

Soil Investigation Levels for Urban Development Sites

Sample Drop Off: 16 Chilvers Road
Thornleigh NSW 2120

Tel: 1300 30 40 80
Fax: 1300 64 46 89

Mailing Address: PO Box 357
Pennant Hills NSW 1715

Em: info@sesl.com.au
Web: www.sesl.com.au

Batch N°: 28133 **Sample N°:** 1 **Date Received:** 23/10/13 **Report Status:** ☐ Draft ☒ Final

Client Name: Adam Loel	Project Name: Contamination Analysis
Client Contact: Adam Loel	Location: Lot 1039, Oxford Falls Rd, Oxford Falls
Client Job N°:	SESL Quote N°:
Client Order N°:	Sample Name: BH1/0-150
Address: Lot 1039, Oxford Fall Rd West Oxford Falls NSW 2100	Description: Soil
	Test Type: BWC

DISCUSSION and RECOMMENDATIONS

Analysed by Eurofins - MGT, NATA # 1261, Report # 397266

Benzene, Toluene, Ethylbenzene, Xylenes: Below Detection Limit

TRH C6-C10 (F1): <20mg/kg TRH >C10-C16 less Naphthalene (F2): <50mg/kg

This sample collected by SESL from Lot 1039, Oxford Falls Rd, Oxford Falls was analysed to determine the contamination status of the imported fill material material for the proposed child care centre development. Samples were collected from surface soil within the proposed development area.

The results were compared against the National Environment Protection Amendment Measure (NEPM 2013) Heath Investigation Levels for Residential A (HIL-A), which is the most appropriate criteria for standard residential with garden/accessible soils including children's day care centres, pre-schools and primary schools.

All results were within the adopted thresholds. Therefore SESL concludes that based on this limited assessment, the surface soil does not indicate potential contamination. Please note that this report is an interpretation of the results for this sample collected and does not represent a complete site investigation. In the event that potentially contaminated material is encountered during site works, a Contamination Site Investigation as per Schedule B2 of NEPM 2013 must be undertaken to comprehensively assessed the site.

Assessment Criteria: ☒ HIL A ☐ HIL B ☐ HIL C ☐ HIL D

Chemical		Health Based Investigation Levels (HIL mg/kg)				Result (mg/kg)	Comments
		HIL A ¹	HIL B ¹	HIL C ¹	HIL D ¹		
Metals and Inorganics							
Arsenic	(As)	100	500	300	3000	<2	Acceptable
Beryllium	(Be)	60	90	90	500		Did not test
Boron	(B)	4500	40000	20000	300000	-	Did not test
Cadmium	(Cd)	20	150	90	900	<0.4	Acceptable
Chromium (VI)	(CrVI)	100	500	300	3600		Did not test
Chromium (Total)	(Cr)	NR	NR	NR	NR	<5	No requirement
Cobalt	(Co)	100	600	300	4000	-	Did not test
Copper	(Cu)	6000	30000	17000	240000	10	Acceptable
Lead	(Pb)	300	1200	600	1500	8.2	Acceptable
Manganese	(Mn)	3800	14000	19000	60000	-	Did not test
Mercury	(Hg)	40	120	80	730	<0.05	Acceptable
Methyl mercury		10	30	13	180		Did not test
Nickel	(Ni)	400	1200	1200	6000	<5	Acceptable
Selenium	(Se)	200	1400	700	10000	-	Did not test
Zinc	(Zn)	7400	60000	30000	400000	56	Acceptable
Cyanide (free)*		250	300	240	1500		Did not test

*Testing is for Total Cyanide.

See page 2 for PAHs, Phenols, OCPs, Herbicides and other Pesticides and Organics.

National Environment Protection (Assessment of Site Contamination) Measure 1999 as amended May 2013 - Schedule B1 Guideline on Investigation Levels For Soil and Groundwater

- HIL A:** Residential with garden/accessible soil (home-grown produce <10% fruit and vegetable intake; no poultry), also includes childcare centres, preschools and primary schools. NR: No reported guideline level. D.N.T.: "Did not test."
- HIL B:** Residential with minimal opportunities for soil access; includes dwellings with fully and permanently paved yard space such as high-rise buildings and apartments.
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- HIL D:** Commercial/industrial, includes premises such as shops, offices, factories and industrial sites.

