



# Portbury Dock Renewable Energy Plant

Scoping Statement, August 2008



Climate &  
Renewables



**PROPOSED RENEWABLE ENERGY PLANT  
AT ROYAL PORTBURY DOCK, BRISTOL**

**ENVIRONMENTAL IMPACT ASSESSMENT  
SCOPING STATEMENT**

**August 2008**



## PREFACE

The UK faces the combined challenges of maintaining security of energy supplies and reducing greenhouse gas emissions to address climate change. E.ON believes a broad range of technologies need to be deployed to address these challenges and is proposing to construct and operate a dedicated biomass-fired Renewable Energy Plant at the Royal Portbury Dock in the Port of Bristol. The proposed Renewable Energy Plant is to be located within the Port owned and operated by the Bristol Port Company and will generate around 150 Mega Watts (MW) of renewable electricity. The Renewable Energy Plant is well sited and it is intended to be able to provide heat to the neighbouring industrial establishments. The proposed development will contribute towards the planning and regeneration objectives of the South West Regional Assembly's Regional Spatial Strategy 2006-2026.

In early 2009 E.ON intends to submit an application to the Secretary of State for Business, Enterprise and Regulatory Reform for Consent (under Section 36 of the Electricity Act 1989) for the proposed development. This Environmental Impact Assessment Scoping Statement has been prepared to initiate this process and describes the key issues which will form the basis of the Environmental Impact Assessment (EIA) and be addressed in the Environmental Statement (ES). A Non Technical Summary (NTS) will also accompany the application.

In addition to this statutory consultation E.ON intends to consult widely with the local community and other stakeholders on the proposed development.

The proposed Portbury Dock Renewable Energy Plant is planned for commissioning in 2013, subject to the granting of all necessary planning and environmental consents and permits.

This scoping statement has been produced in accordance with the requirements of The Electricity Works (Environmental Impact Assessment) (England and Wales) Regulations 2000. It presents the proposed activities to be undertaken for the production of the Environmental Statement to construct and operate a biomass-fired Renewable Energy Plant. This Environmental Impact Assessment Scoping Statement is presented in three main sections:

<b>Section 1: Introduction:</b>	Background to the project
<b>Section 2: The Site and the Project:</b>	The plant design and the site for the proposed biomass plant
<b>Section 3: Environmental Impact Assessment:</b>	Proposed activities to be undertaken to establish the effects of the proposed plant on the environment in terms of emissions, visual aspects, traffic, noise, ecology, water quality and the socio-economic implications for the local community
<b>Section 4: Summary:</b>	List of the key issues associated with the development

The proposed renewable energy plant will be referred to as the 'Portbury Dock Renewable Energy Plant' or 'the biomass plant' throughout this document.

This Environmental Impact Assessment Scoping Statement has been issued to The Department for Business, Enterprise and Regulatory Reform (BERR) at the following address:-

Department for Business, Enterprise & Regulatory Reform  
1 Victoria Street  
London SW1H 0ET

Copies of Environmental Impact Assessment Scoping Statement have also been issued to the following bodies:-

Bristol Port Company St Andrew's House St Andrews Road Avonmouth Bristol BS11 9DQ	North Somerset Council Town Hall Walliscote Grove Road Weston-super-Mare BS23 1UJ
The Planning Control Team, Environmental Management Group Somerset County Council County Hall TAUNTON Somerset TA1 4DY	Chief Executive Bristol City Council The Council House College Green BS1 5TR
English Heritage 29 Queen Square Bristol, BS1 4ND	Natural England Block 3 Government Building Burghill Road Westbury on Trim Bristol BS10 6NJ
Highway Agency Temple Quay House, 2 The Square, Temple Quay, Bristol BS1 6HA.	Government Office for the South West 2 Rivergate Temple Quay Bristol BS1 6EH
Environment Agency South West Regional Office Manley House Kestrel Way Exeter Devon EX2 7LQ	British Waterways The Dock Office Commercial Road Gloucester GL1 2EB
South West Regional Assembly Dennett House 11 Middle Street Taunton Somerset TA1 1SH	South West of England Regional Development Agency Corporate Headquarters Sterling House Dix's Field, Exeter Devon, EX1 1QA

Severn Estuary Coastal Group Head of Highways & Waste Management Monmouthshire County Council County Hall Cwmbran NP44 2XH	North Devon & Somerset Coastal Authorities Group Environment Agency South West Regional Office, Manley House Kestrel Way, Exeter Devon, EX2 7LQ
Welsh Assembly Government Cathays Park Cardiff CF10 3NQ	Portbury Parish Council c/o/ Portishead Business Services 1 <sup>st</sup> Floor Office Suite 114B High Street Portishead BS20 6PR
Civil Aviation Authority CAA House 45-59 Kingsway London WC2B 6TE	RSPB South West Regional Office Keble House Southernhay Gardens Exeter Devon EX1 1NT
Avon Wildlife Trust 32 Jacobs Wells Road Bristol BS8 1DR	Easton-in-Gordano Parish Council 1 Monmouth Road Pill BS20 0AY

Copies of the Environmental Impact Assessment Scoping Statement may be obtained by writing to the following address:

Nilton Chan  
 E.ON Climate & Renewables UK Limited  
 Westwood Way  
 Westwood Business Park  
 Coventry  
 CV4 8LG

Any requests for further information on the proposed plant or information relating to E.ON or E.ON Climate & Renewables in general should be made to Nilton Chan at the above address. Information relating to the proposed Portbury Dock Renewable Energy Plant development will also be made available via the internet at the following address:

[www.eon-uk.com/portburydock](http://www.eon-uk.com/portburydock)

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## SECTION ONE: INTRODUCTION

### 1.1 E.ON - The Company

E.ON is the world's largest investor-owned power and gas company, supplying over 30 million customers. Electricity and gas are the core business of the company with leading positions in Europe and the US Midwest.

