

Indaver Rivenhall IWMF DCO

Planning Act 2008

Infrastructure Planning (Applications: Prescribed Forms and Procedure)

Regulations 2009

**Examination Documents [PINS Ref:  
EN0101038]**

# **Applicant's Comments on Deadline 3 Submissions - Noise Technical Note**

**Document Reference: EN0101038/APP/9.4.4**

**Revision Number 1.0**

**APFP Regulation 5(2)(q)**

09 July 2024

Indaver Rivenhall Ltd

Leading the field in  
sustainable waste  
management.

**To** Robert Mansfield

**From:** Benedict Sarton

**Company** Essex County Council

**SLR Consulting Limited**

**Date:** 9 July 2024

**Project No.** 403.064810.00001

**RE: Rivenhall IWMF DCO - Jacobs Review of Noise Modelling and Updated Cumulative Assessment**

---

This technical memo has been produced in response to comments received by Jacobs following a review of the noise modelling files and an updated cumulative noise assessment to include the Dry Silo Mortar Plant (DSM).

## 1.0 Noise Modelling Review

SLR has reviewed document 'EN010138-000281-Essex County Council – Jacobs review of noise modelling files.' SLR has reviewed the main comments with responses provided below.

### Jacob's Comment 1

A full review of the noise models has not been possible at this time due to the supporting data (which may include manufacturer datasheets, noise measurement data, internal room noise level calculations, etc.) not being made available. As such, it is not possible for Jacobs to confirm the veracity of the predicted noise levels presented in the ES chapter.

### SLR Response 1

As a precursor, it should be noted that this question relates to noise generated by the Consented Scheme. It is common ground between the Applicant and ECC that the Proposed Development would not result in any noticeable increase in noise generated by the Consented Scheme.

With regards to the supporting data, the modelling and subsequent assessment was based on the information available, and this level of detailed information (i.e. calculation methods for internal noise levels and noise breakout etc) was not provided to SLR.

However, the source noise data has been provided by the EPC Contractor (HZI), and they are design limits for noise sources/buildings, inlets and outlets which cannot be exceeded. The data provided also includes the attenuation/transition loss provided by the claddings to the relevant noise generating buildings and any silencers/acoustic louvres that would need to be fitted to inlets, outlets and stacks.

Octave band data was then provided for each source/noise generating buildings which were based on HZI's catalogue of data from similar projects and considered the attenuation measures as described above.

These noise levels were then used within the noise model.

It must be reiterated that the information has been provided directly from HZI who have built a significant number of EfW plants throughout the UK and who have a *contractual obligation* to ensure that the noise levels generated by the Proposed Development meet the Consented Scheme noise limits at the sensitive receptors, otherwise they cannot hand over the plant to the operator at the contractual Takeover date. Therefore, the Consented Scheme has been designed to meet the consented noise limits and these design parameters have been utilised as the basis of the modelling and assessment.

It is also a contractual obligation for HZI to undertake compliance monitoring as part of their Takeover tests, to ensure that the consented noise levels are being met at all receptors assessed for the Consented Scheme (far-field), and the noise limits for the relevant items of noise generating plant are also met (near-field).

If the monitoring determines that any limits are being exceeded, then HZI would have to mitigate accordingly.

To conclude, until it has been confirmed that the Consented Limits are met by HZI, the Consented Scheme would not be handed over to Indaver.

Based on the above, though the supporting data was not available, it is considered that the noise source data included within the model is robust and as accurate as reasonably practicable.

### **Jacob's Comment 2**

The most pertinent comments that may be contributing to an under prediction of noise levels are:

- The level of reflection that has been assumed from the surfaces of buildings within the model.
- Noise source directivity, particularly if there are examples of noise source propagation from sources to receivers that are on-axis and consequently more likely to result in an increase in prediction noise level at receivers.

