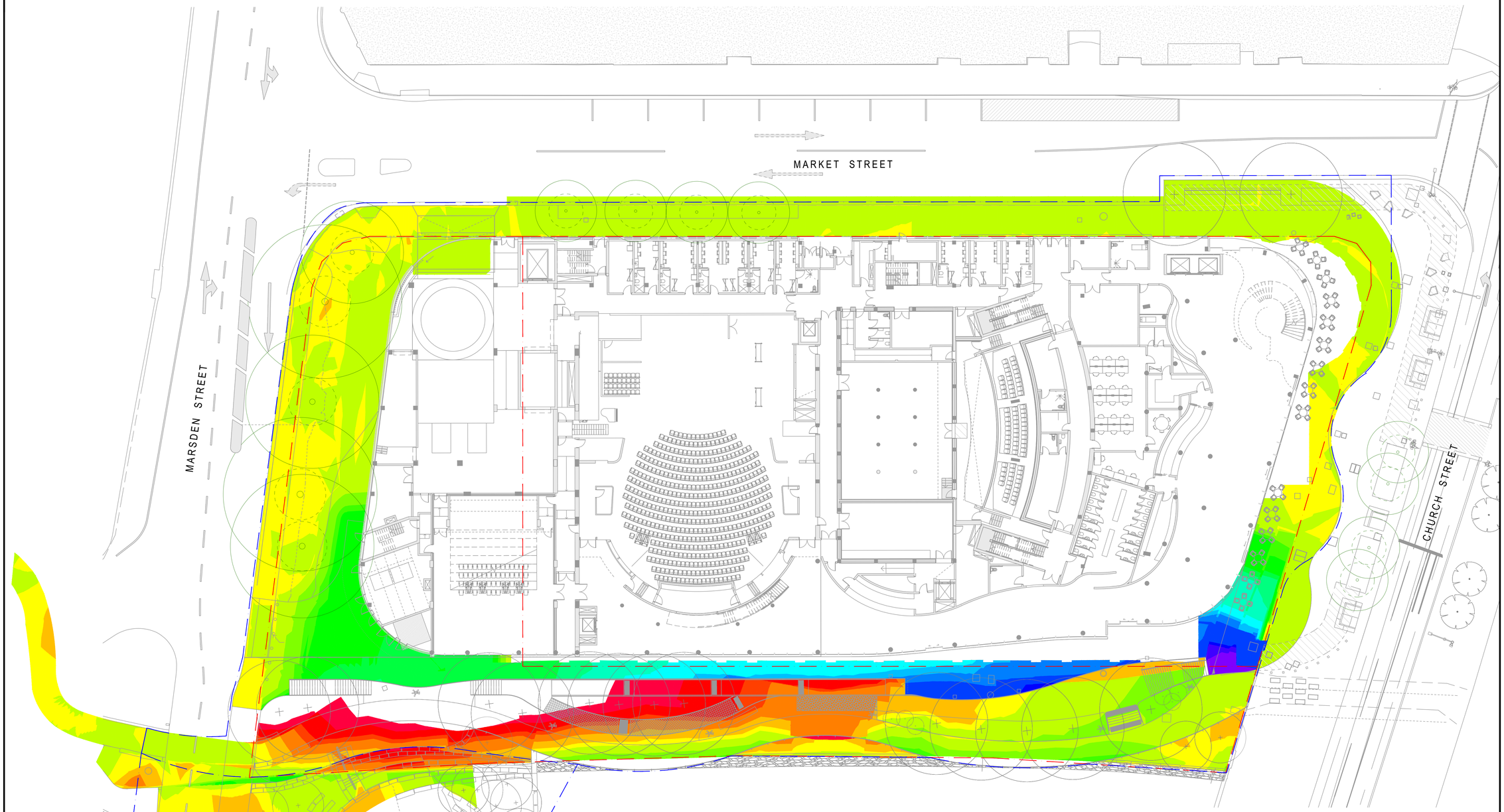
Drawing Title:

EROSION & SEDIMENT CONTROL DETAILS

Designed: S. SAIARA | J. NELSON
Drawn: J. O
Checked: -
Scale: NOT TO SCALE
Approved: D. FETTELL
Date: 22.01.2025
Drawing Number: 103054-MMD-01-DD-DR-C-0015
Revision: 02

CIVIL ENGINEERING

PLOT STAMP DATE - 19/12/2024



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Rev	Description	By	Date
01	DRAFT 30% DETAILED DESIGN	DF	19.12.2024
02	30% DETAILED DESIGN	JHN	22.01.2025

CUT AND FILL VOLUMES (APPROX)

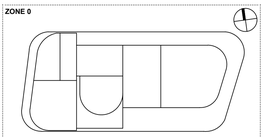
GROUND LEVEL:
CUT = - 16 m³
FILL = 1,095 m³
BALANCE = + 1,079 m³ (IMPORTED FILL)

LOWER BASEMENT LEVEL:
CUT = - 1,196 m³
FILL = 152 m³
BALANCE = - 1,044 m³ (EXCESS CUT)

ALLOWANCES USED IN CALCULATIONS:

1. ALLOWS 450mm BOXING DEPTH FOR ALL ROADS.
2. DOES NOT ALLOW FOR STRIPPING & REPLACEMENT OF TOPSOIL.
3. DOES NOT ALLOW FOR EXCAVATION OF DRAINAGE TRENCHES.
4. DOES NOT ALLOW FOR ANY UNSUITABLE MATERIAL FOUND ANYWHERE ON SITE.
5. DESIGN CONTOURS AND CUT/FILL HATCH SHOWN IN THIS PLAN ARE THE FINAL SURFACE

