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CIVIL STORMWATER MANAGEMENT PLAN

461 Chapel Road, Bankstown

Prepared for Sustainable Development Group Limited

242285-01

Revision [B]

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1. Introduction

Northrop Consulting Engineers Pty Ltd has been engaged to undertake the conceptual stormwater management design on behalf of the Anglican Church Property Trust Diocese of Sydney under Sydney Anglican Property (SAP) in support of a State Significant Development Application (SSDA) for a mixed-use development, comprising social and affordable housing at 459-461 Chapel Road, Bankstown (the site).

The purpose of this report is to summarise the proposed design solutions for the stormwater management for a Development Application submission to City of Canterbury Council. The proposed design has been considered with regard to the City of Canterbury DCP 2023, in particular Chapter 3.1 General Requirements, Canterbury-Bankstown Development Engineering Standards Guide as well as industry best practice.

We note the information contained in this report is not intended to present detailed design solutions but rather provide solutions commensurate with a conceptual design suitable for Development Application assessment.

2. Project Background

SAP was formed on 1 January 2024 to provide a unified, co-ordinated approach to all diocesan property matters. A key objective of SAP is to put the Sydney Anglican Diocese's property on mission by delivering high-quality projects that provide much-needed community infrastructure, including upgraded ministry facilities, affordable housing and childcare.

As part of this mission, SAP, in partnership with Anglicare, is working with the Government to deliver a 23 storey 100% social and affordable housing development on its landholdings in the Bankstown City Centre. The affordable housing will be accompanied by community and renewed ministry facilities, childcare and retail and commercial uses within the podium.

3. Site Description

The site is located at 459-461 Chapel Road, Bankstown within the Canterbury-Bankstown Local Government Area (LGA). It is located 500m of the Bankstown Station and City Centre and as such, is located within the Bankstown TOD Accelerated Precinct.

The site comprises three allotments, which are all owned by the Anglican Church Property Trust Diocese of Sydney and are legally described as Lots 26A, 27A and 28A in DP7058. Combined, the site has an approximate area of 2,179m2. It is located on a corner and has a street frontage of 52m to French Avenue to the north and 43m to Chapel Road to the west. Figure 1 below provides an aerial map of the site.

The site currently comprises an existing 350 capacity church building, known as Saint Paul's Anglican Church, as well as an associated ministry building and an additional building containing a range of community uses.

