

# **SSDA - Flood and Stormwater Report**

**338 Pitt Street, Sydney**

**Prepared for Hans Sydney Pty Ltd / 06 April 2020**

181034 CAAA – Rev A

## Contents

1.0	Introduction.....	1
2.0	Existing Site.....	3
3.0	Proposed Development.....	5
4.0	Flood Impact Assessment.....	6
4.1	Existing Flood Behaviour.....	6
4.2	Proposed Flood Behaviour.....	10
4.3	Proposed Flood Impact.....	13
4.4	Proposed Flood Planning Levels.....	14
4.5	Climate Change.....	14
5.0	Stormwater Management.....	15
6.0	Stormwater Quality.....	17
7.0	Construction Phase Stormwater Management.....	18
8.0	Conclusion.....	19
	Appendix A: Proposed Ground Floor Plan	
	Appendix B: Flood Results	
	Appendix C: Proposed Civil Plans	
	Appendix D: Sydney Water OSD Requirements	

## 1.0 Introduction

This report has been prepared by Taylor Thomson Whitting (TTW) to support a Stage Significant Development Application (SSDA) for the mixed use redevelopment of 338 Pitt Street, Sydney, which is submitted to the City of Sydney pursuant to Part 4 of the Environmental Planning and Assessment Act 1979 (EP&A Act). China Centre Development Pty Ltd is the proponent of the SSDA.

The site is located at the corner of Pitt Street and Liverpool Street, within the 'Mid Town' precinct of Sydney's Central Business District (CBD), refer to Fig 1. The site is approximately 150m west of Museum Station and Hyde Park, and approximately 350m from Town Hall Station. The site includes several allotments and constitutes nearly one third of the city block between Bathurst Street, Pitt Street and Liverpool Street. The site is an irregular shape and has a combined area of approximately 5,900m<sup>2</sup>.

The proposed development comprises of hotel, residential, commercial and retail uses and will include:

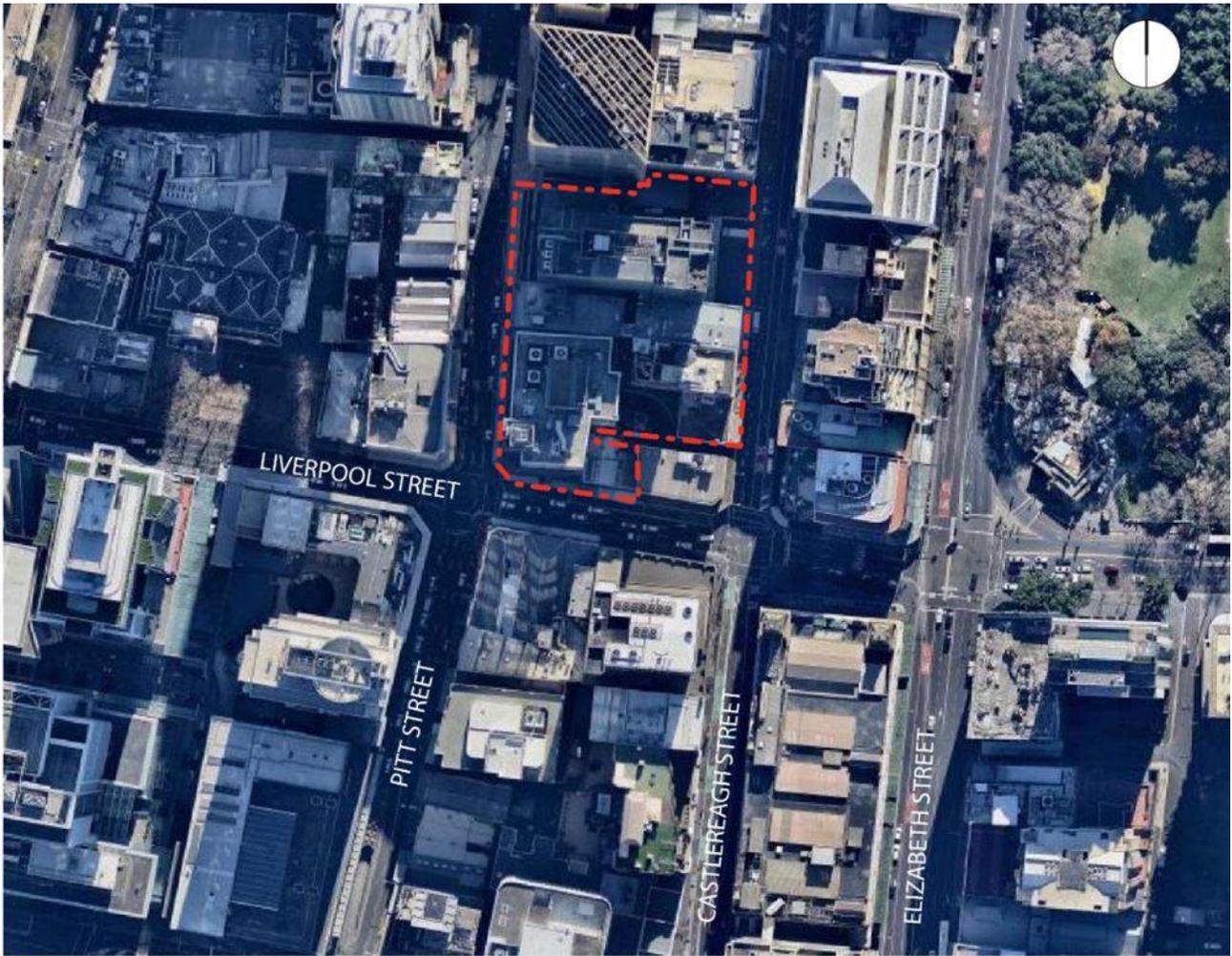
- demolition of all existing structures;
- excavation and site preparation, including any required remediation;
- construction and use of a mixed-use development, with an iconic 258m two-tower built form above a podium and internal courtyard;
- four (4) basement levels and a lower ground level accommodating residential, retail and hotel car parking, motorcycle parking, bicycle parking, loading dock, storage and relevant building services;
- improvements to the public domain, including landscaping, pedestrian thoroughfares/connections, and landscaping; and
- augmentation and extension of utilities and services.

A detailed description of development is provided by Ethos Urban within the EIS.

The subsequent sections of this report cover the following civil works, which respond to the Corresponding Secretary's Environmental Assessment Requirements (SEARs):

Sears Reference:	Civil Requirements:
<b>11. Water, drainage and stormwater</b>	Flood Impact Assessment (Refer to Section 4)
	Proposed Stormwater Management Plan (Refer to Section 5)
	Music Water Quality Assessment (Refer to Section 6)
<b>10. Construction management</b>	Construction Erosion and Sediment Control (Refer to Section 7)

The Stage 1 Concept Development Application (D/2016/1509) for the development has been approved by City of Sydney Council.



 The Site

Figure 1: Site Location

## 2.0 Existing Site

The site comprises of an existing block of commercial/mixed-use properties located between Pitt Street to the west, Liverpool Street to the south and Castlereagh Street to the east. The existing Dungate Lane provides service access from Castlereagh Street to the back of the house and existing basement carparking (ref Figure 2). The development will consolidate the existing lots into a single lot.

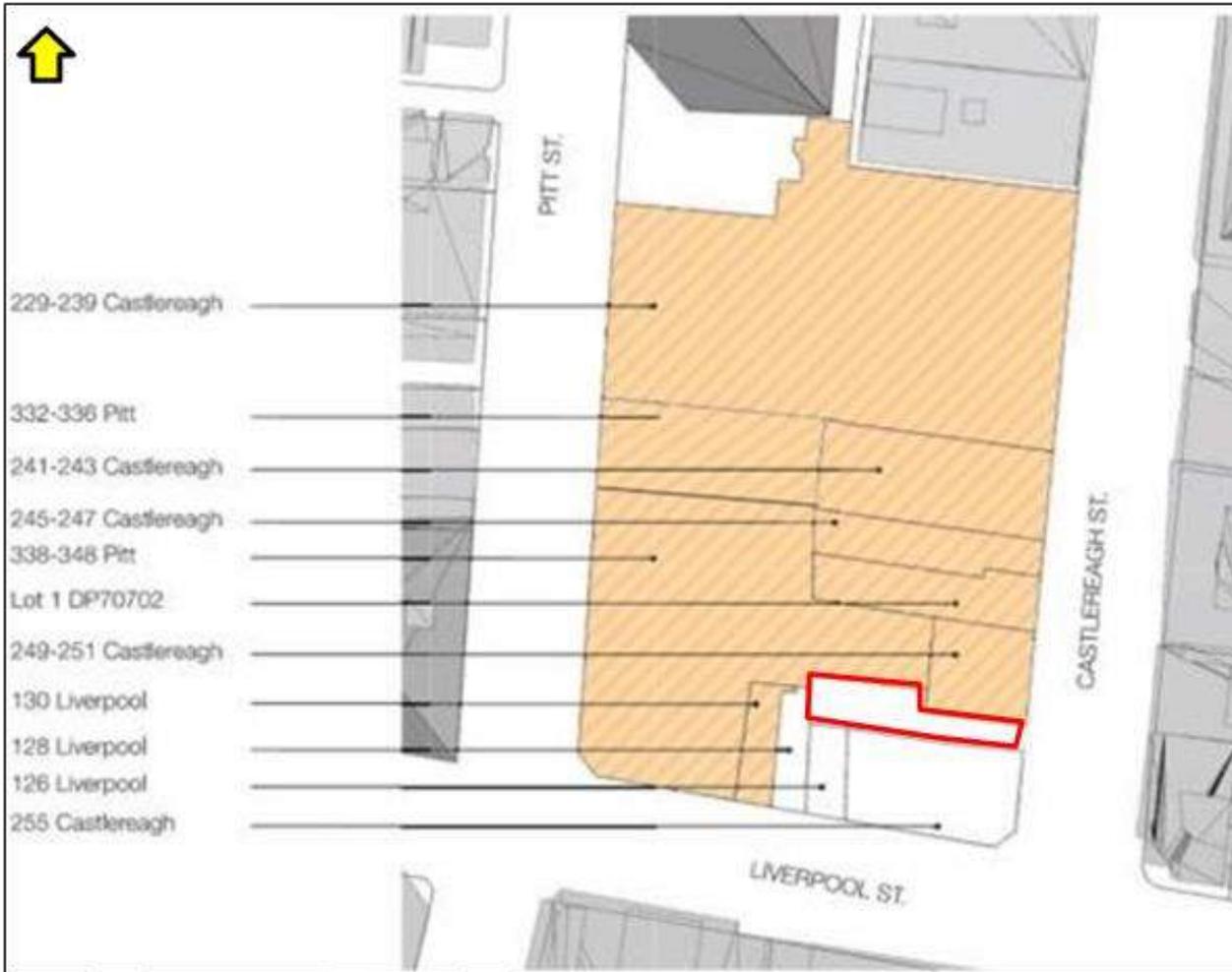


Figure 2: Existing Site

The existing site area is approximately 5900m<sup>2</sup> and is currently 100% impervious. The site falls from the northeast (RL 24.00m) to the south-west (RL 18.00m), refer to figure 3. Existing services are located around the site and detailed investigation is required to confirm the type, size, location and level of the existing services. A topographical survey of the site is included as drawing C17 in Appendix C.



Figure 3: Existing Services and Site Levels (Approximate)

### 3.0 Proposed Development

The proposed development will consist of 4 basement levels beneath a mix of mid and high rise residential and commercial buildings. The proposed ground floor plan is shown in figure 4 and included in Appendix A

A new vehicle ramp will provide access to the basement at the northwest corner of the site from Pitt Street. The proposed ground floor level will create continuous through site links between Castlereagh Street, Pitt Street, and Liverpool Street, as required by the concept DA approval.

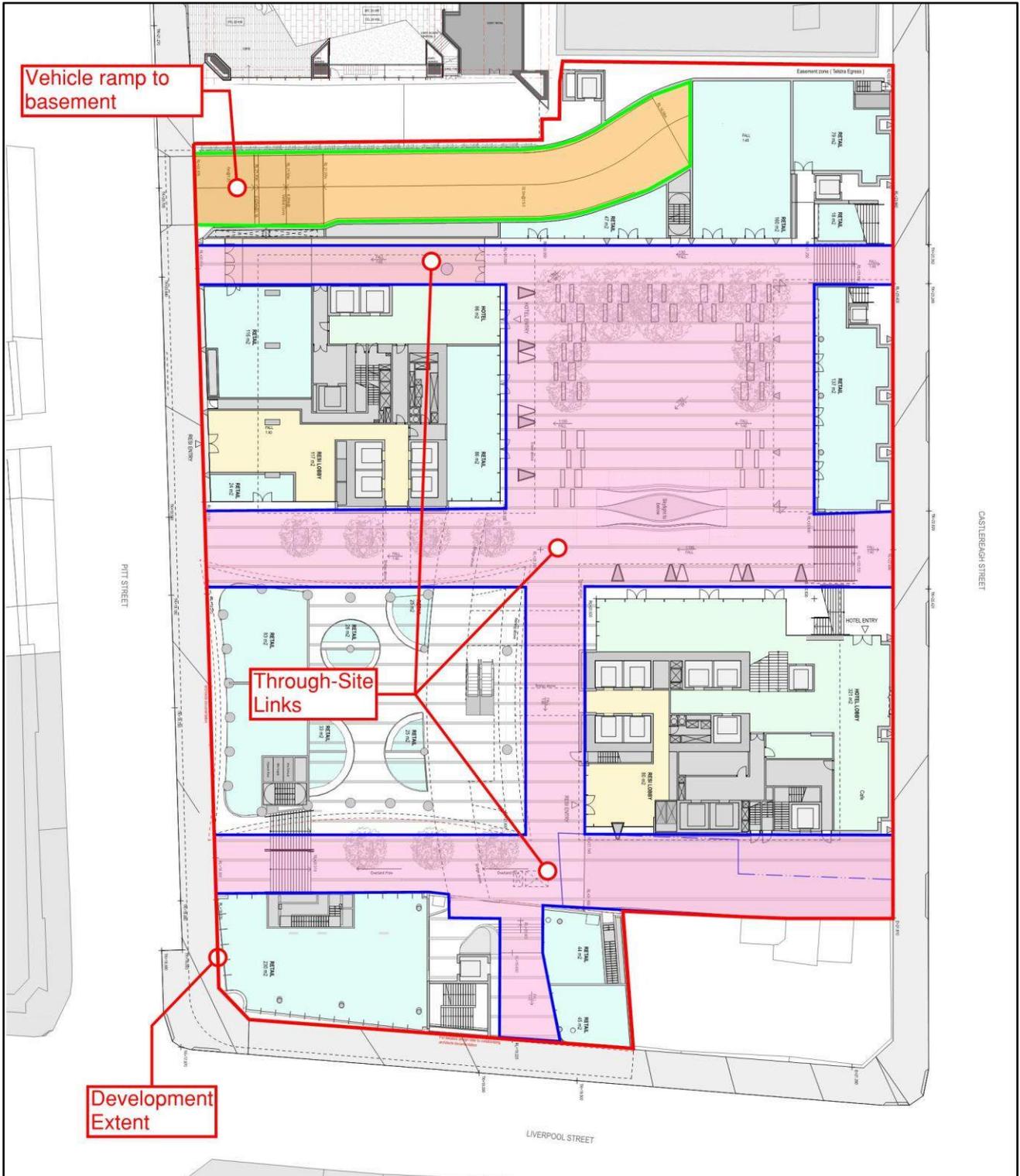


Figure 4: Proposed Ground Floor Plan

## 4.0 Flood Impact Assessment

The SEARS requires a flood impact assessment in accordance with the City of Sydney Interim Floodplain Management Policy.

