REPORT

Sandsfield Gravel Company Ltd

Milegate Eastern Extension Quarry and Landfill

Non-Technical Summary

Submitted to:

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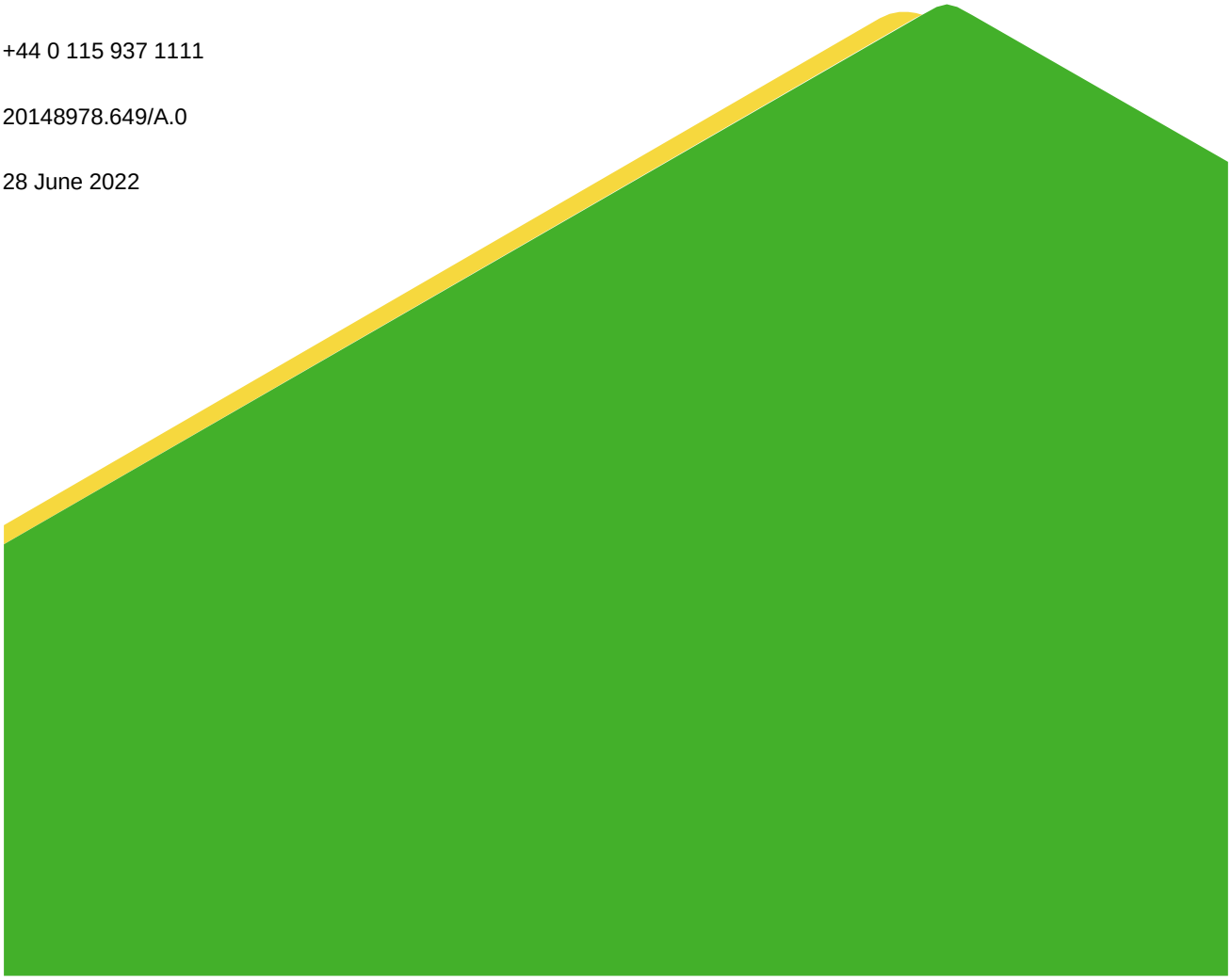

Distribution List

Sandsfield Gravel Company Ltd - 1 copy (pdf)

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1.0 INTRODUCTION

1.1 General

This Non-Technical Summary (NTS) is provided in support of an Environmental Permit (EP) variation application submitted by Sandsfield Gravel Company Ltd (Sandsfield) to the Environment Agency (EA) for the development of an 'Eastern Extension' to Milegate Extension Quarry and Landfill, near Brandesburton. The application has been prepared by Golder, member of WSP in UK, at the request and with the support of Sandsfield.

