

Engreen Environmental Consultants Ltd.

Title: Environmental Risk Assessment

Client: G.H. BY PRODUCTS (DERBY) LIMITED

Date: June 2019

Report Reference: P171-R02-F1

Submitted to:

Environment Agency

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Report Issue History		
Report Number	Date	Comments
P171-R02-ID1	May	Internal Draft
P171-R02-D1	04/06/19	Draft for Client Review
P171-R02-F1	18/06/19	Finalised for Issue

CONTENTS

1	Introduction	1
1.1	Background	1
1.2	General Approach	1
1.3	Detail of Approach	1
1.4	Report Format	2
2	Screening Assessment	3
2.1	Methodology	3
2.2	Screening Assessment Table	3
2.2.1	Normal Operations	3
2.2.2	Abnormal Operations / Accident Situations	4
3	Environmental Risk Assessment	6
3.1	Introduction	6
3.2	Receptors	6
3.3	Environmental Risk Assessment Methodology	7
3.3.1	Key Policies and Procedures	8
3.4	Risk Assessments	9
3.4.1	Introduction	9
3.4.2	Table Key	9
3.4.3	Assessment Tables	9
4	Conclusions	13
4.1	Summary	13

1 Introduction

1.1 Background

G.H. By Products (Derby) Limited are applying for an Environmental Permit for their proposed waste storage and transfer facility located at Park Farm, Willingham-by-Stow.

As part of the application process G.H. By Products (Derby) Limited is required to demonstrate how potential environmental risks and impacts have been identified and quantified. This Environmental Risk and Impact Assessment (ESA) is a systematic evaluation of these potential risks and impacts. The methodology and results for this assessment process are presented in this report, which should be read in conjunction with the following permit application documents:

- P171-R01-F1 – Site Information;
- EM 01-003 – DRAFT Odour Management Plan
- EM 01-004 – DRAFT Environmental Accident Management Plan.

1.2 General Approach

This ESA follows the basic structure as required by the Environment Agency's gov.uk guidance for undertaking Environmental Risk Assessments. In summary, the approach to evaluating and reporting potential risks and impacts addresses the following possible impacts:

- Amenity (litter / vermin / dust / mud / fire);
- Odour;
- Noise;
- Fugitive Air Releases;
- Surface Water;
- Groundwater;
- Air;
- Waste Produced;
- Global Warming Potential (GWP) / Photochemical Ozone Creation Potential (POP).

1.3 Detail of Approach

Impact and risk assessments for both normal operations and for reasonably foreseeable accident and abnormal conditions has been carried out below. The following definitions are used for assessing possible impacts under the different scenarios or operating conditions:

<i>Normal (N)</i>	Routine activity on site
<i>Abnormal (A)</i>	Planned, or reasonably foreseeable, deviations from normal operating conditions
<i>Emergency (E)</i>	Unplanned deviations from normal operating conditions (<i>accident situations</i>)

The initial step is a screening assessment to screen out the processes and ancillary operations that, even under the reasonably foreseeable abnormal and emergency conditions identified, would be incapable of causing a significant environmental impact. Those aspects that do not screen out fall into two categories for more detailed evaluation:

- Emissions under normal operations for which a detailed assessment of environmental impacts is required.
- Normal, abnormal and accident scenarios for which there is a need to carry out a detailed environmental risk assessment.

1.4 Report Format

This Environmental Risk and Impact Assessment is set out as follows:

- Introduction;
- Screening Assessment;
- Environmental Risk Assessments;
- Environmental Impact Evaluations;
- Conclusions and Improvements.

2 Screening Assessment

2.1 Methodology

For the initial screening assessment, the potential risks and impacts of both normal operations and abnormal/accident situations have been considered. Tables 2.2.1 and 2.2.2 below set out these initial screening assessments to determine which combinations of operations and potential impacts warrant further assessment.

Where it is considered that there is minimal or no potential for an impact to occur, a brief explanation has been provided for each impact criterion and activity. For those potential risks and impacts that cannot immediately be screened out and which, therefore, require further evaluation:

- ‘**RA**’ is placed in the relevant box where further evaluation for assessing environmental risk has been undertaken in Section 4 of this report, for normal operations, abnormal operations or accident situations;
- ‘**DA**’ is placed in the relevant box where more detailed evaluation of emissions is required and has been undertaken in Section 5 of this report.

