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Fabcot Pty Ltd
Prepared by
Ramboll Australia Pty Ltd
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SITE AUDIT REPORT
PROPOSED WAREHOUSE AND CUSTOMER FULFILLMENT CENTRE, 74 EDINBURGH ROAD, MARRICKVILLE, NSW

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19 October 2020

Fabcot Pty Ltd
Attn.: Thomas Stock
1 Woolworths Way
Bella Vista NSW 2153

By email: tstock@woolworths.com.au

Dear Thomas

SITE AUDIT REPORT - PROPOSED WAREHOUSE AND CUSTOMER FULFILLMENT CENTRE, 74 EDINBURGH ROAD, MARRICKVILLE, NSW

I have pleasure in submitting the Site Audit Report for the subject site. The Site Audit Statement, produced in accordance with the NSW *Contaminated Land Management Act 1997*, is included as Appendix B of the Site Audit Report. The Audit was commissioned by Fabcot Pty Ltd to assess whether the nature and extent of contamination has been appropriately determined to allow remedial planning.

This Site Audit Report is not currently required by regulation or legislation and is therefore a non-statutory audit.

Thank you for giving me the opportunity to conduct this Audit. Please call me on 9954 8100 if you have any questions.

Yours sincerely,
Ramboll Australia Pty Ltd

Louise Walkden
EPA Accredited Site Auditor 1903

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LIST OF ABBREVIATIONS

Measures

%	per cent
µg/L	Micrograms per Litre
ha	Hectare
km	Kilometres
m	Metre
mbgl	Metres below ground level
mg/kg	Milligrams per Kilogram
mg/L	Milligrams per Litre
mm	Millimetre
ppm	Parts Per Million

General

ABC	Ambient Background Concentration
ACL	Added Contaminant Limit
ACM	Asbestos Containing Material
ADWG	Australian Drinking Water Guidelines
AF	Asbestos Fines
AHD	Australian Height Datum
ANZG	Australian & New Zealand Guidelines
ASS	Acid Sulphate Soil
AST	Aboveground Storage Tank
ANZECC	Australian and New Zealand Environment and Conservation Council
BaP	Benzo(a)pyrene
BGL	Below Ground Level
BTEXN	Benzene, Toluene, Ethylbenzene, Xylenes & Naphthalene
CCME	Canadian Council of Ministers of the Environment
CLM Act	NSW Contaminated Land Management Act 1997
COC	Chain of Custody
Council	Inner West Council
CSM	Conceptual Site Model
DGV	Default Guideline Value
DLA	DLA Environmental Pty Ltd
DP	Deposited Plan
DQI	Data Quality Indicator
DQO	Data Quality Objective
EIL	Ecological Investigation Level
EIS	Environmental Investigation Services Pty Ltd
Envirolab	Envirolab Services Pty Ltd
EPA	Environment Protection Authority (NSW)
ESL	Ecological Screening Level
FA	Fibrous Asbestos
GIL	Groundwater Investigation Level
HIL	Health Investigation Level
HSL	Health Screening Level
JKE	JK Environmental Pty Ltd (formerly EIS)
JKG	JK Geotechnical Pty Ltd
LEP	Local Environment Plan
LOR	Limit of Reporting
Metals	As: Arsenic, Cd: Cadmium, Cr: Chromium, Cu: Copper, Ni: Nickel, Pb: Lead, Zn: Zinc, Hg: Mercury
ML	Management Limits
NATA	National Association of Testing Authorities
ND	Not Detected
NEPM	National Environment Protection Measure
NHMRC	National Health and Medical Research Council
NL	Non-Limiting
n	Number of Samples
OCPs	Organochlorine Pesticides
OEH	Office of Environment and Heritage

OH&S	Occupational Health & Safety
OPPs	Organophosphorus Pesticides
PAHs	Polycyclic Aromatic Hydrocarbons
PCBs	Polychlorinated Biphenyls
pH	A measure of acidity, hydrogen ion activity
PID	Photoionisation Detector
PQL	Practical Quantitation Limit
QA/QC	Quality Assurance/Quality Control
Ramboll	Ramboll Australia Pty Ltd – previously Ramboll Environ Australia Pty Ltd and ENVIRON Australia Pty Ltd
RPD	Relative Percent Difference
SAR	Site Audit Report
SAS	Site Audit Statement
SWL	Standing Water Level
TCLP	Toxicity Characteristic Leaching Procedure
TEQ	Toxic Equivalence Quotient
TPHs	Total Petroleum Hydrocarbons
TRHs	Total Recoverable Hydrocarbons
UCL	Upper Confidence Limit
UST	Underground Storage Tank
VCH	Volatile Chlorinated Hydrocarbons
VOCs	Volatile Organic Compounds
-	On tables is "not calculated", "no criteria" or "not applicable"

1. INTRODUCTION

1.1 Audit Details

A site contamination audit has been conducted in relation to the site at 74 Edinburgh Road, Marrickville, NSW. The Audit was conducted to provide an independent review by an EPA Accredited Auditor of the nature and extent of any contamination of the land, i.e. a "Site Audit" as defined in Section 4 (1) (b) (i) of the NSW *Contaminated Land Management Act 1997* (the CLM Act).

The site has historically been used for industrial purposes. Woolworths propose to develop the site for use as a warehouse and Customer Fulfillment Centre (CFC) with ancillary offices. The development is designated as State Significant Development (SSD 10468). Correspondence from the NSW EPA (DOC20/433201 dated 16 June 2020) recommended that the Planning Secretary's Environmental Assessment Requirements (SEARs) include a requirement "*…that an NSW EPA Accredited Sites Auditor review the adequacy of all contamination reports provided in support of the development*".

The Audit was initiated to comply with this recommendation through review of existing site contamination investigations and is currently a non-statutory audit. It is anticipated that a Site Audit Statement (SAS) and supporting Site Audit Report (SAR) confirming the suitability of the site for its intended use (a Section A SAS) will be required as a condition of consent.

Details of the Audit are:

Requested by:	Thomas Stock on behalf of Fabcot Pty Ltd
Request/Commencement Date:	26 September 2020
Auditor:	Louise Walkden
Accreditation No.:	1903

1.2 Scope of the Audit

The scope of the Audit included:

- Review of the following reports:
  - 'Phase 2 Detailed Environmental Site Assessment, 74 Edinburgh Road, Marrickville, NSW 2204', September 2010, DLA Environmental Pty Ltd (DLA) (*the DESA*)
  - 'Acid Sulfate Soil Assessment and Management Plan, Proposed Masters Development, Cnr Edinburgh Road and Sydney Steel Road, Marrickville, NSW', 3 February 2015, Environmental Investigation Services (EIS) (*the ASSMP*)
  - 'Report to Fabcot Pty Ltd on Detailed (Stage 2) Site investigation For Proposed Warehouse and Customer Fulfillment Centre with Ancillary Offices at 74 Edinburgh Road, Marrickville, NSW', 22 September 2020, JK Environments Pty Ltd (JKE) (*the DSI*)
- A site visit by the Auditor on 6 October 2020.
- Discussions with Fabcot.

The investigations were completed prior to the Auditor's engagement and no discussion with JKE, EIS or DLA was undertaken.

2. SITE DETAILS

2.1 Location

The site locality is shown on Attachment 1, Appendix A.

The site details are as follows:

Street address:	74 Edinburgh Road, Marrickville, NSW
Identifier:	Lot 202 DP1133999, Lot 101 DP1237269 and Lot 1 DP539623 (Attachment 2, Appendix A)
Local Government:	Inner West Council
Owner:	Fabcot Pty Ltd
Site Area:	Approximately 2.8 ha

The boundaries of the site are well defined by streets and adjoining properties.

2.2 Zoning

The current zoning of the site is IN1 General Industrial and SP2 Infrastructure under the Marrickville Local Environment Plan (LEP) 2011.

2.3 Adjacent Uses

The site is located within an area of mixed residential, commercial and industrial land use. The surrounding site use includes:

North: Edinburgh Road with residential properties and commercial land use (shopping centre) beyond

East: Edinburgh Road and Sydney Steel Road with industrial land use beyond comprising a Sydney Metro construction site (stabling yards)

South: Sydney Steel Road and the Sydney Metro stabling yards construction site.

West: Industrial land use, warehouses and commercial buildings.

Dewatering activities within the Sydney Metro Construction site to the south and east of the site may impact shallow groundwater flow conditions under the site. The closest permanent surface water receptor is Alexandra Canal located approximately 1.2 km to the south-east of the site. A concrete lined stormwater drain is present beneath the site and becomes a surface drain to the south of Sydney Steel Road on the Sydney Metro site, which flows south to the Sydenham stormwater retention pit located approximately 200 m to the south.

2.4 Site Condition

The site layout is shown in Attachment 3 in Appendix A. JKE undertook a site inspection on 12 August 2020, during the DSI, and noted the following:

- The site was occupied by three warehouses. The warehouse located in the north-eastern section of the site was used for a furniture distribution business. The warehouse in the southern section was used as part of three separate businesses: a food delivery service; wine storage and distribution; and metal welding and spray painting. The warehouse in the north-western section was vacant and had dangerous good signage for the use of anhydrous ammonia.
- All the warehouses on the site appeared in average condition. The north-eastern warehouse was constructed from steel and concrete. The north-western was constructed from steel, brick and cement fibre. The southern warehouse was constructed from steel and concrete.

The northern section of the site had a gatehouse which was constructed from cement and wood fibre which appeared in average condition.

- The northern and eastern sections of the site were concreted and were used for storage for a welding business, a scaffolding business, a recycling drop off and storage of several shipping containers.
- Several fuel drums, petrol and diesel fuel agents and coolants were located between the north-western and southern warehouses and in the south-eastern corner of the site. Several black microtone spray paint drums were disposed of in a skip bin located in the centre of the site outside of the welding and spray paint business.
- Cut and fill was evident near to the southern warehouse with an approximately 1.8 m to 2 m retaining wall located either side of the main loading dock.
- A stormwater main extends through the northern section of the site. The stormwater drain is understood to be at a depth of approximately 1.5 m and 3 m below ground level (bgl) and also extends through the neighbouring properties. Sewer and electrical services also run through the northern portion of the site. The location of the stormwater drain and services is shown on Attachment 3 in Appendix A.
- Sensitive environments such as wetlands, ponds, creeks or extensive areas of natural vegetation were not identified on site or in the immediate surrounds.

The following was noted by the Auditor during the site visit on 6 October 2020:

- The site was fenced on all boundaries with access from Edinburgh Road in the northern corner of the site. The site was accessible by the public.
- Concrete hardstand was present across the site and the site topography sloped generally to the south. The ground surface was raised in the eastern and northern portions relative to the central portion by approximately 0.5 to 1.0 m.
- In addition to the three main warehouses, several outdoor storage areas were being used for storage of shipping containers, pallets, metal scaffolding and vehicles including buses, coaches and semi-trailers.
- Warehouses were being used for storage and distribution of various goods including wine, stage and lighting equipment, personal storage units, and vehicle storage.
- A substation is understood to be present within a brick building in the centre of the site, however, the building was not accessible during the inspection.
- While areas of general rubbish were evident across the site, the fuel drums and waste paint drums noted by JKE were not observed and no fragments of asbestos containing materials were observed.

2.5 Proposed Development

The site is to be redeveloped by Fabcot as a warehouse and CFC comprising a slab on ground warehouse across the majority of the site with a multi-storey car park in the northern portion of the site, access road and loading docks to the east and south and five levels of office space above the warehouse and car park. Access to the site will be from two driveways along the boundary with Edinburgh Road and four along Sydney Steel Road. The proposed site layout is shown in Attachments 4 and 5, Appendix A.

It is understood that the stormwater drain that currently bisects the site from north-west to north-east is to be relocated along the northern perimeter of the site. An on-site stormwater detention (OSD) tank is to be placed in the south-eastern corner of the site.

The proposed development design will involve piled foundations. While major bulk earthworks are not anticipated, some cut and fill will be required to achieve design levels, backfill the stormwater drain and excavate the new drain and the OSD tank. There is the potential that, where it is geotechnically feasible, some of the existing concrete slabs will be retained.

For the purposes of this audit, the 'commercial/industrial' land use scenario will be assumed.

3. SITE HISTORY

JKE provided a summary of the site history in the DSI based on aerial photographs, historical maps, NSW EPA records, SafeWork NSW dangerous goods records and Certificates of Title. DLA also included a description of the site history in the DESA. The Auditor has summarised the site history in Table 3.1.

Table 3.1: Site History

Date	Activity
1901-1980	It is noted in the DESA that the site was developed as an edible oils manufacturing and nut roasting facility in 1901. Historical land titles indicate that part of the site was owned by Marrickville Margarine Pty Ltd from 1918 until 1980. A historical map from 1917 included in the DSI indicates the site was a steel works at this time and that a portion of the site was owned by the Sydney Steel Company from 1913-1937. The aerial photograph from 1930 indicates a surface water body was present to the south and encroached on the south-western portion of the site. The south-western portion of the site remained undeveloped land until the mid-1970s. The stormwater drain in the northern portion of the site is visible as an open drain in the 1943 aerial photograph but has been covered onsite by 1951. The site was gradually developed with warehouses between 1930 and 1970, with most of the site covered with industrial buildings by 1970. The food manufacturing facility occupies the site and the property to the immediate west of the site. Surrounding land uses comprised predominately industrial land use with residential to the north.
1980-2005	The site was owned by Unilever from 1980 to 2005 and continued to be used for food manufacturing and distribution. Demolition of several old warehouses occurred between 1986 and 2000 with construction of the large warehouse in the south-east of the site occurring between 1986 and 1991. By 2000, a warehouse in the north-western portion of the site has been demolished and a new warehouse built by 2009. SafeWork NSW records included in the DSI report indicate that in 2002 Unilever retained a licence for storage of Dangerous Goods, including anhydrous ammonia in a 5,000 L above ground tank (AST), sodium hydroxide, sulfuric acid (26,500 L AST) and phosphoric acid (10,000 L AST), compressed hydrogen and nitrogen for refrigeration, and smaller volumes of ethanol, acetone and petroleum products. The main AST farm associated with the site was present on the adjoining site to the west and was decommissioned between 2000 and 2009. This adjoining site has been redeveloped for commercial site use between 2009 and 2020. The Safe Work NSW records indicate that underground storage tanks (USTs) for storage of petrol and diesel were present on the adjoining site to the west and were decommissioned insitu between approximately 1994 and 1995. The records do not indicate that USTs were present on the site.
2005-2020	The site was divested to ACPP Industries Pty Ltd in 2005 and then to Hydrox Nominees Pty Ltd before being purchased by Fabcot in 2018. During this period the site has been sub-leased to various businesses and generally used for warehousing and distribution. The site layout remained largely unchanged during this period.

