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**Natural Resources Wales permitting decisions**

# Castle Cement, Padeswood Works, Substantial Variation

## Substantial Variation

**The application number is: PAN-001655**

**The Operator is:** Castle Cement Limited

The Installation is located at: Padeswood Cement Works, Padeswood, Mold, Flintshire, CH7 4HB

We have decided to issue the variation Padeswood Cement Works operated by Castle Cement Limited.

The variation number is **EPR/BL1096IB/V014**.

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:

- explains how the application has been determined
- provides a record of the decision-making process
- shows how all relevant factors have been taken into account
- justifies the specific conditions in the permit other than those in our generic permit template.

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

## Structure of this document

- Table of contents
- Key issues
- Annex 2 the consultation and web publicising responses

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## Key issues of the decision

### 1 Our decision

Based on the information currently available to us we are currently minded to issue a permit to the Applicant. This would, if issued, allow it to operate the Installation, subject to the conditions in the Permit.

We consider that, in reaching that decision, we have taken into account all relevant considerations and legal requirements and that the permit will ensure that a high level of protection is provided for the environment and human health.

This Application is to operate an installation which is subject principally to the Industrial Emissions Directive (IED), the requirements of which have been transposed into the Environmental Permitting Regulations (England and Wales) 2016 (EPR).

The consolidated permit contains many conditions taken from our standard Environmental Permit template including the relevant annexes. We developed these conditions in consultation with industry, having regard to the legal requirements of EPR and other relevant legislation. This document does not therefore include an explanation for these standard conditions. Where they are included in the permit, we have considered the Application and accepted the details are sufficient and satisfactory to make the standard conditions appropriate.

## **2 How we reached our decision**

### **2.1 Receipt of Application**

The Application was accepted as duly made on 16<sup>th</sup> June 2017. This means we considered it was in the correct form and contained sufficient information for us to begin our determination, but not that it necessarily contained all the information we would need to complete that determination.

The Applicant made no claim for commercial confidentiality. We have not received information in relation to the Application that appears to be confidential in relation to any party.

### **2.2 Consultation on the Application**

We carried out consultation on the Application in accordance with the EPR, our statutory Public Participation Statement (PPS) and our Regulatory Guidance Note RGN6 for Determinations involving Sites of High Public Interest.

Furthermore we have also considered the Well-Being of Future Generations (Wales) Act 2015 and the Environment (Wales) Act 2016 during our assessment process.

We advertised the Application by a notice placed on our website, which contained all the information required by the IED, including advising people where and when they could see a copy of the Application.

A copy of the Application and all other documents relevant to our determination (see below) are available for the public to view. Anyone wishing to see these documents could arrange for copies to be made.

We sent copies of the Application to the following bodies, which includes those with whom we have “Working Together Agreements”:

- Food Standards Agency
- Public Health Wales/Betsi Cadwaldr Health Board
- Flintshire County Council Planning and environmental Health Section



These are bodies whose expertise, democratic accountability and/or local knowledge make it appropriate for us to seek their views directly.

Further details along with a summary of consultation comments and our response to the representations we received can be found in Annex 3. We have taken all relevant representations into consideration in reaching our determination.

We are now carrying out a consultation on our draft decision. This consultation will begin on 4<sup>th</sup> December 2017 and end on 4<sup>th</sup> January 2018.

### 2.3 Requests for Further Information

Further information was also requested by way of a Schedule 5 Notice requiring details relating to the noise modelling submitted and clarification for why certain elements relating to Best Available Techniques (BAT) for noise were not applied or considered not applicable. The Schedule 5 Notice was sent on 11<sup>th</sup> October 2017 with a response date of 6<sup>th</sup> November 2017. The Applicants response to the Schedule 5 Notice was provided on 3<sup>rd</sup> November 2017. The additional information supplied satisfied the requirements of the Schedule 5 notice issued on 11<sup>th</sup> October 2017.

A copy of the information notice and e-mails requesting further information were placed on our public register as were the responses when received.

## 3 The Legal Framework

The Permit will be granted, under Regulation 13 of the EPR. The Environmental Permitting regime is a legal vehicle which delivers most of the relevant legal requirements for activities falling within its scope. In particular, the regulated facility is:

- an *installation* as described by the IED;
- subject to aspects of the Well-Being of Future Generations (Wales) Act 2015 and the Environment (Wales) Act 2016 which also have to be addressed.

We address the legal requirements directly where relevant in the body of this document. NRW is satisfied that this decision is consistent with its general purpose of pursuing the sustainable management of natural resources in relation to Wales, and applying the principles of sustainable management of natural resources. In particular, NRW acknowledges that it is a principle of sustainable management to take action to prevent significant damage to ecosystems. We consider that, in granting the Permit a high level of protection will be delivered for the environment and human health through the operation of the Installation in accordance with the permit conditions.

