

Appendix I Contamination Assessment Screening

GQRA Screening

Assessments	Status	Date	Created by	Reviewed By
Acute human health risk - Soils	Completed	20.08.2024	TT	DH
Chronic human health risk - Soils	Completed	20.08.2024	TT	DH
<i>Chronic human health risk - Groundwater vapour</i>	<i>Not undertaken</i>			
<i>Controlled waters risk - Surface water</i>	<i>Not undertaken</i>			
<i>Controlled waters risk - Drinking water</i>	<i>Not undertaken</i>			
<i>Controlled waters - Free phase indicator</i>	<i>Not undertaken</i>			
<i>Phytotoxicity</i>	<i>Not undertaken</i>			
<i>Ecotoxicity</i>	<i>Not undertaken</i>			

Key

Assessment	Abbr.	GQRA Source (in order of preference)	Last Update
All	NGA	No guideline value available	-
Acute human health risk - Soils	AGAC	Acute Generic Assessment Criteria (SoBRA)	April 2019
	sat.	Contaminant poses a low acute risk unless the soil saturation limit is exceeded and a free oil phase is present.	April 2019
Chronic human health risk - Soils	C4SL	Category 4 Screening Levels (DEFRA)	May 2021
	S4UL	Suitable 4 Use Levels (LQM)	August 2015
	ATK	Atrisk Soil Screening Values (Atkins)	June 2017
	CL:AIRE	Generic Assessment Criteria (CL:AIRE)	Jan 2010
Phytotoxicity	BSI	BS 3882 - Specification for Topsoil (u = upper limit, l = lower limit for multipurpose topsoil) (British Standards Institute)	April 2015
	SSIA	Potentially Toxic Element. Sewage Sludge in Agriculture: Code of Practice (Environment Agency)	May 2018

Chronic human health risk (soils)

Scenario															
End user		Current and proposed site user													
Receptor		Residential with homegrown produce													
SOM		1.00%													
GAC Preference		C4SLs over S4ULs													
Unspeciated TPH GAC		Worst-case aliphatic/aromatic													
Contaminant	Guideline source	Guideline value (mg/kg)	Max value (mg/kg)	Location	BH04	TP03	TP03	BH05	TP04	TP06	TP07	TP07	TP10	TP10	
				Depth (m)	0.10	0.70 - 1.30	0.10	0.10 - 0.45	0.10	0.10	0.10	0.40	0.10	0.80	
				Date	024-07-25T15::024-07-15T15::024-07-15T15::024-07-15T16::024-07-16T10::024-07-16T11::024-07-16T12::024-07-16T12::024-07-18T08::024-07-18T09::										
Inorganics - Metals															
Arsenic	C4SL	37	54		15	10	18	10	12	4.2	7	5.8	9.3	5.4	
Beryllium	S4UL	1.7	3.3		< 0.5	< 0.5	3.3	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	
Boron	S4UL	290	1.4		< 0.40	0.64	0.4	< 0.40	< 0.40	< 0.40	< 0.40	< 0.40	< 0.40	< 0.40	
Cadmium	C4SL	22	50		< 0.10	< 0.10	0.21	0.15	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	
Chromium (III)	S4UL	910	76		20	14	56	7.9	9.2	14	23	16	28	15	
Chromium (VI)	C4SL	21	<LoD		< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	
Copper	S4UL	2400	300		81	19	130	25	25	9.9	17	16	19	16	
Cyanide - Free	ATK	34	10		10	0.5	0.5	0.8	1.2	1	0.6	< 0.50	0.6	< 0.50	
Lead	C4SL	200	520		150	36	120	38	62	19	35	14	46	16	
Mercury	S4UL	40	0.53		0.15	0.11	0.12	0.12	0.11	0.05	0.08	< 0.05	0.1	< 0.05	
Nickel	S4UL	130	340		12	12	55	6.4	7.1	9.4	13	16	11	19	
Selenium	S4UL	250	2.4		0.68	0.26	0.5	0.37	0.45	< 0.25	0.63	< 0.25	0.37	0.62	
Vanadium	S4UL	410	72		21	19	72	18	17	12	18	15	19	17	
Zinc	S4UL	3700	160		41	46	140	27	25	27	42	36	49	39	
Inorganics - Asbestos															
Asbestos Type					-										
Asbestos Screen					No Asbestos Detected	No Asbestos Detected	No Asbestos Detected	No Asbestos Detected	No Asbestos Detected	No Asbestos Detected	No Asbestos Detected	No Asbestos Detected	No Asbestos Detected	No Asbestos Detected	
Asbestos Quantification (%)															
Inorganics - Soil Parameters															
Organic matter		N/A													
Organics - PAH & Phenol					5.9	3.6	38	3.1	6	3.6	3.6	1.3	3.8	0.83	
Acenaphthene	S4UL	210	<LoD		< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	
Acenaphthylene	S4UL	170	<LoD		< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	
Anthracene	S4UL	2400	0.17		< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	
Benzo(a)anthracene	S4UL	7.2	0.64		< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	
Benzo(a)pyrene	C4SL	5	2.2		< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	
Benzo(b)fluoranthene	S4UL	2.6	3.5		< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	
Benzo(ghi)perylene	S4UL	320	1.9		< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	
Benzo(k)fluoranthene	S4UL	77	0.98		< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	
Chrysene	S4UL	15	0.58		< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	
Dibenz(a,h)anthracene	S4UL	0.24	0.48		< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	
Fluoranthene	S4UL	280	1.1		0.47	< 0.10	0.46	< 0.10	< 0.10	0.49	< 0.10	< 0.10	0.26	0.15	
Fluorene	S4UL	170	<LoD		< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	
Indeno[1,2,3-cd]pyrene	S4UL	27	2.2		< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	
Naphthalene	C4SL	15	1.4		0.8	< 0.10	1.4	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	
Phenanthrene	S4UL	95	0.7		0.32	< 0.10	0.48	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	
Phenol	S4UL	120	7.7		< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	
Pyrene	S4UL	620	0.97		0.46	< 0.10	0.57	< 0.10	< 0.10	0.52	< 0.10	< 0.10	0.26	0.18	
Organics - Banded TPH (unspeciated)															
EC >5-EC6 (unspeciated)	S4UL	42	<LoD		< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	
EC >6-EC7 (unspeciated)	S4UL	70	<LoD		< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	
EC >7-EC8 (unspeciated)	S4UL	100	<LoD		< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	
EC >08-EC10 (unspeciated)	S4UL	27	12		< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	
EC >10-EC12 (unspeciated)	S4UL	74	17		< 1.0	< 1.0	< 1.0	< 1.0	4.3	< 1.0	< 1.0	3.8	3.3	3.8	
EC >12-EC16 (unspeciated)	S4UL	140	86		< 1.0	< 1.0	< 1.0	< 1.0	10	< 1.0	< 1.0	9.6	9.6	11	
EC >16-EC21 (unspeciated)	S4UL	260	500		< 1.0	< 1.0	< 1.0	< 1.0	8.9	7.9	< 1.0	11	9.7	9.6	
EC >21-EC35 (unspeciated)	S4UL	1100	1100		< 1.0	< 1.0	< 1.0	< 1.0	9.7	7.2	< 1.0	7.3	7	5.3	

Chronic human health risk (soils)

