Cyfoeth Naturiol Cymru
Natural Resources Wales

Natural Resources Wales permitting decisions

Bakelite Synthetics UK Limited (Barry Thermosets Plant) Decision Document

Contents

Normal variation

The variation number is: EPR/PP3238LX/V004

The applicant / operator is: Bakelite Synthetics UK Limited

The Installation is located at: Barry Thermosets Plant, Sully Moors Road, Sully, Penarth, Wales, CF64 5YU

We have decided to issue the variation for Barry Thermosets Plant operated by Bakelite Synthetics UK Limited. 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.

Key issues of the decision

Our decision includes but is not limited to the following:

- Air quality
- Noise
- Fugitive emissions
- Best available techniques

This will be discussed separately in this decision document.

1 Our decision

We have decided to issue the variation to the Applicant. This would allow the Operator 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.

2 Overview of variation

The variation adds two 1.2 MW thermal input emergency generators fuelled on gas oil to the permit. Each generator is classed a new limited operating hours Medium Combustion Plant because:

- They are each over 1 MW thermal input and each have their own stack to discharge emissions to air

- They are each operated for less than 500 hours per year
- They each are first put into operation after 20 December 2018

They are classed as an excluded Specified Generator as they are situated on an installation subject to Chapter II of Industrial Emissions Directive, they also meet the definition of 'emergency back-up generators' which is a separate exclusion.

The installation is a 'higher tier site' under the COMAH Regulations 1999 and therefore involves processes that have safety critical controls which could be impacted by a loss of electrical power supply. Previously a back-up power supply was provided by the adjacent Barry Centrica Power Station, however this has now been decommissioned therefore the site has decided to install its own independent back-up power supply in the form of the two generators. The emergency generators will be used in the event of a loss of site power to enable safe shut-down of the operation at the installation.

There will be routine testing of the two generators, there are two testing scenarios proposed:

1. 1x 30 minute test per month of a single generator (at 30% load), alternate generators tested each month equalling a total of 6 hours per year for the two generators
2. 1x 2 hour test per year of both generators at the same (each at 110% load).

The month when the annual test is carried out, the monthly test will not be carried out. Therefore, each generator will be tested for 5 hours per year.

Fuel storage is provided in the base of each generator container with integral bunding and has been sized to enable 30 hours of continuous operation if required, storage capacity is 3000 L per generator.

The generators are situated in the centre of the installation, therefore there is no change to the site boundary due to the variation. Each generator has its own emission point, therefore two emission points are added to the permit, A20 (generator 1) and A21 (generator 2).

The existing permit had existing combustion plant with an aggregated thermal input of 18.8 MW, however due to the closure of part of the chemical plant, the existing combustion plant have been derated to a aggregated thermal input of 9.72 MW. The total aggregated thermal input at the installation following the variation will be 12.2 MW, therefore below the 20 MW thermal input threshold for a Section 1.1 Part B activity and all combustion plant at the site will continue to be permitted as a directly associated activity. The permit has been updated to reflect the derating of the existing combustion plant.

We have taken the opportunity to consolidate the original permit and subsequent variations. The consolidation brings the permit into line with our modern regulatory template. 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(s). Other actions completed as part of the consolidation that are not related to the variation are:

- Update of site plan to ensure all emission points are displayed accurately including the outfall pipe to the estuary
- Emission point A1 has been amended as this in fact should be two emission points A1:B1 and A1:B2
- The removal of the following parameters from the water discharge as they are no longer in use nor present in the discharge: Ethylene dichloride, acrylonitrile and vinyl chloride. They are removed from Table S3.2 and Table S3.3
- Removal of reference to reactors R2, R4 and R5 in Table S3.1 as they are no longer in use
- Changes to the requirement for the monitoring of styrene in both the air emissions and water emissions. Monitoring of styrene is now only required when it is in use at the installation due to its inconsistent and variable use
- Addition of an existing emission point (A22) to the permit that is for venting of fumes from IBC and drum storage via local exhaust ventilation
- A whole new suite of reporting forms have been issued

3 The Legal Framework

The variation will be issued, under Regulation **20** 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 combustion plant is:

- part of an *installation* as described by the Industrial Emissions Directive (IED)
- plant as described by Schedule 25A covering the Medium Combustion Plant Directive (MCPD)
- 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 (SMNR) in relation to Wales, and applying the principles of SMNR. 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 Facility in accordance with the permit conditions. NRW is satisfied that this decision is compatible 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.

Environment Wales Act 2016 – Biodiversity and resilience of ecosystems duty

Section 6 of the Environment Wales Act 2016 requires that we seek to maintain and enhance biodiversity in the exercise of our functions, and in so doing promote the resilience of ecosystems, in a manner that is consistent with the proper exercise of our functions. NRW is satisfied that in this case we have taken into account and had due regard to this duty in so far as it is consistent with the function of determining an application for an EPR permit.