In addition, Condition 14 of the Stage 1 DA Consent (D/2016/1509) requires:

- A site specific flood impact assessment that provides an accurate assessment of the impact of flooding on the site.
- Establish flood planning levels and flood protection measures in accordance with City of Sydney Interim Floodplain Management Policy.
- Thresholds to entrances to below ground basement levels to be at or above the Probable Maximum Flood (PMF)

The purpose of the City of Sydney Interim Floodplain Management Policy is to provide controls that management flood risk within the City of Sydney's LGA. These controls aim to minimise the risk to human life, minimise flood risk to property damage and ensures that existing development is not adversely affected by new development.

### 4.1 Existing Flood Behaviour

The site is located within the Darling Harbour Catchment and Council have completed the Darling Harbour Flood Study, October 2014 which. The flood model has been provided to TTW for review and analysis. The flood study is based on a dynamic 1d/2d TUFLOW model. All existing assumptions and parameters of the flood model remain unchanged, except for the changes stated below.

Changes to the existing flood model include:

- Buildings extents updated to reflect more accurate survey data. (Note that the Council model removes buildings from the active model which prevents flow through buildings).
- DEM updated to include detailed topographical survey levels.

Changes to the proposed flood model include:

- Buildings extents updated to reflect the proposed development.
- DEM updated to reflect the proposed site levels and through-site links.
- Stormwater pit and pipe capacity increased at the low point in Dungate Lane

The site is located towards the eastern boundary of the Darling Harbour catchment, refer to figure 5. The catchment is highly developed with an area of 307ha and drains into Sydney Harbour via Sydney Water's main trunk drainage system. The trunk drainage system is connected to the Council's minor pit and pipe stormwater drainage system.

Due to the location within the upper reaches of the catchment, flooding at the site is caused by overland flow along with the road system when rainfall exceeds the capacity of the stormwater drainage system.

The existing 1% AEP flooding is shown in figure 6, and the PMF is shown in figure 7. All flood results are also included in Appendix B.

Overland flow from upstream areas flows the north along Elizabeth Street, Castlereagh Street and Pitt street. These flows converge on Liverpool Street and continue to flow South along Pitt Street and a George Street toward Darling Harbour.

The flood levels and flood depths vary around the site due to the levels of the local topography. The existing flood model shows that overland flow enters Dungate Lane and gets trapped within the vehicle ramp to the basement. There is also a trapped low point in Dungate Lane.

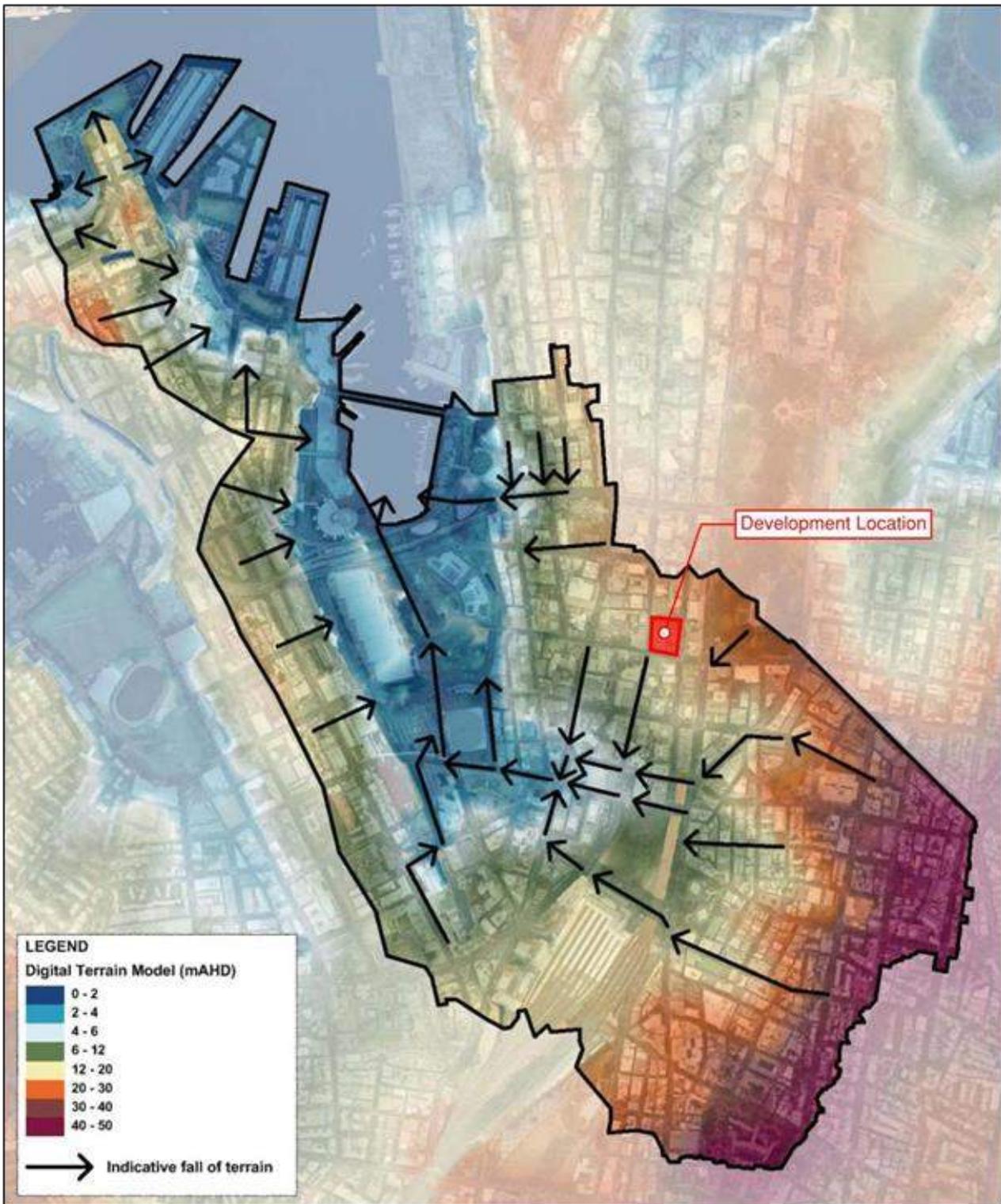


Figure 5: Site location within Darling Harbour Catchment (extract from Council's flood study)

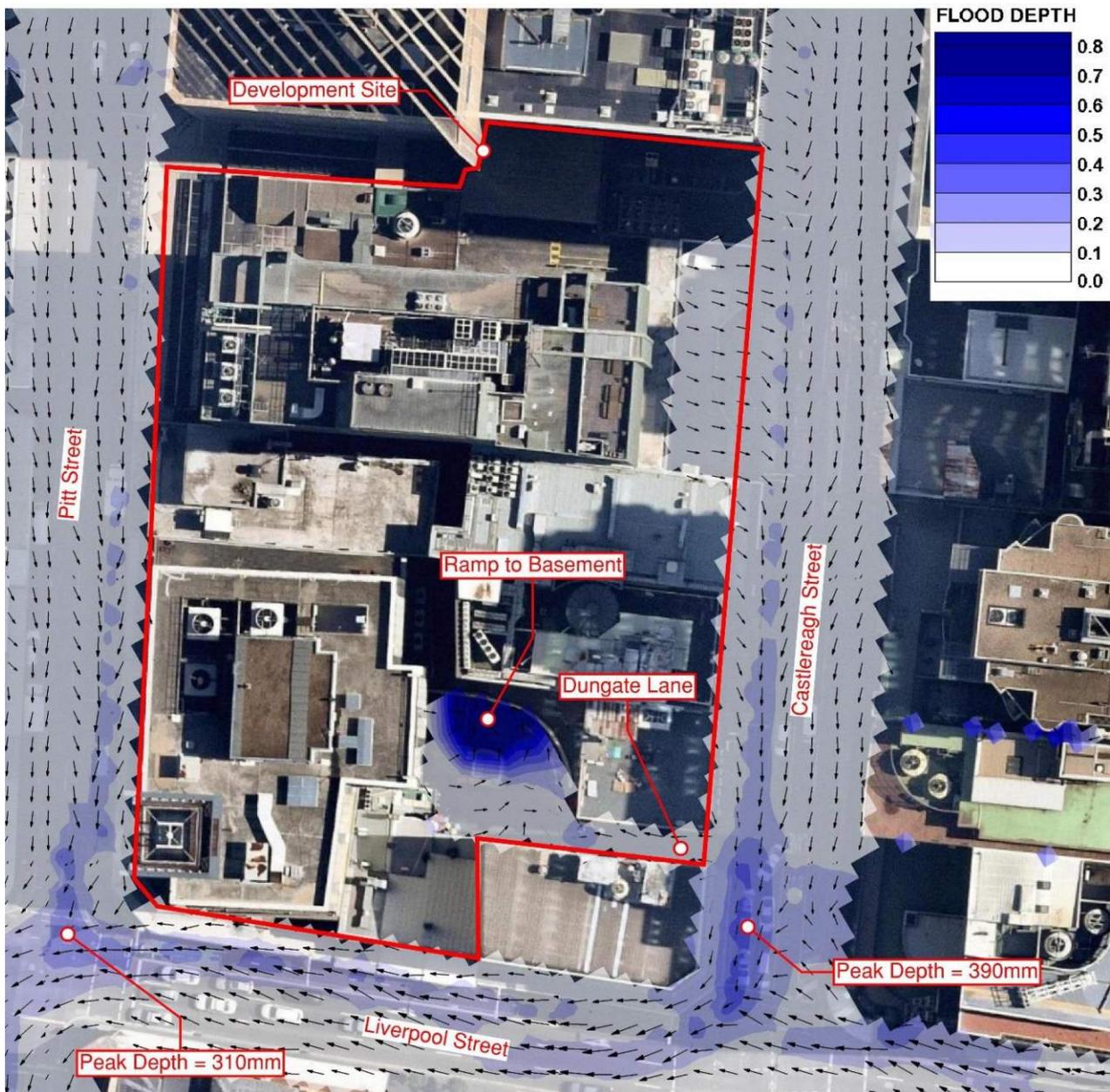


Figure 6: Existing 1% AEP Flood Depth

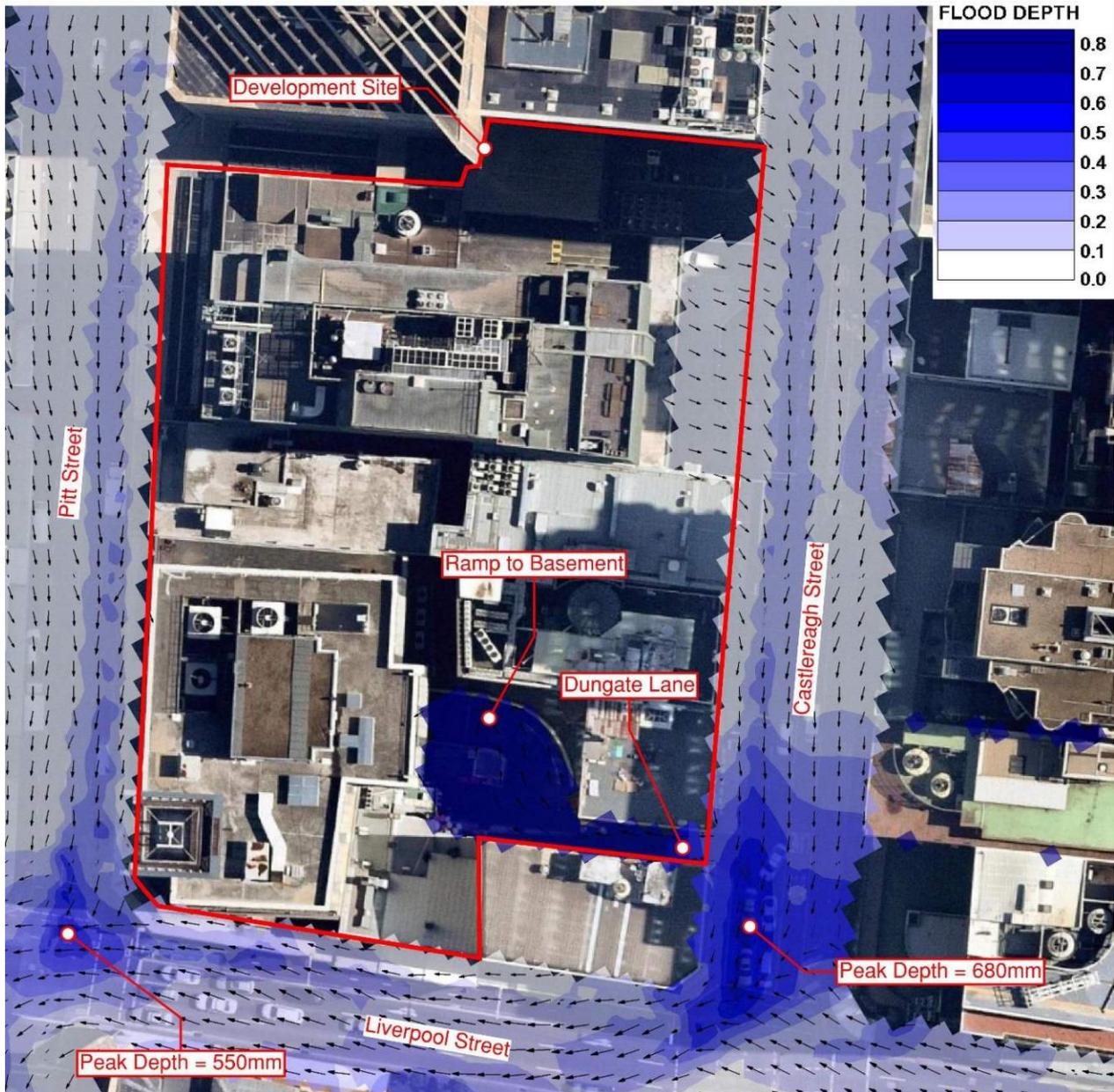


Figure 7: Existing PMF Flood Depth

## 4.2 Proposed Flood Behaviour

The proposed development provides new through-site links between Castlereagh Street, Pitt Street and Liverpool Street, as required by the Concept DA consent conditions. These through-site links allow the existing overland flow entering Dungate Lane to flow through the site towards Pitt Street. The proposed development levels are included on drawing C20 in Appendix C

The other through site links from Castlereagh Street have been designed with a crest above the PMF level that prevents overland flow from entering the site. Proposed levels have been designed to convey flow away from the new buildings.

The proposed 1% AEP flood results are shown in figure 8 and the proposed PMF results are shown in figure 9, and Appendix B.

Note that the proposed stormwater network within the development site has not been modelled, and therefore the flood results within the development site are considered to be conservative.

The proposed results show that the flood hazard (based on the NSW Floodplain Management Manual 2005) following development is low throughout the site, refer to fig 10.