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Sample N°: 1

Date Received: 23/10/13

Report Status: ☐ Draft ☒ Final

Chemical	Health Based Investigation Levels (HIL mg/kg)				Result (mg/kg)	Comments
	HIL A¹	HIL B²	HIL C³	HIL D⁴		
Polycyclic Aromatic Hydrocarbons (PAHs)						
Carcinogenic PAHs (as BaP TEQ)	3	4	3	40	0.61	Acceptable
Total PAHs	300	400	300	4000	<0.5	Acceptable
Phenols						
Phenol	3000	45000	40000	240000		Did not test
Pentachlorophenol	100	130	120	660		Did not test
Cresols	400	4700	4000	25000		Did not test
Organochlorine Pesticides*						
DDT + DDD + DDE	240	600	400	3600	<0.05	Acceptable
Aldrin + Dieldrin	6	10	10	45	<0.05	Acceptable
Chlordane	50	90	70	530	<0.1	Acceptable
Endosulfan	270	400	340	2000	<0.05	Acceptable
Endrin	10	20	20	100	<0.05	Acceptable
Heptachlor	6	10	10	50	<0.05	Acceptable
HCB	10	15	10	80	<0.05	Acceptable
Methoxychlor	300	500	400	2500	<0.2	Acceptable
Herbicides						
2,4,5-T	600	600	800	5000		Did not test
2,4-D	900	1600	1300	9000		Did not test
MCPA	600	900	800	5000		Did not test
MCPB	600	900	800	5000		Did not test
Mecoprop	600	900	800	5000		Did not test
Picloram	4500	6600	5700	35000		Did not test
Atrazine	320	470	400	2500		Did not test
Other Pesticides						
Chlopyrifos	160	340	250	2000		Did not test
Bifenthrin	600	840	730	4500		Did not test
Other Organics*						
PCBs	1	1	1	7	<0.5	Did not test
* Compounds not tested: Organochlorine Pesiticides: Mirex, Toxaphene Other Organics: PBDE Flame Retardants (Br1-Br9)						

Consultant
Kelly Lee



Authorised Signatory
Ryan Jacka



Date of Report
31/10/2013

National Environment Protection (Assessment of Site Contamination) Measure 1999 as amended May 2013 - Schedule B1 Guideline on Investigation Levels For Soil and Groundwater

- HIL A:** Residential with garden/accessible soil (home-grown produce <10% fruit and vegetable intake; no poultry), also includes childcare centres, preschools and primary schools.
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Batch N°: 28133 **Sample N°:** 2 **Date Received:** 23/10/13 **Report Status:** ☐ Draft ☒ Final

Client Name: Adam Loel **Project Name:** Contamination Analysis
Client Contact: Adam Loel **Location:** Lot 1039, Oxford Falls Rd, Oxford Falls
Client Job N°: **SESL Quote N°:**
Client Order N°: **Sample Name:** BH2/0-150
Address: Lot 1039, Oxford Fall Rd West **Description:** Soil
Oxford Falls NSW 2100 **Test Type:** BWC

DISCUSSION and RECOMMENDATIONS

Analysed by Eurofins - MGT, NATA # 1261, Report # 397266

Benzene, Toluene, Ethylbenzene, Xylenes: Below Detection Limit

TRH C6-C10 (F1): <20mg/kg TRH >C10-C16 less Naphthalene (F2): <50mg/kg

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Chemical		Health Based Investigation Levels (HIL mg/kg)				Result (mg/kg)	Comments
		HIL A ¹	HIL B ¹	HIL C ¹	HIL D ¹		
Metals and Inorganics							
Arsenic	(As)	100	500	300	3000	<2	Acceptable
Beryllium	(Be)	60	90	90	500		Did not test
Boron	(B)	4500	40000	20000	300000	-	Did not test
Cadmium	(Cd)	20	150	90	900	<0.4	Acceptable
Chromium (VI)	(CrVI)	100	500	300	3600		Did not test
Chromium (Total)	(Cr)	NR	NR	NR	NR	8.4	No requirement
Cobalt	(Co)	100	600	300	4000	-	Did not test
Copper	(Cu)	6000	30000	17000	240000	11	Acceptable
Lead	(Pb)	300	1200	600	1500	15	Acceptable
Manganese	(Mn)	3800	14000	19000	60000	-	Did not test
Mercury	(Hg)	40	120	80	730	<0.05	Acceptable
Methyl mercury		10	30	13	180		Did not test
Nickel	(Ni)	400	1200	1200	6000	<5	Acceptable
Selenium	(Se)	200	1400	700	10000	-	Did not test
Zinc	(Zn)	7400	60000	30000	400000	53	Acceptable
Cyanide (free)*		250	300	240	1500		Did not test

*Testing is for Total Cyanide.

