MICK GEORGE

ENVIRONMENTAL & ACCIDENTS RISK ASSESSMENT AND MANAGEMENT

CROSS LEYS QUARRY
LEICESTER ROAD
THORNHAUGH
PETERBOROUGH
PE8 6NH

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SiriUS Environmental

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Information Sheet

ENVIRONMENTAL & ACCIDENTS RISK ASSESSMENT AND MANAGEMENT
CROSS LEYS QUARRY, LEICESTER ROAD, THORNHAUGH, PETERBOROUGH

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Prepared for : Mick George Limited

Prepared by : Sirius Environmental Limited
The Beacon Centre for Enterprise
Dafen
Llanelli
SA14 8LQ

Written by :

David Rowe BSc (Hons) MSc
Environmental Consultant

Reviewed by :

Dylan Thomas BSc (Hons) PGDip MCIWM
Principal Environmental Consultant

Approved by :

Mark Griffiths BSc (Hons) MSc CGeol MCIWM
Environmental Director

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CONTENTS

1.0 INTRODUCTION 1
2.0 SITE SETTING 1
3.0 RISK ASSESSMENT 4

LIST OF FIGURES

Figure EARA1: Wind rose for Wittering Airfield meteorological recording station – five-year 2018-2023 annual average 4

LIST OF TABLES

Table EARA1: Local land uses, features, classifications and receptors and their relevant distances from the boundary of future waste operations (within 1km). 2
Table EARA2: Risk Assessment Criteria 4
Table ERAR3: Environmental and Accidents Risk Assessment Matrix and Management 6

LIST OF DRAWINGS

MG1002/14/02	Site Boundaries Plan
MG1002/14/04	Environmental Setting
MG1002/14/05	Natural and Cultural Heritage
MG1002/14/10	Sensitive Receptors

1.0 INTRODUCTION

1.1 Sirius Environmental Limited ('Sirius') has been commissioned by Mick George Limited to prepare an application to vary Environmental Permit EPR/DB3132AZ to support a revised scheme of restoration for the former quarry at Cross Leys Quarry, Thornhaugh, Peterborough. Mick George Ltd are seeking to re-focus the recovery operations from the southern and eastern area of the former mineral working to the north-western area to quarry (this includes an area formerly restored via a Paragraph 9 Exemption).

1.2 These changes are proposed due to the presence of Great Crested Newts (GCNs) in the waterbodies located in the south-eastern area of the site. The revised scheme of restoration has been designed in order to preserve and enhance biodiversity and habitats within the southern section. The revised plans would still retain an element of the approved scheme, with the northern area remaining agricultural. To achieve agricultural restoration in the northern section of the site, the proposal seeks to import around 395,000m^3 of inert restoration materials to raise the levels within the quarry void to create a gentle domed profile which would improve the surface water drainage and resultantly provide a superior quality of agricultural grazing land.

1.2.1 As part of this application it is necessary to prepare an Environmental & Accidents Risk Assessment (EARA). This report has been prepared in accordance with the Environment Agency's Guidance on 'Risk Assessments for your Environmental Permit' (last updated 1st April 2022).

1.2.2 The waste recovery operations will fill the void created by previous limestone quarrying operations. The quarry void space in the northern section of the site will require restoration material of an appropriate volume of 395,000m^3. This will continue to comprise low risk imported inert waste, including construction waste e.g. concrete, tiles and ceramics, as well as soils and stones. The restoration proposals will also incorporate land restored to agriculture, some areas of woodland, shrubs and hedgerows, patches of ripped soils and earth mounds re-seeded with species rich grassland, as well as Great Crested Newt (GCN) ponds with surrounding wetland areas. The revised scheme of restoration will change the current ground levels to the area north and west of the current operations, which are also incorporated into the permit boundary of Cross Leys Quarry.

1.2.3 As part of this application, an Environmental Risk Assessment has been carried out. This assessment is also supported by a Hydrogeological Risk Assessment and Stability Risk Assessment. These risk assessments have been completed in accordance with the requirements of the Environmental Permitting (England and Wales) Regulations 2016 (as amended).