Figure 8: Proposed 1% AEP Flood Depth



Figure 9: Proposed PMF Flood Depth



Figure 10: Proposed 1% AEP Flood Hazard

### 4.3 Proposed Flood Impact

Due to proposed through-site links, as required by the City of Sydney, the trapped overland from Dungate Lane can flow freely through the site toward Pitt Street. The proposed flood results show a slight increase in flood level (up to 60mm) during the 1% AEP on the eastern side of Pitt Street where the overland flow from Dungate Lane flows along the through-site links. This increase only occurs adjacent to the development frontage which meets the required flood planning levels. There is a reduction in flood level within Dungate Lane adjacent to the rear of 255 Castlereagh Street, due to increased pit capacity and pipe outlet.

There is no adverse impact on any existing properties, refer to figure 11.

For extreme events up to the PMF, the development will adopt a 'shelter on-site' policy with safe refuge provided at ground floor and upper levels above the PMF level.

The proposed development minimises the risk to human life, minimise flood risk to property damage and ensures that existing development is not adversely affected by new development, in accordance with the City of Sydney Interim Floodplain Management Policy.

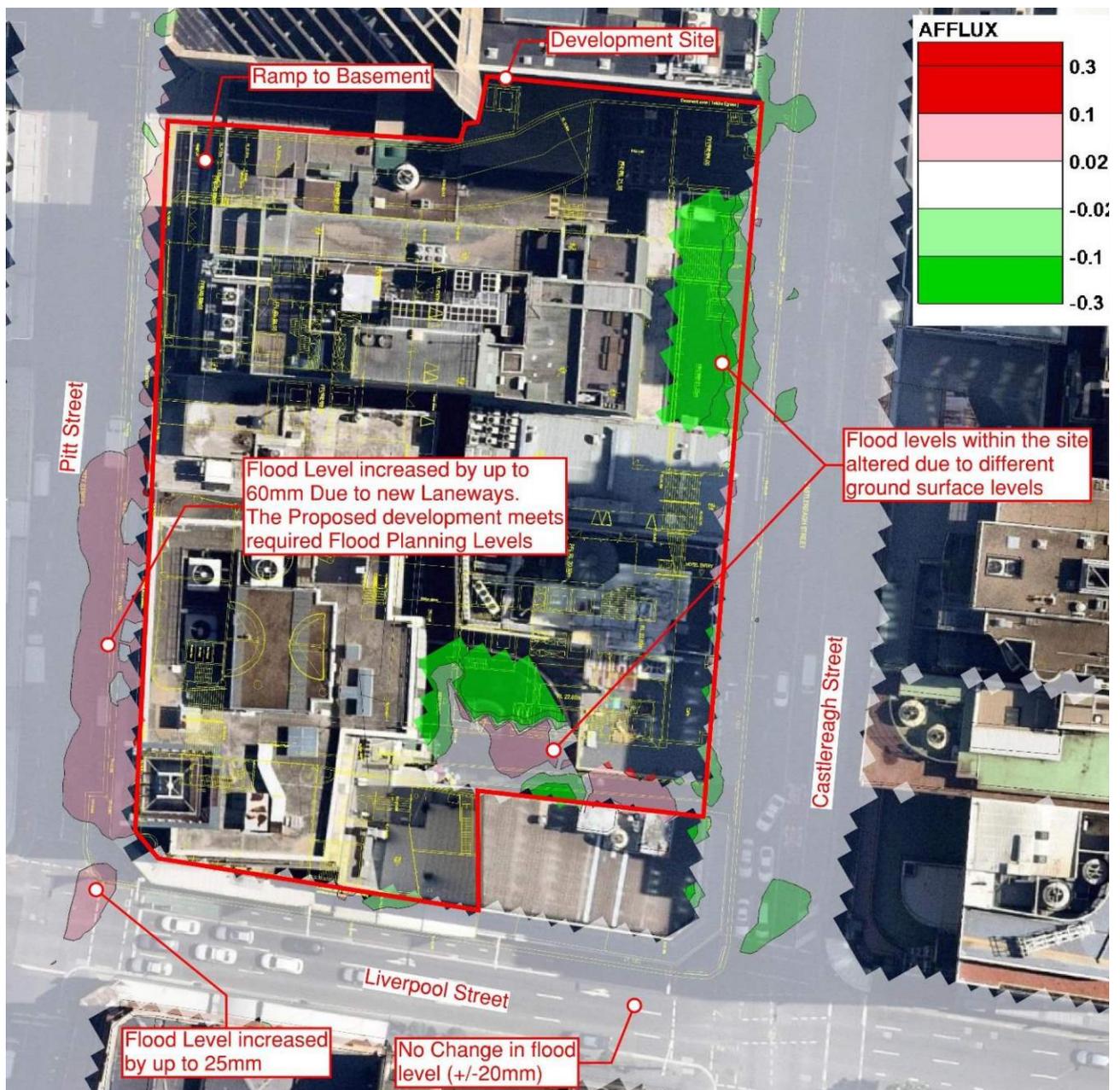


Figure 11: 1% AEP Change in Flood Level (compared to existing)

## 4.4 Proposed Flood Planning Levels

The following table shows the Flood Planning Levels as stated in the City of Sydney Interim Floodplain Management Policy:

Flood Planning Level	Floor Type
PMF	<ul style="list-style-type: none"> <li>▪ <i>Below ground basement levels*</i></li> </ul>
Higher of 1% AEP+ 500mm or PMF	<ul style="list-style-type: none"> <li>▪ Below Ground Parking</li> <li>▪ Critical Facilities</li> </ul>
1% AEP + 500mm	<ul style="list-style-type: none"> <li>▪ Residential – Habitable Rooms</li> </ul>
1% AEP	<ul style="list-style-type: none"> <li>▪ Residential – Non-habitable rooms</li> <li>▪ Business and retail floors</li> <li>▪ Above ground parking (enclosed)</li> </ul>

\* Requirement from Concept DA Consent Condition 14 (D/2016/1509)

The proposed development will meet the required flood planning levels as follows.

- All ground floor business and retail floors will be above the 1% AEP flood levels.
- The access ramp to the basement car park will be above the PMF and above the 1% AEP +500mm flood level.
- All accesses to basement levels will be above the PMF
- All residential floors will be above the ground floor and above the 1% AEP +500mm level.

## 4.5 Climate Change

Council's Darling Harbour Catchment Flood Study included sensitivity analysis for climate change in accordance with *The NSW Sea Level Rise Policy Statement (DECCW, 2009)*. The sensitivity allows for a projected rise in sea level, relative to the 1990 mean sea level, of 0.4 metres by 2050 and 0.9 metres by 2100, which is also in accordance with Council's DCP.

The flood modelling confirms that there is no impact on flood levels at the development site location due to the location in the upper catchment and relative level above sea level (minimum site RL of 18.00m)

In addition to sea level rise, a sensitivity analysis was also undertaken for increased rainfall intensity, incorporating 10%, 20% and 30% increases in design rainfall. The 10% rainfall increase scenario is closest to the regional estimate of future rainfall intensity increases for the Sydney region. The flood modelling confirms a 10% increase in rainfall intensity typically results in flood level increases of less than 0.10m.

## 5.0 Stormwater Management

The existing site area of approximately 5900m<sup>2</sup> is 100% impervious. The existing site is split between a number of lots each, with each lot discharging directly to kerb outlets or to Council’s stormwater system. The existing Stormwater around the site is shown in figure 13.

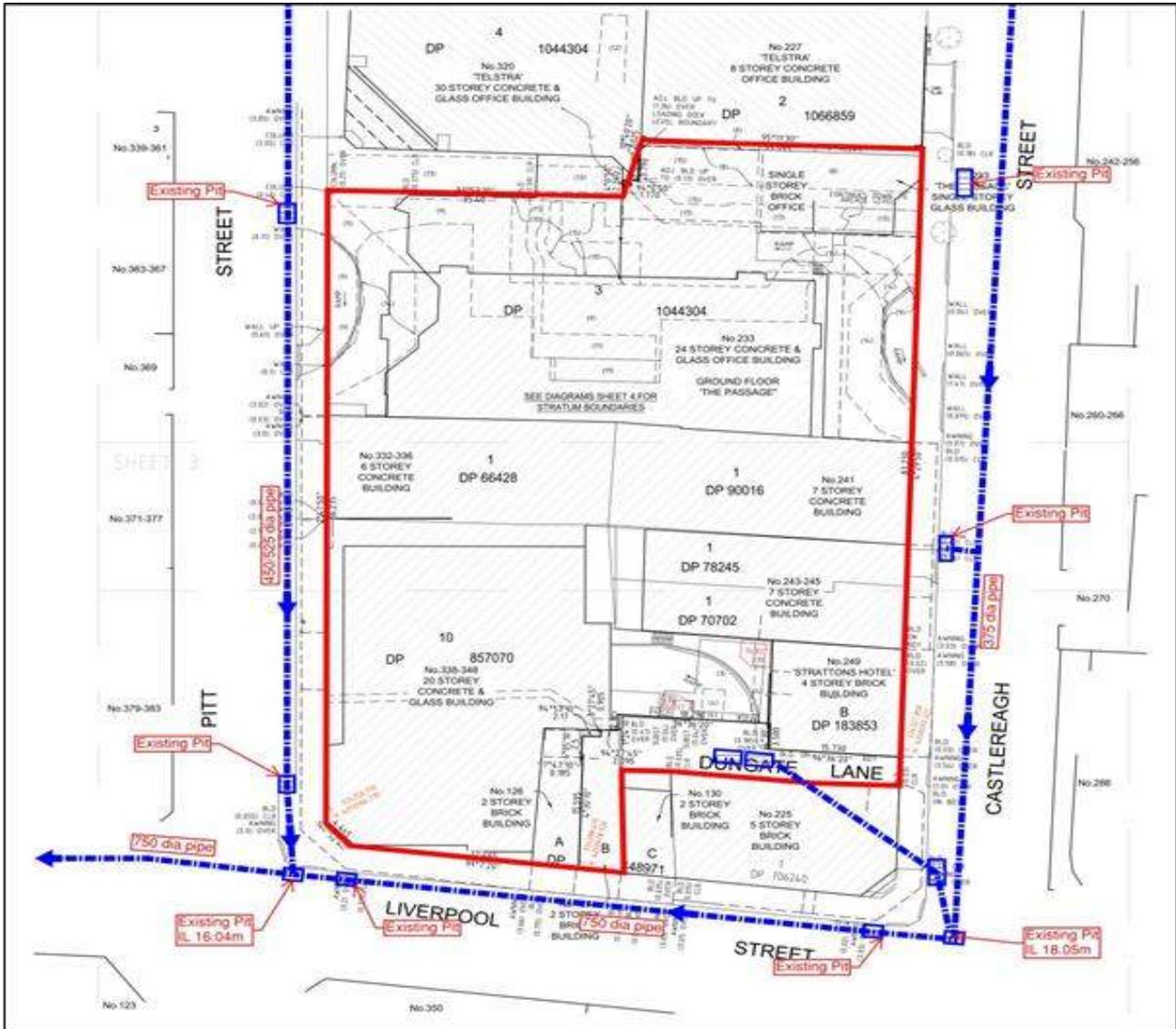


Figure 13: Existing Stormwater

The proposed stormwater within the site will be collecting rainfall runoff in a series of pits and pipes that drain towards the south-west corner of the site into an on-site detention tank (OSD). The proposed stormwater system will be part of the building infrastructure, as it will be located above/within basement levels. Details of the stormwater system will be specified by the hydraulic engineer.

Sydney Water has confirmed the following OSD requirements, refer to Appendix D. The final tank location details and discharge connection point will require coordination with the Architectural and services design during the detailed design stage.

OSD Volume	Permissible Site Discharge
101 cu.m	241 l/s

The proposed OSD tank will be located at the south-west corner of the development at the lowest part of the site. The tank will be located within the basement 1 level and discharge to an existing pit on the corner of Pitt Street and Liverpool Street

The exact invert levels of the stormwater system are subject to variation as the existing services adjacent to the site need to be further investigated. There are numerous services that need to be identified, located with depths investigated prior to any detailed proposed levels being provided.

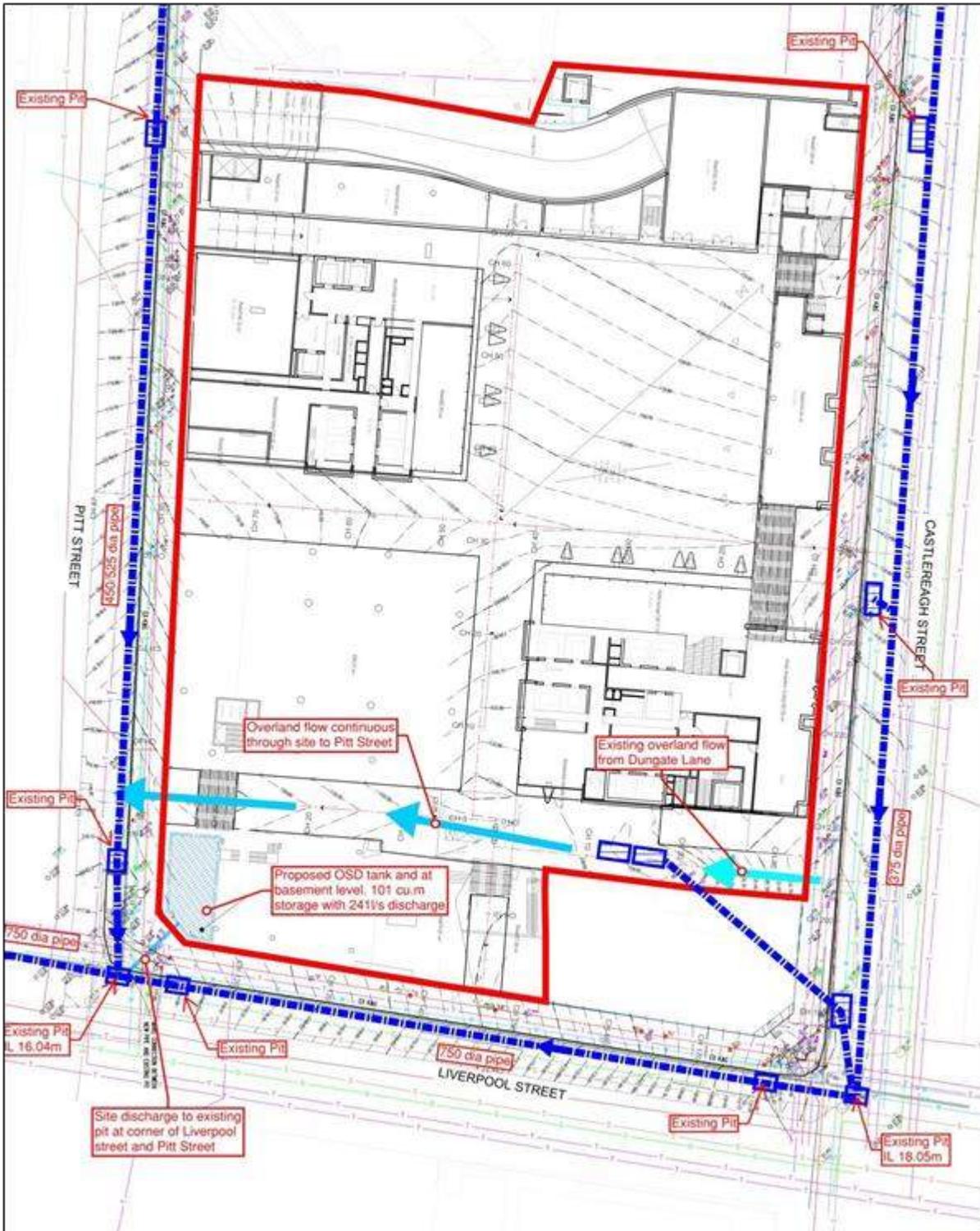


Figure 14: Proposed Stormwater Plan

## 6.0 Stormwater Quality

Stormwater quality analysis has been completed in accordance with; City of Sydney Development Control Plan, Section 3.7.3: Stormwater Quality.

