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17th August 2012

Goodman Property Services
Level 17
60 Castlereagh Street
Sydney NSW 2000
Attention Adrian Tesoriero

Your Ref:
Our Ref: ATL-L002-Stormwater V02
Direct phone: 02 8920 2466

VIA EMAIL: adrian.tesoriero@goodman.com

Dear Adrian,

Proposed Section 75W Modification to MP 08_0066 - Stormwater Management – Lot 1A Oakdale

References

1. *Proposed Modified Architectural Plans for Lot 1a, PA1 01-7 and 11-12, All Rev F*
2. *GHD Oakdale WSUD Strategy report - December 2007*
3. *GHD Oakdale Concept Plan – Water Sensitive Urban Design Strategy Dated September 2010*
4. *GHD Oakdale Central (East) – Soil and Water Management Plan Dated September 2010.*

Background

AT&L have been engaged by Goodman Property Services to review the proposed S75W modification plans (Ref 1) in relation to the stormwater management and sedimentation erosion measures to be implemented on the above project.

As part of the Concept and Project Approvals obtained for the site to date, GHD prepared a precinct wide stormwater management strategy which forms the basis of the stormwater management design proposed for the Oakdale Central site. (Ref 2 and 3)

In addition to this report, GHD also prepared a precinct wide Soil and Water management plan for the proposed site. (Ref 3)

GHD Report Review

AT&L have reviewed all of the above referenced GHD Reports, as submitted within the Original and Mod 1 Project Applications, and we are of the opinion that the proposed Lot 1A modifications (Ref 1) are consistent with the On Site Detention and Water Sensitive Urban Design (WSUD) strategies and principals as originally outlined by GHD. This is for reasons including:

- the proposed modified lot 1A site area remains unchanged
- the proposed lot 1A warehouse roof area remains unchanged
- the no of car parking spaces is reduced from 120 of to 115
- the proposed modified lot 1A site coverage (and hence the sites overall stormwater runoff permeability) is reduced from 51% to 49%.

The On Site Detention (OSD) and Water Sensitive Urban Design (WSUD) strategies proposed by GHD, and our comment on how this relates to the proposed lot 1A modifications, is summarised as follows;

Summary of Site Stormwater Quantity Principals

Stormwater detention will be provided for each building via On Site Detention (OSD) although the total on-lot volume may be offset by providing capacity within the site based bio-basin which is yet to be constructed, as long as, the overall precinct volume is maintained at the prescribed rates below.

From the preliminary hydrologic modelling prepared as part of the Oakdale WSUD Strategy report (Ref 2) it was found a volume of 250m^3/ha is required for stormwater detention with a permissible site discharge (PSD) of 140L/s/ha for the 100-year Average Recurrence Interval (ARI) event. This configuration has been adopted for Site 2A which has already been completed and is operational.

The Stormwater Management Strategy for the lot 1A DHL project, as proposed to be modified, has been designed in a manner that is consistent with the overall above referenced GHD Oakdale Estate Stormwater Reports and is not proposed to be amended by this application.

Table 1 Approximate Detention Parameters (100-year ARI Event)

Location	OSD (m^3)	PSD (l/s)
Lot 1A	829	465

Summary of Site Stormwater Quality Principals

Stormwater quality treatment for Oakdale Cental (East), otherwise known as Water Sensitive Urban Design (WSUD), will ultimately be provided by a proposed bio- retention basin and two bi-swales along the northern and southern perimeters of the precinct. The bioretention basin is proposed to be built west of lot 1C and this once built will wholly accommodate the water quality needs of the majority of the estate road as well as lots 1B,1C,2A,and 2B. The basin and bio-swales have been sized to meet the objectives outlined in the WSUD Strategy Report for the ultimate configuration, that is, the entire Central (East) Precinct. The stormwater quality needs of Building 1A will be wholly serviced by the Northern bio-swale which has already been constructed as part of the first stages of development. The bio-retention basin will be constructed as further stages of development proceed.

The WSUD strategy for Central (East) Precinct which includes Buildings 1A and 2A has been modelled by GHD using MUSIC software. The results of the analysis are summarised in Table 2

Table 2 Water Quality Modelling Results

Pollutant	Sources	Residual Load	MUSIC model Pollution Reduction Results	Required Pollution Reduction
Total Suspended Solids (kg/yr)	40,600	5070	87.5 %	85 %
Total Phosphorus (kg/yr)	66.3	20.3	69.3%	65 %
Total Nitrogen (kg/yr)	494	270	45.4 %	45 %
Gross Pollutants (kg/yr)	7,240	0 (approx)	99 % (approx)	90 %

Overall Summary

It is our opinion that the above Stormwater Quantity and Quality strategies and principals outlined within the above referenced GHD Project Approved reports are consistent with the proposed modification for Building 1A.

Should you have any questions, please don't hesitate to contact the undersigned.

Yours sincerely

Anthony McLandsborough
Director – Civil Engineering
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