## **4 The Installation**

### **4.1 Description of the Installation and related issues**

#### **4.1.1 The permitted activities**

The Installation is subject to the EPR because it carries out an activity listed in Part 1 of Schedule 1 of the EPR:

- Section 3.1 A(1)a - Producing cement clinker in a rotary kiln with a production capacity exceeding 500 tonnes per day.
- 3.1 A(2)(a) - Grinding cement clinker in cement mills.
- Section 3.1 part B (a) - Storing, loading or unloading cement or cement clinker in bulk prior to further transportation in bulk.
- Section 3.1 part B (b) - Blending cement in bulk or using cement in bulk other than at a construction site, including the bagging of cement and cement mixtures, the batching of ready-mixed concrete and the manufacture of concrete blocks and other cement products.

An installation may also comprise “directly associated activities”, which at this Installation includes:

- Waste Storage and handling.
- Rail loading facilities.

Together, these listed and directly associated activities comprise the Installation.

#### 4.1.2 What the Installation does

The Cement works at Padeswood manufactures cement from limestone, pulverised fuel ash (“PFA”), shale and sand, together with gypsum Which is dispatched in bulk tankers and as packaged cement. The kiln has a nominal capacity of 750,000 tonnes per annum. The constituent raw materials are ground together to a fine powder and heated to approximately 1450°C. The heated material balls up into nodules called clinker, which vary in size from 50mm diameter down to dust. The clinker is cooled, then ground with gypsum and limestone, to make cement.

At Padeswood the clinker production capacity is greater than the cement production capacity therefore, new grinding capacity is required. This variation application is for the installation of a vertical roller mill for cement grinding, three new cement storage silos and associated plant for transporting raw materials to the mill and cement from the mill to the existing and new silos.

The vertical roller mill has a number of advantages over other grinding technologies, including:

- 30-50% less energy use than ball mill systems
- Reduced vibration, less wear
- Improved product quality
- Reduced water consumption
- High productivity with stable, reliable operation

#### 4.1.3 Key Issues in the Determination

The key environmental and human health issues considered during the determination of this variation were:

- Air quality – primarily related to Particulates
- Noise
- Applicability of BAT.

Each of these will be discussed separately in this decision document.

## 4.2 The site and its protection

### 4.2.1 Site design: potentially polluting substances and prevention measures

Cement mill 5 will be equipped with a bag filter to collect the cement product before it is transferred to the cement storage silos. The new mill, silos and associated plant will meet all the requirements of BAT. The fundamental operating principles of a vertical mill are the same for production using a conventional ball mill and subsequently, maintenance will be largely the same as for the current raw mill and coal mill.

The new silos will be used for loading cement into rail tankers for dispatch. To enable rail loading the existing rail tracks will be moved, it is expected that the use of rail will lead to an annual reduction in vehicle movements of over 8,000 trips per year.

The new mill will utilise part the cement mill 4 raw material storage systems, consequently upon completion of the project cement mill 4 will no longer be operational. Cement mills 1 and 2 will be mothballed and used as back up production in the event of a major failure. Cement mill 3 will remain operational. An illustration of the visual appearance of the new mill is provided below at Figure 1.