E.ON UK plc's holding company, E.ON AG, is based in Düsseldorf and is responsible for managing the E.ON group as a whole. E.ON UK plc was formed following E.ON's purchase of Powergen UK plc in 2002.

The business extends along the entire value chain in power and gas, with significant operations in power generation and natural gas production, energy trading and wholesale, transport and distribution, and end customer supply.

At the end of 2007 E.ON's installed generating capacity was:

- 36% coal
- 29% natural gas and oil
- 21% nuclear
- 14% renewables

As a group, E.ON plans to invest 60 billion Euros between 2007 and 2010 and aims reduce its specific CO<sub>2</sub> emissions by at least 50% by 2030 (compared to 1990 levels).

E.ON aims to generate 18% of energy from renewable sources by 2015. By 2030 50% of its energy mix should be generated using carbon free renewable and nuclear energy sources. The other 50% should come exclusively from low-emission generation.

In 2007 E.ON was listed for the first time in the Dow Jones Sustainability Index, showing that its performance places it amongst the top ten percent of energy companies in this respect.

In the UK E.ON is closing 4.2GW of fossil fuel power (coal and oil) which represents some 40 per cent of its generating capacity. In light of this and with the aim of reducing CO<sub>2</sub> emissions in mind, E.ON is developing a pipeline of 2.3GW of renewable projects in the UK; this renewable power development portfolio could provide enough power for around a million homes and displace the emission of two million tonnes of carbon dioxide per year.

As a group, E.ON intends to increase its renewable generating capacity from 1.3GW to 10GW worldwide by 2015.

E.ON is making a major contribution to growth in renewable energy sector. In January 2008 E.ON launched its dedicated renewable business, E.ON Climate & Renewables (EC&R). EC&R is responsible for managing and expanding E.ON's renewable energy portfolio and for co-ordinating climate protection projects. EC&R has an estimated generating capacity of 760MW in Europe and approximately 250MW in North America.

In the UK, EC&R generates enough green energy to meet the residential power needs of a city the size of Manchester. Its current portfolio of operational projects consists of 19 onshore and 2 offshore wind farms and one of the UK's largest dedicated biomass fired power plants, Steven's Croft, in Scotland.

EC&R has a development portfolio in the UK which could power over a million homes and displace the emission of almost two million tonnes of carbon dioxide a year by building new onshore and offshore wind farms, biomass-fired power stations, and tidal stream and wave power schemes.

E.ON's proposals for the Portbury Dock Renewable Energy Plant represent a further commitment to developing renewable energy generation capability.

## **1.2 The Need for New Low Carbon Generating Capacity**

### *The Challenge of Climate Change*

E.ON recognises that climate change is an important issue for the Government and for the wider community. It is committed to reduce the carbon intensity of its electricity generation by 10% by 2012, compared with 2005, having already achieved 20% reduction since 1990. EC&R is playing a key part in delivery of its low carbon agenda and the Government's targets for reducing climate changing emissions.

### *Increasing Demand for Electricity*

Despite improved energy efficiency, it is anticipated that there will be a continued growth in electricity demand which, combined with the expected closure of around 16GW of plant (equivalent to the needs of around 12 million homes), means that work must start on planning and developing the next generation of power stations today.

### *Diversity of Fuel Supplies*

There is no one answer to bridging the supply gap in electricity supplies. With the UK forecast to become more reliant on imported natural gas in the future, a diverse range of energy sources available for power generation will be increasingly important. E.ON believes that there is an important role for coal, gas, renewables and other innovative technologies in the generation portfolio for the UK.

### 1.3 E.ON Actions to Address these Challenges

E.ON believes that in order to address the challenges of climate change and security of supply the latest technologies must be deployed now, and have set out to achieve this on many fronts:

#### *Renewable Generation*

EC&R is playing a key part in delivery of E.ON's low carbon agenda and the Government's targets for reducing climate changing emissions.

EC&R is one of the UK's leading renewable generators and is undertaking a large construction programme across the UK. Currently EC&R operates 21 wind farms with a total installed capacity of 208 MW, and operates Steven's Croft, its 44MW dedicated biomass plant at Lockerbie in Scotland which was officially opened in March 2008. The Steven's Croft plant is carbon neutral and burns forestry residue such as sawdust and specially-grown willow from the local area. In December 2007, Steven's Croft was named Scotland's best renewable energy project at the Scottish Renewables' Green Energy Awards.

EC&R also has proposals for a further 235MW of renewable energy projects in the UK for which planning applications have been submitted. EC&R has also recently gained planning permission to construct and operate a 25MW dedicated biomass-fired power plant, Blackburn Meadows, in Sheffield, South Yorkshire. Construction is planned to begin in 2009 and it is anticipated that the plant will be operational as early as 2011. EC&R has also begun construction on Robin Rigg, an 180MW offshore wind farm located in the Solway Firth. EC&R will also have a 50% share in the consortium 'London Array Ltd' which is planning to build a 1,000MW off-shore wind farm off the Kent and Essex coasts in the outer Thames Estuary which, when constructed, will be one of the largest wind farms in the world.

