

Stormwater On-site Water Quality Treatment Memo

Project: Croatia Avenue, Edmondson Park

Project No: 47429

To: Liverpool City Council

Date: 02 July 2021

From: Eliza Persson / Peter Munzel

RE: Stormwater On-site Water Quality Treatment Memo

This memo has been prepared in response to Liverpool City Council RFI for the development application DA-33/2021 dated 26 April, 2021. This development is a mixed-use development located at Croatia Avenue, Edmondson Park, NSW.

Specifically, this memo addresses item 9b of the Development Application RFI document, which is the interim water quality treatment facilities proposed for the buildings C, D, G and H of the development only until bioretention basins D13 and D14 are constructed and operational.

It should be noted that buildings A, B, E and F will be developed once council works realignment of Maxwell's creek is complete and so will not rely on the interim water quality solution outlined in this memo.

1. Requirements

There is a requirement that development applications provide for the achievement of the best practice water quality performance objectives set out in section 6.5 of the Liverpool Development Control Plan 2008 Part 1. This requires the use of stormwater treatment measures that improve the quality of water discharged to waterways. Pollution reduction targets are outlined in Table 1 below.

Pollutant	Pollution Reduction Target
Total Suspended Solids (TSS)	85%
Total Phosphorous (TP)	65%
Total Nitrogen (TN)	45%
Total Gross Pollutants >5mm (GP)	90%

Table 1 Pollution Reduction Targets

A stormwater quality assessment for the proposed development was undertaken by using the pollutant export model software MUSIC. The purpose of this memorandum is to demonstrate to Liverpool City Council that the proposed strategy satisfies the controls outlined in table 1 above.

2. Reference Documents

This memorandum has been developed in accordance with the following documents:

- Liverpool Development Control Plan 2008 Part 1, Liverpool City Council
- Best Practice Guidelines for Greener Subdivisions – Western Sydney
- Water Sensitive Urban Design Guideline, NSW Government Transport, Roads and Maritime Services

3. Catchment Analysis

Buildings C, D, G and H form the first stage of the proposed development and have a total stormwater catchment area of approximately 11,915.7m². It is proposed that the runoff from the roof, trafficable podium and road reserves of these buildings will be discharged to Maxwell Creek (LPD) via a Gross Pollutant Trap (GPT) and a 145m² bioretention basin, as interim treatment measures.

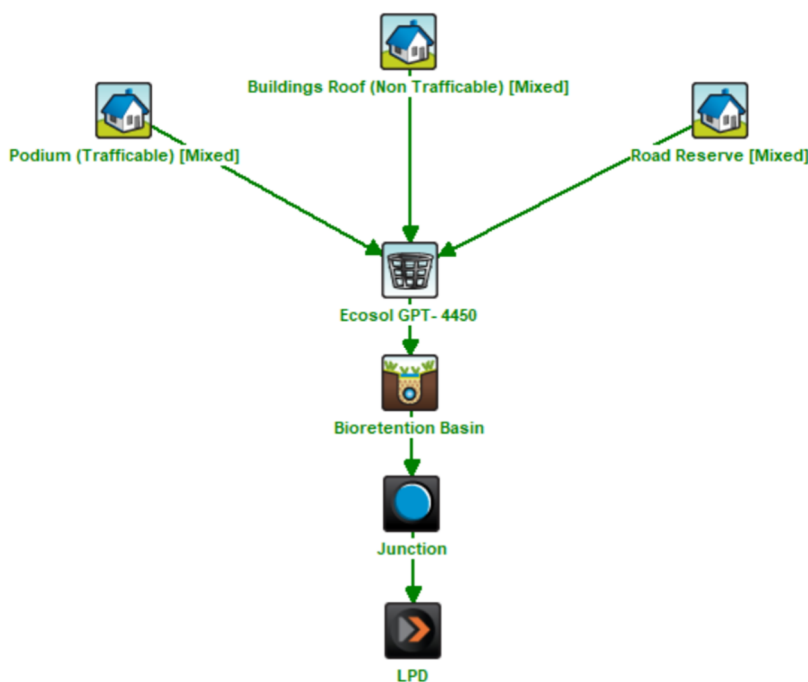
Catchment analysis for each development is summarised in table 2 below. Refer to Appendix A for Catchment Plan and indicative locations of biofiltration basin and GPT.

Area Description	Catchment Area	Description
Roof	5,292.3 m ²	Discharge to LPD via GPT and 145m ² Biofiltration Basin
Trafficable Podium	3950.3 m ²	Discharge to LPD via GPT and 145m ² Biofiltration Basin
Road Reserve	2673.1 m ²	Discharge to LPD via GPT and 145m ² Biofiltration Basin
Total	11,915.7m²	

Table 2 Proposed Development Catchment Analysis

4. Stormwater Quality Modelling

Modelling of the pollutant load for the Croatia Avenue development has been carried out using MUSIC to confirm the proposed treatment measures satisfy the average pollutant load reduction requirements for the site. The stormwater treatment train schematic for each catchment is shown below.



4.1 MUSIC Modelling Results

The results of the MUSIC model are summarised in table 3 below.

Output data from music software					
	Sources	Residual load	Reduction (%)	Target (%)	Target achieved
Flow (ml/yr)	15.5	14.9	3.7	-	-
Total suspended solids (kg/yr)	3040	201	93.4	85.0	Yes
Total phosphorus (kg/yr)	6.36	2.22	65.1	65.0	Yes
Total nitrogen (kg/yr)	44.6	17.6	60.6	45.0	Yes
Gross pollutants (kg/yr)	378	0	100	90.0	Yes

Table 3 – Treatment Train Efficiencies

5. Conclusion

This Stormwater On-site Water Quality Treatment Memo has been prepared for the interim solution of buildings C, D G and H of the proposed development at Croatia Avenue, Edmondson Park.

The stormwater Water Sensitive Urban Design (WSUD) interim strategy for this site has been developed to minimise the impact that the development has on the external environment. This memorandum has demonstrated that the strategy for the proposed development meets the key objectives as per Liverpool City Council requirements and improves the stormwater runoff quality from the site.

This has been completed by incorporating WSUD into the proposed stormwater drainage system for the reduction of Total Suspended Solids, Total Phosphorous, Total Nitrogen and Gross Pollutants, thus exceeding the required best practice water quality performance objectives set out by the Liverpool Development Control Plan 2008 Part 1.

As such from a stormwater management perspective, we believe the development complies with the Liverpool City Council requirements and should be endorsed for approval.

Please do not hesitate to contact me if you have any further questions or queries regarding the response above.

Yours sincerely

Stantec Australia Pty Ltd



Eliza Persson

Appendix A – Site Catchment and Treatment Plan