The summary indicates that the site has been used for industrial purposes since the early 1900s, mostly associated with the manufacturing of food products (edible oils). The site has been used for the storage of chemicals associated with those processes. Portions of the site have been filled to achieve the current site levels.

JKE undertook a review of the NSW EPA public records and identified three properties in the vicinity of the site that had records under Section 58 of the CLM Act 1997. Two of these sites, Sydney Park and the Tidyburn facility, were at distances >900 m from the site and located down or across hydraulic gradient and were not considered to be potential off-site contaminant sources. A dry cleaner was located approximately 110 m to the north-east within the Marrickville Metro shopping centre, potentially up gradient of the site, and was considered by JKE to be a potential off-site contaminant source.

3.1 Auditor's Opinion

In the Auditor's opinion, the site history provides an adequate indication of past activities. Previous site uses with the most significant potential to cause contamination include industrial processes, operation of an electrical substation, storage of chemicals and waste, demolition of on-site buildings containing hazardous building materials and importation of uncontrolled fill materials. The adjoining site to the immediate west was formally part of the food manufacturing facility and contained the AST farm, a boiler house and USTs. There is the potential that contamination from this area may have impacted the site through migration of impacted groundwater or relocation of contaminated soil.

There is a potential for groundwater impacted by chlorinated hydrocarbons from the dry cleaner located 110 m to the north-east of the site to migrate beneath the site. However, based on the distance from the site and the likely influence of subsurface construction works being undertaken on land to the north and east of the site (extension to the shopping centre and Sydney Metro dive site) on the local shallow hydrogeology, the risk to the proposed future site use from migration of impacted groundwater from the dry cleaner is likely to be low.

4. CONTAMINANTS OF CONCERN

JKE provided a list of the contaminants of concern and potentially contaminating activities in the DSI. These have been tabulated in Table 4.1.

Table 4.1: Contaminants of Concern

Source/Activity	Potential Contaminants
Fill material	Heavy metals (arsenic, cadmium, chromium, copper, lead, mercury, nickel and zinc), petroleum hydrocarbons (referred to as total recoverable hydrocarbons – TRHs), benzene, toluene, ethylbenzene and xylene (BTEX), polycyclic aromatic hydrocarbons (PAHs), organochlorine pesticides (OCPs), organophosphate pesticides (OPPs), polychlorinated biphenyls (PCBs) and asbestos.
Chemical and fuel storage	Lead, TRH, BTEX, PAHs and volatile organic compounds (VOCs)
Use of pesticides	Heavy metals and OCPs
Hazardous building materials (HBM)	Asbestos, lead and PCBs
Offsite dry cleaners located up gradient of the site	TRH, volatile chlorinated hydrocarbons (VCH)

4.1 Auditor's Opinion

The Auditor considers that the analyte list used by JKE adequately reflects the site history and condition. DLA adopted a similar analyte list during the DESA although DLA did not analyse for asbestos in soil. In addition to the sources outlined above, spills and leaks of acids from the ASTs may have occurred during use of the site for food manufacturing which may have influenced soil and groundwater pH and soil cation exchange capacity (CEC).

HBM within existing and former structures are considered a significant potential source of contamination. The site history indicates that the former edible oils facility included a boiler house and refrigeration plant. These are potential sources of friable asbestos associated with lagging around pipes and insulation material.

There has been no assessment by the consultants for the presence of per- and poly-fluoroalkyl substances (PFAS) but in the Auditor's opinion there are no indications in the site history that they would be potential contaminants of concern.

5. STRATIGRAPHY AND HYDROGEOLOGY

5.1 Stratigraphy

JKE reviewed geological maps and reported that the site is underlain by Quaternary deposits of silty to peaty quartz sand, silt and clay. Ferruginous and humic cementation are common in places with layers of shells.

Over the course of the DESA and DSI, 60 boreholes or hand auger holes were advanced across the site. The DSI locations are shown on Attachment 3 and DESA locations on Attachment 6 in Appendix A. In addition, bore logs for 11 boreholes completed during a geotechnical investigation by JK Geotechnics in January 2015 are included in the EIS ASSMP and borehole locations are shown on Attachment 7 in Appendix A. Boreholes were completed mainly in accessible areas outside of the buildings, however, JKE completed five shallow boreholes within the large warehouse in the southern portion of the site and one within the warehouse on the northern site boundary during the DSI.

The majority of boreholes (55) were drilled to depths of less than 2.0 mbgl with 16 terminated in fill. Fill material was underlain by silty clay. Bedrock was encountered in three of the 11 boreholes completed during the geotechnical investigation at depths between 4.8 and 5.0 mbgl (BH7 and BH8) in the north-western portion of the site and 9.4 mbgl in the north-east (BH1).

The thickness of the fill unit was generally between 0.5 and 1.5 m thick, however was thicker in the north-western corner of the site (2.3 to 3.0 m), the south-west (3.7 to 4.5 m) and >6.0 m thick at geotechnical borehole BH11 in the centre of the site in the vicinity of the stormwater channel and sewer services.

The sub-surface profile of the site is summarised by the Auditor in Table 5.1.

Table 5.1: Stratigraphy

Depth (mbgl)	Subsurface Profile
0.0 – > 6.0	Fill: grey/black silty, gravelly sand, silty gravel or silty clay underlying the asphaltic concrete surface cover. Fill contained varying quantities of ash, slag, brick fragments, crushed sandstone and concrete. Yellow silty sand fill was encountered at two locations in the centre of the site. A concrete slab was encountered at a depth of approximately 0.2-0.4 m in the southern portion of the site. Fill generally extended to depths of 0.5 to 1.5 mbgl but was thicker in the north-west and south-west corners of the site and at BH11 in the centre of the site, in the vicinity of stormwater and sewer services.
0.5 – 9.4	Silty Clay: orange brown to light grey mottled orange brown.
From 4.8 to 9.4 to maximum extent of investigation (12.0)	Shale: grey to dark grey.

mbgl – metres below ground level

Acid sulfate soils (ASS) information presented in the DSI indicated that the site is located within a Class 2 ASS risk area. Works in a Class 2 risk area that could pose an environmental risk in terms of ASS include all works below existing ground level and works by which the water table is likely to be lowered. Field screening and laboratory assessment completed by EIS in 2015 indicated that potential acid sulfate soil (PASS) is likely at the site and an ASSMP was prepared.

5.2 Hydrogeology

JKE undertook a search for registered bores in August 2020. Two bores were identified within a 500 m radius of the site. The bores were for monitoring purposes and located 370 m and 390 m east of the site. The wells were drilled to depths of 9.0 and 6.1 mbgl with standing water levels (SWL) between 2.8 and 7.6 mbgl.

Based on bore logs in the ASSMP, groundwater strike in deeper bores completed during the geotechnical investigation was reported in the silty clay at depths of between 6.0 and 9.0 mbgl. Bores were left open and SWLs were reported between 2.5 and 4.2 mbgl. Permanent monitoring wells were not installed during the geotechnical investigation.

JKE installed three groundwater monitoring wells during the DSI at BH101, BH118 and BH121. Wells BH118 and BH121 were screened in the silty clay. BH101 is screened across the fill and silty clay. Groundwater was encountered in the fill in BH101 during installation and a SWL of 3.08 mbgl was recorded during sampling. Groundwater strike was recorded on bore logs at 6.1 m and 4.0 m in BH118 and BH121 respectively, with the SWL at time of sampling at 2.83 and 2.77 mbgl respectively. Well construction details are summarised in Table 5.2.

Table 5.2: Site-Specific Hydrogeology

Well ID	Depth (mbgl)	Screened interval	Depth to groundwater August 2020 (mbgl)
BH101	6.0	2.0-6.0 m in fill and silty clay	3.08
BH118	9.0	3.0-9.0 m in silty clay	2.83
BH121	6.0	3.0-6.0 m in silty clay	2.77

Based on the groundwater investigation data, a local shallow aquifer is present in the alluvial silty clay and fill materials overlying the shale bedrock with SWL at approximately 3.0 m bgl.

JKE did not survey the installed groundwater wells, hence the flow direction was not determined. JKE inferred that groundwater flow would follow topography and flow to the south.

5.3 Auditor's Opinion

The Auditor considers that the depth of fill and underlying stratigraphy have been adequately characterised although it is noted that the boreholes completed during the DSI were generally terminated in fill and depth of fill below building footprints is unknown.

Soil sampling was completed by bore hole or hand auger holes which allow limited visual inspection of the subsurface profile. The heterogeneity and extent of fill material has the greatest potential to impact the redevelopment of the site. Further investigation to characterise fill material is not considered necessary prior to demolition given the access restrictions due to site infrastructure and limitations of borehole investigations, however, management requirements to be implemented during site development are discussed in Section 14.

The three monitoring wells installed on the site are positioned to assess groundwater quality in the northern, eastern and south-western portion of the site. There is a data gap with respect to groundwater quality in the south-eastern portion of the site, however, given that significant soil and groundwater contamination has not been identified at the site (see Section 8 and Section 9), the Auditor is satisfied that further intrusive assessment of groundwater is not required prior to site redevelopment. Should unexpected finds be identified during redevelopment that indicate a potential source of groundwater contamination, further groundwater assessment may be required. This is discussed further in Section 14.

The Auditor considers that the site stratigraphy and hydrogeology are sufficiently well known for the purpose of determining site management requirements during redevelopment. The proposed future development of the site is unlikely to abstract groundwater for beneficial use.

6. EVALUATION OF QUALITY ASSURANCE AND QUALITY CONTROL

The Auditor has assessed the overall quality of the data by review of the information presented in the referenced reports, supplemented by field observations. The data sources are summarised in Table 6.1.

Table 6.1: Summary of Investigations

Stage of Works	Field Data	Analytical Data
DESA (DLA, 2010) *Fieldwork date: September 2010*	37 boreholes (BH1-BH37) in accessible areas of the site, outside of building footprints.	Soil: 20 x TRH, 6 x BTEX, 7 x OCP/OPPs, 7 x PCB, 35 x Metals, 35 x PAH
ASSMP (EIS, 2015) *Fieldwork date: January 2015*	11 boreholes (BH1-BH11) drilled for geotechnical purposes. 10 soil samples from 5 boreholes analysed for potential ASS (PASS).	Soil: 10 x sPOCAS analysis
DSI (JKE, 2020) *Fieldwork date: August 2020*	23 boreholes (BH101-BH123) 3 bore holes installed as groundwater monitoring wells (BH101, BH118 and BH121).	Soil: 24 x TRH, BTEX, PAH and Metals, 6 x OCP/OPPs, 6 x PCB, 18 10 L bulk screen samples for ACM >7 mm, 8 x 500 ml samples for friable asbestos or asbestos fibres (FA/AF), 8 x trace asbestos in soil. 2 x TCLP Groundwater: 3 x TRH, BTEXN, Metals and VOCs

The Auditor's assessment of data quality follows in Tables 6.2 and 6.3.

Table 6.2: QA/QC – Sampling and Analysis Methodology Assessment

Sampling and Analysis Plan and Sampling Methodology	Auditor's Opinion
Data Quality Objectives (DQO) Both DLA and JKE defined specific DQOs for the site investigations in accordance with the seven-step process outlined in Schedule B2 of NEPM (2013). The decisions identified by DLA were: • Do contaminant concentrations in soil and groundwater comply with the stated Site Acceptance Criteria (SAC)? • Do residual soils or groundwater pose an unacceptable risk to human health or the environment? Decisions to be made in the DSI were identified in the DQOs as: • Are any results above the SAC? • Do potential risks associated with contamination exist, and if so, what are they? • Is remediation required? • Is the site characterisation sufficient to provide adequate confidence in the above decisions? • Is the site suitable for the proposed development, or can the site be made suitable subject to further characterisation and/or remediation?	The identified DQOs were considered appropriate for the investigations conducted.
Sampling pattern, locations and density *Soil:* Investigation locations were spaced on a judgemental sampling plan and positioned to gain coverage of most of the site. The sampling density of 60 sample locations over approximately 2.8 ha exceeds the minimum recommended by	In the Auditor's opinion the pattern of soil investigation locations and density are sufficient to assess the contamination status of fill materials with respect to metals, PAH and TRH in accessible areas of the site. The density of sampling

