



Aargus

Environmental - Remediation - Engineering - Laboratories - Drilling

PRELIMINARY SITE INVESTIGATION

**80-88 Regent Street,
Redfern NSW**

Prepared for

**Sunny Thirdi Regent St Pty Ltd
c/- Milligan Group**

24th November 2015

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ABBREVIATIONS

AIP	Australian Institute of Petroleum Ltd
ANZECC	Australian and New Zealand Environment and Conservation Council
AST	Aboveground Storage Tank
BGL	Below Ground Level
BTEX	Benzene, Toluene, Ethyl benzene and Xylene
COC	Chain of Custody
DQOs	Data Quality Objectives
DSI	Detailed Site Investigation
EIL	Ecological Investigation Level
EIS	Environmental Investigation Services
EPA	Environment Protection Authority
ESL	Ecological Screening Level
HIL	Health-Based Soil Investigation Level
HSL	Health Screening Level
LGA	Local Government Area
NEHF	National Environmental Health Forum
NEPC	National Environmental Protection Council
NHMRC	National Health and Medical Research Council
OCF	Organochlorine Pesticides
OPP	Organophosphate Pesticides
PAH	Polycyclic Aromatic Hydrocarbon
PCB	Polychlorinated Biphenyl
PID	Photo Ionisation Detector
PQL	Practical Quantitation Limit
PSI	Preliminary Site Investigation
QA/QC	Quality Assurance / Quality Control
RAC	Remediation Acceptance Criteria
RAP	Remediation Action Plan
RPD	Relative Percentage Difference
SAC	Site Assessment Criteria
SMP	Site Management Plan
SVC	Site Validation Criteria
TCLP	Toxicity Characteristics Leaching Procedure
TPH	Total Petroleum Hydrocarbons
UCL	Upper Confidence Limit
UST	Underground Storage Tank
VOC	Volatile Organic Compounds
VHC	Volatile Halogenated Compounds

EXECUTIVE SUMMARY

Aargus Pty Ltd (Aargus) was appointed by Sunny Thirdi Regent St Pty Ltd c/- Milligan Group (the 'client') to undertake a Preliminary Site Investigation (PSI) for the property located at 80-88 Regent Street, Redfern NSW (the 'site'). The site is proposed for redevelopment into a multi-storey commercial and residential building including four-level basement parking.

A PSI was requested by the client to determine the potential for onsite contamination. This report shall provide a preliminary assessment of any site contamination and, if required, provide a basis for a more detailed investigation.

At the time of the inspection (20th November 2015), the site was occupied by five two-storey commercial brick buildings in the eastern portion of the site and five backyards in the western portion of the site. The ground level of the buildings was occupied by three stores, a restaurant and a cafe. The second level was occupied by low density residential properties. No surface standing water was noticed at the site. Six driveways were observed on site, including two driveways for 88 Regent Street, and one driveway each for 86 Regent Street, 84 Regent Street, 82 Regent Street and 80 Regent Street. The driveways were sealed with gravel. Minor cracks were observed. The main access to the site was along Regent Street on the eastern boundary and along William Lane on the western boundary.

The land title information provided for the site suggested that all lots have been primarily owned by private proprietors from at least 1908 to date, excluding Lot B in DP105824, which has been commercially owned from 2015 to date, Lot C in DP105824 which was commercially owned in 1982 and Lot D in DP105824 which was commercially owned from 1935 to 1936 and from 1951 to 1957. This was consistent with the aerial photography which appeared to show the land use of the site to have been continuously occupied by terrace-style buildings from at least 1930 to date. The structure of the current building appeared to have remained unchanged from at least 1943 to date. Lot A in DP105824 and Lot D in D 105824 have been only leased by private individuals, and Lot B in DP105824, Lot C in D 105824 and Lot E in DP105824 have been leased by both private and commercial entities.

The findings of the assessment indicated the following areas of potential environmental concern:

- Potential importation of uncontrolled fill that may contain various contaminants;
- Current or past use of pesticides;
- Driveways where leaks and spills from cars may have occurred;
- Metal degradation; and
- Asbestos based materials.

The contaminants that may be present in some of these areas were considered to be of low significance in terms of risk to the human and environmental receptors identified.

Therefore, a Detailed Site Investigation (DSI) is required to confirm the presence and extent of contamination in order to determine the suitability of the site for the proposed development application and to address the data gaps identified.

