



St Clair Shopping Centre



Stormwater Management Report

Prepared for:

Ringmer Pacific
Management Pty Ltd

Date:
19th December 2017

Prepared by:

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Project No. 36073-SYD-C

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Revision

Site Address: Endeavour Avenue, St Clair
Real Property Description: Lot 1 on DP1018519
Proposed Development: Proposed Carpark Alternations

Client: Ringmer Pacific Management Pty Ltd
Local Authority: Penrith City Council
Authority Reference #: N/A
Wood & Grieve Reference: 36073-SYD-C-R-SMP



Tim Fitzhardinge
For and on behalf of
Wood & Grieve Engineers

REVISION	DATE	COMMENT	APPROVED BY
A	19.12.2017	DA Issue	TIF

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REVISION

Contents

1.	INTRODUCTION	1
2.	EXISTING SITE CHARACTERISTICS	2
2.1	Property Detail	2
2.2	Topography	3
2.3	Stormwater Catchments	3
2.4	Existing Stormwater Discharge	3
3.	LOCAL AUTHORITY REQUIREMENTS	4
3.1	Stormwater Conveyance Requirements	4
3.2	On Site Detention Requirements	4
3.3	Stormwater Quality Treatment	4
4.	FLOOD IMPACT ASSESSMENT	5
5.	STORMWATER CONVEYANCE	6
5.1	External Catchments	6
5.2	Surface Drainage	6
5.3	Legal Point of Discharge	6
6.	EROSION & SEDIMENTATION CONTROL	7
	APPENDIX A – CIVIL DRAWINGS	8

Introduction

1. Introduction

Wood & Grieve Engineers have been commissioned by Ringmer Pacific Management Pty Ltd to prepare this Stormwater Management Plan (SMP) in support of the Development Application for the proposed carpark alterations at St Clair Shopping Centre. The sites real address is Lot 1 on DP1018519.

This SMP outlines the conceptual DA level stormwater design for the proposed carpark alterations to the subject site.

This SMP illustrates that the proposed development complies with the Penrith City Council's Engineering Guide for Development, Australian Rainfall and Runoff, Australian Standards and best engineering practise.

The purpose of this SMP is to evaluate the quantity and quality of stormwater associated with the proposed development plan to demonstrate to Council that an appropriate stormwater management strategy has been adopted.

The SMP specifically addresses the following items for both the construction and operational phases of the development:

- Stormwater runoff volumes and detention (Stormwater Quantity);
- Stormwater quality treatment measures (Stormwater Quality),
- Erosion and Sedimentation Control.

The following will be achieved with the correct application of this SMP report:

- Appropriate standards to be maintained on all aspects of stormwater within the site,
- Establishment of a unified, clear and concise stormwater management strategy.

Existing Site Characteristics

2. Existing Site Characteristics

2.1 Property Detail

Address: Endeavour Avenue, St Clair
Real Property Description: Lot 1 on DP1018519
Total Site Area: 29,025.5m² (2.9Ha)

The proposed development is positioned within Penrith City Council. The proposed development will consist of alteration to the existing carpark located within St. Clair Shopping Centre.

The site is bounded by:

- Endeavour Avenue to the north,
- Bennett Road to the east,
- Botany Lane to the south and west

Refer to locality plan in figure 1.



Figure 1: Site Location Plan (Source: Source: SIX VIEWER 2017 – Department of Land and Property Information NSW)

Existing Site Characteristics

2.2 Topography

The topography of the site falls from the south towards north. The high point of the site is located along the south boundary of the site at a level of RL49.42m AHD. The low point of the site is located along the Northern boundary at a level of RL46.42m AHD.

2.3 Stormwater Catchments

The surrounding area has been investigated to determine the likely impact of existing external stormwater catchments on the proposed site.

