# Omega Proteins Ltd.

## Penrith

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| **Report Title:** | **Environmental Permit Variation Application** |
| **Permit:** | **EPR/HP3238AF** |
| **Issue Date:** | **Sept 2022** |
| **Report Reference:** | **OP-PV-R02-F4 Environmental Risk Assessmentv2.0** |

**Submitted to:**

Environment Agency

**Authorised for issue by:**

Group Technical Advisor

# Contents

# 1 Introduction

This report presents the environmental risk assessment and the environmental impacts review for the variation application for updates to the existing production lines and the associated activities.

## 1.1 Detail of Approach

The guidance (https://www.gov.uk/guidance/risk-assessments-for-your-environmental-permit) is for the risk assessment to address risks using a 6-step approach:

1. *Identify and consider risks for your site, and the sources of the risks.*
2. *Identify the receptors (people, animals, property and anything else that could be affected by the hazard) 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 as part of your permit application.*

The EA Software Tool (H1) has been used to review the air emissions from the chemical scrubber and this is discussed further in section 3.3.3.

The risk assessment for the whole site is reviewed annually as part of the ISO14001 Accreditation for the site.

Receptors are identified and reviewed as part of the site Odour Management Plan, Dispersion Modelling Assessments and Noise Assessments.

The following impacts have been reviewed as they relate to this particular application:

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

# 2 Environmental Risk Assessment

## 2.1 Introduction

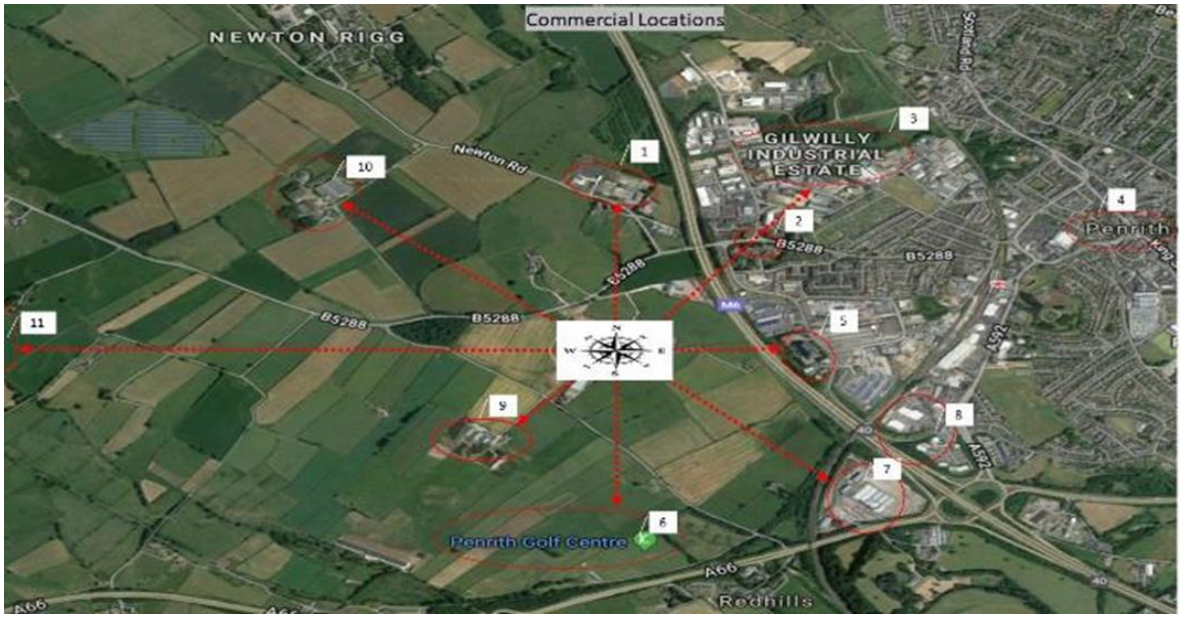
This section addresses the updated environmental risk assessment and is structured to include:

- Review of Sensitive Receptors
- Listing of control measures
- Accident scenario discussion
- ISO 14001 risk assessment
- Summary of current performance

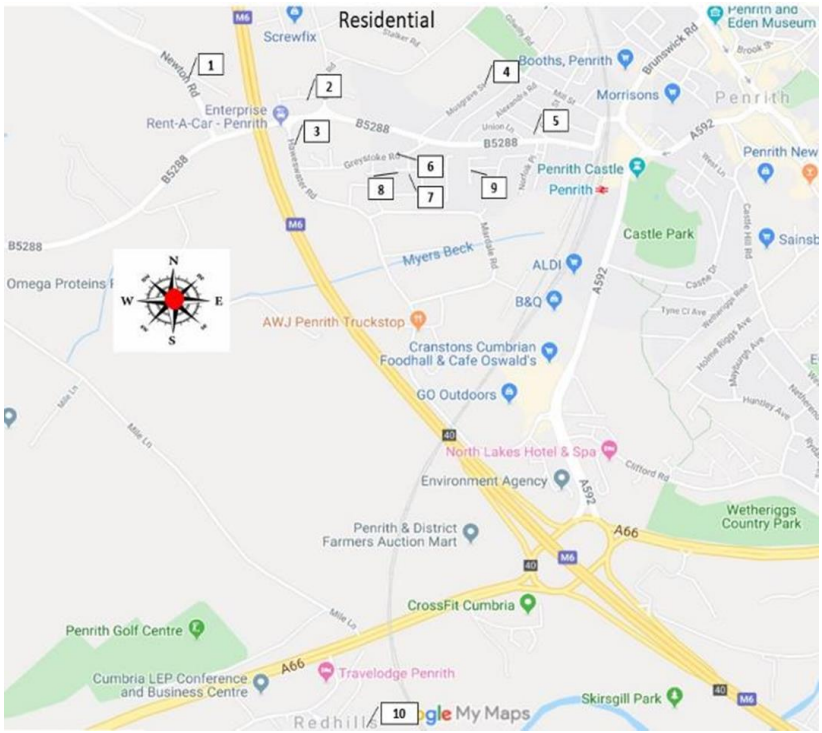
## 2.2 Sensitive Receptors

The installation is located at Greystoke Rd, Wildriggs, Penrith, CA11 0BX. The centre of the site is at National Grid Reference 349857,529406. The site is bounded in all directions by agricultural land, with the M6 Motorway to the East and Penrith Town Centre to the North East.
The prevailing wind is towards the town; hence this is the prime area of concern for any off site odour impacts. Residential properties are less densely situated in the other directions.
In addition, the Dispersion Modelling carried out for the site covers the ecological receptors in the local area.

