

Dear Sir/Madam,

**Re: Amended planning application for a 'Renewable Energy Park' by Energy Park Sutton Bridge, ref H18-0723-12**

I am writing on behalf of Biofuelwatch to object to Energy Park Sutton Bridge's (EPSB's) planning application for a biomass plant (called 'renewable energy park') in Sutton Bridge.

Our objection is based on the following grounds:

- 1) The proposed development would result in 420,000 tonnes of biomass, largely wood, being burned with extremely low conversion efficiency, which means that volume biomass use, emissions, traffic and all other impacts will be disproportionately large per unit of electricity produced. We believe that this does not constitute a sustainable development as defined by the 2012 National Planning Policy Framework.
- 2) An unspecified proportion of the biomass to be burned will be waste wood and EPSB have made it clear that a waste incineration permit will be sought from the Environment Agency. This means that the development would fall under the scope of the Waste Framework Directive, the Waste Management Plan for England and PPS10. However, it has not been shown that the proposed waste incineration complies with the planning requirements for waste incineration.

We are aware that local residents have serious objections on additional grounds that relate to local impacts, however as a national rather than local organisation, we have chosen to focus our objection on those two grounds only.

We further note that the current applications contains several flaws and contradictions. This includes the Air Quality Assessment and puts the conclusions of that assessment into question. We believe that those flaws and contradictions alone should prevent this application being approved.

**Sustainability and efficiency:**

The Non-Technical Summary states: "*The net electrical efficiency of the plant will be around 29%. This will mean that the efficiency of the plant will be in accordance with the current "state of the art" levels for a plant of this scale. The project will endeavour to seek a local heat customer, which if successful would result in a significant increase in overall thermal efficiency.*" We assume that 'net' refers to the export capacity of the plant. 29% efficiency would already be very low. Efficient biomass combined heat and power plants, designed around one or several heat customers, can achieve well over 70% efficiency. The Government has decided to withdraw subsidies from biomass power stations that don't achieve 35% efficiency and combined heat and power recognition for new developments from March 2017 because they no longer want to promote slow resource efficiency in bioenergy<sup>1</sup>.

However, while 29% is already, in our view, a very low efficiency level, we believe that the plant proposed in Sutton Bridge cannot possibly achieve anything near that level.

EPSB have submitted a memorandum from Fichtner who say that for a 50 MWe gross output plant using virgin and waste wood, "*a net electrical efficiency of about 29% and a parasitic load of about 12% of the gross power output are reasonable preliminary*

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<sup>1</sup> [http://www.utilityweek.co.uk/news/Decc-ends-subsidy-to-dedicated-biomass-power/897812#.U7v\\_grFRtjs](http://www.utilityweek.co.uk/news/Decc-ends-subsidy-to-dedicated-biomass-power/897812#.U7v_grFRtjs)

*assumptions. Actual efficiencies will depend on a variety of factors such as the choice of technology, plant configuration, steam conditions and the number of streams."*

We would agree with Fichtner that it is possible for a power station of this size to be designed so as to achieve 29% efficiency but that actual efficiency depends on many different factors, including 'the number of streams'. All other factors being equal, efficiency increases with the size of a boiler/unit. A single-boiler/unit power station of the same size will be far more efficient than one with ten different boiler units, as proposed in this case. Not only has EPSB chosen a site without any identified heat customer, thus forfeiting the option of efficient combined heat and power generation, but they have chosen a particularly inefficient model consisting of multiple small units. This means that, per unit of electricity generated, biomass feedstock requirements, air emissions, traffic and other impacts will be disproportionately large.

Based on Chapter 1 of the revised Environmental Statement, the biomass power station capacity will be 48 MW, the export capacity 42 MW, the running time 7884 hours a year (90%), the design fuel calorific value 14.5 MJ/kg and the fuel use 420,000 tonnes a year. Using those figures, the efficiency for 'gross generation' (i.e. for 48 MW rather than just the export capacity) will be 22.4%. The net efficiency, i.e. the efficiency in relation to electricity export, will be a mere 19.6%. Claims about 29% efficiency are clearly not consistent with the actual figures contained in the planning document

EPSB's Atmospheric Dispersion Model (first published in 2012 but resubmitted with the new application) refers to the "*likely technology provider Biomass Power Ltd*"<sup>2</sup>. Biomass Power Ltd<sup>3</sup> has described one of their plants as having a thermal input of 24 MW and an output of 4.5 MW. This means it would be 19% efficient – in line with the figures contained in EPSB's new planning documents, but not in line with their predicted 29% efficiency.

