

LEITH RENEWABLE ENERGY PLANT

What does this mean for Leith?

Forth Energy proposes to develop a Renewable Energy Plant fuelled by biomass at the Port of Leith. This will be capable of operating 200MW of electricity and 60MW heat, using a sustainable fuel. The renewable electricity and heat will benefit Leith and the wider area.

- Leith has the potential to become a **centre for the renewable energy industry**;
- The **port** has been identified by Scottish Enterprise as a **suitable location** to support the expanding off-shore power generation sector;
- The plant can contribute to meeting **Scottish Government targets** to provide **80% of Scotland's electricity and 11% of Scotland's heat from renewable sources by 2020**;
- The port is a suitable location for biomass power generation which will **save 89% of the carbon emissions associated with a coal fired power plant**;
- The plant will provide **300 to 500 construction jobs, peaking at approximately 700** and **45 permanent operational jobs**;
- There is potential for **education and training opportunities**;
- There will be **contracting opportunities** for local suppliers;
- There is an opportunity to supply **renewable electricity and heat to existing and potential future customers** such as at the proposed new developments at **Leith Docks**; and
- The plant is amongst the **largest infrastructure developments planned in Scotland** in the next ten years.



What is this exhibition about?

Many people will have seen our introduction to this project at the previous exhibition held in February. This exhibition is the second in a series of three public events being held to engage with the public on the proposals. The purpose of this exhibition is to:

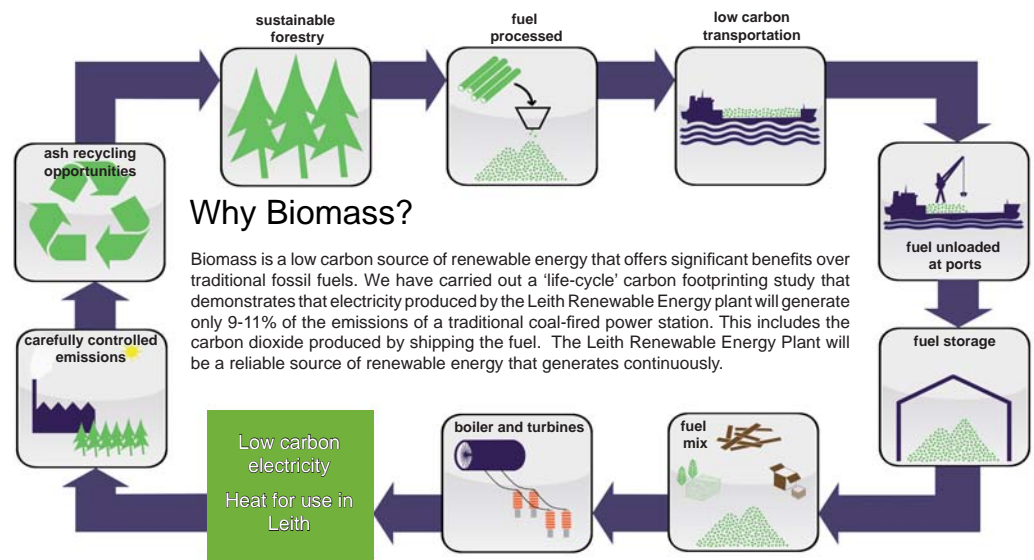
- Answer the questions asked when we introduced the proposals;
- Provide further information as we assess the project in more detail;
- Listen to your ideas and record and review feedback; and
- Clarify the application process and advise how you can comment on the project as it moves forward.

What is Biomass?

Sustainably sourced biomass is a recognised source of renewable energy. Fuel stock for Leith Renewable Energy Plant will include a mix of virgin wood chips or pellets supplemented by energy crops, residues from agriculture and recovered biomass material, such as timber, paper and cardboard.

Where will we get the fuel from?

The majority of the fuel will be imported from sustainable sources overseas including Scandinavia and North America. There is not enough fuel available in the UK market to service the plant. Over time there may be more opportunities to use UK sourced fuel, if energy crops are planted and managed.



