



Application for Development Consent

Application Reference Number: WWO10001

Examining Authority's Second Written Round of Questions and Requests for Information

Supporting Appendices

Noise and Vibration Assessment Tables for the Heckford Street and Park Option

Doc Ref: **APP59.14.01**





APP59.14.01 – Noise and vibration assessment tables for the Heckford Street and Park option

A.1 Introduction

A.1.1 This appendix should be read in conjunction with our response to ExA Q32.14. It contains the noise and vibration assessment tables for the Heckford Street and Park option, which are summarised in the response.

A.2 Noise and vibration assessment tables – with embedded CoCP measures

A.2.1 In undertaking the assessment a package of embedded mitigation has been assumed which would form part of a CoCP. This is explained in detail in our response to ExA Q32.14. The assessment tables are presented below.

Noise

A.2.2 Table 1 presents the comparison between the assessment of residential receptors, and Table 2 has the information for non-residential receptors. The format of the tables and the information included is based on the tables included in the ES. Significant effects are highlighted in red text.

Table 1: Noise – impacts at residential receptors (high sensitivity)

Ref/ receptor (No. of noise sensitive properties)	ABC impact criterion threshold level (potential significance for residential), dBL _{Aeq}	Range of construction noise levels, dBL _{Aeq}	Magnitude	
			Total duration above criterion for <u>all</u> works, months	Worst-case excess above criterion, dBL _{Aeq} (*further assessment undertaken for excess above criterion)
KE1/ Prospect Wharf (20)	65 (day)	55-67	Demolition, diaphragm wall,	+2
	55 (evening)	55	0	0
KE4/ 4 Shadwell Pierhead (3)	65 (day)	40-60	0	0
	55 (evening)	50	0	0
KE5/ 35 Peartree Lane (10)	65 (day)	40-62	0	0
	55 (evening)	50	0	0
KE6/ The Highway (25)	78 (day)	50-70	0	0
	76 (evening)	55	0	0
KE7/ Free Trade Wharf North (20)	78 (day)	50-66	0	0
	76 (evening)	55	0	0
KE8/ Free Trade Wharf Middle (20)	70 (day)	50-66	0	0
	65 (evening)	55	0	0
KE9/ Free Trade Wharf South (20)	65 (day)	50-66	Shaft construction	+1
	65 (evening)	55	0	0

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KE10/ Abbotshade Road (30)	65 (day)	45-60	0	0	0
	55 (evening)	50	0	0	0
KE11/ Flats within 513 Cable Street ¹	70 (day)	60-70	0	0	0
	65 (evening)	55-65	0	0	0
	55 (night)	55-60	Connection tunnel drive and secondary lining	+5	
KE12/ Schoolhouse Lane (Len Bishop Court)	70 (day)	65-77	Site setup (3 months), shaft construction (9 months), connection tunnel drive (3 months), other structures (6 months) (21 months total, worst case duration 1 month)	+7	
	65 (evening)	65-70	Connection tunnel drive and secondary lining	+5	
	60 (night)	60-67	Connection tunnel drive and secondary lining	+7	
KE13/ Free Trade Wharf East	81 (day)	55-70	0	0	
	80 (evening)	55-65	0	0	
	65 (night)	55-60	0	0	
KE14/ The Highway (Scotia)	81 (day)	60-75	0	0	
	80 (evening)	60-65	0	0	

¹ Since publication of the written responses to ExA's first written questions, the façade of 497-511 Cable Street that faces the Heckford Street site, has been identified as containing stairwell windows only and effects would not be significant. Next door to this property is a pub that has been converted to flats (513 Cable Street) with windows to habitable rooms that overlook the site. The results for 497-511 Cable Street would also apply to 513 Cable Street and as such this latter receptor is now referred to.

Building)	65 (<i>night</i>)	55-63	0	0
KE15/ Craven Cottage	65 (day)	50-65	0	0
	60 (evening)	50-55	0	0
	55 (<i>night</i>)	45-50	0	0

A.2.3 The noise levels at the following receptors are above the potential significance threshold levels:

- Prospect Wharf (day)
- Free Trade Wharf South (day)
- Cable Street (night)
- Schoolhouse Lane (day, evening and night)

A.2.4 At Prospect Wharf and Free Trade Wharf South, the internal noise levels are below the guidance noise levels for these properties. Therefore the effects at these properties is assessed as **not significant**.

A.2.5 At Cable Street, the night-time noise levels are above the internal guidance noise levels, and also above the noise insulation threshold. This is on the basis that the windows which face the site are habitable rooms. The effect to these properties is therefore assessed as **significant**.

A.2.6 At Schoolhouse Lane, the noise levels during the daytime, evening and night-time are above the internal guidance levels and also above the noise insulation threshold. The effect of construction noise to all flats is therefore assessed as **significant**.

