
12 Noise and Vibration

Introduction and Methodology

- 12.1 This chapter of the ES assesses the likely noise and vibration effects associated with the construction, operation and decommissioning of the project and is supported by Appendices 12.1 to 12.5.
- 12.2 The chapter describes the assessment methodology; the baseline conditions currently existing at the potentially affected noise and vibration sensitive receptors and the likely significance of noise and vibration effects, taking into account measures proposed to avoid, reduce or offset adverse effects.

Consultations

- 12.3 A formal scoping exercise has been undertaken to inform the scope of the EIA. Details of the scoping exercise are provided in Chapter 5. The scoping response from the Department of Energy and Climate Change (DECC) included responses from the Environment Agency (EA), English Heritage (EH) and Cheshire West and Chester Council. None of these responses contained comments regarding the scope of the noise and vibration assessment.
- 12.4 Details of the proposed methodology and assessment criteria were sent to the planning case officer at Cheshire West and Chester Council for distribution to the relevant Environmental Health Officer (EHO) at the council on 12th December 2009. At the current time, no response has been received.

Assessment Methodology

- 12.5 As a matter of best practice, this assessment has been undertaken based on relevant guidance on noise and vibration assessment. This includes:
- BS 4142;
 - BS 5228; and
 - EA IPPC Technical Guidance Note S5.01.

Baseline

- 12.6 The noise assessment methodology requires a comparison to be made between the existing daytime and night-time noise environments at the noise sensitive receptors (NSRs) and the future noise levels that would be expected to occur at those locations, during construction and operation of the SEP. Existing noise levels were determined by a field study.

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- 12.7 The field study comprised two long-term unattended noise surveys and two short-term attended surveys at separate locations in the area. The noise monitors were installed at locations that were representative of the nearest NSRs to the SEP, which are areas of housing to the south and south-west (in the areas of St John's Close, Middlewich Road and James Street) and individual properties to the east of the site on Lostock Green Road, Lostock Hollow Road and The Birches. The survey locations are provided in Figure 12.1.
- 12.8 The two long-term surveys logged 15-minute measurements continuously over a period of eight days. For the short-term surveys during the daytime, six, 15-minute measurements were made at each location. It was the intention to undertake a short term survey of similar duration in the James Street area during the night-time. However, the survey had to be truncated to 20-minutes due to security concerns. Nevertheless, it is considered that the data obtained are representative of the noise night-time noise environment in the area. All surveys were undertaken at freefield locations at ground floor level.
- 12.9 The instrumentation was calibrated both prior to and immediately following the surveys to ensure that no significant drift had occurred over the survey period. All instrumentation was within the manufacturers' periods of calibration, as specified in BS 7445.
- 12.10 BS 4142 requires a '*representative background noise level*' to be adopted for the assessment of noise effects during the operation of the SEP. One approach that is commonly adopted, and has been adopted for this project, is to use the arithmetic mean of the 15-minute L_{A90} values for the daytime period between 07:00 and 23:00 hours and the night-time period between 23:00 and 07:00 hours, i.e. the arithmetic mean of the 15-minute data from the long-term surveys within the appropriate time period.
- 12.11 The assessment also considers the changes in ambient ($L_{Aeq,T}$) noise levels during the construction and operation of the SEP. These assessments have used the logarithmic average of the 15-minute L_{Aeq} between 07.00 and 19.00 hours, 07.00 and 23.00 hours and 23.00 and 07.00 hours for the assessments of noise during construction, daytime operation and night-time operation, respectively.
- 12.12 Only data that were measured when the wind speeds were at or less than 5 m/s were included in the datasets used to derive the baseline noise levels. BS 4142 implies that measurements can be taken in wind speeds up to 5 m/s, i.e. it states '*For the purposes of this standard, windshields are generally effective up to wind speeds of 5 m/s*'.
- 12.13 It is considered that by only using data obtained when wind speeds are at or less than 5 m/s, data were obtained that are robust and valid in accordance with BS 4142. In addition, data obtained during periods for which '*light*', '*intermittent*' or '*heavy*' rain were reported in the weather data were also excluded from the dataset. Weather data were obtained from metcheck.com for the meteorological station at Manchester Airport. The airport is approximately 10-miles north-east of the site.