Based on the information collected during this investigation and in reference to Clause 7 (DA development of SEPP 55), the site will be suitable subject to the completion of a Detailed Site Investigation (and after remediation and validation, if required) for the proposed multi-storey commercial and residential building including four-level basement parking

1 INTRODUCTION

1.1 Background

Aargus Pty Ltd (Aargus) was appointed by Sunny Thirdi Regent St Pty Ltd c/- Milligan Group (the 'client') to undertake a Preliminary Site Investigation (PSI) within the property located at 80-88 Regent Street, Redfern NSW (the 'site'). The location of the property is presented in Figure 1 of Appendix A.

It is understood that the site is proposed for the demolition of existing buildings and redevelopment into a multi-storey commercial and residential building including four-level basement parking. The proposed development plans can be found in Appendix B.

A site investigation was requested by Sydney City Council to determine the potential for onsite contamination as part of the Development Application (DA).

1.2 Objective

The primary objectives of this PSI are as follows:

- Identify potential areas where contamination may have occurred from current and historical activities;
- Identify potential contaminants associated with potentially contaminating activities;
- Assess the potential for soils and groundwater to have been impacted by current and historical activities; and
- Assess the suitability of the site for redevelopment into a mixed commercial/residential building with basement car park, based on its current condition and the findings of this investigation.

1.3 Scope of Works

The scope of works for this PSI includes:

- Review of the physical site setting and site conditions based on a site inspection, including research of the location of sewers, drains, holding tanks and pits, spills, patches of discoloured vegetation, etc. (where applicable);
- Research and review of the information available, including previous environmental investigations, current and historical titles information, review of aerial photographs, groundwater bore searches, EPA notices, council records, anecdotal evidence, site survey and site records on waste management practices;
- Development of a preliminary Conceptual Site Model (CSM) to demonstrate the interactions between potential sources of contamination, exposure pathways and human/ecological receptors identified; and
- Recommendations for additional investigations should any data gaps be identified or possible strategies for the management of the site, where relevant.

This report was prepared with reference to the NSW Environment Protection Authority (EPA) "*Guidelines for Consultants Reporting on Contaminated Sites*" (2011).

2 SITE IDENTIFICATION AND DESCRIPTION

2.1 Site Identification

Site identification information and land use is summarised in the table below.

Table 1: Site Identification

Lot and DP Number (Address)	Lot A in DP105824 (80 Regent Street, Redfern NSW) Lot B in DP105824 (82 Regent Street, Redfern NSW) Lot C in DP105824 (84 Regent Street, Redfern NSW) Lot D in DP105824 (86 Regent Street, Redfern NSW) Lot E in DP105824 (88 Regent Street, Redfern NSW)		
Geographic Coordinates*		Latitude:	Longitude
	North	-33.892825	151.199937
	East	-33.89297	151.200053
	South	-33.893032	151.199867
	West	-33.893032	151.19975
Approx. Site Area	822m ²		
Local Government Area	Sydney City Council		
Parish	Alexandria		
County	Cumberland		
Current Land Zoning**	Cadastre 17/07/2015		
Proposed Land Use	Commercial (childcare centre) and residential		
Current Site Owner	Yvonne Klimis (Lot A in DP105824) Sunny Thirdi Regent Street Pty Ltd (Lot B in DP105824) Constantine Antonelos (Lot C in DP105824) Gregory Giotopoulos (Lot D in DP105824) Betty Lotus Colquhoun (Lot E in DP105824)		
Site End Users	Residents (adults & children), workers, visitors, customers		

Notes: * refer to <http://maps.six.nsw.gov.au/>

** refer to Sydney Land Zoning Map published in

http://www.legislation.nsw.gov.au/map/7200_COM_LZN_009_005_20150717.pdf?id=0979fc91-2cec-4c44-953e-657a9726786f

The site boundary and Lot and DP numbers are presented in Figure 2 of Appendix A.

