MICK GEORGE

ENVIRONMENTAL PERMIT APPLICATION
NON-TECHNICAL SUMMARY

HUSBANDS BOSWORTH QUARRY
WELFORD ROAD
HUSBANDS BOSWORTH
LEICESTERSHIRE
LE17 6JH

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Information Sheet

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HUSBANDS BOSWORTH QUARRY, WELFORD ROAD, HUSBANDS BOSWORTH, LEICESTERSHIRE, LE17 6JH

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1.0 INTRODUCTION

1.1 APPLICATION BACKGROUND

Application Details

1.1.1 Mick George Limited (Mick George) is applying for an Environmental Permit for the operation of an inert landfill activity to support the restoration of Husbands Bosworth Quarry, Welford Road, Husbands Bosworth, Leicestershire.

Site Setting

1.1.2 Husbands Bosworth Quarry is located approximately 230m southeast of the village of Husbands Bosworth, Leicestershire. The application site has a postcode of LE17 6JH and is centred on a National Grid Reference: SP 65056 83878. Husbands Bosworth Quarry falls within the Bosworth Estate, which covers an area of ~147ha. The Husbands Bosworth Quarry covers ~50ha of the Bosworth Estate, of which the landfill footprint will occupy c.30ha.

1.1.3 Access to the site is via Welford Road (A5199) located to the west of the quarry which in turn connects to Station Road (A4304) and the A14.

1.1.4 Agricultural land use dominates the area immediate surrounding area, with the urban extents of Husbands Bosworth also present further to the north. Agriculture occupies large areas of land to the east, south and west of Husbands Quarry with a smaller buffer of agricultural land located to the north. The village of Husbands Bosworth is located to the north and northwest of the Quarry. Coombe Hill Site of Special Scientific Interest and Bosworth Mill Meadow Site of Special Scientific Interest are located to the east and southwest of Husbands Bosworth Quarry. North Kilworth Local Nature Reserve is located west of the Husbands Bosworth Quarry. A public footpath/bridleway runs along the south-western boundary of the quarry void located.

Regulated Facilities

1.1.5 The regulated facility to be operated at Husbands Bosworth Quarry will be an inert landfill facility to support the restoration of the quarry facility. A total of ~1,300,000m^3 of waste will be deposited at the landfill at a rate of c. 175,000m^3 or 350,000 tonnes per year over an anticipated period of 8 years.

The Operator and Its Activities

1.1.6 The landfill operator will be Mick George Limited whose registered office and installation addresses are below:

Registered Office:	**Installation Address:**
Mick George Limited, 6 Lancaster Way, Ermine Business Park, Huntingdon, Cambridgeshire, PE29 6XU	Husbands Bosworth Quarry, Welford Road, Husbands Bosworth, Leicestershire LE17 6JH

1.2 TECHNIQUES FOR POLLUTION CONTROL

Management Techniques

1.2.1 Mick George Limited will operate the landfill facility in accorded with an Environmental Management System accredited to ISO14001.

The Main Activities

Site Construction and Engineering

1.2.2 The bedrock geology of the application site and the surrounding area comprises of the Dyrham Formation and the Charmouth Mudstone Formation; both part of the Lias Group.

1.2.3 The inert deposits will be placed directly over the Dyrham Formation which in turn overlies the Charmouth Mudstone Formation which have field permeability values between $5x10^{-6}$m/s to $1x10^{-9}$m/s and extend at least 130mbgl.

1.2.4 The sidewall of the quarry comprises mudstone of the Dyrham Formation, glaciofluvial and glacial till deposits and topsoil. An Artificial Enhanced Geological Barrier (AEGB) will be constructed over the sidewalls using suitable site-won or imported cohesive materials. Due to the stability factors and construction techniques, the AEGB will be a minimum of 1m thick over sidewall buttresses with a maximum permeability of the AEGB will be 1×10^{-7} m/s or equivalent.

Waste Disposal

1.2.5 Waste deliveries to the installation will take place via the following infrastructure:

- Surfaced Access and Internal Haul Roads;
- Weighbridge; and
- Wheel cleaning equipment.

1.2.6 Vehicles will access the facility via an existing service road which connects to Welford Road (A5199) and existing weighbridge facilities located in the western extents of the quarry. Deliveries will be subsequently directed to the active tipping area through designated engineered haul roads that route into the landfill area.

