MOTT MACDONALD

Queensferry Wastewater Treatment Works and Sewage Treatment Centre

Noise and Vibration Management Plan

July 2024

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Issue and Revision Record

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P1	01/05/24	J Chan	A Monk-Steel	R Perkins	Draft for internal review
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1 Introduction

1.1 Background and purpose

This Noise and Vibration Management Plan (NVMP) aims to address the management of potential operational noise associated with Queensferry Welsh Water Wastewater Treatment Works (WwTW) and Sludge Treatment Centre (STC) in Queensferry, Deeside, CH5 2DW. The purpose of the NVMP is to describe the appropriate measures applied to manage operational noise.

The WwTW and STC are operating facilities. The review of noise impacts has been undertaken as part of the application for an Industrial Emissions Directive (IED) Environmental Permit.

The consideration of vibration impacts is excluded due to the relatively long distance (minimum of approximately 100m) from the potential sources of operational vibration to the closest sensitive receptors as shown in Figure 2.1.

1.2 Legislative context

This NVMP aims to assist in complying with the requirements and guidelines of the following legislation, standards and guidance:

- The Environmental Protection Act, 1990
- The Noise Act ,1996
- The Control of Pollution Act, 1974
- Technical advice note (TAN) 11, 1997[1]
- Planning Policy Wales 12th Edition [2]
- Environment Agency (EA) Guidance ‘Noise and vibration management: environmental permits’[3]
- British Standard (BS) 4142 ’Methods for rating and assessing industrial and commercial sound’ 2014+A1:2019[4]
- BS 8233 ’Guidance on sound insulation and noise reduction for buildings’ 2014[5]

[1] Welsh Government, Planning Guidance (Wales), Technical Advice Note11: Noise, 1997

[2] Planning Policy Wales - Edition 12 (gov.wales)

[3] Noise and vibration management: environmental permits - GOV.UK (www.gov.uk)

[4] British Standards Institution (2014+A1:2019) BS 4142 Methods for rating and assessing industrial and commercial sound.

[5] British Standards Institution (2014) BS 8233 Guidance on sound insulation and noise reduction for buildings

2 Noise impact

2.1 Noise control principles

Noise impacts at noise sensitive receptors (NSRs) are influenced by the levels of noise emitted by the noise sources and the transmission paths to the receptors. Other factors such as wind direction, ground conditions and meteorological conditions would also affect the noise levels at NSRs. The operator must prevent significant noise impacts and comply with the requirements by 'best available techniques' (BAT) to minimise noise pollution.

2.1.1 Noise control techniques

Noise within the site facilities can be controlled by:

- reducing noise at source by design or management
- introducing noise attenuation to the transmission paths using silencers, enclosures or barriers.

Noise measurements may be required to inform the assessment of the requirements for and the specifications of noise control measures where practicable under any one site specific scenario.

2.1.2 Management plan

The NVMP identifies the relevant noise sources, and the degree of impact at NSRs. The NVMP has been produced with the intention to reduce the impacts as much as practicably possible.

This NVMP presents:

- An assessment of the risks of noise and vibration, from normal and abnormal situations including worst-case scenarios, for example of weather, temperature or equipment failure or accidents
- The appropriate controls (both physical and management) to manage those risks
- Suitable level of monitoring
- Actions, contingencies and responsibilities when problems arise
- Procedures to consider reducing or stopping operations to avoid severe noise impacts
- Regular review of the effectiveness of noise and vibration control measures and this NVMP.

2.2 Noise sources

The following sections identify the dominant noise sources at the site and potential noise impacts at NSRs, which has been considered within the noise impact assessment prepared in January 2024[6]. Table 2.1 summarises the nature of the considered noise emissions at the site and Figure 2.1 shows the noise emission locations and NSR locations.