Construction and Decommissioning Effects

- 12.14 Noise emissions from the site during the construction and decommissioning phases have been predicted using SoundPLAN noise modelling software, which implements the methodology contained within BS 5228-1. Source terms have been obtained from BS 5228-1 based on typical construction and decommissioning plant and activities.
- 12.15 The assessment has considered situations which have the greatest potential to give rise to significant noise effects. At the current stage of the project, the specific items of plant and methods that would be required to demolish the existing power station and to construct and decommission the proposed SEP have not been finalised. The noise assessment has considered the effect of impact driven pre-cast concrete piling during the construction of the building foundations and 24-hour concrete pouring operations (i.e. concrete pouring during the night-time) on a 'worse-case' basis.

Noise from Off-site Construction Activities (Delivery HGVs)

- 12.16 Delivery HGVs would be required to transport construction materials and equipment to the site. The noise assessment has predicted the change in noise emissions from roads around the site due to an increase in the flow of HGVs using the methodology contained within the Calculation of Road Traffic Noise (CRTN).

Vibration from Construction and Decommissioning Activities

- 12.17 It is considered that the only construction sources that would have the potential to give rise to significant vibration effects would be driven or vibratory piling (bored or augured piling and demolition activities would be unlikely to give rise to significant levels of vibration at sensitive receptors). Significant vibration effects due to HGVs at residential receptors are unlikely, provided that the access roads do not contain significant discontinuities.
- 12.18 The effects of vibration emissions associated with the construction of the project have been predicted using methods contained within BS 5228-2 on the basis of impact driven pre-cast concrete piling being required during the construction of the foundations.

Noise and Vibration during the Operation of the Project

- 12.19 Noise levels arising from the operation of the project have been predicted using SoundPLAN noise modelling software, implementing the methodology contained within ISO 9613-2. Broadband internal noise levels for the areas containing the most significant noise generating plant and Sound Reduction Indices (SRIs) of the facades of the building have been provided by Umwelttechnik & Ingenieure GmbH on behalf of the client. A generic spectral shape that is representative of internal diffuse reverberant noise levels within an SEP has been applied to the calculated source terms. A spectral shape has been applied to the SRIs that is representative of the type of cladding from which the SEP is expected to be built.

- 12.20 The significance of the operational effects of noise on residential receptors has been assessed using the methodology contained within BS 4142. In addition, consideration has been given to the ambient daytime noise change that would be expected to occur at residential and recreational receptors (Griffiths Park) as a result of the introduction of the facility.
- 12.21 The noise effects associated with an increase in the flow of HGVs on local roads, due to the operation of the project, have been predicted using the methodology contained within CRTN.
- 12.22 Significant operational vibration effects are unlikely and, therefore, a quantitative assessment is not required.

Assessment of Significance

- 12.23 In order to assess the significance of the effects the following terms have been used:
- Neutral;
 - Minor;
 - Moderate;
 - Major;
 - Substantial.
- 12.24 Minor, moderate, major or substantial effects may be beneficial or adverse. The definitions of these terms for noise and vibration assessments are discussed further below.

Noise from On-site Construction and Decommissioning Activities

- 12.25 The following significance criteria are based upon one of three methodologies contained within Annex E of BS 5228-1 and have been used as the basis for the threshold of significance for this assessment. The relative semantic ratings for adverse effects have been adopted based on progressive increases of 5 dB.

