

Importation Protocol and Construction Controls

July 2024

Report for:
GRS Stone Supplies Ltd
Durnford Quarry
Longwood Lane
Bristol
BS41 9DW

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1. INTRODUCTION AND SCOPE

- 1.1 This Importation Protocol has been prepared by AA Environmental Limited (AAe) in support of the inert landfill permit for the restoration of land near Lower Hare Farm by GRS Stone Supplies Limited (hereafter referred to as the Operator). In total circa 700,000 tonnes of inert engineered fill, engineering GSL fill, and restoration soils is required to restore the site. Following restoration, the land will be returned to agricultural land use. The engineered fill is proposed to come from imported sources as well as re-use of acceptable materials on-site from the enabling works.
- 1.2 The importation protocol 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 are compliant with the standards outlined in the Hydrogeological Risk Assessment (July 2024).

- 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 restoration works. The material will be obtained from a variety of local sources as well as re-use of site won materials. 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 Devon 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. Natural subsoils (17 05 04 and 20 02 02) will be from natural, uncontaminated soil sources. If the material is from a site with Made Ground or suspected with contamination present, it will require testing to demonstrate acceptability. 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
	Uncontaminated Soil and stones (excluding peat and topsoil)	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 2.15.

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, uncontaminated and in accordance with the standards set out in Appendix B, C and D. 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 is 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 Level 1 characterisation of the EA Guidance¹ and as presented below²;
- 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 weight³.

¹ Environment Agency 'Dispose of waste to landfill'

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

³ 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 (excluding peat and topsoil)	17 05 04 or 20 02 02

- 2.12 The sample analysis provided must show the material complies with both human health and controlled water criteria (either Table A1; or in absence of this testing, Table A2 leachate criteria). The testing frequency completed must include all parameters anticipated from a desktop review of the material and must fully characterise the waste using the principles set out in Level 1 and 2 EA Guidance 'Dispose of Waste to Landfill⁴'. It should be noted that no soils with the potential for significant 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.

Amount of waste (tonnes)	Homogeneous waste (number of samples)	Heterogeneous and new waste (number of samples)
Less than 100 t	2	5
100 to 500 t	3	8
500 to 1,000 t	5	14
1,000 to 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 to D (depending on activity type). The soils will be deemed acceptable if both the visual inspection and the chemical assessment are passed. A WAF will be completed documenting the acceptable nature of the material.
- 2.14 All imported or re-used materials must also comply to the derived soil thresholds for the protection of groundwater and environment, as set out in Appendix B to D.
- 2.15 Level 3 verification testing by the Operator for the waste streams listed above, whether waste was imported or re-used, will be tested in accordance with Appendix E.
- 2.16 Waste to be placed in the top 1.25 m of the engineered formation will be required to meet the human health standards for Allotment, as set out in Table D2 in Appendix D. This is in addition to the waste acceptance criteria and thresholds for groundwater protection.

Prohibited Material

- 2.17 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

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

⁴ <https://www.gov.uk/guidance/dispose-of-waste-to-landfill>

- 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 5,000 m³ of imported material will be screened against the standards in Appendix B to D (depending on material type). Note, Table A1 or Table A2 leachate testing will be undertaken to determine risk to groundwater; and
 - Any non-conforming material will be segregated and placed in quarantine.
- 2.19 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.
- 2.20 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.
- 2.21 Certain waste types can only be used for certain activities as per Table 3 below. To note, temporary haul road waste materials will be removed once non-operational and will not form part of the final landform.

Table 3. EWC codes for each activity

Activity	Description	European Waste Catalogue (EWC) Code
Inert landfilling	Soil and stones (excluding peat and topsoil)	17 05 04 or 20 02 02
Temporary haul road construction	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 (excluding peat and topsoil)	17 05 04 or 20 02 02
Geological Barrier	Soil and stones (excluding peat and topsoil)	17 05 04 or 20 02 02
Restoration Soils	Soil and stones	17 05 04 or 20 02 02

