

## **Glasgow Recycling and Renewable Energy Centre (GRREC)**

A large amount of the general waste in the city goes to landfill. As a consequence of increasing landfill tax costs and new waste regulation, in December 2009 Glasgow sought a long-term, cost effective solution for residual waste treatment.

In December 2011, the council approved a 25-year partnership with Viridor to Design, Build, Finance and Operate (“DBFO”) a residual waste treatment facility to process the council’s residual waste at the council owned property at Polmadie.

### **GRREC Plant Throughput & Treatment Process**

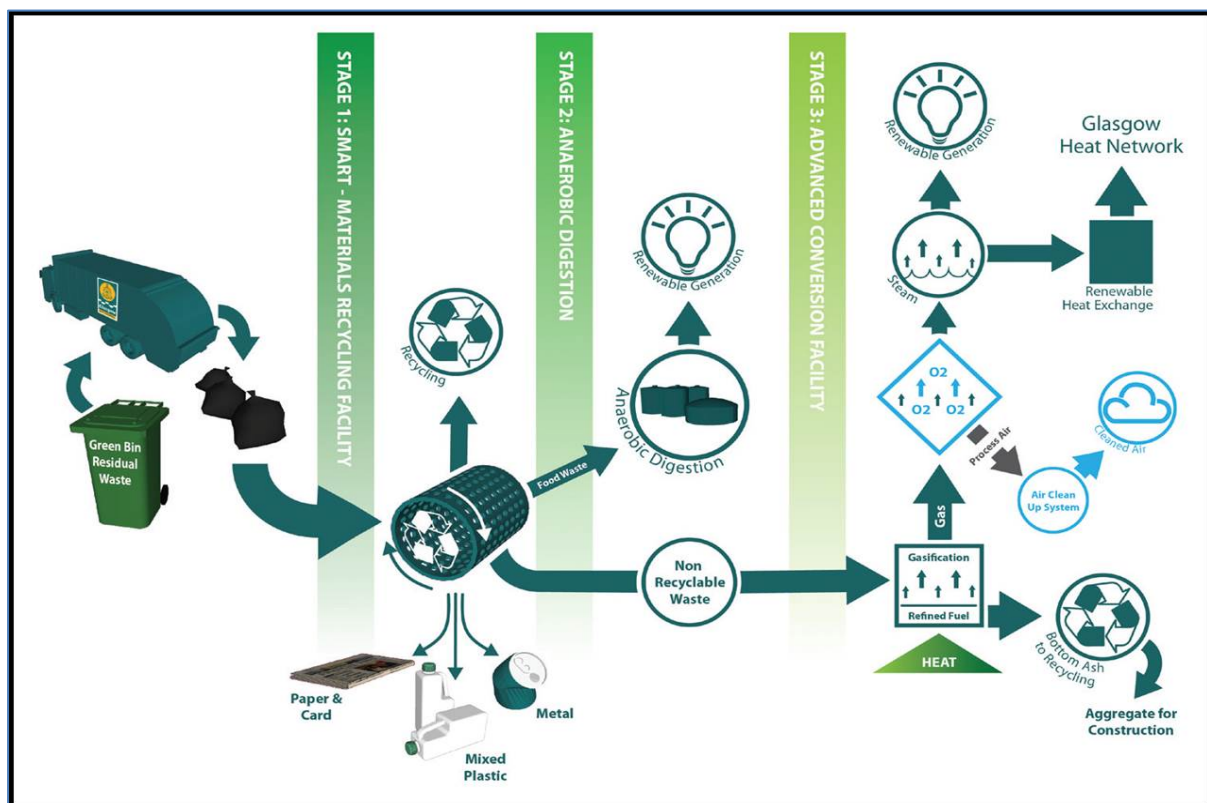
The GRREC has been designed to process up to 200,000 tonnes per annum of the council’s residual “black bag” waste; this material will be primarily of domestic origin. The council has guaranteed to provide Viridor 175,000 tonnes per annum. The GRREC is due to receive waste in 2016.

The technology within the GRREC has been selected to maximise the extraction of high quality recyclables and minimise the amount of material sent for disposal at landfill. The GRREC uses a three stage treatment process and the diagram below highlights the flow of waste through the plant.

The three stages of the GRREC treatment process are as follows:

- **Stage 1:** A Smart Materials Recovery Facility (S-MRF) is the first stage of processing and involves a series of mechanical and manual processes which extracts recyclables (paper, plastic bottles, cans, etc.), prepares organic material for anaerobic digestion (AD) and produces a Refuse Derived Fuel (RDF) from the remaining material to fuel the Advanced Conversion Facility (ACF)
- **Stage 2:** The organic material extracted by the S-MRF is prepared for use in the AD facility. This process involves mixing organic material with water to produce a sludge which is then transferred to an AD tank where organic bacteria break down the material over a period of approximately 14 days to produce a biogas. This gas is then captured and transferred to a Combined Heat and Power (CHP) plant where it is combusted to produce electricity and heat
- **Stage 3:** The ACF is the final stage of the process and ensures a high level of landfill diversion. RDF produced by the S-MRF is transferred to a series of thermal conversion units which heat material to very high temperatures in low oxygen conditions to produce a synthetic gas. This gas is then captured and fully combusted within a separate chamber to produce superheated steam which is transferred to a turbine to generate electricity. There is also potential to divert steam from the turbine to provide heating to support a District Heat Network

## Three Stage Residual Waste Treatment Process at GRREC



### Landfill Diversion & Recycling Performance

The GRREC will achieve a minimum landfill diversion rate of approximately 80% and a recycling level of approximately 18% of materials processed at the facility. Although the GRREC will provide additional opportunities to recycle, the quality of material recovered via this process will not achieve the same standard as those collected within the household recycling services; therefore, it is essential that residents continue to segregate recyclable material from the general waste stream.

### Community Benefits & Legacy

Community Benefits are a key element of the GRREC project and form an important part of the contractual agreement between the council and Viridor. The main community benefits are:

- Creation of 254 jobs
- To recruit a minimum of 10% of total labour workforce as new entrant trainees
- Places for apprenticeships and work experience
- Opportunities for local organisations to tender for business

A dedicated visitor centre has been constructed at Polmadie which will host visits by interested parties, including schools. The visits will be structured to raise awareness of the importance of recycling and waste minimisation and link to the wider objective of delivering a “zero waste” society.