

Macquarie Capital

Metro Martin Place

Stage 1 Amending DA - Stormwater Management & Flooding Report

CSWSMP-MAC-SMA-CE-REP-999906

Rev A | 4 July 2018

This report takes into account the particular
instructions and requirements of our client.

It is not intended for and should not be relied
upon by any third party and no responsibility
is undertaken to any third party.

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This report takes into account our client's particular instructions and requirements and addresses their priorities at the time. This report is relied upon by third parties at their own risk, third parties must make their own assessment of it and it should not be relied on by any third party without first obtaining independent specific professional advice. No responsibility is undertaken to any third party by Arup in relation to this report.

1 Introduction

1.1 Introduction

This report supports a State Significant Development (SSD) Development Application (DA) submitted to the Minister for Planning (Minister) pursuant to Part 4 of the *Environmental Planning and Assessment Act 1979* (EP&A Act) on behalf of Macquarie Corporate Holdings Pty Limited (Macquarie), who is seeking to create a world class transport and employment precinct at Martin Place, Sydney.

The SSD DA seeks approval for an amended Concept Proposal (otherwise known as a Stage 1 DA) relating to the Martin Place Metro Station Precinct ('the Precinct'). An existing development consent (SSD 17_8351) for a Concept Proposal is in place for the Precinct, which approved the concept for two Over Station Development (OSD) commercial towers above the northern (North Site) and southern (South Site) entrances of Martin Place Metro Station. The Concept Proposal approved building envelopes, land uses, Gross Floor Areas (GFA) and Design Guidelines with which the detailed design (otherwise known as a Stage 2 DA) must be consistent.

This Stage 1 Amending DA is a concept development application made under Section 4.22 of the EP&A Act. It seeks to align the approved South Site building envelope with the new planning controls established for the precinct as a result of a site specific amendment to Sydney LEP 2012. The new controls permit greater building height (over a portion of the South Site only) and additional floor space (North Site and South Site).

Whilst the approved Concept Proposal related to the entire Precinct, this Amending DA relates principally to the building envelope of the **South Site**, in terms of amending the approved height and floor space.

This application does not seek approval for elements of the Martin Place Station Precinct which relate to Stage 2 of the Sydney Metro infrastructure project, which is subject to a separate Critical State Significant Infrastructure (CSSI) approval. These include:

- Demolition of buildings on the North Site and South Site;
- Construction of rail infrastructure, including station platforms and concourses;
- Ground level public domain works; and
- Station related elements in the podium of the North Site and South Site building.

The approved Stage 1 Concept Proposal approved conceptual OSD areas in the approved Martin Place Station Structure, above and below ground level, which are classified as SSD as they relate principally to the OSD. These components are within the Metro CSSI approved station envelope that will contain some OSD elements not approved in the CSSI consent. Those elements include the end of trip facilities, office entries, office space and retail areas, along with other office/retail plant and back of house requirements that are associated with the proposed OSD and not the rail infrastructure. This Amending DA does not propose to modify this.

Accordingly, this report provides technical content to support the SSDA. It sets out the strategy for the proposed development in the context of the existing site specific conditions

and relevant City of Sydney (CoS) Council planning requirements as described in the *Sydney Development Control Plan, 2012* (DCP) in addition to specific Metro requirements

This report covers:

- Flood risk management
- Stormwater drainage from the development including on site detention

A summary of these issues and the proposed engineering responses are listed Table 1.

Table 1: Summary of stormwater and flooding issues and proposed outcomes

Item	Summary
Flood planning requirements & Flood risk management	<p>Review of flooding indicates that it will be feasible to set flood levels in accordance with flood planning levels for the site are in accordance with the higher of <i>Interim Floodplain Management Policy</i> (City of Sydney, May 2014) and Metro 'System Requirements'.</p> <p>The development site is potentially affected by minor flooding in the 100yr storm and PMF (Probable Maximum Flood). Flood modelling will be undertaken to set minimum entry levels.</p> <p>Preliminary review of flooding suggests there are no significant impacts to overland flow, flooding or stormwater management. Further development and analysis will be undertaken to review and assess this in subsequent design stages.</p>
Stormwater design	<p>Stormwater from the development will be discharged into the existing Sydney Water infrastructure surrounding the site.</p> <p>Current investigations suggest existing infrastructure will not be altered by the development, with connections made to existing pits along the street.</p> <p>Sydney Water/City of Sydney may require on site detention for the site, and this can be accommodated within the development if required. Volumes will be confirmed during Stage 2 design.</p>

1.2 Context

The New South Wales (NSW) Government is implementing Sydney's Rail Future (Transport for NSW, 2012), a plan to transform and modernise Sydney's rail network so that it can grow with the city's population and meet the needs of customers in the future.