3. CONSTRUCTION CONTROLS

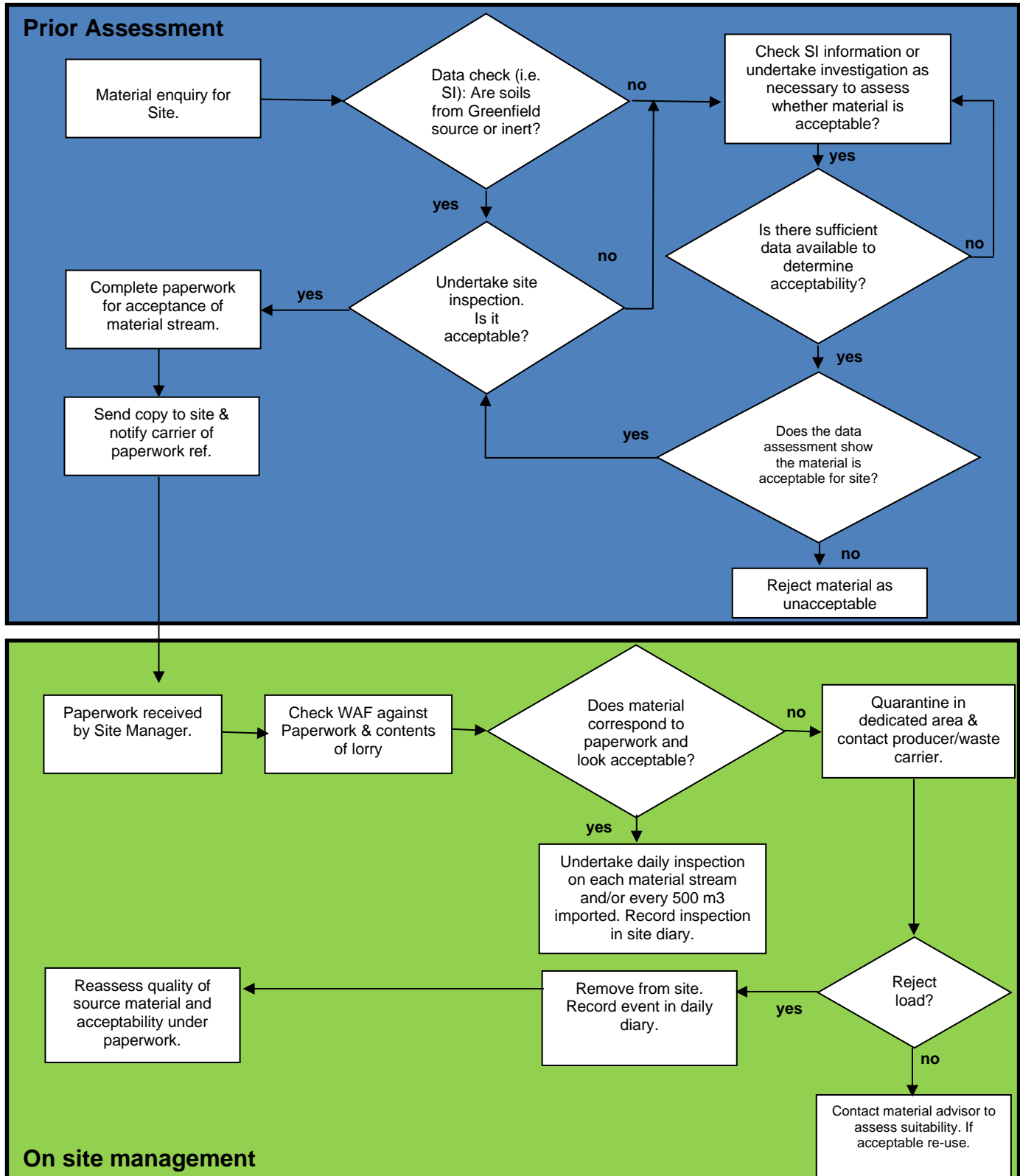
Site preparation

- 3.1 Prior to each phase of the works, vegetation will be stripped in a controlled fashion. The stripping of existing and grasses will be limited to the quarry phase being worked only. This should minimise potential for run-off and silt.
- 3.2 Prior to each phase of works, topsoil and subsoil on the site will be stripped, segregated, and stockpiled in bunds adjacent to the site works prior to the commencement. There will be no mixing of topsoil with sub soils, underlying strata or hardcore. 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/ re-used material is subject to the checks and inspection set out in section 2.
- 3.4 Acceptable fill will be directly placed, inspected, and then compacted by dozer in a maximum of 500 mm layers. The material will be progressively worked until it is within 1 m of the finished profile level which will be recorded by the project surveyor.
- 3.5 The final layer will be ripped by the dozer or by the excavator to loosen the fill material prior to reinstatement of the sub and topsoil, where required.