Table 12.1: Thresholds of Significance for Construction and Decommissioning Noise at Residential Receptors

Noise Change, $L_{Aeq,T}$ (dB)	Significance
≤ 5	Not Significant
> 5 and ≤ 10	Minor Adverse
> 10 and ≤ 15	Moderate Adverse
> 15 and ≤ 20	Major Adverse
> 20	Substantial Adverse

Note 1: T is daily working hours of the site

Note 2: Applies to residential receptors

- 12.26 The limits provided in Table 12.1 are subject to lower cut-off values of 65 dB and 45 dB $L_{Aeq,T}$, from construction noise alone, for the daytime and night-time periods, respectively. There are no suggested criteria for non-residential receptors, such as business premises or recreational areas.

Noise from Off-site Construction Activities (Delivery HGVs)

- 12.27 The following semantic scale has been adopted to assess the significance of the effects of noise change associated with construction HGVs on local roads.

Table 12.2: Semantic Scale for Describing Noise Change at Residential Receptors – Thresholds of Significance (Non-permanent Construction Traffic)

Predicted Noise Change		Scale Rating
Decrease of more than 6 dB	Significant decrease	Significant Positive Effect
Increase or Decrease of Less than 6 dB	No Significant change	No Effect
Increase of 6 – 10 dB	Minor Increase	Significant Adverse Effect
Increase of 11 – 20 dB	Moderate Increase	
Increase of more than 20 dB	Major Increase	

Vibration from Construction Activities

- 12.28 Table 12.3 provides the vibration limits contained within BS 5228-2 above which cosmetic damage could occur and has been adopted as the threshold of significant effects for construction vibration to buildings (minor adverse effect). The Standard states that the vibration limits above which minor and major damage could occur are twice and four times respectively those given in Table 12.3, and correspond to moderate and major adverse effects, respectively.

Table 12.3: Threshold Vibration Values for the Evaluation of Cosmetic Building Damage (BS 5228-2)

Building Classification	Frequency Range of Vibration (Hz)	Vibration Level, PPV mm/s	
		Transient Vibration	Continuous Vibration
Unreinforced or light framed structures	4 Hz to 15 Hz	15 mm/s at 4 Hz increasing to 20 mm/s at 15 Hz	7.5 mm/s at 4 Hz increasing to 10 mm/s at 15 Hz
Residential or light commercial type buildings	15 Hz and above	20 mm/s at 15 Hz increasing to 50 mm/s at 40 Hz and above	10 mm/s at 15 Hz increasing to 25 mm/s at 40 Hz and above

Building Classification	Frequency Range of Vibration (Hz)	Vibration Level, PPV mm/s	
		Transient Vibration	Continuous Vibration
Reinforced or framed structures Industrial and heavy commercial buildings	4 Hz and above	50	25

Note: the limits refer to vibration measured in the foundations of a building.

Noise and Vibration during the Operation of the Project

- 12.29 The thresholds of significance for the assessment of noise effects upon residential receptors have been based upon guidance contained within BS 4142 and S5.01. The semantic scale for assessing the significance of adverse effects has been adopted based upon the semantic scale for noise change. The overall significance has been determined as the maximum effect determined by any one of the criteria.

Table 12.4: Thresholds of Significance for Noise during the Operation of the Project at Residential Receptors

Criterion	≤ 0 dB	>0 and ≤ 3 dB	>3 and ≤ 5 dB	>5 and ≤ 10 dB	>10 dB
Rating level ($L_{Ar,Tr}$) / background noise level (L_{A90}) difference	Not Significant	Minor Adverse	Moderate Adverse	Major Adverse	Substantial Adverse
Freefield rating level ($L_{Ar,Tr}$) (07.00 to 23.00 hours) / 50 dB difference; and the baseline daytime ambient level is 50 dB, $L_{Aeq,16h}$ (07.00 to 23.00 hours), or less	Not Significant	Minor Adverse	Moderate Adverse	Major Adverse	Substantial Adverse
Façade rating level ($L_{Ar,Tr}$) (23.00 to 07.00 hours) / 45 dB difference; and the baseline night-time ambient is level 45 dB, $L_{Aeq,8h}$ (23.00 to 07.00 hours), or less	Not Significant	Minor Adverse	Moderate Adverse	Major Adverse	Substantial Adverse
Ambient noise change $L_{Aeq,16h}$ (07.00 to 23.00 hours)	Not Significant	Minor Adverse	Moderate Adverse	Major Adverse	Substantial Adverse
Noise change from operational traffic	Not Significant	Not Significant	Minor Adverse	Moderate Adverse	Major Adverse