2.2 Screening Assessment Table

2.2.1 Normal Operations

Table 2.2.1: Screening Assessment – Normal Operations			
Activity			
Impact	Delivery, Site and Dispatch Vehicles	Waste Reception / Unloading / Dispatch	Waste Storage / Bulking
Amenity (dust / mud / litter / vermin / fire)	RA	Only non-stackable waste streams delivered to site. Materials discharged into purpose-built covered stores.	Site only storing non-stackable waste streams. Streams are non combustible and stored in purpose-built covered stores.
Odour	No potential for odour from normal operations as wastes delivered in enclosed tankers.	RA	RA
Noise	RA	RA	RA
Fugitive Air Releases ^{1,2}	No potential for fugitive releases to air.	Potential for trivial ammonia releases from wastes during transfer and loading. Material transferred to and from covered stores using dedicated transfer	As a precautionary measure, the lagoon has been fitted with a gas vent system under the liner, to capture and discharge any build up of gases– release covered under

Table 2.2.1: Screening Assessment – Normal Operations			
Activity			
Impact	Delivery, Site and Dispatch Vehicles	Waste Reception / Unloading / Dispatch	Waste Storage / Bulking
		pipework.	fault operations. Potential for trivial ammonia releases from waste streams to be stored on site. Stores are covered therefore potential for ammonia release to impact on receptors is considered to be insignificant.
Surface Water	No potential for releases to surface water under normal operations.	No potential for releases to surface water under normal operations.	No potential for releases to surface water under normal operations.
Groundwater	No potential for releases to ground water under normal operations.	No potential for releases to ground water under normal operations.	No potential for releases to ground water under normal operations.
Air	No point source emissions to air, except exhausts from site vehicles.	No point source emissions to air, except exhausts from site vehicles.	No point source emissions to air.
Waste Production	No waste production under normal operations.	No waste production under normal operations.	No waste production under normal operations.
GWP / POP	Except exhausts from site vehicles, there are no point source or fugitive emissions that will release GWP/POP	Except exhausts from site vehicles, there are no point source or fugitive emissions that will release GWP/POP	There are no point source or fugitive emissions that will release GWP/POP under normal operations.
Notes:			
1 – Excluding odour and Noise (dealt with separately).			
2 – Releases to air that are not from point source emissions e.g. leaks.			

2.2.2 Abnormal Operations / Accident Situations

Table 2.2.2: Screening Assessment – Abnormal / Accident Scenarios			
Activity			
Impact	Delivery, Site and Dispatch Vehicles	Waste Reception and Unloading	Waste Storage / Bulking
Amenity (dust / mud / litter / vermin / fire)	RA	Only non-stackable waste streams delivered to site. Materials discharged into purpose-built covered stores.	Site only storing non-stackable waste streams. Streams are non combustible and stored in purpose-built covered stores.

Table 2.2.2: Screening Assessment – Abnormal / Accident Scenarios			
Activity			
Impact	Delivery, Site and Dispatch Vehicles	Waste Reception and Unloading	Waste Storage / Bulking
Odour	RA	RA	RA
Noise	RA	RA	RA
Fugitive Air Releases ^{1,2}	No potential for fugitive releases to air.	No potential for fugitive releases to air.	RA
Surface Water	RA	RA	RA
Groundwater	RA	RA	RA
Air	No point source emissions to air, except exhausts from site vehicles.	No point source emissions to air, except exhausts from site vehicles.	No point source emissions to air, except exhausts from site vehicles.
Waste Production	RA	RA	RA
GWP / POP	Except exhausts from site vehicles, there are no point source or fugitive emissions that will release GWP/POP	Except exhausts from site vehicles, there are no point source or fugitive emissions that will release GWP/POP	RA
Notes:			
1 – Excluding odour and Noise (dealt with separately).			
2 – Releases to air that are not from point source emissions e.g. leaks.			

3 Environmental Risk Assessment

3.1 Introduction

The screening assessment above has identified several possible scenarios where normal operations, abnormal operations or emergency (accident) situations might have the potential to lead to an environmental impact. Those scenarios marked with 'RA' in the screening assessment are assessed more fully in this section.

The further evaluation methodology utilised within this report is set out below and has been based on general principles for undertaking risk assessments outlined on the Environment Agency's .gov website. The assessment has been undertaken by identifying the potential sensitive receptors and applying the risk scoring mechanism detailed in section 3.3 below.

