Wetherby Skip Services Ltd

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Quarry Works Deposit for Recovery Site

Environmental Setting and Site Design Report

HOOPER-SARGENT LIMITED
Environmental Permitting Consultancy

Document Control

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Project: Quarry Works Deposit for Recovery Site

Client: Wetherby Skip Services Limited

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1 Site Details

1.1 Report Context

This Environmental Setting and Site Design Report (ESSD) has been prepared by Hooper-Sargent Limited (HSL) on behalf of Wetherby Skip Services Limited (WSSL, the proposed Operator) who have applied for a bespoke Deposit for Recovery Environmental Permit (DfR Permit) for their Quarry Works site located on Field Lane in South Elmshall, near Wakefield (the Quarry Works Site).

The Quarry Works Site is understood to be an extension of the much larger South Elmsall Quarries site immediately to the south. The two sites were connected historically by a tunnel that extended beneath Field Lane, which otherwise defines the north / south boundary between the two. The larger South Elmsall Quarries site was restored to surrounding ground levels by landfilling around the 1970s. Based on Ground Investigation information, quarry waste and imported construction and demolition waste was also used to build the site entrance area and an access ramp down into the Quarry Works Site. The same material was used to partly infill the base of the Quarry Works Site, with works believed to have ceased in the 1970s. The Quarry Works Site was subsequently used as a waste transfer station for used industrial tyres, but became disused in the early 2010s. The extent of the former quarry has largely remained unchanged throughout, with the original quarry faces still exposed.

The Operator proposes to backfill the former Quarry Works Site using suitable imported inert waste under a DfR Permit. The purpose of the backfilling is to construct a development platform which will be used for residential housing. It is anticipated that placement of this type of material will significantly reduce the volume of water that infiltrates through the former unlined and uncapped waste deposits and into the underlying groundwater. On completion of the scheme, clean surface water will be diverted to storm sewer as part of a Sustainable Urban Drainage-based scheme in accordance with the planning consent.

1.2 Report Structure

The DfR Permit application was selected for Duly Making checks in April 2024 and consequent to that the Environment Agency (Agency) requested more information in their email dated 26 April 2024. To address the Agency's request for a groundwater risk assessment, gas risk assessment and assessment of all stages of development, a Conceptual Site Model (CSM) was prepared for the Site. Preparation of a CSM is the initial stage of a 4-stage process detailed in Agency online Guidance: *what to include in your Environmental Setting and Site Design report*[1] (the ESSD Guidance) as follows:

1. Prepare a CSM
2. Carry out Risk Assessments based on the CSM
3. Prepare an ESSD
4. Submit [or amend] a permit application

[1] Landfill operators: environmental permits - What to include in your environmental setting and site design report - Guidance - GOV.UK (www.gov.uk)

Report Referenced 2405-0016/R/001 details the Conceptual Site Model for the Site prior to commencement of the proposed activity, during the activity and upon completion. Report referenced 2405-0016/R/002 is a revision to the over-arching Environmental Risk Assessment (ERA) for the Site submitted with the original application. Report referenced 2405-0016/R/003 is the Groundwater Risk Assessment (GWRA) and Report referenced 2405-0016/R/003 is the Gas Risk Assessment (GGRA) for the Site. For brevity and to avoid duplication certain aspects of these reports will be cross-referenced in this ESSD where appropriate.

This ESSD follows the suggested format of the ESSD Guidance as follows:

- Section 1 – Site Details
- Section 2 – Compliance Points
- Section 3 – Pollution Control Measures
- Section 4 – Monitoring

Specific aspects of the above may not be applicable to the Site as determined by the CSM and associated risk assessments, and those will be identified accordingly.

2 Site Details

2.1 Site Location

The Site is located approximately 1 km to the northeast of the centre of South Elmsall, which is 16 km to the southeast of the city of Wakefield. The address and National Grid Reference is detailed below:

Quarry Works
Field Lane
South Elmsall
Pontefract
WF9 2DG
SE 447994 411625

2.2 Site Classification

The Quarry Works Site will be classified as a Deposit for Recovery Activity using non-hazardous waste that meets the waste acceptance requirements for an inert landfill Site as detailed in Council Decision 2003/33/EC: establishing criteria and procedures for the acceptance of waste at landfills pursuant to Article 16 of and Annex II to Directive 1999/31/EC (the Annex to the Landfill Directive (Council Decision 1999/31/EC)).