A Planning application for this development was submitted to East Riding of Yorkshire Council (ERYC) in May 2022.

1.2 Background

The existing Milegate Extension Quarry and Landfill is centred on National Grid Reference TA 131 472 which is located approximately 1 km southeast of the village of Brandesburton. Planning permission for Milegate Extension Quarry and Landfill was granted by the now ERYC in 1999 enabling the working of sand and gravel deposits, landfilling with non-hazardous wastes and restoration to agriculture. The permission required the extraction of minerals and restoration of the Site to cease in 2008 but was subsequently extended to 2018. In 2018, Sandsfield gained permission to amend the line of the northern boundary to include a purchased narrow strip of land for both extraction and filling (the 'Northern Extension') and to extend the period of landfilling to February 2038.

Today, the Site remains an active sand and gravel quarry and landfill for the disposal of non-hazardous waste. Sand and gravel extraction has generally taken place in an east to west direction across the Site, and is substantially complete, apart from small areas in the northeast corner. Landfilling has taken place continuously since 2007 in accordance with Environmental Permit EPR/BX1942IX/V003 issued by the Environment Agency (EA) in 2006, and last varied and consolidated by the EA in February 2020.

Landfilling began in Cell 1 in the southeast corner and proceeded in a westerly direction through Cells 3, 5 and 7. Cell 8 was constructed to the north of Cell 7 in 2016, and subsequently landfilling continued in an easterly direction into Cell 6, Cells 4A and 4B, with Cells 2A and 2B to follow in the northeast corner. Today, Cells 1, 3, 5, 7 and 8 are filled, capped and restored; Cell 6 has been filled and awaits capping and restoration in 2022; Cell 4A filling has recently been completed; Cell 4B commenced filling in January 2022 and is currently operational; and Cells 2A and 2B await development.

The location and layout of the current site is shown in **Figure NTS1**. It shows the restored cells (brown), filled and unrestored cells (orange), active cells (green), and future cells (yellow). It also shows the line of the leachate discharge pipeline to sewer extending to the northwest towards the roundabout and the proposed location of the Eastern Extension to the east.