4 Environmental Risk Assessment

For this variation the principle emissions that have the potential to impact the environment are point source emissions to air, noise and fugitive emissions. These will be discussed separately below.

4.1 Air quality – human health

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

The Applicant has assessed the facility's potential emissions 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 Facility's stack emissions.

The air impact assessments, and the dispersion modelling has been based on the plant testing scenarios. There will be routine testing of the two generators, there are two testing scenarios proposed:

1. 1x 30 minute test per month of a single generator (at 30% load), alternate generators tested each month equalling a total of 6 hours per year for the two generators
2. 1x 2 hour test per year of both generators at the same (each at 110% load).

The month when the annual test is carried out, the monthly test will not be carried out. Therefore, each generator will be tested for 5 hours per year.

Short-term impact assessments have been based on the two generators operating at 110% load together (scenario 2) and assuming continuous operation throughout the year. We are in agreement this is the worst case scenario for the short-term assessments.

Long-term impact assessments have been based on 10 hours of operation per year per generator. Given each generator is expected to be tested for 5 hours per year, this is conservative and we are in agreement this is a worst case scenario for the long-term assessments.

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 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.

The site is not within an Air Quality Management Area nor within an area identified in the Clean Air Plan for Wales.

H1 tool assessment

The applicant completed a H1 risk assessment tool and for any parameters that did not screen out as insignificant, detailed air dispersion modelling was completed. The applicant has calculated process contributions (PC) and if relevant predicted environmental concentrations (PEC) at locations within the

immediate vicinity and all identified sensitive receptor locations (if modelling was completed for the parameter). The following parameters have been assessed: carbon monoxide, oxides of nitrogen and particulate matter. Due to the low sulphur content of the fuel (<5 ppm) assessment of sulphur dioxide is considered not required as emissions will be negligible. Each parameter will be discussed separately below. As shown in the table below, long-term emissions of NOx and particulate matter and all carbon monoxide emissions screened out as insignificant. Short-term emissions of NOx and particulate matter PM_{10} did not screen out using the H1 tool and detailed air dispersion modelling was completed for these parameters.

Parameter	Long-term critical level / µg/m^3	Short-term critical level / µg/m^3	Long-term			Short-term		
			PC / µg/m^3	% PC of critical level	Screened out in H1 tool?	PC / µg/m^3	% PC of critical level	Screened out in H1 tool?
Oxides of nitrogen	40	200	0.31	0.8 %	Yes as PC <1 % of critical level	2,752	1,376%	No as PC >10 % of critical level
Carbon monoxide	-	10,000 (8 hour running mean)	-	-	-	364	3.7 %	Yes as PC <10 % of critical level
Carbon monoxide	-	30,000 (1 hour mean)	-	-	-	520	1.7 %	Yes as PC <10 % of critical level
Particulate matter (PM_{10})	40	50	0.002	0.005%	Yes as PC <1 % of critical level	15.1	30.2 %	No as PC >10 % of critical level
Particulate matter ($PM_{2.5}$)	20	-	0.002	0.01%	Yes as PC <1 % of critical level	-	-	-

Short-term oxides of nitrogen (NOx)

The short-term impacts from NOx did not screen out via use of the H1 tool therefore detailed air dispersion modelling was completed, which calculated the PC and PEC at sensitive receptor locations. At sensitive receptor locations the maximum predicted short-term PC was 26 % of the short-term critical level and the short-term PEC was 40.7 % of the short-term critical level. Therefore the short-term

impacts are considered not significant and are unlikely to lead to an exceedance of the short-term critical level.

Short-term particulate matter PM_{10}

The short-term impacts from PM_{10} did not screen out via use of the H1 tool therefore detailed air dispersion modelling was completed, which calculated the PC and PEC at sensitive receptor locations. At sensitive receptor locations the maximum predicted short-term PC was 0.1 % of the short-term critical level. Therefore the short-term impacts are considered insignificant and are unlikely to lead to an exceedance of the short-term critical level.

4.2 Air quality – habitat sites

National site network sites[1]

This installation is not considered 'relevant' for assessment under NRW's procedures which cover the Conservation of Habitats and Species Regulations 2017 (Habitats Regulations). This was determined by referring to NRW guidance 'AQTAG14: Guidance on identifying 'relevance' for assessment under the Habitats Regulations for installations with combustion processes'. There are no National Site Network Sites located within the relevant screening distance (1 km) as per AQTAG14. Habitats Regulations Assessment (HRA) is not required because there is no conceivable impact pathway to any Natura 2000/Ramsar site.

Sites of special scientific interest (SSSI)

The following Sites of Special Scientific Interest (SSSI) are located within the relevant screening distance (1 km) of the installation as determined by 'AQTAG14: Guidance on identifying 'relevance' for assessment under the Habitats Regulations for installations with combustion processes':

- SSSI Hayes Point to Bendrick Rock

An Appendix 4 Form was completed to assess the potential to effect the SSSI site, this is available to view on the public register. The assessment concluded the facility is not likely to damage any of the features of the SSSI site.