### **SLR Response 2**

With reference to reflections on the surfaces of buildings, a reflection loss of 2.0dB (0.37 absorption coefficient) has been assigned to existing buildings outside of the Site boundary, i.e. receptors and associated outbuildings, so as to represent a structured façade.

With regards to the buildings at the Site, the reflection loss of Site buildings has been reduced to 0.9dB (0.18 absorption coefficient) in-line with information received by the EPC contractor and this change has not made any material effect on the assessment.

Additionally, as noted within the document, the model assumes 3 orders of reflection, which is considered to represent a robust, worst-case scenario for predicted noise levels.

With regards to directivity, the model has been reviewed and it is considered that at the closest receptors which have the potential to experience the greatest impacts, there are no sources directly on-axis, and therefore no directivity has been assigned.

Based on the above, it is considered that assuming no directivity represents a robust approach, as noise will be propagating from all sources in all directions and contributing to the predicted noise levels at the nearest receptors locations which are off-axis.

### **Jacob's Comment 3**

There are also potential sources of noise over prediction identified in the review, such as the receiver height at The Lodge (worst-affected receptor) at night and the omission of source directivity for noise sources where the noise propagation path is off-axis.

### **SLR Response 3**

With regards to The Lodge, as this has been identified as a bungalow, the night-time receiver height has been reduced to 1.5m and the building height reduced to 4m.

With regards to the noise source which could be considered off-axis, namely the stack, as recommended by Jacobs this has been re-modelled, so the point sources are acting as a Chimney with:

- A directivity in the 'Z' axis i.e. pointing upwards.



- An exhaust velocity of 20m/s (which has been confirmed with the operator).
- An exhaust gas temperature of 250°C (which has been confirmed with the EPC contractor).
- A Wind Speed of 3m/s.

These updates have not made a material impact on the assessment and the overall conclusions remain as reported within the ES Chapter [APP-033].

### **Additional Jacobs Noise Model Comments**

#### **Structures**

Within the '*Modelling/Prediction Methodology*' table included in their response Jacobs have also made the following comment regarding the structures:

- All structures within the site are represented by buildings, with the exception of the ACC Cooler, which is represented by a barrier. Cylinders would typically be used to represent cylindrical tanks and chimney stacks (as per CadnaA manual examples). However, this is unlikely to have any material effect on predicted noise levels within these noise models.

SLR can confirm that the cylindrical tanks and chimney stacks have been modelled as buildings with a 0.18 absorption coefficient and 3-orders of reflection this represents a robust approach and therefore it is agreed that changing this modeling approach would not have material effect on the assessment.

#### **ACC Coolers**

Within the '*Modelling/Prediction Methodology*' table included in their response Jacobs have also made the following comment regarding the ACC Coolers:

- The presence of the barrier in the model seems to create a secondary source for ACC 004 and 005 at the diffracting top edges. It is not clear whether this is intended or something that is already accounted for in the sound power level for the noise source, and is therefore effectively being 'double counted' and potentially resulting in a slight over prediction.

As stated in SLR Response 1, the noise inputs include attenuation/transition loss provided by the claddings and any silencers/acoustic louvres. Therefore, the inputs for the ACC are considered to represent a robust, representative scenario.

#### **HGV Inputs**

Within the '*Modelling/Prediction Methodology*' table included in their response Jacobs have also made the following comment regarding the HGV inputs:

- Noise source sound power level is 106 dB and 'Single band'. It would be preferable for the actual (or suitable candidate) noise octave band spectrum to be assigned to the source in the noise source local library. However, as this source is not active in the night-time scenario, the approach to modelling the noise source is unlikely to have a material effect on the assessment.

SLR can confirm that assigning octave band data to the HGVs would not have a material effect on the assessment.

#### **On-times**

Within the '*Modelling/Prediction Methodology*' table included in their response Jacobs have also made the following comment regarding the on-times:

- No on-times have been added to the individual point sources, lines sources or area sources (i.e. as corrections). However, on-time corrections may have been applied to



sources prior to them being imported into the noise model, which cannot be checked without access to the supporting data (e.g. calculation sheets).