#### *New Supercritical Coal-fired Power Generation*

E.ON UK has already applied for consent to build two 800MW modern high efficiency supercritical coal-fired units to replace the four existing 485MW sub-critical coal fired units at Kingsnorth in Kent.

#### *New Gas-fired Power Generation*

E.ON UK has commenced construction of a new gas-fired 1200MW power station at Grain on the site of the existing oil-fired station. It is also has consent for a similar plant at Drakelow in the Midlands on the site of a former coal-fired power station which has recently been demolished.

*Research and Development in New Technologies*

E.ON is investigating marine renewable technologies such as tidal and wave. The company is developing one of the UK's first wave energy projects off the North Coast of Cornwall and a tidal stream power project of up to 8MW in the sea off the west coast.

New technologies also include integrated gasification combined cycle technology and carbon capture and storage, which show great potential in the future. The large scale deployment of these technologies is dependent on overcoming some technical hurdles, together with the creation of a sustainable long-term framework.

**1.4 Development of Renewable Generation at Portbury Dock**

E.ON believes the development of biomass-fired renewable energy plants, together with other forms of renewable developments, is vital to help achieve the Government's carbon dioxide (CO<sub>2</sub>) reduction targets as well as providing security of energy supply.

The proposed Portbury Dock Renewable Energy Plant will produce around 150MW of electricity from biomass, sufficient to provide the needs of around 250,000 homes and will reduce emissions of CO<sub>2</sub> by around half a million tonnes annually (equivalent of taking 175,000 average sized cars off Britain's roads every year). It is intended to be able to supply heat as hot water or steam or a combination of both to neighbouring industrial establishments. If consent is given then construction could commence in 2010 and the plant could be operational as early as 2013.

This renewable energy development will make a significant contribution towards the planning and regeneration objectives of the North Somerset District Council and the strategic regeneration of the Southwest region. It will contribute to the North Somerset and Bristol region's commitment in achieving its sustainable development targets and the target of reducing greenhouse gas emissions.

This Scoping Statement has been produced to describe the issues to be covered by an Environmental Impact Assessment (EIA). The results of the EIA will be described in the Environmental Statement (ES) that will accompany an application by E.ON to BERR for consent under Section 36 of the Electricity Act for construction of the Portbury Dock Renewable Energy Plant. The issues covered by this Scoping Statement will provide a starting point for consultation with all parties having an interest in the biomass plant proposal, enabling comment and agreement on the scope of the EIA.

## SECTION TWO: THE SITE AND THE PROJECT

### 2.1 Introduction

The proposed site for the Portbury Dock Renewable Energy Plant is located within the Port of Bristol. The total area of the port is approximately 1025 hectares (2600 acres). Due to the shape of the site and the existing uses, only approximately 6 hectares (15 acres) is available for future development. The site is largely flat. The area consists of a hard standing on reclaimed land and is currently used for car storage.

The power plant will be located in the site area indicated by the red cross-hatching shown in Figure 1. A description of the plant is given in Section 2.2.

**Figure 1: Site Location Map**



Image produced from the Ordnance Survey Get-a-map service. Image reproduced with kind permission of Ordnance Survey and Ordnance Survey of Northern Ireland

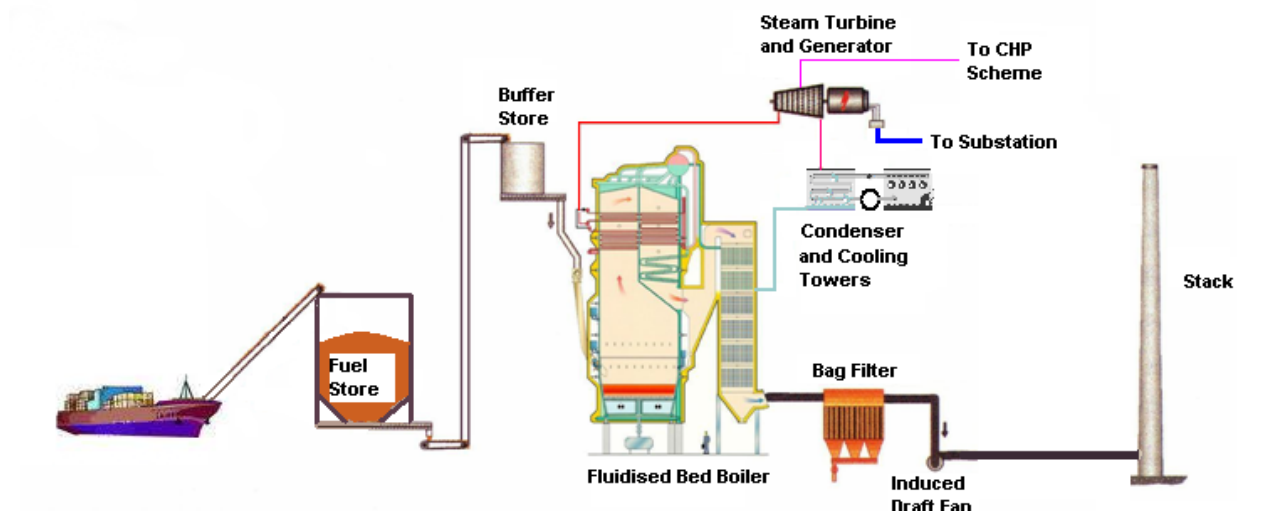
The site is approximately 12 km to the west of Bristol City Centre, and west of the M5. The site is adjacent to the Severn Estuary and is bounded on its Northern side by the River Avon. The site can be accessed via Junction 19 of the M5. It is envisaged that land required for temporary construction activities for the proposed biomass plant will be accommodated within the Bristol Port Company's land holding.