Table 2.1: Noise emission and nature

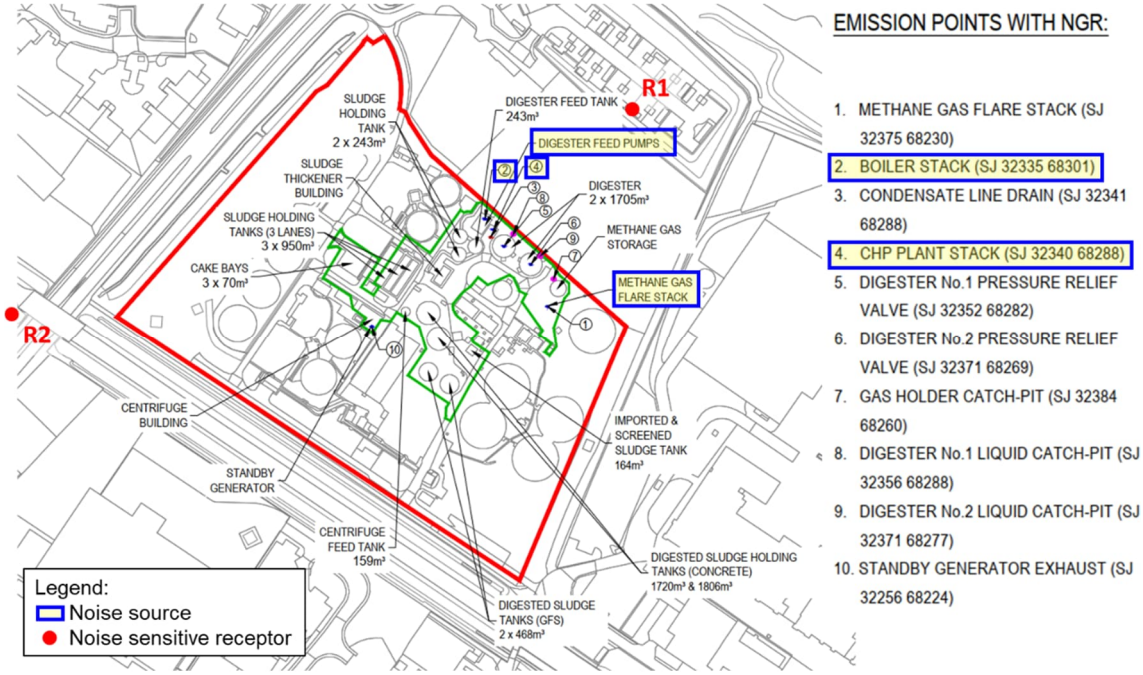
Emission point	Assets	Nature of noise
Digester - 1	Digester feed pump	Operates continuously with no significant tonal or impulsive features

[6] Technical Note of Noise Impact Assessment, Queensferry Wastewater Treatment Works and Sewage Treatment Centre Environmental permit variation application, Mott MacDonald, ref.: B16383-123532-XX-XX-AS-ZA-DH0109 – QUY Noise Impact Assessment January 2024, Jan 2024.

Emission point	Assets	Nature of noise
Digester - 2	Digester feed pump	Operates continuously with no significant tonal or impulsive features
Methane gas flare stack	Methane gas flare stack	Operates continuously with no significant tonal or impulsive features
Boiler stack	Boiler	Operates continuously with no significant tonal or impulsive features
Combined Heat and Power (CHP) plant stack	CHP	Operates continuously with no significant tonal or impulsive features

Source: Mott MacDonald

Figure 2.1: Noise equipment layout and NGR locations*



Source: MMB

Note: *Green line boundary is different in Figure 2.1 to that of the Site Layout Plan (B16383-123532-XX-XX-DR-ZA-DH0116 – QUY Site Layout Plan October 2024), however, the location of the assets identified (CHP and Boilers) have not changed.

2.3 Sensitive receptors

2.3.1 Personnel and visitors

All operatives should be made aware of the hazards presented by noise and vibration on site and should be fully familiar with the contents of the NVMP. Appropriate Personal Protective Equipment (PPE), as identified by a suitable risk assessment undertaken prior to proposed activities on site, shall be made available as required. Furthermore, in accordance with the Control of Noise at Work Regulations 2005, where an employee is exposed to noise levels exceeding the upper exposure action values, the employee has a duty to wear hearing protection.

2.3.2 Sensitive receptors and background noise levels

The two closest NSRs to the site have been identified as being the most exposed to any potential noise impacts from the facilities.

A noise survey was undertaken on site by Mott MacDonald in October 2018. It was observed that main noise source affecting both measurement positions at a back garden of residence at Claremont Avenue and a short-term attended measurement location near the entrance to the Travellers site was road traffic on the A494 road.

The representative background sound levels for the assessment of impacts on the NSRs R1 (Traveller's Site) and R2 (Dwelling on Dundas Street) are summarised in Table 2.2 below.

