



CONCEPT STORMWATER MANAGEMENT PLAN

ST MARY'S COLLEGE - LEARNING CENTRE

REVISION 1.1

30 JULY 2026

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1. INTRODUCTION

This Concept Stormwater Management Plan has been requested by the project manager, Aspect Architects & Project Managers, to support a development application in relation to the proposed development at St Mary's College, Toowoomba.

It is proposed to construct a multi-storey learning centre, extending onto an educational establishment. The building concept design consists of four levels with an amphitheatre, six General Learning Areas (GLA) and a library. This report considers the potential effects of the proposed development from a civil engineering stormwater perspective and any recommended outcomes to ensure the development meets the requirements of the planning scheme.

1.1. SITE LOCATION

The site in question is located at St Mary's College, 129 West Street, Toowoomba on Lot 3 on RP905944. The below site map shows the location and existing land use. The site is currently zoned for Community Facilities with the proposed development on the corner of West and Hill Streets.



Figure 1 - Proposed Development Location and Boundary

1.2. PLANNING SCHEME REQUIREMENTS

This report has been prepared to consider the requirements of the *Toowoomba Regional Council Planning Scheme v28*. We have considered the overall management of stormwater being discharged from the site and potential issues that may arise as a result of the proposed changes to the developed area.

2. STORMWATER MANAGEMENT

2.1. EXISTING SITE DESCRIPTION

The proposed development area currently consists of a single-story library with landscaped and hardstand areas. At present, the landscaped area and western hardstand discharge onto Hill Street via overland flow and kerb adaptors. The existing hardstand area on the northern side discharges to West Street via overland flow. We note that there is currently upstream overland flow from the existing courtyard that bypasses the existing library and discharges as overland flow to a grated drain and kerb adaptor system on the entrance off West Street. The existing development area doesn't include any existing stormwater treatment or detention mechanisms.