| Nature of Receptor | Location Name | Risk Factor of Sensitivity | Direction from site | Distance from the boundary (m) | Plan Number |
|---|---|---|---|---|---|
| Commercial | Commercial property | Medium | N | 669 m | 1 |
| Commercial | Enterprise/ Car wash | High | NE | 574 m | 2 |
| Commercial | Gilwilly Industrial Estate | High | NE | 850 m | 3 |
| Commercial | Penrith Town Centre | Medium | N/NE | 1600 m | 4 |
| Commercial | For Farmer Factory | Medium | E | 534 m | 5 |
| Commercial | Penrith Golf Course | Low | S | 846 m | 6 |
| Commercial | Farmers Auction Mart | Low | SE | 963 m | 7 |
| Commercial | Environment Agency | Low | SE | 1070 m | 8 |
| Commercial | Bell Mount Farm | Low | SW | 524 m | 9 |
| Commercial | Unknown Farm | Low | NW | 1100 m | 10 |
| Commercial | D&C Fawcett | Low | W | 1500 m | 11 |




| Nature of Receptor | Location Name | Risk Factor of Sensitivity | Direction from site | Distance from the boundary (m) | Plan Number |
|---|---|---|---|---|---|
| Residential | Newton Road | Medium | N | 600 m | 1 |
| Residential | Castletown Drive | High | NE | 609 m | 2 |
| Residential | Hawswater Road | High | NE | 593 m | 3 |
| Residential | Musgrave street | High | E/NE | 1100 m | 4 |
| Residential | Howard Street | High | E/NE | 1000 m | 5 |
| Residential | Graystoke Road | High | E/NE | 206 m | 6 |
| Residential | Greystoke Park Ave | High | E/NE | 629 m | 7 |
| Residential | Mardale Road | High | E/NE | 570 m | 8 |
| Residential | Winsor Drive | High | E/NE | 841 m | 9 |
| Residential | Redhills | Medium | SE | 1220 m | 10 |




## 2.3 Control Measures

The control measures at the facility which are relied on to control risks on site are listed below:

| **Table 2.1: Control Measures** | |
|---|---|
| **Area Addressed** | **Controls in Place** |
| Amenity | HACCP system in place for risks associated with production processes<br>This includes pre-requisite procedures for control of pests, standards of housekeeping, compliance with regulations |
| Odour | All raw materials routinely checked for quality<br>Site areas cleaned down daily.<br>Drains fitted with screens to collect solids to prevent them entering drain network.<br>Effluent system enclosed.<br>OMP including specific differentiated mechanisms for control of different odour intensities and providing contingency and back-up abatement.<br>Spills/Leaks cleaned. Spill kits provided. Areas inspected as part of EMS |
| Noise | Equipment maintained by site engineers as part of planned preventative maintenance programme to ensure minimal noise potential from moving and vibrating parts.<br>Drivers instructed not to rev engines unnecessarily, leave engines running on unattended vehicles or accelerate excessively when leaving the site.<br>Vehicles maintained under service contracts to minimise the potential of noise emissions from vibrating parts.<br>Site speed limit.<br>Boilers, pumps and associated infrastructure are maintained as part of planned preventative maintenance programme under service contract to ensure minimal noise potential from |

| Table 2.1: Control Measures | |
|---|---|
| **Area Addressed** | **Controls in Place** |
| | moving and vibrating parts.<br>Boiler units and other such equipment situated internally. |
| Fugitive Air Releases | Enclosed equipment.<br>Enclosed conveyors<br>Building Integrity |
| Surface Water | Separate surface water and effluent drains. Regular yard cleaning to prevent build-up of material that could spill over or block drains.<br>Provision of spill kits.<br>Secondary containment provided<br>Vehicles maintained under service contracts.<br>All site roads covered by hardstand.<br>Site speed limit.<br>Interceptors fitted to surface drains where released to water course.<br>Cleaning chemicals stored in small quantity containers and in dedicated store.<br>Drains will form part of infrastructure monitoring programme within existing EMS<br>Housekeeping measures to ensure site kept clean and tidy |
| Groundwater | Storage areas clean down daily.<br>Regular monitoring of site infrastructure<br>Cleaning chemicals stored in small quantity containers and in dedicated store.<br>Separate surface water and effluent drains.<br>Provision of spill kits.<br>Forklifts maintained under service contracts.<br>All site roads covered by hardstand.<br>Site speed limit.<br>Interceptors fitted to surface drains.<br>Spill cleaned by yard staff. Spill kits provided. Areas inspected as part of EMS |
| Air | Heat sources/ combustion equipment and associated infrastructure are maintained as part of planned preventative maintenance programme under service contract to help minimise potential for out of specification releases. |
| Waste Production | Site areas cleaned down daily.<br>Drains fitted with screens to collect solids to prevent them entering drain network.<br>All raw materials routinely checked for quality<br>Waste production from processing minimised by re-work programmes. |

## 2.4 Accident Scenario Exclusions

Scenarios have only been reported where they have been identified as being a credible mechanism for a risk. Where other factors have not been reported this is because, based on the operator's experience of its existing site, previous documented risk assessments and discussions with technical representatives of trade associations, the scenarios do not lead to credible risks that would need to be addressed. For the avoidance of doubt the reasons for this are as follows:

- Fire – fire risks are managed in conjunction with relevant professional bodies and company insurers. The Health and Safety Manager maintains a comprehensive fire risk assessment for the site. In addition to the existing procedures a Fire Prevention Plan has been implemented to cover the recent addition of the Multi Fuel Oxidiser.

