WATER CYCLE MANAGEMENT STUDY

Yarrabee Property Group Pty Ltd

61-63 Bradley St

Goulburn

2nd November 2024

ADAMS & ASOCIATES – HYDRAULICS

Phone : 0414 873 354

Email: rob@adamshydraulics.com.au

Po Box 2094
Malua Bay
NSW 2536

Table of Contents

1. Site Location

The site No. 61 & 63 Bradley St Goulburn is 0.1270 Ha in area. The site is very flat, but generally slopes to the south towards Bradley St. The lot is within an existing residential area. There are no stormwater treatment measures provided.

Figure1– Aerial View of 61 & 63 Bradley St Goulburn from maps.six.nsw.gov.au.

Figure 2 – Existing site conditions

Figure 3 – Existing access from North St

Figure 4 – Existing site conditions

Figure 5 – Discharge point into the existing stormwater main

2. Proposed Developments

SITE CHARACTERISTICS	
Site Location:	61 & 63 Bradley St Goulburn
Drinking Water Catchment:	8 - Mulwaree River
Rainfall & PET Zone:	1
Affected Catchment Area:	0.127 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 sewered?	Yes
Pre Development Details	
Pre development characteristics:	The site consists of two existing residences with access driveway from North st. A portion of the lot in the North East corner is being used as a storage area for a neighbouring business.
Post Development Details	
Development characteristics:	A Co Living development is proposed for the site consisting of 30 units. The ground floor is to incorporate access & parking area. Total impervious area will increase to 1103 sq.m.

3. Catchment Details

The site slopes from the north to the south & towards Bradley 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 a single bio retention basin.

Land use / Surface area	Total Area (Ha)
Pre Development	
Roof Areas	0.042
Gravel Access Driveway	0.016
Commercial Area	0.028
Overland Flow	0.041
Total	0.127
Post Development	Total
Roof	0.062
Rooftop Terrace	0.026
Pavement	0.022
Overland flow untreated	0.017
Total	0.127

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.

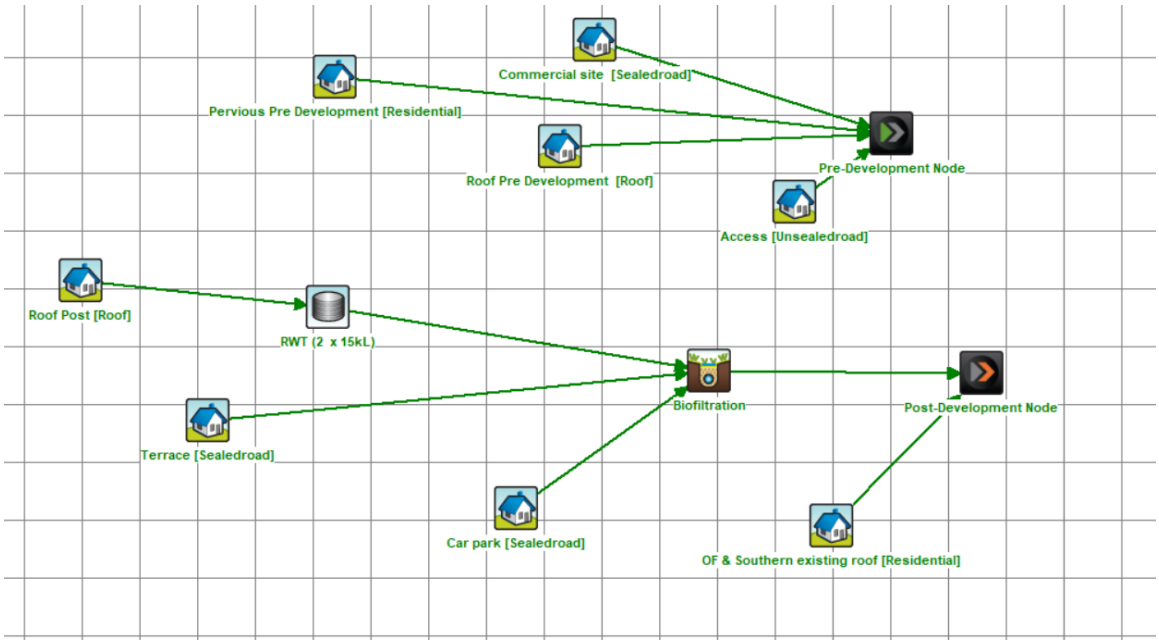
Stormwater pollutant parameters from Table 4.6 & 4.7 of Using MUSIC in Sydney's Drinking Water Catchment. were used for roofwater run off & sealed roads run off.

