



02 July 2015

Tom Goode
Director
JBA Urban Development Services
Level 7, 77 Berry Street
North Sydney NSW 2059

Our ref: 21/24438
207494
Your ref:

Dear Tom,

190 Dunmore Street, Wentworthville, NSW
Addendum to the Phase 2 Environmental Assessment Report (GHD 2011)

1 Introduction

GHD Pty Ltd (GHD) has been commissioned by JBA Urban Development Services (JBA) to review and update the Phase 2 Environmental Site Assessment (ESA) report completed previously for Pacific Brands Limited (GHD, May 2011). The site is located at 190 Dunmore Street Wentworthville NSW (the site). The site location is shown on **Figure 1, Attachment A**. The Phase 2 ESA was prepared for Pacific Brands Ltd who sold the site to JST Pty Ltd in 2012. GHD understands JBA are project managing the site on behalf of JST.

GHD understands that the site is to be rezoned from industrial to a mixed commercial and residential development site

GHD has been informed that manufacturing ceased at the site in February 2009 while some office functions have continued. No demolition of structures on the site has occurred.

This letter report is issued as an addendum to the Phase 2 ESA report (GHD, 2011).

2 Background

GHD undertook a Phase 1 Contamination assessment with limited soil and groundwater sampling in 2009. The results from the 2009 assessment did not identify widespread, gross contamination of soil or groundwater at the site. The Phase 2 Environmental site assessment (ESA) was undertaken in 2011. The objective of the Phase 2 was to provide further information regarding the contamination status of the site. Based on the findings of the Phase 2 ESA, GHD concluded that the site was not subject to gross contamination. However, localised areas of soil contamination with concentrations of contaminants of potential concern above nominated investigation levels were reported and asbestos fragments in fill material were identified.

A total of 83 soil sample locations and nine groundwater monitoring wells were investigated during the ESA, the locations of which are shown on **Figure 2, Attachment A**. Some areas of the site were not accessible for sampling (portions of Building 1 and 3, administrative offices) during the assessment. The report stated that while contamination in these areas is not expected (based on site history information

and field observations) there is the potential for contamination to be identified in these areas following demolition of these structures.

Since the investigations in 2011 the National Environment Protection (Assessment of Site Contamination) Measure 1999 was amended in 2013. This addendum will assess the soil and groundwater results to the amended NEPM. For site characteristics and sampling information refer to the 2011 Phase 2 ESA report.

3 Objective

The objectives of these works are summarised as follows:

- review existing site data, as reported by GHD (2011), with reference to current guidelines and legislation appropriate for a mixed residential and commercial re-development
- assess whether any changes have occurred on the site since the previous ESA (GHD, 2011) which may have the potential to have resulted in site contamination
- provide recommendations for further assessment or management of contamination on the site (if required).

4 Site inspection

GHD undertook a site inspection on 24 March 2015 and a photo log is provided in **Attachment B** and the site layout in Figure 1, **Attachment A**. Since the 2011 investigation the following changes have occurred:

- Previously Administrative buildings (Office A, Office B and Office C) were all in use. At the time of the site inspection, a small portion of Office A and Office B and C were no longer in use, with Office B containing disused office equipment. Access was not available to office C.
- Previously Building 1 was mostly occupied by disused former textiles manufacturing areas. The south western portion was used for warehousing. Currently the south western portion is being used to store and sell PVC pipes. The other part of Building 1 was unable to be accessed. To the north of Building 1 the transformers are still located there.
- A full container of engine oil was found under the awnings on the northern side of Building 1. No staining on the ground surface was noted around the container.
- Building Group 2 had been cleared and is empty and disused.
- Building 3 had large cleared areas. There were areas that could not be accessed due to insufficient lights in the building. There was a large turn wheel as seen in photo 9 of **Attachment B**.
- The Dye house (eastern part of Building 1) was being used for wood storage and there was an empty Castrol drum stored there.
- Cars were parked in the southern awning of Building 1.
- Majority of outside areas on the site were clear of general rubbish with the exception of the south side of the Dye House (surrounding empty Castrol drum noted above).

