PEN MILL

Environmental Permit Application

Environmental Risk Assessment

Prepared for: Duffields (South West) Limited

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1.0 INTRODUCTION

SLR Consulting Limited (SLR) has been instructed by Duffields (South West) Limited (Duffields) to prepare an Environmental Permit application for Pen Mill, Babylon View, Pen Mill Trading Estate, Yeovil, Somerset BA21 5HR (hereafter referred to as 'the Site').

This Environmental Risk Assessment (ERA) has been undertaken in accordance with Environment Agency (EA) Guidance[1]. The aim of the assessment is to identify risks posed to the surrounding environment and to human health from the proposed operations and to then ensure that the risk is made acceptable through the implementation of control measures. The EA guidance requires an ERA to identify all receptors near the Site that could be reasonably affected by the activities.

This report should be read in conjunction with the Non-Technical Summary, Application Forms, Drawings, Site Condition Report, Best Available Techniques, Air Emissions Risk Assessment documents submitted in this application.

The Site Location is illustrated in Drawing EP1 Site Location whilst the layout of the feed mill is shown in Drawing EP2 Site Layout. The local receptors within 500m of the Site are evident in Drawing EP3 Local Receptors whilst Drawing EP4 shows the cultural and natural heritage receptors within 2km. Receptors are identified in Table 2 of this report.

1.1 Amenity and Accidents Risk Assessment

In particular, this report assesses the risks posed from the Site that could contribute towards the occurrence of accidents or amenity degradation. This assessment also identifies control or mitigation measures as appropriate to reduce this risk. The following tables present the assessment in terms of hazard posed, receptors and pathways, along with management and residual risks for the following hazards:

- Accidents;
- Odour;
- Noise and Vibration;
- Fugitive Emissions; and
- Visible Emissions.

1.2 ERA Overview and Approach

This ERA follows six steps set out in the EA guidance to identify and assess risks to receptors:

1. Identify and consider risks for your site, and the sources of the risks.
2. Identify the receptors at risk from your site.
3. Identify the possible pathways from the sources of the risks to the receptors.
4. Assess risks relevant to your specific activity and check they're acceptable and can be screened out.
5. State what you'll do to control risks if they're too high.
6. Submit your risk assessment.

Steps 1-5 are completed below.

[1] Environment Agency Guidance Risk Assessments for your Environmental Permit, March 2021

2.0 OPERATIONS

The Site is an existing animal feed manufacturing facility operated by Duffields regulated under a local authority environmental permit ref. PPC/032 dated 7th March 2018. The mill manufactures compound and blended animal feeds, i.e. feeds which are suitable for consumption by an animal without further processing, for sale to third party farms.

The Site has been producing feed since 1992. Over the course of 2019 and 2020, Duffields embarked on a three phase expansion of the Site as follows:

- Phase 1 – Finished product storage expansion – completed April 2019;
- Phase 2 – Raw material storage expansion – completed February 2020; and
- Phase 3 – Process capacity expansion – completed July 2020.

The products manufactured in the mill are based upon core formulations of cereals (such as wheat and barley), vegetable oils and molasses, plus specific additives such as mineral supplements. The processing is undertaken to a specific formulation on a batch basis, with the key stages being weighing, grinding, mixing, conditioning, pressing, cooling and coating. Depending upon the specific formulation, the required cereals are weighed out prior to grinding to a uniform grist size. The ground materials are then mixed with other ingredients such as oil seed and molasses and pre-weighed supplements and, occasionally, medicinal feed additives. Some material ('meal') is extracted directly from the mixer as product, but the majority is conditioned through the addition of steam to improve its workability.

After conditioning, the hot mix is discharged to a press line, where it is extruded through dies to produce pellets. Hot pellets are then passed through a counter flow air cooler to reduce their temperature, causing them to harden and become durable. The majority of the pellets are subsequently coated in fat to produce the finished product. Some pellets are crumbed prior to coating with fats. Pelleted product is used as feed for larger animals, such as cattle and pigs whilst crumbed product and meal is used as chicken feed. Finished product is stored prior to being automatically loaded to bulk vehicles for delivery to customers.

Activities undertaken at the plant can be summarised as follows:

- Receipt of raw materials and storage;
- Raw material handling;
- Weighing;
- Grinding;
- Mixing;
- Steam conditioning;
- Pressing;
- Cooling;
- Fats coating; and
- Final product storage and despatch.

The expansion of operations on the Site brings the Site's production capacity to approximately 400 tonnes per day.

2.1 Site Layout

The Site Layout is illustrated in Drawing EP2 Site Layout and Environmental Permit Boundary.

Loose and dry raw material will be weighed at the weighbridge, prior to being delivered for storage in the storage silos located on the western boundary of the Site. Liquid raw materials such as molasses, vegetable fat and industrial heating oil are stored in tanks on the southern border of the Site.

Salts, minerals and mould inhibitor are stored in bags on storage racking at the south of the Site behind the main warehouses.

The processing of raw material into finished feed product takes place within the feed mill building. The boiler is located within the same building.

Finished product is stored in a central warehouse. Loose product is transferred directly into lorries via the loading bays within a warehouse in the central area of the Site.