- Vandalism – the site is fenced and permanently manned to deter vandalism. CCTV is also in place to cover sensitive areas.
- Flooding – low lying site areas are adjacent to Myers beck and potentially at risk of floods. The main operations and storage areas are sited away from the Beck to minimise potential flood impacts.
- Drought – if there is insufficient water to run the plant, the site will simply stop operations but will be able to run down operations in preparation for the cessation.
- Heat waves – high ambient temperature is unlikely to impact on the processing operation which is carried out indoors and under temperature control.
- Extreme weather – the buildings are designed to will deal with high winds, snow, cold etc. A programme of building integrity checks is in place as part of the Environmental Management System (EMS) and a programme of improvements is in place for the older buildings on site together with a general site upgrade. External storage tanks have insulation and heating where necessary. In the event that weather conditions prevent vehicular access then operations will be suspended as there will be no material being brought to site.

## 2.5 ISO 14001 Environmental Risk Assessment

### 2.5.1 Introduction

As part of its ISO 14001:2015 EMS the installation has carried out a detailed aspects analysis which is subject to annual review. This analysis has been carried out for normal and abnormal situations and follows a typical likelihood x severity approach as follows:

| **Likelihood of Occurrence** | | **Severity of Environmental Impact** | |
|---|---|---|---|
| **RANK** | **CRITERIA** | **RANK** | **CRITERIA** |
| 5 | Certain | 10 | Very High |
| 4 | Very Likely | 8 | High |
| 3 | Likely | 6 | Moderate |
| 2 | Unlikely | 4 | Low |
| 1 | Very Unlikely | 2 | Minor |
| | | 1 | None |
| Significance= severity x likelihood.(Figure between 1 and 50) **A significance score of 20 and over is classed as significant.** | | | |
| Significant impacts under abnormal situations are in red text. | | | |
| Significant impacts under normal situations are in a red box. | | | |

### 2.5.2 Environmental Risk Results

The full assessment is repeated at Appendix 1 together with the associated Control/Monitoring Plan. Key results are as follows:

| Impact | Significance under Normal Conditions |
|---|---|
| 1. Nuisance | 94 |
| 2. Depletion of natural resources | 50 |
| 3. Use of limited fresh water supply | 48 |
| 4. Ground/surface water contamination | 40 |
| 5. Air pollution | 10 |

| Impact | Significance under Abnormal Conditions |
|---|---|
| 1. Nuisance | 256 |
| 2. Use of limited fresh water supply | 96 |
| 3. Ground/surface water contamination | 88 |
| 4. Depletion of natural resources | 70 |
| 5. Air pollution | 40 |

The key areas of significance are shown to be odour (if not controlled by the abatement / procedures on site) and energy use. Recent improvements include:

- Completion of the raw material trailer shed (for containment of waiting trailers)
- Introduction of a new multifuel thermal oxidiser to supplement existing equipment and reduce carbon emissions
- Introduction of a new gas fuelled thermal oxidiser so that suitable support can be maintained
- Energy management systems accredited to ISO50001: 2018 and the associated monitoring of energy use and implementation of efficiency projects.
- Completion of Improvement Conditions in the current issue of the site permit.

This application also continues with improvements to the integrity of buildings on site, further abatement capacity and also a more flexible approach to odour abatement by utilising different options.

## 2.6 Current Performance

As part of the Environmental Management System (EMS), which is accredited to ISO14001:2015, the environmental impacts of the site processes are regularly reviewed. Targets and Objectives are set every year, with a view to implementing improvements. This document summarises the significant areas – such as odour management, air emissions, energy and water.

### 2.6.1 Odour:

The 3 biofilters are achieving consistent levels of odour destruction (see results section later). A fourth one is being added to offer more flexibility, increased capacity and allowing for downtime associated with media change and maintenance.

### 2.6.2 Pollutant Emissions:

The thermal oxidisers and boiler(s) meet the majority of emission limit values, see results discussed in later section. The addition of a chemical scrubber for room air is also evaluated under the section on odour.

### 2.6.3 Energy Consumption:

This is regularly monitored under the Energy Management System (EnMS), accredited to ISO50001:2018, with monthly reports on efficiency and consumption supplied to site management. A formal review of energy performance is undertaken each year and a baseline set that reflects the current status of the site, taking into account changes to equipment and infrastructure. Targets are then monitored against the revised baseline data.
The tables below show the performance data (in terms of energy used per tonne of raw material processed) from 2017 to 2020.

| Electricity Consumption – kWh per tonne raw material | | | | |
|---|---|---|---|---|
| Period | 2017 | 2018 | 2019 | 2020 |
| Jan- Mar | 36 | 42 | 35 | 43 |
| Apr – June | 35 | 39 | 34 | 43 |
| July – Sept | 37 | 38 | 40 | 41 |
| Oct – Dec | 40 | 38 | 43 | 39 |

There has been a small increase in electricity consumption per tonne, but not the predicted increase indicated on commissioning of the effluent plant. Savings in other areas and focused operation of the aeration plant have kept the increase to a minimum. Some impact experienced due to Covid 19 (throughput was affected due to some suppliers having to scale back production).

| Thermal Energy Consumption – kWh per tonne raw material | | | | |
|---|---|---|---|---|
| Period | 2017 | 2018 | 2019 | 2020 |
| Jan- Mar | 897 | 897 | 891 | 893 |
| Apr – June | 880 | 936 | 896 | 876 |
| July – Sept | 860 | 897 | 901 | 853 |
| Oct – Dec | 930 | 888 | 935 | 742 |

In assessing energy values per unit of throughput it must be noted that the raw materials used in the process are of natural origin and will have variable properties depending on the source and time of year. These natural variations can have an effect on the energy requirements. Water content of the raw material is a key factor, therefore an increase in poultry raw material at the end of 2019 required more energy to process.
Further changes in monitoring and control during 2020 (including real time viewing of performance per tonne) has shown an improvement. All new equipment is subject to a review of energy performance and where feasible renewable fuels are incorporated.
All new installations are well insulated to avoid loss of heat, therefore good performance is expected to continue.

