



Charter Keck Cramer on behalf of Telstra
Corporation Limited

Environmental Site Assessment- Preliminary Site
Investigation (Site History Review) and Detailed Site
Investigation (Soil Investigation)

570 Neerim Road,
Hughesdale, Victoria

4 November 2016

51810 - 105922 Rev 1 (FINAL)

JBS&G

Charter Keck Cramer on behalf of Telstra
Corporation Limited

Environmental Site Assessment- Preliminary Site
Investigation (Site History Review) and Detailed Site
Investigation (Soil Investigation)

570 Neerim Road,
Hughesdale, Victoria

4 November 2016

51810 - 105922 Rev 1 (FINAL)

JBS&G

Table of Contents

Executive Summary.....	vi
1. Introduction.....	1
1.1 Site Details.....	1
2. Preliminary Site Investigation.....	3
2.1 Methodology.....	3
2.2 Site Inspection.....	3
2.3 Surrounding Land Use.....	5
2.4 Regional Geology & Hydrogeology.....	5
2.5 Historical Ownership.....	6
2.6 Aerial Photographs.....	6
2.7 Previous Environmental Investigations.....	7
2.8 EPA Records.....	7
2.8.1 Priority Sites Register.....	7
2.8.2 Issued Certificates and Statements of Audit.....	7
2.9 Historical Society Records.....	10
2.10 Dangerous Goods Search.....	11
2.11 Anecdotal Evidence.....	11
2.12 Cathodic Protection Records.....	11
2.13 Summary of Site History.....	11
2.14 Areas of Chemical Interest.....	11
3. Detailed Site Investigation.....	13
3.1 Scope of Work & Rationale.....	13
3.2 Soil Investigation.....	13
3.2.1 Soil Sampling Methodology.....	13
3.2.2 Soil Laboratory Analysis.....	13
3.2.3 Soil Assessment Criteria & Investigation Levels.....	15
3.2.3.1 Potential Human Health Risks.....	15
3.2.3.2 Potential Ecological Risks.....	16
3.2.3.3 Selected Onsite NEPM Assessment Criteria.....	16
3.3 Soil Results.....	16
3.3.1 Field Observations.....	16
3.3.2 PID Results.....	16
3.3.3 Soil Analytical Results.....	16
3.4 Groundwater Assessment.....	19
3.4.1 Groundwater Laboratory Analysis.....	19
3.4.2 Groundwater Assessment Criteria and Investigation Levels.....	19

3.5	Groundwater Analytical Results	21
3.5.1	Field Observations	21
3.5.2	Groundwater Analytical Results.....	21
4.	Quality Assurance / Quality Control	23
5.	Conclusions	25
5.1	PSI	25
5.2	DSI.....	25
6.	Limitations	26
7.	References	27

List of Tables

Table 1 – Site Details	1
Table 2 – PSI Sources of Information	3
Table 3 – Site Inspection Summary.....	3
Table 4 – Surrounding Land Use	5
Table 5 – Regional Geology and Hydrogeology	5
Table 6 – Summary of Registered Water Bores of Known Purpose within 1 km of the Site ...	5
Table 7 – Summary of Historical Ownership Details.....	6
Table 8 – Summary of Aerial Photograph Observations.....	6
Table 9 – Summary of Environmental Audited Sites within 1 km of the Site.....	10
Table 10 – Summary of Areas and Chemicals of Interest	12
Table 11 – Soil Investigation Methodologies	13
Table 12 – Soil Analytical Program.....	15
Table 13 – Groundwater Investigation and Sampling Methodologies	19
Table 14 –Groundwater Analytical Program	19
Table 15 – Groundwater Beneficial Use Segments.....	20
Table 16 – Summary of Protected and Relevant Beneficial Uses	21
Table 17 – Adopted Groundwater Assessment Criteria	21
Table 18 – Groundwater Field Parameters Summary.....	21
Table 19 – QA/QC Program.....	23

List of Figures

Figure 1: Site Location.....	2
Figure 2: Site Layout.....	4
Figure 3A: Historical Aerial Photographs 1931-1966.....	8
Figure 3B: Historical Aerial Photographs 1975-2016	9
Figure 4: Investigation Locations	14



Figure 5: Potential Area of Lead Impacts18

Appendices

Summary Tables

- Appendix A** Site Photographs
- Appendix B** Certificates of Title
- Appendix C** Historical Society Records
- Appendix D** Energy Safe Victoria Records
- Appendix E** Worksafe Dangerous Goods Records
- Appendix F** Soil Borehole Logs
- Appendix G** Groundwater Monitoring Field Sheet
- Appendix H** Laboratory Certificates and Chain of Custody Documentation

Executive Summary

JBS&G Australia Pty Ltd (JBS&G) was commissioned by Charter Keck Cramer (Charter) on behalf of Telstra Corporation Limited (Telstra) to undertake a Preliminary Site Investigation (PSI) site history review and Detailed Site Investigation (DSI) soil assessment for a portion of the Oakleigh telephone exchange property located at 570 Neerim Road, Hughesdale, Victoria. The divestment portion of the parent site is herein referred to as 'the site'.

The site is currently used for operations associated with the adjacent telephone exchange to the west, with residential properties surrounding the site. An asphalted car park occupies the majority of the site, with two grassed rectangular garden beds containing small trees and shrubs situated in the south-eastern and south-western corners. Given the surrounding land use, the site will most likely be developed as a low to medium density residential land use.

Based on the information obtained during the PSI, the parent site and surrounding area were used for agricultural purposes including cropping and dairy cattle until circa 1935, when surrounding areas started to be developed into residential properties. The site was purchased by the Australian Telecommunications Commission in 1970.

The PSI findings indicated the occurrence of an underground fuel storage tank (UST) in the northern portion of the parent site, however the UST was observed to be empty at the time of inspection and unlikely to contain significant amounts of fuel. Other key potential risks identified were potentially contaminated shallow fill material from overflowing rubbish bins and potentially contaminated imported fill materials. A review of nearby environmental audits did not identify any potential for soil or groundwater contamination from those sites to impact on the divestment site.

JBS&G conducted a grid based soil assessment to assess the suitability of the site for use in a residential setting. Analyses were conducted for a broad range of chemicals associated with imported fill material and possible farming/agricultural activities including metals, TRH, BTEX, PAH, OCP and PCB. One groundwater monitoring well was also installed and sampled.

All grid based soil contaminant concentrations were below the respective adopted assessment criteria, with the exception of arsenic, copper, lead, nickel, zinc and benzo(a)pyrene in one or more samples at concentrations that exceeded adopted ecological screening levels. However, the site is highly modified and any risk to plants could be addressed through professional horticultural advice should the site be redeveloped with garden areas.

Lead and benzo(a)pyrene were identified in soil at concentrations exceeding the Health Investigation Levels (HIL) for low density residential use. The elevated concentrations were restricted to historical imported fill materials within some portions of the site. Depending on the proposed use of the site, these soils may need to be remediated or managed appropriately.

All reported groundwater results were below the adopted criteria with the exception of minor concentrations of chromium and zinc which exceeded the adopted ANZECC freshwater 95% trigger value. It is likely that the chromium and zinc concentrations represent regional conditions and are not contamination associated with the site.

The conclusions of this report should be read in conjunction with and with regard to the Limitations included in Section 6.

1. Introduction

JBS&G Australia Pty Ltd (JBS&G) was commissioned by Charter Keck Cramer (Charter) on behalf of Telstra Corporation Limited (Telstra) to undertake a Preliminary Site Investigation (PSI) site history review and Detailed Site Investigation (DSI) soil assessment for a portion of the Oakleigh telephone exchange property located at 570 Neerim Road, Hughesdale, Victoria. The divestment portion is herein referred to as 'the site'. The location and boundaries of the site and the parent site are illustrated in Figure 1.

The PSI was conducted to review site history information to assess if any site contamination issues associated with past or present site usage may impact on future development of the site.

The DSI soil assessment was conducted to investigate potential subsurface impacts associated with past and existing site and surrounding land uses in order to identify any contamination which may impact on future development of the site.

