

# **Crows Nest Site C Over Station Development**

Structural Statement

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## Glossary

Term	Definition
<b>Concept SSD Application</b>	<p>A concept development application as defined in section 4.22 of the EP&amp;A Act. It is a development application that sets out the concept for the development of a site, and for which detailed proposals for the site or for separate parts of the site are to be the subject of a subsequent development application or applications.</p> <p>The concept for the Crows Nest Station precinct (SSD 9579) was approved by the Minister on 23/12/2020.</p>
<b>Council</b>	North Sydney Council, unless otherwise indicated
<b>CSSI</b>	Critical State Significant Infrastructure
<b>CSSI Approval</b>	<p>The approval under the EP&amp;A Act for the construction of the Sydney Metro City &amp; Southwest Chatswood to Sydenham project, as amended by subsequent modification applications. The CSSI project (application number SSI 15_7400) was approved by the (then) Minister for Planning on 9 January 2017 and has been amended on 6 previous occasions.</p> <p>Any reference to the CSSI Approval is a reference to the most current version of that approval as amended by any subsequent modification application</p>
<b>Crows Nest Station precinct</b>	<p>The Crows Nest Station precinct comprises the land between the Pacific Highway and Clarke Street (eastern side of the Pacific Highway) and Oxley Street and south of Hume Street, Crows Nest. The precinct is divided into three (3) sites:</p> <ul style="list-style-type: none"> <li>• Site A: The block bound by the Pacific Highway, Hume Street, Oxley Street, and Clarke Lane (497-521 Pacific Highway, Crows Nest)</li> <li>• Site B: The block on the southern corner of Hume Street and the Pacific Highway (477-495 Pacific Highway, Crows Nest)</li> <li>• Site C: One lot on the north-western corner of Hume Street and Clarke Street (14 Clarke Street, Crows Nest)</li> </ul>
<b>Detailed SSD Application</b>	The SSD Application(s) made after the concept SSD Application that seek consent for the use,

Term	Definition
	design and to physically construct stages of the development.
<b>DPIE</b>	Department of Planning, Industry and Environment
<b>EP&amp;A Act</b>	<i>Environmental Planning and Assessment Act 1979 (NSW)</i>
<b>EP&amp;A Regulation</b>	<i>Environmental Planning and Assessment Regulation 2000 (NSW)</i>
<b>EIS</b>	Environmental Impact Statement
<b>Heritage item</b>	An item of environmental heritage that is listed in Schedule 5 of <i>North Sydney Local Environmental Plan 2013</i> or on the State Heritage Register under the <i>Heritage Act 1977</i>
<b>ISD</b>	Integrated station development – combined station, OSD and public domain works
<b>IAP</b>	Interchange Access Plan required under Condition E92 of the CSSI Approval. The IAP complements the SDPP and informs the final design of transport and access facilities and services, including footpaths, cycleways, passenger facilities, parking, traffic and road changes, and the integration of public domain and transport initiatives around and at each station.
<b>Minister</b>	The Minister for Planning and Public Spaces
<b>NSDCP 2013</b>	<i>North Sydney Development Control Plan 2013</i>
<b>NSLEP 2013</b>	<i>North Sydney Local Environmental Plan 2013</i>
<b>OSD</b>	Over station development as defined in the CSSI Approval – includes non-rail related development that may occupy land or airspace above, within or in the immediate vicinity of the Sydney Metro CSSI but excluding spaces and interface works such as structural elements that may be constructed as part of the CSSI Approval to make provision for future developments
<b>PIR</b>	The Submissions and Preferred Infrastructure Report submitted as part of Sydney Metro City &

Term	Definition
	Southwest Chatswood to Sydenham project, application no. SSI 15_7400
<b>Secretary</b>	Secretary of the NSW Department of Planning, Industry and Environment, or their delegate
<b>SEARs</b>	The Secretary's environmental assessment requirements, which informs the content of an EIS
<b>SSD</b>	State significant development as defined by Section 4.36 of the EP&A Act
<b>Station box</b>	The volumetric area of the Crows Nest Station development approved under the CSSI Approval – includes below and above ground elements up to the 'transfer slab' level, within and above which would sit each OSD
<b>SDPP</b>	<p>Station Design and Precinct Plan required under Condition E101 of the CSSI Approval. The SDPP resolves the public domain areas for the Crows Nest Station precinct as part of the CSSI Approval and addresses (among other things):</p> <ul style="list-style-type: none"> <li>• Opportunities for public art</li> <li>• Landscaping and building design opportunities to mitigate the visual impacts of rail infrastructure and operational fixed facilities</li> <li>• Any salvaged historic and artistic elements</li> <li>• Location of existing vegetation and proposed landscaping</li> <li>• Location and design of operational lighting and measures to minimise lighting impacts</li> <li>• Timing for the implementation of access, landscaping and public realm initiatives</li> </ul>
<b>Sydney Metro City &amp; Southwest – Chatswood to Sydenham project</b>	<p>The Chatswood to Sydenham component of Sydney Metro City &amp; Southwest involves the construction and operation of a 16.5 kilometre metro line from Chatswood, under Sydney Harbour and through Sydney's CBD out to Sydenham</p> <p>This section of the Sydney Metro City &amp; Southwest will deliver new metro stations at:</p> <ul style="list-style-type: none"> <li>• Crows Nest</li> <li>• Victoria Cross</li> <li>• Barangaroo</li> <li>• Martin Place</li> <li>• Pitt Street</li> </ul>