### 2.6.4 Water Consumption:

Site has seen a substantial reduction in mains water usage by a combination of rainwater use and extraction from a bore hole supply. From 2018 recycling of the wastewater via the effluent treatment plant has further reduced the impact on natural resources.

Water use is monitored as a target under the EMS. The increase seen in 2018 was due to the amount of water needed to set up the effluent treatment plant (including integrity testing of the chambers).

| **Period** | **Mains Water** $M^3$ | **Bore Hole** $M^3$ | **Total** $M^3$ | **$M^3$ per tonne RM processed** |
|---|---|---|---|---|
| 2017 | 899 | 85043 | 85942 | 0.373 |
| 2018 | 1192 | 133102 | 134924 | 0.584 |
| 2019 | 971 | 92258 | 93229 | 0.358 |
| 2020 | 67 | 77810 | 77877 | 0.327 |

Water consumption sits favourably within industry benchmark figures. There will be a small increase in water use from installation of the new equipment (steam requirements) and a new biofilter (irrigation). Recycled water will be used where possible.

# 3 Impacts Assessed

## 3.1 Introduction

The following section details the assessment of relevant impacts associated with the proposed development. It has an initial screening assessment followed by relevant detailed assessments.

## 3.2 Screening

To ensure only relevant aspects are subject to the detailed impact assessment procedure the first step is to carry out a screening review to eliminate non-relevant aspects. This screening review is described below for each of the following elements:

- Amenity (litter / vermin);
- Odour;
- Noise;
- Fugitive Air Releases;
- Surface Water;
- Groundwater;
- Air;
- Waste Produced;
- Global Warming/ GWP

### 3.2.1 Amenity (litter / vermin)

Site has an effective vermin and pest control policy which forms a key element of the HACCP system required to maintain approval under the Animal By-products Regulations. As such there is no need to address this issue further.

Very little paper or packaging is in use at the site and litter potential is minimal.

### 3.2.2 Odour

Site has an approved Odour Management Plan. This has been updated to reflect the latest proposed changes. The sections below outline expected changes to odour impact to ensure that they remain within expected norms.

### 3.2.3 Noise

An update to the existing noise assessment was carried out to reflect the latest changes to combustion equipment and has been agreed with the regulator. No further assessment of noise reduction measures is required at this time. The whole site is to be re-assessed using BS4142 as part of the current Improvement Condition requirements.
A qualitative assessment of noise sources from the new equipment proposed in this variation is set out below:

| Area / Equipment | Noise Source | Details | Contribution to Overall Site Noise |
|---|---|---|---|
| **New Offal Area** | | | |
| Cookers | Electric Motors | Internally located. Maintenance programme in place. Closed door policy. Variable speed drives | Low |
| WHE | Fans | | Low |
| Press | Electric Motors<br>Exhaust Fan (LEV) | | Low |

| Area / Equipment | Noise Source | Details | Contribution to Overall Site Noise |
|---|---|---|---|
| | | avoid unnecessary running. | |
| Raw Material Delivery | Motor | Internally located but with link to outside ducting | Low |
| Collector Vessel | Fan | Internally located but with link to outside ducting | Medium |
| **Single Species** | | | |
| Cookers | Electric Motors | Internally located. Maintenance programme in place. Closed door policy. Variable speed drives to avoid unnecessary running. | Low |
| Presses | Electric Motors Exhaust fan (LEV) | | Low |
| Collector Vessel | Fan | Internally located but with link to outside ducting | Medium |
| | | | |
| **Other** | | | |
| Additional Abatement BF4 | Fans | Externally located . New Low Noise design. Screening from nearest receptor by existing bund and hedgerow. | Medium |
| Chemical Scrubber | Fans | Externally located. Replaces an existing stack with a fan (oxidiser) therefore not adding to noise profile. | Medium |

### 3.2.4 Fugitive Air Releases

For odour control one requirement is the use of enclosed buildings and the containment of potentially odorous materials. These measures are equally effective in minimising fugitive air emissions and no specific impact assessment is required. All new buildings are of a double skinned construction to improve integrity.
This aspect is periodically reviewed under the site Environmental Management System.

### 3.2.5 Surface Water

Site only discharges clean rainwater to the Beck. The risk of inadvertent release is covered in the risk assessment section and no further impact assessment is required. The effluent and clean surface water drainage systems are completely separate.

No changes are being made as part of this application.

### 3.2.6 Groundwater

There are no direct releases to ground or groundwater.

### 3.2.7 Air

The proposals introduce one new emission point, from a chemical scrubber situated to deal with room air from the new offal processing area. The Grid Reference is NY4997429609. The impact of this has been assessed using the H1 Risk Assessment tool. The main measurable impact is from odour emissions, and this is discussed further in section 3.3.3.Treatment chemicals are dissolved in the water sprays. A small amount of free chlorine may escape, this has been assessed in the H1 model.
The combustion equipment has been modelled in the previous application.

### 3.2.8 Waste Produced

There are no new waste streams associated with this application.
The chemicals used in the scrubber are re-circulated within the unit. As with the units on the existing blood lines - blowdown can be tailored within the unit to give 0.1 or less fluctuation in pH, therefore it is estimated that 1% or less of the chemical would need to be disposed of. When 'spent' these can be disposed of to the effluent treatment plant (as advised by the equipment supplier) subject to the usual controls on chemical dosing for effective treatment, although a drip feed of less concentrated material may be a preferable option.

There are also options to dispose of waste chemicals to a licenced contractor, should this be required. The on-site laboratory currently has arrangements in place with contractors for the removal of waste laboratory chemicals.

### 3.2.9 Global Warming

The nature of the air releases and $CO_2$ releases will not change as a result of the proposals in this variation.