2.2 Site Inspection

A site visit was carried out on Friday 20th November 2015 by an Aargus field scientist to inspect the site for any potential sources of contamination and document any observations made regarding the current site conditions. At the time of the inspection, a number of sections within the site were inaccessible; hence observations were limited to the available areas of the site. The following observations were made:

- The site was square in shape and used for commercial and residential purposes.
- The site was occupied by five two-storey commercial brick buildings in the eastern portion of the site and five backyards in the western portion of the site.
- The inside of the buildings were inaccessible.
- The ground level of the buildings were occupied by three stores, a restaurant and a cafe. The second level was occupied by low density residential properties.
- A Furniture Store named 'Retro on Regent St' occupied the ground level of 88 Regent Street, a closed down store occupied the ground level of 86 Regent Street, a closed down restaurant named 'Chinar Indian Restaurant' on the ground level of 84 Regent Street, a café named 'Appetite' on the ground level of 82 Regent Street, and a furniture store on the ground level of 80 Regent Street.
- Vegetation consisting of grass was observed in the western portion of 88 Regent Street. The grass appeared to be healthy.
- The main access to the site was along Regent Street on the eastern boundary, and along William Lane on the western boundary.
- No surface standing water was noticed at the site.
- Six driveways were observed on site, including two driveways for 88 Regent Street, and one driveway each for 86 Regent Street, 84 Regent Street, 82 Regent Street, and 80 Regent Street. The driveways were sealed with gravel. Minor cracks were observed.
- The western portion of the southern boundary of the site consisted of a metal gate.

The site features are presented in Figure 3 of Appendix A. Site photographs are included in Appendix C.

2.3 Topography and Surface Water Drainage

The following observations were made during the site inspection carried out on the 11th September 2015:

- The site topography is generally flat, with Regent Street (to the east) slightly sloping to the south-west at approximately 5% slope, Marian Street (to the south) slightly sloping to the east at approximately 5% slope, and William Lane (to the west) slightly sloping to the south-west at approximately 10% slope.
- Stormwater runoff from the site is expected to flow in a south-westerly direction along Regent Street.

2.4 Surrounding Land Uses

The surrounding land uses identified are described in the table below:

Table 2: Surrounding Land Uses

Orientation	Description
North	Commercial properties.
East	Regent Street, then a public park and a mechanical repairs shop.
South	Marian Street, then mixed use properties.
West	William Lane, then commercial properties.

3 SITE HISTORY

3.1 Land Titles

A review of historical documents held at the NSW Department of Lands offices was undertaken to identify the current and previous land owners, and potential land uses. The results of the title search are summarised in the following table.

Table 3: Land Title Information

Year	Lot A in DP105824 (80 Regent St, Redfern NSW)
1983 - Current	Yvonne Klimis
	Prior: Vol. 10567, Fol. 1
1975 - 1983	Yvonne Klimis
	Prior: Vol. 8381, Fols. 160, 161 & 162
1967- 1975	Henry Klimis Yvonne Klimis
1962 - 1967	Charlotte Carbery
	Prior: Vol. 6845, Fol. 52
1962 - 1962	Robert Lionel Carbery Charlotte Carbery Lotus Colquhoun
1957 - 1962	Gregory Giotopoulos
1954 - 1957	Robery Carbery
	Prior: Vol. 4095, Fol. 221& 222
1925 - 1954	Lease: James Robert Browngedge
1935 - 1954	Eva Kresner
	Prior: Vol. 1527, Fol. 15
1935 - 1935	Isadore Yedwoph
1913 - 1935	Emanuel Yedwoph Lead Yedwoph

Year	Lot B in DP105824 (82 Regent St, Redfern NSW)
2015 - Current	Sunny Thirdi Regent Street Pty Ltd
2015 - 2015	Two Holdings Pty Ltd
2000 - 2015	Marcello Mario Araldi
2012 - 2014	Lease: Lynn's Trading Pty Ltd
2008 - 2011	Lease: Leanne Fraser
1997 – 2000	Marcello Mario Araldi Azzam Kaza Naboulsi
1999 - 2002	Lease: Leanne Fraser Diana Carr
1985 - 1997	Henry Klimis Yvonne Klimis
1991 - 1994	Lease: Barbara LLoyd

	Prior: Vol. 10567, Fol. 2
1986 - 1988	Lease: Van Hung
1974 - 1985	Harry Klimis Yvonne Klimis
	Prior: Vol. 8381, Fols. 160, 161 & 162
1967- 1974	Henry Klimis Yvonne Klimis
1962 - 1967	Charlotte Carbery
	Prior: Vol. 6845, Fol. 52
1962 - 1962	Robert Lionel Carbery Charlotte Carbery Lotus Colquhoun
1957 - 1962	Gregory Giotopoulos
1954 - 1957	Robery Carbery
	Prior: Vol. 4095, Fol. 221& 222
1925 - 1954	Lease: James Robert Browngedge
1935 - 1954	Eva Kresner
	Prior: Vol. 1527, Fol. 15
1935 - 1935	Isadore Yedwoph
1913 - 1935	Emanuel Yedwoph Lead Yedwoph

