WATER CYCLE MANAGEMENT STUDY

New Industrial Sheds

27 Ross St

Goulburn

12th December 2024

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1. Site Location

The site No. 27 Ross St Goulburn is 0.287Ha in area. The site slopes from the north to the south east & generally towards Ross St. The lot is within an industrial area. there are no stormwater treatment measures provided.

Figure1– Aerial View of 27 Ross St from Goulburn Mulwaree Council

Figure 2 – Existing site conditions

Figure 3 – Existing site conditions

Figure 4 – Existing site, gravel track through the Lot

Figure 5 – Discharge point to kerb

2. Proposed Developments

SITE CHARACTERISTICS	
Site Location:	27 Ross St Goulburn
Drinking Water Catchment:	8 - Mulwaree River
Rainfall & PET Zone:	1
Affected Catchment Area:	0.287 Ha
Pre Development Site gradient:	1-6%
Post Development Site Gradient:	1-8%
Soil Landscape:	Silty Clay
Existing watercourses through the site?	No
Overland flow draining onto the site?	No
Soils suitable for infiltration?	Yes
Site sewered?	Yes
Pre Development Details	
Pre development characteristics:	The site is is located within an industrial area. it has been used for vehicle access to adjacent lots & to a storage container, the site has various types of building equipment & materials stockpiled.
Post Development Details	
Development characteristics:	Industrial sheds are to be built on the site. 36% of the developed site will be roof area & 52% pavement

3. Catchment Details

The site slopes from the north to the south & south east, towards Ross St. Post development stormwater will discharge to the kerb.

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

Land use / Surface area		Total Area (Ha)			
Pre Development					
Overland Flow		0.287			
Total		0.287			
Post Development	Total	Bioretention West	Bioretention Central East	Bioretention South East	Oceanguard South
Roof Areas	0.095	0.039	0.056		
Pavement	0.166	0.090	0.021	0.047	0.008
Overland flow	0.026	.007	0.009	0.005	0.005
Total	0.287				

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 Silty Clay & the corresponding data was used for pervious area parameters from Table 4.4 of Using MUSIC in Sydney's Drinking Water Catchment.

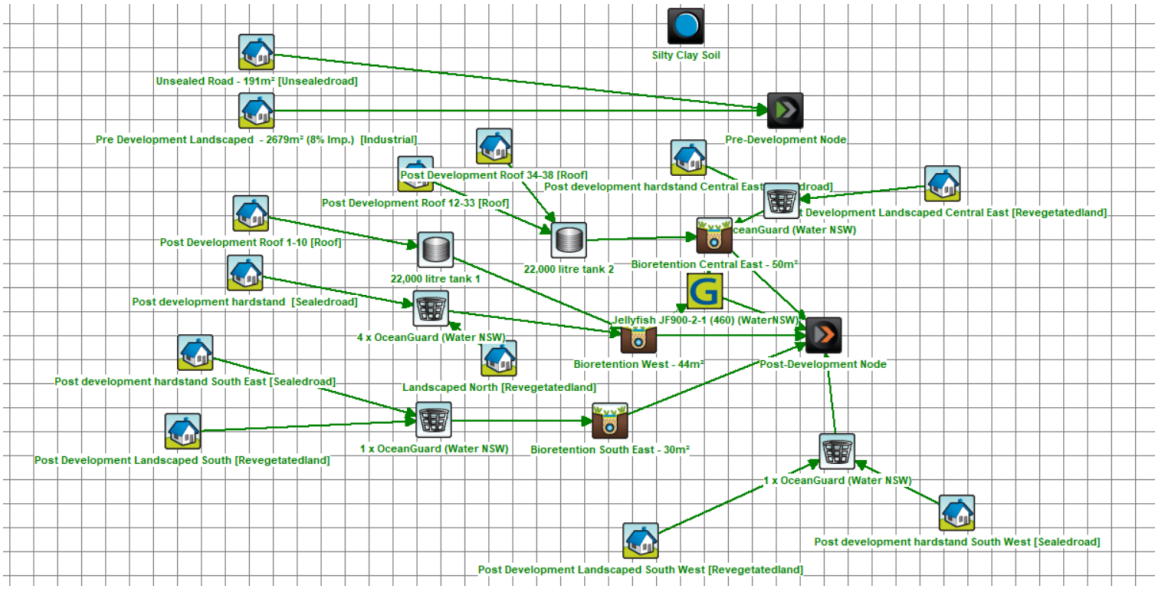
Stormwater pollutant parameters from Table 4.6 & 4.7 of Using MUSIC in Sydney's Drinking Water Catchment. were used for roofwater run off & sealed roads run off.

