

# Greetham Quarry Environmental Permit Application

## Environmental Management & Monitoring Plan

Mick George Limited

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Prepared on Behalf of Tetra Tech Environment Planning Transport Limited.  
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## 1.0 INTRODUCTION

### 1.1 REPORT CONTEXT

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- 1.1.1 This section of the Environmental Permit Application corresponds to Part B4 of the Environmental Permit Application forms, specifically detailing the Environmental Management and Monitoring Plan (EMMP) for the importation of suitable inert waste at the Greetham Quarry.
- 1.1.2 The Environmental Permit application has been prepared by Tetra Tech on behalf of the Operator, Mick George Limited (Mick George).
- 1.1.3 This report has been prepared in accordance with the Environment Agency's (EA) Guidance for the Landfill Sector and LFTGN 02: Guidance on Monitoring of Landfill Leachate, Groundwater and Surface Water and with reference to the Hydrogeological Risk Assessment (HRA) and the Environmental Risk Assessment (ERA).

## 2.0 GROUNDWATER MANAGEMENT AND MONITORING

2.0.1 Adherence to the Waste Acceptance Criteria (as set out in the Operating Techniques document which is Appendix B of the permit application) will ensure that the waste deposited at Greetham Quarry complies with the inert classification thereby mitigating any risk to groundwater.

2.0.2 An HRA has been compiled in support of this Environmental Permit Application (Appendix E of the permit application). The objective of the HRA is to assess the potential risk of significant impacts on groundwater quality as a result of the proposed development and to derive control and compliance limits for groundwater and surface water.

### 2.1 GROUNDWATER MONITORING SCHEDULE

2.1.1 The parameters to be sampled and monitoring frequency to be included in the Environmental Permit are presented in Table 1 below. These requirements are considered adequate in providing in an ongoing characterisation of the groundwater conditions.

**Table 1: Proposed Groundwater Monitoring Determinands and Sampling Frequency**

Quarterly	Annually
Levels, pH, Chloride, Alkalinity, Amm N, Sulphate, Sodium, Potassium, Iron, Manganese, Cadmium, Chromium, Copper, Calcium, Nickel, Lead, Zinc, Electrical conductivity, Magnesium, Selenium, Cyanide, Arsenic, Mercury, Antimony, Barium, Fluoride, Molybdenum and Phenol	<i>To include quarterly suites plus:</i> Water soluble boron, Chromium IV, PAH and TPH.

#### Compliance Limits

2.1.2 The HRA provides compliance levels for the proposed compliance limits for use in the environmental permit is outlined in Table 2 below. Compliance limits should be revised following the capture of further baseline groundwater quality

**Table 2: Groundwater Compliance Limits**

Substance	CLs (mg/l)
<b>Hazardous substances</b>	
Arsenic	0.005
Chromium VI*	0.008
Lead	0.0002
Mercury	0.00001
<b>Non-hazardous pollutants</b>	
Antimony	0.005
Barium	1.3
Cadmium	<0.008
Chloride	104
Copper	0.0037

Fluoride	0.0015
Molybdenum	0.007
Nickel	0.0049
Selenium	0.0053
Sulphate	180
Zinc	0.015
Phenol	0.0077

### Contingency Plan

2.1.3 Once compliance levels have been agreed, should site monitoring identify an increase in the concentration of the selected determinands then a series of contingency actions will be required. Suggested contingency actions, which require agreement with the Environment Agency (EA), are presented in Table 3.

**Table 3: Suggested Contingency Actions for Exceeding Groundwater Compliance**

Appropriate Contingency Action	Timescale
Advise Site Management	Immediately
Advise Environmental Manager of any detection limit issues	1 Week
Advise Environment Agency	1 Week
Confirm by repeat sampling and analysis	1 Month
Review existing monitoring information	1 Month
Review site management/operations, implement actions to prevent future failure	3 Months
Review assumptions in conceptual site model	3 Months
Review existing HRA Compliance Levels	6 Months
Consult EA about need for corrective action	6 Months

## 2.2 QUALITY CONTROL PROCEDURES

### Monitoring Personnel

2.2.1 Monitoring will be undertaken by suitably trained person(s) appointed by the site management who are familiar with the monitoring procedures. The monitoring personnel will have access to the Environmental Permit and any relevant accompanying application documents to gain an understanding of the conditions applicable to groundwater monitoring (levels and quality). Personnel will also be familiar with the assessment criteria to identify compliance and assessment levels.

### Monitoring Procedures

2.2.2 The groundwater levels will be measured prior to sampling using an electronic dip tape/dip meter.

2.2.3 The groundwater samples will be collected using a portable electric submersible pump or other suitable sampling equipment. In order to obtain a sample of the groundwater, each monitoring borehole will be

purged to at least three times the well volume (if possible) to prevent sampling non-representative, stagnant samples.