Recreational Receptors

- 12.30 There are no nationally adopted standards or guidance for the assessment of noise effects on public footpaths. Guidelines for Community Noise (GCN) provides guidance on the reaction

of people in outdoor living areas. However, the time base for these criteria is 16-hours, which implies residential areas and gardens. People on public footpaths are transitory and temporary receptors and it is not appropriate to adopt these criteria at Griffiths Park.

- 12.31 In the absence of appropriate guidance, it is not considered robust to adopt an arbitrary numerical threshold of significance. Consequently, noise emission levels from the SEP and the associated change in daytime ambient noise level have been predicted and a level of significance determined on the basis of numerical results, consideration of the differences between the acoustic/temporal characteristics of the noise emissions from the project and the existing baseline noise environment and professional judgement.

Cumulative Effects

- 12.32 Existing industrial facilities within the surrounding area have been assessed as part of the current baseline scenario. The potential cumulative noise and vibration effects arising from the concurrent construction or operation of the project with the construction or operation of consented or proposed developments in the area have been assessed qualitatively considering the proximity of such developments to NSRs that are predicted to be affected by the project and the expected noise and vibration emissions from consented developments.

Limitations of the Assessment

- 12.33 ISO 9613-2 states that accuracy of the prediction method is +/- 3 dB for distances between 100 and 1,000 m. SoundPLAN claims an accuracy of within 0.2 dB. It is considered that there are no significant limitations to the assessment, beyond the published accuracies of the ISO 9613-2 prediction method and the implementation by SoundPLAN.

Measures Adopted as Part of the Project

- 12.34 The SEP is anticipated to be operational on a 24 hour basis. However, it is assumed that the majority of fuel deliveries would occur during the daytime. This would reduce noise emissions from the operational facility during the night-time.
- 12.35 It is also assumed that delivery HGVs would manoeuvre within an enclosed area attached to the tipping hall. This would reduce the noise emissions from the operational facility and, in particular, the noise from HGV reversing signals.
- 12.36 Construction and decommissioning working hours would generally be between 07.00 - 18.00 hours Monday to Friday and 07.00 - 13.00 hours on Saturdays. However, it is envisaged that non-intrusive activities may be undertaken outside of these hours in order to minimise overall construction time (e.g. for concrete pours). HGV movements associated with such activities would be insignificant. Any intrusive work outside of these hours would be with the prior agreement of the Local Planning Authority, except in the case of any emergency.

- 12.37 A Construction Environmental Management Plan (CEMP) will be prepared for the project that will include details of measures to be undertaken to minimise the effects of construction noise and vibration in accordance with Best Practicable Means (BPM). Descriptions of measures that may be employed are provided within BS 5228-1 and include selection of appropriate plant and community liaison.

Baseline Conditions

Legislation and Policy Context

- 12.38 Appendix 12.1 summarises those policies that are directly relevant to noise and vibration issues. A summary of relevant British Standards (BS) and guidance that have been used to inform the assessment is also provided in Appendix 12.1.
- 12.39 Guidance contained within regional, county and local policy and legislation is consistent with guidance contained within national planning policy guidance, British Standards and EA guidance documents. The Vale Royal Borough (VRB) Local Plan states that the Council will not permit development that will cause an unacceptable increase in background noise level. No guidance is provided on what increase would be deemed to be unacceptable. EA guidance refers to 'creeping background (i.e. creeping ambient)' but clarifies that this is to be interpreted as increases in the L_{Aeq} noise level. 'Background noise level' would normally be interpreted as the L_{A90} noise level, commensurate with the definition contained within BS 4142.