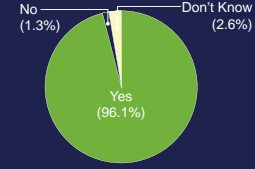
Forth Energy is a joint venture between Forth Ports and SSE



QUESTIONS YOU HAVE ASKED US

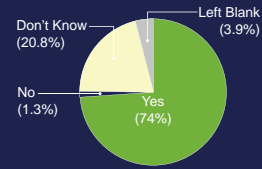
At the public exhibition held in February, 77 people completed questionnaires providing feedback on their views. Visitors to the exhibition were substantially in favour of renewable energy generation, in favour of biomass as a source of renewable energy and supportive of the positive benefits that such a development will bring to Leith.

Do you support the principle of renewable energy generation?



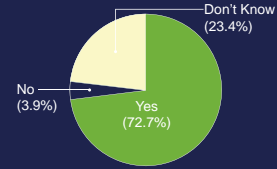
Total: 77 Questionnaires

Do you support the use of Biomass as a source of renewable energy?



Total: 77 Questionnaires

Do you believe this proposed renewable energy plant will bring positive benefits to Leith?



Total: 77 Questionnaires

Whilst many of you accepted the general principle of biomass generation, you also raised a number of key issues that you felt were important to the development of the proposed Leith Renewable Energy Plant. A summary of the main comments raised at the previous exhibition, including environmental, transport and design issues, and the relevant responses to these issues are set out in this exhibition.

We have been undertaking a full Environmental Impact Assessment (EIA) of the proposal. The purpose of the EIA process is to identify any significant impacts which the development could have on the environment and propose mitigation measures. This process has allowed us to carry out a detailed assessment of the issues raised during the first stage of engagement earlier this year.

ENVIRONMENT

Key Comments

Will the plant affect air quality?



Operational renewable energy plant in Hammarby, Stockholm

Will the operation of the plant affect nearby homes?

Will the plant have an impact on pollution in the Firth of Forth?

Will the plant generate any noise and could this affect nearby residents?

Response

The proposed Leith Renewable Energy Plant must demonstrate that it will not have a significant impact on air quality in order for the Scottish Government to grant consent for the project.

The scale and height of the plant has been designed to ensure that emissions from the plant will have no significant impacts on the local area. The plant will be regulated in operation by the Scottish Environment Protection Agency (SEPA), which sets strict emission limits that must be observed. The plant will be monitored on a full-time basis while in operation.

The Environmental Impact Assessment we have undertaken gives careful consideration to issues of noise, dust and vibration. The plant will be designed to ensure that residents are not affected by the proposed development. Fuel will be stored undercover.

Measures will be put in place to prevent pollution during construction, operation and decommissioning of the plant. These will include procedures for the safe storage, handling and use of potentially polluting materials, such as oils and chemicals, based on guidelines produced by the Scottish Environment Protection Agency to prevent the release of pollutants into the water environment.

To maximise the thermal efficiency of the plant, water used to cool the plant will be abstracted from and returned to the Firth of Forth. The heat contained in the discharged water will be mixed rapidly with the large flows of water in the Forth, resulting in no significant impact on aquatic ecology.

Existing noise levels are being monitored and modelling will be undertaken for the plant. There will be no significant effect from operational noise on the surrounding area.

This will be achieved through early consideration of outline noise mitigation measures tailored to the development site. These will be detailed, along with full data on the noise model, within the Environmental Statement that will be submitted with the application.

QUESTIONS YOU HAVE ASKED US

LOCAL BENEFITS

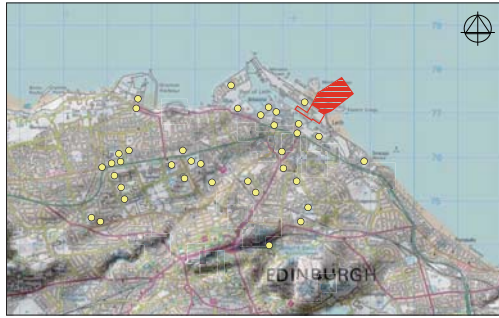
Key Comments

Will the plant create job opportunities for local people?

