
Appendix W

Contamination Report

Hunter Street East Over Station Development Contamination Report

Appendix W

November 2022

Document Number: SMWSTEDS-SMD-SCB-SN100-CT-RPT-044002

REVISION	DATE	SUITABILITY CODE	TEAMBINDER DOCUMENT NUMBER	TB REVISION
D	25/10/2022	S4	SMWSTEDS-SMD-SCB-SN100-CT-RPT-044002	D

Approval Record

FUNCTION	POSITION	NAME	DATE
Author	Environmental scientist	John Kraft	25/10/2022
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Amendment Record

DATE	REVISION	AMENDMENT DESCRIPTION	AUTHOR
09/06/2022	A	Initial issue	John Kraft
04/08/2022	B	Second draft	John Kraft
16/09/2022	C	Third draft	John Kraft
25/10/2022	D	Final issue	John Kraft

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Glossary

Term	Definition
AEI	Area of environmental interest
AEP	Annual Exceedance Probability
AHD	Australian height datum
ANZECC	Australian and New Zealand Environment and Conservation Council
ARMCANZ	Agriculture and Resource Management Council of Australia and New Zealand
ASS	Acid sulfate soil
CLM Act	Contaminated Land Management Act 1997
Concept and Stage 1 CSSI Application	Application SSI-10038, including all major civil construction works between Westmead and The Bays, including station excavation and tunnelling, associated with the Sydney Metro West line
Concept SSDA	A concept development application as defined in section 4.22 of the EP&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
Council	City of Sydney
CoPC	Contaminant of potential concern
CSSI approval	Critical State Significant Infrastructure Approval
DA	Development Application
DCP	Development Control Plan
DPE	Department of Planning and Environment
EIS	Environmental Impact Statement
EP&A Act	<i>Environmental Planning and Assessment Act 1979</i>
EPA	Environment Protection Authority (NSW Government)
EPL	Environmental protection licences
GFA	Gross Floor Area
LEP	Local environmental plan
NSW	New South Wales
OSD	Over Station Development
PFAS	Per- and poly- fluoroalkyl substances
PMF	Probable Maximum Flood
POEO Act	<i>Protection of the Environment Operations Act 1997</i>
Previous CSSI technical studies	Refers to technical papers from Stage 2 CSSI Application and Stage 3 CSSI Application
Proposed development	Refers to the over station development at the Hunter Street Station
SEARs	Secretary's Environmental Assessment Requirements
SEPP	State Environment Planning Policy

Term	Definition
SSDA	State Significant Development Application
SSI	State Significant Infrastructure
Stage 2 CSSI Application	Application SSI-19238057, including major civil construction works between The Bays and Hunter Street Station
Stage 3 CSSI Application	Application SSI-22765520, including rail infrastructure, stations, precincts and operation of the Sydney Metro West line
Sydney Metro West	Construction and operation of a metro rail line and associated stations between Westmead and the Sydney CBD as described in section 1.1
TfNSW	Transport for New South Wales
The site	The site which is the subject of the Concept SSDA
VOC	Volatile organic compounds

Executive summary

This contamination report supports a Concept State Significant Development Application (Concept SSDA) submitted to the Department of Planning and Environment (DPE) pursuant to Part 4 of the *Environmental Planning and Assessment Act 1979* (EP&A Act). The Concept SSDA is made under section 4.22 of the EP&A Act.

Sydney Metro is seeking concept approval for a commercial tower above the Hunter Street Station east site (the site), otherwise known as the over station development (OSD).

The Concept SSDA seeks consent for a building envelope and its use for a commercial and retail premises, a maximum building height of 58 storeys (257.7m, reduced level 269.10), a maximum gross floor area (GFA) of 84,223m², pedestrian and vehicular access, circulation arrangements and associated car parking and the strategies and design parameters for the future detailed design of development.

This contamination report responds specifically to the Secretary's Environmental Assessment Requirements (SEARs) and for the potential for contamination to be present within the site and for related impacts for the Hunter Street East OSD (referred to hereafter as the 'proposed development') located on the corner of Bligh Street, O'Connell Street and Hunter Street.

The works completed prior to the commencement of the proposed development will be completed under the previous Stage 2 CSSI application, which included all major civil construction works between The Bays and the Sydney CBD, and Stage 3 CSSI application which included tunnel fit-out, construction of stations, ancillary facilities and station precincts between Westmead and the Sydney CBD. Both the Stage 2 and the Stage 3 CSSI applications included a contamination assessment. These assessments investigated the baseline contamination within the Concept SSDA study area, including the impact from both construction and operation of the Hunter Street Station. These assessments presented recommendations and conclusions for contamination which have been used to determine the potential contamination risks for the proposed development.

Prior to the construction of the proposed development, all structures within the site will be demolished and station infrastructure and buildings constructed. The proposed development will sit upon the station podium, precluding any risk of impact from existing contamination.

Based on the investigations undertaken, the SEARs outlined in section 1.3 have been wholly satisfied. Given the status of contamination within the site, and the proposed development being seated on a station podium no further contamination investigation is required for the Concept SSDA. The results of this contamination investigation indicate the site would be suitable for the proposed commercial and retail land use following the Stage 2 and Stage 3 CSSI application works.

1 Introduction

1.1 Sydney Metro West

Sydney Metro West will double rail capacity between Greater Parramatta and the Sydney Central Business District (CBD), transforming Sydney for generations to come. The once in a century infrastructure investment will have a target travel time of about 20 minutes between Parramatta and the Sydney CBD, link new communities to rail services and support employment growth and housing supply.

Stations have been confirmed at Westmead, Parramatta, Sydney Olympic Park, North Strathfield, Burwood North, Five Dock, The Bays, Pyrmont and Hunter Street.

Sydney Metro West station locations are shown in below Figure 1-1.

