APP/SMO/4

BILSTHORPE ENERGY CENTRE

PUBLIC INQUIRY UNDER SECTION 77 OF THE TOWN AND COUNTRY PLANNING ACT 1990 (AS AMENDED) INTO THE PROPOSED DEVELOPMENT OF AN ENERGY FROM WASTE FACILITY ON LAND AT BILSTHORPE BUSINESS PARK, BILSTHORPE, NOTTINGHAMSHIRE

PINS REFERENCE: APP/L3055/V/14/3007886
LPA REFERENCE: ES/2950

Rebuttal Proof of Evidence of Stephen Othen
On
Air Quality and R1 Recovery Status

November 2015

TABLE OF CONTENTS

TABLE OF CONTENTS II
APPENDICES (BOUND SEPARATELY) III
1 Introduction 1
2 Eakring Parish Council 2
3 Rufford Parish Council 4
4 NCC Reclamation Specialist 5
5 Local Residents 7

APPENDICES (BOUND SEPARATELY)

APP/SMO/5A	Contamination of livestock due to the operation of a small waste incinerator: a case incident in Skutulsfjörður, Iceland, in 2010.
APP/SMO/5B	Health Protection Agency response to British Society of Ecological Medicine report.

1 Introduction

1.1 In this rebuttal proof, I have responded to points made by a number of interested parties.

a) Eakring Parish Council, in relation to the effect of the BEC on local health;

b) Rufford Parish Council, in relation to safety and health.

c) A number of local individuals, who have all raised the effect on a dairy farm close to a small incinerator in Iceland and a report by the British Society of Ecological Medicine; and

d) Comments made by NCC's reclamation specialist in his response to the Third Regulation 22 submission.

1.2 It should be noted that I have not generally repeated points which I consider are already made clear in my main proof of evidence. Therefore, the fact that I have not commented on a particular issue or point made by another witness or in a submission by an interested party which contradicts my evidence is not intended to show that I agree with them or that I accept the point.

2 Eakring Parish Council

2.1 The submission by Marisha Curry on behalf of Eakring Parish Council raises concerns about air quality and health. Although I have covered this topic in section 3 of my proof, I would like to respond to three specific points made by Eakring Parish Council.

"Eakring will be in direct line of emissions"

2.2 I agree that the prevailing wind blows from the BEC site towards the northern end of Eakring. I also agree, as shown in Figure A.5 in the air quality assessment (Appendix 12.1 to the Environmental Statement, CD3) that Eakring would be the area of human habitation most affected by emissions from the BEC, although I note that the point of maximum impact is actually on open land and is closer to the BEC than to Eakring.

2.3 I and my team specifically assessed the impact of the BEC on Eakring. Figure A.1 in the air quality assessment shows the specific receptors which we considered, and these included Manor Farm (at the northern end of Eakring) and Hillside View (at the southern end), Appendix B to the air quality assessment shows the predicted impact at all of the receptors for nitrogen dioxide, 1,3-butadiene and cadmium. While Manor Farm has the highest predicted concentration at any of the receptors, this is less than half the maximum impact and is 1% or less of the relevant air quality objective or guideline in each case. (The source of the air quality objectives and guidelines is described in section 3 of Appendix 12-1 to the Environmental Statement.) The predicted impact at Hillside View is even lower.

2.4 Therefore, I conclude, based on the IAQM guidance described in section 3.3 of my main proof and the detailed assessment methodology in Appendix 12,1 to the Environmental Statement, that the impact of the BEC on residents of Eakring will be negligible.

"The local prevalence for respiratory problems and cancer is higher than the national prevalence, do we really need ANY deterioration in air quality?"

2.5 I note the information provided in Appendix 1 to Eakring Parish Council's submission, which shows that the prevalence of asthma, COPD (chronic obstructive pulmonary disease) and cancer is higher for patients at the Bilsthorpe surgery than nationally, although, without further demographic information, it is difficult to draw definitive conclusions from this information. However, I can confirm that the air quality objectives are set to protect vulnerable people, such as those with asthma or COPD, and so I conclude that the impact of the BEC on residents of Eakring will still be negligible, whatever their current state of health. This conclusion is based on the air quality assessment, which is described in section 3 of my main proof, and is based on all relevant UK standards and guidance.

"If you don't know what is going in, how do you know what is going out".

2.6 The emissions from the BEC, and indeed from any waste combustion or gasification plant, are only slightly related to the feedstock, which means that it is not necessary to know exactly what is being fed to be able to assess what is released. There are two reasons for this.

2.7 First, as I explained in paragraph 2.5.13 of my main proof, all waste is a mixture of three things – ash, moisture and volatile materials. The volatile materials form the syngas and, ultimately, are combusted to form the flue gas. The volatile materials are primarily carbon, hydrogen, oxygen and nitrogen, which are combusted to form carbon dioxide, nitrogen gas and water. While the amount of electricity from a tonne of waste will vary depending on its composition, the main components of the flue gas will remain carbon dioxide, nitrogen, oxygen and water vapour.