Existing Conditions

- 12.40 The site is located on Griffith's Road between Northwich and Lostock Gralam in Cheshire. The SEP would be located on land owned by Brunner Mond within the area formerly occupied by the Lostock Power Station. A plan of the area around the site is provided in Figure 12.1.
- 12.41 The site is bounded to the north by Brunner Mond's manufacturing facility and a brine purification plant owned by Ineos, beyond which lies the railway line between Chester and Manchester. To the immediate west of the site is industrial land including the wider Lostock site and a remediated landfill site associated with the historic operations of the site and now with public access. To the east of the site there is generally flat undeveloped land comprising waste lime beds and fields, beyond which are a number of individual dwellings and farms. Griffiths Park lies to the south west of the site. To the south and south-west of the site, beyond Griffiths Park, are residential areas in the village and civil parish of Rudheath. The Trent and Mersey Canal runs north/south through the site.
- 12.42 The closest residential properties are in St John's Close and Cottage Close, which are to the south of the site. The nearest NSRs are (in no particular order):

- Houses and flats in Cottage Close, which is approximately 310 m from the south-east corner of the site boundary;
- Houses and bungalows in St John's Close, which are approximately 380 m from the south-east corner of the site boundary;
- Houses in James Street, which are approximately 480 m from the south-west corner of the site boundary;
- 'The Bungalow', Springbank Farm and cottages at Lostock Gralam Bridge and Birches Lane, which are approximately 650 – 800 m to the east of the site; and
- The village of Lostock Green, which is approximately 1 km to the south-east of the site.

12.43 The closest recreational receptors to the site are:

- Griffiths Park, which adjoins the south-east boundary of the site; and
- Allotment gardens on James Street, which is approximately 480 m from the south-west corner of the site boundary.

12.44 Baseline noise levels have been determined by two long-term (7-days) and two short-term (1.25-hours during the daytime and 15-minutes during the night-time (residential location only)) surveys at locations that are representative of the potentially greatest affected NSRs. Significant noise sources that affect the ambient and background noise levels at the NSRs listed above include:

- Existing operations on the Lostock site;
- Passenger and freight train movements on the railway;
- Occasional road traffic within residential areas; and
- (to a lesser extent) aircraft overhead.

Long-term Location 1 – 4 St John's Close

12.45 The survey was undertaken from Thursday 10 December to Friday 18 December 2009 using a 01dB Solo Class 1 sound level meter. The dominant noise sources include existing operations on the Lostock site and passenger and freight train movements on the railway. The results of the noise survey are provided in Table 12.5 and provided graphically in Figure 12.2.

Table 12.5: Long-term Noise Survey Results – 4 St John's Close

Date at Start of Period	Day	Daytime (07.00 to 19.00 hours)		Daytime (07.00 to 23.00 hours)			Night-time (23.00 to 07.00 hours)		
		L _{Aeq,12h} (dB)	Hours in Dataset	L _{Aeq,16h} (dB)	L _{A90} (dB)	Hours in Dataset	L _{Aeq,8h} (dB)	L _{A90} (dB)	Hours in Dataset
10/12/2009	Thursday	51	6	50	44	10	47	39	8
11/12/2009	Friday	55	12	55	45	16	52	47	8
12/12/2009	Saturday	56	12	55	48	16	52	46	8
13/12/2009	Sunday	54	12	54	48	16	50	46	8
14/12/2009	Monday	53	5	53	46	5	50	45	8
15/12/2009	Tuesday	54	12	53	42	16	48	43	5
16/12/2009	Wednesday	53	4	53	48	8	50	45	8
17/12/2009	Thursday	57	9	56	49	13	51	46	8
18/12/2009	Friday	57	3.5	57	50	3.5			
Mean	Mon - Fri	54		54	46		50	44	
	Mon - Sat	55		54	47		50	44	
	Sun	54		54	48		50	46	

Long-term Location 2 – Lostock Gramam Bridge

12.46 The survey was undertaken from Thursday 10 December to Friday 18 December 2009 using a 01dB Solo Class 1 sound level meter. The dominant noise sources include existing operations on the Lostock site. The results of the noise survey are provided in Table 12.6 and provided graphically in Figure 12.3.

