



Appendix E – Technical note: Planning Application 160276: East Tullos Energy from Waste – Further Information Relating to Noise Assessment

1. Introduction

Additional information has been requested by the Environmental Health Officer (EHO) at Aberdeen City Council (ref. Energy from Waste project NIA response 1 Memo, 'the memo') in order to support Chapter 10 'Noise' of the Environmental Statement (ES) submitted for the erection of an Energy from Waste facility on Greenbank Crescent, Aberdeen (planning ref P160276). A summary of the comments and Amec Foster Wheeler's responses are detailed in the following sections of this technical note. This technical note should be read in conjunction with the ES.

The assessment is based on a number of assumptions, which are discussed below, and as it is not possible to be certain of the effect on amenity during each phase of the construction works, Amec Foster Wheeler recommends that, a Construction Noise Management Plan (CMP) is to be submitted. The requirement for a CMP that would set out the specific detail for construction plant, type, numbers and control measures to be implemented is welcomed by the Applicant. Amec Foster Wheeler also recommends that as condition of planning, all proposed plant is designed to minimise tonal sound at source, and all walls and roofs should provide a minimum sound reduction of R_w 35 (dB).

2. Operational Noise

In the absence of detailed specifications and indications of acoustic characteristics, the EHO has requested that a conservative approach is applied within the BS 4142:2014 assessment. The EHO has requested that a tonal correction of +4 dB be applied to represent 'clearly perceptible' acoustic features. Furthermore, following a revised assessment, additional noise mitigation measures should be identified if required.

Amec Foster Wheeler has re-assessed operational noise using the conservative approach recommended. A tonal penalty of +4 dB has therefore been applied to all sound sources that would potentially produce tonal sound. No tonal penalty has been applied to vehicle movements and the stack, as it is considered that these sources would not produce tonal sound.

Appendix B.1 of this technical note details the applied penalties per sound source, and revised Rating Level due to addition of the tonal penalty. **Appendix B.1** of this technical note replaces Appendix 10.E of the ES. A summary of the Specific Level and the Rating Level applied to each sound source is shown in

Table 2.1.

Table 2.1 Predicted Sound Levels

Location	Period	Specific Level (dBA)	Rating Level (dBA)
LT1 – Kirkhill Place	Daytime	34	36
	Night-time	30	34
LT2 - Wellington Road	Daytime	37	39
	Night-time	33	37

The BS 4142:2014 assessment has been repeated using the revised rating levels as detailed in

Table 2.1. The revised BS4142:2014 assessment is shown in Table 2.2.

Table 2.2 BS 4142:2014 Assessment

Scenario	LT1 - Daytime	LT1 - Night-time	LT2 - Daytime	LT2 - Night-time
Rating level (dB $L_{Ar,1h}$)	36	34	39	37
Background sound level (dB $L_{A90,15\ min}$)	36	30	45	36
Excess of rating over background sound level (dB)	0	+4	-6	+1
Assessment indicates	Low Impact	Less than Indication of Adverse Impact	Low Impact	Less than Indication of Adverse Impact

As shown in Table 2.2, the BS4142:2014 assessment has determined that the rating level for both locations is predicted to be '*low impact*' during the daytime and '*less than indication of adverse impact*' during the night-time. It should be noted that a noise change of below 0 dB(A) is considered '*low impact*' and a noise change above 5 dB(A) is considered '*adverse impact*', and because the noise change during the night falls between the two categories the assessment indicates '*less than indication of adverse impact*'.

The sensitivity of both receptors (LT1 and LT2) is categorised as '*medium*' (as defined in paragraph 10.2.55 of the ES), and the magnitude of impact is categorised as '*low*' during the daytime and '*medium*' during the night-time (in accordance with the noise magnitude criteria shown in Table 10.11 of the ES). Accordingly, the predicted impact is deemed '*not significant*' in accordance with the significance matrix as detailed in Table 10.12 of the ES.

The EHO recommended guideline values for noise in external living areas during the daytime that are consistent with those detailed by the World Health Organisation (WHO) (1999)^[1] (55 dB $L_{Aeq, T}$ as an upper level). It was also requested that the BS 4142:2014 rating level does not exceed the existing background sound level during the night-time. Incorporating the tonal penalty, the repeated BS 4142:2014 assessment shows that during the daytime, noise levels are below the guideline value of 55 dB $L_{Aeq, T}$ for external amenity areas, but the rating level may exceed the background sound level at night-time.

