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**Importation Protocol and Construction Controls**

**January 2020**

*Report for:*  
Knowl Hill Limited  
1 & 2 Studley Court Mews Studley Court,  
Guildford Road,  
Chobham,  
Woking,  
Surrey,  
GU24 8EB

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**Document Reference:** 183125/IP  
**Date of Issue:** January 2020  
**Revision:** -

**Document revision history**

Revision	Date	Author	Purpose	Summary of Changes

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## 1. INTRODUCTION AND SCOPE

- 1.1 This report has been prepared by AA Environmental Limited (AAe) for the import of engineering fill at Broadwater Park Golf Club, by Knowl Hill Limited (hereafter referred to as the Operator). In total 342,578 tonnes of imported inert engineered fill is required to cap and re-profile Broadwater Golf Club to the course to a playable condition. The site location and permit boundary plan is shown in drawing 183125/D/001.
- 1.2 The importation procedure set out in this document details the processes through which the importation of material to the site will be controlled, ensuring that the environmental and physical properties of the material are deemed suitable and in compliance with the site requirements.
- 1.3 Importation of material will only progress once an area of the site has been prepared in line with the construction controls, as set out in this plan.

## 2. IMPORTATION CONTROLS

- 2.1 The importation protocol details the processes through which the material brought to the site will be controlled. This process will ensure that the environmental and physical properties of the material are deemed suitable and in compliance with the project requirements.
- 2.2 Importation will only progress once an area of the site has been prepared in line with section 3 of this plan.

### Material Acceptance Control

- 2.3 It is proposed that fill materials will be imported to the site for the approved land raise works. The material will be obtained from a variety of local sources. The material will meet general fill engineering specifications in line with Series 600 of the Specification for Highway Works (Table 6/1 and 6/2).
- 2.4 To determine a material's acceptability for use at the site, the Operator will apply this protocol ensuring the properties are fully assessed, and that importers of the material are suitably licensed.

### Waste Carriers Licence

- 2.5 A Waste Carriers Licence will need to be provided to the Operator prior to importation of any material by a third party. The certificate will be checked to ensure that it is valid. If there is any doubt as to the certificate's validity, the Operator will restrict access to the site whilst clarification is provided regarding validity and status.

### Prior Assessment of Material Characteristics

- 2.6 Due to the volume of material required it is not possible to source from one site. It is proposed to import material predominantly from demolition and construction sites in surrounding Guildford and Godalming area. Where significant contamination may have occurred, material will only be accepted following receipt of the necessary contamination reports, sampling methodologies and analysis. All wastes will undergo classification in accordance with WM3 prior to its acceptance at the site or the Operator will carry out suitable checks to ensure producers have classified their waste correctly.
- 2.7 Prior to the importation of any material, the Operator will evaluate the source of the material to be accepted under this protocol. The Operator will employ a Waste Acceptance Form (WAF) to document the evaluation process for each material stream to be deposited at the site, for example, the tracking process. The WAF will identify the material type and its source. If the material is not composed of natural soil, stone or rock, the WAF will determine its environmental characteristics. As appropriate, this will include chemical solid test results on metals, hydrocarbons and non-metals, as well as the leachate assessment detailed in the Waste Acceptance Criteria (WAC). The WAF, along with any supporting information, will be retained at the Operator's office. Each WAF will have

a unique reference. A schematic of the material acceptance procedure is attached in the Appendix A. Details required prior to acceptance include the following:

- Source details (location, volume, previous land uses); and
- Material characteristics (chemical test results where available, texture and colour, process producing the waste).

2.8 The material types to be accepted at the site are presented in the Permit. The use of the materials must comply with the conditions in the Permit table.

#### Natural and Construction Inert Materials

2.9 Where a material can be proven as fully complying with the Landfill Directive definition of inert, including brick, clay, concrete, tiles and ceramics, they can be imported to the site without chemical testing. The material stream must be inspected prior to import, to determine there is no potential cross contamination. Suitable material streams that can be imported without chemical analysis are presented in Table 1.

