

## **BAT Assessment – Electricity Supply Winterton Road Scunthorpe**

### **Baseline Situation**

The site uses mains electricity up to the maximum capacity available; diesel generators are used because there is insufficient supply capacity to the site to run the RDF and SRF shredders.

Previous enquiries with Northern Powergrid indicate that providing sufficient capacity would require a new transformer, with significant costs to the business as well as infrastructure modifications with further significant costs. Therefore increasing mains capacity was not considered economically viable at the time was not considered an available technique.

### **Emissions**

The base load diesel generators used to power the shredders give rise to point source SO<sub>2</sub>, NO<sub>x</sub>, and particulate emissions that can impact the local environment.

The site is undertaking emissions monitoring and assessment of the generators and will continue to review the availability, feasibility and practicality of:

- Reducing emissions from the existing generators.
- Replacing existing diesel generators with gas fired generators.
- Alternative Electricity Supplies.

Based on the thermal efficiency of a standard diesel generator, CO<sub>2</sub> emissions arising from onsite generation may be around 8-9% higher than those associated with UK grid supply (based on current carbon intensity of UK supplies). However, when the UK average transmissions losses of 9% are taken into account the CO<sub>2</sub> emissions are similar.

### **Options for Reducing Emissions**

#### ***Abatement***

In conjunction with the emissions monitoring outputs, Ellgia will undertake a detailed feasibility study to establish the likely impact on emissions of retrofitting Selective Catalytic Reduction (SCR) to reduce NO<sub>x</sub> emissions in combination with Diesel Particulate Filters. It is noted that only systems with minimal ammonia slippage should be considered.

#### ***Alternative Fuels***

Ellgia is investigating the viability of replacing the existing diesel generators with LPG or natural gas fired generators. Both natural gas and LPG can serve as viable options for continuous load electricity generation, viability depends on factors such as infrastructure, regional availability, cost considerations, load. Natural gas is often associated with larger power plants and urban settings, while LPG is commonly used in smaller-scale distributed

power generation systems. Whilst LPG would potentially generate lower emissions than Diesel, it is likely that natural gas would provide lower emissions than LPG. However, either approach would require infrastructure development as there is currently no mains gas supply to the site. Options for local LPG storage tanks versus gas main distribution will need to be assessed from the point of view and cost and practicality.

The feasibility of using gas to liquid GTL fuel in the existing generators will also be assessed. GTL fuels generally produce lower emissions compared to traditional diesel. They contain fewer impurities, resulting in reduced particulate matter and lower levels of NOx and SOx, and can also increase efficiency due to the high cetane number. However, this will have to be weighed against the cost and availability of GTL fuel at the site.

## **Alternative Electricity Supply Options**

### ***Onsite Renewable Energy***

The site is actively investigating the feasibility of solar panels on the roofs of the main process buildings, whilst this would contribute to the electricity base load demand it would never be sufficient to replace the existing diesel generators.

### ***Battery Storage Facilities***

Batteries can store the increasing levels of renewable energy generated from solar farms and wind turbines. As there are various schemes under consideration in the region, Ellgia will continue to review any potential options for collaboration with battery storage facilities at nearby sites which would allow mains voltage electricity to be provided at an economically viable cost.

### ***Increasing Mains Electricity Supply Capacity***

Ellgia will also revisit the cost and practicality of upgrading the existing mains electricity supply including Northern PowerGrid Fees as well as onsite infrastructure requirements for power distribution.