Crimplesham Inert Landfill Site

Environmental Permit Application

Environmental Risk Assessment

September 2020

Prepared on behalf of Mick George Limited

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1.0 Introduction

1.1 Report Context

1.1.1 This section of the Environmental Permit application corresponds to Section 6 of Part B2 of the Environmental Permit application forms, and has been prepared on behalf of the operator, Mick George Limited (Mick George) by WYG.

1.1.2 Mick George seeks to gain a bespoke Environmental Permit to allow the deposit of waste in an area to the south of the Crimplesham Quarry site (as shown on Drawing Number P2734 D3, Rev F). The proposed works will facilitate the restoration of the site following mineral extraction which was approved by Norfolk County Council under planning permission reference C/2/2008/2006.

1.1.3 This Environmental Risk Assessment (ERA) is limited to a qualitative assessment of the potential risk to the environment and human health specifically related to the proposed activity. This report will identify any significant risk and demonstrate that the risk of pollution will be acceptable by taking the appropriate measures to manage the risk.

2.0 Environmental Risk Assessment

2.1 Methodology

2.1.1 This report has been prepared in accordance with the Environment Agency's Risk Assessment guidance. It specifically relates to the potential risk associated with the following risk types:-

- Odour;
- Noise and vibration;
- Fugitive emissions; and
- Accidents and incidents.

2.1.2 This risk assessment addresses the above, and is based on the following methodology:-

- Identification of potential sources of risk;
- Identification of all potential receptors to risk; and
- Risk assessment of each risk type.

2.1.3 The ERA is a tool used to identify the pollutant linkage i.e. source -pathway-receptor. For most risks, the atmosphere is the main pathway and will always exist. Therefore, the ERA deals primarily with the sources and receptors. The ERA provided in Appendix A is summarised below.

2.2 Sources

2.2.1 The potential sources of risks have been considered for each risk type, as shown in Appendix A. The sources of risk for this application have been identified as:-

<u>Noise</u>

- Plant and machinery;
- Vehicle movements to/from the site;
- Vehicle movements within the site; and
- Engineering works.

Fugitive emissions

- Odour;
- Particulate matter (dust);
- Mud and litter; and
- Scavenging birds, pests and vermin.

Accidents

- Leaks/spillages;
- Fire or failure to contain firewater;
- Flooding; and
- Vandalism

2.3 Pathways

2.3.1 The pathways have been identified for each risk type as shown below in Table 1:

Table 1: Potential Pathways

Risk Type	Pathway
Odour	Atmosphere
Noise	Atmosphere
Fugitive emissions	Atmosphere
Accidents	Atmosphere
	Surface water run-off
	Infiltration
	Percolation

2.4 Receptors

2.4.1 Receptors within 1km of the proposed application boundary, are shown on Drawing Number MGL/A110260/REC/01. The main pathway for the identified sources will be the atmosphere and as such, atmospheric conditions can affect dispersion rates and hence potential risk. As a result, the location of each receptor in relation to the site may influence the potential impact of the risk, as summarised in Table 2.

2.4.2 As part of this process, a Nature and Heritage Conservation Screen (reference number

EPR/GB3902FH/A001) was requested was requested from the Environment Agency to identify any nature or heritage conservation interests that could be impacted from the proposed activity. The results of the screen (Appendix B) did not identify any nature and heritage conservation interests that could be impacted by the proposed activity.