**Table 1. Inert Materials Acceptable at the Site**

Fill Material	Description	European Waste Catalogue (EWC) Code
	Concrete	17 01 01
	Bricks	17 01 02
	Tiles and ceramics	17 01 03
	Mixtures of the concrete, bricks, tiles and ceramics	17 01 07
	Soil and stones (natural arisings confirmed by inspection, not including peat and top soil and not from contaminated sites)	17 05 04 20 02 02

2.10 Details of the inspection will be recorded in the WAF for each material stream. The management of the import is detailed in Section 2.16.

#### Potentially Suitable Materials

2.11 Soils from brownfield land or industrial processes (shown below in Table 2) will not be accepted at the site unless they can be definitively proven to be inert and accordance with the standards set out in Appendix B. The following checks and tests will be undertaken prior to the material being imported:

- The Operator will visually inspect the waste, to ensure that there are no unacceptable detritus within the materials matrix or suspicious odours. In the event that there is any doubt the material will not be determined as acceptable;
- The Producer or Operator will undertake sufficient sampling and chemical analysis at an accredited laboratory to determine suitability. Testing must follow good industry practice and the minimum frequency must comply with the Table 4.1 of the EA Guidance<sup>1</sup> and as presented below<sup>2</sup>;
- Where a material is below potentially contaminated material there must be a clear policy of segregation demonstrated; and
- In the event that detritus is presented but considered to be acceptable, definitive quantification must be undertaken and the amount of waste proven to be less than 1 % weight by weight<sup>3</sup>.

<sup>1</sup> Environment Agency 'Waste Sampling and Testing for Disposal to Landfill'

<sup>2</sup> In the event the producer provides insufficient data, but it is compliant, the Operator will undertake the residual testing during initial importation.

<sup>3</sup> An acceptable standard for use in capping below highways. Series 800 of the Highways Specification

**Table 2. Potentially Acceptable Materials**

Potentially Acceptable Material	Description	European Waste Catalogue (EWC) Code
	Soil and stones from Brownfield land	17 05 04 or 20 02 02
	Wastes from mineral non-metalliferous excavation	01 01 02
	Waste gravel and crushed rocks	01 04 08
	Waste sand and clays	01 04 09
	Solids from physical treatment (limited to soil washing fines only)	19 02 06
	Minerals from waste facilities	19 12 09
	Solid from soil remediation (limited to soil washing fines only)	19 13 02

- 2.12 The sample analysis provided must show the material complies with both human health and controlled water criteria. The testing frequency completed must include all parameters anticipated from a desktop review of the material and must fully characterise the waste in line with Level 1 and 2 EA Guidance 'Waste Sampling and Testing for Disposal to Landfill'. It should be noted that no soils with the potential for PCB, VOC (other than BTEX) will be accepted at the site. The required testing frequency by the Producer is presented in the extract from the EA guidance, 'Table 4.1'.

**Table 4.1 Laboratory sample testing frequency for Level 1, 2 and 3 testing where the waste can be clearly classified as a single waste type.**

	Population (tonnes)	Homogeneous (number of samples)	Heterogeneous and new wastes (number of samples)
Level 1 Characterisation for Descriptive, Total Concentration & Leaching Tests	<100 t	2	5
	< 500 t	3	8
	<1000 t	5	14
	10,000 t	11	22
	plus per additional 10,000 t	+5 (pro rata)	+10 (pro rata)

- 2.13 The representative analysis will be assessed against the requirements of Appendix B. The soils will be deemed acceptable if both the the visual inspection and the chemical assessment are passed. A WAF will be completed documenting the acceptable nature of the material.

#### Prohibited Material

- 2.14 The following wastes are not permitted at the site:

- Hazardous wastes;
- Wastes in liquid form;
- Asbestos fragment containing material; and
- Wastes consisting solely or mainly of powder or loose fibres.