Appendix A Waste Acceptance Procedure



Appendix B

Derived Acceptance Criteria for Inert Waste, Temporary haul road / lay down materials and geological barrier

- B.1 *Controlled water assessment:* All materials, as presented in Table 2 of main report, should be accompanied by representative solid and leachate test results for WM3 and leachate analysis. The acceptable criteria is set out in Table B1. If the pre-acceptance review identifies a potential for additional parameters other than that set out in the 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 B1. Derived 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		
Selenium (total)	0.1		
Zinc (total)	4.0		
Chloride (total)	800		See Notes
Fluoride (total)	10		
Sulphate (as SO4)*	1000		See Notes
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 SO4.			
2. If the waste does not meet the values for sulphate, it may still be considered as complying with the acceptance criteria if the leaching does not exceed either of the following values: 1,500 mg/l as C0 at L/S = 0,1 l/kg; and 6,000 mg/kg at L/S = 10 l/kg.			
3. DOC will be used instead of TOC. TOC is not used as not considered applicable to land use.			

- B.2 There is no requirement for human health limits as this material will not be within the top 1.25 m. In the event there are internal haul roads at landform surface, the haul road and lay down areas will conform to Appendix D restoration soils criteria.

- B.3 The geological barrier will also confirm to the engineering requirements set out in the CQA Strategy Plan. It is noted that the geological barrier material must have a pollution potential less than, or equal to, the natural quality of the surrounding geology.

Appendix C

Derived Acceptance Criteria for geological barrier for infilling of the temporary water lagoon in Phase 3

- C.1 In the event site derived subsoils cannot be re-used to infill the lagoons, there will be the importation of materials for this. The imported materials will be in accordance with the importation criteria in Appendix C.
- C.2 All imported materials, as presented in Table 1 and 2 of main report, should be accompanied by representative solid and leachate test results for WAC analysis. The material must adhere to WM3 solids assessment, inert solids criteria, and WAC acceptable criteria is set out in Table C1. Table C1 thresholds are based on baseline subsoil maximum leachate values. The baseline data is shown in the ESSD.

Table C1. Derived Acceptable Criteria

Determinant	WAC Leachate Criteria (LS=10l/kg) (mg/kg)	Notes
Arsenic (total)	0.012	Maximum subsoil leachate value
Barium (total)	0.05	Maximum subsoil leachate value
Cadmium (total)	0.001	Maximum subsoil leachate value
Chromium (total)	0.005	Maximum subsoil leachate value
Copper (total)	0.021	Maximum subsoil leachate value
Mercury (inorganic)	0.001	Maximum subsoil leachate value
Nickel (total)	0.005	Maximum subsoil leachate value
Lead (total)	0.007	Maximum subsoil leachate value
Selenium (total)	0.005	Maximum subsoil leachate value
Zinc (total)	0.04	Maximum subsoil leachate value
Chloride (total)	42	Maximum subsoil leachate value
Fluoride (total)	0.54	Maximum subsoil leachate value
Sulphate (as SO ₄)*	110	Maximum subsoil leachate value
Phenol (total)	0.3	Maximum subsoil leachate value
TDS	520	Maximum subsoil leachate value
DOC	190	Maximum subsoil leachate value
1. The values of TDS can be used instead of Cl or SO ₄ . 2. If the waste does not meet the values for sulphate, it may still be considered as complying with the acceptance criteria if the leaching does not exceed either of the following values: 1,500 mg/l as C0 at L/S = 0,1 l/kg; and 6,000 mg/kg at L/S = 10 l/kg. 3. DOC will be used instead of TOC. TOC is not used as not considered applicable to land use.		

