

Omega Proteins Ltd.

Penrith

Report Title: Environmental Permit
Variation Application

Permit: EPR/HP3238AF

Issue Date: October2019

Report Reference: OP-PV-R03-SCR .docx

Submitted to:

Environment Agency

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1 Introduction

1.1 Background

1.1.1 General

The following Site Condition Report (SCR) and update programme has been developed for the Omega Proteins Limited installation located in Penrith, Cumbria. The National Grid Reference for the centre of the site is NY 50021 29642 (349996 529635). This report covers the entire site as identified within the Installation Boundary, as shown by the 'Installation Boundary Plan' within the current permit EPR/HP3238AF. The report is based on the Environment Agency's 'H5 Site condition report – guidance and templates' guidance but reflects the situation of the majority of this site already benefitting from an A(1) permit and associated Environmental Management System.

1.1.2 EA Guidance

The updated report is to support a variation application for the current permit (EPR/HP3238AF). An initial evaluation for the variation has been prepared and has been discussed with the EA who have provided helpful comments for further investigation options. In addition, the existing permit has an improvement condition (IC25) to carry out a more detailed intrusive investigation to supplement the main permit application documents.

Discussions with the EA have led to the conclusion that the most effective way forward is to discharge IC25 in a stepwise manner and use these results to be the updated SCR which can then be added to the site infrastructure and closure plan folders. The stepwise approach is as follows:

1. Review of previous SCR information (already carried out and reported in previous update)
2. Additional data collection via geotechnical intrusive work (already carried out and reported in previous update)
3. Review of additional data by EA (completed and comments noted in Appendix XX)
4. Review of additional data and EA comments by qualified engineers/consultants (carried out and reported here)
5. Preliminary proposals to carry out further investigations to meet EA comments and consultant review (reported here)
6. EA review of proposed scheme of work (to be carried out)
7. Adjustment, if necessary, of the scheme of work to ensure it fully meets EA expectations (to be done following EA review)
8. Implementation of final agreed scheme of work
9. Reporting of results and updating of EMS records

1.2 SCR Scope

1.2.1 General

1.2.2 SCR Structure

The SCR has been structured as follows:

- Summary review of the existing site SCR.
- Discussion of potential impact of operational phase on the SCR.
- Review of new data from geotechnical surveys.

1.2.3 Sources of Environmental Data

The following data and information has been relied on in producing this SCR:

- Original site condition report AP-P-PPC-R03 – copy submitted with previous application (April 2016).
- Updated site condition report for A1 permit application – P137-R03-F3 copy provided for information.
- Site procedures – current Environmental Management System.
- Discussions with site management and site walk-arounds.
- Relevant Improvement Condition reports for the current permit.
- GeoCon Geotechnical report (J0230 JL (GSI 0976) PII Report AW MP 0907181 July 2018) containing recent intrusive site investigations – Copy provided for information.
- EA Review of previous update to SCR
- Specialist consultancy review of data and proposals for investigation

2 Background Information

2.1 Results

The original SCR report (2006) identified the site as being on made ground but concluded that the infill material was inert and no hazardous substances were present.

Vegetation on site was limited and only in a couple of areas, notably the perimeter and the landscaping around the office building. There was no evidence of ground pollution causing stress to plants.

The site was essentially hardstanding and buildings. Relevant hazardous substances were shown to be contained in suitable facilities and to have adequate secondary containment.

No continuity with underlying groundwater was expected.

Aspects of the previous report that warranted further explanation were as follows:

- The mention of a historical hexane storage tank.
- The description of the effluent transfer line.

This information is repeated here, in the following sections.

2.1.1 Hexane Storage Tank

Until the early 1980's much of the UK rendering industry employed the solvent extraction system and hexane was a commonly used solvent. It is, therefore, not unexpected for the site to have once had a hexane storage tank installed. In the early 1980's UK rendering companies moved away from solvent extraction rendering and concentrated solely on heat processing methods.