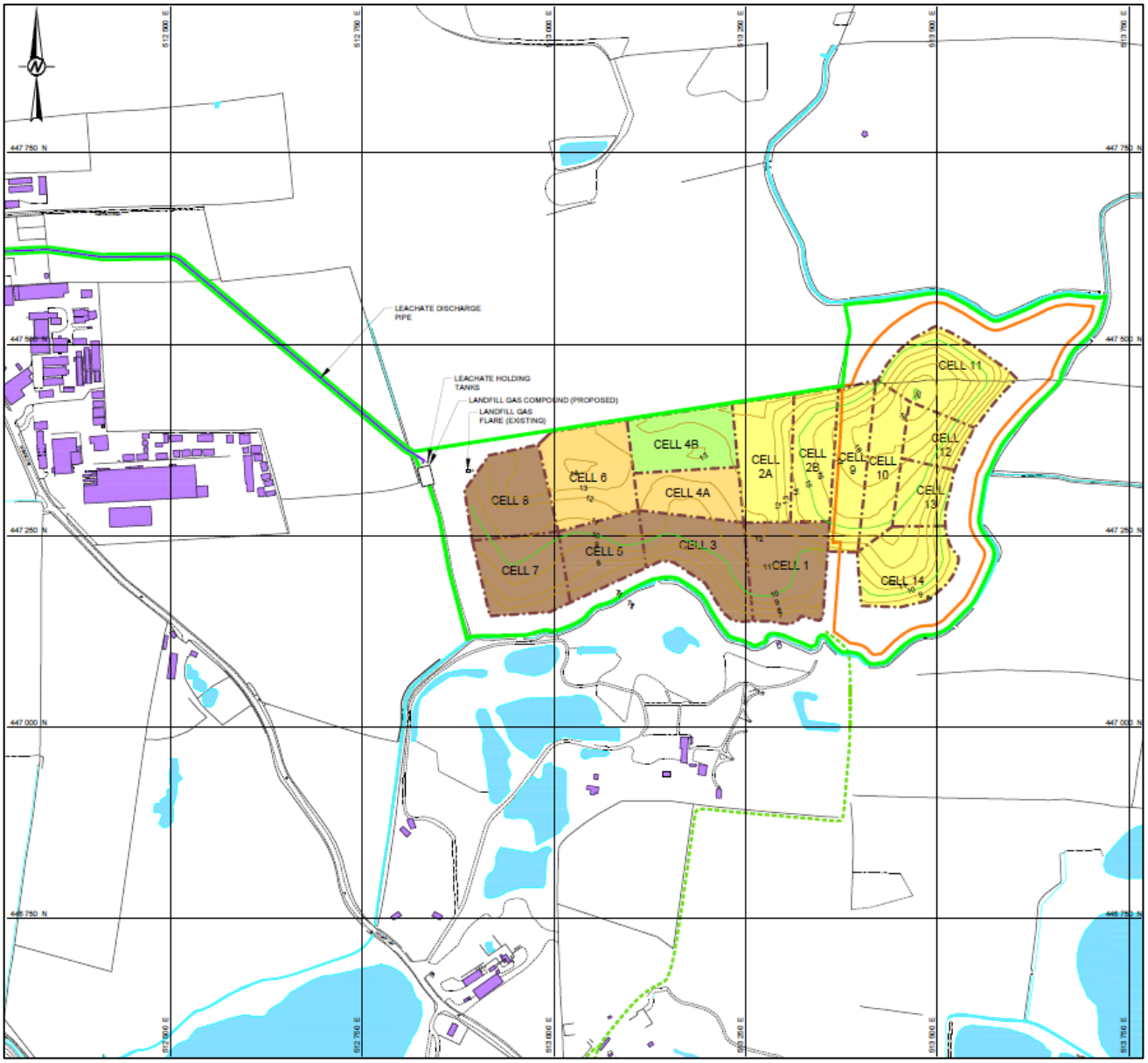


Figure NTS1: Current Site Layout

1.3 Summary of Proposed Development Scheme

Sandsfield is proposing a development scheme to allow continued and uninterrupted mineral extraction and landfilling operations to extend into the neighbouring field to the east (the 'Eastern Extension') which is currently in agricultural use.

Sand and gravel remains exposed in the eastern face of the quarry, (**Figure NTS2**) and is known to extend under much of the neighbouring field. The volume of sand and gravel is estimated at 400,000 m^3 or 640,000 tonnes (at 1.6 t/m^3). Sandsfield is proposing to extract this mineral by working eastwards through the quarry sidewall and then to 'chase the mineral' clockwise around the north end of the neighbouring field and then southwards once a working face has been established across the full, west to east, width of the site. The northwest and northeast corners of the Eastern Extension area may be excluded from the quarry void as the mineral may be locally absent.

Extraction of mineral would commence upon receipt of both planning permission and Environmental Permit to ensure that both extraction of mineral and restoration by landfill can be achieved. Mineral would be extracted at a typical rate of 100,000 tonnes/annum currently proposed to start in 2023 and finish in 2030 (seven years).

Landfilling will follow behind the mineral extraction operations. It is proposed that the eastern edge of Cells 2A and 2B will comprise an intercell bund, to enable cell development to continue eastwards from about 2025 as a continued and uninterrupted operation. By that time, mineral extraction will be at a mid-stage of completion and landfill development will then progress systematically behind the mineral extraction operation with the development of Cells 9 to 14 in a generally clockwise and then north to south direction. Landfilling will progress in six cells (Cells 9 to 14) with a footprint illustrated in **Figure NTS1**, above.

