

3 July 2017

Ivan Goodman Investec Australia Finance Pty Limited Level 23 The Chifley Tower 2 Chifley Square, Sydney NSW 2000

Dear Ivan,

Re: Site Contamination Assessment and Remediation Annie Street, Wickham, NSW

1. Introduction

Investec Australia Finance Pty. Ltd. (Investec) is planning to develop the site described in the following table for mixed residential, commercial and open space uses.

Street Address	Land Title Description
49 Annie Street, Wickham, NSW	Lot 2 in Deposited Plan 346352 (10,200 m2).
57 Annie Street, Wickham, NSW -	Lot 1 in Deposited Plan 346352 (10,000 m2).
33 Annie Street, Wickham, NSW	Lot 3 in DP 346352
41 Annie Street, Wickham, NSW	Lot 13 in DP 830026

Figure 1 (attached) shows the location and layout of the site, and the distribution of the allotments across the site area. Investec plans to stage the development process, with the first stage being the conversion of the wool store in the southern portion of Lot 1 for residential use, and creation of public open space and stormwater detention in the northern portion of Lot 2

This letter has been prepared to describe the status of site contamination investigation and remediation activities at the site in the context of the proposed future development plans and staging – as described in the Statement of Environmental Effects (SEE) for the development prepared by City Plan Services (July 2017).



2. Site Investigations and Remediation

Investec engaged Senversa Pty. Ltd. (Senversa) to conduct a detailed site investigation (DSI) and prepare a remediation action plan (RAP) for Lot 1 and Lot 2 of the site – on which the first stage of development is proposed (refer to **Section 1**). These documents form appendices to the SEE. New South Wales EPA Accredited Site Auditor (Dr. Lange Jorstad of Geosyntec Consultants) has reviewed the DSI and RAP and provided Interim Audit Advice (IAA) (also appended to the SEE), indicating that:

- The nature and extent of contamination on and under Lot 1 and Lot 2 has been adequately assessed; and
- Implementation of the RAP should make the site suitable for the proposed future uses.

Minor comments on the RAP provided by the Site Auditor have been addressed in the version of the document attached to the SEE.

Investigation and remediation of contamination on and under the portion of the site formed by Lot 3 and Lot 13 is ongoing, with development of these parts of the site only to occur once IAA or a Section A Site Audit Statement is provided - indicating that this part of site can be made, or is suitable, for the proposed future use.

The DSI and other investigations conducted on Lot 3 and Lot 13 indicate the presence of acid sulfate soils under the site. However, the extent to which the proposed future development will disturb these soils is not currently known. Once established, a site-specific acid sulfate soil management plan will be prepared to describe methods and procedures to mitigate potential risks to human and the environment associated with the disturbance of these natural soils.

3. Closure

Please do not hesitate to contact Graeme Miller on 0415 709 868 at <u>graeme.miller@senversa.com.au</u> if you have any questions.

Yours sincerely,

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Graeme Miller Principal Environmental Scientist

Figures: Figure 1 – Site Location and Layout

GM/JH

Limitations to Reliance and Uncertainties

This document has been prepared solely for the use of Investec Australia Finance Pty Ltd. No responsibility or liability to any third party can be accepted for any damages arising out of the use of this document. Reliance in relation to this proposal and upon the scope described herein cannot be transferred or provided to any other party upon commencement of works. This document is commercial in confidence and may contain confidential information. No portion of this document may be removed, extracted, copied, electronically stored or disseminated in any form without the prior written permission of Senversa. If you receive this proposal in error please contact Senversa and we will arrange collection of this document.

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Figures

Figure 1: Site Location and Layout



\square		Legend		Designed:	L. Trickey	Date:	26/06/2017	Figure No:
		Approximate Location of Observed Surface Tar		Drawn:	S. Koroblitsas	Revision:	0	Title:
50	Lot Boundary			Checked:	G. Miller	Scale:	1:1,250 (A3)	
Address:	e: (02) 8252 0000	 Boundary of Declared Land (Area Number 3392) Caltex Terminal L ot 3 and 13 		File:	S14013_10_F001_Site Location and Layout			Project:
Phone:				0 5 10 20 30 40 Lo				Location:
Website:	www.senversa.com.au		Notes: Aerial imagery sourced from Nearmap Pty Ltd		Datum GDA 1994, P	rojection MGA Zone 56		Client:

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Site Location and Layout

Remediation Action Plan 49 and 57 Annie Street, Wickham, NSW Investec Australia Finance Pty Limited



29 June 2017

Ivan Goodman Investec Australia Limited By email: <u>ivan.goodman@investec.com.au</u>

