Planning

From: Niki Ayles <[redacted]
Sent: 27 September 2021 10:55
To: Planning
Subject: FW: Consultee chase - Regulation 25 Consultation - Portland Port, Castletown, Portland - WP/20/00692/DCC
Attachments: Portland Town Council objection.docx

Follow Up Flag: Follow up
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Dear Planning Team A/Adrian Lynham

Further to Weymouth Town Council's objection, dated 23rd November 2020 and titled "WTC Response re. WP-20-00692-DCC.pdf", we would also like to add the points raised in the Portland Town Council objection to the Environmental Permit to be included in the Weymouth Town Council objection. This document raises important issues regarding pollution impact and health implications.

I would be grateful if this email and the attached could be uploaded to the planning website.

Many thanks

Niki Ayles
Democratic & Administration Officer
[redacted]

WEYMOUTH TOWN COUNCIL

From: Planning <planningteama@dorsetcouncil.gov.uk>
Sent: 24 September 2021 12:54
To: Planning <planningteama@dorsetcouncil.gov.uk>
Subject: Consultee chase - Regulation 25 Consultation - Portland Port, Castletown, Portland - WP/20/00692/DCC

CONSULTATION ON ENVIRONMENTAL PERMIT APPLICATION
ref: EPR/AP3304SZ/A001

PORTLAND ENERGY RECOVERY FACILITY

PORTLAND PORT, CASTLETOWN, PORTLAND, DT5 1PP

OBJECTION

SUBMITTED ON BEHALF OF

PORTLAND TOWN COUNCIL

17th September 2021

INTRODUCTION

1. Freeths LLP ("**Freeths**") were instructed by Portland Town Council to review the environmental permit application for the proposed Portland Energy Recovery Facility and to work with Portland Town Council to co-ordinate an appropriate consultation response. Freeths is a law firm with a team of solicitors specialising in environmental law.

2. As explained in more detail below, this consultation response has also been informed by a number of technical consultants who were engaged by Freeths to review key technical data and impact assessments submitted as part of the environmental permit application.

3. As a result of the review by Freeths and the technical consultants, Portland Town Council **objects** to the environmental permit application. As explained in more detail below, the grounds of objection are as follows:

    3.1. A number of important permit application documents, including the shadow Habitats Regulations Assessment (dated September 2020), the Supporting Information document (dated 20 December 2020) and the Environmental Risk Assessment (dated 21 December 2020) are based on out-of-date information. The Environment Agency cannot lawfully grant an environmental permit application on the basis of such out-of-date, unreliable evidence.

    3.2. Given that the shadow Habitats Regulations Assessment is out of date, the Environment Agency cannot be satisfied, with the degree of certainty that the law requires, that the proposed permitted facility will have no adverse effect on the integrity of any European site. The Environment Agency cannot lawfully grant an environmental permit on the basis of the assessment currently submitted.

    3.3. The noise impact assessment is incomplete and flawed in a number of respects. Even the applicant (or its acoustic consultant) acknowledges that the noise impact assessment does not provide sufficient information for the permit application. The Environment Agency cannot lawfully grant an environmental permit on the basis of the assessment submitted.

    3.4. A number of issues have been identified in relation to operating techniques and BAT assessments. The permit documents do not provide sufficient information and/or analysis for the application. As such, the Environment Agency cannot lawfully conclude that the proposal meets BAT requirements.

    3.5. The assessment of air quality impacts is inadequate. Impacts should be reassessed or the application refused.

    3.6. The inadequate assessment of air quality impacts undermines other assessments including the shadow Habitats Regulations Assessment and the overall Environmental Risk Assessment. These assessments are unreliable and the application should be refused.

    3.7. The impacts on human health have been underestimated. The risk to human health is unacceptable and the application should be refused.

    3.8. The fire prevention plan is inadequate, creating unnecessary and unreasonable risks. The application should be refused.

4. Portland Town Council is particularly concerned about the inadequacies of the Air Quality Impact Assessment, the weakness of the Human Health Risk Assessment and the shortcomings in the Fire Prevention Plan. The impacts of the proposed development have

been substantially underestimated. The risk to human health and to the environment is unacceptable and the application should be refused.

OUT OF DATE DATA AND ASSESSMENTS

5. Freeths wrote to the Environment Agency on 6 September 2021, drawing attention to the fact that a number of important permit application documents are based on out-of-date information and require updating.

6. Environment Agency officers will be aware that, as well as the environmental permit application, the applicant has submitted a planning application to Dorset Council (under planning reference WP/20/00692/DCC). The planning application has not yet been determined.

7. Many of the key environmental impact assessments and much of the underlying data submitted for the purposes of the environmental permit application were identical to those submitted for the planning application. However, in their letter dated 6 September 2021, Freeths highlighted that new iterations of important impact assessment documents had been updated for the purposes of the planning application but not for the permit application. The new documents were submitted for the purposes of the planning application because consultation responses had identified flaws in the assessments and the local planning authority, Dorset Council, made a formal request to the applicant for further information.

8. Notably, updates to the shadow Habitats Regulations Assessment, the Human Health Risk Assessment and air quality modelling data have not been carried across to the permit application.

9. In the circumstances, in their letter dated 6 September 2021, Freeths asked the Environment Agency to:

    9.1. Immediately suspend the current public consultation;

    9.2. Require the applicant to provide updated information for the purposes of the permit application as soon as possible; and

    9.3. Restart the statutory consultation period in full only once the permit application documents have been updated, so that interested parties have a full and fair opportunity to consider and respond to up-to-date environmental impact assessments.

10. The Environment Agency has acknowledged receipt of Freeths' letter but, despite a number of chasing telephone calls from Freeths, has not provided a substantive response. It follows that the ongoing consultation has not been suspended and that consultees are being asked to comment on out-of-date information.

11. Given that the consultation has not been suspended as requested, Portland Town Council makes the following points by way of objection to the environmental permit application:

    11.1. An updated shadow Habitats Regulations Assessment (dated August 2021) has been submitted to the local planning authority. However, the environmental permit application documents include and rely on the previous incarnation of the shadow Habitats Regulations Assessment, dated September 2020. It follows that those documents are now out of date.

    11.2. The Supporting Information document submitted as part of the permit application presents a summary of all of the data in the various impact assessments as at 20

December 2020. As the data and assessment have been updated for the purposes of the planning application but not for the environmental permit application, the Supporting Information document is predicated on now-superseded data and assessments. It follows that the Supporting Information document is now out of date.

11.3. The Supporting Information document for the permit application appends an Environmental Risk Assessment (dated 21 December 2020). As the Environmental Risk Assessment is similarly predicated on now-superseded data and assessments, it follows that it is also now out of date.

11.4. Neither the Supporting Information document nor the Environmental Risk Assessment reflect the findings of an assessment of marine impacts, which has been newly submitted in support of the planning application.

12. The Habitats Regulations Assessment is addressed in more detail below. As to the other documents, the Environment Agency will be aware that its determination of the environmental permit application must, among other considerations:

12.1. be based on evidence, to ensure any decision is objectively rational; and

12.2. not take into account irrelevant considerations or fail to take into account a relevant consideration (such as any relevant new/updated assessments) *(R v The Director General of Telecommunications ex p Cellcom Ltd [1999] E.C.C. 314, para 27).*

13. Should the Environment Agency determine the environmental permit application on the basis of the currently submitted application documents, its decision will be based on out-of-date, unreliable information. Any such decision will be fundamentally flawed and susceptible to legal challenge.

FLAWED CONSULTATION PROCESS

14. Freeths, on behalf of Portland Town Council, had requested suspension of the consultation exercise pending submission of updated documents by the applicant to ensure that stakeholders were given a proper opportunity to address up-to-date information and thus a full and fair opportunity to participate in the public consultation. It is extremely disappointing that the Environment Agency has failed to respond to that correspondence.

15. As explained in Freeths' letter dated 6 September 2021, it is not feasible for interested parties (including publicly funded bodies such as Portland Town Council) to invest their inevitably limited resources responding to the current set of documents (that are likely to be superceded) and then to invest further resource reviewing updates when they are available. Portland Town Council remains concerned that the Environment Agency's approach to this consultation will have prevented the proper participation of stakeholders, by continuing to run the consultation process when it had been pointed out that the assessments were out of date.

16. Given that the Environment Agency has not suspended the consultation as requested, Portland Town Council considers that it has no choice but to submit this objection prior to the current consultation deadline of 5pm on 22 September 2021. To make the best use of resource, Portland Town Council has had to make some judgement decisions as to whether it should (i) comment only on the fundamental legal errors that would arise if out of date information is relied upon (as in the case of the shadow Habitats Regulations Assessment – see paragraphs 18 to 26 below), to try to preserve resource for when the updated information is supplied; or (ii) comment on the substance of an assessment now (as it does with the noise impact assessment, air quality assessment and assessment of risk to human health) albeit that such assessments may be superseded if the applicant supplied further information.

17. However, Portland Town Council reserves its right to raise issues as to the validity and effectiveness of the consultation exercise, if appropriate, in due course.

FLAWED HABITAT REGULATIONS ASSESSMENT

18. The shadow Habitats Regulations Assessment ("**sHRA"**) that has been submitted for the environmental permit application was the same as that submitted for the planning application.

19. Consultee responses to the planning application identified that the sHRA is fundamentally flawed. The planning authority, Dorset Council, subsequently issued a request for further information pursuant to regulation 25 of the Town and Country Planning (Environmental Impact Assessment) Regulations 2017 on 30 April 2021. On 17 August 2021, the applicant submitted (i) a detailed response to the regulation 25 request; and (ii) a number of new/updated documents, including a substantial addendum to its Environmental Statement and an updated shadow Habitats Regulations Assessment.

20. To date, the documents submitted in connection with the environmental permit application (as published on the Environment Agency's Citizen Space portal) have not been similarly updated. The impact assessments and evidence base informing the permit application (including, critically, the air quality modelling data) are therefore now out of date and cannot be relied upon by the Environment Agency.

21. The Environment Agency, as a competent authority, must comply with the assessment requirements contained in the Conservation of Habitats and Species Regulations 2017. Pursuant to regulation 63, the Environment Agency may only decide to issue an environmental permit for the proposed Portland Energy Recovery Facility if, after undertaking its own Habitats Regulations Assessment, the Environment Agency is able to conclude with certainty that there will be no adverse effect from the proposed facility on the integrity of any European or Ramsar site, either alone or in combination with other plans or projects.

22. The Environment Agency cannot be so satisfied, given that the sHRA dated September 2020 (as submitted for the permit application) has been recognised (in the context of the planning application) as being flawed and is based on data that is out of date.

23. The Environment Agency will no doubt be aware of the caselaw relating to the strict standard of assessment required for an appropriate assessment and the subsequent "adverse effect on integrity" test. By way of example, which is of direct and critical relevance to this case, an appropriate assessment may not have lacunae and must contain complete, precise and definitive findings and conclusions capable of removing all reasonable scientific doubt as to the effects of the proposed works on the protected area concerned (CJEU case C-164/17, paragraph 39)[1].

24. As noted above, the shadow Habitats Regulations Assessment has been substantively redrafted for the purposes of the planning application but not for the purposes of the planning application; and is predicated on evidence which is no longer valid. The conclusions of the sHRA dated September 2020 cannot therefore remove all reasonable scientific doubt as to the effects of the permitted facility. It logically follows that the Environment Agency cannot be satisfied, with the degree of certainty that the law requires, that the proposed permitted facility will have *"no adverse effect on the integrity of any European site either alone or in combination with any other plans or projects"*.

25. The Environment Agency cannot adopt the 2020 sHRA and lawfully decide to issue the permit in reliance on its findings. If it does, the Environment Agency's decision would be susceptible to legal challenge.

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[1] C-164/17*Grace and Sweetman v An Bord Pleanala* [2018]

26. As recorded above, as a result of inevitably limited resources, it is not feasible for Portland Town Council to provide an independent, detailed analysis of the content of the sHRA that currently supports the permit application and then to commission a full review of the updated sHRA that the Environment Agency must, lawfully, require from the applicant. Given the significance of the legal issues set out at paragraphs 18 to 25 above, Portland Town Council has limited itself at this stage to commenting on the fatal legal error that would occur if the Environment Agency were to adopt the sHRA dated September 2020 and/or determine the environmental permit application without requiring updated information. Portland Town Council reserves the right, though, to review and make submissions in respect of any updated information that may be submitted in due course.