ZONE 0



SURFACE ANALYSIS: ELEVATION RANGES		
LOWER VALUE	UPPER VALUE	COLOUR
0 m	0.2 m	
0.2 m	0.4 m	
0.4 m	0.6 m	
0.6 m	0.8 m	
0.8 m	1.0 m	
1.0 m	1.2 m	
1.2 m	1.4 m	
1.4 m	1.6 m	
1.6 m	1.8 m	
1.8 m	2.0 m	
2.0 m	9.9 m	

SURFACE ANALYSIS: ELEVATION RANGES		
LOWER VALUE	UPPER VALUE	COLOUR
-9.9 m	-2.0 m	
-2.0 m	-1.8 m	
-1.8 m	-1.6 m	
-1.6 m	-1.4 m	
-1.4 m	-1.2 m	
-1.2 m	-1.0 m	
-1.0 m	-0.8 m	
-0.8 m	-0.6 m	
-0.6 m	-0.4 m	
-0.4 m	-0.2 m	
-0.2 m	0 m	

COLOUR PRINTING REQUIRED

1:200 0 10m 20m

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Project No. 703103054

Project
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Acknowledgement
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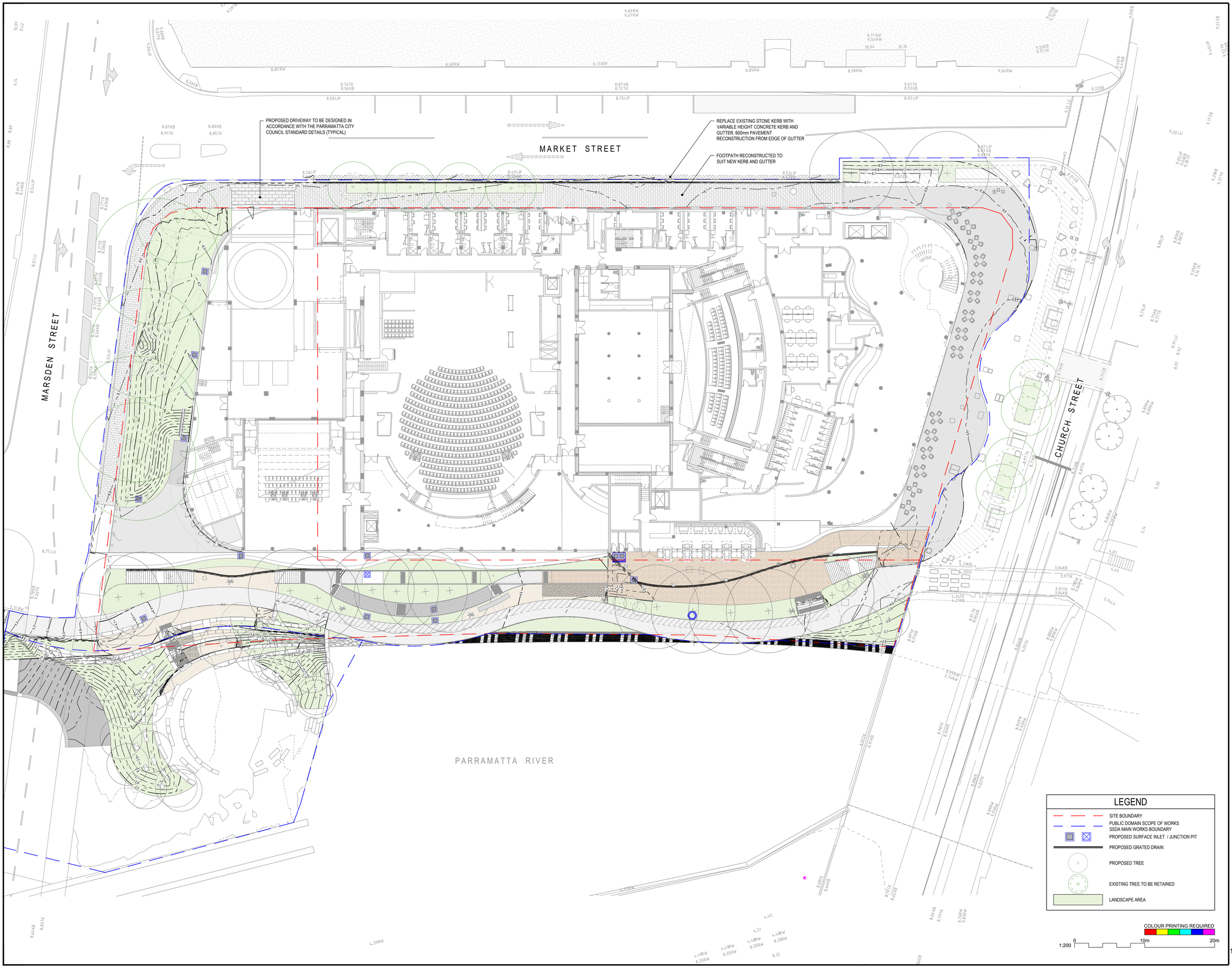
Document Control Status: PRELIMINARY

Drawing Title:
BULK EARTHWORKS CUT/FILL PLAN

Designed: B.R. SHRESTHRA	**Drawn:** J. O
Checked: -	**Scale:** 1:200 @ B1
Approved: D. FETTELL	**Date:** 22.01.2025
Drawing Number: 103054-MMD-01-DD-DR-C-0020	**Revision:** 02

CIVIL ENGINEERING

PLOT STAMP DATE: 19/12/2024



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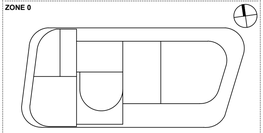
02	30% DETAILED DESIGN	JHN	22.01.2025