3.0 SITE SETTING AND RECEPTORS

3.1 Site Setting

The Site is located approximately 2km north-east of the centre of Yeovil, centred on national grid reference ST 57683 17115. The Site is located on the eastern edge of the Pen Mill Trading Estate from which access to the Site is gained via Lyde Road.

The surrounding land generally consists of open fields, the River Yeo and the railway line between Yeovil and Castle Cary to the east and light industrial uses associated with the business park to the north, west and south. The nearest residential properties are located approximately 190m on Pembroke Close to the west. Further residential properties include those associated with a housing estate approximately 340m to the north.

The location of the Site and its environmental setting are illustrated on Drawings EP1 and EP3.

Table 1 Surrounding Land Uses

Boundary	Land Use
North	Immediately to the north lie industrial and commercial units on Pen Mill Industrial Estate, the closest of which is Falcon Signs. Beyond this is an area of open ground and some residential estates on the outskirts of Yeovil.
East	Land to the east is predominately open ground/agricultural land. The River Yeo also lies to the east.
South	Immediately to the south lies industrial units on Pen Mill Industrial Estate, the closest of which is Nice Package Ltd. Beyond the industrial estate lies a railway line.
West	Industrial units bound the western edge of the Site. Beyond the Pen Mill Industrial Esate lies the town of Yeovil.

Agricultural and Open Land

The nearest agricultural receptors lie adjacent to the Site on the eastern boundary. Birchfield Park lies approximately 155m to the north.

Commercial

The Site is located within Pen Mill Industrial Estate, which extends westwards, southwards and northwards from the Site meaning there are numerous commercial premises in the area. The closest commercial premises in each direction are as follows; Falcon Signs 12m to the north and Nice Package Ltd 25m to the south.

Industrial

The Site is located within Pen Mill Industrial Estate, which extends westwards, southwards and northwards from the Site meaning there are numerous industrial premises in the area. The closest industrial receptors in each direction are as follows; MoT Yeovil adjacent to the north, Holden Engineering UK Ltd 50m to the south and Magic Yeovil adjacent to the west.

Along with numerous industrial units located within Pen Mill Industrial Estate, Vale Road Sludge Treatment Works, a wastewater and sewage treatment works, is located 250m south of the Site.

Residential

The closest residential receptor to the Site is on Pembroke Close on the eastern edge of Yeovil, approximately 190m west of the Site. There are also residential properties 340m to the north in large residential estates, along with some scattered properties to the east, the closest of which lies approximately 490m to the south-east.

Surface Water Features

The nearest surface water receptor to the Site is the River Yeo which lies 280m east at the closest point. Along with this, there is a drain located 300m north of the Site, which joins the River Yeo.

Local Transport Network

There are numerous small roads in the area to the north, west and south of the Site which provide access around residential streets and the Pen Mill Industrial Estate, the closest of which is Babylon View which provides access to the Site on the northern boundary.

A railway line is located 340m to the east of the Site.

Woodland

A small area of deciduous woodland is situated approximately 370m east and some areas of deciduous woodland lies 400m to the south.

3.2 Geology

A review of the British Geological Survey (BGS)[2] map revealed that the Site is underlain by bedrock deposits of Dyrham Formation – Sandstone formation.

There are no superficial deposits recorded at the Site.

3.3 Hydrogeology

3.3.1 Aquifer Designations

The Multi-Agency Geographical Information for the Countryside (MAGIC) map[3] identified that the bedrock deposits comprise a Secondary A Aquifer, whilst the superficial deposits is designated as Unproductive.

[2] British Geological Survey (BGS) Map www.bgs.ac.uk, accessed in December 2020
[3] Multi Agency Geographical Information for the Countryside (MAGIC) map, www.magic.co.uk, accessed in December 2020.

3.3.2 Source Protection Zones

The Site does not lie within a Source Protection Zone (SPZ). The closest SPZ lies 425m south-east of the Site, this SPZ is classified as Zone II – Outer Protection Zone.

3.4 Hydrology

3.4.1 Groundwater Vulnerability

The Groundwater Vulnerability Map on MAGIC indicates that the location of the Site is designated as of High Vulnerability and with a soluble rock risk.

3.4.2 Flood Zone

According to the Flood Map for Planning[4] the Site lies within a Flood Zone 1, which is defined as land having a less than 1 in 1,000 annual probability of river or sea flooding.

3.5 Ecology

The MAGIC map website has been accessed to determine the presence of any European or Internationally designated sites within a 2km radius from the Site's boundary.

3.5.1 European/International Designated Sites

Site of Special Scientific Interest (SSSI)

Babylon Hill SSSI is situated approximately 1.1km south of the Site. The SSSI is separated over two units which cover 1.84ha in total.

3.5.2 National/Locally Designated Sites

Ancient Woodland

A small section of Newton House Wood ancient woodland is situated 1.9km south-west of the Site.