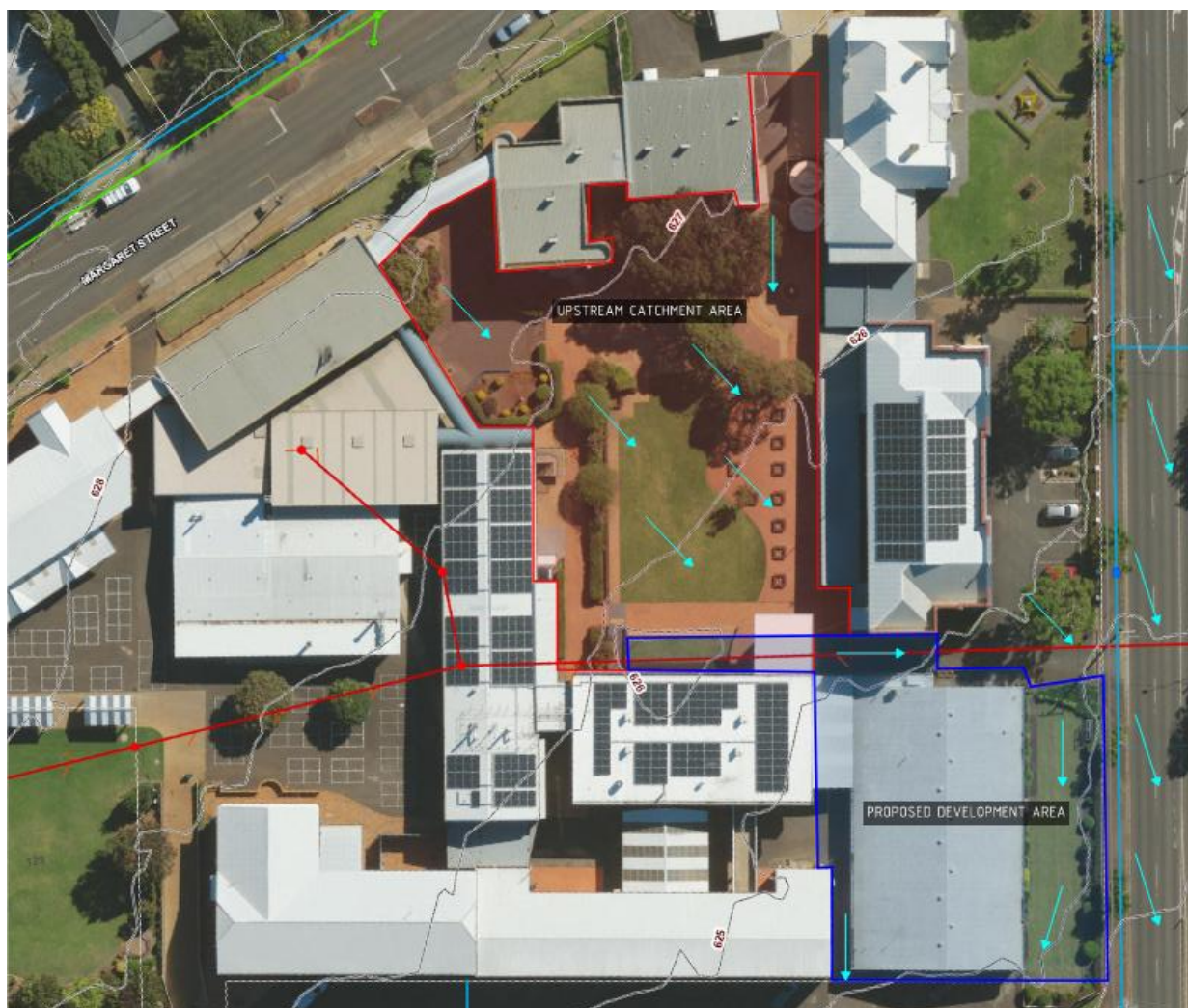


Figure 2 - Existing Site Stormwater Flows

2.2. PROPOSED DEVELOPMENT DESCRIPTION

The proposed multi-storey education facility and associated site alterations will result in a marginal increase in impervious area. Roof runoff will be collected by the proposed stormwater drainage system and discharged to Hill Street and West Street via kerb adaptors.

The proposed development will not alter the existing upstream overland flow path around the development area. Accordingly, the development is expected to have a negligible impact on upstream runoff. Upstream flows will be captured where required and conveyed to their existing lawful points of discharge.

The total site impervious area will increase by approximately 1.5%. Consequently, the proposed development is expected to result in a negligible increase in stormwater discharge for events ranging from 0.5 EY to 1% AEP. The proposed development conditions have been incorporated into the DRAINS model.

Stormwater quality treatment will be provided through FlowGuard drains and a FlowFilter located within the landscaped area. Treated stormwater will subsequently discharge to the kerb via kerb adaptors.

A copy of the drawing showing the concept development layout is attached at *Appendix A – Concept Development Civil Engineering Plans*.

2.3. STORMWATER ANALYSIS

2.3.1. LAWFUL POINT OF DISCHARGE

QUDM provides guidance on the location of discharge for stormwater (QUDM Sec 3.9.1) and provides a three-step process for determining a 'lawful point of discharge'. The first step assesses whether, as a result of the development, the stormwater discharge will substantially damage a third party. If the answer is 'no', then no further steps are required to obtain a lawful point of discharge.

The site currently discharges to the Hill and West Street frontage via overland flow and kerb adaptors. As the landform will not significantly change as part of this development, this outlet point will not change as a result of the proposed development thus the Hill and West Street Kerbs are considered the lawful point of discharge for the proposed development.

2.3.2. HYDRAULIC ASSESSMENT

Table 1 below outlines the inputs into the stormwater model for the catchment runoff hydraulic assessment. The rational method was used to determine peak flow for pre and post development across six events, from 0.5EY to 1% A.E.P. A 10-minute Time of Concentration for the pervious areas based on Table 4.6.2 of QUDM was adopted.

Impervious areas were set at 5-minute Time of Concentration in all cases. Existing site contours and service locations have been provided by Minstaff Survey, Drawing Number M6638 3000 001, dated 01/07/2026.

Table 1 – Area Inputs for Catchment Analysis

	St Mary's College – Learning Centre Catchment (m ²)	
	Existing	Proposed
Grass / Landscaping	1281	1206
Impervious Pavement/Driveway	1973	2118
Roof/Buildings	948	878
TOTAL Area (A)	4,202	4,202
Impervious Area – Tc (minutes)	5	5
Pervious Area –Tc (minutes)	10	10

In order to determine the impacts of the development, the pre and post development catchments were analysed in the extended rational method in *Watercom Drains* software. Rainfall IFD data was sourced from the BOM website (www.bom.gov.au) and used to calculate peak discharge for storm duration and intensity. Total runoff was calculated for both instances to enable a comparison between pre and post development peak flow rates.