## 2.2 Description of Proposed Plant and Processes

The principal biomass fuel to be burnt by the biomass plant will be woodchip which will be sourced from sustainable supplies, however it is likely the majority of the fuel will be delivered by ship with the remainder being regionally sourced and delivered by road or rail (subject to a transport assessment).

The design capacity of the plant has not yet been determined precisely as it will depend on the completion of a fuel supply study. However, the plant is likely to have a net electrical output of about 150MW which would require a fuel supply of approximately 1,200,000 tonnes per year. The annual tonnage of biomass required will depend on the technical specification such as the Calorific Values and the types of the woodchip. The biomass plant will be technically capable of supplying renewable heat to neighbouring industrial establishments. The amount of heat distributed will be determined by potential customers' requirement and commercial terms. The technology which will be used in the proposed development is shown schematically in Figure 2. The main individual plant components are described in more detail below.

**Figure 2: A Schematic Diagram of the Proposed Development.**



### *Fuel Preparation and Delivery*

The majority of woodchip will be delivered by ship and will be transferred via the port facilities to the receiving hopper and conveyed to a screen for the removal of any oversize particles followed by magnetic and eddy current devices to remove any metal. The biomass fuel will then be conveyed to the fuel store and the rejects will be disposed of to licensed facilities off-site.

The regionally sourced woodchip will be prepared off-site and delivered by HGV or rail before transfer to the receiving hopper.

### *Fuel Storage and Buffer Silo*

The processed fuel store will consist of around ten circular section silos. The fuel will be reclaimed by automatic conveyors. The capacity of the store will be equivalent to at least fourteen days operation at full output such that the plant can continue to operate over weekends and bank holidays when no new deliveries to the plant are made. From this store the fuel will be conveyed to small buffer silos in the boiler house. The buffer silos will have a limited capacity of around one hour and will be used to meter the flow of biomass to the boiler.

### *Combustion Device and Boiler*

The boiler will be integral with the combustion device which is likely to be fluidised bed combustor. This device has been used extensively throughout the world in this type of application.

In fluidised bed combustors, the air velocity is sufficient to 'fluidise' the bed to the point where it resembles a rapidly boiling liquid. The combustion chamber typically contains sand as bed material, which is fluidised by blowing air up through it. The bed maintains an even temperature due to the heat retaining capacity of the sand.

Heat recovery will be provided by a water-tube boiler, which recovers the heat produced by the combustion of the fuel. This heat will be used to generate superheated steam for power generation.

### *Auxiliary Burner and Fuel*

The biomass plant is likely to have an auxiliary burner, which has two purposes:

- Start-up: the burner is used to bring the combustor to the required temperature prior to the introduction of woodchips,
- Combustion Support: the burner is used to maintain the combustion temperature at the required minimum in the event of insufficient heat release in the combustor. This ensures that complete combustion occurs under all operating conditions.

The burner may be fired on gas or gas oil and, if gas oil is used, a bulk fuel storage feed system will be provided. This will include a bunded storage tank, pipework and feed pumps. Under normal operation of the biomass plant the burner should not fire (i.e. no fossil fuel should be used), the wood being of suitable quality to support combustion at appropriate temperatures.

#### *Steam Turbine*

The hot combustion gases produce high pressure and temperature steam that is piped to the steam turbine. The steam turbine is connected to the electricity generator, and the exhaust steam, having been reduced in temperature and pressure in passing through the turbine, is condensed and pumped through the condensate and feed heating system back to the boiler in a closed cycle.

#### *Hybrid Cooling Tower*

The plant will use a hybrid cooling tower system to condense the steam turbine exhaust. This is an indirect method of cooling which significantly reduces the quantity of water that needs to be abstracted. This system uses a low level induced draught tower incorporating both "wet" and "dry" sections to minimise plume visibility. The heated cooling water from the steam turbine condenser initially passes through tubes in the dry section where part of the heat is removed by the air current induced by the fans. The water is then cooled further by an evaporative process in the wet section of the tower. The heated air from the dry section is then mixed in the upper part of the tower with the vapour from the wet section. This lowers the relative humidity before the air current leaves the cooling tower, which significantly reduces plume formation above the tower.

#### *Emissions control*

The plant will utilise flue gas cleaning equipment, employing the Best Available Techniques (BAT) to reduce air emissions to as low a level as possible and in compliance with the requirements of the Pollution Prevention and Control Act 1999.

#### *Dust Control*

The cooled combustion gases are drawn through a highly efficient fabric filter unit by a fan before being discharged to atmosphere through the stack. The filter unit consists of a number of filter bags stretched over wire frames. The gases pass from the outside to the centre of the bags with the fly ash being captured on the outside surface. The fly ash is periodically automatically removed to hoppers below by injecting a jet of compressed air down the centre of each bag.

