

Civil Response to Submissions

Issue B

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Document History

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Date	Issue	Reason for Issue	Prepared by	Checked by
16 Apr 2021	A	Draft	Eirian Crabbe	Stephen Brain
04 May 2021	B	Final	Eirian Crabbe	Stephen Brain

Abbreviations

Abbreviation	Meaning
AEP	Annual Exceedance Probability (1% = 1 in 100)
AS/NZS	Australian/New Zealand Standard
ANZECC	Australian and New Zealand Environment and Conservation Council guidelines
Council	City of Sydney Council
CPRP	Central Precinct Redevelopment Program
DP	Deposited Plan
EIS	Environmental Impact Statement
ESD	Ecologically Sustainable Development
LGA	City of Sydney Local Government Area
m	metre
mm	millimetre
MUSIC	Model for Urban Stormwater Improvement Conceptualisation
NABERS	National Australian Built Environment Rating System
NARCIIM	NSW and ACT Regional Climate Modelling project.
OEH	NSW Office of Environment and Heritage
OSD	On-Site Detention
PMF	Probable Maximum Flood
RL	Reduced Level
RMS	Roads and Maritime Services
SEARs	Secretary's Environmental Assessment Requirements
sqm	Square Metres
SSD	State Significant Development
SSDA	State Significant Development Application
Sub-precinct	Western Gateway Sub-precinct
TNSW	Transport for New South Wales
WELS	Water Efficiency Labelling and Standards
WSUD	Water Sensitive Urban Design

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1 INTRODUCTION

Taylor Thomson Whitting has been commissioned by Atlassian (the Applicant) to prepare this Civil Response to Submissions Report in response to the issues raised in by government agencies, community organisation groups and the public during the public exhibition of the proposed Atlassian Central State Significant Development (SSD) application (SSD-10405) in relation to the site at 8-10 Lee Street, Haymarket.

The application was placed on public exhibition from 16th December 2020 to 3rd February 2021.

This report has been prepared to respond to the Civil Engineering related comments raised by City of Sydney and Environment, Energy and Science Group (EES), as reproduced in the following table.

Table 1 Civil Related Comments Raised In Submissions

City of Sydney Comment - Public Domain and Water Sensitive Urban Design	Location of Response within Report
<p>43. The City is concerned that the development is relying on a proposed stormwater network extension to reduce flood levels in Ambulance Avenue, which is unacceptable. All flood planning levels are to comply with the City's Interim Floodplain Management Policy. The following further information should be submitted for review prior to determination:</p> <ul style="list-style-type: none"> a) A study regarding the practicability and constructability of the proposed stormwater network extension, regarding underground utilities in the area. b) Approval from Sydney Water for the proposed extension to connect to the Sydney Water trunk drain. c) Failsafe design of the inlet structures in the Ambulance Avenue sag, for example blockage of the inlets. 	Refer to Section 1.1
<p>44. The City has adopted MUSIC-link for assessing Water Sensitive Urban Design (WSUD) compliance for developments. A stormwater quality assessment for the proposed development must comply with the City's specific modelling parameters as adopted in MUSIC-link. A preliminary Music model has been completed which confirms that the proposed water quality treatment devices can be installed to meet the Sydney Water load reduction targets. However, a certificate and/or report from MUSIC-link and the electronic copy of the MUSIC Model must be submitted for review and approval with the stormwater quality assessment report.</p>	Refer to Section 1.2
<p>45. The City requests that the levels and gradients are submitted now for full review and approval. If more information is required contact Phil Dunne. pdunne@cityofsydney.nsw.gov.au.</p>	Refer to Section 1.3
Environment, Energy and Science Group (EES) Comment - Flooding	Location of Response within Report
<p>EES recommends that the proponent prepare a Flood Emergency Response Plan in consultation with Council and the NSW State Emergency Service (SES) to address the full range of floods up to and including the Probable Maximum Flood to ensure the safety of personnel and users of the development. The Flood Emergency Response Plan should give attention to the potential for rare flooding of the lower ground floor level and the basement levels</p>	Refer to Section 1.4

1.1 City of Sydney Comment 43

43. The City is concerned that the development is relying on a proposed stormwater network extension to reduce flood levels in Ambulance Avenue, which is unacceptable. All flood planning levels are to comply with the City's Interim Floodplain Management Policy. The following further information should be submitted for review prior to determination:

- A study regarding the practicability and constructability of the proposed stormwater network extension, regarding underground utilities in the area.
- Approval from Sydney Water for the proposed extension to connect to the Sydney Water trunk drain.
- Failsafe design of the inlet structures in the Ambulance Avenue sag, for example blockage of the inlets.