INCOMPLETE AND FLAWED ACOUSTIC ASSESSMENT

27. Sharps Acoustics have reviewed the noise impact assessment that forms part of the environmental permit application. Their report is at Appendix 1 to, and forms part of, this objection.

28. As the Sharps Acoustics report explains, it highlights:
    28.1. a number of issues which need to be clarified in order for a full check on the assessment to be carried out;
    28.2. a number of issues which mean that the assessment conclusions may be unreliable; and
    28.3. a number of apparent errors in fact or interpretation in the assessment.

29. A summary of the issues identified by Sharps Acoustics is set out in Table 7.1 of their report.

30. Crucially, the noise impact assessment itself acknowledges that a more detailed study will be required and that *"it is not intended that this noise impact assessment meets all of the requirements for the IPPC permit"* (see paragraphs 2.1 and 2.2 of Sharps Acoustics report at Appendix 1 to this objection). Therefore, even the applicant (or its acoustic consultant) acknowledges that the noise impact assessment does not provide sufficient information for the permit application. Sharps Acoustics agree that further work is required to provide an adequate, reliable assessment of noise and vibration effects from the proposed development.

31. It follows that the information required to determine the permit application is currently incomplete and unreliable. The Environment Agency cannot lawfully grant an environmental permit on the basis of the assessment submitted.

PROPOSED TECHNIQUES AND BAT

32. RSK have reviewed the technical details of the permit application, including the plant design, proposed operations, BAT assessment and assessment of fugitive emissions. Their report is at Appendix 2 and forms part of this objection.

33. RSK identify a number of issues in relation to the operational techniques, which can be summarised as follows:

    33.1. Quality control of incoming waste: there is no justification for the omission of radioactivity detection (section 2.2 of RSK's report);

    33.2. Thermal processing:

        33.2.1. the applicant has omitted to discuss whether the use of oxygen-enriched air has been considered (section 4.3.7 of RSK's report);

33.2.2. there are no specific proposals in relation to reduction of grate-riddings (although it is acknowledged that this is perhaps an inherent part of sound incinerator design) (section 4.3.10 of RSK's report);

33.2.3. it is unclear whether key meta-parameters will be used in a feedback loop (section 4.3.12 of RSK's report).

33.3. Emissions of NOx, N_2O, CO and NH_3 : the applicant proposes using a selective non-catalytic reduction (SNCR) system with ammonia reagent, possibly with a catalytic 'polisher' in the bag filters. The applicant acknowledges that SNCR is not the option that provides the highest level of NOx abatement. Selection of technology that is not the cleanest available requires strong justification. However, the choice of SNCR over SCR raises the following issues (section 2.5.1 of RSK's report):

33.3.1. The difference in greenhouse gas emissions from displaced grid generation between the SNCR and SCR systems is likely to be less than the claimed 1300 tpa and more in the region of 750 tpa in the early years of operation and less in future years as the grid decarbonises further.

33.3.2. The calculation of POCP in the BAT assessment and its use as an advantage of SNCR is not accepted. RSK has never before seen the argument that emitting NOx is a positive thing because it reacts with ozone and forms NO_2.

33.3.3. The presentation of figures relating to ammonia use is meaningless without detail on what this entails in terms of actual environmental impact. The reader has no means of understanding whether the additional ammonia use is at all significant.

33.3.4. The applicant has used SCR performance of 80 mg/Nm3 to compare with the SNCR performance of 120 mg/Nm3. The BAT-AEL for NOx emissions is 50-120 mg/Nm3, with the lower end stated to be achievable with SCR. RSK anticipate 50 mg/Nm3 is achievable with greater amounts of catalyst and greater reagent injection (possibly with greater ammonia slip) and hence greater costs but this is not discussed in the BAT assessment.

33.3.5. The BAT assessment may have omitted consideration of an additional benefit of SCR over SNCR. The assessment is based entirely on the relative NOx emissions performance of the two options. The BAT-AEL for ammonia emissions is 2-10 mg/Nm3, with Powerfuel proposing an ELV of 8 mg/Nm3 for its chosen SNCR technology option. The BATC indicates that the lower end of the BAT-AEL range is achievable with SCR.

33.3.6. Powerfuel notes that the difference between the marginal abatement costs of NOx emissions for the two options is *"approximately an additional 300% per tonne of NOx abated"*. However, it omits any discussion of benchmarks for NOx abatement costs. (What is the cost to society of a tonne of NOx emissions?)

33.4. Emissions of acid gases: The case for ruling out a wet scrubber option to reduce emissions of acid gases is underdeveloped for the reasons set out in section 2.5.2 of RSK's report and the positive drivers for implementation of such a system have not been given sufficient consideration. RSK conclude that the wet scrubber should have been taken forward to the full quantitative BAT assessment, alongside the semi-dry and dry options.

33.5. Emissions of mercury: The BAT justification for mercury emissions control is underdeveloped for the reasons set out in section 2.5.4 of RSK's report. There should be discussion of the likely levels of incoming mercury-containing wastes, primary emissions controls and justification that additional techniques do not add risk reduction.

34. It follows from the above that the Environment Agency cannot be satisfied as to the acceptability of the proposed operational techniques and cannot lawfully conclude that the proposal meets BAT requirements. The application cannot be granted the basis of the present information.

AIR QUALITY IMPACT ASSESSMENT

35. RSK's report at Appendix 2 to this objection includes a review of the air quality impact assessment. Again, RSK's observations form part of this objection. They can be summarised as follows:

35.1. Re-assessment of air quality impact is necessary following the Environment Agency's update of Environment Assessment levels (AELs) in 2021. Inclusion of the revised EALs would have resulted in higher significance of impact (section 3.2 of RSK's report);

35.2. Re-assessment of Predicted Environmental Concentrations is considered necessary as baseline concentrations of pollutants were derived from the UK-AIR website which are widely recognised as underestimated (section 3.3 of RSK's report);

35.3. Details of other onsite emissions, specifically from standby generators, are required to identify realistic short-term air quality impacts. A detailed air quality assessment to quantify short-term in-combination impacts with the incinerator emissions might be required (section 3.4 of RSK's report);

35.4. The assessment's approach to predicted environmental concentrations is not appropriate. A total modelled roadside concentration from all traffic should be added to the spatially averaged background values (section 3.6 of RSK's report);

35.5. Stack height requires reassessment after allowing for the shortcomings identified in RSK's review (section 3.8 of RSK's review);

35.6. High-rise buildings are inappropriately represented in the air dispersion model (also at section 3.8 of RSK's review);

35.7. BAT states that ammonia emission levels of 2 mg/Nm^3 are achievable whereas the application documents refer to a reduced emission level of 8 mg/Nm^3. To achieve the lower, BAT, levels would require selective catalytic reduction (SCR) rather than SNCR which is proposed in this case (section 3.9 of RSK's review);

35.8. Emissions from other sources, including other committed/consented facilities, are not included in the assessment to quantity the potential in-combination impacts on local air quality (section 3.10 of RSK's report); and

35.9. Tables 18 and 19 in the air quality impact assessment contain some incorrect values and there is a misrepresentation of sulphur dioxide in Tables 22 and 23 (section 3.11 of RSK's report).

36. RSK conclude, at section 3.6 of their report, that air quality impacts of the proposed scheme ought to be reassessed and that this will have implication on other assessments. Other

documents that will be affected include the Supporting Information document and the overall Risk Assessment.

37. The above is sufficient, on its own, to conclude that an environmental permit cannot be granted on the basis of the current air quality assessment. In addition, though, it should be noted that the assessment of air quality impacts is fundamental to the sHRA. Given the shortcomings in the air quality assessment, the sHRA is based on flawed evidence. The Environment Agency cannot be satisfied, with the degree of certainty that the law requires, that the proposed permitted facility will have *"no adverse effect on the integrity of any European site either alone or in combination with any other plans or projects"* (as to the requirement for certainty, see further paragraphs 21, 23 and 24 above).

38. With the benefit of local knowledge, Portland Town Council also urges the Environment Agency to take account of the uniqueness of this site and its topography, in which the chimney stack will be abutted by a cliff:

    38.1. Portland Town Council endorses the concerns raised by the Prison Service as to the risks to human health and notes, from the BAT document, that noxious emissions have not been modelled at height, resulting in a failure to consider detrimental effects on those living on upper levels of nearby apartment blocks.

    38.2. Portland Town Council is concerned that there has been insufficient modelling of the effect of wind funnelling and the unusual way in which emissions from this specific chimney, in this particular location, will behave, resulting in different levels of risk for different areas of Portland and, possibly, neighbours across the bay.

39. Finally, in relation to air quality impacts, it should be noted that some of the documents submitted as part of the environmental permit application refer to stack heights of 80 metres whereas others refer to 90 metres. As stack heights are relevant to air quality impacts (see, for example, section 3.9 of RSK's report), this anomaly must be addressed and any impact assessments adjusted as appropriate.

HUMAN HEALTH ASSESSMENT

40. RSK have also reviewed the Human Health Assessment submitted as part of the environmental permit application and have identified a number of shortcomings. RSK's report at Appendix 2 to this objection sets out those shortcomings and concludes that (i) the potential human health impacts of the proposed scheme need to be reassessed; and (ii) this will have implications on other assessments.

41. RSK's report should be read in full but the shortcomings in the Human Health Assessment can be summarised as follows:

    41.1. Several key compounds of potential concern are not included in the assessment. As a result, the carcinogenic risk is underestimated;

    41.2. The assessment ignores intake by consuming locally sourced fish and possibly other marine life. The associated risk is therefore underestimated;

    41.3. There are a number of farms within 2 km of the proposed development site which have not been considered;

    41.4. The additional daily dose (particularly for breast-fed infants) is not reported in the assessment.

42. The overall burden of pollution is critical to health. The shortcomings in the air quality and human health risk assessments indicate that impacts have been underestimated. With the nature and level of pollution that will be generated by this proposal, the consequences of miscalculating the impact on human health are very serious indeed. It is also clear from RSK's observations in relation to both BAT and the air quality assessment that the applicant has failed to take available opportunities to mitigate pollution, rejecting techniques that could have reduced emissions and being prepared, instead, to expose local residents to unnecessary risk.

43. Portland Town Council remains gravely concerned about the high level of pollutants that are envisaged by this application. The application should be refused on the grounds of unacceptable risk to human health.

FIRE PREVENTION PLAN

44. Finally, EDP (an RSK company) have reviewed the Fire Prevention Plan ("FPP") for the proposed facility. Their report is at Appendix 3 and forms part of this objection.

45. The findings of the report can be summarised as follows:

    45.1. The FPP does not set our how plans will be tested to ensure they are appropriate and so that staff can demonstrate awareness and understanding of their responsibilities and actions to be taken in the event of an incident. The plan should state how often the plan will be tested and the form that these tests will take (section 1 of EDP's report).

    45.2. The FPP should be updated to include all areas that could be considered to be a sensitive receptor within 1km of the stack location (section 2 of EDP's report);

    45.3. The FPP does not satisfy the need to detail how quarantined material will be removed from the site (section 3.2 of EDP's report);

    45.4. The FPP does not detail how the internal temperature of the bales would be monitored and reported (section 3.4.1 of EDP's report);

    45.5. The FPP states that requirements relating to pile separation distance only applies to external storage of wastes. This is a dilution of requirements in Environment Agency guidance, for which no explanation is given (section 4.3 of EDP's report);

    45.6. The FPP should reflect the Environment Agency's expectation that all fire prevention measures are covered by a third-party certification scheme and/or meet the appropriate recognised standards (section 4.8.1 of EDP's report);

    45.7. There is inadequate information on the quantities of water required by firefighting systems and the proposed water supplies (section 4.8.5 of EDP's report);

    45.8. The plan does not include the provision of portable fire extinguishers within all vehicles (section 4.8.9 of EDP's report)*;*

    45.9. Some relevant information is not yet available (see sections 2.1, 3.1 and 4.4 of EDP's report.) A key recommendation of this report is to undertake a further review of the FPP on completion of the detailed process design (section 1 of EDP's report).

