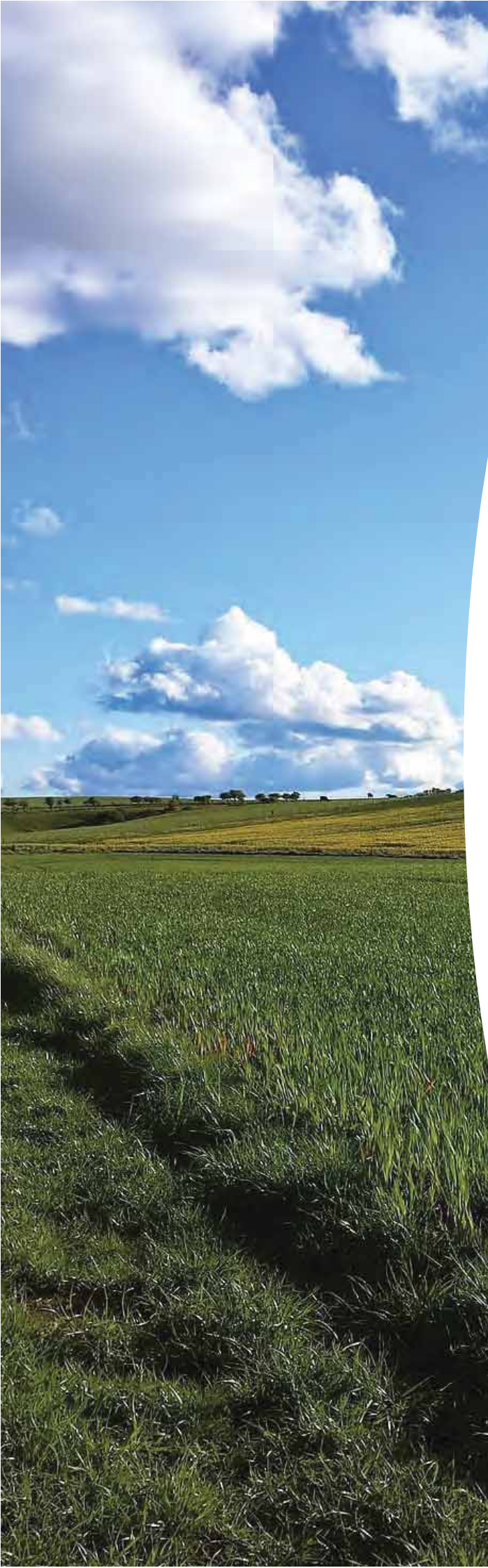

Metech
CONSULTING
Contamination Management Specialists

Contamination Assessment

4 - 6 Chapel Road
Bankstown NSW

Prepared for:
Tony Hanna & Sons Pty Ltd
Loue & Mansour Pty Ltd

Prepared by:
Metech Consulting Pty Ltd

Date:
2 November 2023

Project Number:
EP241-RP01

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VERSION CONTROL RECORD

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Document Approved by	Qualification
Michael Evans Principal Environmental Scientist	Certified Environmental Practitioner Site Contamination Specialist (No.SC41108)

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Contents

List of Tables

List of Figures

List of Appendices

Executive Summary

Metech Consulting were commissioned to undertake a contamination assessment of the property located at 4 – 6 Chapel Road, Bankstown, NSW. The purpose of the assessment was to support a development application that seeks to rezone part of the property from SP2 (Infrastructure) to B1 (Neighbourhood Centre), which as required by *State Environmental Planning Policy (Resilience and Hazards) 2021*, needs to include an assessment of contamination that confirms suitability of the property for a business zoning land use.

The assessment was undertaken in accordance with the stage, risk-based approach outlined in the *National Environment Protection (Assessment of Site Contamination) Measure 1999*, which included a detailed evaluation of the history of the property and surroundings lands to identify the environmental setting and past and present land use activities that may pose a contamination risk to the property. The desktop-based assessment was supplemented by a detailed site inspection and targeted soil and soil vapour sampling and analysis programs.

Key findings from the assessment include:

- The property was historically used for residential purposes, prior to it being redeveloped for commercial use that comprised the construction of the existing retail premises in the 1960s.

- There has been little change to the layout and configuration of the property since 1970, with retail premises being present within the eastern portion and the central and western portions being undeveloped and generally used for carparking and storage, ancillary to the retail land use activities.

- The majority of businesses that have operated from the retail premises have been assessed to pose a low contamination risk, which have included use for a newsagent, chemist, cake shop, fruit shop, butcher shop, dance studio, taxation consultant, medical practitioner, fishing tackle & bait, variety store and massage parlour.

- The only potentially contaminating activity undertaken within the retail premises was identified to be the operation of a shopfront dry cleaning business from approximately 2008 to 2017. Other potential sources of contamination that were identified were limited to the use of parts of the property for carparking and equipment / material storage, the presence of fill materials originating from an unknown source across the central and western portions of the property and atmospheric fallout of fine particulates from the combustion of fuels in motor vehicles, considering the proximity of the property to adjacent arterial road network.

- A comprehensive program of soil and soil vapour sampling and analysis was designed based on the outcomes of the conceptual site model development for the property as parts of this assessment, which targeted the identified potential sources of contamination.

- The results from the sampling programs determined that concentrations of all identified potential contaminants of concern in both soil and soil vapour were low and below the adopted site assessment criteria applicable to a commercial / industrial land use setting, with the exception of asbestos at one location.

- The small fragment of fibro-cement sheeting containing bonded-asbestos was identified within the subsurface soils (fill materials), however it was determined that this asbestos does

not pose a significant risk to the continued use of the property for commercial / industrial purposes, given the low risk of harm posed by the form of asbestos, the isolated occurrence and as the material was assessed to be adequately encapsulated to mitigate exposure risk by the existing ground surface covering.

Based on these findings, it is concluded that:

- Contamination is unlikely to pose a significant constraint to the ongoing use of the property;
- The property is suitable for commercial / industrial land use without the need for any further investigation or management action; and
- No significant contamination issues are present at the property that would pose a constraint to the proposed rezoning from SP2 (Infrastructure) to B1 (Neighbourhood Centre).

1 Introduction

1.1 Preamble

Metech Consulting Pty Ltd were commissioned to undertake a Contamination Assessment of the property located at 4 – 6 Chapel Street, Bankstown, NSW (hereafter referred to as "the Site"). The Site is described as Lot 1 DP 655843, Lot 2 DP 655844 and Lot 8B DP 389749, occupying a total area of approximately 1,600 m^2.

The location of the Site is shown in **Figure 1** and the current layout of the Site is shown in **Figure 2**.

The Site is currently subject to dual land use zoning under the Canterbury-Bankstown Local Environmental Plan 2023 (refer **Figure 3**), as follows:

- Lot 1 DP 655843: B1 (Neighbourhood Centre) and SP2 (Infrastructure).
- Lot 2 DP 655844: B1 (Neighbourhood Centre) and SP2 (Infrastructure).
- Lot 8B DP 389749: SP2 (Infrastructure).

Due to the dual land use zoning that poses constraints to the potential future use of the Site, a rezoning application is currently being prepared that will seek to amend the zoning to B1 (Neighbourhood Centre) across the full extent of the Site.

In accordance with the requirements *of State Environmental Planning Policy (Resilience and Hazards) 2021* and at the request of Canterbury-Bankstown Council, this contamination assessment has been undertaken to determine the suitability of the Site for a business zoning land use.

The investigation has been undertaken in accordance with the requirements of the NSW contaminated land management framework, including:

- DUAP (1998) *Planning Guidelines: SEPP 55 - Remediation of Land - Managing Land Contamination*;
- NEPC (2013) *National Environment Protection (Assessment of Site Contamination) Measure 1999*; and
- NSW EPA (2020) *Contaminated Land Guidelines: Consultants Reporting on Contaminated Land*.

1.2 Study Approach

State Environmental Planning Policy (Resilience and Hazards) 2021 requires planning authorities to take the potential for a property to be affected by contamination into account when determining zoning proposals. The national framework for assessing contaminated land issues in Australia are set out by the *National Environment Protection (Assessment of Site Contamination) Measure 1999* (NEPC, 2013), which have been adopted by the NSW Environment Protection Authority (NSW EPA). NEPM recommends a staged, risk-based approach for evaluating and characterising contaminated land issues.

For the assessment of contamination at the Site, the risk-based approach outlined in the NEPM (NEPC, 2013) has been adopted, however to provide further certainty of the investigation findings and using a weight of evidence approach, the scope of the investigation includes:

- Assessment as per the requirements of a Preliminary Site Investigation (PSI) scope as defined by the NEPM.
- Soil sampling and analytical program, based on a judgemental sampling design.
- Soil vapour sampling and analytical program, targeted to a specific potential point source of contamination.

1.3 Objectives

The objectives of the investigation were to:

- Assess current and historical land use operations for the Site and adjacent properties to identify potential on and off-site sources of contamination;
- Determine the nature of potential contaminants (if any) and the potential location(s) of contamination issues across the Site;
- Identify the presence of any potentially significant contamination issues at the Site that may pose a potential constraint to the ongoing use of the Site under a commercial / industrial land use setting; and
- Determine the suitability of the Site for commercial / industrial land use.

1.4 Scope of Work

The following scope of work was undertaken to meet the objectives of the investigation:

- Review and evaluation of available information to establish the environmental setting of the Site and local area.
- Review of available historical and background information for the Site and local area to understand and evaluate potential on and off-site sources of contamination.
- A detailed inspection of the Site to:
  - Identify the nature of current site operations and activities;
  - Identify any potential sources of contamination relating to these land use activities;
  - Assess for evidence of any indicators of actual contamination issues that have or may be occurring; and
  - Verify the findings of the desktop review.
- Development of a Conceptual Site Model (CSM) to outline how potential contaminant sources, pathways and receptors may be linked together, which may result in a risk of harm being present.

- Implementation of a judgemental soil sampling and analytical program to investigate areas of potential contamination identified by the CSM and to support the findings of the PSI.
- Implementation of a targeted soil vapour sampling and analytical program to investigate a specific potential point source of contamination at the Site.
- Evaluation of the findings of the investigation program with reference to the Tier 1 assessment criteria outlined in the NEPM (2013) *National Environment Protection (Assessment of Site Contamination) Measure 1999*.
- Assessment of the level of risk/impact (if any) of any identified contamination sources.
- Evaluation of the suitability of the Site for use under a commercial / industrial land use setting.
- Preparation of this Contamination Assessment report in accordance with the requirements of the *Contaminated Land Guidelines: Consultants Reporting on Contaminated Land* (NSW EPA 2020).

2 Site Identification

2.1 Site Identification

Details of the Site are summarised below:

Table 2.1: Site Identification

Address:	4 – 6 Chapel Road, Bankstown, NSW (refer **Figure 1**)
Title:	Lot 1 DP 655843 Lot 2 DP 655844 Lot 8B DP 3897491
Size:	1,600 m^2 (approx.)
Local Government Area:	Canterbury Bankstown Council
Zoning:	B1 (Neighbourhood Centre) and SP2 (Infrastructure) Canterbury Bankstown Local Environmental Plan (2023)
Current Land Use:	Commercial (retail shops and carpark)
Proposed Land Uses:	Commercial (retail shops and carpark)
B1 (Neighbourhood Centre) **Permitted Land Uses (without consent)** **Permitted Land Uses (with consent):** **Prohibited:**	 Home occupations Boarding houses; Building identification signs; Business identification signs; Business premises; Car parks; Centre-based child care facilities; Community facilities; Early education and care facilities; Environmental facilities; Environmental protection works; Flood mitigation works; Food and drink premises; Home businesses; Information and education facilities; Kiosks; Markets; Medical centres; Mortuaries; Neighbourhood shops; Neighbourhood supermarkets; Office premises; Oyster aquaculture; Places of public worship; Recreation areas; Recreation facilities (indoor); Respite day care centres; Roads; Service stations; Shops; Shop top housing; Specialised retail premises; Tank-based aquaculture; Veterinary hospitals. Pond-based aquaculture; any development not specified as being permitted (with or without consent).
SP2 (infrastructure) **Permitted Land Uses (without consent)** **Permitted Land Uses (with consent):** **Prohibited:**	 Nil Aquaculture; Roads. Any development not specified as being permitted (with or without consent).

2.2 Site Layout and Description

A detailed inspection of the Site was undertaken by an appropriately qualified and experienced environmental scientist on 29 September 2023, who is a Certified Environmental Practitioner, Site Contamination Specialist (No.SC41108), under the Environmental Institute of Australia and New Zealand (EIANZ) certification scheme.

Site photographs from the inspection are provided in **Appendix A**.

The Site is located within a commercial area of Bankstown, with retail shops present in the eastern portion fronting Chapel Road, and the western portion being occupied primarily by a carpark that services the retail shops, as well as a small compound that is currently utilised for material / equipment storage. A laneway off Calidore Street to the south west of the Site provides access to the western portion of the Site.

Further details of these three main areas of the Site are described in the following subsections.

2.2.1 Retail Shops

The eastern portion of the Site comprises several adjoining buildings that front Chapel Road, which are operated as retail premises. The buildings are constructed from brick with corrugated iron roofs. The northernmost building is a two storey structure, while the other buildings are single storey. The ground surfaces beneath the buildings are sealed with a concrete pavement, that extends out as pathways / driveways to the rear (west) of the buildings.

The buildings were assessed to be in relatively good condition with no hazardous building materials such as asbestos-containing materials (ACM) or lead-based paint identified.

Various tenants occupying these retail shops, with current business activities including:

- Kitchen appliances store.
- Fishing tackle and bait store.
- Domestic lighting store.
- Thai massage parlour.
- Newsagency / post office.

The current business activities were not identified to comprise of any potentially contaminating activities. Inspection of the premises did not identify the storage of any significant quantities of oils, fuels or chemicals, which may otherwise be considered as a potential source of contamination.

2.2.2 Carpark Area

The western portion of the Site behind the retail shops is occupied by a level carpark that is generally covered by a surface layer of compacted gravel, with minor areas of dilapidated asphalt and / or concrete. There is subsurface drainage infrastructure present within the carpark, which includes several drainage grates at the ground surface.

The carpark is secured by fencing and a security gate, which is accessed via an unnamed laneway.

The majority of the carpark area was free from any wastes and/or other materials. There were a number of garbage bins and minor materials storage present in the area directly adjacent to the shops.

Visual observations of the ground surfaces of this portion of the Site did not identify any evidence of the presence of asbestos-containing materials (ACM), soil staining, odours soils or visual evidence of contamination.

2.2.3 Storage Compound

The north eastern portion of the Site (Lot 8B DP 389749), which is accessed via a gate through the carpark area, is understood to be used for material storage, although at the time of the inspection the area was predominantly vacant with only minor materials being stored, including several wooden pallets and a small stock of steel temporary fencing panels and associated hardware.

The ground surface of this portion of the Site is similar to the carpark area, where a gravel ground surface is present, although the condition of the surface was poor with areas of bare and exposed soils present. Areas of weeds were also present in this area, generally adjacent to the fences.

The site inspection did not identify that any potentially contaminating activities were being undertaken within this area, nor was any evidence identified to suggest that this area has been subject to past development or that potential sources of contamination are currently present.

Visual observations of the ground surfaces of this portion of the Site did not identify any evidence of the presence of asbestos-containing materials (ACM), soil staining, odours soils or visual evidence of contamination.

3 Site Condition and Surrounding Environment

3.1 Surrounding Uses

The land uses surrounding the Site are described in the table below.

Table 3.1: Surrounding Land Uses

North:	Commercial (retail) and low density residential
South:	Commercial (retail)
East:	Chapel Road, followed by commercial
West:	High-density aged-care facility

3.2 Topography and Hydrology

The Site is located at an elevation of approximately 19 metres Australian Height Datum (m AHD) and is relatively flat, with only a very slight gradient to the east. Salt Pan Creek is located approximately 850 metres to the north east of the Site, with the local topography grading in this direction. A figure showing topographical contours of the local area is provided in **Appendix D**.

The eastern portion of the Site is sealed and covered by the footprint of the retail shop buildings, while the western portion is covered by semi-permeable gravel surface, which includes subsurface drainage infrastructure and at grade drainage grates. Based on these characteristics, it is expected that the majority of rainfall would directed into the municipal drainage system that is likely to discharge into Salt Pan Creek, although surface waters would be able to infiltrate through the gravel surface in the western portion of the Site and into underlying soils.