SLR can confirm that all plant is assumed to have a 100% on-time which represents a worst-case scenario and no corrections have been applied.

### *Source Height and Position*

Within the '*Modelling/Prediction Methodology*' table included in their response Jacobs have also made the following recommendation.

- We (Jacobs) would recommend that ground contours at the site that are influencing noise sources are reviewed to ensure they accurately represent the conditions at the site.

The ground contours at the Site were provided to SLR by the operator and were produced via a topographic drone survey of the Site in April 2023. Therefore, it is considered that the contours utilised within the model accurately represent the conditions at the Site.

### *Materials (Sound Reduction Indices – SRIs)*

Within the '*Modelling/Prediction Methodology*' table included in their response Jacobs have also made the following comment regarding the Sound Reduction Indices:

- There are five SRI entries in the local library. The data sources for these values are not presented. However, these all seem to be redundant and not used in the model. If this is not correct, i.e. they should be used within the model, then they need to be assigned to sources in the model.

SLR can confirm that the SRI entries in the local library form part of SLR's CadnaA database and have not been used in the assessment.

## **2.0 Cumulative Noise Assessment Review**

SLR has reviewed document 'EN010138-000279-Essex County Council – Post-hearing submissions, including written summaries of oral submissions to the hearings (if held).' SLR has reviewed the main comments with responses provided below.

### **Jacob's Comment 4**

SLR's Technical Memorandum states that the cumulative assessment addresses the operation of the Dry Silo Mortar (DSM) plant at the quarry, in combination with the IWMF during the evening period 19:00-22:00 and night-time period 06:00-07:00. The current planning consent for operations at Bradwell quarry (ESS/12/20/BTE, 22 June 2022) allows the operation of the DSM during these hours, but Condition 10 also allows the operation of the bagging plant (with roller shutter doors closed) during these hours. It is understood that current demand for these goods means that neither the DSM nor the bagging plant operate frequently; however, they are consented to operate independently or concurrently should demand rise. The worst-case cumulative assessment should include contributions from all sources that may operate concurrently. The bagging plant has not been considered by the Technical Memo.

It should also be noted that predicted DSM noise levels presented in the DSM application are 3 dB lower than the night-time noise limit imposed by the current Bradwell Quarry consent (39 dB vs 42dB  $L_{Aeq1hr}$ ), and 5dB lower than the evening noise limit (44dB  $L_{Aeq1hr}$ ). Compliance monitoring undertaken for the DSM plant has been unable to confirm the exact site attributable noise levels due to the influence from extraneous noise. ECC would be unable to take any enforcement action if DSM noise levels increased above the predicted noise levels until the planning consent was breached. Therefore, it would be prudent to consider whether the DSM operating at its consented limit would, in combination with the IWMF, cause a significant



cumulative effect. For example, adding 3dB to the Technical Memo's predicted DSM noise levels would result in an exceedance of SLR's proposed night-time noise limit at The Lodge.

## SLR Response 4

### *DSM Noise Limit*

It should be noted that based on the information available, all evidence suggests that the DSM is not operating at its consented limits i.e:

- The approved noise assessment predicts a worst-case noise level of 39dB at Heron's Farm (3/5dB below the respective 44dB evening and 42dB night-time limit); and
- The noise from the facility has not been audible during the compliance monitoring exercises.

In addition, Conditions 23 and 24 included within the decision notice (Ref: ESS/20/17/BTE) for the extension of hours at the DSM provide measures that would reduce overall noise levels (i.e. white noise reverse alarms, silencers fitted to all vehicles/plant).

However, SLR has amended the cumulative noise predictions which were included within the Technical Memorandum so that noise levels of 44dB and 42dB are predicted at the closest receptor (Herons Farm) during the evening and night-time (06:00 to 07:00) periods respectively.

