

BARRY ENERGY RECOVERY LTD

**ENERGY RECOVERY FACILITY,
BARRY – SUSTAINABILITY AND
ENERGY STATEMENT**




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1 INTRODUCTION

1.1 Background

1.1.1 Barry Energy Recovery Ltd (BERL), part of the BioGen Power group of companies, propose to build and operate an Energy Recovery Facility in Barry Docks in the Vale of Glamorgan. The Facility will process approximately 80,000 tonnes of waste per annum and generate 7.5 megawatt (MW_e) of renewable electrical energy for export to the National Grid. Which is enough to power approximately 11,000 homes.

1.1.2 This Sustainability Statement sets out the sustainability considerations of the development and those aspects considered and incorporated as part of the design process. Based upon the Vale of Glamorgan Supplementary Planning Guidance (SPG) – Sustainable Development (2006), the Statement is divided into the following areas:

- Site selection;
- Transportation and movement;
- Low carbon energy and efficiency (including energy conservation, efficiency, and lighting to minimise pollution);
- Low embodied energy material and resource efficiency;
- Water conservation and sustainable drainage;
- Waste management; and
- Landscape, trees and ecology.

1.1.3 The Statement reflects environmental sustainability, rather than the broader aspects of social and economic sustainability. It is, however, recognised that there is a complex interrelationship between the environmental, social and economic elements of sustainability. As such, the Vale of Glamorgan Unitary Development Plan 1996 - 2011 (2005), aims to establish “...a strategic environmental framework which reflects the aim to improve the quality of both urban and rural living in the Vale and to ensure that finite resources are protected for both present and future generations”.

1.2 Project Context

1.2.1 The applicant will target the commercial and industrial waste (CIW) market and the construction and demolition waste (C&D) markets based upon the need for disposal capacity in the area. In addition to CIW and C&D waste the Facility has the ability to process Municipal Solid Waste (MSW)/Refuse Derived Fuels (RDF) produced by householders and Local Authorities.

1.2.2 In the UK, it is estimated that the quantity of Industrial and Commercial and Construction and Demolition Wastes continue to grow at a rate of between 1.5 - 3%. Household waste generated each year continues to grow at a rate of approximately 3%. This growth rate is unsustainable and measures are required to reverse this trend and, following reduction, increase the quantity of waste that is reused, recycled, and recovered. These increases are driven in part by implementation of the European

Landfill Directive and by the introduction of targets to reduce the quantity of waste disposed to landfill. At present waste generated in the Vale of Glamorgan is primarily disposed to landfill in Merthyr Tydfil, therefore placing it in the least preferred waste management approach within the context of the waste hierarchy.

- 1.2.3 The Energy Recovery Facility represents a means to unlock energy within waste that cannot be recycled. BERL recognise that should all locally generated waste be treated within such a Facility, then this might not be considered the best environmental option. However, alongside existing waste management facilities within the Vale of Glamorgan, the Facility will treat residual waste that would otherwise go to landfill, without recovering the energy that it contains. The proposed facility will process approximately 80,000 tonnes per annum of residual waste including commercial, industrial, and construction and demolition wastes and potentially MSW/RDF. Since the proposed gasification process is located higher up the waste management hierarchy than current landfill practice, it represents an improvement over current practice.

1.3 Policy Context

- 1.3.1 Although a broad range of definitions of sustainable development exist, each commonly seeks to integrate economic, social and environmental aspects, to ensure a better quality of life for people today, without compromising the needs of future generations. In 2005, the Government launched its Sustainable Development Strategy 'Securing the Future', which alongside Planning Policy Guidance 1 'Delivering Sustainable Development' (2005) sets out a clear commitment to action on sustainable development. The latter highlights the role of planning in facilitating sustainability objectives and to improving quality of life.

- 1.3.2 Further policy context is provided by Planning Policy Wales (2006), the Welsh Assembly Government Sustainable Action Plan, the Wales Spatial Plan (2002), and at the local level the Vale of Glamorgan Unitary Development Plan (UDP) 1996 – 2011. Within the UDP, sustainability is highlighted by the Part I Policy 2, which encourages and favours sustainable practices in terms of the following:

- Proposals which contribute to energy conservation or efficiency, waste reduction or recycling, pollution control, biodiversity and the conservation of natural resources;
- Proposals which are located to minimise the need to travel, especially by car and help to reduce vehicle movements or encourage cycling, walking and the use of public transport;
- Reclamation of derelict or degraded land for appropriate beneficial use; and
- Proposals which improve the quality of the environment through the utilisation of high standards of design.

