

Full Circle Generation Energy from Waste Facility




FULLCIRCLE
GENERATION

BOMBARDIER
the evolution of mobility

Northern Ireland's Sustainable Future

Local Solutions Delivering Local Benefits



The Full Circle Generation Energy from Waste Facility when operational will generate enough power for over 21,000 households and recover energy from waste generated by over 155,000 Northern Irish households. The facility will be operational by the end of 2017.



Full Circle Generation is developing a £107 million Energy from Waste Facility adjacent to Bombardier's Wing facility in Belfast Harbour Estate. The facility incorporates best available technology and will process a waste derived fuel to produce energy and heat. This strategic piece of Northern Irish infrastructure will deliver the following benefits:



Local Infrastructure

The development will allow the region to develop its own locally based gasification waste to energy facility capable of recovering **180,000mt** of Refused Derived Fuel each year. This development is in line with the Department of Environment's Waste Management Strategy 'Delivering Resource Efficiency'.



Renewable Energy

The facility will produce over **100,000MW** of energy each year. This base load energy source will go a long way to ensuring Northern Ireland's renewable energy targets are met.



Council Waste

The facility will address the needs of all of Northern Ireland's councils in meeting their ambitious landfill diversion targets as well as their local and European recycling targets. The facility will also provide greater transparency of waste movements, allowing Northern Ireland Environment Agency (NIEA) to easily track waste from households to end destination.



NI Industry

The plant is located adjacent to Bombardier's Wing facility and will provide the company with a predictable energy source for the next **20 years**.



Inward Investment

The **£107m** project has been financed without the need for public investment. As such the development represents a meaningful level of inward investment and given the all-equity nature of the project, it is regarded as one of Northern Ireland's largest ever pure equity transactions.



Complements Existing Infrastructure

The infrastructure to treat the level of waste required to feed the plant already exists within Northern Ireland and consequently the development is seen as 'bolt on' to Northern Ireland's already well developed waste management sector.



Jobs

The facility will create up to **250 jobs** during construction with an additional **20 employees** during operational stage. It has also the added benefit of supporting well over **1,000 jobs** currently employed within Northern Ireland's waste management and environmental services sector.



Circular Economy

The various benefits all added together meet all the fundamental attributes of a real Circular Economy, a destination for all regions focused on a sustainable future.

Protecting Local Industry





Businesses in Northern Ireland have faced continuously escalating energy costs over the last number of years. This issue alone is often cited as the single biggest challenge to Northern Ireland's heavy industry and manufacturing sectors. If it is not addressed, there is a very real threat to the ongoing viability of some of these businesses.

Bombardier's Business Case

Energy costs for Bombardier, Belfast are critical to its global competitiveness. They are currently three times those of other Bombardier sites in North America and significantly higher than costs faced by many other competitors. Consequently, they impact Bombardier's ability to retain its existing work packages and win new contracts.

Over the past few years, Bombardier has launched several new energy projects to help reduce costs and reliance on fossil fuel. In January 2014, the company received planning permission for the EfW plant.

Full Circle Generation's Energy from Waste Facility will provide Bombardier with a competitive energy source long term. It will halve the company's carbon footprint, with the added bonus of cutting significantly the amount of waste currently going to landfill in Northern Ireland.

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Global Partner with Proven Experience

The Full Circle Generation Energy from Waste Facility has been procured under a robust Design, Build and Operate contract with Bouygues Energy and Services. Under the contract, Bouygues will be responsible for building out the development within a stated timeframe as well as operating the plant for 20 years.

As one of Europe's largest and most respected energy and construction contractors with a proven track record, Bouygues is a real asset to the overall project and provides the developers with significant design, construction and operational comfort.

Bouygues Energies & Services, a subsidiary of Bouygues Construction, is an expert in energy performance and services. Every day across the world, Bouygues Energies & Services designs, installs, maintains and operates technical systems and provides tailored high added-value services to its clients. By way of example Bouygues Energies & Services is currently operating a photovoltaic plant in Thailand, which it previously constructed. It is now constructing two thermal power plants in Saint-Martin (in the French West Indies) and Gibraltar, as well as a waste-to-energy gasification plant in England.

In Great Britain and Ireland, Bouygues Energies & Services offers its customers turnkey or bespoke solutions across all or part of the lifecycle of their assets, and is particularly present in the industrial and renewable energy sectors.

Amongst those, the Waste-to-Energy market takes a preponderant place in the offer of Bouygues Energies & Services which have been successful in closing two majors deals in 2015: a 10MWe biomass gasification plant in Hoddesdon (Hertfordshire-England) as well as the 15MWe biomass gasification plant in Belfast (Northern Ireland).

