

## Technical Note

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To response to the Request for Further Information (RFI) - Corbriggs Wood Processing Facility - EPR/DP3642YM/A001, Bureau Veritas (BV) provide the required information for the noise impact assessment of Mansfield Road, Corbriggs. This technical note should be read in conjunction with the previous BV report (Ref. UK.15174559-02 - Mansfield Road, Corbriggs - Noise Assessment, dated 21 October 2022).

The information has been provided in line with EA guidance on Noise impact assessments involving calculations or modelling.

### Background Sound Levels

To establish the ambient and background sound levels at the nearest receptors, long-term noise monitoring was carried out at a representative location from 13<sup>th</sup> to 20<sup>th</sup> April 2023. The measurement location [X(Eastings): 440967, Y(Northings): 368302] is shown in **Appendix One**.

All measurements were undertaken in free-field conditions at a height of approximately 1.2 m above ground. The noise monitoring equipment was calibrated at the beginning and end of the assessment period using an acoustic calibrator, which had itself been calibrated against a reference set traceable to National and International Standards. A shift of 0.1 dBA in calibration level was observed.

The sound level meter was set to record in 15-minute interval values for the measurement period, for the  $L_{Aeq}$ ,  $L_{Amax}$  and  $L_{A90}$  indices (in line with Section 8.1.3 of BS4142). The raw data of the survey is provided in an excel file along with the submission of this Technical Note.

The predominant sound source was road traffic on Mansfield Road, with occasional vehicle movements and industrial noise from the industrial site to the east. The road traffic noise from A617 was also audible.

A weather station was set up next the noise monitoring equipment in line with the methods stated in Section 6.4 of BS4142. During the long-term monitoring, the temperature was 0-16 °C, with maximum wind speed of 1.6 m/s. Rain occurred during the monitoring periods of 14<sup>th</sup> April daytime and 17<sup>th</sup> April night. The meteorological data at the monitoring location was used to expurgate the noise data measured at the site when the wind speed was higher than 5 ms<sup>-1</sup> and when rain occurred. The full long-term weather data is shown in **Appendix Two**.

Table 1 presents a summary of the sound level survey results. The full long-term measurement data is shown in **Appendix Two**.

**Table 1: Summary of Derived Sound Levels at the long-term monitoring location**

| Weekday /Weekend | Date                       | Period                           | Sound Pressure Level, dB re: 20µPa (Fast, Free-field) |                       |                       |                    |
|------------------|----------------------------|----------------------------------|---|-----------------------|-----------------------|--------------------|
|                  |                            |                                  | L <sub>Aeq,T</sub>                                    | L <sub>Amax,T</sub>   | L <sub>A10,T</sub>    | L <sub>A90,T</sub> |
| Weekday          | 13-14/04/23<br>17-20/04/23 | 07:00 - 08:00<br>(Early Morning) | 57 – 63<br>Average 59                                 | 65- 80<br>Average 73  | 60 – 65<br>Average 62 | 52 – 59<br>Mode 55 |
|                  |                            | 08:00 - 17:00                    | 55– 63<br>Average 59                                  | 65- 85<br>Average 73  | 57 – 67<br>Average 61 | 51 – 59<br>Mode 55 |
|                  |                            | 17:00 - 19:00<br>(Early Evening) | 66 – 76<br>Average 59                                 | 66 – 76<br>Average 71 | 59– 63<br>Average 62  | 51 – 59<br>Mode 55 |
| Weekend          | 15-16/04/23                | 07:00 - 08:00<br>(Early Morning) | 53 – 56<br>Average 54                                 | 63- 77<br>Average 70  | 56 – 59<br>Average 57 | 46– 48<br>Mode 47  |
|                  |                            | 08:00 - 17:00                    | 53 – 61<br>Average 56                                 | 61- 89<br>Average 70  | 56 – 65<br>Average 58 | 46 – 53<br>Mode 49 |
|                  |                            | 17:00 - 19:00<br>(Early Evening) | 53 – 58<br>Average 55                                 | 65 – 79<br>Average 70 | 56– 62<br>Average 58  | 47 – 50<br>Mode 47 |

During the long-term monitoring, during weekdays, the modal daytime L<sub>A90,T</sub> of the measured sound levels is **55** dB during 07:00 – 08:00 (Early Morning), 08:00 – 17:00, and 17:00 – 19:00 (Early Evening) (see Table 1), which is considered to be the representative background sound level for the time periods.