Non-statutory conservation sites

There are no non-statutory conservation sites located within he relevant screening distance (100 m) of the installations as determined by 'AQTAG14: Guidance on identifying 'relevance' for assessment under the Habitats Regulations for installations with combustion processes'. Therefore no further assessment is required.

4.3 Noise

[1] National Site Network means the networks of sites in the United Kingdom's territory consisting of such sites as – (a) immediately before exit day formed part of Natura 2000; or (b) at any time on or after exit day are European sites, European marine sites and European offshore marine sites for the purposes of any of the retained transposing regulations.

The generators have the potential to cause noise pollution, however the generators have a close-fitting acoustic enclosure and are situated in the centre of the large installation, approximately 250 m from the closest residential receptor. The current mitigation measures are deemed appropriate and we consider there is limited potential for noise pollution to be caused outside of the site and no further specific measures are considered required.

4.4 Fugitive emissions

The Applicant has completed a risk assessment of fugitive emissions. The primary sources of fugitive emissions are volatile organic compounds (VOC) vapours and leakage of diesel and other hazardous chemicals associated with the running of the generators. Emissions of VOCs are unlikely to cause pollution at sensitive receptors due to the location of the generators in the centre of the large installation, in addition to the appropriate storage and management of raw materials and fuel. Appropriate storage of diesel fuel to reduce likelihood and impact of leaks has been provided in the form of secondary containment and high and low level tank alarm systems, segregated drainage systems, interceptors and isolation points, in addition to regular maintenance and inspection of these systems.

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 The site and it's management

5.1 The site

The operator has provided a plan which we consider is satisfactory, showing the extent of the site of the facility including all emission points. There is no change to the installation boundary as part of this variation. Two new emission points are added to the site plan from each generator. A plan is included in the varied permit and the operator is required to carry on the permitted activities within the site boundary.

5.2 Environment Management System

The Operator has a management system that is certified to ISO14001:2015 standard. There is no known reason to consider that the operator will not have the management systems to enable it to comply with the permit conditions. The decision was taken in accordance with RGN 5 on Operator Competence.

5.3 Operating techniques and BAT

We have reviewed the techniques used by the operator and compared these with the relevant guidance notes. The relevant guidance notes for this plant are:

- Technical Guidance Note (TGN) M5: Monitoring of stack emissions from medium combustion plants and specified generators
- Medium combustion plant and specified generator permits: how to comply - GOV.UK (www.gov.uk)

- Monitoring stack emissions: low risk MCPs and specified generators - GOV.UK (www.gov.uk)

As a new Medium Combustion Plant, the site must adhere to the following operating techniques specific for MCP which have been set in the permit in Table S1.2A:

- Each MCP must be operated in accordance with the manufacturer's instruction and records must be made and retained to demonstrate this.
- The operator must keep periods of start-up and shut down of each MCP as short as possible.
- There must be no persistent emission of 'dark smoke' as defined in Section 3(1) of the Clean Air Act 1993.

The proposed techniques are in line with the benchmark levels contained in the TGN and we consider them to represent appropriate techniques for the facility. The plant are not subject to emission limit values contained within the MCPD as they are operated less than 500 hours per year.

The Applicant has justified the use of these plant are BAT due to:

- The reliability and ability for plant to come on-line quickly is required to ensure the continuity of supply to the safety critical controls
- The generators are sized appropriately for power demands
- Use of two generators gives flexibility for loading and is more efficient when running at lower power load
- The generators are fuelled on bio-diesel
- Short-term and long-term impacts of air emissions for the testing scenarios have been considered insignificant
- The expected frequency of an emergency operation is very low, there has not been a situation in the previous twenty years that would require emergency operation of the generators

5.4 Emission limits, monitoring and reporting

Emission limits

The generators are exempt from the MCPD emission limits values (ELVs) as per Article 6(8) of MCPD as they are operated for less than 500 hours per year. Therefore, no emission limits have been set in the permit.

Monitoring

Although not subject to any of the MCPD ELVs, monitoring of carbon monoxide is required as per Annex III of MCPD. Therefore, monitoring of carbon monoxide has been set in the permit with a frequency of once every 1500 hours and no less than once every 5 years. Due to the operating profile and to avoid operation of the units solely for emissions monitoring we have set the monitoring method in line with Monitoring stack emissions: low risk MCPs and specified generators - GOV.UK (www.gov.uk). This decision was taken in accordance with Technical Guidance Note (TGN) M5 and Monitoring stack emissions: low risk MCPs and specified generators - GOV.UK (www.gov.uk).

Reporting

We have specified reporting in the permit of the monitoring results in line with the MCPD. Reporting is required once every 1500 hours and no less than once every 5 years.

5.5 OPRA

The OPRA score at permit issue is **242**. There is no change to the OPRA score due to the variation.