- C.3 There is no requirement for human health limits as this material will not be within the top 1.25 m.
- C.4 The geological barrier will also confirm to the engineering requirements set out in the CQA Strategy Plan. It is noted that the geological barrier material must have a pollution potential less than, or equal to, the natural quality of the surrounding geology.

Appendix D

Derived Acceptance Criteria for restoration subsoils

- D.1 Site derived subsoils and topsoils may be re-used as part of the restoration soils. In the event materials are to be imported, they must comply with this Appendix D.
- D.2 All imported subsoil materials, as presented in section 2 of main report, should be accompanied by representative solid test results for human health and WAC analysis. The imported subsoil materials must comply to WM3 assessment and Table D1 and Table D5 below.

Table D1. Subsoil Derived 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		
Selenium (total)	0.1		
Zinc (total)	4.0		
Chloride (total)	800		See Notes
Fluoride (total)	10		
Sulphate (as SO4)*	1000		See Notes
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 SO4.			
2. If the waste does not meet the values for sulphate, it may still be considered as complying with the acceptance criteria if the leaching does not exceed either of the following values: 1,500 mg/l as C0 at L/S = 0,1 l/kg; and 6,000 mg/kg at L/S = 10 l/kg.			
3. DOC will be used instead of TOC. TOC is not used as not considered applicable to land use.			

- D.3 The import of topsoil is not deemed likely given the abundance of site derived topsoil.
- D.4 *Sub-soil characteristics:* All soils within the top 1.25 m must meet the multi-purpose parameters as defined in Table D4, in accordance with BS 8601. Reference will also be made to the Sewage Sludge Code of Practice, to ensure maximum permissible concentrations of potentially toxic elements are not present in the soil. This is to ensure potential phytotoxic elements are not present in the soil.

Table D3. Sub-soil characteristics

PTE	Maximum permissible concentration of PTE in soil (mg/kg dry solid)		
	pH <6.0	pH 6.0<7.0	pH >7.0
Zinc	200	200	300
Copper	100	135	200
Nickel	60	75	110
1. It should be recognised that the subsoils can be nutrient low. Full compliance is not required and additional nutrients can be added post-placement.			

- D.5 The pre-acceptance and acceptance checks and testing regime should ensure that incoming subsoils have been assessed against the main analytical suites required by Environment Agency Technical Guidance Note TGN EPR 8.01, section 4 Waste and Waste analysis. Table D.5 indicates the main analytical suites and how they are addressed at Lower Hare.

Table D.4 Main Analytical Suites TGN EPR 8.01

Suite	Potential Parameters	Measures for Lower Hare
Nutrients	Nitrogen, Phosphate Potassium Magnesium, Sulphur	Laboratory testing in line with BS8601.
Physical properties	% dry matter % organic matter	Laboratory testing in line with BS8601
Chemical properties	Neutralising value Conductivity pH	Laboratory testing in line with BS8601
Metals (PTE's)	Zinc, copper and nickel	Compliance with Table D4 above.
Pathogens - to demonstrate biologically active waste is sanitised	E. coli Salmonella	No acceptance of sewage sludge. Natural, uncontaminated subsoils only.
Physical contaminants – particularly important in compost to demonstrate material is fit for use	Metal Glass Plastic	Laboratory testing in line with BS8601
Other contaminants	Notifiable disease Noxious weeds	These will be screened out at the pre-acceptance stage based on desk study information
Waste specific analysis	C:N ratio in composts Sodium levels in salty wastes Demonstration of waste stability, e.g. for compost	Laboratory testing in line with BS8601. No acceptance of salty wastes No direct acceptance of compost.

- D.6 Human health assessment: All soils within the top 1.25 m of the formation, must also meet the human health limits as defined in Table D5; as well as the protective standards for Controlled Waters. The standards are based upon the Allotment 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 At-risk residential cyanide limit.