Table 2: Sensitive Receptors Located within 1km of the Proposed Waste Operation

ID	Receptor	Direction from Operational Area	Minimum Distances from the Permit Application Boundary (approx. m)
Designated ecological habitats e.g. Ramsar, SAC, SPA, SSSI, LNR			
N/A			
Domestic Dwellings			
1	Mill House	N	455
2	Manor Farm Cottages	W	510
3	Residential area in Crimplesham	W	815
Commercial and Industrial Premises			
N/A			
Highways or Minor Roads			
4	Main Road	N	Adjacent
5	A134	E	335
6	Downham Road	NW	1,000
7	Mill Road	N	450
8	Wilow Heath Road	NW	645
9	Lime Kiln Road	SE	785
Priority Habitats			
10	Deciduous Woodland (Teakettle Wood)	S	180
11	Deciduous Woodland	SE	705
12	Deciduous Woodland (Burnt Wood)	SW	940
13	Deciduous Woodland (Love Lane Plantation)	NW	515
14	Deciduous Woodland (Picton's Wood)	N	545
15	Deciduous Woodland (Lilian's Wood)	N	755
16	Deciduous Woodland (Sandpit Plantation)	N	925
17	Deciduous Woodland (Fourteen Acre Plantation)	NE	760
18	Deciduous Woodland (Miller's Eight Acres)	E	940
Farmland			
19	Ashcraft Farm	W	Adjacent
20	Manor Farm	W	585
21	Grange Farm (North Site)	E	565
22	Grange Farm (South Site)	SE	715
Surface Water e.g. rivers and streams			
23	Unnamed Pond	S	415
24	Surface water bodies within the northern Crimplesham Quarry site	N	220
Groundwater			
According to the Multi-Agency Geographic Information for the Countryside's (MAGIC) website, the site is not located within a Groundwater Source Protection Zone. With regards to aquifers, the MAGIC website shows that the majority of the site overlies a Principal aquifer.			

2.5 Risk Assessment

2.5.1 The ERA (Appendix A) looks at each specific hazard identified and assesses the likelihood of those hazards impacting on the receptors. This is achieved by fulfilling the following objectives:-

- Identify the location and nature of each hazard;
- Identify the specific receptors potentially at risk and assess the sensitivity of each receptor;
- Provide a qualitative assessment of the risk posed to each sensitive receptor;
- Identify management and monitoring techniques; and
- Provide recommendations for more detailed assessments where necessary.

2.6 Summary of ERA

2.6.1 The ERA (Appendix A) indicates that the proposed inert landfill will have no significant impacts in terms of odour, noise and vibration, and fugitive emissions, and the likelihood of accidents is minimal.

2.7 Noise Risk Assessment

2.7.1 The application site forms part of the Crimplesham Quarry site which is located approximately 855m east from the village of Crimplesham in Norfolk, where the majority of the noise sensitive receptors are located. There is one further property which has been considered, located to the east, beyond the A134 and over 370 metres from the closest operational area of the quarry.

2.7.2 The proposed permit operations would involve deliveries of inert materials, which would be delivered by HGV directly to the operational areas. The material would be spread periodically using a CAT D6 Dozer (or equivalent). Typically, a CAT D9 generates a noise level of 79 dB LAeq at a distance of 10 metres (measured adjacent to a D6 undertaking equivalent operations). On this basis, the noise level at the closest property, assuming the plant fully operational, would be 42 dB LAeq, 1 hour, assuming soft ground attenuation and no reduction for any screening effects, which would further reduce noise levels, whilst the plant operates below the ground surface. Noise levels within the village, which is located considerably further from the quarry are not anticipated to exceed a level of 35 dB LAeq, 1 hour.

2.7.3 This level of noise is very low for daytime operations, equivalent to the night-time noise limit specified within the Minerals PPG and 8 dB(A) below a level which would be considered as

representing a level at which people would be moderately annoyed, as defined in World Heath Organisation Guidance. Whilst no background noise monitoring has been undertaken at this location, noise levels at the closet property will be influenced by road traffic travelling along the A134 throughout the day and likely to be the main influence on the background (LA90) noise levels. Whilst road traffic noise levels are unlikely to be low, BS 4142 advises that where background and ambient noise levels are low, it is often as or more important to consider the overall noise levels when assessing potential impacts.

