



Project: Hunter Sports High –
Major Capital Works Upgrade
Stormwater Management Plan

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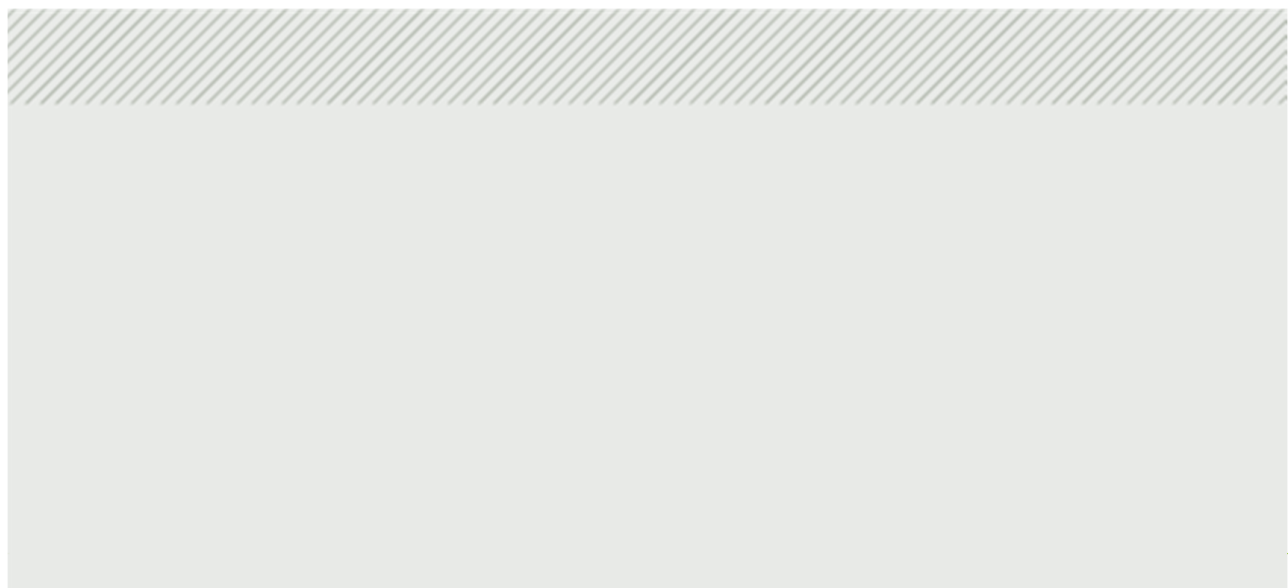
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Sediment and Erosion Control Plan



1 Introduction

1.1 Background

Aurecon has been engaged by EJE Architecture to assist with the preparation of documentation for a Development Application for Hunter Sports High School.

This Stormwater Management Plan provides an overview of the treatment and conveyance systems provided for the development in order to achieve the required flow retardation and stormwater quality outcomes for the development.

1.2 Site Description

The site is located in Gateshead NSW, consisting of an existing Public Secondary School with a street frontage on the Pacific Highway. A number of aged multi storey classroom buildings are located on the Northern end of the site, with a new Gymnasium building and COLA in the centre, and playing fields to the Western and Southern boundaries.

The total site area is approximately 91055m². The site currently has a below ground piped stormwater system that discharges to Johnsons Creek to the Southwest of the site.

A new Gymnasium complex was built in 2010 which provided a 60kL rainwater tank for irrigation reuse on the site. Additionally, this development is connected to an on-site detention system providing 55 cumecs of below ground storage.

Refer to Appendix A for Site Analysis sketch.

1.3 Proposed Re-development

The proposed development based on architectural plans produced by EJE Architecture comprises the following principal features:

- Two staged replacement of existing buildings to the Northern end of the site
- New single storey Movement Complex
- A number of Multi storey classroom and administration buildings
- New paved footpaths, landscaping and mass planting areas
- No planned work to the existing Gymnasium, COLA and playing fields

Refer to the architectural sketches prepared by EJE Architecture for further details.