#### *NO<sub>x</sub> Control*

Reagents such as hydrated lime and activated carbon are injected into the exhaust gases upstream of the fabric filter to neutralise emissions to atmosphere. The release of Nitrogen Oxides (NO<sub>x</sub>) is minimised by good combustion control, the controlled injection of combustion air and if necessary, the boiler will be equipped with dilute ammonia injection into the secondary

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combustion chamber. The ammonia reacts with the oxides of nitrogen and converts a proportion back to nitrogen and water. This process is known as Selective Non-Catalytic Reduction (SNCR).

### 2.3 Main Plant Dimensions

The overall area taken up by the plant will be about 48,500 sq m (~12 acres). The estimated dimensions of the main components are as follows:

Component	Length (m)	Width / diameter (m)	Height (m)
Fuel Silo (each)		30	40
Boiler House	50	50	65
Fabric Filter Unit	40	30	65
Hybrid Cooling Towers (2 banks)	75	15	40
Turbine Hall	40	20	30
Stack		3 (maximum)	80 (approximately and subject to air quality assessment)

The building dimensions are indicative. The stack height will be determined by calculation and the results of the air quality assessment. The building dimensions will be subject to variation dependent upon the main plant contractor ultimately chosen, but are not expected to vary significantly from those stated above.

### 2.4 Biomass Fuel

The principal biomass fuel burnt by the plant will be woodchip brought in by ship supplemented by regionally sourced recycled wood. In order to meet the definition of biomass that has been included in the 2006 revision of the Renewables Obligation Order (ROO), the fuel must be at least 90% pure biomass by energy. The source of the bulk of the fuel is likely to be from sustainable sources. Regionally sourced supplies will require the fuel to be selected at source to avoid wood that has significant levels of preservative or other contaminants.

The net electrical output of the biomass plant is likely to be about 150MWe. Based on a plant availability of 90%, this would equate to about 1,200,000 tonnes/year of fuel burnt.

## 2.5 Electricity Distribution

The plant will be electrically connected into a newly constructed substation which will be sited within the Bristol Port Company landholding.

## 2.6 Construction

The biomass plant construction programme will be up to 40 months from placing of contracts to full commercial operation. The traffic generation at the peak of construction will be about 300 vehicles per day, mainly for construction personnel vehicles, but including some Heavy Goods Vehicles (HGV). However E.ON anticipates that the number of HGVs would be reduced to a minimum by virtue of the fact that most deliveries of main plant components could be delivered by ship or barge to the port. Once operational, the levels of traffic generation will reduce significantly. Construction of the biomass plant is scheduled to begin in 2010 and it is currently estimated that it would be operational in 2013.

## 2.7 Operation

The proposed biomass plant is expected to create up to 35 full time permanent jobs and more than 200 temporary jobs during the construction phase. Additional staff may be appointed to supervise fuel deliveries and to undertake routine checks and housekeeping duties local to the plant. Additional personnel will be employed indirectly to support the biomass supply infrastructure.

## 2.8 Health and Safety

E.ON's statutory responsibilities include the safe design and construction of plant and apparatus and the provision and maintenance of safe and healthy working conditions, equipment and systems of work for all of its employees as well as for the health and safety of other people who may be affected by its activities. This responsibility arises from the requirements of various Acts of Parliament, principally the Health and Safety at Work Act 1974.

The design of the proposed biomass plant will incorporate features that will ensure that these responsibilities are met. Where appropriate, the Health and Safety Executive (HSE) will be consulted about safety issues associated with the development.

The planning and management throughout the design and construction of the plant will comply with the Construction (Design and Management) Regulation 2007 (CDM2007), as well as other relevant health and safety regulations.

## SECTION THREE: ENVIRONMENTAL IMPACT ASSESSMENT

### 3.1 Introduction

The Electricity Works (Environmental Impact Assessment) (England and Wales) Regulations 2000 require that an Environmental Statement (ES) in relation to an application for a non-nuclear thermal generating station of greater than 50MW (megawatts) must be produced before the Secretary of State can grant consent under Section 36 of the Electricity Act 1989. The object of the Environmental Statement is to identify, examine and assess the likely impacts of new generating units on the environment.

The Electricity Works (Environmental Impact Assessment) (England and Wales) Regulations 2000 require that certain information is provided by Environmental Statement ("the specified information"), which is shown as below:

- (a) A description of the development proposed, comprising information about the site, the design and size or scale of the development;
- (b) The data necessary to identify and assess the main effects which the development is likely to have on the environment;
- (c) A description of the likely significant impacts, direct and indirect, on the environment, explained by reference to its possible impact on –
  - . human beings;
  - . flora;
  - . fauna;
  - . soil;
  - . water;
  - . air;
  - . climate;
  - . the landscape;
  - . the inter-action between any of the foregoing;
  - . material assets;
  - . the cultural heritage;
- (d) Where significant effects are identified with respect to any of the foregoing, a description of the measure envisaged in order to avoid, reduce or remedy those effects; and
- (e) A summary in non-technical language of the information specified above.

## 3.2 Proposed Scope of Environmental Impact Assessment

Following is a list of proposed activities to be undertaken as part of the Environmental Impact Assessment for the proposed Portbury Dock Renewable Energy Plant.