Scenario														
End user		Current and proposed site user												
Receptor		Residential with homegrown produce												
SOM		1.00%												
GAC Preference		C4SLs over S4ULs												
Unspecified TPH GAC		Worst-case aliphatic/aromatic												
Contaminant	Guideline source	Guideline value (mg/kg)	Max value (mg/kg)	Location	TP15	TP12	TP09	TP14	TP11	TP08	TP16	WS04	BH01	BH02
				Depth (m)	0.10	0.10	0.10	0.10	0.60	0.90	0.10	0.15	0.10	0.10 - 0.35
				Date	J24-07-18T10::J24-07-18T10::J24-07-18T11::J24-07-18T11::J24-07-18T12::J24-07-18T12::J24-07-18T15::J24-07-23T14::J24-07-30T00::J24-07-30T00::									
Inorganics - Metals														
Arsenic	C4SL	37	54		11	15	4.4	4.4	14	12	11	10	8.4	14
Beryllium	S4UL	1.7	3.3		0.7	< 0.5	< 0.5	< 0.5	0.7	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Boron	S4UL	290	1.4		0.68	0.45	0.73	1.4	< 0.40	0.45	< 0.40	< 0.40	< 0.40	0.56
Cadmium	C4SL	22	50		0.52	0.12	< 0.10	< 0.10	0.11	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Chromium (III)	S4UL	910	76		19	15	13	14	76	17	9.2	8.9	9.8	8.6
Chromium (VI)	C4SL	21	<LoD		< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Copper	S4UL	2400	300		26	35	13	14	31	35	24	30	13	72
Cyanide - Free	ATK	34	10		0.8	0.8	0.7	0.6	< 0.50	< 0.50	0.6	1.1	0.5	0.7
Lead	C4SL	200	520		71	57	24	29	51	46	47	52	24	57
Mercury	S4UL	40	0.53		0.09	0.12	0.05	0.06	0.1	0.08	0.11	0.1	0.05	0.21
Nickel	S4UL	130	340		7.3	8.2	7.6	9.3	31	17	6.7	10	7.5	8
Selenium	S4UL	250	2.4		2.4	0.55	0.31	0.36	0.98	0.55	0.65	0.55	0.63	0.58
Vanadium	S4UL	410	72		15	18	11	12	30	23	14	17	16	18
Zinc	S4UL	3700	160		39	48	26	36	89	55	24	35	27	36
Inorganics - Asbestos														
Asbestos Type														
Asbestos Screen														
Asbestos Quantification (%)														
Inorganics - Soil Parameters														
Organic matter		N/A												
Organics - PAH & Phenol														
Acenaphthene	S4UL	210	<LoD		< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Acenaphthylene	S4UL	170	<LoD		< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Anthracene	S4UL	2400	0.17		< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Benzo(a)anthracene	S4UL	7.2	0.64		< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Benzo(a)pyrene	C4SL	5	2.2		< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Benzo(b)fluoranthene	S4UL	2.6	3.5		< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Benzo(ghi)perylene	S4UL	320	1.9		< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Benzo(k)fluoranthene	S4UL	77	0.98		< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Chrysene	S4UL	15	0.58		< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Dibenz(a,h)anthracene	S4UL	0.24	0.48		< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Fluoranthene	S4UL	280	1.1		0.48	0.33	0.45	< 0.10	< 0.10	0.33	0.1	0.24	0.13	< 0.10
Fluorene	S4UL	170	<LoD		< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Indeno(1,2,3-cd)pyrene	S4UL	27	2.2		< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Naphthalene	C4SL	15	1.4		< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Phenanthrene	S4UL	95	0.7		0.23	0.17	0.39	< 0.10	< 0.10	0.21	< 0.10	0.14	< 0.10	< 0.10
Phenol	S4UL	120	7.7		< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Pyrene	S4UL	620	0.97		0.45	0.33	0.39	< 0.10	< 0.10	0.29	0.1	0.24	0.11	< 0.10
Organics - Banded TPH (unspecified)														
EC >5-EC6 (unspecified)	S4UL	42	<LoD		< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
EC >6-EC7 (unspecified)	S4UL	70	<LoD		< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
EC >7-EC8 (unspecified)	S4UL	100	<LoD		< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
EC >08-EC10 (unspecified)	S4UL	27	12		< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	1.3
EC >10-EC12 (unspecified)	S4UL	74	17		4.4	4.4	4.8	4.4	< 1.0	5.4	4.3	6	4.2	6.1
EC >12-EC16 (unspecified)	S4UL	140	86		10	10	12	11	< 1.0	14	9.5	11	10	11
EC >16-EC21 (unspecified)	S4UL	260	500		7.8	8.4	8.8	11	< 1.0	14	8.4	11	8.9	8.5
EC >21-EC35 (unspecified)	S4UL	1100	1100		6.9	6.7	6.3	7.2	< 1.0	11	6.6	8.1	6	5.6

Chronic human health risk (soils)

Scenario															
End user		Current and proposed site user													
Receptor		Residential with homegrown produce													
SOM		1.00%													
GAC Preference		C4SLs over S4ULs													
Unspeciated TPH GAC		Worst-case aliphatic/aromatic													
Contaminant	Guideline source	Guideline value (mg/kg)	Max value (mg/kg)	Location	BH03	BH06	TP20	TP19	TP19	TP17	BH08	BH10	TP22	TP24	
				Depth (m)	0.10	0.10 - 0.40	0.10	0.10	1.20	0.10	0.10 - 0.40	0.10 - 0.40	0.10	0.10	
				Date	:24-07-30T00:::24-07-30T00:::24-07-25T12:::24-07-25T12:::24-07-25T12:::24-07-25T13:::24-07-25T13:::24-07-25T13:::24-07-25T14:::24-07-25T15:										
Inorganics - Metals					10	11	9.9	23	1.6	9.1	19	5.9	9	8.1	
Arsenic	C4SL	37	54		< 0.5	< 0.5	< 0.5	2.4	< 0.5	0.6	0.6	0.5	< 0.5	< 0.5	
Beryllium	S4UL	1.7	3.3		0.49	0.41	0.63	< 0.40	< 0.40	< 0.40	0.56	< 0.40	< 0.40	0.96	
Boron	S4UL	290	1.4		< 0.10	< 0.10	0.13	0.79	0.3	0.1	0.22	< 0.10	< 0.10	< 0.10	
Cadmium	C4SL	22	50		6.3	10	12	14	6.6	13	22	19	10	10	
Chromium (III)	S4UL	910	76		< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	
Chromium (VI)	C4SL	21	<LoD		56	23	54	190	6.6	35	41	18	21	23	
Copper	S4UL	2400	300		0.8	0.7	0.8	< 0.50	0.6	0.7	0.9	< 0.50	< 0.50	0.6	
Cyanide - Free	ATK	34	10		44	51	58	50	8	520	100	18	38	58	
Lead	C4SL	200	520		0.17	0.11	0.14	0.06	0.07	0.38	0.53	< 0.05	0.06	0.1	
Mercury	S4UL	40	0.53		5.7	7.6	7.5	44	6.2	19	17	22	11	10	
Nickel	S4UL	130	340		0.49	0.44	0.37	1.4	0.48	0.62	0.99	0.39	0.29	0.35	
Selenium	S4UL	250	2.4		14	16	19	55	8.6	15	26	18	16	14	
Vanadium	S4UL	410	72		25	28	53	160	24	56	84	47	47	30	
Zinc	S4UL	3700	160												
Inorganics - Asbestos															
Asbestos Type					N/A										
Asbestos Screen					N/A			No Asbestos Detected	No Asbestos Detected	No Asbestos Detected	No Asbestos Detected	No Asbestos Detected	No Asbestos Detected	No Asbestos Detected	No Asbestos Detected
Asbestos Quantification (%)															
Inorganics - Soil Parameters															
Organic matter		N/A			9.7	7.9	10	26	21	12	5.3	2.9	2.9	26	
Organics - PAH & Phenol															
Acenaphthene	S4UL	210	<LoD		< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	
Acenaphthylene	S4UL	170	<LoD		< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	
Anthracene	S4UL	2400	0.17		< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	
Benzo(a)anthracene	S4UL	7.2	0.64		< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	0.21	< 0.10	< 0.10	< 0.10	
Benzo(a)pyrene	C4SL	5	2.2		< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	
Benzo(b)fluoranthene	S4UL	2.6	3.5		< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	
Benzo(ghi)perylene	S4UL	320	1.9		< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	
Benzo(k)fluoranthene	S4UL	77	0.98		< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	
Chrysene	S4UL	15	0.58		0.12	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	0.19	< 0.10	< 0.10	< 0.10	
Dibenz(a,h)anthracene	S4UL	0.24	0.48		< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	
Fluoranthene	S4UL	280	1.1		0.18	0.13	0.24	< 0.10	< 0.10	0.22	0.43	< 0.10	< 0.10	0.22	
Fluorene	S4UL	170	<LoD		< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	
Indeno[1,2,3-cd]pyrene	S4UL	27	2.2		< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	
Naphthalene	C4SL	15	1.4		< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	0.15	< 0.10	< 0.10	< 0.10	
Phenanthrene	S4UL	95	0.7		0.12	< 0.10	0.14	< 0.10	< 0.10	< 0.10	0.45	< 0.10	< 0.10	< 0.10	
Phenol	S4UL	120	7.7		< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	
Pyrene	S4UL	620	0.97		0.16	0.13	0.22	< 0.10	< 0.10	0.2	0.4	< 0.10	< 0.10	0.2	
Organics - Banded TPH (unspeciated)															
EC >5-EC6 (unspeciated)	S4UL	42	<LoD		< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	
EC >6-EC7 (unspeciated)	S4UL	70	<LoD		< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	
EC >7-EC8 (unspeciated)	S4UL	100	<LoD		< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	
EC >08-EC10 (unspeciated)	S4UL	27	12		< 1.0	< 1.0	< 1.0	12	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	
EC >10-EC12 (unspeciated)	S4UL	74	17		4.3	4.2	6.2	13	< 1.0	6.2	< 1.0	< 1.0	< 1.0	< 1.0	
EC >12-EC16 (unspeciated)	S4UL	140	86		11	9.6	11	22	< 1.0	16	< 1.0	< 1.0	< 1.0	< 1.0	
EC >16-EC21 (unspeciated)	S4UL	260	500		9.8	11	12	14	< 1.0	16	< 1.0	< 1.0	< 1.0	< 1.0	
EC >21-EC35 (unspeciated)	S4UL	1100	1100		8.3	7	9.3	6.1	< 1.0	10	< 1.0	< 1.0	< 1.0	< 1.0	