Table D5. Allotment Human Health Criteria

Parameter	Human Health limit (units mg/kg (source))		
Arsenic	43 (DEFRA Level 4 screening value)		
Cadmium	1.9 (LQM/CIEH)		
Cyanide (total)	34 (Atrisk Soils – Residential Threshold)		
Chromium III	18,000 (LQM/CIEH)		
Chromium VI	1.8 (LQM/CIEH)		
Copper	520 (LQM/CIEH)		
Lead	80 (DEFRA Level 4 screening value)		
Inorganic Mercury	19 (LQM/CIEH)		
Nickel	230 (LQM/CIEH)		
Selenium	88 (LQM/CIEH)		
Zinc	620 (LQM/CIEH)		
Aliphatic (5-6)	1,700 (LQM/CIEH)	Capped at 500 mg/kg total TPH (WAC Criteria)	
Aliphatic (6-8)	5,600 (LQM/CIEH)		
Aliphatic (8-10)	770 (LQM/CIEH)		
Aliphatic (10-12)	4,400 (LQM/CIEH)		
Aliphatic (12-16)	13,000 (LQM/CIEH)		
Aliphatic (16-35)	270,000 (LQM/CIEH)		
Aliphatic (35-44)	270,000 (LQM/CIEH)		
Aromatic (5-7 benzene)	27 (LQM/CIEH)		
Aromatic (7-8 toluene)	51 (LQM/CIEH)		
Aromatic (8-10)	21 (LQM/CIEH)		
Aromatic (10-12)	31 (LQM/CIEH)		
Aromatic (12-16)	57 (LQM/CIEH)		
Aromatic (16-21)	110 (LQM/CIEH)		
Aromatic (21-35)	820 (LQM/CIEH)		
Aromatic (35-44)	820 (LQM/CIEH)		
Total phenols	140 (LQM/CIEH)		
PCB	1 (WAC Criteria)		
Naphthalene	10 (LQM/CIEH)	Capped at 100 mg/kg total PAHs (WAC Criteria)	
Acenaphthene	85 (LQM/CIEH)		
Acenaphthylene	69 (LQM/CIEH)	BTEX capped at 6 mg/kg (WAC Criteria)	
Fluorene	67 (LQM/CIEH)		
Anthracene	950 (LQM/CIEH)		
Fluoranthene	130 (LQM/CIEH)		
Phenanthrene	38 (LQM/CIEH)		
Pyrene	270 (LQM/CIEH)		
Benzo(a)anthracene	6.5 (LQM/CIEH)		
Chrysene	9.4 (LQM/CIEH)		
Benzo(b)fluoranthene	2.1 (LQM/CIEH)		
Benzo(k)fluoranthene	75 (LQM/CIEH)		
Benzo(ghi)perylene	470 (LQM/CIEH)		
Benzo(a)pyrene	2.0 (LQM/CIEH)		
Dibenzo(ah)anthracene	0.27 (LQM/CIEH)		
Indeno(123-cd)pyrene	21 (LQM/CIEH)		
Notes			
<ul style="list-style-type: none">Materials must comply with non-hazardous limits for WM3 assessment and controlled waters Table D1 or D2 criteria.Speciated PAH, TPH and Phenols are all based on 1% SOM.TPH Aliphatic Aromatic >C10-C44 total is not permitted to exceed 500 mg/kg for the protection of the water environment.			

Parameter	Human Health limit (units mg/kg (source))
<ul style="list-style-type: none"> TPH >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. 	

Appendix E Level 3 Onsite Verification Testing



GRS Stone Supplies Ltd

Lower Hare Farm Landfill

**Level 3 Onsite Verification
Testing**

Report ref: LHF L3VT/
Volume 1

Issued: 5TH July 2024

4.0 LEVEL 3 ONSITE VERIFICATION TESTING

4.1 Waste Sampling Protocol

4.1.1 Waste Quality Monitoring

Incoming deliveries of waste will be sampled by GRS Stone Supplies (GRSSS) to monitor compliance with the Company's acceptable waste list and the waste acceptance criteria. The frequency of sampling will be approximately one in every two hundred deliveries. Samples will be sent to a UKAS accredited laboratory for analysis and certified to MCERTS standards-.

4.1.2 Waste Sampling Protocol

The transport manager or a nominated person will determine which loads are to be sampled. The selection of loads will try to ensure that a representative cross section of incoming waste is sampled (i.e., one-offs as well as large contracts). The transport manager will inform the weighbridge clerk which loads are to be sampled.