- 1.3.3 Further guidance is provided by the Vale of Glamorgan Supplementary Planning Guidance (SPG) – Sustainable Development (2006), which aims to "...raise awareness of how the development of land can contribute to sustainability, through encouraging a holistic approach to construction and by reducing the impact of a development during its lifetime". This Sustainability Statement has been prepared within the context of the SPG, and addresses those issues outlined within Section 5 of the SPG document.

1.4 Site Context

- 1.4.1 The site is situated on Atlantic Way within Barry Docks, and is located approximately 100m south east of eastern dock wharf, approximately 450m east of the main dock gates and approximately 370m to the north of the Severn Estuary. The site is currently disused and comprises made ground. There are currently no buildings on site and there is no evidence of any previous buildings. The site is vegetated with a mixture of grasses, scrub, ruderal species and immature trees. There is evidence on-site of fly tipping. Surrounding land use comprises mixed industrial activities, including waste management activities (scrap yards, waste segregation, and landfill) and bulk materials storage and handling (including stockpiles of sand and other aggregates) and other small industrial units.

2 SUSTAINABILITY CONSIDERATIONS**2.1 Site Selection**

- 2.1.1 The Facility is proposed to be developed upon an underutilised brownfield site located on Atlantic Way. During the project development process, four alternative locations were considered within the local area. However, due to various site constraints – including potential flooding issues, surrounding domestic receptors, and site area limitations – the preferred option was identified. The proposed development site, as the preferred option, will not result in the loss of greenfield land.
- 2.1.2 Drawing 08-1353-P06 which accompanies the planning application provides artists impressions of the proposed Facility. The Facility has been designed to respond to the language of its industrial park setting. The mass of the building has been broken to achieve a “layering” effect to lighten its appearance. A materials palette of predominantly natural green rainscreen cladding with grey coloured accent framework seeks to blend the building with adjacent grassed and planted landscaped areas.
- 2.1.3 On site there will be a fully structured landscape planting scheme with feature trees and shrubs to L.A approvals. This planting will screen the services and circulation activities proposed. The introduction of a pond at the Atlantic Way/ Atlantic Crescent corner of the site provides a reference point to the surrounding wetland, whilst giving a quality visual amenity focal point when viewed from both inside the site boundaries and the surrounding area.
- 2.1.4 Drawing 08-1353-P01 which accompanies the Planning Application provides a site layout. The process will require an emissions stack 45 m in height. The construction of the Facility will require site clearance, installation of the drainage systems, foundations for buildings, and provision for on-site roads and parking areas, therefore, the Facility will directly impact the existing site. Construction impacts will be managed through the implementation of a Construction Environmental Management Plan (CEMP).

2.2 Transportation and Accessibility

- 2.2.1 Given the location of the site within an existing industrial area, transport movements are unlikely to have significant safety implications for pedestrians close to the site. Though there is a suitable footpath for the entire length of Atlantic Way, the closest public transport link (Barry Docks train station), is accessible at a distance of 2.5km. All bus stops are further away from the site than the train station. As such,

encouraging public transport use for the site is therefore limited. Expanding the local public transport service to place a bus stop for employees is not considered financially viable given the limited number of employee's onsite. Since cycling to work will be a viable option for some employees, onsite facilities including bicycle storage, showers and changing rooms have been incorporated into the design. Drawing P3706-BARRY-SK006 which accompanies the Planning Application provides further details of the office layouts.

2.2.2 Access to the site is via Fyordd y Mileniwm, Wimbourne Road and Atlantic Way. Wimbourne Road and Atlantic Way are in private ownership although limited public access is allowed to Wimbourne Road. With regard to potential operational impacts, a traffic impact assessment has been conducted and concluded that the percentage impact of Heavy Goods Vehicles (HGVs) on the local highway network will be less than 10%. Therefore, the development will have no impact on the existing local highway network greater than daily variation in traffic flows. Onsite traffic movements will be the subject of a management plan, to ensure efficient and safe vehicle movements, such as mandatory engine shutdown for stationary vehicles.

2.2.3 The opening of the facility will decrease journey lengths for waste generated within Vale of Glamorgan rather than it being transported to Merthyr Tydfil and Carmarthen

2.3 Energy Conservation / Efficiency and Low Carbon Energy

2.3.1 Significant environmental benefits can arise from considering passive solar design, natural daylighting and ventilation within the design process to reduce heating and lighting resource consumption for example.

2.3.2 Despite space limitations onsite, potential benefits of such systems will be considered as part of the detailed design, whilst ensuring that operational efficiency and safety are maintained. Consideration will be given to the use of solar panels and roof wind turbines where these can be added without unacceptable environmental impacts. Should it be required further planning permission will be sought for these additions. Energy efficient appliances and measures will also be integrated where feasible.

