



# Permit Application Section 5 - ESSD High Pole Farm

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Minerals  
Waste  
Environment

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## SECTION 5: Environmental Setting and Site Design Report

### 5.1 Introduction

5.1.1 *The Mineral Planning Group Ltd.* (MPG) have been commissioned by *Graeme Thomas* to make an application for a Bespoke Permit to the Environment Agency (EA) for the Use of Waste in a Deposit for Recovery Operation on land ('The Site') adjacent to High Pole Buildings, near Keighley, West Yorkshire.

5.1.2 The following Environmental Setting and Site Design (ESSD) report will consider:

- the characteristics of the site in environmental terms.
- the design and engineering of the site that would be followed in light of potential environmental considerations.

5.1.3 There are no historic or permitted landfill sites within the vicinity of The Site, the nearest being some 2km from The Site.

5.1.4 The ESSD will help to inform The Site's risk assessments and provide information to be fed back into the Conceptual Site Model (CSM).

### 5.2 Site Details

5.2.1 The grid reference for the site is SE 00792 41843, and its location is shown on drawing *313/1 - 1*.

- 5.2.2 The application area is just 0.85ha, and currently has no productive use (see Sections 1 and 2 and the WRP). The site is accessed exclusively from Pole Road. The proposals are predominantly for the purposes of agricultural improvement, but also facilitate a new access road into High Pole Farm.
- 5.2.3 The Site is abutted in all directions by further agricultural land. Immediately east of The Site are High Pole Farm buildings. A stream runs through the centre of the site, flowing from the southeast towards the northwest.
- 5.2.4 The materials proposed for the agricultural improvement are inert wastes that conform to the requirements for a recovery operation.

### 5.3 Source

#### Historical Development

- 5.3.1 The Site has had no historic use other than agriculture. The Site has Planning Permission for the proposed agricultural improvement works, ref: 66/2016/17133.

#### Proposed Development

- 5.3.4 The proposed waste types to be deposited for the purposes of agricultural improvement conform to those permitted for Recovery operations, and match those provided in the Waste Recovery Plan for The Site (see Appendix A).
- 5.3.5 The proposed list of permitted waste types is shown below in Table 5.1:

Waste Code	Description
<b>17</b>	<b>Construction and demolition wastes</b>
17 01 01	Concrete
17 01 02	Bricks
17 01 03	Tiles and ceramics
17 01 07	Mixtures of concrete, bricks, tiles and ceramics
17 05 04	Soils and stones
<b>20</b>	<b>Municipal wastes</b>
20 02 02	Soil and stones

Table 5.1: Proposed Waste Codes

5.3.6 The proposed total tonnage of waste to be imported to The Site is 6,560 tonnes (when using a density of 2 tonnes per m<sup>3</sup>).

5.3.7 The Site is separated into 3 'areas', defined as the eastern area with the culvert, and areas north and south of the stream, as shown on drawings ref: *F183-001* and *Sterling Surveys Topographic Survey Apr 2015*. The final proposed landform is shown in drawing ref: *F183-003*.

## 5.4 Pathways and Receptors

### Geology

5.4.1 The bedrock geology beneath The Site is characterised as the Millstone Grit

Group on BGS 1:50,000 scale geological maps, and is formed of mudstone, siltstone and sandstone. To the east of The Site is the Boulder Stones sandstone unit.

- 5.4.2 The superficial deposits at The Site are characterised as till / diamicton. The Site owner confirms that there are thin soils (200 – 400mm) above clay across The Site, which contributes to the poorly draining nature of the land.

#### Hydrology

- 5.4.3 As described, there is a small stream that runs through The Site. There are no other water courses that would be affected by the proposals. The Site is entirely within Flood Zone 1, and there is considered to be very low risk of off-site flooding from the stream. However, as described, the land is often waterlogged due to the existing topography that does not allow for proper drainage into the stream. For this reason, the works would only be carried out during dry periods when the soils are dry and friable.

- 5.4.4 Existing sources of pollution to this watercourse may be present from ongoing farming activities at and near to The Site. However, farming locally is entirely pastoral, so there is likely to be limited probability of pesticides and fertilisers (other than manure) being used in the vicinity of The Site.

#### Hydrogeology

- 5.4.5 The Site is within a Secondary A Aquifer. However, this designation appears to have been applied to the entirety of the Millstone Grit Group and does not,

therefore, imply that the bedrock acts as an aquifer immediately beneath The Site. The superficial deposits are listed as a Secondary (undifferentiated) aquifer. At The Site, the superficial deposits are unlikely to support significant groundwater, due to their glacial till and boulder clay composition. The groundwater vulnerability beneath The Site is listed as Medium.

