

Document: Stormwater Report for UTS Ku-ring-gai Campus

Project: UTS Lindfield prepared for NSW Department of Education

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EXECUTIVE SUMMARY

EWFW was tasked to review a drainage report, which was prepared by Patterson Britton prepared in July 2006 which has investigated all pertinent aspects of runoff and treatment, to the extent that can be identified, for this site.

Hydrologic review for this catchments and conveyances corridor was been undertaken.

On review of the project, and assessment of all the required elements, we do not foresee any adverse finding or technical issues that would preclude this development report from proceeding as described in issue 5 July 2006

The prepared report has defined the 20, 50 and 100 years ARI event flows is contained within the drainage system including Water tanks (OSR). The drainage outflows are restricted to 1 in 20 year flows with controlled discharge, with no net increase in the 1 in 2 year ARI runoff .The runoff values are within the Ku-ring-gai Council's DCP 47 Water management control plan (2005).

The development report has defined the Music Model runoff values, and is within the Ku-ring-gai Council's DCP 47 Water management control plan (2005). Usage of rainwater tanks will attenuate to discharge, reducing the impacts of flooding.

Within the report, your attention is drawn to the calculated stormwater runoff values using ARR1987 and not the new ARR2016. The new runoff calculations may have an adverse effect on the onsite detention requirements, water quality devices and the runoff volumes. The current report still complies with the DCP 47 (2005)

CONTENTS

1.	INTRODUCTION.....	1
1.1.	PURPOSE	1
1.2.	CURRENT SITE LOCATION IMAGE	1
1.3.	REPORT SITE LOCATION IMAGE.....	2
1.4.	GOVERNING AUTHORITIES	2
2.	TECHNICAL INFORMATION.....	3
2.1.	STORMWATER.....	3
2.2.	CATCHMENT AREAS.....	3
2.3.	RUNOFF POST DEVELOPMENT DISCHARGE	4
2.4.	WATER QUALITY	4
2.5.	OTHER OBSERVATIONS.....	4
2.6.	CERTIFICATION	4
3.	INFORMATION SOURCES, ASSUMPTIONS, LIMITATIONS AND LIABILITY	6
3.1.	PROJECT INFORMATION SOURCES.....	6
3.2.	ASSUMPTIONS AND LIMITATIONS	6
3.3.	LIABILITY	6

1. INTRODUCTION

1.1. PURPOSE

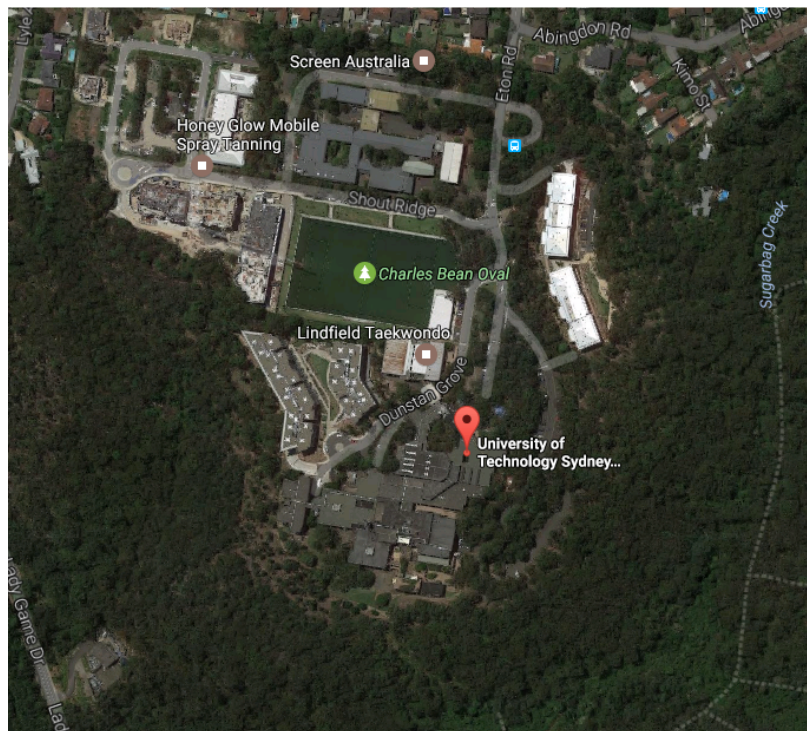
The preparation of this report is based on our understanding of the requirements and our understanding of the local conditions of council's DCP.