Sampling and Analysis Plan and Sampling Methodology	Auditor's Opinion
EPA (1995) *Sampling Design Guidelines* of 38. The density of sampling was lower beneath the footprints of buildings with samples collected from within the two main warehouses only. Four sample locations were completed within the southern warehouse and one location in the footprint of the northern warehouse. While two boreholes were placed adjacent to the electrical substation in the central portion of the site, samples have not been collected from the footprint of the building. The density of analysis of various contaminants also varies with 59 soil samples submitted for analysis for metals and PAH, 44 for TRH, 30 for BTEX, 13 for OCPs, OPPs and PCBs, 18 for ACM >7 mm and 8 for FA/AF. Analysis targeted the fill materials with only four natural soil samples analysed for metals and PAH and two for TRH and BTEX. *Groundwater:* Three monitoring wells are installed on the site and intercept shallow groundwater within the silty clay. One well is located in the northern (assumed up gradient) portion of the site (BH121), one downgradient of the southern warehouse (BH118) and one in in the south-western corner (BH101 assumed down gradient). There is no groundwater well in the south-eastern portion of the site.	beneath buildings, beneath the substation and in natural soil is low. The sampling density for asbestos is low and the sampling method (boreholes) does not allow good visual assessment of the soil profile. Given the site history, there is the potential for ACM and friable asbestos to be present in fill at the site. The density of groundwater wells is low and groundwater flow direction is uncertain. It is possible that flow is to the south or south-east and the lack of a well in this portion of the site is a data gap. However, the lack of contamination identified in soil and groundwater suggests that a significant contaminant plume is not present in groundwater beneath the site. No underground sources of potential groundwater contamination have been identified on the site. If sources, such as USTs or pits/sumps, are encountered during redevelopment, additional assessment of groundwater may be required.
Sample depths Soil samples were collected and analysed from a range of depths, with the primary intervals being within the shallow fill (0.2-0.5 mbgl) and at and around the fill/clay interface (around 1.5 mbgl). The maximum depth of investigation was 12.0 mbgl and the maximum depth of sampling was 2.9 mbgl. Groundwater samples were collected from the shallow aquifer within the silty clay and fill overlying bedrock.	In the Auditor's opinion, this sampling strategy was appropriate and adequate to characterise the primary material types present on site.
Well construction Groundwater monitoring wells were installed to depths between 6.0 and 9.0 mbgl with screen intervals of between 3.0 and 6.0 m within the silty clay or silty clay and fill (see Section 5.2). Wells were constructed of 50 mm uPVC. A bentonite seal of 0.3-1.3 m thickness was placed above the screen and the well backfilled with sand to the ground surface. The SWL intersects the screen interval in BH101 but was just above the screen in wells BH118 and BH121.	In the Auditor's opinion the well construction was acceptable.
Sample collection method *Soil*: Sample collection by DLA was from solid flight augers, directly from the auger. Soil sampling by JKE was via a SPT split spoon sampler or directly from the auger or hand auger. *Asbestos*: JKE screened 18 x 10 L bulk soil samples in the field using a 7.1 mm aperture sieve and inspected for the presence of fibre cement or, due to the cohesive nature of the soils, each sample was subsequently placed on a contrasting support (blue tarpaulin) and inspected for the presence of fibre cement. Any soil clumps/nodules were disaggregated in accordance with NEPM (2013) (Schedule B1). The bulk soil sample was obtained over the top 1.0 m length of the borehole. JKE also collected 8 x 500 mL samples for laboratory analysis for asbestos fines/ fibrous asbestos (AF/FA) and trace asbestos. *Groundwater*: Wells were installed by solid flight augers, developed with a submersible pump and sampled by low flow peristaltic pump with dedicated sample tubing.	Overall the sample collection methods are acceptable.

Sampling and Analysis Plan and Sampling Methodology	Auditor's Opinion
Decontamination procedures *Soil:* New nitrile gloves were reportedly used for each new sample. Reusable sampling equipment was reportedly cleaned with detergent and tap water between sampling events to prevent cross contamination. *Groundwater*: Dedicated tubing was used for each well. The pump was flushed with potable water between each sample. New gloves were reportedly used for each new sample.	Acceptable
Sample handling and containers Samples were placed into prepared and preserved sampling containers provided by the laboratory and chilled during storage and subsequent transport to the labs. Samples for asbestos analysis were placed in plastic zip-lock bags. It is not reported if groundwater samples analysed for heavy metals were field filtered. The metals concentrations reported may therefore be over- or under-estimated depending on the groundwater pH. The laboratory reported that the lid of the sample bottle for the inter-laboratory groundwater sample collected during the DSI (WDUP2) was broken when received at the lab, however additional bottles were supplied for this sample to allow analysis.	Acceptable.
Chain of Custody (COC) Completed COC forms were provided in the reports.	Acceptable
Detailed description of field screening protocols *Soil:* Field screening for volatiles was undertaken using a PID during the DSI but not the DESA. Soil sub-samples were placed in ziplock plastic bags and the headspace measured for VOCs after allowing time for equilibration. *Groundwater:* Field parameters were measured during well sampling and development.	Acceptable
Calibration of field equipment Field screening was not undertaken during the DESA. The DSI report indicated that calibration had been undertaken prior to use and checks were performed during use. Daily calibration certificates from the PID and water quality meter were provided in the DSI report. JKE reported that the scales used for weighing ACM fragments were calibrated. The scales used for weighing the bulk (10 L) soil samples were not calibrated but were considered to provide a sufficiently accurate result for the purposes of the assessment and to be a more accurate weight than application of an approximate density to the sample volume.	Acceptable
Sampling logs Soil logs are provided within the reports, indicating sample depth, PID readings where applicable and lithology. Groundwater field sampling records were provided in the DSI, indicating SWL, field parameters, methodology and observations.	Acceptable

Table 6.3: QA/QC – Field and Lab Quality Assurance and Quality Control

Field and Lab QA/QC	Auditor's Opinion
Field quality control samples Field quality control samples including trip blanks, trip spikes, field intra-laboratory and inter-laboratory duplicates were undertaken for sampling events during the DESA and DSI. A rinsate blank was not collected during the DESA but was for the DSI. The frequency of intra-laboratory duplicates was 8-14% and inter-laboratory duplicates at 4-5%.	Acceptable.
Field quality control results The results of field quality control samples were generally within appropriate limits. The following exceptions were noted: • During the DESA there were 11 exceedances of the RPD limits for metals and PAH however all reported concentrations were less than 10 x the PQL or had an absolute difference of less than 5% of the SAC. DLA concluded the results were acceptable. • During the DSI, elevated RPDs were reported for several metals and PAH compounds in the soil field duplicates and their primary samples and elevated RPDs were reported for individual metal compounds in groundwater sample MW101 and the inter-laboratory duplicate sample WDUP2. Values outside the acceptable limits were attributed to sample heterogeneity and the difficulties associated with obtaining homogenous duplicate samples of heterogeneous matrices. Where applicable, the higher duplicate value was adopted as a conservative measure.	Overall, in the context of the dataset reported, the elevated RPD results are not considered significant and the field quality control results are acceptable.
NATA registered laboratory and NATA endorsed methods Laboratories used included: Envirolab NSW as the primary laboratory in both the DESA and the DSI and SGS was used as the secondary laboratory during the DESA and Envirolab VIC for the DSI. Laboratory certificates were NATA stamped. Analysis of asbestos for AF/FA in accordance with NEPM (2013) is not NATA accredited.	Acceptable
Analytical methods Analytical methods were included in the laboratory test certificates. Both Envirolab and SGS provided brief method summaries of in-house NATA accredited methods used based on USEPA and/or APHA methods (excluding asbestos) for extraction and analysis in accordance with the NEPM (2013). Asbestos identification was conducted by Envirolab using polarised light microscopy with dispersion staining by method AS4964-2004 *Method for the Qualitative Identification of Asbestos Bulk Samples*.	Acceptable
Holding times Review of the COCs and laboratory certificates indicate that generally the holding times had been met with the exception of the holding time for pH for soil samples collected during the DSI.	Acceptable. The exceedance of the holding time for pH in soils has been considered in interpretation of the results.
Practical Quantitation Limits (PQLs) *Soil:* PQLs (except asbestos) were less than the threshold criteria for the contaminants of concern. *Asbestos:* The NATA approved limit of detection for asbestos in soil was 0.01% w/w although NEPM (2013) analyses were reported to 0.001% w/w for AF/FA. *Groundwater:* PQLs were less than the threshold criteria for the contaminants of concern in groundwater.	*Soil (except asbestos):* Overall the soil PQLs are acceptable. *Asbestos:* In the absence of any other validated analytical method, the detection limit for asbestos is considered acceptable.

Field and Lab QA/QC	Auditor's Opinion
Laboratory quality control samples Laboratory quality control samples including laboratory control samples, matrix spikes, surrogate spikes, blanks, internal standards and duplicates were undertaken by the laboratories.	Acceptable
Laboratory quality control results The results of laboratory quality control samples were generally within appropriate limits, with the following exceptions: • Elevated laboratory RPDs for chromium and nickel for soils samples analysed during the DSI – a triplicate result was issued. • Raised PQL for cadmium in the inter-laboratory groundwater sample during the DSI. • Surrogate recovery for TRH C_{10}-C_{40} not reported for duplicate soil samples analysed during the DSI.	In the context of the dataset reported, the laboratory quality control non-conformances are not considered significant and the laboratory quality control results are acceptable.
Data Quality Indicators (DQI) and Data Evaluation (completeness, comparability, representativeness, precision, accuracy) Predetermined data quality indicators (DQIs) were set for laboratory analyses including blanks, replicates, duplicates, laboratory control samples, matrix spikes, surrogate spikes and internal standards. These were discussed with regard to the five category areas in both the DESA and DSI. DLA concluded in the DESA that "*It is considered that the analytical data generated is of an acceptable degree of accuracy and precision for the purpose of assessing the soil quality on the site.*" JKE concluded in the DSI that "*JKE are of the opinion that the data are adequately precise, accurate, representative, comparable and complete to serve as a basis for interpretation to achieve the investigation objectives*."	An assessment of the data quality with respect to the five category areas has been undertaken by the Auditor and is summarised below.

6.1 Auditor's Opinion

In considering the data as a whole the Auditor concludes that:

- While data is likely to be representative of the overall condition of fill and natural soils at the site, some limitations were noted. The density of soil sampling beneath buildings, beneath the substation, in natural soil, and for asbestos is low. The sampling method used (boreholes) raises uncertainty with regard to the potential for asbestos impacted soils to be encountered during site redevelopment.
- The data is considered to be complete.
- There is a high degree of confidence that data is comparable for each soil sampling and analytical event.
- The laboratories provided sufficient information to conclude that data is of sufficient precision.
- The data is likely to be accurate.

7. ENVIRONMENTAL QUALITY CRITERIA

The Auditor has assessed the results against Tier 1 criteria from National Environmental Protection Council (NEPC) *National Environmental Protection (Assessment of Site Contamination) Measure 1999*, as Amended 2013 (NEPM, 2013). Other guidance has been adopted where NEPM (2013) is not applicable or criteria are not provided. Based on the proposed development (no basement and combination of car parking and warehousing on the ground level), the human health criteria and ecological criteria appropriate for 'commercial/industrial' land use were adopted.

7.1 Soil Assessment Criteria

7.1.1 Human Health Assessment Criteria

- NEPM (2013) Health Investigation Levels (HILs) for 'Commercial/Industrial' (HIL D) land use.
- NEPM (2013) Health Screening Levels (HSLs) for 'Commercial/Industrial' (HSL D) land use. The HSLs assuming a sand soil type. Depth to source adopted was <1 m as an initial screen.
- NEPM (2013) Management Limits (MLs) for petroleum hydrocarbons for 'Commercial/Industrial' land use and assuming coarse soil texture. Criteria are relevant for operating sites where significant sub-surface leakage of petroleum hydrocarbons has occurred and when decommissioning industrial and commercial sites.
- NEPM (2013) HSLs for Asbestos Contamination in Soil for 'Commercial/Industrial' (HSL D) land use.

7.1.2 Ecological Assessment Criteria

Based on the proposed development, there will be limited exposure for ecological receptors to contamination in soil following site development. However, the Auditor notes that if fill materials are to be retained onsite in landscaped areas shown in Attachment 4 (Appendix A), the following ecological screening levels will be required to be applied to landscaped areas of the site:

- NEPM (2013) Ecological Screening Levels (ESLs) for 'Commercial and Industrial' land use, assuming coarse soil.
- NEPM (2013) Ecological Investigation Levels (EILs) for 'Commercial and Industrial' land use. Site specific EILs for copper, zinc and nickel have been derived using the Interactive (Excel) Calculation Spreadsheet provided in the ASC NEPM Toolbox assuming the contamination is "aged", high traffic volume, and using site specific pH and cation exchange capacity (CEC) values. The pH and CEC values adopted for the fill were an average pH of 8.35 (range 7.7 to 9.0) and CEC of 32 cmolc/kg (range 30 to 34). The published range of the added contaminant limits were applied as an initial screen for other metal compounds.
- Canadian Council of Ministers of the Environment (CCME) (2010) *Canadian soil quality guidelines: carcinogenic and other polycyclic aromatic hydrocarbons (PAHs)* soil quality guideline (SQG) for benzo(a)pyrene for 'Commercial/Industrial' land use. The SQG can be adopted in place of the NEPM (2013) ESL as it is based on a larger and more up-to-date toxicity database than the low reliability NEPM (2013) ESL.

7.1.3 Soil Aesthetic Considerations

The Auditor has considered the need for soil remediation based on 'aesthetic' contamination as outlined in *Section 3.6 Aesthetic Considerations* of NEPM (2013) Schedule B1, which acknowledges that there are no chemical-specific numerical aesthetic guidelines. Instead, site assessment requires a balanced consideration of the quantity, type and distribution of foreign material or odours in relation to the specific land use and its sensitivity.

7.2 Groundwater Assessment Criteria

7.2.1 Human Health Assessment Criteria

NEPM (2013) HSLs for 'Commercial/Industrial' (HSL D) land use. The HSLs assumed a clay soil type and a depth to groundwater of 2 to <4 m.

7.2.2 Ecological Assessment Criteria

- ANZG (2018) *Australian and New Zealand Guidelines for Fresh and Marine Water Quality.* Australian and New Zealand Governments and Australian state and territory governments, Canberra ACT, Australia (www.waterquality.gov.au/anz-guidelines). Groundwater Default Guideline Values (DGVs) provided are concentrations that, if exceeded, indicate a potential environmental problem at the point of use and 'trigger' further investigation. The criteria for freshwater and 95% level of protection were adopted since the closest receptor is a concrete lined drainage channel that flows into the Alexandra Canal.