2.3 Site Boundary and Security

The Site boundary is also defined by the proposed permit boundary on Natural Resource Planning drawing referenced NRP-WSS-Permit-Biii: *Permit Boundary* attached in Appendix A. The Site is currently secured via lockable gates and fencing. A substantial thicket of established trees and shrubs encircles the entire site making unauthorised access very difficult.

It is understood permit for South Quarries Landfill referenced HP3998ZK and operated by South Quarries Landfill Ltd is still extant. It is assumed the permit boundary extends to the full extent of the Site i.e. up to and coincident with the southern edge of Field Lane but that is to be confirmed. There is no permit listed for the waste tyre transfer station on the public register and it is therefore assumed to have been surrendered.

2.4 Site Context

Drawing referenced 2405-016/D/001 attached to the accompanying ERA details the relevant receptors within 500 m of the proposed activity.

2.5 Climate Change

Section 2.7 of the ERA details how the proposed activity will be adapted to account for the anticipated impacts of climate change.

3 Compliance Points

3.1 Groundwater

It is understood the quarrying activities previously carried out at the Quarry Works Site extends to the full ownership boundary of the site i.e. there is no ground available external to the void into which boreholes could be drilled. The site also directly abuts Field Lane to the south with the South Elmsall Quarries landfill site directly adjacent to that. It would therefore not be possible to distinguish between emissions from the proposed activity and those associated with the significant waste deposits in the existing landfill.

Installation of boreholes through the base of the quarry void is not considered appropriate as they would also be subject to emissions from the existing waste deposits in the Quarry Works Site and their integrity of them could not be guaranteed during progression of the DfR activity. They would also represent a direct potential pathway of emissions into the underlying bedrock from the existing and proposed waste deposits.

The waste deposits made historically in the Quarry Works Site and the landfill site immediately to the south were not subject to the requirements of the Landfill Directive in terms of engineering or waste acceptance. The deposit of waste that will meet the requirements of the Landfill Directive is anticipated to present a lower risk of pollution than the historically landfilled waste on and off site. Placement of fill in the site will also reduce infiltration into the ground via the existing waste deposits.

No groundwater monitoring is therefore proposed as the very conservative waste acceptance controls are considered to be sufficient.

3.2 Surface Water

There are no sensitive surface water receptors in the vicinity of the Quarry Works Site and no direct connection to more distant receptors. On completion of the works, clean surface water run-off will be directed to the storm sewer. This water will be subject to a surface water management scheme to be approved by the Local Authority that meets the requirements of the planning consent. The flow from the site will be episodic and only after rainfall events, and also restricted to the volume currently discharged from site, which at present is limited to the area of hardstanding adjacent to the road. The risk to surface water receptors is considered to be low and monitoring is not proposed.

4 Pollution Control Measures

4.1 General

The current site security measures will be maintained throughout the duration of the DfR activity. No groundwater control or abstraction is required as the base of the site is not below the water table. The surface water management scheme will be constructed in accordance with approved submissions to discharge relevant conditions of the planning consent. No fuels or other potentially contaminating liquids will be stored on site. Potential accidents associated with the operation of site plant are detailed in the accompanying ERA.

4.2 Basal and Side Slope Engineering

It is not proposed to construct an engineered basal or side-slope barrier or layer due to the presence of existing waste deposits within the site and the placement of less polluting material upon them.

4.3 Surface Water Management

Surface water will be managed in accordance with the response to planning consent condition 19, 21 and 22. The responses are currently being prepared and will be provided to the Agency in due course.

4.4 Amenity

The measures to be implemented to minimise the impact of emissions on local residents are detailed in the accompanying ERA and Dust and Emissions Management Plan (DEMP).

