

# TECHNICAL NOTE

**Job Name:** Berry Hill Bioresources Centre - Wessex Water Environmental Permitting  
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## 1. Introduction

- 1.1. Stantec (UK) has been commissioned by Wessex Water (WW) to undertake a noise and vibration risk assessment to support a permit application for the Berry Hill Bioresources Centre (BHBC).
- 1.2. The application is being made due to changes to the Environment Agency (EA) interpretation of the environmental permitting exclusion for Urban Wastewater Activities (under Environmental Permitting (England and Wales) Regulations 2016 (EPR) Schedule 1, Part 2, Chapter 5, Section 5.4).
- 1.3. This technical note summarises the results of our review of the activities associated with the BHBC having regard to statutory guidance relating to noise and vibration.

## 2. EA Permitting Requirements - Noise

- 2.1. The Environment Agency requires that operators (or permit applicants) must consider the potential noise impact of their site. They may need to carry out noise impact assessments:
  - at the permit application stage
  - when applying to vary a permit
  - to comply with specific permit conditions
- 2.2. The environment agencies will treat noise in the same way as any other polluting emission. If noise is audible at any of the following types of locations, they will regard it as 'possibly causing an impact':
  - residential properties
  - schools
  - hospitals
  - offices
  - public recreation areas

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- other NSRs
- noise sensitive habitats

Where noise is possibly causing an impact, the operator must carry out an assessment to determine:

- the level of impact
- how much work needs to be done to prevent or minimise noise pollution

- 2.3. Operators must prevent significant pollution and also comply with the requirements to use 'appropriate measures' (Waste Framework Directive 2018/851) or 'best available techniques' (BAT) to prevent or minimise noise pollution.
- 2.4. Guidance on the noise assessment process for permit applications is detailed in Noise and vibration management: environmental permits.<sup>1</sup>

### Guidance on Risk Assessments

- 2.5. Risk assessments for permitting purposes should be undertaken in accordance with the Guidance on the preparation of risk assessments<sup>2</sup>.

### Requirements for Quantitative Noise Impact Assessments

- 2.6. The information requirements of the EA with regards to what must be submitted if an assessment uses computer modelling or spreadsheet calculations are detailed in guidance 'Noise impact assessments involving calculations or modelling'<sup>3</sup>. This requirement is not applicable in this instance as a qualitative review methodology has been selected.

### Basic Pre-Application Advice Note (v1)

- 2.7. A basic pre-application advice note<sup>4</sup> relating to Industrial Emission Directive (IED) permits for water and sewage companies has been provided by the Environment Agency.
- 2.8. With respect to noise, the note states that if the risk assessment indicates the operation is likely to cause noise or vibration beyond the site boundary then a noise impact assessment based on BS4142:2014+A1:2019 should be provided.
- 2.9. The assessment should be accompanied by a noise and vibration management plan informed by the results of the assessment.

## 3. Best Applicable Techniques (BAT)

- 3.1. Information on BAT is detailed in the 'Commission Implementing Decision (EU) 2018/1147 of 10 August 2018'<sup>5</sup>. With respect to noise, section 1.4 states:

***BAT 17.** In order to prevent or, where that is not practicable, to reduce noise and vibration emissions, BAT is to set up, implement and regularly review a noise and vibration management*

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<sup>1</sup> <https://www.gov.uk/government/publications/noise-and-vibration-management-environmental-permits/noise-and-vibration-management-environmental-permits>

<sup>2</sup> <https://www.gov.uk/guidance/risk-assessments-for-your-environmental-permit>

<sup>3</sup> <https://www.gov.uk/guidance/noise-impact-assessments-involving-calculations-or-modelling>

<sup>4</sup> Water and sewage companies IED permits: Basic pre-application advice – supporting information (v1, March 2021)

<sup>5</sup> <https://www.legislation.gov.uk/eudn/2018/1147>

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plan, as part of the environmental management system (see BAT 1), that includes all of the following elements:

1. A protocol containing appropriate actions and timelines;
2. A protocol for conducting noise and vibration monitoring;
3. A protocol for response to identified noise and vibration events, e.g. complaints;
4. A noise and vibration reduction programme designed to identify the source(s), to measure/estimate noise and vibration exposure, to characterise the contributions of the sources and to implement prevention and/or reduction measures.

### Applicability

The applicability is restricted to cases where a noise or vibration nuisance at sensitive receptors is expected and/or has been substantiated

**BAT 18.** In order to prevent or, where that is not practicable, to reduce noise and vibration emissions, BAT is to use one or a combination of the techniques given below.