1.2.4 This report considers the potential impact the site may have on specific receptors in the locality and has been undertaken based on a "worst case scenario" i.e. closest potential siting of future restoration works to the sensitive receptor. A review of the potential receptors at risk and meteorological conditions are presented together with the risk assessment matrix towards the rear of this document.

2.0 SITE SETTING

Site Description

2.1 The quarry is located within a rural setting in which there are a limited number of residential properties located within 2km of the site. The A47 trunk road is

located to the immediate north of the quarry, whilst agricultural land and woodlands dominate areas beyond all boundaries of the site. The nearest residential property (Wittering Lodge) is located to the north of the south-eastern section of the quarry, ~125m from the operational extents of the future waste activities. Cross Leys Farm and the adjacent cottages are located ~515m and ~460m south respectively of the extent of future waste operations.

2.2 Collyweston Great Wood and Easton Hornstocks SSSI, National Nature Reserve (NNR) and ancient woodlands extend across an area of for a distance of over 2.5km to the west of the quarry. Bonemills Hollow SSSI extents ~1.7km to the northwest from immediately beyond the A47 to the north of the quarry. Bedford Purlieus Woods SSSI is located ~440m to the east of the future waste operations boundary. There are no RAMSAR sites, Special Areas of Conservation (SACs) or Special Protected Areas (SPAs) located within 2 km of the site boundary. Additionally, Cross Leys Quarry does not lie within an Air Quality Management Area (AQMA) or a Source Protection Zone (SPZ). Wittering Coppice Woodland is a protected habitat, namely a deciduous Ancient Woodland and lies adjacent to the site's western boundary.

2.3 The RAF Wittering Airfield, is situated approximately 1.6km to the north of the site. Businesses within 2km of the site include the aforementioned East Northants Resource Management Facility (situated c. 1.3km south west of the site) and the Thornhaugh Landfill site (1.25km to the south east).

2.4 DEFRA's "Magic Map" Application indicates that the historic land use in the area (250m grid) primarily consists of Enclosed Agriculture (including ancient, pre-modern and modern forms), with patches of woodland and forestry. This is interspersed with settlements, unimproved land and areas of Industry. For example, the area upon which the site lies is shown as having historic landscape classifications of both enclosed agriculture and industry (which is a reference to the presence of the quarry).

2.5 The site is within a Flood Zone 1, which means that the land has been assessed as having a less than 1 in 1,000 annual probability of river or sea flooding (<0.1%).

2.6 The site overlies a principle bedrock Aquifer which is classified as being of high vulnerability owing to soluble rock risk. The Bedrock geology over the north-western section of the site comprises Lower Lincolnshire Limestone, while the bedrock geology of the south-eastern section of the site consists of Upper Lincolnshire Limestone.

Sensitive Receptors

2.7 **Table ERA1** provides a list of the potential receptors that have been identified via a desk top assessment of the locality and the corresponding minimum distance from the site's permit boundary.

Table EARA1: Local land uses, features, classifications and receptors and their relevant distances from the boundary of future waste operations (within 1km).

ID	Receptor Name	Type of Receptor	Approximate nearest distance from the operational boundary	Direction from the future operational areas
R1	Principle Aquifer (Lincolnshire Limestone)	Groundwater	Underlying	N/A

ID	Receptor Name	Type of Receptor	Approximate nearest distance from the operational boundary	Direction from the future operational areas
R2	Priority Species	Flora and Fauna	On Site	N/A
R3	A47	Public Highway (Main Road)	Adjacent	North
R4	Collyweston Great Wood & Easton Homstocks & Wittering Coppice Woodland	National Nature Reserve (NNR), Special Site of Scientific Interest (SSSI), Ancient Woodland & Protected Habitat – Deciduous Woodland.	Adjacent+	West
R5	Agricultural Land	Agricultural	20m+ Adjacent+ 200m+ 150+	North Northwest East South
R6	Wittering Lodge	Residential Property	125m	East & Northeast
R7	Bonemills Hollow	Special Site of Scientific Interest (SSSI), Protected Habitats – Lowland Calcareous Grassland & Lowland Fens.	25m+	North
R8	Bedford Purlieus	SSSI, Protected Habitat – Deciduous Woodland/ National Nature Reserve (NNR) & Ancient Woodland	440m+/780m	East and Southeast
R9	Cross Leys Farm	Industrial (Agricultural) Property	380m	South
		Residential Property	515m	
R10	Cross Leys Farm Cottages	Residential Properties	460m	South
R11	Public Footpaths / Bridle Ways	Public Right of Way	970m	Southeast