ZONE 0



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Acknowledgement
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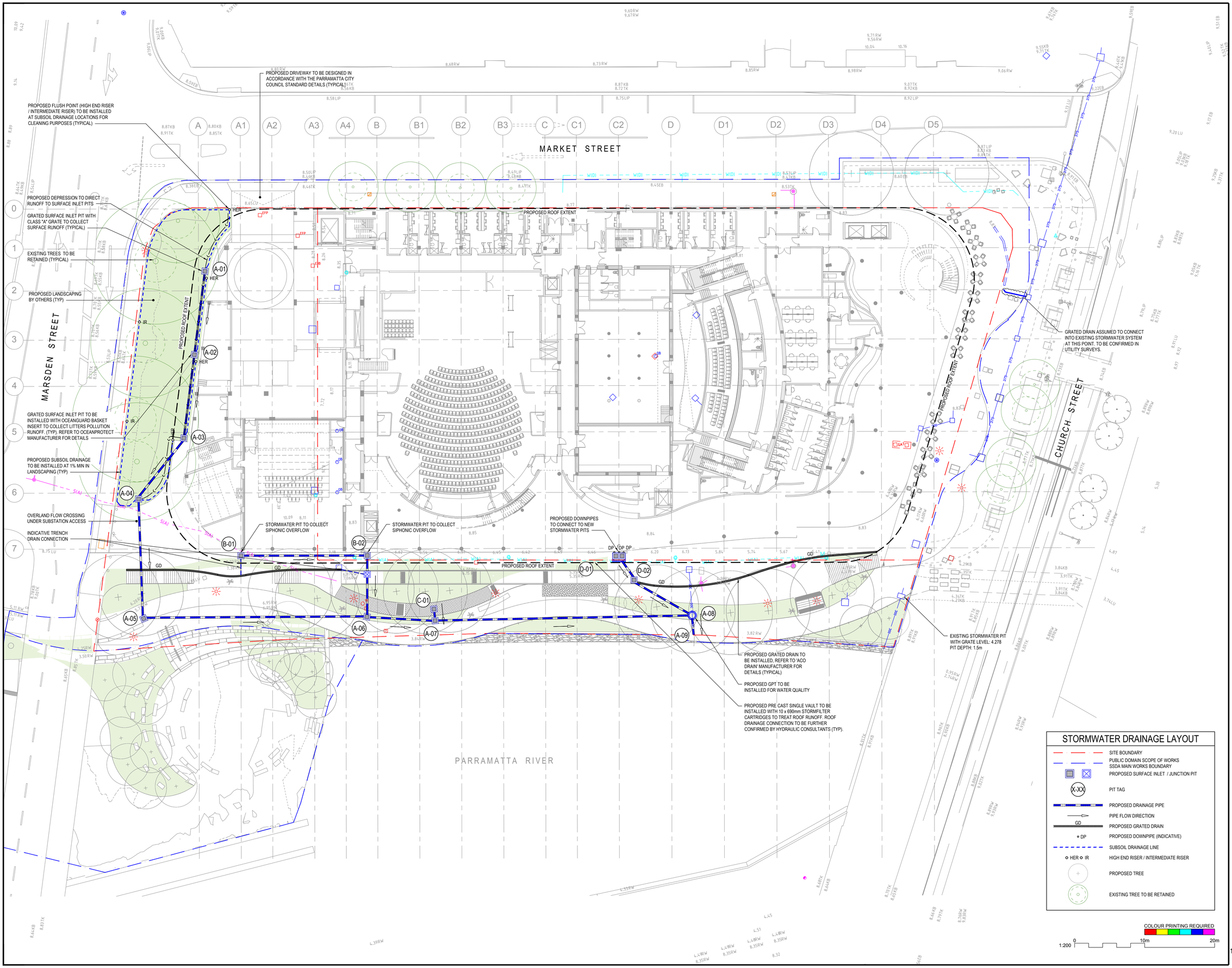
Document Control Status: PRELIMINARY

Drawing Title:
GENERAL ARRANGEMENT PLAN

Designed: S. SAIARA | J. NELSON	**Drawn:** J. O
Checked: -	**Scale:** 1:200 @ B1
Approved: D. FETTELL	**Date:** 22.01.2025
Drawing Number: 103054-MMD-01-DD-DR-C-0030	**Revision:** 02

CIVIL ENGINEERING

PLOT STAMP DATE: 19/12/2024



STORMWATER DRAINAGE LAYOUT

- SITE BOUNDARY
- PUBLIC DOMAIN SCOPE OF WORKS
- SSDA MAIN WORKS BOUNDARY
- PROPOSED SURFACE INLET / JUNCTION PIT
- X-XX PIT TAG
- PROPOSED DRAINAGE PIPE
- PIPE FLOW DIRECTION
- GD PROPOSED GRATED DRAIN
- DP PROPOSED DOWNPIPE (INDICATIVE)
- SUBSOIL DRAINAGE LINE
- HER IR HIGH END RISER / INTERMEDIATE RISER
- PROPOSED TREE
- EXISTING TREE TO BE RETAINED

COLOUR PRINTING REQUIRED

1:200 0 10m 20m

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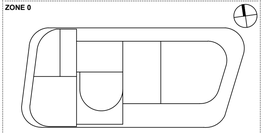
Rev	Description	By	Date
01	DRAFT 30% DETAILED DESIGN	DF	19.12.2024
02	30% DETAILED DESIGN	JHN	22.01.2025

GENERAL NOTES:

1. ALL PROPOSED STORMWATER TO BE DESIGNED TO CATER FOR THE MINOR STORM OF 5% AEP IN ACCORDANCE WITH PARRAMATTA CITY COUNCIL DEVELOPMENT ENGINEERING GUIDELINES - SECTION 5.0.
2. SAFE OVERLAND FLOW PATH TO CATER FOR MAJOR STORM OF 1% AEP.
3. ALL BUILDING DRAINAGE TO BE CONFIRMED BY HYDRAULIC CONSULTANTS.
4. PROVIDE OCEAN PROTECT STORMFILTER CARTRIDGES OR SIMILAR. DETAILS TO BE PROVIDED BY MANUFACTURER.

