Engineering Value

www.sgce.com.au

Mixed-Use Development

5-9 Gordon Avenue, Chatswood (DPG 32)

Desktop Flood Study
Issue D

Prepared for DPG Project 32 Pty Ltd

Date: Friday, 21 August 20

File Reference: 20180001-R01_Desktop Flood Report.docx

+61 2 8883 4239

P.O. Box 7855 Baulkham Hills NSW 2153

Suite 503, 156 Pacific Highway St Leonards NSW 2065

Revision Table

Revision	Date	Issue Description	Issued by	Approved by	Signed
A	02.02.2018	Submission to Council	JH/ZZ	Selh	
B	27.02.2018	Submission to Council	JH/ZZ	Selh	
C	07.03.2018	Submission to Council	JH/ZZ	Selh	
D	August 2020	Revised Submission	SH	Selh	

Table of Contents

List of Figures

1 Introduction

1.1 Brief

S&G Consultants Pty Ltd (SGC) have been engaged by DPG Project 32 Pty Ltd to prepare a Desktop Flood Study report for the proposed mixed-use development at 5-9 Gordon Avenue, Chatswood.

1.2 Limitation

This report is intended solely for DPG Project 32 Pty Ltd as the sole clients of S&G Consultants Pty Ltd and no liability will be accepted for use of the information contained in this report by other parties than this client. This report is limited to the information including the referenced documents made available at the time when this report was written.

1.3 Proposed Development

This document is a flood assessment report for the proposed mixed-use development within Willoughby Council LGA and is potentially affected by overland flow in adjacent road during large storm events.

The proposal consists of a 26 storey building comprising a 2 storey commercial/retail podium and 24 storey tower above containing 23 levels of residential apartments and 1 level of common facilities for the apartments. Up to 5 levels of basement car parking will be provided. The entire site to be occupied by the development is approximately 1522 sq.m in area and has frontages to Gordon Avenue and Hammond Lane, Chatswood. The proposed development is illustrated in Error! Reference source not found. below.

Figure 1.1 Site Plan

1.4 Scope of This Report

This report demonstrates potential overland flood issues in relation to upstream catchment for the site. The site is traversed by a low point in the local upstream catchment with an area totaling around 4.44 ha.

The objectives of this report is to calculate the peak design flows that are generated by the runoff from the upstream catchment and proposes measures to divert the flows around the development site.

2 Catchment Analysis

The catchment analysis provides calculations for the 20-yr and the 100-yr storm events and determines the peak design flows for these events.

The upstream catchments are shown on the accompanying drawing Figure 2.1 below.