2.8 The waste related restoration operations will be restricted to the north-western of the current operations, as illustrated in **Drawing No. MG1002/14/02**. Please note, the approximate distances quoted in **Table EARA1** are in relation to the intervening distance between the receptor and the future operational area, not the Environmental Permit boundary. The sensitive receptors identified in **Table EARA1** are depicted upon **Drawing No. MG1002/14/10.** The exact boundaries of these receptors are depicted in **Drawing Nos. MG1002/14/04** and **MG1002/14/05.**

Meteorological Conditions

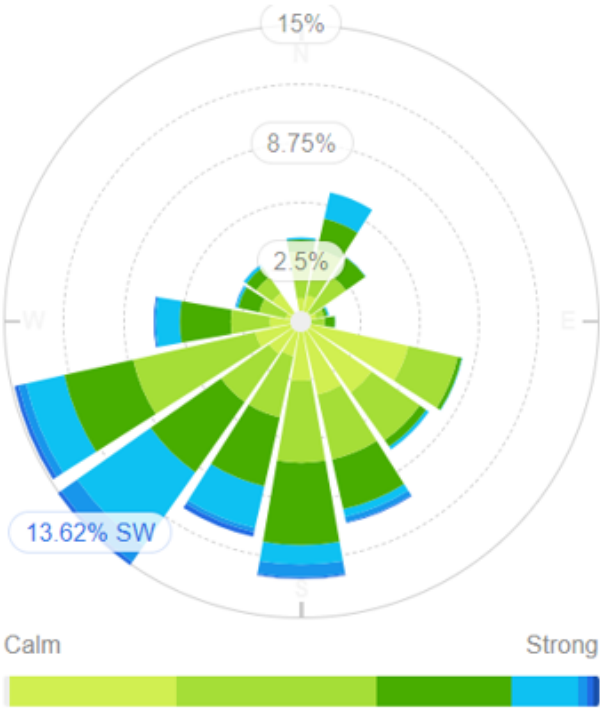
2.9 The fugitive emissions of dust from the site could be affected by local weather conditions.

2.10 The impact of weather conditions has been taken into account by using regional climate data which has been sourced from the recording station located at Wittering Airfield (situated at 52.6111, -0.459), which lies approximately 1.7km to the north of the site.

2.10.1 The predominant local wind direction is from the south-western quadrant with the prevailing winds originating from the southwest and west-south-west, as seen in **Figure EARA1.** Winds from these directions amount to ~ 27% of the wind. Wind from east and south-east, occurring relatively less frequently, with winds from the northwest and north occurring infrequently.

Figure EARA1: Wind rose for Wittering Airfield meteorological recording station – five-year 2018-2023 annual average

Direction	Proportion
N	3.88%
NNE	6.09%
NE	3.63%
ENE	1.31%
E	1.57%
ESE	7.57%
SE	7.16%
SSE	9.45%
S	11.78%
SSW	10.08%
SW	13.62%
WSW	13.46%
W	1.08%
WNW	3.10%
NW	3.22%
NNW	0%



Source: www.willyweather.co.uk

3.0 RISK ASSESSMENT

Risk Assessment Criteria

3.1 The risk assessments have been prepared using the widely accepted source-pathway-receptor methodology. Where any complete source-pathway-receptor linkage exists the magnitude of any such risk is qualified by the probability and consequence of any such risk occurring. The criteria adopted for the risk assessment are presented in **Table EARA2.**

Table EARA2: Risk Assessment Criteria

Probability ⇨ Consequence ⇩	Very Low	Low	Moderate	High
Very Low	Negligible	Very Low	Low	Low-Moderate
Low	Very Low	Low	Low-Moderate	Moderate
Moderate	Low	Low-Moderate	Moderate	High
High	Low-Moderate	Moderate	High	Very high

Risk Assessment Matrix

3.2 An matrix showing the assessment of the potential risk to sensitive receptors is present in **Table ERAR3**. The assessment covers the following potential risks:

- Fugitive emissions to air.
- Mud and Debris on the road.
- Scavengers & Pests
- Noise and vibration.
- Odour.
- Fugitive emissions to water.
- Accidents

Table ERAR3: Environmental and Accidents Risk Assessment Matrix and Management

Data and information				**Judgement**				**Action (by permitting)**	
Source	**Harm**	**Pathway**	**Receptor**	**Probability of exposure**	**Consequence**	**Magnitude of risk**	**Justification for magnitude**	**Risk management**	**Residual risk**
What is the agent or process with potential to cause harm?	**What are the harmful consequences if things go wrong?**	**How might the receptor come into contact with the source?**	**What is at risk? What do I wish to protect?**	**How likely is this contact?**	**How severe will the consequences be if this occurs?**	**What is the overall magnitude of the risk?**	**On what did I base my judgement?**	**How can I best manage the risk to reduce the magnitude?**	**What is the magnitude of the risk after management?**
Dust/Particulates									
Particulate matter and dusts from delivery, handling and deposit of wastes/materials, including trafficked mud and debris, preparation engineering	Harm to human health - respiratory irritation and illness.	Air transport, deposition then inhalation.	Local human population *(R3, R6, R9, R10 & R11)*	High	High	Very High	Wastes will not consist solely or mainly of dusts, powders or loose fibres. Wittering Lodge is located ~125m from the edge of the future waste operations and downwind of the prevailing wind.	All delivery and dispatch vehicles to be sheeted or fully enclosed. The site access road is metalled for ~150m from its junction with the A47. Mechanical road sweeper and/or towed spray bowser will prevent waste surfaces and haul roads from becoming dry and dusty, especially during periods of dry weather. Operational staff to be trained to assess dust generation at the site throughout the working day. Further visual assessment to be carried out daily by the site operations manager and the Environmental Managers. Vehicle speed limits will be imposed to prevent dust arising Earth bunds and tree lines along site perimeter to be maintained.	Low
	Nuisance - dust on property, clothing etc.	Air transport then deposition	Local human population *(R3, R6, R9, R10)*	High	Moderate	Moderate-High	Nuisance dusts will settle within 400m of the site. Existing perimeter vegetation and earth bunds will provide screening.		Low
	Smothering of habitats and crops	Air transport then deposition	Local wildlife habitats/ species *(R4, R5, R7, R8)*	Moderate	Moderate	Moderate	Wastes will not consist solely or mainly of dusts, powders or loose fibres. Existing perimeter vegetation and earth bunds will provide screening.		Low
Odours									
Odours from delivery and dispatch of wastes/materials Handling and deposition of inert waste	Nuisance, loss of amenity	Air transport then inhalation.	Local human population *(R6, R9, R10 & R11)*	Very Low	Moderate	Low	Site located in rural setting ,with only 1 sensitive receptor within 200m of the site. Only inert materials will be accepted at site for disposal. Olfactory monitoring will be carried out by trained operatives within the vicinity of the operations of cells and other areas of the site throughout the day.	All wastes loads delivered from the site will be sheeted. Exclusively inert wastes will be accepted at the site for disposal with the view of restoring the quarry void. All wastes to be inspected prior to acceptance at the site to ensure every delivery is in compliance with the list of permitted wastes in the site's Environmental Permit. Operational staff to be trained to assess odour generation at the site throughout the working day. Further olfactory assessment to be carried out daily by the site operations manager and the operator's Environmental Managers.	Very Low
Litter									
Litter within waste deposited at the site Tracking of mud and debris onto public roads causing accident, hazards and nuisance to road users.	Nuisance, loss of amenity, road traffic accidents and harm to animal health	Vehicles entering and leaving site. Air transport and then deposition	Local human population, livestock and wildlife. Local road users. *(All Receptors; except R1)*	Very Low	Moderate	Low	Little potential for litter generation due to the types of waste accepted on site.	All deliveries or dispatches of waste to be sheeted or enclosed. All vehicles to be inspected prior to leaving site. Wheel cleansing facilities to be provided / utilised as appropriate. The site entrance will be inspected daily for evidence of mud and debris. Daily litter inspections will be carried out across the site.	Very Low