Sydney Metro is a new standalone rail network identified in Sydney's Rail Future. The Sydney Metro network consists of Sydney Metro Northwest (Stage 1) and Sydney Metro City & Southwest (Stage 2).

Stage 2 of the Metro entails the construction and operation of a new Metro rail line from Chatswood, under Sydney Harbour through Sydney's CBD to Sydenham and onto to Bankstown through the conversion of the existing line to Metro standards. The project also involves the delivery of seven (7) new Metro stations, including Martin Place.

This step-change piece of public transport infrastructure once complete will have the capacity for 30 trains an hour (one every two minutes) through the CBD in each direction catering for an extra 100,000 customers per hour across the Sydney CBD rail lines.

On 9 January 2017 the Minister approved the Stage 2 (Chatswood to Sydenham) Metro application lodged by Transport for NSW (TfNSW) as a Critical State Significant Infrastructure (CSSI) project (reference SSI 15_7400). Work is well underway under this approval, including demolition of buildings at Martin Place.

The OSD development is subject to separate applications to be lodged under the relevant provisions of the EP&A Act.

1.3 Site Description

The Sydney Metro Martin Place Station Precinct project relates to the following properties (refer to **Figure 1**):

- 50 Martin Place, 9 – 19 Elizabeth Street, 8 – 12 Castlereagh Street, 5 Elizabeth Street, 7 Elizabeth Street, and 55 Hunter Street (North Site);
- 39 – 49 Martin Place (South Site); and
- Martin Place (that part bound by Elizabeth Street and Castlereagh Street).

This Stage 1 Amending DA relates principally to the building envelope of the South Site, being land at 39 – 49 Martin Place, Sydney (refer to **Figure 1**).



Figure 1 – Aerial Photo of the North and South Site of the Martin Place Metro Station Precinct

1.4 Background

Sydney Metro Stage 2 Approval (SSI 15 7400)

On 9 January 2017, the Minister approved Stage 2 of the Sydney Metro project, involving the construction and operation of a metro rail line between Chatswood and Sydenham, including the construction of a tunnel under Sydney Harbour, links with the existing rail network, seven metro stations (including a station at Martin Place), and associated ancillary infrastructure. The project approves the demolition of existing buildings at Martin Place, excavation and construction of the new station (above and below ground) along with construction of below and above ground structural and other components of the future OSD, although the fit-out and use of such areas are the subject of separate development approval processes.

Modification 3 to the Sydney Metro consent, approved 22 March 2018, enabled the inclusion of Macquarie-owned land at 50 Martin Place and 9-19 Elizabeth Street within the Martin Place Station footprint, and other associated changes (including retention of existing MLC pedestrian link).

Planning Proposal (PP 2017 SYDNE 007 00) – Amendment to Sydney LEP 2012

The Planning Proposal (PP_2017_SYDNE_007_00) sought to amend the development standards applying to the Sydney Metro Martin Place Station Precinct through the inclusion of a site-specific provision in the Sydney LEP 2012. This site-specific provision reduced the portion of the South Site that was subject to a 55 metre height limit from 25 metres from the boundary to Martin Place, to 8 metres, and applies the Hyde Park North Sun Access Plane to the remainder of the South Site, forming the height limit of the tower. It also permitted a revised FSR of 22:1 on the South Site and 18.5:1 on the North Site (resulting in a combined permissible overall GFA of 153,141m²). These amendments were gazetted within Sydney LEP 2012 and reflect the new planning controls applying to the precinct.

Concept Proposal (SSD 17_8351)

On 22 March 2018, the Minister approved a Concept Proposal (SSD 17_8351) for the Precinct. The Concept Proposal established the planning and development framework through which to assess the detailed Stage 2 applications.