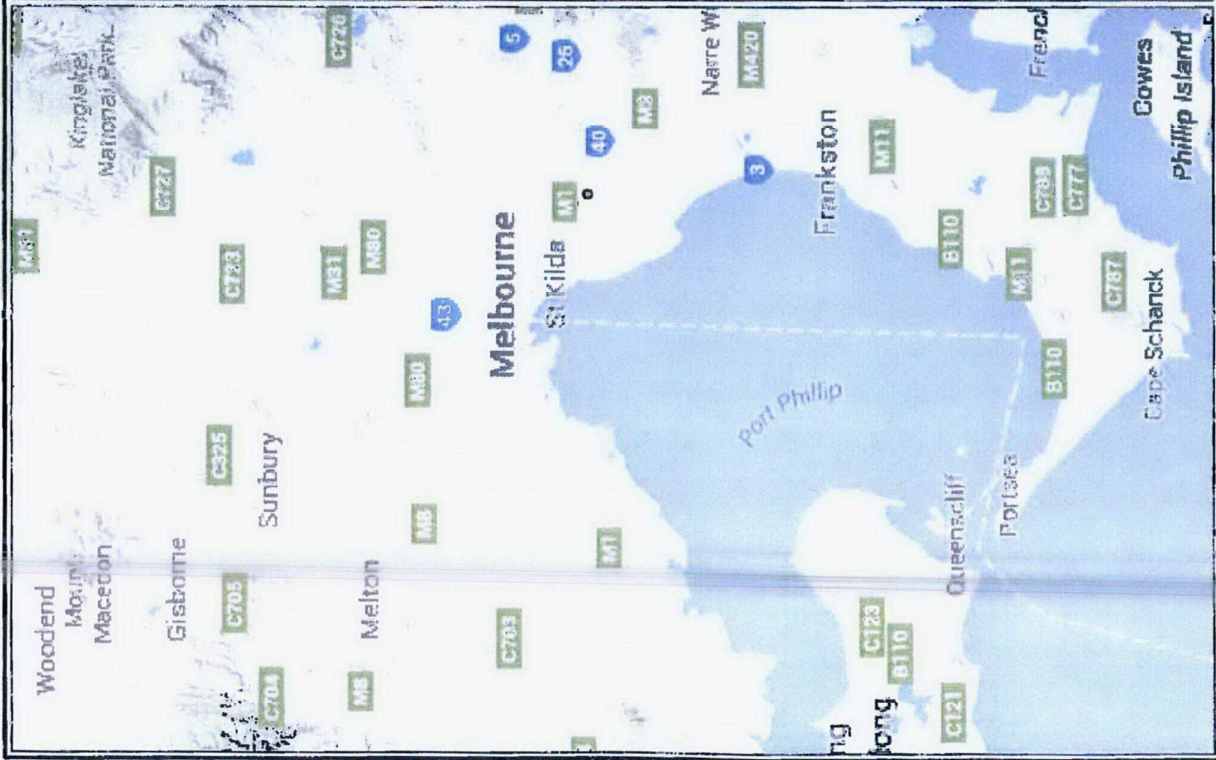
It is understood that the divestment area is most likely to be redeveloped for low to medium density residential use based on surrounding land use.

1.1 Site Details

Site details are presented in Table 1.

Table 1 – Site Details

Category	Details
Street Address	570 Neerim Road, Hughesdale, Victoria, 3166
Allotment Details	Lot 1 PS403236
Areas of Site	Parent Site = Approximately 3,489 m ² Divestment Portion = Approximately 600 m ²
Municipality	Monash City Council
Zoning	General Residential Zone – Schedule 2 (GRZ2)



Legend:
 ● Site Location
 ■ Parent Property
 ■ Proposed Divestment Area



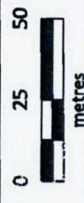
Job No: 51810

Client: Charter Keck Cramer

Version: FINAL Date: 4-Nov-2016

Drawn By: AS Checked By: JB

Scale at A4: 1:2,000



Coord. Syst. GDA 2011 MGA Zone 55

Oakleigh TE
 570 Neerim Road, Hughesdale, Victoria
SITE LOCATION

FIGURE 1

2. Preliminary Site Investigation

2.1 Methodology

The PSI was undertaken in accordance with the procedures presented in the *National Environment Protection (Assessment of Site Contamination) Measure 1999, as amended 2013* (NEPM), published by the National Environment Protection Council (NEPC, 2013), with particular reference to Schedule B(2) Site Characterisation. The PSI includes the components outlined in Table 2.

Table 2 – PSI Sources of Information

Source / Section Heading	Report Section Number
Site inspection	Section 2.2
Surrounding land use	Section 2.3
Regional geology and hydrogeology	Section 2.4
Land ownership	Section 2.5
Aerial photographs	Section 2.6
Previous environmental investigations	Section 2.7
EPA records	Section 2.8
Historical Society Records	Section 2.9
Dangerous Goods Search	Section 2.10
Anecdotal information	Section 2.11
Cathodic Protection Records	Section 2.12
Summary of site history	Section 2.13
Areas and contaminants of interest	Section 2.14

2.2 Site Inspection

On 20 September 2016, an experienced JBS&G environmental scientist undertook a site inspection. Observations from the site inspection are presented within Table 3. Photographs taken during the site inspection are included as Appendix A.

Table 3 – Site Inspection Summary

Item	Detail
Shape of site	Rectangular.
Topography	The site is generally flat with a slight downhill slope to the east.
Nearest surface water body	Scotchmans Creek runs approximately 1.2 km to the east of the site, this creek converges with Dandenong Creek further to the east.
Current layout	A single story brick building occupies the majority of the parent site. The northern portion of the parent site contains a concreted area with an underground storage tank and a warehouse. A dip point was not located, however the UST was observed to be empty via bailer testing at the time of site visit. The majority of the divestment site is occupied by a carpark, with two rectangular garden beds situated in the south-eastern and south-western corners.
Surface condition	No staining or cracks were observed in the divestment site carpark or in the building or concreted area of the parent site.
Site observations – Divestment area	<ul style="list-style-type: none"> The two garden beds situated in the southern portion of the site are grassed and contain small trees and shrubs. A fire hydrant is located in the eastern garden bed. A wooden fence runs along the border of the eastern boundary of the site. Two large skip bins and a wheelie bin are situated in the north-eastern portion of the site. These bins were observed to be overflowing with rubbish at the time of site inspection with rubbish and various debris covering the northern area of the site. Wooden pallets and other discarded equipment are situated adjacent to the skip bins.

The current site layout is shown in Figure 2.

Legend:

- Parent Property
- Proposed Divestment Area



Job No: 51810

Client: Charter Kids Crmmer

Version: FINAL Date: 4-Nov-2016

Drawn By: AS Checked By: JB

Scale: A4 1:800



0 10 20 metres

Coor. Sys: GDA 1994 MGA Zone 55

Oakleigh TE

570 Neerim Road, Hughesdale, Victoria

SITE LAYOUT

FIGURE 2



Document Path: G:\Projects\JBSS\Melbourne\51810_CDC_Melbna_XML\Output\T\Word5\Maps\Oakleigh TE - Site Layout.mxd
 Image Reference: www.natmap.com.au - Imagery Date: 28 August 2015



2.3 Surrounding Land Use

The surrounding land use at the time of the site inspection is summarised in Table 4.

Table 4 – Surrounding Land Use

Location	Detail
North	Residential
East	Residential
South	Neerim Road followed by residential
West	Residential

2.4 Regional Geology & Hydrogeology

Details of the regional geology and hydrogeology are presented in Table 5.