Technique		Description	Applicability
a.	Appropriate location of equipment and buildings	Noise levels can be reduced by increasing the distance between the emitter and the receiver, by using buildings as noise screens and by relocating building exits or entrances.	For existing plans, the relocation of equipment and building exits or entrances may be restricted by a lack of space or excessive costs.
b.	Operational measures	This includes techniques such as: (i) inspection and maintenance of equipment; (ii) closing of doors and windows of enclosed areas, if possible; (iii) equipment operation by experienced staff; (iv) avoidance of noisy activities at night, if possible; (v) provisions for noise control during maintenance, traffic, handling and treatment activities.	Generally applicable.
c.	Low-noise equipment	This may include direct drive motors, compressors, pumps and flares.	
d.	Noise and vibration control equipment	This includes techniques such as: (i) noise reducers; (ii) acoustic and vibrational insulation of equipment; (iii) enclosure of noisy equipment; (iv) soundproofing of buildings.	Applicability may be restricted by a lack of space (for existing plants).
e.	Noise attenuation	Noise propagation can be reduced by inserting obstacles between emitters and receivers (e.g. protection walls, embankments and buildings).	Applicable only to existing plants, as the design of new plants should make this technique unnecessary. For existing plans, the insertion of obstacles may be restricted by a lack of space.  For mechanical treatment in shredders of metal wastes, it is applicable within the constraints associated with the risk of deflagration in shredders.

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### 4. Project Proposals

- 4.1. Reference should be made to Section II of the full permit application for a technical description of the site activities covered by the permit variation application. A site layout and plan of the current BHBC assets is included as part of the application.

### 5. Noise and Vibration Risk Assessment

- 5.1. A preliminary noise risk assessment has been undertaken based on information provided by WW.
- 5.2. In considering the risks associated with the operations covered by the permit application, the following site-specific factors have been considered:
- The proximity and sensitivity of nearby receptors.
  - The existing environmental sound climate at the receptors.
  - The operational characteristics of the source.
  - The historical lack of outstanding noise complaints arising in respect of the operations carried out under the scope of the permit variation.

#### Noise and Vibration Sensitive Receptors

- 5.3. The sensitivity of a particular receptor depends on a variety of factors, but the following table provides examples of the types of receptors likely to be considered either high, medium or low sensitivity.

Table 1: Summary of Receptor Sensitivity

Sensitivity to Noise and Vibration	Description	Example Receptor
High	Receptors where people or operations are particularly sensitive to noise or vibration	Residential, including private gardens Quiet outdoor areas used for recreation Theatres/Auditoria/Studios Schools and Nurseries during the daytime Hospitals/residential care homes Places of worship
Medium	Receptors where noise or vibration may cause some distraction or disturbance	Offices Retail areas and other commercial developments Bars/Cafes/Restaurants where external noise may be intrusive Sports ground where quiet conditions are necessary (e.g. tennis, golf, bowls)
Low	Receptors where distraction or disturbance from noise and vibration is minimal	Industrial areas Sports ground with no specific requirement for quiet conditions Night clubs

- 5.4. For the purposes of this assessment, noise and vibration sensitive receptors are considered to be any existing occupied premises within 1km of the site which may be adversely affected by noise or vibration and has a high sensitivity. Receptors beyond this distance are unlikely to be significantly affected by noise or vibration from BHBC.
- 5.5. In this instance the following receptors have been identified. Where appropriate, receptors have been grouped where they are within the same area. Due to the large number of receptors within 1km of the site, we have only identified those closest to the site boundary.

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Table 2: Noise and Vibration Sensitive Receptors

Receptor Reference	Receptor Description	Receptor Type	Distance/Direction from Site Boundary (m)
A	Dwellings on Watery Lane	Residential	330 SE
B	Dwellings Muscliffe Lane	Residential	450 S
C	Parley Green Lane	Residential	515 W
D	Merritown Lane	Residential	560 N

- 5.6. Due to the nature of the sources present on site, the distance between the identified receptors and the site boundary, vibration from the operations at the site is unlikely to have an impact and is considered to be low risk. Vibration is therefore not considered further.

### Existing Environmental Sound Climate

- 5.7. The site lies in a predominantly rural area to the south of Bournemouth International Airport. With the exception of Merritown Lane to the north and Parley Green Lane to the west, the majority of the noise sensitive receptors are situated outside the 55dB  $L_{Aeq,16hour}$  noise contour for the airport.
- 5.8. Strategic noise mapping data provided by Defra<sup>6</sup> does not cover this area, and there are no planning applications in the immediate vicinity which include environmental sound survey data.
- 5.9. In the absence of detailed environmental sound surveys, the existing environmental sound climate is assumed to be low.

### Operational Characteristics

- 5.10. The sources of noise associated with the permit include:
- The movement of vehicles to and from the Imported Sludge Howard Tanks.
  - The operation of plant items including the CHP engine, induced draft fans associated with odour extraction, rotating screens, compressors, waste gas burner and air-cooled radiators.
- 5.11. Typically, the main sources of noise would be the operation of the CHP (engine and exhaust), air-cooled radiators and waste gas burner.
- 5.12. All of the activities described within the permit variation application are existing and will continue to operate in the same manner as their established use (e.g. hours of operation and load). There are no changes to activities or additional plant or equipment included as part of the permit variation.