The results of the Drains software analysis are shown in Table 2 with combined peak flow hydrographs comparing pre and post development flows at the West and Hill Street kerbs shown in Figure 1Figure 3.

Table 2 – Peak Design Runoff Flows (Q – m³/sec) – Site overall discharge to West and Hill Street Kerbs

	Design Storm					
	0.5 EY Peak Q (m ³ /s)	20% A.E.P Peak Q (m ³ /s)	10% A.E.P Peak Q (m ³ /s)	5% A.E.P Peak Q (m ³ /s)	2% A.E.P Peak Q (m ³ /s)	1% A.E.P Peak Q (m ³ /s)
Pre - Development	0.09	0.13	0.16	0.19	0.23	0.26
Post - Development	0.10	0.13	0.17	0.19	0.23	0.26
% Change	1.8%	2.0%	2.2%	2.2%	2.1%	1.9%

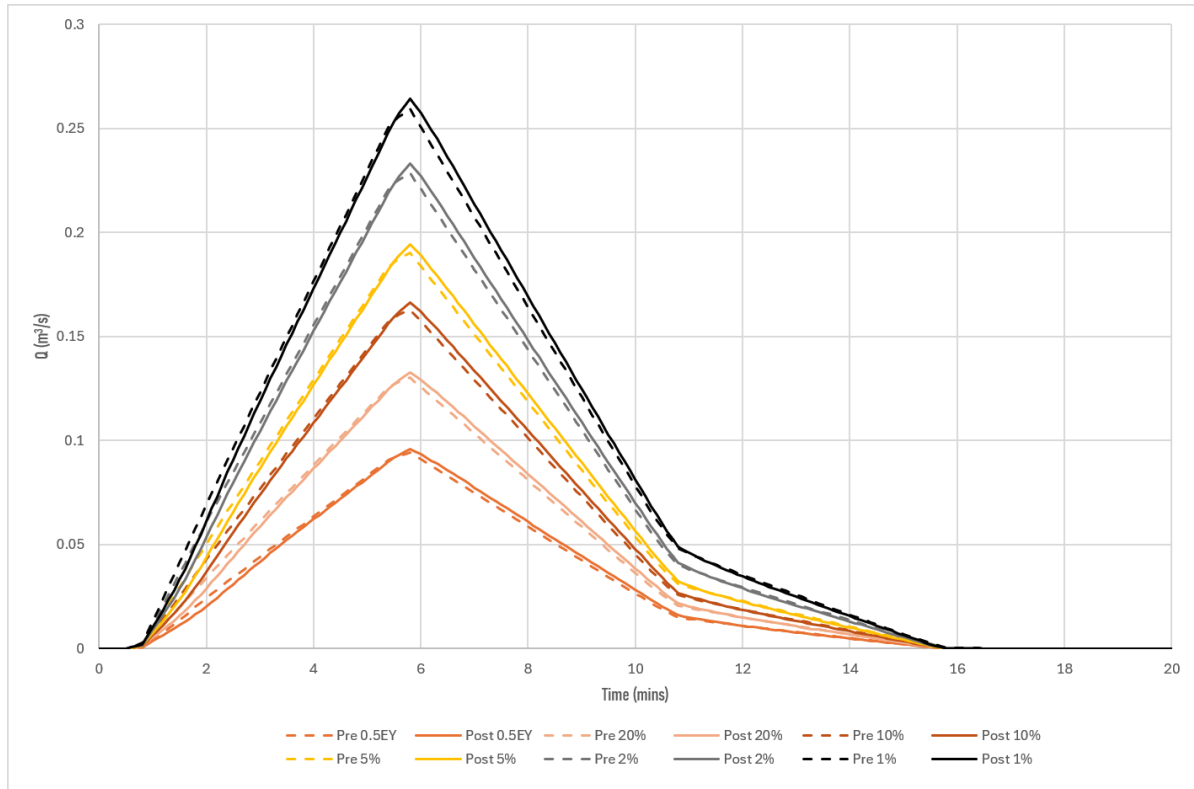


Figure 3 - Comparison Flow Hydrographs for Site SW Runoff

Overall, the proposed development will result in a negligible increase in peak discharge from the total site catchment, with the increase remaining below 5 L/s due to the marginal increase in impervious area. Accordingly, the development is not expected to adversely affect neighbouring properties under post-development conditions.