It has to be assumed that the Wildriggs site followed the same approach as other companies. As a result the hexane tank would have become redundant and would have been removed. The removal of the tank predates any permitting regime that would have required the retention of data relating to the tank's location and removal and, with the passage of time, there is no-one remaining at the site who may have direct knowledge of the tank and its removal.

The next step in assessing the tank is to address the next available report which is the Due Diligence report from 2002. At the time of this report the site was in the process of being purchased and the due Diligence report would have sought to highlight any potential liabilities for the new owners. The Due diligence Report, which would have drawn on the previous 1996 report, concludes that there is minimal contamination risk from previous operations. On the basis of these two reports it is reasonable to conclude that there is no historical contamination associated with the hexane tank and its subsequent removal.

This has since been confirmed by the latest Geotechnical investigations.

2.1.2 Effluent Transfer Line

The effluent transfer line was required to take effluent from the lower part of site, where the collection sump and pump are located, to the effluent storage tank on the upper part of site. It was proprietary PVC piping with connections made using industry-standard connectors. The pipe was run alongside the biofilter to keep it away from vehicle traffic and minimise the risk of possible damage from such vehicles. The pipe was not run in a pipe trench but was instead covered in woodchip/sawdust to provide frost insulation. The insulation depth was 500-1000mm which matches guidance on water pipe protection issued by UK utility companies.

Since the installation of the new effluent treatment plant this is no longer a concern as new tank locations and pipework have replaced this.

2.2 Conclusions

Conclusions from the original SCR was that:

- The site was on material not likely to contain polluting substances.
- Site infrastructure was sufficient to provide protection against future ground pollution.
- There was not a need to gather reference data.

Testing carried out in 2016 and reported in the previous SCR (ref. P137-R03-F3) confirmed the following:

The physical data are not incompatible with the original SCR which identified 3m+ of inert made ground under the site. It is apparent that the whole area, including the extended installation boundary is comprised of similar materials. As such the current documents provide a suitable description of the site and its pollution potential.

Several samples from the ground investigation in 2016 were analysed. All showed insignificant potential contaminants when assessed against published EA and DEFRA criteria. This supports a working assumption that minimal ground and groundwater contamination is currently present.

The results can be found in Appendix 3 of the document P137-R03- F3, where the report by Met Engineers April 2016 is included in full.

3 Operational Phase Review

3.1 Introduction

This section of the report addresses the operational phase of the installation. In particular it addresses the plans and procedures in place to assure and to monitor continued protection of ground and groundwater.

3.1.1 Procedures

The programmes in place as part of the Environmental Management System (EMS) include infrastructure and containment inspections and reviews. The purpose of the inspections, with respect to the SCR, has been to assess potential ground and groundwater impacts. Whilst the inspections may have occasionally identified a need to empty and clean bunds or clean up spillages, this has not led to significant ground contamination issues.

3.1.2 ISO 14001

Since November 2013 the installation has been accredited to the Environmental Management System standard ISO 14001. Infrastructure maintenance and inspection form key parts of this system and are assessed during audits by the accrediting body. No major non-conformances have been recorded against the infrastructure protection plans and procedures.

3.1.3 Changes to the Activity

Have there been any changes to the installation boundary? The new permit boundary is shown in the current permit, changes were made to accommodate the effluent treatment plant and trailer shed. The new effluent treatment plant was constructed on land to the north and north-east of site. The land was previously agricultural. Prior to construction of the effluent treatment plant it was necessary to carry out a geotechnical sampling and assessment exercise. The physical data are not incompatible with the previous SCR (see section 2.2).

The new thermal oxidiser is being built between the existing oxidiser building and the trailer shed. This has necessitated removal of several storage tanks and re-routing of ducting and external power and telephone connections. Further intrusive site sampling was carried out prior to construction works commencing. This is detailed in the GEOCON report (J0230 JL (GSI 0976) PII Report AW MP 0907181 July 2018).

Have there been any changes to the permitted activities?

This SCR supports a further variation to the existing A1 permit which extend and amend the existing activities relating to animal by-product processing.

Have any "Dangerous Substances" not identified in the application Site Report been used or produced as a result of the permitted activities?