This is the lowest-efficiency proposed biomass power station which we have ever come across. It would likely waste over 80% of the energy contained in wood entirely as uncaptured heat. Low efficiency will mean that all of the adverse impacts (including carbon emissions, air emissions, traffic) will be disproportionately great compared to the size of the plant. This, we believe, makes the proposed development inherently unsustainable.

Furthermore, we would like to point out that the amended planning documents contain no credible commitments in relation to the sustainability of wood sourcing. All that the new Non-Technical Summary says about this is the following:

*"On the 1st April 2014, OFGEM published a document titled 'Renewables Obligation: Sustainability Criteria' <https://www.ofgem.gov.uk/ofgem-publications/86994/sustainabilitycriteriaguidance.pdf>. This document provides guidance to operators of generating stations using solid biomass, biogas or bioliquids to generate electricity. It explains how to demonstrate compliance with the sustainability criteria of the Renewables Obligation in England, Wales and Scotland and is effective from 1 April 2014. The Sutton Bridge facility will, throughout its operational lifetime comply with the requirements and guidance contained within this document (and any subsequent replacement or successive and equivalent publication) whether it is receiving financial support or not in order to ensure that the biomass fuels used are sustainable".*

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<sup>2</sup> [http://www.sholland.gov.uk/PublishedRecords/PBC/DC/APP/1/H18-0723-12-H18-0723-12\\_V1712400013062014\\_1AMEND.pdf](http://www.sholland.gov.uk/PublishedRecords/PBC/DC/APP/1/H18-0723-12-H18-0723-12_V1712400013062014_1AMEND.pdf)

<sup>3</sup>

<http://www.biomasspower.co.uk/pdfs/sep11/4.5%20MWe%20Refuse%20Derived%20Fuel%20to%20Energy%20Plant.pdf>

This simply means that EPSB intend to comply with the law and report on the origin of their wood. There are currently no legally binding sustainability or greenhouse gas standards in the UK and Ofgem Guidance can be complied with by declaring that wood does not meet any criteria whatsoever.

And finally, we would like to point out that no details are given about the availability of either virgin or waste wood. We discuss this further below in relation to waste wood. The fact that EPSB have not shown that sufficient wood supplies are available nearby in our view further undermines the sustainability of the proposal since it may very well involve large-distance road transport of wood for bioenergy that might otherwise be used locally, thus contributing to higher CO2 emissions from transport.

### **Apparent non-compliance of the planning documents with the requirements of the Waste Framework Directive and the Waste Management Plan for England**

The planning documents make it clear that a permit is required under the Waste Incineration Directive and that an unspecified proportion of the biomass will be waste wood.

We understand that the application should therefore have regard to the principles laid down in the EU Waste Framework Directive, in the Waste Management Plan for England and PPS 10. Those documents provide that the waste hierarchy must be applied, which means that reuse and recycling of waste must be prioritised over energy recovery. They also include the proximity principle.

The planning documents contain no details as to where the waste wood (or for that matter the virgin wood) will come from – they simply say that wood will come from ‘a range of sources and suppliers’. There has been no attempt to show that waste wood is available in the vicinity of the proposed plant or, alternatively, that there would be any rationale for burning waste wood arisings from elsewhere in the UK (or even abroad) in Sutton Bridge. There is no indication as to whether waste wood re-use or recycling would be prejudiced by this development and no life-cycle assessment related to energy recovery from waste wood through this particular development has been included. We also believe that the extremely low efficiency of the proposed plant makes it incompatible with waste-related planning considerations.