Subject: Site Audit of 49 and 57 Annie Street, Wickham, NSW (LBJ 16/09) Interim Audit Advice #1 From Review of Detailed Site Investigation and Remediation Action Plan Geosyntec Project: GSY0072

Dear Ivan,

1. INTRODUCTION

Geosyntec Consultants Pty Ltd (Geosyntec) was engaged by Investec Australia Limited (Investec) to provide NSW EPA Accredited Site Auditor (auditor) services in accordance with the New South Wales (NSW) Contaminated Land Management (CLM) Act 1997 in relation to 49 and 57 Annie Street, Wickham, NSW (the site). As part of the provision of these auditor services, the auditor was engaged to provide an independent review of the following reports:

- HLA (2003). Elders Woolstore Apartments Preliminary Site Investigation Cnr Annie and Milford Streets Wickham, NSW 2293. Dated 3 November 2003.
- Aargus (2004). Environmental Site Assessment 57 Annie Street, Wickham NSW. November 2004
- Douglas Partners (2004). Report on Preliminary Contamination Assessment Proposed Residential Development – 33 – 49 Annie Street, Wickham. February 2004
- Senversa (2014). Boundary Groundwater Investigation 33, 41, 49 and 57 Annie Street, Wickham, NSW. Dated 23 October 2014.
- Senversa (2017a). Detailed Site Investigation 49 and 57 Annie Street, Wickham, NSW. Dated 22 June 2017.
- Senversa (2017b). Remediation Action Plan 49 and 57 Annie Street, Wickham, NSW. Dated 22 June 2017.

This letter has been provided as interim advice and, in keeping with guidelines endorsed under the CLM Act 1997, you are advised that this letter does not constitute a Site Audit Report or Site Audit Statement and does not pre-empt the conclusion that may be made at the Investec Australia Ltd 29 June 2017 Page 2

end of the audit process. This letter will be referred to by, and form an appendix to, the Site Audit Report. This interim advice is subject to the limitations as presented in Section 4.

2. SCOPE OF REVIEW

The auditor's review of the ESA has included reference to the requirements/ provisions of the following policy and guidelines made or endorsed under the CLM Act 1997:

- New South Wales (NSW) Department of Environment and Conservation (DEC) (April 2006) Guidelines for the NSW Site Auditor Scheme (2nd Edition) (the Auditor Guidelines);
- NSW EPA (1995) Sampling Design Guidelines (the Sampling Guidelines);
- NSW DEC (2007) Guidelines for the Assessment and Management of Groundwater Contamination (the Groundwater Guidelines);
- NSW Office of Environment and Heritage (OEH, 2011) Guidelines for Consultants Reporting on Contaminated Sites (the Reporting Guidelines);
- NSW EPA (2015) Guidelines on the Duty to Report Contamination Under the *Contaminated Land Management Act 1997* (the Duty to Report Guidelines); and
- National Environment Protection Council (NEPC, 1999) National Environment Protection (Assessment of Site Contamination) Measure (as amended May 2013).

3. CONTAMINATION STATUS OF THE PROPERTY

The reported historical land uses at the various properties that comprise the site included a range of commercial and industrial land uses, many of which pose a potential contamination risk. Potentially contaminating land uses and contamination sources identified from site inspections included:

- **57 Annie Street (Lot 1)**: Former businesses on site included wool store, steel fabrication and construction businesses and furniture storage. The HLA (2003) report indicates that the steel fabrication business used lanolin and petroleum based oils on finished steel products. Tar was observed in the north western portion of the property;
- **49 Annie Street (Lot 2)**: Former uses included a wool store, workshop and whole sale motor vehicle dealership, maintenance workshop, pallet repair business, a former building located in the northern portion of the property was used for rag manufacturing and distribution, minor quantities of oil were stored in the wool store building located at the southern end of the property.
- **Offsite Sources**: The Caltex Newcastle terminal located to the east and hydraulically upgradient of Lots 1 and 2 has known releases of jet fuel and petroleum hydrocarbons

to the subsurface. Previous investigations have identified contaminated soil, groundwater, and soil vapour associated with these releases under Lot 3, immediately east and adjacent to Lot 2.

3.1 Soil Contamination Status

The most recent Senversa (2017) soil investigations encountered fill material at all locations on Lots 1 and 2 at depths of 0 to 1.5 meters below ground level (mbgl). All fill material contained aesthetically unsuitable material including coke, slag, and ash. ACM fragments were identified in soil at 0.4 - 0.5 mbgl in TP01 and 0.1 - 0.2 mbgl in TP03. TP01 was located just outside of the northwestern corner of the wool storage warehouse on Lot 2, while TP03 was located inside the northern half of the wool storage warehouse located at Lot 1.