### 3.2.1 Site and its Planning Context

The proposed development will be considered in the light of the relevant national, regional and local planning context. The following documents will be reviewed and the proposal assessed against relevant policies:

- Planning Policy Statement 22 : Renewable Energy
- Planning Policy Statement 22 : Renewable Energy – Companion Guide
- Planning Policy Statement 23 : Planning and Pollution Control
- Planning Policy Statement 23 : Planning and Pollution Control – Annex 1 – Pollution control Air Quality and Water
- Planning Policy Statement 25 : Development and Flood Risk
- Planning Policy Statement 10 : Planning for Sustainable Waste Management
- Planning for Waste Management Facilities : A Research Study
- Regional Spatial Strategy for the South West

Regional planning policy identifies the need for renewable energy facilities in the Draft Regional Spatial Strategy (RSS) which sets a target for the Former Avon area of 35 - 52MW of renewable energy generation by 2010, and a regional target for the South West of 850MW by 2021. Planning policies reviewed identify the following key issues to be considered in the planning of biomass renewable energy plants:

- Location may be influenced by proximity to fuel source to reduce travel distance, connections to the electricity grid and potential use of heat generated may influence location. The facility should be located close to the source of fuel under the proximity principle.
- The impact of traffic generation on road infrastructure should be considered.
- Noise from traffic and plant operations should be considered.
- There is a need to consider the positive benefit of the proposals to the local economy.
- The plant is an industrial feature with a chimney and in certain weather conditions a plume may be evident, therefore the impact of visual intrusion will need to be considered.
- The effects on health, local ecology or conservation from airborne and waterborne emissions should be considered.

- The facility should not cause residents or visitors in any hotel, hostel, residential institution or housing to suffer from unacceptable living conditions.
- Waste hierarchy holds a preference for waste minimisation, re-use and recycling above incineration and energy recovery. Incineration and energy recovery, however, is preferred to waste to landfill.
- Regions should aim for regional self sufficiency for all waste streams.

With regard to the suitability of the site for a biomass-fired renewable energy plant, the following policies have been identified:

- UDP designates the proposed site for "Proposed Industrial and Business Site". The site is within the "Fringe Industry and Business Area".
- The site has been identified by the Environment Agency as being in Flood Zone 2. Planning Policy Statement 25: Development and Flood Risk. PPS25 outlines that a sequential test should be taken whereby development should only take place in Flood Zone 2 or 3 if there are no suitable sites in Flood Zone 1. Under circumstances where no suitable sites are available in Flood Zone 1, the Exception Test should be applied. This will require a Flood Risk Assessment.

### 3.2.2 Air Quality

Under Integrated Pollution Prevention and Control legislation (IPPC), pollution control in the UK is achieved by eliminating or reducing unwanted emissions from industrial processes at source. Any remaining emissions to the atmosphere are released in such a way as to ensure that there will be no significant adverse impacts on health or the environment. The proposed Portbury Dock Renewable Energy Plant will be operated to IPPC standards. The IPPC objectives are attained by applying the principles of Best Available Techniques (BAT).

Atmospheric emissions from the proposed biomass plant will be through a flue gas duct into a stack. The main source of impacts on local air quality is likely to be in the form of emissions of oxides of nitrogen and sulphur dioxide, which are formed as part of the combustion process. It is anticipated that there may be an increase of local dust levels during construction of the proposed development although appropriate measures will be undertaken to mitigate this.

An assessment of the proposed Portbury Dock Renewable Energy Plant on local air quality will be undertaken, with reference to the relevant UK and European Air Quality Objectives. This assessment will address the emissions of nitrogen oxides, sulphur dioxide and particulates during the operation of the proposed biomass plant. An assessment will be made of climate change, regional acidification issues, effects on sensitive habitats and plume visibility and dispersion

issues. Predictions of future changes to local air quality resulting from the proposed plant will be undertaken using the computer based atmospheric dispersion modelling system ADMS.

### 3.2.3 Water Quality

Water will be abstracted from the Royal Portbury Dock to replace the water lost by evaporation from the hybrid cooling towers. A purge discharge flow to the dock will control the build up of dissolved salts in the system. The purge discharge will have a slightly greater concentration of dissolved salts than the ambient dock water owing to the concentrating effect of evaporation from the hybrid cooling towers. Although the flow rate of the purge discharge to the dock is likely to be small, it will have a greater temperature than the ambient water. Therefore it will be necessary to undertake predictive hydrodynamic modelling of the dispersion of the cooling water discharge using DELFT3D software.

Some use of biocide (sodium hypochlorite) will be required in the cooling system to control bio-fouling and microbiological risks. This has a long history of use in such systems, and degrades rapidly in the environment, and will also be required to be below consented discharge levels such that no residual impacts would be anticipated on the dock. Thus heat would be expected to be the main significant effect of the quality of the aqueous discharge.

### 3.2.4 Flood Risk

In accordance with Planning Policy Statement 25 (PPS25), a flood risk assessment will be undertaken to ensure the proposed development itself is not at risk from flooding and will not increase flood risk elsewhere. The flood risk assessment will aim to demonstrate the proposed development passes both the Sequential Test and Exceptional Test.

Information obtained from the Environment Agency indicates the site is located within Flood Zone 2. This comprises land assessed as having significant chance of flooding from the River Severn, with a 1 in 200 to 1 in 1000 (0.5% - 0.1%) annual probability.