Term	Definition
	<ul style="list-style-type: none"> <li>• Central (new underground platforms)</li> <li>• Waterloo</li> <li>• Sydenham</li> </ul> <p>This part of the project will operate between Chatswood and Sydenham Stations</p>
<b>Sydney Metro City &amp; Southwest – Sydenham to Bankstown Upgrade</b>	<p>Upgrading of the T3 Bankstown Line to Sydney Metro standards between Sydenham and Bankstown, including the upgrade of all 10 stations.</p> <p>These works are the subject of a separate Critical State Significant Infrastructure project (reference SSI 17_8256), which was granted consent in December 2018.</p>
<b>Sydney Metro</b>	The applicant for this detailed SSD Application
<b>Sydney Metro CSSI</b>	Sydney Metro City & Southwest – Chatswood to Sydenham project

# 1 Introduction

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## 1.1 Purpose of this report

This report supports a State Significant Development (SSD) Application for the detailed design, construction and use of Over Station Development (OSD) on Site C of the Crows Nest Station precinct. It is submitted to the Department of Planning, Industry and Environment (DPIE) pursuant to Part 4 of the *Environmental Planning and Assessment Act 1979* (EP&A Act).

On 9 January 2017, the Minister for Planning (the Minister) approved the Sydney Metro City & Southwest - Chatswood to Sydenham application lodged by Transport for NSW (TfNSW) as a Critical State Significant Infrastructure project (reference SSI 15\_7400), hereafter referred to as the CSSI Approval. The CSSI Approval includes all physical work required to construct the CSSI, including the demolition of existing buildings and structures on each site. Importantly, the CSSI Approval also includes provision for the construction of below and above ground structures and other components of the future OSD (including building infrastructure and space for future lift cores, plant rooms, access, parking and building services, as relevant to each site). The rationale for this delivery approach, as identified within the CSSI application is to enable the OSD to be more efficiently built and appropriately integrated into the metro station structure.

Sydney Metro is seeking to develop an OSD commercial building located above and integrated with the Clarke Street entrance to the Crows Nest Station. It represents the next phase in the realisation of the Crows Nest Station precinct. It follows and is pursuant to the Concept SSD Application (SSD 9579), granted consent on 23/12/2020, which established the planning and assessment framework for all OSD within the Crows Nest Station precinct. This detailed SSD Application has been prepared to be consistent with the Concept SSD Application in accordance with Division 4.4 of the EP&A Act.

The Concept SSD Application established the building envelopes (i.e. volumetric parameters), maximum gross floor area (GFA), minimum non-residential GFA, land uses, future subdivision (if required) and general development strategies to inform the future detailed design of the OSD. It is consistent with the strategic planning work undertaken by DPIE, including the finalisation of the *St Leonards and Crows Nest 2036 Plan* (2036 Plan) and the *Crows Nest Sydney Metro Site Rezoning Proposal* (Rezoning Proposal).

The Concept SSD Application approved the following key parameters with regard to Site C:

- **Maximum building height** – RL 127 metres or 9 storeys (includes two station levels and conceptual OSD space approved under the CSSI Approval)
- **Maximum building services zone** – RL 132 or 5 metres to accommodate lift overruns, rooftop plant and services
- **Gross floor area** – maximum of 3,100 square metres
- **Land uses** – commercial office premises (of which two floors could be provided as social infrastructure), including the use of approximate conceptual areas associated with the OSD which have been provisioned for in the Crows Nest

station box (CSSI Approval) including areas above ground level (i.e. OSD lobbies and associated spaces)

- **Strategies** – for modulation and expression of built forms, loading, vehicular and pedestrian access arrangements, utilities and services provision, managing stormwater and drainage, achievement of ecological sustainable development, providing public art, signage zones, and a design excellence framework

This detailed SSD Application for the Site C OSD is classified as SSD in accordance with Clause 12 of *State Environmental Planning Policy (State and Regional Developments) 2011* (SEPP SRD). Under Clause 12 of the SEPP, any development application pursuant to a Concept SSD Application is also classified as SSD whether or not that part of the development exceeds the minimum value specified in the relevant schedule of the SEPP. Accordingly, while the estimated capital investment value of this application does not exceed \$30 million in accordance with clause 19(2) of Schedule 1 of the SEPP, it is pursuant to the approved Concept SSD Application and has not been delegated to Council under Section 4.37 of the EP&A Act. The proposed development is, therefore, classified as SSD and is submitted to DPIE for assessment and determination.