The Waste Management Plan for England states that Defra’s Waste Hierarchy Evidence paper<sup>4</sup> should be taken into account. That document in turn refers to detailed research carried out by Defra in relation to waste wood availability. The research has since been published<sup>5</sup>. It states:

*“Given the high demand for wood waste from the domestic biomass industry and for exports (ca.1.1 Mt), the Tolvik report tried to estimate the amount of wood waste that would be available for domestic biomass and exports in the future (Table 9). The authors estimate that by the end of 2012 recovery of wood waste would be 3.3 Mt and demand from other sectors (not biomass and export) would be 2.1 Mt. This would leave 1.2 Mt available for use by the biomass and export sectors. Subtracting the existing domestic biomass and export demand (1.1 Mt) leaves 0.1 Mt of wood waste available to new*

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[https://www.gov.uk/government/uploads/system/uploads/attachment\\_data/file/69404/pb13529-waste-hierarchy-summary.pdf](https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/69404/pb13529-waste-hierarchy-summary.pdf)

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[https://www.gov.uk/government/uploads/system/uploads/attachment\\_data/file/82571/consult-wood-waste-researchreview-20120731.pdf](https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/82571/consult-wood-waste-researchreview-20120731.pdf)

*biomass facilities and export routes. This is projected to rise to 0.5 Mt by 2015 (assuming a projected improvement in recovery rates to reach 85%, similar to other EU countries). Assuming that the planned and existing biomass facilities will require domestic wood waste to cover 10% of their energy needs (32 Mtpa), the Tolvik report estimates that by 2015 there will be a shortfall in supply if only 25% of planned biomass capacity is developed...The increase in demand from the biomass sector is also anticipated by the authors of the Pöyry report, who expect that demand for wood waste for the production of pellets will also increase. Similarly, the WRAP 2012 report estimates that the main growth customer for new recovery will most likely be biomass. However, it also recognises the possibility raised by the Tolvik report that the current trend in exporting wood will be long term meaning that less will be available for domestic biomass. Therefore the international trade in wood waste becomes an important consideration both for domestic recovery and for biomass investment."*

This means that there is no evidence that any unutilised waste wood will be available by 2015, i.e. by the time this proposed plant could be built. We would also point out that the capacity of waste-wood growing biomass power stations across the UK has increased since 2012 when Defra published this paper. For example, a large 65 MW biomass power station is in the process of being commissioned by RWE in Fife, Scotland and this will primarily run on waste wood, much of it from England. Pressures on waste wood supplies have clearly grown further.

In relation to the proximity principle, the Waste Management Plan for England does permit incineration of non-local waste where there are sound reasons for it. It states:

*"In some circumstances a larger plant [burning non-local waste] may be the appropriate solution and there can be benefits from these also. For example: greater efficiencies; economies of scale; the ability to support alternative transport links such as dedicated rail heads; or the availability of large industrial heat customers."*

In this case, however, EPSB are proposing an exceptionally inefficient biomass plant. Despite the considerable size of the overall development, there are no economies of scale because 10 small boilers are to be built. There are no identified heat customers and all of the wood is to be transported by road.

Thus, on the one hand, no case has been made that waste wood is locally available and, on the other hand, no case has been made that burning non-local waste wood would be justified in this case.

The Waste Management Plan for England further states:

*"The Government supports efficient energy recovery from residual waste – of materials which cannot be reused or recycled - to deliver environmental benefits, reduce carbon impact and provide economic opportunities. Our aim is to get the most energy out of waste, not to get the most waste into energy recovery."*

The exceptionally low efficiency of the proposed plant makes it, in our view, incompatible with those aims and principles. In this context, we would like to point out that the efficiency ratings are so low that, if this was a Municipal Solid Waste incinerator, there would be questions whether it would even qualify at all as 'energy recovery' as opposed to mere 'waste disposal', based on the R1 calculation set out in the Directive's Annex II.

### **Flaws and contradictions in the planning documents:**

#### **Capacity of the plant:**

+ Point 15.2.3 of the revised Non-Technical Summary states: "The installed electricity generating capacity would be 48MWe and result in an export capacity of around 42MWe. A standby multifuel generator of 5MW capacity will also be on site and used to assist in starting the process." This would suggest an overall capacity of 53 MWe; however

+ Point 15.5.6 of the same document says: "The Project will provide approximately 48 MWe of installed energy generating capacity". Point 15.6.24 again speaks of a 48 MWe capacity. Beyond point 15.2.3, the additional multifuel generator appears to have been ignored in this document;

+ The Air Quality Assessment (4.9.3) states: "*The Energy Park will have the capacity to export ~275,940 MWhre annum-1 of renewable electricity to the local distribution network, based upon an estimated 90% availability*". A plant that runs at full capacity for 90% of the time and exports 285,940 megawatt hours of electricity has a total export capacity of 35 MWe. We note that this was the figure for the export capacity given the original planning application.