#### Site Controls of Imported Material

- 2.15 Once waste/material has been accepted for importation, it will be subjected to further checks on the site, including:

- The WAF form will be issued to site;
- Every load will be inspected at the gatehouse to ensure the material arriving is acceptable. The operator will inspect the imported materials at the point of placement. Records of the time/date and materials being inspected will be maintained in a site diary;
- Additional visual inspections will be made on an adhoc basis during placement and formation;
- 1 test per 1000 cu m of imported potentially acceptable materials (as defined in Table 2) will be screened against the standards in Appendix B. Note, WAC testing will be undertaken to determine risk to groundwater; and

- Any non-conforming material will be segregated and placed in quarantine.
- 2.16 If there are any concerns regarding the material (including odour, visual discolouration or sheen, potential presence of asbestos) the importation will cease immediately and only recommence once any discrepancies have been fully resolved. The material will be transferred to the quarantine area as detailed in the Operational Plan. Any materials which are suspected to be contaminated or appear to contain unacceptable materials (e.g. asbestos fragments or deleterious matter including plastics) will be placed in the quarantine area. If a material cannot be readily moved, the affected area will be fenced off to avoid disturbance. The Producer (person or organisation) of the material will be contacted with a view to removal and off-site disposal, with further soil testing undertaken as necessary.
- 2.17 The documentation (completed WAF and Certificates of Analysis, as required) will be retained by the Operator for all materials imported onto the site, for at least 2 years. The Operator will record all sources of materials imported onto the site and calculate the total imported volume on a weekly basis. All records will be made available to the Environment Agency for inspection, as required.

### 3. CONSTRUCTION CONTROLS

#### Site preparation

- 3.1 The vegetation in all areas of proposed construction will be stripped in a controlled fashion. The stripping of existing and grasses will be limited to the phase being worked only. This should minimise potential for run-off and silt.
- 3.2 Prior to each phase of works, the top 250 mm of topsoil and subsoil on the site will be stripped, segregated and stockpiled prior to the commencement of any cut and fill operations, or the importation of any soil materials. There will be no mixing of topsoil with sub soils, underlying strata or hardcore. The height of the topsoil stockpile shall not exceed 3 m high. The stockpile will be loosely compacted and sealed on the sides. The stockpiles will be clearly demarcated to ensure they are not trafficked or damaged during the works.