Data and information				Judgement				Action (by permitting)	
Source	**Harm**	**Pathway**	**Receptor**	**Probability of exposure**	**Consequence**	**Magnitude of risk**	**Justification for magnitude**	**Risk management**	**Residual risk**
								Site entrance to be mechanical swept to remove mud and debris deposited. Litter picking to be carried out on signs of litter generation. The source of any litter will also be investigated and remedied.	
Mud and Debris									
Waste debris and mud on local roads Tracking of mud and debris onto public roads causing accident, hazards and nuisance to road users.	Nuisance, loss of amenity, road traffic accidents and harm to animal health	Vehicles entering and leaving site.	Local human population, livestock and wildlife. Road users (*All Receptors; except R1*)	Moderate	Moderate	Moderate	Site is junction with A47 public highway. Approx. 150m of existing metalled internal roadways present at the quarry prior to vehicles exiting on the A47.	All deliveries or dispatches of waste to be sheeted or enclosed. All vehicles to be inspected prior to leaving site. Wheel cleansing facilities to be provided / utilised as appropriate. The site entrance will be inspected daily for evidence of mud and debris. Site entrance to be mechanically swept to remove mud and debris deposited. Litter picking to be carried out on signs of litter generation. The source of any litter will also be investigated and remedied.	Low
Scavengers and Pests									
Scavenging animals and scavenging birds, Pests (e.g. flies) attracted to or infesting wastes	Harm to human health - from waste carried off site and faeces. Nuisance and loss of amenity. Negative effects on habitats and crops	Air transport and over land.	Local human population, crops and local habitats (*R3-R11*)	Very Low	Moderate	Low	Permitted waste is not likely to attract scavenging animals or pests.	Discharge of deliveries to the site will be supervised by trained site operatives. Visual inspection undertaken at weighbridge.	Very Low
Noise & Vibration									
Noise and vibration caused by engine noise and vibrations from loading shovel, lorry movements etc.	Nuisance, loss of amenity, loss of sleep or harm.	Noise through the air and vibration through the ground.	Local human population *(R6, R9, R10 & R11)*	Moderate	Moderate	Moderate	Wittering Lodge is located ~110m from edge of future operation areas Site Operations restricted to: 07:00 – 18:00 Monday to Friday 07:00 – 13:00 Saturday Existing perimeter vegetation and earth bunds will provide screening.	Screening bund will be constructed along the eastern edge of the future operational areas. Speed limit restrictions apply on internal roads. Metalled roads will be maintained free of ruts and potholes to minimise body slap. All site plant used on site will be operated and maintained in accordance with manufactures recommendation. Noise levels will be monitored daily by site manager) or nominated deputy) to ensure that operations are not resulting in significant levels of noise beyond the site boundary. Daily subjective monitoring will be supported by 6-monthly noise surveys required under by the conditions of Planning consent. If reversing sirens or bleepers are used on a mobile plant which gives rise to noise complaints, the use of quieter or silent types of alarm or warning devices that are more environmentally acceptable will be explored.	Low

