Permitting Decisions- Variation

We have decided to grant the variation for Melton Ross Lime Works operated by Singleton Birch Limited.

The variation number is EPR/BL8805IZ/V011.

The variation is for the following changes:-

- Install a new hydrator vessel (Hydrator 4) with independent stack and emission control system. *This will serve existing Hydrator 2 post - hydration plant*. The will replace use of Hydrator 2 reaction vessel which will be retained for stand-by / backup only operations.
- Changes to Low Solids Aqualime plant to enable use of calcium oxide as alternative to hydrated lime.
- Operation of a manual, batch process High Solids Aqualime pilot plant trial with end point of 3000 tonnes (120 loads).
- Construction and operation of additional AD lagoon serving AD plant. Lagoon for the on-site storage of digestate which has undergone preliminary treatment in the Anaerobic Digestion Plant.

We consider in reaching that decision we have taken into account all relevant considerations and legal requirements and that the permit will ensure that the appropriate level of environmental protection is provided.

Purpose of this document

This decision document provides a record of the decision-making process. It

- highlights key issues in the determination
- summarises the decision making process in the decision considerations section to show how the main relevant factors have been taken into account

Unless the decision document specifies otherwise we have accepted the applicant's proposals.

Read the permitting decisions in conjunction with the environmental permit and the variation notice.

Key issues of the decision

Application EPR/BL8805IZ/V011 was initially received on 14/08/2020 as a substantial variation with inclusion of a Derogation request (as extension to the operator's existing derogation for Kiln 1). The operator subsequently withdrew this request for Derogation and amended their application to a normal variation on 16/12/2020.

The remaining aspects of the application are covered below in the following key issues:-

Hydrator 4

This request is for the installation of a new hydrator vessel (Hydrator 4) including its own stack and emission control system to serve existing Hydrator 2 post hydration plant. Existing Hydrator 2 reaction vessel (which has served existing Hydrator 2 post hydration plant) is to be retained on site for stand-by / backup operations only.

Assessment of new Hydrator 4 vessel
This vessel will use Zeropoll bag filter technology allowing emission concentration of 10mg/Nm^3 to be achieved for particulate emissions. We are satisfied that this meets BAT.

- Hydrator 2 stack height is 29.96 meters with total flow of 4,978 m^3/hr.
- Hydrator 4 stack height is 28.8 meters with total flow of 9,819 m^3/hr.

The H1 impact assessment provided with the application demonstrates the following:-

- Hydrator 2 : Long Term PC of 0.00640 µg/m^3 / Short Term PC of 0.289 µg/m^3
- Hydrator 4 : Long Term PC of 0.0158 µg/m^3 / Short Term PC of 0.660 µg/m^3

Conclusions
Whilst hydrator 4 vessel is operated as a replacement for Hydrator 2 vessel it also allows for increased capacity, therefore emissions will increase. [*Hydrator 4 vessel has a larger capacity than hydrator 2 vessel allowing for an increase in hydrator production by 50%].*

The impact assessment provided considers emission dispersion with comparable stack discharge heights, and increased flow. The results show a small increase to PC values. The calculated PC values are screened out as insignificant [the long-term process contribution is less than 1%; and the short-term process contribution is less than 10%].

As this emission has been screened out in this way, we do not require detailed emissions modelling and are satisfied that the proposals [for the prevention and control of the emission] meet BAT. We have amended table S3.1 to include this emission point (as A7) and included relevant emission limit value of 10mg/m^3.

Low Solids Aqualime

The installation is currently permitted to produce Aqualime (by activity AR11 in table S1.1 of the permit). This process is currently undertaken in an automatic semi-batch process using hydrated lime and water.
The application requests a minor change to activity AR11 by production of slaked Aqualime. This follows the same process but utilises calcium oxide instead of hydrated lime.
A local exhaust ventilation (LEV) is located above the mixer tank [above a vent opening in the mixer tank lid]. The LEV includes a bag filter to draw any dust from addition of raw material.

The reaction taking place during the production of Aqualime is exothermic. A difference by production of slaked Aqualime using calcium oxide is a slight increase to this exothermic temperature (15% or less). This difference is not significant enough to require changes to the production process.

LEV loading will increase slightly by virtue of calcium oxide powder being denser than hydrated lime.