However, as set out in the ES Section 10.2.45 based on similar developments, it is considered that the majority of proposed plant is unlikely to be of a tonal nature. The potential exception to this is the ACC fans. Furthermore, the separation distance between the site and the nearest residential receptor is 310 m from the site boundary and there are intervening buildings, which will provide attenuation due to screening between sound sources and receptors. Taking account of the tonal penalty, additional mitigations are set out below.

^[1] WHO. 'Guidelines for Community Noise', 1999

Additional Mitigation

In order to minimise any potential tonal components and to ensure that there are no audible tones at the nearest residential receptors, it is recommended that all proposed plant is designed to minimise tonal sound at source. It is recommended that this mitigation should be secured through a planning condition.

Design

Section 10.4 and Table 15.1 of the ES recommends that the material used for the walls and roofs of all rooms/halls should be double cladded, providing a minimum sound reduction of R_w 35 (dB). The EHO has requested that the requirement for walls and roofs to provide a sound reduction of R_w 35 (dB) should be secured through a planning condition and Amec Foster Wheeler recommends this approach.

3. Onsite Construction Noise

The EHO has requested that a more conservative approach is applied to the construction noise assessment. The construction noise assessment is based on the distance between sound source and the nearest noise sensitive receptor (NSR). Section 10.5.2 of the ES, used an average separation distance between the sound source and the NSR, however, the EHO has recommend that the closest distance is used. The EHO has requested that following a revised assessment using the more conservative approach, additional noise mitigation measures should be identified if required

Construction calculations have been completed adopting a closest approach to the nearest residential dwellings. The closest approach has been considered to be 310 m to Kirkhill Place and 685 m to Wellington Road. The outcome of the revised assessment using the conservative approach is shown in Table 3.1 and Table 3.2, for dwellings on Kirkhill Place and Wellington Road respectively.

Table 3.1 Predicted Worst Case Construction Noise Levels for Dwellings on Kirkhill Place (LT1)

Activity	Closest Approach Separation Distance (m)	Worst Case Construction Noise Level (dB $L_{Aeq, 1hr}$)
Earth works and excavation	310	53
Piling	310	48
General Development Site activities	310	50
Infrastructure Construction	310	51
Building Construction	310	54
		Total* = 57

*Total noise level assuming all operations occur simultaneously with the exception of earth works and excavation, which will occur before all other activities

Table 3.2 Predicted Worst Case Construction Noise Levels for dwellings on Wellington Road (LT2)

Activity	Closest Approach Separation Distance (m)	Worst Case Construction Noise Level (dB $L_{Aeq, 1hr}$)
Earth works and excavation	685	45
Piling	685	40
General Development Site activities	685	42
Infrastructure Construction	685	43
Building Construction	685	46
		Total* = 49

*Total noise level assuming all operations occur simultaneously with the exception of earth works and excavation, which will occur before all other activities

Table 3.1 and Table 3.2 show that even when applying the conservative approach, the average construction noise levels for both LT1 and LT2 fall below the 65 dB $L_{Aeq, T}$ criterion adopted for this assessment.

At both LT1 and LT2, The sensitivity of the receptors is categorised as '*medium*' (ES defined in paragraph 10.2.55 of the ES) and the magnitude of impact is categorised as '*Low*' (in accordance with the noise magnitude criteria shown in Table 10.11 of the ES). Therefore, in accordance with the significance matrix as detailed in Table 10.12 of the ES chapter the predicted effect is '*not significant*'.

Assessment of Office Buildings

In the ES, commercial units were categorised as '*Medium*' sensitivity and construction noise predictions were undertaken for the nearest commercial units. It was agreed with the EHO that the commercial units in Table 10.20 of ES were more likely to be of '*Low*' sensitivity. This is because the main use of the premises is for industrial use with existing high levels of noise, rather than for office use. This assumption is supported by guidance contained within Table 2.1 of the Technical Advice Note¹ for PAN 1/2011², which states that "*Factories and working environments with existing high noise levels*", should be assigned "*low sensitivity*".

Amec Foster Wheeler has therefore re-assessed construction noise at the nearest commercial unit to the Development Site with a clear office use. The nearest office is identified as Citrus House. Citrus House is located to the west of the Development Site and the nearest façade is approximately 163 m from the Development Site. Table 3.3 provides a summary of the predicted worst-case construction noise levels at Citrus House, and because this is considered the nearest office building to the Development Site, the assessment is considered indicative of worst-case construction noise levels for office buildings on East Tullos Industrial Estate.