### **Type of plant:**

+ Point 15.7.20 of the revised Non-Technical Summary outlines a standard combustion process and refers to the units as combustion plants: "*Biomass fuel will be combusted within the main process building to produce radiant heat, which in turn will heat hot water to produce superheated steam. This high pressure and high temperature steam will be passed*";

+Point 15.2.7 of the Non-Summary, however, refers to an "advanced conversion facility (gasification)" and to a CHP Plant;

+ We accept that there is no legal definition of gasification. However, DECC has made it clear that it is not the government's intention to allow standard combustion plants to become eligible for support as 'advanced conversion' facilities. They have stated: "*The Government Response to the RO banding review, published in July, set out our decision to remove the requirement to measure the gross calorific value of fuels, in order to be eligible for the Advanced Fuel band. Since then, we have become aware that this action may allow standard combustion stations to become eligible for support under this band, which was not the policy intention*"<sup>6</sup>. The application does not mention the gross calorific value of any gaseous fuel and this, together with the description in the Non-Technical summary means that it is unclear whether EPSB intend to build a standard combustion plant with several small units or an advanced conversion gasification plant;

+ The Non-Technical contains a general statement that "*the project will endeavour to seek a local heat customer, which if successful would result in a significant increase in overall thermal efficiency*". However, the Design and Access Statement makes it clear that no major heat customer has been identified and solely speaks of plans to look at the potential for heat use subsequent to obtaining planning consent. There is nothing in the planning documents to suggest that the plant would meet DECC's CHPQA CHP definitions, nor those of the EU Combined Heat and Power Directive. So we cannot understand the reference to a CHP plant;

+ The revised Air Quality Assessment speaks of ten grate-firing units and five stacks (i.e. two grate-firing units sharing one stack);

+ The revised Design and Access Statement says: "*The stack structures would consist of six 'pairs' of stacks with castellated 'bracing to a. create optimum dispersion of pollutants*

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<sup>6</sup> [https://www.gov.uk/government/uploads/system/uploads/attachment\\_data/file/66516/7328-renewables-obligation-banding-review-for-the-perio.pdf](https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/66516/7328-renewables-obligation-banding-review-for-the-perio.pdf)

*and b. minimise potential visual impacts*". This would mean 12, not 10 combustion units, raising obvious questions about the overall capacity of the plant. We can conceive of no rationale for building redundant 'pairs' of stacks and thus grate firing units, without any intention of using them.

**Feedstock requirement:**

+ The revised Non-Technical Summary speaks of "*an annual throughput of approximately 420,000 tonnes of biomass fuel*";

+ The revised Design and Access Statement says: "*The Site will receive annually circa 350,000 tonnes of Biomass from a variety of sustainable sources*".

**Air Quality Assessment:**

As shown above, the revised Air Quality Assessment uses a significantly smaller capacity figure for the plant than the revised Non-Technical Summary. The original planning documents spoke of 35 MWe export capacity of the biomass plant and of 350,000 tonnes of biomass feedstock. The new Non-Technical Summary speaks of 43 MWe export capacity and 420,000 tonnes biomass feedstock and also of an additional 5 MWe multifuel boiler. We are therefore wondering whether the new Air Quality Assessment may be based on 350,000 rather than 420,000 tonnes of biomass being burned every year, which would lead to quite a significant underestimate of emissions. We also note that the Air Quality Assessment says nothing about emissions from a multifuel generator.

Furthermore, we find it impossible to ascertain from the Air Quality Assessment or the Atmospheric Dispersion Modelling what the assumptions for total stack emissions have been. Table 9 of the Air Quality Assessment gives figures for stack emissions expressed as g/s. Those would appear to be unrealistically low for a power plant that will burn 420,000 (or for that matter even 350,000) tonnes of biomass a year – having looked at various other EIAs for biomass power plants. There is a possibility that Table 9 only represents individual stacks and that the overall emissions have been multiplied five times, however the document does not say so. We are very concerned about this lack of transparency which makes it impossible to check on basic input data.

Clearly, if emissions are underestimated then the effects on ambient air quality will have been underestimated, too.

Best regards,

Almuth Ernsting  
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Biofuelwatch