Updated flood data and information on catchment strategies will be obtained through consultations with the Environment Agency and Local Planning Authority. Where appropriate, the options for surface water management, attenuation, storage and disposal, incorporating the use of Sustainable Urban Drainage Systems (SUDS) shall be assessed and agreed with the competent authority. An assessment will also be carried out to determine the flood risks from other sources as required by PPS25, e.g. groundwater, artificial drainage systems and infrastructure failure.

### 3.2.5 Ecology

The site of the proposed development is predominately reclaimed land (from the mid 1990's) with hard standing. It is enclosed inside the confines of the Royal Portbury Dock and is currently used for imported car storage.

An ecological assessment relating to the proposed Portbury Dock Renewable Energy Plant will be undertaken commencing with a desktop study to review all previous surveys carried out at the Bristol Docks and in particular the Royal Portbury Dock site, where available.

An Extended Phase 1 Habitat Survey will be carried out on all land affected directly through land take, construction activities or through indirect impacts. This will classify the habitats affected and ascertain whether further species studies are necessary. Where necessary, measures will be proposed to mitigate any significant ecological impacts and to improve levels of site biodiversity.

There are statutory designated sites within a 2km radius of the site. These comprise of a Ramsar site that covers the inter-tidal areas of the Severn and Avon Estuaries, Special Areas of Conservation and Sites of Special Scientific Interest. The assessment will therefore consider the potential impact of the proposal on the designated interest of the protected sites. .

The scope for biodiversity enhancements in connection with this proposal will be considered and proposals for investment biodiversity enhancements in the region will be included in the Environmental Statement.

### 3.2.6 Transport

The bulk of the biomass fuel will be delivered by ship. The remainder will be delivered by road or rail, subject to assessment. It is anticipated that large components for the construction of the biomass plant will be delivered by ship or barge. The possibility of deliveries of construction material by rail will be investigated.

For road related transport a transport assessment will be prepared in accordance with the latest guidance notes. This will establish the highway and transportation baseline and will predict the traffic generation during both construction and operation of the Portbury Dock Renewable Energy Plant. The scope of any assessment will be agreed with the local highway authority.

E.ON is aware of certain highway and transportation issues which will need to be considered. These include the requirement to accommodate and encourage non-car modes as a means of accessing the site and the potential impact that this development could have on the motorway network. All these issues will be addressed in the transport assessment.

Where necessary, mitigation measures will be proposed where the impact is likely to result in adverse environmental and / or safety impacts.

### 3.2.7 Solid Waste

The Environmental Impact Assessment will identify the sources of solid waste arising from the construction and operation of the proposed Portbury Dock Renewable Energy Plant and by applying the principles of the waste hierarchy will identify opportunities for waste reduction, re-use and re-cycling. Where there are no alternatives to disposal, suitable licensed landfill sites will be identified, in accordance with relevant waste management regulations.

### 3.2.8 Noise

The methods contained in British Standard BS 4142 (1997), Method for Evaluating Industrial Noise Affecting Mixed Residential and Industrial Areas, will be used to assess the intermittent and steady operational noise arising from the proposed Portbury Dock Renewable Energy Plant.

Assessments of construction noise, piling noise, traffic noise and vibration will be undertaken in line with applicable guidance and British Standards. Recommendations for any mitigation required will also be put forward where required such that any residual impacts are reduced to an acceptable level. Noise monitoring locations and methodology will be agreed with the Planning Authority.

### 3.2.9 Landscape and Visual

A landscape and visual assessment will be undertaken based on guidance from the Landscape Institute and Institute of Environmental Management and Assessment Guidelines for Landscape and Visual Impact Assessment Second Edition and Natural England and Scottish Natural Heritage (2002) Landscape Character Assessment: Guidance for England and Scotland.

Data sources will include The National Character Map of England (North Somerset). The assessment will consider the character of the area and consider the degree of visual intrusion that may be expected from the proposed development.

The assessment will be based on desktop and field study for a defined area around the site based on key viewing points and sensitive land uses.

Surveys will be carried out and photographic records will be taken, attending both to principal public and private viewpoints. These viewpoints will be agreed with North Somerset Council and Newport City Council. Existing maps and written data may also be reviewed, to accrue further information regarding the wider landscape character and condition. Photomontages will be produced to represent the anticipated impact of the proposed biomass plant from key viewpoints highlighted during the study.

A landscape strategy will be considered as part of the development proposals and considered in the context of the Environmental Statement.

Mitigation measures, where necessary, will be incorporated into the scheme to reduce any adverse environmental impacts.

### **3.2.10 Socio-economic Effects**

Baseline population, economy and employment statistics for the Bristol and North Somerset areas will be collected and presented within the Environmental Statement and predicted impacts in each of the areas described and also in terms of changes in the characteristics of employment locally. In addition, the assessment will consider the role of the project in contributing towards local and regional economic, sustainability and energy strategies.

A full formal public consultation exercise will take place and the assessment will take account of comments associated with the construction and operation of the proposed Portbury Dock Renewable Energy Plant.

The construction of the proposed biomass plant will have a small but positive benefit on the local economy and employment levels both in the short term, through the employment of a construction workforce and associated expenditure with local businesses and services (It is expected that the construction work force will find accommodation in the area) and the long term, through the employment of full time operational support staff once the plant is fully operational. The required staffing level is expected to be around 35 permanent members of staff.