None other than those already listed in the previous report.

3.1.4 Pollution prevention

Use records that you collected during the life of the permit to summarise whether pollution prevention measures worked.

Site operate monitoring and testing according to the procedures laid out in the EMS for its permitted operations. This is subject to continuous review and updating. The procedures cover – integrity testing, maintenance, continuous monitoring of key plant and equipment, incidents with a potential for pollution, spillages and containment, general site inspections, storage, supervision of deliveries, hardstanding and infra-structure, drainage.

Any faults or deficiencies encountered are recorded on a corrective action form, which would then initiate an appropriate level of management commitment to an investigation and correction.

3.1.5 Pollution incidents

Summarise any pollution incidents that may have damaged the land or groundwater.

Discussions with site management confirm that there were no significant pollution incidents throughout the permit lifetime that may have damaged the land or groundwater.

Any such incidents would trigger a major corrective action procedure under the site's EMS and reporting to the Regulator.

3.2 Site Reconnaissance

3.2.1 Hardstanding and Bunds

The external areas are predominantly hardstanding. The only areas which do not comprise hardstanding are the vegetated areas around the perimeter and some landscaping around the office areas. No process related activities or materials storage occurs on these unmade areas.

The hardstanding areas comprise both concrete and black top. Programmes are in place to check and periodically repair hardstanding. The Improvement Condition IC20 review the status of the site infrastructure and prioritises the necessary repairs. A bund review has been carried out for Improvement Condition 15 and a programme of improvements works implemented.

The site is undergoing significant building works at the current time, providing for a change in the production areas and installation of the new thermal oxidiser.

3.2.2 Vegetation

The nature of the site includes an almost complete coverage by hardstanding of operational areas. However, there are areas of decorative vegetation around the perimeter fences and close to the office building entrance.

All vegetation is healthy and in good order.

3.2.3 Surface Water Features

There are no surface water features on the site, although Myers Beck flows eastwards along the northern boundary and through a culvert under the site. The condition of the water flowing into and through the Beck is monitored weekly, with checks on Chemical Oxygen Demand (COD), total Nitrogen (N) and a visual check is carried out daily for oils/ fats or other pollutant indications.

Work is planned for the upgrading and repair of the culverted section of the beck (Improvement Condition 16).

3.3 Nature of the Storage and Handling of Materials

Bulk liquid materials are stored in dedicated banded tanks. An inventory of tanks and bunds is kept up to date within the EMS. Improvement Condition Report IC14 details recent changes to the tank

inventory on site. Further work was carried out to assess the structural integrity and containment measures of the tanks in 2019 (Improvement Condition 13)

Potentially hazardous materials stored in smaller quantities comprise the following:

- Cleaning chemicals are stored in IBCs internally on hardstanding or externally in bunded storage.
- Processing aids are stored in IBCs internally on hardstanding or externally in bunded storage.
- Oils and greases are held in drums internally within the workshop facility or externally in bunded storage.
- Vehicle washing is undertaken internally with wash water directed to the effluent drains.
- Effluent Treatment chemicals are stored internally on hard standing or externally in self bunded tanks.

3.3.1 Surface Water and Foul Drainage

There are no soakaways at the site. Rainwater from roof down pipes is directed to Myers Beck. All yard surface drainage and process related water is discharged to the effluent system.

All drains and drain covers are checked for condition and defects reported for attention.

A CCTV review of the drainage system has been carried out and the drainage plan updated, together with a risk assessment of the drainage, based on these reports. The Improvement Conditions IC16, 18 and 19 refer (submitted in June and August 2018).

A water borehole was completed in October 2015 at location NY 50054 29721. There are no indications of adverse water quality from this borehole which is sampled on a regular basis and is subject to licensing by the Local Authority.