Scenario	
End user	Current and proposed site user
Receptor	Residential with homegrown produce
SOM	1.00%
GAC Preference	C4SLs over S4ULs
Unspecified TPH GAC	Worst-case aliphatic/aromatic

Contaminant	Guideline source	Guideline value (mg/kg)	Max value (mg/kg)	Location	TP25	BH11	SLO1	SLO2	SLO3	SLO4	SLO5	SLO6	SLO7	SLO8
				Depth (m)	0.10	0.10 - 0.40	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10
				Date	J24-07-25T15>J24-07-25T15 : J24-07-26T09>J24-07-26T09 : J24-07-26T09 : J24-07-26T09 : J24-07-26T09 : J24-07-26T09 : J24-07-26T09 :									
Inorganics - Metals					5.9	22	47	54	9.8	6.8	7.5	11	13	12
Arsenic	C4SL	37	54		< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Beryllium	S4UL	1.7	3.3		< 0.40	0.56	< 0.40	< 0.40	0.56	0.54	< 0.40	0.54	0.59	0.42
Boron	S4UL	290	1.4		< 0.10	0.22	3.9	50	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Cadmium	C4SL	22	50		7.4	27	28	24	8.1	14	9.1	8	15	11
Chromium (III)	S4UL	910	76		< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Chromium (VI)	C4SL	21	<LoD		24	67	4.9	0.83	18	48	27	31	27	28
Copper	S4UL	2400	300		< 0.50	0.6	1.9	1.5	< 0.50	< 0.50	0.6	< 0.50	< 0.50	0.6
Cyanide - Free	ATK	34	10		20	95	1.6	1.6	33	37	43	57	62	53
Lead	C4SL	200	520		0.05	0.49	< 0.05	< 0.05	0.08	0.16	0.13	0.14	0.13	0.13
Mercury	S4UL	40	0.53		7.8	13	140	340	5.7	4.1	4.7	9.2	11	8.7
Nickel	S4UL	130	340		< 0.25	0.88	0.57	1.8	0.34	< 0.25	< 0.25	0.29	0.47	0.47
Selenium	S4UL	250	2.4		12	26	30	21	11	11	12	16	18	19
Vanadium	S4UL	410	72		31	80	6.1	6.4	24	23	29	38	45	44
Zinc	S4UL	3700	160											
Inorganics - Asbestos														
Asbestos Type		N/A			Fibres/Clump s Fibres/Clump s, Paper Product/ Bitumen									
Asbestos Screen		N/A			No Asbestos Detected	No Asbestos Detected	Chrysotile	Chrysotile	No Asbestos Detected	No Asbestos Detected	No Asbestos Detected	No Asbestos Detected	No Asbestos Detected	No Asbestos Detected
Asbestos Quantification (%)					0.008 1.8									
Inorganics - Soil Parameters														
Organic matter		N/A			4.5	5.7	47	6	SLO3	7.6	13	12	7.1	5.5
Organics - PAH & Phenol														
Acenaphthene	S4UL	210	<LoD		< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Acenaphthylene	S4UL	170	<LoD		< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Anthracene	S4UL	2400	0.17		< 0.10	< 0.10	0.11	0.17	< 0.10	< 0.10	< 0.10	< 0.10	0.12	< 0.10
Benzo(a)anthracene	S4UL	7.2	0.64		< 0.10	< 0.10	0.59	0.64	< 0.10	< 0.10	0.25	< 0.10	< 0.10	< 0.10
Benzo(a)pyrene	C4SL	5	2.2		< 0.10	< 0.10	0.74	2.2	< 0.10	< 0.10	0.32	< 0.10	< 0.10	< 0.10
Benzo(b)fluoranthene	S4UL	2.6	3.5		< 0.10	< 0.10	1.1	3.5	< 0.10	< 0.10	0.48	< 0.10	< 0.10	< 0.10
Benzo(ghi)perylene	S4UL	320	1.9		< 0.10	< 0.10	0.68	1.9	< 0.10	< 0.10	0.26	< 0.10	< 0.10	< 0.10
Benzo(k)fluoranthene	S4UL	77	0.98		< 0.10	< 0.10	0.44	0.98	< 0.10	< 0.10	0.15	< 0.10	< 0.10	< 0.10
Chrysene	S4UL	15	0.58		< 0.10	< 0.10	0.58	0.47	< 0.10	< 0.10	0.37	< 0.10	< 0.10	< 0.10
Dibenz(a,h)anthracene	S4UL	0.24	0.48		< 0.10	< 0.10	< 0.10	0.48	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Fluoranthene	S4UL	280	1.1		< 0.10	0.4	1.1	1.1	< 0.10	0.45	0.48	0.3	0.35	0.19
Fluorene	S4UL	170	<LoD		< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Indeno(1,2,3-cd)pyrene	S4UL	27	2.2		< 0.10	< 0.10	0.67	2.2	< 0.10	< 0.10	0.27	< 0.10	< 0.10	< 0.10
Naphthalene	C4SL	15	1.4		< 0.10	< 0.10	0.29	0.21	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Phenanthrene	S4UL	95	0.7		< 0.10	0.18	0.51	0.58	< 0.10	0.24	< 0.10	0.21	0.23	0.19
Phenol	S4UL	120	7.7		< 0.10	< 0.10	0.6	7.7	0.1	< 0.10	0.1	< 0.10	< 0.10	< 0.10
Pyrene	S4UL	620	0.97		< 0.10	0.4	0.97	0.89	< 0.10	0.43	0.48	0.29	0.32	0.21
Organics - Banded TPH (unspecified)														
EC >5-EC6 (unspecified)	S4UL	42	<LoD		< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
EC >6-EC7 (unspecified)	S4UL	70	<LoD		< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
EC >7-EC8 (unspecified)	S4UL	100	<LoD		< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
EC >8-EC10 (unspecified)	S4UL	27	12		< 1.0	< 1.0	< 1.0	4.1	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
EC >10-EC12 (unspecified)	S4UL	74	17		< 1.0	< 1.0	9.2	7	7	5.4	7.3	5.6	< 1.0	< 1.0
EC >12-EC16 (unspecified)	S4UL	140	86		< 1.0	< 1.0	86	17	14	14	17	13	< 1.0	< 1.0
EC >16-EC21 (unspecified)	S4UL	260	500		< 1.0	< 1.0	500	79	13	13	21	11	< 1.0	< 1.0
EC >21-EC35 (unspecified)	S4UL	1100	1100		< 1.0	< 1.0	1100	640	5.4	6.2	10	6.8	< 1.0	< 1.0