Response

Yes. The plant will create between 300 to 500 jobs during the construction period, peaking at approximately 700 and 45 full time operational jobs. The Edinburgh and Lothians area has a large labour pool, and it is likely that many of the staff for these new jobs will be local. Forth Energy will work in partnership with the City of Edinburgh Council to encourage local employment opportunities. There will also be port jobs created and ongoing contracting opportunities to supply the plant in the future.

How is electricity generated and is there an opportunity to provide renewable heat in the local area?



Locations of Potential Heat Customers in and around Leith

The heat from the combustion of the biomass produces steam to drive a steam turbine which in turn generates electrical energy for supplying into the National Grid. There is potential for combined heat and power to be used across the Leith Docks development and in new developments in the wider area. A heat plan will take account of the requirements of identified renewable heat users.

There is an opportunity to provide renewable heat from the Leith Renewable Energy Plant to serve the local area. We have undertaken heat mapping, and are looking at the dynamics of heat use and the benefits that this may bring, including the economic benefits for new businesses locating in the area.

Forth Energy is currently contacting potential customers to raise awareness of the opportunity that the Leith Renewable Energy Plant could provide locally. Potential customers identified initially include local authority users, education providers, and commercial and industrial organisations.

TRANSPORT



Quayside at Sodertalje's renewable energy plant in Sweden



Typical ship used for delivering fuel to the plant

Key Comments

Will the plant affect the local road network?

Response

The projected traffic volumes are considered to be very low and unlikely to be detectable within the day to day variation in traffic flow on the local road network. During operation, it is estimated that there will be 32 HGVs and 31 staff vehicles entering and leaving the plant every day, resulting in a total of 64 HGV movements and 62 staff vehicle movements throughout the day.

Is there an opportunity for the existing rail network to transport fuel to the plant?

The majority of the fuel will be transported to the plant by ship and there are no plans to use rail.



QUESTIONS YOU HAVE ASKED US

FUEL SUPPLY

Key Comments

Will Forth Energy investigate the potential to burn Leith's waste as fuel for the plant?



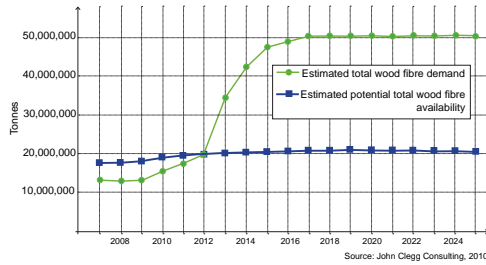
Typical Fuel Stock



Wood chip pile at Sodertalje's renewable energy plant in Sweden

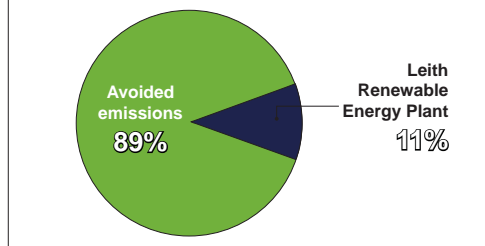
Will UK sourced biomass fuel be used in the plant?

Forecast total potential availability and total demand for wood fibre in Britain from 2007 to 2025



How sustainable is it to import fuel from overseas?

Lifecycle carbon emissions from Leith Renewable Energy Plant compared to those from a Coal Plant (including emissions from shipping)



What is the size of the carbon deficit, or delay between when the carbon is emitted from the plant and re-captured by the growth of replacement trees or crops?

Response

No. The Leith Renewable Energy plant has been designed to generate energy by burning wood based biomass fuel only.