3.4 Conclusion

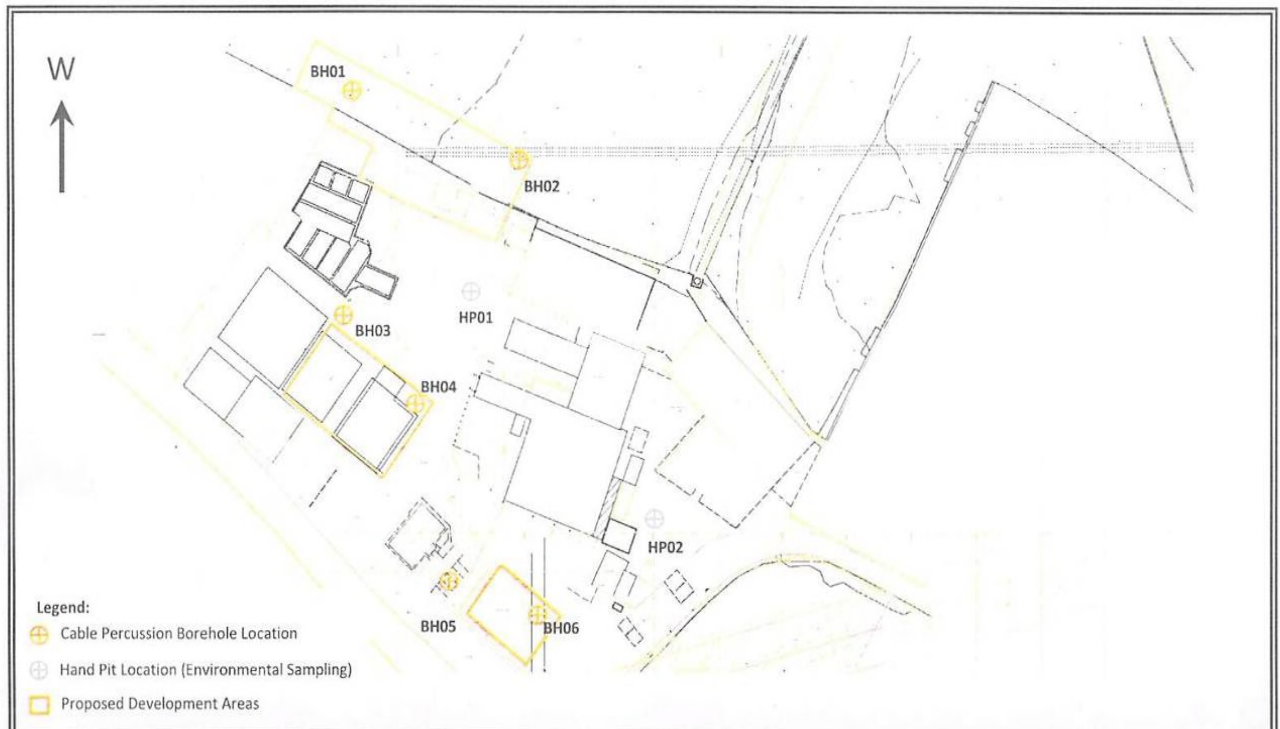
The site operates to a robust monitoring programme under the EMS and there are no indications from any of these sources that there has been significant pollution to ground or groundwater.

4 Recent Site Sampling

4.1 General

The conclusions of the Operational review are supported by the latest Geotechnical investigations on site. The full report is provided for information and a summary is included here.

Map of Sample Locations



4.2 Sampling Regime

In addition to taking samples on the day, groundwater monitoring was undertaken on six occasions over a three-month period in conjunction with the gas monitoring regime, to establish the standing water levels beneath the site, and facilitate groundwater sampling.

4.3 Reported Results

The actual ground conditions encountered across the site were generally uniform and comprised made ground overlying glacial till deposits, overlying the Alston formation. Made ground was encountered in all exploratory hole locations from ground level to depths of between, 0.30 and 2.20mbgl. The made ground generally comprised hardstanding overlying layers of granular and cohesive made ground materials.

Hardstanding comprising either concrete and tarmac was encountered in BH03, BH04, BH05, BH06 and HP01 from ground level to depths of between 0.12 and 0.24mbgl.