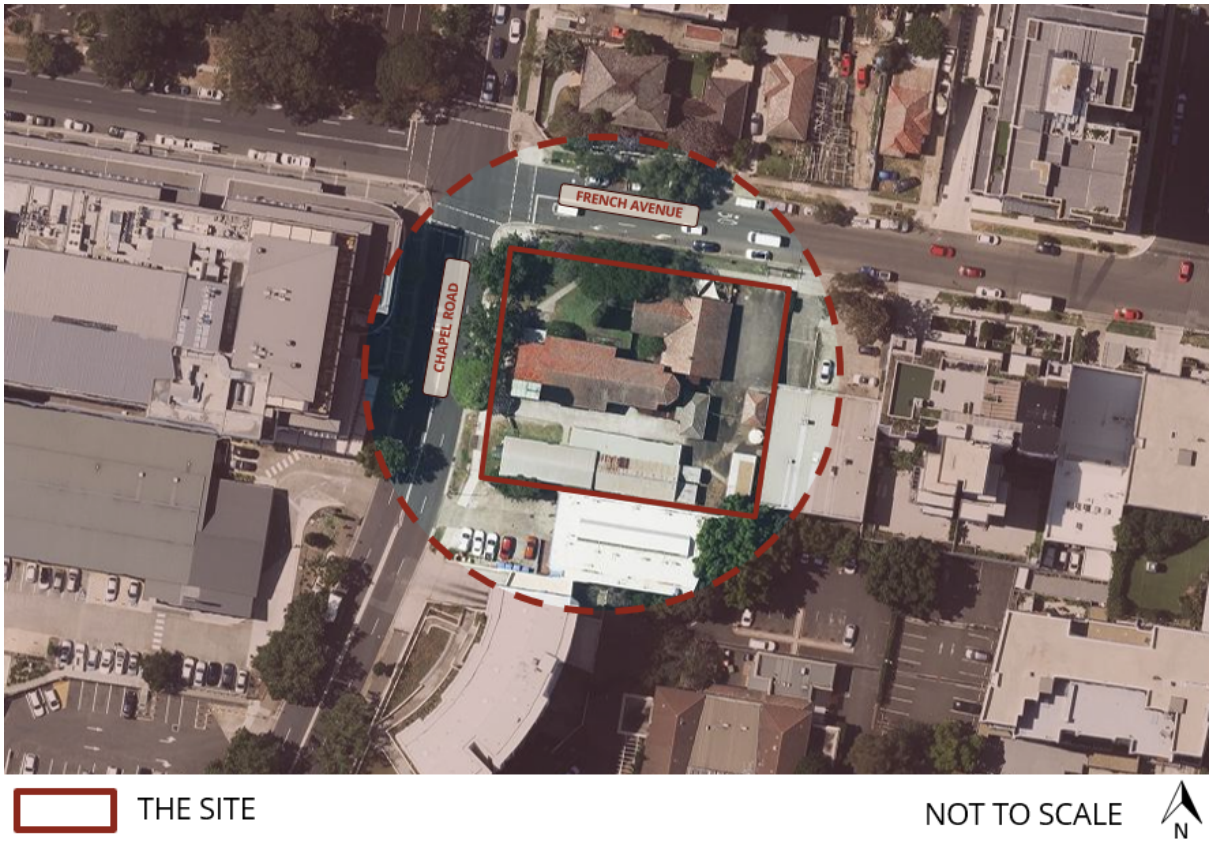

Figure 1: Aerial Image

4. Proposed Development

This SSDA seeks approval for a new mixed-use affordable housing development. Specifically, the proposed development will comprise the following scope of works:

- Site preparation and excavation works, including demolition of all structures on the site.
- Construction of a new mixed-use 23 storey building, comprising the following:
    - Ground level retail and Level 1 commercial floor space located on the corner of Chapel Road and French Avenue.
    - 2 storey dual use community facility and place of public worship.
    - A childcare centre with outdoor open space, which will be shared with the community facility and place of public worship after hours and on weekends.
    - Approximately 186 dwellings from Level 2 and above, which will be used for the purpose of affordable housing, with the exception of one four-bedroom dwelling located on Level 2, which will be allocated to the church and therefore, is proposed to be ancillary to the place of public worship.
- One storey basement, comprising approximately carparking spaces, plant and loading facilities, which will be accessed via French Avenue. An at-grade shared carpark will be provided along the eastern boundary.
- Associated landscaping and public domain works.
- Extension and augmentation of physical infrastructure and utilities as required.

For a detailed project description, refer to the Environmental Impact Statement prepared by Beam Planning and the Architectural Drawings prepared by Plus. The layout of the proposed development has been illustrated in the concept engineering plans appended to the rear of this report.

5. Proposed Stormwater Management Strategy

5.1 General Strategy

The onsite stormwater management system has been designed to replicate the processes which would occur naturally on site. The proposed development will incorporate a number of devices and measures aimed at providing adequate and responsible management of stormwater runoff for minor and major storm events.

In line with Chapter 3 of Canterbury Bankstown DCP, the stormwater management strategy has considered the following items which will be discussed in the following sections of this report:

- Onsite detention;
- Flood Risk Management;
- Local overland drainage;
- Stormwater quality and pollution control.

5.2 Onsite Detention

In accordance with Canterbury Bankstown DCP, on-site detention will be required to be investigated to limit post development flows from the proposed development site to less than or equal to pre-development flows for storm events from 5 to 100-year ARI events. Runoff from the proposed development was modelled using the runoff routing software DRAINS incorporating an on-site detention facility. This was compared to the pre-developed site in its existing state with an impervious percentage of 79%.

The ILSAX hydrological model in DRAINS was used to generate runoff hydrographs for the pre-developed and post-developed site. Data from the Bureau of Meteorology (BOM) was used to generate design storms. Runoff parameters were selected to replicate the site conditions that will be present in the post-developed case and that which currently occur in the pre-developed case. A summary of parameters used for the model are shown below:

Impervious depression storage	= 1 mm
Pervious depression storage	= 5 mm
Time of concentration	= 5 minutes
Soil type	= 3

Storm durations ranging from 5 minutes to 180 minutes were investigated for each of the design storm events that were analysed for a site area of 2179m^2.

A screenshot of the DRAINS model for is displayed in **Figure 2.**

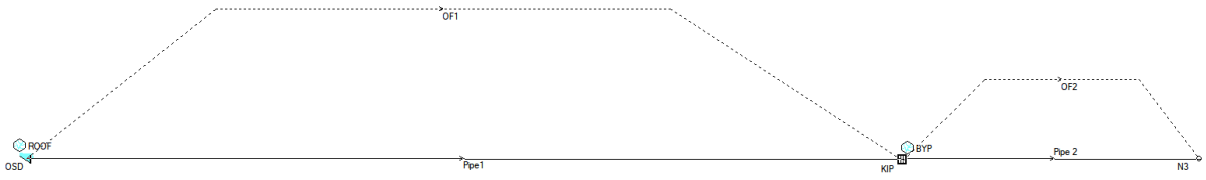

Figure 2: DRAINS Model Schematic

A comparison between the pre-development and post-development flows from the site for the critical storm duration for each of the design storm events, up to and including the 100-year ARI is presented in Table 1.

Table 1: DRAINS output comparing pre-development and post-development flows.

AEP	Pre-Developed Peak Flow (L/s)	Post-Developed Peak Flow (L/s)
1%	102	89
2%	92	80
5%	79	71
10%	70	66
20%	59	59

As shown in **Table 1**, the peak post-development flows for storm events up to the 100-year ARI have been detained to less than that for the pre-development site. Confirming the OSD provided will achieve the design intent to limit post-development flows to that of the pre-development state.

