

# St Aloysius College Rozelle

## Stormwater Management Report

**Prepared for:** St Aloysius College C/- PMDL Architecture & Design Pty Ltd  
**Date:** 22<sup>nd</sup> October 2021  
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# Revision

Site Address: 48 Victoria Road & 2a-2b Gordon Street  
Rozelle

Real Property Description: Lot 2, DP65961 & Lot 1, DP169780

Proposed Development: Educational Facility

Client: PMDL

Local Authority: Inner West Council

Stantec Reference: 301350424-SWMP\_001



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Revision	Date	Comment	Prepared By	Approved By
001	22.10.2021	Issue for SSDA	GYD	RET

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# Contents

<b>1.</b>	<b>Introduction</b>	<b>1</b>
<b>2.</b>	<b>Relevant Policies, Standards and Guidelines</b>	<b>2</b>
<b>3.</b>	<b>Existing Site Characteristics</b>	<b>3</b>
3.1	Property Detail	3
3.2	Stormwater Catchments	3
3.3	Existing Stormwater Infrastructure & Discharge	4
<b>4.</b>	<b>Local Authority Requirements</b>	<b>6</b>
4.1	Stormwater Conveyance Requirements	6
4.2	On Site Detention Requirements	6
4.3	Stormwater Quality Treatment	7
<b>5.</b>	<b>Flood Impact Assessment</b>	<b>8</b>
5.1	Existing Flooding	8
<b>6.</b>	<b>Stormwater Conveyance</b>	<b>9</b>
6.1	Roof Drainage	9
6.2	Surface Drainage	9
6.3	Legal Point of Discharge	9
<b>7.</b>	<b>Water Quality Treatment</b>	<b>10</b>
7.1	Potential Pollutants	10
7.2	Pollutant Reduction System	11
<b>8.</b>	<b>Erosion &amp; Sedimentation Control</b>	<b>14</b>
	<b>Appendix A Civil Drawings</b>	<b>1</b>

# 1. Introduction

Stantec have been engaged by St Aloysius College C/- PMDL Architecture & Design Pty Ltd ('the Proponent') to prepare a Stormwater Management Plan for the St Aloysius Rozelle ('the Site') Development. The plan/report is intended to address the management of stormwater and water sensitive urban design (WSUD) to support the of the State Significant Development (SSD) application.

The proposed development relates to land at 48 Victoria Road and 2A-2B Gordon Road, Rozelle legally described as Lot 1 DP 82780, Lot 2 DP 65961 and Lot 1 DP169780. The proposal involves:

- Conversion of buildings at 48 Victoria Street and 2A/B Gordon Street for education purposes (school);
- Construction of a new lift on the building located at 48 Victoria Road;
- Internal alterations and fit-out to both existing buildings for educational uses;
- Use of the St Josephs Parish Church crypt for educational space; and
- Upgrades to the courtyard at 48 Victoria Road to provide outdoor playspace.



## 2. Relevant Policies, Standards and Guidelines

The following listed policies, standards and guidelines were referred to in the preparation of this report:

- The Leichhardt Development Control Plan 2013
- Australian Rainfall & Runoff 2016;
- AS3500 parts 0-5: 2013 Plumbing and Drainage
- Landcom Managing Urban Stormwater: Soils and Construction Volume 1 2004
- NSW Floodplain Development Manual 2005
- Guidelines for development adjoining land and water managed by DECCW (OEH, 2013)



### 3. Existing Site Characteristics

#### 3.1 Property Detail

The proposed development forms part of the site with the following property details:

Site Address: 48 Victoria Road & 2a-2b Gordon Street  
Rozelle  
Real Property Description: Lot 2, DP65961 & Lot 1, DP169780

Development Area: 4,807m<sup>2</sup> (0.48Ha)

The proposed development can be seen on the design drawings in Appendix A of this report.

The proposed Education Facility development consists of the internal refurbishment of two existing buildings and upgrade of the courtyard of 48 Victoria Road.

Refer to locality plan in figure 1.



Figure 1: Site Location Plan (Source: Nearmaps 2021)

#### 3.2 Stormwater Catchments

The surrounding area has been investigated to determine the likely impact of existing external stormwater catchments on the proposed site. The site is currently surrounded by developments and roadway, so it is believed that no external catchments impact the development site.