46. The FPP contains inadequate and insufficient detail, glossing over important elements of managing fire risk. With the benefit of local knowledge, Portland Town Council would stress the following in addition to the points raised by EDP:

46.1. As well as inadequate information about quantities of water required for firefighting systems (paragraph 45.7 above), the FPP's lack of calculation of - and provision for - dealing with the contaminated water in respect of potential fire;
46.2. Further to the dilution of requirements relating to pile separation distances (paragraph 45.5 above), the site is of restricted capacity and will not enable compliance with space requirements for segregation of combustible materials;
46.3. Crucially, the FPP does not take sufficient consideration for the large number of neighbouring operations and premises in the neighbourhood. Portland Town Council considers that there may be in excess of 5,000 people within close confines of the proposed incinerator and the FPP has not dealt with the protection of these people.

47. The FPP is of immense significance for the environment and for the local population. The inadequacies of the FPP result in unnecessary and unreasonable risks, such that the application should be refused.

CONCLUSION

48. Portland Town Council **objects** to the environmental permit application.

49. For the reasons set out above, the Environment Agency cannot lawfully grant an environmental permit application on the basis of the submitted evidence and impact assessments, including (but not limited to) the shadow Habitats Regulations Assessment (sHRA) and overall Environmental Risk Assessment.

50. The inadequacies of the Air Quality Impact Assessment, the weakness of the Human Health Risk Assessment and the shortcomings in the Fire Prevention Plan (FPP) are of particular and grave concern. The applicant has failed to take reasonable opportunities to mitigate the pollution that will be caused by the facility and, crucially, has underestimated the impacts on human health. The application should be refused on the grounds of unacceptable risk to the environment and to human health.

51. Portland Town Council is concerned that the failure to suspend the consultation process, as requested, pending receipt of updated assessments will prevent the proper participation of some stakeholders in the process. Portland Town Council reserves its right to raise issues as to the validity and effectiveness of the consultation exercise, including in the event that revised assessments are submitted now that consultees have expended significant resource to review and comment on the current documentation.

52. In the meantime, RSK, EDP, Sharps Acoustics, Freeths and Portland Town Council have, together, identified a series of shortcomings in the application, including:
52.1. Out of date data and assessments;
52.2. A flawed shadow Habitats Regulations Assessment;
52.3. An incomplete and flawed acoustic assessment;
52.4. A failure to demonstrate that the proposal meets BAT requirements, including rejection of available techniques that could reduce emissions;
52.5. An inadequate air quality assessment, which should in itself lead to refusal of the application and which undermines other assessments including the sHRA and overall Environmental Risk Assessment;
52.6. Under-estimated and inadequately modelled risks to human health; and
52.7. An inadequate Fire Prevention Plan.

53. The mistakes, omissions and inaccuracies, under-tested baseline data and outdated reference documentation undermine the application as a whole and are indicative of a poor degree of care and competence from the applicant. The risk to human health and the environment is significant, unacceptable and unnecessary even on the face of the documents, such that the application should be refused. However, the strength of this argument becomes overwhelming

when the omissions, inaccuracies and under-estimation of risks are taken into account. With the level of risk posed to human health and to flora and fauna, the submission is wholly unacceptable. The application should be refused.

Portland Town Council
17th September 2021

APPENDIX 1: REPORT OF SHARPS ACOUSTICS

sharps acoustics

ERF - Portland

Review of noise assessment work submitted in relation to proposed ERF permit application

Clive Bentley BSc (Hons) CIEH MIEnvSc MIOA CEnv CSci
Acoustic Consultant
Sharps Acoustics LLP
7th September 2021

1.0 Introduction

1.1 Sharps Acoustics LLP (SAL) have been instructed by Freeths on behalf of Portland Town Council to review the noise assessment submitted to accompany an application for an Energy Recovery Facility by Powerfuel Portland on the Isle of Portland, Dorset.

The review has been carried out as a desktop exercise only and SAL have neither visited the site and surroundings nor carried out any survey work. The review has focussed solely on the documentation (including modelling files and calculation spreadsheets) submitted by the applicant, with the benefit of limited local knowledge of the surroundings and a review of the area using Google Earth and Google Streetview.

1.2 This note contains comments and criticisms of the noise assessment submitted and highlights:

- issues which need to be clarified in order for a full check on the assessment to be carried out;
- issues which mean that the assessment conclusions may be unreliable; and
- apparent errors in fact or interpretation, in the opinion of SAL.

1.3 The note is divided as follows:

- Review of Assessment Methodology Used
- Review of Baseline Data
- Review of Construction Phase Assessment
- Review of Operational Phase Assessment
- Noise Emissions Limits and Monitoring
- Conclusions

2.0 Review of Assessment Methodology Used

2.1 The approach to the assessment is described in Section 2.1 of the Report and the following comment is made:

Environment Agency Horizontal Guidance for Noise[4] describes the principles of noise measurement and prediction and the control of noise by design, by operational and management techniques and using abatement technologies. The new facility will require a permit, issued by the Environment Agency (EA) under the Integrated Pollution Prevention and Control (IPPC) Directive Regulations Part A(1) Installations 2010[5] guidance, which accompany the Environmental Permitting (England and Wales) Regulations 2016. A more detailed study than is possible at this stage in the design process may be required to fulfil this obligation. For clarity, it is not intended that this noise impact assessment meets all the requirements for the IPPC permit.

2.2 According to the Report's authors, therefore, the noise assessment study reported in the Report is not intended to provide sufficient information for the permit application. SAL agree that further work is required to provide an adequate, reliable assessment of noise and vibration effects from the proposed development.

Application of LOAEL and SOAEL

2.1 These terms were introduced in 2010 in the DEFRA publication 'Noise Policy Statement for England' (NPSE) the Government's Noise Policy Statement for England (NPSE). This document sets out policy advice applicable to the assessment and management of noise, including environmental noise. The NPSE states three policy aims, which are:

> *"avoid significant adverse impacts on health and quality of life;*
>
> *mitigate and minimise adverse impacts on health and quality of life; and*
>
> *where possible, contribute to the improvement of health and quality of life."*

2.2 All three of these aims are to be considered in the context of Government policy on sustainable development.

2.3 The first two aims require that no significant adverse impact should occur and, where noise falls between the lowest observable adverse effect level (LOAEL) and the significant observed adverse effect level (SOAEL), then according to the NPSE:

> *"… all reasonable steps should be taken to mitigate and minimise adverse effects on health and quality of life whilst also taking into consideration the guiding principles of sustainable development. This does not mean that such effects cannot occur."*

2.4 The NPSE notes that, "It is not possible to have a single objective noise-based measure that defines SOAEL that is applicable to all sources of noise in all situations. Consequently, the SOAEL is likely to be different for different noise sources, for different receptors and at different times".

2.5 Further, more detailed guidance on these terms and their interpretation and implementation is contained in the Government's Planning Practice Guidance on noise (PPG).

2.6 The use of the lowest observed adverse effect level (LOAEL) and significant observed adverse effect level (SOAEL) for the assessment of noise impacts is reinforced in the PPG, which seeks to define human perception at these effect levels.

2.7 The PPG describes the LOAEL as the level at which *"noise can be heard and causes small changes in behaviour, attitude or other physiological response"* and it is *"present and intrusive"*. Below this level, the PPG describes the NOAEL, or No Observed Adverse Effect Level, which it notes *"can be heard but does not cause any change in behaviour, attitude or other physiological response"* as the noise is *"present but not intrusive"*. The NOAEL is not included in the NPSE and is introduced in the PPG. Below the NOAEL, the PPG describes the NOEL, or No Observed Effect Level, where noise is *"not present"* and has *"no effect"*.

2.8 The PPG describes the LOAEL as the:

> *"… boundary above which the noise starts to cause small changes in behaviour and attitude, for example, having to turn up the volume on the television or needing to speak more loudly to be heard. The noise therefore starts to have an adverse effect and consideration needs to be given to mitigating and minimising those effects (taking account of the economic and social benefits being derived from the activity causing the noise)."*

2.9 Significant observable adverse effects, i.e. those occurring at or above the SOAEL, are described as *"present and disruptive"* and the PPG states that above the SOAEL:

> *"… the noise causes a material change in behaviour such as keeping windows closed for most of the time or avoiding certain activities during periods when the noise is present. If the exposure is predicted to be above this level the planning process should be used to avoid this effect occurring, for example through the choice of sites at the plan-making stage, or by use of appropriate mitigation such as by altering the design and layout. While such decisions must be made taking account of the economic and social benefit of the activity causing or affected by the noise, it is undesirable for such exposure to be caused."*

2.10 The assessment criteria listed in the Report contain reference to some LOAEL and SOAEL values and it is highlighted that levels should not exceed the SOAEL. However, although the need to mitigate and minimise noise which is above the LOAEL but below the SOAEL is discussed, this not done within the assessment.

2.11 The Report reaches conclusions on whether a predicted level is above the SOAEL (or whether it is "significant") but where the level is predicted not to be significant, it does not identify whether it is above or below the LOAEL. Without this information, it is not possible to evaluate whether further actions may be necessary to mitigate or minimise the noise.

2.12 To take an example, if the LOAEL and SOAEL for a particular assessment parameter were determined to be 50 and 60dB, respectively and the assessment predicted that the level would be 59dB, it would be correct to state that this would be below the SOAEL and that would be no significant adverse effect. However, noise policy requires that between 50 and 60dB (in this example) reasonable steps must be taken to mitigate and minimise noise. The Report, in such an instance would state simply that the level would not result in a significant adverse effect and stop there.

2.13 It is not enough simply to state that a predicted level is "not significant" as has been done throughout the Report. This is a critical omission for the assessment as a whole as it means that instances when noise which could be (and should be) further reduced have not been identified and the additional reductions necessary would not be implemented.

Operational Noise Assessment Criteria

2.14 The Report states that Operational Noise from the site has been assessed against criteria taken from British Standard BS8233:2014 "Guidance on sound insulation and noise reduction for buildings" (BS8233).

2.15 However, BS8233 states, at paragraph 6.5.2 that:

> *"Where industrial noise affects residential or mixed residential areas, the methods for rating the noise in BS 4142 should be applied."*

2.16 This approach is therefore flawed, in SAL opinion, for the assessment of industrial and commercial noise.

2.17 British Standard (BS) 4142: 2014+A1: 2019 *'Methods for rating and assessing industrial and commercial sound'* (BS 4142) describes a method for rating and assessing sound of an industrial or commercial nature, which includes, in Section 1.1 of the standard:

> *"sound from industrial and manufacturing processes;*
>
> *sound from fixed installations which comprise mechanical and electrical plant and equipment;*
>
> *sound from the loading and unloading of goods and materials at industrial and/or commercial premises; and*
>
> *sound from mobile plant and vehicles that is an intrinsic part of the overall sound emanating from premises or processes, such as that from forklift trucks, or that from train or ship movements on or around an industrial and/or commercial site."*

2.18 BS4142 is the appropriate assessment method for the types of sounds which would be present at this site.

2.19 Oddly, despite using the absolute levels from BS8233, the Report actually highlights BS4142 as having some relevance, stating:

> Operational noise assessment for an industrial facility also needs to consider the character of the noise, as well as the level and context in which it is experienced as set out in BS 4142:2014+A1:2019. This standard compares the noise emission from the source with the background (L_{A90}) sound level (see section 2.3.1).

2.20 However, having made this statement, the Report does not adopt the approach within BS4142. Whilst a comparison with background levels is provided within the assessment, the character is not considered, and neither is the context. The assessment is presented against the absolute levels and this is not a reliable way to assess industrial sound of this nature. This is discussed further in Section 5.0 below.

3.0 Review of Baseline Data

3.1 It is recognised that the assessment was carried out during extraordinary circumstances. There was a national lockdown in place (COVID-19 restrictions) and it was not possible to undertake a reliable survey of noise levels, as noise sources (and particularly road traffic noise) were not typical of normal times. This meant that the Report's authors were forced to use available data and make assumptions based on this to establish an estimate of baseline levels.

