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SHELLINGFORD QUARRY LANDFILL GAS RISK ASSESSMENT TO SUPPORT ENVIRONMENTAL PERMIT VARIATION APPLICATION EPR/BP3095EU/V006

For

MULTI-AGG LIMITED

January 2026

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SHELLINGFORD QUARRY LANDFILL GAS RISK ASSESSMENT TO SUPPORT ENVIRONMENTAL PERMIT VARIATION APPLICATION EPR/BP3095EU/V006

1. INTRODUCTION

1.1 Report Context

Shellingford Quarry Landfill currently operates under Environmental Permitting Regulations (EPR) Permit EPR/BP3095EU which provides for the landfilling with imported inert waste of the quarry excavation in accordance with extant Planning Permissions STA/SHE/8554/12-CM (MW.0020/11) and STA/SHE/8554/11-CM (MW.0021/11).

Planning Permission P18/V2610/CM (MW.0104/18) was granted in September 2020 and provides for the extraction of sand and limestone from a western extension to Shellingford Quarry and restoration of the excavation to original ground levels using imported inert waste material and indigenous soils.

An EPR Permit application is being submitted to vary the existing EPR Permit EPR/BP3095EU to add a deposit for recovery activity to accommodate infilling within the adjacent western quarry excavation area with imported inert waste.

This report presents a Landfill Gas Risk Assessment (LGRA) and has been prepared to support the EPR Permit application to vary the existing EPR Permit to accommodate infilling with imported inert waste associated with the adjacent western quarry excavation area.

1.1.1 Operator of the proposed installation

Multi-Agg Limited, The Upper Lime Kiln Works Bytham Road, Ogbourne St. George, Marlborough, Wiltshire, SN8 1TD.

1.1.2 Agent who completed this report

GWP Consultants LLP, Upton House, Market Street, Charlbury, Oxfordshire, OX7 3PJ.

1.1.3 Outline of the proposed development

The EPR Permit application is to vary the existing EPR Permit EPR/BP3095EU to add a deposit for recovery activity to accommodate infilling within the adjacent western quarry excavation area with imported inert waste. The inert fill capacity associated with the deposit for recovery activity is *c.* 1.60Mm^3 which equates to a tonnage of *c.* 2.88Mt (using a conversion factor of 1.8t/m^3).

The additional deposit for recovery activity associated with the Permit variation will be limited to the western quarry excavation area that is adjacent to the inert landfilling area covered by the existing EPR Permit. This means the current Permit boundary will need to be extended to the west and south to allow for the additional deposit for recovery activity.

Details of the site setting and installation design are presented in the Environmental Setting and Site Design (ESSD) report prepared by GWP Consultants LLP (GWP) (GWP Report No. 250212) which accompanies the EPR Permit variation application (Appendix Hii of the EPR Permit variation application) and which should be read in conjunction with this report.

Drawing No. SHELLQMA2508-1 shows the site location.

Drawing No. SHELLQMA2508-2 shows the EPR Permit variation application area within the context of the existing EPR Permit area, highlighting where the deposit for recovery activity in the western extension area will take place.

Drawing No. SHELLQMA2508-3 is the site plan which shows the total extent of the varied EPR Permit area being applied for.

Drawing No. SHELLQMA2508-7 illustrates the phasing of the excavation and infilling of the western quarry extension, approved by Planning Permission P18/V2610/CM (MW.0104/18).

1.2 Sources

The site currently receives Landfill Directive compliant inert waste only. The waste types permitted by the existing EPR Permit will remain unchanged and are listed below in Table 1.

These wastes are, by definition, of insignificant ecotoxicity and are not subject to bio-degradation and consequently they do not have the potential to generate landfill gas.

Given the inert nature of the waste and strict waste acceptance procedures and protocols, which are currently in place and will continue, there is no potential source of any significant quantities of landfill gas from the existing landfill or the infilling with inert waste within the western quarry excavation area under a deposit for recovery activity. Therefore, there is no potential for landfill gas generation and no requirement for landfill gas management.