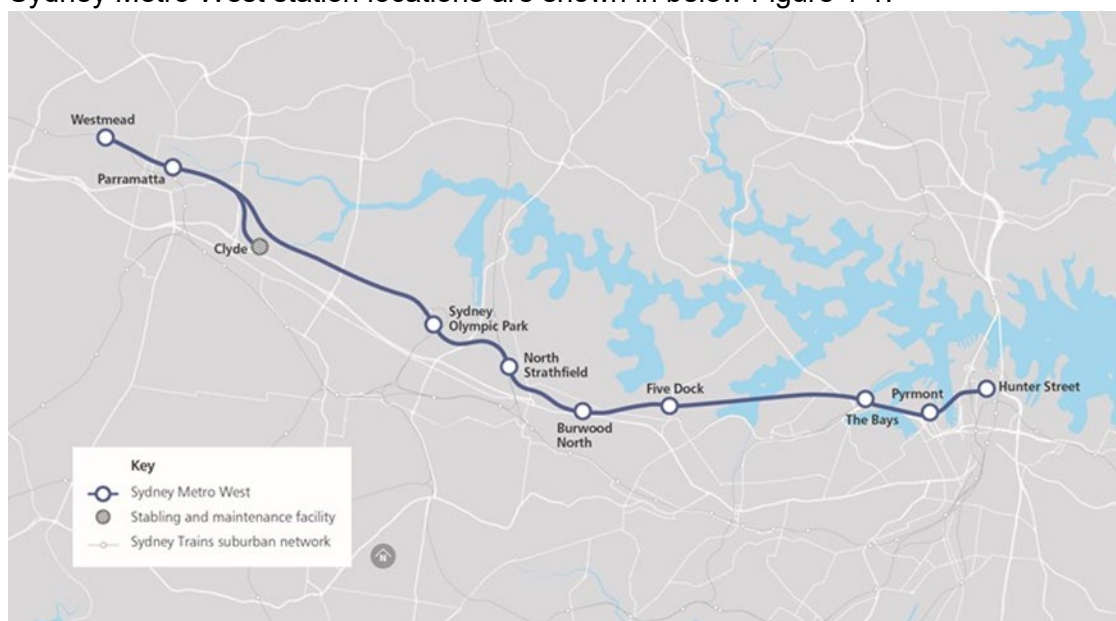


Figure 1-1 Sydney Metro West

1.2 Background and planning context

Sydney Metro is seeking to deliver Hunter Street Station under a two part planning approval process. The station fit out infrastructure is to be delivered under a Critical State Significant Infrastructure (CSSI) application subject to provisions under Division 5.2 of the EP&A Act, while the over station developments are to be delivered under a State Significant Development (SSD) subject to the provisions of Part 4 of the EP&A Act. It is noted a Planning Proposal request has been submitted to the City of Sydney Council to amend the planning controls on the site (refer to section 1.2.3).

1.2.1 Critical state significant infrastructure

The state significant infrastructure (SSI) planning approval process for the Sydney Metro West metro line, including delivery of station infrastructure, has been broken down into a number of planning application stages, comprising the following:

- Concept and Stage 1 CSSI Approval (SSI-10038) – All major civil construction works between Westmead and The Bays including station excavation, tunnelling and demolition of existing buildings (approved 11 March 2021)
- Stage 2 CSSI Application (SSI- 19238057) – All major civil construction works between The Bays and Hunter Street Station (approved 24 August 2022)
- Stage 3 CSSI Application (SSI- 22765520) – Tunnel fit-out, construction of stations, ancillary facilities and station precincts between Westmead and the Hunter Street Station, and operation and maintenance of the Sydney Metro West line (under assessment).

1.2.2 State significant development application

The SSDA will be undertaken as a staged development with the subject concept state significant development application (Concept SSDA) being consistent with the meaning under section 4.22 of the EP&A Act and seeking conceptual approval for a building envelope, land uses, maximum building heights, a maximum gross floor area, pedestrian and vehicle access, vertical circulation arrangements and associated car parking. A subsequent Detailed SSDA/s is to be prepared by a future development partner which will seek consent for detailed design and construction of the development.

1.2.3 Planning proposal

A Planning Proposal request has been submitted to the City of Sydney Council to amend the planning controls that apply to the Hunter Street Station under the Sydney Local Environmental Plan 2012 (LEP). Hunter Street Station includes both an eastern site (this application) and western site.

The Planning Proposal request seeks to enable the development of a commercial office building on the site that would:

- comprise a maximum building height of between reduced level (RL) 257.7m and RL 269.10m (as it varies to comply with the relevant sun access plane controls)
- deliver a maximum gross floor area (GFA) of 84,287m² (resulting in a maximum floor space ratio (FSR) of 22.82:1), measured above ground level
- facilitate the adaptive reuse of the existing Former Skinners Family Hotel within the overall development
- include site specific controls which ensure the provision of employment and other non-residential land uses
- require the mandatory consideration of a site specific Design Guideline
- allow for the provision of up to 70 car parking spaces
- establish an alternative approach to design excellence.

The Planning Proposal request was submitted to the City of Sydney in May 2022 and is currently under assessment.

1.3 Purpose of the report

This contamination report supports a Concept SSDA submitted to the Department of Planning and Environment (DPE) pursuant to Part 4 of the EP&A Act. The Concept SSDA is made under section 4.22 of the EP&A Act.

This report has been prepared to specifically respond to the Secretary's Environmental Assessment Requirements (SEARs) issued for the Concept SSDA on 8 August 2022 which states that the environmental impact statement is to address the following requirements.

SEARs requirement	Where addressed
In accordance with SEPP Resilience & Hazards, assess and quantify any soil and groundwater contamination and demonstrate that the site is suitable (or will be suitable, after remediation) for the development.	Throughout this contamination report.

This contamination assessment will identify potential risks associated with soil, groundwater and vapour contamination which may be present as a result of historic and/or current activities undertaken within the concept SSDA study area. This will assist in identifying construction limitations/constraints and management options within the proposal with respect to contamination.

2 The site and proposal

2.1 Site location and description

Hunter Street Station is in the northern part of the Sydney CBD, within the commercial core precinct of Central Sydney and within the Sydney Local Government Area (LGA). The Hunter Street Station includes two sites – the eastern site and western site. This report relates to the eastern site only.

The Hunter Street Station east site (the site) is on the corner of O’Connell Street, Hunter Street and Bligh Street adjacent to the existing CBD and South East Light Rail that extends from Circular Quay to Moore Park, Kensington and Kingsford. The east site is adjacent to the new Martin Place Station which forms part of the Sydney Metro City and Southwest, Australia’s biggest public transport project connecting Chatswood to Sydenham and extending to Bankstown. The remainder of the site is currently occupied by commercial office buildings and a range of ground floor business premises including retail, restaurants and cafes.