## 1.2 Site Description

The Crows Nest Station precinct is located between the Pacific Highway and Clarke Street (eastern side of the Pacific Highway) and Oxley Street and south of Hume Street, Crows Nest. It is wholly located within the North Sydney Local Government Area, however, it is also near the boundary of both the Willoughby and Lane Cove Local Government Areas.

The approved Concept SSD Application encompasses three sites that make up the Crows Nest Station precinct. Of relevance to this application is Site C that comprises one lot on the north-western corner of Hume Street and Clarke Street (14 Clarke Street, Crows Nest). Site C has a site area of 608 square metres.

Separate and future application/s will be undertaken for OSD in relation to Sites A and B.





**Figure 1: Aerial photograph of Site C within the greater Crows Nest Station precinct**

### 1.3 Overview of the proposed development

This application seeks approval for the following:

- The design, construction, and operation of a new nine storey (plus rooftop plant) commercial OSD tower consistent with the building envelope for Site C established under the approved Concept SSD Application.
- The detailed design and delivery of interface areas within the approved station box that contain OSD exclusive elements including the entry lobby, bicycle parking and end of trip facilities, and plant not associated with the rail infrastructure.
- Vehicle loading associated with the OSD office space being provided.
- Works related to the provision of services, management of drainage and flooding, and the mitigation of construction noise and vibration.
- Provision of rooftop building identification signage zones.

The development is located entirely within the approved Concept SSD Application building envelope and has a maximum height of RL 132m and a GFA of 2,977m<sup>2</sup> (attributed to the OSD, excluding CSSI areas).



**Figure 2: Proposed Site C OSD contained within the approved building envelope**

## 1.4 Assessment requirements

DPIE has issued the Secretary's Environmental Assessment Requirements (SEARs) for the preparation of an Environmental Impact Statement for the proposed development. This report has been prepared having regard to the SEARs as follows:

SEAR	Where addressed
<p>Consistency with the concept approval</p> <ul style="list-style-type: none"> <li>Demonstrate the proposal is consistent with the Crows Nest Over Station Development Concept Approval (SSD 9579) and provide details of consistency with any modification(s) to the concept approval if sought concurrently.</li> </ul>	Section 1.1 and 1.3
<p>Integration with Sydney Metro station infrastructure</p> <ul style="list-style-type: none"> <li>Show how the SSD will integrate with the CSSI infrastructure such as structural design, detailed architectural approach, access, wayfinding, public domain works and construction management.</li> </ul>	Section 2.1 and 2.5

## 2 Structural Philosophy

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### 2.1 OSD Tower Overview

The Site C OSD is a 7-storey structure over the 2-level station (9 storeys total, maximum R.L of 132m). The OSD building is a reinforced concrete structure which interfaces with the Station Structure at Level 2.

The structural design of the OSD building is governed by architectural and spatial requirements. For example, the Level 2 floor structure has been designed as a transfer deck which enables OSD loads from the internal floor columns above to span across the building onto perimeter columns and core walls. This avoids internal column continuity into the station area which is required to maintain an open space for public use at street level.

### 2.2 OSD Tower Lateral System

The main lateral stability system consists of a reinforced concrete stair core and shear wall in combination with moment resisting frames spanning in the NE-SW direction. These elements are designed to cope with the vertical gravity loads and lateral loads imposed by wind and earthquake forces.

Ground level columns and walls in the station entrance area are double height as there is a mezzanine floor provided at Level 1 towards the Clarke Lane end. Lateral perimeter tie beams have been provided for restraint at this level.

The perimeter columns and concrete core walls aligned outside of the footprint of the station perimeter wall are supported on bored piles connected by a series of reinforced concrete ground beams. These piles transfer loads to the soil rock strata.

### 2.3 Gravity Load Transfer

Gravity loads from the self-weight of the structure, plant and equipment loads, superimposed dead loads and live loads are supported by in-situ reinforced concrete floor slabs supported by reinforced concrete beams. These beams span onto perimeter columns and the stair core wall and north-east shear wall where aligned.