### 3.3 Existing Stormwater Infrastructure & Discharge

#### 3.3.1 2A-2B Gordon Street

The proposed works on 2A-2B Gordon Street consist of an internal refurbishment of one of the buildings, there are no external works proposed for this Lot. The existing building drainage consists of a gutter and downpipe system which discharges into the kerb on Maney Street as can be seen in Figure 2 below. The building drainage is assumed to be in good working condition and will be maintained with the development.



Figure 2 - 2A-2B Gordon Street Building Drainage and Discharge

#### 3.3.2 48 Victoria Road

The proposed works on 48 Victoria Road consist of an internal refurbishment of the building and landscaping work to the external courtyard. The existing building drainage consists of a gutter and downpipe system. The southern portion of roof catchment discharges to the kerb on Prince Street, which can be seen in Figure 3 below, while the northern portion of roof catchment is assumed to discharge into the existing stormwater pit and pipe system in the courtyard of 48 Victoria Road. All building drainage is assumed to be in good working condition and will be maintained with the development. Survey information has indicated an existing pit and pipe infrastructure within the courtyard of 48 Victoria Road which is assumed to discharge into one of the existing kerb inlet pits on Victoria Road.



Figure 3 - 48 Victoria Road Existing Building Drainage and Discharge

## 4. Local Authority Requirements

Design requirements for stormwater management on the site have been set out in The Leichhardt Development Control Plan. These requirements are summarised in the sections below.

### 4.1 Stormwater Conveyance Requirements

The Leichhardt DCP states that the following design storm Average Recurrence Intervals (ARI)'s should be allowed for when designing the Stormwater runoff conveyance systems for the development.

Design Parameter	Annual Exceedance Probability (AEP)	Conveyance Method
Minor Drainage System	20%	In Ground (Piped)
Major Drainage System	1%	Overland

Table 1: Stormwater Drainage Serviceability

### 4.2 On Site Detention Requirements

The Leichhardt Development Control Plan sets out the on-site detention requirements for the proposed development and states that the post-development peak flows for the 100 year ARI storm event are to be limited to the pre-development 5 year ARI flows.

The council DCP goes on to state that developments may be exempt from the requirement of OSD if it complies with one of the following conditions.

- C1 On-site detention facilities are required except where:
- the site drains directly into Parramatta River or Sydney Harbour; or
  - the proposal is for minor works to a single dwelling, commercial or industrial building and where the impervious area is not increased by more than 40 square metres; or
  - subdivision of existing or currently approved dwellings.

The proposed development of 2A-2B Gordon Street consists entirely of internal refurbishment, no external works are proposed and hence Stantec have deemed the works to be minor whereby there is no increase in impervious area.

The proposed development of 48 Victoria Road consists of internal refurbishment and development of the landscaped area affronting Victoria Road. The proposed development of the landscaped area involves an increase in pervious area and hence there will be no increase in impervious areas.

For the reasons mentioned above, OSD has not been proposed for the site as it is deemed to be in accordance of clause C1 (b) of the Leichhardt DCP.



## 4.3 Stormwater Quality Treatment

The Leichhardt Development Control Plan section E1.1.2 states that an Integrated Water Cycle Plan is required for all large-scale developments whereby the provision of accommodation for 50 or more residents, occupants or employees.

The following pollution reduction targets have been set by council for developments requiring an Integrated Water Cycle Plan:

- C5 For applications that require an Integrated Water Cycle Plan, water quality treatment measures must be installed that meet the following environmental targets for stormwater runoff leaving the site:

Pollutant	Baseline Annual Pollution Load (kg/ha/yr)	Retention Criteria
Gross pollutants, including trash, litter and vegetation matter greater than 5mm	500	90% reduction of average annual load
Total suspended solids, including sediment and other fine material less than 5mm	900	85% retention of average annual load
Total Phosphorous	2	65% retention of average annual load
Total Nitrogen	15	45% retention of average annual load
Hydrocarbons (Oils and Greases)		90% reduction of annual load – no visible discharge
Toxicants		100% containment of toxicants

*(Source: Catchment Management Authority Sydney Metropolitan: Draft Managing Urban Stormwater: Environmental Targets October 2007)*

Figure 4 - Pollution Reduction Targets



## 5. Flood Impact Assessment

When considering a new development, it is necessary to assess the impact of existing flooding on the proposed development and the potential flooding impact of the proposed development upon existing developments located upstream and downstream of the site.