2.7.4 Given that the noise levels attributable to the operation of the plant would be equivalent to a more stringent night-time minerals noise limit and substantially below daytime noise level recommendations specified by the WHO, it is concluded that any potential adverse noise impacts on the occupants of surrounding properties would result in a Low Impact and therefore acceptable.

Drawings

P2734 D3, Rev F – Working Plan and Environmental Permit Boundary

MGL/A110260/REC/01 - Receptor Plan

Appendices

Appendix A – Amenity and Accident Risk Assessment

Table A1: Odour Risk Assessment and Management Plan

What do you do that can harm and what could be harmed?			Managing the risk	Assessing the risk		
Hazard	**Receptor**	**Pathway**	**Risk Management**	**Probability of Exposure**	**Consequence**	**What is the overall risk?**
What has the potential to cause harm?	**What is at risk? What do I wish to protect?**	**How can the hazard get to the receptor?**	**What measures will you take to reduce the risk? If it occurs – who is responsible for what?**	**How likely is this contact?**	**What is the harm that can be caused?**	**What is the risk that still remains? The balance of probability and consequence.**
Receipt and storage of odorous wastes.	Occupiers of domestic dwellings listed in Table 2 above.	Atmosphere.	The proposed waste types are not putrescible and therefore will not biodegrade to produce offensive odours. There will be strict waste acceptance procedures in place to minimise the risk of non-compliant wastes being accepted. Details of the waste acceptance procedures are provided in the Operating Techniques (Appendix B of the Environmental Permit Application). All site operatives will be vigilant regarding the identification of non-compliant wastes and any non-conformances or odour issues will be reported to the Site Manager.	Unlikely due to the nature of the proposed waste types and the measures in place.	Odour annoyance.	Not significant due to management techniques employed.

Table A2: Noise and Vibration Risk Assessment and Management Plan

What do you do that can harm and what could be harmed?			Managing the risk	Assessing the risk		
Hazard	**Receptor**	**Pathway**	**Risk Management**	**Probability of Exposure**	**Consequence**	**What is the overall risk?**
What has the potential to cause harm?	What is at risk? What do I wish to protect?	How can the hazard get to the receptor?	What measures will you take to reduce the risk? If it occurs – who is responsible for what?	How likely is this contact?	What is the harm that can be caused?	What is the risk that still remains? The balance of probability and consequence.
Vehicle movements on site.	Occupiers of domestic dwellings listed in Table 2 above. Priority Habitats listed in Table 2.	Atmosphere.	Loads will only be delivered to the site during the hours stipulated (07:00 – 18:00 Monday – Friday and 07:00-13:00 on Saturdays) in the planning permission. The delivery of waste will take place in a controlled manner to keep noise/vibration to a minimum. As detailed on the approved Working Plan (Drawing Number P2734 D3, Rev F) bunds ranging from 2-3m in height, will be placed along the perimeter of the working phases using topsoil and overburden soils. This will minimise the potential for noise to impact receptors that are situated beyond the site boundary. All plant and machinery will have effective silencers where practicable and be maintained in accordance with the manufacturer's requirements to minimise the risk of mechanical failure which could result in increased noise emissions. All equipment and vehicles when not in regular use shall be switched off. All noise and vibration generating activity will be monitored closely and site operatives will be vigilant and report any excessive noise or vibration issues to the Site Manager.	Intermittent during operating hours.	Intermittent noise and vibration disturbance.	Not significant due to management techniques employed.