The proposed site has been modelled in MUSIC to demonstrate that the proposed stormwater treatment devices achieve the required stormwater treatment targets outlined in the policy:

The stormwater treatment train for the proposed development includes the following and will be incorporated into the OSD tank in the basement 1 level. In addition, a 150m<sup>3</sup> rainwater tank will also be included as detailed by the Hydraulic Engineer:

- 1x SPEL Storm sacks (or equivalent)
- 9 x SPEL Filter (or equivalent)

The proposed treatment devices meet the required targets as shown in the table below.

Pollutant (Loads Are In Kg/Year)	Load	Residual Load	Load Reduction (%)	Reduction Target
Gross Pollutants	168	0	100	90%
Total Suspended Solids	1300	191	85.40	85%
Total Phosphorus	2.06	0.694	66.1	65%
Total Nitrogen	15.30	6.93	54.10	45%

## 7.0 Construction Phase Stormwater Management

Construction works are to be carried out in accordance with the “Blue Book” erosion and sediment control requirements. The exact controls will vary depending on construction methodology and staging, but will typically consist of:

- Sediment fences;
- A sediment basin;
- Sediment trap;
- Vehicle shaker grid and wash down; and
- Sandbags to protect existing pits.
- Overland flow diversion at the upstream boundary of the site

A conceptual erosion and sediment control plan is included as drawing C15 in the civil drawing set in Appendix C.

## 8.0 Conclusion

The proposed development meets the SEAR's Requirements as well as the City of Sydney LEP 2012, and the Interim Floodplain Management Policy.

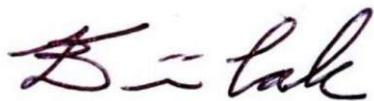
Flood modelling has been completed for the existing and the proposed development scenarios, based on the Council's adopted Darling Harbour Catchment Flood Study. The flood modelling confirms that;

- The development is within a low flood hazard precinct,
- The development does not significantly change existing flood behaviour,
- The development will not result in significant increases in the potential flood affectation of existing development or properties
- The development will incorporate appropriate measures to manage risk to life from flooding
- The development will meet the required Flood Planning Levels.

The design of the proposed stormwater system will be in accordance with City of Sydney Stormwater Drainage Manual and Sydney Water OSD requirements:

- On-Site Detention tank provided with a volume of 101 m<sup>3</sup> and a permissible site discharge of 241 l/s.
- The OSD will connect to the existing pit at the corner of Liverpool Street and Pitt Street
- 1xSPEL Storm sack, 9xSPEL Filter (or equivalent) and a rainwater tank will form the water quality treatment train that meets Council's required treatment targets.

Prepared by  
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**TAYLOR THOMSON WHITTING NSW TRUST**



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**Eirian Crabbe**  
Associate Director

Authorised By  
**TAYLOR THOMSON WHITTING (NSW) PTY LTD**  
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**Stephen Brain**  
Technical Director

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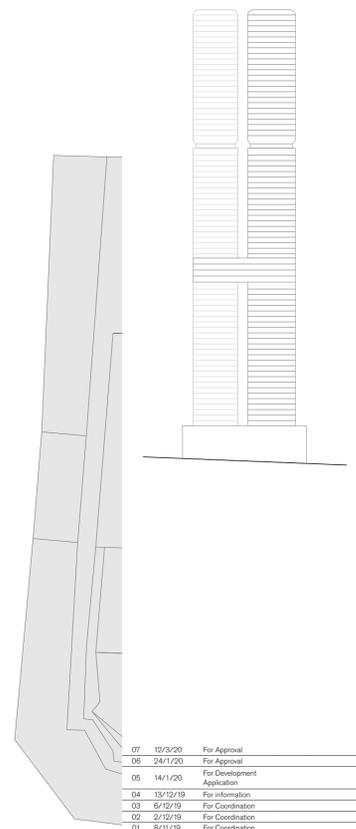
## Appendix A

# Proposed Ground Floor Plan

**GENERAL NOTES**  
 ○ ALL DIMENSIONS AND EXISTING CONDITIONS SHALL BE CHECKED AND VERIFIED BY THE CONTRACTOR BEFORE PROCEEDING WITH THE WORK.  
 ○ ALL LEVELS RELATIVE TO AUSTRALIAN HEIGHT DATUM.  
 ○ DO NOT SCALE DRAWINGS.  
 ○ USE FIGURED DIMENSIONS ONLY.

Legend

- 1 Bed Apartment
- 2 Bed Apartment
- 3 Bed Apartment
- Residential Amenities
- Parking
- Hotel Amenities
- Hotel
- Hotel Spa
- Hotel BOH
- Circulation
- Food and Beverage
- Retail
- Lift, Fire stair, Services
- Plant
- Boundary



rev	date	name	by	chk
07	12/3/20	For Approval	TS	
06	24/1/20	For Approval	KIK	
05	14/1/20	For Development Application	KIK	
04	13/12/19	For information	KIK	
03	01/12/19	For Coordination	TS	
02	27/12/19	For Coordination	PN	
01	01/11/19	For Coordination	KIK	

fjmt studio architecture interiors landscape urban community  
 sydney melbourne uk  
 Level 5, 70 King Street + 61 2 9251 7077 • [fjmtstudio.com](http://fjmtstudio.com)

project  
**338 Pitt Street**  
 338 Pitt Street  
 Sydney NSW 2000

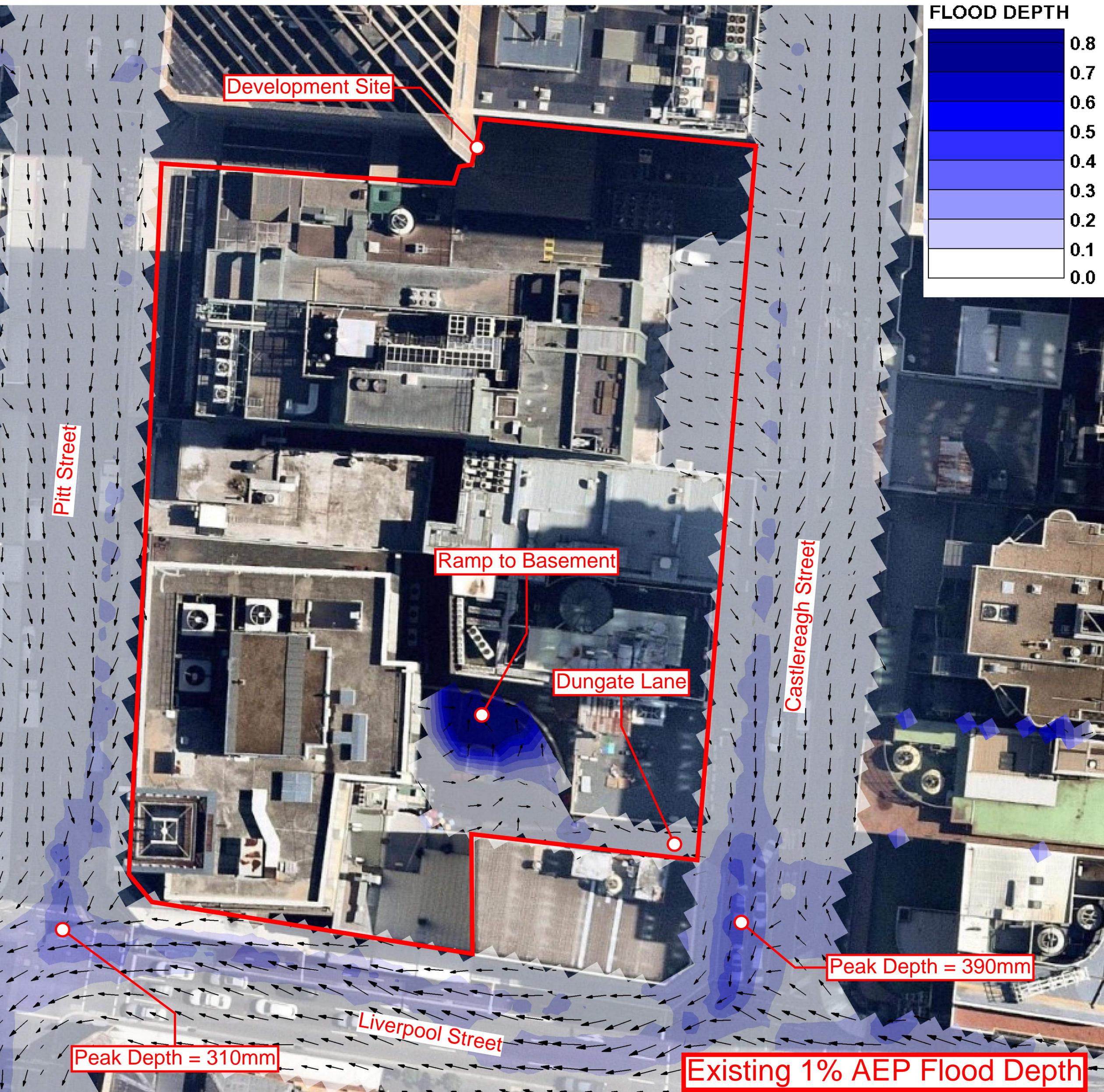
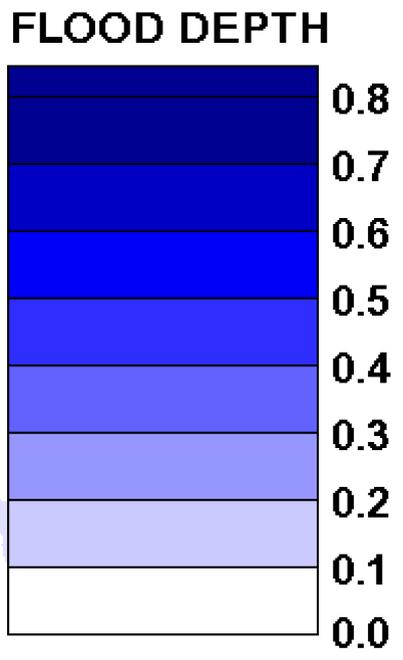
title  
**General Arrangement Plans**  
**Ground Floor - Hotel Lobby+Residential**  
**Lobby+Retail**

project code	sheet no.	revision	first issued
H338	2007		8/11/19

**For Approval**

## Appendix B

# Flood Results



Development Site

Pitt Street

Ramp to Basement

Dungate Lane

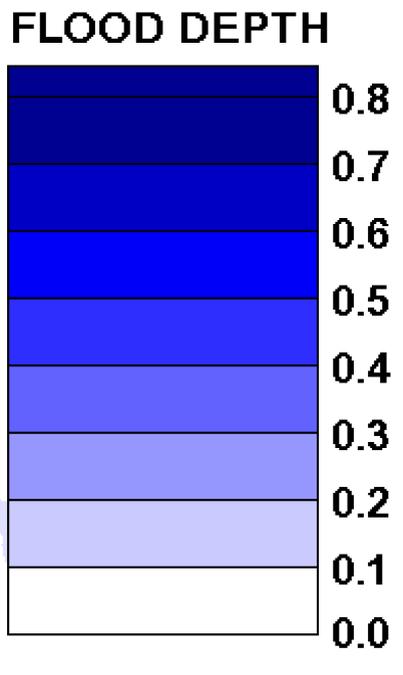
Castlereagh Street

Peak Depth = 390mm

Peak Depth = 310mm

Liverpool Street

Existing 1% AEP Flood Depth



Development Site

Ramp to Basement

Pitt Street

Dungate Lane

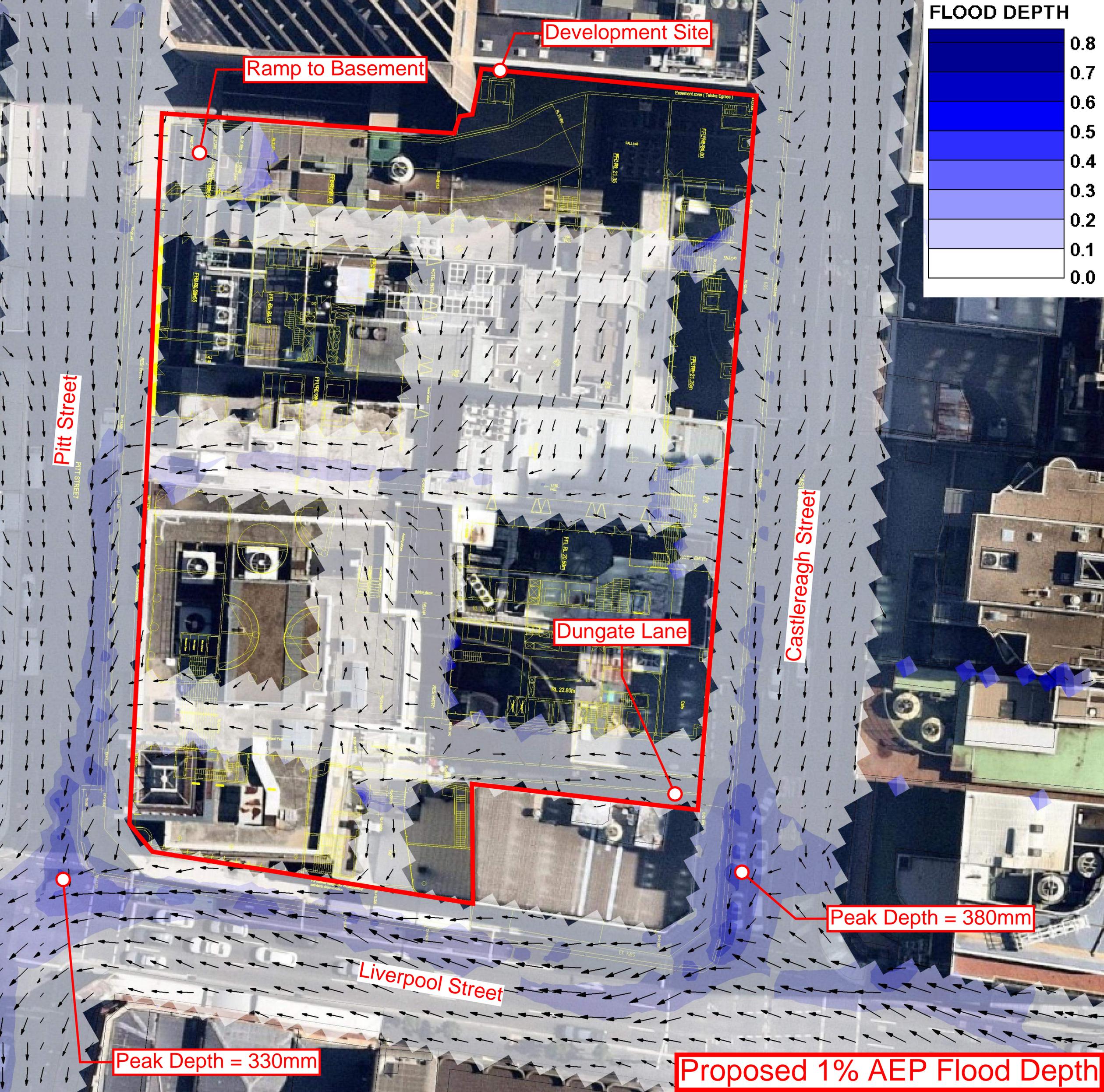
Castlereagh Street

Peak Depth = 380mm

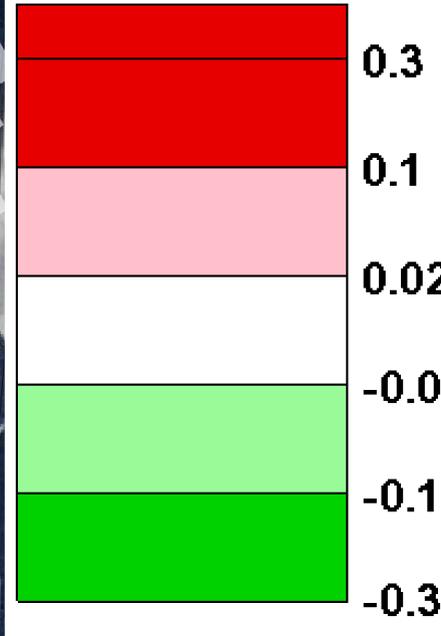
Liverpool Street

Peak Depth = 330mm

Proposed 1% AEP Flood Depth



**AFFLUX**



Development Site

Ramp to Basement

Pitt Street

Flood levels within the site altered due to different ground surface levels

Flood Level increased by up to 60mm Due to new Laneways. The Proposed development meets required Flood Planning Levels