The approved Concept Proposal specifically encompassed:

- building envelopes for OSD towers on the North Site and South Site (see **Figure 3**) comprising:
 - 28+ storey building on the South Site, with a 25m setback to Martin Place above 55m in height, and a 40+ storey building on the North Site.
 - Concept approval to integrate the North Site with the existing/retained 50 Martin Place building (the former Government Savings Bank of NSW).
- predominantly commercial land uses on both sites, comprising office, business and retail premises;
- a maximum total GFA of 125,437m² across both sites;
- consolidated Design Guidelines to guide the built form and design of the future development.
- a framework for achieving design excellence.
- strategies for utilities and services provision, managing drainage and flooding, and achieving ecological sustainable development.
- conceptual OSD areas in the approved Martin Place Metro Station structure, above and below ground level¹.

The Concept Proposal was prepared and determined prior to the site specific Sydney LEP 2012 amendment being gazetted and was developed based on the height development standards that applied to the South Site at the time. As a result, the approved Concept Proposal allows for a tower on the South Site that is now inconsistent with the building envelope envisaged through the Sydney LEP 2012.

¹ Refers to those components within the Metro CSSI approved station envelope that will contain some OSD elements not approved in the CSSI consent. Those elements include the end of trip facilities, office entries, office space and retail areas, along with other office/retail plant and back of house requirements that are associated with the proposed OSD and not the rail infrastructure.



Figure 2 – North Site and South Site Approved OSD Building Envelopes

1.5 Overview of the Proposed Development

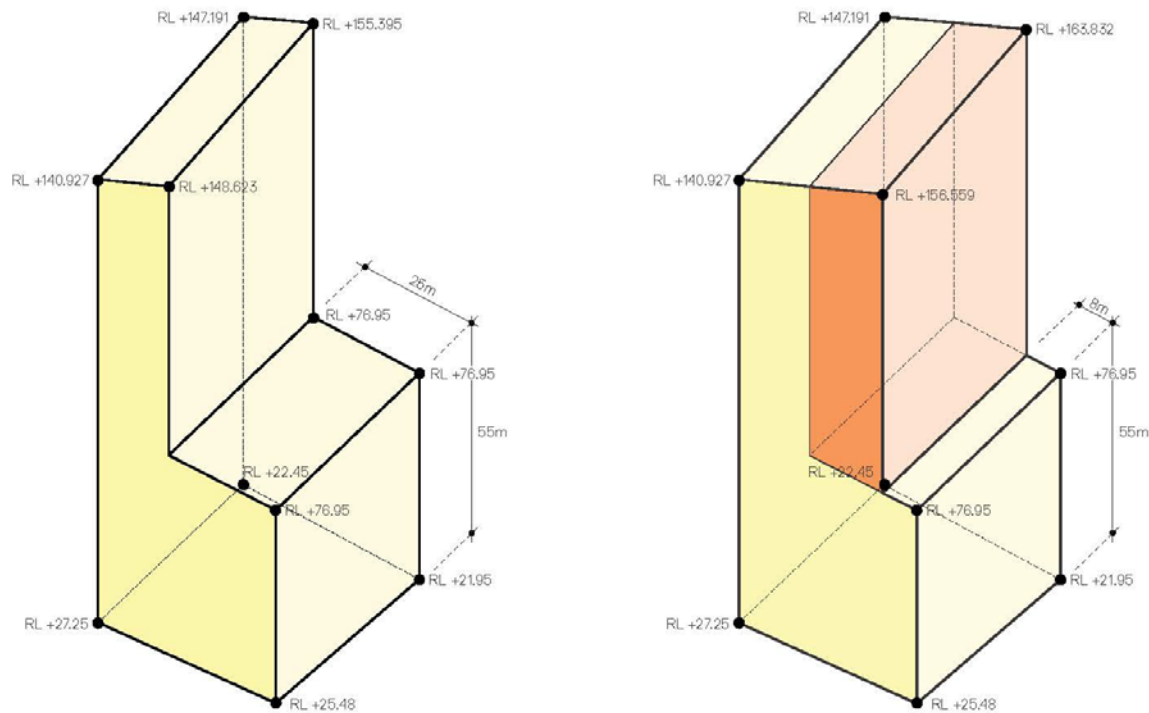
The Stage 1 Amending DA seeks approval for an amended Concept Proposal for the Martin Place Metro Station Precinct, specifically a larger building envelope for the South Site compared to the building envelope approved by the Minister through SSD 17_8351. The amended South Tower envelope will reflect a building envelope that aligns with the new controls applying to the precinct under Sydney LEP 2012, including increased height and FSR limits. It is proposed to amend the South Tower building envelope, through:

- a tower setback to Martin Place of 8 metres above the 55m podium height (reduced from 25 metres as approved within the Concept Proposal);
- a tower height that is consistent with the Hyde Park North Sun Access Plane beyond the 8m setback to Martin Place (constituting a generally taller tower than approved within Concept Proposal); and
- an increase in GFA/FSR for the South Site from approximately 23,700m² (12.5:1) up to approximately 41,700m² (22:1) - inclusive of all CSSI Station components.