During the long-term monitoring, during weekend, the modal daytime L<sub>A90,T</sub> of the measured sound levels is **47** dB during 07:00 – 08:00 (Early Morning) and 17:00 – 19:00 (Early Evening), **49** dB during 08:00 – 17:00 (see Table 1), which are considered to be the representative background sound levels for the time periods.

## Sound Sources

It has been further confirmed by the client that the fixed and mobile plants in the site include:

- 1no. Waste wood shredder [X(Eastings): 441035, Y(Northings): 368258];
- Truck delivery [X(Eastings): 441021, Y(Northings): 368175];
- Car parking; and
- HGV movements.

The operating hours of wood processing (shredding / screening) is proposed to be an average of 6-7 hours during the daytime period 07:00 – 19:00.

There are two proposed car parking plots for employees and visitors (17no. car parking spaces) and one quarantine area & overnight parking for HGV & mobile plant, one area for processing plant and one area for HGV and mobile plant overnight parking.

It is proposed that all HGV arrival and departure movements are via a new access formed on the concrete road located immediately south of the application site.

The staff will work on a shift system. It is anticipated that there will be four shifts. The applicant has advised that a maximum of 10 employees will be on Site at once. The car parking is assumed to have 0.25 vehicle movements per hour per park space as a worst case.

The inbound and outbound vehicle movements for waste loads were calculated by Silva Recycling based on forecast split of load types and anticipated weights. For inbound traffic, there would be 110 loads (220 movements) per week, and for outbound traffic, there would be 66 loads (132 movements) per week. It is assumed the number of HGV movements is the same for each day, i.e., 50 movements per day.

The applicant has advised that waste reception will occur between 0700-1900 hours (i.e., 12 hours). It is proposed that the facility operates Monday to Sunday.

Worst-cases are used to allow the greatest level of flexibility in the development. The sound levels of the sound sources were assumed based on the BS 5228-1 sound level database and best practice on similar schemes. **Appendix Three** shows the assumptions of the acoustic data of the truck delivery and the acoustic performance data for the proposed shredder. The modelled sound emission rates comprise:

- Shredder (electric, with diesel generator) = 111 dB  $L_{WA}$ , operating 6-7 hrs/day during 7 am to 7 pm, at 1.5 m above ground, weekdays and weekends;
- Truck delivery = 106 dB  $L_{WA}$ , operating during 7 am to 7 pm, at 1 m above ground, weekdays and weekends; and
- HGV movements with 50no. (two-way) per day, weekdays and weekends.

Sound power levels modelled using octave spectral distribution. As illustrated in the site layout (ref. 12800\_004 PHASE 2 REV E-A1 - GA), the height of the walls for storage is 5 m. The storage walls are also included in the model.

The predicted specific sound levels at the nearest receptors during the daytime operation are shown in Table 2 below.

**Table 2: Summary of Predicted Sound Levels on the nearest façades (day)**

| Receptor(s) | X (Easting) | Y (Northing) | Sound Pressure Level, dB $L_{Aeq,T}$ (Ground floor façade) |
|-------------|-------------|--------------|--|
| NSR1        | 441003      | 368081       | 46   |
| NSR2        | 440872      | 368294       | 46   |
| NSR3        | 440902      | 368385       | 44   |

### BS4142 Assessment

The BS4142 impact assessments are updated to include separate assessments during the week and weekend with corresponding background sound levels that are representative of the entire range of proposed operating hours for the site.

The noise contour map of the modelling is shown in **Appendix Four**.