2.8 Secondly, the volatile materials also include trace components, such as sulphur, chlorine and fluorine, which form acidic gases, and metals. These trace components are removed in the syngas treatment plant at the BEC, so that the syngas which is passed to the engines is clean, and the syngas treatment plant is designed to remove large quantities of these trace components. Hence, while the operation of the syngas cleaning system will vary depending on the composition, and so the quantity of trace components removed from the syngas will vary, the emissions to atmosphere will remain below the emission limits which will be included in the environmental permit. For the avoidance of doubt, it should be noted that the air quality assessment was carried out on the basis that the plant would operate at the emission limits.

3 Rufford Parish Council

3.1 Rufford Parish Council made the following statement in their submission:

> *"RPC are not satisfied that the proposal would not cause any material health or safety, the waste is of a hazardous nature and there is no evidence of any unit in the UK to disprove this, and as such we are entering an unknown field. The air quality in the area will be affected, which would in the opinion of RPC's [be a] health risk to residents and others persons in the area."*

3.2 I do not accept the assertions made in this statement.

a) The waste to be gasified will specifically not be hazardous. The BEC will only take non-hazardous waste.

b) While there is no operational plant in the UK, there are operational plasma gasification plants elsewhere in the world and the emissions from these are known. The emissions from the gasification plant will be regulated by the Environment Agency and will be required to meet stringent emission limits. If these are not achieved, the plant will be closed down.

c) The impact on air quality in the local area has been investigated thoroughly, as summarised in section 3 of my main proof, and the impact has been shown to be negligible.

3.3 In any event, I note that the Inspector referred to paragraph 7, bullet 5 of the National Planning Policy for Waste during the Pre-Inquiry Meeting (see paragraph 32 of the Inspector's Pre-Inquiry Meeting Note, CD69), which states.

> *"When determining waste planning applications, waste planning authorities should... concern themselves with implementing the planning strategy in the Local Plan and not with the control of processes which are a matter for the pollution control authorities. Waste planning authorities should work on the assumption that the relevant pollution control regime will be properly applied and enforced."*

3.4 Rufford Parish Council's concerns should also be seen in the light of Public Health England's response to the original planning application (CD30), which stated that "Public Health England therefore has no significant concerns regarding this proposed development".

4 NCC Reclamation Specialist

4.1 Derek Hair, a principal project engineer in the Landscape and Reclamation Team at Nottinghamshire County Council, responded to the third Regulation 22 submission (CD 75). Although the submission raised no issues of direct relevance to his specialism, Mr Hair made two comments.

4.2 First, he stated:

> *"The increased role of segregated recycling collections will perhaps reduce the calorific value of this waste stream, thus with the further application of waste segregation will not the percentage of energy generated as renewable decrease ? and as a consequence affect the calculation referred to in section 1.1.8 and 5.1.1 of the Environmental Statement ?"*

4.3 The effect of increased recycling on the bioenergy content of waste is not straightforward. If more organic material is recycled, such as paper or green waste, then the bioenergy content of the residual waste will drop. If more plastics are recycled, then the bioenergy content of the residual waste will increase and if more metals and glass are recycled, the bioenergy content stays about the same.

4.4 The calculations in Appendix 4-1 to the first regulation 22 submission (CD6) actually illustrate this effect quite clearly. Tables 10.3 to 10.6 show the effect of taking four different compositions for C&I waste and applying increased on-site segregation followed by separation in the MRF. In each case, the bioenergy content is reduced by improved segregation (i.e. increased recycling) and then increased again by separation in the MRF.

4.5 This also emphasises that the calculation of carbon benefits, and indeed the bioenergy content in the third Regulation 22 submission, already take account of increased recycling and waste segregation.

4.6 Secondly, he stated

> *"I also note that the supplier of the gas engine has now been selected and been able to guarantee a higher efficiency than had been anticipated, is this based upon the revised renewable efficiency value of 12.581Mj/kg and how would the efficiency be impacted by a reduction in calorific value of the waste?"*

4.7 The efficiency of the gas engines is unaffected by the calorific value of the waste, but less power would be generated from a tonne of waste with lower calorific value, as there is less energy available in the waste itself. This might mean that the overall efficiency of the plant is reduced, as the energy used by the plant itself could be a higher proportion of the electricity generated.

4.8 I considered this point in the context of the R1 calculation in paragraph 2.5.16 of my main proof. I showed that the R1 value with waste with a lower calorific value of 10.5 MJ/kg would drop slightly but remain above 0.65.

5 Local Residents

5.1 A number of local residents (Kate Shea, Francis O'Malley, Sarah Knight, Tracey Wright, Marcus Coulam, David Austin and Graham Atkins) have objected to the BEC on three grounds, using similar wording. Deb Altoft has also referred to the second and third points, although using different wording, and Hazel Pedley to the first point.

a) It is experimental.

b) Impacts on Food

c) Impacts on Health

5.2 I have addressed the first point in paragraphs 5.5.4 and 5.5.5 of my main proof, so I have not repeated that response here. I have responded to the other two points below. However, I would also remind the Inquiry of paragraph 4.1.2 of my main proof, which sets the context of all health issues.

