



# **Langley Quarry Inert Landfill**

## **Environmental Permit Application**

### **Environmental Management and Monitoring Plan**

**November 2017**

Prepared on behalf of CEMEX UK Materials Limited





**Document control**

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**Drawings**

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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 application forms, specifically detailing the environmental management and monitoring plan for the importation of suitable inert waste at Langley Quarry.
- 1.1.2 The Environmental Permit application has been prepared by WYG on behalf of the Operator, CEMEX UK Materials Limited (CEMEX).
- 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

2.1.1 Adherence to the Waste Acceptance Criteria will ensure that the waste deposited at the site complies with the inert classification thereby mitigating any risk to groundwater.

2.1.2 A HRA has been prepared for the inert landfill application (Appendix F of the main 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, to derive control and compliance limits for groundwater and surface water and to provide recommendations for contingency actions on the event of exceedances of those levels.

## 2.2 Groundwater Monitoring Schedule

2.2.1 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 an ongoing characterisation of the groundwater conditions.

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

Monthly	Quarterly	Annually
Levels	pH, Iron, Electrical conductivity, Lead, Alkalinity as CaCO <sub>3</sub> , Manganese, Ammonia, Magnesium, Antimony, Mercury, Arsenic, Nickel, Calcium, Selenium, Chloride, Sodium, Chromium, Sulphate, Copper, Zinc	As quarterly

### Compliance Levels

2.2.2 The HRA provides compliance levels for boreholes W0B1 and W0B2 for ammoniacal nitrogen and chloride. Details of the control and compliance limits are set out in Table 2 below.

**Table 2: Proposed Control and Compliance Levels**

Borehole Reference	Chloride (mg/l)		Ammoniacal Nitrogen (mg/l)	
	Control	Compliance	Control	Compliance
W0B1	59.6	73.8	2.15	2.87



WOB1	104.7	135	13.9	16.4
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Contingency Plan

2.2.3 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 EA, are presented in Table 3.

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

Appropriate Contingency Action	Timescale
Advise Site Management	Immediately
Advise Environmental Manager of PQL	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 of a compliance level	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

Contingency Plan

2.2.4 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 EA, are presented in Table 3.

**2.3 Quality Control Procedures**

Monitoring Personnel

2.3.1 Monitoring will be undertaken by suitably trained person(s) 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

- 2.3.2 The groundwater levels will be measured prior to sampling using an electronic dip tape.
- 2.3.3 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 to prevent sampling non-representative, stagnant samples.
- 2.3.4 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.
- 2.3.5 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

- 2.3.6 A hard copy of the sampling results will be stored on site for the duration of the site operations.
- 2.3.7 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

- 3.0.1 The nearest surface water feature to the site is the Horton Brook which runs along the western boundary of the application site.
- 3.0.2 The Grand Union Canal Slough Arm is located approximately 345m north of the application site and runs in a west to east direction.
- 3.0.3 A series of ponds are situated within the Richings Park Golf Club, with the nearest pond located approximately 210m south of the application site.

### 3.1 Abstractions

- 3.1.1 There are 3 licensed surface water abstractions within 3km of the Site. Details are summarised in Table 4 The locations of these abstractions are also plotted on Drawing Number ESSD/08. The abstractions at Richings Park Golf Club is the closest to the Site and it is approximately 500m south of the Site.

**Table 4: Surface water abstraction licences within 5 km of the Site**

Licence No.	NGR	Point	Purpose
28/39/28/0510	504700, 179900	Colne Brook at Thorney Farm, Iver	Golf Courses, Spray Irrigation - Storage
28/39/28/0614/R01	502854, 178660	Horton Brook, North Park, Richings Park, Iver	Golf Courses, Spray Irrigation - Storage
28/39/28/0301	502500, 176360	Points N to P on River Colnbrook at Berkin Manor Farm	General Agriculture, Spray Irrigation - Direct

### 3.2 Flood Risk

- 3.2.1 A flood risk assessment was carried out by ESI in 2015. Part of the Site along the south-western Site boundary is within the flood plain for Horton Brook. A strip of land both sides of the brook lies in Flood Zone 3, which has a high risk of fluvial flooding. The majority of the Site lies within Flood Zone 1 which has a low risk of fluvial flooding. The surface water and groundwater flood risk to the Site is low to moderate. As a 30m standoff will be maintained from Horton Brook and the oil and gas pipelines, relatively little gravel extraction will occur in Flood Zone 3.





- 3.2.2 As the placement of the geological barrier and inert waste will have no impact on reduction of floodplain storage, no compensatory flood storage is required during the operation and restoration phases.
- 3.2.3 A drainage strategy is proposed to intercept surface water runoff using a small ditch between the Horton Brook and the restored agricultural area, and also to provide storage within ponds and wetlands on the Site. It is anticipated that the majority of surface runoff will infiltrate back to ground. However, excess flow from large rainfall events can be stored in the ditches and ponds before being released to Horton Brook.

### **3.3 Surface Water Monitoring Schedule**

- 3.3.1 The HRA recommends that surface water is monitored at two locations on the Horton Brook. These locations are marked as SW2 (upstream) and SW1 (downstream) on Drawing Number ESSD/07.

### **3.4 Compliance Limits**

- 3.4.1 No control or compliance limits are proposed for surface water quality monitoring.

### **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 the 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 Langley Quarry Inert Landfill, 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 G.
- 4.0.3 Furthermore, in accordance with LFTGN03 in waste landfill gas monitoring infrastructure will be installed within each completed cell. These boreholes will be monitored monthly throughout the operational phase of the landfill and every six months during the aftercare period.



## **5.0 Meteorological Monitoring**

- 5.0.1 Due to the acceptance of inert waste at the site and with reference to the HRA, it is considered unnecessary 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 landfill gas 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 (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.

7.0.2 Due to the inert nature of the waste, the site will not produce odour or litter nor will it attract birds, vermin and insects.

7.0.3 The ERA concluded that the risk of particulate matter and noise annoyance was not significant and therefore it is not proposed to implement monitoring regimes for these potential hazards.

7.0.4 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.

7.0.5 The site is covered by planning permission CM/51/16. This consent has planning conditions covering noise, dust, and mud on the highway.



## **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**

ESSD/07 – Surface Water Features

ESSD/08 – Licensed Surface Water Abstractions