Other Receptors

A review of the EA Habitat and Conservation screening assessment completed for the Site and the MAGIC website confirmed that none of the following are situated within 2km of the Site;

- Areas of Outstanding Natural Beauty;
- Local Nature Reserve;
- National Nature Reserve;
- Ramsar site;
- Special Area of Conservation;
- Special Protection Area; and
- National Parks.

[4] Flood Map for Planning https://flood-map-for-planning.service.gov.uk/summary/338690/566167, accessed in December 2020

3.6 Cultural Heritage

Scheduled Monuments

The scheduled monument Roman temporary camp at East Farm is located 1.5km south of the Site. The monument area covers 12.5ha.

Listed Buildings

There are numerous listed buildings with a 2km radius of the Site. The closets of which is the Grade II listed building is the Lower Farmhouse and Attached Garden Wall, situated 1km east.

Registered Parks and Gardens

An area of Newton Surmaville registered park and garden is located 1.5km south-west of the Site.

Other Receptors

A review of MAGIC map confirmed that none of the following are situated within 2km of the Site:

- Registered Battlefields;
- World Heritage Sites.

3.7 Receptors

Local Receptors within 500m of the Site are illustrated in Drawing EP3. Receptors of cultural and ecological importance are identified within 2km of the Site, as shown on Drawing EP4. These are further detailed in Table 2.

Table 2 Identified Receptors

Receptor Name	Receptor Type	Direction	Approximate Distance from Site Boundary (m)
Local Receptors within 500m			
Pen Mill Industrial Estate	Industrial/Commercial	North, South, West	Adjacent
Local Road Network	Local Transport Network	North, South, West	Adjacent
Agricultural Land	Open Ground/Agricultural Land	East	Adjacent
Birchfield Park	Open Ground/Agricultural Land	North	155
Pembroke Road	Residential	West	190
Sewage Works	Industrial	South	250
River Yeo	Surface Water Feature	East	280
Drain	Surface Water Feature	North	300
Residential Properties	Residential	North	340
Railway Line	Local Transport Network	East	340
Deciduous Woodland	Woodland	East	370
Deciduous Woodland	Woodland	South	400
Residential Property	Residential	South-East	490

Receptor Name	Receptor Type	Direction	Approximate Distance from Site Boundary (m)
Natural and Cultural Heritage Receptors within 2km			
Lower Farmhouse and Attached Garden Wall	Listed Building	East	1000
Babylon Hill	Site of Special Scientific Interest	South	1100
Newton Surmaville	Registered Park and Garden	South-West	1500
Roman temporary camp at East Farm	Scheduled Monuments	South	1500
Newton House Wood	Ancient Woodland	South-West	1900

4.0 AMENITY RISK ASSESSMENT TABLES

Table 3 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? – 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.
Odour from storage and handling of raw material. Odour from production of waste products.	Sensitive receptors listed in Table 2 including residential, commercial, agricultural recreational and ecological receptors.	Air	All raw materials will be stored within internal or external silos and tanks, or externally within bags and bays behind the main processing building. The warehouse and outloading building benefit from roller shutter doors which are closed when not in use to allow access for vehicles and strip curtains over the entrance ways to limit the pathway for odour to reach receptors. The mill is located within the confines of a building and is completely enclosed at all stages of processing. The Site does not accept or handle materials which are considered to have a high odour potential. Strict procedures will be followed to ensure only the permitted raw materials are accepted on Site. All raw materials, effluent and waste on Site are stored within enclosed silos, tanks and containers or in stores	Low	Odour nuisance and loss of amenity.	Low

What do you do that can harm and what could be harmed			Managing the Risk	Assessing the Risk		
			under negative pressure, to minimise any chance of odour potential. The process building benefit from good design and extract ventilation. If any odours are identified the cause will be investigated. If the odours are found to be due to odorous waste materials that arise from processing, these will be stored within an enclosed area before being transferred off Site to a suitably licenced facility. Monthly, at the time of molasses delivery (which is the product considered to have the highest odour potential), a Site Operative will survey the Site border for signs of odour. The Site benefits from a Site specific Odour Management Plan. Daily checks will be undertaken by the Site Manager or designated individual of odour at the Site boundary. Daily inspections are undertaken by the Site Manager or selected Site Operatives, of all areas of the Site. If an area is identified to be odorous or deemed liable to odour emissions, the Site Manager is responsible for undertaking mitigation to resolve this. Records are maintained of emissions, complaints and remedial actions taken.			

What do you do that can harm and what could be harmed			Managing the Risk	Assessing the Risk		
			For further information on management of odour at the Site. Please refer to the Odour Management Plan in Section 9 of the application.			

