

Infrastructure Management Plan - Stormwater

171320

Prepared for University of Wollongong / 19.09.17

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Taylor Thomson Whitting (NSW) Pty Ltd, Consulting Engineers | ABN 81 113 578 377
48 Chandos Street, St Leonards NSW 2065 | +612 9439 7288

**Structural
Civil
Traffic
Facade
Consulting
Engineers**

Contents

1.0	INTRODUCTION	3
1.1	Key Parameters	3
2.0	SITE 3	
3.0	EXISTING CONDITIONS	3
3.1	Existing Stormwater	3
3.2	Existing Overland Flow	3
4.0	STORMWATER	4
4.1	Stormwater Drainage System	4
4.2	Onsite Stormwater Detention (OSD)	4
4.3	Overland Flow	4
4.4	Flooding	4
4.5	Flood Mitigation Strategy	4
4.6	Stormwater Quality	4
5.0	Summary	5

1.0 INTRODUCTION

Taylor Thomson Whitting (TTW) has been engaged to produce the stormwater infrastructure management plan for a proposed Western Building at the University of Wollongong.

This report relates to stormwater elements of the works.

Site assessment and planning has been led by HASSELL and Donald Cant Watts Corke, with survey input by LandTeam.

Previous reports undertaken for the University of Wollongong by other consultants have been used in preparation of this document.

1.1 Key Parameters

From a civil requirement, the key items that are to be addressed are:

- Stormwater overland flow,
- Site flooding,
- Stormwater design and Onsite Stormwater Detention (OSD),

2.0 SITE

There are two working sites in this project (Site A and Site B).

The Site A is located on the main campus at the University of Wollongong, in an area currently occupied by demountable and single storey buildings which will be demolished due to proposed works. Building 21 is on the opposite side of the Ring Road.

The Site B is in front of the Western car park entry off Robsons Road.

3.0 EXISTING CONDITIONS

The existing services which are located within the development site will be either relocated to suit works, capped and abandoned, or removed.

3.1 Existing Stormwater

There are existing in-ground stormwater pipes and pits running along the Ring Road, which may need to be reconstructed to suit the proposed stormwater drainage works.

3.2 Existing Overland Flow

The main campus overland flowpath, in this area, as outlined in Cardno's Stormwater Assessment (2014), is along the campus Ring Road and onto the eastern oval. It is known that road drainage system is designed to convey up to 5 year Australia Rainfall Intensity (ARI) flow to ensure road serviceability is maintained.

Cardno's recent investigation (10 July 2017, Ref: 8201720801-letter 002) indicated that the culvert under Robsons Road causes water flow through the western carpark and onto the site.

4.0 STORMWATER

4.1 Stormwater Drainage System

The site-wide stormwater drainage and retention strategy is to be developed by the Civil Engineer.

The stormwater design should be based on rainfall intensities of:

- 265mm/hr for eaves gutters (1 in 20 year ARI with 10% design safety)
- 338mm/hr for downpipes (1 in 100 year ARI with 10% design safety)

Within the Western Building footprint, a network of underground stormwater pipes pickup building down pipes and stormwater pits.

There is limited stormwater infrastructure in this area/

4.2 Onsite Stormwater Detention (OSD)

The proposed building area will increase the hard stand surfaces, leading to an increasing stormwater runoff, therefore OSD is proposed.

Two OSD tanks are proposed, having a total volume of approximately 85m³.

4.3 Overland Flow

It is proposed that all external surfaces drain away from the proposed building and any upstream flow is diverted around the development sites.

4.4 Flooding

As per Cardno's Stormwater Assessment, the University of Wollongong campus is affected by flooding. The report indicates that the proposed Site A area is affected by the 1% AEP and Probable Maximum Flood (PMF) flow. It is indicated that 1% Annual Exceedance Probability (AEP) will produce below 100mm of flooding which has slow velocity (less than 0.3m/s) and therefore is categorised as being a low hazard. In addition, during the PMF the flow is deeper and faster around 200mm depth at 3 m/s.

It will be required that the floor levels for the Site A area are above the 1% AEP with appropriate freeboard. Freeboard tends to vary from 300 to 500mm depending on the importance of the building or threat to health and safety. It is expected that freeboard will be advised by Cardno.

Further, upstream flow diversion will be designed to reduce the flood level.

4.5 Flood Mitigation Strategy

The flood water is predicted, during 100 year ARI, to overtop Robson's Road Culvert, leading overland flow into the Western carpark. Cardno's recent investigation (15.06.17, Ref: 8201720801) have considered several options.

4.6 Stormwater Quality

Stormwater quality treatment will be required in accordance with Council's water quality requirements.

5.0 Summary

This report outlines the stormwater works intent

Prepared & Authorised by:
**TAYLOR THOMSON WHITTING
(NSW) PTY LTD**



Kelvin Holey
Senior Civil and Environmental Engineer