- A number of mechanical components were being stored in the southern car park and under the awnings adjacent to Building Group 2.
- The 40,000 L Water tank located in the south western portion of the site appeared to be leaking as can be seen in photo 29 of **Attachment B**.

No major changes were noted on site to suggest that further contamination may have occurred since the investigation in 2011.

4.1 Relevant guidelines

The framework for this report has been developed in accordance with guidelines “made or approved” by the NSW EPA under *Section 105* of the *Contaminated Land Management Act, 1997*.

These guidelines include the following:

- National Environment Protection Council (NEPC) 1999, National Environment Protection (Assessment of Site Contamination) Measure (NEPM) amended 2013.
- NSW Office of Environment & Heritage (OEH) 2011, Contaminated Sites: Guidelines for Consultants Reporting on Contaminated Sites.
- NSW DEC 2006, Contaminated Sites: Guidelines for NSW Site Auditor Scheme (2nd Edition).
- NSW Department of Environment and Conservation (DEC) 2007, Contaminated Sites: Guidelines for the Assessment and Management of Groundwater Contamination.
- NSW Department of Environment & Climate Change (DECC) 2009, Contaminated Sites: Guidelines on the Duty to Report Contamination under the Contaminated Land Management Act 1997.
- Australia and New Zealand Environment and Conservation Council (ANZECC) 2000, Australian and New Zealand Guidelines for Fresh and Marine Water Quality.

Additional guidelines referred to in this report are:

- Friebe and Nadebaum 2011, Technical Report No. 10: Health screening levels for petroleum hydrocarbons in soil and groundwater.

4.2 Assessment criteria

A summary of the investigation levels which will be used to evaluate measured chemical concentrations in soil samples are summarised in **Table 1**. Groundwater has been excluded due to the screening criteria in the Phase 2 ESA report have remained the same.

Table 1 - Overview of adopted guidelines

Guideline	Justification	Acronym
Soil – Human Health		
Health Investigation/Screening Level – A (HIL/HSL-A) from NEPC (2013)	HIL/HSL-A has been selected based on the potential future site use and being	NEPM 2013 HIL-A / HSL D

Guideline	Justification	Acronym
NEPM)	the most conservative.	
Intrusive Maintenance Workers (CRC Care, 2011)	Guidelines for intrusive maintenance workers have also been adopted	
Management Limits (2013 NEPM)	Management limits have been used for commercial / industrial land use for coarse soils.	MLs
Soil – Ecological		
Ecological investigation/screening level from NEPC (2013 NEPM) Urban residential and public open space	EIL/ESLs has been selected based on the site has soft cape areas.	NEPM 2013 EIL /ESL
Groundwater		
Groundwater Investigation Levels (GIL) –Marine Water (1999 NEPM amended 2013)	Marine water criteria have been selected for the GILs as some of the receiving surface waters, surrounding the site	Groundwater investigation Levels (GIL)
Groundwater Investigation Levels (GIL) – Drinking Water (1999 NEPM amended 2013)	Groundwater is not likely to be abstracted for potable use in the area of the proposed alignment based on quality and the availability of reticulated town supply. However, incidental ingestions could occur during maintenance.	Groundwater investigation Levels (GIL)
Low reliability trigger values - ANZECC (2000) <i>Australian and New Zealand Guidelines for Fresh and Marine Water Quality</i>	Where there is no NEPM GIL (Marine) for analytes the ANZECC low reliability trigger value will be adopted	LRTV
Regional Screening Levels (RSLs) for tap water (2014, USEPA)	Where there is no NEPM GILs or ANZECC, the RSLs tap water value has been adopted	RSLs

GHD notes that the asbestos screening criteria has changed with NEPM (2013) however; no asbestos in soils were identified during the investigation only fragments and therefore the results will remain the same which is asbestos identification analysis only (presence/absence).