### 5.1 Existing Flooding

According to the Leichhardt Council Water Guidelines the site is not located within a flood-controlled lot as can be seen in Figure 5 below. No further flood study will be undertaken as part of the development.



Figure 5 - Leichhardt Council Water Guidelines - Flood Control Lot Map 1

## 6. Stormwater Conveyance

This section of the report discusses the systems proposed to allow for stormwater to be conveyed across the site to the legal point of discharge.

As discussed in section 4.1 of this report council have set serviceability requirements for the stormwater conveyance network such that minor flows are conveyed through piped drainage, and major flows are discharged via controlled overland flow.

### 6.1 Roof Drainage

The existing roof drainage systems for all buildings on the site, 2A-2B Gordon Street and 48 Victoria Road, will be maintained post development.

### 6.2 Surface Drainage

The surface area in the external courtyard on 48 Victoria Road, Rozelle will be drained through a variety of methods, discussed below, in accordance with AS3500.3:2003 and council's stormwater drainage guidelines.

#### 6.2.1 In Ground Drainage

The in-ground drainage has been designed to meet the following criteria:

- In the minor design storm event (20% AEP) there will be no surcharging of the in-ground drainage system and;
- In the major design storm event (1% AEP) there will be no uncontrolled discharge from the site onto neighbouring properties or the surrounding street

Surface runoff from the courtyard and surrounding landscapes areas will be directed to stormwater inlet structures using the design topography of these elements. The inlet structures have been designed to adequately convey the surface runoff into the in-ground drainage network.

The runoff will then be conveyed underground across the site to the legal point of discharge using gravity and the geometric falls of the pipe system.

### 6.3 Legal Point of Discharge

The proposed legal point of discharge for 48 Victoria Street will be to a kerb outlet on Prince Street. The existing drainage and discharge for 2A-2B Gordon Street will be maintained.



## 7. Water Quality Treatment

As discussed in section 4.3 of this report The Leichhardt DCP requires stormwater quality treatment on new developments to reduce the pollutant loading of stormwater discharged into the council drainage system.

The works proposed on 2A-2B Gordon Street as well as the building refurbishment on 48 Victoria Road consists of only internal refurbishments and hence have been considered minor and as such not requiring stormwater quality treatment.

As the development of 48 Victoria Road includes alteration to the existing stormwater infrastructure in the courtyard stormwater quality treatment has been proposed for the courtyard area. The area considered for stormwater treatment can be seen in Figure 6 below.



Figure 6 - Site Area Subject to Stormwater Quality Treatment

### 7.1 Potential Pollutants

There are a wide range of potential stormwater pollutant sources which occur from urbanised catchments, many which can be managed through appropriate stormwater quality treatment. Typical urban pollutants may include:

- Atmospheric deposition
- Erosion (including that from subdivision and building activities)
- Litter and debris
- Traffic emissions and vehicle wear
- Animal droppings
- Pesticides and fertilisers
- Application, storage and wash-off of car oil, detergents and other household and commercial solvents and chemicals
- Solids accumulation and growth in stormwater systems

- Weathering of buildings

These pollutants in urban stormwater can be placed into various categories as follows. The pollutants underlined below are able to be readily modelled:

- Suspended Solids
- Litter
- Nutrients such as Nitrogen and Phosphorous
- Biological oxygen demand (BOD) and chemical oxygen demand (COD) materials
- Micro-organisms
- Toxic organics
- Trace metals
- Oils and surfactants

While only the key pollutants underlined above will be examined within the modelling, the stormwater Quality Improvement Devices implemented are expected to assist in reducing a wide range of pollutants. For example, heavy metals are commonly associated with, and bound to fine sediments thus, reducing the discharge of fine sediment during the construction and operational phases will also reduce the discharge of heavy metals to existing stormwater systems.

