

Natural Resources Wales permitting decisions

Normal Variation and Consolidation – Liberty Steel Newport

We have decided to issue the variation for Liberty Steel Newport operated by Liberty Steel Newport Limited

The permit number is EPR/EP3830GH.

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

- Key issues of the decision for the normal variation

Key issues of the decision for the normal variation

The operator currently holds an environmental permit for an engineered steel works in Newport Dock, the site is also permitted for waste storage activities. The operator has applied to install nine biofuel electricity generators to provide a stand-by power source for the installation in the event of a power cut, the generators will also be used to provide electricity to the National Grid during times of peak demand. The generators will be located in the South-Eastern corner of the installation on existing concrete hardstanding. The plant will take up approximately 0.41ha within the existing site boundary.

The operator has proposed to install nine 4.59 MWth power generators, each of these units are capable of generating 1.65 MWe of electrical energy, it is planned that the units will run for up to 500 hours per year. The units will also have associated switch gear installed, a sub-station and three 50m³ fuel storage vessels. The generators and all associated equipment will be installed on a concrete hardstanding laid in accordance with BS8500. The fuel storage vessels are double skinned and will be situated within a concrete bund served by sealed drainage.

At present there is no final position on Best Available Techniques (BAT) for capacity mechanism combustion installations where:

- The aggregated rated thermal input makes the installation an activity listed in Section 1.1A(1)(a) of Part 2 Schedule 1 of the Environmental Permitting Regulations (England and Wales) 2016 (EPR 2016), but not a large combustion plant (LCP) as defined in Chapter III of the Industrial Emissions Directive (IED); and
- The total annual operating hours is significantly less than is typically the case with baseload power stations which operate on more or less a continuous basis; and
- The type and mode of operation of the combustion plant has the potential to result in increased releases of emissions over a short-term period.

We have therefore considered the information regarding BAT provided in the application against the legislation and guidance that is most relevant to this installation.

The Department of Business Energy and Industrial Strategy (DBEIS) and the appropriate regulators in the United Kingdom (including Natural Resources Wales) have been working together to set out the regulatory position for capacity mechanism combustion installations and to develop policy on BAT for the sector. We have taken this information into account when making our decision. We will also review the permit for this installation, and any other similar installations, as and when any new policy is developed and/or guidance is published.

There are a number of environmental aspects that are explored in greater detail further in this document. The main environmental impact is emissions to air. Emissions from the units are unlikely to exceed 400mg/Nm³ of NO_x. The operator has however taken a very conservative approach with the assessment and has used a worst-case critical load for the habitats screen, the assessment also captures significant contributions from background loads.

The generators will be stored within soundproof containers which attenuate noise levels to a maximum of 75dBA at 7m, noise levels at the nearest residential receptors will be half this value again.

Environmental Risk

Emissions to air

There are 9 emission points associated with this variation. One for each of the units. Due to the infrequent operation of the units, on-going monitoring is not required, emissions will be controlled by regular on-going maintenance of the units.

The applicant has assessed the impact of emissions of NO₂ and Carbon Monoxide to ecological and human receptors with the vicinity of the installation against relevant critical levels and loads. Where necessary, the applicant has considered the impact of the emissions that will arise from the installation in conjunction with the ambient background levels.

The applicant has obtained background air quality data for NO₂ and particulate matter from Defra's 2013 based background concentration maps. NO₂ diffusion tube concentration data from locations within the Air Quality Management Areas were also selected to be used for the background NO₂ concentrations for a number of human receptors. The background annual mean concentration for carbon monoxide was taken from Defra's 2001 based 1 x 1 km projected background maps. Where Defra data was used in the assessment, short-term background concentrations were calculated by multiplying the selected annual mean background concentration by a factor of 2, as detailed in the Environment Agency's Air Risk Assessment Guidance.

Human receptors

The applicant considered the impact of emissions from the installation on human receptors within relevant screening distances of the installation. There were 29 receptors that were assessed for impact. The emissions from the installation under foreseen operations, would result in process contributions at all receptors for nitrogen dioxide, carbon monoxide and particulate matter (PM₁₀ and PM_{2.5}) that can be screened as insignificant. Process contributions are less than 1% of the relevant environmental standard for annual averages impacts and less than 10% of the relevant environmental standard for short term impacts at all sensitive human receptors. The air quality management area receptors have background annual mean nitrogen dioxide concentrations above the objective. With the generators running there is less than a 1% increase.