3.3 Soils, Geology and Hydrogeology

The NSW Department of Planning, Industry and Environment (DPIE) *1:100,000 Penrith Geology Map* shows the Site and surrounding properties to primarily be underlain by the Wianamatta Group, Ashfield Shale, generally described to comprise *black to light grey shale and laminate*.

The Atlas of Australian Soils classifies the soil landscape of the Site to be representative of Sodosols, which are described as *"undulating; chief soils are hard acidic yellow mottled soils usually containing some ironstone gravels throughout the profile".*

The NSW Department of Planning, Industry and Environment Soil Landscape of Central and Eastern NSW map identifies the Site to be located on the boundary of two soil landscapes, including:

- "Blacktown" landscape (western portion), which is characterised by gently undulating rises on Wianamatta Group shales and Hawkesbury shale; shallow to moderately deep (<100 cm) red and brown podzolic on crests, upper slopes and well-drained areas; deep (150–300 cm) yellow podzolic soils and soloths on lower slopes and in areas of poor drainage.

- "Disturbed Terrain" (eastern portion), which is characterised by level plain to hummocky terrain, extensively disturbed by human activity, including complete disturbance, removal or burial of soil; soil / turfed fill areas commonly capped with up to 40 cm of sandy loam or up to 60 cm of compacted clay over fill or waste materials.

The *Hydrogeology Map of Australia* (Geoscience Australia) identifies the Site to contain *"porous, extensive aquifers of low to moderate productivity"*. A review of groundwater boreholes registered with NSW Department of Primary Industries that was undertaken on 26 September 2023 identified 38 registered bores within a 2 kilometre radius of the Site, primarily all located within an area of commercial/industrial properties located on Gow Street, Padstow, located approximately 1,200 metres to the south east of the Site. The bores are all registered as being for groundwater monitoring purposes and details provided with the bore information shows that the bores are typically installed to shallow depths of between 5 and 7 metres, indicating that groundwater would be present within this shallow depth range.

Groundwater beneath the Site would be expected to flow in a north easterly direction.

3.4 Dryland Salinity

Review of both the Australian Government dryland salinity database (National Land and Water Resources Audit) and the NSW Office of Environment and Heritage *Dryland Salinity Potential of Western Sydney* database identified that the Site is affected by dryland salinity, where the Site is classified as an area of moderate salinity potential.

3.5 Acid Sulfate Soils

Review of the Department of Planning Industry & Environment *Acid Sulphate Soil Risk Map Series* indicates that the Site is classified as not containing acid sulfate soils.

4 Site History

4.1 Aerial Photographs

Periodic aerial photographs were reviewed to assist in identifying the history of the Site and the surrounding area. Details of key observations made from the review of aerial photographs are outlined in **Table 4.1**. Copies of the aerial photographs are included in **Appendix D**.

Table 4.1: Aerial Photograph Review

Year	Observations
1930	The Site is not defined as it currently is, and likely forms part of a larger land allotment. There is a building (possibly residential dwelling) present within the south east portion of the Site on the western side of the road intersection of what is currently Chapel Road and Canterbury Road, with a small structure (shed) located to the rear of the building. The remainder of the Site appears to be grassed and undeveloped. The local area comprises well defined roads, with several residential dwellings and allotments located to the south of the Site. The area is dominated by large open grassed areas / fields, likely within a rural / residential land use setting. A small to medium sized building is present on the opposite corner of the road intersection adjacent to the Site, which through review of historical business directory records, is likely to be representative of a motor mechanic garage that operated from this location (Four Ways Motors, Bankstown) (refer **Section 4.5**).
1943	The Site appears similar to what was observed in the 1930 aerial photograph (although clearer due to the improved quality of the photograph), where a residential dwelling is located in the south east portion of the Site and the remainder of the Site is vacant and grassed. The properties directly to the north and west of the Site have been developed. The land use cannot be determined, but there is medium-sized building present directly adjacent to the north west corner of the Site, with the land to the west possibly used for materials storage. The local area sees an increase in low density residential dwellings, particularly to the south and south east of the Site. Undeveloped lands include large areas of grassed parcels of land with mature trees throughout, with areas of bushland evident to the north west and south west of the Site.
1949	The Site has been further developed, where the land appears to have been divided into the three (3) parcels of land that currently form the Site, where fencelines are evident providing segregation. The previous dwelling has been removed and a new dwelling appears to be present in the northern allotment fronting Chapel Road, which includes a small structure in the rear, possibly a freestanding garage. The remainder of the Site appears to be vacant. Significant development has occurred in the local area, including the development of the land to the north of the Site, where six (6) low density residential allotments and dwellings appear to have been constructed.
1955/56	The Site has been further developed where a medium sized, potentially commercial building is present in the south east corner of the Site fronting Chapel Road. Two (2) smaller buildings / sheds are present to the rear (west) of this building. The residential dwelling remains at the Site within the land parcel to the north of this new building, whilst the western portion of the Site remains vacant and undeveloped. The motor garage workshop on the opposite side of the road intersection has changed, where the original building appears to have been removed with a new larger building now present, together with large open forecourt areas. It is likely that the land is still operated as a motor garage.

Year	Observations
	The residential dwelling located on the properties directly to the north of the Site have changed, with the addition of new structures to the east of the dwellings adjacent to Chapel Road. It is possible that these buildings have been developed for retail purposes, similar to the current configuration along Chapel Road. The local area has further been developed where most of the land to the north, west and south is occupied by a low density residential property. The Bankstown commercial / light industrial precinct along Canterbury Road and east of Chapel Road is expanding, with various additional commercial/industrial buildings now present.
1961	The main building in the south east corner of the Site has expanded through additions to the north and west. The residential dwelling remains and the western portion is still vacant. There appears to be several vehicles parked in the rear (western) portion of the Site. The surrounding areas appears similar to what was present in 1955/56, with the main changes being further development within the commercial/light industrial precinct to the east of the Site.
1965	No significant changes to the Site or adjacent properties since 1961.
1970	The Site has been subject to further development, where the residential dwelling has been removed and a new medium-sized building constructed in the northern portion of the Site fronting Chapel Road. The layout and configuration of the Site appears to be similar to what is currently present in 2023. The surrounding properties also appear to be similar to what is currently present, with commercial properties to the south and east, retail shops to the north and the local area to the north and west dominated by low-density residential properties.
1978	No significant changes to the Site or adjacent properties since 1970, with the exception of a new large, multi-storey building now present directly to the west of the Site, in the location of the current aged-care facility.
1982	No significant changes to the Site or adjacent properties since 1978. There are now several vehicles parked within the carpark area to the west of the buildings on the Site.
1986	No significant changes to the Site or adjacent properties since 1982, other than some new large building having been constructed within the commercial/light industrial precinct to the east of the Site.
1991	No significant changes to the Site or adjacent properties since 1986.
1994	No significant changes to the Site or adjacent properties since 1991.
2000	No significant changes to the Site or adjacent properties since 1994.
2007	No significant changes to the Site or adjacent properties since 2000.
2011	No significant changes to the Site or adjacent properties since 2007.
2016	No significant changes to the Site since 2011. The large building adjacent to the west of the Site has been demolished and the adjacent carpark removed, with two large vacant parcels of land now present. No other notable changes are observed.
2020	No significant changes to the Site since 2016, although part of the roof of the building in the northern portion of the Site appears to be covered with a blue tarpaulin, possible indicative of some renovation works being undertaken. The north west portion of the Site that is currently (2023) used as a storage compound appears to have been segregated from the carpark areas with new fences/gates, as previously the area formed a single area.

Year	Observations
	A new large building (aged-care faciality) has been constructed on the vacant land to the west of the Site, while the majority of the surrounding lands appear to be relatively unchanged since 2016.
2023	No significant changes to the Site or adjacent properties are evident since 2021, other than the apparent use of the north west portion of the Site for material storage.

4.2 Historical Land Titles

Land title information was obtained from the NSW Department of Land and Property Information to identify the historical ownership of the Site and to assess for potentially contaminating activities that may have been undertaken (refer **Appendix E**).

A summary of the historical land title information is provided in **Table 4.2**, which are grouped per Lot as during various periods of time, individual Lots that form the Site were owned by different entities.

Table 4.2: Historical Land Title Information – Lot 1 DP 655843

Date	Title at Acquisition and Sale	Landowner (Occupation)
Lot 1 DP 655843		
09.05.1912 (1912 to 1924)	Volume 2251 Folios 113 to 115	Caroline Gertrude Hunt (Spinster) Amy Alice Hunt (Spinster) Lucy Ruth Violet Atkinson (Widow)
06.01.1924 (1924 to 1935)	Volume 2251 Folios 113 to 115	Emily Elizabeth Davies
23.08.1935 (1935 to 1945)	Volume 2422 Folio 187 Now Volume 5484 Folio 231	William Arthur Selben (Bank Official)
11.10.1945 (1945 to 1952)	Volume 5484 Folio 231	Cecil John Loveless (Second Hand Dealer) Constance Loveless (Married Woman)
14.10.1952 (1952 to 1965)	Volume 5484 Folio 231 Now Volume 7848 Folio 242	Harold Vernon (Storekeeper) Mary Ann Vernon (Married Woman)
05.11.1965 (1965 to 2007)	Volume 7848 Folio 242 Then Volume 15441 Folio 72 Now 1/655843	Guiseppe Caristo (Bootmaker) Now Giuseppe Caristo

Date	Title at Acquisition and Sale	Landowner (Occupation)
04.10.2007 (2007 to 2016)	1/655843	Chris Kafataris Theodora Kafataris
30.04.2016 (2016 to date)	7848-242	Lou and Mansour Pty Ltd Tony Hanna & Sons Pty Ltd
Lot 2 DP 655844		
09.05.1912 (1912 to 1941)	Volume 2251 Folios 113 to 115	Caroline Gertrude Hunt (Spinster) Amy Alice Hunt (Spinster) Lucy Ruth Violet Atkinson (Widow)
31.01.1941 (1941 to 1944)	Volume 2251 Folios 113 to 115 Now Volume 5292 Folio 57	Amy Alice Hunt (Spinster)
30.06.1944 (1944 to 1946)	Volume 5292 Folio 57 Now Volume 5443 Folio 39	Jemima Douglas Jessup (Married Woman)
10.07.1946 (1946 to 1947)	Volume 5443 Folio 39	Gordon Graham Douglas (Electrical Engineer)
14.04.1947 (1947 to 1952)	Volume 5443 Folio 39	William David Findlay (Storeman)
20.10.1952 (1952 to 1954)	Volume 5443 Folio 39	Petro Mercha (Labourer) Elfriede Mercha (Married Woman)
30.04.1954 (1954 to 1965)	Volume 5443 Folio 39	Harold Vernon (Storekeeper) Mary Ann Vernon (Married Woman)
05.11.1965 (1965 to 2007)	Volume 5443 Folio 39 Then Volume 13347 Folio 156 Now 1/655844	Guiseppe Caristo (Bootmaker) Now Giuseppe Caristo
04.10.2007 (2007 to 2016)	1/655844	Chris Kafataris Theodora Kafataris
30.04.2016 (2016 to date)	1/655844	Lou and Mansour Pty Ltd Tony Hanna & Sons Pty Ltd

Date	Title at Acquisition and Sale	Landowner (Occupation)
Lot 8B DP 389749		
09.05.1912 (1912 to 1941)	Volume 2251 Folios 113 to 115	Caroline Gertrude Hunt (Spinster) Amy Alice Hunt (Spinster) Lucy Ruth Violet Atkinson (Widow)
13.08.1941 (1941 to 1951)	Volume 2251 Folios 113 to 115 Now Volume 5265 Folio 137	Percy Joseph Eli Round (Plasterer)
30.04.1951 (1951 to 1954)	Volume 5265 Folio 137	John Round (Plasterer)
20.12.1954 (1954 to 1965)	Volume 5265 Folio 137 Now Volume 6942 Folio 114	Harold Vernon (Storekeeper) Mary Ann Vernon (Married Woman)
05.11.1965 (1965 to 2007)	Volume 6942 Folio 114 Now 8B/655844	Guiseppe Caristo (Bootmaker) Now Giuseppe Caristo
04.10.2007 (2007 to 2016)	8B/655844	Chris Kafataris Theodora Kafataris
30.04.2016 (2016 to date)	8B/655844	Lou and Mansour Pty Ltd Tony Hanna & Sons Pty Ltd

Lease information (excluding premises) are as follows:

- Various leases were found from 28th January 1927 (Lot 1 DP 655843), 23rd May 1995 (Lot 2 DP 655844) and 28th January 2010 (Lot 8B DP 389749) that have since expired or have been surrendered (refer **Appendix E** for details).
- 28.01.2010 (AF 275841) to Best Yet Dry Cleaners Pty Ltd: Shop 4A/4-6 Chapel Road, expires 31.12.2012, also 3 year option.

4.3 Council Information

A review of the planning certificate prepared under Section 10.7(2)(5) of the *Environmental Planning and Assessment Act 1979* was conducted to assist with identifying any known or suspected contamination issues at the properties (refer **Appendix F**). A summary of key information relating to contamination matters is provided in **Table 4.3**.

Table 4.3: Planning Certificate Information Relating to Contamination Issues

Item	Notation
Is the land significantly contaminated within the meaning of the *Contaminated Land Management Act 1997?*	No
Is the land affected by Acid Sulfate Soils?	No
Are any properties within the Study Area listed on the loose-fill asbestos insulation register?	No
Within the meaning of the *Contaminated Land Management Act 1997,* has Council been advised for any of the properties within the Study Area: • The land is significantly contaminated land? • The land is subject to a management order? • The land is subject to an approved voluntary management proposal? • The land is subject to an ongoing maintenance order? • The land is subject to a site audit statement?	No
Additional information:	Council has adopted by resolution a policy concerning the management of contaminated land. The policy applies to all land in the Canterbury-Bankstown Local Government Area and will restrict development of the land if the circumstances set out in the policy prevail. But Council is not aware of the land being affected by any matters as prescribed by Section 59 (2) of the *Contaminated Land Management Act 1997.*

4.4 Google Street View Review

A review of the Google Street View images was undertaken for the years 2008 to 2023 to assist with the identification of land use activities or changes undertaken at the Site. The review was limited to areas observed from Chapel Road (eastern boundary).

Findings from the review confirmed that no significant changes have occurred to the structures present at the Site throughout the 15-year review period, whee retail shows as per their current configuration have remained throughout. The only notable changes observed relates to the tenants operating from the premises.

Tenants observed to occupy the Site are outlined in **Table 4.4**.

Table 4.4: Tenant Details

Business Activity	Year(s)
Locksmith	2008
Fishing Tackle and Bait	2008, 2013, 2014, 2016, 2017, 2018, 2019, 2020, 2021, 2022, 2023
Domestic Lighting	2008, 2013, 2014, 2016, 2017, 2018, 2019, 2020, 2021, 2022, 2023
Dry Cleaners	2008, 2013, 2014, 2016, 2017
Newsagency	2008, 2013, 2014, 2016, 2017, 2018, 2019, 2020, 2021, 2022, 2023
Variety Store (BBQ and gas heaters)	2013, 2014, 2016, 2017, 2018, 2019, 2020, 2021, 2022, 2023
Thai Massage Parlour	2020, 2021, 2022, 2023

4.5 Historical Business Directories

A review was undertaken of business directory content derived from the Universal Business Directories (UBD) from 1950, 1961, 1970, 1986, and 1991 to identify local businesses that have operated at the Site and in the local area.

Considering that the Site comprises of retail premises that are understood to have been constructed around the 1960s – 1970s, a significant number of business listings were identified. Full details of the search records are provided within **Appendix D**, with the majority of records for the Site and adjacent properties showing that the land uses have been for low contamination risk, retail premises, for purposes as newsagents, chemist, cake shop, fruit shop, butcher shop, dance studio, taxation consultant and medical practitioners.

A review was also undertaken of the business directories for high-risk businesses including dry cleaners, motor garages and service stations for the years 1951, 1955, 1957, 1960, 1963, 1973, 1974, 1977 and 1987, which didn't identify any high-risk activities to have been undertaken at the Site during these years, although records were identified for adjacent premises as listed in **Table 4.5**.