In order to manage these changes, the operator has included the following measures within their existing production process:-

- The addition of thermocouple in order to ensure the reaction temperature does not result in excessive heat generation (which might otherwise overload the LEV). This will allow operators to manage operations by monitoring temperature levels.
- The addition of water gauge / airflow meter to ensure LEV maintains the level of flow required for effective dust capture.
- The addition of a flowmeter to ensure density meter is always seeing a circulated representative flow.

Other remaining controls including emergency controls (i.e. sequential plant shut down) will remain in place and are considered appropriate for this change.

We are satisfied with the measures proposed by the operator to allow this change to activity AR11. As this process uses existing emission controls (LEV with bag filter) for Aqualime, no changes are required to table S3.1 of the permit.

High Solids Aqualime

The installation does not currently produce high solids Aqualime, and seeking permission by this application to operate a pilot plant trial [with end point of 3000 tonnes (120 loads)] by use of a manual, batch process. The trial will utilise calcium oxide as a feedstock with dispersant and ionic solid to make a 50% high solid stable product.

The purpose of the trial is to gather essential design information to take from a laboratory scale to the construction of a full sized production facility. If the trial is successful the operator will be required to submit a separate variation application request should they wish to pursue a full sized production facility.

For this trial three mixing tanks will be used.

- The primary tank will have temporary portable LEV to minimise dust from calcium oxide handling. There should be no other emissions from this tank. A temperature probe will be utilised to monitor reaction temperature and ensure the retardation of the lime to water reaction is not progressing in this tank.
- The secondary tank is the normal Aqualime plant-mixing vessel, which already as LEV (bag filter system to collect particulates) incorporated on the top of the vessel. There should be no other emissions from this tank. The existing circulation system will be operating in this tank, allowing density measurements to taken. There will also be a thermocouple to monitor the delayed exothermic reaction.
- There should be no emissions from the tertiary tank. A temperature probe will monitor final product temperature.

We are satisfied with the measures proposed to allow this small pilot plant trial. Secondary tank (utilising the normal Aqualime plant-mixing vessel) will retain LEV (bag filter system) for Aqualime, no changes are required to table S3.1 of the permit. We have included an improvement condition IC8 to report on dates for the trial along with a performance review.

Additional lagoon (to existing lagoon serving AD plant)

The installation operates an existing lagoon for on-site storage of digestate which has undergone preliminary treatment in the Anaerobic Digestion Plant (activity AR6, table S1.1). The application requests the construction and operation of a new, permanently covered digestate lagoon to allow for capacity during periods where weather does not allow for land spreading operations to occur.

The lagoon will be constructed within the existing site boundary, therefore no changes to the extent of the installation area covered by the site report.

The applicant confirmed (email dated 11/12/2020) that the additional lagoon doesn't include request for increase to Anaerobic Digestion Plant production. The site has an existing lagoon for storage of digestate and this additional lagoon allows for management of this storage. In consideration of this, and the measures employed for the additional lagoon we are satisfied that existing controls relating to odour (permit condition 3.3) remain effective.

The lagoon lining and installation of a permanent leak detection system will be subject to independent CQA involving testing, monitoring, inspection and documentation to confirm that the works have been constructed to meet the requirements of the CQA Plan

The Contractor will undertake construction surveys during the duration of the Works.

- Existing ground - topographical survey of existing ground prior to commencement
- Lagoon formation. Top of excavated surface after trimming and compaction prior to placement of Engineered Clay Liner.

The application includes engineering specifications (report titled “AD lagoon specifications”). Construction Works will take place in accordance with this report, and will include:-

- Source evaluation, importation, placement and compaction of suitable clay in layers to form a minimum 300mm thick Engineered Clay Liner to the base and internal side slopes of the lagoon, to a maximum permeability 1.0 x 10-9m/s;
- Installation of a permanent leak detection system across the base and internal side slope of the lagoon at the interface between the engineered clay liner and Geomembrane lining system
- Installation of a welded Geomembrane liner, comprising 1mm thick double textured
- A leak detection survey of the lagoon liner system
- Installation of a fully welded, Geomembrane cover to the lagoon.
- Installation of gas collection pipework on top of the HDPE cover

We are satisfied with the detail provided within the application. We have included a pre-operational condition within the variation notice requiring:-

At least two weeks prior to commissioning the new AD plant lagoon, the operator shall submit a written report demonstrating that works have been completed in accordance with the requirements of the Construction Quality Assurance (CQA) plan – including lagoon lining and permanent leak detection systems.