## 7.2 Pollutant Reduction System

In order to achieve the pollutant reduction targets specified in section 4.3 of this report a series of treatment devices are proposed which together form a treatment train. The proposed treatment train includes the following:

- 3 x Ocean Protect ZPG Storm Filter Cartridges (or approved equivalent) proposed within a 1.2m x 1.2m Storm Filter Chamber
- 2 x Ocean Protect Enviropod 200 (or approved equivalent) proposed within the stormwater inlet pits



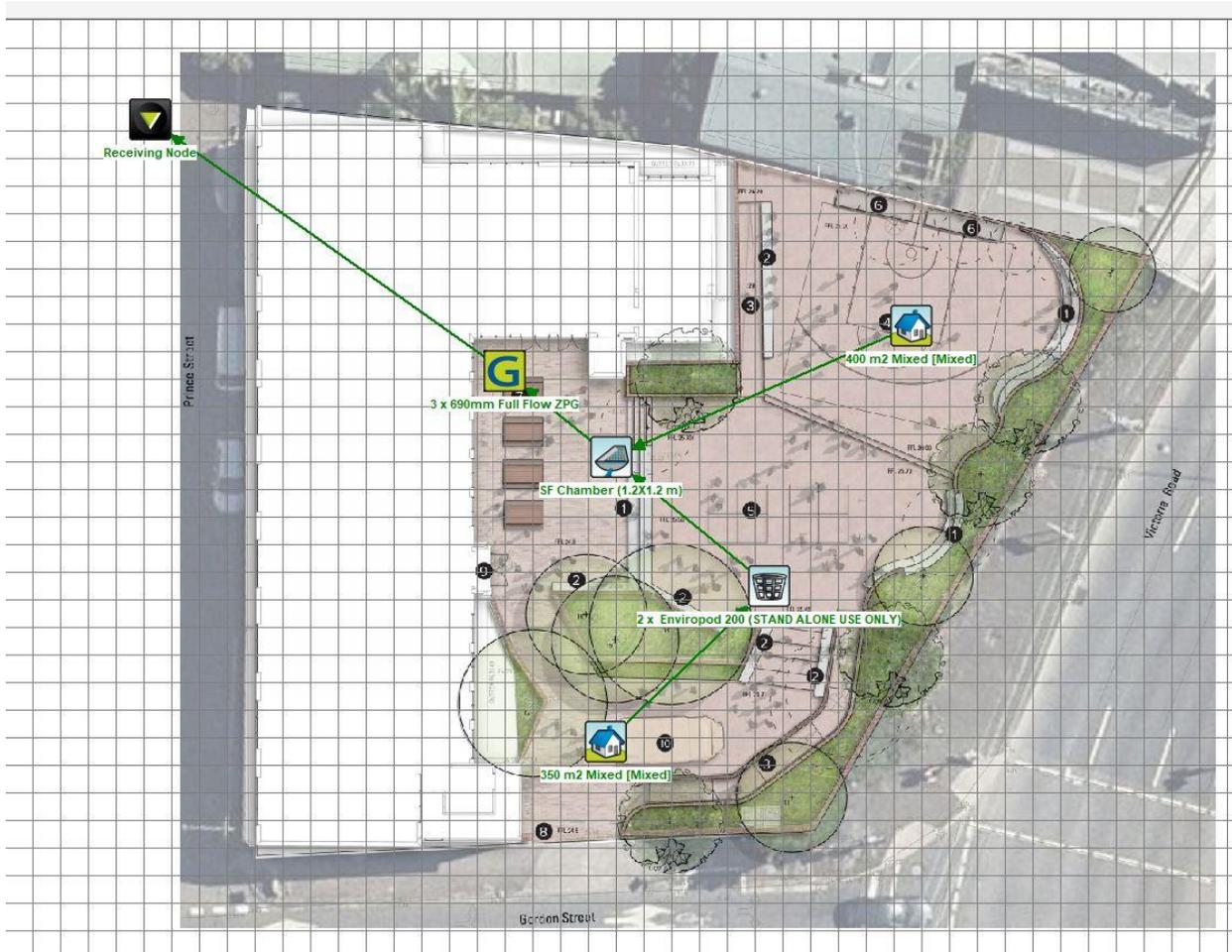


Figure 7 - MUSIC Model Treatment Train

The following are the treatment rates as determined by the MUSIC model.

	Sources	Residual Load	% Reduction
<b>Flow (ML/yr)</b>	0.781	0.781	0
<b>Total Suspended Solids (kg/yr)</b>	141	14	90.1
<b>Total Phosphorus (kg/yr)</b>	0.228	0.0392	82.9
<b>Total Nitrogen (kg/yr)</b>	1.68	0.767	54.3
<b>Gross Pollutants (kg/yr)</b>	18.5	0	100

Figure 8 - MUSIC Modelling Results



Pollutant/Issue	Target	Reduction	Target Achieved
TSS	85%	90.1%	YES
Phosphorus	65%	82.9%	YES
Nitrogen	45%	54.3%	YES
Gross Pollutants	90%	100%	YES

As can be seen in the table above, the MUSIC model shows that the proposed design meets council's reduction targets.