## 3.3 Odour

The main sources of odour from the new equipment is set out in the table below together with the chosen abatement technique. It is important that the rate of feed of raw material in the process is relative to the number and capacity of cookers and abatement systems.

| Odour Source | High/Med/Low | Mitigation | Additional Support |
|---|---|---|---|
| **New Offal Line** | | | |
| Process fume from cooker | High | The WHE is primarily designed for energy efficiency but also has the effect of condensing odorous air, thus not adding to the flow to the thermal oxidiser from the whole site. | Support from air cooled condensers.<br>Control of fugitive emissions (building integrity, cleaning, control of heat within processing areas).<br>Additional abatement of room air by directing to oxidiser as combustion air. |
| Foul air from presses | High | WHE as above | |
| Room air | Low | Chemical Scrubber | |

| Odour Source | High/Med/Low | Mitigation | Additional Support |
|---|---|---|---|
| **Single Species Lines** | | | |
| Process fume from cooker | High | Oxidiser | Support from air cooled condensers.<br>Control of fugitive emissions (building integrity, cleaning, control of heat within processing areas).<br>Additional abatement of room air by directing to oxidiser as combustion air.<br>Bio filters are linked to provide alternative where required (during maintenance or media change). |
| Foul air from presses | High | Oxidiser | |
| Room air | Low | Bio Filter (BF1) | |

#### 3.3.1 Bio filters

A summary of odour testing results for the bio filters is shown below. The work was carried out by Silsoe Odours Ltd on each occasion

| Sample | ID | OU/$m^3$ 2018 | OU/$m^3$ 2019 | OU/$m^3$ 2020 | %Removal 2018 | %Removal 2019 | %Removal 2020 |
|---|---|---|---|---|---|---|---|
| BF1 In | | 22298 | 23440 | 21,954 | | | |
| BF1 Out | A1 | 371 | 168 | 373 | 98.6 | 98 | 99 |
| BF2 In | | 45643 | 50517 | 49,275 | | | |
| BF2 Out | A2 | 169 | 1326 | 1708 | 97.5 | 99.6 | 97 |
| BF3 In | | 15314 | 10866 | 21,964 | | | |
| BF3 Out | A3 | 424 | 1271 | 498 | 93.6 | 97 | 88* |

*media replaced

The odour destruction efficiency of the biofilters is high and relatively consistent.

Results for the 2021 sampling show all 3 biofilters continuing to perform well at better than 96% efficiency.

There is a scheduled programme of media monitoring and replacement. The same controls will be applied to the new biofilter (BF4). This addition will provide 30-40% more capacity than is actually needed.

#### 3.3.2 Thermal Oxidisers

A summary of odour testing results for the thermal oxidisers is shown below. The work was carried out by Silsoe Odours Ltd (2014/ 2015), by Envirocare Ltd (2016 / 2017) and by Element (2021). Testing is a new permit requirement (2022). Recent results show that the existing oxidisers are still performing well on odour removal efficiency. The newly installed equipment will be tested as part of the current permit conditions and is expected to give similar performance on odour reduction.

In the modelling exercise, the maximum predicted odour concentration (based on expected performance), at any receptor, was 0.18 $OU_E$ $m^{-3}$ (well below the minimum EA guideline of 1.5 $OU_E$ $m^{-3}$).

| Oxidiser Odour Concentration $OU_E$ $m^{-3}$ | ID | May 2014 | May 2015 | June 2016 | June 2017 | Sept 2021 |
|---|---|---|---|---|---|---|
| Bradford Stack | A6 | 1003 | 7791 | 2410 | 379 | 873 |
| Penrith Stack | A5 | 798 | 6654 | 1392 | 246 | 1136 |

ER32 presents outlet concentration data for a number of rendering plant thermal oxidisers. The outlet concentrations range from 1,000 to about 60,000 OU/m3 with the vast majority of emissions in the 7,000-15,000 OU/m3 range. The Penrith emissions can be seen to be at the lower end of typical outlet odour concentrations from well-performing abatement systems.

#### 3.3.3 Chemical Scrubber

The reported odour reduction efficiencies of chemical scrubbers in the sector are typically between 85 – 95%, occasionally higher. Outlet concentrations reported are typically around 250 - 2,500 OUE/m3.

Recent measurements from the tipping areas have given odour units of 14,000 OUE/m3 and these are used in the assessment as a conservative estimate. The mean odour concentration was 14,031 $OU_E$ $s^{-1}$ with no measured ammonia and a level of 0.5 mg $m^{-3}$ of hydrogen sulphide. However, for completeness an average figure of 5.0 mg $m^{-3}$ was substituted for the ammonia level. At these levels (assuming an 85% reduction by the scrubbing process) the ammonia and hydrogen sulphide were screened out using the H1 Assessment Tool as not significant.

Given the predicted efficiency of the scrubbing unit of 85 – 95%, the odour units would be reduced to 2,105 – 702 $OU_E$ $s^{-1}$. This is similar in levels to a well operating bio filter.

The chemicals within the scrubber are re-circulated and not considered to be an air emission. Any residual odour of chlorine associated with the operation of the unit will be picked up in the total odour units. Approximate figures for chlorine were calculated using the composition of the sodium hypochlorite as stated by the manufacturer and these figures used in the H1 assessment to evaluate the impact. This was shown to be insignificant.

## 3.4 Air Releases

### 3.4.1 Nature of Release

The main emissions to air are from the thermal oxidisers and the steam raising boilers. There are no changes to the combustion equipment proposed in this variation application.

Releases of odour are considered in the earlier section.

### 3.4.2 Air Emissions Impact

In May 2005 as part of the original PPC application an air dispersion assessment was carried out (report in Appendix4 of H1 Assessment submitted with the 2016 application).

This has been updated in August 2017 for odour and in 2020 for pollutants. The reports have been included with the previous variation application documents for reference. The results showed no significant impact and there are no significant changes within this application that would alter the conclusions.

The modelling approach assumed a maximum design load volumetric flow for consideration of peak (1-hour) impacts, and 85% of this value for long-term operations to describe predicted annual mean effect, which is a conservative approach.
The predicted maximum ground level receptor concentrations of the pollutants NO2, PM10, SO2, CO, and NH3, when added to the local background value, are all well below their respective air quality Objectives and EAL values, over short term and annual average periods. This is the case at all residential receptor locations in the vicinity of the facility, including a new property close to the site on Greystoke Road. Full results are contained within the Modelling Reports previously supplied.