ZONE 0



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Project No. 703103054

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Acknowledgement
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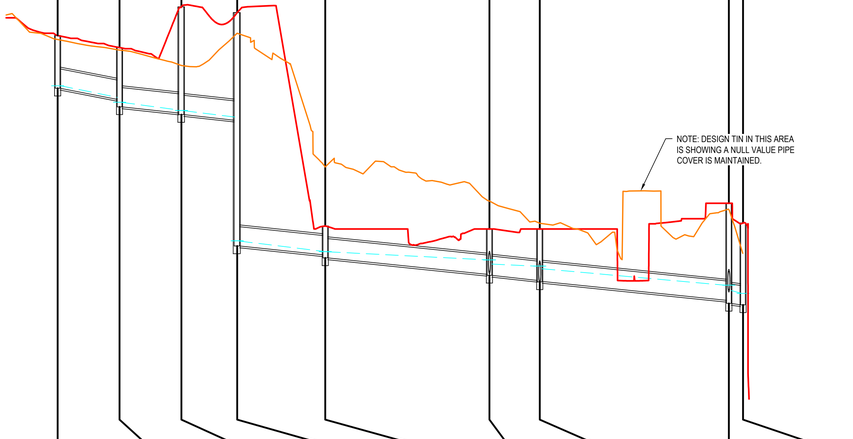
Document Control Status: PRELIMINARY

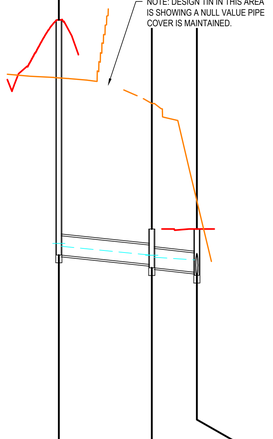
Drawing Title:
STORMWATER DRAINAGE LAYOUT PLAN

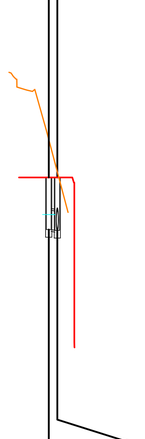
Designed: S. SAIARA | J. NELSON	**Drawn:** J. O
Checked: -	**Scale:** 1:200 @ B1
Approved: D. FETTELL	**Date:** 22.01.2025
Drawing Number: 103054-MMD-01-DD-DR-C-0050	**Revision:** 02

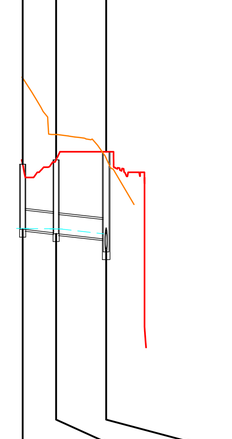
CIVIL ENGINEERING

PLOT STAMP DATE: 19/12/2024









STRUCTURE NAME & SETOUT COORDINATES	A-01 315208.155 E 6257123.593 N	A-02 315205.027 E 6257111.991 N	A-03 315201.900 E 6257100.389 N	A-04 315194.314 E 6257092.867 N	A-05 315192.699 E 6257075.649 N	A-06 315224.307 E 6257071.537 N	A-07 315223.886 E 6257069.653 N	A-08 315270.349 E 6257065.373 N	A-09 315270.186 E 6257062.633 N
STRUCTURE DESCRIPTION									
PIPE SIZE (mm)	375	375	375	375	375	375	375	375	
PIPE CLASS & TYPE	RCP Class 2	RCP Class 2	RCP Class 2	RCP Class 2	RCP Class 2	RCP Class 2	RCP Class 2	RCP Class 2	
PIPE GRADE (%)	1.80%	1.00%	1.00%	1.00%	1.00%	1.00%	1.00%	1.00%	
PIPE SLOPE (1 in X)	55.4	100.0	100.0	100.0	100.0	100.0	100.0	100.0	
FULL PIPE VELOCITY (m/s) NORMAL DEPTH VELOCITY (m/s)									
PIPE FLOW (cumecs) CAPACITY FLOW (cumecs)	0.005	0.011	0.012	0.014	0.018	0.086	0.113	0.118	
DATUM RL	-3.000								
HGL IN PIPE & WSE IN STRUCTURE	7.280 7.283	7.055 6.960 6.958	6.808 6.800 6.796	6.673 4.270 4.265	4.066 4.060 4.058	3.901 3.900 3.819	3.778 3.780 3.728	3.406 3.410 3.306	3.255 3.250 3.255
FINISHED (& EXISTING) SURFACE LEVEL	8.256 (8.179)	8.021 (7.974)	8.813 (7.674)	8.702 (8.299)	4.559 (5.705)	4.500 (5.043)	4.500 (4.612)	5.000 (4.873)	4.616
DEPTH OF INVERT BELOW FSL	1.023	1.005 1.151	(7.974) 2.063	(8.299) 2.090	0.561 4.532	0.621 0.880	0.900 0.997	1.885 1.945	1.588 1.588
INVERT LEVEL	7.233	7.016 6.870	6.750 6.720	6.612 4.170	3.999 3.939	3.620 3.600	3.503 3.483	3.115 3.055	3.028 3.028
CHAINAGE	0.000	12.016	24.032	34.858	51.952	83.826	93.589	130.302	133.046
	12.016m	12.016m	10.825m	17.094m	31.874m	9.763m	36.713m	2.745m	
LINE	A								