5. Proposed Treatment

This section should be read in conjunction with the attached drawings 01-36215 issue A dated 4th November 2024

- Roofwater from the residential building will be piped to 2 x 10,000 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 directly to a bio retention basin, with 10 sq.m. of filter material 300mm deep & 48 sq.m. of extended detention 50mm deep.
- Overland flows from the driveway & parking will be graded to the bio retention basin as above.
- The discharge from the bio retention basin will be piped to council's stormwater system.

6. Pre & Post Development Comparisons

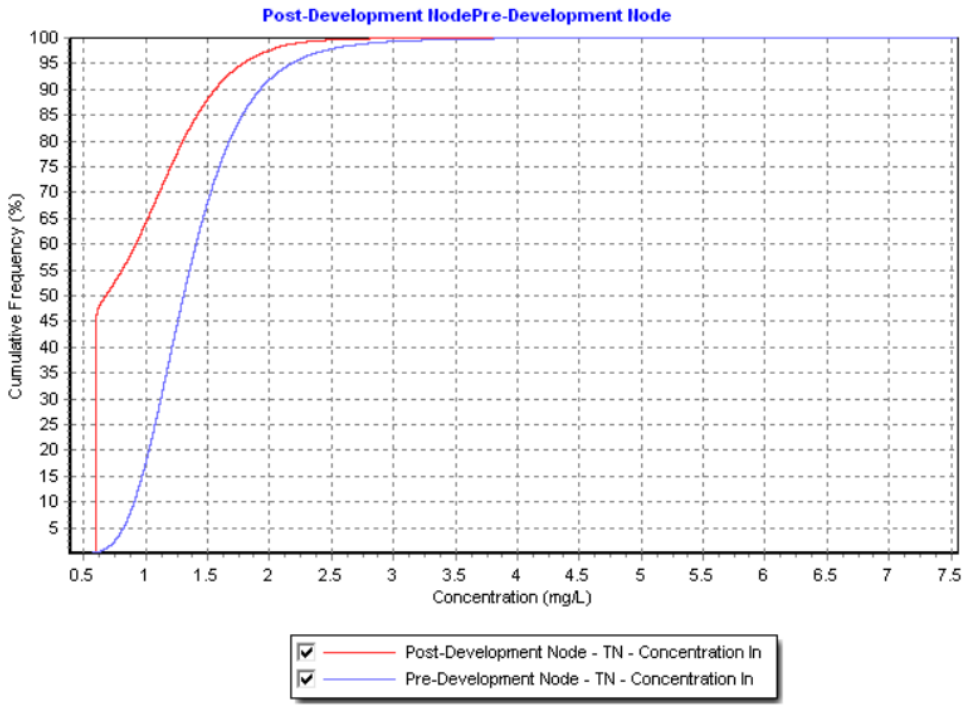