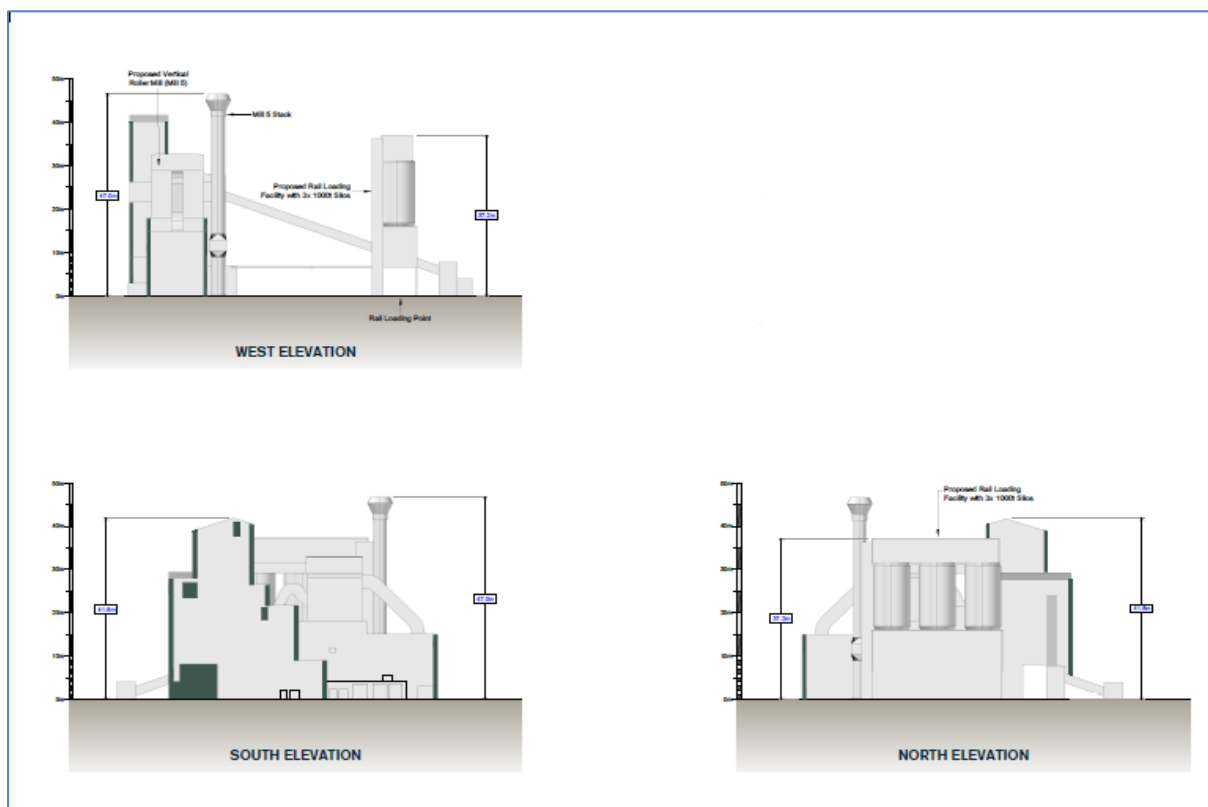


Figure 1 Visual appearance of CM5

The only significant emission from the cement mill is particulates to air through the cement mill stack. There are also a number of small release points associated with the

transport of raw materials from the raw material store to the mill and the transport of cement from the mill to the existing and new storage silos.

Cement mill 5 will be equipped with a hot gas generator to provide additional heat for process reasons, as a result, there will be emissions arising from the combustion of fuel in the hot gas generator. The burner will be fired using either; gas oil, kerosene or processed fuel oil complying with the requirements of the WRAP/Environment Agency PFO quality protocol. The hot gas generator is a low temperature combustion process meaning the production of thermal NO<sub>x</sub> is unlikely. Figure 2 illustrates the emission points including the new emission point A15.