### **3.2.11 Cultural Heritage**

A desk assessment will be carried out to understand the archaeological and historical features within the locality of the site. Consultation will be undertaken with English Heritage and the relevant officer in the Local Authority. It is thought that the proposed site will be of low cultural heritage value due to previous land use and no significant impact is expected.

### **3.2.12 Land Contamination**

The site of the proposed Portbury Dock Renewable Energy Plant is reclaimed land. Given the potential for land contamination, an assessment will be made of the potential impacts of the proposals on land quality, and provide an overview on the likely contamination impacts that may arise during the construction and/ or operational phases of the development.

The potential impacts arising from the construction phase of the proposals will be addressed in detail in the Environmental Statement. At this stage it is expected that the main impacts would be related to disturbance of potentially contaminated ground which may require treatment or off-site disposal. Any impacts during the operational phase of the proposed plant are likely to

result from run off/process water potentially becoming contaminated and entering the drainage and/or groundwater system of the areas, and from there the Severn Estuary.

A detailed Phase 1 desk study of the site will be produced prior to undertaking an intrusive ground investigation. This will be used to assess ground conditions via visual observations, testing of samples for contamination parameters, and the establishment of gas and groundwater regimes. The findings from both the Phase 1 study and the ground investigation will be used to prepare a Phase 2 Contamination Assessment Report for the site.

As part of the approach, a Qualitative Risk Assessment will be used to produce a conceptual model of the site, developed using a source-pathway-receptor linkage methodology. This is as defined in Part IIA of the Environmental Protection Act 1990, and will be used to identify the likelihood and significance of potential impacts on the environment from contaminated soils, water and gas. The assessment will assist in developing the scope of any further investigation or mitigation measures required for construction and operation phases. If necessary, a Contamination Remediation Strategy will be developed from the findings of the assessment.

All reporting and assessments will be in accordance with current legislation and best practice guidance, including CLEA, British Standards and CIRIA guidance. The data collated and reports produced will be fed into the relevant chapter of the Environmental Statement, which will comprise a succinct overview and summary of the main issues and findings.

### **3.2.13 Health and Safety**

E.ON views health and safety as its number one priority. We have a "Rule One" culture which states that "We don't hurt people". This applies in addition to the statutory responsibilities of the company, which include the health and safety of all its employees and other people who may be affected by its activities. This responsibility arises from the requirements of various Acts of Parliament. The design of the Portbury Dock Renewable Energy Plant will incorporate features which will ensure these responsibilities are met. Consideration of the Construction (Design and Management) Regulations will be taken in the Environmental Impact Assessment and throughout the development.

### **3.2.14 Sustainability**

The proposed development will help contribute towards the goals of the UK government sustainable development strategy 'Securing the Future' and those of the regional sustainable development framework for the southwest of England.

A key goal of the UK government sustainable development strategy is tackling climate change through reducing emissions of carbon dioxide (CO<sub>2</sub>); the proposed Portbury Dock Renewable Energy Plant will be carbon neutral, i.e. it has net zero carbon dioxide emissions due to carbon dioxide uptake during growth of fuel required to feed the plant which offsets the emissions from the combustion process. The current UK generating mix emits 0.43 tonnes of CO<sub>2</sub> per MWh, on

this basis, the operation of this biomass plant would equate to a potential saving of over half a million tonnes of CO<sub>2</sub> per year.

The proposed development will be appraised against the policies contained in the North Somerset District Council's Local Development Framework documents and the South West Regional Spatial Strategy for consistency with their policies. The documents in question have undergone sustainability assessment in line with the requirements of the SEA directive and thus assessing the level of conformity with the plans and policies in question will give an indication as to the sustainability of the proposed development.

A sustainability appraisal will be undertaken for the Portbury Dock Renewable Energy Plant which will rate the performance of the planned project against a range of sustainability issues under the categories of environmental performance, social performance, economic performance and natural resource consumption.

Appraisal will also include a feasibility study of the use of waste heat from the biomass plant to support surrounding industry and an overview of the range of transport options available during construction and operation of the biomass plant.

## SECTION FOUR: SUMMARY

As a result of the production of this Environmental Impact Assessment Scoping Statement, the following key issues relating to the proposed development of the Portbury Dock Renewable Energy Plant have been identified as listed below. The list is not intended as an exclusive summary and represents only those impacts that E.ON has identified through the production of this document and that E.ON considers are significant; it is understood that other effects may occur as a result of construction and operation of the proposed Portbury Dock Renewable Energy Plant which will be investigated through the EIA process as appropriate.

Air quality	Emissions of greenhouse gases and other emissions; Dust levels during construction;
Flood risk	Identification of any mitigation works which may be needed during the development stage of the project;
Ecology	Direct and indirect impacts on statutory and non-statutory designated sites; Scope for biodiversity enhancements;
Transport	Increase in road movements during construction and operation; Inter-action with other proposed transport schemes;
Noise	Temporary noise increases during construction; Noise during operation;
Landscape and Visual	Visual aspects of the proposed biomass plant; Building design;
Socio-economic	Potential for job creation during construction; Potential employment throughout the development;
Energy/sustainability	Contribution to the Region's sustainable energy strategy;