

Watlington Quarry — Environmental Management and Monitoring Plan

A117209
November 2021

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1.0 INTRODUCTION

1.1 REPORT CONTEXT

- 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 Watlington 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 H 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 providing an ongoing characterisation of the groundwater conditions.

Table 1: Proposed Groundwater Monitoring Schedule

Monitoring Locations	Quarterly	Annually
BH 1, BH 2, BH 3, BH 4 and BH 5	pH, Chloride, Alkalinity, Amm N, Sulphate, Sodium, Potassium, Iron, Manganese, Cadmium, Chromium, Copper, Calcium, Nickel, Lead, Zinc, Electrical conductivity, Selenium, Magnesium	<i>To include quarterly suites plus:</i> Hazardous substances

Compliance Limits

- 2.1.2 The HRA provides compliance levels for the use in the environmental permit is outlined in **Table 2** below. The below compliance limits have been set for the down-gradient boreholes BH 2 and BH 3. These requirements are considered adequate in providing an ongoing characterisation of the groundwater conditions.

Table 2: Groundwater Compliance Limits

Determinand	Compliance Limit
Ammoniacal Nitrogen (mg/l)	8
Chloride (mg/l)	86
Sodium (mg/l)	26
Lead (µg/l)	0.2

Contingency Plan

- 2.1.1 An annual review of the proposed compliance limits should be carried out and any alterations in the compliance levels discussed and agreed with the EA.
- 2.1.2 Where the site monitoring programme identifies an increase in groundwater determinants that could lead to a breach, then a series of contingency actions will be required. Suggested contingency actions, which will need to be agreed with the Environment Agency, are presented in Table 3 below.

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 hard 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, the site is located 1.4km south of the River Nar within the River Nar valley. The surface water features, and groundwater elevation are controlled by the artificial drainage channels which all ultimately drain to the Polver Drain, via Hobbs Drain to the north. The site itself and the low-lying area surrounding the site falls within the Inland Drainage Board (IDB) area of the East of Ouse, Polver and Nar IDB. Hobb's Drain, is located approximately 400m northwest of the site and drains a substantial catchment to the west of the site and is set in a shallow valley. Hobb's Drain flows northwards to join the Polver Drain which, in turn, flows eastwards to join with the River Great Ouse.

3.2 FLOOD RISK

3.2.1 According to the Flood Map for Planning Service (FMPS) and the Amber Planning Flood Risk Assessment produced, the is located in Flood Zone 1 which has a low probability of flooding.

3.3 SURFACE WATER MANAGEMENT

3.3.1 A surface water management system has not been proposed due to the low profile of the final landform. During the restoration phase, a detention pond, planted with reed beds to aid the settlement of sediments, will be constructed at the site's lowest point near the southern boundary. Perimeter swales will direct surface water flow towards the detention pond. Any water discharges will represent normal runoff rates, with excess water generated during storm events being fully contained.

3.4 SURFACE WATER MONITORING

3.4.1 No surface water monitoring is proposed at the site.

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 procedures will be implemented:-

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

3.5.2 For major fuel/oil spillage the following procedures will be implemented:-

- i. 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;

- ii. If possible, try and contain the spill using absorbent materials available on site;
- iii. Phone 999, ask for the Fire and Rescue Service and request assistance;
- iv. Ring the EA to explain what has happened so they can take appropriate action;
- v. At no time put staff, customers or the public at risk;
- vi. If appropriate close the site, wait at the gate for emergency services and explain the situation prior to allowing access to site;
- vii. Do not allow staff or the public to go back into the site until authorised to do so;
- viii. Keep customers, and if appropriate public, informed about what is going on at all times;
- ix. Once it is safe to enter the site, re-open to customers and update the EA;
- x. Complete the site diary and any other paperwork about the incident; and
- xi. The resultant spillage material should be disposed of in accordance with Environmental 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 the 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 Watlington 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 J of the environmental permit application. The perimeter gas monitoring proposals including frequencies of monitoring are outlined in Table 4 below.

Table 4: Landfill Gas Monitoring Programme

Location	Parameter	Monitoring Frequency
BH 1, BH 2, BH 3, BH 4, and BH 5	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 cell or phase of filling as per MGL-A117209-MON-01 - Borehole Location Plan.
- 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 the **Table 5**.

Table 5: 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 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 site owner.

7.0 AMENITY MANAGEMENT AND MONITORING

7.0.1 An Environmental Risk Assessment (Appendix C to this Environmental Permit Application) has been prepared in accordance with the EA'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.

7.0.2 As the imported waste will be strictly inert, the site will not produce odour or litter nor will it attract birds, vermin or insects.

7.0.3 The ERA concluded that the risk of particulate matter and noise annoyance was not significant. All personnel employed on site will undertake visual monitoring for the dust throughout the working day. Any problem that is observed will be reported to the site manager (or the next level of management if they are unavailable), who will be responsible for investigating the cause and implementing any necessary remedial action. Additional quantitative monitoring at the filling area, the installation boundary or at sensitive receptors will only be carried out in circumstances where complaints have been received, corrective action has not resolved the problem, and where such monitoring will assist in determining the source/cause and what further action may be appropriate.

7.0.4 The ERA also considered the risk of mud transferred to the local highways as not significant. All active hauls roads will be dampened. 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 this stage it is proposed to monitor on the same basis as during the operational phase. Any changes to the monitoring frequency and analysis will be subject to agreement with the EA.

DRAWINGS

MGL/A117209/PER/01 – Site Location and Environmental Permit Boundary

W8/1/19/04 – Restoration Proposals

W8/1/19/05-09 – Phasing Plan Combines (Phases 1 – 5)

MGL-A117209-MON-01 - Borehole Location Plan