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Our Ref: R18/1004/Reg25/Add3/DRK

**Ref: Noise & Vibration Impact Assessment for Proposed Sand & Gravel Quarry
Land at Bow Farm, Bow Lane, Twyning, Tewkesbury, Gloucestershire
Application Number: 19/0081/TWMAJM (District Ref: 19/1231/CM)**

Further to queries raised by Worcestershire County Council in respect of noise from representations received relating to the above reference, we have provided below further information to explain a specific point raised by Ardent (No. 308).

Query raised:

“2.3 Following a request for more information under Regulation 25 of the EIA regulations, further information was supplied by NVC Ltd on 16th December 2020. This provided the Applicant the opportunity to address all issues raised during the original consultation exercise. One aspect not raised previously relates to the noise impacts from temporary activities such as soilstripping, boundary bund creation etc. Table 6.2 in the original NVIA suggest noise levels at Puckrup Lane (Puckrup Hall) will be between 35-43 dB for such temporary operations, while with screening bunds in place, extraction in Phases 1 & 2 will be more noisy at this location (39-49 dB – see Table 6.3) and again so with Phases 3-9 at 38 – 42 dB (see Table 6.4). It seems perverse that the most noisy operations associated with mineral extraction, which are those involving the stripping of top and subsoils and creating boundary screens are likely to generate lower noise levels at Puckrup Hall than extraction operations taking place behind said boundary screens and at a depth below surrounding ground levels.”

Response:

Soil stripping and formation of earth mound bunds would form part of the initial site works, which would basically involve the use of, for example, a tracked excavator and dump trucks to move the excavated soils and to transport the material to the earth mound location. Once off-loaded, the excavator or dozer would move the soil to create and shape the earth mound. This plant would also operate intermittently in-between the dump truck movements from load to offload. In specific relation to these activities the PPG higher noise limits for up to 8 weeks a year (i.e. 70dB(A) Leq 1hr) are quite clear and that these temporary noisy activities would include the following activity:

"Activities such as soil-stripping, the construction and removal of baffle mounds, soil storage mounds and spoil heaps, construction of new permanent landforms and aspects of site road construction and maintenance."

In respect of the reference to Table 6.2, the predicted noise levels are shown to be 35-43dB during the earth mound screen works, which is correct. This includes for the plant mentioned above operating between excavation point and mound position and does not include for any processing at this point (as it is not relevant) or mineral excavation (as it is also not relevant). Therefore, bearing in mind the separation distance to the Hotel is something like 400m minimum to the earth mound works, then a level of 43dB LAeq is what would be expected.

The introduction of the additional screen on top of the earth mound to the south (as proposed in the previous Schedule response) may marginally increase this level due to some additional works which includes a 1m high timber screen, but would still remain well below the 70dB limit and also well below the 55dB LAeq 1hr limit at noise sensitive properties. The PPG guidance refers to these limits being **applicable to noise sensitive properties and not leisure or recreation receptors**.

Ardent make the comment that there is a higher-level during extraction than during earth mound works, there is a reason for this, which I explain below:

Table 6.3 refers to Phases 1 & 2 with screening. The levels here did actually include the effect of the processing plant rather than just the extraction noise source and so were artificially higher than they should read. I have provided below Table 6.3 which **excludes** the processing plant and levels at Puckrup Hall drop from 39-49 to 39dB LAeq. This can be seen in the noise mapping in Appendix NVC/9 when comparing noise map 5 (which includes the processing plant) and noise map 6 which does not (also attached for ease of reference).

Table 6.3: Extraction Phases 1 & 2 (with screening)

| Activity | Receptor | Range of likely noise contribution from activities LAeq _{1hr} dB | Maximum Noise Criteria LAeq _{1hr} dB | Increase above maximum noise criteria |
|-----------------------|---------------------------------|---|---|---------------------------------------|
| Extraction Activities | 1. Silvermead (north) | 40-42 | 55 | None |
| | 2. Bow Farm | 42-47 | 54 | None |
| | 3. Puck Cottage etc (east) | 42-51 | 54 | None |
| | 4. Bowbridge Cottage etc (east) | 42-45 | 54 | None |
| | 5. Puckrup Lane (Puckrup Hall) | 39 | 53 | None |
| | 6. Fairfield Bungalow | 34-35 | 55 | None |
| | 7. Southeast (Twyning) | 36-38 | 54 | None |
| | 8. South (Redpools) | 37-38 | 55 | None |
| | 9. Southwest (Windmill Tump) | 35 | 53* | None |
| | 10. West (The Stalls etc.) | 38 | 54* | None |

Table 6.4 include predictions of extraction phases 3 to 9 and does not include the processing and produces noise levels of 38-42dB Leq at Puckrup Hall, which are slightly lower than the earth mound construction work predictions of 43dB.