3.2 Receptors

Table 3.1 below details the identified sensitive receptors within a 1 kilometre radius (unless otherwise specified) of the proposed site boundary. Only the closest receptor in each direction is listed.

Nature of Receptor		Direction	Approximate Distance from the Proposed Site Boundary ³	Plan Reference
Residential*		SE	c. 80m	R1
		NE	c. 990m	R2
Industrial / Commercial / Offices*		N	Adjacent	R3
Educational*		None within 1 km.		
Nature Conservation ¹	Priority Habitat Inventory – Deciduous Woodland Habitat	N	c. 375m	R4
		N	c. 645 m	R5
	SSSI / SAC / SPA / Ramsar / LNR / NNR / Ancient Woodland	None of the listed habitats are within 1km of the site.		
Water Resources – Surface Water*	Land Drain	N	c. 375 metres	R6
	Existing Farm Lagoon	SW	c. 50 metres	R7
	Pond	W	c. 110 metres	R8
	Land Drain	SE	c. 160m	R9
Water Resources – Groundwater ¹		Site is not located within a Groundwater Source Protection Zone. It is anticipated the underlying geology will have variable permeability.		
Groundwater and Surface Water Abstractions ⁶		No licensed Groundwater or Surface Water abstractions are within 1 km metres of the proposed facility boundary.		
Flood Zone ⁷		Located within a Flood Zone 1. An area with a low probability of flooding.		
Highways and Transportation ²		N	Adjacent	R10
Air Quality Management Areas ⁴		Site is not within an AQMA		

Table 3.1 - Summary of Sensitive Receptors Identified			
Nature of Receptor	Direction	Approximate Distance from the Proposed Site Boundary ³	Plan Reference
Notes:			
*: Closest receptor identified. No other receptors within 1 km;			
1: Groundwater Source Protection Zones, Nitrate Vulnerable Zones, Nature and Conservation receptors established through the MAGIC and Nature on the Map websites May 2019;			
2: Closest local road network only;			
3: Distance shown measured using Ordnance Survey data provided by Promap;			
4: AQMA locations sourced through DEFRA's website;			
5: Locations shown on Sensitive Receptor Plan below;			
6: Data taken from Delta-Simons Project No. 18-0530.01 Proposed Slurry Store Investigation Report;			
7: Taken from the EA's Flood Map For Planning Report created 21 May 2018 11:42.			

3.3 Environmental Risk Assessment Methodology

The risk assessment has been undertaken for each potential environmental risk identified in the tables set out in section 2.2 above for normal operations, abnormal operations and accident situations. The risk classification assigned has been evaluated by assessing the likelihood of an incident occurring and the severity of impact should it occur, using the following methodology.

Table 3.2 - Probability of an event occurring		
Score	Description	Definition
1	Very Low	Extremely unlikely to occur (<1 per 10 years)
2	Low	Unlikely to occur (<1 per year)
3	Moderate	Could occur (1 per year)
4	High	Could occur frequently (>1 per year)
5	Very High	Could occur continuously

Table 3.3 - Severity of impact should the event occur		
Score	Description	Definition
1	Very Low	Negligible impact
2	Low	Minor impact (contained in localised area on site & recoverable)
3	Moderate	Medium impact (contained within site boundary & recoverable)
4	High	Major impact (spread off site &/or difficult to recover)
5	Very High	Major impact (spread off-site & long term/permanent damage)

Risk Assessment:

The Probability (P) and Severity (S) scores assigned to each item are then multiplied together to provide a total risk assessment score (R):

$$P \times S = R$$

Scores are considered to be high or low risk using the following risk classification:

< 10 – Low Risk – Insignificant

≥ 10 – High Risk - Significant Risk

Where the residual risks are found to be significant a more detailed assessment will be undertaken, or improvements to mitigate the risks will be recommended within the conclusions section of this report.

3.3.1 Key Policies and Procedures

The procedures and policies in place at the site to minimise the potential for environmental risk and form part of the Environmental Management System are summarised within the report referenced P124-R04-F1. These procedures, along with the identified impact control measures, have been taken into consideration when calculating the residual risk.

3.4 Risk Assessments

3.4.1 Introduction

The tables set out below detail the risk assessments undertaken based on the methodology outlined above, for those activities and associated impacts where a 'RA' tick has been recorded in Table 2.2.1.