Table 5 – Regional Geology and Hydrogeology

Source	Detail
Geology Geological Survey of Victoria (1997) 1:250,000 Melbourne Geological Map Sheet	The area is underlain by the Tertiary age Brighton Group sediments, including fluvial sandstone, conglomerate, and ironstone as well as some Quaternary age siltstone and claystone from lagoonal deposits.
Hydrogeology Australian Bureau of Meteorology, National Groundwater Information System.	A search of the Australian Government Bureau of Meteorology Groundwater Information System was undertaken to identify licensed groundwater wells within a 1 km radius of the site. A total of 38 licensed wells were identified that ranged from 8 to 62 m in total depth. Six wells were listed for monitoring, nine wells for stock and domestic purposes, one well for exploration, one well for commercial and industrial purposes and the remaining 21 wells had unknown purposes.

Table 6 provides a summary of the groundwater well locations with identified purposes occurring within approximately 1 km of the site.

Table 6 – Summary of Registered Water Bore of Known Purpose within 1 km of the Site

Bore ID	Distance and Location from Site*	Bore Depth (m)	Date Installed	Bore Use
WRK071812	950 m east	9.0	14/11/2012	Monitoring
WRK98275	990 m north	13.0	12/09/2008	Exploration
WRK058920	300 m south west	8.0	27/09/2010	Monitoring
WRK989884	900 m north east	49.0	28/06/2009	Stock and Domestic
WRK981502	900 m east	10.0	21/05/2007	Stock and Domestic
WRK071813	950 m east	9.0	Unknown	Monitoring
WRK981504	900 m east	10.0	22/05/2007	Stock and Domestic
WRK981507	900 m east	10.0	22/05/2007	Stock and Domestic
WRK981506	900 m east	10.0	22/05/2007	Stock and Domestic
WRK065917	370 m west	8.0	02/09/2011	Monitoring
WRK981503	900 m east	10.0	22/05/2007	Stock and Domestic
WRK981505	900 m east	10.0	21/05/2007	Stock and Domestic
WRK689717	150 m north east	15.85	27/10/1983	Stock and Domestic
WRK055842	950 m east	62.0	07/07/2010	Commercial and Industrial
WRK072749	850 m north east	20.8	Unknown	Monitoring
WRK075031	900 m east	9.0	01/08/2014	Monitoring

* Approximate distance provided

2.5 Historical Ownership

The site is currently described as Lot 1 PS403236.

Copies of available current and historical Certificates of Title are attached as Appendix B. The Title details are summarised in Table 7.

Table 7 – Summary of Historical Ownership Details

Property Description	Certificate of Title	Date	Details
Crown Portion 94, Parish of Prahran East of Elsterwick, County of Burke	Volume: 07838 Folio: 089	13 th January 1953	Commonwealth of Australia
	Volume: 08733 Folio: 994	14 th June 1968	
	Volume: 08733 Folio: 995	14 th June 1968	
	Volume: 08780 Folio: 137	9 th May 1969	
	Volume: 08827 Folio: 728	14 th April 1970	
	Volume: 08844 Folio: 831	31 st July 1970	
	Volume: 10323 Folio: 063	17 th March 1997	

The site was owned by the Commonwealth of Australia from at least 1953 until 1970, where it was then transferred to the Australian Telecommunications Commission.

2.6 Aerial Photographs

Table 8 presents a summary of the review of historical aerial photographs relating to the site. Copies of the aerial photographs are presented in Figure 3A and Figure 3B, with the approximate site boundaries shown for reference.

Table 8 – Summary of Aerial Photograph Observations

Date	Comments
1931	<ul style="list-style-type: none"> The quality of the photograph is poor, however, the following general statements can be made: <ul style="list-style-type: none"> The site appears to be clear and potentially agricultural land. A building appears to exist to the south west of the site. Neerim and Poath Roads have both been constructed.
1945	<ul style="list-style-type: none"> The site appears to have been covered in concrete, apart from some vegetation (likely garden beds) located in the north and the south-east corner. The building still remains in the south-west. There has been residential development around all boundaries of the site.
1956	<ul style="list-style-type: none"> The quality of the photograph is poor, however, the following general statements can be made: <ul style="list-style-type: none"> A building has been constructed in the north-west corner. A shed has also been constructed in the north-west corner. The south-west building appears to have been extended and now takes up approximately 1/3 of the site's area. The site's area appears to have increased since the aerial photo taken in 1945, with more concrete extending out to the north-east corner.
1966	<ul style="list-style-type: none"> The extended site boundary to the north-east appears to have had some further development, with construction of buildings on the boundary. The building on site does not appear to have undergone any further developments. Surrounding area continues to develop into residential properties.
1975	<ul style="list-style-type: none"> The quality of the photograph is poor, however, the following general statements can be made: <ul style="list-style-type: none"> The building in the south-west has been extended again and now takes up approximately half of the site. The site boundary extension in the north-east corner appears to have increased again including more concreted area.

Date	Comments
1984	<p>The quality of the photograph is poor, however, the following general statements can be made:</p> <ul style="list-style-type: none"> • The footprint of the building occupying the subject site is broadly consistent with the 1975 aerial photograph. • Another large building has been constructed on the western neighbouring property.
1991	<p>The quality of the photograph is poor, however, the following general statements can be made:</p> <ul style="list-style-type: none"> • The developed extension of the north-eastern corner has been cleared. • The main building still exists and takes up the majority of the site. • The large building in the western neighbouring property still remains.
2016	<ul style="list-style-type: none"> • The large building on site appears to have not undergone any further developments. • The neighbouring building on the western building has been demolished since the 1991 aerial photograph was taken. • The cleared area of the site extension has now been redeveloped into residential properties.

2.7 Previous Environmental Investigations

JBS&G is not aware of any previous environmental investigations conducted at the site.

2.8 EPA Records

2.8.1 Priority Sites Register

Priority Sites are sites which the EPA has issued a Clean-Up Notice pursuant to section 62A or a Pollution Abatement Notice (relevant to land/groundwater) pursuant to section 31A or 31B of the Victorian Environment Protection Act, 1970 (as amended). Typically, these are sites where pollution of land and/or groundwater presents an unacceptable risk to human health or the environment.

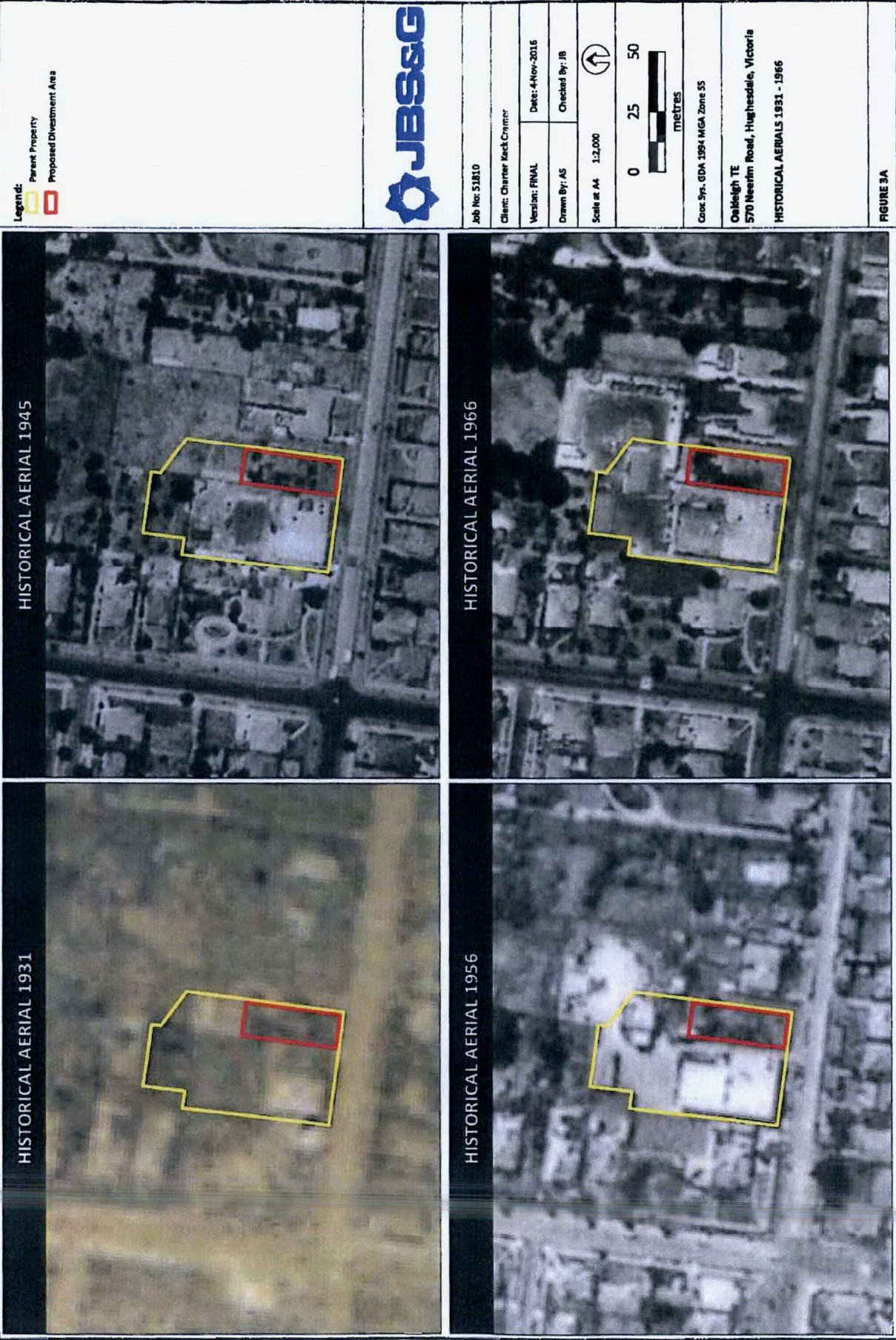
EPA maintains the Priority Sites Register as a listing of all priority sites and the register is available to the public. It is important to note that the Priority Sites Register is not a listing of all contaminated sites in Victoria, nor is it a list of all contaminated sites of which EPA has knowledge.