Figure 3 below illustrates these proposed amendments to the South Site building envelope.

It is proposed that a condition be imposed on the Stage 1 Amending DA development consent pursuant to Section 4.17(1)(b) of the EP&A Act, requiring the modification of the original consent (SSD 17_8351) upon the commencement of the Stage 1 Amending DA Consent, in accordance with the procedures under Clause 97 of the *Environment Planning and Assessment Regulation 2000* (EP&A Regulation). This condition would address any

inconsistency between the approved Concept Proposal and the Stage 1 Amending DA (and any subsequent detailed consents, i.e. the Stage 2 South Site DA).



*Approved South Site Building Envelope Proposed Amended South Site OSD Envelope
(aligning with site specific amendment to Sydney LEP 2012)*

Figure 3 – Relationship between the approved and proposed amended South Site building envelope

1.6 Planning Approvals Strategy

State Environmental Planning Policy (State and Regional Development) 2011 (SEPP SRD) identifies development which is declared to be State Significant. Under Schedule 1 and Clause 19(2) of SEPP SRD, development within a railway corridor or associated with railway infrastructure that has a capital investment value of more than \$30 million and involves commercial premises is declared to be State Significant Development (SSD) for the purposes of the EP&A Act.

The proposed amendment (involving commercial development that is both located within a rail corridor and associated with rail infrastructure) is therefore SSD.

Submitted separately to this SSD DA are detailed proposals for the South Site (Stage 2 South Site DA) and North Site (Stage 2 North Site DA), which follow the approval of the Concept Proposal for the Precinct under Section 4.22 of the EP&A Act (formerly Section 83B). The Stage 2 detailed DA for the South Tower includes a design which is consistent with the envelope envisaged with this subject Stage 1 Amending DA and where it must only be determined following approval of the subject Stage 1 Amending DA.

Figure 4 below is a diagrammatic representation of the suite of key planning applications undertaken or proposed by Macquarie and their relationship to the subject application (the subject of this report).