However, it is proposed that proportionate monitoring is undertaken to confirm that the site poses a negligible risk from landfill gas throughout the operational and post closure phases of site development.

Table 1 – Waste types

Waste types	
Exclusions **Wastes having any of the following characteristics shall not be accepted:** **Consisting solely or mainly of dusts, powders or loose fibres** **Hazardous wastes** **Wastes in liquid form**	
Waste Code	**Description**
17	**CONSTRUCTION AND DEMOLITION WASTES (INCLUDING EXCAVATED SOIL FROM CONTAMINATED SITES)**
17 01	**concrete, bricks, tiles and ceramics**
17 01 01	concrete (2)
17 01 02	bricks (2)
17 01 03	tiles and ceramics (2)
17 01 07	mixtures of concrete, bricks, tiles and ceramics other than those mentioned in 17 01 06 (2)
17 05	**soil (including excavated soil from contaminated sites), stones and dredging spoil**
17 05 04	soil and stones (excluding topsoil and peat) other than those mentioned in 17 05 03 (1)
19	**WASTES FROM WASTE MANAGEMENT FACILITIES, OFF-SITE WASTE WATER TREATMENT PLANTS AND THE PREPARATION OF WATER INTENDED FOR HUMAN CONSUMPTION AND WATER FOR INDUSTRIAL USE**
19 12	**wastes from the mechanical treatment of waste (for example sorting, crushing, compacting, pelletising) not otherwise specified**
19 12 09	minerals (for example sand, stones) from the treatment of waste aggregates that are otherwise naturally occurring minerals – excludes fines from treatment of any non-hazardous waste or gypsum from recovered plasterboard (2)
20	**MUNICIPAL WASTES (HOUSEHOLD WASTE AND SIMILAR COMMERCIAL, INDUSTRIAL AND INSTITUTIONAL WASTES) INCLUDING SEPARATELY COLLECTED FRACTIONS**
20 02	**garden and park wastes (including cemetery waste)**
20 02 02	soil and stones (excluding topsoil and peat) (1)

(1) For the purposes of waste acceptance, soil includes naturally occurring sands and clays

(2) Selected construction and demolition waste (C & D waste): with low contents of other types of materials (like metals, plastic, organics, wood, rubber, etc). No C & D waste from constructions, polluted with inorganic or organic dangerous substances, e.g. because of production processes in the construction, soil pollution, storage and usage of pesticides or other dangerous substances, etc., unless it is made clear that the demolished construction was not significantly polluted.
No C & D waste from constructions, treated, covered or painted with materials, containing dangerous substances in significant amounts.

If it is unsure whether the waste fulfils the definition of inert waste, or is uncontaminated, then testing of the waste must be undertaken to confirm compliance with the criteria for inert waste as specified in The Landfill (England and Wales) Regulations 2002 as amended. The origin of all waste must be known.

2. LANDFILL GAS RISK ASSESSMENT

2.1 The Nature of the Landfill Gas Risk Assessment

Environment Agency guidance proposes a tiered approach to risk assessment whereby the complexity of the assessment reflects the potential risk posed by a particular site, the sensitivity of the site settings and the probability of a risk being realised.

The initial risk screening is based upon the source – pathway – receptor approach. Whilst such an approach is iterative, with regular reviews built into the process, the initial Tier 1 risk screening has not identified a source of landfill gas. This indicates that no further assessment is required as without a source, the pathway – receptor linkages are academic and the site therefore presents a negligible risk to potential receptors.

However, for completeness, the following potential receptors for landfill gas have been identified.

- site operatives, visitors and passers-by;
- on-site offices;
- residential properties;
- crops in adjacent fields;
- global atmosphere.

Having completed the risk screening, it has been established that there is no source of landfill gas and therefore there is no need to move to more sophisticated forms of analysis. This is in accordance with available Environment Agency guidance (LFTGN03 – Guidance on the management of landfill gas). Strict management control and adherence to the waste acceptance criteria and protocols are considered sufficiently robust to ensure that the landfill gas source is demonstrably negligible and will remain negligible.