The indicative assessments to BS 4142:2014 are provided in Table 3 to Table 8 below for different time periods, respectively:

**Table 3: Indicative BS 4142:2014 Assessment – 07:00 - 08:00 Weekday**

| Description  | Result   | Relevant Clauses of BS 4142:2014 | Commentary  |
|--|--|----------------------------------|---|
| Specific Sound Level (free-field)  | $L_{Aeq,T} = 46$ dB (R1)<br>$L_{Aeq,T} = 44$ dB (R2)<br>$L_{Aeq,T} = 44$ dB (R3) | 7.3.6                            | Predicted level (free-field) at ground floor level at the nearest receptor. Determined by calculation using CadnaA.                       |
| Background sound level   | 55   | 8.1 and 8.2                      | The background noise levels (free-field) were measured at the monitoring locations close to the noise-sensitive receptors.                |
| Acoustic features correction   | +3 dB  | 9.2                              | A penalty of 3 dB for intermittency of operation of the shredder and HGV movements  |
| Rating Level   | 49 dB (NSR1)<br>47 dB (NSR2)<br>47 dB (NSR3)                                     |                                  |   |
| Excess of Rating Level over Background Sound Level   | -6 dB (NSR1)<br>-8 dB (NSR2)<br>-8 dB (NSR3)                                     |                                  |   |
| Assessment of impact: Assessment indicates no impact due to plant noise at the receptors   |  | 11                               |   |
| <b>Context:</b> The dominant road noise at the receptor reduces the likelihood of an adverse impact from the wood processing site. |  |                                  |   |
| Uncertainty of the assessment  |  | 10                               | The specific noise level has been predicted by CadnaA, which utilises ISO9613 calculations, which have a claimed uncertainty of +/- 3 dB. |

The results in Table 3 indicate that, during the time period 07:00-08:00 weekdays, the predicted sound levels generated by the site would result in no adverse impact at the nearest residential receptors.

**Table 4: Indicative BS 4142:2014 Assessment – 08:00 - 17:00 Weekday**

| Description  | Result   | Relevant Clauses of BS 4142:2014 | Commentary  |
|--|--|----------------------------------|---|
| Specific Sound Level (free-field)  | $L_{Aeq,T} = 46$ dB (R1)<br>$L_{Aeq,T} = 44$ dB (R2)<br>$L_{Aeq,T} = 44$ dB (R3) | 7.3.6                            | Predicted level (free-field) at ground floor level at the nearest receptor. Determined by calculation using CadnaA.                       |
| Background sound level   | 55   | 8.1 and 8.2                      | The background noise levels (free-field) were measured at the monitoring locations close to the noise-sensitive receptors.                |
| Acoustic features correction   | +3 dB  | 9.2                              | A penalty of 3 dB for intermittency of operation of the shredder and HGV movements  |
| Rating Level   | 49 dB (NSR1)<br>47 dB (NSR2)<br>47 dB (NSR3)                                     |                                  |   |
| Excess of Rating Level over Background Sound Level   | -6 dB (NSR1)<br>-8 dB (NSR2)<br>-8 dB (NSR3)                                     |                                  |   |
| Assessment of impact: Assessment indicates no impact due to plant noise at the receptors   |  | 11                               |   |
| <b>Context:</b> The dominant road noise at the receptor reduces the likelihood of an adverse impact from the wood processing site. |  |                                  |   |
| Uncertainty of the assessment  |  | 10                               | The specific noise level has been predicted by CadnaA, which utilises ISO9613 calculations, which have a claimed uncertainty of +/- 3 dB. |

The results in Table 4 indicate that, during the time period 08:00-17:00 weekdays, the predicted sound levels generated by the site would result in no adverse impact at the nearest residential receptors.