Castlereagh Street

Liverpool Street

Flood Level increased by up to 25mm

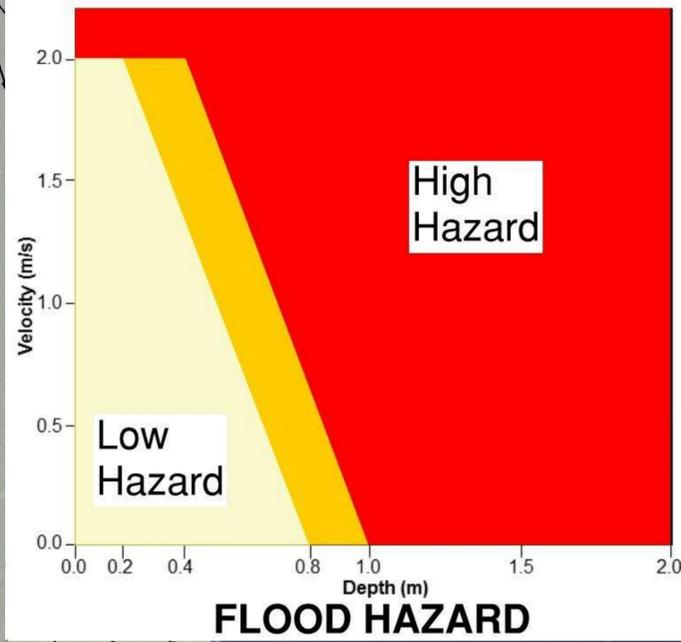
No Change in flood level (+/-20mm)

1% AEP Change in Flood Level (proposed compared to existing)





Development Site



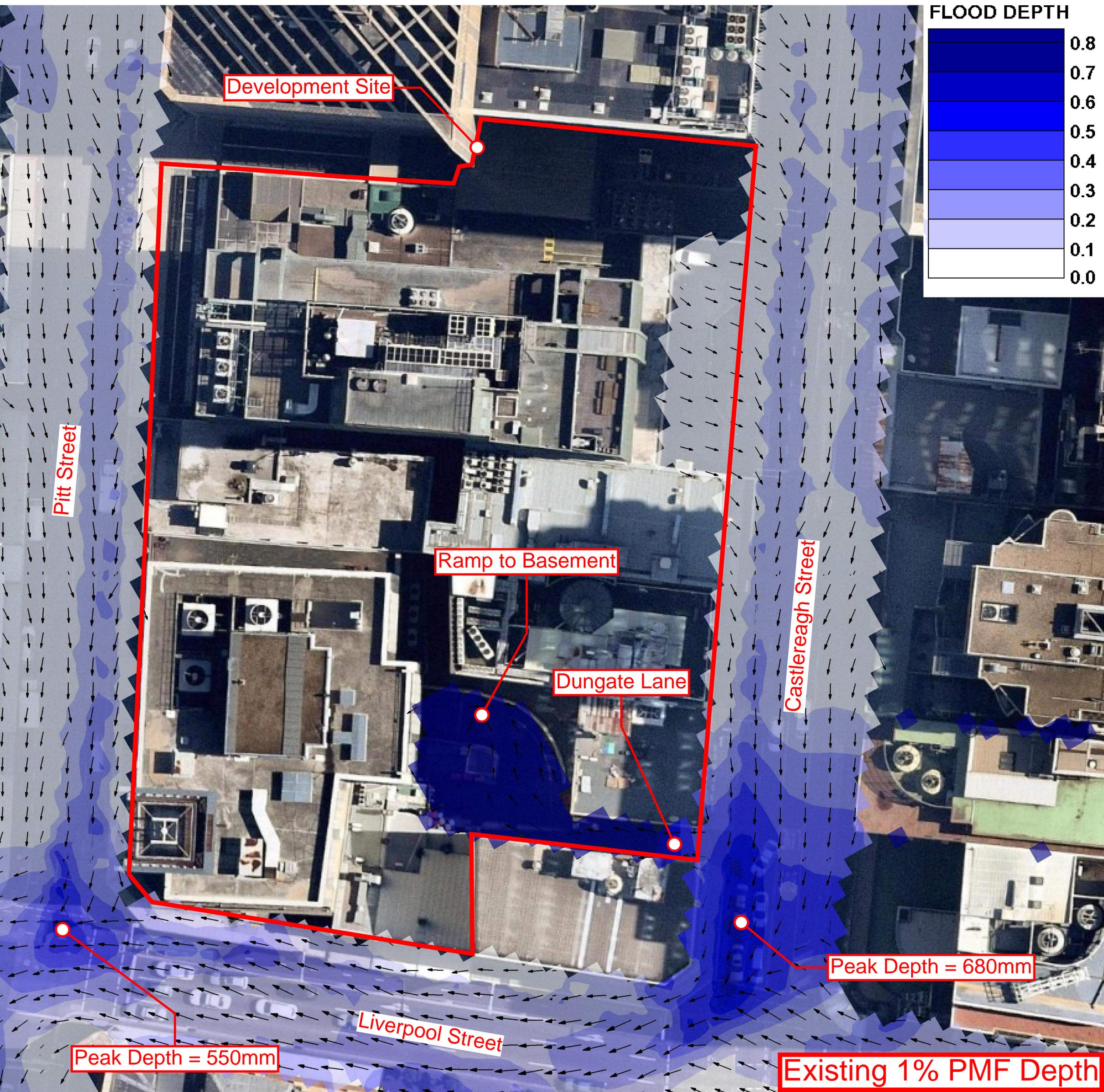
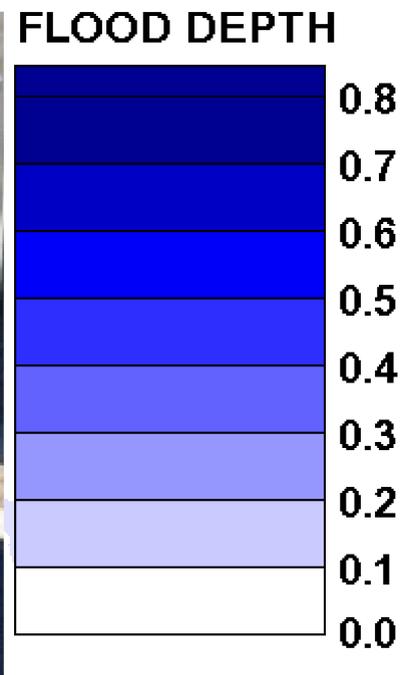
Pitt Street

Castlereagh Street

Dungate Lane

Liverpool Street

Proposed 1% AEP Flood Hazard



Development Site

Pitt Street

Ramp to Basement

Dungate Lane

Castlereagh Street

Peak Depth = 680mm

Peak Depth = 550mm

Liverpool Street

Existing 1% PMF Depth

Crest of Basement Ramp (above PMF and 1% AEP+500mm)

Development Site

Top of steps above PMF level along Castlereagh Street

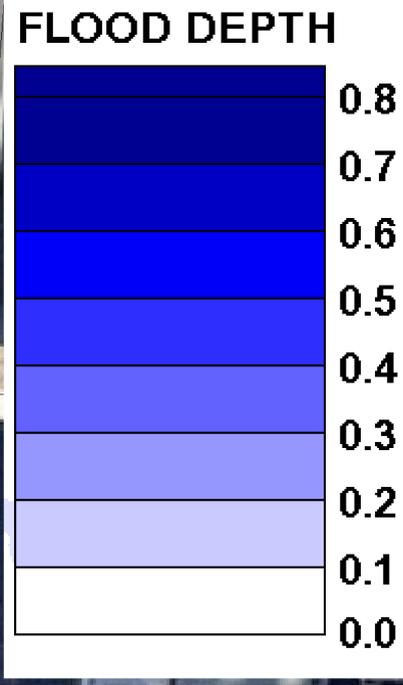
Dungate Lane

Peak Depth = 610mm

Liverpool Street

Peak Depth = 560mm

Proposed PMF Depth



## Appendix C

# Proposed Civil Plans

# HANS 338 PITT STREET SYDNEY, PUBLIC DOMAIN CIVIL WORKS

**GENERAL NOTES**

- Contractor must verify all dimensions and existing levels on site prior to commencement of works. Any discrepancies to be reported to the SUPERINTENDENT.
- Strip all topsoil from the construction area. All stripped topsoil shall be disposed of off-site unless directed otherwise.
- Make smooth connection with all existing works.
- Compact subgrade under buildings and pavements to minimum 98% standard maximum dry density in accordance with AS 1289 5.1.1. Compaction under buildings to extend 2m minimum beyond building footprint.
- All work on public property, property which is to become public property, or any work which is to come under the control of the Statutory Authority: the Contractor is to ensure that the drawings used for construction have been approved by all relevant authorities prior to commencement site.
- All work on public property, property which is to become public property, or any work which is to come under the control of the Statutory Authority: the Contractor is to ensure that the drawings used for construction have been approved by all relevant authorities prior to commencement site.
- For all temporary batters refer to geotechnical recommendations.

**REFERENCE DRAWINGS**

- These drawings have been based from, and to be read in conjunction with the following Consultants drawings. Any conflict to the drawings must be notified immediately to the Engineer.

Consultant	Dwg Title	Dwg No	Rev	Date
FJMT	GROUND FLOOR PLAN	1006		
SURVEYS	DETAIL SURVEY	42368DT	1	XX/XX/XX

**SURVEY AND SERVICES INFORMATION SURVEY**

Origin of levels : PM XXXXX, AHDX: XXXX  
 Datum of levels : A.H.D. AUSTRALIAN HEIGHT DATUM  
 Coordinate system : MGA  
 Survey prepared by : LAND SURVEYS  
 Setout Points : CONTACT THE SURVEYOR

Taylor Thomson Whitting does not guarantee that the survey information shown on these drawings is accurate and will accept no liability for any inaccuracies in the survey information provided to us from any cause whatsoever.

**UNDERGROUND SERVICES - WARNING**

The locations of underground services shown on Taylor Thomson Whittings drawings have been plotted from diagrams provided by service authorities. This information has been prepared solely for the authorities own use and may not necessarily be updated or accurate.

The position of services as recorded by the authority at the time of installation may not reflect changes in the physical environment subsequent to installation.

Taylor Thomson Whitting does not guarantee that the services information shown on these drawings shows more than the presence or absence of services, and will accept no liability for inaccuracies in the services information shown from any cause whatsoever.

**The Contractor must confirm the exact location and extent of services prior to construction and notify any conflict with the drawings immediately to the Engineer/Superintendent.**

The contractor is to get approval from the relevant state survey department, to remove/adjust any survey mark. This includes but is not limited to: State Survey Marks (SSM), Permanent Marks (PM), cadastral reference marks or any other survey mark which is to be removed or adjusted in any way.

**Taylor Thomson Whitting plans do not indicate the presence of any survey mark. The contractor is to undertake their own search.**

**KERBING NOTES**

Includes all kerbs, gutters, dish drains, crossings and edges.

- All kerbs, gutters, dish drains and crossings to be constructed on minimum 75mm granular basecourse compacted to minimum 98% modified maximum dry density in accordance with AS 1289 5.2.1.
- Expansion joints (EJ) to be formed from 10mm compressible cork filler board for the full depth of the section and cut to profile. Expansion joints to be located at drainage pits, on tangent points of curves and elsewhere at 12m centres except for integral kerbs where the expansion joints are to match the joint locations in slabs.
- Weakened plane joints to be min 3mm wide and located at 3m centres except for integral kerbs where weakened plane joints are to match the joint locations in slabs.
- Broomed finished to all ramped and vehicular crossings, all other kerbing or dish drains to be steel float finished.
- In the replacement of kerbs -  
 Existing road pavement is to be sawcut 900mm from lip of gutter. Upon completion of new kerbs, new basecourse and surface is to be laid 900mm wide to match existing materials and thicknesses.  
 Existing allotment drainage pipes are to be built into the new kerb with a 100mm dia hole.  
 Existing kerbs are to be completely removed where new kerbs are shown.

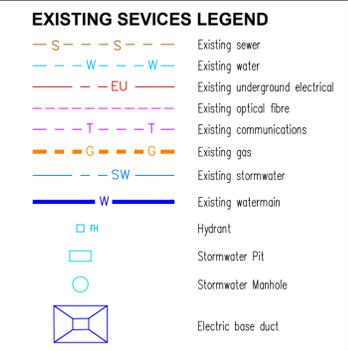
**CONCRETE FINISHING NOTES**

- All exposed concrete pavements are to be broomed finished.
- All edges of the concrete pavement including keyed and dowelled joints are to be finished with an edging tool.
- Concrete pavements with grades greater than 10 % shall be heavily broomed finished.
- Carborundum to be added to all stair treads and ramped crossings U.N.O.

**BOUNDARY AND EASEMENT NOTE**

The property boundary and easement locations shown on Taylor Thomson Whitting drawing's have been based from information received from :

Taylor Thomson Whitting makes no guarantees that the boundary or easement information shown is correct.  
 Taylor Thomson Whitting will accept no liabilities for boundary inaccuracies. The contractor/builder is advised to check/confirm all boundaries in relation to all proposed work prior to the commencement of construction. Boundary inaccuracies found are to be reported to the superintendent prior to construction starting.



**PUBLIC DOMAIN NOTE**

These plans are awaiting final approval from the authority regarding these public works. Public domain works are not to commence until these drawings are stamped as approved.