2.2.4 On-site analysis will include temperature, pH and electrical conductivity. All groundwater samples will be collected in 1 litre polyethylene or glass containers. Unless the containers already contain a preservative, they will be flushed three times with the sample prior to filling.

2.2.5 Filled sample bottles will be stored upright in cool boxes with ice packs. Sample bottles will be pre-labelled in accordance with laboratory requirements and will be submitted to a UKAS accredited laboratory within 24 hours of collection, together with the sample details, tests and suites required. If samples have to be kept overnight, they will be stored in a fridge/cool box and maintained at approximately 4°C.

### **Recording and Reporting**

2.2.6 A copy of the sampling results will be stored on site for the duration of the site operations.

2.2.7 The site management will ensure that copies of the sampling results are sent to the EA in an agreed format and at quarterly frequencies.

## 3.0 SURFACE WATER MANAGEMENT AND MONITORING

### 3.1 SURFACE WATER FEATURES

3.1.1 In terms of surface water features, there are no surface water features on site, and the nearest feature is North Brook which flows west to east approximately 220m south of the application site.

### 3.2 FLOOD RISK

3.2.1 According to the Flood Map for Planning Service (FMPS), the application site is not situated in an area at risk of flooding.

### 3.3 SURFACE WATER MANAGEMENT

3.3.1 In the existing quarry, the site is free-draining with no off-site discharge of surface water. All rainfall, and any internal rainfall runoff, is contained within the quarry boundary and directed to the quarry excavation from where drainage to the underlying limestone occurs naturally. The proposed western extension would operate on the same principle with rainfall and internal runoff directed to quarry excavations with no direct offsite discharge of surface water. Surface water generated from the restored site would be retained within the site and allowed to drain by infiltration to underground strata.

### 3.4 SURFACE WATER MONITORING SCHEDULE

3.4.1 The parameters to be sampled and monitoring frequency, if required, to be included in the Environmental Permit are presented in Table 4 below. These requirements are considered adequate in providing an ongoing characterisation of the groundwater conditions. The sampling location should be agreed with the EA following further discussions if they are required.

**Table 4: Proposed Surface Water Monitoring Determinands and Sampling Frequency**

Quarterly
pH, Iron, Electrical conductivity, Lead, Alkalinity as CaCO <sub>3</sub> , Manganese, Ammoniacal Nitrogen, Magnesium, Nitrogen, Nickel, Calcium, Chloride, Sodium, Chromium, Sulphate, Copper, Zinc

### 3.5 CONTINGENCY PLAN

3.5.1 In the unlikely event of a pollution incident caused by a direct discharge of contamination e.g. leaking pipework, fuel spillage, the following emergency procedure will be implemented:-



- Immediately report incident to the Site Manager; and
- Identify the source and prevent further leak/spillage.

3.5.2 For major fuel/oil spillage implement the following procedures:-

- a) Clear the area immediately and extinguish any naked flames. Attempt to make a bund to contain the fuel/oil in order to limit the extent of the spillage;
- b) If possible, try and contain the spill using absorbent materials available on site;
- c) Phone 999, ask for the Fire and Rescue Service and request assistance;
- d) Ring the EA and explain what has happened so they can take appropriate action;
- e) At no time put staff, customers or the public at risk;
- f) If appropriate, close the site, wait at the gate for emergency services and explain the situation prior to allowing access to site;
- g) Do not allow staff or the public to go back into the site until authorised to do so;
- h) Keep customers and if appropriate, the public informed about what is going on when appropriate;
- i) Once it is safe to enter the site, re-open to customers and update the EA;
- j) Complete the site diary and any other paperwork about the incident; and
- k) The resultant spillage material should be disposed of in accordance with Environmental
- l) Permitting requirements. Specialist advice must be sought in the event of any doubt.

3.5.3 For minor fuel/spillage implement the following procedure: -

- i. Clear the area immediately and extinguish any naked flames;
- ii. Lay absorbent material over the spill to soak up the spillage and if any drains are nearby place the absorbent material around the drain to stop any liquid going into any surface water gullies; and
- iii. Once the liquid has all been absorbed use a shovel to clear up the waste, put it in a plastic sack and then place it in the fullest container for non-recyclable waste for disposal via the normal route.

3.5.4 In the event of the pollution reaching a surface water course, implement remedial measures in accordance with EA guidance. Undertake additional monitoring to ensure water quality does not exceed assessment criteria.