Further to the above, SLR has then predicted the noise levels from the DSM at all other noise-sensitive receptors (NSRs) considered using the same prediction methodology as described in the Technical Memo.

These predicted noise levels have then been logarithmically added to the predicted evening and night-time noise levels from the Proposed Development to calculate the cumulative level.

Based on the above the cumulative noise levels from the Proposed Development and worst-case DSM operations (when the DSM working at its limits at the nearest receptor) are within the noise limits at all the Noise Sensitive Receptors during both the evening and night-time period, with the exception of Herons Farm.

With regards to Herons Farm, the noise limits for the DSM during the evening and night-time being higher than the consented limits for the Proposed Development. By assuming the DSM is operating at its limit at Herons Farm, the consented noise limit for the assessment of the Proposed Development of 42dB during the evening and 40dB during the night-time is exceeded without contributions from the Proposed Development.

Therefore, in conjunction with the magnitude of impact and level of effect matrix included within the ES [APP-033], the cumulative effects associated with the Proposed Development and worst-case DSM operations during the evening and night-time period would still have a '*negligible*' level of effect at all assessed Noise Sensitive Receptors, with the exception of Herons Farm, which is not considered significant in EIA terms.

With regards to Herons Farm the cumulative assessment has shown that there would be a 2dB exceedance in the evening and night-time noise limits, which as a worst-case and in conjunction with the magnitude of impact and level of effect matrix included within the ES [APP-033] would equate to a '*moderate*' level of effect which is considered significant in EIA terms.

However, as previously explained, the exceedance in the noise limits for the Consented Scheme are being caused by the DSM operating at its consented limits which are higher than those for the Proposed Development, therefore the limits are already being exceeded without the Proposed Development, which is not having any additional impacts at Herons Farm.



### Bagging Plant

SLR has requested the original noise assessment for the bagging plant to determine cumulative noise levels, however this has not yet been received. In the absence of this data, a full assessment cannot be undertaken.

Therefore, SLR have utilised the same methodology used to assess the DSM to undertake an indicative assessment of the bagging plant, during the worst-case night-time period. It has been assumed that the bagging plant would be operating at its night-time noise limit of 42dB at Herons Farm along with the DSM also operating at its night-time noise limit of 42dB at Herons Farm, as requested by ECC. Table 1 shows the cumulative noise levels associated with the use of the DSM and bagging plant, with Table 2 showing the cumulative noise levels associated with the use of the DSM, bagging plant and Proposed Development.

**Table 1: DSM and Bagging Plant Operations – Night (06:00-07:00) dB**

Receptor	Night-time Predicted Specific Noise Level $L_{Aeq,1hr}$ Total Resultant DSM (dB)	Night-time Predicted Specific Noise Level $L_{Aeq,1hr}$ Total Resultant Bagging Plant (dB)	Total Cumulative Level, dB $L_{Aeq,1hr}$	Consented Night-time Noise Limit, $L_{Aeq,T}$
R01 Herons Farm	42	42	45	40
R02 Deeks Cottage	37	37	40	
R03 Haywards	35	35	38	
R04 Allshot's Farm	33	33	36	
R05 The Lodge	32	32	35	
R06 Sheepcotes Farm	34	34	37	
R07 Greenpastures Bungalow	37	37	40	
R08 Goslings Cottage	40	40	43	
R09 Goslings Farm	40	40	43	
R10 Goslings Barn	39	39	42	

As shown above, with the joint use of the DSM and bagging plant operating at their noise limits of 42dB at R01 Herons Farm during the night-time, in the absence of the Proposed Development, the noise limit of 42dB would be exceeded at R01 and R08-R09. Additionally, the Consented Scheme night-time noise limit of 40dB would be exceeded at the four closest receptors, R01 and R08-R10. Cumulative noise levels with the addition of operations from the Proposed Development are shown in Table 2.