As described in the TTW Civil SSDA Report (Rev F, 25 Nov 202), section 5.1 confirms that there is no overland flow path away from the trapped low point in Ambulance Avenue. The existing trapped low point is enclosed on 3 sides by existing walls and buildings and is a fully impermeable surface used as an access/maintenance road, refer to figure 10 extract of the report below.

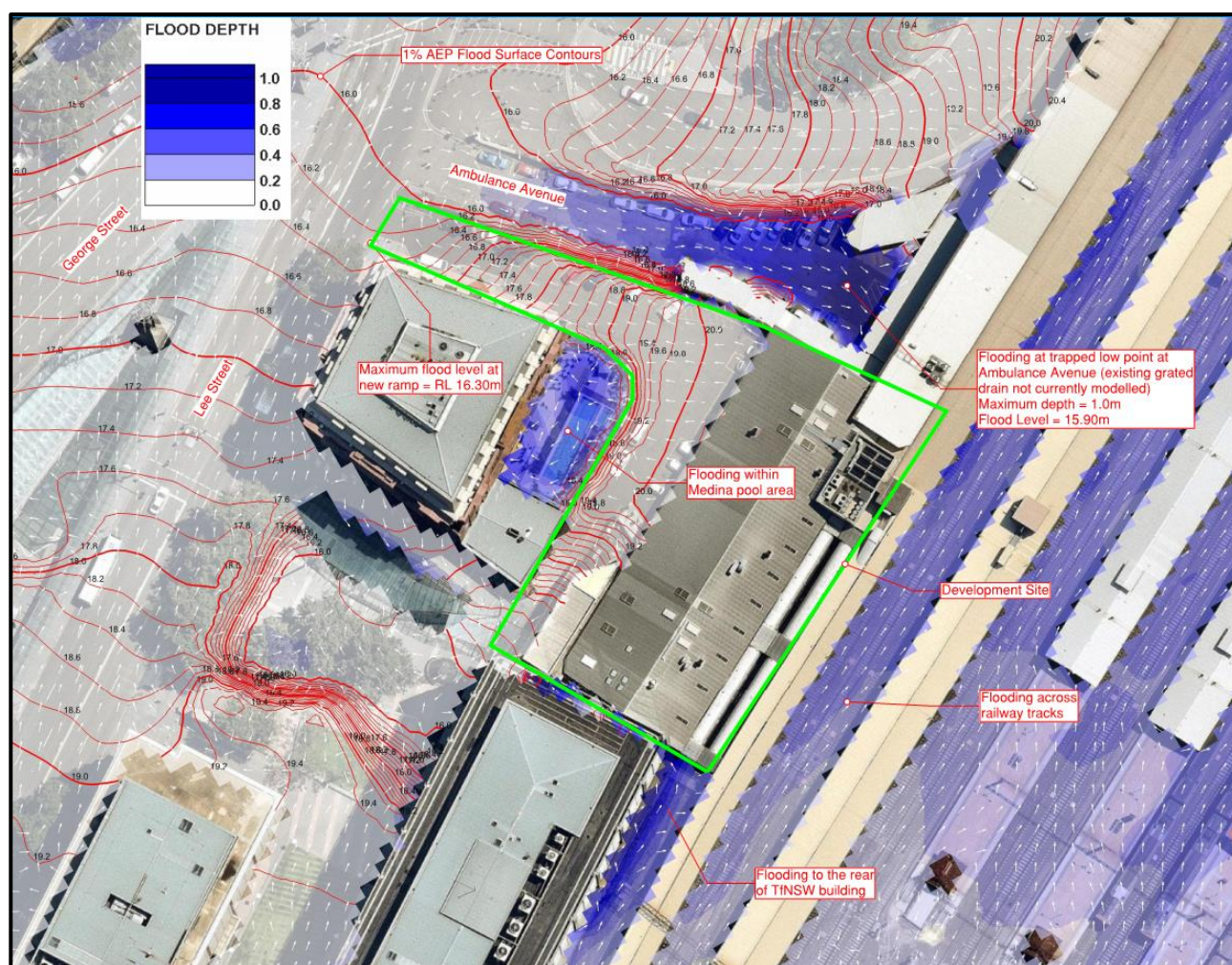


Figure 10 Extract of Civil SSDA Report Showing; Original Darling Harbour Flood Study – 1% AEP Flood Depths and Levels

As its definition implies, a trapped low point has no overland flow path away from it and traps any rainfall, overland flow or surface runoff entering it. The only ways to dispose of stormwater from a trapped low point is by gravity drainage, infiltration, or pumping. As the existing (and future) surface is fully impermeable, infiltration of this trapped low point is not an option. Draining the trapped low point by pumping requires ongoing maintenance and carries greater flood risk in the event of pump failure.