On 16 September 2016, a review of the Register did not identify the site, or any sites within a 1 km radius, listed on the EPA Priority Sites Register.

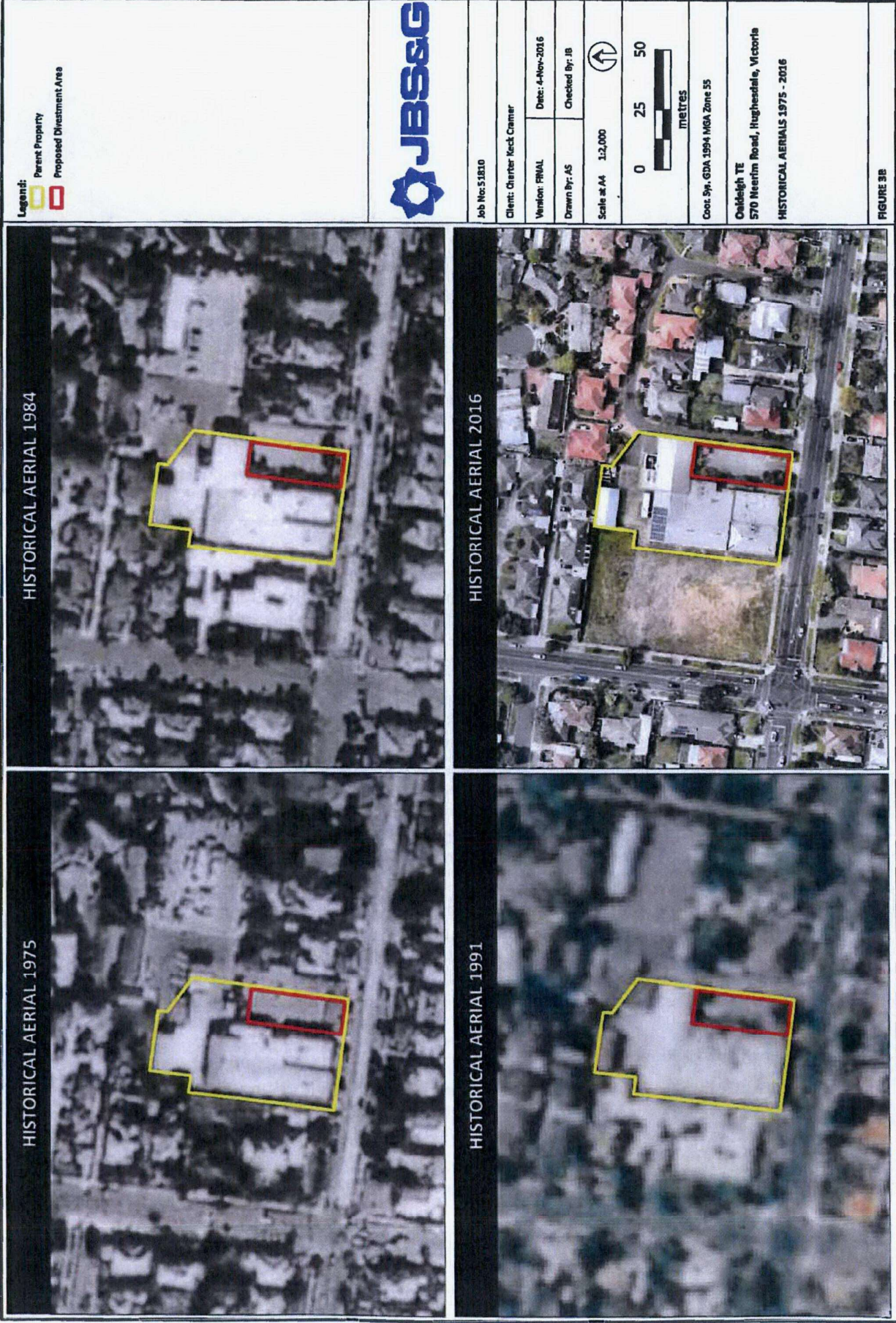
2.8.2 Issued Certificates and Statements of Audit

EPA maintains a register of sites for which Audits have been completed and Certificates or Statements of Audits have been issued.

A search of this register on 16 September 2016 identified four environmental audits within a 1 km radius of the site. Details of the environmental audits with groundwater impacts are summarised in Table 9.



Document Path: C:\Projects\BSS\17\1958\1110_CEC_Thakra_VKCS_Oakleigh TE\ArcGIS\Map\02\1966.mxd
 Image Reference: Victorian State Government Department of Environment, Land, Water and Planning



Legend:
 Parent Property
 Proposed Divestment Area



Job No: S1810	
Client: Charter Keck Cramer	
Version: FINAL	Date: 4-Nov-2016
Drawn By: AS	Checked By: IB
Scale at A4: 1:2,000	
0 25 50	
METRES	
Coord. Sys: GDA 1994 MGA Zone 55	
Oakleigh TE 570 Neerim Road, Hughesdale, Victoria	
HISTORICAL AERIALS 1975 - 2016	

FIGURE B8

Document Path: G:\Projects\JBSS\Melbourne\51810_CDC_Tribina_VIC\5_Oakleigh TE\ncd5\Mapa\Oakleigh TE - Historical Aerials - 1975 - 2016.mxd
 Image Reference: Victorian State Government Department of Environment, Land, Water and Planning & www.narrmap.com.au - Imagery Date: 28 August 2016.