Chronic human health risk (soils)

Scenario															
End user		Current and proposed site user													
Receptor		Residential with homegrown produce													
SOM		1.00%													
GAC Preference		C4SLs over S4ULs													
Unspeciated TPH GAC		Worst-case aliphatic/aromatic													
Contaminant	Guideline source	Guideline value (mg/kg)	Max value (mg/kg)	Location	SL09	SL10	SL11	SL12	SL13	SL14	SL15	SL16	SL17	TP09	
				Depth (m)	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10 - 0.40	0.10 - 0.40	1.00
				Date	124-07-26T09:124-07-26T09:124-07-26T09:124-07-26T09:124-07-26T09:124-07-26T09:124-07-26T09:124-07-26T09:124-07-18T11:14										
Inorganics - Metals					13	14	10	5.2	15	13	11	11	14	5	
Arsenic	C4SL	37	54		< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	0.6	
Beryllium	S4UL	1.7	3.3		0.6	0.5	< 0.40	0.47	0.55	0.53	0.59	< 0.40	0.52	< 0.40	
Boron	S4UL	290	1.4		< 0.10	0.13	< 0.10	< 0.10	0.13	0.2	< 0.10	0.55	0.13	< 0.10	
Cadmium	C4SL	22	50		9.7	13	7.4	7.1	13	35	14	13	13	19	
Chromium (III)	S4UL	910	76		< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	
Chromium (VI)	C4SL	21	<LoD		29	68	20	22	36	42	36	300	32	16	
Copper	S4UL	2400	300		0.8	0.7	0.5	0.5	0.8	0.7	0.7	0.6	0.7	< 0.50	
Cyanide - Free	ATK	34	10		56	85	57	31	70	230	63	75	87	9.9	
Lead	C4SL	200	520		0.22	0.16	0.09	0.08	0.2	0.18	0.27	0.14	0.19	< 0.05	
Mercury	S4UL	40	0.53		8.7	10	7.2	5.5	7	9.5	8.4	11	8.3	22	
Nickel	S4UL	130	340		0.37	0.57	< 0.25	< 0.25	0.39	0.45	0.35	0.42	0.39	0.39	
Selenium	S4UL	250	2.4		17	23	12	8.2	13	16	15	16	17	19	
Vanadium	S4UL	410	72		42	65	22	27	45	66	45	110	59	39	
Zinc	S4UL	3700	160												
Inorganics - Asbestos															
Asbestos Type				N/A											
Asbestos Screen				N/A	No Asbestos Detected	No Asbestos Detected	No Asbestos Detected	No Asbestos Detected	No Asbestos Detected	No Asbestos Detected	No Asbestos Detected	No Asbestos Detected	No Asbestos Detected	No Asbestos Detected	
Asbestos Quantification (%)															
Inorganics - Soil Parameters															
Organic matter		N/A		8.1	8.8	3.3	6.2	9.3	4.7	5.5	6.6	8.1	1.1		
Organics - PAH & Phenol															
Acenaphthene	S4UL	210	<LoD	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10		
Acenaphthylene	S4UL	170	<LoD	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10		
Anthracene	S4UL	2400	0.17	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	0.16	< 0.10		
Benzo(a)anthracene	S4UL	7.2	0.64	< 0.10	0.3	< 0.10	< 0.10	0.24	< 0.10	0.27	< 0.10	0.45	< 0.10		
Benzo(a)pyrene	C4SL	5	2.2	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	0.48	< 0.10		
Benzo(b)fluoranthene	S4UL	2.6	3.5	< 0.10	0.44	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	0.68	< 0.10		
Benzo(ghi)perylene	S4UL	320	1.9	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10		
Benzo(k)fluoranthene	S4UL	77	0.98	< 0.10	0.15	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	0.24	< 0.10		
Chrysene	S4UL	15	0.58	< 0.10	0.3	< 0.10	< 0.10	0.28	< 0.10	0.26	< 0.10	0.44	< 0.10		
Dibenz(a,h)anthracene	S4UL	0.24	0.48	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10		
Fluoranthene	S4UL	280	1.1	0.27	0.62	< 0.10	0.29	0.5	0.43	0.5	0.21	1.1	< 0.10		
Fluorene	S4UL	170	<LoD	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10		
Indeno[1,2,3-cd]pyrene	S4UL	27	2.2	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10		
Naphthalene	C4SL	15	1.4	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10		
Phenanthrene	S4UL	95	0.7	0.2	0.35	< 0.10	0.16	0.29	0.2	0.38	< 0.10	0.7	< 0.10		
Phenol	S4UL	120	7.7	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	0.1	< 0.10	< 0.10		
Pyrene	S4UL	620	0.97	0.26	0.61	< 0.10	0.3	0.45	0.42	0.46	0.21	0.85	< 0.10		
Organics - Banded TPH (unspeciated)															
EC >5-EC6 (unspeciated)	S4UL	42	<LoD	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0		
EC >6-EC7 (unspeciated)	S4UL	70	<LoD	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0		
EC >7-EC8 (unspeciated)	S4UL	100	<LoD	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0		
EC >08-EC10 (unspeciated)	S4UL	27	12	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0		
EC >10-EC12 (unspeciated)	S4UL	74	17	6.4	6.9	4.5	8.6	5.8	5.3	6.2	6.5	6	< 1.0		
EC >12-EC16 (unspeciated)	S4UL	140	86	22	16	14	18	14	13	12	13	14	< 1.0		
EC >16-EC21 (unspeciated)	S4UL	260	500	17	13	10	14	13	11	11	9.6	13	< 1.0		
EC >21-EC35 (unspeciated)	S4UL	1100	1100	7.8	5.6	4.7	6.2	5.8	6.4	6	5.6	5.5	< 1.0		

Acute human health risk (soils)

Scenario	Public exposure
Critical receptor	Young female child (1 to 2 years old)
Oral exposure	Ingestion of a single 5g bolus of soil whilst playing on site
Demal exposure	Soil being left on the skin for several hours
Inhalation exposure	30 mins exposure to a child off-site, from dusts and vapours generated during excavation