4.5 Post-Closure Controls

The site will be developed for residential housing on completion of the development platform. The nature of any foundations or piling required for those developments will be determined by an appropriately qualified person based on their understanding of the ground conditions at the site. Incorporation of gas protection measures may be necessary subject to the data collected from the in-waste gas monitoring data and analysis of waste deposits made at the site.

A surface water management scheme will need to be submitted for approval by the local authority prior to commencement of infilling operations under the permit. This scheme will likely need to be implemented before the final levels are achieved across the entirety of the site i.e. on a phased basis. Effective maintenance of that scheme will be subject to regulation under the planning consent and may require for example periodic clearing or desilting of any drainage channels.

A coal mining report was commissioned to support the Ground Investigation carried out for the site in 2018. It stated that there were former working beneath the site at a depth of 641 m to 754 m. These were last worked in 1972 and concluded all movement associated with them should have ceased. It also stated that there were no reported that there are no notices or claims for damage or subsidence associated with them since the 1994 register commencement date.

The conservative waste acceptance criteria should ensure the DfR deposits will not include material that can produce significant quantities of biogenic gas or release emissions of substances that could pollute groundwater. On completion of the DfR activity an application will be made to surrender the permit which will include reference to the waste acceptance records. The accompanying GGRA also recommends the installation of a further 4 in-waste gas monitoring boreholes to confirm that the DfR material was suitable. That information may also be used to inform the requirement for any gas protection measures in properties constructed on the site and as a precaution against emissions from the neighbouring landfill site.

The type of material to be placed in the void will consist of a mixture of granular and cohesive materials. The waste will not contain a chemically or biodegradable component which could degrade and alter the structure of the waste mass by differential settlement. This material will be compacted by a heavy excavator after placement and will not extend above the surrounding ground levels of the former quarry, and will therefore be confined by the quarry walls or existing deposits. In order to

facilitate vehicle movement within the site and allow deposition of material near or at it final location of placement, the waste will not be placed at a steep gradient. The final platform should therefore be geotechnically stable and no additional geotechnical measures or monitoring are proposed.

5 Monitoring

5.1 Meteorological Monitoring

Meteorological data will be reviewed from the nearest station at Wakefield[2] to identify conditions that may influence the impact of emissions on adjacent receptors. This station records historic wind direction and windspeed data along with rainfall.

5.2 Gas Monitoring

The accompanying GRA recommended the continued monitoring of the existing gas monitoring boreholes at the Quarry Works Site throughout the duration of the works and after completion, along with the installation and monitoring of boreholes drilled into the DfR deposits. The proposed monitoring regime is detailed in Table 1 below.

Table 1 – Proposed Gas Monitoring Regime

Location Identifier	Frequency	Parameters and units
Pre-Operational WS4, WS7 and BH1	Quarterly	Methane (%v/v) Carbon Dioxide (%v/v) Oxygen (%v/v) Balance Gas (%v/v) Flow Rate (l/hr) Differential Pressure (mbar) Atmospheric Pressure (mbar) Atmospheric pressure trend at time of monitoring Dip to liquid / dip to base Ground conditions (e.g. wet, dry, frozen etc)
Operational WS4, WS7 and BH1 WS4 to be sampled for as long as practicably possible	Monthly	
Completion of DfR deposit activities WS7 & BH1 IWBH01 to 04 IWBH01 to 04 to be installed on completion of DfR activities.	Monthly	

5.3 Groundwater Monitoring

It is not proposed to carry out groundwater monitoring at the site.

5.4 Surface Water Monitoring

It is not proposed to carry out surface water monitoring at the site.

[2] Wakefield Wind Forecast, West Yorkshire WF1 2 - WillyWeather

5.5 Amenity Monitoring

The Operator will carry out daily inspections to identify any dust emissions that could impact sensitive receptors as detailed in the accompanying DEMP.

