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PRELIMINARY SITE INVESTIGATION (PSI)

124-142 Beamish Street, Campsie NSW

prepared for

J Group Pty Ltd

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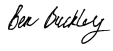
Author		Benjamin Buckley	30/11/15

ABBREVIATIONS

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

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EXECUTIVE SUMMARY

Benviron Group was appointed by J Group Pty Ltd to undertake a Preliminary Site Investigation (PSI) for the property situated at 124-142 Beamish Street, Campsie NSW ("the site").

Refer to **Figure 1** - Site Location and **Figure 2** - Site Plan

The site is currently occupied by a commercial buildings with rear parking. The site is proposed to be redeveloped into a multistorey residential building with a triple basement.

This PESA has been requested by the current owner of the site to determine the potential for on site contamination arising from any areas of concern located within the site and its surrounding area. This report shall provide a preliminary assessment of any site contamination and, if required, provide a basis for a more detailed investigation.

The site is currently occupied by commercial property. Previous site history indicates that the potential for significant soil impact from the past historical uses is Low-medium with the potential for the use as manufacturing or for imported fill to have been used within the site.

Based on the above, it is considered that the potential for significant contamination of soil and groundwater from current and previous activities within the site is generally Low, there is the potential for minor contaminant concentrations or localised surface soil contamination to be present within this site.

Off-site impacts of contaminants in soil are generally governed by the transport media available and likely receptor(s). The most common transport medium is water, whilst

receptors include uncontaminated soils, groundwater, surface water bodies, humans, flora & fauna.

Migration of soil contaminants to the deeper soils or groundwater regime would generally be via leaching of contaminants from the surface soil or fill, facilitated by infiltration of surface water.

In summary

Based on the results of this investigation it is considered that the risks to human health and the environment associated with soil contamination at the site are medium to high in the context of the proposed use of the site. The site ***can be made suitable*** for the proposed development, subject to the following recommendations:

- A Detailed Environmental Site investigation should be undertaken across the entire site area in order to clarify the data gaps identified within this report.
- A hazardous materials assessment of the buildings should be undertaken prior to demolition being carried out on site.

If during any potential site works any significant unexpected occurrence is identified, site works should cease in that area, at least temporarily, and the environmental consultant should be notified immediately to set up a response to this unexpected occurrence.

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

1.0 INTRODUCTION

Benviron Group was appointed by J Group Pty Ltd to undertake a Preliminary Site Investigation (PSI) for the property situated at 124-142 Beamish Street, Campsie NSW ("the site").

Refer to **Figure 1** - Site Location and **Figure 2** - Site Plan

The site is currently occupied by a commercial buildings with rear parking. The site is proposed to be redeveloped into a multistorey residential building with a triple basement.

This PSI has been requested by the current owner of the site to determine the potential for on site contamination arising from any areas of concern located within the site and its surrounding area. This report shall provide a preliminary assessment of any site contamination and, if required, provide a basis for a more detailed investigation.

A site visit was undertaken on 25th November 2015. Fieldwork and reporting was conducted in general accordance with the Benviron Group proposal and with reference to relevant regulatory criteria and Benviron Group fieldwork protocols.

The format of this report closely follows that recommended in the NSW Environment Protection Authority (EPA), now the Office of Environment and Heritage (OEH) "*Guidelines for Consultants Reporting on Contaminated Sites*" - 2011.

2.0 OBJECTIVE

The objective of this PSI was to assess the potential for the soils at the site to have been impacted by previous and current activities undertaken at or adjacent to the site and to assess the site suitability for the proposed development.

This report may also recommend additional investigations and / or remediation works and possible strategies for the management of the site.

3.0 SCOPE OF WORKS

The scope of works for this PSI included:

- Research and review of the information available, including previous environmental investigations, past and current titles, aerial photographs, EPA records, council records and anecdotal evidence, site survey, site records on waste management practices;

- Site walkover, including research of the location of sewers, drains, holding tanks and pits, spills, patches of discoloured vegetation, etc;

- Quality Assurance/Quality Control (QA/QC): work will be undertaken in accordance with relevant regulations and are consistent with industry standards.