The report shall also confirm compliance with SSAFO regulations [The Water Resources (Control of Pollution) (Silage, Slurry and Agricultural Fuel Oil) (England) Regulations 2010].

The report requires written agreement from the Environment Agency prior to commencing operations within the lagoon.

Other EA initiated changes made to the permit

- **Table S1.1:** We have added Directly Associated Activity AR7 for digestate storage, to reflect the existing lagoon and new lagoon. The storage of digestate (lagoon) is a DAA to the AD activity (AR6) and was previously missed from this table. We have performed this amendment alongside application for new lagoon.
  As a result of this additional activity reference, we have amended sequential activity number references.
- **Table S3.1:** We have updated this table to reflect improvement conditions which have been completed.
- **Table S3.1 and S3.2:** We have amended emission limit values where timescales for compliance have been met. We have amended footnotes to tables which appeared misaligned. We have re-referenced emission point references after inclusion of emission point reference A7. Re-referenced emission points A3 and A4 (to represent Kiln3 and Kiln4 respectively).
- **Table S4.1.** We have amended the reporting requirements in accordance with re-sequenced emission point references.
- **Schedule 6 Interpretation**: We have made amendments required to latest permit template conditions in reflection of the end of EU Exit transition period.

Permitting Decisions- Variation

Decision considerations

Confidential information

A claim for commercial or industrial confidentiality has [not] been made.

The decision was taken in accordance with our guidance on confidentiality.

Identifying confidential information

We have not identified information provided as part of the application that we consider to be confidential.

The decision was taken in accordance with our guidance on confidentiality.

The site

The operator has provided a [plan] which we consider to be satisfactory.

The plans show the location of the part of the installation to which this variation applies on that site.

Nature conservation, landscape, heritage and protected species and habitat designations

We consider that the application will not affect any site of nature conservation, landscape and heritage, and/or protected species or habitats.

Environmental risk

We have reviewed the operator's assessment of the environmental risk from the facility.

The operator’s risk assessment is satisfactory.

The assessment shows that, applying the conservative criteria in our guidance on environmental risk assessment all emissions may be screened out as environmentally insignificant**.**

Operating techniques

We have reviewed the techniques proposed by the operator and compared these with the relevant technical guidance and we consider them to represent appropriate techniques for the facility.

The operating techniques that the applicant must use are specified in table S1.2 in the environmental permit.

Updating permit conditions during consolidation

We have updated permit conditions to those in the current generic permit template as part of permit consolidation. The conditions will provide the same level of protection as those in the previous permit. These our outlined in key issues of the decision / other EA initiated changes made to the permit**.**

Pre-operational conditions

Based on the information in the application, we consider that we need to include pre-operational conditions. This is outlined in section “key issues”.

Improvement programme

Based on the information on the application, we consider that we need to include an improvement programme.

We have included an improvement condition IC8. This is outlined in section “key issues”.

Emission limits

Emission Limit Values (ELVs) have been amended as set out within section “key issues”.

Monitoring

We have amended monitoring to cover the new emission point A7.

Reporting

We have amended reporting in the permit to reflect amended emission point references**.**

Management system

We are not aware of any reason to consider that the operator will not have the management system to enable it to comply with conditions for this variation.

The decision was taken in accordance with the guidance on operator competence and how to develop a management system for environmental permits.

Growth duty

We have considered our duty to have regard to the desirability of promoting economic growth set out in section 108(1) of the Deregulation Act 2015 and the guidance issued under section 110 of that Act in deciding whether to grant this permit variation.

Paragraph 1.3 of the guidance says:

“The primary role of regulators, in delivering regulation, is to achieve the regulatory outcomes for which they are responsible. For a number of regulators, these regulatory outcomes include an explicit reference to development or growth. The growth duty establishes economic growth as a factor that all specified regulators should have regard to, alongside the delivery of the protections set out in the relevant legislation.”

We have addressed the legislative requirements and environmental standards to be set for this operation in the body of the decision document above. The guidance is clear at paragraph 1.5 that the growth duty does not legitimise non-compliance and its purpose is not to achieve or pursue economic growth at the expense of necessary protections.

We consider the requirements and standards we have set in this permit are reasonable and necessary to avoid a risk of an unacceptable level of pollution. This also promotes growth amongst legitimate operators because the standards applied to the operator are consistent across businesses in this sector and have been set to achieve the required legislative standards.