Table 12.6: Long-term Noise Survey Results – Lostock Gramam Bridge

Date at Start of Period	Day	Daytime (07.00 to 19.00 hours)		Daytime (07.00 to 23.00 hours)			Night-time (23.00 to 07.00 hours)		
		L _{Aeq,12h} (dB)	Hours in Dataset	L _{Aeq,16h} (dB)	L _{A90} (dB)	Hours in Dataset	L _{Aeq,8h} (dB)	L _{A90} (dB)	Hours in Dataset
10/12/2009	Thursday	52	2	52	47	6	49	42	8
11/12/2009	Friday	55	12	54	46	16	49	42	8
12/12/2009	Saturday	54	12	54	46	16	51	44	8
13/12/2009	Sunday	54	12	54	46	16	49	44	8
14/12/2009	Monday	53	5	53	47	5	47	43	8
15/12/2009	Tuesday	53	12	53	42	16	47	45	5
16/12/2009	Wednesday	53	4	53	46	8	48	42	8
17/12/2009	Thursday	55	9	55	47	13	50	43	8

Date at Start of Period	Day	Daytime (07.00 to 19.00 hours)		Daytime (07.00 to 23.00 hours)			Night-time (23.00 to 07.00 hours)		
		L _{Aeq,12h} (dB)	Hours in Dataset	L _{Aeq,16h} (dB)	L _{A90} (dB)	Hours in Dataset	L _{Aeq,8h} (dB)	L _{A90} (dB)	Hours in Dataset
18/12/2009	Friday	56	4.25	56	48	4.25			
Mean	Mon - Fri	54		54	46		48	43	
	Mon - Sat	54		54	46		49	43	
	Sun	54		54	46		49	44	

12.47 NSRs at Springbank Farm and locale will be affected by the same baseline noise sources as LT2, including road traffic noise from A556. The A556 is approximately 225 m from Springbank Farm and 500 m from LT2. Consequently, baseline noise levels may be slightly higher at Springbank Farm than at LT2, particularly during the daytime when traffic flows will be higher. On this basis, it is robust to adopt the baseline levels derived from the survey at LT2 for NSRs at Springbank Farm and locale.

Short-term Survey Location 1 – James Street and Hargreaves Road

12.48 The daytime survey was undertaken adjacent to the allotment gardens on James Street on 10th December 2009. The night-time survey was undertaken at Hargreaves Road on 11th December 2009. The night-time survey location was different to the daytime location due to security issues at the previously used daytime location at the James Street.

12.49 Noise levels were influenced by occasional car pass-bys on Middlewich Road and aircraft overhead during the daytime. The existing operations at the Lostock site were not audible during the daytime survey and just audible during the night-time survey. The results of the short-term noise survey are provided in Table 12.7.

Table 12.7: Short-term Noise Survey Results – James Street and Hargreaves Road

Time	Meas. Time	L _{Aeq,T} (dB)	L _{Amax,F} (dB)	L _{A90} (dB)
10/12/2009 14:40	15-minutes	43	65	39
10/12/2009 14:55	15-minutes	46	68	42
10/12/2009 15:10	15-minutes	50	78	41
10/12/2009 15:25	15-minutes	48	70	42
10/12/2009 15:40	15-minutes	48	66	42
10/12/2009 15:55	15-minutes	46	71	42
<i>Mean Daytime</i>		47		41
11/12/2009 01:18	5-minutes	59	92	37
11/12/2009 01:23	5-minutes	42	62	36
11/12/2009 01:28	5-minutes	37	43	36