**CONCRETE NOTES**

**EXPOSURE CLASSIFICATION :** External : B2

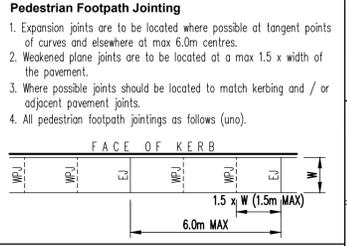
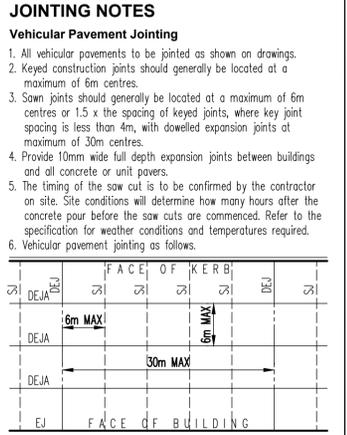
**CONCRETE**

Place concrete of the following characteristic compressive strength  $f_c$  as defined in AS 1379.

Location	AS 1379 $f_c$ MPa at 28 days	Specified Slump	Nominal Agg. Size
Kerbs	S20	80	20
Retaining wall footing	S40	80	20

**FORMWORK**

- Use Type 'CP' cement, unless otherwise specified.
- All concrete shall be subject to project assessment and testing to AS 1379.
- Consolidate by mechanical vibration. Cure all concrete surfaces as directed in the Specification.
- For all falls in slab, drip grooves, relets, chamfers etc. refer to Architects drawings and specifications.
- Unless shown on the drawings, the location of all construction joints shall be submitted to Engineer for review.
- No holes or chases shall be made in the slab without the approval of the Engineer.
- Conduits and pipes are to be fixed to the underside of the top reinforcement layer.
- Slurry used to lubricate concrete pump lines is not to be used in any structural members.
- All slabs cast on ground require sand blinding with a Concrete Underlay



**SAFETY IN DESIGN**

Contractor to refer to Appendix B of the Civil Specification for the Civil Risk and Solutions Register.

**EXISTING SERVICES**

Contractor to be aware existing services are located within the site. Location of all services to be verified by the Contractor prior to commencing works. Contractor to confirm with relevant authority regarding measures to be taken to ensure services are protected or procedures are in place to demolish and/or relocate.

**EXISTING STRUCTURES**

Contractor to be aware existing structures may exist within the site. To prevent damage to existing structure(s) and/or personnel, site works to be carried out as far as practicably possible from existing structure(s).

**EXISTING TREES**

Contractor to be aware existing trees exist within the site which need to be protected. To prevent damage to trees and/or personnel, site works to be carried out as far as practicably possible from existing trees. Advice needs to be sought from Arborist and/or Landscape Architect on measures required to protect trees.

**GROUNDWATER**

Contractor to be aware ground water levels are close to existing surface level. Temporary de-watering may be required during construction works.

**EXCAVATIONS**

Deep excavations due to stormwater drainage works is required. Contractor to ensure safe working procedures are in place for works. All excavations to be fenced off and batters adequately supported to approval of Geotechnical Engineer.

**GROUND CONDITIONS**

Contractor to be aware of the site geotechnical conditions. Refer to geotechnical report by Douglas Partners (report number: 86319.00) for details.

**HAZARDOUS MATERIALS**

Existing asbestos products & contaminated material may be present on site. Contractor to ensure all hazardous materials are identified prior to commencing works. Safe working practices as per relevant authority to be adopted and appropriate PPE to be used when handling all hazardous materials. Refer to geotechnical/environmental report by Douglas Partners (report number: 86319.00) for details.

**CONFINED SPACES**

Contractor to be aware of potential hazards due to working in confined spaces such as stormwater pits, trenches and/or tanks. Contractor to provide safe working methods and use appropriate PPE when entering confined spaces.

**MANUAL HANDLING**

Contractor to be aware manual handling may be required during construction. Contractor to take appropriate measures to ensure manual handling procedures and assessments are in place prior to commencing works.

**WATER POLLUTION**

Contractor to ensure appropriate measures are taken to prevent pollutants from construction works contaminating the surrounding environment.

**SITE ACCESS/EGRESS**

Contractor to be aware site works occur in close proximity to footpaths and roadways. Contractor to erect appropriate barriers and signage to protect site personnel and public.

**VEHICLE MOVEMENT**

Contractor to supply and comply with traffic management plan and provide adequate site traffic control including a certified traffic marshal to supervise vehicle movements where necessary.



**PIT SCHEDULE**

**Note:** Grate size does not necessarily reflect pit size, refer pit type details, shown on detail sheets - C110  
 Final internal pit dimensions are to comply with AS3500

Type	Description	Cover (Clear Opening)	Number
A	Kerb inlet pit	450 x 900 Class D heelguard steel grate hinged to frame	XX
B	Surface inlet pit	2100x1200* Class D heelguard steel grate, hinged to frame	XX
	Junction pit	900x900 Class D infill cover Class D infill cover	XX
C	Extended surface inlet pit	1500x1000* Class D heelguard steel grate, hinged to frame. Internal pit size (2200x1000)	XX

\*Non-standard grate size requires custom build.

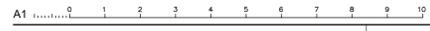
**THE CITY OF SYDNEY REFERENCE DRAWINGS**

REFERENCE No.	DRAWING NAME
<b>KERB &amp; GUTTER</b>	
1.1.3	KERB & GUTTER: STONE KERB PROFILES - DEEP EMBEDMENT
1.1.4	KERB & GUTTER: STONE KERB SECTIONS - DEEP EMBEDMENT
1.1.5	STONE KERB PROFILES - SHALLOW EMBEDMENT
1.1.6	STONE KERB SECTIONS - SHALLOW EMBEDMENT
1.1.11	KERB & GUTTER: TYPICAL STONE GUTTER DETAIL
1.1.16	KERB & GUTTER: ROAD RESTORATION ADJACENT TO KERB & GUTTER WORKS
<b>FOOTWAYS</b>	
2.1.2	GENERAL FOOTPATH: TYPICAL ONE PART PIT COVER
2.1.3	GENERAL FOOTPATH: TYPICAL MULTI PART PIT COVER
2.1.4	GENERAL FOOTPATH: SEWER & STORMWATER PIT INFILL COVER
2.1.5	GENERAL FOOTPATH: SERVICE VALVE COVER DETAIL
2.1.6	GENERAL FOOTPATH: SERVICE PIT EDGEDETAIL
2.1.8	GENERAL FOOTPATH: PROPERTY OWNERSHIP INTERFACE LOCATION
2.5.7	ASHPHALT PAVING: COMMERCIAL/INDUSTRIAL VEHICULAR CROSSING
2.6.3	CONCRETE PAVING: JUNCTIONS
2.6.4	CONCRETE PAVING: JOINTS
2.6.8	CONCRETE PAVING: VEHICULAR CROSSING
2.7.4	TCSI
2.8.1	CONTINUOUS FOOTPATH TREATMENTS
<b>ROADWAYS</b>	
3.1.2	ROAD PAVEMENTS: TRAFFICABLE JOINTS - PLAN
3.1.3	ROAD PAVEMENTS: TRAFFICABLE JOINTS - EXPANSION AND CONTRACTION JOINTS
3.1.4	ROAD PAVEMENTS: TRAFFICABLE JOINTS - CONSTRUCTION JOINTS
3.1.9	ROAD PAVEMENTS: STONE SET PAVEMENT

**DRAWING SCHEDULE**

DRAWING NO.	DRAWING NAME
C200	NOTES AND LEGEND SHEET
C215	EROSION AND SEDIMENT CONTROL PLAN
C216	EROSION AND SEDIMENT CONTROL DETAILS
C217	EXISTING SURVEY
C220	SITEWORKS AND STORMWATER PLAN
C240	CROSS SECTIONS
C241	LONG SECTIONS
C250	TYPICAL DETAILS SHEET 1

Reference: C200.dwg - USER: mathib - Plot File Created: Apr 06, 2020 - 4:45pm



Rev	Description	Eng	Draft	Date	Rev	Description	Eng	Draft	Date
P1	PRELIMINARY ISSUE	EC	MB	06.04.20					

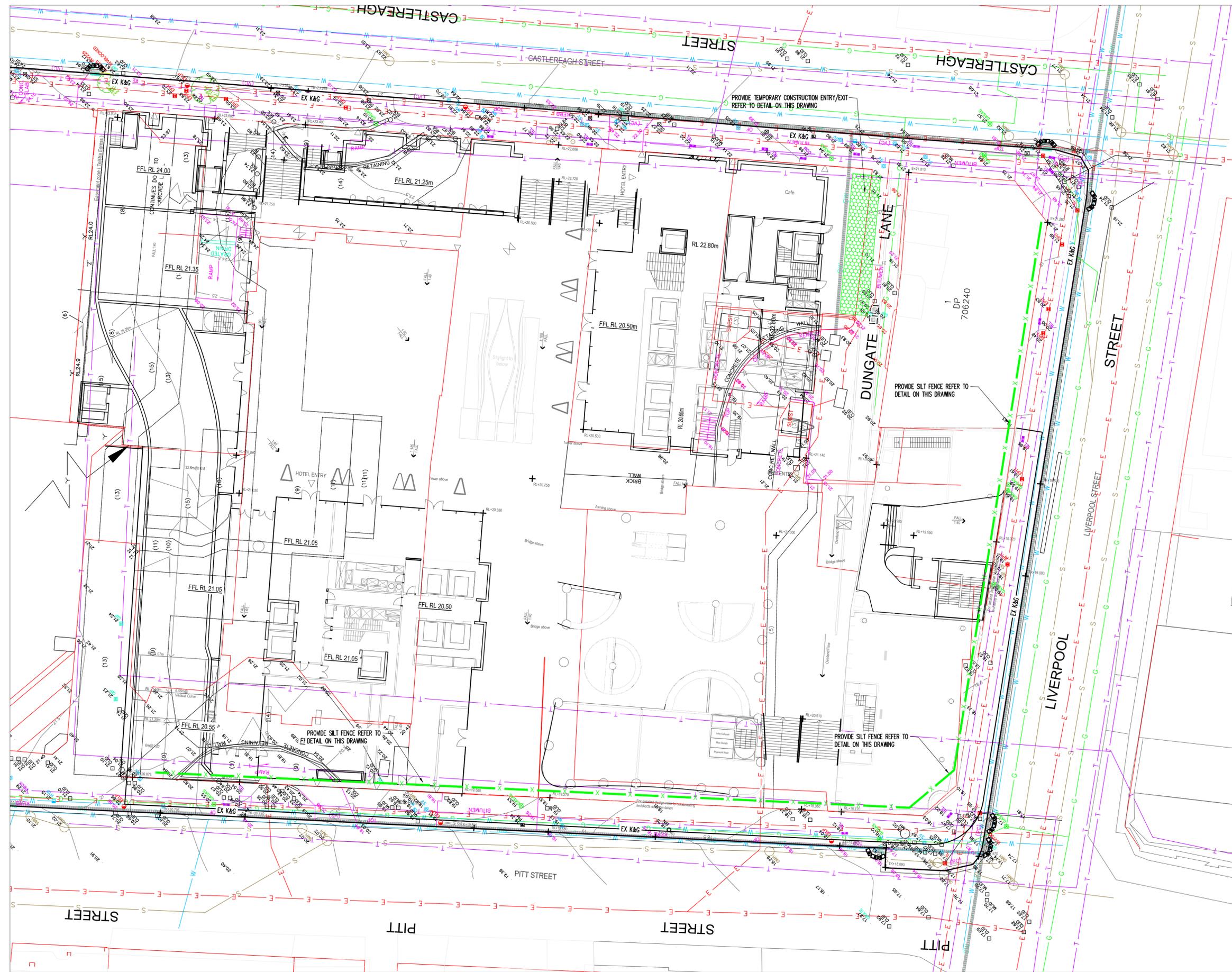
Architect  
**FRANCIS-JONES MOREHEN THORP PTY LTD**

Civil Engineer  
  
 612 9439 7288 | 48 Chandos Street St Leonards NSW 2065

Project  
**338 PITT STREET SYDNEY**

Sheet Subject  
**NOTES & LEGEND SHEET**

Scale	Drawn	Authorised
A1	NTS	MB
Job No	Drawing No	Revision
181034	C200	P1
Plot File Created: Apr 06, 2020 - 4:45pm		



**EROSION AND SEDIMENT CONTROL NOTES**

- All work shall be generally carried out in accordance with
  - Local authority requirements,
  - EPA - Pollution control manual for urban stormwater,
  - LANDCOM NSW - Managing Urban Stormwater: Soils and Construction ("Blue Book").
- Erosion and sediment control **drawings and notes** are provided for the whole of the works. Should the Contractor stage these works then the design may be required to be modified. Variation to these details may require approval by the relevant authorities. The erosion and sediment control **plan** shall be implemented and adapted to meet the varying situations as work on site progresses.
- Maintain all erosion and sediment control devices to the satisfaction of the superintendent and the local authority.
- When stormwater pits are constructed prevent site runoff entering the pits unless silt fences are erected around pits.
- Minimise the area of site being disturbed at any one time.
- Protect all stockpiles of materials from scour and erosion. Do not stockpile loose material in roadways, near drainage pits or in watercourses.
- All soil and water control measures are to be put back in place at the end of each working day, and modified to best suit site conditions.
- Control water from upstream of the site such that it does not enter the disturbed site.
- All construction vehicles shall enter and exit the site via the temporary construction entry/exit.
- All vehicles leaving the site shall be cleaned and inspected before leaving.
- Maintain all stormwater pipes and pits clear of debris and sediment. Inspect stormwater system and clean out after each storm event.
- Clean out all erosion and sediment control devices after each storm event.

**Sequence Of Works**

- Prior to commencement of excavation the following soil management devices must be installed.
  - Construct silt fences below the site and across all potential runoff sites.
  - Construct temporary construction entry/exit and divert runoff to suitable control systems.
  - Construct measures to divert upstream flows into existing stormwater system.
  - Construct sedimentation traps/basin including outlet control and overflow.
  - Construct turf lined swales.
  - Provide sandbag sediment traps upstream of existing pits.
  - Construct geotextile filter pit surround around all proposed pits as they are constructed.
- On completion of pavement provide sand bag kerb inlet sediment traps around pits.
- Provide and maintain a strip of turf on both sides of all roads after the construction of kerbs.

**WATER QUALITY TESTING REQUIREMENTS**

Prior to discharge of site stormwater, groundwater and seepage water into council's stormwater system, contractors must undertake water quality tests in conjunction with a suitably qualified environment consultant outlining the following:

- Compliance with the criteria of the Australian and New Zealand Guidelines for Fresh and Marine Water Quality (2000)
- If required subject to the environmental consultants advice, provide remedial measures to improve the quality of water that is to be discharged into Councils storm water drainage system. This should include comments from a suitably qualified environmental consultant confirming the suitability of these remedial measures to manage the water discharged from the site into Councils storm water drainage system. Outlining the proposed, ongoing monitoring, contingency plans and validation program that will be in place to continually monitor the quality of water discharged from this site. This should outline the frequency of water quality testing that will be undertaken by a suitably qualified environmental consultant.