The fuel type forms part of the operating licence granted by the Scottish Environment Protection Agency. The plant will be designed to burn a specific range of biomass types – wood chips or pellets, energy crops such as the grass 'miscanthus' and recovered biomass materials such as used wood, paper and cardboard.

A recent report demonstrates that the volume of biomass available in the UK is limited.

Due to the limited availability of biomass fuel in Scotland and the UK on the scale required for the plants, we expect to use predominantly imported, sustainably harvested wood. A small proportion may consist of recovered timber construction waste, paper and cardboard. As the majority of wood will be imported from abroad, there will be limited effects on the Scottish timber market.

Forth Energy will however seek to develop local supply chains, and work with the Scottish Government and Forestry Commission to promote an increased proportion of material sourced from Scotland and the UK during the lifetime of the plant.

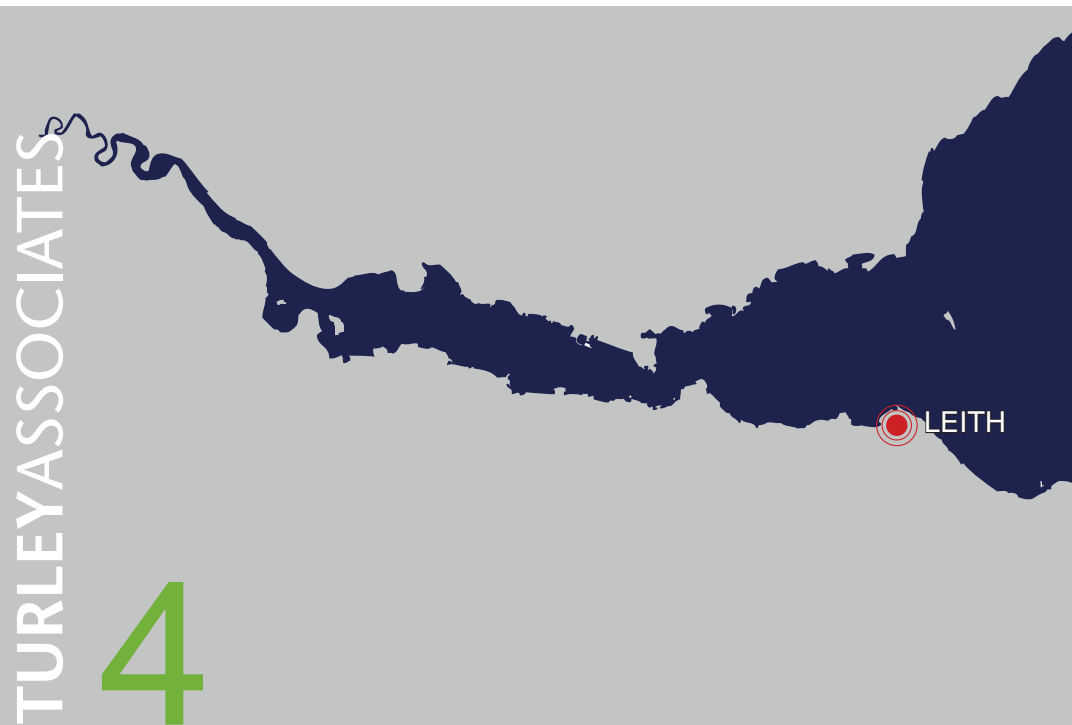
Sustainable biomass generation offers an opportunity to move away from electricity and heat generated from fossil fuels to a lower carbon source.

Forth Energy proposes to use only sustainably sourced wood. All fuel will be sourced from forestry activities which have been certified as sustainable by an internationally recognised third party. This means that as a minimum, any trees harvested will be replaced. In so doing, Forth Energy shall ensure that the fuel procurement process maintains high standards on environmental, social and economic grounds.

We have carried out a 'life-cycle' carbon footprinting study of the proposed plant, taking into account the production and processing of the fuels, and transport of the fuels from Europe and North America to the port location. The study demonstrates that the electricity produced at the plants will generate only 9-11% of the emissions associated with a traditional base-load coal-fired power station.