## 8. Erosion & Sedimentation Control

Landcom have published a design guide entitled “Managing Urban Stormwater - Soils and Construction” which is regarded as the standard to which erosion and sedimentation control should be designed to within NSW.

The control of erosion and sedimentation describes the measures incorporated during and following construction of a new development to prevent the pollution and degradation of the downstream watercourse.

A Soil and Water Management Plan has prepared as part of the development application documentation and is included in Appendix A of this report.

### Stormwater Drainage Infrastructure Inlets

Risk:

- Sediment from the construction site washing into the existing stormwater drainage inlet infrastructure.

Consequence:

- The sediment will then be conveyed into the downstream waterbody by stormwater runoff, contaminating the waterbody.
- The sediment will build up blocking the stormwater infrastructure and preventing stormwater conveyance to the downstream waterbody and impacting drainage upstream.

Mitigation:

- Sandbag protection will be installed surrounding all existing stormwater drainage infrastructure inlets to prevent sediment entering the system.

Maintenance:

- Frequent inspection of the sandbags to ensure they are arranged in a manner that prevents sediment from accessing the drainage system. If sediment is building up on the sandbags they should be cleared of sediment and re-established.

### Construction Exit Protection

Risk:

- Spoil such as soil being conveyed from the site on the wheels of vehicles.

Consequence:

- Spoil being tracked onto the public road corridors where it is then washed into the existing stormwater drainage infrastructure and is then washed downstream polluting the downstream waterbody.
- Spoil being tracked onto the public road creating dangerous driving conditions for other road users.

Mitigation:

- A shaker grid and wash down facility will be installed at all exits from the construction site. All vehicles leaving the site will have their wheels washed down and pass over the shaker grid to remove any spoil collected on their wheels and retaining the spoil on site.

Maintenance:

- Frequent inspection of the shaker grid to ensure it is clean and still functioning.



## Downstream Site Boundaries

### Risk:

- Rainfall runoff falling on the site collecting sediment from the construction site and conveying it overland onto downstream properties and waterbodies.

### Consequence:

- Sediment discharge polluting downstream properties and waterbodies.

### Mitigation:

- Installation of sediment fences on all downstream boundaries of the site to collect sediment and prevent it discharging onto downstream properties or waterbodies.

### Maintenance:

- Regular inspection of the sediment fences to ensure they are functioning correctly and are intact.
- If sediment build up is present it should be removed to ensure correct functionality of the fences.



