Sunrise Renewables (Barry) Ltd - Renewable Power Plant at David Davies Road, Barry ("Project")

Responses to questions raised by Biofuelwatch ("BfW")

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1. What is the explanation for changes in emissions?

Answer: All new power plants are required by law to meet the requirements of the Industrial Emissions Directive (Directive 2010/75/EU of The European Parliament and of The Council on industrial emissions (integrated pollution prevention and control)). In Wales this is administered by Natural Resources Wales. The revised project has been designed so that on a worst case basis it will meet these limits.

Feedback from the Applicant's Air Quality Consultant, Entran, in response to this question confirms that although the emissions are higher than the previous consented scheme, the stack height has been sized accordingly by means of detailed dispersion modelling in order to ensure that impacts at relevant receptors are negligible. As a worst-case, emissions from the site have been assumed to occur at the IED limits. Actual emissions from the site are anticipated to be significantly lower. Predicted maximum off-site process concentrations are well within the relevant air quality standards for all pollutants considered.

2. Is the Plant less efficient than the original consented Plant?

Answer: The previous selected technology pyrolysed 72,000 tonnes of dried wood to produce 9MWe export capacity. In comparison the proposed technology will convert the same amount of dry wood into 10MW export capacity. Therefore it is more efficient

3. Will the new plant use more waste wood?

Answer: Waste wood, just like any wood, contains moisture and this can vary from very low (eg ~5%) to quite high (eg ~40%). When you process wetter wood, it means you are effectively 'boiling off' more water which does not contribute to generating electricity (in fact it detracts since you have to use energy to boil it off).

The technology selected is warranted to process waste wood with a moisture content in the range 5% up to 30%. Of course you never know how much moisture you will be receiving in a delivery (and indeed it varies according to the time of the year). This is why you often convert it back to dry wood equivalent meaning what it would weigh if it was kiln dry.

For Barry, we are expecting to process up to 72,000 dry tonnes equivalent. In fact it might well be less than this since the equipment may be up to 5% more efficient than warranted which would mean ~68,500 dry tonnes equivalent would be needed. As to how many wet tonnes this will equate to will just depend on the delivery (and in effect how much water is being transported in along with the fuel component).

In contrast, for the Sunrise project in Barrow-in-Furness, the calculations were based on the design fuel used by the manufacturers of 20% moisture. At 20% moisture this equates to up to 86,000 tonnes of wet wood, less if the efficiency level hoped for is achieved. Also at Barrow the connection is for 12MW so the plant is able to operate above 10MW at times so long as the

average does not exceed 10MW whereas for Barry the connection is capped at 10MW at all times which does not therefore allow for this flexibility so you would expect Barry to use less waste wood in any case.

As can be seen, it is not possible to be precise on the number of tonnes of actual wood brought into the site and when submitting for Barry it was felt that specifying it in dry tonnes for Barry would be the most accurate and indeed consistent with the previous application. This was in part because the previous proposal was based around pyrolysis requiring delivered wood to be processed and dried on site before being used for pyrolysis. It was planned for 72,000 tonnes of prepared (therefore dried) wood to be pyrolysed. Nothing has therefore changed in this respect.

4. Will the Plant be a Waste Disposal Plant?

Answer: No it is not. Attached below is the 'R1 Calculation' for the Project showing that it comfortably exceeds the 0.65 threshold required under the "Guidance on applying the Waste Hierarchy", issued by Defra June 2011. As such the energy recovery from the facility is sufficiently high for it not to be considered a 'waste disposal facility' and it is not therefore a Waste Disposal Facility for the Incineration of hazardous or non-hazardous waste under Schedule 1 Development of the EIA Regulations.

5. Is the information supplied 'Contradictory'?

Answer: As has been explained in the responses above, the contradictions claimed by BfW do not in fact exist and instead seem be incorrect speculation on their part.

Schedule

Barry Renewable Energy Project – R1 Calculation

Type of energy	energy Ex [MWh]
amount of incinerated waste (without 1.2 and 1.3)	321,840
e.g amount of incinerated sewage sludge	0
e.g. amount used activated carbon incinerated	0
Ew: energy input to the system by waste	**321,840**
$E_{f\,1}$: amount of light fuel oil for start up (after connection with the steam grid)	0
$E_{f\,2}$: amount of light fuel oil for keeping the incineration temperature	0
$E_{f\,3}$: amount of natural gas for start up and keeping incineration temperature	0
S E_f: energy input by imported energy with steam production	**0**
$E_{i\,1}$: amount of light fuel oil for start up/shut down (no connection with the steam grid)	350
$E_{i\,2}$: e.g. natural gas for heating up of flue gas temperature for SCR and start up/shut down	0
$E_{i\,3}$: imported electricity (multiplied with the equivalence factor 2.6)	0
$E_{i\,4}$: imported heat (multiplied with the equivalence factor 1.1)	0
S E_i: energy input by imported energy without steam production	**350**
$Ep_{el\ internal\ used}$: electricity produced and internally used for the incineration process	10,400
$Ep_{el\ exported}$: electricity delivered to a third party	74,080
S $Ep_{el\ produced}$ = $Ep_{el\ internal\ used}$ + $Ep_{el\ exported}$	**84,480**
$Ep_{heat\ exp.1}$: steam delivered to a third party without backflow as condensate	0
$Ep_{heat\ exp.2}$: district heat delivered to a third party with backflow as condensate (hot water)	0
S $Ep_{heat\ exported}$ = $Ep_{heat\ exp.1}$ + $Ep_{heat\ exp.2}$	**0**
$Ep_{heat\ int.used1}$: for steam driven turbo pumps for boiler water, backflow as steam	0
$Ep_{heat\ int.used2}$: for heating up of flue gas with steam, backflow as condensate	0
$Ep_{heat\ int.used4}$: for concentration of liquid APC residues with steam, backflow as condensate	0
$Ep_{heat\ int.used5}$: for soot blowing without backflow as steam or condensate	6,484
$Ep_{heat\ int.used7}$: for heating purposes of buildings/instruments/silos, backflow as condensate	0
$Ep_{heat\ int.used8}$: for deaeration - demineralization with condensate as water input	0
$Ep_{heat\ int.used9}$: for NH4OH (water) injection without backflow as steam or condensate	0
S $Ep_{heat\ int.used}$ = S $Ep_{heat\ int.used1-9}$	**6,484**

R1 = (Ep - (Ef + Ei)) / (0.97 * (Ew + Ef))	**0.73**

Ep = 2.6*(S $Ep_{el\ int.used}$+S $Ep_{el\ exported}$) + 1.1*(S $Ep_{heat\ int.used}$+S $Ep_{heat\ exported}$)	**226,780**