Table 4 Noise 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? – 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.
Noise from the production process. Noise from vehicle movements.	Sensitive receptors listed in Table 2 including residential, commercial, agricultural recreational and ecological receptors.	Air	A noise assessment has been undertaken in the local area which concluded that with reference to BS4142:2014+A1:2019, the daytime operation of the Site is deemed to have a low impact. During the night-time, at NSR01 the rating level is predicted to be above the measured night-time background sound level by a margin of +3dB. However, the night-time background sound level for NSR01, where the predicted margin is up to +3dB, has been referenced to the weekend period, specifically	Low	Noise disturbance and loss of amenity.	Low

What do you do that can harm and what could be harmed			Managing the Risk	Assessing the Risk		
			during a period of site shutdown. Weekday background sound levels (in the absence of specific sound from the Site) are likely to be higher, thus the assessment considers a robust case. Assuming that weekday background sound levels at NSR01 could be higher than the weekend period, the resulting margin over the background sound level for weekdays would be lower, and in accordance with BS4142:2014+A1:2019, would also result in an assessment whereby the weekday daytime operation of the Site is not likely to have an adverse impact at the closest receptors. At NSR02, NSR03 and NSR04, rating levels are predicted to be equal to or below the measured night-time background sound level. Therefore, with reference to BS4142:2014+A1:2019, the night-time operation of the Site is deemed to have a low impact at these locations. For further information on predicted impacts and the management of noise at the Site. Please refer to the Noise Impact Assessment and Management Plan in Section 8 of the application.			

Table 5 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? – 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 vehicular movements. Dust from storage and handling of raw materials. Dust from processing of materials.	Sensitive receptors listed in Table 2 including residential, commercial, agricultural recreational and ecological receptors.	Air	The design of the process is based on the principles of containment, extraction and treatment. There is a potential for dust emissions when raw materials are accepted on Site at the intake point and during outloading. Raw materials are delivered to bulk storage via sheeted tipper lorries, which deposit into an enclosed intake pit to minimise potential for wind whipping of particulates. The intake pit is fitted with a shutter door and extraction unit to contain dust Particulate emissions from the intake pit are extracted to four bag filter units, which discharge back into the pit following the cessation of offloading and the closing of the shutter doors to the intake pit.	Medium	Nuisance and harm to human health	Low

What do you do that can harm and what could be harmed			Managing the Risk	Assessing the Risk		
			Materials are loaded into vehicles for transfer off Site, in the enclosed loading bays. Dust emissions generated from processes such as grinding or bagging are captured by a ventilation system fitted in the building. The particulates are extracted by cyclones (coolers) prior to discharge to atmosphere. Any dust emissions generated by the intake pit, raw material conveyor and meal storage bins are also captured and extracted. Potentially dusty materials are stored in appropriate containers. The transfer of dry raw materials is carried by a suitable mechanical handling system to prevent and minimise air borne dust emissions. Vehicles are sheeted when carrying dusty materials in and out of the Site. Doors between the outdoors and the building are fitted with plastic sheeting to reduce dust emissions leaving Site. Conveyor belts in the processing building are covered. Speed limits are implemented for vehicles using the Site. Vehicles movements on Site are minimised in and out of storage areas and of the outtake loading point. Traffic calming measures are implemented to enforce speed limits and reduce emissions of dust.			

What do you do that can harm and what could be harmed			Managing the Risk	Assessing the Risk		
			Site access and haul roads are maintained and repaired to minimise emissions of dust due to uneven and poor surfacing. All roads and operational areas are swept and vacuumed in accordance with the Site's cleaning procedures to reduce dust emissions. Regular, visual inspection at all areas of the Site and Site boundary are carried out by Site personnel. In the event that significant visual dust is observed at the boundaries of the operational areas, action will be taken to suppress the dust. Dust emissions are continually monitored via an Automated Control System, meaning should emissions exceed 50mg/m^3 the mill will automatically shut down. Daily visual inspections are undertaken by the Site Manager or selected Site Operatives, of all areas of the Site. If an area is identified to be dusty or deemed liable to a fugitive emission of dust, the Site Manager is responsible for undertaking mitigation to resolve this. The Site Manager is responsible for ensuring dust emissions are kept to a minimum and that any unacceptable emissions are mitigated. Records are maintained of dust emissions, dust complaints and remedial actions taken.			

What do you do that can harm and what could be harmed			Managing the Risk	Assessing the Risk		
To Land & Water:						
Run-off from Site Surfaces Percolation of contaminated run-off through Site surfaces	Sensitive receptors listed in Table 2 including residential, commercial, agricultural recreational and ecological receptors. Groundwater	Land	All roads and operational areas on Site are lain with hard standing or impermeable surfacing which prevents run-off to the surroundings. Run-off on external surfaces will be captured by the Site's surface water drainage system with suitable falls in place across the Site to ensure that the runoff from operational areas is captured. The process inside is dry with drainage contained within the confines of buildings. There is no wet cleaning inside the process buildings, meaning no runoff is generated from cleaning processes. All primary containers on Site are fitted with secondary containment to capture any leaks or spills on Site. • Fuels and liquid raw materials are stored within tanks or containers benefiting from secondary containment as described in the BATOT document in Section 5 of this application; and • Filling points are provided with spill trays to capture drips from the taps. Fill points are also provided with padlocks to prevent leaks when not in use. There are two spill kits available on Site and staff are trained in their use and what to do in the event of a spill.	Low	Contamination of ground, surface water and groundwater	Low

