

ENQUIRIES: IAN HARRIS
PROJECT NO: 36546-SYD-C

8th January 2018

Han's Sydney Pty Ltd
C/- Touchstone Partners Pty Ltd
Suite 1, Level 8, 92 Pitt Street
SYDNEY NSW 2000

Attention: Tracy Hoven

Dear Tracy

**RE: 332-336 AND 338-348 PITT STREET, 233, 241-243, 245-247 AND 249-253 CASTLEREAGH STREET
AND 126 LIVERPOOL STREET, SYDNEY - FLOOD IMPACT ASSESSMENT**

Introduction

This report has been prepared to address the stormwater management associated with the development of 332-336 and 338-348 Pitt Street, 233, 241-243, 245-247 and 249-253 Castlereagh Street and 126 Liverpool Street, Sydney.

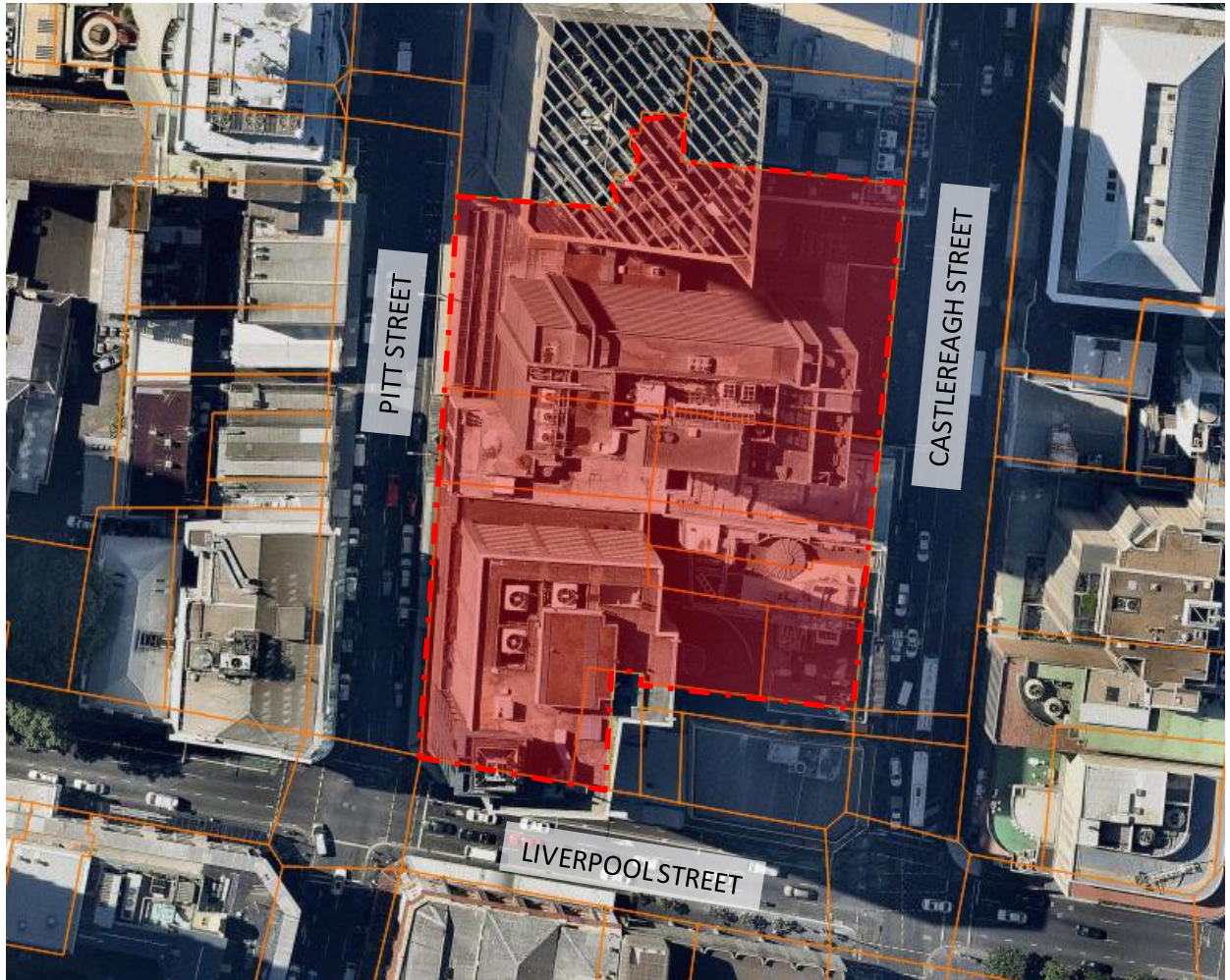
Existing Site Characteristics

Addresses:	332-336 and 338-348 Pitt Street, 233, 241-243, 245-247 and 249-253 Castlereagh Street and 126 Liverpool Street, Sydney
Real Property Description:	Lot 1 of DP66428, Lot 10 of DP857070, Lot A of DP448971, Lot 1 of DP90016, Lot 1 of DP78245, Lot 1 of DP70702, Lot 3 of DP1044304 and Lot B of DP183853
Total Site Area:	6,141m ² (0.6141Ha)