3.4.2 Table Key

P = Probability

S = Severity (Impact / Consequence)

R = Risk Level

1 = All contingency planning requirements are dealt with in the Environmental Accident Management Plan and associated procedures;

2 = No account of Health and Safety risk assessments (human receptors) have been considered.

3 = Applicable operating conditions: N – Normal; A – Abnormal; E – Emergency (accident).

3.4.3 Assessment Tables

<i>Identification of Potential Risks¹</i>			<i>Control Measures</i>			<i>Assessment</i>		
Environmental Risk and Receptors	Initiating Event	Condition N/A/E³	Risk Management Controls²	Residual Risk				
				P	S	R		
Amenity – Dust / Mud / Debris / Vermin / Fire- Humans / Public Highway The closest human occupied receptors are c. 80 metres to South East of the facility boundary.	Dust from vehicles.	N/A/E	Yard areas are covered with hard standing. Yard areas regularly inspected and cleaned where necessary.	2	4	8		
Odour - Humans. The closest human occupied receptors are c. 80 metres to South East of the facility boundary.	Wastes spillage from vehicles that are left to degrade. Wastes left in vehicle or tank at producing site and allowed to get odourous.	A/E	Implementation of a Regulator approved Odour Management Plan. Wastes delivered / dispatched in enclosed tankers. Spill kit on site.	1	4	4		
Noise - Humans. The closest human occupied receptors are c. 80 metres to South East of the facility boundary.	Noise from site due to vehicles moving / unloading / loading. Noise is more likely to be an issue in still conditions. Noise from poorly maintained vehicles.	N/A/E	Drivers instructed not to rev engines unnecessarily or accelerate excessively when leaving the site. Vehicles maintained under service contracts to minimise the potential of noise emissions from vibrating parts. Site speed limit.	1	4	4		

<i>Identification of Potential Risks¹</i>				<i>Control Measures</i>		<i>Assessment</i>		
Environmental Risk and Receptors	Initiating Event	Condition N/A/E³	Risk Management Controls²	Residual Risk				
				P	S	R		
			Site is not operational during unsocial hours.					
Surface and Ground Water Leaks or spills to ground, ground water and surface water. Closest surface water is c.50 metres to the South West of the facility boundary.	Delivery / collection vehicle containment failure or collision leading to significant spillage of materials, including vehicle fuels and oils.	A/E	Vehicles maintained under service contracts. Vehicles driven by trained drivers. Site speed limit. Provision of spill kits on site.	1	4			4
Waste Production	Vehicle collision / failure of vehicle containment will lead to spills of materials which need to be cleaned up and disposed of as waste.	A/E	Deliveries supervised. Site speed limit. Vehicles driven by trained drivers.	1	4			4

<i>Identification of Potential Risks¹</i>				<i>Control Measures</i>		<i>Assessment</i>		
Environmental Risk and Receptors	Initiating Event	Condition N/A/E³	Risk Management Controls²	Residual Risk				
				P	S	R		
Odour - Humans. The closest human occupied receptors are c. 80 metres to South East of the facility boundary.	Wastes spillage from vehicles during discharge to stores / as a result of vandalism to site infrastructure, that are left to degrade. Odours released from agitation of stored waste during delivery.	N/A/E	Implementation of a Regulator approved Odour Management Plan. Wastes delivered in enclosed tankers. Spill kit on site. Material discharged towards the bottom of the stores. Stores fitted with covers. Stores located in secure farmyard.	2	4			8
Noise - Humans. The closest human occupied receptors are c. 80 metres to South East of the facility boundary.	Noise from site due to vehicles moving / unloading / loading. Noise is more likely to be an issue in still conditions. Noise from poorly maintained vehicles.	N/A/E	Drivers instructed not to rev engines unnecessarily or accelerate excessively when leaving the site. Vehicles maintained under service contracts to minimise the potential of noise emissions from vibrating parts. Site speed limit. Site is not operational during unsocial hours.	1	4			4
Surface and Ground Water Leaks or spills to ground, ground water and surface water.	Delivery / vehicle containment failure or collision leading to significant spillage of materials, spillage during transfer, including	A/E	Vehicles maintained under service contracts. Site speed limit. Vehicles driven by trained drivers.	1	4			4