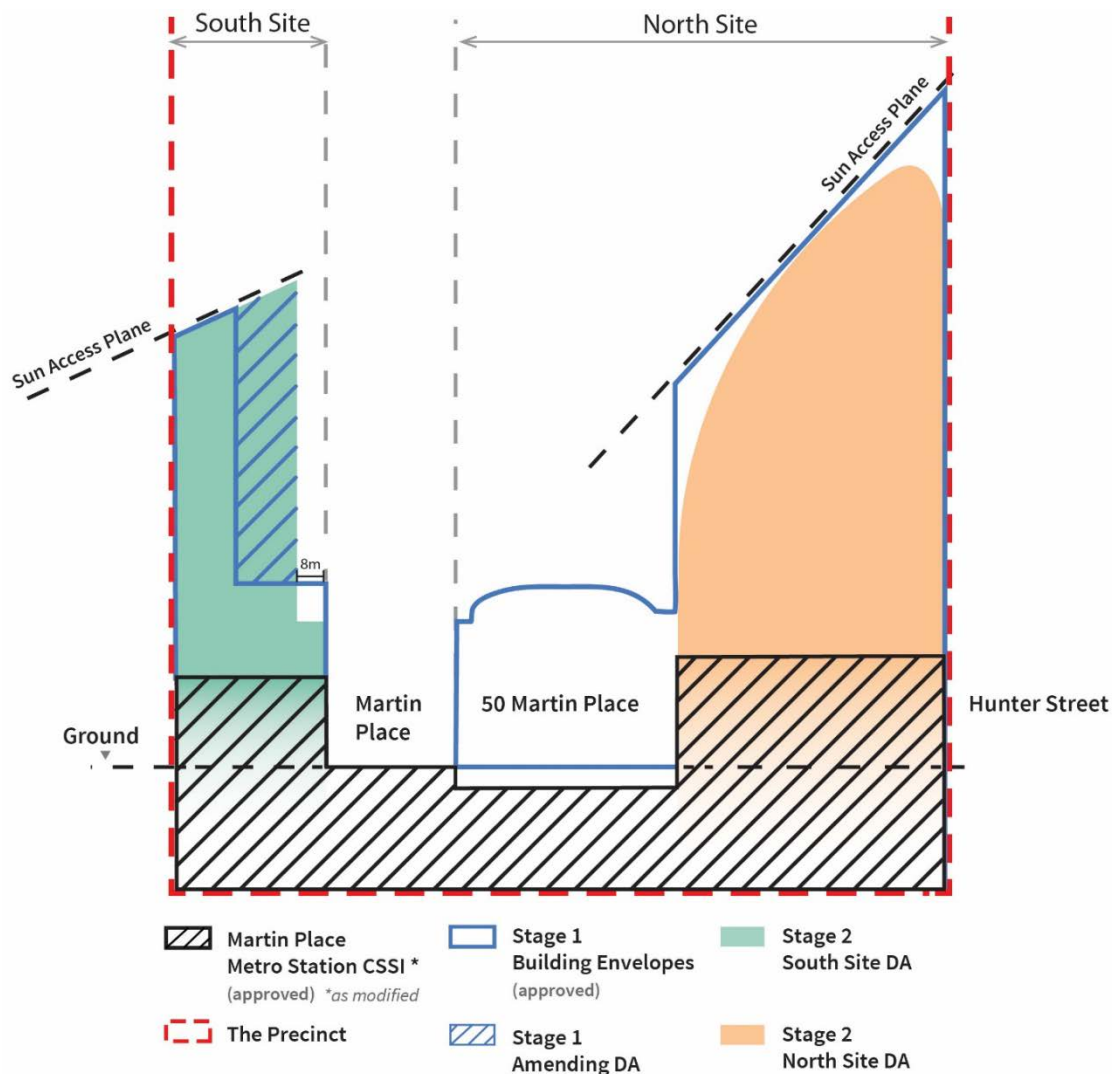


Figure 4 – Relationship of key planning applications to the Stage 1 Amending DA (this application)

The Department of Planning and Environment have provided Secretary's Environmental Assessment Requirements (SEARs) to the applicant for the preparation of an Environmental Impact Statement for the proposed development. This report has been prepared having regard to the SEARs as follows:

The EIS must include all relevant plans, architectural drawings, diagrams and relevant documentation required under Schedule 1 of the *EP&A Regulation 2000*. Provide these as part of the EIS rather than as separate documents.

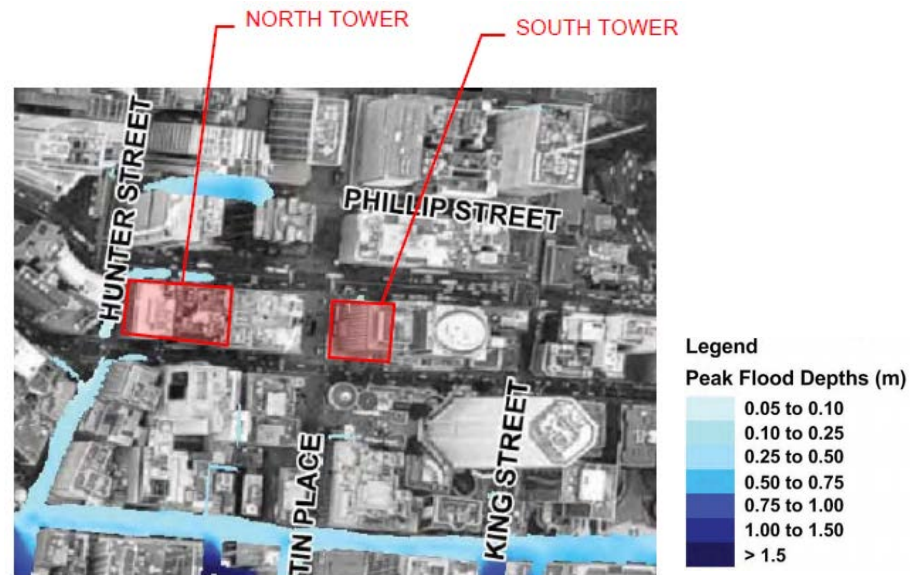
In addition, the EIS must include the following:

- Flood/stormwater management plan (where relevant).