The site area is 3,694m² and be cleared of all buildings and utilities prior to commencement of station construction activities. The site location is shown in Figure 2-1.



Figure 2-1 Location of the site

Table 2-1 sets out the address and legal description of the parcels of land that comprise the site.

Table 2-1 Site legal description

Address	Lot and DP
28 O'Connell Street, Sydney	Lot 1, DP217112
28 O'Connell Street, Sydney	Lot 1, DP536538
28 O'Connell Street, Sydney	Lot 1, DP1107981
48 Hunter Street, Sydney	Lot 1, DP59871
48 Hunter Street, Sydney	Lot 2, DP217112
33 Bligh Street, Sydney	Lot 1, DP626651
37 Bligh Street, Sydney	CP and Lots 1-14, 21-31, 33-36, and 40, SP58859
37 Bligh Street, Sydney	CP and Lots 41-49, SP61852
37 Bligh Street, Sydney	CP and Lots 50-57, SP61922
37 Bligh Street, Sydney	CP and Lots 58-65, SP61923
37 Bligh Street, Sydney	CP and Lots 66 and 67, SP63146
37 Bligh Street, Sydney	CP and Lots 67-70, SP63147
37 Bligh Street, Sydney	CP and Lot 72, SP74004
37 Bligh Street, Sydney	CP and Lots 75-82, SP87437
37 Bligh Street, Sydney	CP and Lots 73-74, SP87628
Total Area: 3,694 m²	

2.2 Overview of this proposal

The Concept SSDA will seek consent for a building envelope above the site (the proposed development). As detailed in Table 2-2 and Figure 2-2.

Table 2-2 Proposed development overview

Built form component	Proposed development outcome
Site area	3,694 m ²
Height	Building height of 257.7m (RL 269.10)
Gross Floor Area	Up to 84,223m ²
Land use(s)	Commercial office and retail
Carparking	Up to 70 car parking spaces

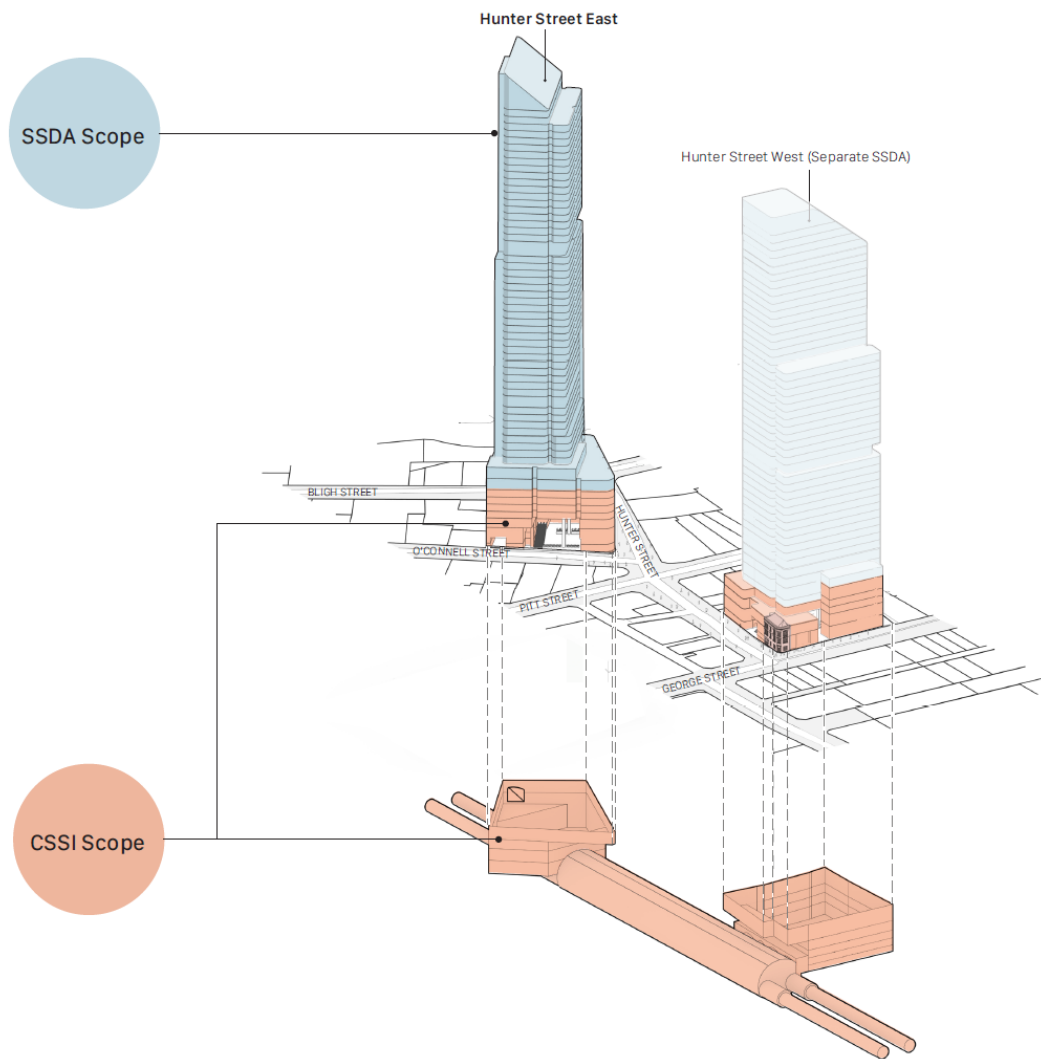


Figure 2-2 Proposed Concept SSDA development and CSSI scope

3 Baseline investigation

This report provides an assessment for the potential for contamination to be present within the site in accordance with *State Environmental Planning Policy (Resilience and Hazards) 2021*. The assessment has considered the scope of work completed during the prior CSSI approval, including the Hunter Street Station bulk earth works and station development which will have addressed existing contamination relevant to the site.