2.3.3 The proposed development will utilise proven gasification technology that has been operational in Europe for approximately 10 years. Gasification technology is more efficient than conventional combustion technology, enabling a higher proportion of the energy contained within a waste mass to be recovered. This process results in cleaner combustion and lower atmospheric emissions than conventional mass burn waste incinerators. The process will generate approximately 7.5MWe renewable electricity for distribution to the local grid network. It is estimated that this is sufficient to power 11 000 homes. Some of the generated renewable electricity will be required to feed back into the gasification process which, once operational, is largely self-sustaining.

2.3.4 There exists the opportunity to utilise quantities of excess steam and heat from the process offsite, for example, as part of a community heating scheme. BERL will explore opportunities to utilise heat (steam) produced by the Facility for existing and future domestic-heating uses including the proposed mixed use development on East Quay and South Quay (Refer to Appendix A of the Planning Application). Further more the Applicant is exploring opportunities to use electricity and heat with Associated British Ports and Dow Corning Ltd..

2.3.5 With respect to the built environment, given the surrounding industrial landscape no significant visual intrusion is anticipated as a result of the Facility. The onsite lighting scheme will be developed as part of the detailed design, and the potential environmental impacts (i.e. efficiency in use) and light pollution will be considered. Externally, it is anticipated that there will be security lighting fixtures and external lamps. All lighting features will be designed in order to minimise light pollution through appropriate siting and orientation, and to ensure safe working levels. In order to reduce the impact of external light, the detailed design will reflect guidance from the Institute of Lighting Engineer's Guidance Note for the Reduction of Obtrusive Light, 2005.

2.4 Low Embodied Energy Materials and Resource Efficiency

2.4.1 In order to reduce the environmental impact associated with the specification and use of materials, as part of the detailed design, BERL will consider specifications in terms of the quality, durability, and appropriateness to the context and also the amount of embodied energy within materials. An important way that embodied impacts can be reduced is through the use of secondary materials, sources of which will be investigated as part of the design process. Opportunities to reuse materials from the excavation of the existing made ground site will be considered. Wherever possible BERL will also utilise recycled materials during construction.

2.4.2 BERL will seek to source materials locally where possible, ideally within 35 miles of the site in order to reduce transportation distances. Where possible, contractors will also be sourced from the local community. It is not envisaged that significant volumes of timber will be required, however any timber used onsite will be independently certified by the Forest Stewardship Council (FSC) or equivalent, wherever possible, to provide evidence of legal and sustainable sources of timber.

2.5 Water Conservation and Sustainable Drainage

2.5.1 It is recognised that water is a finite resource which has financial and environmental cost associated with its purification and supply. There are no surface water features within the site boundary. Existing features within the vicinity of the site include the Cadoxton River (280m to the east), Severn Estuary (370m to the north), Breakwater Streams (300m to the southwest), and features of the Barry Docks, including the main dock gates (450m to the east), and Eastern Dock Wharf (100m to the southeast).

2.5.2 Consultations with the Environment Agency (EA) concluded that the site lies entirely within Flood Zone C2 – an area of floodplain without significant flood defence infrastructure. A Flood Consequence Assessment (FCA) has been prepared by PB and submitted as part of the Planning Application to demonstrate the consequences of flooding can be acceptably managed, in accordance with Technical Advice Note 15. Preliminary site layout drawings indicate that the site is designed at an elevation of 8.50 mAOD. To reduce the risk of flooding, final site elevations, and in particular roadways and site entrances, will remain above the 1 in 200 year tidal flood level (plus effects of climate changes) as a minimum.

2.5.3 The EA confirmed that there is no runoff restriction in place at the Barry site, due to its proximity to the Barry Docks. The Site is under the protection of a Catchment Abstraction Management Strategy (CAMS), which aims to manage the quantity of water removed from the groundwater.

2.5.4 The proposals will alter the ground surface from being primarily scrub growth to hardstanding – including large areas of impermeable features such as parking areas, buildings, and roadways – which would alter flooding and local drainage patterns. BERL will be taking steps to reduce the run off of surface water from the site, and provide appropriate and effective drainage design. The measures that will be considered at detailed design will include:

- appropriately sized storage lagoons, soakaways, and other sustainable drainage systems (SUDS) to attenuate surface water drainage, control surface water runoff, and provide natural water treatment;
- ensuring that any land proposed for soakaways has adequate permeability;
- the use of captured surface water runoff from building roofs and hardstanding will be explored;
- building design to capture rainfall from roofs for onsite use;
- new drainage systems will be designed and sized in accordance with current best practice to reduce risk of flooding;
- road levels, parking areas and building floor levels will be arranged such that essential buildings are not put at risk from site-generated surface water flooding, and there is no increased risk of flooding to existing parts of the site or outside the site;
- plant to be designed and engineering to ensure that all water effluents/discharges will be in accordance with the limits set by the EA;
- surface water drainage from parking areas and hardstandings will be passed through a suitably designed oil interceptor prior to discharge;
- to avoid onsite ‘ponding’, detailed design of hardstanding/roadway will include properly designed sloping, bunding, kerbs etc, to ensure adequate drainage;
- due consideration will be given to vegetated drainage systems during detailed design, to reduce pollution risks from surface runoff before entering receiving waters; and
- within normal plant operation, the air cooling condensers supply water to the quench pits. If a supply shortfall occurs, collected surface water could be used – which would pass through an interceptor prior to use.