2 Proposed Stormwater Systems

2.1 Minor Drainage

Piped minor drainage will be designed to accommodate the 1 in 20yr flows and will be distributed throughout the development to accommodate flows from roof downpipes along with landscaped and paved surfaces. All stormwater pipes will be directed to an onsite detention tank located adjacent to the existing service roadway. This system is documented within the concept stormwater layout provided in Appendix A.

Due to the recent additions to the site and the large areas of playing fields, only the area to the North of the existing service road has been included in the stormwater analysis. (As agreed with Greg Field from LMCC) This area captures the full extent of the proposed new works.

Note that the existing stormwater system below the service road will be retained unaltered. This area includes the following:

- Existing below ground piped drainage system discharging to Johnsons Creek
- Existing rainwater collection tank (60kL) attached to the Gymnasium roof
- Existing below ground detention tanks (45kL & 10kL) adjacent to the Gymnasium
- Overland flow paths

2.2 Major Drainage

Major stormwater flows from rainfall events up to a 100 year ARI that cannot be accommodated by the below ground pipe network will be conveyed on the surface via overland flow along the line of the below ground system. Piped flows will pass through the detention system and discharge at the rates as below. Bypass flows will travel over the surface and dissipate onto the playing fields to the Southwestern part of the site adjacent to Johnsons Creek.

2.3 Detention Storage

A volume of detention storage will be provided appropriate to store peak flows from the proposed new development and limit discharges such that post developed flows will be limited to the pre developed flow for all storm events. Outflows from the detention tank will be discharged through the existing stormwater system to Johnsons Creek.

Note that as there has been a Net decrease in the impervious area with the proposed new development, the Post developed flows will actually be slightly less than the Pre developed flows. However we have still added in an OSD tank to the proposed system to further manage and restrict

the site flows Post development. The analysis of the catchment and detention system has been carried out using the DRAINS software.

The following Storage and Discharge requirements are applicable:

Storm ARI	Storage Required (m ³)	Site Discharge – Pre Development (L/s)	Site Discharge – Post Development (L/s)	Over flows from Detention Tank (L/s)
2	30.6	54	44	0
5	31.2	75	45	0
20	32.1	102	45	0
100	43.8	124	52	0

Table 1 – Storage and Discharge from Detention Tank

Note: High Early Discharge weir at RL 1m (30m³ equivalent volume at 1m depth)

2.4 Stormwater Quality Improvement and Reuse

All new stormwater pits will incorporate EnviroPod™ 200micron filter inserts to remove contaminants from the stormwater by the mechanism of direct screening. The inserts act as a Gross Pollutant Trap and allow for pollutants and coarse sediments to be captured at the source. Given the educational nature of the development, it is anticipated that litter will be the primary pollutant which will be captured at the pit and not allowed to be transmitted through the system to the outfall.

It is also proposed that rainwater will be collected from the new roofed areas and stored in rainwater tanks. The water will be reused for the main building (stage 1) toilet flushing and for irrigation of the new landscaped areas. (Note it will not be used to irrigate the existing playing fields)

2.5 Erosion and Sediment Control

Erosion and sediment controls will be required during the construction phase to capture, control and treat sediment laden water leaving the site. Sediment and erosion controls will consist of various sediment control elements installed around the lower extents of the works, and will include:

- Stabilised entry/exit point consisting of large diameter crushed rock pad. Approx 5m x 3m.
- Sediment fences along lower edges
- Stormwater pit protection barriers
- Designated material stockpile locations

Refer Appendix C for details.



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Appendix A

Site Analysis Sketch

EXISTING STORMWATER DISCHARGE POINT FROM SITE

AREA OF SITE DEVELOPED IN 2010

REMAINDER OF THE SITE DOWNHILL FROM BUILDINGS IS

EXISTING
STORMWATER
DISCHARGE POINT
FROM SITE

REMAINDER OF
THE SITE
DOWNHILL FROM
BUILDINGS IS
FULLY PERVIOUS



Appendix B

Stormwater and Civil Drawings



Appendix C

Sediment and Erosion Control Plan