Therefore there is unlikely to be a significant effect to sensitive human receptors from any emission of nitrogen dioxide, particulates or carbon monoxide from the installation.

Habitats within the relevant screening

The applicant considered the impact of emissions from the installation on habitats within relevant screening distances of the installation. The following European Habitat Sites (i.e. Special Areas of Conservation (SAC), Special Protection Areas (SPA) and Ramsar) are located within 10km of the installation;

- River Severn SAC, SPA, Ramsar
- River Usk SAC

The following SSSI's were located within 2km of the installation;

- River Severn SSSI
- River Usk SSSI
- Newport Gwent Levels SSSI
- Newport Wetlands SSSI
- 2 non-statutory sites - 2 Local Nature Reserves (LNRs).

Impacts on European Sites

The applicant has assessed the impacts of emissions of NO₂ on these habitats against the long-term critical level given in the ambient air directive and the short-term critical level defined by the World Health Organisation. The relevant critical loads for nutrient nitrogen and acid deposition for these sites were obtained from the APIS website. There are no environmental assessment levels for the protection of vegetation specified for carbon monoxide.

River Severn SAC

24-hour NO_x PC – 11.5% → PEC – 50%

Annual NO_x PC – 0.2%

Nutrient Nitrogen – PC <0.1%

Acid Deposition – Habitat not sensitive to acid deposition

The plant is only proposed to operate for 500 hours per year. The PC is above 10% for the 24-hour NO_x however the PEC is below 70%, therefore this screens as insignificant. These figures are based on the lower critical level for NO_x of 75µg/m³.

The PC's are below 1% for annual NO_x and nutrient nitrogen deposition so therefore screen out as insignificant.

The terrestrial features of the Severn Estuary are not sensitive to acid deposition because they are mainly marine or estuarine. The isopleth of the emissions indicate that the areas of the Severn are going to be estuarine/marine for the terrestrial habitats and for the fish to be highly salt water influenced. Due to these points we can conclude that there is likely to be no significant impact.

River Usk SAC

24-hour NO_x PC – 74.5% → PEC – 114% (based on lower critical level for NO_x of 75µg/m³)

24-hour NO_x PC – 28% → PEC – 42% (based on higher critical level for NO_x of 200µg/m³)

Annual NO_x PC – 1.8% → PEC – 67%

Nutrient Nitrogen – No critical loads to assess against for this habitat

Acid Deposition PC – 1.4% → PEC – 164%

The plant is only proposed to operate for 500 hours per year. The PC is above 10% for the 24-hour NO_x and the PEC above 70%. This is based on the lower critical level of 75µg/m³. In consultation with Khalid Aazem the use of the higher critical load was explored.

Based on information published by the WHO; experimental evidence exists that the CLE (critical level) decreases from around 200µg/m³ to 75µg/m³ when in combination with ozone (O₃) or sulphur dioxide (SO₂) at or above their critical levels. In the knowledge that short-term episodes of elevated NO_x concentrations are generally combined with elevated concentrations of O₃ or SO₂, 75µg/m³ is proposed for the 24 hour mean. To determine the applicability of the 75µg/m³ critical level we have assessed whether levels of ozone and sulphur dioxide in the area around the installation are elevated. Data was obtained from the APIS website for annual average background for sulphur dioxide and ozone and interpolated it to represent the background concentrations at the location of the River Usk. APIS gave an annual average concentration for sulphur dioxide of 1.79µg/m³. This figure is significantly lower than the European Union limit value of 20µg/m³. The ozone figure was 1277.72 hours which is significantly below the threshold limit of 5000 hours. In light of the above, we considered that the application of the daily average critical level of 75µg/m³ in this instance is overly conservative and it is more appropriate to apply the daily average critical level of 200µg/m³. When this value is used the PC is still above the 10% level but the PEC is below 70% and therefore screens out as insignificant.

Annual NO_x is above the 1% screening threshold using the lower critical level for NO_x of 75µg/m³, however the PEC is below 70% and therefore screens out. There are no critical loads for this habitat to assess nutrient nitrogen deposition against. Acid deposition is slightly above the 1% threshold, this has been investigated in detail using the APIS website. Taking the background into account and the very low Process Contribution of 0.01Keq/ha/year, the deposition is between the minimum and maximum Critical Load, and therefore within the acceptable envelope.