Year	Lot C in DP105824 (84 Regent St, Redfern NSW)
- Current	Constantine Antonelos
2009 - 2012	Lease: Madhura Holdings Pty Ltd
	Prior: Vol. 10567, Fol. 3
1975 -	Constantine Antonelos Panayotis Gerassimos Antonelos
1972 - 1984	Lease: Stratis Hadjipapas
1982 -	Alliance Acceptance Co Ltd
	Prior: Vol. 8381, Fols. 160, 161 & 162
1967 - 1975	Henry Klimis Yvonne Klimis
1962 - 1967	Charlotte Carbery
	Prior: Vol. 6845, Fol. 52
1962 - 1962	Robert Lionel Carbery Charlotte Carbery Lotus Colquhoun
1957 - 1962	Gregory Giotopoulos
1954 - 1957	Robery Carbery
	Prior: Vol. 4095, Fol. 221& 222
1925 - 1954	Lease: James Robert Browngedge
1935 - 1954	Eva Kresner
	Prior: Vol. 1527, Fol. 15
1935 - 1935	Isadore Yedwoph
1913 - 1935	Emanuel Yedwoph Lead Yedwoph

Year	Lot D in DP105824 (86 Regent St, Redfern NSW)
- Current	Gregory Giotopoulos
- 1990	Lease: Harry Hazadoris Maria Hazadoris
	Prior: Vol. 7432, Fol. 142
1969 -	Nicolas Vlachos
1958 - 1969	Julian Frederick Savieri
	Prior: Vol. 4887, Fol. 5
1957 - 1958	Julian Frederick Savieri
1957 - 1957	Dorothy May Cope
1957 - 1957	Harry James Finnigan Alice Emily Finnigan
1951 - 1957	Public Trustee
1937 - 1951	Cyril Cleverland Cooper
	Prior: Vol. 4807, Fol. 34
1936 - 1937	Allison Bell
1936 - 1936	The Council of the Municipality of Marrickville
	Prior: Vol. 1134, Fol. 34
1936 - 1936	Cyril Cleverland Cooper
1935 - 1936	Dairy Farmers Cooperation
1925 - 1935	Cyril Cleverland Cooper
1908 - 1925	William Grimshaw Williams

Year	Lot E in DP105824 (88 Regent St, Redfern NSW)
- Current	Betty Lotus Colquhoun
1991 - 1993	Lease: J. Lam Pty Ltd
	Prior: Vol. 10567, Fol. 4
1988 - 1990	Lease: Lea Bartipan
1987 -	Lotus Colquhoun
1977 - 1987	John Hedley Colquhoun
	Prior: Vol. 8381, Fols. 160, 161 & 162
1962 - 1967	Charlotte Carbery
	Prior: Vol. 6845, Fol. 52
1962 - 1962	Robert Lionel Carbery Charlotte Carbery Lotus Colquhoun
1957 - 1962	Gregory Giotopoulos
1954 - 1957	Robery Carbery
	Prior: Vol. 4095, Fol. 221 & 222
1925 - 1954	Lease: James Robert Browngedge
1935 - 1954	Eva Kresner
	Prior: Vol. 1527, Fol. 15
1935 - 1935	Isadore Yedwoph
1913 - 1935	Emanuel Yedwoph Lead Yedwoph

In summary, the land title information provided for the site suggested that all lots have been primarily owned by private proprietors from at least 1908 to date, excluding Lot B in DP105824, which has been commercial owned from 2015 to date, Lot C in DP105824, which was commercially owned in 1982 and Lot D in DP105824, which was commercially owned from 1935 to 1936 and from 1951 to 1957. Lot A in DP105824 and Lot D in DP105824 have been only leased by private individuals, and Lot B in DP105824, Lot C in DP105824 and Lot E in DP105824 have been leased by both private and commercial entities.

The operations of the listed companies (where available) have been compiled and will further identify possible land uses at the time of ownership and / or lease and include the following:

- Internet searches indicate that Sunny Thirdi Regent Street Pty Ltd is noted as an Australian proprietary company.
- Internet searches indicate no information about Two Holdings Pty Ltd.
- Internet searches indicate that Lynn's Trading Pty Ltd is an Australian private company, trading as Appetite Café.
- Internet searches indicate that Madhura Holdings Pty Ltd is an Australian private company, trading as Red Chillies Indian Restaurant and Mahati India.
- Internet searches indicate no information about Alliance Acceptance Co Ltd.
- Internet searches indicate that Public Trustee is a self-funding statutory authority that provides services in wills, investments and finance.
- Internet searches indicate that The Council of the Municipality of Marrickville is the Local Government body for the Marrickville area.
- Internet searches indicate that Dairy Farmers Cooperation is a large dairy manufacturer.
- Internet searches indicate that J. Lam Pty Ltd is noted as an Australia proprietary company.