Impacts on Food

5.3 The focus of this issue is a specific incident, which is summarised in the objection letters as follows:

> *"In 2010 contamination by dioxins and dioxin-like PCBs was detected in milk and meat in the Engidalur valley situated in Iceland. The contamination was traced to a small municipal waste incinerator operating in the valley. It was 21 times over the EU safe limit directive. The incineration plant has since been shut down. It is a reminder that complacency over assured safety of these plants due to being modern are to be guarded against."*

5.4 I have investigated this incident. While there are a number of press reports available on the internet, the most authoritative explanation comes in a paper presented at a conference in 2011 – "Environmental contaminants and animal health. Proceedings of the 26th Symposium of the Nordic Committee for Veterinary Scientific Cooperation (NKVet). I have included this paper as APP/SMO/5A.

5.5 The paper confirms the essence of the incident, but also explains that the incinerator had been operating on a "dispensation from the EU incinerator directive" since it started operating in 1995. In other words, the plant had never been required to meet the emission standards of the Waste Incineration Directive. Dioxin emissions had only been measured once, in 2007, and this measurement was 21 times higher than the emission limit in the Waste Incineration Directive. This means that the plant had been running for 15 years before the high level of dioxins in milk was identified. The plant was closed down early in 2011.

5.6 The paper also notes that the incinerator was situated in a narrow valley at the bottom of a fjord with high mountains on either side, and the affected dairy farm was the only such farm in the valley.

5.7 From this paper, I conclude that the situation at Engidalur was completely different to the BEC. The Engialur incinerator was not operating to modern standards, and never had, and the topography would not have promoted good dispersion of the emissions. In contrast, the BEC will be a modern, well-regulated plant which will comply with the latest European Directive and the topography is not an obstacle to good dispersion.

Impacts on Health

5.8 The local residents' objections are based on three documents, two of which are already before the Inquiry as they are attachments to Dr Chow's proof:

a) A report from the British Society of Ecological Medicine (BSEM) called "The Health Effects of Waste Incinerators", which was first published in 2005 and the second edition was produced in 2008 (KC8);

b) Professor V. Howard's evidence to the Planning Board in County Cork, Ireland, relating to the proposed Ringaskiddy incinerator, dated 2009 (KC3); and

c) A quote from a local Dublin newspaper (Newsfour) into the proposed energy-from-waste plant at Poolbeg.

5.9 The Health Protection Agency has reviewed the BSEM report and criticised it severely (see APP/SMO/5B). I have quoted a few of the criticisms below, but note that there are considerably more criticisms in the HPA document.

a) "The BSEM report is not a systematic review of the literature and there is no critical assessment of the quality of the included studies. Consequently the report presents a selective and limited use of the scientific literature."

b) "The authors have also failed to acknowledge the impact of the current legislative regime which minimises the potential for public exposure to emissions."

c) "The report does not distinguish adequately between hazard and risk i.e. the intrinsic hazard associated with a chemical/s as opposed to the likelihood of health impacts (which is dependent on exposure)"

5.10 Local residents might not be aware that the BSEM report has been quoted numerous times at public inquiries into proposed energy-from-waste plants. Successive Secretaries of State and Inspectors have consistently failed to give it significant weight. As two examples, I have considered the two appeal decisions which are already before the Inquiry.

a) The BSEM report was introduced as evidence at the Shepshed inquiry (NCC2). The Inspector stated, in paragraph 12.52 of his report, that "*Forceful reference was made by a local GP at the evening session of the Inquiry to dioxin emissions and possible health impacts. However, his views relied heavily on a report that has been strongly criticised and refuted by the HPA, together with other reports which referred to old style pre-WID incinerators or hazardous waste incinerators. These have no application to modern, well-run operations subject to the EA's regulatory regime.*" Paragraph 7.121 confirms that the report referred to was the BSEM report.

b) At the Lostock Inquiry (NCC3), the BSEM report was introduced as evidence, but the Inspector concluded that there was no reason to conclude that the plant would have an adverse impact on human health.

5.11 Similarly, Professor Howard's statement has appeared at other Inquiries. It relates to particulate matter, particularly ultrafine particles, and health, which is actually already considered in the HPA statement (KC2). The HPA does not consider that the emissions of particulate matter from energy-from-waste plants are a cause for concern.

5.12 It is interesting to note that, while planning consent was refused for the Ringaskiddy plant, this was not on the grounds of health impact but on the grounds that the site was inappropriate, and due to issues with flooding and coastal erosion.

5.13 The article from Newsfour makes a number of unsubstantiated statements. It refers to the Dargavel gasification plant, which was based on a very different technology. It also refers to a specific incident at a French incinerator, which I think is the incinerator at Gilly-sur-Isére which was closed in 2001.

5.14 Overall, these reports do not provide any new information which contradicts the conclusion of the HPA, quoted in paragraph 3.4.5 of my main proof, that “while it is not possible to rule out adverse health effects from modern, well regulated municipal waste incinerators with complete certainty, any potential damage to the health of those living close-by is likely to be very small, if detectable.”