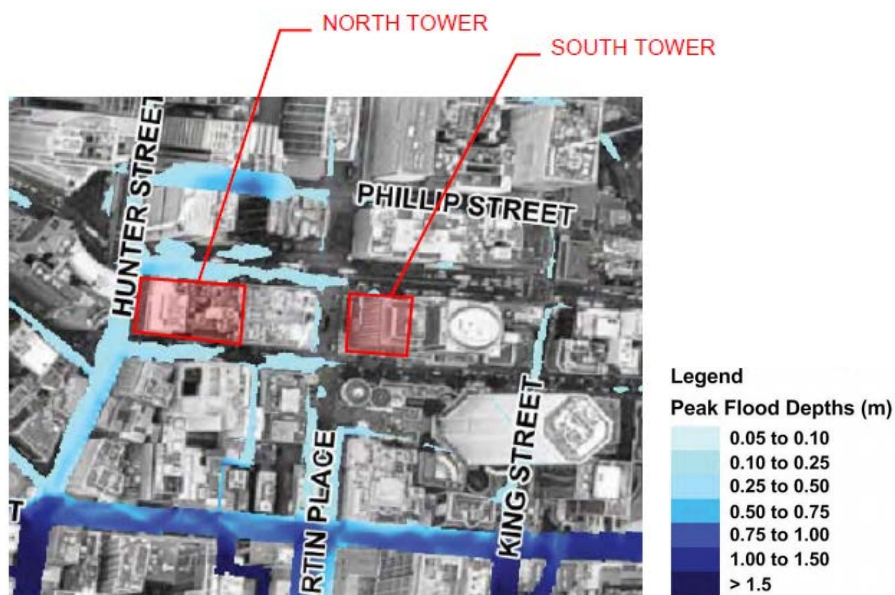
2 Flooding

2.1 Existing Flooding

The City of Sydney Council “City Area Catchment Floodplain Risk Management Study, Final Draft, May 2016” provides information and flood maps which indicate that some areas of the proposed development site are potentially impacted by flooding. This is shown in Figure 6:



1 in 100yr flood



PMF flood

Figure 1. Existing flood extents and depths (greater depth indicated by deeper shades of blue) during both the 100yr and PMF flood (excerpt City Area Catchment Floodplain Risk Management Study, May 2016)

As shown on the excerpt, generally flooding is isolated to Hunter Street with some minor flooding (isolated to the road corridor) along both Elizabeth Street and Castlereagh Street surrounding the 'North Tower'. The 'South Tower' is exempt from flooding from adjoining streets.

2.2 Flood Planning Requirements

Flood planning levels for the site are understood to be dictated by the *Interim Floodplain Management Policy* (City of Sydney, May 2014) and the Sydney Metro 'System Requirements Specification', with the more onerous requirements to be adhered to in the event of a discrepancy between the two standards.

As noted in the previous section, flooding is generally isolated to Hunter Street with overland flow within the road corridor along both Elizabeth and Castlereagh streets.

Applicable flood planning requirements from the *Interim Floodplain Management Policy* (City of Sydney, May 2014) are as follows:

- Commercial Development: Merits approach with a minimum of the 1% Annual Exceedance Probability (AEP) flood;
- Below ground car park entrances: 1% AEP flood level +0.5m or the PMF (whichever is higher), applicable 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; and
- Critical facilities: 1% AEP flood level +0.5m or the PMF (whichever is higher).

The 1% AEP flood is approximately equal to the 100 year ARI flood referred to elsewhere within this report.

Flood planning levels identified in the Sydney Metro 'System Requirements Specification' are as follows:

"Flood immunity – underground (SM-CSW-SRS-3773):

Sydney Metro underground systems (including tunnel entries, station entries and below ground facilities) shall be designed, constructed, operated and maintained so as to prevent flooding from the 100 year ARI (Average Recurrence Interval) flood level plus 0.5m or the Probable Maximum Flood (PMF), whichever is the greater level.