Table 2.2: Representative baseline noise levels

NSR and description	Approx. distance to site boundary (m)	Daytime		Night-time	
		$L_{Aeq,T}$ dB	$L_{A90,T}$ dB	$L_{Aeq,T}$ dB	$L_{A90,T}$ dB
R1 - Travellers Site (adjacent to the proposed site boundary)	115	64	61	59	40
R2 – Dwelling at Dundas Street, adjacent to A494	100	64	61	59	40

Source: Mott MacDonald

2.4 Noise impact assessment

Details of the noise impact assessment are provided in the technical note produced in January 2024. The summary of noise impact assessment is given in Table 2.3.

Table 2.3: Summary of noise impact assessment

NSR	Description	Initial Impact
R1	Travellers Site (adjacent to the proposed site boundary)	Adverse impact modified to 'Low or no impact' after considering the context
R2	Dwelling at Dundas Street, adjacent to A494	Low or no impact

Source: Mott MacDonald

On the basis of this assessment, no specific noise mitigation measures are recommended as no adverse impact is identified in the noise impact assessment. However, as an adverse impact was identified at R1 before the consideration of context, appropriate measures should be applied in accordance with EA guidance.

3 Community engagement

A proactive community engagement approach will be implemented in order to maintain open communications between local residents and site management.

The Site Manager will be receptive to feedback from neighbouring residents and will respond to any concerns or complaints within the working day detailed in Section 3.1.

A notice will be prominently posted at the site entrance to provide contact details (telephone and email) for the Site Manager, including out-of-hours arrangements.

Feedback and complaints received will be reviewed by the Site Manager at least monthly and if noise is identified as a significant or repeating issue. the following actions will be considered and implemented as appropriate:

- A newsletter to be prepared and circulated to nearby residents or other interested parties in order to provide a regular update on site operations
- A liaison meeting for local residents and other stakeholders (such as the EA) or a drop-in session will be arranged either as a one-off or regularly occurring event, subject to local interest and demand

Further community engagement measures may be agreed following discussions with residents or other stakeholders.

3.1 Noise complaint response

A noticeable increase in noise levels may be detected either by receipt of a noise complaint from a third party suggesting that there is potentially excessive noise from the site, or by daily site check using noise monitoring equipment.

This section details if excessive noise has been identified through receipt of a noise complaint from a third party, the contingency measures that will be in place to identify the source of the increase and the approach to reducing noise levels.

A record of any actions taken to rectify the issue shall be made. The person reporting the incident shall be notified. Each required action will include a timescale for rectification.

3.1.1 Noise complaint investigation

A site diary to record complaints will be completed by the Site Manager (or delegate) and shall be kept at the site office.

A customer care and complaints procedure will be implemented and applied in the case of all complaints, feedback and requests made by third parties regarding operational activities, environmental, health and safety performance or quality of service/product.

All complaints from third parties including external customers, potential customers, statutory authorities, statutory consultees, members of the general public and internal clients will be logged and forwarded to the designated responsible person to action as below and recorded, for example within an issue log within 24 hours.

The Site Manager will ensure that:

- The complaint is investigated to identify the cause. If necessary, this may involve direct communication with the complainant

- In the event of elevated levels of noise being detected, the presence of temporary 'abnormal' onsite activity is assessed and if necessary corrective action is taken that will prevent a reoccurrence of the same issue. These actions must be documented.
- The complainant will be contacted and given information on the investigations conducted and actions taken as appropriate.
- All complaints are reported to a member of the senior management team. Progress against all actions shall be reviewed in monthly management meeting.
- If the investigation indicates that the complaint has not been justified, this will be clearly recorded.

The Site Manager will investigate the performance failure event within 24 hours and, if necessary, will report the event to the EA. Once the issue has been resolved, the corrective action taken will be recorded and the issue will be closed.

3.2 Emergency response

This section considers the potential for unplanned events (or incidents) which would result in the loss of control of noise emissions and could have an unacceptable short-term impact on the local community.

The measures in place to mitigate any emergency situations will generally be the same as the contingency measures identified in Section 4.1.2. If the situation is considered to be an emergency by the Site Manager, then the mitigation measures will be immediately implemented, and the Site Manager will consider limiting the hours of operation or immediately suspending the site operations creating the unacceptable levels of noise. These measures will be considered on a case-by-case basis.

3.2.1 Breakdown of equipment and plant

Excessive noise breakout from the site may arise due to the breakdown of the site equipment or abatement equipment. Machines not operating to the manufacturer's specification and the failure of noise mitigation measures such as damage to acoustic enclosure or noise barriers may allow unacceptable noise levels to break out from the site.