Contaminant	Guideline source	Principal pathway	Guideline value (mg/kg)	Max value (mg/kg)	Location	BH04	TP03	TP03	BH05	TP04	TP06	TP07	TP07	TP10	TP10	TP15
					Depth (m)	0.10	0.70 - 1.30	0.10	0.10 - 0.45	0.10	0.10	0.10	0.40	0.10	0.80	0.10
					Date	024-07-25T15:00:00	024-07-15T15:00:00	024-07-15T15:00:00	024-07-15T16:00:00	024-07-16T10:00:00	024-07-16T11:00:00	024-07-16T12:00:00	024-07-16T12:00:00	024-07-18T08:00:00	024-07-18T09:00:00	024-07-18T10:00:00
Inorganics																
Arsenic	AGAC	Oral	80	54		15	10	18	10	12	4.2	7	5.8	9.3	5.4	11
Cadmium	AGAC	Oral	140	50		< 0.10	< 0.10			< 0.10	< 0.10		< 0.10		< 0.10	0.52
Cyanide - Free	AGAC	Oral	24	10		10	0.5	0.5	0.8	1.2	1	0.6	< 0.50	0.6	< 0.50	0.8
Organics																
Benzene	AGAC	Oral & Inhalation	47													
Phenol	AGAC	Oral	2,000	7.7		< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Trichloroethene	AGAC	Inhalation	8,000													
Vinyl Chloride	AGAC	Inhalation	98													

Acute human health risk (soils)

Scenario	Public exposure
Critical receptor	Young female child (1 to 2 years old)
Oral exposure	Ingestion of a single 5g bolus of soil whilst playing on site
Demal exposure	Soil being left on the skin for several hours
Inhalation exposure	30 mins exposure to a child off-site, from dusts and vapours generated during excavation

Contaminant	Guideline source	Principal pathway	Guideline value (mg/kg)	Max value (mg/kg)	Location	TP12	TP09	TP09	TP14	TP11	TP08	TP16	WS04	BH01	BH02	BH03
					Depth (m)	0.10	0.10		0.10	0.60	0.90	0.10	0.15	0.10	0.10 - 0.35	0.10
					Date	024-07-18T10:00:00Z	024-07-18T11:00:00Z		024-07-18T11:00:00Z	024-07-18T12:00:00Z	024-07-18T12:00:00Z	024-07-18T15:00:00Z	024-07-23T14:00:00Z	024-07-30T00:00:00Z	024-07-30T00:00:00Z	024-07-30T00:00:00Z
Inorganics																
Arsenic	AGAC	Oral	80	54		15	4.4	5	4.4	14			10	8.4	14	10
Cadmium	AGAC	Oral	140	50		0.12	< 0.10	< 0.10	< 0.10	0.11	< 0.10	< 0.10	< 0.10		< 0.10	< 0.10
Cyanide - Free	AGAC	Oral	24	10		0.8	0.7	< 0.50	0.6	< 0.50	< 0.50	0.6	1.1	0.5	0.7	0.8
Organics																
Benzene	AGAC	Oral & Inhalation	47													
Phenol	AGAC	Oral	2,000	7.7		< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Trichloroethene	AGAC	Inhalation	8,000													
Vinyl Chloride	AGAC	Inhalation	98													

Acute human health risk (soils)

Scenario	Public exposure
Critical receptor	Young female child (1 to 2 years old)
Oral exposure	Ingestion of a single 5g bolus of soil whilst playing on site
Demal exposure	Soil being left on the skin for several hours
Inhalation exposure	30 mins exposure to a child off-site, from dusts and vapours generated during excavation

Contaminant	Guideline source	Principal pathway	Guideline value (mg/kg)	Max value (mg/kg)	Location	BH06	TP20	TP19	TP19	TP17	BH08	BH10	TP22	TP24	TP25	BH11	
					Depth (m)	0.10 - 0.40	0.10	0.10	1.20	0.10	0.10 - 0.40	0.10 - 0.40	0.10	0.10	0.10	0.10 - 0.40	
					Date	024-07-30T00:00:00	024-07-25T12:00:00	024-07-25T12:00:00	024-07-25T12:00:00	024-07-25T13:00:00	024-07-25T13:00:00	024-07-25T13:00:00	024-07-25T14:00:00	024-07-25T15:00:00	024-07-25T15:00:00	024-07-25T15:00:00	
Inorganics																	
Arsenic	AGAC	Oral	80	54			9.9	23	1.6		19	5.9	9	8.1	5.9		
Cadmium	AGAC	Oral	140	50		< 0.10	0.13	0.79	0.3	0.1	0.22	< 0.10	< 0.10		< 0.10	0.22	
Cyanide - Free	AGAC	Oral	24	10		0.7	0.8	< 0.50	0.6	0.7	0.9	< 0.50	< 0.50	0.6	< 0.50	0.6	
Organics																	
Benzene	AGAC	Oral & Inhalation	47														
Phenol	AGAC	Oral	2,000	7.7		< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Trichloroethene	AGAC	Inhalation	8,000														
Vinyl Chloride	AGAC	Inhalation	98														

Acute human health risk (soils)

Scenario	Public exposure
Critical receptor	Young female child (1 to 2 years old)
Oral exposure	Ingestion of a single 5g bolus of soil whilst playing on site
Demal exposure	Soil being left on the skin for several hours
Inhalation exposure	30 mins exposure to a child off-site, from dusts and vapours generated during excavation

Contaminant	Guideline source	Principal pathway	Guideline value (mg/kg)	Max value (mg/kg)	Location	SL01	SL02	SL03	SL04	SL05	SL06	SL07	SL08	SL09	SL10	SL11
					Depth (m)	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10
					Date	024-07-26T09:30:00	024-07-26T09:30:00	024-07-26T09:30:00	024-07-26T09:30:00	024-07-26T09:30:00	024-07-26T09:30:00	024-07-26T09:30:00	024-07-26T09:30:00	024-07-26T09:30:00	024-07-26T09:30:00	024-07-26T09:30:00
Inorganics																
Arsenic	AGAC	Oral	80	54			54	9.8	6.8	7.5	11	13	12	13	14	
Cadmium	AGAC	Oral	140	50		3.9	50	< 0.10				< 0.10	< 0.10	< 0.10	0.13	< 0.10
Cyanide - Free	AGAC	Oral	24	10		1.9	1.5	< 0.50	< 0.50	0.6	< 0.50	< 0.50	0.6	0.8	0.7	0.5
Organics																
Benzene	AGAC	Oral & Inhalation	47													
Phenol	AGAC	Oral	2,000	7.7		0.6	7.7	0.1	< 0.10	0.1	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Trichloroethene	AGAC	Inhalation	8,000													
Vinyl Chloride	AGAC	Inhalation	98													

Acute human health risk (soils)

Scenario	Public exposure
Critical receptor	Young female child (1 to 2 years old)
Oral exposure	Ingestion of a single 5g bolus of soil whilst playing on site
Demal exposure	Soil being left on the skin for several hours
Inhalation exposure	30 mins exposure to a child off-site, from dusts and vapours generated during excavation