<i>Identification of Potential Risks¹</i>			<i>Control Measures</i>		<i>Assessment</i>		
Environmental Risk and Receptors	Initiating Event	Condition N/A/E³	Risk Management Controls²	Residual Risk			
				P	S	R	
Closest surface water is c.50 metres to the South West of the facility boundary.	vehicle fuels and oils.						
Waste Production	Vehicle collision / failure of vehicle containment / store failure will lead to spills of materials which need to be cleaned up and disposed of as waste.	A/E	Deliveries supervised. Site speed limit. Vehicles driven by trained drivers.	1	4	4	
	Wastes delivered to site that are not in compliance with the permit.	A/E	Operations undertaken in accordance with the EMS. Deliveries supervised. Waste acceptance procedures implemented at site.	1	3	3	

<i>Identification of Potential Risks¹</i>			<i>Control Measures</i>		<i>Assessment</i>		
Environmental Risk and Receptors	Initiating Event	Condition N/A/E³	Risk Management Controls²	Residual Risk			
				P	S	R	
Odour - Humans. The closest human occupied receptors are c. 80 metres to South East of the facility boundary.	Some materials permitted on site are potentially odorous. Wastes stored on site for pro-longed period and left to degrade. Failure of store covers leading to odour releases.	N/A/E	Implementation of a Regulator approved Odour Management Plan. Wastes stored on site for no longer than 18 months. Stores constructed to CIRIA 759 standard. Store integrity inspected as part of a Fugitive Emissions Monitoring Programme implemented as part of the sites Environmental Management System.	1	4	4	
Noise - Humans. The closest human occupied receptors are c. 80 metres to South East of the facility boundary.	Noise from site pumps clearing rainwater from store covers. Faulty pump.	N/A/E	Pumps maintained as per manufacturers instructions.	1	4	4	
Fugitive Emissions to Air – Humans / Habitats Releases of ammonia from stored materials. The closest human occupied receptors are c. 80 metres to South East of the facility boundary. The closest designated habitat is	Failure of store covers leading to fugitive releases of ammonia.	A/E	Stores constructed to CIRIA 759 standard. Store integrity inspected as part of a Fugitive Emissions Monitoring Programme implemented as part of the sites Environmental Management System.	1	4	4	

Table 4.1.3: Activity – Waste Storage						
Identification of Potential Risks ¹			Control Measures			Assessment
Environmental Risk and Receptors	Initiating Event	Condition N/A/E ³	Risk Management Controls ²	Residual Risk		
				P	S	R
c.375 metres to the North of the facility boundary.						
Surface Water and Ground Water Leaks or spills to ground, ground water and surface water. Closest surface water is c.50 metres to the South West of the facility boundary.	Failure of site stores / vandalism of stores, leading to significant loss of material.	A/E	Stores constructed to CIRIA 759 standard. Lagoon fitted with leak detection system. Store integrity inspected as part of a Fugitive Emissions Monitoring Programme implemented as part of the sites Environmental Management System. Stores located within a secure farmyard.	1	5	5
Waste Production	Waste generated as a result of non-permitted wastes discharged into the stores.	A/E	Site manned throughout the working day. Waste acceptance procedures implemented to ensure only permitted wastes are delivered to site. No ad hoc waste deliveries are to be accepted at site.	1	4	4
GWP / POP Atmosphere	Gas trapped under the lagoon liner released via the vent to atmosphere.	A/E	Gases vented to atmosphere and dispersed.	1	5	5

4 Conclusions

4.1 Summary

The Environmental Risk Assessment has identified those processes and activities on site that have the potential to create an environmental impact on identified environmentally sensitive receptors, under normal, abnormal and emergency (accident) scenarios.

The results Environmental Risk Assessment has been summarised in Table 4.1 below.

Table 4.1 Assessment Summary	
Possible Impact	Significance / Further Assessment
Amenity (litter / vermin / mud / dust / fire)	Insignificant impact, no further assessment required.
Odour	Insignificant impact, no further assessment required.
Noise	Insignificant impact, no further assessment required.
Fugitive Air Releases	Insignificant impact, no further assessment required.
Surface Water	Insignificant impact, no further assessment required.
Groundwater	Insignificant impact, no further assessment required.
Air	No potential for impact, no further assessment required.
Waste Produced	Insignificant impact, no further assessment required.
Global Warming Potential (GWP) / Photochemical Ozone Creation Potential (POP).	Insignificant impact, no further assessment required.