Table 9 - Summary of Environmental Audited Sites within 1 km of the Site

CARMS No.	Completion Date	Address	Distance from Site	Contaminants of Potential Concern (COPC)	Media Effected	Sources of Contamination	GW Flow Direction
30371-1	18/10/1996	473AA Neerim Road, Murrumbeena	Approximately 915 m to the west	Polycyclic Aromatic Hydrocarbons (PAH) and Total Petroleum Hydrocarbons (TPH)	Soil	Contaminated fill material	East (towards Scotchmans Creek)
34214-1	02/04/1998	502 Neerim Road, Murrumbeena	Approximately 830 m to the west	Heavy Metals (lead, zinc)	Soil	Contaminated fill material	East (towards Scotchmans Creek)
69595-1	14/10/2011	506 Neerim Road, Murrumbeena	Approximately 806 m to the west	TPH, Heavy Metals (arsenic, copper, lead)	Soil, ground water	Contaminated fill material	East (towards Scotchmans Creek)
62801-1	17/04/2009	1384 Dandenong Road, Hughesdale	Approximately 858 m to the east across hydraulic gradient	PAH and Heavy Metals (lead), asbestos	Ground water	Petroleum hydrocarbon spill at a neighbouring service station	East (towards Scotchmans Creek)

The three audits in Neerim Road determined contamination to be isolated to near surface soils as a result of the importation of uncontrolled fill. Remediation of 473AA Neerim Road and 502 Neerim Road was conducted through the removal of all significantly contaminated material and replaced with off-site controlled Fill Material. The auditor at 506 Neerim Road has not required any major remediation, as future residential development will place a concrete slab over the entire area and surface soils will no longer be exposed.

The environmental audit completed at 1384 Dandenong Road, Hughesdale, identified PAH and Heavy Metals (lead) in groundwater which exceeded environmental criteria. Initially, the contamination was thought to be sourced from a leak in an Underground Storage Tank (UST) located on site. Analysis found the contamination was instead migrating from the neighbouring petrol station, where a spill occurred. The contaminated soil was remediated via excavation and off-site disposal and ongoing groundwater monitoring has been undertaken to track whether the dissolved petroleum hydrocarbons will migrate further from the spill site.

Based on an inferred groundwater flow from the Oakleigh exchange site to Scotchmans Creek (located to the east of the site), the audit site at 1384 Dandenong is considered to be hydraulically down gradient of the Oakleigh exchange site. The potential for groundwater contamination migration from the audit site to the Oakleigh exchange site is therefore considered to be low. The remaining three audits are unlikely to affect the Oakleigh exchange site, as soil contaminants do not migrate readily. Therefore, any residual soil or groundwater impacts have very little potential to impact the Oakleigh exchange site.

2.9 Historical Society Records

On 21 September 2016, the Royal Historical Society of Victoria Inc. (RHSV) provided a report based on their records. This report searches the Sands and McDougall (S&M) Directories from 1860 to 1974 and other relevant historical information (RHSV, 2016).

The Victorian Municipal Directory for 1881 described the Oakleigh district as good agricultural land ideal for market gardening, cropping and dairy cattle. The Sands and McDougall directory of 1894



does not mention Neerim Road, however, from 1904 to 1935 a dairy farmer named Henry Shields is named as a resident of Poath Road (intersects Neerim Road), with four other farmers further along.

In the Sands and McDougall directory of 1935, Neerim Road begins to be numbered, with the Telephone Exchange already built on the site. Between 1944 and 1974 (the last listing of the directory) the site is given the number 570, which is its current address. The Melways Directories between 1990 and 2016 shows that 568 Neerim Road has operated as a Community Health Centre. The large Telstra building can be identified on Google Earth in the earliest images taken in 2000.

Information supplied by the Victorian Historical Society has been included in Appendix C.

2.10 Dangerous Goods Search

On 18 October 2016, a representative from WorkSafe searched the Dangerous Goods Database for records of the storage and handling of dangerous goods at the site. No records were found.

A copy of the Dangerous Goods Database Search is included as Appendix D.

2.11 Anecdotal Evidence

No anecdotal information pertaining to the site was available.

2.12 Catholic Protection Records

On 20 September 2016, a search for catholic protection systems, which may indicate the presence of a UST, was completed by Energy Safe Victoria. This search did not identify the presence of a catholic protection system at the site.

A copy of the Energy Safe Victoria information is presented in Appendix E.

2.13 Summary of Site History

Based on the information obtained during the PSI, the site and surrounding area were used for agricultural purposes, including cropping and dairy cattle until 1935. From then on, the surrounding areas were developed into residential properties. In 1970, the Australian Telecommunications Commission became the proprietors of the site.

The site and surrounding areas have been used for residential / commercial purposes up until the present day.

A UST is located at the parent site but the dip point was not located or accessible. However, the UST was observed to be empty and unlikely to contain any fuel.

Nearby audits have indicated that regional background concentrations in groundwater may limit groundwater extraction for residential or domestic use at the divestment area. These uses are considered to be unlikely given the site setting and the low potential for groundwater use.

A number of nearby environmental audits have reported groundwater impacts within a 1 km radius of the divestment area. Based on groundwater flow direction, the location of the sites and the nature of the contamination identified, any residual groundwater impacts associated with these nearby audit sites are unlikely to further restrict the use of groundwater or impact the condition of the divestment site.

2.14 Areas of Chemical Interest

Based on the findings of the PSI, the following areas and contaminants of interest have been identified within the site. The findings are summarised in Table 10 below.



Table 10 – Summary of Areas and Chemicals of Interest

Potentially Contaminating Activity	Area of Interest	Chemicals of Potential Concern	Potential Significance
Imported fill	Entire divestment area	Various chemicals including heavy metals, TPH, benzene, toluene, ethyl benzene and xylenes (BTEX), PAH, organochlorine pesticides (OCP), asbestos and polychlorinated biphenyls (PCB).	Potential for contamination in fill material. Potential for pesticide contamination associated with the management of weeds.
Hydrocarbon contamination	Entire divestment area	TPH, PAH, BTEX, heavy metals	Hydrocarbon contamination associated with the US ¹
Storage areas and waste building materials	Entire divestment area	Asbestos, metals, PAH	These chemicals have generally low mobility and are likely to be limited to surface soils only. Asbestos should be managed in accordance with the appropriate legislation and safe work practices.



3. Detailed Site Investigation

3.1 Scope of Work & Rationale

On 23 September 2016, six grid based soil bores (SB01 to SB06) were advanced at the site.

The DSI was undertaken in general accordance with the procedures presented in the NEPM. The number of grid based soil assessment locations was considered to be consistent with the minimum recommended grid based sampling density included in AS4482.1 Standards Australia (2005) *Guide to the Sampling and Investigation of Potentially Contaminated Soil Part 1: Non-Volatile and Semi-Volatile Compounds* for the characterisation of a site.

3.2 Soil Investigation

3.2.1 Soil Sampling Methodology

The sampling methodologies for the soil investigations are presented in Table 11. The investigation locations are shown in Figure 4.

Table 11 – Soil Investigation Methodologies

Method	Detail
Push tube	<ul style="list-style-type: none"> • Underground services were cleared by a professional underground service locator following review of 'Dig Before you Dig' plans; • Concrete coring was required at four soil bore locations; • Soil bores were advanced to 1.4 m using push tube techniques; • Soil encountered was logged in accordance with the Unified Soil Classification System (USCS); • Clean disposable gloves were used for the collection of each soil sample; • Soil samples were collected in clean acid washed sample jars provided by the laboratory; • Drilling equipment was decontaminated between sampling locations; • Samples were collected at predetermined depths, at lithology changes and/or where visual or olfactory evidence of contamination was observed; • Duplicate soil samples were collected and screened for VOC with a calibrated photo ionisation detector (PID); • Following completion of logging and sampling, the soil bores were reinstated with soil cuttings and then capped with rapid set concrete level with the surrounding surface; • The samples were transported in a chilled insulated box and under chain-of-custody (COC) documentation to the laboratory for selected chemical analyses; • Quality control (QC) samples were collected in accordance with the NEPM and AS4482.1. This included one intra-laboratory blind duplicate, one inter-laboratory split sample and one equipment rinseate sample; and • Samples not tested were archived and stored under refrigerated conditions for possible future analysis.

3.2.2 Soil Laboratory Analysis

The soil samples were transported to Eurofins Australia (Eurofins) in Oakleigh, Victoria for chemical analysis. Eurofins is accredited by the National Association of Testing Authorities (NATA) for the analyses undertaken. Inter-laboratory split samples were transported to NATA accredited Envirolab, also located in Victoria.

Surface and subsurface samples from each soil bore were analysed as summarised in Table 12. Samples not tested were archived and stored under refrigerated conditions for possible future analysis.