Based on the proposed medium density residential and open space (northern half of Lot 2) land use criteria (HIL/HSL-A/B and HIL/HSL-C, respectively), there were various exceedances of health-based soil criteria. The exceedances of health-based soil criteria from previous investigations and the most recent Senversa (2017) DSI report are summarised below:

- Total PAHs, BaP TEQ and non-volatile TRH fractions present under the majority of the site at concentrations greater than the relevant residential (HIL/HSL-B) and open space (HIL/HSL-C) criteria, noting that none of the samples collected from under the wool store on Lot 2 reported these chemicals greater than the assessment criteria;
- Volatile hydrocarbons including TRH (F1, F2), benzene and naphthalene were reported at concentrations greater than the HSL-A/B criteria (and where future residential land use is proposed on site) at three locations in the north-western portion of Lot 1, at two locations under the wool store on Lot 1 (one in the centre and the other in the south), and at one location under the southern portion of the wool store in Lot 2.
- Concentrations of arsenic, chromium (III+VI), copper, lead, nickel, zinc, TRH (F1, F2, and F3), and BaP in the majority of soil samples across the site exceeded the adopted ecological criteria. The above concentrations were primarily observed in fill material.
- The Senversa (2017) DSI report included field screening and/or SPOCAS analysis to assess for the presence of acid sulphate soils beneath the site. Natural soil samples were collected at 7 different locations for analysis. The results indicated that potential or actual sulphate soils underlie the majority of the site.

3.2 Groundwater Contamination Status

Contamination concentrations exceeding the adopted human health assessment criteria or ecological assessment criteria are summarised as follows:

Investec Australia Ltd 29 June 2017 Page 4

- Concentrations of benzene slightly exceeded the adopted human health (drinking water) assessment criterion of $1 \mu g/L$ in groundwater samples collected from monitoring wells 2 and MW102 at concentrations of $4 \mu g/L$ and $8 \mu g/L$, respectively. These wells are located in the north-eastern portion of the site where the proposed open space redevelopment area will be located;
- Naphthalene slightly exceeded the human health assessment criterion (drinking water) of $0.14 \ \mu g/L$ in well MW102 at a concentration of $1.6 \ \mu g/L$;
- Fluoranthene and phenanthrene slightly exceeded the adopted ecological assessment criteria in groundwater samples collected from monitoring wells MW100 (2.7 μ g/L and 1.1 μ g/L, respectively) and MW102 (5.2 μ g/L and 4.7 μ g/L, respectively);
- The following metals and metalloids exceeded the ecological assessment criteria:
 - Arsenic marginally exceeded the ecological assessment criterion of 2.3 μ g/L at locations across the site ranging from concentrations of 3 μ g/L to 12 μ g/L;
 - Copper exceeded the ecological assessment criterion of 1.3 μ g/L in wells BH03 and MW102 at concentrations of 4 μ g/L and 15 μ g/L, respectively;
 - \circ Lead exceeded the ecological assessment criterion of 4.4 µg/L in well MW102 with a concentration of 9 µg/L;
 - Zinc exceeded the ecological assessment criterion of 5 μ g/L in wells 7 and MW102 at concentrations of 36 μ g/L and 27 μ g/L, respectively;

In summary, the contamination status of the site is not compatible with the proposed future land use without some form of remediation or management. The Senversa (2017) DSI report recommended the preparation of a Remedial Action Plan (RAP) to address the soil contamination and ACM in soil. Additionally, the RAP would include a requirement for regular monitoring of groundwater quality along the eastern boundary of the site as well as contingency measures to be implemented should monitoring indicate an increasing trend in contaminant concentrations from source(s) to the west. Senversa also recommended the preparation of an Acid Sulphate Soils (ASS) management plan to manage potential or actual ASS that may be encountered during development of the site.

4. KEY OUTCOMES OF AUDITOR'S REVIEW

The auditor considers that the environmental site assessment (ESA) reports and RAP adequately address the majority of requirements described in the NEPM, the Auditor Guidelines and the Reporting Guidelines.

The key outcomes of the auditor's review of the ESA results and RAP are summarised below. Minor spelling and grammatical errors, where encountered, have only been addressed if the potential uncertainty arising from the error was deemed to be noteworthy.

1) The auditor agrees with the conclusions of the ESA, that fill and soil across the majority of the audit site contains contaminant concentrations that exceed the health-based and ecological assessment criteria for the proposed land uses for one or more COPC

(primarily PAHs, TRH and metals). The site is considered to be unsuitable in its current state for residential and open space land use without remediation or management.