The most suitable way to drain a trapped low point is by providing stormwater inlets and pipes that are drained by gravity and conveyed to areas that lie below the trapped low point. This is a standard method of stormwater drainage used for trapped low points and is currently the existing method used for draining this area. The proposed stormwater amplification increases the inlet and pipe capacity to improve the efficiency of draining this trapped low point and reduces flood risk to the development and to the wider

Central Station Precinct. As confirmed in the TTW Civil SSDA Report, section 5.4, the proposed stormwater works reduce flood levels with no negative impact elsewhere.

Furthermore, the proposed Central Precinct Redevelopment Program concept allows for regrading this area to remove the trapped low point with a continuous overland flow path out towards George Street. This Atlassian development does not rely on this regrading and removal of the trapped low point, but it would mean that when these works are undertaken there will no longer be a trapped low point and the flood risk will be significantly reduced. The following points address the specific points raised by City of Sydney.

- a) A detailed services and utilities survey is currently being undertaken that will enable a detailed review of the practicality and constructability of the proposed stormwater. However, the proposed depth of the stormwater at up to 4m below the surface of the Lee Street is unlikely to clash with existing utilities and services that are generally located at much shallower depths. Further design progression of the proposed stormwater will take place following the SSDA approval as part of the design development.
- b) Approval from Sydney Water for the proposed stormwater connections to the existing Sydney Water trunk drain will be obtained through a Section 73 application. Consultation with Sydney Water is ongoing and it is likely that approval from Sydney Water will be obtained following the SSDA approval which can be conditioned with the consent.
- c) The flood model detailed in the TTW Civil SSDA Report, section 5.2 confirms that a blockage factor of 95% blockage has been applied to large grated inlet structure in Ambulance Avenue, in accordance with City of Sydney (CoS) drainage specification. The proposed inlet structure will be 25m long and 600mm wide, the likelihood of the full inlet area being completely blocked is extremely unlikely in any storm event. The ground floor levels are compliant with CoS interim Floodplain Management Policy and are set above the 1% AEP flood level with basement entrances raised or protected with internal flood gates to provide protection up to the PMF and 1% AEP +500mm flood level.

Furthermore, the trapped low point is proposed to be removed and regraded as part of the Central Precinct Redevelopment Program. The likelihood of full blockage of the system and an extreme storm event (1% AEP or greater) occurring within the interim period, before the trapped low point is removed, is extremely unlikely.

1.2 City of Sydney Comment 44

The City has adopted MUSIC-link for assessing Water Sensitive Urban Design (WSUD) compliance for developments. A stormwater quality assessment for the proposed development must comply with the City's specific modelling parameters as adopted in MUSIC-link. A preliminary Music model has been completed which confirms that the proposed water quality treatment devices can be installed to meet the Sydney Water load reduction targets. However, a certificate and/or report from MUSIC-link and the electronic copy of the MUSIC Model must be submitted for review and approval with the stormwater quality assessment report.

Music modelling has been completed in accordance with CoS modelling parameters and stormwater design policy as referenced in section 5.9 of the TTW Civil SSDA report. A copy of the Music-link report is included in Appendix A of this report, and an electronic copy of the model (.sqz file) will be submitted.

1.3 City of Sydney Comment 45

The City requests that the levels and gradients are submitted now for full review and approval. If more information is required contact Phil Dunne. pdunne@cityofsydney.nsw.gov.au.

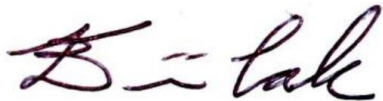
It is recommended that the submission of the Levels and Gradients plans is conditioned with the SSD consent, allowing for full consultation with City of Sydney Public Domain Team.

1.4 Environment, Energy and Science Group (EES) Comment - Flooding

EES recommends that the proponent prepare a Flood Emergency Response Plan in consultation with Council and the NSW State Emergency Service (SES) to address the full range of floods up to and including the Probable Maximum Flood to ensure the safety of personnel and users of the development. The Flood Emergency Response Plan should give attention to the potential for rare flooding of the lower ground floor level and the basement levels

The EES response endorses the findings of the flood assessment and proposed flood mitigation as detailed in section 5 of the *TTW Civil SSDA Report*. It is recommended (and usual practice) that the submission of the Flood Emergency Response Plan is conditioned with the SSD consent. The Flood Emergency Response Plan needs to be coordinated with fully detailed architectural plans and confirm access/egress routes, levels and critical infrastructure locations. This level of detail is usually confirmed during the design development stage, after the SSD Approval and prior to Occupational Certificate.