Contaminant	Guideline source	Principal pathway	Guideline value (mg/kg)	Max value (mg/kg)	Location	SL12	SL13	SL14	SL15	SL16	SL17	TP09
					Depth (m)	0.10	0.10	0.10	0.10	0.10 - 0.40	0.10 - 0.40	1.00
					Date	024-07-26T09:40:00	024-07-26T09:40:00	024-07-26T09:40:00	024-07-26T09:40:00	024-07-26T09:40:00	024-07-26T09:40:00	024-07-18T11:00:00
Inorganics												
Arsenic	AGAC	Oral	80	54		13			11	5		
Cadmium	AGAC	Oral	140	50		< 0.10	0.13			0.55	0.13	< 0.10
Cyanide - Free	AGAC	Oral	24	10		0.5	0.8	0.7	0.7	0.6	0.7	< 0.50
Organics												
Benzene	AGAC	Oral & Inhalation	47									
Phenol	AGAC	Oral	2,000	7.7		< 0.10	< 0.10	< 0.10	< 0.10	0.1	< 0.10	< 0.10
Trichloroethene	AGAC	Inhalation	8,000									
Vinyl Chloride	AGAC	Inhalation	98									

Phytotoxicity

Scenario													
Land use				Planting									
Contaminant	Guideline source	Guideline value (mg/kg)	Max value (mg/kg)	Location	BH04	TP03	BH05	TP04	TP06	TP07	TP07	TP10	TP15
				Depth (m)	0.10	0.10	0.10 - 0.45	0.10	0.10	0.10	0.40	0.10	0.10
				Date	024-07-25T15:1	024-07-15T15:5	024-07-15T16:1	024-07-16T10:3	024-07-16T11:3	024-07-16T12:4	024-07-16T12:4	024-07-18T08:4	024-07-18T10:1
Soil parameters													
pH	BSI-u	8.5	8.9		8.3	8.2	7.9	8.2	8.2	8.3	8.4	8.3	8.8
pH	BSI-l	5.5	7.2		8.3	8.2	7.9	8.2	8.2	8.3	8.4	8.3	8.8
Potentially toxic element													
Arsenic	SSIA	50			15	18	10	12	4.2	7	5.8	9.3	11
Cadmium	SSIA	3	0.79		< 0.10			< 0.10	< 0.10		< 0.10		0.52
Chromium (III)	SSIA	400	56		20	56	7.9		14	23		28	
Lead	SSIA	300	520		150	120	38	62	19	35	14	46	71
Mercury	SSIA	1	0.53		0.15	0.12	0.12	0.11	0.05	0.08	< 0.05	0.1	0.09
Selenium	SSIA	3	2.4		0.68	0.5	0.37	0.45	< 0.25	0.63	< 0.25	0.37	2.4
Potentially toxic element (pH >7.0)													
Copper	SSIA	200	300		81	130	25	25	9.9	17	16	19	26
Nickel	SSIA	110	55		12	55	6.4	7.1	9.4	13	16	11	7.3
Zinc	SSIA	300	160		41	140	27	25	27	42	36	49	39

Phytotoxicity

Scenario													
Land use				Planting									
Contaminant	Guideline source	Guideline value (mg/kg)	Max value (mg/kg)	Location	TP12	TP09	TP09	TP14	TP11	TP08	TP16	WS04	BH01
				Depth (m)	0.10	0.10	0.10	0.60	0.90	0.10	0.15	0.10	
				Date	2024-07-18T10:30:00	2024-07-18T11:00:00	2024-07-18T11:50:00	2024-07-18T12:10:00	2024-07-18T12:30:00	2024-07-18T15:20:00	2024-07-23T14:50:00	2024-07-30T00:00:00	
Soil parameters													
pH	BSI-u	8.5	8.9		8.6	8.7	8.6	8.4	8.5	8.6	8.5	8.7	8.6
pH	BSI-l	5.5	7.2		8.6	8.7	8.6	8.4	8.5	8.6	8.5	8.7	8.6
Potentially toxic element													
Arsenic	SSIA	50			15	4.4	5	4.4	14			10	8.4
Cadmium	SSIA	3	0.79		0.12	< 0.10	< 0.10	< 0.10	0.11	< 0.10	< 0.10	< 0.10	
Chromium (III)	SSIA	400	56		15	13	19	14		17	9.2		9.8
Lead	SSIA	300	520		57	24	9.9	29	51	46	47	52	24
Mercury	SSIA	1	0.53		0.12	0.05	< 0.05	0.06	0.1	0.08	0.11	0.1	0.05
Selenium	SSIA	3	2.4		0.55	0.31	0.39	0.36	0.98	0.55	0.65	0.55	0.63
Potentially toxic element (pH >7.0)													
Copper	SSIA	200	300		35	13	16	14	31	35	24	30	13
Nickel	SSIA	110	55		8.2	7.6	22	9.3	31	17	6.7	10	7.5
Zinc	SSIA	300	160		48	26	39	36	89	55	24	35	27

Phytotoxicity

Scenario													
Land use				Planting									
Contaminant	Guideline source	Guideline value (mg/kg)	Max value (mg/kg)	Location	BH02	BH03	BH06	TP20	TP19	TP19	TP17	BH08	BH10
				Depth (m)	0.10 - 0.35	0.10	0.10 - 0.40	0.10	0.10	1.20	0.10	0.10 - 0.40	0.10 - 0.40
				Date	024-07-30T00:00:00	024-07-30T00:00:00	024-07-30T00:00:00	024-07-25T12:30:00	024-07-25T12:40:00	024-07-25T12:40:00	024-07-25T13:00:00	024-07-25T13:10:00	024-07-25T13:20:00
Soil parameters													
pH	BSI-u	8.5	8.9		8.7	8.8	8.9	8.9	8.6	8.4	7.6	8.3	7.5
pH	BSI-l	5.5	7.2		8.7	8.8	8.9	8.9	8.6	8.4	7.6	8.3	7.5
Potentially toxic element													
Arsenic	SSIA	50			14	10		9.9	23	1.6		19	5.9
Cadmium	SSIA	3	0.79		< 0.10	< 0.10	< 0.10	0.13	0.79	0.3	0.1	0.22	< 0.10
Chromium (III)	SSIA	400	56		8.6		10	12			13	22	19
Lead	SSIA	300	520		57	44	51	58	50	8	520	100	18
Mercury	SSIA	1	0.53		0.21	0.17	0.11	0.14	0.06	0.07	0.38	0.53	< 0.05
Selenium	SSIA	3	2.4		0.58	0.49	0.44	0.37	1.4	0.48	0.62	0.99	0.39
Potentially toxic element (pH >7.0)													
Copper	SSIA	200	300		72	56	23	54	190	6.6	35	41	18
Nickel	SSIA	110	55		8	5.7	7.6	7.5	44	6.2	19	17	22
Zinc	SSIA	300	160		36	25	28	53	160	24	56	84	47

Phytotoxicity

Scenario													
Land use				Planting									
Contaminant	Guideline source	Guideline value (mg/kg)	Max value (mg/kg)	Location	TP22	TP24	TP25	BH11	SL03	SL04	SL05	SL06	SL07
				Depth (m)	0.10	0.10	0.10	0.10 - 0.40	0.10	0.10	0.10	0.10	0.10
				Date	2024-07-25T14:40:00	2024-07-25T15:00:00	2024-07-25T15:00:00	2024-07-25T15:10:00	2024-07-26T09:40:00	2024-07-26T09:40:00	2024-07-26T09:40:00	2024-07-26T09:40:00	2024-07-26T09:40:00
Soil parameters													
pH	BSI-u	8.5	8.9		8	7.9	7.8	7.8	7.6	7.5	7.7	7.6	7.2
pH	BSI-l	5.5	7.2		8	7.9	7.8	7.8	7.6	7.5	7.7	7.6	7.2
Potentially toxic element													
Arsenic	SSIA	50			9	8.1	5.9		9.8	6.8	7.5	11	13
Cadmium	SSIA	3	0.79		< 0.10		< 0.10	0.22	< 0.10				< 0.10
Chromium (III)	SSIA	400	56		10	10	7.4	27		14	9.1	8	15
Lead	SSIA	300	520		38	58	20	95	33	37	43	57	62
Mercury	SSIA	1	0.53		0.06	0.1	0.05	0.49	0.08	0.16	0.13	0.14	0.13
Selenium	SSIA	3	2.4		0.29	0.35	< 0.25	0.88	0.34	< 0.25	< 0.25	0.29	0.47
Potentially toxic element (pH >7.0)													
Copper	SSIA	200	300		21	23	24	67	18	48	27	31	27
Nickel	SSIA	110	55		11	10	7.8	13	5.7	4.1	4.7	9.2	11
Zinc	SSIA	300	160		47	30	31	80	24	23	29	38	45