5. Proposed Treatment

This section should be read in conjunction with the attached drawing 01-36076 issue B dated 12th December 2024

- 100% of roofwater will be piped to 4 x 22,000 litre water tanks, with harvested water to be re used for external hose cocks & irrigation purposes including a 125 sq.m. of bioretention basin area.
- Overflow from the rainwater tanks for units 1-10 will be piped directly to a bioretention basin, with 40 sq.m. of filter material 400mm deep & 44 sq.m. of extended detention 200mm deep.
- Flows from the northern pavement & parking will be piped to the bioretention as above
- Overflow from the rainwater tanks for units 12-38 will be piped directly to a bioretention basin, with 40 sq.m. of filter material 400mm deep & 44 sq.m. of extended detention 200mm deep.
- Outlets from the bioretention basins as above will be further treated through a 'Jellyfish JF900'
- Overland flows from the landscaped areas, eastern pavement & parking will be piped to the bioretention as above
- Overland flows from the central & southern pavement & parking will be piped or graded as overland flow to a bioretention basin with 25 sq.m. of filter material 400mm deep & 30 sq.m. of extended detention 200mm deep.
- Overland flows entering each of the Bioretention basins will be through surface inlet pits fitted with 'Ocean Guard' filter baskets
- Overland flows from a small portion of the southern pavement & landscaped area will drain from the site through a pit with 'Oceanguard' filter basket
- The discharge from the site will be piped to the kerb in Ross St.