2.2 Proposed Assessment Scenarios

No further assessment is required as the risk screening completed in accordance with guidance provided by the Environment Agency (LFTGN03 – Guidance on the management of landfill gas) has revealed no potential for the generation of significant landfill gas.

2.3 Accidents and their Consequences

The only conceivable accident that would result in a release of landfill gas at this site is the accidental acceptance of biodegradable wastes. Due to the robust waste acceptance procedures which are currently employed on site, and will continue to be employed, it is considered highly unlikely that any biodegradable wastes have entered, or will enter, the site in significant quantities.

However, for the purposes of a simulated accident it has been assumed that *c.* 2000t of non-inert waste is accidently accepted at the site during a single day. If it is conservatively assumed that 10% of this waste was biodegradable waste then the total gas yield can be calculated over a 1 year period from the following equation which assumes that each tonne of waste produces 10m³ of gas (which is an overestimate based on Environment Agency Guidance):

$$Q = M \times 10 \times T / 8760 \text{ m}^3/\text{hr} \quad \text{or} \quad Q = 200 \times 10 \times 1 / 8760 \text{ m}^3/\text{hr}$$

Where:

Q = methane flow in m³/hour

M = annual quantity of biodegradable waste in tonnes

T = time in years

Even if such a set of circumstances were to arise, the gas production is estimated at only 0.228m³/hr and this from an isolated location. This should be compared with a minimum flow for gas flaring of *c.* 50m³/hr. Clearly, any such accident would not be significant in altering the outcome of the screening risk assessment. Consideration of this highly unlikely accident reveals no elevated landfill gas risk to receptors around the site.

2.4 Numerical Modelling

No numerical modelling is required as the risk screening completed in accordance with guidance provided by the Environment Agency (LFTGN03 – Guidance on the management of landfill gas) has revealed no potential for the generation of significant landfill gas.

2.5 Risks to the Environment and Human Health

The landfill gas emissions estimated from the site are insignificant. Accordingly, there is no landfill gas risk associated with:

- sub-surface migration;
- atmospheric dispersion and odour;
- atmospheric pollution; or
- human exposure

or to the potential receptors for landfill gas listed in Section 2.1 above.

2.6 Landfill Gas Completion Criteria

Risk screening and simple risk assessment has indicated that even if a small amount of biodegradable waste is accidentally accepted at the site, this will not lead to landfill gas emissions which could cause pollution or harm to human health as landfill gas will preferentially migrate to the surface and disperse in the atmosphere.

Post-closure monitoring will be required to demonstrate that the landfill is performing as designed. The site will be considered to no longer pose a risk from landfill gas when the concentration compliance criteria have been met at the site for at least 2 years based on the Environment Agency guidance (Landfill (EPR 5.02) and other permanent deposits of waste; How to surrender your environmental permit).

3. LANDFILL GAS MANAGEMENT PLAN

3.1 Control Measures

No control measures are required as the risk screening completed in accordance with guidance provided by the Environment Agency (LFTGN03 – Guidance on the management of landfill gas) has revealed no potential for the generation of significant landfill gas. Gas monitoring within external perimeter boreholes in accordance with the requirements of existing Environmental Permit EPR/BP3095EU has revealed that no significant quantities of landfill gas are being produced as a result of the permitted activities at the site.

3.2 Monitoring and Sampling Plan

Given the inert nature of the waste and strict waste acceptance procedures and protocols, and consistent with the findings of this LGRA, there is no potential source of any significant quantities of landfill gas from the existing inert landfill or the infilling with imported inert waste under a deposit for recovery activity associated with the adjacent western quarry excavation area.

However, it is proposed that proportionate monitoring is undertaken to confirm that the site continues to pose a negligible risk from landfill gas throughout the continued operational phase and the post closure phase of site development.