### Risk Matrix

- 5.13. Based on the Preliminary Noise Risk Assessment set out in Section 5, Table 3 details a risk matrix setting out overall risk levels associated with the BHBC operations with regards to noise.
- 5.14. The combined assessment of the proposals in noise and vibration terms is that the probability of exposure and consequence are both low, with the overall risk level being low.
- 5.15. As there are no outstanding noise complaints associated with BHBC, and there are no significant changes proposed to the existing installation, BAT 17 as defined in 'Commission Implementing Decision (EU) 2018/1147 of 10 August 2018' is not considered to be applicable.
- 5.16. On the basis of the qualitative risk assessment carried out above and reported in Table 3, and in light of the operating history of the plant, no further controls are considered necessary in respect of

<sup>6</sup> <https://www.gov.uk/government/publications/strategic-noise-mapping-2019>

<https://stantec.sharepoint.com/teams/WessexWater-IED/Shared Documents/Berry Hill EP Application/App 10 Noise & Vibration Risk Assessment/App 10 Noise and Vibration Risk Assessment.docx>

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the permitted operations. Site management practices included within WW's Environmental Management Systems (EMS), which include provisions for noise control and plant maintenance, will continue to be applied; no specific permit Noise Management Plan is considered necessary at this time. In the event of material changes to the local noise environment, or location or sensitivity of nearby receptors, or should substantiated complaints arise, this position should be reviewed as part of normal site management reviews and controls.

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Table 3: Risk Matrix

Hazard	Receptor	Pathway	Risk Management Techniques	Probability of Exposure	Consequence	Overall Risk
Noise: CHP	Residential	Airborne	<p>The equipment is containerised in a high performance acoustically treated building.</p> <p>Plant is located a significant distance from receptors.</p> <p>Plant is located such that surrounding structures shield potential receptors from the noise source.</p> <p>Good maintenance of plant to ensure that excessive noise levels are not generated, under Operations &amp; Maintenance contract</p> <p>Regular checks of noise mitigation measures fitted to items of plant. Where repair or replacement is required, the plant will, where possible, be taken out of service until repair or replacement of parts has been undertaken.</p>	Low – The risk management actions will prevent significant impact at nearest receptors	Low – Minor nuisance impacts	Low
Noise: Gas Boosters	Residential	Airborne	<p>Plant is located such that surrounding structures shield potential receptors from the noise source.</p> <p>Good maintenance of plant to ensure that excessive noise levels are not generated, under Operations &amp; Maintenance contract</p> <p>Regular checks of noise mitigation measures fitted to items of plant. Where repair or replacement is required, the plant will, where possible, be taken out of service until repair or replacement of parts has been undertaken.</p>	Low – The risk management actions will prevent significant impact at nearest receptors	Low – Minor nuisance impacts	Low
Noise: CHP Exhaust	Residential	Airborne	<p>Enclosure mounted exhaust silencer.</p> <p>Plant is located a significant distance from receptors.</p> <p>Regular checks of noise mitigation measures fitted to items of plant. Where repair or replacement is required, the plant will, where possible, be taken out of service until repair or replacement of parts has been undertaken.</p>	Low - The risk management actions will prevent significant impact at nearest receptors	Low – Minor nuisance impacts	Low
Noise: Fans on air cooled radiators	Residential	Airborne	<p>Fans of a low noise specification and subject to regular checks and maintenance.</p> <p>Plant is located such that surrounding structures shield potential receptors from the noise source.</p> <p>Timings of plant adjusted so that they do not run overnight.</p> <p>Plant is located a significant distance from receptors.</p> <p>Good maintenance of plant to ensure that excessive noise levels are not generated from equipment breakdown or wear and tear (e.g. fan motor bearing failure), under Operations &amp; Maintenance contract.</p>	Low - The risk management actions will prevent significant impact at nearest receptors	Low – Minor nuisance impacts	Low
Noise: Waste Gas Burner	Residential	Airborne	<p>Waste gas burner operates only when CHPs are unavailable.</p> <p>Plant is located a significant distance from receptors.</p>	Low - The risk management actions will prevent significant impact at nearest receptors	Low – Minor nuisance impacts	Low

<https://stantec.sharepoint.com/teams/WessexWater-IED/Shared Documents/Berry Hill EP Application/App 10 Noise & Vibration Risk Assessment/App 10 Noise and Vibration Risk Assessment.docx>

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			Good maintenance of plant to ensure that excessive noise levels are not generated from equipment breakdown or wear and tear (e.g. fan motor bearing failure), under Operations & Maintenance contract.			
Noise: Vehicular movements around site	Residential	Airborne	<p>Vehicles will be screened from receptors.</p> <p>Deliveries would take place during the daytime hours only when background sound levels are higher.</p> <p>Large vehicles predominately use the second entry road from the Parley Lane entrance close to Hurn airport to minimise noise from using the Watery Lane entrance.</p>	Low - The risk management actions will prevent significant impact at nearest receptors	Low – Minor nuisance impacts	Low