

Riverside Energy Park

Applicant's response to Cllr Dave Putson Deadline 3 Submission

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1 Applicant's responses to Dave Putson's Deadline 3 Submission

1.1 Introduction

1.1.1 Councillor Putson's submission consists of extracts or full versions of 8 documents, along with his oral submission to the Issue Specific Hearing on Environmental Matters held on 05 June 2019.

1.1.2 The Applicant's primary response to this submission is contained within the **Post Hearing Note on Public Health and Evidence (8.02.27, REP3-033)**. **Paragraph 1.2.2** of that document summarises the Applicant's position with regard to Public Health England's (PHE) position statement, subsequent research commissioned by PHE and emissions of ultrafine particles, as follows:

"This note demonstrates that:

- *PHE considers 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";*
- *research commissioned by PHE and published in 2018 and 2019 shows that there is no evidence that living close to an ERF is associated with increased infant mortality or other infant health risks; and*
- *abatement systems in place for particulate matter in ERFs are very effective at avoiding emissions of ultrafine particles."*

1.1.3 The Applicant considers that this statement and the supporting evidence in the **Post Hearing Note on Public Health and Evidence (8.02.27, REP3-033)** are a sufficient response to the concerns raised by Councillor Putson. However, for completeness, the Applicant has commented briefly on each document referenced in his submission.

1.2 Moss Study

1.2.1 Councillor Putson has included a report from the Air Quality News website¹ on 4 June 2019 regarding a French study. This is the second page of the pdf of Councillor Putson's submission. The submission appears to refer to the paper "*Long-term exposure to atmospheric metals assessed by mosses and mortality in France*" by Lequy et al (2019)². This paper suggests that there is an association between exposure to metals (specifically cadmium, copper,

¹ <https://airqualitynews.com/2019/06/04/groundbreaking-moss-study-reveals-new-airborne-metals-death-link/>

² Long-term exposure to atmospheric metals assessed by mosses and mortality in France, Lequy, E. et al, Environmental International Vol 129, Pages 145-153. August 2019.

mercury, lead and zinc), using metal concentrations in rural mosses as a proxy, and mortality rates.

- 1.2.2 However, there is no link between this paper and any particular emission sources. The air quality assessment presented in the **Environmental Statement (ES) Chapter 7 Air Quality (6.1, REP2-019)** considers all five of the metals identified in Lequy et al and concludes (in **Paragraphs 7.9.21 to 7.9.30**) that the impacts on all identified receptors are Negligible. All of the metals except copper are also considered in the **Human Health Risk Assessment (6.3, REP2-040)**, also reported in the **ES Chapter 7 Air Quality (6.1, REP2-019)**, and it is concluded in **Paragraph 7.9.41** that "*there will be no significant effects in relation to long term exposure to dioxins and metals*".
- 1.2.3 Hence, while the study confirms that emissions of metals should be regulated, as they will be under the Environmental Permit (EP), the Applicant can confirm that REP will not lead to significant health impacts from releases of metals.
- 1.2.4 Pages 3 and 4 of Councillor Putson's pdf submission include some unattributed text which is not considered relevant as it refers to a conference in 1996 on air pollution in Eastern Europe, a Daily Telegraph article from 1995 and a Friends of the Earth briefing paper on diesel emissions from 1989. As such, this information is considered out of date and not of relevance in the consideration of the impacts on ERFs on health.

1.3 Cardiovascular health risk

- 1.3.1 Pages 5 to 9 of Councillor Putson's pdf submission are a review article from the Journal of Clinical and Experimental Toxicology entitled "*Cardiovascular health risk posed by Polycyclic Aromatic Hydrocarbon and Ultrafine Particles*", Asweto, January 2018. The article refers to a number of scientific studies which suggest that ultrafine particles and polycyclic aromatic hydrocarbons (PAH) are deleterious to health. While this is correct in principle, the Applicant has explained that REP will not be a significant source of ultrafine particles in the **Post Hearing Note on Public Health and Evidence (8.02.27, REP3-033)** because bag filters, such as those proposed part as part of REP, are very effective at removing such particulates from the flue gases. PAHs from REP are considered in **paragraph 7.9.26** of the **Air Quality Assessment (6.1, REP2-019)** and **Human Health Risk Assessment (6.3, REP2-040)** and are shown to have an insignificant impact.

