

Portbury Dock Renewable Energy Plant

Cumulative Impact Assessment

Non-Technical Summary

September 2009

INTRODUCTION

On 28th August 2009 E.ON Climate & Renewables UK Developments Limited (EC&R) submitted an application to the Secretary of State for the Department of Energy and Climate Change (DECC) under Section 36 of the Electricity Act 1989 for consent to construct and operate a 150 Megawatt electrical (MWe) biomass-fired renewable energy plant at the Royal Portbury Dock, within the Port of Bristol, North Somerset, hereafter referred to as the Portbury Dock Renewable Energy Plant.

The proposed renewable energy plant will:

- result in the saving of over 400,000 tonnes of carbon dioxide emissions by burning sustainably sourced biomass in replacement of fossil fuel
- burn a mixture of forestry products and recycled waste-wood.
- produce enough electricity to meet the needs of 200,000 homes
- be capable of supplying renewable heat to local businesses and district heating schemes.
- create 35 full time-jobs during its 25 year operational life and up to 300 temporary jobs during its 40 month construction period.

An Environmental Impact Assessment (EIA) of the proposed development was undertaken, in line with the Electricity Works (Environmental Impact Assessment) (England and Wales) 2000 Regulations, to determine the likely effects of the proposed plant on the environment, the results of which were documented in an Environmental Statement and accompanying Non-Technical Summary. These documents were submitted with the application to DECC and a number of other Statutory and Non-Statutory Consultees to the consenting process.

It has become apparent during consultation that there are a number of other similar developments proposed in the South West and E.ON Climate and Renewables has been asked by DECC to consider the likely cumulative environmental effects of its development and other similar local energy plant developments which have recently been granted development consent or recently made planning applications, either to DECC or to the relevant local planning authority.

The atmospheric dispersion modelling of the air emissions from the proposed Portbury Dock Renewable Energy Plant, carried out as part of the EIA process and reported in the Environmental Statement, shows that at a distance of more than 3km from the plant the contribution to ground level concentrations of all air emissions can be classed as insignificant against the Environment Agency's criteria of insignificance. Hence a 3km radius was applied when searching for local plants to be considered in the cumulative environmental impact assessment.

An internet search, combined with a search of the planning registers at North Somerset and Bristol City Councils, revealed two other similar developments nearby (that lie within 3km of the proposed Portbury Dock Plant), as identified below:

1. Avonmouth Resource Park, a 12.5MWe Energy from Waste plant (hereafter referred to as the Avonmouth Resource Park Plant) which has already been granted planning permission under the Town and Country Planning Act 1990 by Bristol City Council

2. Helius Energy, a 100MWe Biomass Fired Renewable Energy Plant, Avonmouth, Bristol (hereafter referred to as the Helius Energy Plant) which is currently the subject of a Section 36 application to DECC

The locations of the three development sites are shown in Figure 1.

A cumulative environmental impact assessment has been undertaken to assess the likely environmental effects should the proposed Portbury Dock Renewable Energy Plant, Avonmouth Resource Park and Helius Energy Plant all be constructed and operated.

The results have been reported in a Cumulative Impact Assessment Document, which has been sent to DECC and a number of other Statutory and Non Statutory Consultees, for consideration during the Section 36 consenting process for the Portbury Dock Renewable Energy Plant.

The Portbury Dock Renewable Energy Plant Environmental Statement, submitted with the Section 36 application in August covered twelve study areas, which were also covered during the cumulative environmental impact assessment. The cumulative assessment was made based on information contained within the Environmental Statements submitted with the planning applications for each of the developments considered.

SUMMARY OF CUMULATIVE IMPACTS

A summary of the findings of the cumulative environmental impact assessment is described below by study area.

Air Quality

The air emissions from the proposed Portbury Dock Renewable Energy Plant will be carefully controlled in line with the requirements of the relevant European Directives and UK Regulations. Compliance will be continuously monitored during operation by both E.ON Climate and Renewables and the Environment Agency. There will be no significant negative impact on human health or the local environment as a result of the operation of the Portbury Dock Renewable Energy Plant.

An atmospheric dispersion model (ADMS) was used to assess the likely impacts of air emissions from the Proposed Portbury Dock Renewable Energy Plant, Avonmouth Resource Park and Helius Energy Plant in combination and the results have been compared against National Air Quality Objectives and the relevant health based and ecosystems standards.

The emissions from the plants will be:

- Nitrogen oxides (NO_x)
- Sulphur dioxide (SO₂)
- Small dust/soot particles (PM₁₀ and PM_{2.5})
- Carbon monoxide (CO)
- Hydrogen chloride (HCl)
- Dioxins and Furans.

The maximum permissible limits from the operational plant for each of the emissions listed are presented in relevant European Directives.

The air quality modelling software used in the assessment was input with data representing existing/current air quality, meteorological data, the locations of the emissions points for the three plants and the emission limit values.

The model results showed:

In terms of Impacts on Human Health:

The concentrations of the substances released from the three plants comply with relevant air quality standards, both alone and taking into account existing background concentrations resulting from other sources, except for annual mean Predicted Environmental Concentrations of nitrogen dioxide.

However, the modelling was based on a number of conservative assumptions, which has resulted in a large over-estimate of actual expected impacts due to the precautionary methodologies used in the assessment and on this basis, emissions to air from the three proposed energy plants are not expected to have a significant adverse effect on human health.

In terms of impacts on vegetation:

Assessments for air concentrations, nutrient nitrogen deposition and acid deposition have been performed for all ecologically sensitive sites within 15km of the proposed Portbury Dock Renewable Energy Plant in combination with impacts arising from the proposed Helius Energy Plant and consented Avonmouth Resource Park. The precautionary nature of the assessment process and the low levels of impact confirm that neither air concentrations nor deposition arising as a result of plant emissions will be at levels likely to lead to significant adverse effects at the local Natura 2000 sites or likely to damage the special interest features at the local SSSIs.