What do you do that can harm and what could be harmed			Managing the Risk	Assessing the Risk		
			The Site benefits from impermeable surfacing. The Site's surface water drainage system does not contain shut off valves which would prevent fire water egress off Site. As such, in the event of a fire, drain mats and firewater booms will be deployed to contain fire waters on Site. Once contained, removal of fire waters for disposal at a suitable licensed facility will be arranged by tanker. The Site benefits from an Oil Spillage Management Procedure to be followed in the event of a spill. The Site Manager will be responsible for monitoring the Site. Records will be maintained of spills and remedial actions taken.			
Pests						
Attraction of birds, vermin and insects	Sensitive receptors listed in Table 2 including residential, commercial, agricultural recreational and ecological receptors.	Land, Air, Water	The Site will be inspected daily for signs of pests. If pests are encountered, appropriate remedial action will be undertaken. The Operations Manager shall ensure that a programme to control insects, rodents, birds and any other pests is documented and followed by a suitable qualified Pest Controller. Pest Control records are held in the Operation Managers office. Pes controllers should visit the Site at least monthly.	Medium	Nuisance, loss of product, potential risk to health	Low

What do you do that can harm and what could be harmed			Managing the Risk	Assessing the Risk		
			The Site Manager will be responsible for monitoring the Site. Records will be maintained of monitoring, complaints and remedial actions taken.			
Mud and Litter						
Litter from packaging or visitors	Sensitive receptors listed in Table 2 including residential, commercial, agricultural recreational and ecological receptors.	Air, Surface Water, Land	Vehicles bringing and removing materials from Site are sheeted where necessary. The bagging building benefits from plastic strip curtains over the entrance way to prevent accidental emissions of litter. The Site benefits from a regular housekeeping schedule which will ensure any litter is identified quickly and minimised. Daily monitoring is carried out by the Site Manager or a designated individual. Litter picking is undertaken as necessary in response. The Site Manager is responsible for monitoring the Site and maintain it free of litter. Records will be maintained of monitoring, complaints and remedial actions taken.	Low	Nuisance from litter. Dangerous conditions on roads.	Low
Mud on roads	Local road network	Transferral of mud on vehicles wheels	The Site is surfaced such that there are no operational muddy areas on Site. This removes the possibility of vehicles tracking dirt or mud off Site.	Low	Nuisance from mud. Dangerous conditions on roads.	Low

What do you do that can harm and what could be harmed			Managing the Risk	Assessing the Risk		
			Daily monitoring is conducted by the Site Manager or a designated individual. Road sweeping is employed as necessary to maintain Site surfaces in a clean condition. The Site Manager will be responsible for monitoring the Site. Records will be maintained of monitoring, complaints and remedial actions taken.			

5.0 ACCIDENTS RISK ASSESSMENT AND MANAGEMENT PLAN

This section presents the results of an assessment of the risks posed to the environment by the feed mill in the event of abnormal operating conditions and accidents. The risk assessment carried out includes an estimate, for each potential environmental accident scenario, of:

- Likelihood – the probability of the event taking place;
- Severity – the potential environmental impact as a result of the event occurring; and
- Overall risk to the environment – through a combination of likelihood and severity.

A ranking system has been used that attempts to objectively quantify each of these parameters. Tables 6, 7 and 8 describe the ranking systems for the likelihood, severity and overall risk, respectively.

Table 6 Likelihood Scoring System

Score	Category	Range
1	Extremely unlikely	Incident occurs less than once in a million years
2	Very unlikely	Incident occurs between once per million and once every 10,000 years
3	Unlikely	Incident occurs between once per 10,000 years and once every 100 years
4	Somewhat unlikely	Incident occurs between once per hundred years and once every 10 years
5	Fairly probable	Incident occurs between once per 10 years and once per year
6	Probable	Incident occurs at least once per year

Table 7 Severity Scoring System

Score	Category	Definition
1	Minor	Nuisance on Site only (no off-Site effects) No outside complaint
2	Noticeable	Noticeable nuisance off-Site e.g. discernible odours Minor breach of permitted emission limits, but no environmental harm One or two complaints from the public
3	Significant	Severe and sustained nuisance, e.g. strong offensive odours or noise disturbance Major breach of Permitted emissions limits with possibility of prosecution Numerous public complaints
4	Severe	Hospital treatment required Public warning and off-Site emergency plan invoked Hazardous substance releases into water course with ½ mile effect
5	Major	Evacuation of local populace Temporary disabling and hospitalisation

Score	Category	Definition
		Serious toxic effect on beneficial or protected species Widespread but not persistent damage to land Significant fish kill over 5 mile range
6	Catastrophic	Major airborne release with serious off-Site effects Site shutdown Serious contamination of groundwater or watercourse with extensive loss of aquatic life

Table 8 Risk Magnitude Scoring System

Likelihood	Severity of Consequence					
	Minor	Noticeable	Significant	Severe	Major	Catastrophic
Extremely unlikely	1	2	3	4	5	6
Very unlikely	2	4	6	8	10	12
Unlikely	3	6	9	12	15	18
Somewhat unlikely	4	8	12	16	20	24
Fairly probable	5	10	15	20	25	30
Probable	6	12	18	24	30	36

Following the scoring system identified, the scenarios have been placed in the following categories:

- Acceptable (or low risk) – unshaded;
- Acceptable if the risk is controlled as far as is practicable (medium risk) – pink; and
- Unacceptable (high risk) – red.