2.3.3. STORMWATER MANAGEMENT

The site will retain the existing stormwater discharge arrangement, whereby runoff is directed to the kerb and gutter system. To distribute flows across the site, the existing upstream overland flow path will be maintained, with runoff continuing to discharge via the existing grated drain and nine kerb adaptors on West Street.

Runoff from the remainder of the site will be treated by the proposed FlowFilter and FlowGuard systems before discharging through three 100 mm kerb adaptors on Hill Street.

The total peak flows presented in Table 2 will be distributed between three kerb adaptors on Hill Street and the existing nine on West Street. This arrangement will ensure that the discharge from each individual kerb adaptor remains below Toowoomba Regional Council's stipulated limit of 50 L/s.

2.3.4. STORMWATER QUALITY

Under the *State Planning Policy Appendix 2 – Stormwater Management Design Objectives* any development greater than 2,500m² that will result in six or more lots or will result in an impervious area greater than 25% of the net developable area needs to consider stormwater runoff quality. This development is a single lot with a total impervious area of 75% this requirement is triggered.

The development was assessed using MUSIC software and the net results are shown below. The proposed treatment of the paved external areas is via a Flowguard filter strip drain across the Hill Street service access and a 2.5kL detention tank with a FlowFilter capable to treat 30L/s to treat stormwater prior to discharging to the street via kerb adaptors. The modelled treatment train is shown in Figure 4 below and the resulting stormwater quality objectives are shown in Table 3 below.