4.0 SITE IDENTIFICATION

4.1.1 Site identification

The site is identified as follows:

Table 1: Site Identification Review

Site Identifier	Site Details	
Site Location	124-142 Beamish Street, Campsie NSW	
Lot/DP	Lots 1 & 2 Section A DP4190, Lot 1 DP575837 and Lot 101 DP739066.	
Parish	St George	
County	Cumberland	
Nearest Survey Marker	SS130635	
Coordinates (SW Corner)	Lat: 33°54'30.12"S, Long: 151° 6'11.24"E	
Site Area	3,345m^2	
Local Government Area (LGA)	Canterbury Council	
Zoning	B2 Local Centre	
Surrounding Land Uses	*North*	Ninth Avenue followed by Retail/Commercial
	South	Campsie Street followed by Commercial.
	East	Beamish Street followed by Commercial
	West	Mixed Commercial and High Density Residential

5.0 SITE HISTORY AND PROPOSED DEVELOPMENT

5.1.1 Underground Search

Dial Before You Dig' plans were requested and reviewed for the Site. Plans were provided by Ausgrid, Jemena Gas West, Sydney Water, Telstra NSW and council information for NSW. The plans provided for Ausgrid, Sydney Water & Telstra did not indicate the presence of any major underground services or utility easements at the Site.

5.1.2 Review of Historical Maps

A review of the Canterbury Map originally produced by Higinbotham & Robinson between 1885-1890 was undertaken. The map revealed that the site had no distinguishable features nor was it occupied by any major industry at the time of development.

5.1.3 WorkCover Search

A WorkCover Search was undertaken for the site however no records were found pertaining to the site.

5.1.4 Council Records

Based on a review of the Section 149 certificate for the site no constraints in regards to contamination was noted.

5.1.5 Review of aerial photographs

A number of aerial photographs obtained from the NSW Department of Lands were reviewed as part of this PSI. Copies of the aerial photographs are kept in the offices of Benviron Group and are available for examination upon request. The results of this review are presented in the following table:

Table 2 Review of Aerial Photographs

Year	Site		Surrounding areas
1943	Vacant	The western portion of the site is vacant while the eastern portion of the site is occupied by a residential property.	The surrounding area is mostly residential or vacant in nature.
1961	Vacant	No major changes	The residential area is expanding to the west and the south.
1989	Commercial	A commercial warehouse now exists within the site area with rear parking.	The surrounding area is becoming more densely populated and commercial areas continue to nearby roadways.
2003	Commercial	No major changes.	No major changes
Current	As per inspection	The site is as inspected (section 5.2)	As per inspection

In summary, the aerial photographs reveal that the site on lot 15-16 was vacant up until the western portion of the site is vacant while the eastern portion of the site is occupied by a residential property the late 1980s when the site was redeveloped and was occupied by a commercial warehouse. The site layout then remained similar up until the current period.

5.1.6 Title search

A review of historical documents held at the NSW Department of Lands offices was undertaken to characterise the previous land use and occupiers of the site.

Refer to **Appendix A** – Land Titles.

Table 3 Historical land title data

Year	Lot 2 DP786400	Company/Personal Occupation
2009-Current	George Elia, Houda Elia, John Elias and Randa Elias	-
2006	Michael and Norma Elias and Charlie and Mona Assad	-
1997	Gelveri Holdings Pty Ltd	-
1990	Roscommmon Finance and Carole McEnally	-
1988	Deruno Pty Ltd	-
	Lot C DP279787	-
1983	Eli and Audette Haddad	
1974	Maurice Chidiac and Reine Tarabay	Hairdresser
1927	Robert Thorn	Lorry Driver
1926	Thomas Thorn	Freeholder
1913	James, Henry and Robert Frazer	Builder, Carpenter
	Lot D DP279787	-
1987	Gordon and Joyce Rhodes	-
1926	Donald Rhodes	Motor Engineer-
1913	James, Henry and Robert Frazer	Builder, Carpenter
	Lot E DP279787	-
1978	John Fuller	Sheet Metal Worker

Year	Lot 2 DP786400	Company/Personal Occupation
1960	Robert Holt	Tiler
1913	James, Henry and Robert Frazer	Builder, Carpenter
	Lot 262	-
1946	Alexander Spence	Schoolteacher
1945	Ernest McKay	Electrical Engineer
1913	James, Henry and Robert Frazer	Builder, Carpenter

In summary, the site has been owned for private use up until the late 1980s when the site was purchased by a company (Deruno Pty Ltd) and was then purchased by various private and commercial owners up until the current period.