**EROSION AND SEDIMENT CONTROL LEGEND**



Reference: C215.dwg - USER: msh30 - Plot File Created: Apr 06, 2020 - 4:46pm

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**FRANCIS-JONES MOREHEN THORP PTY LTD**

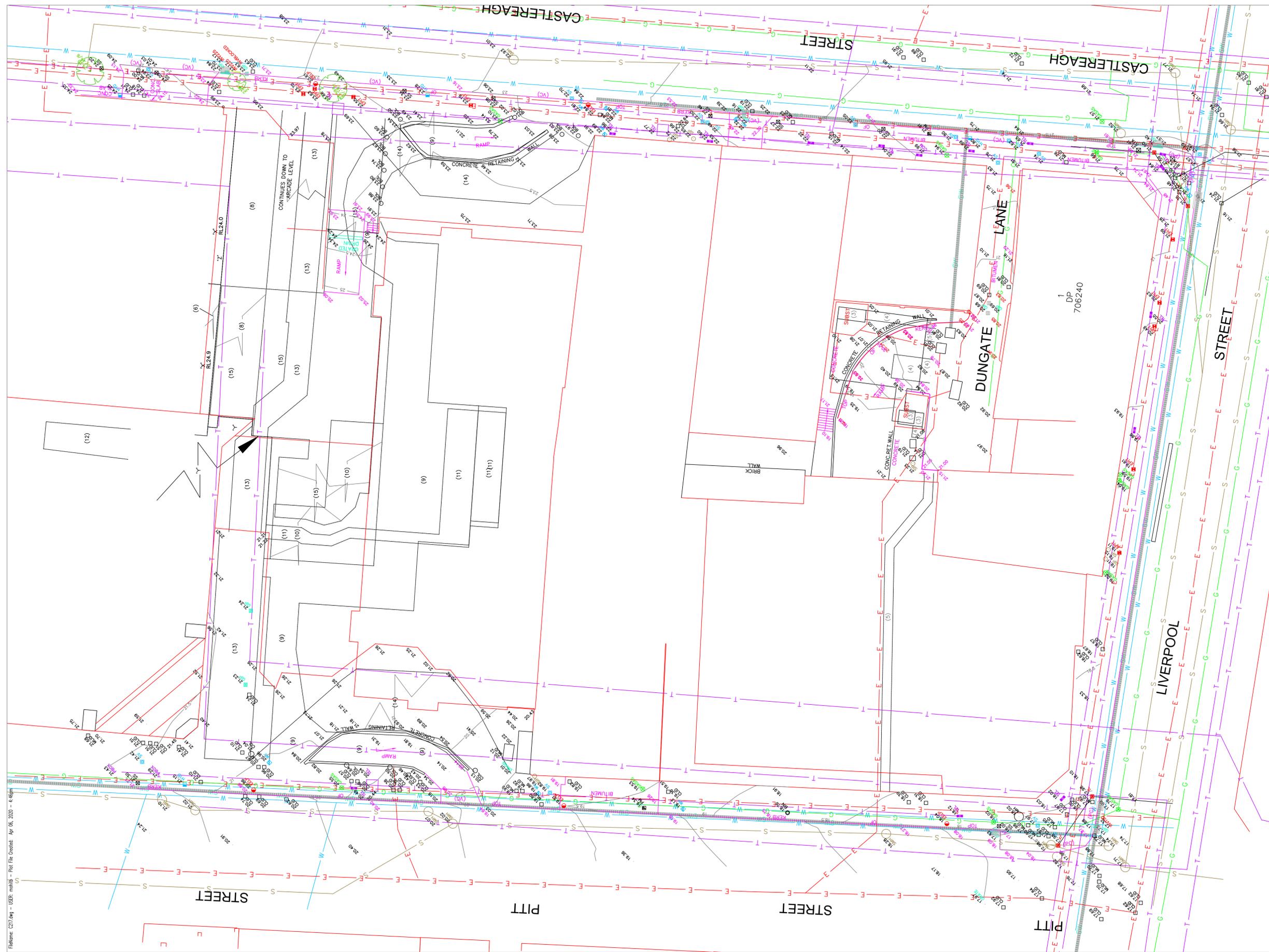
Civil Engineer  
  
 812 9439 7288 | 48 Chandos Street St Leonards NSW 2065

Project  
**338 PITT STREET SYDNEY**

Sheet Subject  
**EROSION AND SEDIMENT CONTROL PLAN**

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Job No	Drawing No	Revision
181034	C215	P1
Plot File Created: Apr 06, 2020 - 4:46pm		





**EXISTING SERVICES LEGEND**

S	Existing sewer
E	Existing electrical
W	Existing water
T	Existing communications
G	Existing gas
---	Existing stormwater

Scale	A1
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Job No	181034
Drawing No	C217
Revision	P1
Plot File Created	Apr 06, 2020 - 4:46pm

Rev	Description	Eng	Draft	Date
P1	PRELIMINARY ISSUE	EC	MB	06.04.20

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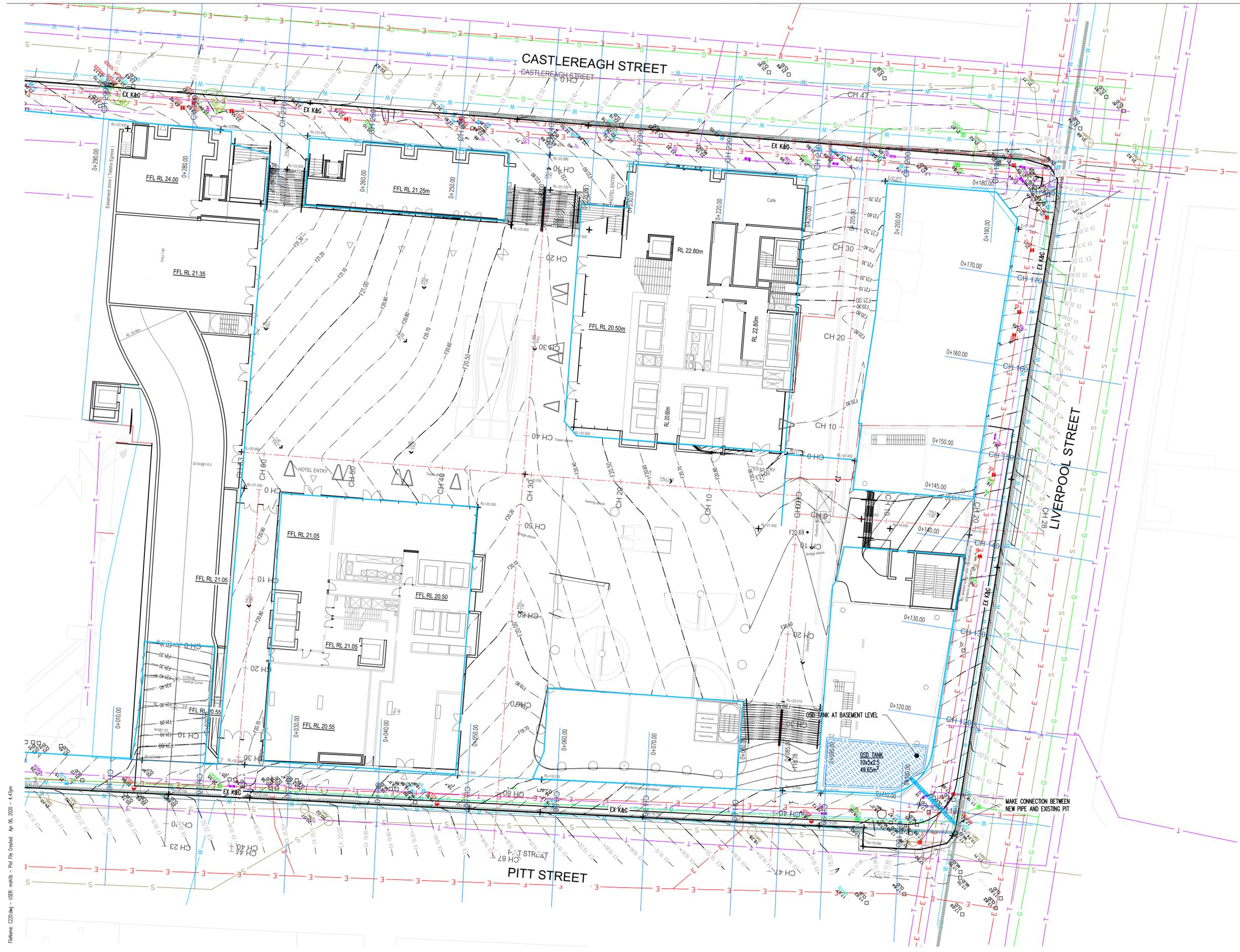
Civil Engineer  
  
 812 9439 7288 | 48 Chandos Street St Leonards NSW 2065

Project  
**338 PITT STREET SYDNEY**

Sheet Subject  
**EXISTING SURVEY**

**SITWORKS LEGEND**

-  F22.00 Finished contour
-  EX K&G Kerb and gutter
-  New Stormwater line
-  Existing Stormwater line



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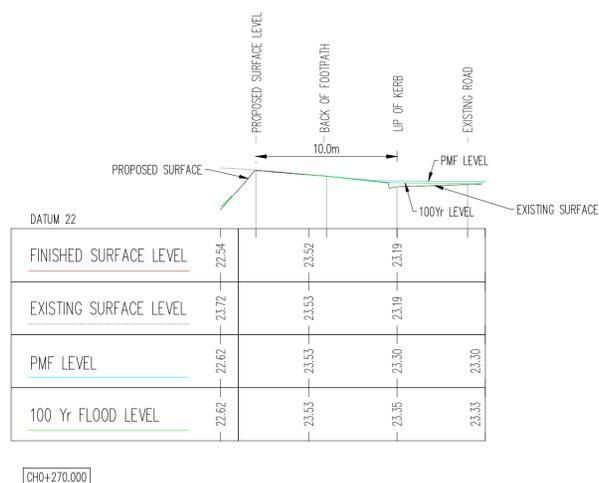
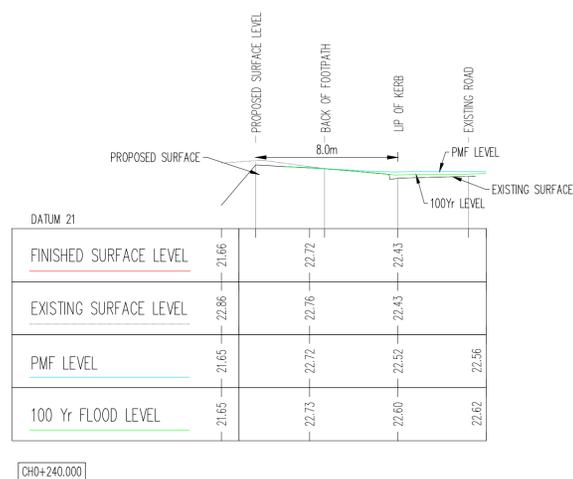
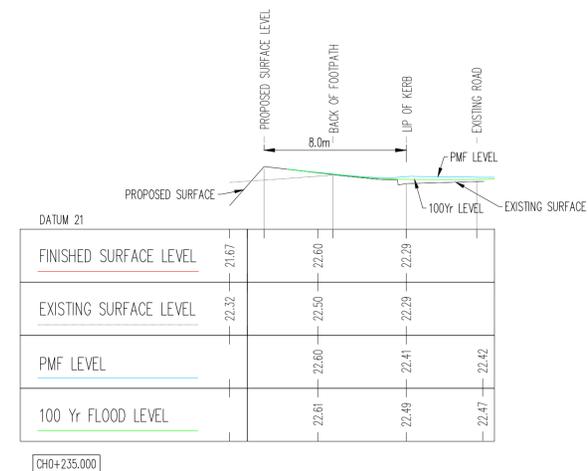
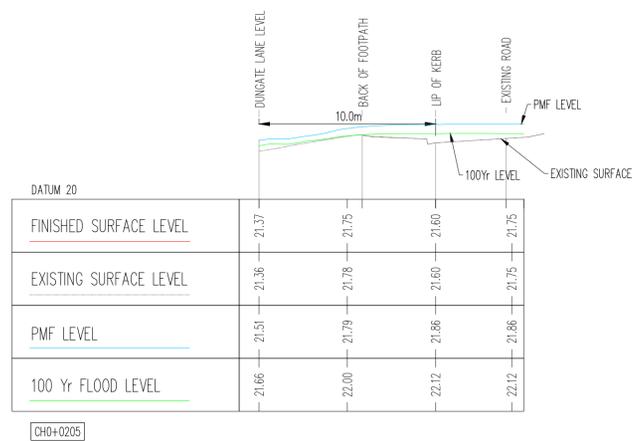
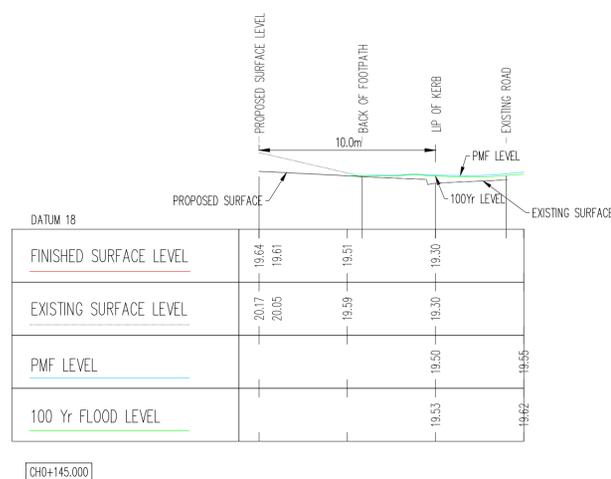
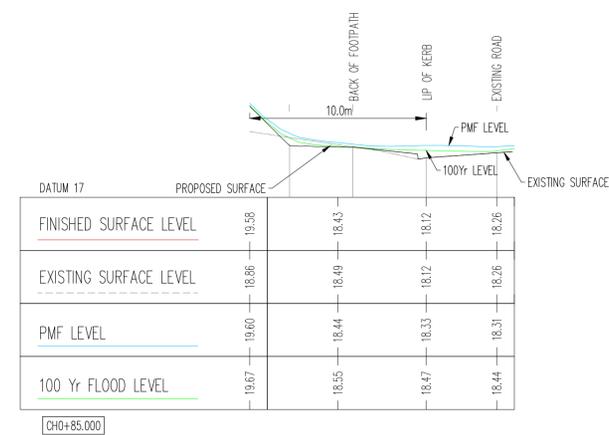
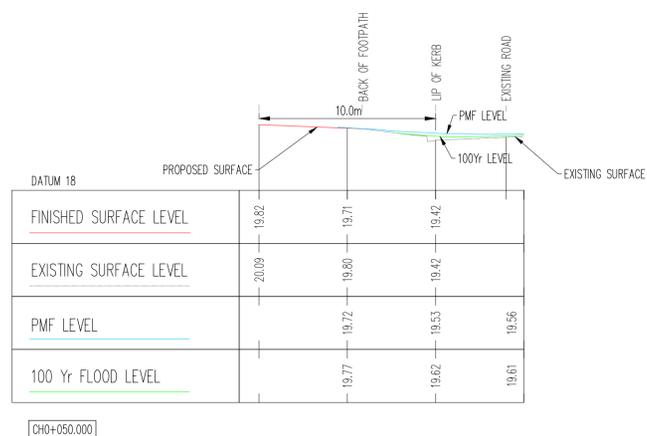
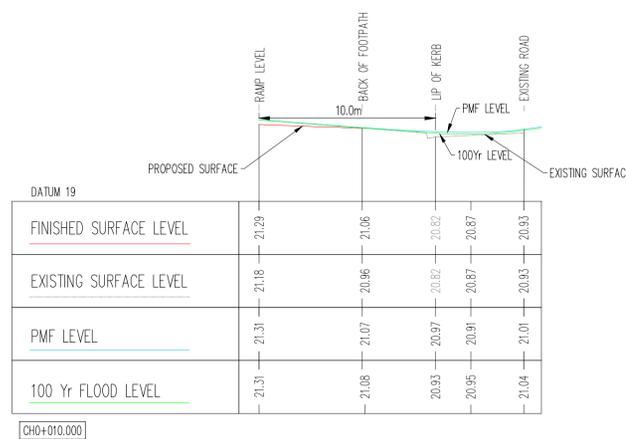
Architect  
**FRANCIS-JONES MOREHEN THORP PTY LTD**