Table 12 – Soil Analytical Program

Analyte	Number of Samples			Rinseate Blank
	Primary	Intra- Laboratory Split	Inter- Laboratory Split	
TRH, PAH, BTEX, and heavy metals (As, Cd, Cr, Cu, Hg, Ni, and Zn)	11	0	0	0
RS NEPM HIL Screen *	2	0	0	0
TRH and Metals (B)	0	1	1	1

* TRH, phenol, PAH, OCP, PCB, heavy metals, trivalent chromium, hexavalent chromium, total cyanide, free cyanide, total sulphur, sulphate (1:5 ratio) and total phosphorus.

3.2.3 Soil Assessment Criteria & Investigation Levels

The following assessment criteria and investigation levels were used in the interpretation of the laboratory results. These criteria are presented with the laboratory results in the summary tables appended to this report.

The NEPM states that:

“Investigation levels and screening levels are the concentrations of a contaminant above which further appropriate investigation and evaluation will be required”.

An exceedance of an investigation or screening level does not indicate that there is a definite risk to human health or ecological receptors, but rather that further site-specific assessment may be required to quantify the potential risk.

3.2.3.1 Potential Human Health Risks

The NEPM Health based Investigation Levels (HILs) were used to assess the potential risks to human health for low density residential use (Setting A), high density residential use (Setting B) and ongoing commercial / industrial use (Setting D). The HILs are based on generally conservative assumptions for the estimated exposure of site occupants in the above land use scenarios.

The NEPM also provides Health Screening Levels (HSLs) for BTEX and volatile petroleum hydrocarbon fractions based on vapour intrusion risks from soil contamination. These concentrations are lower than those provided in the CRC Care Technical Report No. 10 *Health screening levels for petroleum hydrocarbons in soil and groundwater* (2011) for direct contact with TRH and BTEX contaminated soil and so the NEPM criteria have been adopted for screening purposes. For the non-volatile TPH fractions (F3 and F4), the direct contact criteria included in CRC Care 2011 have been adopted for screening purposes.

The NEPM describes the Residential / Sensitive use (Setting A) as *“Residential with garden/accessible soil (home-grown produce <10% of vegetable and fruit intake (no poultry), also includes childcare centres, preschools and primary schools”*. Typically, this refers to sites where a density of between one dwelling per 300 m² and one dwelling per 4,000 m² exists.

The NEPM describes the High Density Residential (Setting B) as being *“residential with minimal opportunities for soil access includes dwellings with fully and permanently paved yard space such as high-rise buildings and flats”*. Typically, these criteria are used where there are multiple dwellings on a site with minimal access to soil. This is typically a density greater than one dwelling per 200 m² or a residential building greater than four storeys.

The NEPM describes the Commercial / Industrial land use (Setting D) as *“Commercial / Industrial, includes premises such as shops, offices, factories and industrial sites”*.



3.2.3.2 Potential Ecological Risks

The NEPM EILs were used to assess the potential risks to the environment posed by soil remaining on site, assuming the soil is accessible. The EILs are derived for specified levels of percentage species protection depending on the intended land use within areas of ecological significance, urban residential areas and public open space, as well as commercial and industrial land uses. The NEPM describes urban residential areas and public open space as broadly consistent with the equivalent HIL land use scenarios where the generic land use protection levels are 80%.

The NEPM Ecological Screening Levels (ESLs) apply a weight-of-evidence approach to derive ecologically based 'Tier 1 eco soil contact' values for TPH fractions and specific compounds. The overall approach provides protective criteria based on a point estimate of the toxicant concentration that has an obvious adverse effect on 25% of test organisms for residential land use and 50% of test organisms for commercial / industrial land use. It is noted that data limitations did not allow for derivation of the EIL methodology and the resulting values are adopted as low reliability ESLs.

3.2.3.3 Selected Onsite NEPM Assessment Criteria

The site is likely to be used for low to medium density residential land use. On that basis, both the NEPM residential settings (A and B) have been selected for screening purposes.

3.3 Soil Results

3.3.1 Field Observations

Grey brown sandy silt, sand and silty clay fill material was encountered to a depth of between 0.1-0.90 m below surface in all locations. Fill material was underlain by natural orange brown silty clay material.

The soil bore logs are attached as Appendix F.

3.3.2 PID Results

The results of the PID screening of soil bore samples were all below 1.0 ppm, indicative of background conditions.

3.3.3 Soil Analytical Results

The soil analytical results have been tabulated and compared to relevant NEPM assessment criteria in the Summary Tables attached to this report.

All contaminant concentrations were below the respective laboratory reporting limits or adopted assessment criteria with the exception of arsenic, copper, lead, nickel, zinc and benzo(a)pyrene, which were identified in one or more samples collected from the fill material at concentrations that exceeded the adopted ecological criteria for urban residential and commercial / industrial use. It is noted that the site is highly modified and any risk to plants could be addressed through professional horticultural advice.

Elevated concentrations of lead and benzo(a)pyrene were reported to exceed the adopted human health criteria for low density residential use at a number of locations in samples collected from fill material. It is noted that all samples that exceeded the adopted ecological and human health criteria were collected from the historically placed fill materials.

All other analytical results were below laboratory reporting limits and/or applicable ecological screening level criteria and both the residential and the commercial / industrial human health criteria.

The potential area of lead impacts which exceeded the adopted human health criterion is shown in Figure 5.



The NATA certified laboratory certificates of analysis and COC documentation are included in Appendix H.



- Legend:**
- Parcel Property
 - Proposed Divestment Area
 - Groundwater Monitoring Well
 - Soil Borehole
 - Potential Area of Lead Impacts



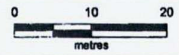
Job No: S1810

Client: Charter Kock Cramer

Version: FINAL Date: 6-Nov-2016

Drawn By: AS Checked By: JB

Scale at A4: 1:800



Coor. Sys. GDA 1994 MGA Zone 55

OutMight TE
570 Neerim Road, Hughesdale, Victoria

INVESTIGATION LOCATIONS AND POTENTIAL AREA OF LEAD IMPACTS

FIGURE 5

OutMight TE\Projects\897\Measures\S1810_CAC_1616a_VIC3_731\High TE\High TE\Map\OutMight TE - Lead impacts.mxd
Image Reference: www.nearmap.com © Imagery Date: 28 August 2016

3.4 Groundwater Assessment

Soil bore SB06, located in the north west corner of the site and the closest bore to the UST present on the adjacent exchange site, was completed as a groundwater monitoring well. A groundwater sample from the shallow aquifer was collected within 24 hours of the installation of the well. This groundwater sampling event does not fully comply with the applicable guidelines, which typically require a seven day stabilisation period prior to sampling and therefore the analytical results should be viewed as indicative only. A follow-up groundwater monitoring could be undertaken to confirm the initial findings.

The installation and sampling methodologies for the groundwater investigation are presented in Table 13.

Table 13 – Groundwater Investigation and Sampling Methodologies

Task	Detail
Groundwater Monitoring Well Installation	<ul style="list-style-type: none"> The groundwater well was advanced to a depth of approximately 9.0 m below surface using solid auger techniques; The well was constructed in accordance with standard environmental practices, including grouting to the surface. The well was completed at the surface level using a flush mounted, traffic rated well cover. Refer to well construction log (Appendix F) for well construction details; and The monitoring well was developed using a foot valve pump immediately following construction to ensure good connectivity with the aquifer.
Groundwater Monitoring Well Sampling	<ul style="list-style-type: none"> The well was gauged using an interface probe prior to any purging or sampling to assess the presence of light non-aqueous phase liquid (LNAPL), if any; Following the gauging event, the groundwater well was purged and sampled using a dedicated piece of Waterra tubing connected to a foot valve; Field parameters including pH, electrical conductivity, dissolved oxygen, redox potential and temperature were recorded during purging; A groundwater sample was collected in dedicated sampling containers provided by the laboratory and forwarded to Eurofins for laboratory testing in a chilled cool box under COC documentation.

3.4.1 Groundwater Laboratory Analysis

The groundwater sample was transported to Eurofins for chemical analysis. The groundwater sample was analysed as summarised in Table 14.