See page 2 for PAHs, Phenols, OCPs, Herbicides and other Pesticides and Organics.

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Batch N°: 28133

Sample N°: 2

Date Received: 23/10/13

Report Status: ☐ Draft ☒ Final

Chemical	Health Based Investigation Levels (HIL mg/kg)				Result (mg/kg)	Comments
	HIL A¹	HIL B²	HIL C³	HIL D⁴		
Polycyclic Aromatic Hydrocarbons (PAHs)						
Carcinogenic PAHs (as BaP TEQ)	3	4	3	40	0.61	Acceptable
Total PAHs	300	400	300	4000	<0.5	Acceptable
Phenols						
Phenol	3000	45000	40000	240000		Did not test
Pentachlorophenol	100	130	120	660		Did not test
Cresols	400	4700	4000	25000		Did not test
Organochlorine Pesticides*						
DDT + DDD + DDE	240	600	400	3600	<0.05	Acceptable
Aldrin + Dieldrin	6	10	10	45	<0.05	Acceptable
Chlordane	50	90	70	530	<0.1	Acceptable
Endosulfan	270	400	340	2000	<0.05	Acceptable
Endrin	10	20	20	100	<0.05	Acceptable
Heptachlor	6	10	10	50	<0.05	Acceptable
HCB	10	15	10	80	<0.05	Acceptable
Methoxychlor	300	500	400	2500	<0.2	Acceptable
Herbicides						
2,4,5-T	600	600	800	5000		Did not test
2,4-D	900	1600	1300	9000		Did not test
MCPA	600	900	800	5000		Did not test
MCPB	600	900	800	5000		Did not test
Mecoprop	600	900	800	5000		Did not test
Picloram	4500	6600	5700	35000		Did not test
Atrazine	320	470	400	2500		Did not test
Other Pesticides						
Chlopyrifos	160	340	250	2000		Did not test
Bifenthrin	600	840	730	4500		Did not test
Other Organics*						
PCBs	1	1	1	7	<0.5	Did not test
* Compounds not tested: Organochlorine Pesiticides: Mirex, Toxaphene Other Organics: PBDE Flame Retardants (Br1-Br9)						

Consultant
Kelly Lee



Authorised Signatory
Ryan Jacka



Date of Report
31/10/2013

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Batch N°: 28133

Sample N°: 3

Date Received: 23/10/13

Report Status: ☐ Draft ☒ Final

Client Name: Adam Loel

Client Contact: Adam Loel

Client Job N°:

Client Order N°:

Address: Lot 1039, Oxford Fall Rd West
Oxford Falls NSW 2100

Project Name: Contamination Analysis

Location: Lot 1039, Oxford Falls Rd, Oxford Falls

SESL Quote N°:

Sample Name: BH3/0-100

Description: Soil

Test Type: BWC

DISCUSSION and RECOMMENDATIONS

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Benzene, Toluene, Ethylbenzene, Xylenes: Below Detection Limit

TRH C6-C10 (F1): <20mg/kg TRH >C10-C16 less Naphthalene (F2): <50mg/kg

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Boron	(B)	4500	40000	20000	300000	-	Did not test
Cadmium	(Cd)	20	150	90	900	<0.4	Acceptable
Chromium (VI)	(CrVI)	100	500	300	3600		Did not test
Chromium (Total)	(Cr)	NR	NR	NR	NR	9.1	No requirement
Cobalt	(Co)	100	600	300	4000	-	Did not test
Copper	(Cu)	6000	30000	17000	240000	11	Acceptable
Lead	(Pb)	300	1200	600	1500	26	Acceptable
Manganese	(Mn)	3800	14000	19000	60000	-	Did not test
Mercury	(Hg)	40	120	80	730	<0.05	Acceptable
Methyl mercury		10	30	13	180		Did not test
Nickel	(Ni)	400	1200	1200	6000	5.8	Acceptable
Selenium	(Se)	200	1400	700	10000	-	Did not test
Zinc	(Zn)	7400	60000	30000	400000	83	Acceptable
Cyanide (free)*		250	300	240	1500		Did not test

*Testing is for Total Cyanide.

