

Ref: CR230630-00-CV-LE01-5
29 Jan 2026

Moriah College
c/- EY
200 George Street
Sydney, NSW 2000

Dear Kate,

Re: Moriah College – Stage 1 – Civil Design Statement

Northrop Consulting Engineers (Northrop) have been engaged by Moriah College to develop a Stormwater Management Plan (SMP) for Moriah War Memorial College in support of a Section 4.55 submission to Department of Planning, Housing & Infrastructure and any nominated referral agency. This letter outlines the stormwater management objectives set by Council and the proposed methodology designed to meet these required targets. S4.55 Civil Engineering drawings provided by Northrop should be read in conjunction with this letter.

Site Location and Context

The subject site is located at 3 Queens Park Road and 101 York Road, Queens Park (Lot 3 DP701512 and Lot 22 DP879582) and is situated within the Waverley Local Government Area.

The multi staged development proposes the demolition of administration and learning buildings, tennis courts, and communal areas, and then the construction of a new STEAM building, carpark and driveway, and landscaped areas.



Figure 1: Site Locality (Source: Nearmap)

Stormwater Management Objectives

The proposed Stormwater Management system has been designed in accordance with Waverley Council's *Water Management Technical Manual*, specifically Sections 6.0 *On-Site Stormwater Detention (OSD)*, 7.0 *Roofwater Harvesting* and 9.0 *Stormwater Quality*. The stormwater management objectives / requirements outlined in this document are summarised below:

- Design an On-site Stormwater Detention (OSD) system to capture and control post-development stormwater runoff flows such that the rate of stormwater runoff (both OSD and bypass discharge rates) from the post-developed site does not exceed the allowable Permissible Site Discharge (PSD). Waverley Council has defined the PSD as the following:
 - **Maximum discharge from the site in undeveloped conditions during a 20% AEP 5-minute storm event.**
- Stormwater discharging from the site must achieve the annual pollutant load reduction targets specified below in Table 1.

Table 1: Water Quality Objectives (Source: Melrose Park North Site-Specific DCP)

Pollutant	Percent Reduction
Gross Pollutants (>5mm) (GP)	90%
Total Suspended Solids (TSS)	80%
Total Phosphorous (TP)	55%
Total Nitrogen (TN)	40%

Proposed Stormwater Management Plan

The previously approved civil strategy as proposed by JHA is per the following:

- 124m³ OSD tank located at downstream portion of site to discharge through a stormwater network with water quality treatment devices, Humeceptor and Vortceptor GPT before discharging offsite.

However, upon further investigation to reach council requirements the current general site stormwater management plan is as listed below:

- Stormwater runoff will be captured and conveyed through a new pit and pipe network located on the southern half of the entire site.
- Existing upstream catchment flows running through an existing pit and pipe network will be intercepted and diverted through the proposed pit and pipe network. This upstream catchment will not be developed.
- Stormwater flows within the pit and pipe network will be directed to an underground OSD tank before discharging at a controlled rate to a new kerb inlet pit located on York Street. Flows will then be directed to the existing point of discharge on Baronga Avenue.
- Water quality treatment is to be provided directly prior to the OSD tank to achieve Council's pollutant reduction targets. An Atlan Vortceptor (SVI.160) GPT and a minimum two (2) AtlanFilter's (FIL-3.0) have been proposed.
- Roof runoff from the proposed building is to be captured in a rainwater tank for external irrigation only with overflows entering the proposed OSD tank.
- A minor portion of the developed site will bypass water quality and quantity infrastructure.

Water Quantity

The site was modelled in the hydrological modelling software DRAINS (incorporating the integrated ILSAX hydrological model) to analyse the pre-developed site flows in comparison to the post-developed site flows.

Assumptions made to achieve Council's PSD requirements are as follows:

- Pre-developed (undeveloped) site conditions were assumed to be the same as what currently exists onsite. Percentages impervious were concluded as 80%.
- Council's PSD requirements were considered applicable to the developed site area only (including the calculated bypass in this area) and excludes the upstream catchment that is to remain untouched.
- The additional upstream flows from the untouched area of the site were considered during DRAINS modelling as these flows will be directed through the tank before discharging from the site. To incorporate these flows into the PSD, the upstream catchment 1% AEP flows (worst case) were added to the developed sites PSD.

Ultimately, an OSD tank with a minimum volume of **488m³** is required to comply with Council's PSD requirements. A below ground precast / modular OSD tank (Atlan MegaVault) with a minimum 24 vaults at 2.6m has been proposed.

Water Quality

Stormwater quality modelling for the site was also conducted and was prepared using 'Model for Urban Stormwater Improvement Conceptualisation' (MUSIC) Version 6.3. The model has been built to assess the adequacy of the proposed SQIDs and to ensure that the quality of stormwater meets the WQOs for the proposed development.

The proposed treatment train assessed is as follows:

- Roof runoff is to be captured in a 60kL rainwater tank underground and adjacent the OSD tank. Reuse is proposed for irrigation purposes only
- Overflows from the rainwater tank are directed to the OSD chamber.
- Stormwater runoff is to be directed to an Atlan Vortceptor (SVI.160) Gross Pollutant Trap to provide primary water quality treatment, removing gross pollutants and coarse sediment from stormwater runoff before entering the proposed OSD tank.
- Further pollutant removal is to also be achieved prior to entering the OSD storage area via a minimum two (2) AtlanFilter's (FIL-3.0) which will be situated within a treatment chamber at the OSD tank's inlet.
- Five stormwater pits located in bypass areas are to be fitted with OceanGuard 200 micron filter inserts which will act as pre-treatment for stormwater runoff, capturing litter and coarse sediment from the site.

MUSIC Modelling results are shown in Table 2.

Table 2: MUSIC Model Treatment Train Effectiveness

Pollutant Type	Sources	Residual Load	% Reduction	Target
Total Suspended Solids (kg/yr)	3110	348	88.8	80%
Total Phosphorus (kg/yr)	6.25	1.8	69.9	55%
Total Nitrogen (kg/yr)	42.2	23.3	44.7	40%
Gross Pollutants (kg/yr)	423	2.49	99.4	90%

The existing stormwater strategy for the site is generally being maintained, and minimal changes to site gradients are proposed. As such, the existing point of discharge for the site is to be maintained in Baronga Avenue. Directing flows to the south of the site ensures the proposed civil strategy will not result in adverse impacts on the ESBS reserve located to the western corner of the site.

Overall, the proposed stormwater management plan developed by Northrop demonstrates that the development can be constructed and operated in accordance with Council's stormwater quantity and quality requirements listed above.

Yours faithfully,

Laura Muxlow
Civil Engineer



On behalf of Northrop Consulting Engineers Pty Ltd