The EILs are now based the added contaminant limit above the ambient background concentration. This calculation is based on collection and analysis of pH, cation exchange capacity (CEC) and clay content usually collected from a reference site. However, this was not collected and therefore the most conservative numbers for the contaminant has been selected.

The screening criteria (HSL / HIL / EIL / ESL / GIL / LRTV / RSL) used in this assessment are detailed on **Table 1 and 2 in Attachment C.**

5 Updated results

5.1 Updated EPA Registers

Under the provisions of the NSW Contaminated Land Management Act (1197, Section 58, Subsection 'CLM Act') a public register of current NSW declarations and orders in force is maintained by the EPA. A search of the record was conducted on 27 March 2015. A search of the contaminated sites register and did not identify any registered sites within 500 m of the site. A search of the POEO register did not identify any licences within a 500 m of the site.

A search of the contaminated site notified to the EPA, identified one site, 7 Eleven Service Station, 217 Wentworth Avenue, Pendle Hill – under assessment. The site is located 315 metres to the northwest of the site. The site is located cross gradient and does not have the potential to impact on the site.

A groundwater bore search was undertaken using the Office of Water website <http://allwaterdata.water.nsw.gov.au/water.stm> (accessed 2 April 2015) showed that there were no groundwater bores within a 1 km radius of the site.

5.2 Analytical results

The amended NEPM 2013 created new total petroleum hydrocarbon fractions, therefore for comparison purposes they have been loosely paired with the previously fractions. The USEPA regional screening levels for residential soil have been used where there are no NEPM 2013 values for comparison only.

5.2.1 Soil results

Elevated concentrations of metals (including arsenic, chromium, cobalt, copper, nickel and zinc) reported above Ecological Investigation Levels (EILs) are summarised in **Table 2**. These concentrations were generally below the adopted Health Investigation Level (HILs). The design of the site is unknown and therefore all results have been compared to the most conservative criteria being residential. The soil analytical results are summarised in **Table 1, Attachment C**.

Table 2 Summary of Soil Sample Exceedances

Analyte	Adopted Criteria (mg/kg)		No of Exceedances		Max Concentration (mg/kg)	Adopted Criteria (mg/kg)	
	EIL ¹	HIL-A	EIL ¹	HIL-A		EIL ²	HIL-D
Arsenic	100	100	2	2	200 (WS6/0-0.1)	160	3000
Chromium ³	190	100	1	2	3300 (WS6/0-0.1)	310	3600
Cobalt	-	100	-	1	540 (TP06/1.0)	-	4000
Copper	60	6000	14	0	520 (WS6/0-0.1)	85	240,000
Nickel	30	400	23	0	190 (HA29/0.13)	55	6000
Zinc	70	7400	46	0	2300 (WS6/0-0.1)	110	400,000

Analyte	Adopted Criteria (mg/kg)		No of Exceedances		Max Concentration (mg/kg)	Adopted Criteria (mg/kg)	
	EIL ¹	HIL-A	EIL ¹	HIL-A		EIL ²	HIL-D
Benz(a)anthracene	-	0.15*	-	3	0.4 (GW4/0-0.2)		
Benzo(b)&(k) fluoranthene	-	0.15*	-	4	0.7 (GW4/0-0.2)		
Indeno(1,2,3-c,d)pyrene	-	0.15*	-	5	0.2 (GW4/0-0.2), AD1, HA39/0.6)		

1 EIL is for urban residential and public open space conservative.

2 EIL is commercial and industrial conservative

3 Chromium as Chromium (VI) for the HILs and Chromium (III) for EILs.

Interpretation of asbestos, PCBs and Waste classification data remains consistent with the 2011 ESA.

5.2.2 Groundwater results

All exceedances remain the same as per the 2011 ESA. The NEPM 2013 guidelines had new screening criteria for HSLs in groundwater for the following analytes; total petrol hydrocarbon (now referred to as total recoverable hydrocarbons), benzene, toluene, ethylbenzene and total xylenes (BTEX) and naphthalene. There were no reported exceedances of the HSLs for residential land use. The groundwater analytical results are summarised in **Table 2, Attachment C**.