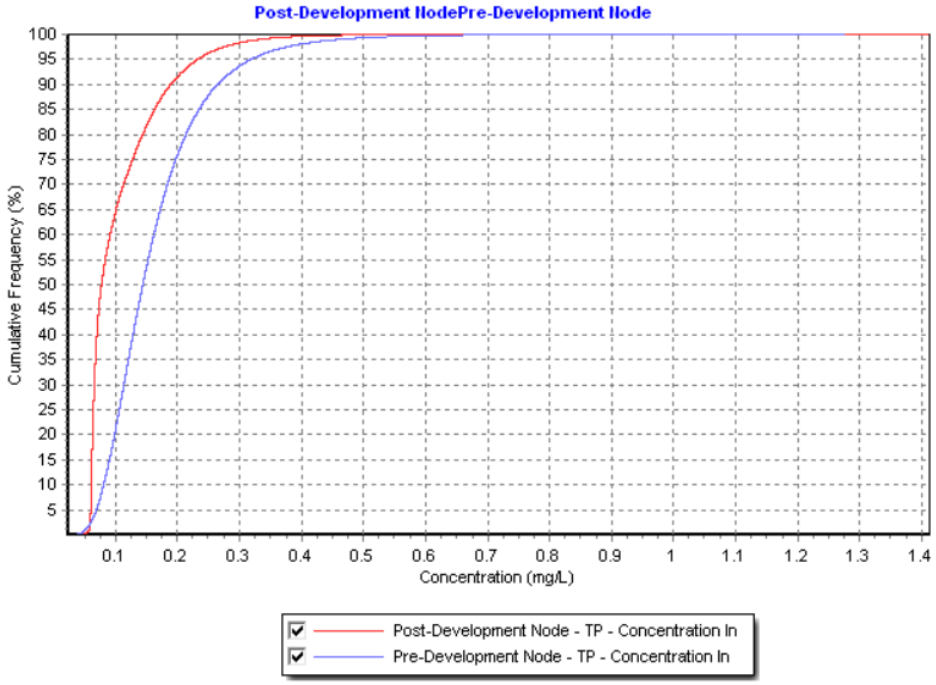
Results post development after modelling treatment procedures;

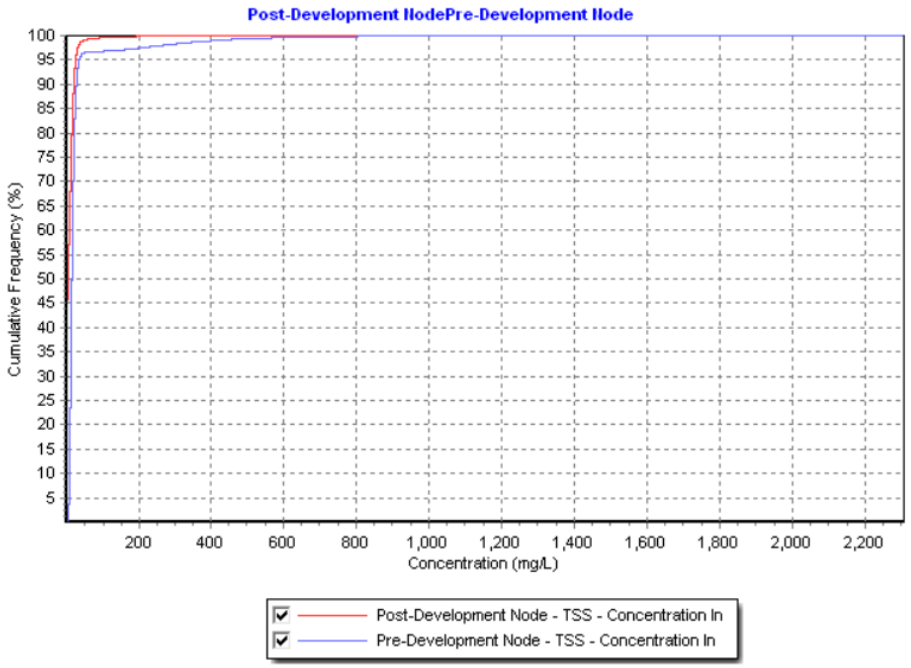
	Pre Development	Post Development	% reduction
Flow (ML/yr)	0.575	0.499	
Total Suspended Solids (kg/yr)	186	17.1	90
Total Phosphorus (kg/yr)	0.201	0.058	71
Total Nitrogen (kg/yr)	1.31	0.543	58
Gross Pollutants (kg/yr)	17.5	3.08	

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
0.1
0.2
0.3
0.4
0.5
0.6
0.7
0.8
0.9
1
1.1
1.2
1.3
1.4
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
Concentration (mg/L)
Post-Development Node - TSS - Concentration In
Pre-Development Node - TSS - Concentration In