5.1.7 NSW OEH records

The NSW OEH publishes records of contaminated sites under Section 58 of the Contaminated Land Management (CLM) Act 1997. The notices relate to investigation and/or remediation of site contamination considered to pose a significant risk of harm under the definition in the CLM Act.

A search of the database revealed that the subject site is not listed, however there were two (2) sites listed within the Campsie Area. These sites are located greater than 1km from the site and are not expected to be cause for concern.

It should be noted that the OEH record of Notices for Contaminated Land does not provide a record of all contaminated land in NSW.

Refer to **Appendix B** – NSW EPA Notice Summary.

5.1.8 Anecdotal evidence

No anecdotal evidence was identified for the site.

5.1.9 Summary of site history

In summary:

- A review of the land titles indicates the site has been owned for private use up until the late 1980s when the site was purchased by a company (Deruno Pty Ltd) and was then purchased by various private and commercial owners up until the current period.
- The aerial photographs reveal that the site on lot 15-16 was vacant up until the western portion of the site is vacant while the eastern portion of the site is occupied by a residential property the late 1980s when the site was redeveloped and was occupied by a commercial warehouse. The site layout then remained similar up until the current period.

5.1.10 Integrity Assessment

The information found in the historical sources has been found to be in general concurrence. It is therefore considered that accuracy of this data is acceptable for this investigation.

5.1.11 Previous Reports

No previous reports were identified for the site.

5.1.12 Proposed Development

The site is proposed to be redeveloped into a mixed use multistorey residential building with a triple basement.

Refer to **Appendix C** - Proposed Site Plans

6.0 SITE CONDITION AND SURROUNDING ENVIRONMENT

Table 4: Site Condition and Surrounding Environment Review

Site Information	Descriptions
Sensitive Receivers within 500m	No sensitive receivers were identified within 500m of the site.
Topography (1:25,000)	The site has a slight slope approximately 5° to the north east.
Geological Profile	The Geological Map of Sydney (Geological Series Sheet 9130, Scale 1:100,000, 1983), published by the Department of Mineral Resources indicates the residual soils within the site to be underlain by Triassic Age Shale of the Wianamatta Group, comprising black to dark grey shale and laminite.
Presence of Acid Sulphate Soils **(Review of NSW Department of Land & Water Conservation (DLWC) *Acid Sulphate Soil Risk Maps* (Edition Two, December 1997, Scale 1:250,000).**	No reports were A review of the aforementioned map indicated that there is a "No Known Occurrence " of acid sulphate soil materials within the soil profile During site investigations no indicators of acid sulphate soils were identified.

Site Information	Descriptions				
Localised Hydrogeology	**Number**	**Distance**	**Depth**	**SWL**	**Use**
	GW102215	1km E	15	-	Domestic
Nearest Surface Water Body	Cooks River – 600m NNE				
Nearest Active Service Station	Approx. 1km from the site				

7.0 SITE INSPECTION

7.1.1 Site observations

The site was visited on 25th November 2015 by Benviron Group Environmental Scientists to inspect the site for any potential sources of contamination.