2.6 Waste Management

2.6.1 During construction a Site Waste Management Plan (the Plan) will be implemented to ensure that opportunities for reusing and recycling waste, both on and offsite are maximised. The Plan will also describe the type and description of waste removed from site, the identity of the carrier removing waste from site, and their waste carrier registration number. It will also include information relating to the site that the waste will be taken to, and details of its permit or exemption. Importantly, the Plan will also include details of how the waste hierarchy (eliminate, reduce, reuse, recycle, recovery and dispose), will be applied. Also included within the Plan will be the design and management measures to reduce waste, and segregation, reuse and recycling of site gained materials. The Plan will also include details of how measurement of waste will take place, and steps to identify lessons learnt for use on future developments.

2.6.2 Waste outputs of the process include bottom ash, and also Air Pollution Control (APC) residues (known as fly ash). It is anticipated that the fly ash will account for approximately 4% by weight of the waste entering the system. The fly ash will be tested to determine its characteristics; fly ash is normally classified as hazardous waste and requires disposal at a licensed special waste landfill. The applicant is investigating recycling opportunities for the fly ash however, should this not prove possible the fly ash will be disposed of at a suitably licensed waste management facility. Bottom ash is anticipated to account for approximately 18% by weight of the waste entering the system. Bottom ash is inert and is suitable for re-use as an aggregate material in construction. Opportunities to recycle the Fly Ash are being investigated by the Applicant.

2.6.3 Additional site waste, such as that generated within office facilities, will be managed in accordance with the waste hierarchy. The focus will be upon material efficiency, and eliminating waste streams where possible. The next step will maximise reuse and recycling as appropriate.

2.7 Landscape, Trees and Ecology

2.7.1 As part of the EIA process to accompany the current Planning Application, assessments of landscape and ecology have been undertaken. Following a desk-study, an ecological site assessment was undertaken in April 2008, to identify habitat types and the potential presence of ecological constraints. The desk study search produced a number of designated sites within a 2 km radius of the survey area, the closest being Hayes Point to Bendrick Road Site of Special Scientific Interest (SSSI). No records of protected species were identified within the immediate site vicinity.

2.7.2 The ecological site assessment identified that the survey area was disused and comprised made ground. The habitats predominantly comprised scrub and ruderal vegetation, considered to be of no greater value than neighbourhood value. As such, the study area was found to be of very limited conservation value and biodiversity interest. No site features are considered to be suitable for retention as part of the site layout/landscaping scheme.

2.7.3 Strands of Japanese knotweed were identified on-site, these will be treated prior to construction with the aim of preventing the spread and ideally eradicate knotweed from the site. Effective management during the construction phase will be an important consideration to be included within the CEMP. Furthermore, post-development management and monitoring of this aspect may therefore be required, as part of the eradication programme.

2.7.4 There exists some potential to incorporate biodiversity elements to the development site, through the use of appropriate landscaping. As part of the landscaping, the use of locally sourced indigenous trees and plants has been recommended. This allows marginal planting to be put in place and will increase opportunities for wildlife at the site. Further consideration will be given to the area and depth during detailed design of the pond/lagoon. Opportunities to create habitat on buildings and structures by incorporating features such as nest boxes for birds will be considered. Figure 8.6 accompanying the Planning Application details the proposed landscaping scheme..



3 SUMMARY

- 3.1.1 The proposed Facility will process approximately 80,000 tonnes of residual waste per annum using an efficient proven technology to produce 7.5 MWe of renewable energy, enough to power 11,000 homes. The site is an underutilised brownfield site located on Atlantic Way, close to Barry Docks within an existing industrial area. Access to the site is obtained from Ffordd y Mileniwm and Wimbourne Road (private road); the site access is off Atlantic Way, (private road)
- 3.1.2 Sustainability considerations have been incorporated as part of the development process and will be expanded upon during the detailed design process, including recycling surface water within the energy recovery process, bicycle parking and showers.
- 3.1.3 During construction, impacts will be managed through the CEMP, Construction Best Practice Guidelines and during operation through BERL's Environmental Permit.