Table 14 – Groundwater Analytical Program

Analyte	Number of Samples		
	Primary	Intra-Laboratory Split	Inter-Laboratory Split
TRH, PAH, metals (8), BTEX	1	0	0
TRH and metals (8)	0	1	1

3.4.2 Groundwater Assessment Criteria and Investigation Levels

The beneficial uses of groundwater to be protected in the State of Victoria are provided in the State Environment Protection Policy *Groundwaters of Victoria* (EPA, 1997) (referred to as the Groundwater SEPP). The protected beneficial uses of the groundwater are primarily based on the salinity of the groundwater measured as TDS.

Electrical Conductivity (EC) was measured as part of the field parameters collected during purging and prior to sampling of the groundwater. The TDS can be approximated using EC values. This requires a conversion factor of 0.65. Given the EC value reported during field sampling was 6,330 $\mu\text{S}/\text{cm}$ at the site, the groundwater was inferred to have a TDS concentration of 4,115 mg/L.

Based on the TDS concentration, groundwater is classified into one of five Segments (A1, A2, B, C, D), as shown in Table 15 for which certain beneficial uses are nominated for protection.

Table 15 – Groundwater Beneficial Use Segments

Segment	A1	A2	B	C	D
TDS (mg/L)	<500	501 – 1,000	1,001 – 3,500	3,501 – 13,000	>13,000

Based on the inferred salinity, the groundwater would be classified as Segment C and the protected beneficial uses are:

- Maintenance of Ecosystems;
- Stock watering;
- Industrial water use;
- Primary contact recreation; and
- Buildings and structures.

For the protection of Maintenance of Ecosystems, the Groundwater SEPP states the objective that “groundwater shall not cause receiving waters to be affected to the extent that the level of any water quality indicator is greater than the level of that indicator specified in the relevant State Environment Protection Policy for surface waters.”

The guidelines used for the assessment of groundwater contamination for the protection of beneficial uses under Segment A are as follows:

- **Maintenance of Ecosystems:** Those specified in the relevant SEPP for surface waters, *Waters of Victoria* (June 2003), although this primarily defers to the environmental quality objectives specified in the ANZECC *Australian and New Zealand Guidelines for Fresh and Marine Water Quality* (ANZECC, 2000) with a level of ecosystem protection for this Segment being the 95% Freshwater criterion (slightly or moderately modified aquatic ecosystems).
- **Stock Watering:** Those criteria specified in the ANZECC (2000) guidelines for livestock use.
- **Primary Contact Recreation:** Those outlined in the *Guidelines for Managing Risks in Recreational Waters* (NHMRC 2008). The NHRMC (2008) recreational water quality guidelines refer to the raw water for drinking water purposes for toxicants, as provided in ADWG (2016).
- **Industrial Water Use:** Those criteria specified in the ANZECC (1992) guidelines for industrial water quality in absence of other criteria.
- **Buildings and Structures:** The groundwater shall not be corrosive to structures or building materials (pH, sulphate, redox potential) as stated within Australian Standard 2159-2009: *Piling and Design*.

Given the area is supplied by high quality mains water and the low yield obtainable from shallow groundwater wells, it is considered unlikely that groundwater at the site will be utilised for extractive purposes. A medium density development is unlikely to provide an opportunity for construction and operation of a groundwater well.

Given the depth of groundwater it is considered unlikely that any buildings or structures constructed at the site will intersect the groundwater. On these bases, the extractive beneficial uses and Buildings and Structures are not considering relevant and have not been considered further.

Table 16 provides a summary of the protected beneficial uses of groundwater and their relevance to this site.



Table 16 – Summary of Protected and Relevant Beneficial Uses

Beneficial Use	Protected for this Site		Relevant		Not Relevant Unlikely
	Yes	No	Existing	Likely	
Maintenance of Aquatic Ecosystem	Yes		✓		
Porable Water Supply (acceptable)	No				✓
Porable Mineral Water	No				✓
Agriculture, Parks & Gardens	No				✓
Stock Watering	Yes				✓
Industrial Water use	Yes				✓
Primary Contact Recreation Buildings & Structures	Yes				✓

The NEPM HSLs were used to assess the potential risks to human health for residential (Setting A&B) land use posed by volatile petroleum hydrocarbons in groundwater. The HSLs are based on generally conservative assumptions for the estimated exposure of site occupants in various land use scenarios.

The following groundwater criteria presented in Table 17 have been selected for a preliminary assessment of risks posed to human and ecological receptors at site.

Table 17 – Adopted Groundwater Assessment Criteria

Potential Sensitive Receptor	Reference
Human Health	NEPM Health Based Screening Levels for vapour intrusion residential land use (HIL – A&B); National Health and Medical Research Council (2016), <i>Australian Drinking Water Guidelines 2011, Version 3.2</i> , updated February 2016.
Ecological	Australian and New Zealand Guidelines for Fresh and Marine Water Quality (ANZECC and ARMCANZ, 2000).

3.5 Groundwater Analytical Results

3.5.1 Field Observations

Water quality parameter data collected during the sampling works are presented in Table 18.

Table 18 – Groundwater Field Parameters Summary

Well ID	Date	SWL (m BTOC)	Disolved Oxygen (ppm)	Temperature (C)	pH	EC (µS/cm)	Redox potential (mV)
MW01	23/09/2016	4.561	0.94	18.4	5.96	6,330	11.6

Notes:
SWL = standing water level, m BTOC = metres below top of casing. * = Due to the short stabilisation period, it is unlikely that this water level is representative of the local stabilised groundwater level.

No visual or olfactory signs of contamination were observed during groundwater sampling. The groundwater sampling field sheet is attached as Appendix G.

As only one well was sampled, the direction of groundwater flow was not determined. Regional groundwater flow in the vicinity of the site is expected to flow to the east towards Scotchmans Creek.

3.5.2 Groundwater Analytical Results

All reported results were below the adopted criteria with the exception of chromium and zinc.

The chromium concentration of 0.005 mg/L slightly exceeded the ANZECC 2000 freshwater criterion 95% trigger value of 0.003 mg/L. The zinc concentration of 0.042 mg/L slightly exceeded the ANZECC 2000 freshwater criterion 95% trigger value of 0.008 mg/L. The elevated chromium and zinc concentrations are most likely attributable to regional background aquifer conditions and are not



indicative of site derived contamination. No groundwater impacts were identified associated with the nearby UST located on the adjacent exchange site.

A summary of the laboratory results for groundwater is presented in the tables appended to this report. The NATA certified laboratory certificates of analysis and COC documentation are attached as Appendix H.



4. Quality Assurance / Quality Control

To ensure that results were not biased by field sampling techniques or laboratory methods, blind and field split duplicate samples were collected in the field for selected analyses by a primary and secondary laboratory.

The precision of the results for each analyte between the primary sample and the field duplicate was determined by calculating the relative percentage difference (RPD), as follows:

$$RPD = \frac{(Concentration\ 1 - Concentration\ 2) \times 100}{(Concentration\ 1 + Concentration\ 2) / 2}$$

The RPD is not calculated where one or both of the duplicate results are below the laboratory reporting limits. The RPDs are included in the tabulated results. It is noted that the RPD method is skewed by low laboratory results, where a small actual difference in concentrations returns a high RPD.