The size of any short term carbon deficit associated with biomass fuel depends on the source, species and management system of the biomass resource. Using hardwood timber with a re-growth period of 40 years will lead to a larger deficit than use of species which achieve maturity in a shorter time-frame. For instance some short rotation crops can reach maturity in as little as 6 years.

The remaining deficit could be further reduced by re-planting at an earlier date or an increased rate, to offset the initial combustion emissions. The plant's fuel will also include a proportion of agricultural residues and recovered biomass materials like paper and cardboard which also reduce overall carbon impact. In comparison, fossil fuels, such as coal, are fuel sources renewed within a timescale of many hundreds or thousands of years, so the 'deficit' is continually increasing.



QUESTIONS YOU HAVE ASKED US

VISUAL IMPACT

Key Comments

What will the plant look like, and where will you see it from?



View of the outline shape of the plant from Edinburgh Castle



View of the outline shape of the plant from Constitution Street



View of the outline shape of the plant from Royal Yacht Britannia



View of the outline shape of the plant from Ocean Drive



View of the outline shape of the plant from Salamander Street

Response

The plant will include large buildings which will be visible from a range of locations. Forth Energy has modelled the visual impact of the key components of the plant using a technique called Landscape and Visual Impact Assessment (LVIA). This considers the visual impact of the proposed plant from a range of viewpoints identified on the plan below.

It is very important to note that these views just show the untreated outline of the proposed plant. Architects will be appointed to design the appearance of the plant, and to consider appropriate materials for its construction.

Viewpoint locations included in the LVIA



<p>Viewpoints</p> <ol style="list-style-type: none"> 1 Ocean Drive, Leith 2 Customs Wharf, Leith 3 Sandport Place 4 Royal Yacht Britannia 5 Baltic Street 6 Constitution Street 7 Junction Bridge, Great Junction Street 8 Salamander Place 9 Leith Links - Duncan Place 10 Leith Links - East Hermitage Place 11 Leith Links - Summerfield Gardens 12 Western Harbour Drive 13 Seaford Road 14 A602 Ferry Road 15 Leith Walk 	<p>Viewpoint locations</p> <ol style="list-style-type: none"> 16 Calton Hill 17 Granton Harbour 18 Dean Bridge 19 Edinburgh Castle 20 Arthur's Seat, Holyrood Park 21 Blackford Hill 22 Edinburgh Road, Musselburgh 23 Fisherrow Links, Musselburgh 24 Cramond 25 Kinghorn Pier, Fife 26 Aberdour, Fife 27 Wester Meadows, Dalkeith 28 A68 near Dalkeith 29 Minor Road, Stoneyhall Hill, Fife 30 Allermuir Hill (Pentland Hills)
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The architecture of the plant should be considered carefully

Forth Energy recognises that the design of the renewable energy plant is very important to local people and have appointed Gordon Murray Architects to advise on design and entered into a dialogue with City of Edinburgh Council to develop ideas about how the plant may look. Once Forth Energy has consent for the principle of the plant from Scottish Ministers, the detailed design will require to be agreed with City of Edinburgh Council before development can commence.

How does it fit with the proposed Leith Docks development?



View from a residential area in Hammarby, Stockholm of a renewable energy plant

The focus of development on Edinburgh's Waterfront over the next decade will be on developing the new Harbour area, recently approved by the City of Edinburgh Council, improving and further developing Ocean Terminal and completing Western Harbour. These developments are estimated to generate a minimum of £180 million gross value added growth per annum to the local economy. Leith Docks will remain in operational use for some considerable time. The Port of Leith has been identified by the Government in its National Renewables Infrastructure Plan as a potential hub for the renewable energy industry, which would bring new manufacturing jobs to Leith.

WHAT MIGHT LEITH RENEWABLE ENERGY PLANT LOOK LIKE?

