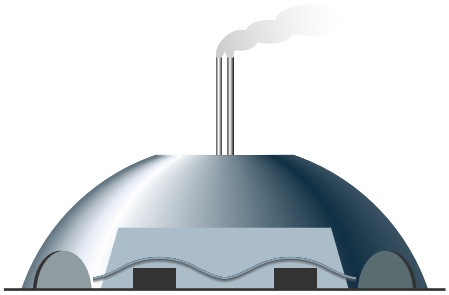

S.T.I.G.

St.Dennis Incinerator Group June 2008

Carbon Balance

Consultee Response to CERC Planning Application

Consultee
St.Dennis Incinerator Group (S.T.I.G.)

Applicant
Sita Cornwall Ltd.

Application Reference
08/00203/WAS

Address of Proposal
Land at
Rostowrack Farm
St.Dennis
St.Austell
Cornwall
PL26 8DX

Proposal
Construct and Manage a
240,000 TPA Energy Recovery Centre
(Mass Burn Incinerator)

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Carbon Balance

1.1 Introduction

This report provides an assessment of the carbon balance of the proposed SITA CERC during the construction and operational phases. For comparison purposes, a do-nothing scenario has been provided whereby waste disposal continues at Connon Bridge landfill until its capacity is exhausted around the year 2012. Thereafter, the waste will be transported out of the county. As the actual disposal site is not certain at this stage, an estimate was made about the distance the waste would travel.

STIG Response

The whole carbon balance report is fundamentally flawed from the outset. ERM using a do-nothing scenario as a baseline comparison to building an incinerator is not an acceptable or reasonable comparison. It is widely accepted by the populous of Cornwall that we have to do something with our waste and the ERM generated carbon balance report should use a viable alternative technology such as Mechanical Biological Treatment (MBT) as a comparison.

1.2 GHG Assessment – Construction 1.2.1 Overview

At the time of writing, the CERC project is not at a stage where the breakdown of construction materials and the sources where these materials are supplied from can be defined. Therefore, the amounts of construction materials provided for this assessment are estimates, and the related GHG emissions of the construction phase should, at this stage, be taken as indicative values only.

STIG Response

The lack of information regarding the precise design of the proposal renders this section of the carbon balance report worthless. The estimated values should not be used as indicative as estimates are rarely accurate. As an example in April 2004 Cornwall County Council stated that “Currently a £50 - 60 million dual carriageway is planned to link Innis Downs to Indian Queens, taking a route around the north of Goss Moor, which would then be consolidated as a nature reserve.” According to the Highways Agency in July 2007, the scheme actually cost £93 million.

1.3 GHG Assessment – Operation 1.3.1 Overview

The majority of potential GHG emissions will arise through the operational phase of the CERC project. For baseline comparison purposes, the GHG assessment has also been carried out for a do-nothing scenario where waste will be landfilled at Connon Bridge until its capacity is exhausted (estimated to be around 2012) and the waste would have to be diverted out of the county

STIG Response

Again the “do-nothing” scenario is not an acceptable or reasonable comparison.

1.3 GHG Assessment – Operation 1.3.2 Mobilisation Emissions

Mobilisation emissions also include emissions from delivery of residues from the waste treatment facility to ultimate disposal or recovery sites using a lorry. The main GHG from combustion of vehicle fuels is fossil-derived CO_2, with some small amounts of N_2O.

STIG Response

The above comment is covered later in this response when methodology is dealt with.

1.3 GHG Assessment – Operation 1.3.3 Process Emissions

Process emissions could also arise from decomposition of biodegradable material in the landfill.

STIG Response

A significant amount of the bio-degradable content is food waste, which if separated and composted would drastically reduce the emissions from landfill. According to Somerset Waste Partnership “Food waste forms 28% of the average Somerset householder’s bin waste by weight and can make a significant difference in increasing the level of recycling”.

1.3 GHG Assessment – Operation 1.3.5 Avoided Emissions

The waste treatment process may generate useful energy in the form of electricity and heat. Emissions are avoided as useful energy displaces the generation of electricity or heat elsewhere from fossil fuels; reusing recycled materials displaces the primary production of materials from virgin resources and its associated GHG impacts.

For example, the electricity exported from the CERC would be used to displace electricity from the national grid. Another example is the recovery of aluminium from the residues produced by the incineration process, which would displace primary metal production from raw materials.

STIG Response

An element of doubt is detected in the true potential of the scheme when the report contains the terminology “The waste treatment process **may** generate useful energy in the form of electricity and heat”.

Regarding emission avoidance and fossil fuels it is unsafe to assume that over a 30 year period, which is the duration of the proposal, that fossil fuels will continue to be used to generate electricity or heat to the extent they are used at the time of this report.