1.4 Ringaskiddy evidence

- 1.4.1 Pages 10 to 47 of Councillor Putson's pdf submission are the Statement of Evidence from Professor Vyvyan Howard to the public inquiry into the proposed energy-from-waste plant at Ringskiddy, County Cork, Ireland. The evidence was given in June 2009. It primarily focusses on the health risks associated with ultrafine particles and includes references to a number of scientific papers published before 2009, so over 10 years ago. These papers are outdated and so cannot be relied on to the extent implied, and conflict with PHE's position statement based on recent, comprehensive studies.

- 1.4.2 The Applicant does not dispute that there is evidence that ultrafine particles can lead to health effects. However, as stated above, REP will not be a significant source of ultrafine particles because bag filters are very effective at removing such particulates from the flue gases, as explained in the **Post Hearing Note on Public Health and Evidence (8.02.27, REP3-033)**. The Post Hearing Note also discusses the detailed studies commissioned by PHE and published in the last 12 months³ which demonstrate that UK EfW plants operated to the latest standards do not pose a significant risk to human health.
- 1.4.3 Operations at REP cannot commence unless an EP is granted by the Environment Agency (EA). The Waste Incineration BAT Reference Document (Waste Incineration BREF) contains "emission levels associated with the best available techniques" (referred to as BAT-AELs) for waste incineration facilities such as the ERF at REP. The proposed emission limits within the EP application are in accordance with the BAT-AELs published in the Draft Waste Incineration BREF for new plants. This includes an emission limit for particulate matter on both a half hour average and daily average basis. Particulate matter would therefore be regulated under the EP for REP. Full details of the permitting regime are set out in the **Environmental Permit and Air Quality Note (8.02.06, REP2-057)**.

1.5 PAHs and PM2.5s in India

- 1.5.1 Pages 48 to 59 are a paper by Mohanraj et al entitled "*Polycyclic Aromatic Hydrocarbons Bound to PM 2.5 in Urban Coimbatore, India with Emphasis on Source Apportionment*", dated April 2012. This paper considers PM2.5 concentrations in the city of Coimbatore and particularly considers PAHs bound to the PM2.5s. The paper concludes "*PAH diagnostic ratios and principal component analysis results revealed vehicular emissions and diesel-powered generators as predominant sources of PAH in Coimbatore.*" Therefore, the Applicant does not consider that this paper is relevant to REP. **Paragraph 7.9.13 of the ES Chapter 7 Air Quality (6.1, REP2-019)** concludes that the impact of emissions from additional road traffic associated with the Proposed Development is considered not significant. The Applicant also notes that the levels of pollution recorded in the location considered in the paper are much higher than would be expected in the UK. PM2.5 concentrations were between 27.8 µg/m³ and 165.75 µg/m³, compared to background levels near the site of 8 – 16 µg/m³ (**Table 7.26a in Chapter 7 Air Quality of the ES (6.1, REP2-019)**), the predicted contribution from the ERF of 0.23 µg/m³ (**Table 7.34**) and the highest predicted contribution from traffic associated with REP of 0.08 µg/m³ (**Table C.1.6.2 in Appendix C.1 to the ES (6.3, REP2-036)**).

³ Ghosh RE, Freni Sterrantino A, Douglas P, Parkes B, Fecht D, de Hoogh K, Fuller G, Gulliver J, Font A, Smith RB, Blangiardo M, Elliott P, Toledano MB, Hansell AL. Fetal growth, stillbirth, infant mortality and other birth outcomes near UK municipal waste incinerators; retrospective population based cohort and case-control study. Environment International. 2018 and Freni-Sterrantino, A; Ghosh, RE; Fecht, D; Toledano, MB; Elliott, P; Hansell, AL; Blangiardo, M. Bayesian spatial modelling for quasi-experimental designs: An interrupted time series study of the opening of Municipal Waste Incinerators in relation to infant mortality and sex ratio. Environment International. 128 (2019) 106-115.