Data and information				Judgement				Action (by permitting)	
Source	**Harm**	**Pathway**	**Receptor**	**Probability of exposure**	**Consequence**	**Magnitude of risk**	**Justification for magnitude**	**Risk management**	**Residual risk**
								A Noise Impact Assessment has been carried out and a Noise Management Plan (MG1002/12) has been produced as part of this application which will be adhered to throughout the duration of the deposition activities onsite.	
Water									
Generation of contaminated run-off and leachate from waste deposits and other hazardous substances handle on site (e.g. fuels, oils etc)	Harm to protected site through nutrient enrichment, leachate, contaminated surface water runoff	Surface water run-off, and sub-surface transport of leachates then base and spring flows to rivers.	Groundwater, surface water bodies and their associated habitats. *(R1 & areas of R7 [Lowland Fens])*	Low	Moderate	Low-Moderate	Only inert wastes will be deposited at the site.	Written waste acceptance procedures in place to prevent the acceptance of contaminated wastes. AEGB to be constructed on areas to receive in excess of 2m of imported wastes. All plant and equipment will be maintained in accordance with manufacturers recommendations.	Low
	Harm to a protected site through contamination, nutrient enrichment		Protected species and habitats *(R4, R7, R8)*	Very Low	Moderate	Low	Only inert waste will be deposited at the site. No designated sites/habitats that are hydraulically connected to the underlying aquifer are located down gradient of the quarry relative to the direction of groundwater flow.	Written waste acceptance procedures in place to prevent the acceptance of contaminated wastes. An AEGB will be constructed over areas where >2m of wastes will be deposited. All plant and equipment will be maintained in accordance with manufacturers recommendations.	Very Low
Accidents									
On site hazards: wastes, machinery, vehicles, surface water lagoon.	Bodily injury	Direct physical contact	Local human population	Very Low	High	Moderate	Site is remote to populated areas. No access to public to the quarry	The perimeter of the site is fenced and/or densely vegetated. The main access point for the site is gated and secured outside of operational periods. Signs are present at the site entrance and along the perimeter to deter trespassers. All site staff and visitors will receive an induction to the site to ensure safety protocols are adhered to.	Low
Fire resulting from arson/vandalism or an accident causing the release of polluting materials (smoke or fumes) to air, water or land.	Bodily injury	Direct physical contact	Local human population, wildlife & local habitats *(All receptors except R1)*	Low	Moderate	Low-Moderate	Only non-combustible waste will be accepted at the site.	No wastes will be burned within the confines of the site. All plant and equipment to be maintained in accordance with manufacturers recommendations.	Low

Data and information				Judgement				Action (by permitting)	
Source	**Harm**	**Pathway**	**Receptor**	**Probability of exposure**	**Consequence**	**Magnitude of risk**	**Justification for magnitude**	**Risk management**	**Residual risk**
Leaks and Spillages from on-site plant/vehicles, waste or contaminated rainwater runoff.	Deterioration of water quality, contamination of ground/surface waters	Direct run off from site across ground surface, indirect runoff via the soil layer or transport through soil/groundwater	Water bodies and associated habitats. *(R1 & areas of R7 [Lowland Fens])*	High	Moderate	High	Leaks and spills of potentially polluting substances would potential occur directly onto bare limestone surfaces. Fractured nature of limestone offers very limited attenuation. There are no groundwater abstraction within 2km of the site. Bonemills Hollow is not located downgradient of the site relative to the direction of groundwater flow.	All plant and equipment to be maintained in accordance with manufacturers recommendations. All fuels, oils, and other potential polluting substances to be stored in bunded areas or double skinned tanks. IBCs, drums and smaller containers will be stored on drip/spill trays. Refuelling and maintenance of plant and equipment to be carried out contained areas. Spill kits will be position across the site.	Low
Disturbance to Protected Species and Habitats Onsite									
Waste deposition activities resulting in potential direct and indirect harm to protected species onsite.	Loss of viable habitat for protected species, direct harm from plant and operations onsite.	Direct physical contact.	Local wildlife habitats/ species *(R2)*	High	Moderate	High	The site has recorded populations of Great Crested Newt (GCN) which utilise the ponds on site for breeding along with the terrestrial habitats. Other notable species have been recorded on site including common lizard, breeding and wintering birds, badger and a range of invertebrate species. The revised restoration scheme will result in the loss of habitat in the north of the quarry with the area back filled with inert restoration materials.	The loss of ponds in the northern section of the quarry will be mitigated by retaining and enhancing the large waterbodies in the southern section and creating six new ponds to support breeding habitats for Great Crested Newts (GCN). Any removal or modification of the southern waterbodies will be compensated by developing higher value marginal habitats for amphibians and birds. The overall creation of diverse, high-value habitats in the south, along with a new pond on the western boundary in the north and a tree belt for habitat connectivity, will partially offset the loss of less favourable habitats in the northern section. The resulting habitat enhancements are presented in **Drawing No.: CL5_5**. Before waste imports begin at the site, a Biodiversity & Landscape Management Plan will be prepared for approval by the Mineral Planning Authority, as required by the conditions of existing planning permissions. This plan will include detailed measures for protecting species, a reptile mitigation strategy, specifications for new ponds, and updated species surveys based on the current restoration scheme for the quarry.	Low

DRAWINGS