The transport manager and/or weighbridge clerk will create a sample number using the procedure detailed below under 'sample labelling protocol'. The transport manager/clerk will allocate a sampling bay to the load and write the sample number on the whiteboard in the weighbridge office under the appropriate sampling bay number. The weighbridge clerk will write the sampling bay number on the Waste Transfer Note (WTN) and securely store a copy of the WTN and weighbridge ticket (if applicable) in preparation for sampling.

The weighbridge clerk will inform the driver of an incoming vehicle if the load is to be sampled and will direct him to the designated sampling bay storage area. The weighbridge office will then radio down to the dozer driver to supervise the load being tipped into the appropriate sampling bay.

One of the sites Technically Competent Managers (TCMs) or a competent nominated person taking the sample will gather a copy of the WTN and weighbridge ticket and identify the WIF number for incoming job to support labelling and the completion of the laboratories Chain of Custody Sampling (CoC) form.

The TCM or nominee will subsequently take a combined sample from the tipped load on the day it is delivered in accordance with the following procedure.

- Six portions from different parts of the load (front, back and sides) will be sampled by means of a hand shovel and combined together into a small pile in front of the load.
- With repeated twisting and cutting motions of the shovel (like hand-mixing concrete), the sampler will mix the sample for 30 seconds to reduce lumps and homogenise it.
- From the blend produced, the sampler will fill sample containers supplied by the UKAS accredited laboratory for this purpose (approximately 2 kg).
- The sample container will then be sealed and labelled with the sample number and date on the marker post.
- A picture of the filled sampling containers will be taken whilst sat on top of the sampled load.
- The sample will be kept in secure storage awaiting collection and transport to the laboratory.

N.B. It is preferable to avoid incorporating any unnecessary, additional moisture. The sampler should therefore avoid taking a sample in the rain. Also, if it has been raining prior to sampling, the sampler should dig into the tipped load to attempt to extract a relatively dry sample.

The weighbridge clerk or TCM will then note the GRSSS sample number and ticket number in the site diary. The person sampling the waste must also upload a copy of the WTN, weighbridge ticket, CoC form and a picture of the sampled waste to the Shared Drive and/or sent to the Environmental Compliance Manager and/or a nominated person who is responsible for collating all waste sampling and analysis results.

The sampled load will remain in the quarantine storage area until the analytical results have been received from the laboratory and compared with the waste acceptance criteria. The Environmental Compliance Manager and/or nominated person will review the results to determine the acceptability of the waste. If the loads meet the acceptance criteria, the Operations Manager and Transport Manager will receive email notification, so that the acceptable waste can be removed from the sampling bay and deposited in the tipping area.

If the sampled load does not meet the acceptance criteria, the non-conformance procedure (NCP) flow diagram should be followed to complete a laboratory and sampled load quality assurance (QA) check to ensure the protocol has been met. See 4.3 for the NCP flow diagram.

Following the completion of the NCP if the sampled load does not meet the acceptance criteria an unacceptable waste analysis form (UWAF) will be completed by the Environment Compliance Manager or an appointed person and emailed to the Operations Manager and Transport Manager. See 4.4. for UWAF template. A copy of the UWAF will also be sent to the waste producer, who will be asked to remove the unacceptable waste from the site. No further loads are to be accepted from the same source unless additional waste quality testing is undertaken that demonstrates the acceptable quality of the remaining material. In such cases, the Environmental Compliance Manager is to vet the additional information and only if an 'approved' sampling email is issued for the remainder of the contract may deliveries resume.

Where an unacceptable load is part of a large contract, the contract must be halted immediately, and the waste investigated in more detail. The quantity already deposited must be established and further samples of any remaining material still to be disposed of should be taken to determine whether the unacceptable sample is typical or atypical of the contract as a whole. When this additional information is available, an assessment will be made as to whether the deposited material represents a significant risk to the environment, bearing in mind the after use of the location where the material has been deposited. If the assessment indicates that a significant risk is present, then the waste will be located and removed. Where the additional sampling indicates that the offending sample was a one-off, an 'approved' sampling form will be issued and the contract may resume.