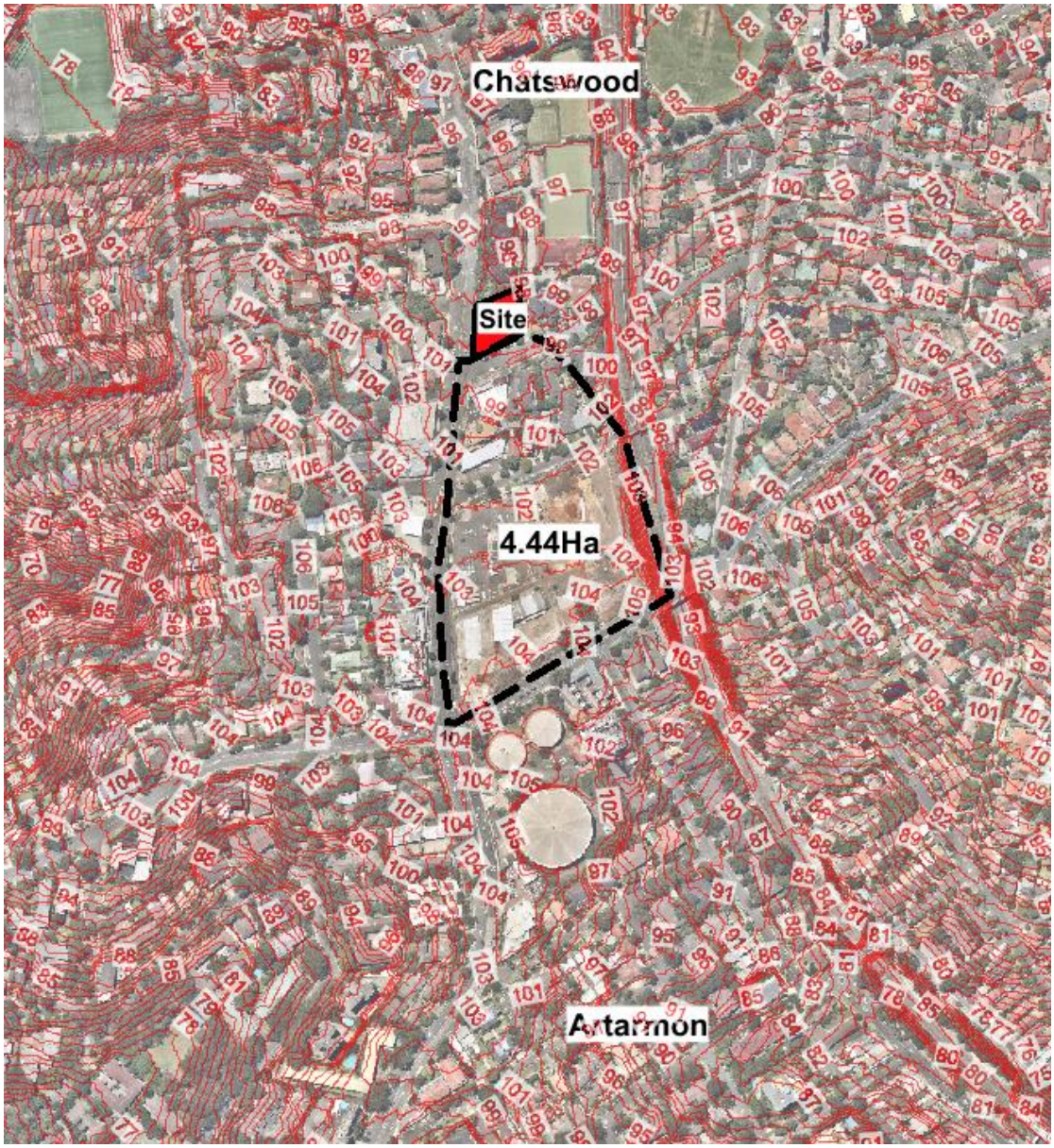

Figure 2.1 Upstream Catchment Plan

Stormwater runoff from upstream catchment will be worked out by using Manning Equation, i.e.

$$Q = C * I * A / 3600, \text{ where } Q \text{ is the flow rate in } m^3/s$$

Upstream catchment area = 44400 m^2

n = 0.08 (Normal residential)

L = 330m (Longest distance of travel)

T_c = 20mins

I_{100} = 155mm/hr

I_{20} = 118mm/hr

f = 0.08

C_{100} = 0.681

Q_{100} = 0.681*155*44400/3600 = 1.30m^3/s

Manning's Open Channel Calculations for Proposed Overland Flow Path:-

$$Q = AR^{2/3}S^{1/2}/n$$

S = 0.02m/m

n = 0.012 (Concrete)

USE:

Width W = 1.65m

Depth D = 0.2m

Left Edge Slope = 1

Right Edge Slope = 1

Area of Flow: 0.37m^2

Perimeter of Flow: 2.22m

Hydraulic Radius: 0.17m

Total Flow in Channel: 1.32m^3/s

As a result, a concrete overland flow path with 1.65m in width and 0.2m in ponding depth is required to carry out the 100-yr overland flow from upstream catchment.

3 Conclusion

This desktop study provides an analysis of the overland flows that could potentially affect the proposed development site. The study determined the peak flows and proposed overland flow path dimensions to be incorporated into the design (without taking underground storm water infrastructure into account).

The risk is more than likely to be medium/low risk and the development is appropriate in this case. Prior to DA submission, further flood modelling is required to determine the 100yr flood level and associated flood planning levels for habitable areas within the building. As per Council's WDCP Attachment 27) 10.5 & 10.6, the proposed building floor levels will set 500mm above the 100-yr flood level and the crest to basement will set 300mm above 100-yr flood level.

+61 2 8883 4239
P.O. Box 7855 Baulkham Hills NSW 2153
Suite 503, 156 Pacific Highway St Leonards NSW 2065