3.1 Objectives

The objectives of this contamination assessment are to:

- satisfy the requirements of the SEARs summarised in section 1.3
- identify areas of potential existing contamination within the site
- outline the findings of the previous CSSI applications
- identify whether potential contamination at the site is likely to preclude it from being suitable to accommodate the proposed commercial and retail land uses.

3.2 Scope of work

To achieve the objectives, the methodology for this contamination assessment includes:

- desktop review of available information sources and observations from previous site inspections to understand the existing environment and potential for contamination within the Concept SSDA study area. The study area for this technical paper comprises the site boundary plus a 500-metre buffer from the site boundary
- consideration of the contamination status following the construction of the station, prior to the future construction activities commencing on the site
- identification of areas of environmental concern (with respect to contamination) and assessment of potential impacts during construction and operation from contamination (with no mitigation measures)
- identification of contamination receptors and exposure pathways, and rank these in terms of risk using a prioritisation methodology to illustrate the potential harm
- identification of appropriate mitigation and management responses for contamination, or where further investigation or remediation may be required.

The desktop assessment involved a review of available information relevant to the site to understand the existing environment, the potential risk for contamination and the potential impacts. The review of information included:

- findings from the Planning Proposal for Hunter Street Over Station Development Geotechnical and Contamination Assessment (Sydney Metro, 2022)
- findings from The Bays to Sydney CBD Environmental Impact Statement – Stage 2 Technical Paper 8 Contamination (Sydney Metro, 2021a)
- findings from Westmead to Sydney CBD Environmental Impact Statement – Stage 3 Technical Paper 7 Contamination (Sydney Metro, 2021b)

- findings from Westmead to Sydney CBD Environmental Impact Statement – Stage 3 Technical Paper 8 Hydrology, flooding and water quality (Sydney Metro, 2021c).
- publicly available information including:
 - the New South Wales (NSW) Environment Protection Authority (EPA) register
 - licenced activities under the NSW EPA *Protection of the Environment Operations Act 1997* (POEO Act)
 - the Commonwealth Scientific and Industrial Research Organisation (CSIRO) Australian Soil Resource Information System (ASRIS) database
 - former NSW Department of Primary Industries groundwater database
 - publicly available information available via general internet searches for the key words (contamination, remediation, and site investigation) for City of Sydney and major projects within and adjoining the proposed Hunter Street developments
 - existing land uses in vicinity to the site and information on topography, drainage, geology, soils, hydrogeology, acid sulfate soils (ASS), and receiving environment data including relevant mapping and provisions in the relevant local environment plans.

Areas located within the site, nearby land uses, and potential areas of environmental concern (with respect to contamination) were visually inspected previously for Technical Paper 8 Contamination (Sydney Metro, 2021a) as part of the Stage 2 CSSI application. The site inspection was completed from only publicly available areas and focused on the construction site, as well as nearby land uses and potential areas of environmental interest (AEIs).

3.3 Relevant contamination guidelines and legislation

In preparing this contamination assessment, the following guidelines were considered (where relevant):

- Australian and New Zealand Guidelines for Fresh and Marine Water Quality (ANZECC & ARMCANZ, 2000, ANZG, 2018, and draft ANZG, 2020)
- Department of Environment, Climate Change and Water NSW (DECCW) (2010) Vapour Intrusion: Technical Practice Note
- NSW DEC 2007, Contaminated Sites: Guidelines for the Assessment and Management of Groundwater Contamination
- Heads of EPAs Australia and New Zealand (HEPA), 2020. PFAS National Environmental Management Plan 2.0
- National Health and Medical Research Council 2008, Guidelines for Managing Risks in Recreational Waters
- National Environment Protection Council (NEPC) 1999, National Environment Protection (Assessment of site Contamination) Measure 2013 (the ASC NEPM)
- NSW EPA 2020, Guidelines for Consultants Reporting on Contaminated Sites
- NSW EPA 2017, Guidelines for the NSW Site Auditor Scheme (3rd edition)

- NSW EPA 2015, Guidelines on the Duty to Report Contamination under the *Contaminated Land Management Act 1997* NSW EPA 1995, Contaminated Sites: Sampling Design Guidelines.

The relevant legislation, regulations and policies for contaminated land matters that have been considered during the preparation of this assessment include:

- *Contamination Land Management Act 1997* (New South Wales Environment Protection Authority, 1997)
- State Environmental Planning Policy (Resilience and Hazards) 2021
- *POEO Act* (New South Wales Environment Protection Authority, 1997)
- Protection of the Environment Operations (Waste) Regulation 2014 (New South Wales Environment Protection Authority, 2014)
- *Environmental Planning and Assessment Act 1979*
- State Environmental Planning Policy (Precincts – Central River City) 2021
- Sydney Local Environment Plan 2012 (Sydney LEP 2012).

3.4 Site conditions and surrounding environment

This site condition and surrounding environment section has drawn on the findings from previous CSSI technical studies (Sydney Metro 2021a, 2021b). The site condition and surrounding environment provided in this chapter will evaluate Sydney Metro's findings in the context of the site.

3.4.1 Land use and zoning

The site currently comprises a mixture of retail and commercial office buildings. Prior to the commencement of the site, all structures within the site will be demolished. The demolition works will be completed under the Sydney Metro Stage 2 CSSI approval, which includes the bulk excavation works for the station box. Once done, the station building, and infrastructure will be constructed under the Sydney Metro Stage 3 CSSI approval.

The land use zones within 500 metres of the site are a combination of Commercial Core (B3), Infrastructure (SP2), Mixed (B4) and Public Recreation (RE1) zones as described by the City of Sydney LEP 2012.

The land zoning within the site is Metropolitan Centre (B8). In this land zone, the use of the land is limited to commercial premises, community services including childcare centres, community facilities, educational establishments, entertainment facilities, function centres, information and education facilities, registered clubs, respite day care centres, restricted premises, roads, tourist, and visitor accommodation.

3.4.2 Topography and drainage

The site study area is relatively flat with a gentle decline to the north towards Circular Quay. The site sits at a height of 15 metres Australian Height Datum (AHD).

The site study area has underground drainage networks in the adjacent road reserves generally following existing kerb lines and connecting into Pitt Street where flows discharge to Circular Quay, 460 meters to the north. Local stormwater drains pick up additional runoff as required at the site.