Table 4.5: Business Directory Records – High Risk Businesses – Adjacent Properties

Business Activity	Business Activity / Premise	Year(s)
Motor Garage & Service Stations	Vernon's Service Centre Pty Ltd, 203-213 Canterbury Road, Bankstown	1954
Motor Garage & Service Stations	South Bankstown Service Centre, 203-213 Canterbury Road, Bankstown	1956 - 1989
Dry Cleaners, Pressers and Dyers	Challenge Dry Cleaners, 183 Canterbury Road, Bankstown	1950 - 1953
Motor Garages and/or Engineers	Four Ways Motors Bankstown Pty Ltd, 164 Canterbury Road, Bankstown	1948 – 1975
Motor Garages and/or Engineers	Crawley J. W, 126 Canterbury Road, Bankstown	1962 - 1972

Business Activity	Business Activity / Premise	Year(s)
Motor Garage & Service Stations	Midway Star Service Station Pty Ltd, 108 Canterbury Road, Bankstown	1964 - 1972
Motor Garage & Service Stations	Caltex Bankstown Service Station, 108 Canterbury Road, Bankstown	1975 - 1993
Motor Garage & Service Stations	C & H Mechanical Repairs, 111 Gow Street, Padstow	1980 - 1986
Dry Cleaners, Pressers and Dyers	Richwear Dry Cleaning Co., 151 Canterbury Road, Bankstown	1954 - 1964
Dry Cleaners, Pressers and Dyers	V.I.P. Dry Cleaners, 151 Canterbury Road, Bankstown	1979 - 1981

4.6 NSW Government Database Records

A review of various NSW Government databases was undertaken to evaluate the condition of the surrounding environment and the potential for on or off-site sources of contamination to exist. Details of this information review are summarised below.

4.6.1 Contaminated Land

A review of contaminated sites notified to NSW EPA and regulated under the *Contaminated Land Management Act 1997*, the PFAS investigation program and other contamination issues reported by NSW EPA was undertaken on 25 September 2023 to determine if the Site is subject to any significant environmental constraints. The following key information was identified:

- Two (2) properties within a 1 kilometre radius of the Site have been notified to NSW EPA as potential contaminated sites under the notification provisions of the *Contaminated Land Management Act 1997* (CLM Act). These include:
  - Parts 64 and 92 Gow Street, Padstow (Sebel Furniture): Assessed by NSW EPA to not require regulation under the CLM Act.
  - 49 Gow Street, Padstow (Galvatech): Assessed by NSW EPA to require regulation under the *Protection of the Environment Operation Act 1997* (POEO Act).
- Numerous EPA Notices (including Penalty Notices, Clean-up Notices and Preventative Notices), have been issued to various properties within a 1 kilometre radius of the Site under the provisions of the POEO Act, which includes:
  - A Section 91 Clean-up Notice issued to a former tenant of the Site (Best Yet Dry Cleaners Pty Ltd, 4a/6 Chapel Road) on 15 March 2023 (refer **Appendix H**). The Notice (ref. 1515835) related to the inappropriate storage of a hazardous dry cleaning chemical waste (perchloroethylene) being stored at the rear of the shop inside and adjacent to the garage door.
- Eight (8) properties within a 1 kilometre radius of the Site are listed on the National Liquid Fuel Facilities database, which all relate to current operational petrol stations in the local area.

- No properties within a 1 kilometre radius of the Site were identified to be sites listed as:
  - Subject to current regulation by NSW EPA under the CLM Act;
  - Containing former Gasworks;
  - National Waste Management site;
  - Requiring PFAS investigation or management under the NSW EPA, Defence and/or Airservices Australia PFAS investigation/management programs;
  - A James Hardie asbestos manufacturing / waste disposal site;
  - A radiological investigation site in Hunter's Hill; or
  - Forming part of the Pasminco Lead Abatement Strategy Area.

4.6.2 Environment Protection Licences

A review of current and former environmental protection licences issued by the NSW EPA under the *Protection of the Environment Operations Act 1997* and delicensed activities still regulated by the NSW EPA was undertaken on 25 September 2023.

Four (4) records were identified for currently licensed facilities under the POEO Act, one (1) record was identified for a delicensed still regulated by NSW EPA and thirteen (13) records for formerly licensed activities under the POEO Act 1997, now revoked or surrendered, were identified within a 1 kilometre radius of the Site as outlined in **Tables 4.6**, **4.7** and **4.8**.

Table 4.6: Licensed Activities (current)

Premise	Distance & Direction	Licensed Activity	Organisation	EPL
81 Gow Street, Padstow	604m, SE	Recovery of general waste	Gow Street Recycling Centre Pty Ltd	10943
81 Gow Street, Padstow	604m, SE	Waste storage - other types of waste	Gow Street Recycling Centre Pty Ltd	10943
1 Wordie Place, Padstow	816m, SE	Metal coating	Galvatech Pty Ltd	7029
1 Wordie Place, Padstow	816m, SE	Metal waste generation	Galvatech Pty Ltd	7029

Table 4.7: Delicensed Activities

Premise	Distance & Direction	Licensed Activity	Organisation	EPL
Eldridge Road, Bankstown	434m, W	Hazardous, Industrial or Group A Waste Generation or Storage	Sydney South West Area Health Service	6894

Table 4.8: Formerly Licensed Activities (now revoked or surrendered)

Premise	Distance & Direction	Licensed Activity	Organisation	EPL
112-116 Canterbury Road, Bankstown	313m, E	Metal Waste Generation	Mackies Asia Pacific Pty Limited	6994
2a Mavis Street, Revesby, NSW 2212	375, SW	Hazardous, Industrial or Group A Waste Generation Or Storage	Boral Investments Pty Limited	11607
Waterways Throughout NSW	547m, NE	Other Activities / Non Scheduled Activity - Application of Herbicides	Luhrmann Environment Management Pty Ltd	4653
Various Waterways Throughout NSW	547m, NE	Other Activities / Non Scheduled Activity - Application of Herbicides	Robert Orchard	4838
Waterways Throughout NSW	547m, NE	Other Activities / Non Scheduled Activity - Application of Herbicides	Sydney Weed & Pest Management Pty Ltd	6630
Waterways Throughout Bankstown City Council	547m, NE	Other Activities / Non Scheduled Activity - Application of Herbicides	Bankstown City Council	7498
299 Canterbury Road, Revesby	683m, SW	Dangerous Goods Production; Hazardous, Industrial or Group A Waste Generation Or Storage	Macdermid Overseas Asia Ltd	11664
M5 West Widening - Kings Georges Rd to Camden Valley Way	712m, S	Road Construction	Acciona Infrastructure Projects Australia Pty Ltd	20149
Unit 8/9 Wordie Place, Padstow	803m, SE	Waste Storage - Hazardous, Restricted Solid, Liquid, Clinical and Related Waste and Asbestos Waste	Tak Son Recycling Pty Ltd	12714
36a Mavis Street, Revesby	837m, W	Hazardous, Industrial or Group A Waste Generation or Storage	Veolia Environmental Services (Australia) Pty Ltd	6192
35 Bryant Street, Padstow	928m, SE	Chemical Production Waste Generation	The Lincoln Electric Co (Australia) Pty Ltd	866
35 Bryant Street, Padstow	928m, SE	General Chemicals Storage	The Lincoln Electric Co (Australia) Pty Ltd	866
12 Short Street, Bankstown	952m, E	Hazardous, Industrial or Group A Waste Generation or Storage	Blue Point Products Pty Ltd	6865

4.6.3 Heritage Information

Review of Commonwealth, State and Local government heritage lists and registries was undertaken on 25 September 2023 to determine if the Site is subject to any significant environmental constraints from heritage items. The review indicated the Site is not listed on the Commonwealth Heritage List, National Heritage List or State Heritage Register.

4.7 Previous Environmental Assessment Reports

No environmental assessment or investigation reports are known to have been previously prepared for the Site or adjacent properties.

4.8 Summary of Site History

Based on the various sources of information reviewed, a summary of the history of the Site and surrounding areas is as follows:

- The Site was historical used for residential purposes, with a residential dwelling being present within different lots in the eastern portion of the Site fronting Chapel Road between at least 1930 and 1965.
- The first commercial use of the Site is likely to have commenced in the mid-1950s, where a medium-sized commercial building is shown to be present in the south east corner of the Site in 1955/56. This correlates with the purchase and ownership of part of the Site (Lot 1 DP 655843) by Mr Harold Vernon (storekeeper) and Mrs Mary Vernon from 1952 to 1965. During these years, historical business directories identified the following listings for the Site:
  - 1961: Cake Shop / Pastrycook (6a Chapel Road) and Newsagency (4 Chapel Road).
  - 1965: Cake Shop / Pastrycook (6a Chapel Road), Fruiterers & Greengrocers (6 Chapel Road) and Newsagency (4 Chapel Road).
- The Site may have been used for both residential and commercial purposes from the mid-1950s to late 1960s, but from at least 1970 the Site was redeveloped for commercial (likely retail) use, where the layout and configuration of the Site buildings appear to be similar to the current (2023) configuration. All lots that form the Site were then under the ownership of Guiseppe Caristo (from 1965 to 2007) and a range of tenants were identified to have occupied parts of the Site for business purposes including newsagent, chemist, cake shop, fruit shop, butcher shop, dance studio, taxation consultant and medical practitioner.
- Since 2007 there has been little change to the Site with business tenancy also being relatively consistent, which has included the following business activities: locksmith; fishing tackle; domestic lighting (retail); dry cleaners; newsagency; variety store (BBQ and gas heaters) and massage parlour.
- The only high risk business activity identified to be undertaken at the Site that would have the potential to cause contamination was the use as a dry cleaners from approximately 2008 to 2017.

5 Conceptual Site Model

Based on the outcomes of the desktop review and detailed site inspection, a Conceptual Site Model (CSM) has been developed to outline the framework for identifying how the Site may have become contaminated and how potential receptors may be exposed to contamination either in the present or the future. The key elements of the CSM as outlined in NEPC (2013) include:

- Known and potential sources of contamination;
- Contaminants of concern;
- Mechanism of contamination;
- Potentially affected media;
- Human and ecological receptors;
- Potential for migration; and
- Exposure pathways.

5.1 Known and Potential Sources of Contamination

Past and present land use activities undertaken at the Site and in the local area have been identified to comprise of a number of potential sources of contamination as described in **Table 5.1**.

Table 5.1: Potential Sources of Contamination

Potential Source	Evidence	Description
Dry Cleaning Activities	Business listings and EPA notice	A shopfront dry cleaning business operated from part of the Site between 2008 and 2017. An EPA Notice (refer **Appendix H**) was issued to the premise in relation to the management of waste products.
Atmospheric fallout of contaminants (lead) from motor vehicles	Site location	The Site is located at the intersection of a busy road network, which would be at risk of being affected by urban pollution from motor vehicle emissions.
Use of fill materials	Site investigations	A shallow layer of fill material was identified to be presence across the ground surface of the western portion of the Site.
Carparking and material storage	Aerial photographs and site inspection	The central and western portion of the Site are used for carparking and material storage, generally ancillary to the use of the Site for retail activities
Local industry	Historical aerial photographs and business listings	The local area to the east of the Site has been used for light industrial purposes since the 1950s, noting that this area is likely to be located downgradient of the Site. A motor garage / service station operated opposite the Site (also downgradient) for many years).

5.2 Contaminants of Concern

Potential contaminants of concern typically associated with the identified potential sources of contamination are as follows:

- Volatile Organic Compounds (VOC).
- Heavy metals (lead, arsenic, cadmium, chromium, copper, mercury, nickel and zinc).
- Petroleum hydrocarbons (TRH/BTEXN).
- Polycyclic Aromatic Hydrocarbons (PAH).
- Asbestos.
- Organochlorine Pesticides (OCP).
- Polychlorinated Biphenyls (PCB).

5.3 Mechanism of Contamination

The primary mechanisms for contamination of the Site are determined by the sources of contamination, which have been assessed to include:

- Use and storage of dry cleaning chemicals and waste bi-products within part of the Site formerly operated as a shopfront dry cleaners, which may have involved the leakage and/or spillage of chemicals onto the ground surface.
- Atmospheric fallout of fine particulates from the combustion of fuels in motor vehicles from the adjacent arterial road network.
- Importation and placement of fill materials on the ground surface of the unsealed ground surfaces within the central and western portions of the Site from an unknown source.
- Leakage of fuels and oils from motor vehicles and equipment / materials stored within the central and western portions of the Site.

5.4 Potentially Affected Media

Potentially affected media at the Site are considered to be:

- Fill materials.
- Natural soils.
- Groundwater.
- Soil vapour

5.5 Human and Ecological Receptors

The current and proposed future land use of the Site has been assessed to fall under a commercial land use setting, where sensitive receptors would include:

- Workers at the premises
- Maintenance workers.
- Visitors / customers.

Considering the commercial (retail) land use setting of the Site where no vegetated areas are present, the built up infrastructure on the adjacent properties and the distances from the Site of the closest water body (Salt Pan Creak, over 1 kilometre to the east of the Site), there are unlikely to be any sensitive ecological receptors to any site-derived contamination.

5.6 Potential for Migration

Contaminants generally migrate via a combination of windblown dusts, rainwater infiltration, groundwater migration and surface water runoff, which is affected by the following:

- The nature of the contaminants (solid/liquid and mobility characteristics);
- The extent of the contaminants (isolated or widespread);
- The location of the contaminants (surface soils or at depth); and
- The site topography, geology, hydrology and hydrogeology.

The potential contaminants of concern identified by this assessment are present in both solid and liquid form.

Liquid contaminants, such as chemicals associated with former dry cleaning activities, have the potential to infiltrate in to ground surfaces, which may then impact underlying natural soils and groundwater, although it noted that the portion of the Site where such land use activities may have occurred has a concrete pavement ground surface that was assessed to be in a good condition, with no evidence of cracking, deterioration or surface staining.

Solid contaminants, such as atmospheric fallout of fine particulates or substances such as heavy metals and/or asbestos-containing materials that may be present within fill materials, are more likely to accumulate within the surface / near surface soils in areas not covered by building or ground surface pavements.

Based on the nature of the potential contaminants of concern identified for the Site, the past and present infrastructure at the Site and the environmental setting of the Site, the potential for contamination to have occurred at the Site and to have migrated into the natural soils and groundwater is considered to be low, with surface / near surface soils and fill materials within the unsealed areas of the Site considered to be at highest risk of being affected by any site-derived contamination.

The potential for offsite sources of contamination to have impacted the Site through migration of contaminated groundwater and/or via vapour intrusion is also considered to be low, given that the identified potential sources of contamination are all located downgradient of the Site.

5.7 Exposure Pathways

Exposure pathways to site-derived contamination are dependent on the type and characteristics of the contaminants of concern. Based on the potential sources of contamination at the Site and the current and proposed future commercial land use setting, exposure pathways to any site-derived contamination could include:

- Inhalation, via vapour intrusion into buildings.
- Dermal contact.
- Ingestion.

Exposure to VOCs derived from dry cleaning chemical contamination that may be present at the Site via vapour intrusion into the current site buildings is considered to be the primary potential mechanism for exposure to contamination (if present) at the Site, albeit a low risk.

Considering the land use setting and operational nature of the Site, dermal exposure and ingestion of soil through eating or windblown exposure to impacted soils are considered relatively low and would be limited to receptors who may access the rear (central and western) portion of the Site. This area of the Site is currently covered with a layer of compacted gravel (DGB), which is considered to provide an adequate physical barrier to any subsurface contamination that may be present, with a potential complete exposure pathway only occurring should significant disturbance, eg. by excavation, of this ground layer occur.

Groundwater is not expected to be extracted or used at the Site, given the land use setting and typical low-yield, high salinity of groundwater sourced from the Ashfield Shale.

5.8 Potential Areas of Environmental Concern and Contaminants of Concern

Based on the CSM developed for the Site, a summary of the potential areas of environmental concern and potential contaminants of concern are presented in **Table 5.2**.

Table 5.2: Potential Areas of Environmental Concern and Contaminants of Concern

Potential Source	Potential Areas of Environmental Concern	Likelihood of Contamination	Likely Extent of Contamination	Potential Contaminants of Concern
Dry cleaning activities	South eastern portion of the Site, currently used by the massage parlour and adjacent newsagency	Low	Localised	• VOCs
Atmospheric fall out of fine particulate matter	Central and western portions of the Site, currently used for carparking and materials storage	Low	Widespread	• Heavy metals

Potential Source	Potential Areas of Environmental Concern	Likelihood of Contamination	Likely Extent of Contamination	Potential Contaminants of Concern
Fill materials	Central and western portions of the Site, currently used for carparking and materials storage	Low	Localised	• Heavy metals • PAH • Asbestos • OCP • PCB
Carparking and material storage	Central and western portions of the Site, currently used for carparking and materials storage	Low	Localised	• TRH/BTEXN • Heavy metals

6 Sampling, Analysis and Quality Plan

6.1 Assessment Strategy

For the assessment of contamination at the Site, the risk-based approach outlined in the NEPM (NEPC, 2013) has been adopted. This has involved a comprehensive assessment of the past and present land use activities undertaken at and adjacent to the Site to identify potential sources of contamination, which has been supplemented by targeted soil and soil vapour sampling and analytical programs to characterise the contamination status of subsurface conditions across the Site, focused on potential sources of contamination and contaminant exposure pathways as identified by the CSM.