STRUCTURE NAME & SETOUT COORDINATES	B-01 315207.677 E 6257082.840 N	B-02 315225.557 E 6257080.196 N	A-06 315224.307 E 6257071.537 N
STRUCTURE DESCRIPTION			
PIPE SIZE (mm)	375	375	
PIPE CLASS & TYPE	RCP Class 2	RCP Class 2	
PIPE GRADE (%)	1.00%	1.00%	
PIPE SLOPE (1 in X)	100.0	100.0	
FULL PIPE VELOCITY (m/s) NORMAL DEPTH VELOCITY (m/s)			
PIPE FLOW (cumecs) CAPACITY FLOW (cumecs)	0.056	0.067	
DATUM RL	-3.000		
HGL IN PIPE & WSE IN STRUCTURE	4.220 4.165	3.995 3.990 3.952	3.901 3.900 3.819
FINISHED (& EXISTING) SURFACE LEVEL	8.559 (7.434)	4.500	4.500
DEPTH OF INVERT BELOW FSL	4.566	0.687 0.752	0.840 0.900
INVERT LEVEL	3.993	3.813 3.748	3.660 3.600
CHAINAGE	0.000	18.047	26.795
	18.047m	8.749m	
LINE	B		

STRUCTURE NAME & SETOUT COORDINATES	C-01 315233.948 E 6257071.315 N	A-07 315233.886 E 6257069.653 N
STRUCTURE DESCRIPTION		
PIPE SIZE (mm)	375	
PIPE CLASS & TYPE	RCP Class 2	
PIPE GRADE (%)	1.00%	
PIPE SLOPE (1 in X)	100.0	
FULL PIPE VELOCITY (m/s) NORMAL DEPTH VELOCITY (m/s)		
PIPE FLOW (cumecs) CAPACITY FLOW (cumecs)	0.013	
DATUM RL	-4.000	
HGL IN PIPE & WSE IN STRUCTURE	3.780 3.778	3.778 3.728
FINISHED (& EXISTING) SURFACE LEVEL	4.500 (5.242)	4.500 (4.612)
DEPTH OF INVERT BELOW FSL	1.010	1.027 1.017
INVERT LEVEL	3.490	3.473 3.483
CHAINAGE	0.000	1.663
	1.663m	
LINE	C	

STRUCTURE NAME & SETOUT COORDINATES	D-01 315257.830 E 6257075.660 N	D-02 315262.823 E 6257071.522 N	A-08 315270.349 E 6257065.373 N
STRUCTURE DESCRIPTION			
PIPE SIZE (mm)	375	375	
PIPE CLASS & TYPE	RCP Class 2	RCP Class 2	
PIPE GRADE (%)	1.00%	1.00%	
PIPE SLOPE (1 in X)	100.0	100.0	
FULL PIPE VELOCITY (m/s) NORMAL DEPTH VELOCITY (m/s)			
PIPE FLOW (cumecs) CAPACITY FLOW (cumecs)	0.000	0.012	
DATUM RL	-4.000		
HGL IN PIPE & WSE IN STRUCTURE	3.510 3.505	3.505 3.500 3.505	3.406 3.306
FINISHED (& EXISTING) SURFACE LEVEL	4.757 (6.432)	4.842 (5.334)	5.000 (4.873)
DEPTH OF INVERT BELOW FSL	1.266	1.416 1.436	1.691 1.945
INVERT LEVEL	3.491	3.426 3.406	3.309 3.055
CHAINAGE	0.000	6.485	16.204
	6.485m	9.719m	
LINE	D		

COLOUR PRINTING REQUIRED

1:500 0 25m 50m

1:50 0 2.5m 5m

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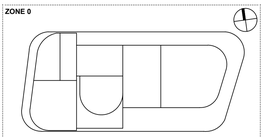
Rev	Description	By	Date
-	-	-	-
02	30% DETAILED DESIGN	JHN	22.01.2025

ZONE 0



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Project No. 703103054

Project
RIVERSIDE THEATRES
CORNER MARKET & CHURCH ST, PARRAMATTA 2150

Acknowledgement
In the language of the Darug people, this site is known as Burramattagal.