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Chlordane	50	90	70	530	<0.1	Acceptable
Endosulfan	270	400	340	2000	<0.05	Acceptable
Endrin	10	20	20	100	<0.05	Acceptable
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HCB	10	15	10	80	<0.05	Acceptable
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Herbicides						
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Other Organics*						
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Consultant
Kelly Lee



Authorised Signatory
Ryan Jacka



Date of Report
31/10/2013

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Batch N°: 28133 **Sample N°:** 4 **Date Received:** 23/10/13 **Report Status:** ☐ Draft ☒ Final

Client Name: Adam Loel	Project Name: Contamination Analysis
Client Contact: Adam Loel	Location: Lot 1039, Oxford Falls Rd, Oxford Falls
Client Job N°:	SESL Quote N°:
Client Order N°:	Sample Name: BH4/0-150
Address: Lot 1039, Oxford Fall Rd West Oxford Falls NSW 2100	Description: Soil
	Test Type: BWC

DISCUSSION and RECOMMENDATIONS

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Benzene, Toluene, Ethylbenzene, Xylenes: Below Detection Limit

TRH C6-C10 (F1): <20mg/kg TRH >C10-C16 less Naphthalene (F2): <50mg/kg

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Beryllium (Be)	60	90	90	500		Did not test
Boron (B)	4500	40000	20000	300000	-	Did not test
Cadmium (Cd)	20	150	90	900	<0.4	Acceptable
Chromium (VI) (CrVI)	100	500	300	3600		Did not test
Chromium (Total) (Cr)	NR	NR	NR	NR	9	No requirement
Cobalt (Co)	100	600	300	4000	-	Did not test
Copper (Cu)	6000	30000	17000	240000	8	Acceptable
Lead (Pb)	300	1200	600	1500	14	Acceptable
Manganese (Mn)	3800	14000	19000	60000	-	Did not test
Mercury (Hg)	40	120	80	730	<0.05	Acceptable
Methyl mercury	10	30	13	180		Did not test
Nickel (Ni)	400	1200	1200	6000	<5	Acceptable
Selenium (Se)	200	1400	700	10000	-	Did not test
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Soil Investigation Levels for Urban Development Sites

Sample Drop Off: 16 Chilvers Road
Thornleigh NSW 2120

Tel: 1300 30 40 80
Fax: 1300 64 46 89

Mailing Address: PO Box 357
Pennant Hills NSW 1715

Em: info@sesl.com.au
Web: www.sesl.com.au

Batch N°: 28133

Sample N°: 4

Date Received: 23/10/13

Report Status: ☐ Draft ☒ Final

Chemical	Health Based Investigation Levels (HIL mg/kg)				Result (mg/kg)	Comments
	HIL A¹	HIL B²	HIL C³	HIL D⁴		
Polycyclic Aromatic Hydrocarbons (PAHs)						
Carcinogenic PAHs (as BaP TEQ)	3	4	3	40	0.61	Acceptable
Total PAHs	300	400	300	4000	<0.5	Acceptable
Phenols						
Phenol	3000	45000	40000	240000		Did not test
Pentachlorophenol	100	130	120	660		Did not test
Cresols	400	4700	4000	25000		Did not test
Organochlorine Pesticides*						
DDT + DDD + DDE	240	600	400	3600	<0.05	Acceptable
Aldrin + Dieldrin	6	10	10	45	<0.05	Acceptable
Chlordane	50	90	70	530	<0.1	Acceptable
Endosulfan	270	400	340	2000	<0.05	Acceptable
Endrin	10	20	20	100	<0.05	Acceptable
Heptachlor	6	10	10	50	<0.05	Acceptable
HCB	10	15	10	80	<0.05	Acceptable
Methoxychlor	300	500	400	2500	<0.2	Acceptable
Herbicides						
2,4,5-T	600	600	800	5000		Did not test
2,4-D	900	1600	1300	9000		Did not test
MCPA	600	900	800	5000		Did not test
MCPB	600	900	800	5000		Did not test
Mecoprop	600	900	800	5000		Did not test
Picloram	4500	6600	5700	35000		Did not test
Atrazine	320	470	400	2500		Did not test
Other Pesticides						
Chlopyrifos	160	340	250	2000		Did not test
Bifenthrin	600	840	730	4500		Did not test
Other Organics*						
PCBs	1	1	1	7	<0.5	Did not test
* Compounds not tested: Organochlorine Pesiticides: Mirex, Toxaphene Other Organics: PBDE Flame Retardants (Br1-Br9)						