**Table 5: Indicative BS 4142:2014 Assessment – 17:00 - 19:00 Weekday**

| Description  | Result   | Relevant Clauses of BS 4142:2014 | Commentary  |
|--|--|----------------------------------|---|
| Specific Sound Level (free-field)  | $L_{Aeq,T} = 46$ dB (R1)<br>$L_{Aeq,T} = 44$ dB (R2)<br>$L_{Aeq,T} = 44$ dB (R3) | 7.3.6                            | Predicted level (free-field) at ground floor level at the nearest receptor. Determined by calculation using CadnaA.                       |
| Background sound level   | 55   | 8.1 and 8.2                      | The background noise levels (free-field) were measured at the monitoring locations close to the noise-sensitive receptors.                |
| Acoustic features correction   | +3 dB  | 9.2                              | A penalty of 3 dB for intermittency of operation of the shredder and HGV movements  |
| Rating Level   | 49 dB (NSR1)<br>47 dB (NSR2)<br>47 dB (NSR3)                                     |                                  |   |
| Excess of Rating Level over Background Sound Level   | -6 dB (NSR1)<br>-8 dB (NSR2)<br>-8 dB (NSR3)                                     |                                  |   |
| Assessment of impact: Assessment indicates no impact due to plant noise at the receptors   |  | 11                               |   |
| <b>Context:</b> The dominant road noise at the receptor reduces the likelihood of an adverse impact from the wood processing site. |  |                                  |   |
| Uncertainty of the assessment  |  | 10                               | The specific noise level has been predicted by CadnaA, which utilises ISO9613 calculations, which have a claimed uncertainty of +/- 3 dB. |

The results in Table 5 indicate that, during the time period 17:00-19:00 weekdays, the predicted sound levels generated by the site would result in no adverse impact at the nearest residential receptors.

**Table 6: Indicative BS 4142:2014 Assessment – 07:00 - 08:00 Weekend**

| Description  | Result   | Relevant Clauses of BS 4142:2014 | Commentary  |
|--|--|----------------------------------|---|
| Specific Sound Level (free-field)  | $L_{Aeq,T} = 46$ dB (R1)<br>$L_{Aeq,T} = 44$ dB (R2)<br>$L_{Aeq,T} = 44$ dB (R3) | 7.3.6                            | Predicted level (free-field) at ground floor level at the nearest receptor. Determined by calculation using CadnaA.                       |
| Background sound level   | 47   | 8.1 and 8.2                      | The background noise levels (free-field) were measured at the monitoring locations close to the noise-sensitive receptors.                |
| Acoustic features correction   | +3 dB  | 9.2                              | A penalty of 3 dB for intermittency of operation of the shredder and HGV movements  |
| Rating Level   | 49 dB (NSR1)<br>47 dB (NSR2)<br>47 dB (NSR3)                                     |                                  |   |
| Excess of Rating Level over Background Sound Level   | +2 dB (NSR1)<br>+0 dB (NSR2)<br>+0 dB (NSR3)                                     |                                  |   |
| Assessment of impact: Assessment indicates low impact due to plant noise at NSR1 and no impact at NSR2 and NSR3.                   |  | 11                               |   |
| <b>Context:</b> The dominant road noise at the receptor reduces the likelihood of an adverse impact from the wood processing site. |  |                                  |   |
| Uncertainty of the assessment  |  | 10                               | The specific noise level has been predicted by CadnaA, which utilises ISO9613 calculations, which have a claimed uncertainty of +/- 3 dB. |

The results in Table 6 indicate that, during the time period 07:00 - 08:00 Weekend, the predicted sound levels generated by the site would result in a low adverse impact at NSR1, and no impacts at NSR2 and NSR3.