3.2 The Report recognises that this and identifies that more detailed study will be required for the permit application. Until such an additional study has been produced, the baseline information required to determine the permit application is incomplete.

3.3 Unfortunately, to compound this problem, the information used to derive an estimate of baseline levels has been very poorly presented and the assumptions made appear to be likely to result in unreliable estimates.

Poor presentation of survey data

3.4 The is no information supplied about the survey locations from which the data was taken. The information required would include exact location (including distances from any nearby noise sources, such as roads); whether the measurement was taken in the free field or at a façade; and height above ground. One would also expect a little more information on measurement conditions, type of sound level meter used and parameters measured. This lack of information means that it is not possible to check that the results presented provide a reliable estimate of typical baseline conditions at nearby noise sensitive receptors.

3.5 Section 4 of the Report states that baseline data is derived from data "…taken from baseline survey data collected around the port as part of ongoing environmental monitoring."

3.6 Figure 3 seems to indicate that survey locations which are adjacent to the edge of the harbour and away from roads. However, reported levels (which are all between 50 and 60dB, $L_{Aeq,\ 5mins}$) are far higher than would be expected from such locations. These relatively high levels suggest that the monitoring locations may have been near to roads and this would mean that the baseline levels used may be higher than would actually be representative of levels at noise sensitive receptors which face the harbour.

3.7 If the baseline data is too high, it follows that any assessment work which compares predicted levels to baseline levels would underpredict the impact.

3.8 The levels reported in Appendix B are unclear ; the table is not labelled and there is no descriptive text to explain what parameters are being displayed. Levels are reported as "Minimum", "Maximum" and "Average" levels but it is not clear what these terms mean. When reporting noise, it is normal to refer the maximum (and occasionally the minimum) levels which occur instantaneously in a given measurement period to describe sound. These are referred to as the L_{max} and L_{min} levels. Further, the "average" level in a period is usually referred to as the L_{eq}. It is a logarithmic average of the instantaneous measurements over a given period.

3.9 However, although it is possible that the terms in the table in Appendix B may have the meanings described above, it seems more likely from the text in the Report that they refer to the maximum and

minimum L_{Aeq} values which were measured over a particular day. It is unclear whether the "average" referred to in Appendix B (and in Table 8 of the Report) is the L_{Aeq}, which would be the log-average for the day, or an arithmetical average of the individual L_{Aeq} (or other) measurements over the day. If it is an arithmetic average, this would result in a lower baseline and, again, this could lead to underprediction of effects in some circumstances.

3.10 If it is assumed that the values are L_{Aeq} values and that the average values are log averages of daily levels, then the derivations which follow in Section 4 of the Report would be logical (if unreliable), however this needs to be clarified.

Reliability of levels

3.11 It seems unlikely, based on experience, that noise levels for noise sensitive premises fronting the harbour are unlikely to be in the range 50-60dB. The basis of the assessment work assumes that they are and this may not be a valid assumption, in SAL opinion.

3.12 It appears that a single, arithmetic average of weekday levels across all of the survey locations has been taken to represent weekday levels and the Report states that this value (54dB) should be taken as the baseline for all locations. The basis for this assumption or for ignoring weekend values has not explained. In SAL experience, this approach is highly unlikely to result in reliable predictions of likely baseline levels for each receptor (or group of receptors) since the levels appears too high for many of the receptors and since ambient levels will vary greatly depending on local circumstances and therefore the use of a single value for all is incapable of providing reliable results.

3.13 According to the Report, a further step is then taken – to assume that the background level (L_{A90}) will be 14dB below the derived "average" day time L_{Aeq} and that the night time background level will be 22dB below the day time average noise level. This approach has been derived from data reported in the "National Noise Incidence Study 2000/2001" (NIS) which found that, on average, this was the difference in these levels across the UK. Different levels are reported in the NIS for areas which are "rural, urban, suburban or locations which are predominantly residential but with some light industry or main roads" but it is not clear from the numbers used in the Report which of these conditions has been assumed for the area concerned. The closest fit appears to be with the NIS "rural" noise levels category.

3.14 The use of the NIS data is innovative (given the difficult circumstances in which the noise assessment work was carried out) and provides a method to enable an estimate to be made of background noise levels when there is very little data available. However, the estimate, even if the initial assumption relating to the day time L_{Aeq} were reliable (which it is not, for the reasons explained above), would be bound to result in a high degree of unreliability since background noise levels are very variable.

3.15 Any conclusions which use these baseline values: whether the ambient level (described using the L_{Aeq} parameter) or the background noise level (which is described using the L_{A90} parameter) as their basis will be unreliable.

3.16 The Report's authors acknowledge this shortcoming and highlight that a more detailed study will be required for the permit application. Until such an additional baseline study has been produced, the information required to determine the permit application is incomplete in SAL opinion.

4.0 Review of Construction Phase Assessment

Noise

4.1 If the predicted levels are correct, they would be sufficiently low that noise is unlikely to result in an adverse effect, even given that the baseline levels are unreliable.

4.2 The source terms used have been reviewed. They are from the relevant British Standard (BS5228) and appear to be reliable. However, it is not possible to check calculated construction noise using the spreadsheet provided, as this contains bespoke user defined functions and, without these functions, checking the calculations is not possible.

4.3 No plans are available showing the extent of the construction, phasing of work or areas within which key noisy activities are expected to occur. It is therefore not possible to check predictions using SAL own calculation methods.

Vibration

4.4 The Report states that there are no vibration sensitive receptors within 200m of any source of vibration and so there would be no adverse effect from vibration. If the distance quoted is correct, then the second part of the statement (that there would be no adverse vibration effects) is agreed. However, it is not possible to check on the distances, since there are no plans available showing the extent of the construction, phasing of work or areas within which key noisy activities are expected to occur.

Traffic Noise

4.5 According to the report, construction road traffic noise is to be assessed by considering the change in level which would result from the increase in vehicles on the roads. It states, in the assessment criteria section:

> For construction traffic operating on the public highway, the threshold criterion used for identifying a significant effect is a moderate or major magnitude of impact. This represents a change in BNL of 3dBL_{Aeq} or more, following the guidance in LA111.

4.6 However, the assessment does not go on to carry out the assessment in this way. It appears, instead, to consider an absolute value only, stating:

> The predicted worst case noise level from these vehicles would be 62dB$L_{Aeq,12hr}$ which is well below the construction noise assessment criterion. Although individual vehicles passing would clearly be noticeable, this short term change in road traffic noise is assessed as a not significant effect.

4.7 The predicted 62dB, $L_{Aeq,12hr}$ is not compared to noise levels which would exist without the construction traffic so it is not possible to evaluate what the level difference would be.

4.8 Looking at the calculation supplied in the "Noise modelling assumptions" folder, it appears (although it is not specifically stated, so one cannot be certain) that this value is the predicted level at 10m from the

kerb of the road, with a 3dB façade reflection added. It is unclear why this distance has been selected, as there appear (from Google Streetview) to be residential windows closer than this to the traffic routes.

4.9 The assessment of construction traffic noise appears to be flawed, therefore. It does not use its own criteria to carry out the assessment and the value used appears to be an unreliable prediction of actual levels, in any event.

5.0 Review of Operational Phase Assessment

Noise

5.1 The report describes noise emissions from the operation of the site as having been calculated from:

- Internal reverberant noise levels have been assumed to be 85dBL_{Aeq} in each of the main spaces of the facility;
- Calculated sound insulation performance of the relevant elements of the building envelope, based on the architect's drawings; and
- Latest architect's drawings of the building.

5.2 There are no details of these calculations presented in the report or its Appendices, so this cannot be checked.

5.3 Strangely, some calculations spreadsheets have been included which consider noise break-in to some office accommodation. It is unclear why those calculations were included and tempting to wonder whether perhaps the wrong files were submitted.

5.4 It is unclear why the Report states that the only on site source of noise which is considered is that from breakout from buildings on site. In fact, it appears from a review of the calculation spreadsheets supplied that the model includes a great number of other sources of noise. However, the format of the spreadsheets, with values not labelled or labelled according to a coding system which is not explained, means that it was not possible to check the assumed levels and the reliability of the calculations provided.

5.5 It is quite likely that one of the potentially significant sources of operational noise on site would be noise from vehicle movements and from delivery and picking up of raw materials and waste. SAL have reviewed the model using the submitted modelling files and have not been able to find any line sources within the site, meaning that on suite movements of HGVs do not appear to have been included.

5.6 The terrain data within the model appears to be reliable, as does the ground absorption assigned. However, the façade of the buildings within the model are assigned as an area source, but they are constantly "criss-crossed," in the model files submitted causing a "fatal error" when opening. This means that SAL cannot check the noise level calculations from the data available.

5.7 The Report provides no information on key plant items such as fans, duct (or chimney) openings, pumps, cooling or heating plant, compressors and so on, which might be used on site. The modelling files show source noise levels which appear to be generic and do not vary with each source (for example, the stack noise level and the façade of the building being the same). It is unclear what the source of the noise source data is or whether this is reliable.

5.8 The only reference to plant noise on site within the Report is to some very large transformers to be installed. The Report states:

> The proposal is to provide electricity for docked ships, which will require two 15MW transformers and containerised converters (to provide 60Hz AC) and include cooling fans. These will be designed such that the overall noise emission from the proposed scheme will comply with the environmental noise emission requirements.

5.9 The "noise emission requirement" referred to in this statement is not discussed or defined. Without a reliable estimate of background noise levels or information about their location and sound characteristics, it is not possible, in SAL opinion, to state with certainty that the noise emissions will comply with "the requirements". Further information is required to enable this to be considered.

5.10 Although the Report compares predicted operational noise levels to estimated background levels (which appear unreliable, for the reasons explain in Section 3.0 above), the assessment is made without consideration of this level difference in context or with character corrections applied, as required by BS4142. As discussed above in Section 2.0 above, operational noise assessment has been carried out by solely comparing predicted levels from the site with absolute criteria derived from BS8233 and this means that the wrong approach has been used and the assessment conclusions are not correct.

5.11 The Report states that the noise would be, *"… audible from time to time …"* but that that it would be at a level which would be, *"… below the assessment criteria, including the night time LOAEL."* Finally, it states that, *"Operation of the plant is therefore assessed as a not significant effect".* Since the estimated baseline data is unreliable and the assessment methodology is not appropriate for the sources concerned, these conclusions are not valid.

6.0 Noise Emissions Limits and Monitoring

6.1 It is normal practice for noise limits to be set for plant and this is virtually always done with reference to background noise levels and rating levels assessed in accordance with BS4142. This lack of limit means that the normal level of control which would be required for a project such as this would be missing.

6.2 Routine monitoring of noise emissions is not always required, but may be worth considering, if there is a possibility that offsite levels would result in an adverse effect (even if not a significant adverse effect).

6.3 No mention is made of any proposed noise limits or monitoring of site noise emissions in the Report.

7.0 Conclusions

7.1 Further work is required to provide an adequate, reliable assessment of noise and vibration effects from the proposed development which is suitable for an IPPC permit application. This is acknowledged by the Report's authors. As it stands, the conclusions stated in noise and vibration assessment cannot be relied upon in SAL opinion.

7.2 Table 7.1 below provides a summary of key concerns identified from the documentation provided in the application.

Table 7.1: Summary of findings and conclusions

Issue	Finding	Conclusion
Levels between LOAEL and SOAEL should be mitigated and minimised.	Instances when noise which could be (and should be) further reduced have not been identified and the additional reductions necessary would not be implemented.	Important information missing which means that the assessment is incomplete and conclusions may be unreliable.
Assessment methodology for operational noise	The approach taken is not suitable for the assessment of industrial / commercial noise. There is an ideal standard, which is used throughout the industry, BS4142, and although this is mentioned, it is not used to reach conclusions about the noise impact. Neither the character of the sound, nor its context have therefore been taken into account, as they should have been.	This has resulted in an error of interpretation, since the levels predicted have been compared to criteria which are not appropriate for this type of noise.
Baseline levels – presentation of data and lack of survey data	No survey was undertaken (since the assessment was undertaken during the COVID lockdown and conditions were atypical). The data used was from historic records and is poorly presented such that it is not possible to interpret reliably.	Further information is required (ie. the presentation of the data in a clearly understandable format) in order to be able to carry out a check on this.
Baseline levels - reliability	The levels presented appear considerably higher than would be expected. This may because the location from which data was taken is not presentative of conditions at the receptors. The derivation of estimated background levels appears highly unreliable.	More detailed information describing the survey locations and the receptor locations is required to check this. Actual survey work is required to provide more certainty in any event. The Report's authors acknowledge this shortcoming and highlight that a more detailed study will be required for the permit application. The information required to determine the permit application is currently incomplete.
Construction noise and vibration	No plans are provided to show where activities would be likely to occur so it is not possible to check the predictions.	Additional information is required in order to check this aspect of the assessment.