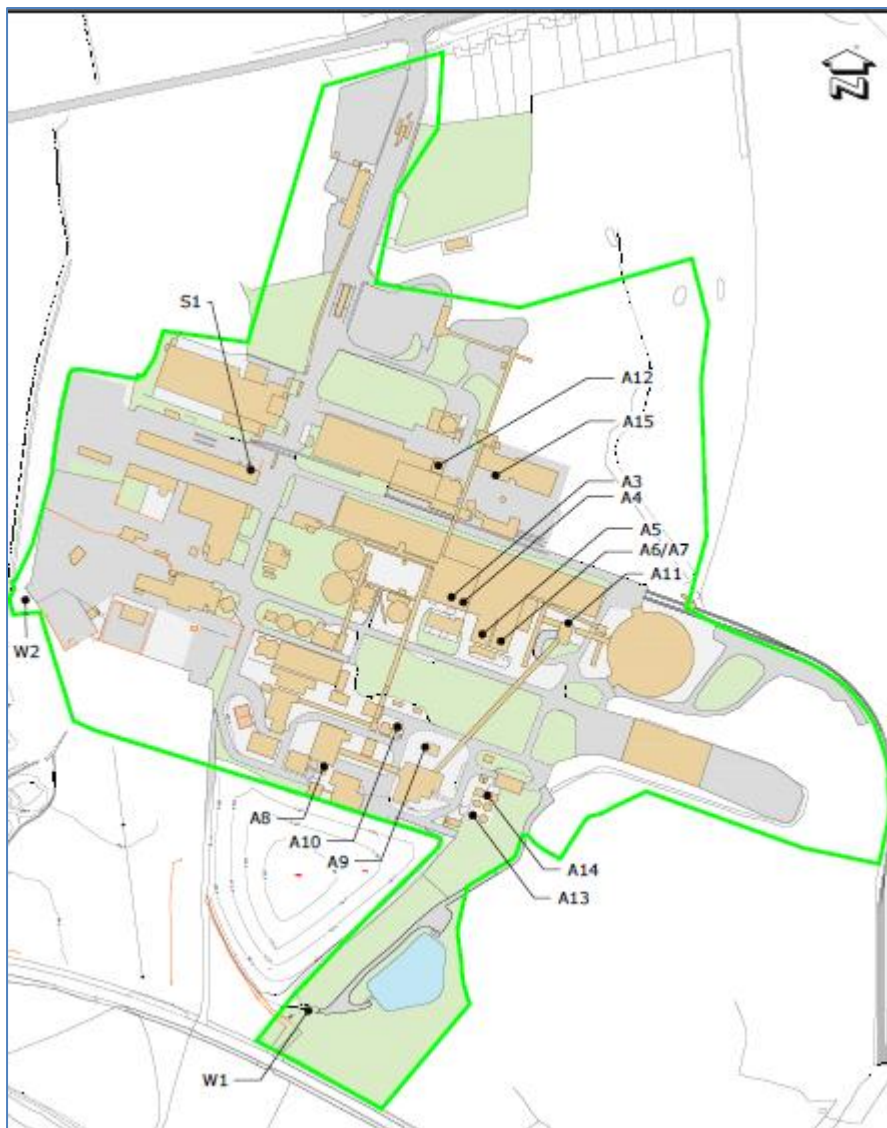


Figure 2 Site Boundary and emission points

## 4.3 Operation of the Installation – general issues

### 4.3.1 Administrative issues

We are satisfied that the Applicant's submitted OPRA profile is accurate. The OPRA score will be used as the basis for subsistence and other charging, in accordance with our Charging Scheme. OPRA is Natural Resources Wales method of ensuring application and subsistence fees are appropriate and proportionate for the level of regulation required.

### 4.3.2 Management

The operator has an EMS which is certified to ISO14001. This is part of an Integrated Management System. The introduction of cement mill 5 doesn't require changes to the procedures within the management system that control the operation of the IMS or the Hanson wide corporate procedures.

We are satisfied that appropriate management systems and management structures will be in place for this Installation, and that sufficient resources are available to the Operator to ensure compliance with all the permit conditions.

### 4.3.3 Operating techniques

There will be no changes to the operation of the kiln system and clinker transport systems from the kiln to the clinker store and to the crane store.

A new material feed system will be installed in order to transport materials (comprising mainly of gypsum, clinker and limestone) from storage to Mill 5 for grinding. The raw materials will be stored in the current clinker store and existing raw material storage hall. Each material will be transferred to mill 5 via the existing Mill 4 storage hoppers. New weigh feeders will be fitted to the existing clinker and gypsum hoppers and the existing limestone weigh feeder will be upgraded.

The raw materials will be transported to the mill 5 building using a "Sicon" tube conveyor from the mill 4 hoppers on the south side of the crane store through an over ground tunnel within the material store at ground level. After the tunnel on the north side of the raw materials storage hall the mill feed conveyor rises to the mill 5 building in an enclosed gantry. The 'Sicon' conveyor belt has the capability to incline and turn without the requirement for transfer points thereby minimising the potential for fugitive dust emissions when handling dusty materials such as clinker. The Sicon belt also

reduces the potential for dust emissions along the length of the conveyor as the belt forms a teardrop shape with belt edges brought together. Once inside the mill 5 building the Sicon belt opens and becomes a troughed belt that discharges onto another belt conveyor which delivers the raw materials to the mill via a rotary valve.

The mill is a vertical roller mill similar to that already used at Padeswood to grind raw meal and coal for kiln 4. Mill 5 has two pairs of rollers on hinged arms, which are pulled down using hydraulic pressure on to a rotating table driven using an electric motor. The clinker, gypsum, limestone and other raw materials used to make cement are crushed between the rollers and the table. A fan draws air into the mill, lifting the crushed material off the table into the mill body, the heavier and larger particles fall back onto the table for further grinding. Once ground to the desired particle size, the resulting cement will then be collected in a bag filter and transported to cement storage and distribution facilities by pneumatic transport.

The pneumatic transport design selected for cement transport will be designed to

- Minimise solids velocities
- Operate at lower conveying pressure
- Reduce Wear
- minimise power requirements

In addition to the conveying benefits above the selected application has following benefits specific to the project as follows:

- Limited effect on site roads and potential internal road obstruction
- Reduced structures required compared to mechanical transport
- Reduce potential risks to existing structures and silo compared to mechanical transport.

#### 4.3.4 Energy efficiency

Cement manufacture is an energy intensive process, around 90% of the energy consumption is fuel used to fire the kilns. The remaining 10% of energy consumption is electricity of which approximately 60% of the electricity consumption is used by the

kiln with the remaining 40% consumed in the grinding of cement. The use of a vertical roller mill for cement grinding will significantly reduce the electrical energy consumption in the cement grinding process. The energy consumption of a ball mill is around 60 kwh/t. The operation of cement mill 5 is expected to reduce this to around 40 kwh/t.