7.3 Auditor's Opinion

The environmental quality criteria for soil and groundwater referenced by the Auditor are consistent with those adopted by JKE. The Auditor notes that JKE applied site specific soil EILs for copper, nickel and zinc that varied slightly from those calculated by the Auditor. The derivation of the EILs used by JKE was not provided in the report. Given the results obtained, the Auditor considers that these discrepancies do not affect the overall conclusions reached by JKE and the Auditor.

The DESA was completed prior to the 2013 revision of the NEPM and DLA adopted soil assessment criteria from Schedule B1 *Guideline on the Investigation Levels for Soil and Groundwater* from NEPM 1999 for commercial/industrial land use, the NSW EPA *Guidelines for Assessing Service Station Sites* (1994) and the NSW EPA *Guidelines for the NSW Site Auditor Scheme, second edition* (2006). The Auditor has assessed contaminant concentrations reported in the DESA against the updated guideline criteria outlined above where appropriate. The fractionation of TRH completed by the laboratory for the DESA differs to the fractions reported in the DSI and the criteria in NEPM 2013. The Auditor has considered the significance of all reported fractions in the assessment of soil data.

8. EVALUATION OF SOIL RESULTS

As outlined in Table 6.1, soil sampling was undertaken by both DLA and JKE. The sample locations are presented in Attachments 3 and 6 in Appendix A and the following sections outline the soil field and analytical results for the DESA and DSI investigations.

8.1 Field Results

Soil samples were screened for VOCs using a PID during the DSI with results between 0 and 1 ppm equivalent isobutylene, indicating a lack of PID detectable VOCs in soils. Fill material was encountered in most boreholes comprising grey to black gravelly, silty sand and sandy, silty gravel with anthropogenic inclusions of ash, slag, brick and concrete fragments. No odours or staining were reported during either investigation.

Soil pH and CEC measurements were reported for two samples during the DSI (BH110_0.25-0.30 and BH114_0.18-0.35). The pH values were 7.7 and 9.0 respectively with CEC values of 30 and 34 cmolc/kg.

8.2 Analytical Results

Soil samples were analysed for a variety of contaminants including petroleum hydrocarbons, PAHs, asbestos and heavy metals. Most analysed samples were fill material with four samples of natural silty clay analysed. The analytical results for fill material have been assessed against the environmental quality criteria and are summarised in Table 8.1. Results for natural soil samples are discussed below Table 8.1.

Table 8.1: Evaluation of Soil Analytical Results – Summary Table

Analyte	n	Detections	Maximum (mg/kg)	n > Human Health Screening Criteria	n > Terrestrial Ecological Screening Criteria
ACM >7 mm (10 L samples)	18	0	-	0 above HSL D 0.05% w/w	-
AF/FA (500 mL samples)	8	1	0.0038 g, <0.001% w/w	0 above HSL 0.001% w/w	-
Asbestos in soil	8	0	-	0 above 0.1 g/kg	-
Asbestos in material	1	0	-	-	-
BTEX	30	0	<PQL	0 above HSL D 0-1 m, sand	0 above ESL (commercial/industrial)
F1 (TRH C_6–C_{10} minus BTEX)	43	0	<25	0 above HSL D 0-1 m, sand	0 above ESL (commercial/industrial)
F2 (TRH >C_{10}–C_{16} minus naphthalene)	24	0	<50	0 above HSL D 0-1 m, sand	0 above ESL (commercial/industrial)
TRH C_6–C_{10}	43	0	<PQL	0 above ML (commercial/industrial) 700 mg/kg	-
TRH C_{10}–C_{14}	19	0	<50	-	-
TRH >C_{10}–C_{16}	24	0	<50	0 above ML (commercial/industrial) 1000 mg/kg	-
F3 TRH >C_{16}-C_{34}	24	6	690	0 above ML (commercial/industrial) 3500 mg/kg	0 above ESL (commercial/industrial) 1700 mg/kg

Analyte	n	Detections	Maximum (mg/kg)	n > Human Health Screening Criteria	n > Terrestrial Ecological Screening Criteria
TRH C_{15}–C_{28}	19	2	360	-	-
F4 TRH >C_{34}-C_{40}	24	1	110	0 above ML (commercial/industrial) 10,000 mg/kg	0 above ESL (commercial/industrial) 3300 mg/kg
TRH C_{29}–C_{36}	19	2	340	-	-
Naphthalene	55	4	0.6	0 above HSL D 0-1 m, sand 3 mg/kg	0 above EIL (commercial/industrial) 370 mg/kg
Benzo(a)pyrene	55	31	6.2	-	0 above CCME SQG (commercial/industrial) 72 mg/kg
Benzo(a)pyrene TEQ	24	6	8.6	0 above HIL D 40 mg/kg	-
Total PAHs	25	17	120	0 above HIL D 4000 mg/kg	-
Arsenic	55	20	11	0 above HIL D 3000 mg/kg	0 above EIL (commercial/industrial) 160 mg/kg
Cadmium	55	3	1	0 above HIL D 900 mg/kg	-
Chromium	55	55	37	0 above HIL D 3600 mg/kg	0 above most conservative ACL (commercial/industrial) 310 mg/kg
Copper	55	55	470	0 above HIL D 240,000 mg/kg	**1 above site specific EIL (commercial/industrial) 350 mg/kg**
Lead	55	55	1500	0 above HIL D 1500 mg/kg	0 above generic ACL (commercial/industrial) 1800 mg/kg
Mercury	55	12	1.2	0 above HIL D 730 mg/kg	-
Nickel	55	55	89	0 above HIL D 6000 mg/kg	0 above site specific EIL (commercial/industrial) 630 mg/kg
Zinc	55	55	980	0 above HIL D 400,000 mg/kg	0 above site specific EIL (commercial/industrial) 1700 mg/kg
PCB	13	0	<PQL	0 above HIL D 7 mg/kg	-
OCP	13	0	<PQL	0 above HIL D	0 above EIL
OPP	13	0	<PQL	0 above HIL D	-

n number of samples
- No criteria available/used
NL Non-limiting
<PQL Less than the practical quantitation limit

In reviewing the analytical results, the Auditor notes the following:

- Concentrations of all analysed contaminants of concern were below the adopted human health criteria.
- Chrysotile asbestos was detected by the laboratory in one 500 ml soil sample collected from borehole BH117 at 0.2-0.5 mbgl. Based on the quantification method completed in accordance with NEPM 2013, the concentration of asbestos was below the health criteria for

FA and AF estimation of 0.001% w/w. The form of the asbestos was not reported by the laboratory (e.g. ACM, lagging, etc.).

- The concentration of copper in one fill sample exceeded the ecological screening criteria. The Auditor undertook statistical analysis of the data to determine the 95% upper confidence limit (UCL) based on the data set. The 95% UCL value of 75.6 mg/kg is below the calculated EIL of 350 mg/kg, indicating the copper exceedance is not statistically significant.
- In addition to the analytical results for fill samples shown in Table 8.1, four samples of natural silty clay underlying the fill were analysed during the DESA for metals and PAH and one sample for TRH. All results were below the PQL or adopted SAC.

Based on the results of the DESA, DLA concluded that "*Based on this Site Assessment, no further investigation is required and the Site is deemed suitable for the intended* [commercial] *land use.*"

JKE concluded that "*Based on the findings of the investigation, JKE are of the opinion that the site is suitable for the proposed development described in Section 1.1. The following recommendations should be implemented for the development works:*

- *Complete a Hazardous Building Materials Assessment (Hazmat) for the existing structures at the site;*
- *Prepare and implement an Asbestos Management Plan (AMP) for soil disturbance in the vicinity of BH117;*
- *Prepare and implement an Unexpected Finds Protocol (UFP) for the development works; and*
- *Prepare and implement an ASS Management Plan (ASSMP) for the proposed development.*"

8.3 Auditor's Opinion

In the Auditor's opinion, the soil analytical results are consistent with the site history and field observations and do not indicate the presence of widespread contamination. The fill material present across the site includes anthropogenic inclusions of ash, slag and building rubble, however, concentrations of contaminants do not exceed the SAC.

The density of analysis for asbestos in soils was low. Asbestos fibres were detected in one soil sample as FA and AF at a concentration below the HSL of 0.001% w/w. As discussed in Table 6.1, the sampling density and sampling methodology adopted for assessment of asbestos in soils raises uncertainty in relation to characterisation of fill materials for asbestos. There is also uncertainty in relation to soil conditions below the existing building footprints. It is recommended that this uncertainty is managed during the redevelopment process as outlined in Section 14.

9. EVALUATION OF GROUNDWATER RESULTS

Three primary groundwater samples and two duplicates were collected in August 2020 during the DSI. These were submitted for analyses for metals, PAHs, TRH, BTEX and VOCs. The DSI was undertaken as described in Section 6 and the analytical results from one round of sampling at the three wells are summarised in Table 9.1 below. The groundwater monitoring locations are shown in Attachment 3, Appendix A.

9.1 Field Results

Phase separated product, or light non aqueous phase liquid (LNAPL) was not detected during well installation or sampling and no odours were detected.

Water quality parameters were recorded during well development and sampling. Groundwater pH ranged from 4.52 to 6.86 which is acidic to neutral. Electrical conductivity (EC) ranged from 967 µS/cm to 15,274 µS/cm, redox potential (Eh) ranged from -108.3 mV to 288.1 mV and dissolved oxygen (DO) concentrations ranged from 0.3 to 4.6 ppm indicating an anerobic environment.

9.2 Analytical Results

Table 9.1: Evaluation of Groundwater Analytical Results – Summary Table (µg/L)

Analyte	n	Detections	Maximum	n > HSL D sand, >8 m NEPM (2013)	n > Freshwater ANZG (2018)
TRH C_6-C_{10} less BTEX (F1) or TPH (C_6-C_9)	3	0	<25	NL	-
TRH >C_{10}-C_{16} less naphthalene (F2) or TPH (C_{10}-C_{14})	3	0	<50	NL	-
TRH >C_{16}-C_{34} or TPH (C_{15}-C_{28})	3	0	<100	-	-
TRH >C_{34}-C_{40} or TPH (C_{29}-C_{36})	3	0	<100	-	-
BTEXN	3	0	<PQL	0 above HSL D	0 above DGV
Benzo(a)pyrene	3	0	<0.1	-	0 above DGV of 0.1
Anthracene	3	0	<0.1	-	0 above DGV of 0.01
Fluoranthene	3	0	<0.1	-	0 above DGV of 1
Phenanthrene	3	0	<0.1	-	0 above DGV of 0.6
Arsenic	3	0	<1	-	0 above DGV of 13
Cadmium	3	0	<0.1	-	0 above DGV of 0.2
Chromium as Cr(III)	3	0	<1	-	0 above DGV of 3.3
Copper	3	2	7	-	**1 above DGV of 1.4**
Lead	3	0	<1	-	0 above DGV of 3.4
Mercury (inorganic)	3	1	0.07	-	**1 above DGV of 0.06#**
Nickel	3	3	6	-	0 above DGV of 11
Zinc	3	3	42	-	**2 above DGV of 8**
VOCs	3	0	<PQL	-	0 above DGV

n number of samples
- No criteria available/used
<PQL Less than the practical quantitation limit
NL non limiting

In assessing the analytical results, the Auditor makes the following observations:

- Concentrations of petroleum hydrocarbons (TRH, BTEXN), PAHs, VOCs and most metals were below PQLs.
- Copper in groundwater sample from BH118, mercury in groundwater from BH121 and zinc in the groundwater samples from BH118 and BH121 exceeded the DGVs for freshwater water (95% species protection). Other metals were less than the DGVs and typically less than the detection limit. JKE considered the results for copper and zinc to represent background groundwater quality, with the reported levels common in urban environments. The detection of mercury only slightly exceeded the SAC (0.07 µg/L vs 0.06 µg/L) and was not considered to pose a risk to ecological receptors.

9.3 Auditor's Opinion

In the Auditor's opinion, the groundwater monitoring undertaken was adequate to identify significant groundwater contamination posing a risk to onsite and offsite receptors. The groundwater results indicate some slightly elevated copper and zinc concentrations, likely to be due to regionally elevated concentrations in a heavily disturbed urban environment. Overall, the groundwater results do not indicate that groundwater contamination is present beneath the site that poses a risk to the proposed future site use. There is a lack of groundwater data from the southern portion of the site, however, the lack of detected soil and groundwater contamination suggests that the potential for significant groundwater impact in this area is low.

10. EVALUATION OF CONCEPTUAL SITE MODEL

A conceptual site model (CSM) is a representation of the source, pathway and receptor linkages at a site. JKE developed a CSM during the DSI. Table 10.1 provides the Auditors review of the CSM.

