

Note: The removal of the Made Ground during excavation of the basement, dewatering and treatment will aid the betterment of the groundwater at the site. The risk to Controlled Waters is considered to be low, therefore the capping import specification is protective of human health only.

Appendix C. Maximum Permissible Concentrations for Imported Capping Layer Soils

Determinant		Residential without Plant Uptake Human Health Generic Assessment Criteria (mg/kg)	Suggested Capping Import Maximum permissible concentration ¹ (mg/kg) ²	Selection of Import Criteria ¹¹
		6% SOM	6% SOM	
Arsenic		30	30 ⁴	GAC ⁴ to be used
Beryllium		1.7	1.7 ⁴	GAC ⁴ to be used
Boron (water soluble)		10,800	5 ⁵	More stringent lower limit for potential phytotoxic effect to be used
Cadmium		85.3	85.3 ⁴	GAC ⁴ to be used
Chromium (III)		887	887 ⁴	GAC ⁴ to be used
Chromium (VI)		5.75	5.75 ⁴	GAC ⁴ to be used
Lead		310	310 ⁴	C4SL ¹⁰ to be used
Mercury		75.3	75.3 ⁴	GAC ⁴ to be used
Selenium		596	596 ⁴	GAC ⁴ to be used
Copper		7,130	135 ³	More stringent specification for Topsoil value to be used
Nickel		182	75 ³	More stringent specification for Topsoil value to be used
Zinc		40,400	200 ³	More stringent specification for Topsoil value to be used
Vanadium		651	651 ⁴	GAC ⁴ to be used
Benzo(a)pyrene		3.2	3.2 ⁴	GAC ⁴ to be used
Benzo(a)anthracene		15	15 ⁴	GAC ⁴ to be used
Benzo(b)fluoranthene		4.06	4.06 ⁴	GAC ⁴ to be used
Benzo(k)fluoranthene		107	107 ⁴	GAC ⁴ to be used
Chrysene		31.9	31.9 ⁴	GAC ⁴ to be used
Dibenzo(a,h)anthracene		0.34	0.34 ⁴	GAC ⁴ to be used
Indeno(1,2,3-cd)pyrene		46.2	46.2 ⁴	GAC ⁴ to be used
Naphthalene		12.4	12.4 ⁴	GAC ⁴ to be used
TPH aliphatic ⁶	EC5-6	107	107 ⁴	GAC ⁴ to be used
	EC>6-8	328	328 ⁴	GAC ⁴ to be used
	EC>8-10	87.7	87.7 ⁴	GAC ⁴ to be used
	EC>10-12	453	453 ⁴	GAC ⁴ to be used
	EC>12-16	2,970	750 ⁷	More stringent assessment criteria ⁷ to be used
TPH aromatic ⁶	EC>16-35	12,900	750 ⁷	More stringent assessment criteria ⁷ to be used
	EC5-7	1.42	1.42 ⁴	GAC ⁴ to be used
	EC>7-8	3,860	750 ⁷	More stringent assessment criteria ⁷ to be used
	EC>8-10	144	144 ⁴	GAC ⁴ to be used
	EC>10-12	720	720 ⁴	GAC ⁴ to be used
	EC>12-16	2,060	750 ⁷	More stringent assessment criteria ⁷ to be used
	EC>16-21	1,940	750 ⁷	More stringent assessment criteria ⁷ to be used
	EC>21-35	1,940	750 ⁷	More stringent assessment criteria ⁷ to be used
Sum of TPH aliphatic & aromatic C5-C10		4,528	< 750 ⁷	More stringent assessment criteria ⁷ to be used
Sum of TPH aliphatic & aromatic C10+		22,983	< 750 ⁷	
pH		5-10	5-10	
Monohydric Phenols		2,310 ⁴	750 ⁷	GAC ⁴ to be used
Free Cyanide		34 ⁴	34 ⁴	GAC ¹⁰ to be used
Asbestos			No detectable fibres ⁸	

Notes:

1. These maximum permissible concentrations (MPCs) are import criteria only and are not necessarily appropriate for human health risk assessment.
2. In mg/kg dry soil except pH and asbestos.
3. British Standard BS3882:2015 Specification for Topsoil and requirements for use. Table 1. Values taken for pH 6-7.

CGL – Capping Layer Soil Import Specification

4. Generic Assessment Criteria generated 'in-house' based on CLEA model Version 1.071.
5. Nable, Banuelos and Paul. (1997). *Boron Toxicity*. Plant and Soil, **Vol. 193**, pp1 81-198. Lower limit for potential phytotoxic effect
6. Speciated TPH values must not exceed individual GAC. The listed GAC consider risks to human health, but it is possible that some of the values for heavy-end TPH could pose a risk to controlled waters. As such, a lower import criterion for these fractions is recommended.
7. Assessment criteria of 750mg/kg is noted to be more stringent than Site Specific Assessment Criteria/GAC using CLEA and should the material be excavated in the future, should prevent it being classified as hazardous waste.
8. Laboratory screen by microscopy may be required subject to source of material.
9. Published C4SL for lead (DEFRA, 2014)
10. GAC for free cyanide derived by Atkins based on acute exposure for a 0-6 year old child
11. Requirement for British Standard for Topsoil and Subsoil, or landscaping specification to be met. All other material to be imported as a product.