3.4.3 Surface water and flood potential

The site would be in an area with significant urban development, which has an elevation fall toward Circular Quay from south to north.

Flood modelling for this proposal has determined that the site is flood affected by up to about 0.06 metres in the 5% Annual Exceedance Probability (AEP) and 0.25 metres in a 1% AEP flood event and up to 0.4 metres in a Probable Maximum Flood (PMF) event. In the PMF event both Hunter Street and the southern portion of the site have flood depths up to 0.3 metres whilst O'Connell Street has depths up to 0.15 metres.

There are no mainstream flooding or coastal inundation risks relevant to the site and immediate surrounds. Modelling suggests that some private properties would be expected to already experience a degree of flooding in the baseline PMF event (Sydney Metro, 2021c).

3.4.4 Acid sulfate soils

Potential ASS risk maps obtained from the NSW DPE (previously Office of Environment and Heritage) were reviewed to assess the probability of potential ASS being present in proximity to the site. Based on this review it was noted the site is mapped as having a low probability of ASS occurrence with very low confidence.

The site is located in a Class 5 area, ASS are not typically found within Class 5 areas. There will be no interaction with existing ground, therefore ASS issues are not relevant to this phase of the approval.

Class 2 mapped soils are located 200 metres north near Circular Quay and 400 metres west of the construction site. On the eastern side of Darling Harbour there is an extremely low probability of ASS occurrence, with very low confidence (Sydney Metro, 2021a).

3.4.5 Hydrogeology

Groundwater is known to occur in the soil profile and within the fractured or porous rock at the site (Golder-Douglas, 2020a). Groundwater bores for beneficial use were not located within 1km of the construction site. Groundwater has been previously measured at 2.97 to -5.56 metres AHD in the vicinity of the construction site (Golder-Douglas, 2020a; Golder-Douglas, 2021).

In the vicinity of the site the groundwater system is considered highly disturbed due to the large number of existing tunnels, excavations and impermeable barriers (e.g. tanked basements) to groundwater flow. Groundwater is not likely to interact with creeks associated with Cockle Bay and Circular Quay as they are concrete-lined which serve mainly as stormwater discharge channels.

3.4.6 Sensitive receiving environments

There are no coastal wetlands, as defined by the *State Environmental Planning Policy (Coastal Management) 2018*, near the site. The closest coastal wetland is located approximately 3.4 kilometres from the site. Sydney Harbour has been identified as a sensitive receiving environment and has a high conservation and community value and supports ecosystems that are particularly sensitive to contamination or degradation of water quality.

Table 3-1 summarises the sensitive surface water receiving environments specific to the site study area and describes their condition and sensitivity (Sydney Metro, 2021a).

Table 3-1 Sensitive surface water receiving environments at Hunter Street Station

Watercourse	Surface water features	Condition	Sensitive receiving environment rating
Sydney Harbour	<ul style="list-style-type: none"> Numerous SEPP Coastal Wetlands. Potential habitat for threatened aquatic species and protected aquatic vegetation Type 1 Key Fish Habitat Fourth Order waterway Permanently flowing 	Moderately disturbed	High

3.5 Site background

The site is located in the northern part of the Sydney CBD, within the commercial core precinct of Central Sydney and within the Sydney local government area.

The following sections are a summary of background information on the site, including historic uses, council records and EPA records.

3.5.1 Aerial photographs

Historical aerial photographs of the site and surrounds were reviewed to identify former land uses that may have the potential to be sources of contamination. The photographs were obtained from NSW Spatial Portal Service Historical Imagery Viewer. Details of the aerial photographs are detailed below in Table 3-2 and can be seen in Appendix A.

Table 3-2 Historical aerial photograph review

Date	The site	Surrounding area
1943	High rise commercial buildings are present on the site	The surrounding areas appear to comprise primarily of commercial land use with open space including the Domain further east and Wynyard Park to the west.
1955	No significant changes evident from previous imagery	The surrounding areas do not appear to have undergone significant changes in comparison to the 1943 imagery.

Date	The site	Surrounding area
1970	No significant changes evident from previous imagery	The surrounding areas do not appear to have undergone significant changes in comparison to the 1955 imagery with the exception of some demolition and redevelopment with higher density buildings being constructed.
1989	No significant changes evident from previous imagery	The surrounding areas do not appear to have undergone significant changes in comparison to the 1970 imagery with the exception of some redevelopment of surrounding commercial buildings.
1994	Site appears to have undergone minor changes to existing buildings	The surrounding areas do not appear to have undergone significant changes in comparison to the 1989 imagery with the exception of some redevelopment of surrounding commercial buildings.
2005	No significant changes evident from previous imagery	The surrounding areas do not appear to have undergone significant changes in comparison to the 1994 imagery with the exception of some redevelopment of surrounding commercial buildings.
2020	No significant changes evident from previous imagery	The surrounding areas do not appear to have undergone significant changes in comparison to the 2005 imagery with the exception of some redevelopment of surrounding commercial buildings.

3.5.2 NSW EPA records

NSW Contaminated sites notified to the EPA

A search conducted on 9 May 2022 of the NSW EPA Contaminated Sites Record of Notices (under section 58 of the *Contaminated Land Management Act 1997 (CLM Act)*) and the list of contaminated sites notified to the NSW EPA (under section 60 of the *CLM Act*) indicated that there were five sites registered with the NSW EPA within 500 metres of the site that were either regulated or had been notified. The sites are summarised in Table 3-3 below.

Table 3-3 NSW EPA regulated / formerly regulated / notified sites within 500 metres of the site

Site address	Contamination status	EPA listing	Site activity	Location relative to the site
Road reserve fronting 30–38 Hickson Road, Millers Point	Contamination currently regulated under <i>CLM Act</i>	Regulated	Gasworks	About 400 metres south of the site

Site address	Contamination status	EPA listing	Site activity	Location relative to the site
36 Hickson Road, Millers Point	Contamination currently regulated under <i>CLM Act</i>	Regulated	Gasworks	
38 Hickson Road, Millers Point	Contamination being managed via the planning process (<i>Environmental Planning and Assessment Act 1979</i>)	Notified	Gasworks	
30–34 Hickson Road, Millers Point	Regulation under <i>CLM Act</i> not required	Notified	Gasworks	

Licenced activities under the *POEO Act*

A search conducted on 9 May 2022 of the *POEO Act* public register (under section 308 of the *POEO Act 1997*) indicated there were two sites within 500 metres of the site that have current environmental protection licences (EPL). The sites are summarised in Table 3-4. EPLs that are no longer in force or surrendered have not been included in the table as it has been assumed that potential contamination risk is only associated with current licensed activities.