The chemical scrubber is reviewed separately in section 3.3.3.

## 3.5 Sewer Emissions

### 3.5.1 Background

The facility has three distinct and separate discharges from the site:-

- Surface water run off – non-production road areas (access road) and clean roof water
- Foul water – personnel facilities
- Process effluent – wash waters and surface water from yard areas (designated as 'dirty')

### 3.5.2 Process Effluent Emissions

The process effluent is discharged under a United Utilities Trade Effluent consent.

As set out in the Trade Effluent Consent document, site takes composite samples and these are analysed for compliance with the consented parameters of pH, suspended solids & COD. This testing suite ensures that good practice in monitoring is achieved.

There have been no recent breaches of the consented values. The permeate produced is of suitable quality to re-use on site (wash water) or to treat in the Reverse Osmosis equipment for use as boiler feed water.

For the specific instance of the Omega Proteins site the following actions ensure that the effluent discharge (including chemicals used in the process) does not cause deleterious impacts on the receiving treatment works:

- Site does use a DAF system and so whilst there is use of ferric chloride, it is in relatively low and dilute quantities and only stored in small quantities in a contained area. In the event of a leak or overdose, only very low quantities would be discharged. Under normal operational use, the iron would be expected to be removed from the effluent in the floccs (sludge) as per its intended purpose;
- The facility uses very small quantities of caustic (sodium hydroxide) and low mercury grade caustic is used.
- The cleaning chemicals used are all food safe chemicals and are described as being biodegradable; these materials can be expected to be degraded in the effluent treatment plant.
- There is a comprehensive testing regime in place together with flow monitoring at different stages of the process.

The additional processes will not change the nature of the effluent stream and the plant is capable of dealing with the increase in volume.

Each side of the ETP is duplicated, allowing for half of the unit to be run at any one time. There is a capacity of 1500 $m^3$ in each of the aeration lanes with only one being in use for treatment of site effluent at the current time. At full production there would be approximately four tonnes of moisture evaporated through each WHE. This would give a maximum of 300 $m^3$ from this source if all three lines were in operation.
The MBR stage is modular, allowing for additional cassettes to be added for increasing the final filtration rate. The final permeate is used on site, therefore throughput is not limited by discharge to the sewer. The condensate is fed directly into the anoxic zone therefore the feed rate is not limited by the DAF unit.

In summary, to ensure the additional flow of condensate can be dealt with, the second aeration lane will be brought into use and the capacity of the MBR will be increased by adding more filtration cassettes. The site management team is also reviewing capacity and operation with a view to making energy savings and these future changes will ensure capacity is maintained.
As a contingency there is also the option to dispose of the condensate to land, subject to the appropriate permitting procedures, or via an AD Plant.

## Appendix I – Site Environmental Risk Assessment

**Date of last review: Aug 21 (notes added ref new equipment / facilities)**

**Date of Previous review: July 2020 (improvements to biofilter management and monitoring of energy / water)**

The scope of this risk assessment is to cover the physical boundary of the Omega Proteins Ltd site at Penrith (as defined by the Environmental Permit) and the activities which take place within it.

The various aspects and impacts are assessed both without and with controls in place. The controls are described.

Emergency situations have also been assessed.

The assessment of potential environmental impacts is based on risk-based scoring approach as described below:

| **Likelihood of Occurrence** | | **Severity of Environmental Impact** | |
|---|---|---|---|
| **RANK** | **CRITERIA** | **RANK** | **CRITERIA** |
| 5 | Certain | 10 | Very High |
| 4 | Very Likely | 8 | High |
| 3 | Likely | 6 | Moderate |
| 2 | Unlikely | 4 | Low |
| 1 | Very Unlikely | 2 | Minor |
| | | 1 | None |

Significance= severity x likelihood.(Figure between 1 and 50) **A significance score of 20 and over is classed as significant.**

Significant impacts under abnormal situations are in red text.

Significant impacts under normal situations are in a red box.

A= abnormal situation or controls not in place

N= normal situation with controls in place

| Activity/ Process | Aspect (cause) | Impact (effect) | A/N | Likelihood | Severity | Total (1 to 50) | Significant Yes/ No | Controls in place / Notes |
|---|---|---|---|---|---|---|---|---|
| **Transport on site** | | | | | | | | |
| Transportation | Noise and vibration | Nuisance, loss of amenity and sleep | A | 4 | 6 | 24 | **Yes** | Deliveries scheduled to avoid a queue. |
| | | | N | 3 | 2 | 6 | No | |
| Transportation of ABPs | Odour | Nuisance, loss of amenity | A | 4 | 6 | 24 | **Yes** | Fresh or chilled material. Trailers kept covered until within the building, with the doors closed.<br>Odour checks at weighbridge to ensure any odorous trailers are prioritised for prompt tipping.<br>Use of trailer shed (not yet completed) |
| | | | N | 2 | 2 | 4 | No | |
| **Input of raw material** | | | | | | | | |
| Raw material trailer waiting | Leaking trailer | Ground/water contamination | A | 3 | 8 | 24 | Yes | Trailers are all parked on hard standing.<br>Trailers are inspected after loading & on arrival at the site – defect reporting is in place to report faults to transport.. |
| | | | N | 1 | 4 | 4 | No | |
| Raw material trailers waiting | Odour | Nuisance, loss of amenity | A | 4 | 8 | 32 | **Yes** | Trailers scheduled for delivery so not waiting too long before processing. Waiting trailers remain covered.<br>Trailer are placed into the newly built trailer strore. |
| | | | N | 2 | 6 | 12 | **No** | |
| Tipping | Odour | Nuisance, loss of amenity | A | 4 | 8 | 32 | **Yes** | Raw material tipped in the tipping building with fast speed doors closed. Odours extracted to the biofilters. |
| | | | N | 2 | 6 | 12 | No | |
| Tipping | Noise and vibration | Nuisance, loss of amenity and sleep | A | 3 | 6 | 18 | **No** | Material tipped inside building with doors closed. |
| | | | N | 2 | 6 | 12 | No | |
| Washing emptied trailer/containers | Use of water | Use of significant quantities of limited fresh water supply | A | 4 | 6 | 24 | **Yes** | Thorough washing required for safety and to comply with ABP regulations. Water metered. Washing is time limited. Lances have trigger controls.<br>Designated wash area planned for construction. |
| | | | N | 3 | 4 | 12 | No | |