The operation of a conventional ball mill for cement grinding converts much of the input energy to heat and noise. The heat produced by the grinding action in the mill is sufficient to dry the moisture present in the gypsum and limestone. The heat generated in a vertical mill may not always be sufficient to increase the air temperature to remove this water from the raw materials, therefore additional heat will be provided using a hot gas generator. Additional heating is likely to be required when ambient air temperatures are low, clinker temperature is low and when products containing more limestone are milled. Even in these circumstances it is possible that once the mill achieves the correct operating temperature that this will be self-sustaining and the hot gas generator will only be required during start up.

The hot gas generator will have a capacity of 1.925 MW, this will consume approximately 250 kg of gas oil per hour when in use. A portion of the exhaust gases after the bag filter will be recycled to the mill to minimise the fuel requirements from the hot gas generator therefore instead of heating ambient air from 10 to 120°C the recycled gas will be heated from 60 to 120°C.

The operator has considered using waste heat from the clinker cooler as a potential source of drying air for the mill. However, the mill will be required to operate when the kiln line is stopped for maintenance and therefore the hot gas generator is required as part of the design. The cost of ductwork was greater than the cost of the hot gas generator and the power consumption of the required fan is greater than that of a recirculating fan, this option proved to be cost prohibitive with the only potential energy saving being from the fuel used in the hot gas generator.

Hanson UK operations are covered by the Energy Efficiency Directive and energy savings opportunity scheme. The requirements ESOS are met through certification to ISO50001. Site energy usage is reported monthly at site and Hanson Cement executive level, energy saving opportunities are recorded in a database and progressed by the site energy team.



We are satisfied that the Applicant will ensure that energy is used in the most efficient way possible.

#### 4.3.5 Avoidance, recovery or disposal of wastes produced by the activities

This requirement addresses wastes produced at the facility.

Under normal operation any process waste or raw materials will be collected and returned to the process for grinding into cement. If this is not possible for quality control reasons then these materials will be processed through the kiln system to produce clinker.

Having considered the information submitted in the Application, we are satisfied that the waste hierarchy referred to in Article 4 of the Waste Framework Directive (WFD) will be applied to the generation of waste and that any waste generated will be treated in accordance with this Article.

We are satisfied that waste from the Installation that cannot be recovered will be disposed of offsite using a method that minimises any impact on the environment. Permit condition 1.4.1 will ensure that this position is maintained.

#### 4.3.6 Waste types

We have specified the permitted waste types, descriptions and quantities, which can be accepted at the regulated facility. It was requested that additional waste types be included in the permit as raw materials for the manufacture of cement. The Operator had claimed that the waste types should already be included in the permit. NRW agreed to include some of these waste types as they had been agreed previously through email exchange. Other waste types were also allowed as they are readily used in the cement manufacturing industry and are allowed under the Mineral Products Association (MPA) Code of Practice. NRW were satisfied that the Operator has robust acceptance criteria in place to accept these wastes. These waste types are found in Table S2.3.

We have excluded the following wastes for the following reasons 02 02 03, 19 01 13, 19 02 03, 19 02 04 and 19 12 12. These wastes were excluded because NRW were not satisfied that a sufficient description had been provided, which meant that we were unable to agree that the appropriate acceptance criteria and handling measures were in place.

## 5 Minimising the Installation's environmental impact

Regulated activities can present different types of risk to the environment, these include odour, noise and vibration; accidents, fugitive emissions to air and water; as well as point source releases to air, discharges to ground or groundwater, global warming potential and generation of waste. All these factors are discussed in this and other sections of this document.

For an installation of this kind, the principal emissions are :

- Particulates
- Oxides of Nitrogen (NO<sub>x</sub>)
- Sulphur Dioxide (SO<sub>2</sub>)
- Carbon Monoxide (CO)

The next sections of this document explain how we have approached the critical issue of assessing the likely impact of emissions from the Installation on human health and the environment and what measures we are requiring to ensure a high level of protection.

### 5.1 Assessment of Impact on Air Quality

This section of the decision document deals primarily with the dispersion modelling of emissions to air from the stack and its impact on local air quality.

The emissions listed above have been assessed using the Environment Agency's H1 tool to determine if detailed modelling is required. The screening exercise identified that detailed modelling was required for particulate emissions only and was not required for the NO<sub>x</sub>, CO and SO<sub>2</sub> emissions. This assessment concluded that "*The results of the H1 assessment under these worst-case operating conditions, indicate that annual mean NO<sub>2</sub> concentrations would be less than 1% of the long term Environmental Assessment Level (EAL) and short term concentrations would be less than 10% of the short term EAL. Therefore, the focus of the assessment of emissions from the cement mill has been with respect to particle emissions*". Similarly CO and SO<sub>2</sub> also screenout as insignificant.