The PMF is;

- *as defined in Australian Rainfall and Runoff,*
- *in accordance with the Department of Environment and Climate Change (DECC) Floodplain Risk Management Guideline – Practical Consideration of Climate Change, version 1 October 2007; and*
- *in accordance with DECC's Draft Sea Level Rise Policy Statement, February 2009."*

2.2.1 Climate Change

The potential impacts of climate change are discussed in the City of Sydney's 'City Area Catchment Flood Study, March 2014', with respect to both rainfall intensity increases and rising sea levels. In the worst case scenario for rainfall intensity (30% increase, no sea level rise), the increase of flood levels is at a maximum 0.1m along Hunter Street compared to the existing case. Refer to Figure 7 to observe predicted increases in flood levels for this scenario.

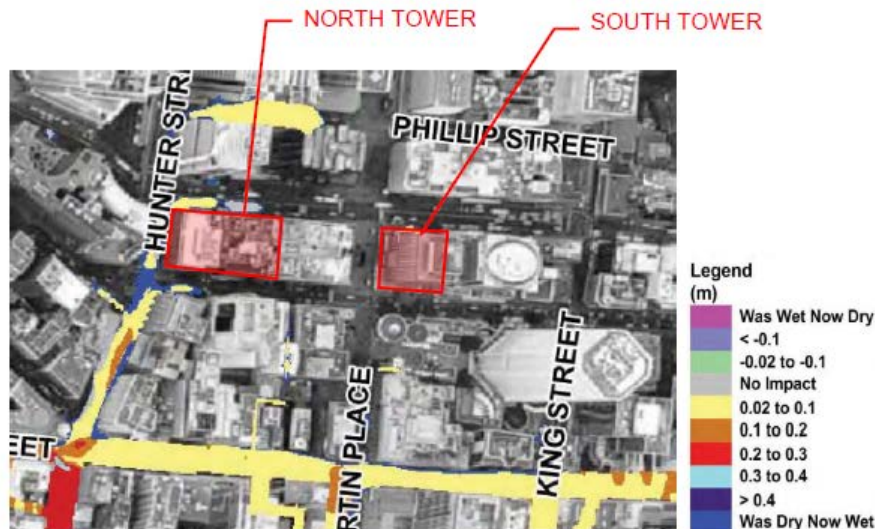


Figure 2. Climate Change Impacts, excerpt from City Area Catchment Flood Study

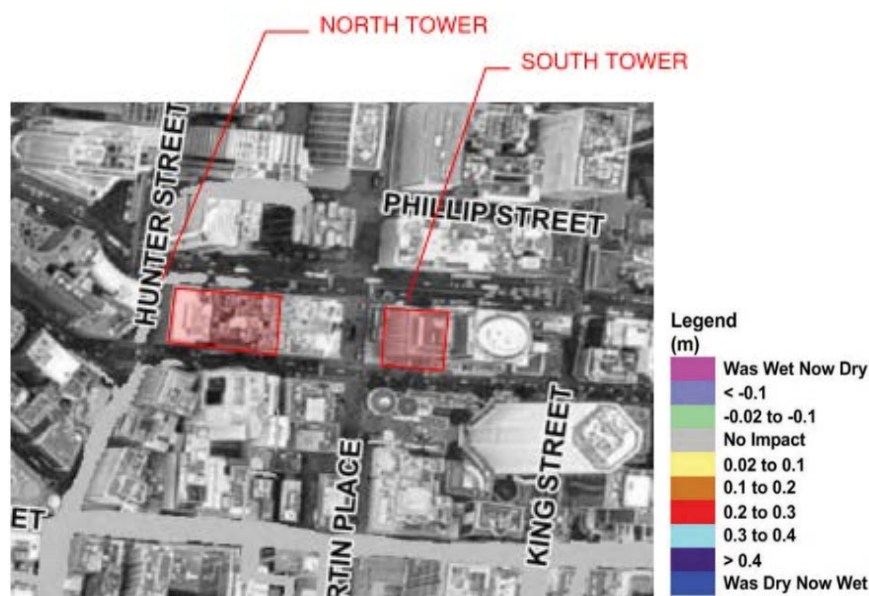


Figure 3 Sea Level Rise, excerpt from City Area Catchment Flood Study

The flood study also suggests that the proposed site will not be impacted by an increase in sea level rise, which is likely due to the elevation of this development relative to sea level. With reference to the excerpt from the Flood Study. An increase of sea level by 0.9m (2100 benchmark, DECCW, 2009) the results show that there is no potential impact to the site.