As can be seen in the site location aerial photo below, the site is bound by Pitt Street to the west, Liverpool Street to the south and Castlereagh Street to the east.

The site is currently fully developed with a 20 storey high commercial development.

The existing site topography surrounding the site falls along Pitt Street and Castlereagh Street to the South and to the West along Liverpool Street with the low point on the site being located at the Pitt Street – Liverpool Street intersection.



Site Location Aerial (Source: Near Maps)

Existing Stormwater Drainage

The site is currently fully developed and there is evidence that the building stormwater drainage discharge directly to the kerb and gutter in the surrounding roads. Kerb connectors exist along the length of Pitt Street, Castlereagh Street and Liverpool Street.

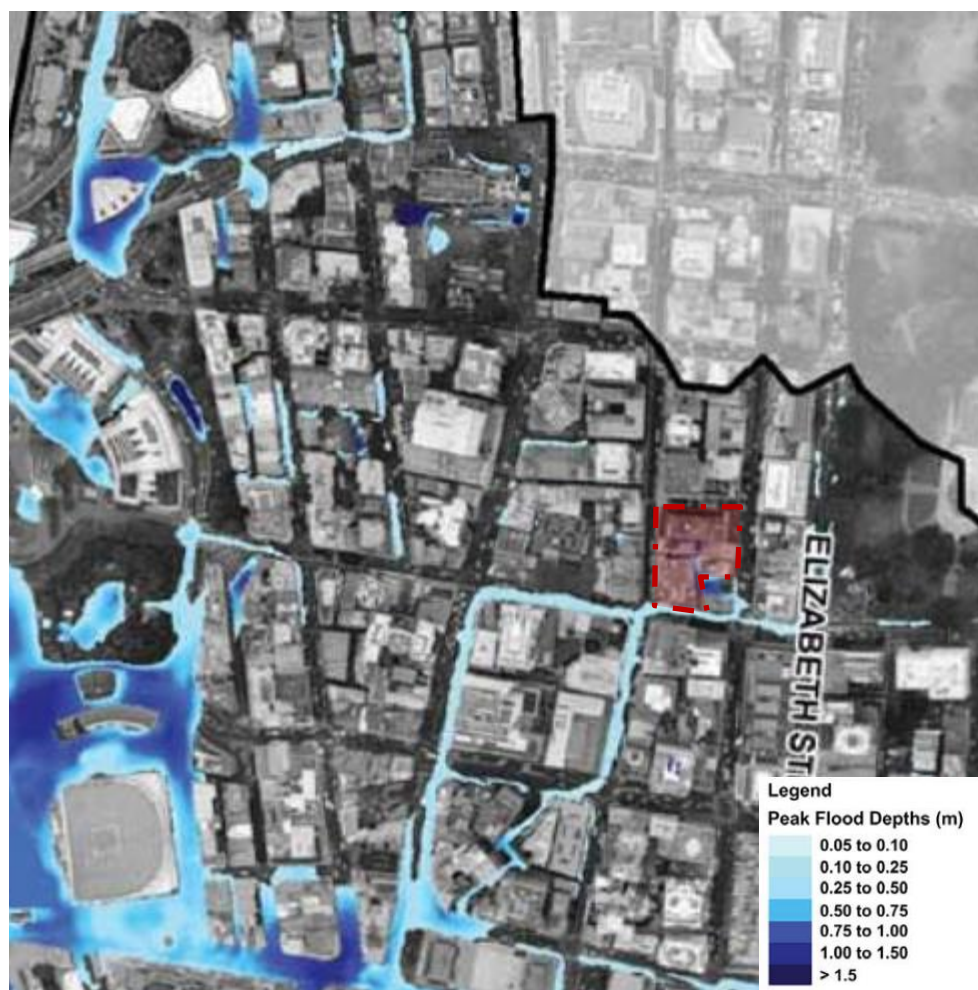
There is a Sydney Water owned in-ground drainage network on Pitt Street, Castlereagh Street and Liverpool Street directly under the kerb and gutter along the property boundary.