Figure NTS2: Sand and Gravel exposed in the Eastern Sidewall of the Quarry

As the mineral extraction proceeds, the quarry void will be shaped and overburden, interburden and Middle Clay materials will be used to pre-engineer 1(v) in 2.5 (h) sideslopes. Landfilling is proposed to start in Cell 9 in 2025 and finish in 2034 (nine years), followed by capping and restoration. The site will be worked progressively with the objective, as far as is operationally and economically practicable, of minimising the site area that is disturbed and unrestored at any one time. The Eastern Extension is proposed to be completed within the timeframe already permitted for the existing operations, i.e. before February 2038.

The post-settlement post-restoration contours established by the 1999, 2008 and 2018 planning permissions were designed in keeping with the surrounding topographic contours and to maintain a generally southerly flow of surface water towards Milldam Beck. To accommodate the Eastern Extension area, the existing approved restoration has been extended across to Eastern Extension to tie in with the surrounding topographic contours.

The progressive capping and restoration of the landfill cells will produce a gently undulating landform that will be returned to agricultural use. During the restoration programme, the opportunity will be taken to enhance the appearance and nature conservation value of the site by the introduction of hedge lines and blocks of planting. The Restoration Plan is shown in **Figure NTS3.**

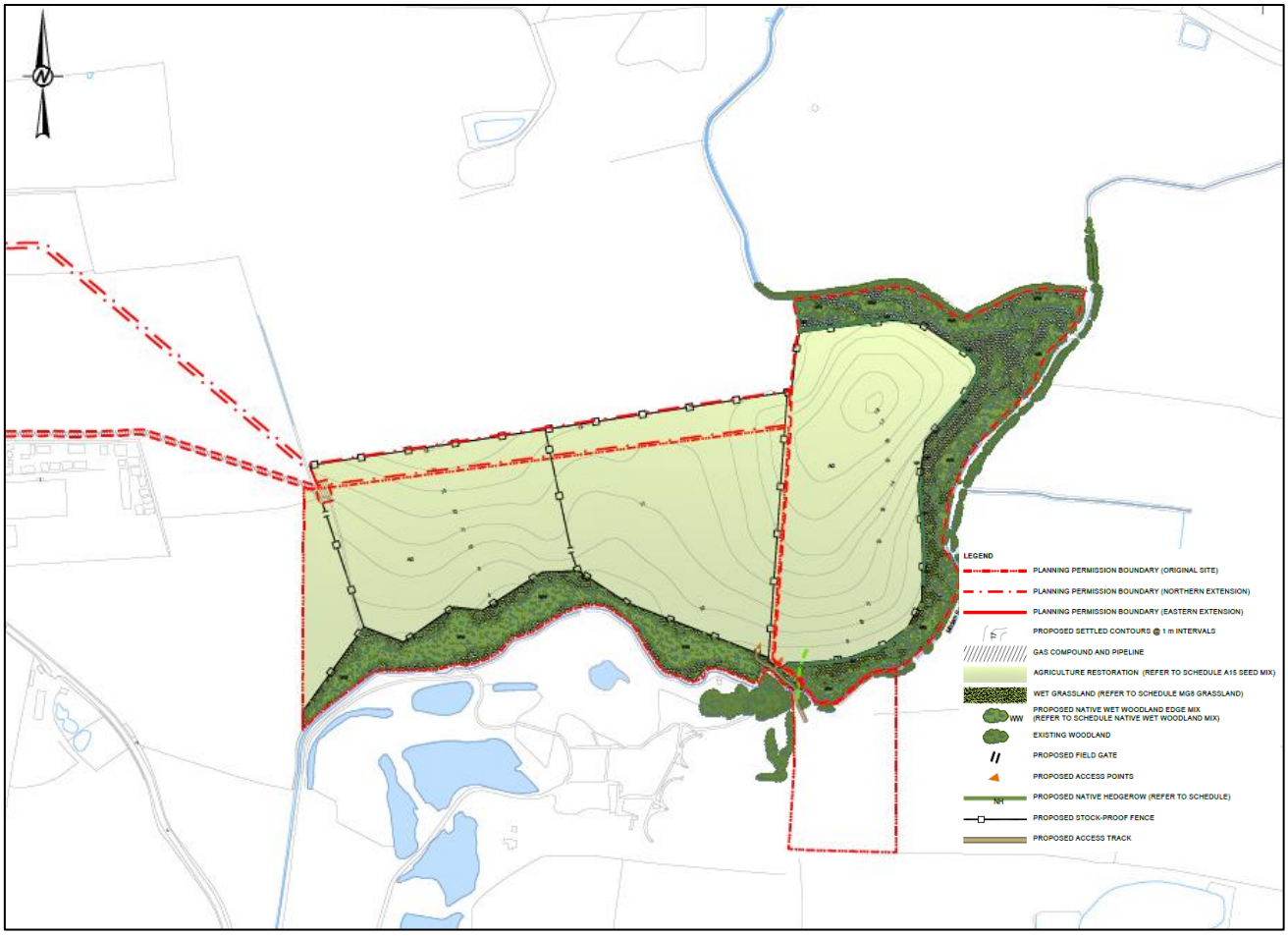


Figure NTS3: Restoration Plan.

The key features of the restoration plan include:

- A slightly higher landform at the eastern end of the existing site to enable a more sinuous ‘natural looking’ transition between the two parts of the Site.
- The reinstatement of the Site back to agricultural land, using topsoil previously stripped from the Site;
- Enclosure of the new fields with stock-proof boundaries to facilitate grazing, or arable production;
- Creation of a ‘smooth’ residual landform with gentle gradients and a ‘natural’ appearance that maintains surface water run off pre- and post-settlement;
- The Site boundary would be enclosed with stock-proof fencing (1.2 m high post and wire with stock proof mesh). To facilitate efficient grazing and stock management, the main part of the Site would be divided into two separate fields, replicating the previous field boundaries prior to mineral extraction;