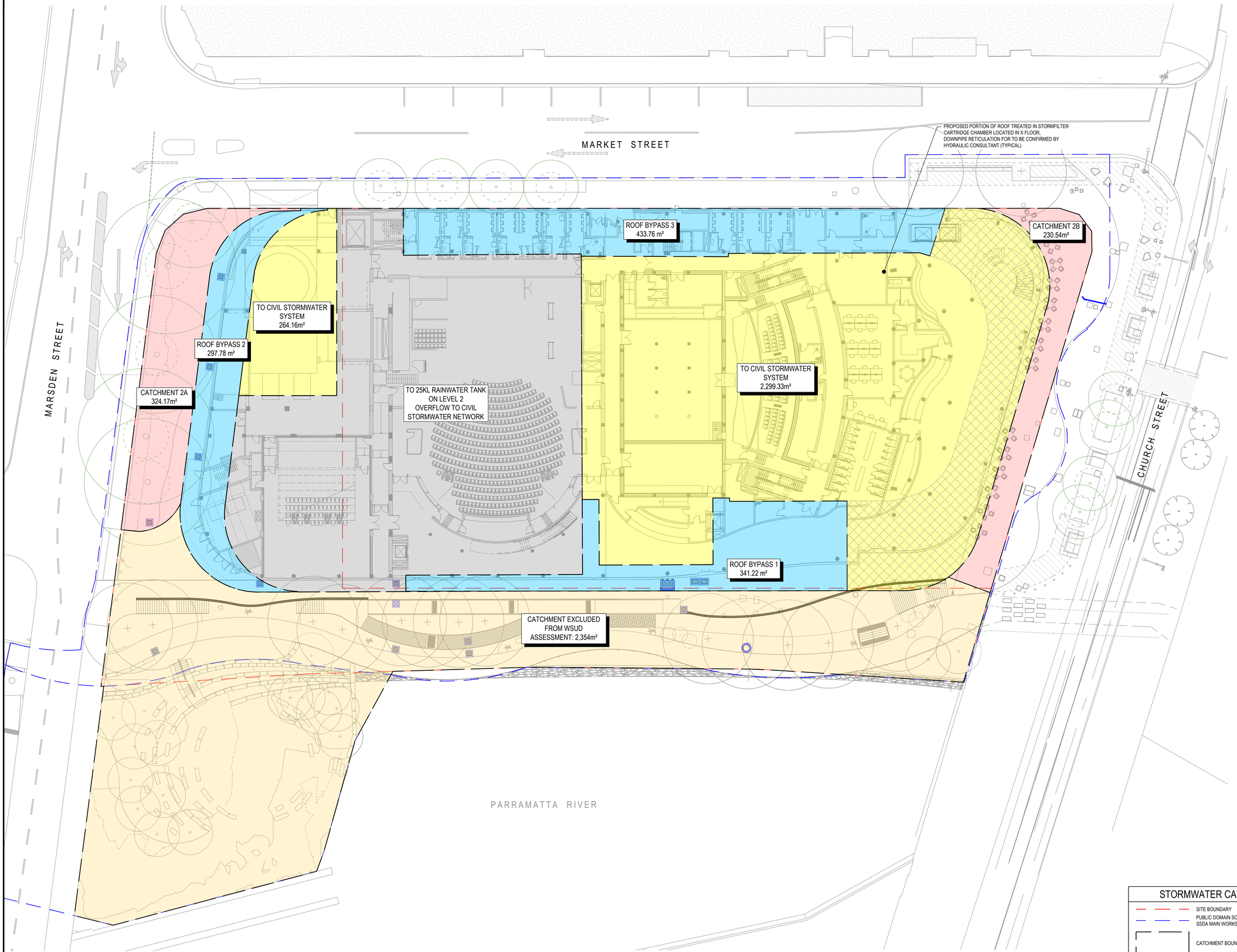
Document Control Status:
PRELIMINARY

Drawing Title:
STORMWATER DRAINAGE LONGITUDINAL SECTIONS - SHEET 01

Designed:	Drawn:
S. SAIARA | J. NELSON	J. O
Checked:	**Scale:**
	1:500(H) | 1:50(V) @ B1
Approved:	**Date:**
D. FETTELL	22.01.2025
Drawing Number:	**Revision:**
103054-MMD-01-DD-DR-C-0051	02

CIVIL ENGINEERING

PLOT STAMP DATE: 19/12/2024



STORMWATER CATCHMENT

- SITE BOUNDARY
- PUBLIC DOMAIN SCOPE OF WORKS
- SSDA MAIN WORKS BOUNDARY
- CATCHMENT BOUNDARY

COLOUR PRINTING REQUIRED

1:200 0 10m 20m

If this drawing is printed or plotted at a size other than B1 - DO NOT SCALE DIMENSIONS FROM DRAWING
Always take figured dimensions in preference to scaling

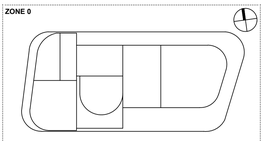
Rev	Description	By	Date
01	DRAFT 30% DETAILED DESIGN	DF	19.12.2024
02	30% DETAILED DESIGN	JHN	22.01.2025

GENERAL NOTE

BYPASS AREA: 7,352 - 6,367 = 985 m²

- ALL OF ROOF CATCHMENT TO DRAIN INTO THE STORMFILTER CHAMBER INSTALLED WITH 29x690 STORMFILTER CARTRIDGES. DOWNPIPE RETICULATIONS TO BE FURTHER CONFIRMED BY HYDRAULIC CONSULTANTS (TYP)

ZONE 0



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3XN Architecture 3xn.com

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Bangawarra bangawarra.com

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Project No. 703103054

Project
RIVERSIDE THEATRES
CORNER MARKET & CHURCH ST, PARRAMATTA 2150

Acknowledgement
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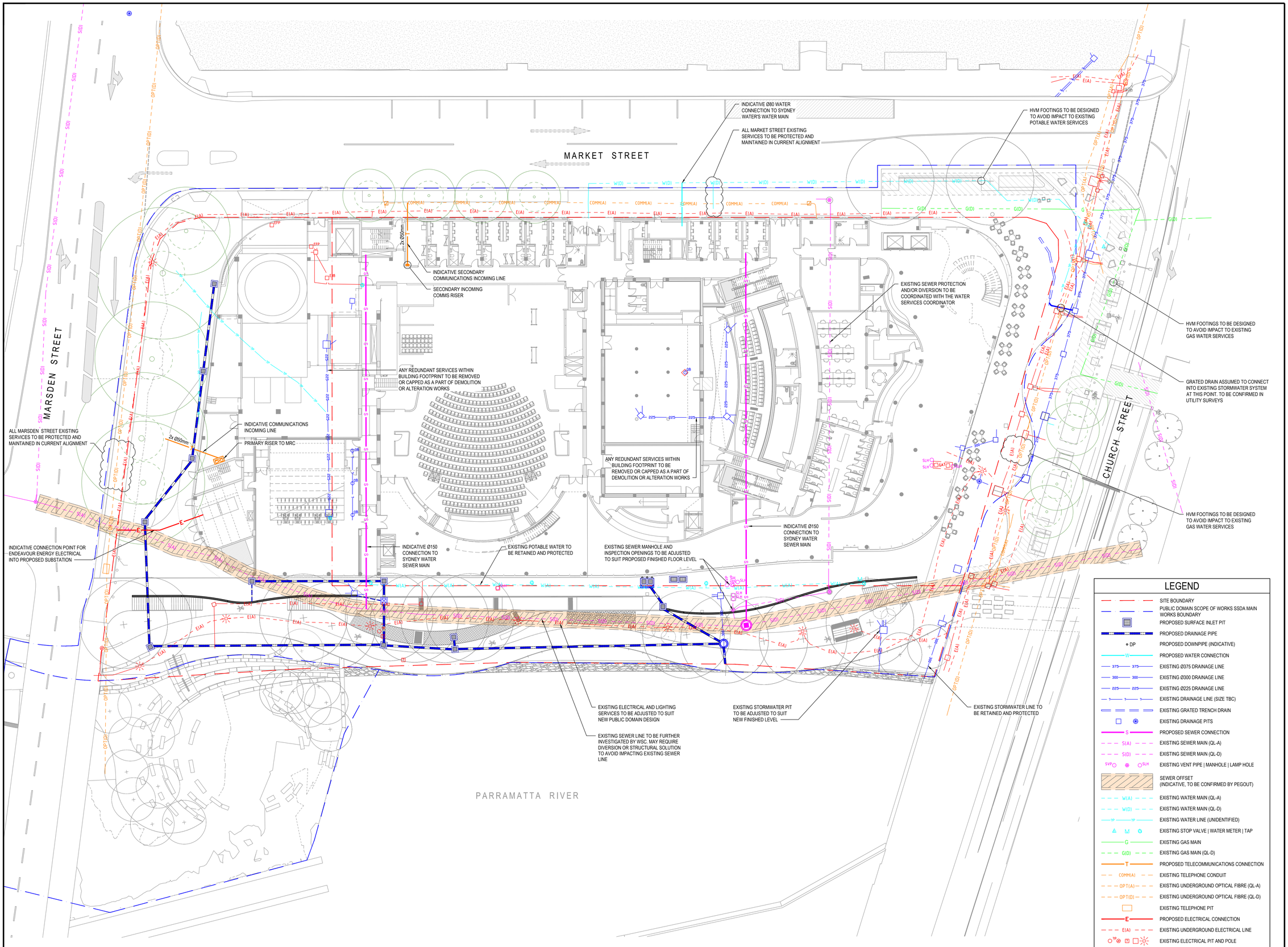
Document Control Status: PRELIMINARY