In-waste gas monitoring will be undertaken in accordance with a scheme submitted to satisfy the requirements of Improvement Programme Requirement IC3 of the existing EPR Permit. In-waste landfill gas monitoring boreholes will be retro-drilled on a phased basis as soon as it is operationally practicable to do so once the landfill has reached final level. It is proposed that 3 No. in-waste gas monitoring boreholes are installed within the western extension deposit for recovery area in addition to the in-waste gas boreholes to be installed within the existing inert landfill area. No in-waste landfill gas monitoring boreholes have yet been installed.

Available landfill gas monitoring data is provided in Appendix 1 and shows no evidence that the existing landfill is producing any significant or measurable levels of landfill gas.

It is considered that the continued monitoring of the existing external monitoring locations, plus monitoring of 2 No. additional monitoring boreholes installed during 2021 to the south (BH02/21)

and west (BH03/21) of the western extension area, and the future monitoring of the in-waste landfill gas monitoring boreholes (to be installed in accordance with the Improvement Condition IC3 submission and the 3 No. additional in-waste gas monitoring boreholes proposed for the western extension area) will be adequate for the purposes of monitoring gas at the site. Borehole BH01/21, which was situated to the north of the western extension area, has been lost.

In-waste gas monitoring locations (approved and proposed) are shown on Drawing No. SHELLQMA2508-15.

External gas monitoring locations are also shown on Drawing No. SHELLQMA2508-15.

Compliance levels for in-waste gas monitoring boreholes will be set in accordance with the requirements of Improvement Condition IC3 of the existing EPR Permit.

Given that the continued acceptance of inert waste at the site will be strictly controlled using robust waste acceptance criteria, it is considered that the continued operation of the site, including the deposit for recovery activity in the western quarry excavation area, will not result in any significant or measurable levels of gas being produced.

In the unlikely event that significant concentrations of gas are detected within monitoring boreholes, the frequency of monitoring will be increased, and additional management procedures may be considered in consultation with the Environment Agency.

3.3 Post Closure Controls

At 6 months prior to completion of the site, a Post Closure Management Plan will be submitted to the Environment Agency detailing the proposed post closure monitoring programme. Following the approval of this Post Closure Management Plan, completion of the site and completion of immediate post closure monitoring (2 years), providing there have been no indications of groundwater contamination or landfill gas generation, then the EPR Permit will be surrendered. The Post Closure Management Plan will also detail the procedures to be adopted should compliance limits for landfill gas be exceeded.

Post closure monitoring will be required to demonstrate that the existing landfill and deposit for recovery activity in the western extension area are performing as designed. The site will be considered to no longer pose a risk when compliance criteria have been met at the site for at least 2 years based on the Environment Agency Guidance (Landfill and deposit for recovery: aftercare and permit surrender).

4. CONCLUSIONS – COMPLIANCE WITH THE LANDFILL DIRECTIVE

The Landfill Directive requires that appropriate measures are taken in order to control the accumulation and migration of landfill gas. As this site will not produce any significant landfill gas there are no measures required to control the accumulation and migration of gas. In this respect the site is currently, and will continue to be, Landfill Directive compliant.

The Landfill Directive also requires that if the landfill is to receive biodegradable wastes the landfill gas will be collected, treated and where possible utilised. As this site will not accept any biodegradable wastes there are no requirements to collect, treat or use the gas. In this respect the site is Landfill Directive compliant.

Available landfill gas monitoring data shows no evidence that the existing landfill is producing any significant or measurable levels of landfill gas.

It is proposed that proportionate monitoring is undertaken to confirm that the site continues to pose a negligible risk from landfill gas throughout the continued operational phase and the post closure phase of site development

Given that the continued acceptance of inert waste at the site will be strictly controlled using robust waste acceptance criteria, it is considered that the continued operation of the site, including infilling the western excavation area under a deposit for recovery activity, will not result in any significant or measurable levels of gas being produced.

GWP CONSULTANTS
JANUARY 2026

APPENDIX 1

Landfill gas monitoring data