Dedicated structures have been developed to design, build and then operate and maintain these facilities, supported by an in-house engineering, R&D and innovation departments.







**3 TREATMENT
PLANTS**

**& 4 TRANSFER
STATIONS**

LOCATED ACROSS NI WITH A
TOTAL LICENSED CAPACITY OF

600,000mt

CURRENTLY MANAGING OVER

**360,000mt
OF WASTE**

PER ANNUM ON BEHALF OF

**6 COUNCILS
AND OVER**

3,000

PRIVATE & PUBLIC

CUSTOMERS

DIVERTING OVER

160,000mt

FROM LANDFILL EACH YEAR

EMPLOYING OVER

**190
PEOPLE**

Turning Waste into a Resource

The engineered fuel required to run the facility, known as Refuse Derived Fuel (RDF), will be supplied through RiverRidge Recycling Limited.

RiverRidge Recycling is regarded as Northern Ireland's largest independent waste management company. The Northern Ireland based company has built a strong reputation for itself as a pioneer in the development of waste derived fuels and provides sustainable alternatives to landfill for a number of Councils including:



**Belfast
City Council**



**Causeway
Coast & Glens
Borough Council**



Derry City & Strabane
District Council
Comhairle Chathair
Dhoire & Cheantar
an tSrátha Báin
Derry City & Strabane
District Council



Comhairle Ceantair
Lár Uladh
Mid Ulster
District Council



**Armagh City
Banbridge
& Craigavon**
Borough Council



**Mid & East
Antrim**
Borough Council

The company has three of Northern Ireland's most advanced facilities and currently manages over 360,000mt of waste annually. The organisation is by far the most experienced producer and exporter of waste derived fuels in Northern Ireland and has established supply arrangements with some of Europe's leading Waste to Energy operators in Sweden, Denmark, Germany, Netherlands, Republic of Ireland and Spain.

RiverRidge Recycling's treatment process, along with the requirements of the Full Circle Generation Energy from Waste Facility for a pre-treated fuel, ensure that all recyclates are extracted from the incoming waste streams prior to final recovery of the residual fuels. By following this commitment to sustainable waste management practices, RiverRidge Recycling ensures that Councils' recycling targets, as well as their overall landfill diversion targets, are addressed.

Reducing NI's Reliance on Landfill

Northern Ireland has committed itself to reducing its reliance on the landfilling of Local Authority collected waste under the European Landfill Allowance Trading Scheme (NILAS).

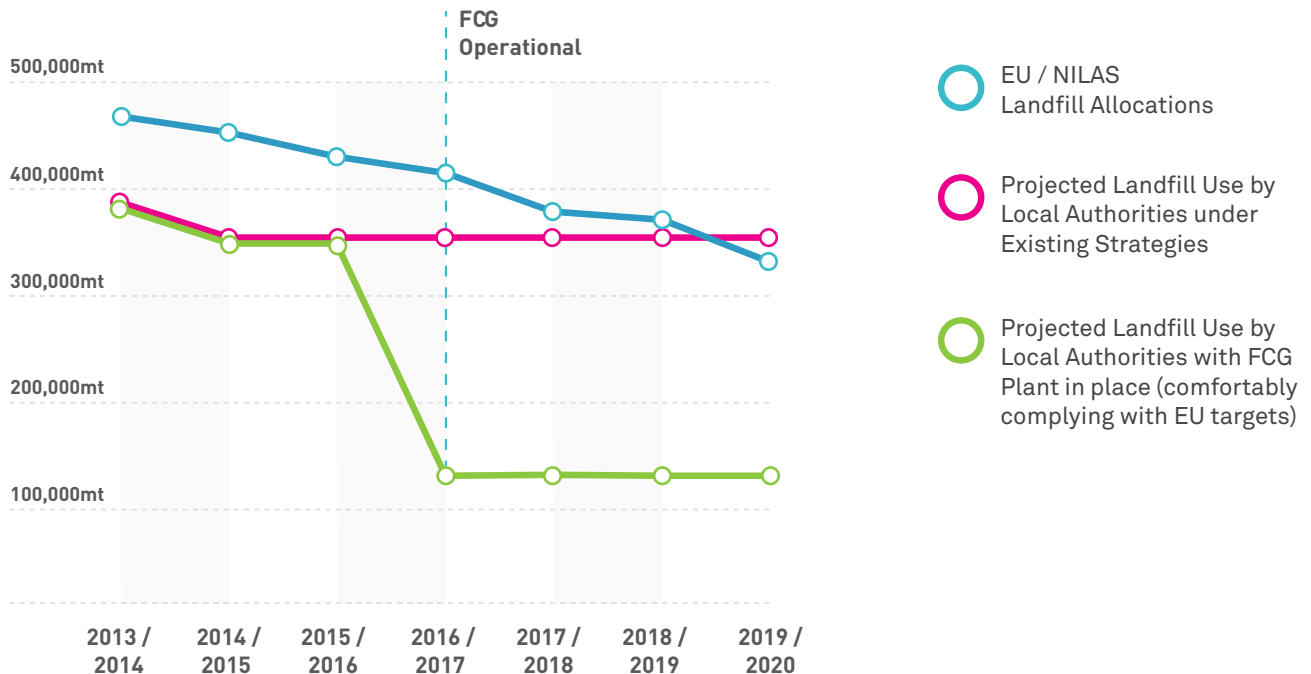
A strategy of reliance on the landfilling of Household Residual Waste without pre-treatment as a low cost solution for Local Authorities is unsustainable over time.