The cumulative table (i.e. Table 6.6) is therefore over predicting the noise levels, as it had assumed that Table 6.3 did not include processing noise. The net effect is that the range of noise levels for positions 4, 5 & 6 are actually predicting 2dB lower (i.e. we have overestimated the cumulative noise levels) and the assessment is therefore pessimistic, but importantly are robust. Table 6.6 has been updated (including the additional screen height adjacent to the processing area) and is provided below.

Table 6.6: Cumulative Effect of Mineral Extraction & Processing Plant

| Activity | Receptor | Range of likely noise contribution from activities LAeq _{1hr} dB | Maximum Noise Criteria LAeq _{1hr} dB | Increase above maximum noise criteria |
|------------------------------------|---------------------------------|---|---|---------------------------------------|
| Extraction & Processing Activities | 1. Silvermead (north) | 38-43 | 55 | None |
| | 2. Bow Farm | 46-53 | 54 | None |
| | 3. Puck Cottage etc (east) | 45-52 | 54 | None |
| | 4. Bowbridge Cottage etc (east) | 49-51 | 54 | None |
| | 5. Puckrup Lane (Puckrup Hall) | 50-51 | 53 | None |
| | 6. Fairfield Bungalow | 50-51 | 55 | None |
| | 7. Southeast (Twyning) | 45-49 | 54 | None |
| | 8. South (Redpools) | 45-47 | 55 | None |
| | 9. Southwest (Windmill Tump) | 39-44 | 53* | None |
| | 10. West (The Stalls etc.) | 39-42 | 54* | None |

Comments made in respect of the sensitivity of the golf course in respect of the PPG guidance has already been provided in the Regulation 25 request for further information response dated 16th December 2020 (Q3).

Other Comments

(i) Objection 145b: Puck Cottage

Information provided previously for the Regulation 25 response to additional information request has specifically provided information in respect of noise and vibration. It should be noted that if the property was so sensitive to vibration, then the daily passage of vehicles along the adjacent highway (Bow Lane), which runs very close to the property, would show signs of cosmetic damage over time. Vibration levels from HGVs and cars at such close proximity (i.e. 1m to 2m distance) have been shown by studies undertaken by NVC to range between 0.2mm/sec to 0.5mm/sec, which is higher than would be expected from the type of plant used at the proposed development site and closest approach to the property. From a noise perspective, as shown at all properties, the noise levels are within appropriate and relevant noise guidance for this type of activity.

ii) Objection 194b: 1 Puckrup Cottages

Comment made that the 'acoustician can claim that the noise levels will be imperceptible'. The only mention of imperceptibility refers to vibration levels not noise as this has never been claimed but that noise levels comply with national guidance, which is designed to provide a reasonable level of amenity.

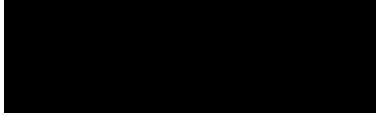
iii) Objection 227b: Gardeners Cottage

Refers to concerns that their property and others on the north eastern edge of the golf course have been ignored. This is not the case, as the noise assessment takes the approach of assessing the closest receptors to the development as these will be subject to the greatest impact, as noise levels will be higher. The report takes this approach and receptors that are at similar or greater distance from the activity will be subject to similar or lower impacts and therefore it is not necessary to predict noise at every dwelling in the area. Noise contour line maps provided within the noise impact assessment appendices (i.e. NVC/9) provide the reader with indicative levels at other locations if they have not been specifically referenced in the assessment.

For further information, we would refer to the application noise impact assessment and subsequent technical responses and information provided previously in response to the Regulation 25 request for additional information.