Flood Impact Assessment

When considering a new development it is important to assess the impact of existing flooding on the proposed development and also the impact of the proposed development on existing or potential flooding both upstream and downstream of the development.

Existing Flooding.

The Darling Harbour Catchment Flood Study prepared by BMT WBM indicates that the site is flood affected during the 100 year design flood event. An extract from the report is shown below.



100 Year Flood Depth (Darling Harbour Catchment Flood Study: BMT WBM)

In the 100 year flood event the flood depths along Liverpool Street are indicated as being between 0.05m and 0.1m. This would result in flood levels along Liverpool Street of RL21.37m at the intersection with Castlereagh Street and RL17.83m at the Pitt Street intersection.

In addition to this Dungate Lane is currently a trapped low point and as a result experiences deep flooding as water cannot escape. The flood modelling suggest the water depth in Dungate Lane during a 100 year flood would be approximately 0.75m to 1.0m resulting in a 100 Year flood level of RL21.92m. It is however noted that the proposed design removes the restriction to overland flow from Dungate Lane which will reduce the flood impacts through the lane and reduce the flood depths to approximately 0.1m.

The PMF flood levels are approximately RL21.77m on Liverpool Street at the intersection with Castlereagh Street and RL18.23m.

Flood Impacts of Development

The flood planning requirements for developments impacted by flood within the City of Sydney LGA are set in the Interim Floodplain Management Policy. Relevant extracts from this policy are identified below:

Development		Type of Flooding	Flood Planning Level
Commercial	Retail	Mainstream Flooding	Merits approach presented by the applicant with a minimum of the 1% AEP flood. The proposal must demonstrate a reasonable balance between flood protection and urban design outcomes for street level activation.
	Tourist Establishments	Mainstream Flooding	1% AEP flood level + 0.5 m
Below Ground Parking	All below ground parking other than single residential	Mainstream Flooding	1% AEP flood level + 0.5 m or the PMF (whichever is the higher) See Note 1
Critical Infrastructure	Floor Level	Mainstream Flooding	1% AEP flood level + 0.5 m or the PMF (whichever is the higher)

1) The below ground garage/car park level applies to all possible ingress points to the car park such as vehicle entrances and exits, ventilation ducts, windows, light wells, lift shaft openings, risers and stairwells.

In areas which are not impacted by flood water, council's requirement for flood planning levels are that the finished floor level should be no lower than 300mm above the invert of gutter directly adjacent.