Consultant
Kelly Lee



Authorised Signatory
Ryan Jacka



Date of Report
31/10/2013

National Environment Protection (Assessment of Site Contamination) Measure 1999 as amended May 2013 - Schedule B1 Guideline on Investigation Levels For Soil and Groundwater

- HIL A:** Residential with garden/accessible soil (home-grown produce <10% fruit and vegetable intake; no poultry), also includes childcare centres, preschools and primary schools.
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Batch N°: 28133	Sample N°: 5	Date Received: 23/10/13	Report Status: <input type="radio"/> Draft <input checked="" type="radio"/> Final
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Client Name: Adam Loel	Project Name: Contamination Analysis
Client Contact: Adam Loel	Location: Lot 1039, Oxford Falls Rd, Oxford Falls
Client Job N°:	SESL Quote N°:
Client Order N°:	Sample Name: BH5/0-150
Address: Lot 1039, Oxford Fall Rd West Oxford Falls NSW 2100	Description: Soil
	Test Type: BWC

DISCUSSION and RECOMMENDATIONS

Analysed by Eurofins - MGT, NATA # 1261, Report # 397266

Benzene, Toluene, Ethylbenzene, Xylenes: Below Detection Limit

TRH C6-C10 (F1): <20mg/kg TRH >C10-C16 less Naphthalene (F2): <50mg/kg

This sample collected by SESL from Lot 1039, Oxford Falls Rd, Oxford Falls was analysed to determine the contamination status of the imported fill material material for the proposed child care centre development. Samples were collected from surface soil within the proposed development area.

The results were compared against the National Environment Protection Amendment Measure (NEPM 2013) Heath Investigation Levels for Residential A (HIL-A), which is the most appropriate criteria for standard residential with garden/accessible soils including children's day care centres, pre-schools and primary schools.

All results were within the adopted thresholds. Therefore SESL concludes that based on this limited assessment, the surface soil does not indicate potential contamination. Please note that this report is an interpretation of the results for this sample collected and does not represent a complete site investigation. In the event that potentially contaminated material is encountered during site works, a Contamination Site Investigation as per Schedule B2 of NEPM 2013 must be undertaken to comprehensively assessed the site.

Assessment Criteria: ☒ HIL A ☐ HIL B ☐ HIL C ☐ HIL D

Chemical	Health Based Investigation Levels (HIL mg/kg)				Result (mg/kg)	Comments
	HIL A ¹	HIL B ¹	HIL C ¹	HIL D ¹		
Metals and Inorganics						
Arsenic (As)	100	500	300	3000	<2	Acceptable
Beryllium (Be)	60	90	90	500		Did not test
Boron (B)	4500	40000	20000	300000	-	Did not test
Cadmium (Cd)	20	150	90	900	<0.4	Acceptable
Chromium (VI) (CrVI)	100	500	300	3600		Did not test
Chromium (Total) (Cr)	NR	NR	NR	NR	6.1	No requirement
Cobalt (Co)	100	600	300	4000	-	Did not test
Copper (Cu)	6000	30000	17000	240000	7	Acceptable
Lead (Pb)	300	1200	600	1500	12	Acceptable
Manganese (Mn)	3800	14000	19000	60000	-	Did not test
Mercury (Hg)	40	120	80	730	<0.05	Acceptable
Methyl mercury	10	30	13	180		Did not test
Nickel (Ni)	400	1200	1200	6000	<5	Acceptable
Selenium (Se)	200	1400	700	10000	-	Did not test
Zinc (Zn)	7400	60000	30000	400000	67	Acceptable
Cyanide (free)*	250	300	240	1500		Did not test

*Testing is for Total Cyanide.

See page 2 for PAHs, Phenols, OCPs, Herbicides and other Pesticides and Organics.

National Environment Protection (Assessment of Site Contamination) Measure 1999 as amended May 2013 - Schedule B1 Guideline on Investigation Levels For Soil and Groundwater

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Consultant
Kelly Lee



Authorised Signatory
Ryan Jacka



Date of Report
31/10/2013

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