Issue	Finding	Conclusion
Construction traffic noise	The assessment methodology correctly states that this should be assessed by considering the change in level which would result. However, this has not been done. Instead a single figure has been produced and this has been compared to an absolute value. It is not clear how the predicted level was derived or where this level is predicted to occur.	The assessment of construction traffic noise is therefore flawed (since it uses the wrong method) and the value used also appears to be unreliable. The assessment conclusions are therefore unreliable for this element.
Operational noise	There is a lack of clarity about the approach taken and assumptions made to predict noise levels. The modelling data provided appears to suggest that a comprehensive modelling exercise was undertaken, but this is not described within the Report.	Further information and clarity in relation to what modelling assumptions were used and where these were derived from is required in order for a full check on calculations to be carried out. Also, as discussed above, the methodology used is unreliable, so conclusions are not reliable.
Limits and Monitoring	Neither noise limits nor routine monitoring of levels has been proposed.	Without limits, there would be no control of operational noise, as would normally be expected.

APPENDIX 2: REPORT OF RSK

(PROPOSED TEHCNIQUES AND BAT, AIR QUALITY AND HUMAN HEALTH RISK ASSESSMENT)

Freeths LLP

Environmental Permit Application Review

Portland Energy Recovery Facility

September 2021

RSK GENERAL NOTES

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Contents

TABLES

1 Introduction

RSK Environment Ltd (RSK) was commissioned by Freeths LLP to undertake a review of the environmental permit application for the Portland Energy Recovery Facility (ERF). The applicant and proposed operator of the installation is Powerfuel Portland Limited (Powerfuel).

The review is part of a package of legal and technical consultancy support for Portland Town Council and is to inform the council's response to the public consultation on the permit application.

RSK was specifically asked to undertake the following:

- review of technical details including plant design, proposed operation and management systems;
- assess whether the plant design and proposed operation appears technically sound and whether the proposed installation complies with best available techniques ("BAT");
- review the standalone BAT assessment and the commentary on BAT in the separate supporting information document to confirm whether the conclusion is sound (i.e. that the proposed techniques represent BAT in accordance with relevant guidance notes);
- review the assessment of fugitive emissions, including water and air emissions, as set out in the overall supporting information document, the overall environmental risk assessment and individual technical documents. Review the modelling of emissions to air and confirm compliance with BAT Associated Emission Levels set out in the waste incineration BREF;
- notify us of any other technical issues that you consider may be grounds to object to the application;
- review the human health risk assessment;
- review the fire prevention plan and risk assessment.

2 Proposed Techniques and BAT

This section describes our review's findings with regard to the installation's planned operational techniques and their compliance with the requirement to use the best available technique (BAT). The section is organised in line with the sections of the waste incineration BREF note, which is the primary reference document for describing candidate techniques and BAT considerations and conclusions. The BAT conclusions generated by the BREF note are transposed into statute. For waste incineration this is through commission implementing decision (EU) 2019/2010 of 12 November 2019 establishing the best available techniques (BAT) conclusions, under Directive 2010/75/EU of the European Parliament and of the Council, for waste incineration (the 'BAT conclusions', or 'BATC'). Provisions of the Environmental Permitting Regulations require installations to use BAT and the Industrial Emissions Directive states that BATC

should be the primary, though not necessarily only, reference for setting permit conditions.

Where this section describes a BATC, it is in the format BAT *x* where *x* is a number and these are as per the BATC document.

2.1 Management Techniques

Environmental management systems (EMS) are discussed in section 4.1.1 of the BREF and BAT 1 specifies that BAT is to implement an EMS with various features.

As Powerfuel is a new organisation, established to develop the ERF project, it is to be expected that it does not have an EMS currently in place. Section 2.10.1 describes Powerfuel's intention to develop and implement an EMS that meets the requirements of BS EN ISO 14001. The text references an out of date version of this standard (2004) – the latest version is 2015 and should be used for all new EMSs.

Once this commitment to meet the requirements of ISO 14001 is established, the remainder of the section is largely tautologous as all the elements it describes are requirements of the standard. Table 2-11 of the supporting information (SI) also includes a commitment that the EMS will meet the specific requirements of BAT 1, which includes measures specific to waste incineration plant. The development of a suitable EMS should be included as a permit condition - this is a standard approach for an application where no EMS is currently in place. Table 2-11 includes a proposal that a pre-operational condition to provide a summary of the EMS should be included in the permit.

Section 4.1.2 of the BREF describes how effective management systems should ensure continuous operation of the plant and minimise startups and shutdowns, as these can entail higher emissions and other environmental risks that normal, continuous operation. This is reflected in BAT 16, and Powerfuel commits to meeting this requirement in Table 2-11.

The proposals for management techniques are appropriate at this stage of a project's development. Commitments to meet the necessary standards are all that can reasonably be expected.

2.2 Operational Techniques – Quality Control of Incoming Waste

Section 4.2.1 of the BREF describes the necessary considerations in the quality control of incoming waste, and BAT 9, with links to BAT 11, are the relevant BATC. Powerfuel has described its techniques in sections 2.2.2.1 and 2.2.2.2 of the SI document and referred back to these sections in the justification of compliance with BAT 9 and BAT 11 in table 2-11.

The proposed measures and commitments meet the requirements, if fully and effectively implemented, with the exception of the following.

Powerfuel states that "the facility will not undertake radioactivity detection tests as it is not anticipated that any radioactive waste will be received". The BREF and the BATC describe radioactivity detection as 'generally applicable', including for MSW streams, and BAT 11 specifies radioactivity detection as BAT "depending on the risk posed by the

incoming waste". There is no justification of the risk of radioactivity being present being low enough to justify the omission of radioactivity detection.

2.3 Operational Techniques – Thermal Processing

2.3.1 Combustion Technology

Options for different types of incinerator are discussed in section 4.3.1 of the BREF. There are no BATC specific to this topic. Powerfuel discusses its choices in section 2.6.1 of the SI and undertakes a quantitative BAT assessment, reported in a separate document (section 5 of that document being the relevant section) for three technology types.

The initial screening of options, in the SI document, is appropriate and the options taken forward agree with those that have appropriate capacity as stated in table 4.6 of the BREF.

The BAT assessment is sound in its approach. We agree with the selection of environmental aspects quantified and the approach used in quantifying them on a like-for-like basis. It is beyond the remit of this review to verify or challenge the specific numbers in the assessment as this would require detailed engineering information which is not presented in the assessment report.

The moving grate is concluded to be the option with the lowest environmental impact in all the aspects, therefore the cost assessment is essentially redundant (cost justification only becomes significant if an option that does not entail the lowest environmental impact is proposed) and the conclusion that moving grate is BAT is uncontroversial. The marginal differences in the environmental impacts between the three options are small – it is principally the air pollution control system that determines the plant's emissions, rather than the choice of combustion technology.

There is considered to be no grounds for comment on this aspect of the plant design.

2.3.2 Control System

The monitoring and control of the process is covered in section 4.3.3 of the BREF. BAT 3, 14 and 15 are the relevant BATC. Powerfuel describes its proposals in sections 2.5.3-2.5.5 of the SI and summarises its position with regard to the BATCs in table 2-11.

While the precise details of the control system are, understandably, subject to detailed design, the proposals indicate an appropriate adherence to the principles described in the BREF and BATC.

There is considered to be no grounds for comment on this aspect of the plant design.

2.3.3 Combustion Control Detailed Techniques

Sections 4.3.4 to 4.3.10 of the BREF describe various specific techniques that can improve the process control and thus optimise performance and reduce environmental effects. There are no BATC specifically related to these sections, though they could perhaps be interpreted to be covered by the catch-all requirement of BAT 14 to optimise the incineration process

4.3.4 – primary and secondary air supply and distribution optimisation. Section 2.5.5 of the SI describes monitoring and control of the oxygen concentration at the boiler exit to ensure that there will always be adequate oxygen for complete combustion of combustible gases and states that "oxygen concentration will be controlled by regulating the combustion airflows…". Section 2.5.4 states that "CFD modelling will also be used to optimise the location of the secondary air inputs into the combustion chamber" and it is reasonable to extrapolate this to infer that the CFD modelling will be used to optimise the primary and secondary air supply and distribution overall.

4.3.5 – preheating of primary and secondary combustion air. Section 2.8.2 of the SI states that "low grade heat will be extracted from the turbine and used to preheat combustion air in order to improve the efficiency of the thermal cycle".

4.3.6 – replacement of part of the secondary air with recirculated flue-gas. The possible inclusion of this technique is discussed in section 2.6.2 of the SI and a decision deferred until detailed design. This is reasonable.

4.3.7 – use of oxygen-enriched air. This technique has significant cross-media effects (parasitic load is significantly increased in order to reduce certain emissions and ash production) and the BREF indicates limited applicability and current use, however, it is perhaps remiss of the applicant to entirely omit to discuss the technique and whether it has been considered.

4.3.8 – higher temperature incineration (slagging). The BREF indicates that this technique is not applicable to the type of incinerator and waste to be used at Portland.

4.3.9 – increase of the waste burnout. Section 1.4.2 of the SI states that the moving grate will agitate the fuel bed to promote a good burnout and describes the minimum residence time, also discussed in sections 2.5.3 and 2.5.4 and 2.12.1. It is considered that the techniques discussed in this section are adequately addressed in the application.

4.3.10 – reduction of grate riddlings. There are no specific proposals on this in the application, but it is perhaps an inherent part of sound incinerator design to reduce the grate spacing 'as much as possible' such that waste does not fall through it.

4.3.11 – use of low gas velocities in the furnace and inclusion of empty passes before the boiler convection section. The proposals contain no specific details on this, though it does seem a matter for detailed design and perhaps too technically detailed for a permit application. The commitment to optimise the design through CFD is probably sufficient at this stage.

4.3.12 – determination of the calorific value of the waste and its use as a combustion control parameter. The proposals contain no specific details on this, though it does seem a matter for detailed design and perhaps too technically detailed for a permit application. The commitment to use an advanced control system is sufficient at this stage. The parameters that the system will measure do include some key meta-parameters mentioned in this section that would allow online surrogate measurement of the waste calorific value (steam flow and temperature, flue gas CO_2, H_2O, CO) but whether these parameters will be used in a feedback loop as described in this section is not clear.

2.4 Operational Techniques – Energy Recovery

2.4.1 Optimisation of Overall Energy Efficiency and Recovery

The optimisation of overall energy efficiency and recovery is discussed in section 4.4.1 of the BREF. The sole BATC specific to this topic is BAT 19's requirement to use a heat recovery boiler, which is of course complied with in this case.

Some of the techniques included in the BREF such as location of the facility close to energy demand are not matters that can be considered in environmental permitting.

The BREF states that about 0.4 MWh to 0.8 MWh of electricity can be generated in a MSW incineration plant from one tonne of MSW. Powerfuel is intending to generate 18.1 MWe from 22.8 t/h of waste, which is equivalent to 0.79 MWh/t, i.e. at the very top of the range indicated by the BREF. Table 2-12 in the SI has a narrower and lower range of 0.415-0.644 for this benchmark, taken from an EA sector guidance note, which Powerfuel expects to comfortably exceed.