Table 2: Comparison of impacts at non-residential receptors (daytime only)

Ref/receptor	Receptor sensitivity*	Range of construction noise levels, $dBL_{Aeq}^{b,c,d}$	Ambient baseline noise level, dBL_{Aeq}^d	Magnitude	
				Total duration above ambient for <u>all</u> works, months	Worst-case excess above ambient, dBL_{Aeq}

Ref/receptor	Receptor sensitivity*	Range of construction noise levels, dBL _{Aeq} ^{b,c,d}	Ambient baseline noise level, dBL _{Aeq} ^d	Magnitude	
				Total duration above ambient for <u>all</u> works, months	Worst-case excess above ambient, dBL _{Aeq}
KE2/ Shadwell Basin Outdoor centre	Low	45-60	54	Site setup and shaft works	+6
KE3/ Pier Head Prep. School	High	50-60	54	Site setup and shaft works	+6

- A.2.7 The highest daytime noise level at both the outdoor centre and the school is 6dB above the ambient baseline noise level. In the case of the school, the noise levels are not above the guideline noise levels with windows closed, however the noise levels will exceed the guidance noise eives with windows open. The effect on the Pierhead Prep school is therefore **significant**.
- A.2.8 The outdoor centre is less sensitive a receptor, and noise levels are below that predicted in the ES, and as such the effect of noise to this receptor is considered **not significant**.
- Construction road traffic**
- A.2.9 The existing traffic on the Highway is high enough such that the additional HGV using this route would not generate a significant effect at properties on this road.
- A.2.10 The worst affected road along the haul route will be Schoolhouse Lane, and although existing traffic flows are not available for this leg, the peak daily average of 90 movements is likely to be sufficient to generate a greater than 3dB change in noise levels on this road.
- A.2.11 Therefore, noise from construction traffic entering the site on Schoolhouse Lane was assessed as **significant**.
- A.2.12 No other links are predicted to have significant effects from noise from construction traffic.

Vibration

- A.2.13 Vibration levels to most receptors would be much lower than predicted in the ES, as all the works are now much further away. The exception to this is properties on the Highway, which are now much closer to piling works on the site. At the Heckford Site, only properties on Schoolhouse Lane are close enough to potentially be subject to high vibration levels.

Table 3 Vibration – Comparison of human response to vibration impacts

Ref	Receptor	Impact (highest predicted eVDV across all activities m/s ^{1.75} *)	Value/sensitivity	Magnitude
KE6	The Highway	0.4	High	Low probability of adverse comment – No impact
KE12	Schoolhouse Lane	0.2	High	Low probability of adverse comment – No impact

- A.2.14 At properties on the Highway and Schoolhouse Lane, the levels of vibration are low enough that effects on human comfort from vibration due to piling are **not significant**.

Table 4 Vibration – Comparison of building vibration impacts and magnitudes

Ref	Receptor	Impact (highest predicted PPV across all activities, mm/s)	Value/sensitivity	Magnitude*
KE6	The Highway	<0.5	High	Below threshold of

Ref	Receptor	Impact (highest predicted PPV across all activities, mm/s)	Value/ sensitivity	Magnitude*
				potential cosmetic damage – No impact
KE12	Schoolhouse Lane	<0.5	High	Below threshold of potential cosmetic damage – No impact

A.2.15 The effects on buildings from vibration due to construction activities is **not significant**.

A.3 Noise and vibration assessment tables – with additional mitigation measures

A.3.1 At Heckford Street, three additional mitigation measures have been considered which would reduce some of the noise effects, namely a slurry treatment plant enclosure, a three sided enclosure around and roof over the materials handling area, and an acoustic shed over the shaft during tunnelling works.

A.3.2 The assessment undertaken has been updated to establish what effect these three additional measures would theoretically have on the overall assessment. The assessment tables are presented below.

Noise

A.3.3 Table 5 presents the comparison between the assessment of residential receptors, and Table 6 has the information for non-residential receptors. The format of the tables and the information included is based on the tables included in the ES. Significant effects are highlighted in red text.

Table 5: Noise – impacts at residential receptors (high sensitivity)

Ref/ receptor (No. of noise sensitive properties)	ABC impact criterion threshold level (potential significance for residential), dBL _{Aeq}	Range of construction noise levels, dBL _{Aeq}	Magnitude	
			Total duration above criterion for all works, months	Worst-case excess above criterion, dBL _{Aeq} (*further assessment undertaken for excess above criterion)
KE1/ Prospect Wharf (20)	65 (day)	55-65	0	0
	55 (evening)	55	0	0
KE4/ 4 Shadwell Pierhead (3)	65 (day)	40-60	0	0
	55 (evening)	50	0	0
KE5/ 35 Peartree Lane (10)	65 (day)	40-62	0	0
	55 (evening)	50	0	0