The Applicant has assessed the Installation's potential emissions of particulates to air against the relevant air quality standards, and the potential impact upon human health. These assessments predict the potential effects on local air quality from the Installation's stack emission.

The assessment used air dispersion modelling software Breeze Aermod version 7. The modelling used five years (2012-2016) of observed meteorological data from Hawarden which is approximately 5km north east of the installation. The modelling included the effects of buildings and terrain within their model.

The modelling report states that "The main stack emission has been excluded since as a high-level emission this disperses further and maximum concentrations are some distance from the site." The concept behind this statement is generally valid when emission rates are similar between high and low level sources. The proposed development introduces seven new emission points including the Mill 5 stack. However, there are a number of existing emission sources which will be decommissioned as a result of the new cement mill development. The modelling predicts that short and long-term PM<sub>10</sub> concentrations at sensitive receptors will be marginally lower as a result of the proposed emissions sources when compared against predictions due to the existing sources.

The assessment concludes that "The results of this assessment indicate that maximum predicted annual mean PM<sub>10</sub> and PM<sub>2.5</sub> and 24-hour mean PM<sub>10</sub> ground level concentrations are substantially less than the relevant air quality objective set for the protection of human health. Furthermore, predicted concentrations with the new cement mill were less than existing emission sources. However, it was concluded that this reduction in concentrations was not significant."

NRW have used air dispersion modelling software Breeze Aermod version 8 to undertake check modelling, with 1.5km resolution Met Office numerical weather prediction data extracted for the site location. Our check modelling is generally in good agreement with the operator's. NRW's check modelling indicates that the predicted short and long-term PM<sub>10</sub> process contributions at residential receptors for emissions from Mill 5 and associated sources in isolation, are likely to be less than 10% and 1% of the PM<sub>10</sub> short and long-term AQS respectively.

NRW's check modelling agrees that the predicted PM<sub>10</sub> concentrations at sensitive receptors are likely to be marginally lower due to the proposed emissions compared against existing emissions. The operator Operator did not include the main stack in

their modelling, nor reasons for this omission. Although it is preferable for the operator to provide the evidence behind their decision to not include the main stack in their modelling, inclusion of the main stack would not have changed the conclusions of the modelling report.

The assumptions underpinning the model have been checked and are reasonably precautionary. The way in which the Applicant used dispersion models, its selection of input data, use of background data and the assumptions it made have been reviewed by Natural Resources Wales modelling specialists to establish the robustness of the Applicant's air impact assessment. The output from the model has then been used to inform further assessment of health impacts.

## **5.2 Emissions to water**

There will be no process emissions from the mill 5 systems to water. There will be some water use for cooling compressors, drives and bearings. This water, rainwater and surface run off water from the mill 5 area will be collected in the existing works drainage network. The surface water and a very small quantity of condensate from compressors collected passes through an oil water separator into the works settling pond, this water is then returned to the works for use as cooling water. In periods of high rainfall and low production it is sometimes necessary for the operator to discharge water from the settling pond to surface water if the level in the settling pond becomes too high. This operation is unlikely to change as a result of the mill 5 installation.

## **5.3 Emissions to land**

There are no emissions to land from the operation of cement mill 5.

## **5.4 Fugitive emissions**

Fugitive emissions are most likely to arise from transport of cement and raw materials to and from the mill, the silos and during rail loading activities. However the pneumatic transport system primarily comprising the sicon conveyor belt system is designed to minimise the potential for fugitive emissions. The sicon conveyor belt is capable of inclining and turning without the requirement for transfer points, thereby minimising the potential for fugitive dust emissions. The sicon belt also reduces the potential for

dust emissions along the length of the conveyor as the belt forms a teardrop shape with belt edges brought together. Most of the cement produced in mill 5 will be transported to Silo 6, an existing concrete silo with a capacity of 4,400 tonnes. As this silo is the main destination for Mill 5 product the mill has been positioned near to this silo to reduce transport distances.

The existing facility, principally silos 7, 8, 9, and 10 will be demolished and a new rail loading facility built including three new 1000 tonne cement silos. Each of these silos will be equipped with small (less than 10,000 Nm<sup>3</sup>/h capacity) filters to control particulate emissions from transport and silo aeration air. These filters will be specified to emit less than 10 mg/Nm<sup>3</sup> as required by BAT conclusion 16. Each silo will be equipped with continuous level monitoring, emergency pressure relief valves and automated silo protection systems to prevent overfilling.