Noise from reverse vehicle warnings.	Occupiers of domestic dwellings listed in Table 2 above. Priority Habitats listed in Table 2.	Atmosphere.	Loads will only be delivered to the site during the hours stipulated (07:00 – 18:00 Monday – Friday and 07:00-13:00 on Saturdays) in the planning permission. Utilisation of low level warning signals. As detailed on the approved Working Plan (Drawing Number P2734 D3, Rev F) bunds ranging from 2-3m in height, will be placed along the perimeter of the working phases using topsoil and overburden soils. This will minimise the potential for noise to impact receptors that are situated beyond the site boundary. All noise and vibration generating activity will be monitored closely and site operatives will be vigilant and report any excessive noise or vibration issues to the Site Manager.	Intermittent during operating hours.	Intermittent noise and vibration disturbance.	Not significant due to management techniques employed.
Noise and vibration from loading and unloading of wastes.	Occupiers of domestic dwellings listed in Table 2 above. Priority Habitats listed in Table 2.	Atmosphere.	Loads will only be delivered to the site during the hours stipulated (07:00 – 18:00 Monday – Friday and 07:00-13:00 on Saturdays) in the planning permission. All plant and machinery will have effective silencers where practicable and be maintained in accordance with the manufacturer's requirements to minimise the generation of noise. The loading/unloading of wastes will be undertaken in a controlled manner to keep noise/vibration to a minimum. Vehicles will be directed by site operatives to minimise the drop height when depositing loads at the site. As detailed on the approved Working Plan (Drawing Number P2734 D3, Rev F) bunds ranging from 2-3m in height, will be placed along the perimeter of the working phases using topsoil and overburden soils. This will minimise the potential for noise to impact receptors that are situated beyond the site boundary.	Intermittent during operating hours.	Intermittent noise and vibration disturbance.	Not significant due to management techniques employed.

			All noise and vibration generating activity will be monitored closely and site operatives will be vigilant and report any excessive noise or vibration issues to the Site Manager.			
Noise and vibrations from engineering works.	Occupiers of domestic dwellings listed in Table 2 above. Priority Habitats listed in Table 2.	Atmosphere.	Loads will only be delivered to the site during the hours stipulated (07:00 – 18:00 Monday – Friday and 07:00-13:00 on Saturdays) in the planning permission. All plant and machinery will have effective silencers where practicable and be maintained in accordance with the manufacturer's requirements to minimise the generation of noise. All plant and equipment will be switched off when not in regular use. As detailed on the approved Working Plan (Drawing Number P2734 D3, Rev F) bunds ranging from 2-3m in height, will be placed along the perimeter of the working phases using topsoil and overburden soils. This will minimise the potential for noise to impact receptors that are situated beyond the site boundary. All noise and vibration generating activity will be monitored closely and site operatives will be vigilant and report any excessive noise or vibration issues to the Site Manager.	Intermittent during operating hours.	Intermittent noise and vibration disturbance.	Not significant due to management techniques employed.

Table A3 – Fugitive Emissions Risk Assessment and Management Plan

What do you do that can harm and what could be harmed?			Managing the risk	Assessing the risk		
Hazard	**Receptor**	**Pathway**	**Risk Management**	**Probability of Exposure**	**Consequence**	**What is the overall risk?**
What has the potential to cause harm?	What is at risk? What do I wish to protect?	How can the hazard get to the receptor?	What measures will you take to reduce the risk? If it occurs – who is responsible for what?	How likely is this contact?	What is the harm that can be caused?	What is the risk that still remains? The balance of probability and consequence.
To Air						
Dust from haul roads.	Occupiers of domestic dwellings listed in Table 2 above. Surrounding agricultural land Priority Habitats listed in Table 2.	Atmosphere.	Any waste vehicles or haul roads that gather significant amounts of dust may be dampened or washed as and when necessary. The site will use standard dust dampening methods which will be implemented as necessary to suppress any dust left on the hardstanding due to vehicle movements. The vehicle cleaning facilities will be checked on a monthly basis and any necessary repair work will be carried out as soon as practicable. In the event of a breakdown, additional road cleaning equipment will be provided. If necessary, a road sweeper will be contracted to clean the access road and Main Road where vehicles exit the site. Wastes being delivered to the site will be covered or sheeted to prevent the generation of dust while the waste is in transit. Vehicle speeds will be limited on site and access road to prevent re-suspension and entrainment of dust. The Site Manager will undertake a daily visual assessment of dust levels and all site operatives will be vigilant and report any problems to the Site Manager.	Dust could potentially reach the nearby dwellings when a strong wind blows in their direction. Management actions should prevent this happening.	Local nuisance – dust on cars, clothing, vegetation, etc. Smothering. Nutrient enrichment.	Not significant due to management techniques employed.