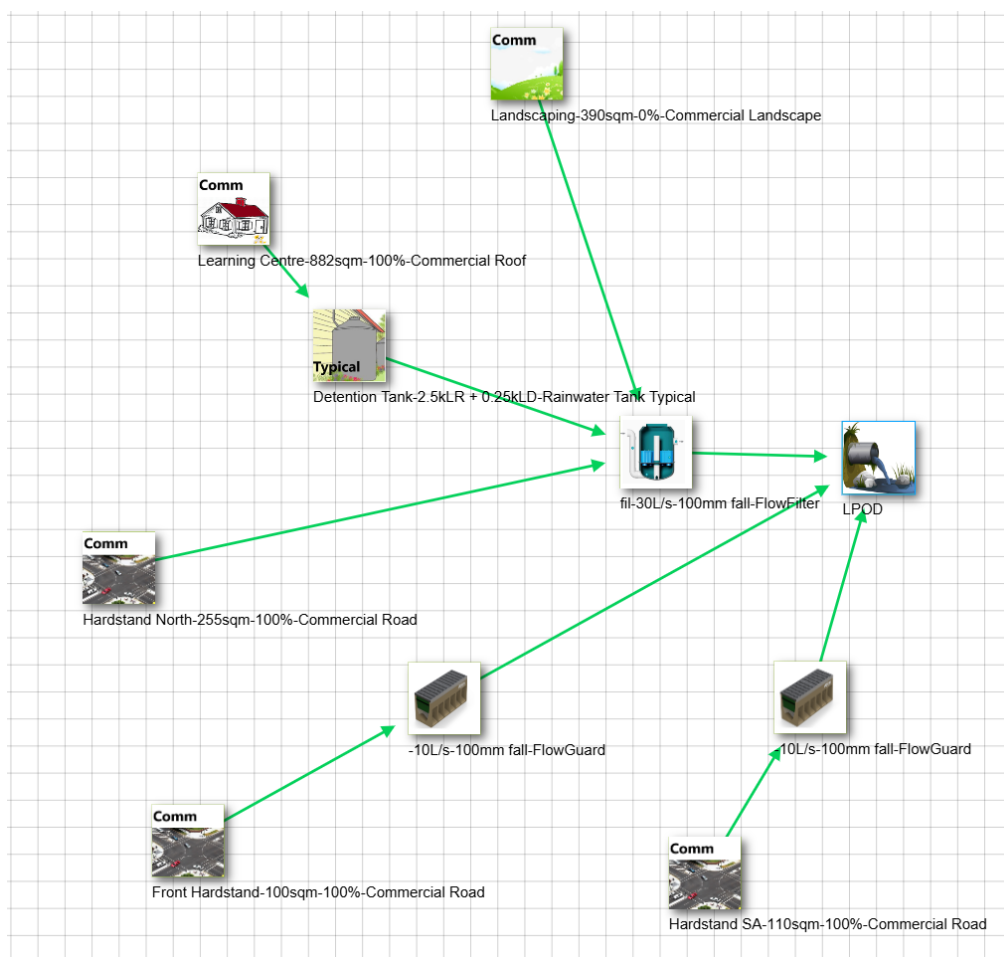


Figure 4 - Stormwater Treatment Train

Table 3 - Treatment Train Effectiveness Results

	Sources	Residual Load	% Reduction	Target Reduction % (SPP 2017)
Flow (ML/yr)	1.22	1.13	7.36	N/A
Total Suspended Solid (kg/yr)	197.43	29.97	84.82	80.00
Total Phosphorus (kg/yr)	0.45	0.15	66.50	60.00
Total Nitrogen (kg/yr)	3.86	1.89	51.05	45.00
Gross Pollutants (kg/yr)	29.09	0	99.98	90.00

As shown above the proposed treatment train achieves the Target Reduction objectives from SPP 2017. As a result of this the proposed development complies with the requirements for stormwater quality.