**Table 7: Indicative BS 4142:2014 Assessment – 08:00 - 17:00 Weekend**

| Description  | Result   | Relevant Clauses of BS 4142:2014 | Commentary  |
|--|--|----------------------------------|---|
| Specific Sound Level (free-field)  | $L_{Aeq,T} = 46$ dB (R1)<br>$L_{Aeq,T} = 44$ dB (R2)<br>$L_{Aeq,T} = 44$ dB (R3) | 7.3.6                            | Predicted level (free-field) at ground floor level at the nearest receptor. Determined by calculation using CadnaA.                       |
| Background sound level   | 49   | 8.1 and 8.2                      | The background noise levels (free-field) were measured at the monitoring locations close to the noise-sensitive receptors.                |
| Acoustic features correction   | +3 dB  | 9.2                              | A penalty of 3 dB for intermittency of operation of the shredder and HGV movements  |
| Rating Level   | 49 dB (NSR1)<br>47 dB (NSR2)<br>47 dB (NSR3)                                     |                                  |   |
| Excess of Rating Level over Background Sound Level   | +0 dB (NSR1)<br>-2 dB (NSR2)<br>-2 dB (NSR3)                                     |                                  |   |
| Assessment of impact: Assessment indicates no impact due to plant noise at the receptors   |  | 11                               |   |
| <b>Context:</b> The dominant road noise at the receptor reduces the likelihood of an adverse impact from the wood processing site. |  |                                  |   |
| Uncertainty of the assessment  |  | 10                               | The specific noise level has been predicted by CadnaA, which utilises ISO9613 calculations, which have a claimed uncertainty of +/- 3 dB. |

The results in Table 7 indicate that, during the daytime period 08:00 - 17:00 weekends, the predicted sound levels generated by the site would result in no adverse impact at the nearest residential receptors.



**Table 8: Indicative BS 4142:2014 Assessment – 17:00 - 19:00 Weekend**

| Description  | Result   | Relevant Clauses of BS 4142:2014 | Commentary  |
|--|--|----------------------------------|---|
| Specific Sound Level (free-field)  | $L_{Aeq,T} = 46$ dB (R1)<br>$L_{Aeq,T} = 44$ dB (R2)<br>$L_{Aeq,T} = 44$ dB (R3) | 7.3.6                            | Predicted level (free-field) at ground floor level at the nearest receptor. Determined by calculation using CadnaA.                       |
| Background sound level   | 47   | 8.1 and 8.2                      | The background noise levels (free-field) were measured at the monitoring locations close to the noise-sensitive receptors.                |
| Acoustic features correction   | +3 dB  | 9.2                              | A penalty of 3 dB for intermittency of operation of the shredder and HGV movements  |
| Rating Level   | 49 dB (NSR1)<br>47 dB (NSR2)<br>47 dB (NSR3)                                     |                                  |   |
| Excess of Rating Level over Background Sound Level   | +2 dB (NSR1)<br>+0 dB (NSR2)<br>+0 dB (NSR3)                                     |                                  |   |
| Assessment of impact: Assessment indicates low impact due to plant noise at NSR1 and no impact at NSR2 and NSR3.                   |  | 11                               |   |
| <b>Context:</b> The dominant road noise at the receptor reduces the likelihood of an adverse impact from the wood processing site. |  |                                  |   |
| Uncertainty of the assessment  |  | 10                               | The specific noise level has been predicted by CadnaA, which utilises ISO9613 calculations, which have a claimed uncertainty of +/- 3 dB. |

The results in Table 8 indicate that, during the time period 17:00 - 19:00 weekends, the predicted sound levels generated by the site would result in a low adverse impact at NSR1, and no impacts at NSR2 and NSR3.