The fish features are sensitive to acid deposition in the River Usk but only above the stretch of river that has the salt water influence (i.e. only in the freshwater parts of the Usk).

The isopleth of the emissions indicate that the areas of the Severn & Usk are going to be estuarine/marine for the terrestrial habitats and for the fish to be highly salt water influenced. Due to these points the proposal is not likely to damage the special interest features of the SSSI.

Impacts on National Sites

The applicant has assessed the impacts of emissions of NO₂ on these habitats against the long-term critical level given in the ambient air directive and the short-term critical level defined by the World Health Organisation. The relevant critical loads for nutrient nitrogen and acid deposition for these sites were obtained from the APIS website. There are no environmental assessment levels for the protection of vegetation specified for carbon monoxide.

River Severn SSSI – Same as the European Site above

River Usk SSSI – Same as the European Site above

Newport Wetlands SSSI

24-hour NO_x PC – 21.4% → PEC – 60%

Annual NO_x PC – 0.5%

Nutrient Nitrogen – No critical loads to assess against for this habitat

Acid Deposition PC – <0.1%

The PC is above 10% for the 24-hour NO_x however the PEC is below 70% and therefore screens out as insignificant.

The PC for annual NO_x is below 1% and therefore screens out as insignificant. There is no critical loads associated with this habitat to assess for nutrient nitrogen deposition. The PC for acid deposition is below 1% and therefore screens out as insignificant. The plant is only proposed to operate for 500 hours per year and operate for only 3 hours per day. Due to these points the proposal is not likely to damage the special interest features of the SSSI.

Gwent Levels SSSI

24-hour NO_x PC – 10% PEC – 49%

Annual NO_x PC – 1%

Nutrient Nitrogen – Habitat not sensitive to Nutrient Nitrogen deposition

Acid Deposition – Habitat not sensitive to Acid Deposition

The PC's are all below the relevant screening thresholds, 10% for short term NO_x and below 1% for long term NO_x and therefore screen out as insignificant.

The PC for annual NO_x is below 1% and therefore screens out as insignificant. This habitat is not sensitive to nutrient nitrogen or acid deposition.

Due to these points the proposal is not likely to damage the special interest features of the SSSI.

Based on the results of the modelling the emissions to air from the proposal is not likely to damage any of the special interest features of the 4 SSSIs mentioned above.

Impacts on non-statutory Sites

The applicant has assessed the impacts of emissions of NO₂ on these habitats against the long-term critical level given in the ambient air directive and the short-term critical level defined by the World Health Organisation. The relevant critical loads for nutrient nitrogen and acid deposition for these sites were obtained from the APIS website.

There are no environmental assessment levels for the protection of vegetation specified for carbon monoxide. All process contributions are below 100% and therefore can be screened as insignificant for both of the local nature reserves.

Fugitive Releases

Fugitive release will be minimal from the plant, the main route for fugitive release is from losses to air when re-filling the fuel tanks. This is thought to be negligible due to the low volatility of the biofuel. The fugitive losses to water and land are also negligible due to the units being within containers, all equipment is to be situated on concrete hardstanding, fuel tanks are bunded and all drainage within the vicinity is linked to the sites main drainage network that incorporates interceptors and filters.

Emissions to surface water and sewer

There will be no additional emissions to surface water or sewer arising from this variation. Any surface water run-off will be directed into the sites existing surface water drainage system. Drainage in the area surrounding the plant is to be fitted with Filtrelec Eco-design storm water filters; these are high efficiency, oleophilic hydrophobic polymer filters, designed to capture hydrocarbons to a discharge concentration of 5ppm in flows up to 40l/sec. The filters are also designed to seal in the event of a loss of containment resulting in high levels of hydrocarbons within the system. The 3 fuel storage vessels are to be located on a 12m x 12m concrete hardstanding with a 0.4m high bund wall, giving effective containment for 55m³ of liquid. The tanks themselves are 50m³ HDPE integrally bunded tanks. Drainage around the bund and fuel delivery & transfer point is directed to the main installations drainage system which is served by interceptor and a containment lagoon, thus providing tertiary containment for any spills or leaks.