6.2 Assessment Methodology

Details of the soil sampling and analytical program that was implemented to address the objectives of the project are provided in **Table 6.1**.

Table 6.1: Soil Investigation Methodology

Activity	Details
Sampling Locations	Five (5) boreholes (BH1, BH2, BH3, BH4 and BH5) were drilled at the Site as part of the soil investigation. The investigation locations were constrained by the existing buildings, although were able to be positioned in areas considered to be appropriate to provide a thorough characterisation of the contamination status of the subsurface soil conditions across the Site, targeted to areas assessed to have been at highest risk of being impact by the identified potential sources of contamination. The sampling locations are shown in **Figure 2**.
Soil Sampling	Boreholes drilling and soil sampling was undertaken on 29 September 2023 by an appropriately experienced and qualified environmental scientist. Borehole depths were extended through the gravel ground surface, underlying fill materials and into natural clay soils to a depth of 1 metre below the ground surface. Representatives samples were collected at various depths depending on the geological conditions that were encountered, including where a visible change in strata was identified, which typically included: • 0.1 – 0.2m. • 0.4 – 0.5m. • 0.9 – 1.0m. Soil samples were placed immediately into an appropriate laboratory-supplied sample container selected based on the nature of the potential contaminants of concern and stored in an ice filled esky during field activities and transport to the testing laboratory. New disposable nitrile gloves were used for the collection of all soil samples and non-disposal sampling equipment was decontaminated between sampling locations. All soil sampling was conducted in accordance AS 4482.1-2005. Borehole logs are provided in **Appendix C**.
Sample Handling and Transportation	All samples were immediately placed in an esky chilled with ice for transport to the nominated NATA accredited laboratory. Chain-of-custody documentation was prepared for sample transfer from the Site to the laboratory. A copy of the completed chain-of-custody documentation and sample receipt advice are included in **Appendix G**.

Activity	Details
QA / QC Procedures	All non-disposable sampling equipment was decontaminated with approximately 5% Decon 90 solution (phosphate-free) in potable water and rinsed with deionised water prior to use and between each sample location. Samples were collected using a new pair of disposal nitrile gloves for each sample. Samples were placed directly into new glass laboratory-prepared sample containers that are provided with Teflon lined caps.
Analytical Program	Representative soil samples from each location were submitted for laboratory analysis for the identified potential contaminants of concern. Details of the samples scheduled for analysis are provided in the Sample Register (refer **Table 1** in **Appendix G**).

6.3 Soil Vapour Assessment Methodology

As discussed in **Section 5.1**, the operation of a dry cleaners within one of the retail shops, including the identified inappropriate management of dry-cleaning wastes (refer **Appendix H**), is considered to represent a potential point source of contamination to the Site. To assess whether such activities have caused contamination to the Site, it was determined that the primary indicator of the presence of such contamination is via the assessment of the vapour intrusion migration pathway, by direct measurement of sub-slab soil vapour.

Details of the targeted soil vapour investigation program are provided in **Table 6.2**.

Table 6.2: Soil Vapour Investigation Methodology

Activity	Details
Sampling Locations	One (1) soil vapour monitoring point (SV1) was installed within the garage area at the rear of the now Thai Massage premises, which is the area understood to have been formerly used for the storage of dry-cleaning wastes. The Vapour Pin™ was installed into the ground level concrete pavement to facilitate the collection of a sub-slab soil vapour sample. The sampling location is shown in **Figure 2**.
Soil Vapour Pin Installation	One (1) Vapour Pin™ were installed, which is a specific soil vapour sampling apparatus constructed of stainless steel. The Vapour Pin™ was decontaminated prior to use. A 16mm diameter hole was drilled using a hand held drill through the concrete slab and approximately 25mm into the underlying soil. The drill bit was removed and the hole brushed to remove loose cuttings. The lower end of the vapour pin containing a silicon seal was tapped into the drilled hole using a rubber mallet and a protective cap was placed on the vapour pin to prevent vapour loss prior to sampling. A leak test was conducted through the placement of a water dam around the Vapour Pin™ installation, which was confirmed to pass the water shut out test prior to commencing sample collection.

Activity	Details
Soil Vapour Sampling	Sampling was undertaken on 24 October 2023 by an appropriately experienced and qualified environmental scientist. The sample was collected as follows: • Purging was undertaken with a laboratory provided hand pump until a vacuum was achieved. All dead-air in the sample train was removed prior to sampling. • The vapour sample was obtained in specialised TO-15 vacuum canisters (1L) cleaned and pressurised by a NATA accredited laboratory. • A laboratory supplied flow regulator was fitted to the sample train, set at a maximum flow rate of 80 mL per minute. • Measurement of the vacuum within the soil vapour implant was monitored throughout sampling to ensure that the vacuum did not exceed -5" Hg. • Sampling continued until the summa canister was filled with soil vapour to a pressure of approximately -10" Hg.
Sample Handling and Transportation	The sample was transported within the laboratory supplied summa canister to the nominated NATA accredited laboratory. Chain-of-custody documentation was prepared for sample transfer from the Site to the laboratory (refer **Appendix G**).
QA / QC	All sampling equipment was decontaminated and certified for use by the NATA certified testing laboratory. All analysis was undertaken in accordance with the relevant standards as defined by NEPM (NEPC 2013) by Eurofins who are NATA-accredited for all required analytical methods. Field equipment used to perform sampling was calibrated prior to use by the testing laboratory. Leak testing was undertaken to ensure the sampling train and vapour pin were air tight. Data quality objectives are provided in **Section 7**.
Analytical Program	All collected soil vapour samples were scheduled for the USEPA T0-15 VOCs and NEPM TRH suite.

7 Data Quality Objectives

The DQO process is a systematic planning tool based on the scientific method for establishing criteria for data quality and for developing data collection designs. The DQOs define the experimental process required to test a hypothesis. The DQO process has been developed to ensure that efforts relating to data collection are cost effective, by eliminating unnecessary, duplicative or overly precise data whilst at the same time, ensuring the data collected is of sufficient quality and quantity to support defensible decision making.

It was recognised that the most efficient way to accomplish these goals is to establish criteria for defensible decision making before data collection began and to develop a data collection design based on these criteria. The DQO process was used to plan the investigation effort, improving the effectiveness, efficiency and defensibility of the decision in a resource and cost-effective manner.

The DQO process consists of seven steps, which were designed to clarify the study objectives, define the appropriate type of data and specify tolerable levels of potential decision errors. The seven-step DQO process is summarised as follows:

- Step 1: Define the Problem. The first step in the DQO process is to 'define the problem' that has initiated the investigation.
- Step2: Identify the Decision. The second step in the process is to define the decision statements that the study will attempt to resolve.
- Step 3: Identify Inputs to the Decision. In this step, the different types of information needed to resolve the decision statement are identified.
- Step 4: Define the Study Boundaries.
- Step 5: Develop a Decision Rule.
- Step 6: Specify Limits on Decision Errors.
- Step 7: Optimise the Design for Obtaining the Data.

7.1 Define the Problem

To determine whether there are any significant contamination issues at the Site that would pose a potential constraint to the proposed rezoning of the Site from SP2 (Infrastructure) to B1 (Neighbourhood Centre), under a commercial / industrial land use setting.

7.2 Identify the Decision

The relevant decision statements for this investigation are:

- Does contamination occur at the Site at concentrations that pose an unacceptable level of risk to human health and/or environmental receptors based on a commercial / industrial land use setting?

And if so:

- What measures could be adopted to mitigate or manage the risk?

7.3 Identify the Inputs to the Decision

Key data required to resolve the project problem includes the concentrations of contaminants of concern in soil and soil vapour, the pathways for contaminant movement and the location of sensitive receptors.

A robust, targeted sampling and analytical program has been designed to collect sufficient data to inform the decision statements and to provide a sound scientific and quality-assured dataset that can be relied on.

7.4 Define the Boundaries of the Study

The boundaries of the study are limited to the extent of the Site as defined in **Section 1.1**, **Section 2.1** and as shown in **Figure 2**. The vertical extent of the study boundaries is limited to the depth of investigations undertaken during sampling, giving due consideration to the underlying soils which would comprise the source of contamination at the Site (if present).

The temporal boundaries of the study extend across the dates for which environmental data has been collected for the Site (September to October 2023).

7.5 Develop a Decision Rule

The decision rule is:

- If the concentrations of contaminants are below the adopted investigation levels, and the data is of acceptable quality, then contamination issues are unlikely to pose a constraint to use of the Site under a commercial / industrial land use setting and remedial action is not required.
- If the concentrations of contaminants are above the adopted investigation levels, and the data is of acceptable quality, then further risk-based assessment of the data in the context of the CSM may be required to evaluate the significance of any contamination and determine whether remedial action is required.
- If it is assessed that an unacceptable risk of harm is posed by any identified contaminants to the identified receptors under the current and proposed future land use setting, then remedial action will be required to mitigate the risk to an acceptable level.

7.6 Specify Limits on Decision Errors

Two primary decision error-types may occur due to uncertainties or limitations in the project data set:

- A sample/area may be deemed to pass the nominated criteria, when in fact it does not. This may occur if contamination is 'missed' due to limitations in the sampling plan, or if the project analytical data set is unreliable.
- A sample/area may be deemed to fail the nominated criteria, when in fact it does not. This may occur if the project analytical data set is unreliable, due to inappropriate sampling, sample handling, or analytical procedures.

To minimise the potential for the decision errors above, a statistical evaluation of the data (including calculation of upper confidence limits) will be carried out where required.

In order to further evaluate the adequacy of the data, Data Quality Indicators (DQIs) have been established for precision, accuracy, representativeness, comparability and completeness. The DQIs for sampling techniques and laboratory analysis of collected samples identifies the acceptable level of error for the investigation.

The DQOs will be assessed by reference to DQIs as follows:

- **Precision** - measures the reproducibility of measurements under a given set of conditions. The precision of the laboratory data and sampling techniques is assessed by calculating the Relative Percent Difference (RPD) of duplicate samples.

  $$RPD\% = \frac{(C_0 - C_d)}{C_0 + C_d} \times 200$$

  Where C_0 is the analyte concentration of the original sample

  C_d is the analyte concentration of the duplicate sample

  Metech Consulting adopts a nominal acceptance criterion of +30% RPD for duplicates and splits for inorganics and a nominal acceptance criterion of +50% RPD for duplicates and splits for organics. However, it is noted that this will not always be achieved, particularly in heterogeneous soil or fill materials, or at low analyte concentrations.

- **Accuracy** - measures the bias in a measurement system. The accuracy of the laboratory data that are generated during this study is a measure of the closeness of the analytical results obtained by a method to the 'true' value. Accuracy is assessed by reference to the analytical results of laboratory control samples, laboratory spikes and analyses against reference standards.

  The nominal "acceptance limits" on laboratory control samples are defined as follows:

  - Matrix spikes – 70-130% recovery for metals.

  - Laboratory blanks - <PQL.

- **Representativeness** - expresses the degree which sample data accurately and precisely represents a characteristic of a population or an environmental condition. Representativeness is achieved by collecting samples in an appropriate pattern across the Site and by using an adequate number of sample locations to characterise the Site.

- **Comparability** - expresses the confidence with which one data set can be compared with another. This is achieved through maintaining a level of consistency in techniques used to collect samples, ensuring analysing laboratories use consistent analysis techniques and reporting methods.

- **Completeness** - is defined as the percentage of measurements made which are judged to be valid measurements. The completeness goal is set at their being sufficient valid data generated during the study. If there is insufficient valid data, then additional data are required to be collected.

7.7 Quality Assurance / Quality Control

A program of quality assurance / quality control (QA/QC) was undertaken for the investigation program that comprised the following elements:

- Sample collection in accordance with documented standard operating procedures;
- Decontamination of all sampling equipment and the use of new, nitrile gloves for all sampling works; and
- Detailed review and evaluation of laboratory QA/QC data.

All analysis was undertaken in accordance with the relevant standards as defined by NEPM (NEPC 2013) by Eurofins Environmental and SGS Environmental who are NATA-accredited for all required analytical methods.

The Data Quality Indicators (DQIs) used to evaluate the data are outlined in **Table 7.1**.

Table 7.1: Quality Assurance and Quality Control Program

Data Quality Indicator	Frequency	Acceptance Criteria
Precision		
Blind duplicates (inorganics)	1 in 20 samples	<30% RPD
Laboratory duplicates	1 in 20 samples	< 30% RPD
Accuracy		
Surrogate spikes	All Organic Samples	60 – 140%
Matrix spikes (inorganics)	1 per Batch	60 – 140%
Matrix spikes (organics)	1 per Batch	70 – 130%
Laboratory Blanks	1 per Batch	<PQL
Representativeness		
Sampling appropriate for media and analytes	All Samples	All Samples
Samples extracted and analysed within holding times	All Samples	NEPM (2013) limits and laboratory limits required for NATA accreditation
Completeness		
Soil description and COCs completed and appropriate	All Samples	Borehole logs included in report. COCs signed and included in report

Data Quality Indicator	Frequency	Acceptance Criteria
Appropriate documentation	Soil vapour samples	Field sheet documenting conditions during sampling, cannister vacuum and times of sampling
Satisfactory frequency and result for QC samples	All Samples	All Samples
Comparability		
Standard operating procedures used for sample collection and handling	All Samples	All Samples
NATA-accredited analytical methods used for all analytes	All Samples	All Samples
Consistent field conditions, sampling staff and laboratory analysis	All Samples	All Works
Limits of reporting appropriate and consistent	All Samples	All Samples

8 Assessment Criteria

8.1 Soil

The purpose of any contaminated land assessment is to determine the human health and ecological risks associated with the presence of site contamination and to inform any remediation or management plan to make the site fit for the current or proposed land use. The appropriate use of investigation levels is an integral component of the assessment process.

The *National Environment Protection (Assessment of Site Contamination) Measure 1999* (NEPC 2013) outlines the framework for implementing a Tier 1 risk assessment using investigation and screening levels. A Tier 1 assessment is a risk-based analysis comparing site data with generic investigation and screening levels for various land uses to determine the need for further assessment or development of an appropriate management strategy.

NEPC (2013) provides both environmental investigation / screening levels (EILs/ESLs) and health-based investigation / screening levels (HILs/ HSLs) for the following land use settings:

- **HIL A**: Residential with garden/accessible soil (home grown produce <10% fruit and vegetable intake (no poultry), includes children's day care centres, preschools and primary schools.
- **HIL B**: Residential with minimal opportunities for soil access, includes dwellings with fully and permanently paved yard space such as high-rise buildings and flats.
- **HIL C**: Public open space such as parks, playgrounds, playing fields (eg. ovals), secondary schools and footpaths.
- **HIL D**: Commercial/industrial such as shops, offices, factories and industrial sites.

The HILs have been derived for the above land use scenarios based on long-term exposures for the most sensitive receptor populations exposed. The HILs are therefore considered to be protective of exposures to other receptor populations.

Based on the CSM developed for the Site and in comparison to the CSM's developed for the above four (4) generic land use settings (NEPC 2013), it has been determined that the most appropriate land use setting for the Site with a proposed "business" land use zoning of B1 (Neighbourhood Centre) is **HIL D – Commercial / Industrial**.

Potential risks to ecological receptors to site-derived contamination have been assessed based on the following ecological criteria provided in NEPC (2013):

- EIL: Urban residential and public open space for aged contaminants, generic values.

The adopted site assessment criteria for the investigation are outlined in **Table 8.1**.