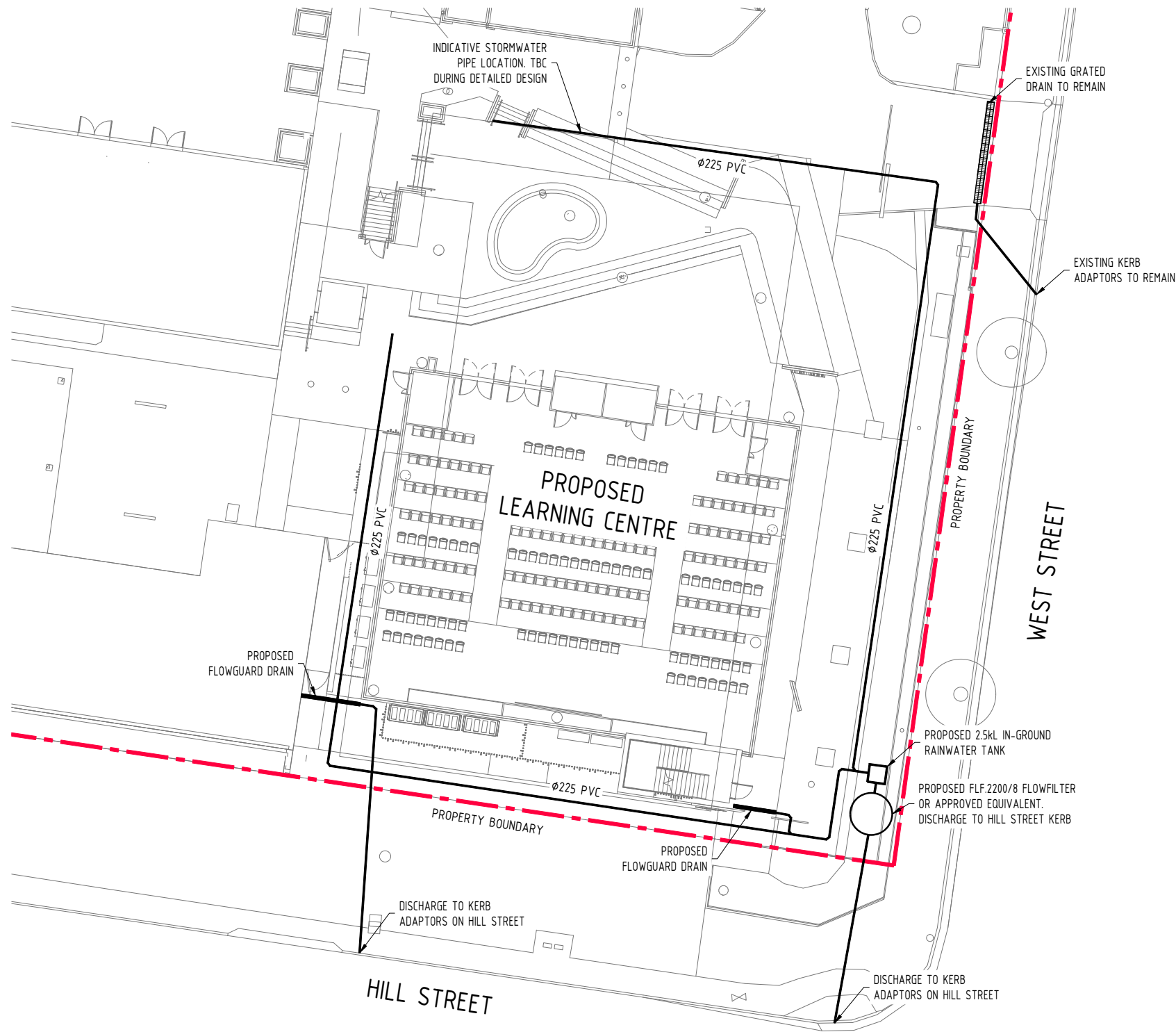
3. CONCLUSION

The following points can be concluded from the above assessment:

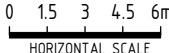
- The proposed development as modelled will result in a negligible in total runoff for all events from 0.5EY to 1% A.E.P;
- The proposed stormwater quality treatments meet the targets set out in SPP 2017;
- The proposed development considered as part of this report, meets the requirements of Council's planning scheme for stormwater quantity & quality management.

Overall, following our review we can confirm the proposed development can meet Council's standard requirements for development from a civil engineering perspective in relation to stormwater and stormwater quality.

APPENDIX A - CONCEPT DEVELOPMENT CIVIL ENGINEERING PLANS



LEARNING CENTRE GENERAL ARRANGEMENT PLAN
SCALE 1:150

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			CONTRACT									
			DRAWING No.			1.0	B					
			SERIES NUMBER			1 OF 1						
B	FOR APPROVAL		06/08/2026			DESIGNED: M.P.				AUX DWG		
A	FOR APPROVAL		30/07/2026	DRAWN: M.P.								
REVISION	DESCRIPTION	SIGNATORY: - RPEQ FULL NAME, ENG. AREA AND RPEQ NO. OR FULL NAME AND POSITION TITLE	DATE	TITUS CIVIL CONSULTING PTY. LTD. TOOWOOMBA, QLD, AUSTRALIA, 2023. ALL RIGHTS RESERVED								



PRE-DEVELOPED STORMWATER CATCHMENTS

PRE - DEVELOPMENT AREAS						
ITEM	TOTAL AREA (m ²)	% IMPERVIOUS	PERVIOUS T _c	IMPERVIOUS T _c	PEAK Q 10% AEP (m ³ /s)	PEAK Q 1% AEP (m ³ /s)
PRE DEVELOPED CATCHMENT 1	1523	74	10 mins	5 mins	0.063	0.100
PRE DEVELOPED CATCHMENT 2	2684	67	10 mins	5 mins	0.104	0.167

LEGEND:

- PRE DEVELOPED CATCHMENT 1
- PRE DEVELOPED CATCHMENT 2
- EXISTING BUILDINGS
- EXISTING HARDSTAND
- EXISTING VEGETATION



POST-DEVELOPED STORMWATER CATCHMENTS

POST - DEVELOPMENT AREAS						
ITEM	TOTAL AREA (m ²)	% IMPERVIOUS	PERVIOUS T _c	IMPERVIOUS T _c	PEAK Q 10% AEP (m ³ /s)	PEAK Q 1% AEP (m ³ /s)
POST DEVELOPED CATCHMENT 1	1523	76	10 mins	5 mins	0.064	0.102
POST DEVELOPED CATCHMENT 2	2684	69	10 mins	5 mins	0.106	0.168

LEGEND:

- POST DEVELOPED CATCHMENT 1
- POST DEVELOPED CATCHMENT 2
- PROPOSED BUILDINGS
- PROPOSED HARDSTAND
- PROPOSED VEGETATION

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