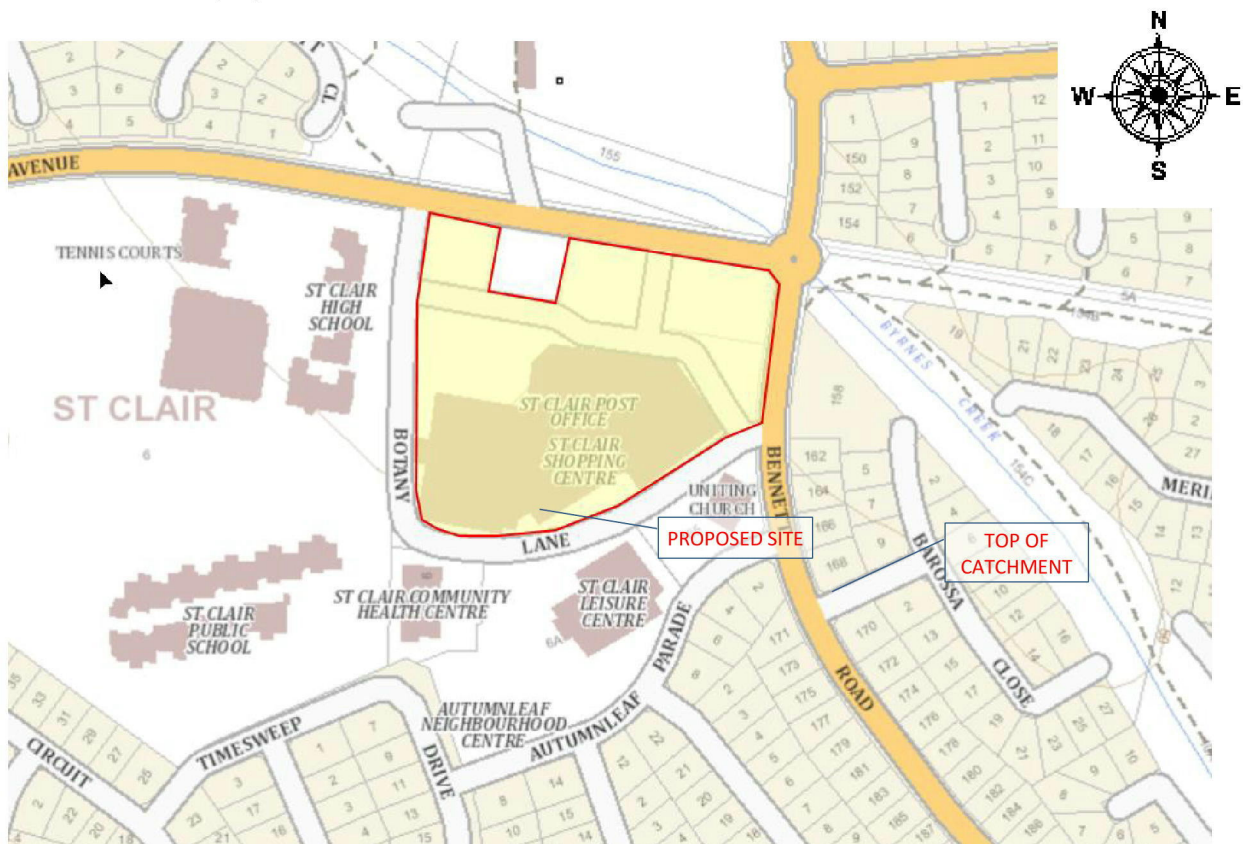


Figure 2: Upstream Catchment Plan (Source: SIX VIEWER 2017 – Department of Land and Property Information NSW)

The site is located towards the top of the existing catchment. Overland flows generated from the upstream catchment are conveyed through the existing road networks.

2.4 Existing Stormwater Discharge

The stormwater discharge from the existing carpark are divided into 2 catchments. The western portion of the existing carpark discharges into drainage infrastructure in Botany Lane. Stormwater drainage infrastructure along Endeavor Avenue discharges the eastern portion of the existing car park.

Local Authority Requirements

3. Local Authority Requirements

Penrith City Council set the design requirements for any new stormwater management system associated with new development in their Engineering Guide for Development. A summary of the key stormwater requirements are summarized below.

3.1 Stormwater Conveyance Requirements

Penrith City Council's Engineering Guideline states that the following design storm Average Recurrence Intervals (ARI) should be allowed for when designing the Stormwater runoff conveyance systems for the development.

Design Parameter	Design Storm ARI (Years)	Conveyance Method
Minor Drainage System	20	In Ground (Piped)
Major Drainage System	100	Overland

Table 1: Stormwater Drainage Serviceability

3.2 On Site Detention Requirements

Council has advised that the site does not require on site detention. The alterations to the existing carpark does not increase the impervious area, therefore on site detention not required. .

3.3 Stormwater Quality Treatment

Penrith City Council's WSUD Policy identifies the requirements for WSUD on developments. The alterations to the existing site does not increase the impervious area, therefore no WSUD requirements for the site.

4. Flood Impact Assessment

When considering a new development, it is important to assess the impact of existing flooding on the proposed development and also the impact of the proposed development on existing or potential flooding both upstream and downstream of the development.

Wood and Grieve have reviewed Council's documentation and since the site is at the top of the catchment, the site is not subjected to flooding.

Local or Nuisance flooding describes flooding occurring due to site specific constraints. Local flooding is often caused by local topographical constraints and stormwater drainage system capacity restrictions.

Wood & Grieve have assessed the local constraints surrounding and through the site to ascertain any areas where local flooding may be an issue.

The existing carpark have been designed to ensure all runoff is directed to the existing road infrastructure and as a result, local flooding will not affect the development.

5. 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 3.1 of this report council have set minimum design parameters for the flows they require to be conveyed through the in ground drainage system and what they will allow to be conveyed in a controlled manner overland across the site.

5.1 External Catchments

As discussed in section 2.3 the site is towards the top half of the catchment and the existing roads convey residual flow. Thus no upstream catchment surface runoff enters the subject site.

5.2 Surface Drainage

The surface areas will be drained through a variety of methods, discussed below, in accordance with AS3500.3:2003 and council's stormwater drainage guidelines.

5.2.1 In Ground Drainage

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

- In the minor design storm event (20 year) there will be no surcharging of the in ground drainage system and;
- In the major design storm event (100 year) there will be no uncontrolled discharge from the site onto the residential properties to the east of the site.

Surface runoff from the development sites will be directed towards the existing stormwater inlet structures of the site. The runoff will then be conveyed underground across the site to the existing legal point of discharge using gravity and the geometric falls of the pipe system.

5.3 Legal Point of Discharge

The existing carpark is split up into to 2 catchments area. The western catchment discharges in to the drainage infrastructure within Botany Lane. The eastern catchment discharges stormwater via existing assets along Endeavour Avenue.

6. 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. Council specifies compliance with the Landcom design guide in there Stormwater and Floodplain Management Technical Manual.

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.

An Erosion & Sediment Control Plan has prepared as part of the development application documentation and is included in Appendix A of this report.

Common control measures adopted are:

- Sedimentation fences;
- Sedimentation basins;
- Stormwater drainage inlet protection;
- Overland flow diversion swales;
- Shaker Grids and wash downs for vehicles leaving the construction site;
- Dust control measures.

The maintenance of these control measures throughout their intended lifespan will ensure that the risk of erosion and sedimentation pollution of the downstream watercourse will be minimized.

Appendix A – Civil Drawings

Appendix A – Civil Drawings