APPENDIX A – Natural Resource Planning drawing referenced NRP-WSS-Permit-Biii: *Permit Boundary*

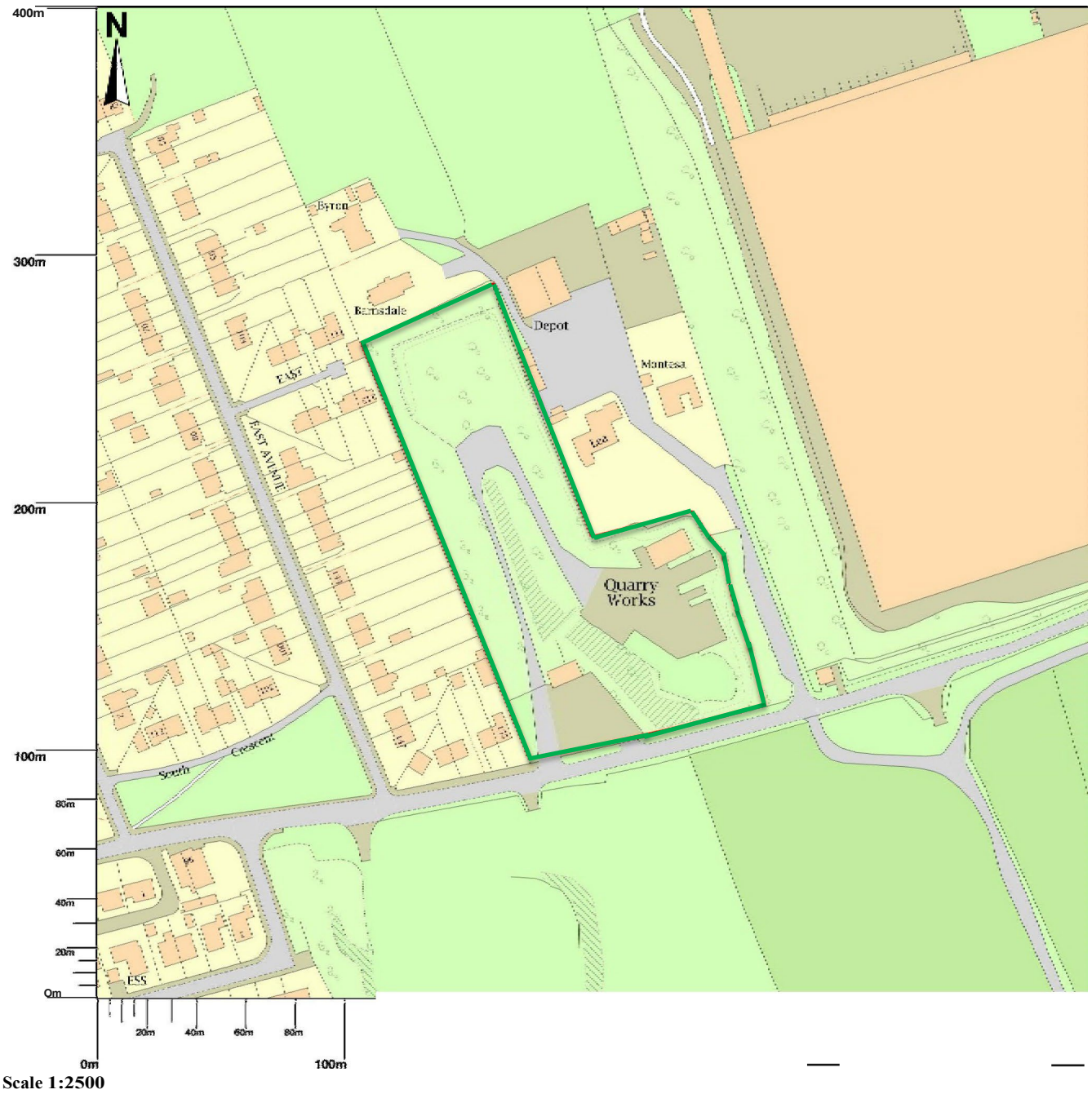
Permit Boundary

Quarry Works

Wetherby Skip Services Ltd
Bespoke Environmental Permit

Map data

Natural Resource Planning
Ref: NRP-WSS-Permit-Biii



Scale 1:2500

Site Name	Quarry Works, Field Lane	Title	Permit Boundary
		Scale	1:2500
Wetherby Skip Services Ltd		Reference	PERMIT Biii