**Table 2: DSM, Bagging Plant Operations and Proposed Development – Night (06:00-07:00) dB**

Receptor	Night-time Predicted Specific Noise Level $L_{Aeq,1hr}$ Proposed Development (dB)	Night-time Predicted Specific Noise Level $L_{Aeq,1hr}$ Total Resultant DSM (dB)	Night-time Predicted Specific Noise Level $L_{Aeq,1hr}$ Total Resultant Bagging Plant (dB)	Total Cumulative Level, dB $L_{Aeq,1hr}$	Consented Night-time Noise Limit, $L_{Aeq,T}$
R01 Herons Farm	28	42	42	45	40
R02 Deeks Cottage	28	37	37	40	
R03 Haywards	29	35	35	38	
R04 Allshot's Farm	35	33	33	38	
R05 The Lodge	39	32	32	41	
R06 Sheepcotes Farm	31	34	34	38	
R07 Greenpastures Bungalow	26	37	37	40	
R08 Goslings Cottage	26	40	40	43	
R09 Goslings Farm	26	40	40	43	
R10 Goslings Barn	26	39	39	42	

As can be seen in Table 2, cumulative noise levels with the inclusion of the Proposed Development remain the same as presented within Table 1, for receptors R01-R03 and R07-R10, which shows the Proposed Development is not contributing to cumulative levels at these receptors.

There is an increase of 2dB at R04 and 1dB at R06 with the inclusion of the Proposed Development, with levels below the Consented night-time noise limit.

At R05, The Lodge, the Consented night-time noise limit is exceeded by 1dB, with the assumption that the DSM and bagging plant would be operating at their noise limit. As described earlier in this response, all evidence suggests that the DSM is not operating at its consented limits. Additionally, as shown in Table 1, with just the operation of the DSM and bagging plant both operating at their noise limits, the night-time noise limit of 42dB would be exceeded at R01 Herons Farm and at R08 and R09. Therefore, the assumption that they could both operate at their limits would mean cumulative noise levels would breach this limit and therefore could not operate under this assumption. Given this, the overall cumulative noise levels in Table 2 would be lower and within the Consented night-time noise limits.

Following on from the above, although SLR have carried out an additional cumulative assessment of the Proposed Development alongside the DSM and bagging plant at the





request of ECC, this is not considered relevant to this DCO application. As set out within the Rivenhall DCO EIA Scoping Report (dated April 2023) and the ES Volume I, Chapter 6: EIA Methodology in the Basis of Assessment sections, the approach applied in the ES was to use a 'Future Baseline Scenario' which assumes,

*'a future date when the EfW plant in the Consented Scheme is built and with its theoretical operation based on the Consented Scheme'* (ES Volume I, Chapter 6: EIA Methodology, paragraph 6.3.5)

and assesses this future baseline scenario in comparison to,

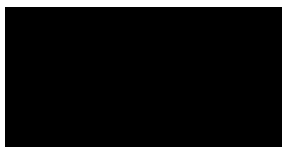
*'the incremental change associated with the Proposed Development... (i.e. the assessment of any operational changes relative to the Consented Scheme)'* (ES Volume I, Chapter 6: EIA Methodology, paragraph 6.3.5).

Consideration of the present-day baseline, of which the DSM and bagging plant form part of, is not considered necessary to understand the change in effect associated with the Proposed Development from the operation of consented EfW as per the Consented Scheme being built and in-situ. Therefore, it is not considered relevant to this DCO application to assess the DSM and bagging plant cumulatively alongside the Proposed Development.

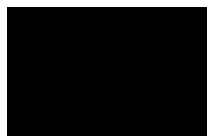
## Closure

Regards,

**SLR Consulting Limited**



**Benedict Sarton** MIOA  
Technical Director – Acoustics and Vibration



**Emma Aspinall** AMIOA  
Senior – Acoustics and Vibration