Table 19 – QA/QC Program

QA/QC Item	Detail
Field Procedures	Field procedures were undertaken in broad accordance with the NEPM (refer to methodology presented in this report).
Laboratories used and NATA accreditation	Eurofins was used as the primary laboratory for the analysis of samples. EnviroLab was used as the secondary laboratory for the analysis of the inter-laboratory split samples. Eurofins and EnviroLab are NATA accredited for the analyses undertaken.
Sample Tracking	COC documentation was used for the transport of all samples to the laboratory.
Sample Preservation and Storage	Samples were placed in laboratory supplied containers in a chilled insulated box and transported to the laboratory under COC documentation.
Holding Times	Samples were analysed within holding times.
Data Transcription	Summary results tables are appended to this report. Tables were generated using csv files provided by the laboratory to avoid transcription errors.
Laboratory Reporting Limits	The laboratory reporting limits are presented in the Laboratory Certificates of Analysis included in the appendices of this report. The reporting limits were equal to or below the assessment criteria.
QC	
Soil Intra-Laboratory Duplicate	One intra-laboratory soil duplicate was retrieved during the field investigation and submitted for analysis. All RPDs were below the generally accepted maximum value of 50% with exception of duplicate pair for arsenic (140%). The elevated RPD value is considered to be a result of sample heterogeneity and is not considered to effect the outcome of this assessment.
Soil Inter-Laboratory Duplicate	One inter-laboratory soil duplicate was retrieved during the field investigation and submitted for analysis. All RPDs were below the generally accepted maximum value of 50% with the exception of the duplicate pair for lead (65%) and zinc (80%). The elevated RPD value is considered to be a result of sample heterogeneity and is not considered to effect the outcome of this assessment.
Groundwater Intra-Laboratory Duplicate	One intra-laboratory soil duplicate was retrieved during the field investigation and submitted for analysis. All RPDs were below the generally accepted maximum value of 50%.
Groundwater Inter-Laboratory Duplicate	One inter-laboratory soil duplicate was retrieved during the field investigation and submitted for analysis. All RPDs were below the generally accepted maximum value of 50% with the exception of the duplicate pair for zinc (125%). The elevated RPD value is considered to be a result of sample heterogeneity and is not considered to effect the outcome of this assessment.
Blanks	One equipment rinseate blank was taken during soil sampling activities to verify wash down procedures. The sample was analysed for TH and metals. All results were below the laboratory reporting limits.



QA/QC Item	Detail
Laboratory/ Internal QC	The laboratory undertook internal quality assurance/quality control (QA/QC) procedures which were generally within the acceptable limits of repeatability, chemical extraction and detection. Minor exceptions are not likely to impact on the quality of the data presented.

Based on the results of the evaluation of the QA/QC data, it is considered that:

- The field and laboratory quality assurance measures implemented are considered to provide an acceptable level of confidence that the data collected and reported is appropriately complete, comparable and representative; and
- The field and laboratory quality control measures implemented are considered to provide an acceptable level of confidence that the data collected and reported is appropriately accurate and precise.

Therefore, it is concluded that the data collected for the investigation is considered to be reliable and usable for reporting the contamination status of soil and groundwater across the site.



5. Conclusions

JBS&G Australia Pty Ltd (JBS&G) was commissioned by Charter Keck Cramer (Charter) on behalf of Telstra Corporation Limited (Telstra) to undertake a Preliminary Site Investigation (PSI) site history review and Detailed Site Investigation (DSI) soil assessment for a portion of the Oakleigh telephone exchange property located at 570 Neerim Road, Hughesdale, Victoria. The divestment portion of the parent site is herein referred to as 'the site'.

5.1 PSI

The site is currently used for operations associated with the adjacent telephone exchange to the west, with residential properties surrounding the site. An asphalted car park occupies the majority of the site with two grassed rectangular garden beds containing small trees and shrubs situated in the south-eastern and south-western corners. Given the surrounding land use, the site will most likely be developed as low to medium density residential land use.

Based on the information obtained during the PSI, the parent site and surrounding area were used for agricultural purposes including cropping and dairy cattle until circa 1935 when surrounding areas started to be developed into residential properties. The site was purchased by the Australian Telecommunications Commission in 1970.

The PSI findings indicated the occurrence of an underground fuel storage tank (UST) in the northern portion of the parent site, however the UST was observed to be empty at the time of inspection and unlikely to contain significant amounts of fuel. Other key potential risks identified were potentially contaminated shallow fill material from overflowing rubbish bins and potentially contaminated imported fill materials. A review of nearby environmental audits did not identify any potential for soil or groundwater contamination from those sites to impact on the divestment site.

5.2 DSI

JBS&G conducted a grid based soil assessment to assess the suitability of the site for use in a residential setting. Analyses were conducted for a broad range of chemicals associated with imported fill material and possible farming/agricultural activities including metals, TRH, BTEX, PAH, OCP and PCB. One groundwater monitoring well was also installed and sampled.

All grid based soil contaminant concentrations were below the respective adopted assessment criteria with the exception of arsenic, copper, lead, nickel, zinc and benzo(a)pyrene in one or more samples at concentrations that exceeded adopted ecological screening levels. However, the site is highly modified and any risk to plants could be addressed through professional horticultural advice should the site be redeveloped with garden areas.

Lead and benzo(a)pyrene were identified in soil at concentrations exceeding the Health Investigation Levels (HIL) for low density residential use. The elevated concentrations were restricted to historical imported fill materials within some portions of the site. Depending on the proposed use of the site, these soils may need to be remediated or managed appropriately.

All reported groundwater results were below the adopted criteria with the exception of minor concentrations of chromium and zinc which exceeded the adopted ANZECC freshwater 95% trigger value. It is likely that the chromium and zinc concentrations represent regional conditions and are not contamination associated with the site.

The conclusions of this report should be read in conjunction with and with regard to the Limitations included in Section 6.



6. Limitations

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

The advice herein relates only to this project and all results conclusions and recommendations made should be reviewed by a competent person with experience in environmental investigations, before being used for any other purpose.

JBS&G accepts no liability for use or interpretation by any person or body other than the client who commissioned the works. This report should not be reproduced without prior approval by the client, or amended in any way without prior approval by JBS&G, and should not be relied upon by other parties, who should make their own enquires.

Sampling and chemical analysis of environmental media is based on appropriate guidance documents made and approved by the relevant regulatory authorities. Conclusions arising from the review and assessment of environmental data are based on the sampling and analysis considered appropriate based on the regulatory requirements.

Limited sampling and laboratory analyses were undertaken as part of the investigations undertaken, as described herein. Ground conditions between sampling locations and media may vary, and this should be considered when extrapolating between sampling points. Chemical analytes are based on the information detailed in the site history. Further chemicals or categories of chemicals may exist at the site, which were not identified in the site history and which may not be expected at the site.

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

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

7. References

BOM (2016). *Australian Groundwater Explorer*

<http://www.bom.gov.au/water/groundwater/explorer/> accessed 10 August 2016.

CRC CARE (2011). *Health screening levels for petroleum hydrocarbons in soil and groundwater Summary*, CRC Care (2011) Health Screening Levels for Petroleum Hydrocarbons in Soil and Groundwater, Technical Report 10.

Energy Safe (2016). *Search for Cathodic Protection Systems*, Energy Safe Victoria, 29 July 2016.

EPA (2016). *Priority Sites Register* <http://www.epa.vic.gov.au/your-environment/land-and-groundwater/priority-sites-register> accessed 10 August 2016.

Geological Survey of Victoria (1997), 1:250,000 Geological Map, Melbourne.

LANDATA (2016). *Historical Search Statement: TP331423L*. <https://www.landata.vic.gov.au>. Compiled 2 August 2016.

National Environment Protection Council (2013). *National Environment Protection (Assessment of site Contamination) Measure 1999, as amended May 2013*.

RHSV (2016). *Site Search: 1575 Frankston-Flinders rd. Tyabb, Victoria, 3913*, Royal Society of Victoria Inc, 4 August 2016.

Standards Australia (2005). *Guide to the Sampling and Investigation of Potentially Contaminated Soil, Part 1: Non-Volatile and Semi-Volatile Compounds, AS4482.1-2005*.

Standards Australia (1999). *Guide to the Sampling and Investigation of Potentially Contaminated Soil*,

WorkSafe (2016). *Dangerous Goods Database Search, 1575 Frankston-Flinders rd. Tyabb, Victoria, 3913*. WorkSafe Victoria 9 August 2016 (Ref. H16/00111).

Making new architecture



570 Neerim Rd. Hughesdale.

TOWNPLANNING ENDORSEMENT
PROPOSED RESIDENTIAL DEVELOPMENT

2017/08/04