

WATER CYCLE MANAGEMENT STUDY

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Goulburn**

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1. Site Location

The site No.7 Rex St Goulburn is 0.405 Ha in area. The site is very flat, but generally slopes to the north away from Rex St. The lot is within an existing residential area. There are no stormwater treatment measures provided.



Figure1— Aerial View of 7 Rex St Goulburn from 'Explorer' NSW spatial services



Figure 2 – Existing site conditions



Figure 3 – Existing site conditions



Figure 4 – Existing site conditions



Figure 5 – Post development stormwater discharges into the existing stormwater main

2. Proposed Developments

SITE CHARACTERISTICS	
Site Location:	7 Rex St Goulburn
Drinking Water Catchment:	8 - Mulwaree River
Rainfall & PET Zone:	1
Affected Catchment Area:	0.405 Ha
Pre Development Site gradient:	1-2%
Post Development Site Gradient:	1-2%
Soil Landscape:	Clay Loam
Existing watercourses through the site?	No
Overland flow draining onto the site?	No
Soils suitable for infiltration?	Yes
Site sewerred?	Yes
Pre Development Details	
Pre development characteristics:	The existing site has a single residence with gravel access driveway from Rex St.
Post Development Details	
Development characteristics:	A Community housing development is proposed with 6 residential units with a common meeting & office area

3. Catchment Details

The site slopes from the south to the north & away from Rex St. Post development stormwater will discharge to the council stormwater system through an existing stormwater pit.

Catchment areas are based on flow paths to discharge point. Pre development as single treatment train & post development flows are through two bio retention basins.

Land use / Surface area	Total Area (Ha)		
Pre Development			
Roof Areas	0.034		
Gravel Access Driveway	0.026		
Overland flow	0.345		
Total	0.405		
Post Development	Total	Eastern Bioretention	Western Bioretention
Roof	0.118	0.038	0.08
Pavement	0.056	0.033	0.023
Overland flow treated	0.104	0.052	0.052
Overland flow untreated	0.127		
Total	0.405		

4. MUSIC Parameters & Additional Water Quality Issues

The site is located in the Mulwaree River Catchment & so rainfall data for Zone 1 was used for the meteorological template.

Default rainfall threshold values from Table 4.3 of Using MUSIC in Sydney's Drinking Water Catchment were used for Roofs, sealed roads & unsealed roads.

The dominant soil type would be described as Clay loam & the corresponding data was used for pervious area parameters from Table 4.4 of Using MUSIC in Sydney's Drinking Water Catchment.

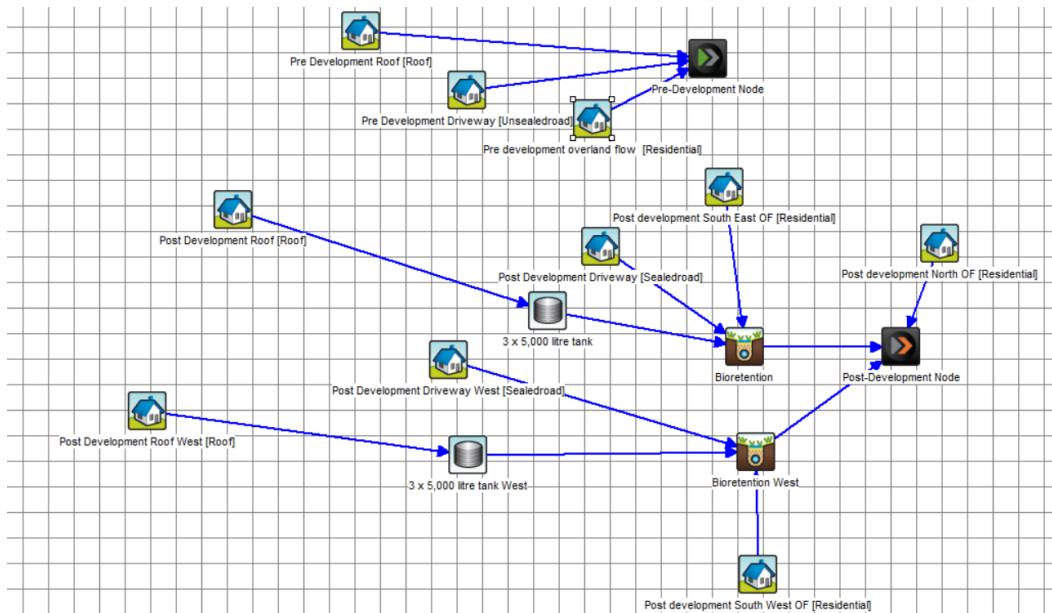
Stormwater pollutant parameters from Table 4.6 & 4.7 of Using MUSIC in Sydney's Drinking Water Catchment. were used for roofwater run off & sealed roads run off.

5. Proposed Treatment

This section should be read in conjunction with the attached drawings 01-36232 issue A dated 18th April 2025

- Roofwater from each of the residential units on the eastern boundary will be piped to 3 x 5,000 litre water tanks, with harvested water to be re used for toilet flushing , external hose cocks & irrigation purposes.
- Overflow from the rainwater tanks will be piped through charged lines to a bioretention basin with 5 sq.m. of filter material 200mm deep & having an extended detention surface area 80 sq.m. also 200 mm in depth.
- Roofwater from the remaining units & common area building will be piped to 4 x 5,000 litre water tanks, with harvested water to be re used for toilet flushing , external hose cocks & irrigation purposes.
- Overflow from the rainwater tanks will be piped through charged lines to a bioretention basin with 5 sq.m. of filter material 200mm deep & having an extended detention surface area 100 sq.m. also 200 mm in depth.
- Overland flows from the driveway & parking will be graded to the east & west into the bioretention basins as above
- The discharge from the bio retention basins will be piped to council's stormwater system.

6. Pre & Post Development Comparisons



Results post development after modelling treatment procedures;

	Pre Development	Post Development	% reduction
Flow (ML/yr)	0.671	0.861	
Total Suspended Solids (kg/yr)	150	16.9	88
Total Phosphorus (kg/yr)	0.163	0.079	52
Total Nitrogen (kg/yr)	1.32	0.795	40
Gross Pollutants (kg/yr)	14.2	1.24	

The above results would suggest that the development with the proposed treatment would achieve a beneficial effect on the quality of water discharged from the site.

7. Cumulative Frequency Graphs