Water Quality

Cooling water for the proposed Portbury Dock Renewable Energy Plant will be taken from the Royal Portbury Dock. The discharge or purge water will be returned to the Dock, slightly higher in temperature and with a slightly higher concentration of natural salts and potentially some residual biocide, which will quickly degrade in the environment. There will be no resulting disruption to port operations or any significant adverse impacts on the Severn Estuary or its wildlife.

The Avonmouth Resource Park development will use air cooled condensers to provide process cooling and hence was not considered further.

The cooling system for the proposed Helius Energy Plant is not yet decided and could be any one of the three listed below:

- air cooled condenser,
- water cooling towers,
- hybrid air/ water cooling towers.

However, because the cooling water intake and outfall for the Portbury Dock Renewable Energy Plant are confined to the Royal Portbury Dock and the Helius Energy Plant is situated over 2 km away at the Avonmouth Dock, there is not expected to be any combined impact on water quality in the Severn Estuary resulting from the simultaneous operation of the plants.

By-Products and Solid Waste

There will be some waste generated, primarily ash, as a result of plant operation. The waste will be dealt with in line with relevant legislation and approved codes of practice. Where possible re-use and recycling will be applied in preference to disposal of waste. As the three plants propose to generate electricity by burning some fuel classified as waste which would otherwise go to landfill, the combined effect is a positive one, resulting in the diversion of up to approximately 401,900 tonnes of waste from landfill each year.

Flood Risk

The site is not at unacceptable risk of flooding and will not lead to increased risk of flooding elsewhere. The proposed plant is suitable for development in the chosen location. There is no evidence to indicate that the development of the Portbury Dock Renewable Energy Plant, in addition to the other two plants would result in any cumulative impact on flood risk at the sites or in the surrounding area.

Ecology

Both the Portbury Dock Renewable Energy Plant and Helius Energy Plant development sites are predominantly composed of hardstanding and with no valued habitats within or immediately adjacent to the proposed development site, so no significant impacts are anticipated as a result of habitat loss. The Avonmouth Resource Park will be accommodated in a previously approved industrial building so no significant impacts are anticipated as a result of habitat loss. Therefore it has been concluded that there will be no significant impacts arising from habitat loss as a result of the construction and operation of the three plants combined.

Good construction site management will be implemented to avoid/minimise generation of excessive litter, dust, noise and vibration, in the case of all developments. As a result and due to the Helius Energy Plant and Avonmouth Resource Park developments being situated over 2km from the Proposed Portbury Dock Renewable Energy Plant it is not expected there will be any significant combined impact on ecology from these types of impact during the construction phases.

An air quality modelling assessment revealed there will be no resulting significant negative impacts on local ecologically sensitive sites as a result of air emissions from the operating plants.

Landscape and Visual effects

The proposed plants will be constructed in or close to the existing industrial context of the Bristol Docks. There will be a change in some local views with some clear lines of sight of the proposed plants. There will not be a significant adverse impact on landscape character.

Traffic and Transportation

The majority of biomass fuel for both the Portbury Dock Renewable Energy Plant and the Helius Energy Plant will be delivered to the sites by ship. There will be some road based traffic generated as a result of the construction and operation of the proposed plants. Traffic management plans will be created and vehicle movements timed sensitively to minimise impacts. There will not be a significant percentage increase in road based traffic compared with existing conditions.

The three operational plants are sufficiently far apart on different road networks to have no adverse cumulative effects on traffic.

Noise

The majority of parts of the proposed plants will be enclosed within buildings and this will reduce noise created and impacts on local residents.

The predicted noise generated by the Portbury Dock Renewable Energy Plant (based on other similar plants operated by E.ON Climate and Renewables) was modelled in addition to existing noise climate and compared against relevant British Standards, with the conclusion being that the proposed plant would be extremely unlikely to give rise to complaint or cause noise which will lead to disturbance to local residents during normal operation.

Noise from the Avonmouth Resource Park will be reduced to levels that mean its effect on ambient noise climate in Avonmouth community would be insignificant and so has been excluded from the assessment.

For operational noise the Portbury Dock Renewable Energy Plant and Helius Energy Plant will each contribute to the noise climate in the Avonmouth community. Taken individually the Portbury Dock Renewable Energy Plant's impact on the night time noise climate is 'none' whilst the Helius Energy Plant impact is 'slight'. When taken together, the industrial noise from the plants would give an overall specific noise level that would still have a 'slight' impact.

Socio-Economic Effects

Together the three plants will result in the creation of nearly 600 short term / temporary roles (during the construction phases of the three projects) and 138 full time long term roles which will have a positive impact on employment levels locally and regionally. 300 of the short term roles will be attributable to the Portbury Dock Renewable Energy Plant and 35 of the full time long term roles.

Cultural Heritage

There will be no impact on any heritage sites, including listed buildings and designated archaeological remains as a result of the proposed Portbury Dock Renewable Energy development. The Avonmouth Resource Park and Helius Energy developments are both outside the 2km buffer zone from the Portbury Dock Renewable Energy which was considered appropriate for assessing the effects on the built heritage and historic landscape resource so there will be no cumulative effect.

Contaminated Land, Geology, Hydrogeology and Drainage

The proposed Portbury Dock Renewable Energy Plant site is separated from the Helius Energy Plant and Avonmouth Resource Park sites by the Avon Swash and Severn Estuary. The Portbury Dock site is not adjacent to or connected directly with the other two sites with no common pathway for drainage or contamination existing between the sites therefore the development/remediation of the Portbury Dock site would not have a direct impact (adverse or positive) on the other sites and vice versa.