4.1.3 Equipment Required

Equipment required for sampling includes:

- Shovel
- Sample containers (2 x 250litre glass jars & 2 x plastic tubs)
- Marker pen with waterproof ink
- Labels for sample jars if not already provided
- Appropriate Personal Protective Equipment

4.1.4 Sample Labelling Protocol

Samples numbers are comprised of a combination of site code, sample character and date. The Site Name code is LHF.

The sample character is SS (soil sample). Examples:

A sample taken on 17th April 2004 would have the number LHFSS170404.

A sample taken on 3rd December 2004 would have the number LHFSS031204.

If more than one sample is taken on one day, add a forward slash and 1, 2, 3, etc. to the sample number, e.g., LHFSS170404/1, LHFSS170404/2, etc.

4.1.5 Analytical Procedures and Determinants

All soil samples will be prepared and analysed by the UKAS laboratory using the MCERTS performance standards. The analysis procedure and chemical determinants will be reviewed from time to time to take into account advances in practical experience, waste research and analytical technology, and may also vary as a result of changes in legislation.

Samples will be tested for a combination of organic and inorganic components in accordance with the following schedule: -

Determinants to be tested for in raw sample:

1. Soil and Stones
2. Toluene extract

If Toluene Extract exceeds 1500 mg/kg then carry out:

- Polycyclic aromatic hydrocarbons (PAH),
- Mineral Oil (C₆ to C₄₀) (TPH by GC)*,

* Oils in the range C₆ to C₄₀ include BTEX compounds and thus separate BTEX testing is not required.

Determinants to be tested after sample preparation:

Sample preparation will be undertaken using BSEN12457-2 a single stage leaching process at a liquid: solid ration of 10:1. Analytical data to be reported as mg/kg dry weight (L/S=10 l/kg).

- Arsenic (As)
- Cadmium (Cd)
- Chromium (Cr) (Total)
- Copper (Cu)
- Lead (Pb)
- Nickel (Ni)
- Zinc (Zn)
- Dissolved Organic Carbon (DOC)
- Total Dissolved Solids (TDS)

4.1.6 Random Waste Sample Acceptance Criteria

In order to be accepted as inert waste, the waste must not exceed the limit values given below:

Determinant	Limit Value at Liquid/Solid ratio = 10 l/kg (mg/kg)
Arsenic	0.5
Cadmium	0.04
Chromium (Total)	0.5
Copper	2.0
Lead	0.5
Nickel	0.4
Zinc	4.0
Dissolved Organic Carbon*	500
Total Dissolved Solids	4,000 (0.4%)