Table 3-4 Sites with current EPL within 500 metres of the site

Site address	Licence holder	Activity	Location relative to the site
Australian Rail Track Corporation (ARTC) Network, Sydney	Australian Rail Track Corporation Limited	Railway infrastructure operations	About 400 metres south of the site
Between Chatswood dive site and Sydenham dive site, Sydney (associated with Sydney Metro)	CPB Contractors Pty Limited	Railway infrastructure operations (<50,000T)	About 400 metres south of the site

EPLs generally detail requirements for the management of pollution risks associated with the licenced activities. As such, if activities are operating in accordance with their respective EPL, the risk of those activities causing contamination would be reduced.

Review of per- and poly- fluoroalkyl substances sources

Considering the high mobility of Per- and poly- fluoroalkyl substances (PFAS) within the environment, a search of potential PFAS sources was carried out within one kilometre of the site. The search involved a review of:

- NSW EPA Contaminated Sites Record of Notices (under section 58 of the *CLM Act 1997*) and the list of contaminated sites notified to the NSW EPA (under section 60 of the *CLM Act 1997*) for PFAS as a contaminant of concern
- current and historical (from 1955 onwards) aerial imagery for visually identifiable industry and/or operations which may be associated with PFAS contaminants (as defined by the PFAS National Environmental Management Plan, 2018) including aviation, coal works, power generation (including switchyards), petrochemical production, fuel production, petroleum products storage, aviation, sewage treatment plants and waste disposal
- a review of available aerial imagery services (GoogleEarth).

Following the review, no potential PFAS sources were identified within one kilometre of the proposed development.

3.5.3 Areas of environmental interest

Based on the findings of the desktop review and site inspections completed by Sydney Metro (2021a) and Sydney Metro (2021b), several known and potential contamination sources (AEI) were identified within the site study area.

Potential on-site sources of contamination identified were:

- AEI 12 – current and historic storage of diesel for backup generators within commercial buildings.

As part of the prior CSSI approved works, all sites within the site will be demolished and the majority of soil and bedrock will be removed.

Potential off-site sources of contamination identified were:

- AEI 10 – dry cleaning facilities within the western construction site
- AEI 5 – dry cleaning businesses (including 447 Kent Street) surrounding the site
- AEI 6 – former gasworks at Millers Point.

These sites are shown in Figure 3-1, the potential contamination pathways, receptors, contaminants of potential concern (CoPC), and estimated risk to the site following the prior CSSI approved works are summarised below in Table 3-5.