# Appendix A Civil Drawings





**PMDL ARCHITECTS**



# ST ALOYSIUS COLLEGE ROZELLE

**48 VICTORIA ROAD,  
ROZELLE, NSW 2039**

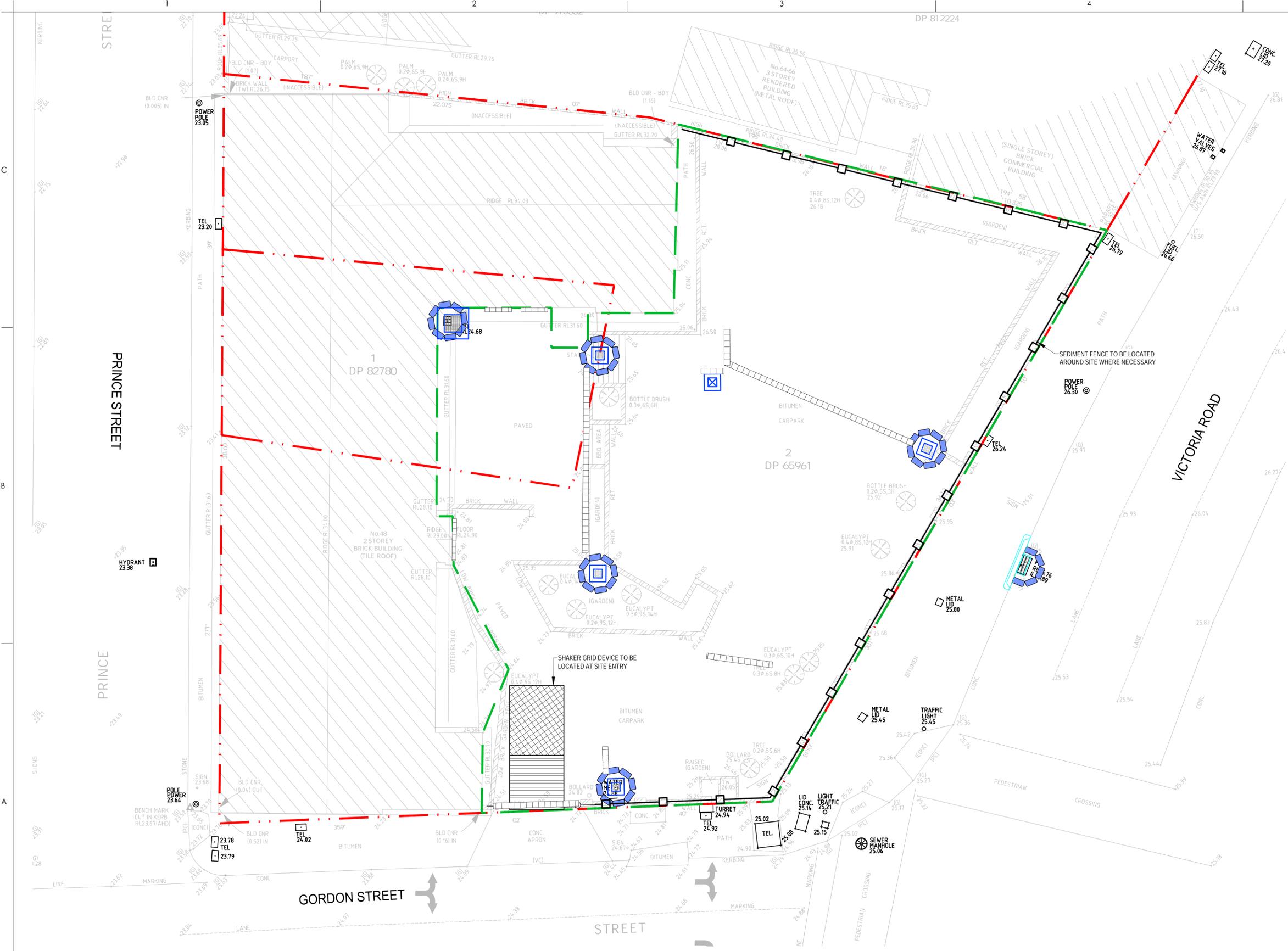
**STATE SIGNIFICANT DEVELOPMENT APPLICATION  
22.10.2021**

**Stantec Project Number: 301350424**

DRAWING LIST	
NO.	DRAWING NAME
CI-000-001	COVER SHEET
CI-007-001	GENERAL NOTES
CI-070-001	EROSION AND SEDIMENT CONTROL PLAN
CI-076-001	EROSION AND SEDIMENT CONTROL DETAILS
CI-520-001	STORMWATER DRAINAGE PLAN
CI-526-001	STORMWATER DRAINAGE DETAILS - SHEET 1
CI-526-002	STORMWATER DRAINAGE DETAILS - SHEET 2







### LEGEND

- - - PROPOSED SITE BOUNDARY
- - - LIMIT OF WORKS BOUNDARY
- VEHICLE SHAKEDOWN DEVICE
- PROPOSED SILT FENCE
- SITE GATE
- SANDBAG PIT PROTECTION
- SEDIMENT TRAP FOR KERB INLET PITS
- PROPOSED JUNCTION PIT
- EXISTING JUNCTION PIT
- PROPOSED GRATED PIT
- EXISTING GRATED PIT
- PROPOSED KERB INLET PIT
- EXISTING KERB INLET PIT
- PROPOSED GRATED DRAIN

### NOTES

1. REFER DRAWING CI-076-01 FOR EROSION AND SEDIMENT CONTROL DETAILS.
2. MINIMISE THE AREA OF SITE BEING DISTURBED AT ANY ONE TIME.
3. WORKS IN PROXIMITY OF EXISTING TREES TO BE CARRIED OUT IN ACCORDANCE WITH ARBORIST CONSULTANT ADVICE.
4. SEDIMENT AND EROSION CONTROL PLAN IS INDICATIVE ONLY.

1:100 1 0 1 2 3 4 5 A1  
1:200 A3

Notes	Issue Status
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