Time	Meas. Time	L _{Aeq,T} (dB)	L _{Amax,F} (dB)	L _{A90} (dB)
11/12/2009 01:33	5-minutes	60	88	36
<i>Mean Night-time</i>		50		36

12.50 Noise levels in the northern areas of Rudheath which are closest to the project and the significant baseline noise sources are likely to be broadly similar, particularly in terms of the L_{A90} index and during the night-time. The measurements made at LT1 – 4 St John's Close during the same time periods as ST1 are provided in Table 12.8.

Table 12.8: Noise Survey Results at LT1 during Surveys at ST1

LT1 - St John's Close				LT1 minus ST1	
Time	Meas. Time	L _{Aeq,T} (dB)	L _{A90} (dB)	L _{Aeq,T} (dB)	L _{A90} (dB)
10/12/2009 14:41	15-minutes	50	42	7	3
10/12/2009 14:56	15-minutes	48	44	2	2
10/12/2009 15:11	15-minutes	48	43	-2	2
10/12/2009 15:26	15-minutes	51	44	2	2
10/12/2009 15:41	15-minutes	50	45	2	3
10/12/2009 15:56	15-minutes	48	44	1	2
<i>Mean Daytime</i>		49	44	2	2
11/12/2009 01:11	15-minutes	38	36	-12	-1
11/12/2009 01:26	15-minutes	39	37	-11	1

12.51 During the daytime periods, L_{Aeq, 15min} and L_{A90} values are -2 to +7 dB and +2 to +3 dB higher at LT1 than at ST1, respectively. The mean and mode difference is +2 dB. During the night-time periods, despite the different time periods, the results of the survey indicate that the L_{Aeq} and L_{A90} values are approximately -12 dB lower and -1 to +1 dB higher at LT1 than at ST1, respectively. Car movements on Middlewich Road, which were reported in the survey notes would have affected L_{Aeq} noise levels measured at ST1 but not at LT1. Occasional car movements would not have affected the measured L_{A90} noise levels at either location.

12.52 On the basis of the surveyed data and the discussion provided above, it is robust to adopt baseline ambient (L_{Aeq}) and background (L_{A90}) levels for NSRs in the James Street area of Rudheath which are 2 dB lower during the daytime, and equal to during the night-time, those determined from the long term survey at St John's Close.

Short-term Survey Location 2 – Griffiths Park

12.53 The survey was undertaken at the northeast corner of the footpath within the park on 10th December 2009. Noise levels were influenced by existing operations at the Lostock site. The results of the short-term noise survey are provided in Table 12.9.

Table 12.9: Short-term Noise Survey Results – Griffiths Park

Time	Meas. Time	L _{Aeq,T} (dB)	L _{Amax,F} (dB)	L _{A90} (dB)
10/12/2009 11:55	15-minutes	51	57	45
10/12/2009 12:10	15-minutes	48	55	45
10/12/2009 12:25	15-minutes	51	61	46
10/12/2009 12:40	15-minutes	47	52	45
10/12/2009 12:55	15-minutes	47	50	45
10/12/2009 13:10	15-minutes	48	57	46
<i>Mean Daytime</i>		48		45

12.54 Noise levels in Griffiths Park and in the northern areas of Rudheath which are closest to the project and the significant baseline noise sources are likely to be broadly similar, particularly in terms of the L_{A90} index. The measurements made at LT1 – 4 St John’s Close during the same time periods as ST2 are provided in Table 12.10.