Table 10.1: Review of the Conceptual Site Model

Element of CSM	Consultant	Auditor Opinion
Contaminant source and mechanism	JKE considered the key site contamination issues to be: • The presence of fill used to level the site; and • The storage and handling of chemicals associated with ASTs and potential USTs which may have caused environmental impact through leaks and spills • Use of pesticides around and under buildings • Hazardous building materials as a result of demolition of former site buildings and within existing buildings • Off-site dry cleaners located 110 m to north-east of the site and potentially upgradient. Based on the above, JBS&G identified the following contaminants of potential concern: • Metals • TRH • BTEX • OCPs • PCBs • PAHs • VCHs • Asbestos.	The sources of contamination and contaminants of concern including the mechanism of contamination have generally been appropriately identified. It is noted that investigation of the site did not identify significant soil or groundwater impact. Asbestos was not observed in fill material during the DESA or DSI. However, it is noted that there were limitations associated with the soil investigation methodology adopted and there is a potential that more widespread ACM and friable asbestos in fill material than indicated by the results. The sampling density for soils beneath building footprints is also low, and there is the potential for fill materials that differ from those characterised during the investigations.
Affected media	Site soils and groundwater	The affected media have been appropriately identified.
Receptor identification	Commercial/industrial workers and intrusive maintenance workers (short duration). Off-site human receptors include adjacent land users and groundwater users. Ecological receptors include terrestrial organisms and plants within unpaved areas (including the proposed landscaped areas).	The onsite receptors have been identified. The auditor notes that offsite ecological receptors would include Alexandra Canal. It is noted that extraction of groundwater for beneficial use surrounding the site is unlikely based on the urban environment and availability of reticulated water supply.
Exposure pathways	Exposure pathways for human receptors include ingestion, dermal absorption and inhalation of dust (all contaminants) and vapours (volatile TRH, naphthalene and BTEX). The potential for exposure would be associated with the construction and excavation works, and future use of the site. Potential exposure	The exposure pathways for soils and groundwater are generally appropriate. However, it is noted that the current and proposed future development design do not include a basement or subsurface enclosed spaces, therefore, the vapour inhalation exposure pathway into these structures is incomplete. It is also noted that oral and dermal exposure to groundwater is unlikely to be a relevant

Element of CSM	Consultant	Auditor Opinion
	pathways for ecological receptors include primary/direct contact and ingestion. Exposure during future site use could occur via direct contact with soil in unpaved areas such as gardens, inhalation of airborne asbestos fibres during soil disturbance, or inhalation of vapours within enclosed spaces such as buildings and basements.	pathway given the depth to groundwater (>2.5 mbgl) and absence of abstraction bores on the site and within a 500 m radius of the site. Groundwater migration and discharge to surface water is unlikely based on the data presented, including the low permeability of the aquifer, and the distance to the receptor.
Presence of preferential pathways for contaminant movement	The backfill around services is identified as a potential preferential pathway for contaminant migration via groundwater/ seepage if present or via soil/vapour migration through the sewer and/or trench backfill.	Potential preferential pathways for migration include the stormwater drainage channel that underlies the site as well as services. The sandy, gravelly nature of the underlying fill materials could also provide preferential pathways for contaminant migration.
Potentially complete source-pathway-receptor (SPR) linkages requiring remediation or management	The DSI did not specify potentially complete SPR linkages.	The Auditor considers the potentially complete SPR linkages to potentially include exposure to soil and dust by construction workers during site redevelopment works and maintenance workers following redevelopment. The proposed development plan in Attachment 4 (Appendix A) includes limited landscaping areas. A potentially complete SPR linkage may be present for gardeners if fill material is retained in these areas.
Evaluation of data gaps	JKE identified the following data gaps in the DSI: • The location of the former USTs could not be determined based on the plans available via SafeWork. JKE recommend undertaking a Ground Penetrating Radar (GPR) survey of the site as part of the development works. • Soil sampling beneath building footprints. • Soil sampling for waste classification. Based on the results of the DSI, JKE recommended: • Completion of a hazardous materials building survey for existing structures • Implementation of an Asbestos Management Plan (AMP) for soil disturbance near BH117 • Implementation of an Unexpected Finds Protocol (UFP) for the development works • Implementation of an ASS Management Plan (ASSMP) for the proposed development.	The Auditors review of the SafeWork plans indicated that the USTs were present on the adjoining site to the west which has been redeveloped. The potential for asbestos to be present in fill material has not been well characterised given the limitations of the investigation methodology. There may therefore be more ACM and/or friable asbestos present in fill material than indicated by the results of the investigations.

10.1 Auditor's Opinion

The Auditor is of the opinion that the CSM was a reasonable representation of the potential contamination at the site. The results of the DSI, discussed in Sections 8 and 9, indicate that the site is not significantly contaminated, however, there is potential for contamination to be present under building footprints and as unidentified asbestos in fill. Management requirements to

address these issues and potential contamination by HBM during the building demolition process are identified by JKE in the DSI and are discussed further in Sections 12 and 14 of this report.

11. CONTAMINATION MIGRATION POTENTIAL

11.1 Auditor's Opinion

No significant levels of contaminants were detected over the site and therefore there is limited potential for migration of contamination from the site or vertically to groundwater. The low concentrations of contaminants in groundwater indicate that further groundwater characterisation is not considered necessary. Should potential sources of groundwater contamination be identified during site redevelopment, further investigation of groundwater may be required.

Based on the historic use of asbestos in building materials and the detected presence of asbestos fibres in one soil sample, asbestos could be encountered during redevelopment works which will need to be managed to prevent off-site migration of asbestos as fibres or in dust.

In the Auditor's opinion, significant migration of contamination from the site is unlikely subject to appropriate soil and waste material management during site redevelopment works.

12. ASSESSMENT OF RISK

Soil conditions below existing building footprints have not been assessed and there is the potential for contamination by HBM, primarily asbestos, to be present in fill materials or to occur during demolition of existing buildings. JKE made the following recommendations to address these risks:

- Complete a Hazardous Building Materials Assessment (Hazmat) for the existing structures at the site;
- Prepare and implement an Asbestos Management Plan (AMP) for soil disturbance in the vicinity of BH117; and
- Prepare and implement an Unexpected Finds Protocol (UFP) for the development works.

In addition, JKE recommended preparation and implementation of an ASS Management Plan (ASSMP) for the proposed development.

12.1 Auditor's Opinion

Based on assessment of results against relevant guidelines and consideration of the overall investigations, it is the Auditor's opinion that the risks to human health and the environment from potential contamination at the site are currently low.

The potential for asbestos to be present in fill material has not been well characterised given the limitations of the investigation methodology, and building footprints are identified as a data gap. Given the proposed development will comprise minimal bulk excavation of fill material, no excavation of a basement and hardstand cover above retained soils, the potential for exposure to any residual contamination by future site occupants is limited to intrusive maintenance workers and landscaped areas of the site. There is a risk of importing contamination during the redevelopment works if recycled civil materials are used. If non-quarried material is to be imported during redevelopment works, such materials should be validated for potential contamination prior to, or following, importation.

Management of risk issues associated with the redevelopment works is recommended through preparation and implementation of a remedial action plan (RAP) documenting the processes and procedures to be implemented as discussed in Section 14.

Based on the groundwater investigation undertaken during the DSI, the Auditor considers that the risks to human health and the environment from groundwater are low (i.e. low potential for contamination and no direct contact). It is noted that beneficial re-use of groundwater is not proposed at the site, however, any future use of groundwater would require appropriate regulatory approvals from the NSW Office of Water.

13. COMPLIANCE WITH REGULATORY GUIDELINES AND DIRECTIONS

13.1 General

The Auditor has used guidelines currently made and approved by the EPA under section 105 of the NSW *Contaminated Land Management Act 1997*.

The investigations were generally conducted in accordance with SEPP 55 Planning Guidelines and reported in accordance with the OEH (2011) *Guidelines for Consultants Reporting on Contaminated Sites* (which was applicable at the time the DESA and ASSMP reports were prepared) and the NSW EPA (2020) *Consultants Reporting on Contaminated Land*.

13.2 Development Approvals

The proposed development is designated as State Significant Development (SSD 10468). Correspondence from the NSW EPA (DOC20/433201 dated 16 June 2020) recommended that the Planning Secretary's Environmental Assessment Requirements (SEARs) include a requirement "*…that an NSW EPA Accredited Sites Auditor review the adequacy of all contamination reports provided in support of the development*".

The Audit was initiated to comply with this recommendation through review of existing site contamination investigations and is currently a non-statutory audit. It is anticipated that a SAS and supporting SAR confirming the suitability of the site for its intended use (a Section A SAS) will be required as a condition of consent.

13.3 Duty to Report

Consideration has been given to the requirements of the EPA (2015) *Guidelines on the Duty to Report Contamination under the Contaminated Land Management Act 1997*. The Auditor considers that the site is not required to be notified under the Duty to Report requirements. The Auditor notes that should significant unexpected contamination be encountered during development works that a Duty to Report notification may be required.

13.4 Conflict of Interest

The Auditor has considered the potential for a conflict of interest in accordance with the requirements of section 3.2.3 of the NSW EPA (2017) *Guidelines for the NSW Site Auditor Scheme*.

The Auditor considers that there are no conflicts of interest, given that:

1. The Auditor is not related to a person by whom any part of the land is owned or occupied.
2. The Auditor does not have a pecuniary interest in any part of the land or any activity carried out on any part of the land.
3. The Auditor has not reviewed any aspect of work carried out by, or a report written by, the site auditor or a person to whom the site auditor is related.

14. CONCLUSIONS AND RECOMMENDATIONS

JKE concluded in the DSI (dated August 2020) that:

"Based on the findings of the investigation, JKE are of the opinion that the site is suitable for the proposed development described in Section 1.1. The following recommendations should be implemented for the development works:

- *Complete a Hazardous Building Materials Assessment (Hazmat) for the existing structures at the site;*
- *Prepare and implement an Asbestos Management Plan (AMP) for soil disturbance in the vicinity of BH117;*
- *Prepare and implement an Unexpected Finds Protocol (UFP) for the development works; and*
- *Prepare and implement an ASS Management Plan (ASSMP) for the proposed development.*

The following should be implemented in the event of an unexpected find:

- *All work in the immediate vicinity should cease and temporary barricades should be erected to isolate the area;*
- *A suitably qualified contaminated land consultant should be engaged to inspect the find and provide advice on the appropriate course of action. In the event that the unexpected find triggers remediation, the requirements of SEPP55 must be addressed (e.g. notifications to Council); and*
- *Any actions should be implemented and validated to demonstrate that there are no unacceptable risks to the receptors."*

Based on the information presented in the DLA and JKE reports and observations made on site, and following the Decision-making process for assessing urban redevelopment sites in NSW EPA (2017) *Guidelines for the NSW Site Auditor Scheme (3rd Edition)*, the Auditor concludes that the nature and extent of contamination has been adequately assessed for remedial planning purposes.

The Auditor considers that there is a potential for asbestos impacted fill materials to be present at the site that will require remediation or management during the redevelopment. There is also the potential that unidentified sources of contamination such as underground tanks or subsurface structures may be encountered. It is recommended that a RAP is prepared for further assessment and remediation during demolition and redevelopment of the site.

The Auditor makes the following recommendations:

1. Preparation and implementation of a RAP prepared in accordance with the NSW EPA (2020) *Consultants reporting on contaminated Land: Contaminated land guidelines* including, but not limited to:
   - the inspection and characterisation process for fill material under building footprints following demolition including validation for ACM in accordance with NEPM (2013)
   - the inspection process to be implemented during removal of hardstand to assess for any unidentified sources of contamination
   - remediation and validation procedures to be implemented if ACM impacted fill materials are encountered or any other unidentified contamination, including underground tanks or subsurface infrastructure

- the procedure for determining the need for further groundwater characterisation should contamination be identified during the development works
- materials handling and waste classification procedures
- validation procedures for assessment of imported materials as suitable for intended use
- interaction of the RAP with other site management plans

The RAP should be reviewed by a NSW EPA Accredited Site Auditor.

2. Preparation of a final site validation report by a qualified environmental consultant documenting the works undertaken in accordance with the RAP and certifying the suitability of the site for the proposed development.
3. Preparation of an Environmental Management Plan (EMP) for the management of any contamination remaining on site following the redevelopment that presents a risk to human health or the environment.
4. Preparation of a Section A Site Audit Statement by a NSW EPA Accredited Site Auditor reviewing the above information and confirming the suitability of the site for the intended use.

Groundwater has not been assessed for beneficial re-use. Any future use of groundwater would require appropriate regulatory approvals from the NSW Office of Water.

15. OTHER RELEVANT INFORMATION

This Audit was conducted on the behalf of Fabcot Pty Ltd for the purpose of assessing the nature and extent of any contamination of the land, i.e. a "Site Audit" as defined in Section 4 (1) (b) (i) of the CLM Act.

This report may not be suitable for other uses. The consultants included limitations in their reports. The Audit must also be subject to those limitations. The Auditor has prepared this document in good faith but is unable to provide certification outside of areas over which the Auditor had some control or is reasonably able to check.