Historical land titles information obtained by Aargus can be found in Appendix D.

3.2 Aerial Photographs

Selected aerial photographs obtained from the NSW Department of Lands were reviewed to describe the site features and surrounding areas at various timelines. A summary of the review is presented in the table below.

Table 4: Summary of Historical Aerial Photos

Year	Site	Surrounding areas
1930	The site appeared to comprise of adjacent buildings or terraces, likely of residential in nature. However, it was noted that the photo resolution was poor.	N: Developments, likely commercial/industrial S: Street then likely commercial/industrial developments E: Street, then a street island, then likely commercial developments W: Street, then a large development, likely commercial
1943	The site layout appeared to be similar to that observed in the 1930 photo.	N: Commercial/industrial developments S: Street, then commercial/industrial developments E: Street, then a street island, then commercial/industrial developments W: Street, then commercial/industrial developments
1951	The site layout appeared to be similar to that observed in the 1943 photo.	No significant changes are visible to the surrounding properties.
1970	The site layout appeared to be similar to that observed in the 1951 photo. However, it was noted that the photo resolution was poor.	No significant changes are visible to the surrounding properties.
1996	The site layout appeared to be similar to that observed in the 1970 photo. Grass was observed along the western boundary of the site.	No significant changes are visible to the surrounding properties.
2004	The site layout appeared to be similar to that observed in the 1996 photo. However, it was noted that the photo resolution was poor.	No significant changes are visible to the surrounding properties, with the exception of: E: Street, then a street island with trees, then commercial/industrial developments
2015	The site layout appeared to be similar to that observed in the 2004 photo.	No significant changes are visible to the surrounding properties.

In summary, land use of the site appeared to have been continuously occupied by terrace-style buildings from at least 1930 to date. The structure of the current building appeared to have remained unchanged from at least 1943 to date.

The general land use of the immediate site vicinity seems to have been consistently commercial/industrial developments from 1930 to date.

Copies of current and historical aerial photographs are presented in Appendix E.

3.3 EPA Records

3.3.1 CLM Act 1997

The NSW EPA publishes records of contaminated sites under Section 58 of the Contaminated Land Management (CLM) Act 1997. The notices relate to investigation and/or remediation of site contamination considered to pose a significant risk of harm under the definition in the CLM Act. However, it should be noted that the EPA record of Notices for Contaminated Land does not provide a record of all contaminated land in NSW.

A search of the EPA database revealed that the subject site is not listed. In addition, no other site was listed within the Redfern suburb area. Therefore, the site is not likely to be affected by other contaminated land around.

Copies of the EPA records are included in Appendix F.

3.3.2 POEO Register

A search of the POEO Register revealed that the site was not listed. A copy of the POEO register search is included in Appendix F.

3.4 WorkCover NSW Records

Access to the Stored Chemical Information Database (SCID), for licences to keep dangerous goods at the site, was not provided at the time of writing this report.

3.5 Section 149 Certificates

The Planning Certificate – Section 149 (2) of the Environmental Planning & Assessment Act 1979 for the site was not provided at the time of writing this report.

3.6 Council Search Records

Access to The City of Sydney Council database, in order to disclose file records relating to the site, was not provided at the time of writing this report.

3.7 Industrial Processes and Products Manufactured

A review of the industrial processes and/or products manufactured at the site was conducted, with no relevant information available. A portion of the site, 86 Regent Street, Redfern (Lot D in D105824), was owned by the Dairy Farmers Cooperation between 1935 and 1936, which is associated with manufacturing dairy products, however, these activities were unlikely to have taken place at the site.

3.8 Former Chemical Storage and Transfer Areas

A review of the former chemical storage and transfer areas and/or products manufactured at the site was conducted, and no relevant information was available. Furthermore, it is unlikely any significant chemical storage and/or storage areas were present previously within the site.

3.9 Product Spill & Loss History

It was indicated by the client, that to their knowledge no serious land or water contamination had occurred.