- To replicate field boundaries elsewhere, it is proposed to plant occasional native trees at random centres along the field boundaries and introduce native hedgerow; and

- An area of wet woodland and species-rich grassland would be created alongside Milldam Beck, along the eastern boundary of the Eastern Extension, replicating the vegetation cover in the restored areas to the south of the watercourse (Local Wildlife Site).

With regard the other aspect of the development proposal, landfill gas is currently extracted from the landfill through a network of gas wells and pipework and is drawn to the high temperature flare for destruction. The original landfill gas flare in the southeast corner was moved to the northwest corner of the existing site in January 2019 and Sandsfield upgraded that flare in September 2021 for which retrospective planning approval is sought (**Figure NTS4**).

Figure NTS4: Current Landfill Gas Flare in Northwest Corner of Existing Site

However, going forward, as further waste is deposited, the amount of landfill gas generated will become sufficient to power gas engines for the generation of electricity. Consequently, the development proposal includes a new landfill gas utilisation compound at the northwest corner of the existing site. The recently relocated and upgraded landfill gas flare will be moved into this compound and there will be the phased installation of two new landfill gas-to-energy engines and associated equipment within the compound. The gas engines will generate electricity to supply (by new cable connection) a neighbouring business (currently Bankside Patterson Ltd, a manufacturer and supplier of galvanised chassis and modular steel frames for a variety of industries, owned by AL-KO Kober Holdings Ltd (AKK)) by private wire and the National Grid.

2.0 ENVIRONMENTAL PERMIT VARIATION

Environmental Permit BX1942IX was issued for the original Site in March 2006. It was updated in 2016 to modern condition format as part of an Environment Agency-led Sector Review. It was subsequently varied by Sandsfield to include the Northern Extension, so landfilling today takes place in accordance with Environmental Permit EPR/BX1942IX/V003 dated 17 February 2020.