The estimated overall risks are assessed to determine the appropriate measures to be undertaken, such as design and development of operating procedures used, to reduce the risk of accidents and minimise any resulting environmental impact.

The management programme emerging from this analysis is focused on addressing the highest risk scenarios as a priority.

5.1 Techniques to Reduce Risks

Table 9 presents the principal accidents scenarios for the feed mill installation that have the potential to cause significant environmental harm, together with the measures that the Site implements to minimise the risks and to control the consequences.

Henceforth, this accident assessment will be revisited on at least an annual basis. This review will include a review of the BAT guidance for identifying hazards and identifying techniques necessary to reduce the risks and take into account any significant changes to the operations/ process conducted on Site.

The following general measures are undertaken to minimise the risk and effects of accidents:

- Procedures are in place to record all accidents and to mitigate their consequences. These include procedures to:
    - Manage and control raw materials and wastes;
    - Control operations including start up;
    - Address non-conformances (including emergencies) and implement corrective or preventative actions; and
    - Control and respond to leaks, spills and emergencies.
- The Site Health and Safety Policy addresses:
    - Accident reporting;
    - Audits including environmental elements; and
    - Fire prevention and control and evacuation procedures.
- Specialised training needs are reviewed and identified on an annual basis which includes selected personnel being trained in emergency preparedness and response. This covers incident response techniques, including chemical and liquid spill containment, firefighting, control of releases to air and all activities with potentially significant environmental effects;
- Routine safety inspections are undertaken to ensure that equipment is suitable for use;
- A preventative maintenance programme is also implemented at the installation to minimise the risk of unplanned stoppages and potentially serious incidents; and
- Internal audits are undertaken of all emergency and spill procedures.

5.2 Safety

Safe working practices are ensured by adherence to company procedures and systems. Pertinent features of these are summarised below:

- Hazardous Materials – All materials used on Site are assessed and controlled under the Control of Substance Hazardous to Health (COSHH) Regulations. Duffields (South West) Limited maintains an up to date inventory of all substances present on Site which could have environmental consequences if they escape. Procedures are in place for checking raw materials and wastes to ensure compatibility with other substances with which they may accidentally come into contact.
- Operators – The Site has a stable workforce with low turnover of personnel. Training, which includes recognition and control of potential environmental incidents, is mainly task related and is conducted and supervised by experienced senior staff.
- Process Control – Process equipment is designed and operated to ensure that process parameters are controlled within acceptable limits. There are safe shutdown procedures for key processes.
- Permits-to-Work – The Site operates a comprehensive pre-authorisation procedure for work to be performed on Site by third parties, which takes into account the nature of the task and its location.

- Communication – Procedures exist to avoid incidents occurring as a result of poor communication among operations staff during shift changes, maintenance or other engineering work that may be being performed.
- Incidents – Abnormal occurrences resulting in injury, loss of material, damage to buildings or equipment and 'near misses' are subject to a reporting and investigating procedure that is designed to establish the basic cause and to prevent future recurrence.
- Process Modifications – Proposed changes to plant and processes are assessed for potential health, safety and environmental impact by a Management of Change Procedure.
- Site Security – The Site maintains a high level of security to reduce the risk of vandalism.

Table 9 Accident Risk Assessment and Management Plan

Accident or abnormal release scenario	Likelihood of occurrence	Consequences of occurrence	Severity of occurrence	Risk Rating	Actions taken or proposed to minimise the chances of it happening	Actions planned if the event does occur
Generic - Site Wide						
Failure of hardstanding resulting in ground contamination	2	Potential ground contamination with organic oils, fuel and lubricating oils, liquid and soluble raw materials.	2	L	Regular inspection and maintenance of hard standing areas.	Invoke spill containment procedures. Clean up according to COSHH data sheets and appropriate disposal arrangements. Resurface as necessary.
Vehicle collision with product stores	2	Increased waste. Potential release of material into bund system.	2	L	Pallets of product materials are stored in designated areas.	Clean up according to appropriate disposal arrangements.

Accident or abnormal release scenario	Likelihood of occurrence	Consequences of occurrence	Severity of occurrence	Risk Rating	Actions taken or proposed to minimise the chances of it happening	Actions planned if the event does occur
Major fire	3	Loss of containment of stored materials. Releases to atmosphere. Increase in waste generated. Noise and odour releases.	4	M	Fire alarm systems installed, maintained and tested according to Fire and Rescue service recommendations. Emergency procedures are in place and reviewed. Permit to work system to control hot work etc. Designated smoking areas. Preventative maintenance on all electrical systems. Firefighting training. Provision of manual extinguishers.	Invoke emergency procedures and business recovery plan.