The majority of the site is currently either occupied by a building and/ or sealed surfaces. At the time of the inspections, the sealed surfaces of the gravel were in generally good condition with only minor cracks observed. There were no visible signs of oil and/or chemical staining, indicating that any surface spills (if they did occur at all) were cleaned up immediately and did not appear to penetrate the existing slab.

3.10 Discharges to Land, Water and Air

At the time of the inspection, discharges to land, water or air were not observed at the site.

3.11 Complaints History

There was no information obtained or provided indicating any relevant complaint history pertaining to the site.

3.12 Historical Use of Adjacent Land

It was indicated by the client that to their knowledge, the adjacent lands to the site have been used primarily for commercial and mixed used developments.

3.13 Discussion and Summary of Site History

Based on available information, the site historical usage is summarised as follows:

- The land title information provided for the site suggested that all lots have been primarily owned by private proprietors from at least 1908 to date, excluding Lot B in DP105824, which has been commercial owned from 2015 to date, Lot C in DP105824, which was commercially owned in 1982 and Lot D in DP105824, which was commercially owned from 1935 to 1936 and from 1951 to 1957.
- This was consistent with the aerial photography which appeared to show the land use of the site to have been continuously terrace-style buildings from at least 1930 to date. The structure of the current building appeared to have remained unchanged from at least 1943 to date. Lot A in DP105824 and Lot D in D 105824 have been only leased by private individuals, and Lot B in DP105824, Lot C in DP105824 and Lot E in DP105824 have been leased by both private and commercial entities.
- Aerial photography appeared to show that the land use of the immediate site vicinity seems to have been consistently commercial/industrial developments from 1930 to date.

4 ENVIRONMENTAL SETTING

4.1 Sensitive Environmental Receptors

The nearest down-gradient watercourses are Cockle Bay, located approximately 2.1km north of the site, which eventually discharges into Port Jackson, and Alexandra Canal, located approximately 2.1km south-west of the site, which discharges into Botany Bay.

The nearest recreational area is a small park across the street to the east of the site. Prince Alfred Park is located approximately 500m north-east of site.

4.2 Geology

The Geological Map of Sydney (Geological Series Sheet 9130, Scale 1:100,000, 1983), published by the Department of Mineral Resources indicates the residual soils within the site to be underlain by Triassic Age Shale of the Wianamatta Group, comprising black to dark grey shale and laminite.

4.3 Soil

The Soil Landscape Map of Sydney (soil Landscape Series Sheet 9130, Scale 1:100,000, 2002), prepared by the Soil Conservation Service of NSW, indicates that the site is located within the Blacktown landscape area and typically consists of highly plastic and relatively impermeable residual soil.

4.4 Acid Sulfate Soils

To determine whether there is a potential for acid sulphate soils to be present at the site, reference was made to the NSW Department of Land & Water Conservation (DLWC) *Acid Sulphate Soil Risk Maps* (Edition Two, December 1997, Scale 1:250,000), specifically Map No. 93 – “Botany Bay”. A review of the map indicated that there is no known occurrence of

acid sulphate soil materials at the site, and the presence of acid sulphate soils was considered to be unlikely.

4.5 Hydrogeology

Based on available information, our desktop study indicates that groundwater from site could flow towards either Cockle Bay (approximately 2.1km north of the site) that eventually discharges into Port Jackson, and Alexandra Canal (approximately 2.1km south-west of the site) that eventually discharges into Botany Bay.

A search of the NSW Office of Water database information revealed that no groundwater bore record was available within a 500m radius of the site.

A copy of the groundwater bore search records can be found in Appendix G.

4.6 Local Meteorology

The monthly rainfall of the local area can be represented by the data collected by Bureau of Meteorology (BOM) from the rainfall gauge located in Centennial Park, which is located approximately 2.5 km east of the site. Records indicate that the total monthly rainfall for July 2015 was 65.5 mm and that the annual mean since 1900 is 1,256.8 mm.

Reference can be made to Appendix H – Local Meteorology.

5 AREAS OF POTENTIAL ENVIRONMENTAL CONCERN

Based on the site inspection, site history, previous reports and review of available information from the desktop study, the potential Areas of Environmental Concern (AEC) and their associated Contaminants of Concern (CoC) for the site were identified. These are summarised in the following table.