Granular made ground materials were encountered in all exploratory hole locations to depths of between 0.30 and 2.20 mbgl, from ground and beneath the hardstanding and generally comprised sandy slightly clayey gravel, with fragments of concrete, brick, tarmac, charcoal, glass, mudstone, siltstone, limestone, sandstone and varied igneous lithologies.

Samples of groundwater were taken from BH01 and BH04 for subsequent chemical analysis. No visual or olfactory evidence of contamination was encountered or observed during this ground investigation, in particular no obvious visual or olfactory evidence of mobile contamination was observed during the ground investigation.

Result Summary for Soils (see Table 7.2 in full report)

Substance	No Of Samples Tested	Screening Value (mg/kg) where applicable	Concentration Range (mg/kg)	No of Samples Exceeding Screening Value
Perylene	6	NGV	0.209 – 1.16	0
Carbazole	6	NGV	0.235 – 2.42	0
Dibenzofuran	6	NGV	0.493 – 3.26	0
2-Methylnaphthalene	6	NGV	0.125 – 1.19	0

NGV = no guideline screening available

Six samples were analysed for asbestos screen. No fibres were detected in any of the samples.

Result Summary for Groundwater (see Table 7.3 in full report)

Substance	No Of Samples Tested	Screening Value (µg/l) where applicable			Concentration Range above detection (µg/l)	Location of Highest Concentration
		DWS	EQS	WSV		
Copper	2	2000	1	NSV	3 – 4	BH04
Nickel	2	20	34	NSV	2 – 35	BH04
Selenium	2	10	NSV	NSV	2 – 72	BH01
Zinc	2	5000	20	NSV	10 – 58	BH01
Chrysene	2	NSV	NSV	NSV	0.01	BH01
Phenanthrene	2	NSV	NSV	NSV	0.02	BH04
Pyrene	2	NSV	NSV	NSV	0.02	BH01 & BH04
Aromatic >C16-C21	2	NSV	NSV	NSV	7	BH04
Total Aromatics	2	NSV	NSV	NSV	15 – 36	BH04
TPH (Aliphatic & Aromatics)	2	NSV	NSV	NSV	15 – 36	BH04
n-Dibutylphthalate	2	NSV	NSV	NSV	4	BH04

NSV = no screening value available

4.4 Reported Conclusions

Some elevated levels of contamination have been recorded beneath parts of the site within the made ground materials, typically localised around exploratory hole locations BH03 and HP02. However, considering the low levels recorded and the absence of screening criteria available (which indicates that these compounds are not significantly harmful), and that the site will be almost completely covered with hardstanding (in particular the areas around BH03 and HP02) thus removing the pathway and breaking the pollutant linkage, the risks to human health are considered to be **very low** at this stage.

In addition risks to construction workers are considered to be **low**. All construction workers should wear appropriate Personal Protective Equipment (PPE) including latex gloves and dust masks. Provisions should be made for water on site to 'damp down' any dust in dry conditions.

Considering the results of the groundwater and soil analysis, the distance between the site and the receptors, the limited thickness of made ground across the site, that the site will be covered with hardstanding thus limiting the volumes of rain water percolating through the soils, and that natural attenuation, dilution and dispersion will take place, the risks to groundwater and drinking water are considered to be **low**.

5 Review of Recent Data

5.1 GeoCon Report Discussion

The section below summarises the discussions as reported in the recent monitoring work and review. They are reported here for completeness and to inform the next sections which provide a more critical review and proposals to update and enhance the work.

The data from testing is compatible with previous tests and information presented in the preceding SCR documents. The whole area. Including the recently extended installation boundary is comprised of similar materials. As such the existing SCR provides a suitable initial description of the site and its pollution potential. Analysis of further ground investigation samples shows that there are insignificant potential contaminants when assessed against published EA and Defra criteria. This supports a working assumption that minimal ground and groundwater contamination is currently present.

The conceptual site models have been updated and are included in the GeoCon Geotechnical report (J0230 JL (GSI 0976) PII Report AW MP 0907181 July 2018).