5.3 Summary of Soil Assessment finding (updated)

Metal concentrations above EILS were still identified across the site. Majority were below the health investigations levels for residential setting. The majority of the EIL exceedances could be due to background concentrations.

6 Conclusions and recommendations

GHD understands that the majority of the site has remained vacant since Pacific Brands ceased operations at the site and therefore no further contamination of the site is likely to have occurred due to general site operations.

Based on comparison of previous analytical data reported by GHD following sampling completed in 2011, GHD considers that the site can be made suitable for residential/ commercial uses as required by SEPP 55, subject to implementation of the following recommendations.

- Delineation and remediation of the remaining localised contamination should be carried out during the development application and/or prior and during the commencement of works for each stage of the development.
- Localised areas of elevated concentrations of contaminants and areas of asbestos fragments remain on the site. These areas will require further delineation and or remediation once site infrastructure has been removed and prior to development of the site. Obtaining background pH, CEC and clay content soil samples from a reference site (either onsite or nearby) is recommended to adjust the

EILs to be site specific and therefore potentially less conservative with the screening criteria due to natural high background metal concentrations.

In addition, the recommendations made previously by GHD (2011) are still considered to be relevant including:

- *Management or removal of asbestos fragments in fill material along the eastern portion of the site and within the central car park area.*
- *Further assessment of Polychlorinated Biphenyls (PCBs) in surface soils in the vicinity of former transformer stations.*
- *Elevated heavy metal concentrations may require further delineation depending on the development plan at these locations (open space compared to no access to soils).*
- *Management or removal of any near surface soils containing elevated heavy metals concentrations including crushed rock and road/slab base material.*
- *Management or removal of any material that may represent an aesthetic issue for site redevelopment, such as the black impacted soil and ash identified at one location or the fill material within the central car park (rubble from demolition of old boiler house).*
- *Further assessment of the chlorinated hydrocarbon contamination in groundwater identified at a monitoring well.*

Areas of the site that were not accessible for sampling (portions of Building 1 and 3, administrative offices) during the 2011 assessment have the potential for contamination to be identified in these areas following demolition of these structures and an assessment should be carried out in these areas as part of the delineation works.

7 Limitations

This Addendum to the Phase 2 Environmental Assessment Report (GHD 2011) ("Report"):

1. has been prepared by GHD Pty Ltd ("GHD") for JST Pty Ltd (JST);
2. may only be used and relied on by JST;
3. must not be copied to, used by, or relied on by any person other than JST without the prior written consent of GHD and subject always to the next paragraph; and
4. may only be used for the purpose as stated in section 3 of the Report (and must not be used for any other purpose).

GHD and its servants, employees and officers otherwise expressly disclaim responsibility to any person other than JST; arising from or in connection with this Report.

To the maximum extent permitted by law, all implied warranties and conditions in relation to the services provided by GHD and the Report are excluded unless they are expressly stated to apply in this Report.

The services undertaken by GHD in connection with preparing this Report were limited to a review of background information reported by GHD previously and completion of a visual site inspection. The

works were undertaken in accordance with current profession practice and by reference to relevant environmental regulatory authority and industry standards, guidelines and assessment criteria in existence as at the date of this Report and did not include the collection of samples for the purpose of laboratory analysis or verification of information obtained from the site history review.

The opinions, conclusions and any recommendations in this Report are based on assumptions made by GHD when undertaking the services mentioned above and preparing the Report ("Assumptions"), as specified throughout this Report. GHD expressly disclaims responsibility for any error in, or omission from, this Report arising from or in connection with any of the Assumptions being incorrect.

GHD has prepared this Report on the basis of information provided by JST; (and others who provided information to GHD including Government authorities, which GHD has not independently verified or checked ("Unverified Information") beyond the agreed scope of work.