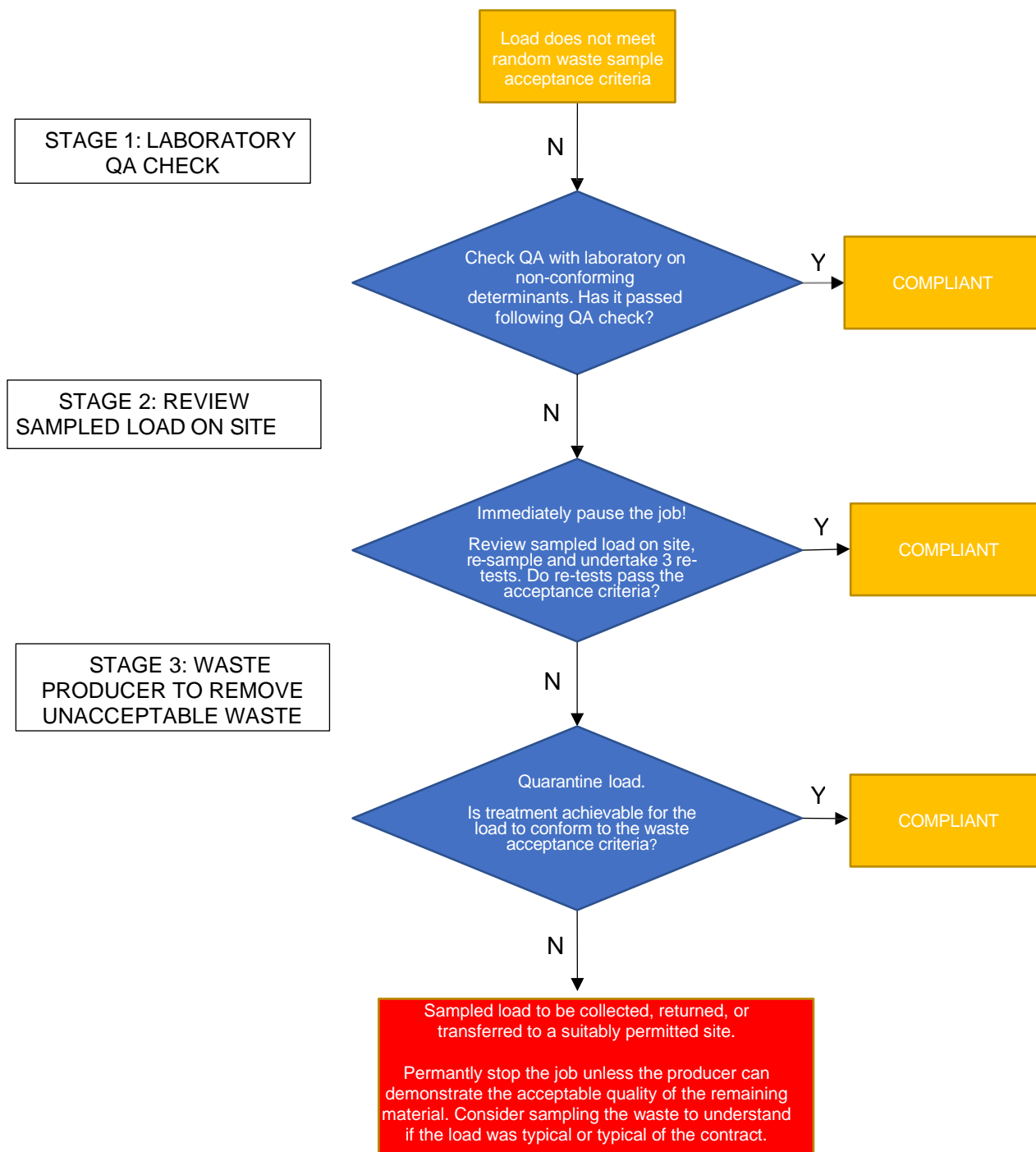
* If the waste does not meet these values for dissolved organic carbon (DOC) at its own pH value, it may alternatively be tested at L/S = 10 l/kg and a pH between 7.5 and 8.0. The waste may be considered as complying with the acceptance criteria for DOC, if the results of this determination does not exceed 500 mg/kg.

Determinant	Value (mg/kg)
PAH (Total of 17):	100
Mineral Oil (C10 to C40)*	500

* The Company carry out a 6-split TPH analysis that includes equivalent carbon numbers from C6 to C40. Compounds in the equivalent carbon range C6 to C8 include BTEX compounds and thus separate BTEX testing will not be undertaken

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4.3 Non-Conformance Procedure Flow Diagram

**Notes:**

1. Only non-conforming determinants will be re-tested in each stage.
2. Any additional sampling at the waste producers' site will be considered as a different batch.

4.4 Unacceptable Waste Analysis Form

Emailed to:

Form Number

Date of emailed:

GRS Stone Supplies Ltd

UNACCEPTABLE WASTE ANALYSIS FORM

This form has been sent to you because one or more the values in the chemical analysis of a sample taken from the load referred to below exceeds the waste acceptance criteria (limit values for inert waste) for Lower Hare Farm Landfill.

Name of Site	LOWER HARE FARM LANDFILL
Date and time waste delivered	
Name of company delivering load	
Vehicle registration number	
Ticket number	
GRSSS sample number	
Address waste collected from (see waste ticket from driver)	
Description of waste on ticket	
REASON ANALYSIS UNACCEPTABLE	

ACTION TO BE TAKEN

1. The acceptance of ALL remaining loads in this contract must cease immediately. Continued acceptance will depend on the results of further investigation.
2. The unacceptable load must be removed from the quarantine area to an authorised disposal facility as soon as practicable.
3. Consideration must be given to the loads already deposited and whether they also need to be removed from site.