| Activity/ Process | Aspect (cause) | Impact (effect) | A/N | Likelihood | Severity | Total (1 to 50) | Significant Yes/ No | Controls in place / Notes |
|---|---|---|---|---|---|---|---|---|
| **Processing** | | | | | | | | |
| Processing | Noise and vibration | Nuisance, loss of amenity and sleep | A | 3 | 6 | 18 | No | Noise and vibration management plan in place. Factory doors kept closed.<br>Noise assessments carried out for new/ proposed equipment |
| | | | N | 2 | 6 | 12 | No | |
| Processing | Odour | Nuisance, loss of amenity | A | 5 | 8 | 40 | **Yes** | Odours extracted to thermal oxidiser and biofilters for treatment. Doors kept closed. |
| | | | N | 2 | 4 | 8 | No | |
| Processing | Energy | Resource depletion, global warming, reduction of air quality and acidification | A | 5 | 6 | 30 | **Yes** | Large energy requirements for process. Process controlled to run efficiently with the minimum energy requirements and equipment turned off when not in use/ required.<br>CORE system installed for steam monitoring |
| | | | N | 3 | 6 | 18 | **No** | |
| Processing | Water use | Use of limited fresh water supply | A | 4 | 6 | 24 | **Yes** | Water is metered.<br>Bore hole in use.<br>Re-use of water from ETP for selected purposes |
| | | | N | 3 | 4 | 12 | No | |
| Outdoor spillage of chemicals | Spill entering ground/ water | Ground/ water contamination | A | 3 | 8 | 24 | **Yes** | Yard concreted to minimise risk of ground/water contamination. Chemicals entering into the drains will be treated in the effluent plant. Spill kits available. Chemicals kept at point of use and stored in bunds. |
| | | | N | 1 | 4 | 4 | No | |
| Cleaning factory – internal and external | Water use | Use of limited fresh water supply | A | 4 | 6 | 24 | **Yes** | Water is metered<br>Lances have trigger controls<br>Bore hole in use.<br>Re-use of water from ETP for selected purposes |
| | | | N | 3 | 4 | 12 | No | |
| Cleaning factory | Use of chemicals | Ground/ water | A | 3 | 2 | 6 | No | All chemicals bunded or stored inside and their use |

| Activity/ Process | Aspect (cause) | Impact (effect) | A/N | Likelihood | Severity | Total (1 to 50) | Significant Yes/ No | Controls in place / Notes |
|---|---|---|---|---|---|---|---|---|
| | | contamination | N | 3 | 2 | 6 | No | monitored. Training for operatives. |
| **Product Dispatch** | | | | | | | | |
| Loading meal | Release of dust particles | Air pollution (dust) | A | 2 | 8 | 16 | No | Trailers loaded under cover/ bags filled inside building and sealed before leaving the building. Conveyors enclosed to prevent fugitive emissions. Mechanical handling device for meal bags.<br>Improvements expected with use of planned new building |
| | | | N | 1 | 6 | 6 | No | |
| Loading meal | Odour | Nuisance, loss of amenity | A | 3 | 6 | 18 | No | Trailers loaded undercover/ bags filled inside building and sealed before leaving the building. Some odour may escape when doors are open for vehicles to go in and out.<br>Improvements expected with use of planned new building. |
| | | | N | 2 | 6 | 12 | No | |
| Filling of Storage tanks (oil/tallow) | Spillage | Ground/water contamination | A | 2 | 8 | 16 | No | Storage tanks have a level indicator and/or alarm to warn of overfilling. Tanks located in bunds. Bunds inspected on a regular basis. Area around bund is concreted and therefore impermeable. |
| | | | N | 1 | 8 | 8 | No | |
| **Abatement Equipment Operation** | | | | | | | | |
| Biofilter fans | Noise and vibration | Nuisance, loss of amenity, loss of sleep | A | 2 | 4 | 8 | No | Sound proofing in place around the fans. Preventative Maintenance Plan in operation. Weekly check on fan operation. |
| | | | N | 1 | 4 | 4 | No | |
| Biofilter operational faults/ leaks | Odour | Nuisance, loss of amenity | A | 5 | 6 | 30 | **Yes** | Biofilter visually inspected twice daily. Gas checks undertaken on outlet gases. Sprinkler system in place for irrigation.<br>Monthly monitoring of moisture, airflow & micro.<br>Daily checks on humidifiers (cleaning and operation) with |
| | | | N | 2 | 4 | 8 | No | |

| Activity/ Process | Aspect (cause) | Impact (effect) | A/N | Likelihood | Severity | Total (1 to 50) | Significant Yes/ No | Controls in place / Notes |
|---|---|---|---|---|---|---|---|---|
| | | | | | | | | frequent refresh of water to prevent ammonia build up. |
| Biofilter watering and humidifier water | Use of water | Use of limited fresh water supply | A | 4 | 6 | 24 | **Yes** | Water use monitored and used efficiently so as to use the minimum required water.<br>Preventative maintenance. Regular cleaning. Checking of nozzles.<br>Daily checks on humidifiers (cleaning and operation) with frequent refresh of water to prevent ammonia build up. |
| | | | N | 3 | 2 | 6 | No | |
| Biofilter effluent storage | Spills/leaks | Ground/water contamination | A | 3 | 6 | 18 | **No** | Sump inspected on scheduled basis.<br>Sumps emptied to a schedule (to be directed to new ETP automatically).<br>Drainage from BF2 direct to WWTP further improvements for BF 1 and 3 included pumping of sumps into main drain instead of using the tractor. |
| | | | N | 2 | 4 | 18 | No | |
| Fuel requirements of thermal oxidiser and steam raising equipment | Energy (fuel) | Resource depletion and global warming | A | 5 | 8 | 40 | **Yes** | Oxidisers required when factory operating for odour abatement purposes.<br>Energy management system in place, including projects for energy efficiency and use of new multifuel oxidiser with renewable fuel (2021/22) |
| | | | N | 4 | 8 | 32 | Yes | |
| Thermal oxidiser and boiler stack emissions | Emission of chemical substances and particulates | Air pollution, acidification, harm to human health | A | 4 | 6 | 24 | **Yes** | Equipment serviced annually by manufacturers and emission monitoring carried out on an annual basis by an independent contractor. Dispersion modelling shows minimal impact under normal operation / with elevated levels of NOx and SOx.<br>New gas oxidiser scheduled for 2022 |
| | | | N | 2 | 2 | 4 | No | |