At the time of the site visit the following observations were made as per the following table:

Table 5: Site Inspection Review

Factors Considered	Description
Buildings & Structures on Site	The site was irregular in shape and was occupied by commercial brick properties with a metal roof. A driveway area exists at the rear of the site
Percentage Concrete Covered	95%
Concrete Condition	Very good
Chemical Storage	No chemical storage was noted within the property.
Above and Underground Storage Tanks	USTs and ASTs were not identified within the site inspection. However, based on the site history they may be present in areas that could not be inspected (i.e. under buildings).
Trade Waste Pits	No trade waste agreements or pits were identified for the building.
Nearby Electrical Transformers	No electrical transformers were identified within the site

Asbestos	No asbestos sheeting was identified within the building structures on site, however may have been present in areas that could not be observed.
Site Vegetation	Vegetation was apparent within the site and appeared healthy and free of stress.
Soil Staining and Odours	No odours were identified within the property. No significant soil staining was noted within the soil profile.
Stormwater and Sewer	Stormwater and sewage were connected to the local utilities.

Refer to **Figure 2** - Site Plans

8.0 CONCEPTUAL SITE MODEL (CSM)

Based on the above information, site history and site walkover, the areas of potential concern and associated contaminants for the site CSM were identified. These are summarised in the following table.

Areas and Contaminants of Concern

Known and potential contamination source	Associated Contaminants
Historical Site Uses-Manufacturing	Heavy Metals, TRH, BTEX, PAH, OCP, PCB and Asbestos
Imported Fill	Heavy Metals, TRH, BTEX, PAH, OCP, PCB and Asbestos
Carparking Areas	TRH, BTEX, PAH
Building degradation/ Demolition	Heavy Metals and Asbestos

Potentially Contaminated Media

Potentially contaminated media present at the site may include:

Known and potential contamination source	Associated Contaminants
Fill Material	There is the potential for contamination to be present in the upper clay/sand fill material.
Groundwater	There is the potential for the leaching of contaminants into groundwater onsite and also migration of the contaminants.
Ground Gas	Given the neighbouring site history and the findings of previous investigations, ground gas on site is not considered to be a potential contaminated medium.

Potential for Migration

Contaminants generally migrate from site via a combination of windblown dusts, rainwater infiltration, groundwater migration and surface water runoff. The potential for contaminants to migrate is a combination of:

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

The potential contaminants identified as part of the site history review, site inspection and previous report are present in solid (e.g. impacted fill, asbestos), liquid (e.g. dissolved in water) and gaseous/vapour forms.

Aerial photography has indicated that there are sealed ground surfaces and therefore, while there is the potential for migration of contaminants via wind-blown dust this transport mechanism is unlikely.

Due to unsealed surfaces in some investigation areas, there is the potential for migration of contamination via rainfall in overland surface flow and potential groundwater discharge to impact surface water bodies.

Rainfall infiltration at the site is expected to occur in unsealed areas. There is therefore the potential that soil contamination could result in impacts to shallow groundwater.

The potential presence of vapour in the subsurface soils area indicates a potential for migration of contaminants in gaseous form.

Potential Exposure Pathways

Potential exposure pathways include:

- Dermal;
- Ingestion; and
- Inhalation.

Due to the presence of exposed potentially impacted soil/fill on ground surfaces, dermal exposure is considered a potential exposure pathway.

The potential for ingestion of soil is considered as a potential exposure pathway. Although groundwater is not used at the site, there is the potential, for ingestion of contaminants via groundwater removed from monitoring wells.

There is the potential for vapour to be present in the underlying profile within the site. As such, these gases potentially pose a risk to human health via the inhalation pathway.

The proposed development concerns the construction and development of a multistorey unit development with a triple basement approximately. Because of this dermal and inhalation exposure pathways by potentially contaminated groundwater and vapour may occur.

Receptors

Potential receptors of environmental impact present within the site which will be required to be addressed with respect to the suitability of the site for the proposed use include:

- Excavation/construction/maintenance workers conducting activities at the site, who may potentially be exposed to COPCs through direct contact with impacted soils, Vapour Intrusion and/or groundwater present within excavations and/or inhalation of dusts/fibres associated with impacted soils;
- Future occupants/users of the site may potentially be exposed to COPCs through direct contact with impacted soils and/or ingestion of impacted soils and/or inhalation of dusts/fibres associated with impacted soils and/or exposure to vapour; and/or
- Offsite sensitive receptors of groundwater; and/or
- Flora species to be established on vegetated areas of the site.