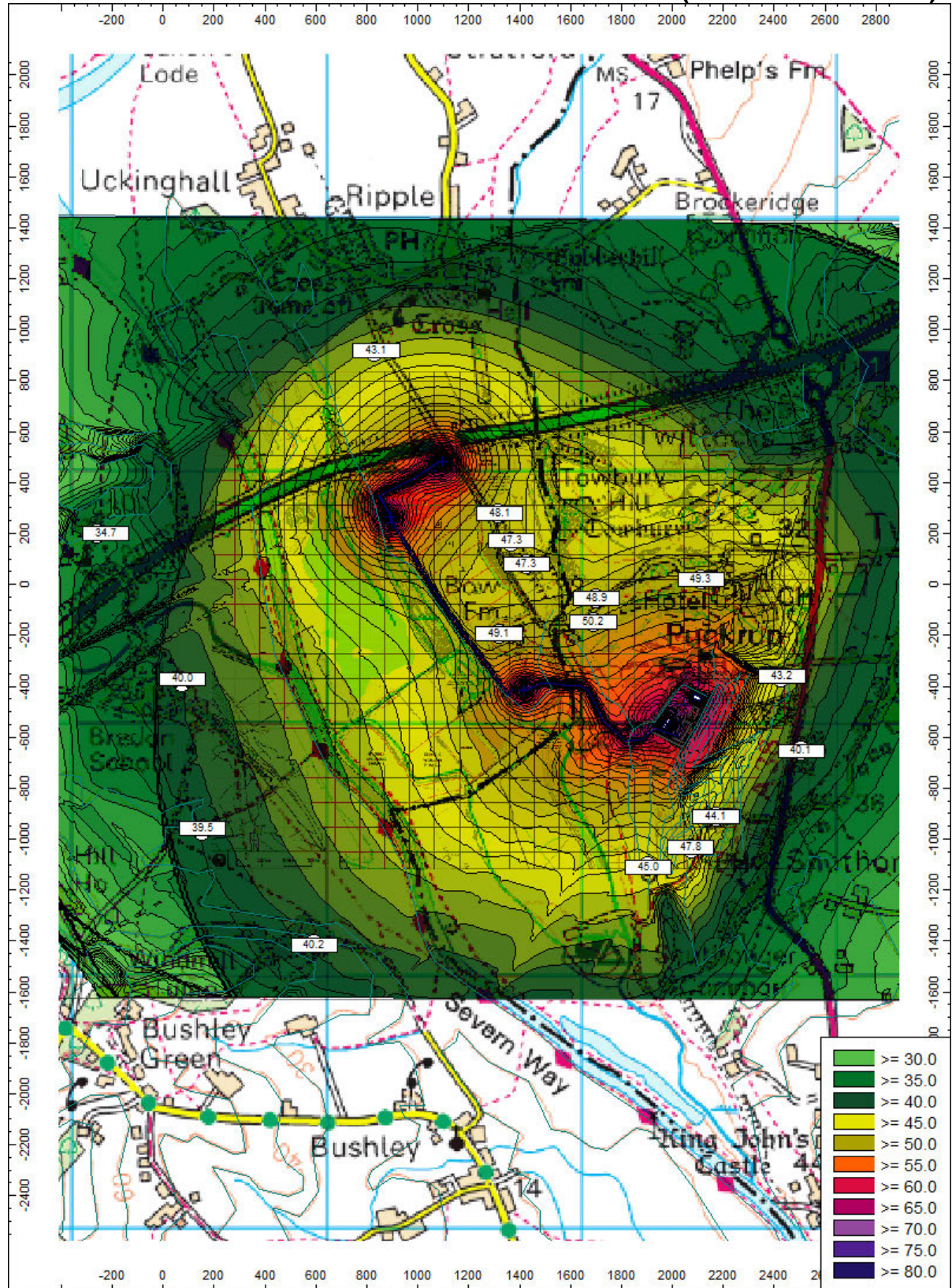
We hope the above provides the required information, as requested, but if further detail is required, please feel free to make contact.

Yours sincerely



D R Kettlewell MSc MIOA MAE I.Eng
Principal Acoustic Consultant
Managing Director

NOISE MAP 5: EXTRACTION ACTIVITIES PHASES 1 & 2 (WITH PROCESSING)



NOISE MAP 6: EXTRACTION ACTIVITIES PHASES 1 & 2 (NO PROCESSING)