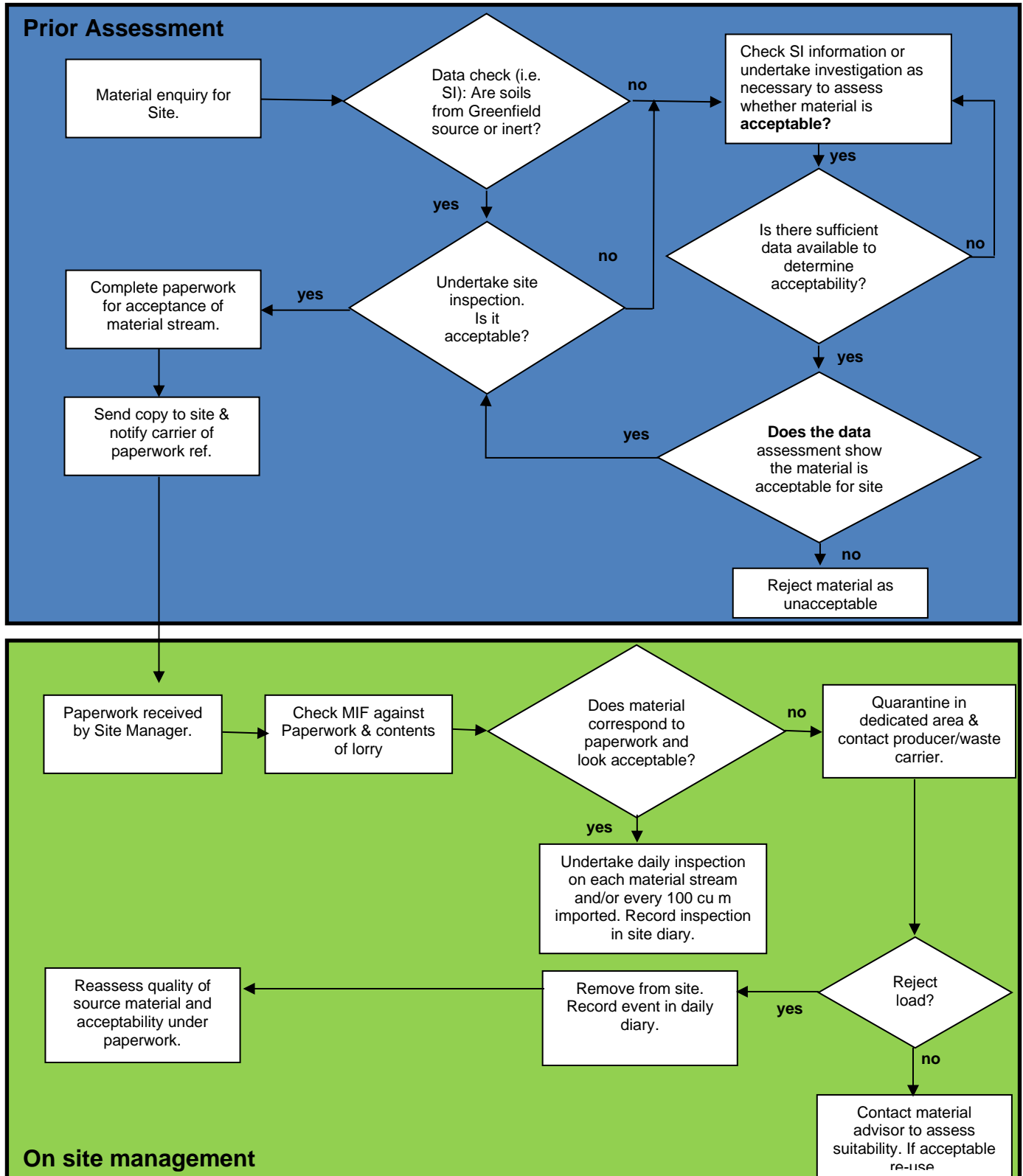
#### Placement of general fill

- 3.3 All imported waste/material is subject to the checks and inspection set out in section 2. Whilst the placed fill material will not be subject to intensive loading, it must be suitably compacted to enable the passage of operational plant and users of the golf course. A 5% Californian Bearing Ratio will be used to demonstrate that suitable compaction has been achieved.
- 3.4 In each working area, the acceptable fill will be placed and compacted by dozer in a maximum of 500 mm layers. The material will be progressively worked until it is within 250 mm of the finished profile level which will be recorded by the project surveyor.
- 3.5 The fill material will be tested by Dynamic Cone Penetration or an equivalent to demonstrate that the compacted fill has achieved a Californian Bearing Ratio of 5%. In the event the material fails to comply it will be further compacted.
- 3.6 The final layer will be ripped by the dozer or by the excavate to loosen the fill material prior to reinstatement of the sub and topsoil, where required.

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**Drawings**

## Appendix A Waste Acceptance Procedure





## Appendix B Derived Assessment Criteria

- A.1 *Controlled water assessment:* All potentially contaminated materials, as presented in Table 2 of main report, should be accompanied by representative solid test results for human health and WAC analysis. The WAC acceptable criteria is set out in Table A1. If the pre-acceptance review identifies a potential for additional parameters other than that set out in the WAC table, then additional leaching tests will be completed. It should be recognised that leachate tests are not acceptable for compounds with a volatile component as the testing process loses the compound to volatilisation.