Phytotoxicity

Scenario														
Land use				Planting										
Contaminant	Guideline source	Guideline value (mg/kg)	Max value (mg/kg)	Location	SL08	SL09	SL10	SL11	SL12	SL13	SL14	SL15	SL16	
				Depth (m)	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10 - 0.40
				Date	024-07-26T09:4	024-07-26T09:4	024-07-26T09:4	024-07-26T09:4	024-07-26T09:4	024-07-26T09:4	024-07-26T09:4	024-07-26T09:4	024-07-26T09:4	024-07-26T09:4
Soil parameters														
pH	BSI-u	8.5	8.9		7.5	7.4	8	8.1	8	7.9	7.8	7.7	7.7	
pH	BSI-l	5.5	7.2		7.5	7.4	8	8.1	8	7.9	7.8	7.7	7.7	
Potentially toxic element														
Arsenic	SSIA	50			12	13	14				13	11		
Cadmium	SSIA	3	0.79		< 0.10	< 0.10	0.13	< 0.10	< 0.10	0.13			0.55	
Chromium (III)	SSIA	400	56			9.7	13	7.4	7.1	13	35	14	13	
Lead	SSIA	300	520		53	56	85	57	31	70	230	63	75	
Mercury	SSIA	1	0.53		0.13	0.22	0.16	0.09	0.08	0.2	0.18	0.27	0.14	
Selenium	SSIA	3	2.4		0.47	0.37	0.57	< 0.25	< 0.25	0.39	0.45	0.35	0.42	
Potentially toxic element (pH >7.0)														
Copper	SSIA	200	300		28	29	68	20	22	36	42	36	300	
Nickel	SSIA	110	55		8.7	8.7	10	7.2	5.5	7	9.5	8.4	11	
Zinc	SSIA	300	160		44	42	65	22	27	45	66	45	110	

Phytotoxicity

Scenario						
Land use		Planting				
Contaminant	Guideline source	Guideline value (mg/kg)	Max value (mg/kg)	Location	SL17	TP09
				Depth (m)	0.10 - 0.40	1.00
				Date	2024-07-26T09:40:00	2024-07-18T11:00:00
Soil parameters						
pH	BSI-u	8.5	8.9		7.8	8.6
pH	BSI-l	5.5	7.2		7.8	8.6
Potentially toxic element						
Arsenic	SSIA	50				5
Cadmium	SSIA	3	0.79		0.13	< 0.10
Chromium (III)	SSIA	400	56		13	19
Lead	SSIA	300	520		87	9.9
Mercury	SSIA	1	0.53		0.19	< 0.05
Selenium	SSIA	3	2.4		0.39	0.39
Potentially toxic element (pH >7.0)						
Copper	SSIA	200	300		32	16
Nickel	SSIA	110	55		8.3	22
Zinc	SSIA	300	160		59	39

GQRA Screening

Assessments	Status	Date	Created by	Reviewed By
Acute human health risk - Soils	Not undertaken			
Chronic human health risk - Soils	Not undertaken			
Chronic human health risk - Groundwater vapour	Not undertaken			
Controlled waters risk - Surface water	Complete	Mar 2023	JT	SCD
Controlled waters risk - Drinking water	Not undertaken			
Controlled waters - Free phase indicator	Not undertaken			
Phytotoxicity	Not undertaken			
Ecotoxicity	Not undertaken			

Key

Assessment	Abbr.	GQRA Source (in order of preference)	Last Update
All	NGA	No guideline value available	-
Controlled waters risk - Surface water	PNEC	Predicted no effect concentration. Derived from the Metals Bioavaililtiy Assessment Tools (M-BAT) (UK TAG)	Nov. 2013 (Cu,Ni,Mn,Zn) March 2015 (Pb)
	AA-EQS	Environmental Quality Standards AA = Annual average (Environment Agency)	August 2021
	EA	Petroleum Hydrocarbons in Groundwater: Supplementary Guidance for Hydrogeological Risk Assessment (Environment Agency)	April 2009
	MAC-EQS	Environmental Quality Standards MAC = Maximum Allowable Concentration (Environment Agency)	August 2021

Controlled waters risk

Scenario	
Receptor	Surface water - Inland freshwater
Hydrometric area	English and Welsh freshwaters
Are bioavailability parameters known?	No

Contaminant	Guideline source	Guideline value (µg/l)	Max value (µg/l)	Location	Spring 1	Spring 1	Spring 1	Spring 2	Spring 3	Spring 3
				Depth (m)	0.00	0.00	0.00	0.00	0.00	0.00
				Type	EW	EW	EW	EW	EW	EW
				Date	30/01/23	22/02/23	14/03/23	30/01/23	30/01/23	22/02/23
Inorganics - Metals										
Arsenic	AA-EQS	50	3		0.53	0.61	0.79	3	0.94	0.57
Boron	AA-EQS	2000	61		35	57	23	34	41	56
Cadmium	AA-EQS	0.08	0.33		0.15	0.33	0.21	< 0.11	< 0.11	0.13
Chromium (total)	NGA	NGA	19		5.2	1.2	19	5.2	<LoD	<LoD
Chromium (III)	AA-EQS	4.7	19		5.2	1.2	19	5.2	< 0.50	< 0.50
Copper	AA-EQS	1	30		18	30	19	4	2.6	8.3
Lead	AA-EQS	1.2	1.5		< 0.50	0.64	1.5	1.3	< 0.50	0.52
Mercury	MAC-EQS	0.07	<LoD		< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Nickel	AA-EQS	4	4.6		3.4	4.6	4	3	1.2	2.8
Selenium	NGA	NGA	2.8		2.7	2.8	< 0.50	2.3	2	2.6
Vanadium	AA-EQS	20	2.3		1.2	< 0.50	0.71	2.3	1.1	< 0.50
Zinc	NGA	12.3	110		60	110	77	10	2.6	9.8
Inorganics - Miscellaneous										
pH	NGA	NGA	7.7		7.7	7.2	7.2	7.3	7.3	7.2
Cyanide - Total	NGA	NGA	<LoD		< 50	< 50	< 50	< 50	< 50	< 50
Cyanide - Free	AA-EQS	1	<LoD		< 50	< 50	< 50	< 50	< 50	< 50
Nitrate (as NO3)	NGA	NGA	13000		3700	2500	12000	< 500	< 500	1100
Sulphate	AA-EQS	400000	35000		13000	14000	9500	14000	26000	35000
Phosphate	NGA	NGA	<LoD		<20	<20	<20	<20	<20	<20
Organics - PAH & Phenol										
Naphthalene	AA-EQS	2	<LoD		< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Acenaphthylene	NGA	NGA	<LoD		< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Acenaphthene	NGA	NGA	<LoD		< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Fluorene	NGA	NGA	<LoD		< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Phenanthrene	NGA	NGA	<LoD		< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Anthracene	AA-EQS	0.1	<LoD		< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Fluoranthene	AA-EQS	0.0063	<LoD		< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Pyrene	NGA	NGA	<LoD		< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Benzo(a)anthracene	NGA	NGA	<LoD		< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Chrysene	NGA	NGA	<LoD		< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Benzo(b)fluoranthene	NGA	NGA	<LoD		< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Benzo(k)fluoranthene	NGA	NGA	<LoD		< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Benzo(a)pyrene	AA-EQS	0.00017	<LoD		< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Indeno(1,2,3-cd)pyrene	NGA	NGA	<LoD		< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Dibenz(a,h)anthracene	NGA	NGA	<LoD		< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Benzo(ghi)perylene	NGA	NGA	<LoD		< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
PAH (sum of 4)	NGA	NGA	<LoD		<LoD	<LoD	<LoD	<LoD	<LoD	<LoD
Phenol	AA-EQS	7.7	<LoD		< 30	< 30	< 30	< 30	< 30	< 30
Organics - SVOCs										
Phenol	AA-EQS	7.7	<LoD		< 30	< 30	< 30	< 30	< 30	< 30