2.4.2 Detailed Techniques for Increasing Energy Recovery

The remainder of section 4.4 of the BREF details some specific techniques for optimising the energy recovery from the incinerator. Some of these are translated into the BATC BAT 20, which Powerfuel claims compliance with through a brief outline of a selection of proposed techniques. This claim is reasonable, though many parts of the BREF in particular are a matter for detailed design. It is natural that Powerfuel should seek to optimise the energy recovery as that will help the project economics – it is unlikely to require significant regulatory intervention to ensure this.

2.5 Operational Techniques – Flue Gas Cleaning and Air Emissions Prevention

2.5.1 Emissions of NOx, N_2O, CO and NH_3

Techniques to reduce emissions of NOx, N_2O, CO and NH_3 are detailed in section 4.5.4 of the BREF and distilled into the BATC BAT 29. Powerfuel describes its proposed techniques in section 2.6.2 of the SI document and claims to meet BAT 29 in the relevant row of table 2-11. A quantitative BAT assessment in the accompanying separate document is done for three NOx abatement options.

Powerfuel proposes using a selective non-catalytic reduction (SNCR) system, with ammonia reagent, possibly with a catalytic 'polisher' in the bag filters.

This is not the option that provides the highest level of NOx abatement. Powerfuel acknowledges that an SCR system would reduce NOx concentration in the stack to 80 mg/Nm^3 whereas the SNCR system only achieves 120 mg/Nm^3. Powerfuel claims that this reduction in NOx is not worth the additional cost and the additional greenhouse gas emissions, which are caused by additional parasitic power demand and loss of exported power (therefore requiring additional fossil-fuelled generation elsewhere).

In the BAT assessment, consistent with the greenhouse gas (GHG) assessment, Powerfuel has used a factor of 349 gCO_2/kWh for the electricity generation displaced. This is based on gas-fired CCGT generation and a reference to a 2013 Defra document

is given for the use of this as the comparator, on the basis that 'A gas fired power station (CCGT) is the current standard comparator as this is the 'marginal' technology if you wanted to build a new power station.'

In 2021 this is not a convincing case. The latest grid emission factor published by the UK Government is 212 g/kWh and this is declining year by year as more renewables capacity becomes available and coal use, in particular, decreases. The actual difference in GHG emissions from displaced grid generation between the SNCR and SCR systems is therefore likely to be less than the claimed 1300 tpa and more in the region of 750 tpa in the early years of operation and less in future years as the grid decarbonises further.

The calculation of POCP in the BAT assessment and its use as an advantage of SNCR is also considered controversial. Yes, tropospheric ozone is a harmful pollutant, but NOx is a more harmful pollutant. RSK has never before seen the argument that emitting NOx is a positive thing because it reacts with ozone and forms NO_2. It is notable that Powerfuel does not mention this 'benefit' in its descriptive conclusions of the BAT assessment.

The SNCR option is also stated to entail an additional 570 tpa (285%) of ammonia use. The presentation of these figures is somewhat meaningless without further detail on what this entails in terms of actual environmental impact. RSK would like to have seen detail on the upstream impacts entailed in ammonia use (at the ammonia plant and in transporting the ammonia to the ERF). These could be limited to just the GHG emissions and placed into context with the marginal GHG emissions as currently presented in the study. At the moment, the reader has no means of understanding whether the additional ammonia use is at all significant.

RSK agrees that the choice between whether FGR is included in the SNCR system is not material – it does not have significant implications on the overall environmental impact or the BAT case. We are comfortable with the applicant's deferral of this to detailed design and a proposed associated pre-operational condition to confirm the decision.

Powerfuel has used SCR performance of 80 mg/Nm^3 to compare with the SNCR performance of 120 mg/Nm^3, stating that "this is the level that the technology has been demonstrated to achieve on a long-term basis". The BAT-AEL for NOx emissions is 50-120 mg/Nm^3, with the lower end stated to be achievable with SCR. It is probably the case that 50 mg/Nm^3 is achievable with greater amounts of catalyst and greater reagent injection (possibly with greater ammonia slip) and hence greater costs, but this ought to have been discussed in the BAT assessment given that the BAT-AELs indicate that this is achievable.

The BAT assessment is based entirely on the relative NOx emissions performance of the two options. The BAT-AEL for ammonia emissions is 2-10 mg/Nm^3, with Powerfuel proposing an ELV of 8 mg/Nm^3 for its chosen SNCR technology option. The BATC indicates that the lower end of the BAT-AEL range is achievable with SCR, therefore the BAT assessment may have omitted consideration of an additional benefit of SCR over SNCR.

Powerfuel presents the marginal abatement costs of NOx emissions for the two options (SNCR: £910/tonne, SCR: £3460/tonne), noting that the difference is "approximately an additional 300% per tonne of NOx abated" but omits any discussion of any benchmarks for NOx abatement costs. What is the cost to society of a tonne of NOx emissions? How much should we expect to pay to avoid a tonne of NOx emissions?

It is not possible to definitively conclude, within the remit of this review and considering the information presented, whether Powerfuel's claim that SNCR is BAT is accurate, but it is certainly a potential area for challenge, as selection of a technology that is not the cleanest available always requires strong justification.

Table 1: NOx, CO and NH_3 emissions BAT-AELs and proposed ELVs

Pollutant	Daily average emission concentrations (mg/Nm^3)	
	BAT-AEL	Proposed ELV
NOx	50-120	120
CO	10-50	1
NH_3	2-10	8

2.5.2 Emissions of Acid Gases

Techniques to reduce emissions of acid gases are detailed in section 4.5.3 of the BREF and distilled into the BATC BAT 27. Powerfuel describes its proposed techniques in section 2.6.3 of the SI document and claims to meet BAT 27 in the relevant row of table 2-11. A quantitative BAT assessment in the accompanying separate document is done, initially for three system types, but a wet scrubber option is quickly screened out, leaving only dry and semi-dry options for full quantitative assessment.

The wet scrubber option is ruled out on the basis of the production of a large volume of hazardous liquid effluent, a reduction in the power generating efficiency of the facility, the generation of a visible plume, high capital and operating cost, high water demand and it 'mainly' being 'used in the UK for facilities treating hazardous waste where high and varying levels of acid gases in the flue gases require the buffering capacity and additional abatement performance of a wet scrubbing system'. This case is underdeveloped, in our opinion, for the following reasons:

- The 'hazardous' liquid effluent needs to be treated by an effluent treatment plant – but there is no indication that this is not possible, for example due to space constraints.
- The reduction in the power generating efficiency of the facility is not quantified in the assessment. The BREF states that the power demand is 19 kWh/tonne of waste input, which, at 22.8 t/h waste, equates to additional parasitic load of 433 kW, or an additional 15% on the 2.9 MW stated, and a reduction of 3% on the power export of 15.2 MW.
- The generation of a visible plume is certainly a disadvantage but, according to the BREF, can be reduced by reheat/condensation.
- The BREF and BATC both class wet scrubber systems to be 'generally applicable', except where there is a constraint on the water supply, therefore the lack of current use in the UK is not in itself a strong reason for ruling it out.
- The high water demand and high costs ought to have been quantified and in general we consider the wet scrubber should have been taken forward to the full quantitative BAT assessment alongside the semi-dry and dry options.

In opposition to these disadvantages cited by Powerfuel, a wet scrubber system is stated by the BREF to have the following drivers for implementation:

- Achievement of particularly low and stable acid gas emission levels
- Reduction of disposal costs for flue-gas treatment residues (lowest residue amounts of all systems)
- Lowest reagent consumption of all systems
- Possibility to recover HCl, salt, gypsum
- Reduction of ammonia emissions

These factors were, in our view, not given sufficient consideration in Powerfuel's assessment.

Of the two options (dry and semi-dry) that were subjected to fully quantitative assessment, the BAT assessment presents little difference between the two, with no difference in SO_2 abatement, lesser power demand, lower cost and zero water consumption in favour of the dry system against 10% less residue production in favour the semi-dry system. We do not agree with the method used to quantify the GHG emissions from displaced power generation, as discussed in section 2.5.1, therefore the dry option's advantage may be slightly overstated in that aspect, however whereas Powerfuel state that the SO_2 abatement performance is the same, the BREF indicates that dry systems can perform better in that regard, with specific emissions of 85 gSO_2/tonne of waste against 140 for the semi-dry system. Therefore, if anything, the dry system's advantage in this regard may have been downplayed.

Between the dry and semi-dry systems, there is no basis for disputing Powerfuel's choice of the dry system as BAT. The step change in performance (albeit with various cross-media playoffs) comes from a wet system, which was not adequately considered, in our opinion.

Powerfuel is proposing that ELVs for acid gases are set at the top of the stated ranges for BAT-AELs:

Table 2: Acid gas emissions BAT-AELs and proposed ELVs

Pollutant	Daily average emission concentrations (mg/Nm^3)	
	BAT-AEL	Proposed ELV
HCl	2-6	6
HF	<1	1
SO_2	5-30	30

2.5.3 Emissions of Particulate Matter, Metals and Metalloids

Techniques to reduce emissions of particulate matter are detailed in section 4.5.2 of the BREF and distilled into the BATC BAT 25, which also includes emissions of metals and metalloids. Powerfuel describes its proposed techniques in section 2.6.4 of the SI document and claims to meet BAT 25 in the relevant row of table 2-11.

Powerfuel has chosen a bag filter over the primary alternative technique of an electrostatic precipitator (ESP) on the basis that the bag filter performs better. This is substantially backed up by the BREF which states that bag filters can achieve <5 mg/Nm^3 whereas ESPs can achieve <5-25 mg/Nm^3. The BAT-AEL is <2-5 mg/Nm^3 and Powerfuel is proposing an ELV of 5 mg/Nm^3 (daily averages). The downside of a bag filter relative

to an ESP is greater energy consumption, according to the BREF. RSK does not have the engineering information available to challenge Powerfuel's assertion that an ESP cannot meet the same performance level as an ESP, but given the limited overlap between the stated performance ranges in the BREF, it seems credible.

Powerfuel has specified a single multi-compartment bag filter system rather than a more complex solution such as pre-dedusting with a cyclone, an ESP or a bag filter as discussed in section 4.5.2.1 of the BREF. This is expected and acceptable. If the main bag filter can meet the desired performance, it would not be sensible to introduce other systems, adding complexity.

Table 3: Particulate, metals and metalloid emissions BAT-AELs and proposed ELVs

Pollutant	Average emission concentrations (mg/Nm^3)	
	BAT-AEL	Proposed ELV
Dust	2-5	5
Cd+Tl	0.005-0.02	0.02
Sb+As+Pb+Cr+Co+Cu+Mn+Ni+V	0.01-0.3	0.3

Dust concentrations are daily averages, others are averages over the sampling period

2.5.4 Emissions of Mercury

Techniques to reduce emissions of mercury are detailed in section 4.5.6 of the BREF and distilled into the BATC BAT 31. Powerfuel does not specifically discuss its proposed techniques in the main part of the SI document, but claims to meet BAT 31 in the relevant row of table 2-11.

Powerfuel claims that the use of dry sorbent injection of activated carbon in combination with the bag filter represents BAT. This is technique (b) in BAT 31, but the BATC states that BAT may require incorporation of at least one of the other techniques listed. Techniques (c) and (d) both require continuous monitoring of mercury in the raw flue gas, which is not being proposed. Technique (a) is to use a wet scrubber (see section 2.5.2).

The BAT justification for mercury emissions control is underdeveloped. There should be discussion of the likely levels of incoming mercury-containing wastes and, based on the risk posed by that, discussion of primary emissions controls (separation of mercury-containing wastes upstream of the ERF) and justification that the additional techniques specified in the BATC do not add risk reduction (for example reducing emissions to the lower end of the BAT-AEL range) to the extent that they are BAT.

Table 4: Mercury emissions BAT-AELs and proposed ELVs

Pollutant	Average emission concentrations (mg/Nm^3)	
	BAT-AEL	Proposed ELV
Mercury	<0.005-0.02	0.02

The BAT-AEL is expressed as 'daily average or average over the sampling period'. As Powerfuel is proposing periodic (not continuous) monitoring of mercury, the latter will apply.