Drawing Title:
STORMWATER CATCHMENT PLAN

Designed: S. SAIARA | J. NELSON	**Drawn:** J. O
Checked: -	**Scale:** 1:200 @ B1
Approved: D. FETTELL	**Date:** 22.01.2025
Drawing Number: 103054-MMD-01-DD-DR-C-0060	**Revision:** 02

CIVIL ENGINEERING

PLOT STAMP DATE: 19/1/2024



LEGEND

- SITE BOUNDARY
- PUBLIC DOMAIN SCOPE OF WORKS SSDA MAIN WORKS BOUNDARY
- PROPOSED SURFACE INLET PIT
- PROPOSED DRAINAGE PIPE
- PROPOSED DOWNPIPE (INDICATIVE)
- PROPOSED WATER CONNECTION
- EXISTING Ø375 DRAINAGE LINE
- EXISTING Ø300 DRAINAGE LINE
- EXISTING Ø225 DRAINAGE LINE
- EXISTING DRAINAGE LINE (SIZE TBC)
- EXISTING GRATED TRENCH DRAIN
- EXISTING DRAINAGE PITS
- PROPOSED SEWER CONNECTION
- EXISTING SEWER MAIN (QL-A)
- EXISTING SEWER MAIN (QL-D)
- EXISTING VENT PIPE | MANHOLE | LAMP HOLE
- SEWER OFFSET (INDICATIVE, TO BE CONFIRMED BY PEGOUT)
- EXISTING WATER MAIN (QL-A)
- EXISTING WATER MAIN (QL-D)
- EXISTING WATER LINE (UNIDENTIFIED)
- EXISTING STOP VALVE | WATER METER | TAP
- EXISTING GAS MAIN
- EXISTING GAS MAIN (QL-D)
- PROPOSED TELECOMMUNICATIONS CONNECTION
- EXISTING TELEPHONE CONDUIT
- EXISTING UNDERGROUND OPTICAL FIBRE (QL-A)
- EXISTING UNDERGROUND OPTICAL FIBRE (QL-D)
- EXISTING TELEPHONE PIT
- PROPOSED ELECTRICAL CONNECTION
- EXISTING UNDERGROUND ELECTRICAL LINE
- EXISTING ELECTRICAL PIT AND POLE

COLOUR PRINTING REQUIRED

1:200 0 10m 20m

If this drawing is printed or plotted at a size other than B1 - DO NOT SCALE DIMENSIONS FROM DRAWING
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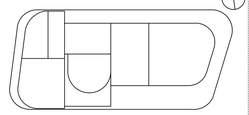
Rev	Description	By	Date
01	DRAFT 30% DETAILED DESIGN	DF	19.12.2024
02	30% DETAILED DESIGN	JHN	22.01.2025

GENERAL NOTES:

1. _____
2. _____
3. _____

ZONE 0



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Project No. 703103054

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CORNER MARKET & CHURCH ST, PARRAMATTA 2150

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Document Control Status: PRELIMINARY

Drawing Title:
COMBINED SERVICES PLAN

Designed: S. SAIARA | J. NELSON	**Drawn:** J. O
Checked: -	**Scale:** 1:200 @ B1
Approved: D. FETTELL	**Date:** 22.01.2025
Drawing Number: 103054-MMD-01-DD-DR-C-0100	**Revision:** 02