Accident or abnormal release scenario	Likelihood of occurrence	Consequences of occurrence	Severity of occurrence	Risk Rating	Actions taken or proposed to minimise the chances of it happening	Actions planned if the event does occur
Minor fire	4	Minor release to atmosphere. Small amount of waste generated. Small release of odour	2	M	Fire alarm systems installed, maintained and tested according to Fire and Rescue service recommendations. Emergency procedures are in place and reviewed. Permit to work system to control hot work etc. Designated smoking areas. Preventative maintenance on all electrical systems. Firefighting training. Provision of manual extinguishers.	Invoke emergency procedures and business recovery plan.
Failure to contain firewater	4	Contaminated waters from fire control entering sewer.	5	H	Fire prevention measures as above. Run-off on external surfaces will be captured by the Site's surface water drainage system with suitable falls in place across the Site to ensure that the runoff from operational areas is captured.	Invoke emergency procedures and business recovery plan. Inform EA.

Accident or abnormal release scenario	Likelihood of occurrence	Consequences of occurrence	Severity of occurrence	Risk Rating	Actions taken or proposed to minimise the chances of it happening	Actions planned if the event does occur
Vandalism	2	Range of damage to equipment e.g. bulk storage and pipe work with consequent release to air / ground water / surface water / sewer.	3	L	Insurers recommended Site security measures are in place including perimeter fence on the northern, western and southern boundaries with controlled access gates. Regular inspection of perimeter fences. On the eastern boundary is no perimeter fence, but there is a steep drop which leads onto uninhabited land which acts as a natural barrier to entry. Padlocks are fitted on refilling taps to prevent unwanted access.	Address any specific equipment damage. Reinstate and review security measures.
Flood	3	Stopped production resulting in increased waste.	3	M	On-Site drainage systems will minimise the risk of flooding and its impact.	Take appropriate corrective and preventative actions to minimise environmental impact (such as sand bagging).
Excessive noise generation associated with vehicular movements	2	Noise complaints.	2	L	Vehicle driver awareness programme. Deliveries/ despatch limited to daylight hours.	Review and reinforce procedures.

Accident or abnormal release scenario	Likelihood of occurrence	Consequences of occurrence	Severity of occurrence	Risk Rating	Actions taken or proposed to minimise the chances of it happening	Actions planned if the event does occur
Fuel / oil spills from vehicles	3	Uncontrolled release to drainage system / surface water / sewer.	3	M	Supervised off-loading. Interceptor fitted in drain in external area to capture fuel if released.	Invoke spill containment procedures. Clean up according to COSHH data sheets and appropriate disposal arrangements.
Accidental activation of alarms/sirens	4	Noise complaints.	2	M	Preventative maintenance programmes.	Stop noise source, repair and review.
Electrostatic explosion	4	Range of damage to equipment e.g. bulk storage and pipe work with consequent release to air / ground / drains / sewer.	3	M	Dust explosion relief panels are fitted to appropriate items of equipment (such as silos).	Depending upon the severity of incident (i.e. whether or not there is an environmental impact) either: a) address specific incident; or b) invoke emergency procedures and business recovery plan. Inform EA.

Accident or abnormal release scenario	Likelihood of occurrence	Consequences of occurrence	Severity of occurrence	Risk Rating	Actions taken or proposed to minimise the chances of it happening	Actions planned if the event does occur
Raw Material Receipt and Storage						
Spillage of bulk solid raw materials (e.g. grains and limestone) during material delivery	4	Uncontrolled release of particulate matter	3	M	Supervised off-loading of materials. Off-loading areas are partially enclosed and fitted with extractor fans. Fill points are located within secondary containment areas or are provided with spill trays.	Stop discharge and clean up spillage
Spillage of bulk liquid raw materials (e.g. molasses and vegetable oils) during material delivery	4	Risk of release to drainage system/ ground/ sewer	3	M	Supervised off-loading of materials. Fill points and liquid storage are located within secondary containment areas or are provided with spill trays.	Stop discharge and invoke spill containment procedures. Spill kits are located close to potential areas of spills. Clean up according to COSHH data sheets and make appropriate disposal arrangements
Overfilling of solid raw material bulk storage silos	4	Uncontrolled release of particulate matter	3	M	Supervised off-loading of materials. High level alarms in bins.	Stop discharge and clean up spillage
Discharge of incorrect raw materials into storage silos	4	Increase waste	2	M	Intake procedures and controls.	Stop discharge. Re-use material as appropriate to minimise waste generation. Appropriate controlled disposal of waste.

Accident or abnormal release scenario	Likelihood of occurrence	Consequences of occurrence	Severity of occurrence	Risk Rating	Actions taken or proposed to minimise the chances of it happening	Actions planned if the event does occur
Unloading of incorrect raw materials into bulk liquid tanks	3	Increase waste	3	M		
Overfilling of bulk liquid storage tank	3	Uncontrolled release of liquids into containment bund	2	L	Supervised off-loading of materials. High level alarms in tanks.	Stop discharge. Appropriate disposal of waste.
Bund failure (following tank failure)	2	Liquid spill onto hardstanding/ drains/ sewer	2	L	Inspection and maintenance of bund. Regular controlled disposal of contents.	Invoke spill containment procedures. Spill kits are located close to potential areas of spill. Clean up according to COSHH data sheets and appropriate disposal arrangements. Inform EA. Repair bund.
Catastrophic loss of bulk liquids from storage tanks with bund overtopping	3	Uncontrolled release of liquids into factory	2	L	Preventative maintenance programme and inspection.	Arrange removal of materials from bund. Appropriate disposal of waste.