This report is based on the following assumptions and exclusions, which must be carefully considered.

In undertaking the preparation of this report, EFWF hereby advised that it has no control over any approvals, additional 3rd party requirements, competitive development costs, nor does it have any control over any increase in statutory fees or future availability of external drainage services capacity.

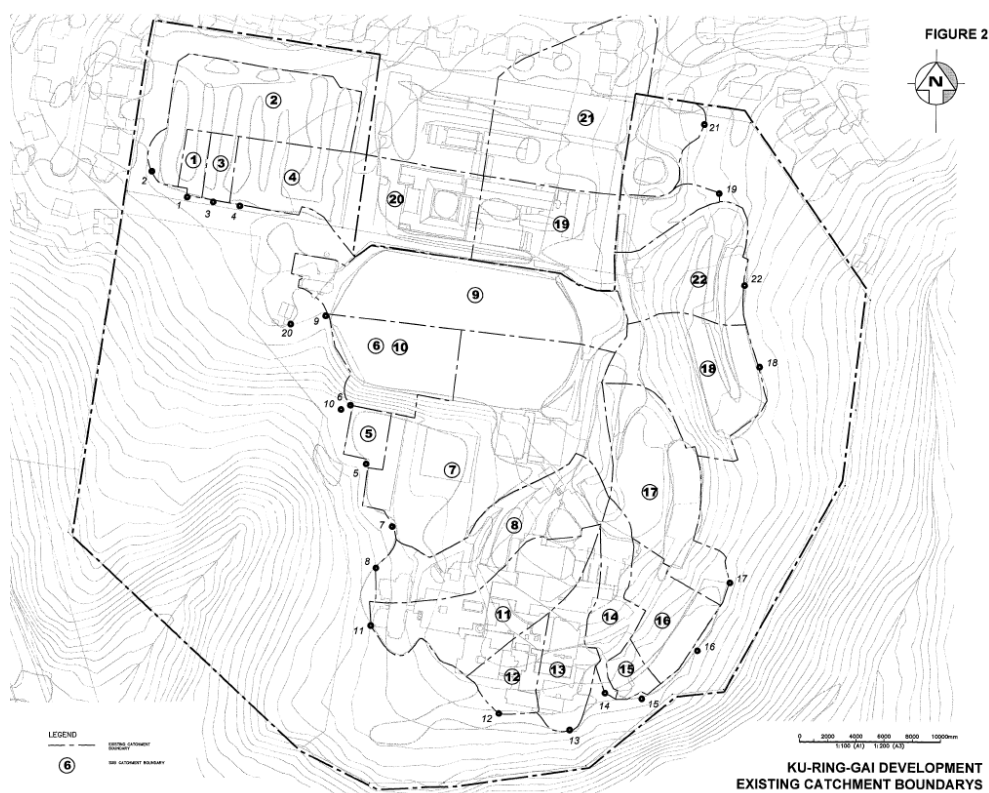
This report produced by EFWF will therefore be provided on the basis of its best judgement as an experienced and qualified engineering consultant, familiar with the construction industry.

1.2. CURRENT SITE LOCATION IMAGE



The site is located within the Ku-ring-gai Council Local Government Area.

1.3. REPORT SITE LOCATION IMAGE



The site sketch was extracted from the report catchment appear to be unchanged, on buildings

1.4. GOVERNING AUTHORITIES

The following Governing Authorities and Regulations shall have jurisdiction over the development:

Authority
Local Council – Ku-ring-gai Council

2. TECHNICAL INFORMATION

2.1. STORMWATER

The existing site is occupied by a number of buildings within the area defined in the Patterson Britton Report; the site has a mix of permeable and impervious area. The catchment data was measured based on the existing aerial imagery.

The stormwater runoff flows into the Blue Gum drainage system.

With increase level of impervious area will result in a far greater level of stormwater runoff. The developer should adopt council's requirements of limiting and abating the post development flows against that of predevelopment flows, with meeting the requirements of water quality discharges.