The use of existing private sector waste treatment infrastructure by some Local Authorities has allowed NI to achieve these targets over the past few years (Ref: NIEA Annual Report 2014/15).

The Full Circle Generation Energy from Waste Facility along with RiverRidge Recycling's existing waste treatment infrastructure provides a foundation for Northern Ireland's landfill diversion strategy as well as its long term recycling ambitions.



Future Landfill Requirements



Assumptions

Rate of use of Landfill tonnage by Councils continues at the same rate.
 No increase in annual household waste volumes takes place.
 Sufficient landfill capacity is available over the period.
 Landfill tonnages are based on stated NILAS BMW targets converted to actual waste volumes.



The Investor Group



Green Investment Bank

RiverRidge Energy Limited was set up by Irish Energy Investments Limited (the parent company of RiverRidge Recycling) to facilitate their investment into the FCG project. IEI have invested over £18 million into various energy and waste related assets in Northern Ireland since 2011.

UK Green Investment Bank plc is the first bank of its kind in the world, the UK Green Investment Bank (GIB) was launched in November 2012 with £3.8bn of funding from the UK government. In the intervening years it has committed £2.3bn to 58 green infrastructure projects with a total value of £10.1bn. It is now the most active investor in the UK's renewable energy and energy efficiency industries. GIB's £47m commitment to Full Circle Generation's £107m energy from waste (EfW) plant in Belfast is the organisation's first direct investment in Northern Ireland. It has previously made three indirect investments in Northern Ireland via fund manager Foresight: a £20m investment in the construction of the 15.8 MWe Evermore Renewable Energy combined heat and power (CHP) station in Derry/Londonderry; and two investments in two on-farm anaerobic digestion (AD) plants – one in Cookstown, County Tyrone, and the other in Banbridge, County Down – totalling £6.5m.

Equitix is a leading investor, developer and long-term fund manager of core infrastructure assets in the UK. Since inception of the business in 2007, the Equitix team has successfully raised over £1.6 billion equity across Equitix Funds I, II, III & IV and the Equitix Energy Efficiency Funds. Equitix offers consortium clients and partners real 'Partnership' for the length of the concession, becoming actively involved from point of engagement through to the end of the project life.



As an active investment manager, Equitix brings a fresh and entrepreneurial approach to bidding, acquiring and operating infrastructure projects. Established to work in partnership, they recognise that tangible, long-term results must be the central goal of any investment. Sustainable communities are therefore at the heart of the Equitix approach and ethos and this is reflected in their choice target sectors which include waste and renewables, healthcare and education.



P3P is a developer and operator of energy centres across the UK. It provides cost-efficient, onsite energy generation solutions to industrial users, and brings expertise in financing, design, construction and operation to the projects. The company was founded in 2011 and, despite its relatively young existence, the partners command a wealth of previous experience in the industry. The company is technologically agnostic, with capability in a range of technologies such as CHP (combined heat and power), biomass, renewables and energy efficiency.

P3P also works with a variety of businesses that include Hilton Hotels. Jaguar Land Rover and APS Salads – the UK's largest tomato grower. It is with the latter, APS Salads, that P3P have the greatest familiarity, delivering state-of-the-art CHP energy centres for their greenhouses. The energy centre built for their Kent operations in 2012 and was the first installation of its kind for a UK horticulture site, and has 15 MW of local generation with carbon capture built in.



For further details or to
arrange a full presentation
on the project, please
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