Table 8.1: Soil Assessment Criteria

Parameter	Ecological Criteria[1,2] (mg/kg)	Human Health Criteria[3,4,9] (mg/kg)
Arsenic	160	3,000
Cadmium	3[11]	900
Chromium	530[8]	3,600
Copper	300[5,6,7]	240,000
Lead	1,800	1,500
Mercury	1[11]	730[10]
Nickel	290[6]	6,000
Zinc	710[6,7]	400,000
Benzo(a)Pyrene	0.7	40
Total PAH	-	4,000
Benzene	95	4
Toluene	135	-
Ethylbenzene	185	-
Xylenes	95	-
Naphthalene	370	-
F1 (C_6-C_{10})	215	310[4] / 800[9]
F2 >C_{10}-C_{16}	170	1,000[9]
F3 >C_{16}-C_{34}	2,500	6,600
F4 >C_{34}-C_{40}	5,000	10,000
Total PCB	-	7
DDT+DDE+DDD	-	3,600
Aldrin and dieldrin	-	45
Chlordane	-	530
Endosulfan	-	2,000
Endrin	-	10
Heptachlor	-	50

Parameter	Ecological Criteria[1,2] (mg/kg)	Human Health Criteria[3,4,9] (mg/kg)
HCB	-	80
Methoxychlor	-	2,500
Mirex	-	100
Toxaphene	-	160

1 Environmental Investigation Levels – Commercial and Industrial (NEPC 2013). Inorganic compounds.
2 Environmental Screening Levels – Commercial and Industrial (NEPC 2013). Organic compounds. 'FINE' soil texture criteria adopted based on the 'Clay' geological conditions present at the Site.
3 Health-based Investigation Levels – Commercial/Industrial HIL D (NEPC 2013).
4 Heath Screening Levels - Commercial and Industrial (NEPC 2013). Organic compounds. 'FINE' soil texture criteria adopted based on the 'Clay' geological conditions present at the Site.
5 The ACL for soils with total organic carbon of 1.3% has been adopted.
6 Based on cation exchange capacity of 10.1 meq/100g.
7 Based on average pH site soils being 7.2.
8 The ACL for soils with clay content of 5% has been adopted.
9 Management Limits for TPH Fractions F1-F4 (NEPC 2013).
10 Based on inorganic mercury.
11 NSW DEC (2006) *Provisional phytotoxicity-based investigation level adopted for initial screening purposes*.

8.2 Soil Vapour

Sub-slab soil vapour results have therefore been screened against primary soil vapour screening criteria as follows:

- *National Environment Protection (Assessment of Site Contamination) Measure* - NEPM (2013) – Soil vapour Health Screening Levels (HSL D: Commercial / Industrial), 0 – 1 metre depth in clay soils.

- *National Environment Protection (Assessment of Site Contamination) Measure* - NEPM (2013) – Interim soil vapour Health Investigation Levels (HILS) for Volatile Organic Chlorinated Compounds (Commercial / Industrial D), 0 – 1 metre depth.

Where no NEPM criteria exists and analytes have been detected in concentrations above the limit of reporting, then results have been screened against a secondary soil vapour screening criteria as follows:

- *Safe Work Australia (SWA) (2022) Workplace Exposure Standards for Airborne Contaminants* (8-hour time weighted average).

The measured sub-slab gas concentrations are not exposure concentrations in indoor or outdoor air and the actual exposure concentration will be significantly less than the measured soil vapour concentration due to processes of diffusion and dilution/mixing within the soil profile and in the indoor/ambient air environments (collectively referred to as attenuation). An attenuation factor of 0.1 for soil vapour to indoor is consistent with guidance from the NEPM (2013) for chlorinated compounds. These screening values are highly conservative, and exceedance of these screening values does not indicate a health risk and merely indicates that further risk assessment may be warranted.

Screening criteria for the identified primary potential contaminants of concern, including compounds chemicals detected above the limit of reporting (LOR), are presented in **Table 8.2**.

Table 8.2: Soil Vapour Assessment Criteria

Chemical of Concern in Soil Vapour	Soil Vapour Screening Criteria (mg/m^3)	Screening Criteria Reference
Benzene	5	NEPM (2013) HSL D (0 - <1m, clay)
Toluene	6,500	NEPM (2013) HSL D (0 - <1m, clay)
Ethylbenzene	1,800	NEPM (2013) HSL D (0 - <1m, clay)
Xylene (total)	1,200	NEPM (2013) HSL D (0 - <1m, clay)
Naphthalene	4	NEPM (2013) HSL D (0 - <1m, clay)
F1 (TRH C6-C10 - BTEX)	1,000	NEPM (2013) HSL D (0 - <1m, clay)
F2 (TRH >C10-C12 - Naphthalene)	800	NEPM (2013) HSL D (0 - <1m, clay)
1,1,1-trichloroethane (1,1,1-TCA)	230	NEPM (2013) Interim HIL D for VOCC
cis-1.2-Dichloroethene	0.3	NEPM (2013) Interim HIL D for VOCC
Tetrachloroethene (PCE)	8	NEPM (2013) Interim HIL D for VOCC
Trichloroethene (TCE)	0.08	NEPM (2013) Interim HIL D for VOCC
Vinyl Chloride	0.1	NEPM (2013) Interim HIL D for VOCC
1,2,4-Trimethylbenzene	123	SWA (2022) Workplace Exposure Standards
Acetone	1,185	SWA (2022) Workplace Exposure Standards
Carbon Disulfide	31	SWA (2022) Workplace Exposure Standards
Cyclohexane	350	SWA (2022) Workplace Exposure Standards
Ethanol	1,180	SWA (2022) Workplace Exposure Standards
Heptane	164	SWA (2022) Workplace Exposure Standards

9 Results

9.1 Weather Conditions

Weather conditions may influence shallow soil vapour concentrations. For that reason, weather records for October 2023 have been evaluated as part of this assessment.

The magnitude of the effect of changes in soil vapour concentration in response to changes in soil moisture content has not been clearly established in the literature, however, increasing moisture content in the soil profile is expected to have a minor impact on soil vapour concentrations.

In the 24 hours prior to the installation of the Vapour Pins™, rainfall at Bankstown was 0.0mm and 0.0mm in the 24 hours prior to that. No rainfall was recorded on the day of sampling.

Temperature of the soil profile also has an effect on soil pore vapour concentrations, although the effect is relatively small.

The weather conditions prevailing during the period leading up to the soil vapour testing and during the time of the testing (Bankstown) were 12.2^0 C to 29.4^0 C the day prior to sampling and 11.5^0 C to 32.1^0 C on the day of sampling. In comparison to the monthly average temperate for Bankstown ion October (12.1^0 C to 26.2^0 C) the weather conditions are considered to be marginally warmer than average, although with the typical range of weather variation for that month.

Accordingly, vapour results can be considered to be representative of normal conditions.

9.2 Field Observations

No current potential sources of contamination were identified at the Site, nor were any areas of potential contamination such as areas of fuel/oil staining of concrete surfaces or staining / discolouration of soils and/or odours soils identified.

No potential hazardous building materials were identified to be present at the Site, which were considered to pose a potential contamination risk.

Soil conditions encountered at the Site were relatively consistent and generally consisted of three (3) main types of materials (refer **Appendix C**):

- Surface covering: Layer of compacted gravel (DGB) covers the central and western portion of the Site, outside of the areas covered by buildings. The DGB layer is present from a depth of 0.0 to 0.2 metres, which consist of a grey/brown gravel (up to 20mm) and fine grained sand/silt. Due to the area's typical use as a carpark, the surface layer is well compacted.

- Fill material: Silty clay soil mixed with gravel and minor amounts of crushed rock, extending to a depth of approximately 0.4 to 0.6 metres below ground level (thickness of 0.2 to 0.4 metres). The fill materials were firm to stiff, with low to moderate plasticity clay.

- Natural soil: Silty clay mottled yellow/brown/grey, stiff, moist, moderate to high plasticity, with minor ironstone gravel inclusions.

Other than some minor inclusions of brick fragments within the fill materials at BH1 and BH5, no other anthropogenic materials were identified within the subsurface soils.

No asbestos-containing materials (ACM) were visibly identified in any areas of the Site, including within the fill materials.

No groundwater inflow was identified to be present within the depths of the investigation, which extended.

9.3 Soil Contamination Analytical Results

Analytical results are provided in summary tables included in **Appendix B**, with the laboratory certificates provided in **Appendix G**. The sampling locations are shown on **Figure 2**.

The results from the analytical program are summarised as follows:

- Concentrations of all heavy metals were reported to be below the adopted site assessment criteria.
- Concentrations of Polycyclic Aromatic Hydrocarbons (PAH) were reported to below the adopted site assessment criteria.
- Concentrations of semi-volatile and volatile Total Recoverable Hydrocarbons (TRH), Benzene, Toluene, Ethylbenzene and Xylenes and naphthalene (BTEXN) were reported to be less than the laboratory limit of reporting (LOR) and below the adopted site assessment criteria.
- Concentrations of Volatile Organic Compounds (VOC) were reported to be less than the laboratory limit of reporting (LOR) and below the adopted site assessment criteria.
- Concentrations of Organochlorine Pesticides (OCP) were reported to be less than the laboratory limit of reporting (LOR) and below the adopted site assessment criteria.
- Concentrations of Polychlorinated Biphenyls (PCB) were reported to be less than the laboratory limit of reporting (LOR) and below the adopted site assessment criteria.
- No respirable asbestos fibres were identified within any of the soil samples analysed.
- One (1) soil sample (BH1/0.3) was reported to contain a small, single fragment of asbestos-containing material (ACM), which was reported to be a 14x10x4mm fragment of cement sheet containing Chrysotile asbestos. No ACM was identified within any other sample.

9.4 Sub-slab Soil Vapour Analytical Data

Soil vapour was sampled from beneath the concrete pavement of the former dry cleaning premise, in the area of the premise that was subject to historical storage of dry cleaning waste products as per the details of the EPA Notice (refer **Appendix H**). The soil vapour sample was subject to analysis for a suite of 62 volatile organic compounds, comprising chlorinated compounds and petroleum hydrocarbons.

Results are presented in **Appendix B**, with the laboratory reports provided in **Appendix G**.

Concentrations of all analytes in soil vapour were reported below the adopted screening levels, with only low level concentrations of the following analytes being reported above the laboratory limit of reporting:

- Volatile Total Recoverable Hydrocarbons:
  - Benzene: 0.32 mg/m^3 (assessment criteria is 5 mg/m^3).
  - Toluene: 0.65 mg/m^3 (assessment criteria is 6,500 mg/m^3).
  - Ethylbenzene: 0.186 mg/m^3 (assessment criteria is 1,800 mg/ m^3).
  - Xylene (total): 0.299 mg/m^3 (assessment criteria is 1,200 mg/m^3).
- Volatile Organic Compounds:
  - 1,2,4-Trimethylbenzene: 19 ug/m^3 (below the screening criteria of 123,000 ug/m^3).
  - 1,2-Dichloropropane: 53 ug/m^3 (no available screening criteria).
  - 4-Ethyltoluene: 17 ug/m^3 (no available screening criteria).
  - Acetone: 1,600 ug/m^3 (below the screening criteria of 1,185,000 ug/m^3).
  - Carbon Disulfide: 40 ug/m^3 (below the screening criteria of 31,000 ug/m^3).
  - Cyclohexane: 2,000 ug/m^3 (below the screening criteria of 350,000 ug/m^3).
  - Ethanol: 360 ug/m^3 (below the screening criteria of 1,800,000 ug/m^3).
  - Heptane: 1,600 ug/m^3 (below the screening criteria of 164,000 ug/m^3).
  - Hexane: 1,900 ug/m^3 (below the screening criteria of 164,000 ug/m^3).
  - Tetrachloroethene: 3,900 ug/m^3 (below the adopted screening level of 8,000 ug/m^3).

9.5 QA / QC Results

The QA/QC results were assessed against the pre-determined DQI as shown in **Table 9.1**.

Table 9.1: Quality Assurance / Quality Control Results

Data Quality Indicator	Result	DQI Achieved
Precision		
Blind duplicates (inorganics)	<30% RPD	Yes
Laboratory Duplicates (inorganics)	<30% RPD	Yes
Laboratory Duplicates (organics)	<50% RPD	Yes
Accuracy		
Surrogate spikes	60 – 140%	Yes
Matrix spikes (inorganics)	60 – 140%	Yes

Data Quality Indicator	Result	DQI Achieved
Matrix spikes (organics)	70 – 130%	Yes
Laboratory Blanks	<PQL	Yes
Representativeness		
Sampling appropriate for media and analytes	All Samples	Yes
Samples extracted and analysed within holding times	NEPM (2013) limits and laboratory limits required for NATA accreditation	Yes
Completeness		
Soil description and COCs completed and appropriate	Borehole logs included in report. COCs signed and included in report	Yes
Appropriate documentation	Field sheet documenting conditions during sampling, cannister vacuum and times of sampling	Yes
Satisfactory frequency and result for QC samples	All Samples	Yes
Comparability		
Standard operating procedures used for sample collection and handling	All Samples	Yes
NATA-accredited analytical methods used for all analytes	All Samples	Yes
Consistent field conditions, sampling staff and laboratory analysis	All Samples	Yes
Limits of reporting appropriate and consistent	All Samples	Yes

Based on the results of the QA/QC program as outlined above, the data produced from the assessment works are considered to be precise, accurate, representative, complete and comparable. A minor exceedance of the 30% RPD value for the blind duplicate sample paid (BH5/0.5 and QA1) was reported for lead (35%) and a minor exceedance of the 30% RPD value for the laboratory duplicate sample was also reported for lead (60%). These minor variance are likely attributed sample heterogeneity and as the sample concentrations were low, close to the PQL value and well below the adopted site assessment criteria, these results are not considered to affect the overall quality of the reported data.

Therefore the data is considered to be of an acceptable quality upon which appropriate conclusions and decisions can be made with respect to the environmental conditions at the Site.

10 Discussion

Section 7.1 identified the key problem for which this assessment sought to investigate, which was to determine whether there are any significant contamination issues at the Site that would pose a potential constraint to the proposed rezoning of the Site from SP2 (Infrastructure) to B1 (Neighbourhood Centre), under a commercial / industrial land use setting.

In accordance with the decision-making process for assessing urban redevelopment sites detailed in DEC (2006) and the pre-determined project DQOs, the decisions required to be made are discussed below.

Does contamination occur at the Site at concentrations that pose an unacceptable level of risk to human health and/or environmental receptors based on a commercial / industrial land use setting?

And if so:

What measures could be adopted to mitigate or manage the risk?

The contamination assessment has identified that there have been limited potentially contaminating activities undertaken at the Site, which include:

- Former use of part of the retail premises as a shopfront dry cleaners, including the storage of dry cleaning waste bi-products.
- Use of fill materials (potentially imported from an unknown source) across the central and western portions of the Site.
- Use of the central and western portions of the Site for parking of motor vehicles and equipment / material storage.

Potential offsite sources of contamination have also been identified, limited to:

- Atmospheric fallout of fine particulates from the combustion of fuels in motor vehicles associated with the use of the adjacent arterial road network.
- Industrial land use activities in the local area.

The CSM presented in **Section 5** determined that based on a number of factors, each of these potential sources of contamination posed only a low risk of causing contamination to the Site.

The assessment did identify that the retail premise that was formally operated as a dry cleaners was subject to a former Notice of Clean-up Action (dated 15 March 2013) that was issued by NSW EPA. The Notice related to the apparent inappropriate storage of a dry cleaning chemical bi-product (Perchloroethylene [PERC]), which was understood to be stored within containers within the rear garage portion of the premise. Recent discussions were had with EPA officers to further assess the significance of the Notice (refer **Appendix H**), who advised that EPA records indicate that the requirements of the Notice had been adequately addressed in the past and that the Clean-up Notice was closed and no longer in force.

The subsequent programs of soil and soil vapour sampling were designed to target all of the identified potential on and offsite sources of contamination, based on the outcomes of the CSM.

With reference to the results as described in **Section 9** and as tabulated in **Appendix B**, it has been confirmed that concentrations of all identified potential contaminants of concern in both soil and soil vapour were reported to be low and below the adopted site assessment criteria, with the exception of:

- A small fragment of bonded-ACM being identified within the subsurface soils (fill materials) at BH1 (depth of 0.2 – 0.3 metres).

The asbestos result relates to a sample of fill material present within the central portion of the Site, beneath the compacted gravel (DGB) ground surface covering. The fill materials in this location were not identified to contain ACM at the time of the site investigation works, although it is noted that minor amount of brick rubble was identified at this location.