| Activity/ Process | Aspect (cause) | Impact (effect) | A/N | Likelihood | Severity | Total (1 to 50) | Significant Yes/ No | Controls in place / Notes |
|---|---|---|---|---|---|---|---|---|
| Air cooled condensers | Noise and vibration | Nuisance, loss of amenity, loss of sleep | A | 3 | 4 | 12 | No | Preventative maintenance plans in place. |
| | | | N | 2 | 2 | 4 | No | |
| **Water Drainage** | | | | | | | | |
| For drainage risks, refer to the Drainage Risk Assessment EID 50. | | | | | | | | |

**Emergency Situations – The probability of these situations is very low due to controls which are in place but if they did occur, the severity could be very high.**

| Emergency | ASPECT (Cause) | IMPACT (effect) | PROBABILITY | SEVERITY | TOTAL | Significant Yes/ No | CONTROLS/NOTES |
|---|---|---|---|---|---|---|---|
| Major plant failure leading to build-up of raw material | Odour | Nuisance, loss of amenity | 2 | 8 | 16 | No | Plant and equipment undergo routine maintenance and inspections. Key spare parts are kept on site. If the plant did break down it should be running again quickly and so little material would have accumulated on the site.<br>Material can be tipped rather than left in trailers.<br>Trailers can be parked in trailer shed. |
| Thermal oxidiser failure | Odour | Nuisance, loss of amenity | 2 | 4 | 8 | No | In the event of thermal oxidiser failure process air is automatically diverted to the standby abatement equipment.<br>New multifuel oxidiser under construction (completion 2021/22) and one new gas oxidiser |
| Large spill | Bund failure for tanks, tanker on the yard spills an entire load (blood, tallow) | Ground/water contamination and odour (depending on the material spilt) | 2 | 8 | 8 | No | Sufficient controls in place including, concreted impervious yard, bunds and spill kits.<br>Yard areas drain to effluent plant. |

| Emergency | ASPECT (Cause) | IMPACT (effect) | PROBABILITY | SEVERITY | TOTAL | Significant Yes/ No | CONTROLS/NOTES |
|---|---|---|---|---|---|---|---|
| Flood | Prolonged, very heavy rain | Water contamination (with ABPs). | 3 | 8 | 24 | Yes | During prolonged periods of heavy rain, water could overcome the rain water drainage system accumulate in certain areas of the yard. Flooding likely to raw material bins.<br>New ETP provides more capacity for dealing with additional rain water. |
| Fire | Accidental fire or arson | Release of pollutants to air, land or water. Inhalation of pollutants and nuisance. | 1 | 10 | 10 | No | Refer to EID 36 Environmental Protection in the event of a Fire.<br>Fire Prevention Plan updated for new multifuel oxidiser (to cover the additional fuel on site). |
| Shunter breaks down causing a build-up of raw material on the site. | Odour | Nuisance, loss of amenity | 2 | 6 | 12 | No | Mechanics can be called out immediately (5 minute journey)to fix.<br>Two vehicles on site. |

The highest risk from the emergency situations is likely to be major plant failure leading to build-up of raw material and flood.

Significant Aspects

| Aspect | Significance under Normal Conditions |
|---|---|
| 1. Odour | 56 Improved BF management |
| 2. Energy use (Electricity & Gas) | 50 |
| 3. Water use | 36 More recycling/ less mains water |
| 4. Noise & Vibration | 38 |
| 5. Spills | 34 |
| 6. Emissions (including dust) | 10 |
| 7. Use & Storage of chemicals | 6 |

| Aspect | Significance under Abnormal Conditions |
|---|---|
| 1. Odour | 176 |
| 2. Water use | 72 less mains water |
| 3. Spills | 82 |
| 4. Noise & Vibrations | 80 |
| 5. Energy use (Electricity & Gas) | 70 |
| 6. Emissions (Including dust) | 40 |
| 7. Use & Storage of Chemicals | 6 |

Significant Impacts

| **Impact** | **Significance under Normal Conditions** |
|---|---|
| 6. Nuisance | 94 Management of odour |
| 7. Depletion of natural resources | 50 |
| 8. Use of limited fresh water supply | 48 |
| 9. Ground/surface water contamination | 40 |
| 10. Air pollution | 10 |

| **Impact** | **Significance under Abnormal Conditions** |
|---|---|
| 6. Nuisance | 256 |
| 7. Use of limited fresh water supply | 96 |
| 8. Ground/surface water contamination | 88 |
| 9. Depletion of natural resources | 70 |
| 10. Air pollution | 40 |

# Appendix II – Control of Risks

**Environmental Risk Assessment – Control / Monitoring Plan**

Significant Aspects

| Aspect | Significance under Normal Conditions | Significant change since last review |
|---|---|---|
| 1. Odour | 56 | Improved management of biofilters |
| 2. Energy use | 50 | Unchanged.<br>Improved monitoring and control with energy management system and projects for improved efficiency continue under the EnMS to prevent significant increases |
| 3. Water use | 36 | Improved monitoring and control (sub meters, use of bore hole) and more recycling through the ETP |
| 4. Noise & Vibration | 38 | Unchanged<br>Assessments for new equipment in place |
| 5. Spills (including leaking trailers) | 34 | No change |
| 6. Dust / Emissions | 10 | No change |
| 7. Use & Storage of Chemicals | 6 | No change |