1.6 Submission

- 1.6.1 Pages 60 to 62 of Councillor Putson's pdf submission are his submission to the Issue Specific Hearing on Environmental Matters. It refers to transport impacts, PAHs and ultrafine particles.
- 1.6.2 **Paragraph 7.9.13** of the **ES Chapter 7 Air Quality (6.1, REP2-019)** reports the assessment of the potential effects on air quality from road traffic. The predicted concentrations of NO₂, PM₁₀ and PM₂₅ are presented in **Appendix C.1** of the **ES (6.3, REP2-036)** and have incorporated the 100% by road scenario into the model. The assessment concludes that the impact of emissions from additional road traffic associated with the Proposed Development is considered not significant.
- 1.6.3 However, the Applicant has noted the concerns on road traffic and, therefore, updated the **dDCO (3.1, Rev2, REP3-003)** at Deadline 3 of the Examination, to include a requirement (Requirement 14) to seek to minimise potential effects of road traffic. Requirement 14 restricts the number of two-way vehicle movements made by heavy commercial vehicles delivering waste to the Energy Recovery Facility and the Anaerobic Digestion Facility at REP during the operational period to a maximum of 90 vehicles in and 90 vehicles out per day, save in circumstances where there is a jetty outage. This restriction will, in turn, reduce the emissions from additional road traffic associated with the Proposed Development, further mitigating the already not significant effects on local air quality.
- 1.6.4 Councillor Putson raises concerns about the health effects of PAHs. Emissions of PAHs from REP are considered in the **Air Quality Assessment (6.1, REP2-019)** and the **Human Health Risk Assessment (6.3, REP2-040)**. The air quality impact is found to be Negligible (**para 7.9.26 of 6.1, REP2-019**). The detailed **Human Health Risk Assessment (6.3, REP2-040)** considers benzo(a)pyrene as a representative PAH and, in particular, includes this in the assessment of carcinogenic risk. The highest annual risk for all carcinogenic substances, including PAHs, is about 1 in 13 million for a local farmer receptor and 1 in 690 million for a local resident. These are very low risks and confirm that REP does not lead to significant health impacts. Councillor Putson also states "*I was able to identify documents that suggest there is a probable link between an incinerator plant that, even with the best filter and scrubbing technology, releases Ultra Fine particulates into the atmosphere*". The Applicant does not accept this point for the reasons explained in section 3 of the **Post Hearing Note on Public Health and Evidence (8.02.27, REP3-033)**, i.e. that bag filters are very effective at removing ultrafine particles.

1.7 Ultrafine particles toxicity

- 1.7.1 Page 63 of Councillor Putson's pdf submission is the abstract of a paper on a specific mechanism of toxicity for ultrafine particles from diesel engines⁴. While this may confirm why it is important to avoid emissions of ultrafine particles, the contribution of traffic associated with REP to particulate emissions, including ultrafine particles, is very small as explained in **Paragraph 1.1.11** above. This paper is not specifically relevant to REP, noting in particular that residual waste will predominately be transported by river and there will be a limit on heavy goods vehicle (HGV) movements. **Paragraph 7.9.13 of ES Chapter 7 Air Quality (6.1, REP2-019)** concludes that the impact of emissions from additional road traffic associated with the Proposed Development is considered not significant.
- 1.7.2 Pages 64 to 65 are a statement by an unnamed author to an unnamed inquiry in 2003. We have not attempted to comment on this as the provenance and context is so uncertain.
- 1.7.3 Pages 66 to 85 are a repeat of the paper by Mohanraj et al and pages 86 to 144 are the full version of the paper by Tian Xia et al. Our comments on these papers are presented above in **Paragraphs 1.1.11** and **1.1.16** respectively.

⁴ Quinones and Aromatic Chemical Compounds in Particulate Matter Induce Mitochondrial Dysfunction: Implications for Ultrafine Particle Toxicity, Tian Xia et al, October 2004.