Dust emissions generated during unloading of inert waste from tipping lorries.	Occupiers of domestic dwellings listed in Table 2 above. Surrounding agricultural land. Priority Habitats listed in Table 2.	Atmosphere.	The site will use standard dust dampening methods which will be used to dampen site roads if deemed necessary. The loading/unloading of wastes will be undertaken in a controlled manner to keep dust emissions to a minimum. Extra care will be taken with the deposit of waste during periods of prolonged dry weather or high winds. The Site Manager will undertake a daily visual assessment of dust levels and all site operatives will be vigilant and report any problems to the Site Manager.	Dust could potentially reach the nearby dwellings when a strong wind blows in their direction. Management actions should prevent this happening.	Local nuisance – dust on cars, clothing, vegetation, etc. Smothering. Nutrient enrichment.	Not significant due to management techniques employed.
To Water						
Contaminated rainwater run-off.	Groundwater. Surface water features listed in Table 2 above.	Direct surface water run-off from site. Infiltration. Percolation.	The proposed waste types are inert and therefore non-hazardous. As such, any run off that is generated on site will simply be rainwater which has passed through inert soils and therefore is not likely to be hazardous. There will be strict waste acceptance procedures in place at the site to prevent the acceptance of non-conforming waste types. Details of these procedures are detailed in the Operating Techniques (Appendix B of the Environmental Permit Application).	Unlikely due to the nature of the proposed wastes types and the measures in place.	Contamination of surface water bodies and groundwater.	Not significant due to management techniques employed and the inert nature of the waste types.
Pests/Scavenging birds						
Birds and pests.	Occupiers of domestic dwellings listed in Table 2 above. Priority Habitats identified in Table 2. Surrounding agricultural land.	Air. Ground.	The proposed waste types are not putrescible and will not attract pests, vermin and/or scavenging birds. Strict waste acceptance procedures will be in place to ensure only permitted waste types are accepted. Details of these procedures are provided in the Operating Techniques (Appendix B of the Environmental Permit Application). The Site Manager will undertake regular reviews of pests and scavenging birds at the site. All site operatives will be vigilant and report any problems to the Site Manager.	Very unlikely.	Nuisance to local residents. Predation of species in Priority Habitats and designated ecological habitats.	Not significant due to management techniques employed and the inert nature of the waste types.

Mud/Litter						
Mud arising from vehicles movements.	Highways identified in Table 2.	Tracked by vehicles.	The site will comprise vehicle cleaning facilities that will be used by HGVs before they leave the site. The amount of mud on local roads will monitored daily by site operatives. In the event that mud is deposited on the access road and/or highway then a road sweeper will be employed if necessary.	Unlikely due to measures in place.	Mud on roads is unsightly and can increase the risk of road traffic incidents.	Not significant due to management techniques employed.
Litter arising from vehicle movements and high winds.	All receptors identified in Table 2.	Air. Tracked by vehicles.	Due to the nature of the proposed waste types, litter will not be generated at the site. The proposed waste types are not considered to represent a significant risk of litter. Strict waste acceptance procedures will be in place to ensure only permitted waste types are accepted. Details of these procedures are provided in the Operating Techniques (Appendix B of the Environmental Permit Application). A vigilant watch for litter will be undertaken by site operatives. In the unlikely event that litter is generated by the activity, the Site Supervisor will implement a litter collection as necessary.	Very unlikely due to measures in place.	Local nuisance.	Not significant due to the inert nature of waste received and management techniques employed.