Emissions to land

There will be no emissions to land. The new generators are containerised and located on a concrete hardstanding, the biofuel storage and delivery area are on a concrete hardstanding and within a bund. The delivery area is on a concrete hardstanding and the area is served by the site's existing drainage system and interceptors, therefore there is a very low risk of contamination to ground.

Management Systems

The site currently operates under an appropriate management system and applies to all current activities on-site. The management system will be reviewed and amended to include the new power generation plant on-site.

Accident Management

There is an existing accident management plan in place for the installation. In addition to this the operator has proposed to create a specific management plan for the peaking plant and biofuel storage operations. This aims to prevent and manage any potential accidents from the proposed operations.

Odour

There is no impact from the proposed plant as the operations does not introduce any odorous materials. The biofuel is produced to EN 15940 standard so has a low odour potential. The fuel will be stored within purposely built, bunded tanks and is then fed into the generators via sealed pipework. In addition to this, there are no sensitive receptors to close to the installation (nearest is 600m away). However if there are signs of odour from the proposed operations, an odour management plan will be prepared by the operator and submitted to Natural Resources Wales for approval.

Raw Materials & Waste Management

The only new raw material to be brought on to the installation is the biofuel. Due to the limited time the plant will be operation, the operator has estimated that the installation will use up to 1,750 tonnes of biofuel per year, with up to 150m³ stored on-site at any one time.

The biofuel used at the installation will be a fuel produced through the hydro treatment of vegetable oils and/or animal fats and further blended with small quantities of diesel to a specification compliant with BS EN 15940. Due to the presence of diesel in the fuel, this has been taken into account in the design of the bunding and hardstanding. There will not be any significant increase in waste from this activity, small additional quantities of waste may arise from maintenance of the plant.

Noise and Vibration

The main concern in relation to noise is due to the increased number of vehicles travelling to and from the site to deliver the fuel. However due to the limited operational time of the units, it is not expected that the number of additional vehicle movements will significantly increase the overall noise from the site. Noise from the actual plant is not expected to be an issue, all of the generators will also be housed in sound insulating containers that reduce the noise levels to between 65dBA and 75dBA at 7m. Off-site impacts from noise is therefore not expected to be significant.

Energy Use and Efficiency

The individual units are anticipated to operate at approximately 36% efficiency producing 1.65MWe from a total input of 4.59MWth. Over the 500 hours operational time this equates to a consumption level of 20,000MWth through the consumption of the 1,750 tonnes of biofuel.

The units that have been selected are considered to represent energy efficient units for the proposed duties of operating as a 'peaking plant'. As the biofuel is derived from fats and oils it is from a sustainable source, using this biofuel and generating energy this way will produce between 50-90% less Carbon Dioxide than using fossil fuels. Due to the low operational hours (500 per annum), the plant is exempt from the Energy Efficiency Directive.

Site Condition Report

The proposed power generation plant will be situated on existing concrete hardstanding within the currently permitted site boundary. The drainage that is associated with this area will be connected into the existing site drainage system which is served by interceptors. The current site condition report already incorporates the assessment for the potential of oil contamination and contains mitigation measures to minimise this. Therefore there is no proposed update to the current site condition report, however the operator will update the site management plans to include this new plant.

Flood Risk

As the installation is located within an area at risk of flooding, the area is categorised as 'high risk'. The operator has mitigated this risk by stating that the proposed plant equipment will comprise fully contained generators and bunded fuel storage. The containers are to be bolted to the concrete hardstanding and the bunding will protect the fuel tanks from the effects of any potential flooding. Therefore the risk of any flood water becoming contaminated with bio-fuel is low. As the site is fully operational as a steel works there is an existing flood management plan in place, as the peaking plant will sit within the existing site boundary, the existing flood management plan will extend to the new equipment and any amendments will not be necessary.

Global Warming Potential

The operator has proposed to use bio-fuel for the generators. This fuel generates between 50-90% less carbon dioxide than conventional diesel fuel, the manufacturer quotes a figure of 65% less carbon dioxide production. The operator has used the Environment Agency's H2 guidance on energy efficiency to assess the impact. The biofuel generates around 1,750 tonnes per year of carbon dioxide whereas a conventional diesel generator would produce around 5000 tonnes, therefore there is 3,250 tonnes less carbon dioxide produced. Therefore there is a significant reduction by using bio-fuel.