It is proposed to vary this permit to include the Eastern Extension. As part of the permit application process, Sandsfield is required to demonstrate that Best Available Technique (BAT) will be implemented to prevent and, where this will not be possible, to minimise, risks of pollution to all environmental media. Sandsfield has been issued with its Environmental Permit indicating that it is able to operate in accordance with BAT for landfill. These operational techniques will be carried forward to operation of the Eastern Extension.

The Environment Agency will regulate the Site under the conditions of the Environmental Permit until its closure, at which time the Site will enter an aftercare period (after restoration has been completed), the length of which could be 60 years or more. During this time period, Sandsfield will continue to monitor and manage the Site under the conditions of the Permit, regulated by the Environment Agency, in a manner protective of the surrounding environment.

3.0 INSTALLATION DETAILS FOR EASTERN EXTENSION

3.1 Access and Waste Acceptance

Access to the Site is obtained from Catwick Lane via Sandsfield's Site reception and offices that serve the quarry and landfill operations, and the adjacent waste transfer station. Sandsfield will continue to use its existing entrance at the Eastern Extension. The entrance has secure steel and mesh gates to prevent non-operational vehicle access, which also prevents unauthorized access to the quarry and landfill. The haul road leading from the reception to the quarry and landfill is constructed from hardcore.

All vehicles report to the Site weighbridge before gaining access to the landfill along the internal access routes. Incoming waste is subject to detailed procedures regarding the checking and acceptance of waste.

There will be no change to the site entrance, car park, reception facilities (including weighbridge and office), mineral storage areas and internal haul road from that already in use for the original Site and Northern Extension.

3.2 Hours of Operation

The hours of operation for the existing Site, are as follows:

- 07:00 to 18:00 Monday to Friday; and
- 08:00 to 13:00 Saturday.

There will be no change to the operational hours already in use at the original Site and Northern Extension.

3.3 Site Management and Employment

The existing quarry and landfill currently has seven full time equivalent staff:

- Site Manager;
- Deputy Manager;
- Weighbridge Clerk;

- Office Administrator;
- Machine and Compactor Operator; and
- Two labourers.

These staff are supported by managerial, operational and administrative staff in Sandsfield's head office who also support the company's other business interests. Sandsfield's head office is located at Sandsfield Farm also on Catwick Lane, 150 m south of the Site Reception.

There will be no change to management and operational staffing levels at the Site Reception already engaged in landfilling operations; however, four additional staff (drivers) will be required to operate one 360 degree tracked excavator, two dump trucks, and one bulldozer/compactor during periods of mineral extraction.

3.4 Waste Inputs

The landfill classification of Milegate Extension Landfill is Non-Hazardous. As such, only non-hazardous and inert solid wastes are deposited within the landfill as specified in the current Environmental Permit. These include wastes sourced from Sandsfield's own waste transfer station.

Wastes may also be received at the landfill for use in restoration, in accordance with the Environmental Permit. Inert wastes will be additionally used for daily cover.

3.5 Landfill Engineering Design

The design principles of the landfill lining system have been established through the development of Cells 1, 3, 5, 7, 8, 6, 4A and 4B which have been installed in accordance with the Environmental Permit. These design principles will continue in the development of Cells 2A and 2B and the Eastern Extension. The Eastern Extension will be divided into 6 engineered landfill cells (Cells 9 to 14) as shown on **Figure NTS1** for the disposal of non-hazardous waste and the development shall proceed in the order of cells in a clockwise manner.

Progressive capping, restoration and landfill gas management within the Eastern Extension will be carried out as each cell is completed.

Quantitative risk assessments have been carried out for hydrogeology, stability and landfill gas. A qualitative nuisance and health risk assessment has also been carried out. These risk assessments have been completed in accordance with the requirements of the Environmental Permitting Regulations 2016 and therefore also the Landfill Directive.

The base of each cell will be lined with with clay and will be sloped to an engineered sump for the collection of leachate. Leachate comprises mostly rainfall that percolates down through the waste and collects in the bottom of each cell. The cell base will be covered with a drainage blanket and network of pipes to direct leachate towards the sump.