## Conclusions

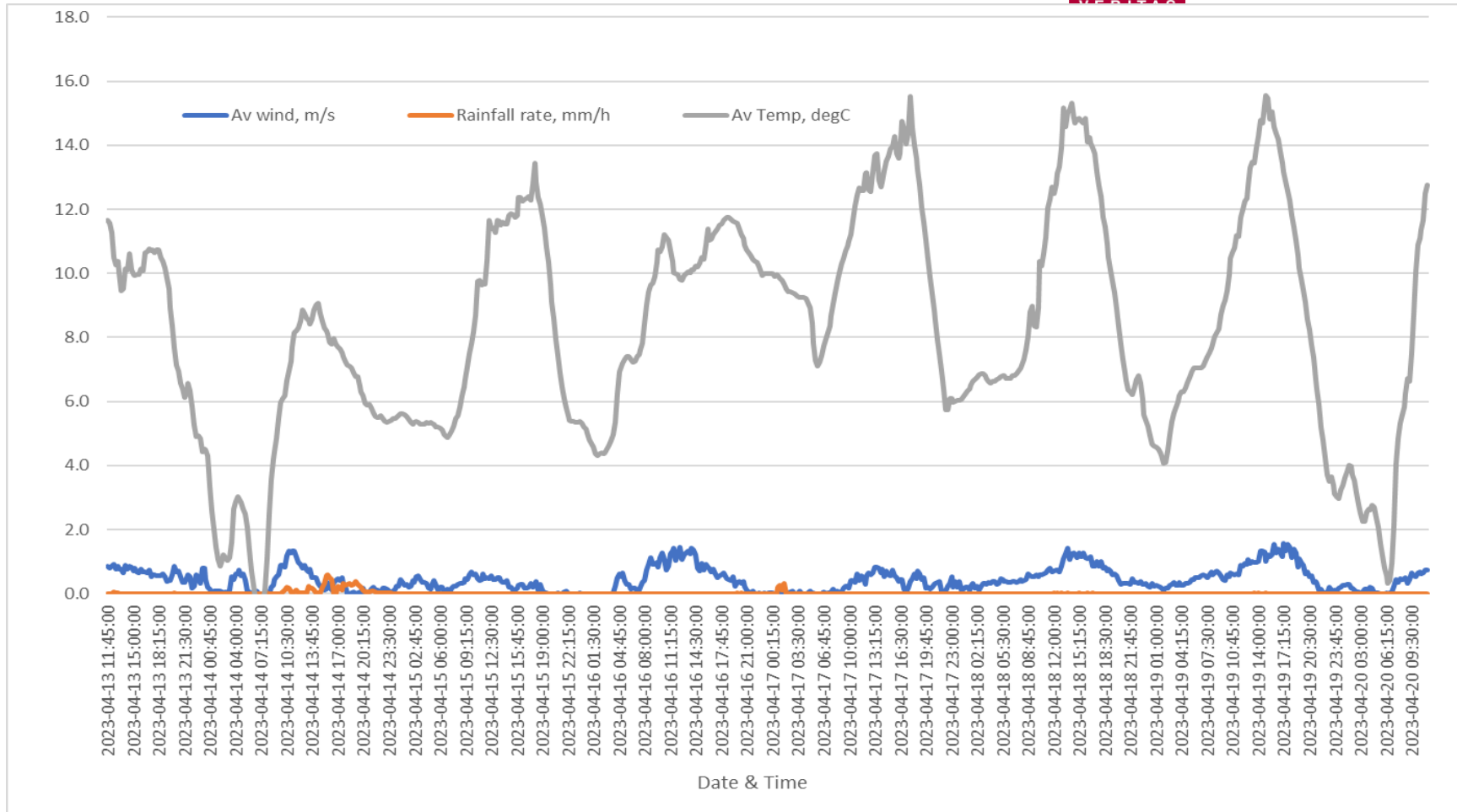
Therefore, in reference to the noise hierarchy in The Planning Practice Guidance for Noise (PPGN), the noise may be present, but would not be intrusive, and therefore the operation noise of the site would be below the Lowest Observed Adverse Effect Level at the nearest residential receptors. No noise mitigation measures are further required.

## Appendix One Monitoring Location



## Appendix Two Long-term Baseline Monitoring Data





## Appendix Three Sound Levels and operation time

| Plant/noise source                               | Assumption of the noise emission levels |                           |                    | Plant reference    |
|--|---|---------------------------|--------------------|--------------------|
|  | % On-time                               | dB L <sub>Aeq</sub> @ 10m | dB L <sub>WA</sub> |                    |
| Electric shredder, powered by a diesel generator | 80                                      | 83                        | 111                | Provided by client |
| Truck delivery                                   | 35                                      | 79                        | 106                | BS 5228, C8.20     |

## Appendix Four Indicative Prediction of Specific Sound Level (Day) – 1.5 m above ground