Table 5: Summary of Potential Areas and Contaminants of Concern

Potential AEC	Potentially contaminating activity	Potential CoCs	Likelihood of Site Impact	Justification
Entire site	Importation of fill material from unknown origin	Metals, TPH, BTEX, PAH, OCP, PCB, Phenols, Cyanides, Asbestos	Low	Based on the site observations and site topography, the presence of imported fill material is likely to be minimal.
	Potential for pesticides to have been sprayed or injected on or underneath concrete slabs	OCP	Low	The site is not known for having been used for agricultural purposes from the 1950s when OCPs were first introduced into Australia. If use of OCPs has occurred, the impact is likely to have been localised and limited to the topsoil layer.
Building Structures	Potential Asbestos/Fibro Features	Asbestos	Low	If present, these will be removed by licensed contractors.
Vicinity of Metal Features	Degradation of metal features	Metals	Low	If this has occurred, the impact is likely to be restricted to the topsoil.
Driveways	Leaks from vehicles	Metals, TPH, BTEX, PAH	Low	Minor cracks were noted on the sealed gravel surfaces.

6 PRELIMINARY CONCEPTUAL SITE MODEL

6.1 Conceptual Site Model

The Preliminary Conceptual Site Model (CSM) presented in the table below provides a representation of the potential risks associated with the linkages between the following elements:

- Potential contamination sources and their associated contaminants of concern identified in Section 5. Only potential areas of concern with a significance rating of low to high were included;
- Potential human receptors that may be impacted by site contamination are current and future end-users, construction workers and the general public within the immediate vicinity;
- Potential environmental receptors identified in Section 4;
- Potential exposure pathways; and
- Whether each source-pathway-receptor pollution linkage are complete, limited or not present, based on current and future site conditions.

Table 6: Conceptual Site Model

Potential Sources	Potential Receptor	Potential Exposure Pathways	Complete Linkages	Risk	Justification
Contaminated soil from placement of uncontrolled fill across the site. Use of OCPs. Metal degradation. Hydrocarbon spills and leakages from parked vehicles. Asbestos.	Site users or the general public	Dermal contact, inhalation or ingestion of exposed impacted soils	Limited (Current)	Low	Direct contact with impacted soils is limited due to the sealed concrete surfaces.
			No (Future)	Negligible	If present, contaminated soils are likely to be remediated and removed with the remaining soils from the basement excavation level for off-site disposal.
	The aquatic ecosystems at the nearby bay discharging into Port Jackson and Alexandra Canal	Migration of impacted groundwater and surface water run-off	Limited (Current)	Moderate	No obvious sources of contamination were observed on site that could migrate off site with surface water run-off.
			No (Future)	Low	If present, contaminated soils and groundwater is likely to be remediated and any remaining residual contamination would likely be at acceptable concentrations upon reaching the waterway.
	Underlying Bedrock Aquifer	Leaching and migration of contaminants through groundwater infiltration	Limited (Current)	Low to Moderate	Depending on the thickness of the expected confining layer and leachability of metals and organic compounds, vertical migration of contaminants may be limited. However, suspected sub-surface hydrocarbon contamination by mechanical operations leakages may be present and extend into the bedrock aquifer.
			No (Future)	Low	If present, contaminated soils and groundwater is likely to be remediated and any remaining residual contamination would likely be at acceptable concentrations upon reaching the underlying aquifer

6.1.1 Data Gaps

Based on the CSM, the following data gaps were identified with respect to the pollution linkages identified:

- The presence and thickness of imported fill material, if any.
- Confirmation if contamination has occurred from those stated in Section 5.0 through the collection and laboratory analysis of soil samples.
- The City of Sydney council records, Section 149 Certificate and WorkCover NSW records were not obtained and need to be read to further define the CSM.

7 CONCLUSION AND RECOMMENDATIONS

The findings of the assessment indicated the areas of potential environmental concern being; potential importation of uncontrolled fill that may contain various contaminants, current or past use of pesticides, driveways where leaks and spills from cars may have occurred, metal degradation, and/or asbestos based building materials.

The contaminants that may be present in some of these areas were considered to be of low significance in terms of risk to the human and environmental receptors identified.

Therefore, a Detailed Site Investigation (DSI) is required to confirm the presence and extent of contamination in order to determine the suitability of the site for the proposed development application and to address the data gaps identified.

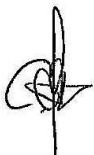
Based on the information collected during this investigation and in reference to Clause 7 (DA development of SEPP 55), the site will be suitable subject to the completion of a Detailed Site Investigation (and after remediation and validation, if required) for the proposed multi-storey commercial and residential building including four-level basement parking

Thank you for the opportunity to undertake this work. We would be pleased to provide further information on any aspects of this report.