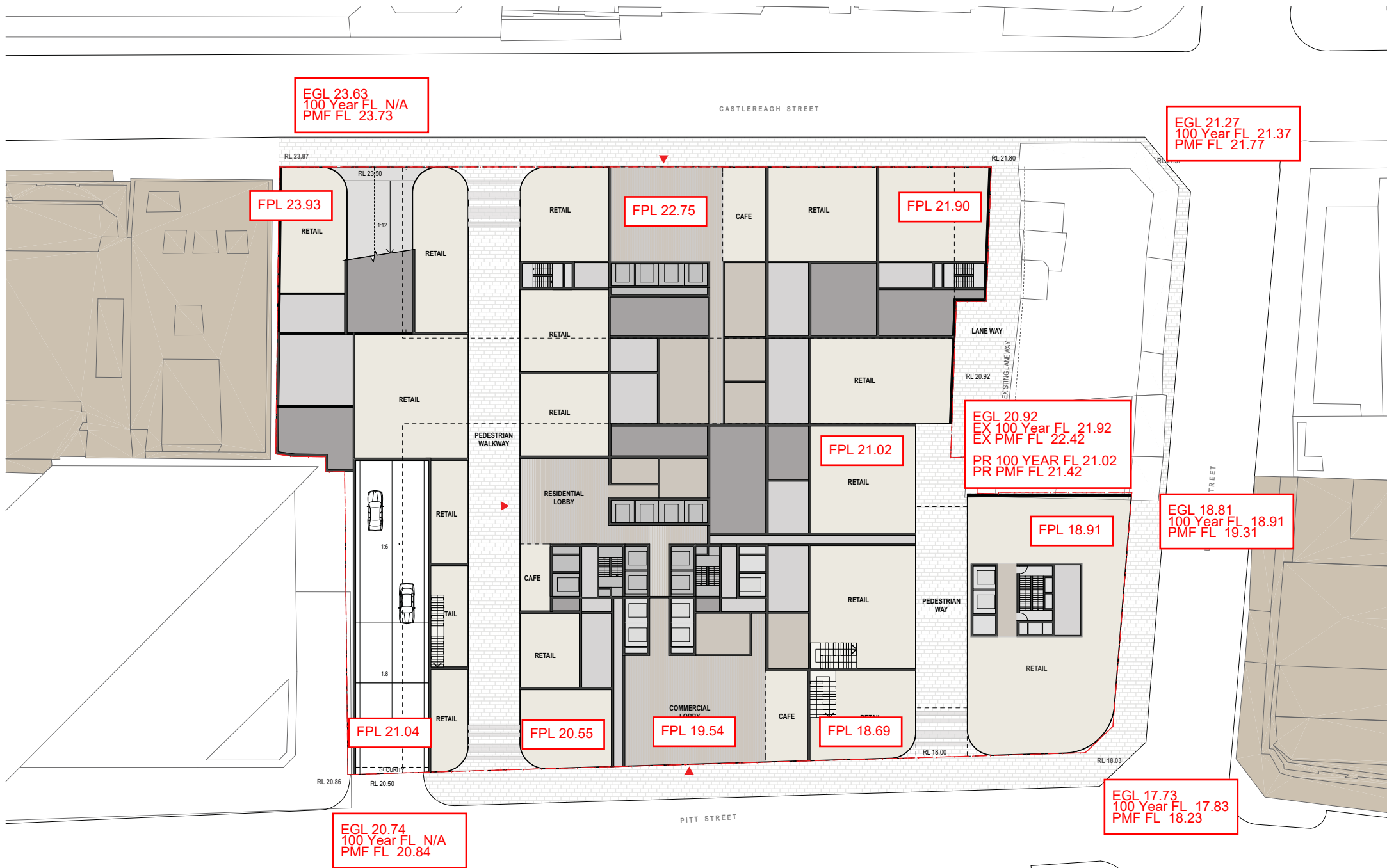
Based on these requirements and the current site topographic survey the required flood planning levels have been identified on the attached ground floor plan. Provided these flood planning levels are achieved the development will comply with City of Sydney's flood planning requirements. These flood planning levels assume that the through site link between Castlereagh Street and Pitt Street is maintained.

We trust that this information is sufficient for your purposes, however should you have any queries in regards to this report please feel free to contact me.

Yours faithfully

A handwritten signature in black ink, appearing to read 'Ian Harris', with a stylized flourish at the end.

Ian Harris
for **Wood & Grieve Engineers**



Flood Planning Levels
338 Pitt Street,
Sydney