Civil Engineer  
  
 812 9439 7288 | 48 Chandos Street St Leonards NSW 2065

Project  
**338 PITT STREET SYDNEY**

Sheet Subject  
**SITWORKS AND STORMWATER PLAN**

Scale: A1 1:200	Drawn MB	Authorised
Job No 181034	Drawing No C220	Revision P1
Plot File Created: Apr 06, 2020 - 4:47pm		



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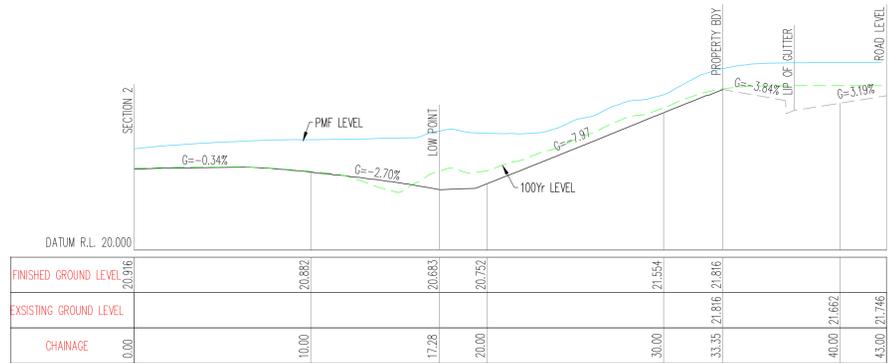
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**FRANCIS-JONES MOREHEN THORP PTY LTD**

Civil Engineer  
**TTW Taylor Thomson Whitting**  
612 9439 7288 | 48 Chandos Street St Leonards NSW 2065

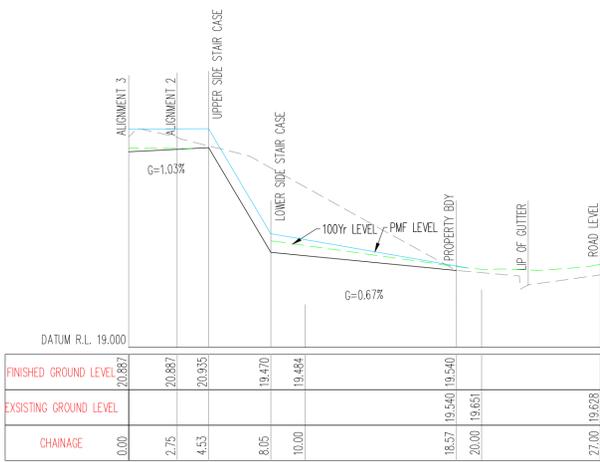
Project  
**338 PITT STREET SYDNEY**

Sheet Subject  
**CROSS SECTIONS**

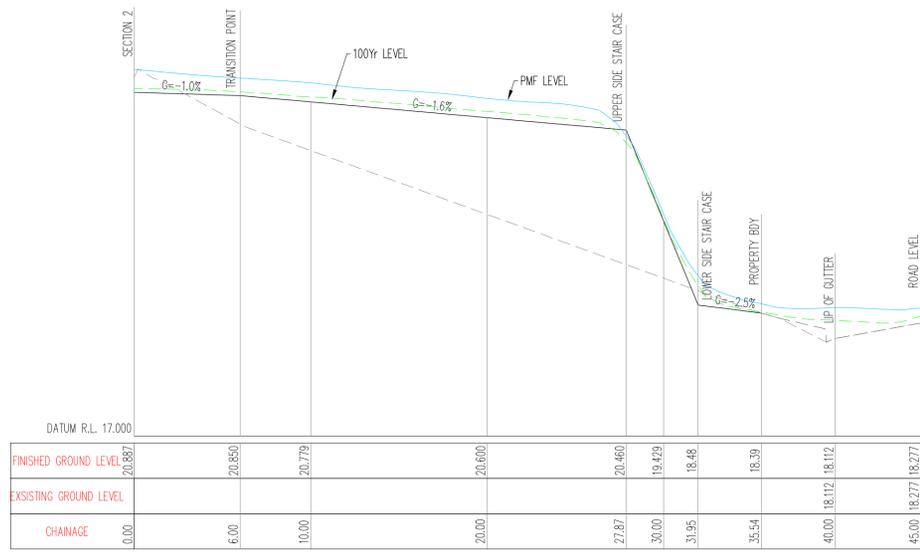
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Drawing No: **C240**  
Revision: **P1**  
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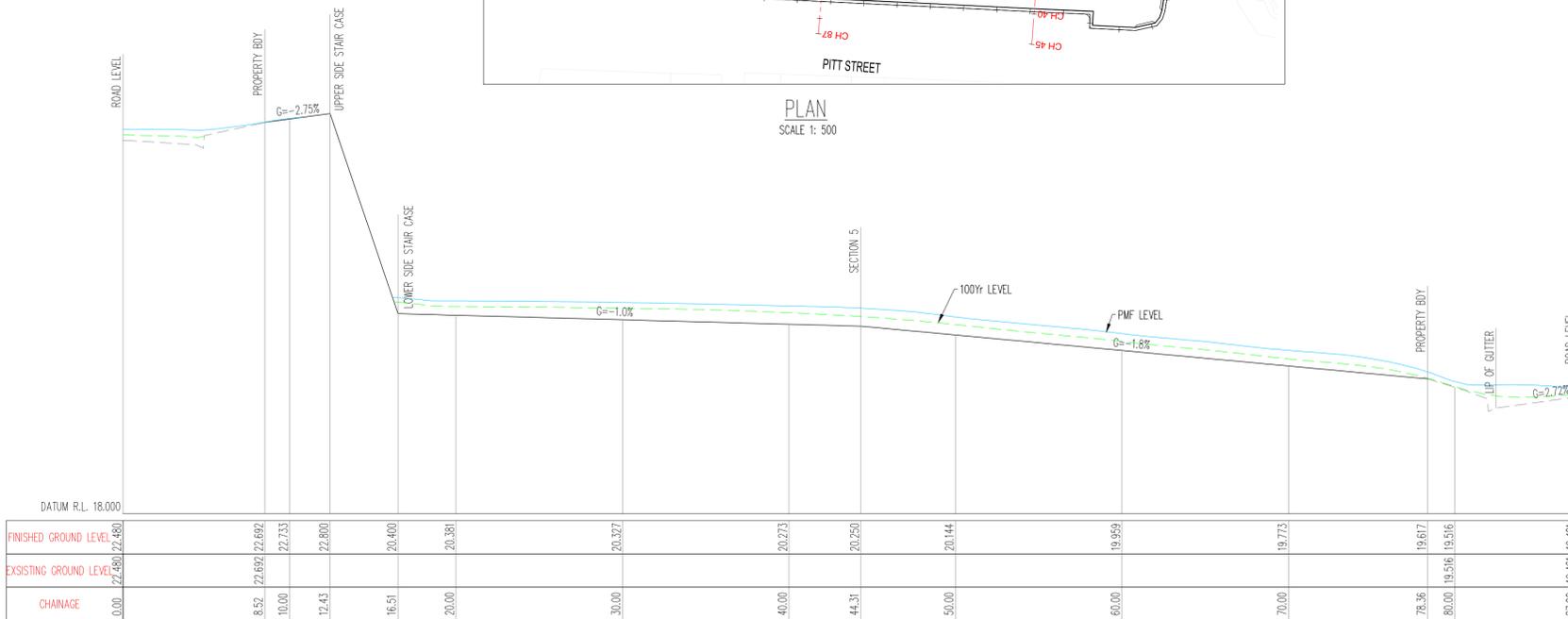
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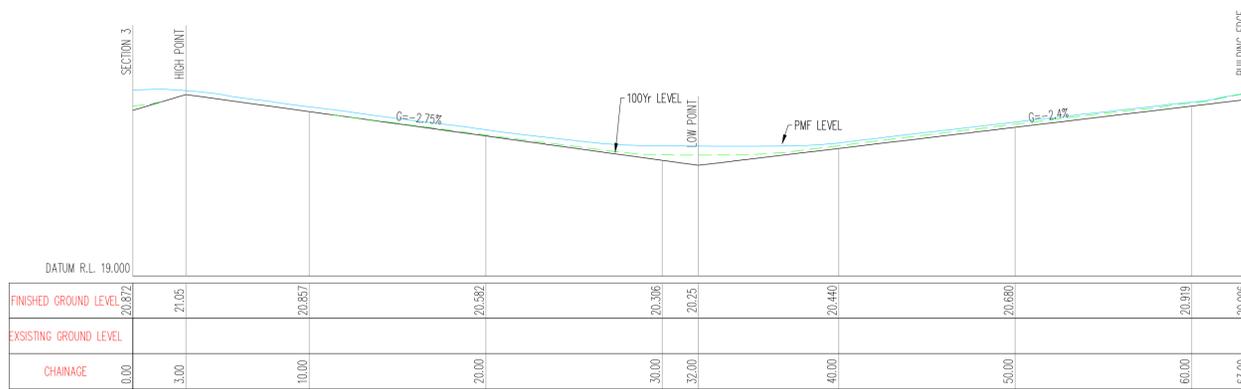
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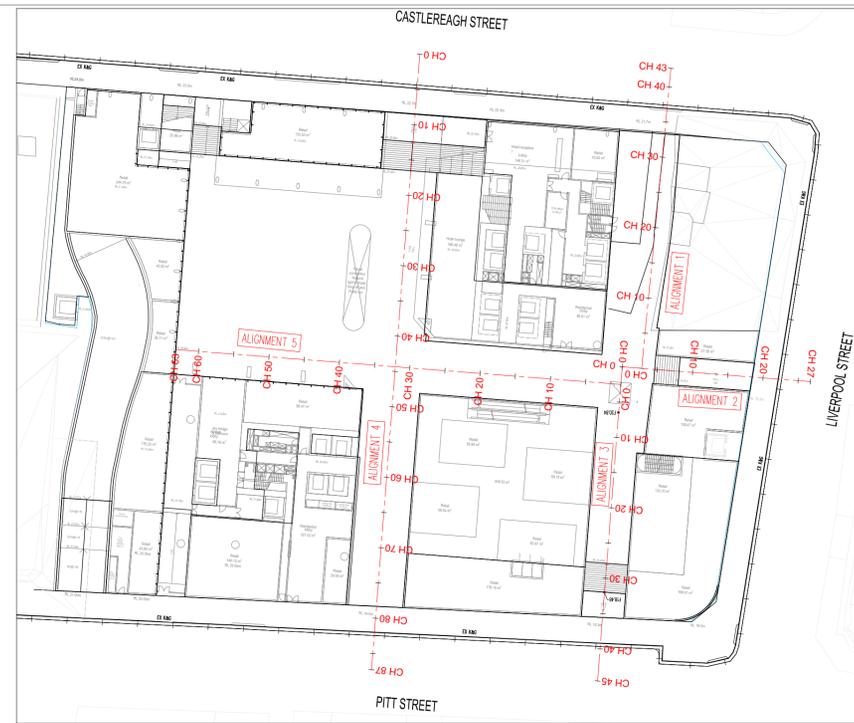
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LONGSECTION ALIGNMENT 4  
SCALE 1: 200



LONGSECTION ALIGNMENT 5  
SCALE 1: 200



PLAN  
SCALE 1: 500

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P1	PRELIMINARY ISSUE	EC	MB	06.04.20										

Architect  
**FRANCIS-JONES MOREHEN THORP PTY LTD**



Project  
**338 PITT STREET SYDNEY**

Sheet Subject  
**LONG SECTIONS**

Scale: A1  
1:200

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MB

Authorised

Job No  
**181034**

Drawing No  
**C241**

Revision  
**P1**

Plot File Created: Jan 02, 2020 - 3:44pm



## Appendix D

# Sydney Water OSD Requirements

## Eirian Crabbe

---

**From:** Stormwater <Stormwater@sydneywater.com.au>  
**Sent:** Wednesday, 20 November 2019 1:29 PM  
**To:** Eirian Crabbe  
**Subject:** RE: 338 Pitt Street, Sydney - OSD requirements

Eirian,

The On Site Detention requirements for the 6,500 square meters site at 338, Pitt Street, Sydney, are as follows:

- On Site Detention 101 cubic meter
- Permissible Site Discharge 241 L/s

The approval for the On Site Detention would only be given as part of the Section 73 application for this development. The On Site Detention is to be designed according to the above values and submitted to Sydney Water for approval with the Section 73 application. The following details are to be included in your submission for On Site Detention approval:

- Location of the On Site Detention in relation to the development
- Location of the On Site Detention in relation to overall stormwater network of the property
- Plan and Elevation of the On Site Detention tank with all dimensions
- Orifice plate calculation

Best Regards

Jeya Jeyadevan  
Senior Capability Assessor

Liveable City Solutions  
Sydney Water, Level 7, 1 Smith Street, Parramatta NSW 2150

Sydney  
**WATER**

Ph 02 8849 6118  
Mob 0409 318 827  
[jeya.jeyadevan@sydneywater.com.au](mailto:jeya.jeyadevan@sydneywater.com.au)

**SAVE WATER BY ONLY  
DOING FULL LOADS OF WASHING**  
IT'S EASIER THAN GETTING A CAMEL FOR A PET

There are many ways to save water.  
Visit [lovewater.sydney/tips](http://lovewater.sydney/tips)



**Reminder: Level 1 water restrictions are in place across Greater Sydney**

---

**From:** Eirian Crabbe <Eirian.Crabbe@ttw.com.au>  
**Sent:** Wednesday, 20 November 2019 10:27 AM  
**To:** Stormwater <Stormwater@sydneywater.com.au>  
**Subject:** 338 Pitt Street, Sydney - OSD requirements  
**Importance:** High

Hi There,

I am looking at the development of 338 Pitt Street, location attached. The concept proposal DA has been approved (D/2016/1509), and we are now looking at the detailed design.

Please can you confirm the OSD requirements, allowable points of discharge for the site and their respective permissible discharge rates.

The site area is approximately 6500sq.m and is currently 100% impermeable.

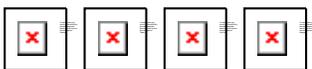
Many thanks.

Eirian

**Eirian Crabbe** | Associate Director

+61 2 9439 7288 | [ttw.com.au](http://ttw.com.au) |  

Level 3, 48 Chandos Street, St Leonards NSW 2065



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