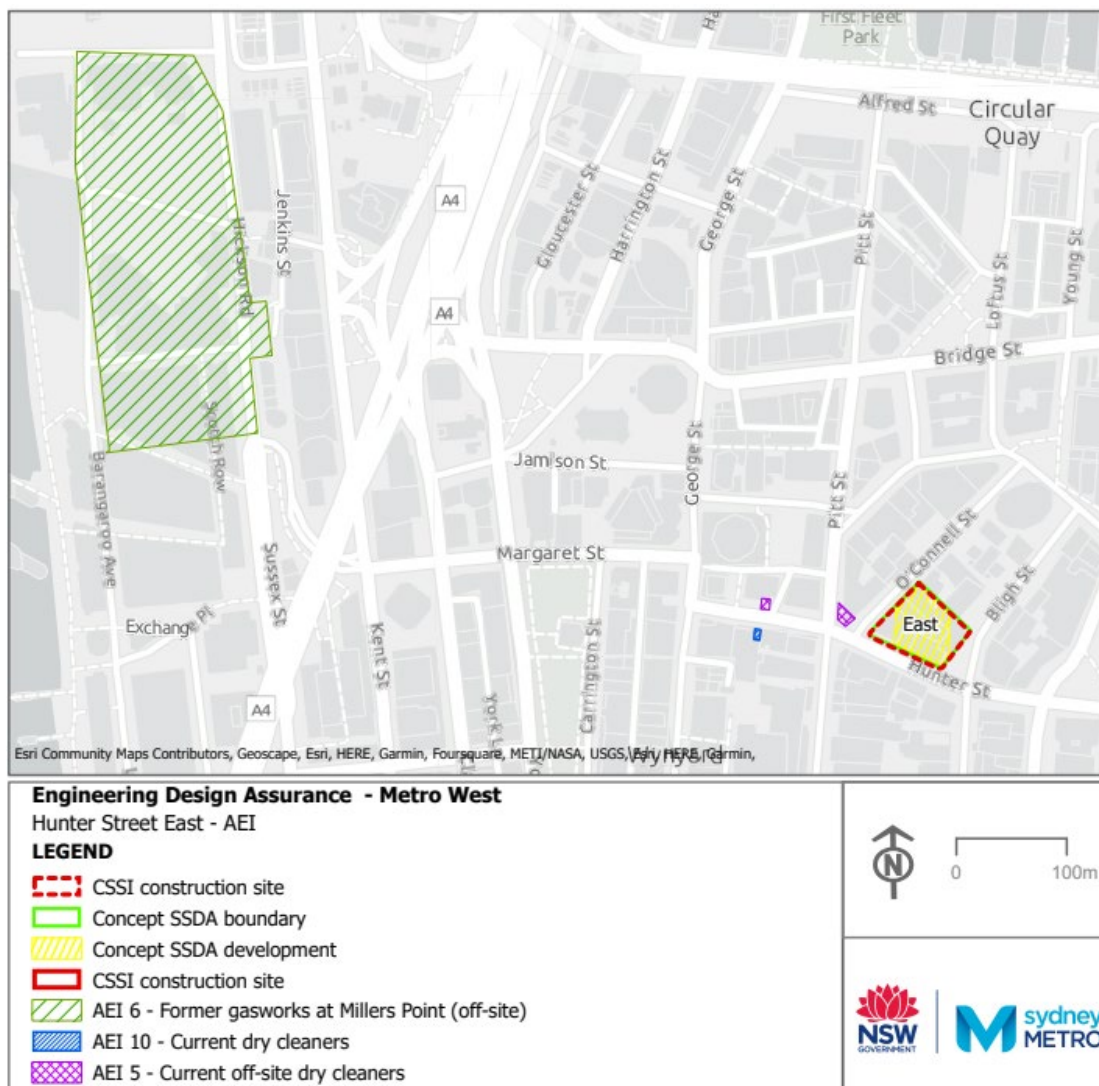


Figure 3-1 AEI locations

Table 3-5 Areas of environmental interest for the site

AEI	Media and CoPC	Contamination status	Pathway	Receptor	Risk identified for the site
AEI 5 - Dry cleaning business (447 Kent Street) (off-site)	<p>Media: Groundwater.</p> <p>Source: Spills and leaks of dry-cleaning solvents.</p> <p>CoPC: VOCs including chlorinated hydrocarbons.</p>	Low potential for contamination to be present at concentrations above the relevant assessment criteria and limited in extent.	Direct contact or ingestion, of groundwater. Discharge of extracted groundwater	Construction workers, future maintenance workers, discharge receiving environment	Very low given the proposed development will be raised above the ground on the station podium and have no interaction with the ground.
AEI 6 - Former gasworks at Millers Point (off-site)	<p>Media: Groundwater</p> <p>Source: Historical coal tar contamination.</p> <p>CoPC: Hydrocarbons, ammonia, phenol and cyanide.</p>	Contamination possibly present at concentrations above the relevant assessment criteria and limited in extent.	Direct contact or ingestion, of groundwater. Discharge of extracted groundwater	Construction workers, future maintenance workers, discharge receiving environment	Very low given the proposed development will be raised above the ground on the station podium and have no interaction with the ground.

AEI	Media and CoPC	Contamination status	Pathway	Receptor	Risk identified for the site
AEI 10 - Current dry cleaners (Off-site)	Media: Soil, groundwater and vapour Source: Spills and leaks of dry-cleaning solvents. CoPC: VOCs including chlorinated hydrocarbons.	Soil: Low potential for contamination to be present at concentrations above the relevant assessment criteria and limited in extent.	Direct contact or ingestion of soil or groundwater. Discharge of extracted groundwater.	Construction workers, future maintenance workers, discharge receiving environment	Soil: Very low given the proposed development will be raised above the ground on the station podium and have no interaction with the ground.
AEI 10 - Current dry cleaners (Off-site)	Media: Soil, groundwater and vapour Source: Spills and leaks of dry-cleaning solvents. CoPC: VOCs including chlorinated hydrocarbons	Groundwater and vapour: Contamination possibly present at concentrations above the relevant assessment criteria and potentially widespread.	Direct contact or ingestion of soil or groundwater. Discharge of extracted groundwater.	Construction workers, future maintenance workers, discharge receiving environment	Groundwater and vapour: Very low given the proposed development will be raised above the ground on the station podium and have no interaction with the ground.

AEI	Media and CoPC	Contamination status	Pathway	Receptor	Risk identified for the site
AEI 12 - Current and historical storage of diesel for backup power supply generators within commercial buildings - Leaks and spills from underground petroleum storage infrastructure	Media: Soil, groundwater, and vapour. Source: Diesel leaks. CoPC: Hydrocarbons.	Contamination possibly present in the media of concern at concentrations above the relevant assessment criteria and limited in extent	Direct contact or ingestion of soil or groundwater. Discharge of extracted groundwater.	Construction workers, future maintenance workers, discharge receiving environment	Very low given the proposed development will be raised above the ground on the station podium and have no interaction with the ground.

3.5.4 Contaminants of potential concern

The desktop review of available information highlights possible CoPC relating to current and historical activities, including the prior CSSI approved works.

Groundwater and soil may be impacted by cyanide, phenols, ammonia, hydrocarbons, or volatile organic compounds within the site as a result of off-site sources of groundwater contamination migrating towards the site. The risk posed by these CoPC to the proposed development is considered to be very low due to there being no interaction between the proposed development and the ground, and the fact the proposed development will be seated on a station podium.

4 Assessment of potential impacts

The potential for impacts from contamination to sensitive receivers are described in the following sections.

4.1 Soil

Surface soils within the site may be contaminated by hydrocarbons, and VOCs (Sydney Metro, 2021b) as well as any contamination resulting from the excavation and development of the Hunter Street Station. There would be no disturbance to soils from the construction of the proposed development, as there will be no interaction with the existing ground, precluding a contamination risk.

The sealed nature of the developed site would preclude an impact from potential soil contamination during operation.

4.2 Vapour and gas

Vapours are generally partitioned from compounds present within soil and groundwater. The generation of vapours can be influenced by sub-surface conditions and the presence of below ground and on surface structures. If present, vapours could accumulate within below ground excavations and enclosed structures at concentrations which could represent an explosion or acute/chronic health risk (Sydney Metro, 2021b).

There would be no anticipated impact from vapours and gas from the construction of the proposed development as there would be no interaction with the existing ground.

4.3 Acid sulfate soils

ASS are unlikely to occur within the site as the site is listed as having Class 5 acid sulfate soil risk (DPE, 2021). Excavation of soils with a potential for ASS is unlikely to occur during the construction of the proposed development, as there will be no interaction with the existing ground.

4.4 Groundwater

Groundwater is known to occur in the soil profile and within the fractured and porous rock within the site study area (Golder Douglas, 2020a). Groundwater has typical depths between 2.97m and -5.5m AHD in the vicinity of the site study area (Golder Douglas, 2020a; Golder Douglas, 2021). In the vicinity of the site the groundwater system is considered highly disturbed due to the large number of existing tunnels, excavations, and impermeable barriers (example tank basements) to groundwater flow.

Contaminated groundwater is not likely be encountered during the construction and operation of the proposed development. The proposed development will sit on the station podium and all below ground excavation will be completed during the prior CSSI approval.

