



GRS Stone Supplies Ltd

Lower Hare Farm Landfill

**Level 3 Onsite Verification
Testing**

Report ref: LHF L3VT/
Volume 1

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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 ratio 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%)

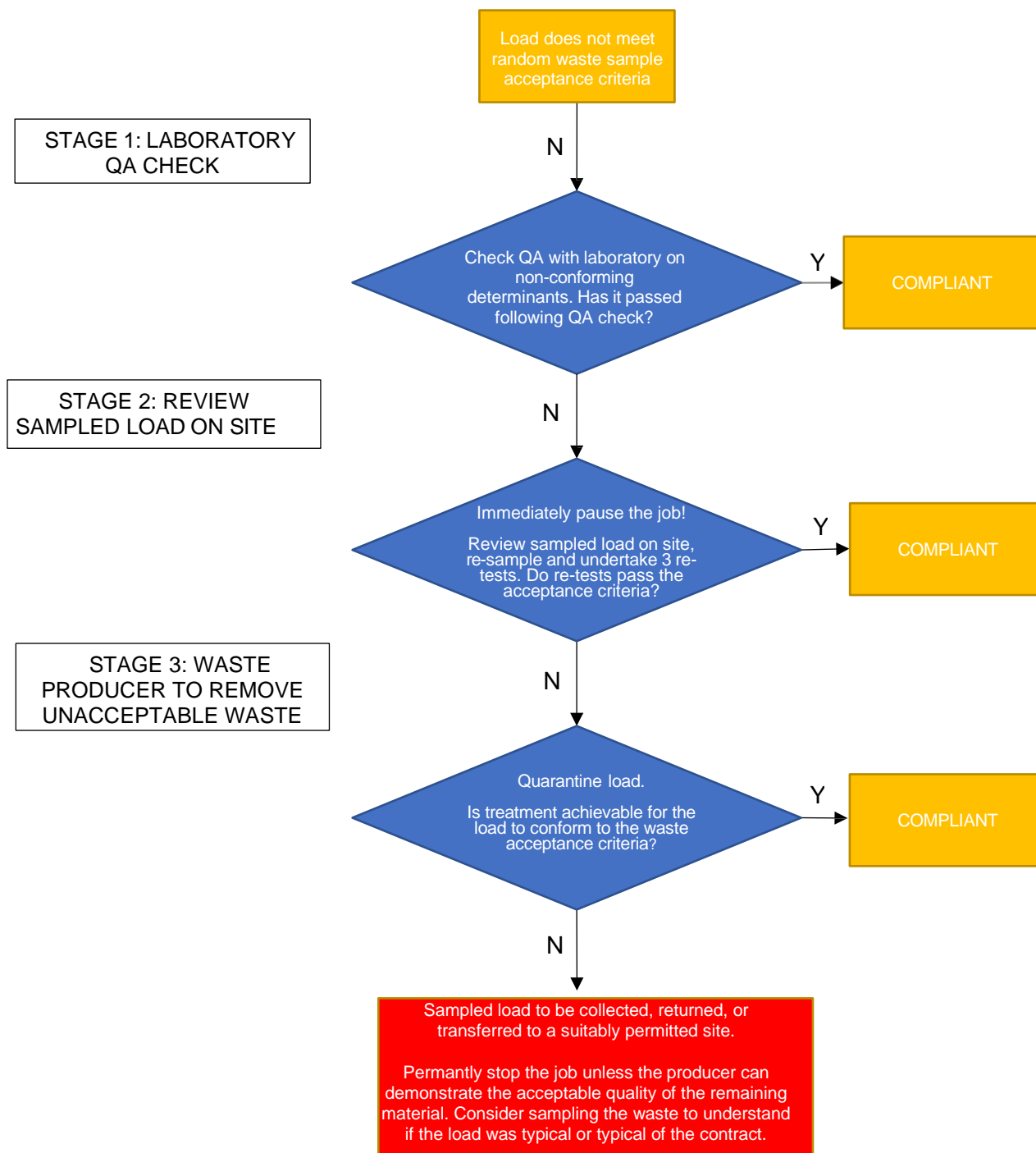
* If the waste does not meet these values for dissolved organic carbon (DOC) at its own pH value, it may alternatively be tested at L/S = 10 l/kg and a pH between 7.5 and 8.0. The waste may be considered as complying with the acceptance criteria for DOC, if the results of this determination does not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