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KE6/ The Highway (25)	78 (day)	50-70		0	0
	76 (evening)	55		0	0
KE7/ Free Trade Wharf North (20)	78 (day)	50-66		0	0
	76 (evening)	55		0	0
KE8/ Free Trade Wharf Middle (20)	70 (day)	50-66		0	0
	65 (evening)	55		0	0
KE9/ Free Trade Wharf South (20)	65 (day)	50-65		0	0
	65 (evening)	55		0	0
KE10/ Abbotshade Road (30)	65 (day)	45-60		0	0
	55 (evening)	50		0	0
KE11/ 513 Cable Street	70 (day)	60-70		0	0
	65 (evening)	55-60		0	0
	55 (night)	50-55		0	0
KE12/ Schoolhouse Lane (Len Bishop Court)	70 (day)	60-77		Site setup (3 months), shaft construction (9 months), acoustic measures set up and removal (4 months), other structures (6 months) (22 months total, worst case duration 1 month)	+7
	65 (evening)	55-60		0	0
	60 (night)	55-60		0	0
KE13/ Free Trade	81 (day)	55-70		0	0

Wharf East	80 (evening)	50-55	0	0
	65 (night)	45-50	0	0
KE14/ Scotia Building	81 (day)	60-75	0	0
	80 (evening)	50-55	0	0
	65 (night)	45-50	0	0
KE15/ Craven Cottage	65 (day)	50-65	0	0
	60 (evening)	45-50	0	0
	55 (night)	45-50	0	0

A.3.4 The noise levels at the following receptors are above the potential significance threshold levels:

- Schoolhouse Lane /Len Bishop Court (day)

A.3.5 At Len Bishop Court, the noise levels during the daytime are above the internal guidance levels. The effect of construction noise to all flats facing the site is therefore assessed as **significant** and properties may qualify for compensation under the Non Statutory off-site mitigation and compensation policy.

Table 6: Comparison of impacts at non-residential receptors (daytime only)

Ref/receptor	Receptor sensitivity*	Range of construction noise levels, dBL _{Aeq} ^{b,c,d}	Ambient baseline noise level, dBL _{Aeq} ^d	Magnitude	
				Total duration above ambient for <u>all</u> works, months	Worst-case excess above ambient, dBL _{Aeq}
KE2/ Shadwell Basin Outdoor centre	Low	45-60	54	Site setup and shaft works	+6
KE3/ Pier Head Prep. School	High	50-60	54	Site setup and shaft works	+6

- A.3.6 The highest daytime noise level at both the outdoor centre and the school is 6dB above the ambient baseline noise level. In the case of the school, the noise levels are not above the guideline noise levels with windows closed, however the noise levels will exceed the guidance noise levels with windows open. The effect on the Pierhead Prep school is therefore **significant**.
- A.3.7 The outdoor centre is less sensitive a receptor, and noise levels are below that predicted in the ES, and as such the effect of noise to this receptor is considered **not significant**.

Construction road traffic

- A.3.8 The existing traffic on the Highway is high enough such that the additional HGVs using this route would not generate a significant effect at properties on this road.
- A.3.9 The worst affected road along the haul route will be Schoolhouse Lane, and although existing traffic flows are not available for this leg, the peak daily average of 90 movements is likely to be sufficient to generate a greater than 3dB change in noise levels on this road.
- A.3.10 Therefore, noise from construction traffic entering the site via Schoolhouse Lane is assessed as **significant**.
- A.3.11 No other links are predicted to have significant effects from noise from construction traffic.

Vibration

- A.3.12 Vibration levels to most receptors would be much lower than predicted in the ES, as all the works are now much further away. The exception to this is properties on the Highway, which are now much closer to piling works on the site. At the Heckford Street Site, there are no piling works required, and vibration from compaction will be controlled via the measures in the CoCP, as per other sites.

Table 7 Vibration – Comparison of human response to vibration impacts

Ref	Receptor	Impact (highest predicted eVDV across all activities m/s ^{1.75} *)	Value/ sensitivity	Magnitude
KE6	The Highway	<0.2	High	Low probability of adverse comment – No impact
KE12	Schoolhouse Lane	<0.2	High	Low probability of adverse comment – No impact

- A.3.13 At properties on the Highway, the levels of vibration are low enough that effects on human comfort from vibration due to piling are **not significant**.
- A.3.14 At properties on Schoolhouse Lane, there are no activities which generate high levels of vibration . As such effects from vibration are **not significant**

Table 8 Vibration – Comparison of building vibration impacts and magnitudes

Ref	Receptor	Impact (highest predicted PPV across all activities, mm/s)	Value/ sensitivity	Magnitude*
KE6	The Highway	<0.5	High	Below threshold of potential cosmetic damage – No impact
KE12	Schoolhouse Lane	1.0	High	Below threshold of potential cosmetic damage – No impact

A.3.15 The effects on buildings from vibration due to construction activities is **not significant**.

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