1.2.7 Waste deposited at the inert landfill site will be handled and compacted using tracked bulldozers.

Surface Water

1.2.8 Surface waters from all areas of site will continue to be managed within the existing network of drains and storage/settlement ponds/lagoons constructed over/in the quarry voids. Water collected and contained within this drainage system will subsequently be utilised as process water on-site and/or discharged to surface water via the existing consented discharge points.

Groundwater Management

1.2.9 The surrounding sand gravel deposits are water bearing, in which groundwaters currently drain into the existing quarry void. To maintain the stability of the AEGB that will be constructed over the sidewalls of the quarry comprising exposed sands and gravels, the sidewalls will be installed over a buttress constructed to a gradient of 1:3. Any groundwaters that drain into the quarry void will be collected within the existing water management systems employed at the quarry.

1.3 RISK ASSESSMENTS

Overview

1.3.1 As part of the Application for the landfill Environmental Permit, the following Risk Assessments have been prepared to determine whether any of the permitted activities will have an unacceptable impact on the environment:

- Stability Risk Assessment
- Hydrogeological Risk Assessment
- Environmental and Accident Risk Assessment

Stability Risk Assessment

1.3.2 The stability risk assessment (SRA) has addressed stability issues arising from the construction of an inert landfill at Husbands Bosworth Quarry.

1.3.3 The SRA examined the stability of the construction of the buttress, stability of the construction of the engineered clay liner and the stability of the subsequent inert waste infilling operations.

1.3.4 The stability analysis has shown that the proposed side wall design for the site have a factor of safety of 1.3 or greater. Therefore, the stability of the proposed 1 in 3 soil buttress is deemed to be acceptable, provided the timings outlined in the SRA are followed.

1.3.5 The integrity analysis has determined that due to the nature of the inert waste, there is considered to be minimal movement within the lining system to cause integrity issues. If there were to be any small movements, it is likely that the material used to construct the side slope lining system shall have a permeability much lower than the required value of $1x10^{-7}$m/s. Therefore, even if strains did appear, the permeability would still be greater than the minimum requirement, ensuring the integrity of the liner is maintained during the landfill operation.

1.3.6 It is recommended that to aid construction, higher permeability drainage pathways should be formed within the buttress to aid in the dissipation of excess positive pore-water pressure within the buttress material.

Hydrogeological Risk Assessment

1.3.7 The Hydrogeological Risk Assessment (HRA) considers the risk posed by the proposed inert landfill site to the local hydrogeological setting.

1.3.8 The HRA developed a conceptual Source-Pathway-Receptor model using the proposed waste types, local geology and hydrogeology and the surrounding groundwater and surface water receptors.

1.3.9 The proposed Husbands Bosworth Quarry inert landfill is located within superficial sand and gravel deposits which contain groundwater and have the potential to provide an element of baseflow to the River Welland.

1.3.10 Semi-quantitative modelling was undertaken using a representative pollution source term and site-specific groundwater and surface water quality data to identify whether the proposed inert Landfill poses a significant risk to the local hydrogeological/hydrological setting.

1.3.11 The undertaken modelling indicates that the restoration of Husbands Bosworth Quarry using inert wastes materials therefore presents no significant risk to the local hydrogeological/hydrological setting.

Environment and Accident Risk Assessment

1.3.12 The potential impact from the following emissions from the facility on the surrounding receptors has been considered:

- Dust and Particulate Matter;
- Odour;
- Dirt and Mud on Highway;
- Litter;
- Birds, Vermin and Insects; and
- Noise and Vibration.

1.3.13 All potential risks to nearby receptors have been considered and mitigated in that all residual risks are of a low magnitude. Due to the elevated potential for fugitive dust emissions to be generated during landfilling operations, a standalone Dust Emission Management Plan has been prepared to support this Environmental Permit Application.

1.4 ENVIRONMENTAL MONITORING

1.4.1 During the operation and post closure period, the installation will be subjected to detailed environmental monitoring covering the following areas:

- Waste Composition (Operational Phases Only)
- Landfill Gas
- Surface Water
- Groundwater
- Site Topography
- Dust (Operational Phases Only)
- Noise (Operational Phases Only)

1.4.2 Monitoring results will be submitted to the Environment Agency in accordance with the Permit conditions and records will be kept in order that monitoring trends can be reviewed and appropriate actions taken if necessary.

1.4.3 All monitoring systems will be maintained and calibrated by trained technicians and the equipment manufacturers to ensure that the equipment and infrastructure is maintained in good working order.