The UK Government set out its policy to deliver a secure, low carbon energy mix for the UK on 23 May 2007 when it published its Energy White Paper “Meeting The Energy Challenge”. Concerns over the use of coal fired powers stations and the uncertainty of the inclusion of carbon capture facilities at such plants raises doubts about the continued use of coal. Some power utilities have expressed doubts. Centrica says that conventional coal is finished as a generating technology unless Carbon Capture and Storage (CCS) is proven: "We believe that any investment in coal without carbon capture will be increasingly risky. We therefore have no current plans to invest in coal generation without carbon capture."

A House of Lords report states that "By 2010 the United Kingdom will be importing around 50% of its gas requirements. This is likely to rise to around 70% in 2020". The report goes on to state "This increasing dependency on imported gas as a major energy source has raised questions about the security of gas supply"

It is clear that over the next thirty years there will be considerable changes in the way we generate power and heat with fossil fuels giving way to true sustainable low carbon methods which will obviously exclude incineration.

1.4 Methodology of Calculation – Construction

STIG Response

As mentioned earlier in this response, the lack of information regarding the precise design of the proposal renders this section of the carbon balance report worthless and does not warrant comment.

1.5 Methodology of Calculation – Operation 1.5.1 Mobilisation Emissions

Vehicle exhaust emissions arise from combustion of fossil fuel during collection of waste from households and onward transport to the treatment plants (CERC or landfill), either directly or via intermediate transfer stations. In addition, residual wastes from the CERC require transport. Bottom ash is transported either to be recycled or landfilled; Air Pollution Control (APC) residue is transported to a hazardous waste treatment facility; metals are transported to a recycling facility.

For the recycling of bottom ash, it has been assumed by ERM that it will be distributed to local markets (i.e. within 25 km)

Annex A – Traffic Information 1.2 Methodology 1.2.4

Bottom ash is a recyclable by-product and is distributed to local markets. It is difficult to assess where these local markets will be and therefore the daily mileage associated to these movements has not been considered. It should be noted that as the bottom ash is distributed to local markets it is likely that the mileage will be very similar for one, two or five CERCs.

STIG Response

Distribution of the bottom ash by lorry obviously generates significant carbon emissions and therefore should form part of the overall carbon balance report for the proposal.

The report states in Table 1.10 that the incinerator will produce 55,000 tones per annum of bottom ash of which 0.1 cannot be re-used thus leaving 54,999.9 tonnes to dispose of.

Using the data provided in the report a calculation can be made to ascertain the amount of GHG i.e. CO_2 emitted into the atmosphere from the bottom ash lorry movements.

Using the average emission factor of .137 (kg CO_2-eq/t.km) provided in the ERM report - vehicle type assumptions Table 1.5 for a large lorry, a calculation has been made of GHG emissions for the transportation each year of 54,999.9 tonnes of bottom ash a distance of 25Km. to the final disposal site.

The calculation shows that 188.374 tonnes of GHG (CO_2) would be emitted in the atmosphere each year. There would be further emissions from the return journey but no factors are available to calculate the tonnage of GHG emissions.

The report chooses to ignore the fact that these lorry journeys, including the return journeys, will produce well over 200 tonnes of GHG which will be emitted to the atmosphere each year.

It should also be noted that whilst data sources have been given for the emission factors these sources proved to be inaccessible and there is no explanation why a large lorry has a lower emission factor than a smaller refuse collection vehicle.

1.5 Methodology of Calculation – Operation 1.5.2 Process Emissions

For biogenic materials, short-term CO_2 emissions are generated which are not included in a GHG inventory. Only CO_2 emissions from fossil sources (e.g. plastics) are included.

Methodology of Calculation – Table 1.6

Short-cycle CO_2 emissions from carbon in the waste - Not included in carbon balance as CO_2 from biogenic sources are considered to be part of the short-term carbon cycle and has no global warming impact.

STIG Response

The carbon balance assessment utilises the general methods outlined by the Intergovernmental Panel on Climate Change (IPCC) in the 2006 IPCC Guidelines for National Greenhouse Gas Inventories, specifically from Volume 5 of the Guidelines which pertains to the Waste sector. However, the exclusion of biogenic material from the carbon balance report is contrary to the guidance of the IPCC for biogenic material.

Chapter 5 of the above mentioned IPCC guidelines clearly states that “The CO_2 emissions from combustion of biomass materials (e.g., paper, food, and wood waste) contained in the waste are biogenic emissions and should not be included in national total emission estimates. However, if incineration of waste is used for energy purposes, both fossil and biogenic CO_2 emissions should be estimated.”

1.6 Disposal Emissions

For the bottom ash and ferrous metal (*i.e.* iron), the recycled product (scrap metal and secondary aggregates) can directly replace the virgin material (pig iron or gravel); the recyclate is considered carbon burden free. Therefore, the carbon balance only takes into account the emissions arising from the primary production of the virgin materials.

Methodology of Calculation – Table 1.9

CO_2-eq emissions from secondary iron production. Not considered. Recycled iron can be used directly to substitute pig iron.