Accident or abnormal release scenario	Likelihood of occurrence	Consequences of occurrence	Severity of occurrence	Risk Rating	Actions taken or proposed to minimise the chances of it happening	Actions planned if the event does occur
Spillage of small volume raw materials (e.g. premixtures) during delivery, unloading or storage.	4	Fugitive release of materials	2	L	Designated storage to minimise damage and spillage. Raw materials stored in secondary containment where applicable. Only trained forklift truck drivers to offload and move materials.	Recover spillage and repackage/ dispose as appropriate according to COSHH data sheets/ food regulations. Controlled disposal of any residual waste as appropriate.
IBC of liquid raw materials (e.g. enzymes) dropped during delivery, unloading or storage.	4	Minor release to hard standing	3	M	Designated storage to minimise damage and spillage. Only trained forklift truck drivers to offload and move materials	Invoke spill containment procedures. Portable bunds and spill kits are located close to potential areas of spill. Clean up according to COSHH data sheets and appropriate disposal arrangements.
Processing						
Incorrect addition of low volume materials in mix	4	Waste generation	2	M	Process control of additives. All staff trained in procedures.	Controlled disposal of waste

Accident or abnormal release scenario	Likelihood of occurrence	Consequences of occurrence	Severity of occurrence	Risk Rating	Actions taken or proposed to minimise the chances of it happening	Actions planned if the event does occur
Incorrect addition of high volume materials in mix	3	Waste generation	2	L	Process control of mixing. Weighers calibrated. All staff trained in blending procedures.	Controlled disposal of waste
Failure of materials conveyance systems	4	Waste generation. Increased need for feed reprocessing.	3	M	Preventative maintenance programme. Level controls and overfeed detection.	Re-use of mix in new batch, where permitted. Controlled disposal of waste
Failure of automated control systems (loss of process control)	3	Waste generation	4	M	Systems fail safe. Maintenance and backups. Supplier support.	Override to recover intact batches where possible. Re-use of work-in-progress feed materials.
Excess noise generation from processing operations	3	Complaints/ nuisance	2	L	Noise attenuation by plant design. Preventative maintenance procedures. Site staff appropriately trained.	Identify source of noise. In the event of a fault take corrective action. Review as appropriate.

Accident or abnormal release scenario	Likelihood of occurrence	Consequences of occurrence	Severity of occurrence	Risk Rating	Actions taken or proposed to minimise the chances of it happening	Actions planned if the event does occur
Excessive odour generation from processing operations	2	Complaints/ nuisance	2	L	Preventative maintenance programme and cleaning regime	Identify source of odour. In the event of a fault take corrective action. Review as appropriate.
Failure of preventative maintenance system	4	Loss of production. Increased remix and waste generation	2	M	Subject to audit.	Review and modify maintenance programme. Recover sound product to rework. Controlled disposal of residual waste
Failure of abatement systems – bag filters	3	Uncontrolled release of particulate matter	3	M	Preventative maintenance programme according to COSHH regulations	Clean and make repairs as necessary (such as replacement of burst bags)
Failure of abatement systems – cyclones	4	Uncontrolled release of particulate matter	3	M	Preventative maintenance programme according to COSHH regulations	Stop process line. Make necessary repairs and clean up.

Accident or abnormal release scenario	Likelihood of occurrence	Consequences of occurrence	Severity of occurrence	Risk Rating	Actions taken or proposed to minimise the chances of it happening	Actions planned if the event does occur
Packaging and Despatch						
Spillage of product during vehicle loading	5	Waste generation	1	L	Driver training. Effective vehicle scheduling. Interceptor fitted in drain in external area.	Stop loading. Recover sound product where possible. Controlled disposal and reuse of residual waste.
Damage of product in storage (such as infestation leading to contamination / spoilage)	3	Waste generation	3	M	Minimal storage of finished product. Hygiene and pest control procedures.	Recover sound product. Controlled disposal of residual waste.
Utilities						
Power failure leading to loss of product	4	Loss of production. Increased waste generation	3	M	High voltage maintenance contracts. On Site preventative maintenance programme.	Review and modify maintenance programme. Recover sound product. Controlled disposal of residual waste.
Boiler failure	5	Loss of production. Increased waste generation	2	M	A standby boiler will be hired to Site. On Site and third party preventative maintenance programmes.	Review and modify maintenance programme. Recover sound product. Controlled disposal of residual waste.

Accident or abnormal release scenario	Likelihood of occurrence	Consequences of occurrence	Severity of occurrence	Risk Rating	Actions taken or proposed to minimise the chances of it happening	Actions planned if the event does occur
Failure of sub surface pipe work	3	Ground contamination	3	M	Inspection and maintenance of hard standing areas and drainage systems. Monitoring of water consumption.	Inform EA. Effect repair.

6.0 CONCLUSION

It is concluded that, with the implementation of the risk management measures described in the above document, the potential hazards associated with the Pen Mill are not likely to be significant.

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