The asbestos result is not considered to pose a significant risk to the continued use of the Site for commercial / industrial purposes, given that:

- The asbestos was limited to a small fragment of bonded fibro-cement sheeting, which is a low risk form of asbestos.
- No asbestos fibres (high risk asbestos) were identified in the soil sample at this location, nor elsewhere across the Site.
- No evidence has been identified to indicate that ACM would be widespread throughout the Site, and it is most likely that the ACM is associated with the limit extent of fill materials that have been identified to be present at the Site.
- The fill material at this location (and elsewhere across the Site), are covered by a layer of compacted gravel (DGB), which at a thickness of approximately 0.2 metres, is considered to be adequate to mitigate exposure risk to the asbestos during normal operations of the Site under a commercial / industrial land use setting.

Regarding the use of part of the retail premise as a dry cleaners:

- It has been confirmed that the requirements of the former Notice of Clean-up Action have been satisfactorily addressed by the former tenant and that no further action is required. Based on the discussions with EPA, it is understood that the Notice was issued following a widespread program of compliance audits of shopfront dry cleaners throughout the Sydney region by EPA back in 2013, rather than the EPA having any particular reason for concern regarding the operations of this particular dry cleaning business.
- No evidence of the former use of the premise as a dry cleaning business were identified by the investigation, including no evidence of chemical spillage/leakage at the premise (eg. surface staining, deterioration of concrete pavement) or in the subsurface soils (eg. staining or odours).
- The results of the soil sampling completed in this area of the Site (BH4) did not show any indications of the presence of contamination, with results for all potential contaminants of concern reported at concentrations below the adopted site assessment criteria, including VOCs, which were reported at levels below the laboratory limit of reporting.

- The results from the soil vapour sampling that targeted the area of the Site understood to have been used for the storage of PERC reported concentrations of all potential contaminants of concern at concentrations below the adopted site assessment criteria. Low level detections of several VOCs were reported, including TCE and PCE (primary indications of dry cleaning chemical use), although these were all at concentrations below the adopted site assessment criteria applicable to a commercial / industrial land use setting.

Based on the overall findings from the assessment, it has been determined that no further investigations are required, that the Site has a low contamination risk and that the Site is suitable for use under a commercial / industrial land use setting.

11 Conclusions

Metech Consulting was commissioned to undertake a contamination assessment of the property located at 4 – 6 Chapel Road, Bankstown, for the purpose of identifying any constraints posed by the presence of contamination that may affect its suitability to be used for commercial / industrial purposes.

The scope of the assessment undertaken was developed in accordance with the NEPM risk-based framework that included a detailed evaluation of the history of the Site and surroundings properties to identify the environmental setting and past and present land use activities that may pose a contamination risk, which was supported by a program of targeted sampling and analysis to identify whether contamination was present at the Site, based on the CSM that had been developed.

The objectives of the assessment were to:

- Assess current and historical land use operations for the Site and adjacent properties to identify potential on and off-site sources of contamination;
- Determine the nature of potential contaminants (if any) and the potential location(s) of contamination issues across the Site;
- Identify the presence of any potentially significant contamination issues at the Site that may pose a potential constraint to the ongoing use of the Site under a commercial / industrial land use setting; and
- Determine the suitability of the Site for commercial / industrial land use.

Based on a detailed evaluation of the site history, it was determined that the Site was historically used for residential purposes (from at least 1930 through to the mid 1960s), then later (around 1950s) and in conjunction with ongoing residential use of parts of the Site, was developed for commercial use, which included retail premises fronting Chapel Road. The existing site buildings were constructed by the 1970s and there has been little change to the layout and configuration of the Site since this time, with retail premises present within the eastern portion and the central and western portions being undeveloped and generally used for carparking and storage, ancillary to the retail use of the Site.

The majority of businesses that have operated from the retail premises have been assessed to pose a low contamination risk, which have included use for a newsagent, chemist, cake shop, fruit shop, butcher shop, dance studio, taxation consultant, medical practitioner, fishing tackle & bait, variety store and massage parlour. However it has been identified that one of the retail shops (4/6a Chapel Road) was operated as a shopfront dry cleaners from approximately 2008 to 2017, which was assessed to pose a potential contamination risk to the Site.

With reference to the project objectives, the following key findings are made:

- Limited potentially significant sources of contamination were identified at the Site relating to past and present land use activities, which included the former use of part of Site as a shopfront dry cleaners, the use of parts of the Site for carparking and equipment / material storage and the presence of fill materials originating from an unknown source that are present across the central and western portions of the Site.

- Based on the environmental setting of the Site, potential offsite sources of contamination were assessed to be limited to atmospheric fallout of fine particulates from the combustion of fuels in motor vehicles associated with the use of the adjacent arterial road network, with other industrial land use activities undertaken in the local area assessed to be located downgradient of the Site, hence posing a negligible contaminant migration risk.

- A comprehensive program of soil and soil vapour sampling and analysis was designed based on the outcomes of the CSM, which targeted the identified potential sources of contamination. The results from the sampling programs determined that concentrations of all identified potential contaminants of concern in both soil and soil vapour were low and below the adopted site assessment criteria applicable to a commercial / industrial land use setting, with the exception of asbestos at one location.

- The small fragment of fibro-cement sheeting containing bonded-ACM was identified within the subsurface soils (fill materials) at BH1, which was assessed to not posing a significant risk to the continued use of the Site for commercial / industrial purposes, given that:

    - The asbestos was limited to a fragment of bonded fibro-cement sheeting, which is a low risk form of asbestos.

    - No asbestos fibres (high risk asbestos) were identified in the soil sample at this location, nor elsewhere across the Site.

    - No evidence has been identified to indicate that ACM would be widespread throughout the Site, and it is most likely that the ACM is associated with the limit extent of fill materials that have been identified to be present at the Site.

    - The fill material at this location (and elsewhere across the Site), are covered by a layer of compacted gravel (DGB), which at a thickness of approximately 0.2 metres, is considered to be adequate to mitigate exposure risk to the asbestos during normal operations of the Site under a commercial / industrial land use setting.

- No evidence was identified to indicate that the former use of part of the Site as a dry cleaners premise has caused any significant contamination that may affect the continued use of the Site for commercial / industrial purposes, with:

    - Confirmation from NSW EPA that the requirements of the former Notice of Clean-up Action have been complied with; and

    - Concentrations of all potential contaminants of concern in soil and soil vapour being reported at concentrations below the adopted site assessment criteria.

Based on these findings it is concluded that contamination is unlikely to pose a significant constraint to the ongoing use of the Site and that the Site is suitable for commercial / industrial land use without the need for any further investigation or management action.

Should redevelopment of the Site be proposed in the future, then the extent of asbestos contamination within the fill materials should be further assessed and managed as part of the development works.

12 References

Contaminated Land Management Act 1997.

Canterbury Bankstown Local Environment Plan 2023

Department of Urban Affairs and Planning (1998) *Planning Guidelines: SEPP 55 (Remediation of Land) – Managing Land Contamination*

Environmental Planning and Assessment Act 1979.

National Environment Protection Council (NEPC 2013) *National Environment Protection (Assessment of Site Contamination) Measure 1999*.

NSW Environment Protection Authority (EPA 2020) *Contaminated Land Guidelines: Consultants Reporting on Contaminated Land.*

NSW Office of Environment and Heritage (OEH 2016) *SALIS: NSW Soil & Land Information System*.

Protection of the Environment Operations Act 1997.

State Environmental Planning Policy (Resilience and Hazards) 2021

13 Limitations

Metech Consulting prepared this report in accordance with the scope of work as outlined in our proposal to Tony Hanna & Sons Pty Ltd and Lou & Mansour Pty Ltd dated 22 September 2023 and in accordance with normal prudent practice and by reference to applicable environmental regulatory authority and industry standards, guidelines and assessment criteria in existence at the date of this report and any previous site investigation and assessment reports referred to in this report.

This report should be read in full and no excerpts are to be taken as representative of the findings. No responsibility is accepted by Metech Consulting for use of any part of this report in any other context.

Subsurface conditions can vary across a particular site and cannot be exhaustively defined by the investigations carried out prior to this report. It is unlikely therefore that the results and estimations expressed or used to compile this report will represent conditions at any location removed from the specific points of sampling.

Site conditions may change over time. This report is based on conditions encountered at the Site at the time of the report and Metech Consulting disclaims responsibility for any changes that may have occurred after this time.

The conclusions presented in this report represent Metech Consulting's professional judgement based on information made available during the course of this assignment and are true and correct to the best of Metech Consulting's knowledge as at the date of the assessment.

Metech Consulting did not independently verify all of the written or oral information provided to Metech Consulting during the course of this investigation. While Metech Consulting has no reason to doubt the accuracy of the information provided to it, the report is complete and accurate only to the extent that the information provided to Metech Consulting was itself complete and accurate. Metech Consulting assumes no liability for any inaccuracies in or omissions to that information.

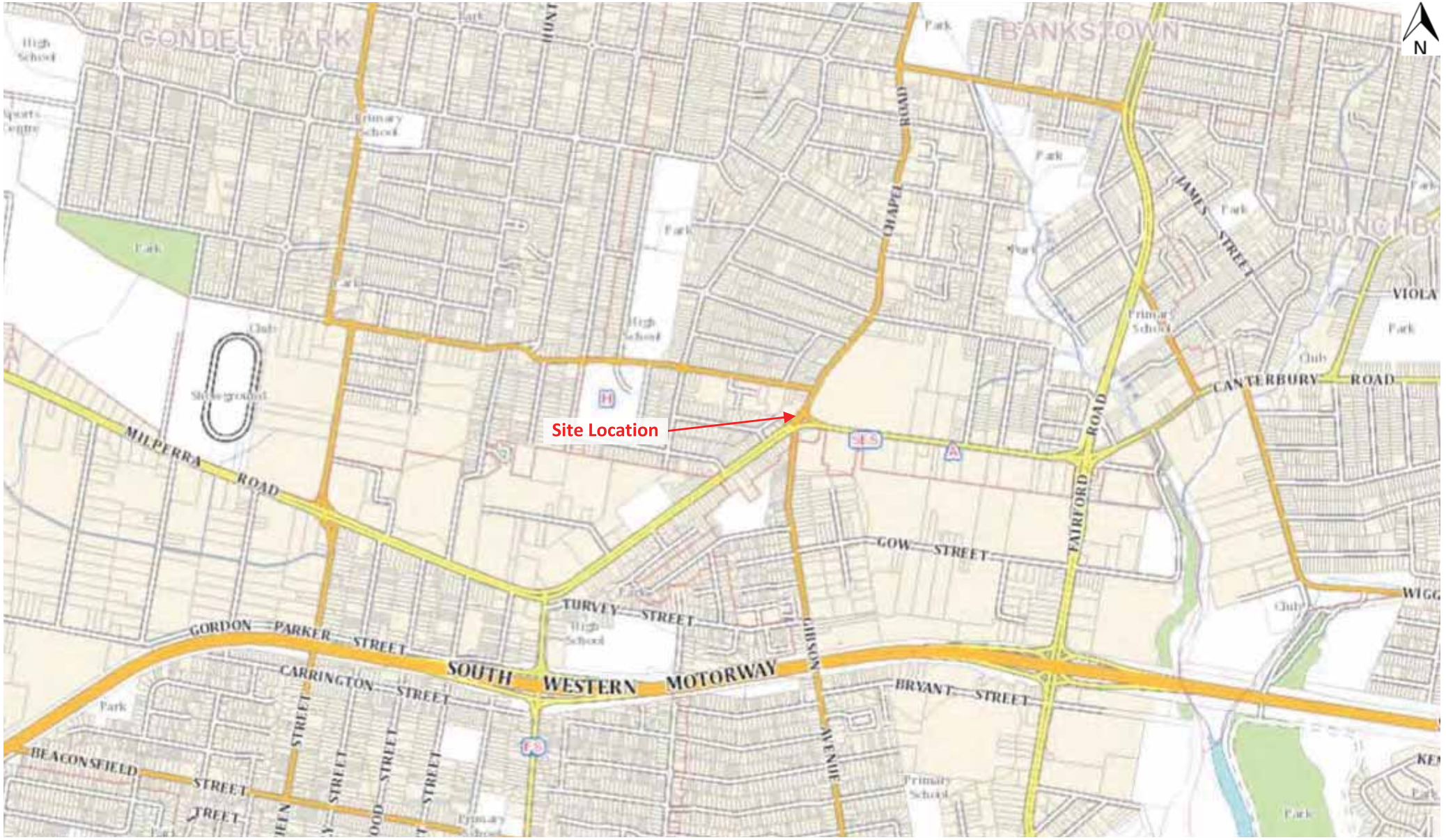
This report does not purport to give legal advice. This advice can only be given by qualified legal advisors.

To the extent permitted by law, Metech Consulting expressly disclaims and excludes liability for any loss, damage, cost or expenses suffered by any third party relating to or resulting from the use of, or reliance on, any information contained in this report. Metech Consulting does not admit that any action, liability or claim may exist or be available to any third party.

13.1 User Reliance

This report has been prepared exclusively for Tony Hanna & Sons Pty Ltd and Lou & Mansour Pty Ltd and may not be relied upon by any other person or entity without Metech Consulting's express written permission.

Figures



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Project number:	EP241-RP01
Source:	SIX Maps, 2018
Date:	11 October 2023

TITLE:	Figure 1 – Site Location
PROJECT:	Contamination Assessment 4 – 6 Chapel Road, Bankstown, NSW
CLIENT:	Tony Hanna & Sons Pty Ltd Loue & Mansour Pty Ltd

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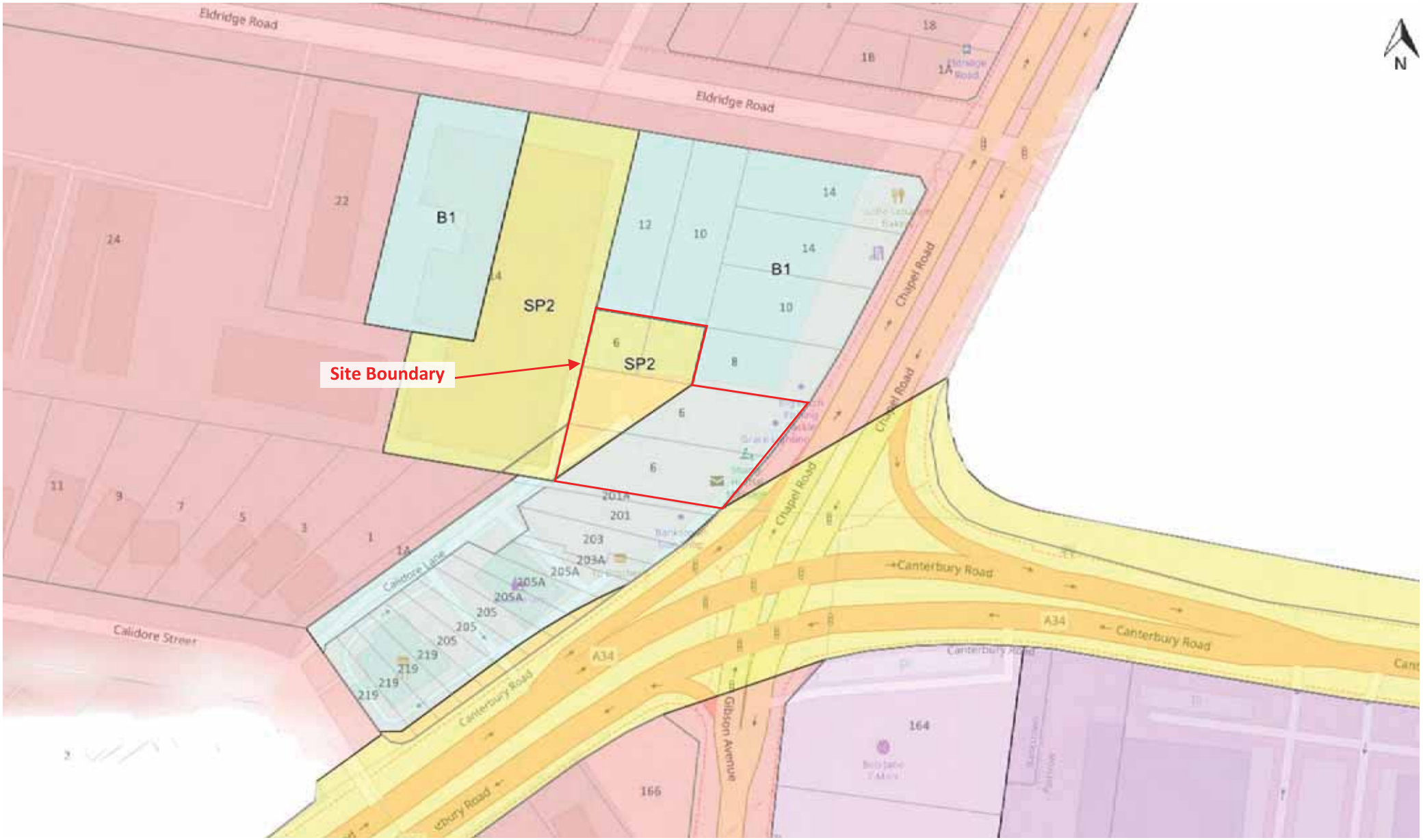
Project number:	EP241-RP01
Source:	SIX Maps, 2018
Date:	31 October 2023

TITLE:	Figure 2 – Site Layout and Sampling Locations
PROJECT:	Contamination Assessment 4 – 6 Chapel Road, Bankstown, NSW
CLIENT:	Tony Hanna & Sons Pty Ltd Loue & Mansour Pty Ltd



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Project number:	EP241-RP01
Source:	Canterbury-Bankstown Council, 2023
Date:	11 October 2023

TITLE:	Figure 3 – Existing Property Land Use Zoning
PROJECT:	Contamination Assessment 4 – 6 Chapel Road, Bankstown, NSW
CLIENT:	Tony Hanna & Sons Pty Ltd Loue & Mansour Pty Ltd

Appendix A
Site Photographs

Photograph 1: Retail shops in the eastern portion of the Site fronting Chapel Street, facing north.