5.3 Flood Risk Management

Review of Salt Pan Creek Stormwater Catchment Study 2007 indicates the site is not impacted by flooding, refer to the below imaging showing the site is not located in a flood affected area during a 1% AEP storm event. As such, flooding has not been considered in the stormwater management for the proposed development.

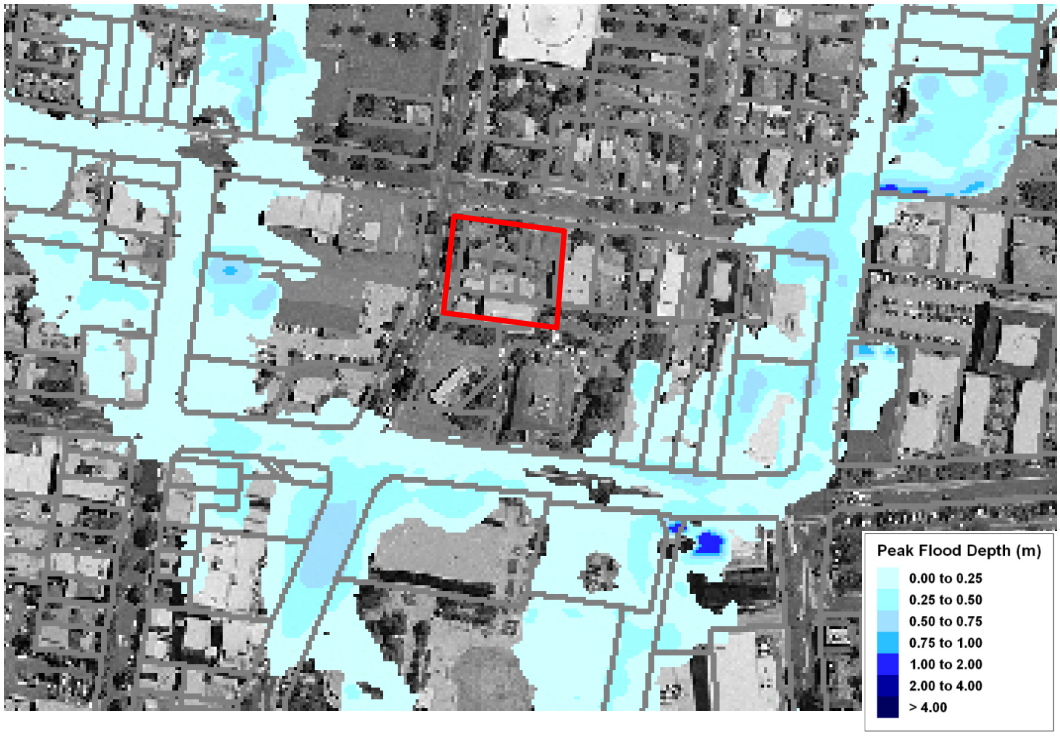

Figure 3: 100 Year ARI Storm Event - Peak Flood Depths

5.4 Stormwater Quality and Pollution Control

In order to minimise any adverse impacts upon the ecology of downstream watercourses, stormwater treatment devices have been incorporated into the design of the development. The adopted stormwater quality strategy is to be in accordance with the Canterbury Bankstown Development Engineering Standards Guide.

As the majority of the site is roof area (97%) the runoff will be treated through the incorporation of a first flush device for sediment and rubbish removal. to prevent debris from entering the onsite detention tank. In addition to this, proprietary leaf guards are to be installed and maintained on roof gutters. The OSD tank will be fitted with a trash screen which will be used in addition to the first flush device and leaf guards to capture suspended solids and gross pollutants.

5.5 Local Over Land Drainage

The proposed development will cover the majority of the site allowing for minimal onsite overland flow. To ensure the development is not affected by overland flow, the verge and footpath between the road and property boundary will be designed to fall away from the property in accordance with Canterbury City Council Guidelines. The driveway to the development has also been designed to ramp up from the road to a crest within the property, ensuring any overland flow remains within the road reserve.

6. Conclusion

The proposed stormwater management design presented above has been prepared to comply with Canterbury Bankstown DCP as well as industry best practice. The design philosophy is based on the principle of at source treatment, to reduce conveyance infrastructure and manage water quantity and quality aspects.

At a concept level the system has been designed to cater for frequent and infrequent storm events.

Based on the above, our investigation and concept designs indicate the proposed development can adequately manage and address all items surrounding stormwater runoff. Should you have any queries, please feel free to contact the undersigned on (02) 4365 1668.

Yours sincerely,

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Civil Engineer

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On behalf of Northrop Consulting Engineers Pty Ltd

7. References:

BMT WBM Pty Ltd, Draft New South Wales MUSIC Modelling Guidelines, August 2010

Salt Pan Creek Stormwater Catchment Study, June 2007

Canterbury-Bankstown Development Control Plan – Chapter 3 General Requirements, June 2023

Canterbury-Bankstown Development Control Plan – Development Engineering Standards Guide, June 2023

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APPENDIX A – SUPPLEMENTARY INFORMATION

- Concept Stormwater Management Plans