GHD expressly disclaims responsibility in connection with the Unverified Information, including (but not limited to) errors in, or omissions from, the Report, which were caused or contributed to by errors in, or omissions from, the Unverified Information."

Inspections undertaken in respect of this Report were limited to visual inspections only and were constrained by the particular site conditions, such as locations of buildings, services or vegetation.

Please do not hesitate to contact the undersigned if you require any further information in relation to this project.

Kind regards,



Jacqui Hallchurch

Service Group Manager
02 9239 7046



Nicole Rosen

Environmental Scientist
02 9239 7

Attachment A – Figures

Attachment B – Photo log

Attachment C – Soil Analytical Results table

Attachment A - Figures

Attachment B – Photo log

Attachment C – Analytical Result Tables



Attachment C
Table C1
Soil Analytical Results

190 Dunmore St, Wentworthville
Wentworthville ESA

										Nitroaromatics		Organochlorine Pesticides																				Organophosphorous Pesticides											
	Manganese	Mercury	Molybdenum	Nickel	Phosphorus	Selenium	Tin	Vanadium	Zinc	Pentachloronitrobenzene	4,4-DDE	α-BHC	Aldrin	β-BHC	chlordane	Chlordane (cis)	Chlordane (trans)	γ-BHC	DDD	DDT	Dieldrin	Endosulfan I	Endosulfan II	Endosulfan sulphate	Endrin	Endrin aldehyde	Endrin ketone	γ-BHC (Lindane)	Heptachlor	Heptachlor epoxide	Hexachlorobenzene	Methoxychlor	Bromophos-ethyl	Chlorpyrifos	Chlorpyrifos-methyl	Diazinon	Dimethoate	Ethion	Ethyl methanesulfonate	Fenitrothion			
	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	
EQL	1	0.1	1	1	2	2	1	1	1	1	0.05	0.05	0.05	0.05	1	0.05	0.05	0.05	0.05	0.1	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.1	0.1	0.1	0.1	0.1	0.1	0.1	1	0.1			
USEPA Regional Screening Levels - residential soils					55			390	110										640																								
NEPM 2013 Conservative EIL-Commercial/Industrial					30			70											180																								
NEPM 2013 Conservative EIL-Urban Residential- Public Open Space																																											
NEPM 2013 ESL Urban residential and public open space, Coarse Soil																																											
NEPM 2013 HIL Commercial/Industrial D Soil	60,000	730		6000		10,000			400,000						530										100				50		80	2500		2000									
NEPM 2013 HIL Recreational C Soil	19,000	80		1200		700			30,000						70										20			10	10	400	250												
NEPM 2013 HIL Residential A Soil	3800	40		400		200			7400						50										10			6	10	300	160												
NEPM 2013 HIL Residential B Soil	14,000	120		1200		1400			60,000						90										20				10	15	500		340										
NEPM 2013 HSL A/B for Vapour Intrusion, 0 to <1m, Sand																																											
NEPM 2013 HSL A/B for Vapour Intrusion, 1m to <2m, Sand																																											
NEPM 2013 HSL A/B for Vapour Intrusion, 2m to <4m, Sand																																											
NEPM 2013 HSL A/B for Vapour Intrusion, 4m+, Sand																																											
NEPM 2013 Mgmt. Residential, parkland and public open space, Coarse Soil																																											

SampleCode	Field_ID	LocCode	Sample Depth (m)	Sampled_Date																																									
53456-24	HA33	HA33	0.1	25-Mar-11	270	<0.1	<1	12	-	<2	20	29	130	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	-	-	<1	<1	<1	<1	<1	-	-	-	-	-	-	-	<1	-				
53456-25	HA33	HA33	0.4	25-Mar-11	54	<0.1	<1	4	-	<2	2	44	50	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
53456-27	HA44	HA44	0.27	25-Mar-11	2	<0.1	<1	<1	43	<2	<1	3	3	<1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	-	<0.1	<0.1	<0.1	<0.														