### 2.4 Floor Plate Structures

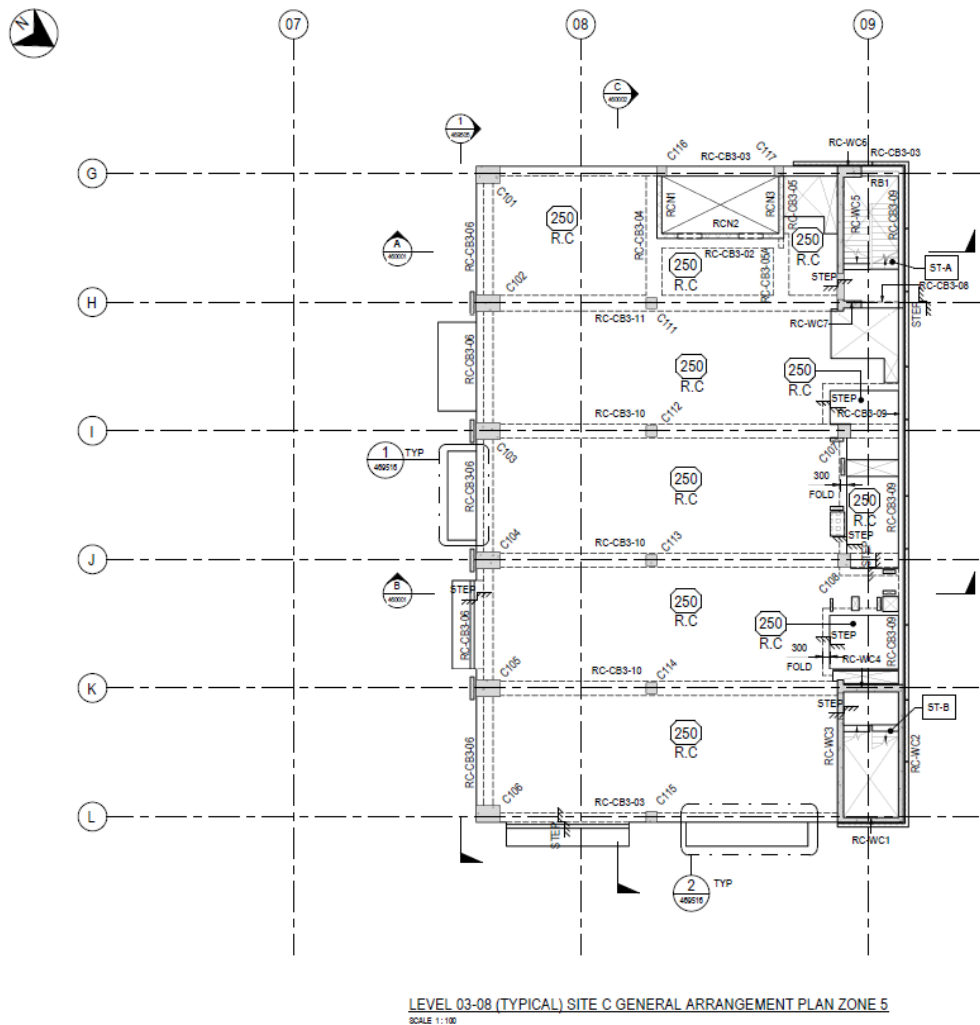
For the floor plates, a one-way reinforced concrete beam and slab system is adopted. Beam depths within the floor plate have been limited to a 500mm depth to accommodate building services design and architectural requirements for floor to floor ceiling heights and negate the need to notch or penetrate services through these beams.

This floor systems have been adopted due to the following advantages:

- Local market experience is readily available.
- Conventional concrete construction and formwork.

- Allows for building services to run under the floor beams without clashes and compromising floor to floor ceiling heights.

Refer to Figure 3 for the structural floor layout for the typical floors of the OSD tower.



**Figure 3: Typical floor level plan**

## 2.5 Transfer Systems

The spatial requirements of the station structure required to maintain an open space for public use at street level. Level 2 floor structure has been designed as a transfer deck which enables OSD loads from the internal floor columns above to span across the building onto perimeter columns and core walls.

All structural elements apart from the Level 1 mezzanine and core walls are to be reinforced precast concrete from Level 2 and below. This allows the station cranes to be utilised up to Level 2 for ease of construction. The Level 2 transfer floor slab comprises of reinforced concrete precast beams, planks, and concrete topping slab. The precast columns supporting Level 2 will require temporary propping during installation of the Level 2 precast elements until the topping slab has been constructed.

## **2.6 Design Criteria**

The building structure complies with:

- Building Code of Australia NCC 2019;
- All current relevant Australia Standards;
- Sydney Metro Crows Nest Station Scope of Works and Technical Criteria where applicable;
- Sydney Metro/TfNSW standards and requirements where applicable;

### **3 Conclusion**

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The design of the OSD building integrated with the construction of the future Crows Nest Station and Sydney Metro City and Southwest rail corridor has been developed in line with the architectural intent of the building and the Station.

The structural design considered all relevant design and planning criteria as well as integration with the other engineering services.