The new rail loading facility will accommodate a maximum train length of 350 metres and will enable between 4,000 and 5,000 tonnes of cement to be transported from site by rail each week. The rail loading facility will have the ability to load up to a maximum of 1,700 tonnes per train, it is expected that up to 4 trains will be loaded per week. The loading heads on the rail silos will include bag filters specified to comply with the 10 mg/Nm<sup>3</sup> emission level specified in BAT conclusion 16.

Based upon the information in the application we are satisfied that the appropriate measures will be in place to prevent or where that is not practicable to minimise fugitive emissions and to prevent pollution from fugitive emissions.

## **5.5 Noise Assessment**

The grinding of cement is an inherently noisy process, however, the operation of a vertical mill is quieter than a ball mill, therefore the general noise level from the plant is expected to be lower.

A noise assessment was submitted by the operator, however further information was required to verify the operators claims. Furthermore additional information was required from the operator to justify their application of BAT for noise at CM5. Satisfactory information was provided by the operator to verify that the operator had applied BAT for noise control to the new mill. A revised noise modelling assessment was submitted as part of their response to our Schedule 5 request for information.

NRW's assessment of the noise modelling submitted by the operator, based on the submitted source and mitigation information was in agreement with the operator's.

The operator's BS 4142 assessment of the noise impact from the proposed Mill 5 in isolation, indicates a significant adverse impact at sensitive receptors, however the assessment used background measurements taken whilst the existing works was offline. Therefore, the assessment is overly cautious and not representative of existing background. Using the consultant's 2017 background measurements, during which the plant was online, the BS 4142 assessment indicates an adverse impact at receptors in the Padeswood Drive area. The noise modelling indicates that the proposed worst case operational scenario (production and mills 1,2,3 and Mill 5 will give rise to noise predictions no more than 1dB higher than the existing worst case operational scenario (production and mills 1,2,3,4), at sensitive receptors.

There are difficulties in applying the BS 4142 assessment methodology to this specific situation. There are existing sources due to be removed as part of the proposal, which may be contributing to the background levels. A monitoring study once Mill 5 is operational would provide validation of the consultant's noise source assumptions and implementation of proposed mitigation measures. Improvement Condition 7 requires the operator to carry out this.

There are unlikely to be any vibration impacts at sensitive receptors, mill 5 is smaller than the raw mill already in operation and similar vibration controls will be implemented. Vibration from the raw mill is noticeable on start up in the works office approximately 50 metres from the mill. It is not evident at greater distances. Given that cement mill 5 is smaller and significantly further away from neighbouring properties than 50 metres, it is very unlikely that there will be vibration impact.

### **5.6 Impact on Habitats sites, SSSIs, non-statutory conservation sites etc**

Based on information provided in the application, it was considered that the Deeside and Buckley Newt Sites (UK0030132) had features that could be affected by the project through nutrient nitrogen deposition caused by NO<sub>x</sub> emissions as even though the contribution had screened out as insignificant, an assessment of potential incombination effects needed consideration. It was considered that particulates would not be a cause for concern given that the site is over 1.5 km from the facility.

The following Natura 2000 sites were also found within 10000 metres of the site air emission point:

- Alyn Valley Woods / Coedwigoedd Dyffryn Alun (UK0030078)
- Berwyn a Mynyddoedd De Clwyd / Berwyn and South Clwyd Mountains (UK0012926)
- Dee Estuary / Aber Dyfrdwy (Wales) (UK0030131)
- Halkyn Mountain / Mynydd Helygain (UK0030163)
- River Dee and Bala Lake / Afon Dyfrdwy a Llyn Tegid (England) (UK0030252)
- River Dee and Bala Lake / Afon Dyfrdwy a Llyn Tegid (Wales) (UK0030252)

Given that the only significant release is from particulate matter the potential for the project to affect these Natura 2000 sites was also initially considered, but was ruled out without further consideration because particulate matter emitted will not travel far enough to affect these sites. All other emissions screened out as insignificant using the H1 assessment tool.

#### Assessment of Likely Significant Effect:

The project has been screened for likelihood of significant effects and, taking account of the advice received from protected sites advisors, is considered not likely to have a significant effect on any Natura 2000 site alone, however an in combination assessment was required for the Deeside and Buckley Newt site, as documented in section 3.2 and 5 of OGN 200 form 1.

#### Appropriate assessment:

In light of the conclusions of an appropriate assessment, and taking account of the advice received from protected sites advisors, it has been established that the project will not adversely affect the integrity of any Natura 2000/Ramsar site, taking into account any conditions or restrictions as applicable, either alone or in-combination with other plans and projects as documented in section 5 of OGN 200 form 1.

#### HRA Overall conclusion:

In light of the conclusions of the appropriate assessment, it has been ascertained that the project will not adversely affect the integrity of any Natura 2000 site, as documented in section 6 of OGN 200 form 1.