Gordon Murray Architects

Forth Energy is working with **gordon murray architects** to ensure that design is at the forefront of their proposals for Leith Renewable Energy Plant. Forth Energy is carrying out initial design investigations into the form and appearance of the proposed plant.

gordon murray architects are experienced in the design of renewable energy plants and other industrial buildings. They supported Scottish Power in securing planning consent for the biomass plant at Longannet, designed and constructed the Caledonian Paper Mills in Irvine and the award winning John Knox Street workshops in Clydebank.



Artist Impression of Leith Renewable Energy Plant

Design Concept

The Leith Renewable Energy Plant will have a significant presence on the city's waterfront and will seek to make a positive contribution to the Edinburgh skyline.

By using the visual cues of the historical industrial port backdrop and drawing inspiration from the maritime location on the edge of the Forth estuary and North Sea beyond it is anticipated an architectural response can be created which symbolises technological progress and a greener Scotland.

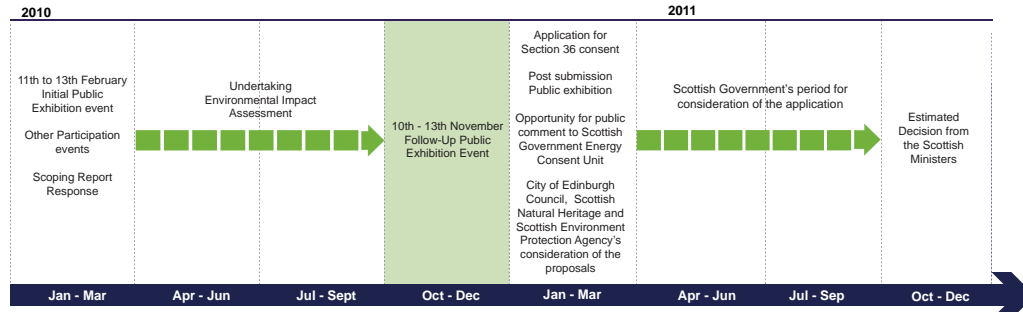


Artist Impression: View from Royal Yacht Britannia



Artist Impression: View from Constitution Street

Next Steps



Forth Energy will submit an application for consent to Scottish Government in January 2011. At this stage there will be an opportunity for you to submit your comments on the proposals to Scottish Government directly. The submission of the application is being held back until January 2011 to avoid consultation occurring over the holiday period. There will be another public exhibition on submission that summarises the application and provides information on how to make your comments.

In the meantime, please give us your thoughts and let us know if you want to find out more. If you would like further information please leave contact details with a member of our team. Alternatively feel free to contact us. This exhibition information can also be found at www.forthenergy.co.uk

Contact Information

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RENEWABLE POWER PLANTS IN SWEDEN

The Forth Energy team has visited three power plants in Sweden.

Hammarby Sjostad, Stockholm

Renewable power plant at the heart of a waterside regeneration area in Stockholm. It supplies a district heating system.



Hammarby Sjostad heat plant



Plant from nearby housing



Plant and adjacent housing site under construction

Sodertalje, Stockholm

Newly commissioned biomass power plant, using 75% virgin wood and 25% waste wood as fuel. Generating 85 megawatts of electricity and 220 megawatts of heat for a district heating system. Fuel arrives mainly by ship with some by HGV. It supplies heat to a district heating system and to nearby industrial users. Built adjacent to an energy from waste plant. Both are in an urban / industrial area.



Fuel stocks



Close up view of power plant



Sodertalje power plant



Power plant with fuel stocks

Helsingborg

Biomass power plant in a port location using virgin pellet as fuel. Generates 65 megawatts of electricity and 129 megawatts of heat for a district heating system. The Helsingborg heat network covers the whole city, extending some 17km in distance from the plant itself. The plant was commissioned in 1983.



View showing proximity of Helsingborg to plant



Fuel store



Power plant