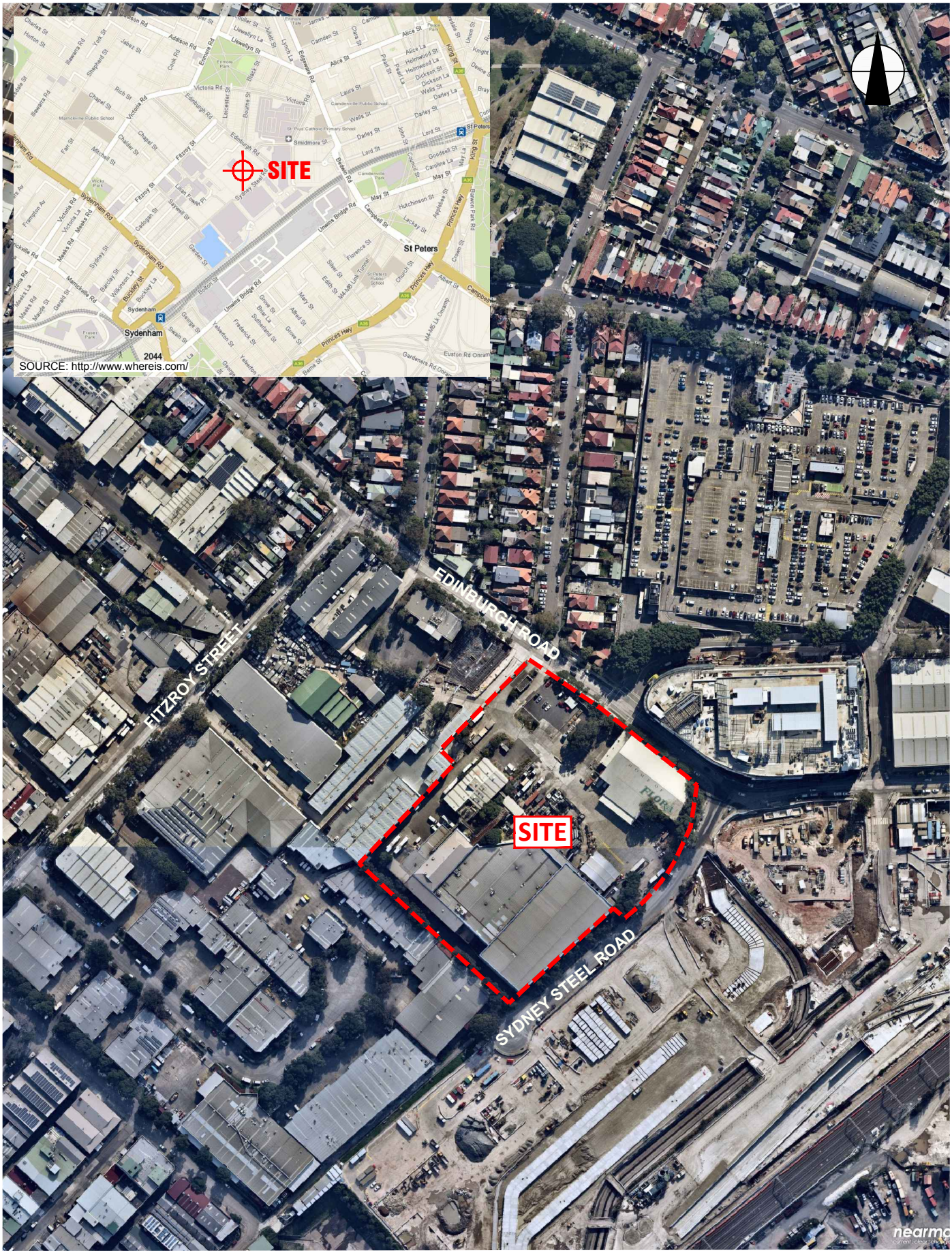
The Auditor has relied on the documents referenced in Section 1 of the Site Audit Report in preparing the Auditors' opinion. If the Auditor is unable to rely on any of those documents, the conclusions of the audit could change.

It is not possible in a Site Audit Report to present all data which could be of interest to all readers of this report. Readers are referred to the referenced reports for further data. Users of this document should satisfy themselves concerning its application to, and where necessary seek expert advice in respect to, their situation.

APPENDIX A
ATTACHMENTS

Attachment 1: Site Location
Attachment 2: Site identifiers
Attachment 3: Site Layout and JKE Sample Locations
Attachment 4: Proposed Development Layout – Plan View
Attachment 5: Proposed Development Layout – Cross Section
Attachment 6: Sample Locations – DLA 2010
Attachment 7: Sample Locations - JK Geotechnical in EIS 2015

Attachment 1: Site Location



AERIAL IMAGE SOURCE: MAPS.AU.NEARMAP.COM

This plan should be read in conjunction with the Environmental report.

Title: **SITE LOCATION PLAN**

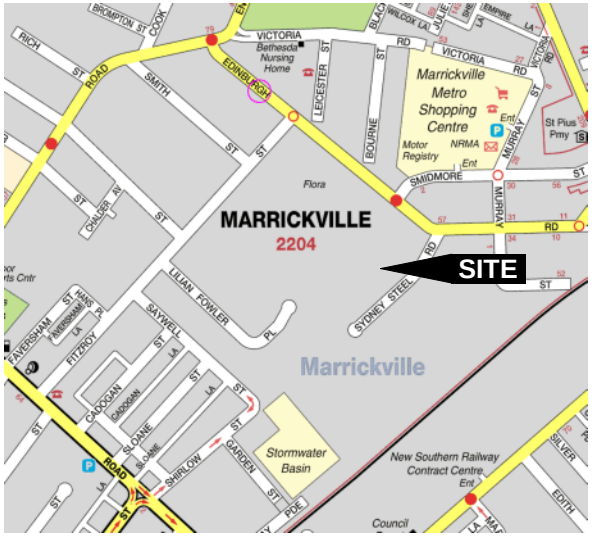
Location: 74 EDINBURGH ROAD, MARRICKVILLE, NSW

Project No: E33191B

Figure No: 1

JKEnvironments

PLOT DATE: 21/08/2020 11:15:37 PM DWG FILE: Z:\5 EIS\5C- EIS \JOBS\33000\SIE33191B MARRICKVILLE\CAD\E33191B.DWG



N

NOTES:
Figure 1 has been recreated from UBD on disc (version 5.0) and NSW Department of Lands SIX Maps. Figure is not to scale.

UBD Map ref: 17 K6 and K7

Reference should be made to the report text for a full understanding of this plan.

ENVIRONMENTAL INVESTIGATION SERVICES

Project Number:	Title:
E28042KB	SITE LOCATION PLAN
Figure: 1	Address: 74 EDINBURGH ROAD, MARRICKVILLE, NSW

BH119 (>1.0)
BH114 (0.35)
BH7 (2.3)
BH120 (2.9)
BH121/MW121 (1.5)
BH115 (1.4)
BH9 (1.5)
BH109 (>0.3)
BH110 (>0.65)
BH122 (>0.35)
BH116 (1.3)
BH117 (1.2)
BH111 (>0.3)
BH105 (>0.3)
BH11 (>6.0)
BH118/MW118 (1.3)
BH1 (1.2)
BH112 (>0.5)
BH106 (>0.3)
BH101/MW101 (4.5)
BH113 (0.5)
BH123 (>0.3)
BH102 (>0.4)
BH108 (>0.7)
BH107 (>0.4)
BH4 (1.4)
BH103 (>0.3)
BH104 (>0.35)

LEGEND

APPROXIMATE SITE BOUNDARY	
BH(Fill Depth)	BOREHOLE LOCATION, NUMBER AND DEPTH OF FILL (m)
BH(Fill Depth)	BOREHOLE LOCATION, NUMBER AND DEPTH OF FILL (m) (FEBRUARY 2015)
BH/MW(Fill Depth)	BOREHOLE AND GROUNDWATER MONITORING WELL LOCATION, NUMBER AND DEPTH OF FILL (m)
APPROXIMATE ALIGNMENT OF SEWER MAINS	
APPROXIMATE ALIGNMENT OF ELECTRICAL SERVICES	
APPROXIMATE ALIGNMENT OF STORMWATER DRAIN	

AERIAL IMAGE SOURCE: MAPS.AU.NEARMAP.COM

0 10 20 30 40 50
SCALE 1:1000 @A3 METRES

This plan should be read in conjunction with the Environmental report.

Title: **SAMPLE LOCATION PLAN**

Location: 74 EDINBURGH ROAD, MARRICKVILLE, NSW

Project No: E33191B

Figure No: 2

JKEnvironments

PLOT DATE: 3/09/2020 11:42:46 AM DWG FILE: Z:\5 EIS\5C EIS JOBS\33000'S\E33191B MARRICKVILLE\CAD\E33191B.DWG

Attachment 4: Development Layout Plan

Area Schedule

Land Use	Area
CFC	60 m²
Commercial	7,973 m²
Core	154 m²
Office	445 m²
Plant	1,882 m²
Warehouse	25,215 m²
Grand total	35,728 m²

1 Ground
1 : 500

Client

Issue	Description	Date
P2	Issued for discussion	27.03.2020
P1	For Review	12.03.2020

Builder

Project Name
Warehouse Facility

Project Address
74 Edinburgh Road, Marrickville, NSW, 2204

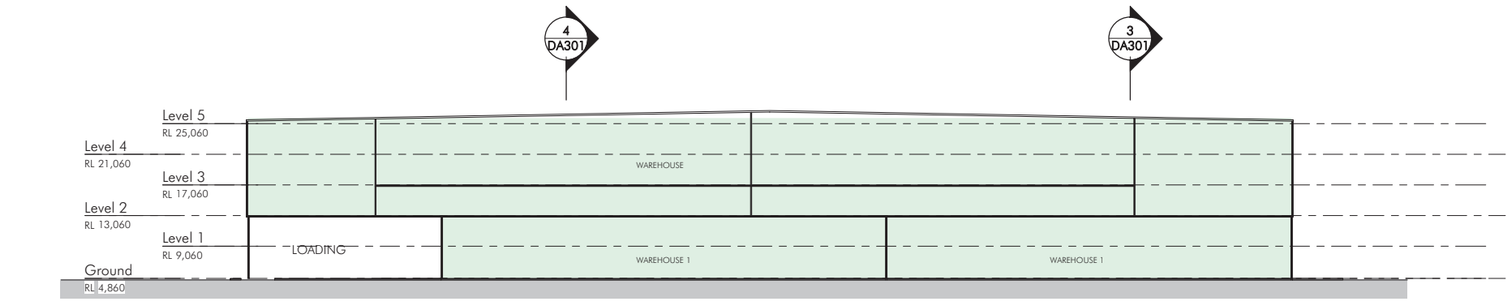
Key Plan
0 10000 25000

Drawing Title:
Ground Floor Plan

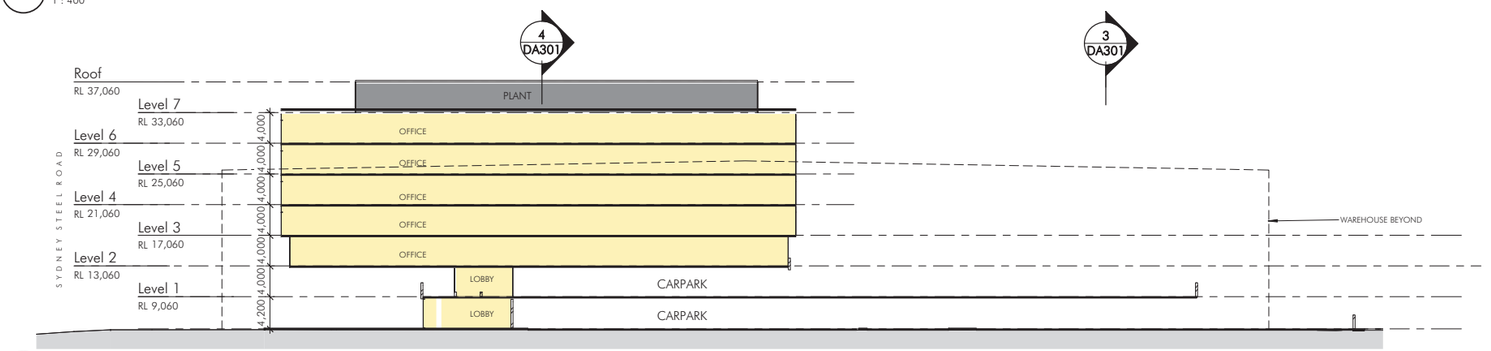
Author: Min | Checker: DC | Sheet Size:
Scale: 1:500
Drawing Number: 10437_DA0101
Issue: P2

nettletontribe
nettleton tribe partnership pty ltd ABN 58 161 683 122
117 Willoughby Road, Crows Nest, NSW 2065
t +61 2 9431 6431
e: sydney@nettletontribe.com.au w: nettletontribe.com.au

Attachment 5: Proposed Development Layout - Cross Section



1 Section 1
1 : 400



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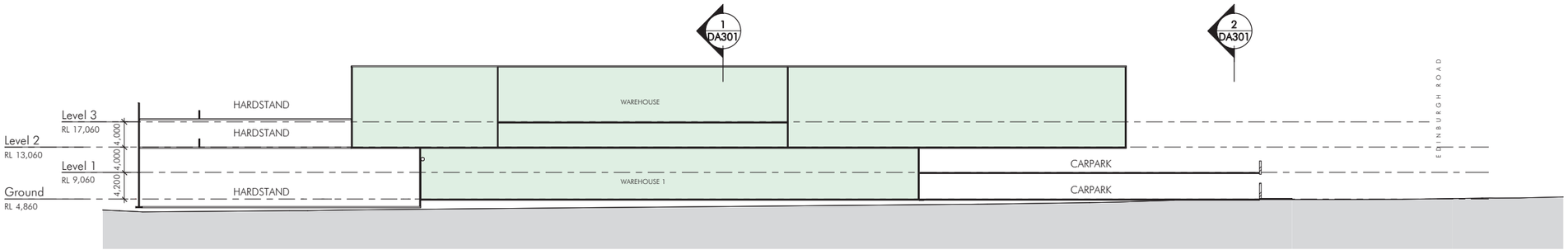
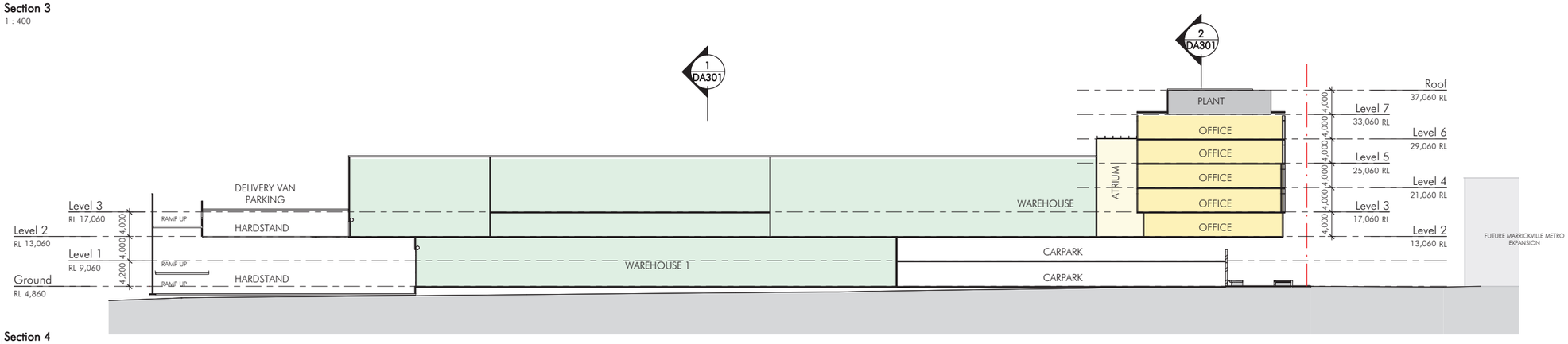