- 5.4.6 The Site is not within a Source Protection Zone, or any form of Drinking Water Safeguard Zones.
- 5.4.7 Additionally, through knowledge gained from farming the land, the landowner states that beneath the thin soils are low permeability clays. This prevents significant percolation of water and potential contaminants into groundwater, instead encouraging surface water run-off.
- 5.4.8 The depth to groundwater is not known, however, it is considered likely to be, at least, several metres beneath the ground surface, as the ground falls away towards the stream and in areas around The Site, by 4-5m where no springs are reported.
- 5.4.9 Groundwater quality for the Millstone Grit Group aquifer(s) varies considerably, primarily based in chemical interactions with bedrock<sup>1</sup>. Groundwater flow directions are considered likely to follow topographic contours, with a general flow direction from The Site towards the northwest then the north.
- 5.4.10 The culverted section of the stream could be considered an additional sub-

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<sup>1</sup> <http://nora.nerc.ac.uk/id/eprint/3551/1/CR05015N.pdf>

surface pathway. However, the culvert would be installed from the site boundary, where surface water enters The Site and would effectively 'seal' the section as a pathway, until the point where water exits the culvert in the centre of The Site.

### Receptors

- 5.4.11 The primary receptor identified is the surface water stream crossing The Site and this is given due consideration in the Hydrogeological Risk Assessment.
- 5.4.12 Due to the localised superficial geology being clay and considered likely to be of low permeability, as well as several factors included in the Environmental Risk Assessment for The Site, groundwater is not considered likely to be a significant receptor to any potential contaminants. Nevertheless, a request was made to the local authority for records of any private water supplies in the forms of both springs and boreholes, and these were subsequently considered in the Hydrogeological Risk Assessment.
- 5.4.13 Two private water supplies were identified within 250m of The Site<sup>2</sup> (shown on Drawing ref: *313/1 – Water-1*). The nearest is some 60 – 70m from The Site boundary. It is considered that groundwater flow direction is likely to be away from this borehole. A further supply is located approximately 140m – 160m from The Site's boundary. However, under the assumption that groundwater flow follows topographic gradients, whilst the flow direction is generally towards the north, at this distance from The Site, the flow direction is likely to

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<sup>2</sup> Due to confidentiality, the location cannot be given in this document. However, plan *313/1 – Water-1* is a strictly confidential plan supplied separately and shows the approximate private water supply locations.



have changed to a more north easterly route and would not be towards this water supply.

## 5.5 Pollution Control Measures

### Site Engineering

- 5.5.1 Due to the findings of the Hydrogeological Risk Assessment, the nature of the waste to be accepted at the site, as well as the strict WAP under The Site's EMS, it is not considered necessary for any landfill engineering, such as basal and sidewall liners, capping, or leachate management features to be utilised at The Site.

### Restoration

- 5.5.2 Due to the small scale of the proposed recovery operations, the restoration of The Site would simply require reinstatement of the retained topsoils, followed by seeding with a locally appropriate agricultural grass seed mix. The final topographic profile is shown in drawing ref: *F103-003*. Due to the low tonnages involved, and the relatively thin depth of the deposit, it is considered that any settlement would be negligible. As a result, it is not considered that there would be any stability issues at The Site.

### Surface Water Management

- 5.5.3 It is proposed to only carry out the operations during dry weather. The short-lived nature of the operations make this possible during spring / summer

months. It is, therefore, not necessary to produce a formal surface water management system for The Site. The small scale of The Site means total surface water run-off volumes are low, especially considering the aim to carry out the works only in dry weather. Post-restoration, the proposed topography would allow surface water run-off to flow towards the stream and leave The Site on the northwest boundary, as per existing conditions. However, minimal surface water volumes would be retained on The Site's surface, relative to the existing waterlogged and flooded conditions during winter.

#### After use

5.5.4 As stated, post-completion of the works, The Site would be used for pastoral farming (predominantly the rearing of cattle and sheep), and a new access road.

### **5.6 Monitoring**

5.6.1 As the waste infilling proposed would utilise solely inert materials, and the total volumes are relatively small, it is not considered that landfill gas would be generated by the proposals. Therefore, it is not intended to install any gas monitoring infrastructure.

5.6.2 The short-lived nature of the proposed operations would make any monitoring scheme of either gas or surface / groundwater impractical. There would likely be insufficient time to collect and analyse samples and identify any trends in levels of the measured determinands, prior to the works being completed. The Site's ERA and HRA show that there is low or very low risk of pollution, and it is considered that monitoring would not be required for the operations.