Photograph 2: Retail shops in the eastern portion of the Site fronting Chapel Street, facing south.

Photograph 3: Rear (western) side of the retail shops (showing the shops in Lot 2 DP 655844), facing east.

Photograph 4: Rear (western) side of the retail shops (showing the shops in Lot 1 DP 655843), facing east.

Photograph 5: The carpark area in the western portion of the Site facing south west, with the unnamed laneway that provides access to the carpark shown in the background.

Photograph 6: The carpark area in the western portion of the Site facing north east, with the rear facades of the retail shops shown in the background.

Photograph 7: Typical ground condition encountered within the western portion of the Site (carpark area).

Photograph 8: The northern eastern portion of the Site, which is currently predominantly vacant, with minor material storage.

Photograph 9: The rear portion of the former dry-cleaning premises and the location of where it is understood that dry cleaning waste the subject of an EPA Clean-up Notice were stored (building with green roller door).

Photograph 10: Soil vapour sampling setup that was completed in the area the subject of the former NSW EPA Clean-up Notice.

Appendix B
Analytical Result Summary Tables

Table 1
Contamination Assessment: 4 - 6 Chapel Street, Bankstown, NSW
Sample Register

Sample ID	Date Sampled	Sample Interval	Sample Type	Material Description	Analytes Tested [1]
BH1/0.3	29/9/2023	0.2-0.3	Soil	Fill material	Metals, TRH, BTEXN, PAH, OCP, PCB, Asbestos
BH1/0.5	29/9/2023	0.4-0.5	Soil	Silty clay	Hold
BH1/1.0	29/9/2023	0.9-1.0	Soil	Silty clay	Hold
BH2/0.3	29/9/2023	0.2-0.3	Soil	Fill material	Metals, Asbestos
BH2/0.5	29/9/2023	0.4-0.5	Soil	Silty clay	Metals, TRH, BTEXN, PAH
BH2/1.0	29/9/2023	0.9-1.0	Soil	Silty clay	Hold
BH3/0.2	29/9/2023	0.1-0.2	Soil	Fill material	Metals, TRH, BTEXN, PAH, Asbestos
BH3/0.5	29/9/2023	0.4-0.5	Soil	Silty clay	Hold
BH3/1.0	29/9/2023	0.9-1.0	Soil	Silty clay	Hold
BH4/0.0	29/9/2023	0.0-0.1	Soil	Fill material	PAH, VOC, Asbestos
BH4/0.5	29/9/2023	0.4-0.5	Soil	Silty clay	PAH, VOC
BH4/1.0	29/9/2023	0.9-1.0	Soil	Silty clay	Hold
BH5/0.1	29/9/2023	0.0-0.1	Soil	Fill material	Metals, TRH, BTEXN, PAH, OCP, PCB, Asbestos
BH5/0.5	29/9/2023	0.4-0.5	Soil	Fill material	Metals, PAH
BH5/1.0	29/9/2023	0.9-1.0	Soil	Silty clay	Hold
QA1	29/9/2023	0.9-1.0	Soil	Duplicate of BH5/0.5	Metals
SV1	24/10/2023	-	Soil vapour	-	VOC, TRH, BTEXN

[1] **Notes:**

Metals = As, Cd, Cr, Cu, Pb, Hg, Ni and Zn
PAH = Polycyclic Aromatic Hydrocarbons
VOCs = Volatile Organic Compounds
TRH = Total Recoverable Hydrocarbons
BTEXN = Benzene, Toluene, Ethylbenzene, Xylenes, Napthalene
OCP = Organochlorine Pesticides
PCB = Polychlorinated Biphenyls

Table 2
Contamination Assessment: 4 - 6 Chapel Street, Bankstown, NSW
Soil Analytical Results - Heavy Metals and Asbestos

All units in mg/kg (except where indicated)

Sample ID	Depth	Sampling Date	Metals								Asbestos
			Arsenic (As)	Cadmium (Cd)	Chromium (Cr)	Copper (Cu)	Lead (Pb)	Mercury (Hg)	Nickel (Ni)	Zinc (Zn)	
PQL			1.0	0.3	0.5	0.5	1.0	0.05	0.5	2.0	-
Environmental Investigation Levels[1]			160 [5]	3 [7]	530 [8]	300 [6]	1,800 [5]	1 [7]	290 [9]	710 [10]	-
Health Investigation Levels[2]			3,000	900	3,600 [4]	240,000	1,500	730 [3]	6,000	400,000	Detection
BH1/0.3	0.2-0.3	29/9/2023	6.0	0.4	21	39	70	0.06	17	140	**Yes**
BH2/0.3	0.2-0.3	29/9/2023	5.0	nd	8.7	10	13	nd	3.1	37	No
BH2/0.5	0.4-0.5	29/9/2023	5.0	nd	8.8	8.2	7.0	nd	1.7	16	-
BH3/0.2	0.1-0.2	29/9/2023	6.0	nd	12	12	14	nd	3.0	20	No
BH4/0.0	0.0-0.1	29/9/2023	-	-	-	-	-	-	-	-	No
BH5/0.1	0.0-0.1	29/9/2023	4.0	nd	38	42	50	0.06	42	180	No
BH5/0.5	0.4-0.5	29/9/2023	6.0	nd	8.5	35	40	0.06	3.1	71	-
QA1	0.4-0.5	29/9/2023	6.0	0.3	11	39	57	0.07	3.6	89	-

[1] Environmental Investigation Levels (EILs) - NEPC (2013) *National Environment Protection (Assessment of Site Contamination) Measure 1999*. Commercial and industrial land use setting.

[2] Health Investigation Levels (HILs) - NEPC (2013) *National Environment Protection (Assessment of Site Contamination) Measure 1999.* HIL D: Commercial/industrial, includes premises such as shops, offices, factories and industrial sites.

[3] Based on inorganic mercury.

[4] Due to the absence of criteria for Cr (Total), Cr(VI) criteria has been adopted for initial screening purposes.

[5] Generic EIL adopted for Aged Contaminants (NEPC 2013).

[6] CEC data not available to calculate site-specific criteria for Cu based on NEPC (2013) requirements. Conservatively, the ACL for soils with a CEC of 10.1 $cmol_c/kg$ and organic carbon content of 1.3 % has been adopted. A pH of

[7] Due to absence of criteria in NEPC (2013), the provisional phytotoxicity-based investigation levels (NSW DEC 2006) have been adopted for initial screening purposes.

[8] Clay content data not available to calculate site-specific criteria for Cr(III) based on NEPC (2013) requirements. Conservatively, the ACL for soils with 5% clay content has been adopted (commercial and industrial).

[9] CEC data not available to calculate site-specific criteria for Ni based on NEPC (2013) requirements. Conservatively, the ACL for soils with a CEC of 10.1 $cmol_c/kg$ has been adopted (commercial and industrial).

[10] CEC data not available to calculate site-specific criteria for Zn based on NEPC (2013) requirements. Conservatively, the ACL for soils with a CEC of 10 $cmol_c/kg$ and a pH of 7.0 has been adopted (commercial and industrial).

BOLD Above EIL

Above HIL

PQL: Practical Quantification Limit
nd: Concentration below PQL

Table 3
Contamination Assessment: 4 - 6 Chapel Street, Bankstown, NSW
Soil Analytical Results - Polycyclic Aromatic Hydrocarbons

All units in mg/kg

/Users/metechconsulting/Documents/EP241 - Bankstown/10 Report/[EP241_RP01 - Appendix B (Result Tables).xlsx]3. Soil-PAH

			Polycyclic Aromatic Hydrocarbons																			
Sample ID	Depth	Sampling Date	Naphthalene	2-methylnaphthalene	1-methylnaphthalene	Acenaphthylene	Acenaphthene	Fluorene	Phenanthrene	Anthracene	Fluoranthene	Pyrene	Benzo(a)anthracene	Chrysene	Benzo(b&j)fluoranthene	Benzo(k)fluoranthene	Benzo(a)pyrene	Indeno(1,2,3-cd)pyrene	Dibenzo(ah)anthracene	Benzo(ghi)perylene	Carcinogenic PAHs, BaP TEQ	Total PAH
PQL			**0.1**	**0.1**	**0.1**	**0.1**	**0.1**	**0.1**	**0.1**	**0.1**	**0.1**	**0.1**	**0.1**	**0.1**	**0.1**	**0.1**	**0.1**	**0.1**	**0.1**	**0.1**	**0.2**	**0.8**
Environmental Investigation Levels[1]			**370**	-	-	-	-	-	-	-	-	-	-	-	-	-	**0.7**	-	-	-	-	-
Health Investigation Levels[2]			-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	**40[4]**	**4,000**
BH1/0.3	0.2-0.3	29/9/2023	nd	nd	nd	nd	nd	nd	0.1	nd	0.2	0.2	nd	0.1	0.1	nd	nd	nd	nd	nd	nd	nd
BH2/0.5	0.4-0.5	29/9/2023	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
BH3/0.2	0.1-0.2	29/9/2023	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
BH4/0.0	0.0-0.1	29/9/2023	nd	nd	nd	nd	nd	nd	nd	nd	0.2	0.2	nd	nd	0.1	nd	nd	nd	nd	0.1	nd	nd
BH4/0.5	0.0-0.1	29/9/2023	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
BH5/0.1	0.0-0.1	29/9/2023	nd	nd	nd	nd	nd	nd	0.6	0.1	1	1	0.3	0.4	0.5	0.2	0.4	0.3	nd	0.3	0.6	5.2
BH5/0.5	0.4-0.5	29/9/2023	nd	nd	nd	nd	nd	nd	0.1	nd	0.3	0.3	0.1	0.1	0.2	nd	0.1	0.1	nd	0.1	nd	1.6

[1] Environmental Investigation Levels (EILs) - NEPC (2013) *National Environment Protection (Assessment of Site Contamination) Measure 1999*. Commercial and industrial land use setting.

[2] Health Investigation Levels (HILs) - NEPC (2013) *National Environment Protection (Assessment of Site Contamination) Measure 1999.* HIL D: Commercial/industrial, includes premises such as shops, offices, factories and industrial sites.

[3] Generic EIL adopted for aged contaminants in soil (commercial and industrial).

[4] HIL based on the 8 carcinogenic PAHs and their TEFs [potency relative to B(a)P]. The B(a)P TEQ is calculated by multiplying the concentration of each carcinogenic PAH in the sample by its B(a)P TEF and summing these Where the B(a)P occurs in bitumen fragments it is relatively immobile and does not represent a significant health risk.

BOLD Above EIL

Above HIL

PQL: Practical Quantification Limit
nd: Concentration below PQL

Table 4
Contamination Assessment: 4 - 6 Chapel Street, Bankstown, NSW
Soil Analytical Results - Volatile Total Recoverable Hydrocarbons

All units in mg/kg

Z:\EP - Projects\EP225 - Woodpark\10 Report\[EP225_RP01 - Appendix B (Results Tables).xlsx]3. Soil-vTRH

Sample ID	Depth	Sampling Date	Volatile Total Recoverable Hydrocarbons (vTRH/BTEXN)								
			C_6-C_9	C_6-C_{10}	F1 (C6-C10 less BTEX)	Benzene	Toluene	Ethylbenzene	m+p-Xylene	o-Xylene	Naphthalene
PQL			20	25	25	0.1	0.1	0.1	0.2	0.1	0.5
Environmental Screening Levels[1]			-	-	215	95	135	185	95		370 [4]
Health Screening Levels - Vapour Intrusion (0 - <1m)[2]			-	-	310	4	-	-			-
Health Screening Levels - Management Limits[3]			-	-	800	-	-	-	-		-
BH1/0.3	0.2-0.3	29/9/2023	nd	nd	nd	nd	nd	nd	nd	nd	nd
BH2/0.5	0.4-0.5	29/9/2023	nd	nd	nd	nd	nd	nd	nd	nd	nd
BH3/0.2	0.1-0.2	29/9/2023	nd	nd	nd	nd	nd	nd	nd	nd	nd
BH5/0.1	0.0-0.1	29/9/2023	nd	nd	nd	nd	nd	nd	nd	nd	nd

[1] Environmental Screening Levels (ESLs) - NEPC (2013) *National Environment Protection (Assessment of Site Contamination) Measure 1999*. Commercial and industrial land use setting. 'FINE' soil type assessment criteria have been adopted based on site geological conditions.

[2] Health Screening Levels (HSLs) for Vapour Intrusion - NEPC (2013) *National Environment Protection (Assessment of Site Contamination) Measure 1999*. Commercial / industrial land use setting, 'CLAY' criteria has been adopted based on site geological conditions.

[3] Health Screening Levels (HSLs), Management Limits for TPH Fractions - NEPC (2013) *National Environment Protection (Assessment of Site Contamination) Measure 1999.* Commercial and industrial land use setting. 'FINE' soil type assessment criteria have been adopted based on site geological conditions.

[4] Environmental Investigation Levels (EILs) - NEPC (2013) *National Environment Protection (Assessment of Site Contamination) Measure 1999*. Generic EIL adopted for Aged Contaminants (NEPC 2013). (Commercial and Industrial)

BOLD Above ESL/EIL

Above HSL (Vapour Intrusion)

Above HSL (Management Limits)

PQL: Practical Quantification Limit
nd: Concentration below PQL
- : Not applicable

Table 5
Contamination Assessment: 4 - 6 Chapel Street, Bankstown, NSW
Soil Analytical Results - Semi-Volatile Total Recoverable Hydrocarbons

All units in mg/kg

/Users/metechconsulting/Documents/EP241 - Bankstown/10 Report/[EP241_RP01 - Appendix B (Result Tables).xlsx]5. Soil-svTRH

Sample ID	Depth	Sampling Date	Semi-Volatile Total Recoverable Hydrocarbons (svTRH/BTEXN)						
			C_{10}-C_{14}	C_{15}-C_{28}	C_{29}-C_{36}	>C_{10}-C_{16}	F2 >C10-C16 less Naphthalene	F3 >C_{16}-C_{34}	F4 >C_{34}-C_{40}
PQL			**20**	**45**	**45**	**25**	**25**	**90**	**120**
Environmental Screening Levels[1]			-	-	-	-	**170**	**2,500**	**6,600**
Health Screening Levels - Vapour Intrusion (0 - <1m)[2]			-	-	-	-	-	-	-
Health Screening Levels - Management Limits[3]			-	-	-	-	**1,000**	**5,000**	**10,000**
BH1/0.3	0.2-0.3	29/9/2023	nd	50	49	nd	nd	nd	nd
BH2/0.5	0.4-0.5	29/9/2023	nd	nd	nd	nd	nd	nd	nd
BH3/0.2	0.1-0.2	29/9/2023	nd	nd	nd	nd	nd	nd	nd
BH5/0.1	0.0-0.1	29/9/2023	nd	nd	nd	nd	nd	nd	nd

[1] Environmental Screening Levels (ESLs) - NEPC (2013) *National Environment Protection (Assessment of Site Contamination) Measure 1999*. Commercial and industrial land use setting. 'FINE' soil type assessment criteria have been adopted based on site geological conditions.