6. Pre & Post Development Comparisons

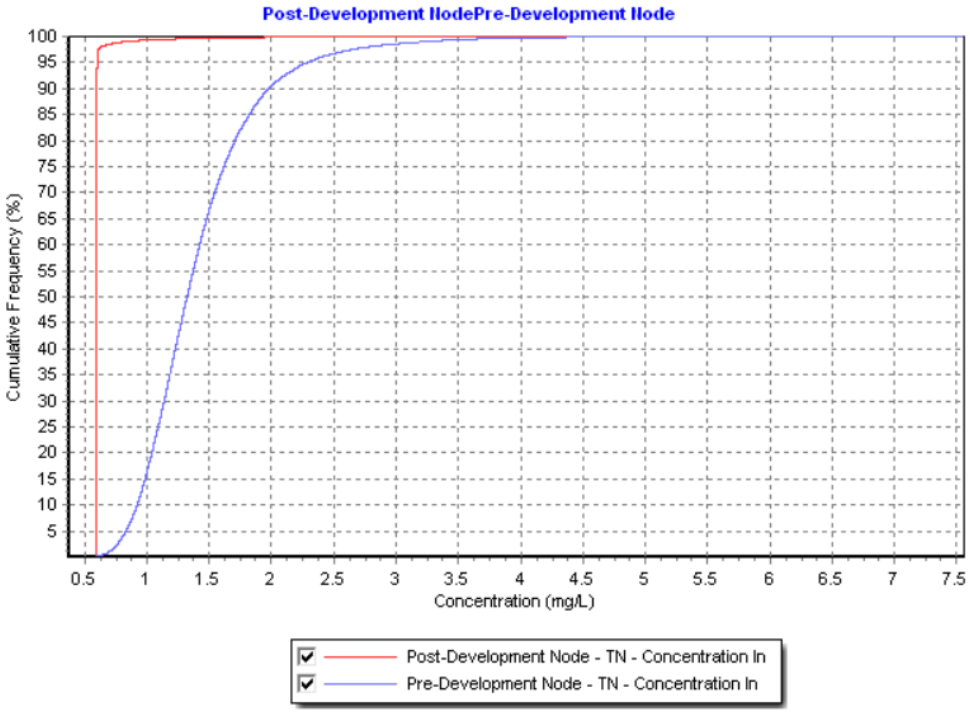


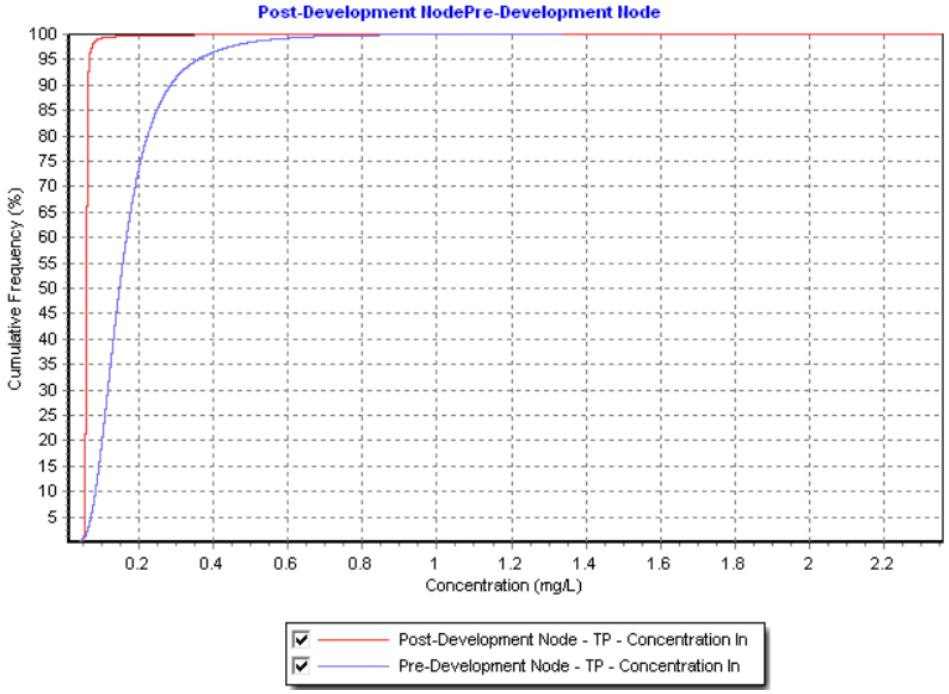
Results post development after modelling treatment procedures;

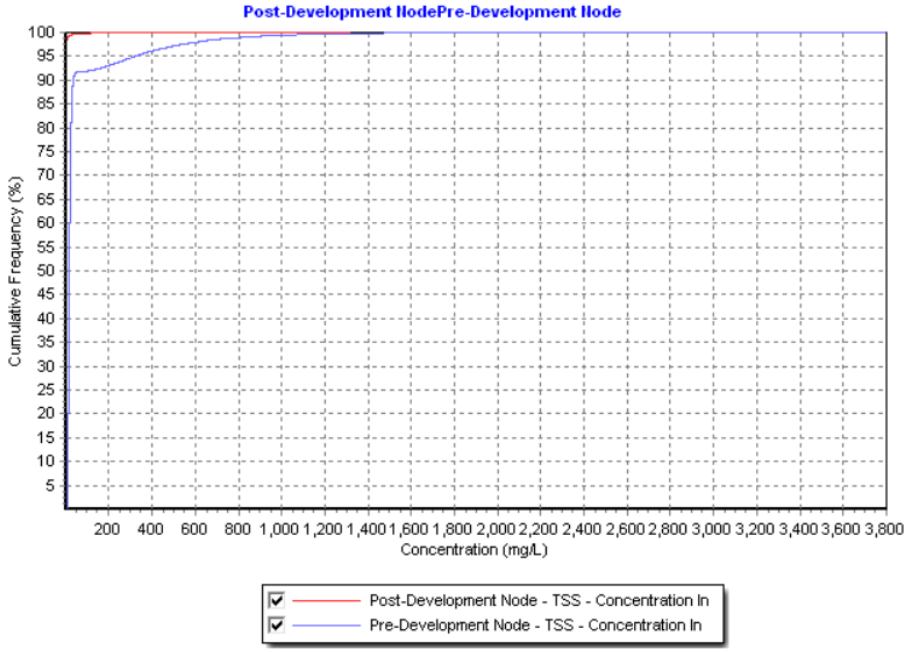
	Pre Development	Post Development	% reduction
Flow (ML/yr)	0.489	1.35	
Total Suspended Solids (kg/yr)	169	11.2	94
Total Phosphorus (kg/yr)	0.163	0.103	36
Total Nitrogen (kg/yr)	1.07	0.952	11
Gross Pollutants (kg/yr)	8.18	0.0001	

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




Post-Development NodePre-Development Node
Cumulative Frequency (%)
100
95
90
85
80
75
70
65
60
55
50
45
40
35
30
25
20
15
10
5
0.2
0.4
0.6
0.8
1
1.2
1.4
1.6
1.8
2
2.2
Concentration (mg/L)
Post-Development Node - TP - Concentration In
Pre-Development Node - TP - Concentration In


Post-Development NodePre-Development Node
Cumulative Frequency (%)
100
95
90
85
80
75
70
65
60
55
50
45
40
35
30
25
20
15
10
5
200
400
600
800
1,000
1,200
1,400
1,600
1,800
2,000
2,200
2,400
2,600
2,800
3,000
3,200
3,400
3,600
3,800
Concentration (mg/L)
Post-Development Node - TSS - Concentration In
Pre-Development Node - TSS - Concentration In