The vertical (multi storey) development will not have a significant effect on the detention volume, as the impervious footprint remains relatively unchanged.

Council have advised in their drainage DCP guidelines that the post-development stormwater runoff volumes from the development site cannot exceed the existing drainage capacity runoff for the current site conditions. Onsite detention storage is required to reduce the post-development flows to equal to the existing flows.

2.2. CATCHMENT AREAS

The site currently has a number of buildings roadways and concrete pathways. The surrounding ground is natural grass & timbered and the soil is a hard loam / clay that are naturally compacted.

Although some of the site is pervious to infiltration from rainfall, this would only occur in the situation of light rainfall periods. The compacted nature of the ground would suggest that in times of heavy rain there would be very little infiltration into the ground and most of the rainfall runoff would flow towards the Blue Gum Creek.

Any proposal is to construct new buildings over the property or car parks would increase the site impervious area with water being mainly caught by the roadway drainage system and swales. The roof water will be captured and redirected into rain water tank (used for recycling) with the overflow connecting into the internal drainage system controlled discharging to the authority infrastructure.

Council requires that the stormwater discharge for the post development 100 yr from the property to limited to the pre-development discharge for the 20 year ARI storm event.

2.3. RUNOFF POST DEVELOPMENT DISCHARGE

The development will require OSR as per council development requirements. All buildings are to have OSR and Bio-swailes channels and basins, with the storage capacity for a 1% AEP (1 in 100 events). Flow from all devices must not exceed the pre-development discharges as describe within the DCP 47.

2.4. WATER QUALITY

Council's Management policy (Ku-ring-gai Council DCP 2005) requires stormwater quality control on all Stormwater developments to reduce the amount of suspended solids, total phosphorous and total nitrogen from leaving the developed site. The impervious roofed areas rain water will be reused via rainwater tanks.

- Below are the requirements for the treatment train modelling, capturing and treatment of pollutants from Council policy.

Water Management Development Control Plan – DCP 47 Chapter 8 – Water Quality

Pollutant	Baseline Annual Pollutant Load (kg/ha/yr)	Standard to be achieved (kg/ha/yr)
Gross pollutants	500 ²	30% (70% reduction) = 150
Total suspended solids	900	20% (80% reduction) = 180
Total Phosphorus	2	55% (45% reduction) = 1.1
Total Nitrogen	15	55% (45% reduction) = 8.25

Above are the requirements to meet of total nitrogen, phosphorus and solids, of the treatment train cycle.

2.5. OTHER OBSERVATIONS

It should be noted that ARR 1987 was used in Patterson Britton Report with the revised ARR 2016 the hydraulic values have differed and they would have change due to the new calculation techniques. Council should be approached to see if they will still accept the 1987 values.

2.6. CERTIFICATION

I hereby certify that the above concept design is in accordance with normal engineering practice and meets the requirements of the Building Code of Australia, the Environmental Planning and Assessment Regulation, and relevant Australian Standards. In particular the design is in accordance with the following:

AS 3500.3 Stormwater Drainage;

Australian Rainfall and Runoff;

I am an appropriately qualified and competent person in this area and as such can certify that the design and performance of the design systems comply with the above.

This certification shall not be construed as relieving any other party of their responsibilities, liabilities or contractual obligations.

3. INFORMATION SOURCES, ASSUMPTIONS, LIMITATIONS AND LIABILITY

3.1. PROJECT INFORMATION SOURCES

Document / programs	Version
BOM (Bureau of Meteorology	
Drains	2016.15
Music	6.2 build 1.1592

Table 3.1 – Project information sources

3.2. ASSUMPTIONS AND LIMITATIONS

The information contained in this document is provided for the sole use of the recipient and no reliance should be placed on the information by any other person. In the event that the information is disclosed or furnished to any other person, EWWF accepts no liability for any loss or damage incurred by that person whatsoever as a result of using the information.

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Due to the limitations of our access to services in the preparation of this report, users of this report should not rely on any statements or representations contained within, but should undertake further and more detailed investigations to satisfy themselves as to the correctness of any statement or representation contained in this report.

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