[2] Health Screening Levels (HSLs) for Vapour Intrusion - NEPC (2013) *National Environment Protection (Assessment of Site Contamination) Measure 1999*. Commercial / industrial land use setting, 'CLAY' criteria has been adopted based on site geological conditions.

[3] Health Screening Levels (HSLs), Management Limits for TPH Fractions - NEPC (2013) *National Environment Protection (Assessment of Site Contamination) Measure 1999.* Commercial and industrial land use setting. 'FINE' soil type assessment criteria have been adopted based on site geological conditions.

BOLD Above ESL/EIL

Above HSL (Vapour Intrusion)

Above HSL (Management Limits)

PQL: Practical Quantification Limit

Table 6
Contamination Assessment: 4 - 6 Chapel Street, Bankstown, NSW
Soil Analytical Results - Volatile Organic Compounds (1 of 3)

All units in mg/kg

/Users/metechconsulting/Documents/EP241 - Bankstown/10 Report/[EP241_RP01 - Appendix B (Result Tables).xlsx]6. Soil-VOCs-1

Sample ID	Depth	Sampling Date	Volatile Organic Compounds																					
			Dichlorodifluoromethane (CFC-12)	Chloromethane	Vinyl chloride (Chloroethene)	Bromomethane	Chloroethane	Trichlorofluoromethane	Acetone (2-propanone)	Iodomethane	1,1-dichloroethene	Acrylonitrile	Dichloromethane (Methylene chloride)	Carbon disulfide	trans-1,2-dichloroethene	MtBE (Methyl-tert-butyl ether)	1,1-dichloroethane	Vinyl acetate	cis-1,2-dichloroethene	Bromochloromethane	Chloroform (THM)	2,2-dichloropropane	1,2-dichloroethane
PQL			1	1	0.1	1	1	1	10	5	0.1	0.1	0.5	0.5	0.1	0.1	0.1	10	0.1	0.1	0.1	0.1	0.1
Environmental Investigation Levels[1]			-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Health Investigation Levels[2]			-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH4/0.0	0.1-0.2	29/9/2023	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
BH4/0.5	0.0-0.1	29/9/2023	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd

[1] Environmental Screening Levels (ESLs) - NEPC (2013) *National Environment Protection (Assessment of Site Contamination) Measure 1999*. Commercial and Industrial.

[2] Health Investigation Levels (HILs) - NEPC (2013) *National Environment Protection (Assessment of Site Contamination) Measure 1999*. HIL D: Commercial and Industrial.

BOLD Above EIL

Above HIL

PQL: Practical Quantification Limit
nd: Concentration below PQL
-: Not applicable

Table 7
Contamination Assessment: 4 - 6 Chapel Street, Bankstown, NSW
Soil Analytical Results - Volatile Organic Compounds (2 of 3)

All units in mg/kg

/Users/metechconsulting/Documents/EP241 - Bankstown/10 Report/[EP241_RP01 - Appendix B (Result Tables).xlsx]7. Soil-VOCs-2

Sample ID	Depth	Sampling Date	Volatile Organic Compounds																				
			1,1,1-trichloroethane	1,1-dichloropropene	Carbon tetrachloride	Dibromomethane	1,2-dichloropropane	Trichloroethene (Trichloroethylene, TCE)	2-nitropropane	Bromodichloromethane (THM)	MIBK (4-methyl-2-pentanone)	cis-1,3-dichloropropene	trans-1,3-dichloropropene	1,1,2-trichloroethane	1,3-dichloropropane	Dibromochloromethane (THM)	2-hexanone (MBK)	1,2-dibromoethane (EDB)	Tetrachloroethene (Perchloroethylene, PCE)	1,1,1,2-tetrachloroethane	Chlorobenzene	Bromoform (THM)	Styrene (Vinyl benzene)
PQL			0.1	0.1	0.1	0.1	0.1	0.1	10	0.1	1	0.1	0.1	0.1	0.1	0.1	5	0.1	0.1	0.1	0.1	0.1	0.1
Environmental Investigation Levels[1]			-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Health Investigation Levels[2]			-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH4/0.0	0.1-0.2	29/9/2023	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
BH4/0.5	0.0-0.1	29/9/2023	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd

[1] Environmental Screening Levels (ESLs) - NEPC (2013) *National Environment Protection (Assessment of Site Contamination) Measure 1999*. Commercial and Industrial.

[2] Health Investigation Levels (HILs) - NEPC (2013) *National Environment Protection (Assessment of Site Contamination) Measure 1999.* HIL D: Commercial and Industrial.

BOLD Above EIL

Above HIL

PQL: Practical Quantification Limit
nd: Concentration below PQL
-: Not applicable

Table 8
Contamination Assessment: 4 - 6 Chapel Street, Bankstown, NSW
Soil Analytical Results - Volatile Organic Compounds (3 of 3)

All units in mg/kg

/Users/metechconsulting/Documents/EP241 - Bankstown/10 Report/[EP241_RP01 - Appendix B (Result Tables).xlsx]8. Soil-VOCs-3

Sample ID	Depth	Sampling Date	Volatile Organic Compounds																					
			1,1,2,2-tetrachloroethane	1,2,3-trichloropropane	trans-1,4-dichloro-2-butene	Isopropylbenzene (Cumene)	Bromobenzene	n-propylbenzene	2-chlorotoluene	4-chlorotoluene	1,3,5-trimethylbenzene	tert-butylbenzene	1,2,4-trimethylbenzene	sec-butylbenzene	1,3-dichlorobenzene	1,4-dichlorobenzene	p-isopropyltoluene	1,2-dichlorobenzene	n-butylbenzene	1,2-dibromo-3-chloropropane	1,2,4-trichlorobenzene	Hexachlorobutadiene	1,2,3-trichlorobenzene
PQL			0.1	0.1	1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
Environmental Investigation Levels[1]			-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Health Investigation Levels[2]			-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH4/0.0	0.1-0.2	29/9/2023	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
BH4/0.5	0.0-0.1	29/9/2023	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd

[1] Environmental Screening Levels (ESLs) - NEPC (2013) *National Environment Protection (Assessment of Site Contamination) Measure 1999*. Commercial and Industrial.

[2] Health Investigation Levels (HILs) - NEPC (2013) *National Environment Protection (Assessment of Site Contamination) Measure 1999.* HIL D: Commercial and Industrial.

BOLD Above EIL

Above HIL

PQL: Practical Quantification Limit
nd: Concentration below PQL
- : Not applicable

Table 9
Contamination Assessment: 4 - 6 Chapel Street, Bankstown, NSW
Soil Analytical Results - Organochlorine Pesticides

All units in mg/kg

/Users/metechconsulting/Documents/EP241 - Bankstown/10 Report/[EP241_RP01 - Appendix B (Result Tables).xlsx]9. Soil-OCP

Sample ID	Depth	Sampling Date	Organochlorine Pesticides																			
			Hexachlorobenzene (HCB)	BHC (total)	Lindane (gamma BHC)	Heptachlor	Aldrin	Heptachlor epoxide	DDE	Endosulfan (total)	Chlordane (total)	trans-Nonachlor	Dieldrin	Endrin	DDD	DDT	Endosulfan sulphate	Endrin aldehyde	Methoxychlor	Endrin ketone	Isodrin	Mirex
PQL			**0.1**	**0.1**	**0.1**	**0.1**	**0.1**	**0.1**	**0.1**	**0.2**	**0.1**	**0.1**	**0.2**	**0.2**	**0.1**	**0.1**	**0.1**	**0.1**	**0.1**	**0.1**	**0.1**	**0.1**
Environmental Investigation Levels[1]			-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Health Investigation Levels[2]			**80**	-	-	**50**	**45 [4]**	-	**3,600 [3]**	**2,000**	**530.0**	-	**45 [4]**	**100**	**3,600 [3]**	**3,600 [3]**	**2,000**	-	**2,500**	-	-	**100**
BH4/0.0	0.1-0.2	29/9/2023	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
BH4/0.5	0.0-0.1	29/9/2023	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd

[1] Environmental Investigation Levels (EILs) - NEPC (2013) *National Environment Protection (Assessment of Site Contamination) Measure 1999*. Commercial and industrial land use setting.

[2] Health Investigation Levels (HILs) - NEPC (2013) *National Environment Protection (Assessment of Site Contamination) Measure 1999*. HIL D: Commercial/industrial, includes premises such as shops, offices, factories and industrial sites.

[3] Sum of DDT, DDE & DDD

[4] Sum of Aldrin & Dieldrin

PQL: Practical Quantification Limit

nd: Concentration below PQL

BOLD Above EIL

Above HIL

Table 10
Contamination Assessment: 4 - 6 Chapel Street, Bankstown, NSW
Soil Analytical Results - Polychlorinated Biphenyls

All units in mg/kg

/Users/metechconsulting/Documents/EP241 - Bankstown/10 Report/[EP241_RP01 - Appendix B (Result Tables).xlsx]10. Soil-PCB

Sample ID	Depth	Sampling Date	Polychlorinated Biphenyls									
			Arochlor 1016	Arochlor 1221	Arochlor 1232	Arochlor 1242	Arochlor 1248	Arochlor 1254	Arochlor 1260	Arochlor 1262	Arochlor 1268	Total PCBs (Arochlors)
PQL			**0.2**	**0.2**	**0.2**	**0.2**	**0.2**	**0.2**	**0.2**	**0.2**	**0.2**	**1**
Environmental Investigation Levels[1]			-	-	-	-	-	-	-	-	-	-
Health Investigation Levels[2]			-	-	-	-	-	-	-	-	-	**7**
BH4/0.0	0.1-0.2	29/9/2023	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
BH4/0.5	0.0-0.1	29/9/2023	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd

[1] Environmental Investigation Levels (EILs) - NEPC (2013) *National Environment Protection (Assessment of Site Contamination) Measure 1999*. Commercial and industrial land use setting.

[2] Health Investigation Levels (HILs) - NEPC (2013) *National Environment Protection (Assessment of Site Contamination) Measure 1999*. HIL D: Commercial/industrial, includes premises such as shops, offices, factories and industrial sites.

BOLD Above EIL

Above HIL

PQL: Practical Quantification Limit

nd: Concentration below PQL

Table 11
Contamination Assessment: 4 - 6 Chapel Street, Bankstown, NSW
Soil Vapour Analytical Results - Total Recoverable Hydrocarbons

All units in mg/m^3 /Users/metechconsulting/Documents/EP241 - Bankstown/10 Report/[EP241_RP01 - Appendix B (Result Tables).xlsx]11. SV-TRH

Sample ID	Depth	ampling Dat	Dilution Factor	Volatile Total Recoverable Hydrocarbons (TRH/BTEXN)							
				F1 (C6-C10 less BTEX)	Benzene	Toluene	Ethylbenzene	m,p-Xylene	o-Xylene	Naphthalene	F2 $>C_{10}$-C_{12} less Naphthalene
Health Screening Levels[1]				1,000	5	6,500	1,800	1,200		4	800
SV1	Sub-slab	24/10/23	3.2	35	0.32	0.65	0.186	0.21	0.089	<0.034	<0.16

[1] Health Screening Levels (HSLs) - Soil Vapour HSLs for Vapour Intrusion - NEPC (2013) *National Environment Protection (Assessment of Site Contamination) Measure 1999*.
HSL D: Commercial / Industrial land use setting; 0 - <1m; 'CLAY' criteria has been adopted based on site geology. Above HSL (Vapour Intrusion)

- : Not applicable

Table 12
Contamination Assessment: 4 - 6 Chapel Street, Bankstown, NSW
Soil Vapour Analytical Results - Volatile Organic Compounds

All units in ug/m^3

/Users/metechconsulting/Documents/EP241 - Bankstown/10 Report/[EP241_RP01 - Appendix B (Result Tables).xlsx]12. SV-VOC

Sample ID	Depth	Sampling Date	Volatile Organic Compounds																		
			1.1.1-Trichloroethane	1.1.2.2-Tetrachloroethane	1.1.2-Trichloroethane	1.1-Dichloroethane	1.1-Dichloroethene	1.2.4-Trichlorobenzene	1.2.4-Trimethylbenzene	1.2-Dibromoethane (EDB)	1.2-Dichlorobenzene	1.2-Dichloroethane	1.2-Dichloropropane	1.3.5-Trimethylbenzene	1.3-Butadiene	1.3-Dichlorobenzene	1.4-Dichlorobenzene	1.4-Dioxane	2.2.4-Trimethylpentane	2-Butanone (Methyl Ethyl Ketone)	2-Hexanone
Health Screening Levels[1]			230,000	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Workplace Exposure Standards[2]			-	-	-	-	-	-	123,000	-	-	-	-	-	-	-	-	-	-	-	-
SV1	Sub-slab	24/10/23	< 9	< 11	< 9	< 6	< 6	< 48	19	< 11	< 10	< 6	53	< 8	< 4	< 10	< 10	< 23	< 30	< 19	< 26

Sample ID	Depth	Sampling Date	Volatile Organic Compounds																		
			3-Chloropropene	4-Ethyltoluene	4-Methyl-2-Pentanone (MIBK)	Acetone	Bromodichloromethane	Bromoform	Bromomethane	Carbon Disulfide	Carbon Tetrachloride	Chlorobenzene	Chloroethane	Chloroform	Chloromethane	Chlorotoluene (Benzyl Chloride)	cis-1.2-Dichloroethene	cis-1.3-Dichloropropene	Cyclohexane	Dibromochloromethane	Ethanol
Health Screening Levels[1]			-	-	-	-	-	-	-	-	-	-	-	-	-	-	300	-	-	-	-
Workplace Exposure Standards[2]			-	-	-	1,185,000	-	-	-	31,000	-	-	-	-	-	-	-	-	350,000	-	1,180,000
SV1	Sub-slab	24/10/23	< 20	17	< 7	1,600	< 11	< 17	< 62	40	< 10	< 7	< 17	< 8	< 33	< 8	< 6	< 7	2,000	< 14	360

Table 12
Contamination Assessment: 4 - 6 Chapel Street, Bankstown, NSW
Soil Vapour Analytical Results - Volatile Organic Compounds

All units in ug/m^3

/Users/metechconsulting/Documents/EP241 - Bankstown/10 Report/[EP241_RP01 - Appendix B (Result Tables).xlsx]12. SV-VOC

Sample ID	Depth	Sampling Date	Volatile Organic Compounds																		
			Freon 11 (Trichlorofluoromethane)	Freon 113 (Trichlorotrifluoroethane)	Freon 114	Freon 12 (Dichlorodifluoromethane)	Heptane	Hexachlorobutadiene	Hexane	Isopropanol	Methyl t-Butyl Ether (MTBE)	Methylene Chloride	Propylene	Styrene	Tetrachloroethene	Tetrahydrofuran	trans-1.2-Dichloroethene	trans-1.3-Dichloropropene	Trichloroethene	Vinyl Acetate	Vinyl Chloride
Health Screening Levels[1]			-	-	-	-	-	-	-	-	-	-	-	-	**8,000**	-	-	-	**80**	-	**100**
Workplace Exposure Standards[2]			-	-	-	-	**164,000**	-	**20,000**	-	-	-	-	-	-	-	-	-	-	-	-
SV1	Sub-slab	24/10/23	< 9	< 12	< 11	< 8	1,600	< 68	1,900	< 157	< 23	< 56	< 28	< 7	3,900	< 5	< 6	< 7	< 9	< 23	< 8

[1] Interim Health Investigation Levels (HILs) for Vapour Intrusion - NEPC (2013) *National Environment Protection (Assessment of Site Contamination) Measure 1999.*
Commercial / Industrial HIL D land use setting

[2] Safe Work Australia (2022) *WorkPlace Exposure Standards For Airborne Contaminants.*
TWA: Eight hour time weighted average, being the maximum average airborne concentration of a substance when calculated over an eight hour working day, for a five day working week.

- : Not applicable

Above HSL (Vapour Intrusion)

Above TWA (airboune contaminants)

Table 13
Contamination Assessment: 4 - 6 Chapel Street, Bankstown, NSW
Relative Percentage Difference Calculations - Metals

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Type	Sample ID	Metals							
		Arsenic	Cadmium	Chromium	Copper	Lead	Mercury	Nickel	Zinc
		(As)	(Cd)	(Cr)	(Cu)	(Pb)	(Hg)	(Ni)	(Zn)
Original	BH5 / 0.5	6	*0.3*	8.5	35	40	0.06	3.1	71
Duplicate	QA1	6	0.3	11	39	57	0.07	*3.6*	89
RPDs (Dup.)	**-**	**0**	**0**	**26**	**11**	**35**	**15**	**15**	**23**