### **SSSI Assessment**

An Appendix 4 form has not been completed for the Buckley Claypits and Commons SSSI, which is within 2 km of the site. This is because activities carried out at Padeswood Cement Works are not specified on the Operations Likely to damage list.

### **European Protected Species**

A screening assessment was requested for transient European Protected Species that could be affected by the proposals. It was concluded that the proposals could not impact upon European Protected Species.

## 6 Setting ELVs and other Permit conditions

### 6.1 Translating BAT into Permit conditions

Article 14(3) of IED states that BAT conclusions shall be the reference for permit conditions. Article 15(3) further requires that under normal operating conditions; emissions do not exceed the emission levels associated with the best available techniques as laid down in the decisions on BAT conclusions.

The emission limits described in the air dispersion modelling sets the worst case scenario. If this shows the emissions from the site are low and that they will not cause a breach of air quality objectives in the area then we are satisfied that the emissions from the site will not adversely impact the surrounding environment or the health of the local community.

The Mill will be fitted with a bag filter designed to meet the BAT AEL of 10 mg/Nm<sup>3</sup> as required by BAT conclusion 18. Fabric filters used at transfer points and other dedusting operations such as silos and loading heads will be specified to achieve 10 mg/Nm<sup>3</sup> or better emission performance as required by BAT conclusion 16.

The operator has set out how the new mill will meet BAT conclusion number 2 relating to noise. NRW were not originally satisfied that the measures imposed were adequately explained and therefore requested further clarification from the operator. Sufficient clarification was provided and therefore NRW are satisfied that the appropriate measures will be in place.

### 6.2 Monitoring

We have decided that monitoring should be carried out for the parameters listed in Schedule 3 using the methods and to the frequencies specified in those tables. These monitoring requirements have been imposed in order to demonstrate that the bag filters are working in accordance with assumptions.

For emissions to air, the methods for continuous and periodic monitoring are in accordance with the Environment Agency's Guidance M2 for monitoring of stack emissions to air.

Based on the information in the Application and the requirements set in the conditions of the permit we are satisfied that the monitoring techniques, personnel and equipment employed by the Operator will have either MCERTS certification or MCERTS accreditation as appropriate.

Particulate emissions from cement mill 5 will be monitored periodically. BAT allows either CEMS or periodic monitoring for particulate, the operator requested periodic. Continuous monitors will be used to monitor filter performance and initiate reactive maintenance. The continuous monitor will clearly show when filter performance is deteriorating as filter bags age or when there is a bag failure. Demonstration of compliance with the BAT AEL will be by annual extractive sampling in accordance with EN13284. The low levels of CO, NO<sub>x</sub> and SO<sub>2</sub> emissions in combination with the limited operating hours of the hot gas generator means that continuous monitoring of these emissions is unnecessary, however Improvement Condition 8 has been set to verify the operators assumptions.

We removed the requirement for 95% confidence intervals as specified in condition 3.5.5 to be applied to non kiln emission sources. This is because these sources are not subject to the requirements of Chapters III and IV of IED.

### **6.3 Reporting**

We have specified the reporting requirements in Schedule 4 of the Permit to ensure data is reported to enable timely review by Natural Resources Wales to ensure compliance with permit conditions and to monitor the efficiency of material use and waste recovery at the installation.

### **6.4 Updating permit conditions during consolidation**

We have updated previous permit conditions to those in the new generic permit template as part of permit consolidation. The new conditions have the same meaning as those in the previous permit.

The operator has agreed that the new conditions are acceptable.

## ANNEX 1: Improvement Conditions

We included two improvement conditions as part of this variation:

- **Improvement condition 7** requires noise monitoring to be carried out once Mill 5 is operational to validate the operators assumptions in the submitted noise modelling assessment.
- **Improvement Condition 8** requires the operator to provide a report to Natural Resources Wales detailing the results of spot sampling of CO, NOx and SO<sub>2</sub> emissions of the hot gas generator to verify that the emissions are as predicted.

## **ANNEX 2: Consultation Reponses**

### **A) Advertising and Consultation on the Application**

The Application has been advertised and consulted upon in accordance with Natural Resources Wales Public Participation Statement. The way in which this has been carried out along with the results of our consultation and how we have taken consultation responses into account in reaching our draft decision is summarised in this Annex. Copies of all consultation responses have been placed on Natural Resources Wales public register.

#### **1) Consultation Responses from Statutory and Non-Statutory Bodies**

We received a consultation responses from Betsi Cadwaladr University Health Board who advised that they had responded to a pre-application consultation from the Operator. They advised that there are no grounds for objection and advised that provided that Best Available Techniques and management controls are applied, then there is limited potential to public health.