3.6 Leachate Management

Leachate is managed at the Site in accordance with the Environmental Permit.

Leachate will be extracted from leachate wells serving each sump and transferred via pipeline to the two above-ground leachate holding tanks in the north-western corner of the Site prior to discharge via pipeline to the sewer discharge point, via Trade Effluent Discharge Consent from Yorkshire Water.

In order to ensure that leachate does not escape beyond the containment system and ultimately into the groundwater around the Site, the leachate level in the Site will be managed and groundwater outside the Site will be monitored. Details of management and monitoring are provided within the application and all results are

submitted to the Environment Agency. The application also provides an action plan in the event of agreed compliance limits being exceeded.

3.7 Landfill Gas Management

Landfill gas is managed at the Site in accordance with the Environmental Permit.

Landfill gas control will be based on an active gas extraction system incorporating a network of gas extraction wells installed into the waste once each area has been filled to the required level and pipework directing gas to a new Gas Compound where the engines and flare will be located. The active gas extraction system will be progressively installed with the restoration of each cell and will generate electricity for a neighbouring business and the National Grid.

A number of boreholes will be installed around the boundary of the Site in order to detect any gas escaping from the containment area. Details of management and monitoring are provided within the application and all results are submitted to the Environment Agency. The application also provides an action plan in the event of agreed trigger levels being exceeded.

3.8 Groundwater Management

Groundwater management and discharge is required whilst the Site is under quarry and landfill development. The principles of groundwater management have been established at the existing Site and are controlled through the Environmental Permit. They will continue in the development of Cells 9 to 14 in the Eastern Extension.

Groundwater that discharges into the quarry from the quarry face is pumped to a settlement pond in the southwest corner of the Site prior to discharge to the Milldam Beck in accordance with EP requirements.

The groundwater drainage system already installed behind existing cells will be extended behind all cells in the Eastern Extension (where required) and will remain in use whilst each cell is under development. Water from the back drain may discharge into the quarry for removal or be accessed by a temporary manhole with submersible pump, and also pumped to the settlement pond prior to discharge to Milldam Beck.

3.9 Surface Water Management

The landform slopes in the final restoration have been designed to shed surface water to the perimeter of the Site and towards the Milldam Beck and the Moor Main Drain. Perimeter surface water drainage ditches will be installed progressively at the site and will be unlined where constructed into virgin ground. Surface water contained in the ditches will infiltrate directly into the underlying sand and gravel and flow towards the Milldam Beck and the Moor Main Drain.

3.10 Capping and Restoration

The principles of engineered capping and restoration have been established at the Site and are controlled through the Environmental Permit. They will continue in the development of Cells 9 to 14 in the Eastern Extension.

In order to reduce the amount of precipitation allowed to infiltrate the waste, a low permeability cap will be constructed as the waste in each cell is completed to final pre-settlement levels. The Site will then be restored by the placement of 1 m of subsoil and topsoil. The detailed design and construction details will require Environment Agency approval prior to the capping and restoration works.

Upon restoration, the Site will be returned to agriculture. Landform slopes in the final restoration have been designed to shed water to designated surface water drainage ditches. Details of surface water management and monitoring are provided within the application and all results are submitted to the Environment Agency. The application also provides an action plan in the event of agreed compliance limits being exceeded.

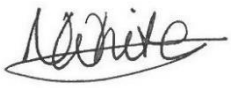
As the original Site, Northern Extension and Eastern Extension will be underlain by one continuous waste mass, the post-settlement post-restoration contours at the eastern end of the existing site have been varied to provide a continuous gently undulating landform that merges with the Eastern Extension and maintains surface water drainage.

3.11 Pollution Control Measures

Environmental monitoring systems will be installed at the Site to ensure that there are no adverse effects on the surroundings. Details of the proposed environmental monitoring programme, and compliance limits are detailed within the application. Environmental management systems will be implemented, and Sandsfield will regularly review these systems to ensure that the latest appropriate techniques are being employed.

Signature Page

Golder WSP UK Limited



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