Preferential Pathways

For the purpose of this assessment, preferential pathways have been identified as natural and/or man-made pathways that result in the preferential migration of COPCs as either liquids or gases.

Man-made preferential pathways are present throughout the site, generally associated with fill materials and services present beneath existing ground surface. Fill materials and service lines are anticipated to have a higher permeability than the underlying natural soil and/or bedrock.

9.0 DISCUSSION

The site is currently occupied by a commercial property. Previous site history indicates that the potential for significant soil impact from the past historical uses is Low-medium with the potential for the use for manufacturing or for possible imported fill to have been used within the site.

Based on the above, it is considered that the potential for significant contamination from soil and groundwater from current and previous activities within the site is generally low-medium, there is the potential for minor contaminant concentrations or localised surface soil contamination to be present within this site.

Off-site impacts of contaminants in soil are generally governed by the transport media available and likely receptor(s). The most common transport medium is water, whilst receptors include uncontaminated soils, groundwater, surface water bodies, humans, flora & fauna.

Migration of soil contaminants to the deeper soils or groundwater regime would generally be via leaching of contaminants from the surface soil or fill, facilitated by infiltration of surface water.

10.0 CONCLUSION AND RECOMMENDATIONS

Based on the results of this investigation it is considered that the risks to human health and the environment associated with soil contamination at the site are medium in the context of the proposed use of the site. The site ***can be made suitable*** for the proposed development, subject to the following recommendations:

- A Detailed Environmental Site investigation should be undertaken across the entire site area in order to clarify the data gaps identified within this report.
- A hazardous materials assessment of the buildings should be undertaken prior to demolition being carried out on site.

If during any potential site works any significant unexpected occurrence is identified, site works should cease in that area, at least temporarily, and the environmental consultant should be notified immediately to set up a response to this unexpected occurrence.

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

For and on behalf of

Benviron Group

Ben Buckley

Ben Buckley

Director

Environmental Forensic Scientist

11.0 LIMITATIONS

To the best of our knowledge information contained in this report is accurate at the date of issue, however, subsurface conditions, including groundwater levels and contaminant concentrations, can change in a limited time. This should be borne in mind if the report is used after a protracted delay.

There is always some disparity in subsurface conditions across a site that cannot be fully defined by investigation. Hence it is unlikely that measurements and values obtained from sampling and testing during environmental works carried out at a site will characterise the extremes of conditions that exist within the site.

There is no investigation that is thorough enough to preclude the presence of material that presently or in the future, may be considered hazardous at the site. Since regulatory criteria are constantly changing, concentrations of contaminants presently considered low may, in the future, fall under different regulatory standards that require remediation.

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

REFERENCES

- Australian and New Zealand Environment and Conservation Council (ANZECC) (1996) – *Drinking Water Guidelines*.
- Australian and New Zealand Environment and Conservation Council (ANZECC) (2000) – *Guidelines for Fresh and Marine Waters*.
- Department of Urban Affairs and Planning – EPA (1998) "*Managing Land Contamination – Planning Guidelines – SEPP 55 – Remediation of Land*".
- National Environmental Protection Council (NEPC) (1999) – *National Environmental Protection (Assessment of Site Contamination) Measure (Amendment 2013).*
- NSW EPA (2014) "*Guidelines for Assessing Service Station Sites*".
- NSW EPA (1995) "*Sampling Design Guidelines*".
- NSW EPA (2011) "*Guidelines for Consultants Reporting on Contaminated Sites*".
- NSW DEC (2006) "*Guidelines for the NSW Site Auditor Scheme*".
- NSW EPA (2014) "*Guidelines on Significant Risk of Harm from contaminated land and the duty to report*".
- NSW DECC "Waste Classification Guidelines, Part 1: Classifying Waste" (2014). Department of Environment and Climate Change NSW, Sydney

FIGURE 1: SITE LOCATION

FIGURE 2: SITE PLANS

APPENDIX A: LAND TITLES

APPENDIX B: NSW EPA NOTICE SUMMARY

APPENDIX C PROPOSED PLANS