5 Conclusion

Prior to the construction of the proposed development, all structures within the site will be demolished, and station infrastructure and buildings including the station podium constructed. The proposed development will sit upon the station podium, precluding any risk of impact from existing contamination.

Based on the investigations undertaken, the SEARs outlined in section 1.3 have been wholly satisfied. Given the status of contamination within the site, and the proposed development being seated on a station podium, no further contamination investigation is required for the Concept SSDA. The results of this contamination investigation indicate the site would be suitable for the proposed commercial and retail land use following the Stage 2 and Stage 3 CSSI application works.

6 Limitations

This report has been prepared for use by the client who has commissioned the works in accordance with the site brief only and has been based in part on information obtained from the client and other parties.

The advice in this report relates only to the site and all results, conclusions and recommendations made should be reviewed before being used for any other purpose. Mott MacDonald accepts no liability for use or interpretation by any person or body other than the client who commissioned the works. This contamination assessment should not be reproduced without prior approval by the client or amended in any way without prior approval by Mott MacDonald, and should not be relied upon by other parties, who should make their own enquires.

Investigation of potential contamination is based on appropriate guidance documents made and approved by the relevant regulatory authorities. Conclusions arising from the review and assessment of environmental data are based on the investigation considered appropriate based on the regulatory requirements. The high-level desktop study conducted relies on publicly available information such as aerial photographs, government records and analysis of local historical records.

No sampling or laboratory analyses were undertaken as part of the investigations. Potential contaminants and areas of concern are based on the information detailed in the site history. This Report does not provide confirmation of the presence of soil and groundwater contamination within the site.

Changes to site conditions may occur subsequent to the investigations, through natural processes or through the intentional or accidental addition of contaminants. The conclusions and recommendations reached in this report are based on the information obtained at the time of the investigations.

This report does not provide a complete assessment of the environmental status of the site, and it is limited to the scope defined herein. Should information become available regarding conditions at the site including previously unknown sources of contamination, Mott MacDonald reserves the right to review the report in the context of the additional information

7 References

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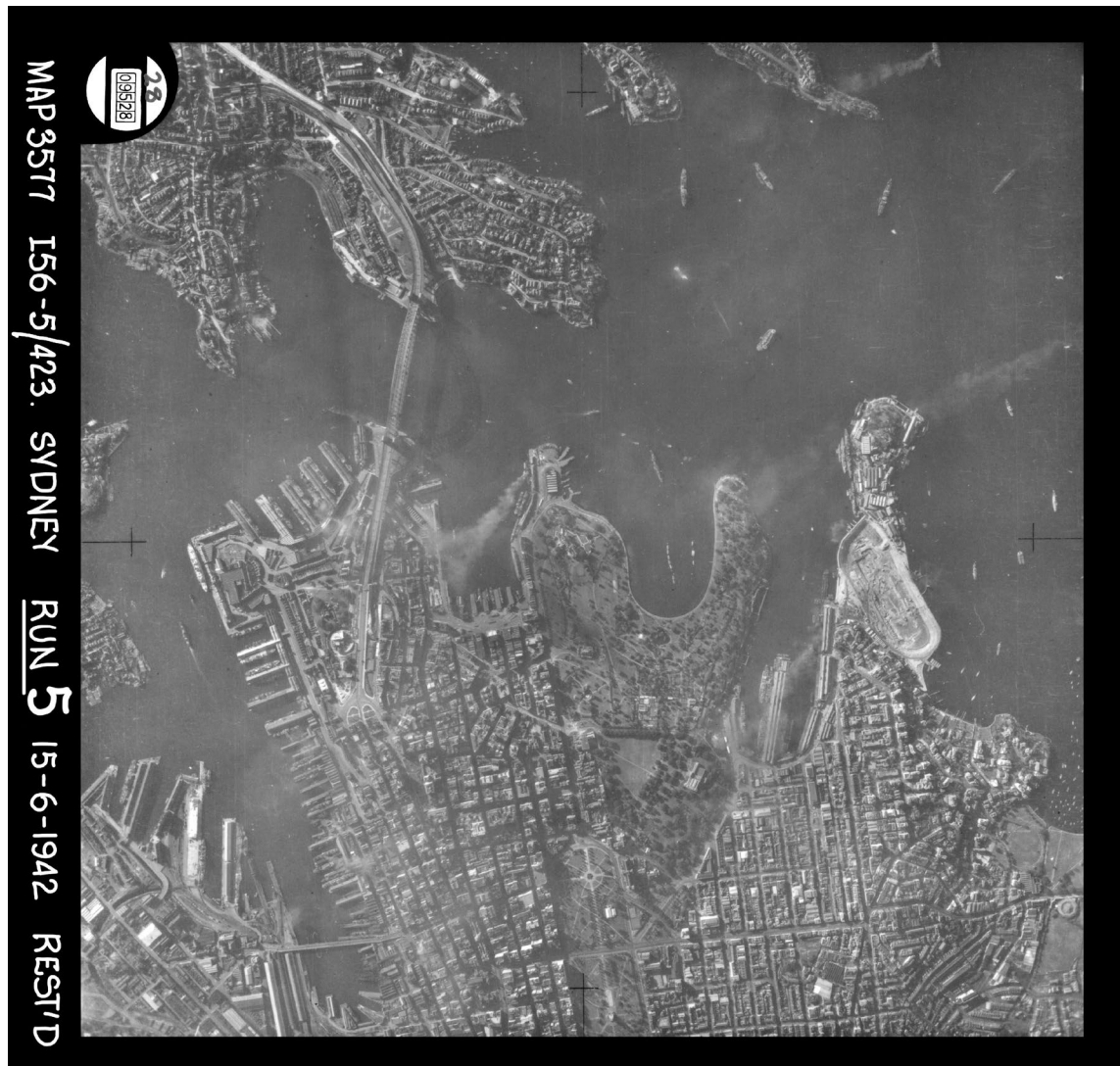
Sydney Metro 2021b, Westmead to Sydney CBD Environmental Impact Statement – Stage 3 Technical Paper 7 Contamination.

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Appendix A Historical aerial photographs

Hunter Street 1942



Hunter Street 1951



467-113

Hunter Street 1971



Hunter Street 1990



Hunter Street 1994



Hunter Street 2005



Hunter Street 2019