STIG Response

Recycling iron is advantageous over producing new iron for two reasons.

- Saving of raw materials and energy by not having to first extract the iron ore from the ground.
- Avoiding the pollution problems in the extraction of iron from the ore.

However, regardless the type of waste treatment plant used i.e. incineration, MBT etc. the recycled ferrous metals would have to be ultimately transported out of the county for re-processing which would incur emissions. These emissions should be included in the overall carbon balance report. This also applies to the transportation of recovered aluminium sent for re-processing.

1.7 Results and Discussion – 1.7.2 Operational Phase

These results are based on a 240,000 tonnes/yr processing of MSW with the waste composition described in *Table 1.7*.

For the CERC, it can be seen that there is a net benefit to the environment of avoided emissions of 36,611 tonnes CO_2-eq/yr. This means based on the assumptions presented in this report, there are more carbon emissions avoided than generated when waste is processed at CERC. Assuming the CERC project operates for 30 years and the assumptions remain constant, the facility could avoid the release of 1.1 million tonnes CO_2-eq/yr during its operational lifetime.

Carbon Balance

STIG Response

Global Renewables, an Australian company operates a facility at Eastern Creek in New South Wales. The facility is designed to process up to 260,000 tonnes of municipal solid waste per annum over a period of 25 years through integrated sorting, biological digestion and composting processes. The company states that the process " increases recycling rates by over 100 per cent, diverts at least 70 per cent of waste from landfill, reduces greenhouse gas emissions by around one tonne of carbon per tonne of MSW, generates renewable energy and is self-sufficient in energy and water".

Global Renewables have been selected by Lancashire County Council under PFI funding to deal with Lancashire's waste using the same process they use at Eastern Creek.

The Lancashire proposed scheme at Leyland will treat 305,000 tonnes each year

resulting in :-

- 88,000 tonnes of recyclable material reclaimed every year
- 55,000 tonnes of garden and green waste composted each year
- 10.2 million m3 pa of Biogas generated
- 12,700 MWh pa of Electricity generated

Clearly the SITA scheme proposed for Cornwall is a poor choice compared to the Global Renewables approach.

Conclusions

SITA / Cornwall County Council's Carbon Balance report for the proposed incinerator has been prepared by Environmental Resource Management (ERM), a worldwide company who state on their website that one of their commitments is "providing our clients with technical excellence and innovative solutions to help them respond to the challenges of sustainable development". Clearly ERM has failed in achieving this as incineration does not provide technical excellence nor is it sustainable.

Incineration is a totally inflexible process which does not provide the ability to adapt to changes in policies regarding waste treatment or embrace new technologies as they arise. For this reason ERM have not delivered technical excellence for dealing with Cornwall's waste. Incineration has been with us for many years but even the

latest incinerators are polluting, harmful to health and the environment. Incinerators are unnecessary, unsustainable and most definitely not an innovative solution.

In the “Need Assessment” executive summary for the proposal, again prepared by ERM, when referring to Municipal Solid Waste (MSW) arisings it states that “However, this assessment indicates that under the most optimistic of scenarios, arisings of MSW will rise to approximately 370,000 tonnes per annum (tpa) by 2035/36.

In producing the carbon balance report ERM do not consider introducing measures to reduce the amount of waste generated in the county. The whole proposal is based on increased waste arisings borne out of projected theoretical data. The projected theoretical arisings are in stark contrast to the view of Lancashire County Council who in their municipal waste management strategy have “targets of limiting annual waste growth to less than 1% and increasing kerbside separation of dry recyclable waste and green/kitchen waste by Lancashire householders to 56% or above”.

At a time when worldwide opinion and government policy is to reduce carbon emissions it is unethical to construct an incinerator which will emit large amounts of carbon dioxide into the atmosphere especially when better cleaner viable technologies such as Mechanical Biological Treatment (MBT) are available. For example, incinerating plastic is a distinctly non-renewable form of energy production. Plastics are made from oil, and while the material has a high energy content, burning plastics contributes to GHG releases through carbon dioxide release. Oil is a fossil fuel, and so incineration of plastic releases carbon previously held in long-term storage in oil deposits. Electricity generation at incinerators is only about 20% efficient, which means that only one-fifth of the original material’s energy content is captured and turned into electricity.

If Cornwall County Council (CCC) and their appointed contractor had approached the problem of dealing with Cornwall’s waste in the same way as Somerset and Lancashire they would not be proposing to build an incinerator. It is unacceptable that the contract between CCC and SITA includes the option to import industrial or commercial waste to burn if there is a shortfall of waste generated in Cornwall. It highlights the fact that both CCC and SITA have doubts about future waste arisings in Cornwall and to import waste to burn does not display a desire to reduce carbon emissions but merely an intention to ensure the proposed incinerator continues to burn precious resources and make a profit for its operator.