Controlled waters risk

Scenario	
Receptor	Surface water - Inland freshwater
Hydrometric area	English and Welsh freshwaters
Are bioavailability parameters known?	No

Contaminant	Guideline source	Guideline value (µg/l)	Max value (µg/l)	Location	Spring 3	Spring 4	Spring 4
				Depth (m)	0.00	0.00	0.00
				Type	EW	EW	EW
				Date	14/03/23	22/02/23	14/03/23
Inorganics - Metals							
Arsenic	AA-EQS	50	3		0.34	0.45	0.38
Boron	AA-EQS	2000	61		31	61	28
Cadmium	AA-EQS	0.08	0.33		< 0.11	0.2	< 0.11
Chromium (total)	NGA	NGA	19		2.1	<LoD	5
Chromium (III)	AA-EQS	4.7	19		2.1	< 0.50	5
Copper	AA-EQS	1	30		7.6	3.6	3.3
Lead	AA-EQS	1.2	1.5		< 0.50	< 0.50	< 0.50
Mercury	MAC-EQS	0.07	<LoD		< 0.05	< 0.05	< 0.05
Nickel	AA-EQS	4	4.6		1.4	2.7	1.7
Selenium	NGA	NGA	2.8		< 0.50	2.6	< 0.50
Vanadium	AA-EQS	20	2.3		< 0.50	< 0.50	< 0.50
Zinc	NGA	12.3	110		9.4	25	16
Inorganics - Miscellaneous							
pH	NGA	NGA	7.7		7.3	6.9	7.3
Cyanide - Total	NGA	NGA	<LoD		< 50	< 50	< 50
Cyanide - Free	AA-EQS	1	<LoD		< 50	< 50	< 50
Nitrate (as NO3)	NGA	NGA	13000		13000	1100	7400
Sulphate	AA-EQS	400000	35000		18000	23000	11000
Phosphate	NGA	NGA	<LoD		<20	<20	<20
Organics - PAH & Phenol							
Naphthalene	AA-EQS	2	<LoD		< 0.10	< 0.10	< 0.10
Acenaphthylene	NGA	NGA	<LoD		< 0.10	< 0.10	< 0.10
Acenaphthene	NGA	NGA	<LoD		< 0.10	< 0.10	< 0.10
Fluorene	NGA	NGA	<LoD		< 0.10	< 0.10	< 0.10
Phenanthrene	NGA	NGA	<LoD		< 0.10	< 0.10	< 0.10
Anthracene	AA-EQS	0.1	<LoD		< 0.10	< 0.10	< 0.10
Fluoranthene	AA-EQS	0.0063	<LoD		< 0.10	< 0.10	< 0.10
Pyrene	NGA	NGA	<LoD		< 0.10	< 0.10	< 0.10
Benzo(a)anthracene	NGA	NGA	<LoD		< 0.10	< 0.10	< 0.10
Chrysene	NGA	NGA	<LoD		< 0.10	< 0.10	< 0.10
Benzo(b)fluoranthene	NGA	NGA	<LoD		< 0.10	< 0.10	< 0.10
Benzo(k)fluoranthene	NGA	NGA	<LoD	< 0.10	< 0.10	< 0.10	
Benzo(a)pyrene	AA-EQS	0.00017	<LoD	< 0.10	< 0.10	< 0.10	
Indeno(1,2,3-cd)pyrene	NGA	NGA	<LoD	< 0.10	< 0.10	< 0.10	
Dibenz(a,h)anthracene	NGA	NGA	<LoD	< 0.10	< 0.10	< 0.10	
Benzo(ghi)perylene	NGA	NGA	<LoD	< 0.10	< 0.10	< 0.10	
PAH (sum of 4)	NGA	NGA	<LoD	<LoD	<LoD	<LoD	
Phenol	AA-EQS	7.7	<LoD	< 30	< 30	< 30	
Organics - SVOCs							
Phenol	AA-EQS	7.7	<LoD	< 30	< 30	< 30	

Project Reference

STV5936

Site Name

Cowm Top, Rochdale

Client

Barratt Homes Manchester

Run by

TT

Date

10-Dec-24

Scenario details

Decision Support Tool for CAR2012 Work Categories

Stage 1

Hazard Factors

Score

Select ACM type (run model for each type to generate 'Worst Case' output)

Extent of degradation of ACMs at outset of work

Friability and degree of bonding by matrix (ACM matrix, not ground materials)

Distribution of Visible Asbestos Across Affected Area

Amount of asbestos fibre in selected ACM/fibre type as % of host material

Free dispersed fibres/fibre bundles

2

Disaggregated (dominated by loose fibrous material; extreme degradation in ACM and/or free asbestos fibres/fibre bundles)

4

Friable ACM or ACM with fibres not linked in any matrix (free dispersed fibres/fibre bundles)

4

No visible ACMs/fibre bundles

0

Large quantities - >0.1 %wt/wt

4

Sub-total

14

Note: the asbestos licensing regime is unaffected by the type of asbestos fibre present in ACMs

Hazard ranking

Medium

No warranty, expressed or implied, or reliance, is provided in relation to the use of this tool.

It is contingent on users to satisfy themselves that the output from the tool is relevant and appropriate to the assessment being made.

Stage 2

Exposure Factors

Score

Anticipated airborne fibre concentration - Control Limit or SALI?
 Anticipated duration of exposure to asbestos
 Activity type and effect on deterioration of ACMs during work
 Best description of primary host material matrix (soil/made ground)
 Respirable fibre index for ACM - RIVM report 711701034 (2003)

<0.01 fibres/ml	1
> 2 hours in a 7 day period and Up to 10 hours in a day (e.g. full time occupational exposure)	4
Sampling, manual or mechanical (no or minimal deterioration expected)	0
Made Ground - Recycled Aggregate, Track Ballast	4
High	4

Sub-total

13

Exposure ranking

Medium

Combined hazard and exposure ranking

27

Medium

Stage 3

Risk Assessment Outputs

Probable Licensing Status	Non-Licensed Work
RPE*	EN140 with P3 filter half mask
Dust Suppression**	Localised mechanical dust suppression
Hygiene/Decontamination***	Localised and enhanced personal decontamination facilities

*Where RPE has to be worn continuously for long periods (e.g. more than 1-hour), then powered RPE may be necessary.

**Reduction in control measures possible if natural mitigation factors are present (e.g. raining, wet ground)

***Guide only; suitability of selected personal hygiene measures may be reviewed on a site/contamination-specific basis