Table 3.3 Predicted Worst Case Construction Noise Levels for Citrus House

Activity	Closest Approach Separation Distance (m)	Worst Case Construction Noise Level (dB $L_{Aeq, 1hr}$)
Earth works and excavation	163	59
Piling	163	54
General Development Site activities	163	56
Infrastructure Construction	163	57
Building Construction	163	60
		Total* = 63

*Total noise level assuming all operations occur simultaneously with the exception of earth works and excavation, which will occur before all other activities

Table 3.3 shows that the maximum level of noise during the construction phase would be in the region of 63 dB $L_{Aeq, 1hr}$ at the nearest commercial units to Development Site. The ES has determined that the sensitivity of office buildings would be '*Medium*'. The ES has also determined that during the construction phase noise levels above 65 dB $L_{Aeq, T}$ are categorised as '*High*' magnitude, noise levels below 60 dB $L_{Aeq, T}$ are categorised at '*Low*' magnitude, and noise levels that do not exceed 65 dB $L_{Aeq, T}$ are categorised as '*Medium*' magnitude. Therefore, according to the significance matrix in Table 10.12 of the ES the predicted effect is '*not significant*'.

¹ The Scottish Government. Technical Advice Note: Assessment of Noise, 2011

² The Scottish Government. 1/2011 Planning and Noise, 2011



4. Construction Noise Management Plan

The EHO has recommended the inclusion of a Construction Noise Management Plan to be submitted and agreed in writing detailing the specific details of the construction plant, type and numbers and control measures to be implemented. This requirement is welcomed by the Applicant and we recommended that it is integrated within the Construction Environmental Management Plan.

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Appendix E.1 Predicted Sound Levels with Tonal Penalty

Table 1 Predicted Sound Levels at LT1 – Kirkhill Place (Daytime)

Sound Source	Emission Level (dBA)	Impulsivity Penalty Applied (dB)	Tonal Penalty Applied (dB)
Waste Vehicle Movements	32	0	0
IBA Vehicle Movements	24	0	0
ACC Fan 1	23	0	+4
ACC Fan 2	23	0	+4
ACC Fan 3	23	0	+4
Turbine Hall Western Façade	19	0	+4
Rating Level, dB(A)			36

Note: Only sources which contribute to cumulative emissions >20 dB(A) (excluding penalties) are shown

Table 2 Predicted Sound Levels at LT1 – Kirkhill Place (Night-time)

Sound Source	Emission Level (dBA)	Impulsivity Penalty Applied (dB)	Tonal Penalty Applied (dB)
HGV Movements	25	0	0
ACC Fan 1	23	0	+4
ACC Fan 2	23	0	+4
ACC Fan 3	23	0	+4
Turbine Hall Western Façade	19	0	+4
IBA Northern Façade	17	0	+4
Rating Level, dB(A)			34

Note: Only sources which contribute to cumulative emissions >20 dB(A) (excluding penalties) are shown

Table 3 Predicted Sound Levels at LT2 – Wellington Road (Daytime)

Sound Source	Emission Level (dBA)	Impulsivity Penalty Applied (dB)	Tonal Penalty Applied (dB)
Waste Vehicle Movements	34	0	0
Turbine Hall Western Façade	30	0	+4
IBA Vehicle Movements	25	0	0
ACC Fan 1	25	0	+4



Sound Source	Emission Level (dBA)	Impulsivity Penalty Applied (dB)	Tonal Penalty Applied (dB)
ACC Fan 2	25	0	+4
ACC Fan 3	23	0	+4
Bunker Hall Roof	17	0	+4
Rating Level, dB(A)			39

Note: Only sources which contribute to cumulative emissions >20 dB(A) (excluding penalties) are shown

Table 4 Predicted Sound Levels at LT2 – Wellington Road (Night-time)

Sound Source	Emission Level (dBA)	Impulsivity Penalty Applied (dB)	Tonal Penalty Applied (dB)
Turbine Hall Western Façade	30	0	+4
Waste Vehicle Movements	24	0	0
ACC Fan 1	24	0	+4
ACC Fan 2	24	0	+4
ACC Fan 3	23	0	+4
Boiler Hall South Western Façade	17	0	+4
Total			37

Note: Only sources which contribute to cumulative emissions >20 dB(A) (excluding penalties) are shown