3 Section 3
1 : 400



4 Section 4
1 : 400

Client

Issue	Description	Date
P1	Issued for discussion	27.03.2020

Builder

Project Name
Warehouse Facility

Project Address
74 Edinburgh Road, Marrickville, NSW, 2204

Key Plan
0 2000 5000

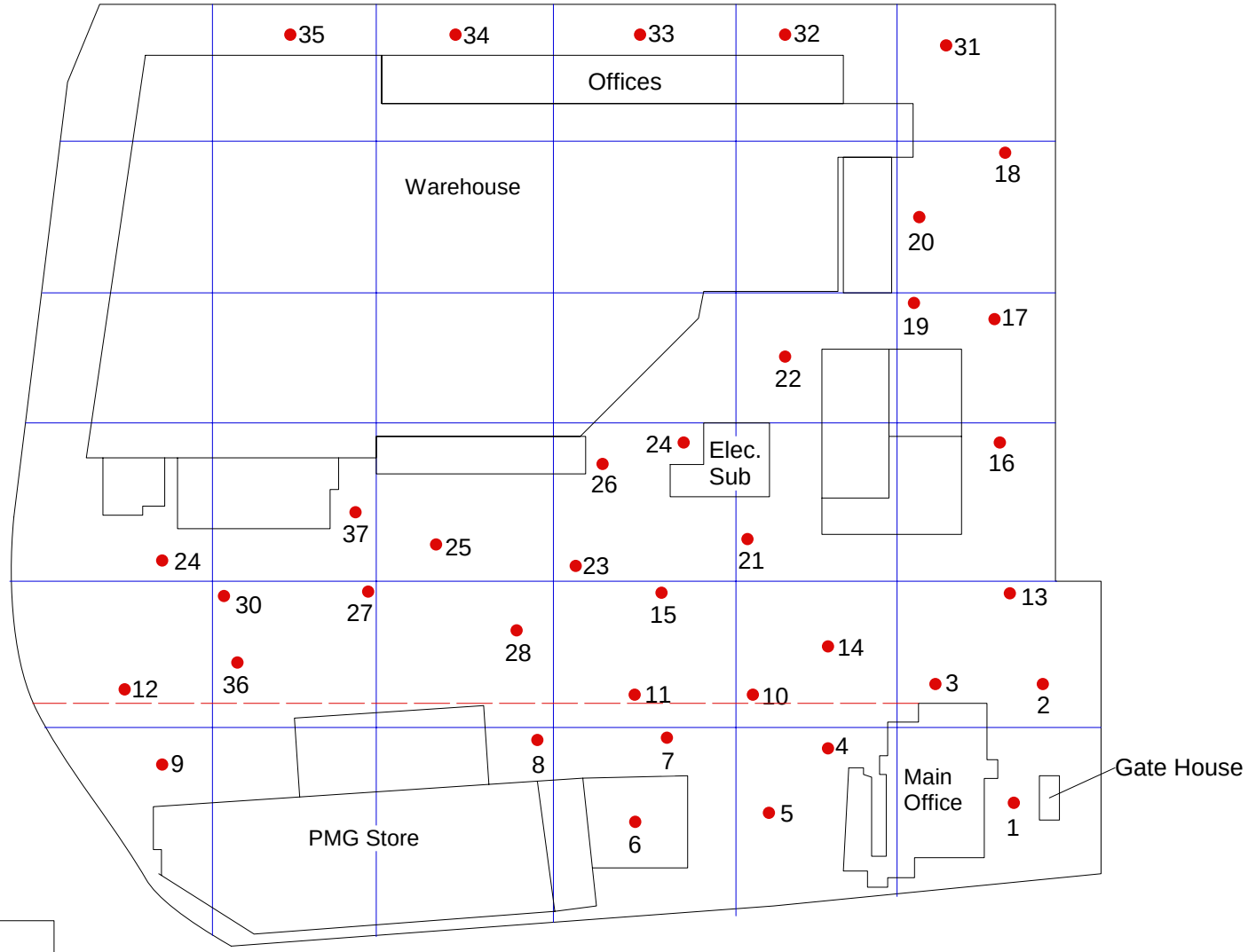
Drawing Title:
Sections

Author: DT
Checker: Checker
Sheet Size:
Scale:
Drawing Number: **10437_DA301**
Issue: **P1**

nettleton tribe partnership pty ltd ABN 58 161 683 122
117 Willoughby Road, Crows Nest, NSW 2065
t +61 2 9431 6431
e: sydney@nettletontribe.com.au w: nettletontribe.com.au

Attachment 6: Sample Locations - DLA 2010

74 Edinburgh Road, Marrickville, NSW



Legend

- 1 Sample Location and ID
- Sampling Grid
- Fence

DLA environmental

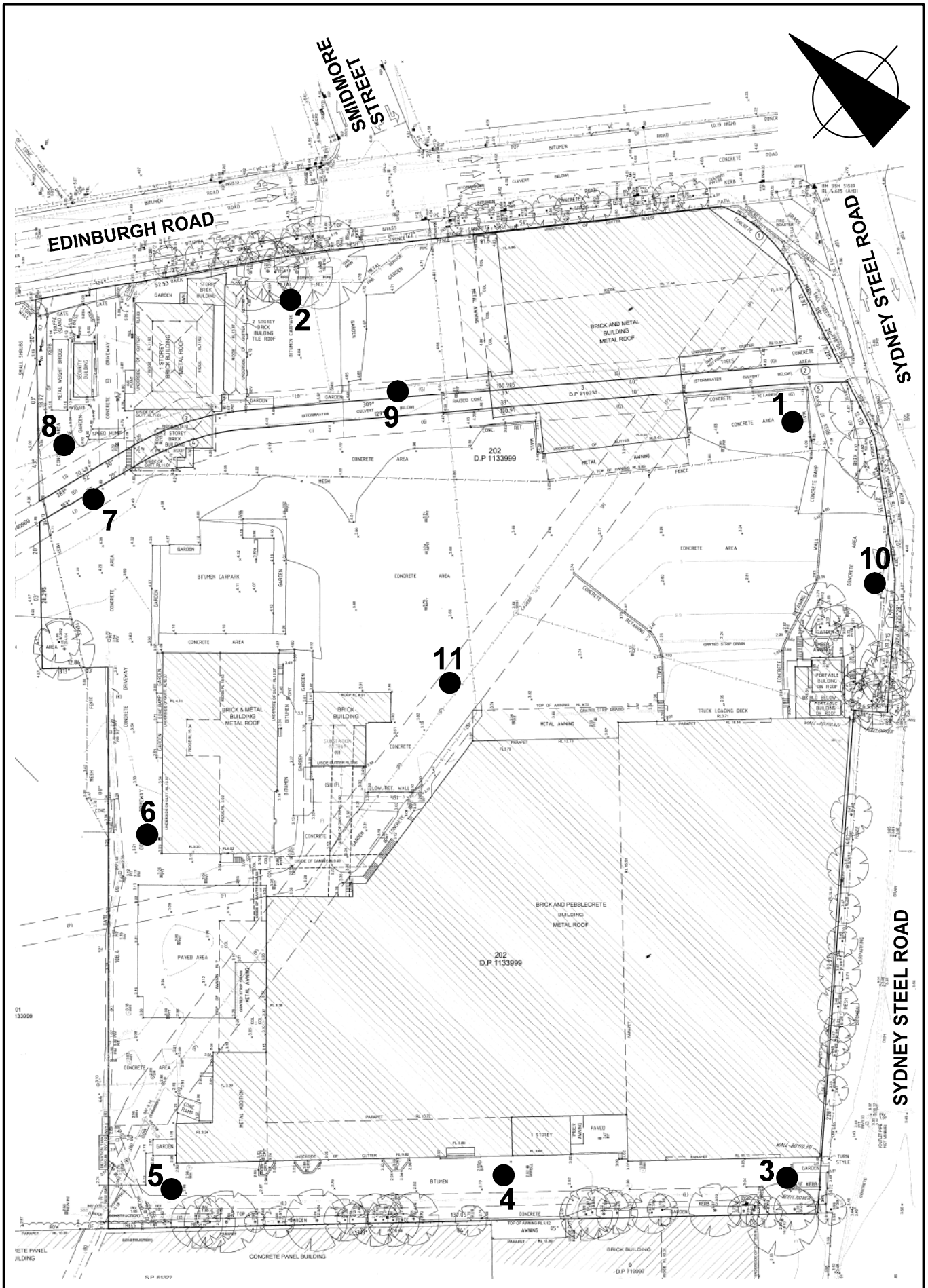
Unit 2b/30 Leighton Place
Hornsby, NSW 2077

Newcastle Office
Phone (02) 4949 3800
Fax (02) 4949 3811

Sydney Office
Phone (02) 9476 1765
Fax (02) 9476 1557

Title:	Site Layout with Sampling Locations
Client:	ACPP Pty Ltd care of AMP Capital Investors
Figure No:	2
Date:	30/09/2010
Scale	Not to Scale
Sheet	1 of 1
Revision	1

Attachment 7: Sample Locations - JK Geotechnical in EIS 2015



ENVIRONMENTAL INVESTIGATION SERVICES	Project Number: E28042KB	Title: BOREHOLE LOCATION PLAN
	Figure: 2	Address: 74 EDINBURGH ROAD, MARRICKVILLE, NSW

APPENDIX B
SITE AUDIT STATEMENT

NSW Site Auditor Scheme

Site Audit Statement

A site audit statement summarises the findings of a site audit. For full details of the site auditor's findings, evaluations and conclusions, refer to the associated site audit report.

This form was approved under the *Contaminated Land Management Act 1997* on 12 October 2017.

For information about completing this form, go to Part IV.

Part I: Site audit identification

Site audit statement no. LW-009

This site audit is a:

☐ statutory audit

☒ non-statutory audit

within the meaning of the *Contaminated Land Management Act 1997*.

Site auditor details

(As accredited under the *Contaminated Land Management Act 1997*)

Name	Louise Walkden
Company	Ramboll Australia Pty Ltd
Address	Level 3, 100 Pacific Highway, North Sydney
	Postcode 2060
Phone	02 9954 8100
Email	lwalkden@ramboll.com

Site details

Address: 74 Edinburgh Road, Marrickville, NSW

Postcode: 2204

Property description

(Attach a separate list if several properties are included in the site audit.)

Lot 202 DP1133999, Lot 101 DP1237269 and Lot 1 DP539623

Local government area: Inner West Council

Area of site (include units, e.g. hectares): approximately 2.8 ha

Current zoning: IN1 General Industrial and SP2 Infrastructure

Regulation and notification

To the best of my knowledge:

☐ **the site is** the subject of a declaration, order, agreement, proposal or notice under the *Contaminated Land Management Act 1997* or the *Environmentally Hazardous Chemicals Act 1985,* as follows: (provide the no. if applicable)

- ☐ Declaration no.
- ☐ Order no.
- ☐ Proposal no.
- ☐ Notice no.

☒ **the site is not** the subject of a declaration, order, proposal or notice under the *Contaminated Land Management Act 1997* or the *Environmentally Hazardous Chemicals Act 1985*.

To the best of my knowledge:

☐ the site **has** been notified to the EPA under section 60 of the *Contaminated Land Management Act 1997*

☒ the site **has not** been notified to the EPA under section 60 of the *Contaminated Land Management Act 1997*.

Site audit commissioned by

Name: Thomas Stock

Company: Fabcot Pty Ltd

Address: 1 Woolworths Way, Bella Vista, NSW

Postcode: 2153

Phone: 0404 077 930

Email: tstock@woolworths.com.au

Contact details for contact person (if different from above)

Name: N/A

Phone:

Email:

Nature of statutory requirements (not applicable for non-statutory audits)

☐ Requirements under the *Contaminated Land Management Act* 1997 (e.g. management order; please specify, including date of issue)

☐ Requirements imposed by an environmental planning instrument (please specify, including date of issue)

☐ Development consent requirements under the *Environmental Planning and Assessment Act 1979* (please specify consent authority and date of issue)

☐ Requirements under other legislation (please specify, including date of issue)

Purpose of site audit

☐ **A1** To determine land use suitability

Intended uses of the land:

OR

☐ **A2** To determine land use suitability subject to compliance with either an active or passive environmental management plan

Intended uses of the land:

OR

(Tick all that apply)

☒ **B1** To determine the nature and extent of contamination

☐ **B2** To determine the appropriateness of:

- ☐ an investigation plan
- ☐ a remediation plan
- ☐ a management plan

☐ **B3** To determine the appropriateness of a **site testing plan** to determine if groundwater is safe and suitable for its intended use as required by the *Temporary Water Restrictions Order for the Botany Sands Groundwater Resource 2017*

☐ **B4** To determine the compliance with an approved:

- ☐ **voluntary management proposal** or
- ☐ **management order** under the *Contaminated Land Management Act 1997*

☐ **B5** To determine if the land can be made suitable for a particular use (or uses) if the site is remediated or managed in accordance with a specified plan.

Intended uses of the land:

Information sources for site audit

Consultancies which conducted the site investigations and/or remediation:

JK Environments Pty Ltd (JKE)

Environmental Investigation Services Pty Ltd (EIS)

DLA Environmental Pty Ltd (DLA)

Titles of reports reviewed:

‘Report to Fabcot Pty Ltd on Detailed (Stage 2) Site investigation For Proposed Warehouse and Customer Fulfillment Centre with Ancillary Offices at 74 Edinburgh Road, Marrickville, NSW’, September 2020, JKE

'Acid Sulfate Soil Assessment and Management Plan, Proposed Masters Development, Cnr Edinburgh Road and Sydney Steel Road, Marrickville, NSW', 3 February 2015, EIS (the ASSMP)
'Phase 2 Detailed Environmental Site Assessment, 74 Edinburgh Road, Marrickville, NSW 2204', 22 September 2010, DLA

Other information reviewed, including previous site audit reports and statements relating to the site:

Site audit report details

Title	Site Audit Report – Proposed Warehouse and Customer Fulfillment Centre, 74 Edinburgh Road, Marrickville, NSW	
Report no.	LW-009 (Ramboll Ref: 318001055)	19 October 2020

Part II: Auditor's findings

Please complete either Section A1, Section A2 or Section B, not more than one section. (Strike out the irrelevant sections.)