**Table A1. Waste Acceptable Criteria**

Determinant	WAC Leachate Criteria (LS=10l/kg) (mg/kg)	Solid results (mg/kg)	Notes
Arsenic (total)	0.5		
Barium (total)	20		
Cadmium (total)	0.04		
Chromium (total)	0.5		
Copper (total)	2.0		
Mercury (inorganic)	0.01		
Nickel (total)	0.4		
Lead (total)	0.5		
Molybdenum (total)	0.5		
Antimony (total)	0.06		
Selenium (total)	0.1		
Zinc (total)	4.0		
Chloride (total)	800		
Fluoride (total)	10		
Sulphate (as SO <sub>4</sub> ) <sup>*</sup>	1000		
Phenol (total)	1.0		
TDS	4000		
DOC	500		
BTEX (TPH C5-C10)		6	BTEX concentration must not exceed the soils total value
TPH Speciated (Aliphatic / Aromatic)		500	Speciated TPH concentrations must not exceed soils total value
PCB		Not permitted	
PAH Speciated 16		100	Speciated 16 PAH concentration must not exceed soils total value
VOC / SVOC / Pesticides / Herbicides	To be considered and extended as appropriate based on knowledge of the source material. If found to be present (above the limit of detection), a quantitative risk assessment should be carried out to determine thresholds for identified contaminants which are protective of Controlled Waters. No import permitted until a revised standard has been agreed with the Environment Agency.		
1. The values of TDS can be used instead of Cl or SO <sub>4</sub> . 2. TOC is not used as not considered applicable to land use.			

- A.2. In certain instances, where assessments have been undertaken for land contamination purposes and not waste disposal there is no Waste Acceptance Criteria testing. In this event, the material will only be accepted if it is supported by leaching test<sup>4</sup> on those parameters set out in Table A2: typically these are the Environmental Quality Standards. Where unavailable, the UK Drinking Water

<sup>4</sup> Frequently included in soil testing during contaminated land investigation to enable the risk to controlled waters to be determined.

Standards have been used. Acceptability for the organics (BTEX, PCB, Mineral oils and PAH) will be determined as presented in Table A1.

- A.3. The Environment Agency Document 'Waste Sampling and Testing for Disposal To Landfill' (EBPRI 11507B) has been reviewed and consulted prior to the formation of the Leachate Assessment Criteria list presented in Table A2. The Determinants listed below are based on the suggested 'Total and Leachable concentration for basic characterisation' (Table 5.2 – EBPRI 11507B Report) and are considered appropriate for the proposed importation material which is to be sourced from greenfield sites and waste streams from construction and demolition contracts.

**Table A2. Leaching Assessment Criteria (all units are in µg/l unless stated)**

Determinant	Leachate Criteria NRA leachate test	Notes (EQS freshwater unless noted)
Ammonia (NH <sub>3</sub> -N)	15	
Arsenic (total)	50	UK Drinking Water Standard
Cadmium (total)	5	UK Drinking Water Standard
Chromium (III)	4.7	EQS-AA Annual Average Standard
Chromium (IV)	3.4	EQS-AA Annual Average Standard
Copper (total)	1	EQS Annual Average Standard (Bioavailable)
Manganese	50	UK Drinking Water Standard
Mercury (inorganic)	0.07	EQS-MAC Maximum Allowable Concentration
Nickel (total)	4	EQS Annual Average Standard (Bioavailable)
Lead (total)	1.2	EQS Annual Average Standard (Bioavailable)
Antimony (total)	5	UK Drinking Water Standard
Selenium (total)	10	UK Drinking Water Standard
Zinc (total)	12.3*	EQS Annual Average Standard (Bioavailable) – *Zinc 10.9 bioavailability plus background dissolved concentration (1.4 µg/l) – WFD UKTAG
Chloride (total)	250000	UK Drinking Water Standard
Fluoride (total)	1500	UK Drinking Water Standard
Sulphate (as SO <sub>4</sub> )	400 mg/l	EQS-AA Annual Average Standard
Phenol	7.7	EQS-AA Annual Average Standard
Cyanide	50	UK Drinking Water Standard

- A.4 Dependent upon the waste type, there is a residual risk of other contaminants being present in addition to those with defined standards, as set out above. In this event no import will occur until appropriate standards have been agreed with the Environment Agency.
- A.5 Human health assessment: All soils within the top 1 m of the formation, must meet the human health limits as defined in Table A3; as well as the protective standards for Controlled Waters. The standards are based upon the public open space residential guidance values available from the Environment Agency, DEFRA Level 4 Screening Values and LQM/CIEH Generic Assessment Criteria. Cyanide level has been set at the Atrisk residential cyanide limit.