- 2) The auditor agrees with the qualitative risk assessment regarding completeness of exposure pathways for various land uses and receptors on the site. The predominant exposure risk is a soil direct contact pathway, and to a lesser extent the vapour intrusion pathway in specific areas of the site.
- 3) The remediation strategy presented in the RAP comprises a combination of selective excavation and off-site disposal of "hot spots" in fill material followed by validation sampling of the underlying "remediation surface", and in-situ management of the balance of the site through a cap and contain strategy administered under a long-term EMP. The auditor considers that this approach is appropriate for the nature of the contamination issues identified at the site, and is commonly applied at sites with similar contamination profiles.
- 4) It is recommended that particular focus is paid to the tarry area in the northwest portion of the site during remediation. Section 3.5.1 of the Groundwater Guidelines advocates the NSW EPA's preference "to reduce NAPL mass to the extent practicable (source removal or treatment)." The HLA (2003) report indicated that tarry material "oozed" from the slab when the civil contractor applied a load to the slab (i.e. parked plant on the slab). Accordingly, the RAP should consider a contingency in the event that the tarry material crosses the site boundary and is potentially mobile enough to seep back onto the site if remediation does not remove the full extent of the tar. If residual tar is proposed to remain following remediation, the validation approach must provide clear evidence that the residual tar does not pose an unacceptable risk to human health or the environment, that it is unlikely to be mobile and spread, and that it is unlikely to contribute an unacceptable contaminant flux to groundwater.
- 5) With regard to the proposed capping methodology, it is the auditor's preference for any capped area that is not beneath hardstand (for example, use of imported VENM as a capping layer in the open space area), to have a geotextile warning layer separating the clean from potentially contaminated material. This is a last line of warning for future exposure scenarios if for any reason the EMP process breaks down and intrusive works are performed without induction into the EMP.
- 6) For whichever remediation or management strategy is applied to areas presenting a potential vapour intrusion hazard, the validation of the remedial works must provide clear evidence that those locations do not pose an unacceptable vapour intrusion hazard following remediation/management. This is obviously most important where those locations coincide with proposed residential development.
- 7) With regard to the elements of the proposed long-term EMP, this should include an indication of the mechanism for making the EMP 'reasonably legally enforceable", as required under the Auditor Guidelines.

In summary, the investigation completed to date indicated that the quality of fill material beneath the site was not compatible with the proposed residential and open space land uses without remediation or management. While a number of relatively minor exceedances of groundwater quality criteria were reported, the general quality of groundwater beneath the

site was not considered to represent an unacceptable risk to the proposed land use or off-site receptors. Localized contamination issues were identified that require remediation. The proposed remediation approach is considered to be appropriate for the nature of the contamination issues at the site, is consistent with the development requirements and should be sufficiently robust to account for any remaining uncertainty or unexpected finds at the site.

If appropriately implemented, the auditor considers that the remedial strategy outlined in the RAP should be adequate to render the site suitable for the proposed residential and open space land uses, subject to the implementation of a long-term EMP for the in-situ management of residual contamination.

5. LIMITATIONS

This advice has been prepared in accordance with the Department of Environment and Conservation (DEC) NSW (2006) Contaminated Sites: Guidelines for the NSW Site Auditor Scheme, 2nd Edition, and other relevant guidelines made or endorsed under the CLM Act 1997.

The comments and opinions provided in this document were based on the auditor's independent review of information prepared and provided by others. While applicable audit standards include a validation of reasonably verifiable information, not all of the information provided to the auditor can be reasonably verified. (For example, the accuracy of field logs, the location of samples, and the consistent compliance by third parties with applicable methodologies is not subject to reasonable verification.) The necessity to rely on third party information results in an inherent level of uncertainty with respect to the audit that exists despite the auditor's compliance with appropriate professional standards of care. In addition, the documents supplied to the auditor for review as part of this audit may contain limitations statements. Accordingly, the opinions and advice developed on the basis of those documents is, by extension, subject to those same limitations.

It is also recognised that the guidelines regarding sampling design for site investigation and validation of remediation are statistically based, and it is possible for unidentified contamination to exist on a site where investigation and/or remedial validation has been performed despite compliance with applicable guidelines. The auditor accepts no responsibility for unidentified contamination encountered subsequent to investigation, remediation and validation that was performed in substantial compliance with the relevant guidelines made or endorsed under the CLM Act 1997.

Investec Australia Ltd 29 June 2017 Page 7



6 CLOSURE

Should you have any further queries please do not hesitate to contact the undersigned on 0447 249 250.

Sincerely,

lange fstad

Lange Jorstad, PhD, RPGeo NSW EPA Accredited Site Auditor (No. 1001)

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