

Appendix 18.15: Noise and vibration impact to terrestrial ecology

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Roberta Epps
Ecology Specialist
RSK

Dear Roberta

RAIL CENTRAL - NOISE AND VIBRATION IMPACT TO TERRESTRIAL ECOLOGY

We can advise the expected levels of noise and vibration from the PDA main site during both the construction and operating phases, in relation to the potential impact on terrestrial ecology.

Our primary prediction relates to noise and vibration impacts to Special Protection Areas (SPA) in relation to birds. We would also potentially consider areas such as Special Areas of Conservation (SAC) and Sites of Special Scientific Interest (SSSI). We are unaware of any of the former within Northamptonshire that might need to be considered in relation to fauna and of two of the latter (SSSI), these relate to geological formations (Blisworth Rectory Farm Quarry) and Roade Cutting, and therefore need not be considered by us.

1. UPPER NENE VALLEY GRAVEL PITS (SPA)

The nearest SPA is at the Upper Nene Valley Gravel Pits and relates to birds. The nearest part of this area is 6.5km NE of the PDA. Our calculations show that during the construction phase, daytime noise levels at this SPA would be typically $L_{Amax} / L_{Aeq, 1hr} < 30dB$. It is not intended to utilise substantial piling during the bulk of the work of the PDA however some piling may be undertaken as part of the construction of the access road to the PDA and also the Intermodal platform. This is anticipated as being CFA piling, which is a rotary technique generating low noise and vibration levels. There may be some driven sheet piling required, and again if the normal vibratory drive is used, then the levels will be no greater than calculated. Depending upon ground conditions there is a possibility although unlikely that some limited driven impact piling may be required for a brief time. The noise levels will rise in this instance with $L_{Amax} < 45 dB$ and $L_{Aeq, 1hr} < 35 dB$. Once the development moves to the operational phase the expected noise levels will be the same day and night with $L_{Amax} / L_{Aeq, 1hr} < 25dB$. Please use these values in your assessment at Upper Nene Valley Gravel Pits. We do note however the proximity of these gravel pits to the A45 and note that on the CPRE (Council for the Protection of Rural England) tranquillity maps, this area is part of the 20% least tranquil land within Northamptonshire.

2. ECOLOGICALLY SENSITIVE RECEPTORS ADJOINING MAIN SITE BOUNDARY

2.1 General

You indicate a number of ecologically sensitive receptors on or close to the boundary of the PDA main site. Their proximity to the site would suggest that the noise and even vibration impact may be potentially significant, however these may be species dependent matters and an issue for you to consider using your specialist expertise.

HEAD OFFICE:
27-29 High Street
Biggleswade
Beds. SG18 0JE
United Kingdom
t. +44 (0)1767 318871
f. +44 (0)1767 317704

WIGAN OFFICE:
The Standish Centre
Cross Street, Standish
Wigan. WN6 0HQ
United Kingdom
t. +44 (0)1257 473242
f. +44 (0)1257 473243

WEB:
www.spectrumacoustic.com
Spectrum Acoustic Consultants Ltd
Registered in England No. 2378475

2.2 Vibration

Firstly on the matter of vibration impacts, we would confirm that during construction and operation, vibration impacts offsite are highly unlikely. Under normal conditions vibration is highly unlikely to be detectable in the ground at more than 50m from heavy construction or operating equipment. In practice vibration impact is highly unlikely to arise at these ecologically sensitive nearby receptors.

It is not expected that driven (impact) piling will be used, however at this stage the potential for limited impact piling does arise at the junction between the site access road as it underpasses the Towcester/Northampton Road. This is at least 300m from Devron House and far enough for there to be no vibration impact here. At the Barns there would be no possibility of nearby piling and so no vibration impact. The vibration impact at the Grand Union Canal where you highlight other routes, will again generally be undetectable during construction and operation. If driven impact piling becomes necessary maybe at the junction of the site access road and the A43, the canal is set back in some cases by typically 100m and therefore should be far away for vibration not to be significant. In other cases perhaps adjoining the new slip road to the north of the junction, the setback distance is much less at just 15m, and in this instance in the event of impact piling being required near the canal, it is likely that a programme of vibration monitoring would be required and carried out to check levels are acceptable. Finally the Farmland bird mitigation area adjoins the rail line and the intermodal platform. This area is already exposed to the potential of vibration from rail movements on the Northampton Loop. However baseline monitoring 50m from line has shown vibration levels from trains currently $0.013 \text{ m/s}^{1.75}$ at night and $0.015 \text{ m/s}^{1.75}$ during the day. These values are around 10 times lower than the threshold above which there is a 'low probability of adverse comment', according to BS6472-1 2008. Closer to the rail line, vibration levels will rise. Vibration from construction and operations of the intermodal platform, which are west of the rail line and therefore further from this proposed bird mitigation area, will also be unlikely to be noticeable.

2.3 Noise

The predicted noise levels in terms of L_{Amax} and $L_{Aeq, 1hr}$ are shown in table 1. The construction phase includes all construction activity envisaged including scope for CFA piling and vibratory sheet piling. In the event that impact sheet piling is required in relation to construction of the site access road and the underpass and junction with the A43, or in relation to the construction of the intermodal platform, the levels of noise may rise for this short duration during the daytime by 10dB at any of these receptors.

	Construction (day only) $L_{Amax}/L_{Aeq, 1hr}$	Operation (day and night) $L_{Amax}/L_{Aeq, 1hr}$
Grand Union Canal	<75 dB/<65 dB	<48 dB/<45 dB
Devron House	<75 dB/<65 dB	<50 dB/<47 dB
The Barns	<75 dB/<65 dB	<48 dB/<45 dB
Farmland Bird Mitigation Area	<85 dB/<75 dB	<75 dB/<65 dB

Table 1: Predicted noise levels ($L_{Amax} / L_{Aeq, 1hr}$) during construction (day) and operation (night) at ecologically sensitive receptors adjoining the PDA main site boundary.

I trust that the above predictions will assist in your assessment of noise and vibration impacts to ecologically sensitive receptors.

Yours sincerely



Andrew Corkill
Director