**Table A3. Human Health Criteria**

Parameter	Human Health limit (units mg/kg (source))
Arsenic	79 (DEFRA Level 4 screening value)
Cadmium	120 (LQM/CIEH)
Cyanide (total)	34 (Atrisk Soils – Residential Threshold)
Chromium III	1,500 (LQM/CIEH)
Chromium VI	7.7 (LQM/CIEH)
Copper	12,000 (LQM/CIEH)
Lead	630 (DEFRA Level 4 screening value)
Inorganic Mercury	120 (LQM/CIEH)
Nickel	230 (LQM/CIEH)

Parameter	Human Health limit (units mg/kg (source))
Selenium	1,100 (LQM/CIEH)
Zinc	81,000 (LQM/CIEH)
Aliphatic (5-6)	570,000 (LQM/CIEH)
Aliphatic (6-8)	600,000 (LQM/CIEH)
Aliphatic (8-10)	13,000 (LQM/CIEH)
Aliphatic (10-12)	13,000 (LQM/CIEH)
Aliphatic (12-16)	13,000 (LQM/CIEH)
Aliphatic (16-35)	250,000 (LQM/CIEH)
Aliphatic (35-44)	250,000 (LQM/CIEH)
Aromatic (5-7 benzene)#	78(56,000) (LQM/CIEH)
Aromatic (7-8 toluene)	56,000 (LQM/CIEH)
Aromatic (8-10)	5,000 (LQM/CIEH)
Aromatic (10-12)	5,000 (LQM/CIEH)
Aromatic (12-16)	5,100 (LQM/CIEH)
Aromatic (16-21)	3,800 (LQM/CIEH)
Aromatic (21-35)	3,800 (LQM/CIEH)
Aromatic (35-44)	3,800 (LQM/CIEH)
Total phenols	760 (LQM/CIEH)
BTEX	6 (WAC Criteria)
Mineral Oil	500 (WAC Criteria)
PCB	1 (WAC Criteria)
PAH (total)	100 (WAC Criteria)
Naphthalene	4,900 (LQM/CIEH)
Acenaphthene	15,000 (LQM/CIEH)
Acenaphthylene	15,000 (LQM/CIEH)
Fluorene	9,900 (LQM/CIEH)
Anthracene	74,000 (LQM/CIEH)
Fluoranthene	3,100 (LQM/CIEH)
Phenanthrene	3,100 (LQM/CIEH)
Pyrene	7,400(LQM/CIEH)
Benzo(a)anthracene	29 (LQM/CIEH)
Chrysene	57 (LQM/CIEH)
Benzo(b)fluoranthene	7.1 (LQM/CIEH)
Benzo(k)fluoranthene	190 (LQM/CIEH)
Benzo(ghi)perylene	640 (LQM/CIEH)
Benzo(a)pyrene	5.7 (LQM/CIEH)
Dibenzo(ah)anthracene	0.57 (LQM/CIEH)
Indeno(123-cd)pyrene	82 (LQM/CIEH)
Asbestos	< 0.001% w/w (below limit of detection at laboratory)
<p><b>Notes</b>  Speciated PAH, TPH and Phenols are all based on 1% SOM.  TPH Aliphatic Aromatic &gt;C10-C44 total is not permitted to exceed 500 mg/kg for the protection of the water environment.  TPH &gt;C5-C10 Aliphatic Aromatic total is not permitted to exceed 6 mg/kg for the protection of the water environment.  PAH total is not to exceed 100 mg/kg total for the protection of the water environment.  PAH Benzo(a)anthracene is not permitted to be in excess of 25 mg/kg as this exceeds the waste hazardous threshold.</p>	