CIVIL ENGINEERING

PLOT STAMP DATE: 21/1/2025

Appendix B

City of Parramatta Correspondence

Outlook

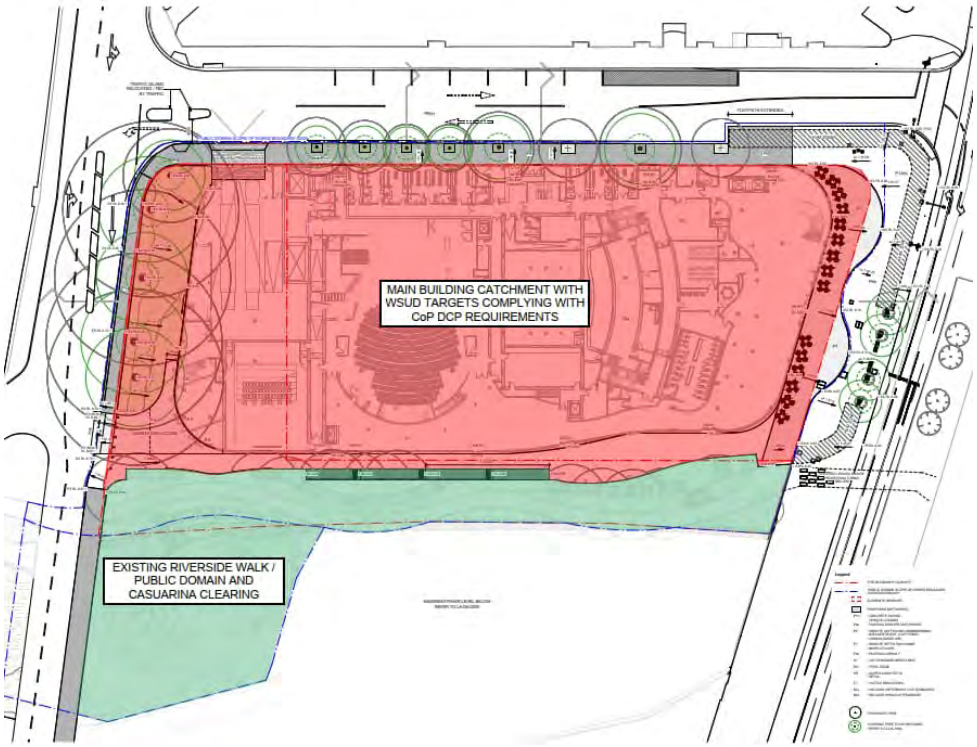
Re: Riverside Theatre - OSD Requirement - WSD and rainwater capture

From Daniel Fettell <Daniel.Fettell@mottmac.com>
Date Tue 17/12/2024 12:40 PM
To Paul Clark <PClark@cityofparramatta.nsw.gov.au>
Cc Myfanwy McNally <MMcNally@cityofparramatta.nsw.gov.au>; Raj Kedarath <RKedarath@cityofparramatta.nsw.gov.au>; Anthony Serratore <ASerratore@cityofparramatta.nsw.gov.au>; James H Nelson <james.h.nelson@mottmac.com>

Hi Paul,

Thank you very for your prompt feedback and we confirm that we will include this analysis in the relevant stormwater and flood feedback. I confirm that we are complying with the requirement for reduction of total discharge, primarily through capturing water through rainwater tanks (of which the final sizing calculations are being undertaken).

In regards to the Water Sensitive Urban Design targets, we are looking to comply with this through a combination of rainwater re-use, potential rain-gardens and potential WSUD tanks/filters. In regards to the catchment we were proposing to split the WSUD catchment between the existing lower level public domain (green) and the main building (red) as per the draft sketch below:



For the green public domain elements they are at the lower river level and include an upgrade to the existing riverside walk and public domain, they are also more constrained due to flood levels. While we are looking at passive irrigation, formalised WSUD functions in the green public domain area would be very difficult due to the flood constraints. Would it be acceptable to exclude the green public domain catchment from the WSUD catchment? (noting the red catchment would fully comply).

The existing condition of this public domain catchment area is shown in the below image:

More than happy to catch-up via a meeting if that is easier to discuss further.

Regards,

Daniel Fettell
Pronouns: he, him, his
Technical Director - Civil Engineering

T +61 (0)2 9098 6800 M 0433326543
daniel.fettell@mottmac.com

From: Paul Clark <PClark@cityofparramatta.nsw.gov.au>
Sent: Tuesday, 17 December 2024 12:11 PM
To: Daniel Fettell <Daniel.Fettell@mottmac.com>
Cc: Myfanwy McNally <MMcNally@cityofparramatta.nsw.gov.au>; Raj Kedarath <RKedarath@cityofparramatta.nsw.gov.au>
Subject: Riverside Theatre - OSD Requirement - WSD and rainwater capture

Dear Daniel

Thank you for your email.

You are correct in anticipating that OSD is probably not required for this site but a brief demonstration of this is required.
Please provide a simple one or two page summary report explaining how the presence of OSD would increase the flood risk by detaining discharges from the site closer to the river (or overland flow) flood peak.

Provided this is done I do not anticipate any OSD requirement.

Please also note Council's requirement for reduction of total discharge of stormwater from the site by 10% compared to the site in an *undeveloped/natural* (not predevelopment) state.
This is a separate matter not related to OSD and flood peak attenuation.
Please see the attached guidance document regarding water sensitive design and also refer to DCP 2023.

Kind regards

Paul

Paul Clark
Senior Catchment & Development Engineer | Development Engineer
02 9806 5512
City of Parramatta
9 Wentworth Street, Parramatta NSW 2150 Australia
PO Box 32, Parramatta, NSW 2124
cityofparramatta.nsw.gov.au

Hello Raj,

I hope you are going well!

We are working with the City of Parramatta on the civil and stormwater design of the Riverside theatre redevelopment:

- https://maps.app.goo.gl/LwCJQo1RaZhuQC1u9

As a part of this project we just wanted to confirm OSD requirements, we wanted to confirm if OSD is required as:

- The critical duration of the site stormwater is shorter than the riverine flooding ; and
- The site discharges directly to the river without utilising current council pipes.

As such OSD would not be particularly effective, would you be able to confirm if we can remove the requirement to provide OSD as a part of this redevelopment?

Regards,

Daniel Fettell
Pronouns: he, him, his
BEng, CPEng, RPEQ
Technical Director - Civil Engineering

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