2.3 Flood Risk Management Strategy

In line with the most onerous of the City of Sydney Interim Floodplain Management Policy requirements and Sydney Metro 'System Requirements Specification':

- All openings and entrances to the Metro (lifts, basement entrances, pedestrian entrances, louvers, grates etc.) are proposed at the higher of the 100yr ARI + 0.5m and PMF.
- A merits-based approach of minimum of 100yr ARI flood level will be adopted for commercial and retail entrances.
- Entrances to basement carparking will be set at the higher of the 100yr ARI + 0.5m and PMF.

All of the above requirements will include consideration of the effect of climate change.

2.4 Flood modelling

Flood modelling will be undertaken during further design development to support the Stage 2 DA, to advise on appropriate flood planning levels and to demonstrate that there is no significant impact on existing flooding from the proposed development. It is assumed that the 'City Area Catchment Flood Study' 1d/2d TUFLOW model will be provided by the City of Sydney for this analysis.

The three step process to be undertaken for the flood modelling under the Stage 2 Development Application will be as follows:

- **City of Sydney model results:** The TUFLOW model (supplied by City of Sydney) will be run to establish the initial flooding conditions as per the *City Area Catchment Flood Study* (City of Sydney, October 2014)
- **Surveyed existing case – 'base case':** The detailed survey of the existing site will be incorporated into the supplied TUFLOW model to provide a more detailed baseline to assess existing flood impacts on the site and inform flood planning levels.
- **Proposed case:** Any proposed grading modifications of the site within the current flood extent will be incorporated into the 'base case' TUFLOW model to determine any flood impacts from the proposed development.

3 Stormwater Drainage

3.1 Existing Drainage

The existing site is largely occupied by buildings of varying heights and basement car parks and Martin Place. Little information is available as to how the existing site discharges to the surrounding stormwater network, however from observation there are connections to the stormwater network along both Castlereagh Street and Elizabeth Street.

Figure 7 illustrates the stormwater infrastructure in the streets surrounding the development site from the DBYD request, which is owned by either Sydney Water or the City of Sydney. This figure shows that there are existing stormwater pits and pipes on Castlereagh, Elizabeth, Phillip and Bligh Streets, and within the public domain area of Martin Place.



Figure 4: Existing stormwater around the site (CoS, 2017)

Of particular significance is the Sydney Water trunk drainage infrastructure within Elizabeth and Castlereagh Street. It is noted that Sydney Water does not allow building structures to encroach laterally within 1m of their existing assets (unlimited depth and height). This requirement has and will continue to be adhered to throughout detailed design. Further design

and investigation will occur through the development of this critical infrastructure to determine that there will be no negative impacts.

According to the information provided from Dial Before You Dig (DBYD) logs and survey, there are no known Sydney Water/ City of Sydney drainage pipes below the building footprint. It is likely however, that there are existing development drains serving the existing buildings and connecting into the surrounding streets. This will require further investigation which may only become possible once demolition of the site commences.

3.2 Proposed Development Drainage

The proposed development involves the construction of two multi-storey commercial and retail buildings which will occupy the majority of the two separate sites. The 'North' and 'South' towers will have roof and canopy drainage systems which will collect and convey water through the buildings and into rainwater harvesting tanks.

From the tanks, the approach will be to drain stormwater by gravity to the Sydney Water drainage network at existing connections along Castlereagh Street. This approach has been suggested because Castlereagh Street is the lowest of the streets surrounding both towers and provides the best opportunity for a gravity connection from the basement. No works are proposed to be undertaken on the Tank Stream heritage drain.

The design of the proposed off-site connections into the Sydney Water system shall be undertaken in the future stages of design development in conjunction with a Sydney Water Coordinator and in consultation with City of Sydney. This will be driven by the internal hydraulic design and reticulation, which will establish the proposed pipe invert levels within the basement.

3.3 On-Site detention

From Sydney Water's policy document on-site detention (June 2014) may be required for this development. Roof drainage for both buildings in excess of that stored by the rainwater harvesting tanks would be collected into a detention tank within the extents of the building, and discharged to the street drainage system. The requirement and size of the on-site detention tanks will be determined from Sydney Water.

As Martin Place is an existing public domain, no on-site detention is proposed for this area.