5.2 EA Review

The full text of the EA's review is included in Appendix XX. In summary:

The report should correctly reference the standards outlined in CLR11 and should ensure the use of appropriate EA and BS methodologies in sampling and interpretation

There are insufficient samples (sample spacing inadequate and samples representing each horizon per sample location have not been provided), but the standards are not utilised in development of the report.

- The chemical testing regime and methodology for soils has data gaps.
- Water sample from BH1 appears to be in made ground, perhaps perched above the mudstone, but there is no water table outlined in the log.
- Water sample BH4 –suggests groundwater is present, but not recorded on logs.
- Crosssection showing subsurface conditions in relation to groundwater levels would help.
- Topographic levels and grid references are required to assess water table levels of groundwater for hydrogeological assessment and determine contaminant variation throughout the soil profile.
- Any further boreholes are recommended to be specific to gas or groundwater,
- A minimum of 3 boreholes are required to triangulate hydraulic gradient. A greater number may be required and are recommended if hydrogeological conditions are more complex, i.e. ephemeral perching, fissure flow, multiple and complex aquifers.
- The information reported to date needs to be re-assessed following further intrusive ground investigation. Chemical assessment of soils and groundwater from both natural and infill area should be accurate and representative to provide a meaningful interpretation of existing conditions.

5.3 Consultant Review

5.3.1 General

The recent data and the EA's review of the initial update to the SCR have been reviewed by geotechnical specialist consultants. They have provided a review of the data presented and the

methodologies used and have developed a proposed action plan to meet the EA's review comments and suggestions.

5.3.2 Review

The review agrees that potential contaminants are present at the site. Primary sources will probably be above ground bulk storage tanks, the condition of which have been established under permit improvement conditions, together with an assessment of secondary containment and site drainage.

The report contains some strata descriptions on the logs that are not consistent with PSD results, some over-interpretation (the made ground looks like surfacing gravel and/or general hardcore fill below concrete surfacing but is not described as such which would be helpful in developing a picture of the ground conditions) and also some not entirely justified conclusions

Further there is no consideration of whether the contaminants identified are associated with the made ground/fill or if they represent contamination from site activities associated with the rendering plant.

From the recent investigation it is evident that the ground conditions comprise a variable thickness of made ground overlying predominantly low permeability superficial soils and mudstone bedrock. Some relatively isolated granular soils are also present within the glacial soils, these may contain groundwater and could provide preferential migration pathways.

Any groundwater is likely to be perched rather than representing a true potential groundwater resource. The culverted watercourse (Myers Beck) is likely to be the primary receptor at this site.

5.3.3 Proposals

A number of proposals have been made and have been incorporated into a plan for site sampling and monitoring over the period where building works are continuing:

- Further targeted boreholes across the site to expand on the current information
- Install monitoring installations in each borehole designed and constructed with targeted response zones based on the actual strata encountered. Some will be within the made ground and others in granular horizons within the superficial soils.
- Collect soil samples from all boreholes for laboratory analysis. Including made ground and natural soil samples, this can be used to assess whether there has been any impact from historical activities on the natural ground conditions.
- Consider the use of leachability testing to determine whether or not the existing made ground represents a potential source of contamination.
- Groundwater level monitoring with both groundwater and surface water (upstream and downstream) samples collected for chemical analysis. This should be carried out on at least three occasions to provide a reasonable data set.

6 Proposed Future Programme

6.1 Proposed Steps

- The first step will be for the EA to comment on the review and the associated proposals contained in this latest update to the SCR. If necessary, this can involve a further review meeting involving site personnel and the geotechnical consultants.
- The EA can then provide detailed comments on the proposals and make further suggestions as to how the programme of work can be tailored to precisely meet their expectations.
- Site and their geotechnical consultant will then update the SCR and issue as a final agreed version that will be implemented.
- Work can then commence on the boreholes and data collection.
- Once all the data has been collected and reviewed an updated SCR will be issued to the EA and relevant site records and plans updated.
- The updated SCR will be reviewed with the EA and proposals for ongoing borehole etc monitoring discussed and agreed.