## 4.0 LANDFILL GAS MANAGEMENT AND MONITORING

- 4.0.1 A Landfill Gas Risk Assessment (GRA) has not been prepared for Greetham Quarry, as Environment Agency Guidance Note H1 Annex I indicates that it is not a requirement for inert landfill sites. However, a screening report has been carried out in accordance with the requirements of Landfill Technical Guidance Note 03 (LFTGN03).
- 4.0.2 This Landfill Gas Screening Report indicates that there is unlikely to be a significant risk posed by the development. However, monitoring of the perimeter boreholes for landfill gas will be carried out in accordance with this Screening Report as detailed within Appendix I of the environmental permit application. The perimeter gas monitoring proposals including frequencies of monitoring are outlined in Table 5 below.

**Table 5: Monitoring Programme**

Monitoring Location	Parameter	Monitoring Frequency
BH 01, BH 02, BH 03, BH4, BH5 and BH6	Methane, carbon dioxide, oxygen, meteorological data, atmospheric pressure, differential pressure, temperature.	Quarterly

- 4.0.3 In accordance with LFTGN03 in-waste landfill gas monitoring infrastructure will be installed within each completed phase of filling.
- 4.0.4 In-waste landfill gas monitoring will be carried out in accordance with the procedures set out in LFTGN03. The proposed monitoring programme is detailed in Table 6 below.

**Table 6: In Waste Borehole Monitoring Programme**

Parameter	Monitoring Frequency
Methane, carbon dioxide, oxygen, meteorological data, atmospheric pressure, differential pressure, temperature.	Quarterly

## 5.0 METEOROLOGICAL MONITORING

- 5.0.1 The proposed landfill will only accept inert waste and with reference to the HRA and EA guidance, it is not considered necessary to manage and monitor leachate. This negates the need to monitor meteorological conditions for the purpose of using water balance calculations as a tool for evaluating leachate production.
- 5.0.2 However, atmospheric pressure, temperature and ground conditions will be monitored and recorded during all monitoring visits.
- 5.0.3 Weather conditions that may be unfavourable to landfilling, particularly dry loads, will be used to determine the acceptability of such wastes on a particular day, for example strong winds given as severe weather warnings from the Meteorological Office.
- 5.0.4 Details on weather conditions will be recorded in the Site Diary on a daily basis.

## 6.0 LANDFILL BODY MONITORING

6.0.1 Procedures will be in place to undertake routine surveys in order to record the following:-

- Surface area of waste;
- Volume of waste;
- Remaining capacity; and
- Settling behaviour

6.0.2 Monitoring will be undertaken on an annual basis, or at a greater frequency determined by the Operator.

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## 7.0 AMENITY MANAGEMENT AND MONITORING

### 7.1 ENVIRONMENTAL RISK ASSESSMENT

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7.1.1 An Environmental Risk Assessment (ERA) has been prepared in accordance with the Environment Agency's Risk Assessment guidance. It specifically deals with the following:-

- Particulate Matter Management and Monitoring;
- Noise Management and Monitoring;
- Odour Management and Monitoring;
- Mud Management and Monitoring;
- Litter Management and Monitoring; and
- Birds, Vermin and Insect Management and Monitoring.

### 7.2 DUST MONITORING

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7.2.1 Dust monitoring will be undertaken in accordance with the Dust Management Plan (Appendix G of the Environmental Permit Application).

### 7.3 NOISE

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7.3.1 Noise will be monitored in accordance with the Noise Management Plan (Appendix F of the Environmental Permit Application).

### 7.4 ODOUR

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7.4.1 Due to the inert nature of the waste, the site will not produce odour.

### 7.5 LITTER

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7.5.1 The waste is considered to have a low litter potential and therefore the risk of litter on site will be low.

### 7.6 BIRDS, VERMIN AND INSECT

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7.6.1 Due to the inert nature of the waste, the site will not attract birds, vermin and insects.

## 7.7 MUD

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7.7.1 The ERA also considered the risk of mud being transferred to the local highways as not significant. A wheel washing facility will be employed on site which will be used by HGVs before they leave the site. Water sprays will also be employed to dampen the access road. However, in the unlikely event that mud is deposited on the road then a road sweeper will be utilised as necessary.

## 8.0 HEALTH IMPACT MONITORING

- 8.0.1 Due to the inert nature of the waste, it is considered unnecessary to undertake health impact monitoring on the surrounding population.

## 9.0 AFTERCARE MONITORING

- 9.0.1 It is proposed to continue the monitoring of groundwater and landfill gas during the aftercare period. At the time the site is ready for closure, all monitoring requirements and frequencies will be reviewed. Any changes to the monitoring frequency and analysis will be subject to agreement with the EA.



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## DRAWINGS

G17/1/19/04 (Revision C) – Restoration Plan