Table A4 – Accident Risk Assessment and Management Plan

What do you do that can harm and what could be harmed?			Managing the risk	Assessing the risk		
Hazard	**Receptor**	**Pathway**	**Risk Management**	**Probability of Exposure**	**Consequence**	**What is the overall risk?**
What has the potential to cause harm?	What is at risk? What do I wish to protect?	How can the hazard get to the receptor?	What measures will you take to reduce the risk? If it occurs – who is responsible for what?	How likely is this contact?	What is the harm that can be caused?	What is the risk that still remains? The balance of probability and consequence.
Fire or failure to contain firewater.	Groundwater. Surface water bodies identified in Table 2. Priority Habitats identified in Table 2. Occupiers of domestic dwellings listed in Table 2. Surrounding agricultural land.	Infiltration. Contaminated rainwater runoff.	The risk of fire is considered to be low as the proposed waste types are not flammable. There will be strict waste acceptance procedures in place to minimise the risk of non-compliant wastes being accepted which may be combustible in nature. Details of the waste acceptance procedures are provided in the Operating Techniques (Appendix B of the Environmental Permit Application). The operator will undertake routine maintenance of all equipment in accordance with the manufacturer's guidance. This will minimise the risk of mechanical failure which may result in an increased risk of combustion. Site notices and training will be undertaken regarding fire hazards. The Site Manager will be responsible for actions undertaken in the event of a fire.	Very unlikely due to the nature of the waste types and the measures in place.	Contamination of local groundwater and/or surface water. Local nuisance from smoke.	Not significant due to the inert nature of waste types and likelihood of a fire on site.
Leaks/spillages of fuel/oil.	Groundwater. Surface waters identified in Table 2.	Surface run-off. Infiltration. Percolation.	The operator will undertake regular maintenance of plant and equipment in accordance with the manufacturer's guidance. This will minimise the risk of mechanical failure which may result in leaks.	Unlikely due to measures in place.	Contamination of land and watercourses.	Not significant due to management techniques employed.

			All fuel, oil and lubricants will be contained within appropriate 110% bunded tanks. The tanks will be maintained and inspected in accordance with the manufacturer's recommendations. Daily vehicle/plant checks will be undertaken to ensure any fuel/oil leaks etc. are repaired as soon as possible. The Site Manager will be responsible for ensuring effective remediation and documenting any incident.			
Flooding.	Groundwater. Surface water bodies identified in Table 2.	Infiltration. Contaminated surface water runoff.	The restored landform will be similar to the pre-development profile. As such, it is considered that there is no increased risk to flooding as a result of this application. In addition, the proposed waste types are inert in nature and therefore the risk of contamination from flooding is considered to be low. Strict waste acceptance procedures will be in place to ensure only permitted waste types are accepted. Details of these procedures are provided in the Operating Techniques (Appendix B of the Environmental Permit Application).	Unlikely due to measures in place.	Disruption to works on site. Contamination of local groundwater and/or surface water. Contamination of local agricultural land.	Not significant due to the management techniques employed.
Vandalism (i.e. resulting in damage to site infrastructure or equipment).	Groundwater. Surface water bodies identified in Table 2.	Unauthorised entry to the site.	The site is surrounded by security fencing and site entrances are protected by lockable gates, which are kept locked outside of operating hours. The security fencing and gates will be inspected on a regular basis. Any identified damage to the fence or gates that could	Unlikely due to measures in place.	Release of polluting materials to air (smokes or fumes) water or land.	Not significant due to management techniques employed.

	Priority Habitats identified in Table 2. Occupiers of domestic dwellings listed in Table 2. Surrounding agricultural land.		compromise the site security will be recorded and temporarily repaired as necessary before the end of that working day. Permanent repair or replacement will be undertaken as soon as practicable. There will be procedures in place which will require all visitors to the site to sign in on arrival and sign out on departure.			

Appendix B – Nature and Heritage Conservation Screen Results