2.5.5 Emissions of Organic Compounds

Techniques to reduce emissions of mercury are detailed in section 4.5.5 of the BREF and distilled into the BATC BAT 30. Powerfuel does not specifically discuss its proposed techniques in a dedicated section in the main part of the SI document, but claims to meet BAT 30 in the relevant row of table 2-11. There are many crossovers between control techniques relevant to these emissions and other techniques such as combustion control and optimisation which are discussed elsewhere in the SI.

Powerfuel is using the four mandatory techniques described by BAT 30 and one of the four optional ones. Of the other optional techniques, two (SCR and wet scrubber) are crossovers with other areas (see sections 2.5.1 and 2.5.2) and therefore reasons for non-selection in those areas apply here also. Use of a fixed- or moving bed adsorption is an alternative to the dry sorbent injection that Powerfuel has chosen. It is also a candidate technique for dust and metals/metalloids reduction. The BREF states that its applicability can be limited by the overall pressure drop associated with the flue gas control system, but this is not specifically cited as justification for its non-selection by Powerfuel, which is a minor weakness.

Table 5: Organic emissions BAT-AELs and proposed ELVs

Pollutant	Average emission concentrations (mg/Nm^3)	
	BAT-AEL	Proposed ELV
Total VOCs	<3-10 mg/Nm^3	10 mg/Nm^3
Dioxins and furans	<0.01-0.06 ng i-TEQ/Nm^3	0.06 ng i-TEQ/Nm^3
Dioxins and furans and dioxin-like PCBs	<0.01-0.08 ng WHO-TEQ/Nm^3	0.08 ng WHO-TEQ/Nm^3

2.5.6 Fugitive Emissions

Techniques to reduce fugitive, or diffuse, emissions are detailed in section 4.2.2 of the BREF and distilled into the BATC BAT 21. Powerfuel discuss its proposed techniques in sections 2.4.2 and 2.4.3 of the SI document, and claims to meet BAT 21 in the relevant row of table 2-11.

The prescribed techniques are:

- Extraction of air from the waste storage area and use of this air as combustion air in the incinerator
- Storage and handling of ash and air pollution control residue in closed buildings
- Reduce volumes of waste in preparation for incinerator unavailability due to planned maintenance

All of these will be undertaken. The measures therefore represent BAT.

2.6 Operational Techniques – Emissions to Water

As the plant proposes to use a dry flue gas cleaning system and does not intend to treat ash or , there are no process emissions to water. Applicable BATCs are BAT 32, which demands segregation of domestic wastewater, surface runoff and process discharges (applicable only in abnormal operational cases at Portland ERF) and, partly, BAT 34

which is mostly not applicable owing to the absence of ash treatment at the facility. The only part of BAT 34 that remains applicable is the requirement to optimise the incineration and FGC process in order to reduce risks of water contamination from ash and residue storage. This BATC refers entirely to other BATCs (14 and 29), which have already been covered in previous sections of this review, to specify the measures.

Powerfuel confirms in the SI – e.g. in the water schematic diagram in appendix A – that the discharge streams will be segregated and discharged to different routes, and their proposals are standard and acceptable. Powerfuel briefly discusses the possible discharges in section 2.4.4 of the SI and details how it will avoid surface water discharges becoming contaminated in section 2.4.5. The proposed measures are standard for many industrial facilities and it is considered that this is not an area where any challenges are necessary.

2.7 Operational Techniques – Solid Residues

Techniques related to solid residues are discussed in section 4.7 of the BREF, but since Powerfuel is not intending to treat any solid residues at the ERF, only a very limited part – specifically section 4.7.1 – is applicable. This requires segregation of the incinerator bottom ash from the air pollution control residue. This requirement is formalised in BATC BAT 35.

Powerfuel confirms in section 2.9.1 of the SI and in the BAT 35 row of table 2-11 that the two residue types will be kept separate and sent to different recovery/disposal routes, therefore this requirement is met and there are no reasons to challenge the proposals related to this subject.

2.8 Operational Techniques – Monitoring

2.8.1 Monitoring of Emissions to Air

Air emissions monitoring techniques are discussed in the BREF specific to “Monitoring of Emissions to Air and Water from IED Installations”, but the BATC are in the waste incineration BATC document – the relevant conclusions are BAT 4 and 5.

Powerfuel describes its proposed techniques for monitoring under normal operating conditions in section 2.5.1 of the SI. All the proposed techniques meet the required standards and represent BAT.

BAT 5 concerns monitoring during other than normal operating conditions (OTNOC). In table 2-11 of the SI, Powerfuel states that it “understands that the UK regulatory agencies are currently consulting with the UK waste incineration industry on the definition of ‘appropriate monitoring’ of emissions to air during OTNOC. On this basis, Powerfuel are not able to confirm how the facility will comply with BAT 5. Powerfuel proposes that a Pre-Operational Condition is included within the permit which requires confirmation of the proposals for monitoring of emissions to air during OTNOC.

RSK cannot verify or refute whether consultations between the regulators and the waste incineration industry are occurring as described. Assuming that the statement is true, it is reasonable to wait for their outcome to avoid pre-emption and possible wasted effort. The suggested use of a pre-operational condition is sensible in this case.

2.8.2 Monitoring of Emissions to Water

Powerfuel is not proposing to undertake any monitoring of liquid discharges as there are to be only discharges of domestic wastewater (to sewer) and surface runoff (to the sea).

This is not in contravention of any rule or guidance.

2.8.3 Monitoring of Process and Solid Output Parameters

In section 2.5.3 of the SI, Powerfuel describes a comprehensive range of process parameters that will be monitored in order to control the process and/or its emissions. The proposals fully meet the requirements of BATC BAT 3, though many of the parameters are more related to the employment of an effective advanced control system, as required by BAT 15 and previously discussed in section 2.3.2.

The BATC (BAT 7) also requires quarterly monitoring of either the loss on ignition or total organic carbon content of the bottom ash, which Powerfuel has committed to implement in section 2.2.3.3 of the SI in order to demonstrate compliance with the BAT-associated performance levels (BAT-APL) summarised in Table 6.

Table 6: BAT-associated performance levels and Powerfuel's proposed performance - unburnt content of bottom ash

Parameter	Dry weight %	
	BAT-APL	Proposed minimum performance
Total organic carbon	1-3	3
Loss on ignition	1-5	5

The BATC states that the lower end of the BAT-APL range can be achieved when using fluidised bed furnaces or rotary kilns operated in slagging mode, not applicable at Portland ERF, therefore aiming only for the higher end of the range is reasonable.

3 Review of the Air Quality Impact Assessment

RSK has reviewed the following documents related to the air quality impact assessment.

1. Appendix D.1 - Baseline Analysis
2. Appendix D.2: Process Emissions Modelling
3. Modelling Results at Discrete Receptor Locations
4. Air Quality Analysis for EP Application
5. Abnormal Emissions Assessment
6. Relevant sections of the Chapter 10 (Natural Heritage) of the ES and the Shadow Appropriate Assessment

3.1 General Method

The software used, meteorological data and other inputs included in the assessment are considered to be appropriate.

3.2 Legislation, Policy and Guidance

The assessment and subsequent amendments were undertaken in 2020. Not all updates related to legislation, policy and guidance used in the assessment are verified, but it is noted that the Environment Agency has updated the environmental assessment levels (EALs) in 2021. An EAL of 195 $\mu g/m^3$ as an hourly average concentration was used to assess the benzene short-term impact whereas the updated EAL is 30 $\mu g/m^3$ expressed as a 24-hourly average. Similarly, EALs for arsenic and chromium VI included in the assessment are now revised. Inclusion of the revised EALs, for example, benzene would have resulted in higher significance of impact. Reassessment is considered necessary.

3.3 Baseline Concentrations

The baseline concentrations of pollutants assessed were derived from the UK-AIR website which represent the estimated average concentrations over a 1 km x 1 km area and are widely recognised as underestimated. Significantly higher annual average concentrations than that used in the assessment have been recorded at the surrounding monitoring stations as published on the Dorset Council website for the Weymouth and Portland area[1]. Inclusion of these measured concentrations would have resulted in higher significance of impact. Reassessment of the predicted environmental concentrations is considered necessary.

[1] https://www.dorsetcouncil.gov.uk/environmental-health/pollution/weymouth-portland-air-quality-data-2020

3.4 Standby Diesel Generators

Details of other onsite emissions are required to identify realistic short-term air quality impacts. In particular, the details of the proposed standby generators, including their number, throughput capacity, location, the proposed stack height and the intended operational hours are required. If significant, a detailed air quality assessment to quantify short-term in-combination impacts with the incinerator emissions might be required.

3.5 Background Values v Baseline Values

The assessment has used predicted environmental concentrations (PECs) by adding the increment from the scheme to spatially averaged background values. This can be appropriate for pollutants that are expected to be relatively spatially homogenous. However, it is not appropriate where there are significant localised sources of emissions within the study area, such as, when predicting concentrations alongside roads or near to areas affected by ship emissions. A total modelled roadside concentration from all traffic should be added to the spatially averaged background values to give an appropriate baseline value to which the additional concentrations from the scheme should be added to calculate PEC.

3.6 Stack Height and Sensitive Receptors

The assessment identified a height of 80 m for the incinerator stack. The methodology to undertake stack height is considered to be appropriate, however, the stack height needs to be reassessed after accounting for the shortcomings listed elsewhere in this review.

High-rise residential properties exist at the Ocean Views Complex, Castle Road. Upper floor level properties can potentially be exposed to higher pollutant concentrations when compared to those at ground floor level. Hence it is considered appropriate to represent such high-rise sensitive receptor locations in the dispersion model after accounting for their elevation above the ground level. This requires reassessment of air quality impacts at these receptor heights.

3.7 Ammonia Emissions Limit and 24-hour NO_X Concentrations

Section 5 of Appendix D2 also considers the effect of a reduced ammonia emissions limit of 8 mg/Nm^3. This, in conjunction with an 80 m stack, would avoid stack impacts of greater than 1% of the critical level at the Chesil Beach SAC. However, such impacts would remain at the Portland SAC. BAT states that emissions as low as 2 mg/Nm^3 are achievable. To achieve this, selective catalytic reduction (SCR) is required, rather than selective non-catalytic reduction (SNCR), which is proposed in the ES. Thus, there is insufficient information that the reduced ammonia emissions limit of 8 mg/Nm^3 is appropriate for this area.

3.8 In-Combination Impacts

Emissions from other emission sources, including other committed/consented facilities, are not included in the assessment to quantity the potential in-combination impacts on local air quality. For example, emissions from shipping emissions are not accounted for

in the assessment. Such emissions are unlikely to be captured in the spatially averaged background pollutant concentrations used in the assessment.

Although there are only two additional ships per week in the scheme, which would have a minimal impact on the annual mean, there is a potential for combined impacts from the stack and ship emissions on maximum 24-hour NO_X concentrations. This could be important for the Portland SAC as it is downwind of both the stack and ship emissions. Therefore, the maximum 24-hour NO_X concentrations should be reassessed.

3.9 Incorrect Values in Appendix D2 Tables

There are a few incorrect vales in Tables 18 and 19. For example, in Table 18, the background lead concentration is stated as 9.80 ng/m^3, the PC is 0.46 ng/m^3 and the PEC is 10.03 ng/m^3. The PEC should equal the background plus the PC; however, it does not. A similar miscalculation occurs in Table 19 for lead. Also, in Table 19 the PCs for all metals are higher than the PECS, which is not possible, thus these are misrepresented.

In Tables 22 and 23 there is a misrepresentation of sulphur dioxide where the values in Table 22 are 1,000 times lower, yet they are both represented as ng/m^3. Thus, the tables need to be reassessed.

These incorrect values are likely to be typos. Although the conclusions are evidently not affected, these typos cast a doubt on the care taken to prepare and review the assessment.

3.10 Conclusions

Due to the above listed shortcomings, air quality impacts of the proposed scheme ought to be reassessed. This will have implication on other assessments.

4 Human Health Impact Assessment

RSK has reviewed the human health risk assessment.

The software used and model inputs for assessing human health impacts is considered to be appropriate. However, the following shortcomings are identified.

4.1 Compounds of Potential Concern

Several key compounds of potential concern (CoPC) including benzene and polycyclic aromatic hydrocarbons (PAHs) are not included in the assessment. The carcinogenic risk is therefore underestimated.