For and on behalf of

Aargus Pty Ltd

Written by:



Celine El-Khoury

Environmental Engineer

Reviewed By:



Mark Kelly

Environmental Manager

LIMITATIONS

The Aargus assessment is based on the result of limited site investigations and sample testing. Neither Aargus, nor any other reputable consultant, can provide unqualified warranties nor does Aargus assume any liability for site conditions not observed or accessible during the time of the investigations.

Despite all reasonable care and diligence, the materials encountered and concentrations of contaminants measured may not be representative of conditions between the locations sampled and investigated. There is always some disparity in subsurface conditions across a site that cannot be fully defined by investigation. Hence it is unlikely that measurements and values obtained from sampling and testing during environmental works carried out at a site will characterise the extremes of conditions that exist within the site. In addition, site characteristics may change at any time in response to variations in natural conditions, chemical reactions, truck movement or contractor movement of soils and other events, e.g. groundwater movement and or spillages of contaminating substances. These changes may occur subsequent to Aargus investigations and assessment.

This report and associated documentation and the information herein have been prepared solely for the use of the client and interested parties at the time of writing the report and is valid (for the purposes of management or transport of material) for a period of one month only from the date of issue. Any other reliance assumed by third parties on this report shall be at such parties' own risk. Any ensuing liability resulting from use of the report by third parties cannot be transferred to Aargus.

Whilst this report provides a review of site conditions encountered at sampling locations within the investigation, it should be noted that if materials are proposed to be moved from site - Part 5.6, Section 143 of the Protection of the Environment Operations (POEO) Act 1997 states that it is an offence for waste to be transported to a place that cannot lawfully be used as a facility to accept that waste. It is the duty of the owner and transporter of the waste to ensure that all material removed from a site must be accompanied by an appropriate waste classification report and materials are disposed of appropriately. An environmental or validation report does not constitute a waste classification report and results are treated

differently. Aargus accepts no liability for the unlawful disposal of waste materials from any site. Aargus does not accept any responsibility for the material tracking, loading, management, transport or disposal of waste from the site. If material is to be removed from a site, before disposal of any material to a licensed landfill is undertaken, the site owner must ensure an appropriate waste classification exists for all materials on the site planning to be removed, the waste producer will need to obtain prior consent from the licensed landfill/recycler. The receiving site should check to ensure that the material received matches the description provided in the report.

Opinions are judgements, which are based on our understanding and interpretation of current regulatory standards, and should not be construed as legal opinions.

Appendix I – Important information about your environmental site report should also be read in conjunction with this report.

REFERENCES

This report was prepared with reference to the following guiding documents:

- ANZECC/NHMRC (1992) – “Australian and New Zealand Guidelines for the Assessment and Management of Contaminated Sites”. Australian and New Zealand Environment and Conservation Council and the National Health and Medical Research Council, Canberra;
- ANZECC National Water Quality Management Strategy “Australian Water Quality Guidelines for Fresh and Marine Waters”, 1992.
- CRC Care Technical Report No. 13 – Soil Vapour Assessment (August 2009);
- Department of Urban Affairs and Planning – EPA (1998) “Managing Land Contamination – Planning Guidelines – SEPP 55 – Remediation of Land”;
- National Environment Protection (Assessment of Site Contamination) Amendment Measure 2013 (No.1);
- NSW DEC, “Guidelines for the Assessment and Management of Groundwater Contamination” (March 2007);
- NSW DEC “Guidelines for the NSW Site Auditor Scheme” (2006, 2nd edition). NSW Environment Protection Authority, Sydney;
- NSW EPA (2014) – “Waste Classification Guidelines, Part 1: Classifying Waste”;
- NSW DECCW, “Vapour Intrusion: Technical Practice Note”, (September 2010);
- NSW EPA “Guidelines for Assessing Service Station Sites” (1994). NSW Environment Protection Authority, Sydney;
- NSW EPA “Guidelines for Consultants Reporting on Contaminated Sites” (2011). NSW Environment Protection Authority, Sydney;
- NSW EPA “Guidelines on the Duty to Report Contamination under the Contaminated Land Management Act 1997” (2009). NSW Environment Protection Authority, Sydney;
- NSW EPA “Sampling Design Guidelines” (1995). NSW Environment Protection Authority, Sydney.