In the event of equipment or abatement breakdown the mitigation measures to be undertaken are the same as the contingency mitigation measures detailed in Section 4.1.2.

3.2.2 Review of noise control measure

Noise control measures will be reviewed by the Site Manager through monthly checks as part of the review of NVMP.

The monthly checks will include but not limited to the following:

- Inspections of the paper trail of forms or logbook to ensure that all data is being entered correctly
- Reviews on the higher risk sources of noise to check any monitoring and maintenance procedures are being carried out in accordance with this NVMP
- Checks to ensure that any issues reported have been resolved correctly.

4 Monitoring

4.1.1 Monitoring plan

It is acknowledged that there will be some occasional sources of noise on site during the daily general operation such as loading and unloading of equipment from vehicles. It is proposed that these occurrences shall be minimised in accordance with the control measures outlined in Section 2 of this document. The Site Manager has the responsibility to monitor site operations and ensure that the proposed control measures are being implemented.

Any additional quantitative monitoring shall be undertaken as required and determined by the Site Manager. Triggers for quantitative monitoring could include:

- Receipt of a substantiated noise complaint
- Following installation of a noise mitigation control e.g. noise attenuator, enclosure or barrier
- After a change of noise risk posed by alteration or addition of a new operational process or technique
- Upon request by the EA or Local Planning Authority
- As part of on-going due diligence works to ensure compliance with the Environmental Permit.

4.1.2 Detection of increases in noise levels

Any increase or excessive noise levels identified by monitoring undertaken will be mitigated as follows:

- The Site Manager will investigate the source of the noise and carry out a range of checks at the identified source. The Site Manager will consider the need for quantitative monitoring.
- Any noise monitoring will be completed in accordance with the relevant British Standards, including BS 4142:2014+A1:2019 "*Methods for rating and assessing industrial and commercial sound*".
- Monitoring locations will be agreed with the EA and/or the Local Planning Authority prior to undertaking monitoring.
- The results of any noise monitoring will determine whether the site is causing an unacceptable impact at the receptors.
- The Site Manager will then ensure the plant is being operated to the manufacturer's specification and ensure that any improvements required to minimise the noise levels are implemented.

To further mitigate the increase noise levels, the following actions shall also be considered where practical and technologically viable.

- The replacement of equipment identified as generating excessive noise.
- Once the improvements have been completed, the Site Manager will commission a further set of monitoring to ensure that the improvements have met the required standard. Failing that, the Site Manager will repeat the investigation into improvements and subsequent monitoring until the limits are met as far as is reasonably practicable.

If operational failings are identified, the retraining of staff will take place to ensure that all site staff operate equipment in accordance with required procedures. If the failings are identified as part of the operating techniques, then the problem will be raised as part of the review of control measures.

The Site Manager will ensure a close liaison with the EA throughout all stages of the process following an identified elevated noise level.

4.1.3 Noise and vibration records

Records of site inspections, complaints log and site diary check sheets shall be maintained and stored. Any adverse operating conditions, non-conformances, complaints and mitigation/management failure resulting in an accident or non-compliance with the Permit shall be recorded in the site diary.

5 Conclusions

This NVMP describes the noise impacts due to the current operation of Queensferry WwTW and STC and the appropriate measures to manage noise.

The calculated operational noise impacts are assessed as low or no impact, with the consideration of context, in accordance with the methodology given in BS 4142 2014+A1:2019.

While this does not require the application of specific measures to mitigate noise, appropriate measures shall be applied in accordance with EA guidance.

The appropriate measures described within the NVMP include:

- A process to record, investigate and resolve noise complaints.
- An approach to dealing with temporarily elevated noise levels due to equipment break down (e.g. plant or noise control devices).
- Inspection and maintenance of equipment and noise control measures.
- Monitoring in response to changes to equipment and reported increases in noise which may result in adverse noise impacts.

A. Glossary and abbreviations

BAT	Best Available Techniques
BS	British Standard
CHP	Combined Heat and Power
EA	Environment Agency
IED	Industrial Emissions Directive
L_{A90}	Statistical acoustic descriptor defined as the A-weighted sound pressure exceeded for 90% of the measurement interval
L_{Aeq}	A-weighted equivalent continuous noise level in decibels
NSR	Noise Sensitive Receptor
NVMP	Noise and Vibration Management Plan
PPE	Personal Protective Equipment
STC	Sludge Treatment Centre
WwTW	Wastewater Treatment Works