4.2 Exposure Pathways

The assessment ignored the intake via consuming the locally sourced fish and possibly other marine life. Given the proximity of the proposed development site to the areas where such marine food is available, the total intake and associated risk is understated.

4.3 Sensitive Receptors

A number of farms exist within 2 km of the proposed development site, but the assessment didn't consider these.

4.4 Quantification of Daily Dose

The daily dose (for example, in pg/kg-day) is not quantified and reported in the assessment. Particularly, the additional daily dose for breast-fed infants is unknown from the assessment.

4.5 Conclusions

Due to the above listed shortcomings, RSK considers that the potential human health impacts of the proposed scheme need to be reassessed to present the realistic health risk. This will have implications on other assessments.

APPENDIX 3: REPORT OF EDP (FIRE PREVENTION PLAN)

Purpose:

To provide comment on the consultation exercise being conducted by Powerfuel Portland Limited on the proposed Portland Energy Recovery Facilities Preliminary Fire Prevention Plan (FPP) for the Facility. The plan identifies the provisions which have been taken into account during the development phase of the Facility. In addition, provisional operational measures have been identified where they were available.

Prepared for:

Freeths LLP

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Reference:

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1. INTRODUCTION

Powerfuel Portland Limited is proposing to build the Portland Energy Recovery Facility at a site within Portland Port on the Isle of Portland, Dorset. The Facility will incinerate refuse derived fuel produced from domestic and commercial & industrial non-hazardous waste.

The Fire Prevention plan documents the measures that will exist to mitigate the risk and impact of fires within the Facility. This consultation report has been developed by comparing the proposed Fire Prevention Plan with the Regulations and guidance that are available for the development of Fire Prevention Plans for :

- Environment Agency guidance note 'Fire Prevention Plans: Environmental Permits', Updated 11th January 2021 (Submitted Fire Prevention plan was developed using the old version updated 4th May 2018);
- Building Regulations – Approved Document B (Fire Safety);
- ACE Technical Risks, Engineering Information Bulletin, Guidance document Energy from Waste (EfW) – Fire Systems Issue 4.0 (27 June 2017);
- National Fire Protection Association 'NFPA 850: Recommended Practice for Fire Protection for Electric Generating Plants and High Voltage Direct Current Converter Stations', 2020 Edition (Submitted Fire Prevention plan was developed using the old 2015 edition); and
- the insurer's requirements where structures or equipment fall outside published guidance or recommended practice.

The three main objectives of the Fire Prevention Plan are to demonstrate how the contractors have;

- Minimised the likelihood of a fire happening
- Put in measure for any fire to be extinguished within 4 hours
- Included measures to minimise the spread of fire within the site and to neighbouring sites

A key point to take into consideration when responding to the consultation is that this version of the Fire Prevention Plan is the initial report and will be subject to review following completion of the detailed process design. Detailed process design is to be programmed following final contract negotiations with the Engineering Procurement and Construction contractor who will be undertaking the construction works. A key recommendation of this report is that a further review of the Fire Prevention Plan is undertaken on completion and issue of the detailed process design.

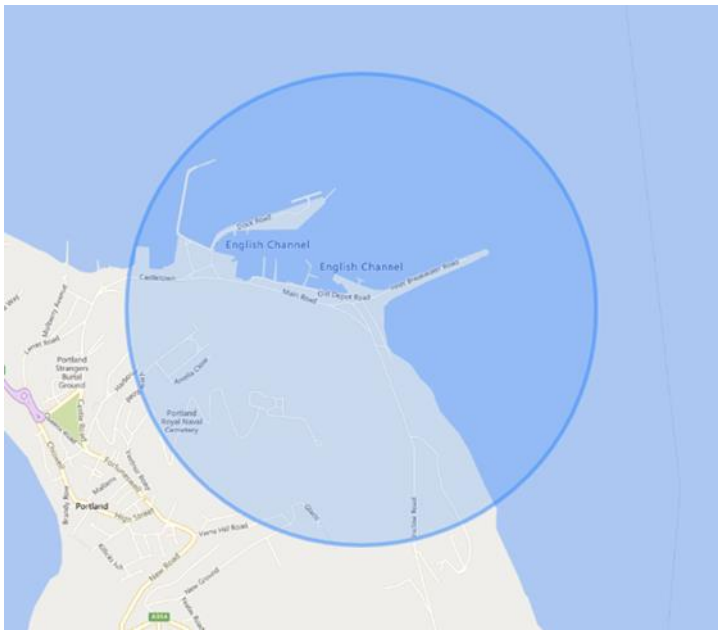
The plan does not set our how the plans will be tested to ensure they are appropriate but also so that staff can demonstrate their awareness and understanding of their responsibilities and actions to be taken in the event of an incident. The plan should state how often the plan will be tested and the form that these tests will take.

2. KEY RECEPTORS

The key receptor lists the furthest receptor as being a Residential Building on Castletown at 739m from the stack. The Environmental Agency (EA) Guidance states that; You must have plans showing all sensitive receptors within a 1km radius of your site that could be affected by a fire. Examples of sensitive receptors may include:

- schools, hospitals, nursing and care homes, residential areas, workplaces
- protected habitats, watercourses, groundwater, boreholes, wells and springs supplying water for human consumption
- roads, railways, bus stations, pylons (on or immediately adjacent to the site only), utilities, airports

An approximate 1KM radius map would include the following areas:



The Fire Prevention Plan should be updated to include all areas that could be considered to be a sensitive receptor within 1km of the stack location.

2.1 Site plans and drawings

The plan contains the following plans as appendix to the main document:

- site location plan
- Installation boundary drawing
- Materials storage areas plan
- Access points around the perimeter to assist firefighting
- Indicative locations of fire hydrants
- Indicative locations of fire walls

- Firewater Supplies and firewater containment.

The fire hydrant and fire wall plans are only indicative and would be subject to detailed design at a future stage. This makes it difficult to give an opinion on their location. The plan does not contain plans to indicate:

- Building layout
- Location of hazardous materials (gas cylinders are listed as being held on-site as an example)
- Permanent ignition sources and their proximity
- Separation distances
- Hydrant plan does not show intended additional water supply (listed as the pond)
- Drainage plan with pollution control features
- Storage areas with pile dimensions and only indicative location of fire walls
- Locations of fixed plant

3. FIRE PREVENTION

3.1 Waste Storage

Waste Reception Area – *No comment*

Bale storage area - *Documented management procedures are not yet available.*

Waste storage bunker – *Bunker management procedure are not yet available.*

Quarantine area for unacceptable waste – *It is difficult to comment on this area as the plan states 'A suitable area for the quarantine of unacceptable waste will be designated as part of the detailed design stage. However, it is expected that it will be located within the tipping hall. Detailed plans would need to be seen to give an informed opinion on this area. Also, the plan does not detail the procedure that would be used to remove waste immediately in the event of a fire.*

Incinerator Bottom Ash – *No comment*

Air Pollution Control Residues – *No comment*

3.2 Storage Duration

Waste Reception Area – *No comment*

Bale Storage Area – *No comment*

Waste Reception Area – *No comment*

Quarantine Area for Unacceptable Waste – The plan does not satisfy the need to detail how in the event of fire, quarantined materials would be removed from the site immediately;

If you use your quarantine area to store material temporarily (for example, non-permitted wastes) you must make sure you remove those wastes as soon as is practicable. In the event of a fire, you must remove it immediately. Your fire prevention plan must include details of the procedure you will use to do this.

Incinerator Bottom Ash – *No comment*

Air Pollution Control Residues – *No comment*

3.3 Monitoring of Stores for Waste and Recovered Materials

No comment

3.4 Actions to Limit Self-Heating

3.4.1 Waste Reception Area

Bale storage area – *Plan states that thermal imaging will be used to monitor the external temperature of the bales but does not detail how the internal temperature of the bales would be monitored and reported.*

Waste storage bunker – *No comment*

IBA Storage – *No comment*

APCr Storage – *No comment*

3.5 Contingency

No comment

3.6 Seasonality

No comment

3.7 Arson or Vandalism

No comment

3.8 Plant and Equipment

No comment

3.9 *Infrastructure and Site Inspections*

No comment

3.10 *Electrical Faults*

No comment

3.11 *Ignition Sources*

No comment

3.12 *Industrial Heaters*

No comment

3.13 *Leaks and Spillages of Oils and Fuels*

No comment

3.14 *Build-up of Loose Combustible Waste, Dust and Fluff*

No Comment

3.15 *Hot Exhausts*

No comment

3.16 *No Smoking Policy*

No comment

3.17 *Heat and Spark Prevention*

No comment

3.18 *Gas Bottle and Other Flammable Items*

No comment

3.19 *Fire Watch*

No comment

3.20 *Smoke/Heat/Flame Detectors*

No comment

4. MANAGEMENT AND STORAGE OF WASTE

4.1 Unacceptable Waste/Not Loads

No comment

4.2 *Waste Acceptance – Permitted Waste*

No comment

4.3 *Waste Storage – Separation Distance*

The plan states

'Following previous discussions with the Environment Agency, it is understood that the storage requirements relating to pile separation distance only applies to external storage of wastes.

This area should be checked as there is no mention of this dilution of requirement within the EAs guidance which states;

'Separation distances between piles of waste can prevent fire spreading between waste piles and allow active firefighting to take place. Setting an appropriate separation distance will depend upon the nature of the material you are storing.

You must:

- *store your combustible waste piles with a separation distance of at least 6m*
- *have a separation distance of at least 6m between waste (whether in piles or containers) and the site perimeter, any buildings, or other combustible or flammable materials'*

Clarification on the statement within the plan should be sought and detailed reference made to the source of that statement made.

4.4 Fire Walls –

The plan states that;

'As part of the detailed design process, a fire risk assessment will be undertaken for each Fire Zone

to identify the appropriate fire detection and protection systems in association with appropriate civil work design principles to control.'

It is believed that the words 'fire risk assessment' should be replaced with 'fire strategy' as the fire risk assessment is a process that will be carried out once the plant is operational. The design and appropriateness of passive and active fire protection measure and how they are intended to interact with the building should be contained within the Fire Strategy.

4.5 *Quarantine Areas for Unacceptable Waste*

No comment

4.6 *Storage with Buildings*

No comment

4.7 Shutdown

No comment

4.8 Active Fire Fighting

4.8.1 Fire Prevention Standards

The plan states;

'Where appropriate, the Facility will be designed and operated in accordance with the following fire prevention and detection standards, or alternative recognised international standards where they are available'

The EAs expectation is that all fire prevention measures shall be covered by an appropriate third-party certification scheme such as UKAS and/or meet the appropriate recognised standards such as a British Standard. The work 'appropriate' should be removed and British Standards followed.

4.8.2 Fire Detection Systems

No comment

4.8.3 Fire Suppression Systems

No comment

4.8.4 Alternative Fire Detection and Suppression Measures

No comment

4.8.5 Provision of Firewater

There is inadequate information on the quantities of water required by the fixed firefighting systems and the outputs of the proposed water supplies. A ring main is only capable of providing a set quantity of water and this is not increased by the number of available outlets. There is also a reliance on the use of a local open water supply (the pond) which has been assumed with no details on any restrictions on or permits needed for the extraction of water. The EA state that 'You must show your calculation for the water supply required and confirm the source of water in your plan'.

4.8.6 Fire Water Cannons

No comment

4.8.7 Fire Hose Reel System and Wet Riser System

No comment

4.8.8 Fire Hydrants and Mains

Comments on hydrants as above in section 4.8.5

4.8.9 Fire Extinguishers

The plan does not include the provision of portable fire extinguishers within all vehicles.

4.8.10 Containment of Firewater

No comment

4.8.11 Contingency During the Incident

No comment

4.8.12 *Actions Following a Fire*

No comment

5. PLANS AND DRAWINGS

5.1 Site location plan

5.2 Installation boundary drawing

5.3 Materials storage areas plan

5.4 Access points around the perimeter to assist firefighting

5.5 Indicative locations of fire hydrants

5.6 Indicative locations of fire walls

5.7 Firewater Supplies and Firewater containment

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