- Use **Section A1** where site investigation and/or remediation has been completed and a conclusion can be drawn on the suitability of land uses **without the implementation** of an environmental management plan.
- Use **Section A2** where site investigation and/or remediation has been completed and a conclusion can be drawn on the suitability of land uses **with the implementation** of an active or passive environmental management plan.
- Use **Section B** where the audit is to determine:
    - (B1) the nature and extent of contamination, and/or
    - (B2) the appropriateness of an investigation, remediation or management plan[1], and/or
    - (B3) the appropriateness of a site testing plan in accordance with the *Temporary Water Restrictions Order for the Botany Sands Groundwater Source 2017*, and/or
    - (B4) whether the terms of the approved voluntary management proposal or management order have been complied with, and/or
    - (B5) whether the site can be made suitable for a specified land use (or uses) if the site is remediated or managed in accordance with the implementation of a specified plan.

[1] For simplicity, this statement uses the term 'plan' to refer to both plans and reports.

Section A1

I certify that, in my opinion:

The **site is suitable** for the following uses:

(Tick all appropriate uses and strike out those not applicable.)

☐ Residential, including substantial vegetable garden and poultry

☐ Residential, including substantial vegetable garden, excluding poultry

☐ Residential with accessible soil, including garden (minimal home-grown produce contributing less than 10% fruit and vegetable intake), excluding poultry

☐ Day care centre, preschool, primary school

☐ Residential with minimal opportunity for soil access, including units

☐ Secondary school

☐ Park, recreational open space, playing field

☐ Commercial/industrial

☐ Other (please specify):

~~OR~~

☐ I certify that, in my opinion, the **site is not suitable** for any use due to the risk of harm from contamination.

Overall comments:

Section A2

I certify that, in my opinion:

Subject to compliance with the **attached** environmental management plan[2] (EMP), the site is suitable for the following uses:

(Tick all appropriate uses and strike out those not applicable.)

☐ Residential, including substantial vegetable garden and poultry

☐ Residential, including substantial vegetable garden, excluding poultry

☐ Residential with accessible soil, including garden (minimal home-grown produce contributing less than 10% fruit and vegetable intake), excluding poultry

☐ Day care centre, preschool, primary school

☐ Residential with minimal opportunity for soil access, including units

☐ Secondary school

☐ Park, recreational open space, playing field

☐ Commercial/industrial

☐ Other (please specify):

_____

EMP details

Title: _____

Author: _____

Date: _____ No. of pages: _____

EMP summary

This EMP (attached) is required to be implemented to address residual contamination on the site.

The EMP: (Tick appropriate box and strike out the other option.)

☐ requires operation and/or maintenance of **active** control systems[3]

☐ requires maintenance of **passive** control systems only[3].

[2] Refer to Part IV for an explanation of an environmental management plan.
[3] Refer to Part IV for definitions of active and passive control systems.

Purpose of the EMP:

Description of the nature of the residual contamination:

Summary of the actions required by the EMP:

How the EMP can reasonably be made to be legally enforceable:

How there will be appropriate public notification:

Overall comments:

Section B

Purpose of the plan[4] which is the subject of this audit:

Investigation of soil and groundwater to enable remedial plan for redevelopment of 74 Edinburgh Road, Marrickville

I certify that, in my opinion:

(B1)

☒ The nature and extent of the contamination **has** been appropriately determined

☐ ~~The nature and extent of the contamination **has not** been appropriately determined~~

~~AND/OR (B2)~~

☐ ~~The investigation, remediation or management plan **is** appropriate for the purpose stated above~~

☐ ~~The investigation, remediation or management plan **is not** appropriate for the purpose stated above~~

~~AND/OR (B3)~~

☐ ~~The site testing plan:~~

- ☐ ~~**is** appropriate to determine~~
- ☐ ~~**is not** appropriate to determine~~

~~if groundwater is safe and suitable for its intended use as required by the *Temporary Water Restrictions Order for the Botany Sands Groundwater Resource 2017*~~

~~AND/OR (B4)~~

☐ ~~The terms of the approved voluntary management proposal* or management order** (strike out as appropriate):~~

- ☐ ~~**have** been complied with~~
- ☐ ~~**have not** been complied with.~~

~~*voluntary management proposal no.~~

~~**management order no.~~

~~AND/OR (B5)~~

☐ ~~The site **can be made suitable** for the following uses:~~

~~(Tick all appropriate uses and strike out those not applicable.)~~

- ☐ ~~Residential, including substantial vegetable garden and poultry~~
- ☐ ~~Residential, including substantial vegetable garden, excluding poultry~~
- ☐ ~~Residential with accessible soil, including garden (minimal home-grown produce contributing less than 10% fruit and vegetable intake), excluding poultry~~

[4] For simplicity, this statement uses the term 'plan' to refer to both plans and reports.

~~☐ Day care centre, preschool, primary school~~

~~☐ Residential with minimal opportunity for soil access, including units~~

~~☐ Secondary school~~

~~☐ Park, recreational open space, playing field~~

~~☐ Commercial/industrial~~

~~☐ Other (please specify):~~

~~IF the site is remediated/managed* in accordance with the following plan (**attached**):~~

~~*Strike out as appropriate~~

~~Plan title:~~

~~Plan author:~~

~~Plan date: No. of pages:~~

~~SUBJECT to compliance with the following condition(s):~~

Overall comments:

The site has been used for industrial purposes since the early 1900s, with the main use for food manufacturing and processing (edible oils and nuts) between approximately 1918 until 2005. The site has been filled to achieve the current levels with fill to depths >6.0 m in areas of the site. The site has had various configurations over time, with demolition of numerous structures undertaken prior to development of the current site layout.

Woolworths propose to develop the site for use as a warehouse and Customer Fulfillment Centre (CFC) with ancillary offices. The proposed development comprises a slab on ground warehouse across the majority of the site with a multi-storey car park in the northern portion of the site, access road and loading docks to the east and south and five levels of office space above the warehouse and car park. Some areas of landscaping are located on road frontages.

While the results of the DLA and JKE investigations have not identified significant contamination of soil or groundwater at the site, based on the site history and the limitations associated with the sampling and analysis for asbestos in soils, there is the potential for asbestos impacted fill materials to be present at the site that will require remediation or management during the redevelopment. There is also the potential that unidentified sources of contamination may be encountered, such as underground tanks or subsurface structures. It is recommended that a RAP is prepared for further assessment and remediation during demolition and redevelopment of the site.

The Auditor makes the following recommendations:

1. Preparation of a remedial action plan (RAP) in accordance with the NSW EPA (2020) *Consultants reporting on contaminated Land: Contaminated land guidelines* including, but not limited to:
   - the inspection and characterisation process for fill material under building footprints following demolition including validation for asbestos containing material (ACM) and friable asbestos (FA) in accordance with NEPM (2013)
   - the inspection process to be implemented during removal of hardstand to assess for any unidentified sources of contamination
   - remediation and validation procedures to be implemented if ACM impacted fill materials are encountered or any other unidentified contamination, including underground tanks or subsurface infrastructure
   - the procedure for determining the need for further groundwater characterisation should contamination be identified during the development works
   - materials handling and waste classification procedures
   - validation procedures for assessment of imported materials as suitable for intended use
   - interaction of the RAP with other site management plans

   The RAP should be reviewed by a NSW EPA Accredited Site Auditor.
2. Preparation of a final site validation report by a qualified environmental consultant documenting the works undertaken in accordance with the RAP and certifying the suitability of the site for the proposed development.
3. Preparation of an Environmental Management Plan (EMP) for the management of any contamination remaining on site following redevelopment that presents a risk to human health or the environment.
4. Preparation of a Section A Site Audit Statement by a NSW EPA Accredited Site Auditor reviewing the above information and confirming the suitability of the site for the intended use.

Groundwater has not been assessed for beneficial re-use. Any future use of groundwater would require appropriate regulatory approvals from the NSW Office of Water.

Part III: Auditor's declaration

I am accredited as a site auditor by the NSW Environment Protection Authority (EPA) under the *Contaminated Land Management Act 1997.*

Accreditation no. 1903

I certify that:

- I have completed the site audit free of any conflicts of interest as defined in the *Contaminated Land Management Act 1997,* and
- with due regard to relevant laws and guidelines, I have examined and am familiar with the reports and information referred to in Part I of this site audit, and
- on the basis of inquiries I have made of those individuals immediately responsible for making those reports and obtaining the information referred to in this statement, those reports and that information are, to the best of my knowledge, true, accurate and complete, and
- this statement is, to the best of my knowledge, true, accurate and complete.

I am aware that there are penalties under the *Contaminated Land Management Act 1997* for wilfully making false or misleading statements.

Signed: 

Date: 19 October 2020

Part IV: Explanatory notes

To be complete, a site audit statement form must be issued with all four parts.

How to complete this form

Part I

Part I identifies the auditor, the site, the purpose of the audit and the information used by the auditor in making the site audit findings.

Part II

Part II contains the auditor's opinion of the suitability of the site for specified uses or of the appropriateness of an investigation, or remediation plan or management plan which may enable a particular use. It sets out succinct and definitive information to assist decision-making about the use or uses of the site or a plan or proposal to manage or remediate the site.

The auditor is to complete either Section A1 or Section A2 or Section B of Part II, **not** more than one section.

Section A1

In Section A1 the auditor may conclude that the land is *suitable* for a specified use or uses OR *not suitable* for any beneficial use due to the risk of harm from contamination.

By certifying that the site is *suitable*, an auditor declares that, at the time of completion of the site audit, no further investigation or remediation or management of the site was needed to render the site fit for the specified use(s). **Conditions must not be** imposed on a Section A1 site audit statement. Auditors may include **comments** which are key observations in light of the audit which are not directly related to the suitability of the site for the use(s). These observations may cover aspects relating to the broader environmental context to aid decision-making in relation to the site.

Section A2

In Section A2 the auditor may conclude that the land is *suitable* for a specified use(s) subject to a condition for implementation of an environmental management plan (EMP).

Environmental management plan

Within the context of contaminated sites management, an EMP (sometimes also called a 'site management plan') means a plan which addresses the integration of environmental mitigation and monitoring measures for soil, groundwater and/or hazardous ground gases throughout an existing or proposed land use. An EMP succinctly describes the nature and location of contamination remaining on site and states what the objectives of the plan are, how contaminants will be managed, who will be responsible for the plan's implementation and over what time frame actions specified in the plan will take place.

By certifying that the site is suitable subject to implementation of an EMP, an auditor declares that, at the time of completion of the site audit, there was sufficient information satisfying guidelines made or approved under the *Contaminated Land Management Act 1997*

(CLM Act) to determine that implementation of the EMP was feasible and would enable the specified use(s) of the site and no further investigation or remediation of the site was needed to render the site fit for the specified use(s).

Implementation of an EMP is required to ensure the site remains suitable for the specified use(s). The plan should be legally enforceable: for example, a requirement of a notice under the CLM Act or a development consent condition issued by a planning authority. There should also be appropriate public notification of the plan, e.g. on a certificate issued under s.149 of *the Environmental Planning and Assessment Act 1979*.

Active or passive control systems

Auditors must specify whether the EMP requires operation and/or maintenance of active control systems or requires maintenance of passive control systems only. Active management systems usually incorporate mechanical components and/or require monitoring and, because of this, regular maintenance and inspection are necessary. Most active management systems are applied at sites where if the systems are not implemented an unacceptable risk may occur. Passive management systems usually require minimal management and maintenance and do not usually incorporate mechanical components.

Auditor's comments

Auditors may also include **comments** which are key observations in light of the audit which are not directly related to the suitability of the site for the use(s). These observations may cover aspects relating to the broader environmental context to aid decision-making in relation to the site.

Section B

In Section B the auditor draws conclusions on the nature and extent of contamination, and/or suitability of plans relating to the investigation, remediation or management of the land, and/or the appropriateness of a site testing plan in accordance with the *Temporary Water Restrictions Order for the Botany Sands Groundwater Source 2017*, and/or whether the terms of an approved voluntary management proposal or management order made under the CLM Act have been complied with, and/or whether the site can be made suitable for a specified land use or uses if the site is remediated or managed in accordance with the implementation of a specified plan.

By certifying that a site *can be made suitable* for a use or uses if remediated or managed in accordance with a specified plan, the auditor declares that, at the time the audit was completed, there was sufficient information satisfying guidelines made or approved under the CLM Act to determine that implementation of the plan was feasible and would enable the specified use(s) of the site in the future.

For a site that *can be made suitable*, any **conditions** specified by the auditor in Section B should be limited to minor modifications or additions to the specified plan. However, if the auditor considers that further audits of the site (e.g. to validate remediation) are required, the auditor must note this as a condition in the site audit statement. The condition must not specify an individual auditor, only that further audits are required.

Auditors may also include **comments** which are observations in light of the audit which provide a more complete understanding of the environmental context to aid decision-making in relation to the site.

Part III

In **Part III** the auditor certifies their standing as an accredited auditor under the CLM Act and makes other relevant declarations.

Where to send completed forms

In addition to furnishing a copy of the audit statement to the person(s) who commissioned the site audit, statutory site audit statements must be sent to

- the **NSW Environment Protection Authority**: nswauditors@epa.nsw.gov.au or as specified by the EPA

  AND

- the **local council** for the land which is the subject of the audit.

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