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Technical Director

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APPENDIX A – MUSIC-link Report

MUSIC-*link* Report

Project Details		Company Details	
Project:	Atlassian	Company:	Taylor Thomson Whitting (TTW) NSW
Report Export Date:	19/04/2021	Contact:	
Catchment Name:	210419_Atlassian_191797	Address:	
Catchment Area:	0.352ha	Phone:	
Impervious Area*:	100%	Email:	
Rainfall Station:	66062 SYDNEY		
Modelling Time-step:	6 Minutes		
Modelling Period:	1/01/1982 - 31/12/1986 11:54:00 PM		
Mean Annual Rainfall:	1278mm		
Evapotranspiration:	1265mm		
MUSIC Version:	6.3.0		
MUSIC-link data Version:	6.33		
Study Area:	City of Sydney Sandy Soil		
Scenario:	City of Sydney Development		

* takes into account area from all source nodes that link to the chosen reporting node, excluding Import Data Nodes

Treatment Train Effectiveness		Treatment Nodes		Source Nodes	
Node: Receiving Node	Reduction	Node Type	Number	Node Type	Number
Flow	26.6%	Rain Water Tank Node	1	Urban Source Node	4
TSS	91.8%	Sedimentation Basin Node	1		
TP	71.1%	Generic Node	3		
TN	66.2%	GPT Node	2		
GP	100%				

Comments

Node from stormfilter chamber was provided directly by the manufacturer

Passing Parameters

Node Type	Node Name	Parameter	Min	Max	Actual
GPT	1 x OceanGuard	Hi-flow bypass rate (cum/sec)	None	99	0.02
GPT	1 x OceanGuard	Hi-flow bypass rate (cum/sec)	None	99	0.02
Rain	100 KL Rainwater Tank	% Reuse Demand Met	None	None	88.8578
Receiving	Receiving Node	% Load Reduction	None	None	26.6
Receiving	Receiving Node	GP % Load Reduction	90	None	100
Receiving	Receiving Node	TN % Load Reduction	45	None	66.2
Receiving	Receiving Node	TP % Load Reduction	65	None	71.1
Receiving	Receiving Node	TSS % Load Reduction	85	None	91.8
Sedimentation	SF 1200x1200 Pit (1.4m2)	% Reuse Demand Met	None	None	0
Sedimentation	SF 1200x1200 Pit (1.4m2)	Exfiltration Rate (mm/hr)	0	0	0
Sedimentation	SF 1200x1200 Pit (1.4m2)	Extended detention depth (m)	0.25	1	0.77
Sedimentation	SF 1200x1200 Pit (1.4m2)	High Flow Bypass Out (ML/yr)	None	None	0
Urban	Developer Works - Pumped Ramp 210 sq m	Area Impervious (ha)	None	None	0.021
Urban	Developer Works - Pumped Ramp 210 sq m	Area Pervious (ha)	None	None	0
Urban	Developer Works - Pumped Ramp 210 sq m	Total Area (ha)	None	None	0.021
Urban	Developer Works - Roof 1880 sq m	Area Impervious (ha)	None	None	0.188
Urban	Developer Works - Roof 1880 sq m	Area Pervious (ha)	None	None	0
Urban	Developer Works - Roof 1880 sq m	Total Area (ha)	None	None	0.188
Urban	State Works - Ramp 490 sq m	Area Impervious (ha)	None	None	0.049
Urban	State Works - Ramp 490 sq m	Area Pervious (ha)	None	None	0
Urban	State Works - Ramp 490 sq m	Total Area (ha)	None	None	0.049
Urban	State Works - Upper Ground 940 sq m	Area Impervious (ha)	None	None	0.094
Urban	State Works - Upper Ground 940 sq m	Area Pervious (ha)	None	None	0
Urban	State Works - Upper Ground 940 sq m	Total Area (ha)	None	None	0.094

Only certain parameters are reported when they pass validation

Failing Parameters

Node Type	Node Name	Parameter	Min	Max	Actual
Sedimentation	SF 1200x1200 Pit (1.4m2)	Notional Detention Time (hrs)	8	12	0.218
Sedimentation	SF 1200x1200 Pit (1.4m2)	Total Nitrogen - k (m/yr)	500	500	1
Sedimentation	SF 1200x1200 Pit (1.4m2)	Total Phosphorus - k (m/yr)	6000	6000	1
Sedimentation	SF 1200x1200 Pit (1.4m2)	Total Suspended Solids - k (m/yr)	8000	8000	1

Only certain parameters are reported when they pass validation