Table 12.10: Noise Survey Results at LT1 during Surveys at ST2

LT1 - St John's Close				LT1 minus ST2	
Time	Meas. Time	L _{Aeq,T} (dB)	L _{A90} (dB)	L _{Aeq,T} (dB)	L _{A90} (dB)
10/12/2009 11:56	15-minutes	48	43	-3	-2
10/12/2009 12:11	15-minutes	46	43	-2	-2
10/12/2009 12:26	15-minutes	49	42	-1	-4
10/12/2009 12:41	15-minutes	43	40	-4	-6
10/12/2009 12:56	15-minutes	42	39	-5	-6
10/12/2009 13:11	15-minutes	45	42	-3	-3
<i>Mean Daytime</i>		45	42	-3	-4

12.55 During the daytime periods, L_{Aeq, 15min} and L_{A90} values are 1 to 5 dB and 2 to 6 dB lower at LT1 than at ST2, respectively. The mean difference is -3 and -4 dB, respectively. The difference is considered to be due to the increased proximity to the Lostock site.

12.56 On the basis of the surveyed data and the discussion provided above, it is robust to adopt daytime baseline levels for NSRs in the Griffiths Park that are 3 and 4 dB higher than those determined from the long term survey at St John’s Close for the L_{Aeq} and L_{A90}, respectively.

Summary of Baseline Noise Assessment

12.57 The baseline noise levels adopted for the assessment are provided in Table 12.11.

Table 12.11: Baseline Noise Levels Adopted for the Assessment

NSR	L _{Aeq,12h} (dB)	L _{Aeq,16h} (dB)	L _{A90} (dB)	L _{Aeq,8h} (dB)	L _{A90} (dB)
	Daytime (07.00 to 19.00 hours)	Daytime (07.00 to 23.00 hours)		Night-time (23.00 to 07.00 hours)	
St John's Close & Cottage Close	51	50	42	47	39
James Street & Allotment Gardens	49	48	40	47	39
Lostock Gralam Bridge, Springbank Farm & locale	52	52	42	47	42
Griffiths Park	54	53	46	N/A	N/A

Construction and Decommissioning Noise and Vibration Assessment

SEP

Noise from On-site Construction and Decommissioning Activities

12.58 The majority of activities associated with the construction and decommissioning of the project would occur during the daytime. The construction of the project is likely to require a concrete pour associated with the construction of the foundations, which may require 24-hour working. Four periods during the construction and decommissioning phase that are representative of the periods for which there is the greatest potential for significant noise effects to occur have been assessed quantitatively:

- site preparation and ground excavations;
- pre-cast concrete driven piling;
- night-time concrete pour of foundations; and
- general building construction.

12.59 Noise levels during the majority of activities associated with the demolition of the existing power station and the future decommissioning of the proposed SEP are likely to be similar to those during construction as similar plant would be used. The superstructures of the main buildings are likely to be dismantled using cranes and clamshell grabs not dissimilar in noise emission to those from the cranes, concrete mixers, pumps and poker vibrators included in the 'general building construction' noise model. Noise emissions from the site during demolition of concrete foundations using hydraulic breakers are not likely to be significantly dissimilar to those during impact piling activities.

- 12.60 The noise sources and source terms included in the construction/decommissioning models are provided in Appendix 12.2. The results of the construction/decommissioning assessments are provided in Appendix 12.3.
- 12.61 The results of the assessment indicate that the noise emission levels from daytime construction/decommissioning activities are not expected to exceed 65 dB $L_{Aeq, 12h}$ at NSRs during the construction and decommissioning of the project. The results of the assessment indicate that the noise emission levels from night-time concrete pouring activities are not expected to exceed 45 dB $L_{Aeq, 8h}$ at NSRs and, on this basis, significant adverse noise effects are not predicted to occur at NSRs. Therefore, noise effects during the construction and decommissioning of the SEP are not considered to be significant and are assessed as of neutral significance.

Noise from Off-site Construction Activities (Delivery HGVs)

- 12.62 Appendix 12.3 contains the results of an assessment of the noise change on local roads associated with construction traffic. The number of vehicles would vary during the construction period between approximately 30 cars and 15 HGVs per day to approximately 240 cars and 60 HGVs per day. The assessment has been undertaken on a conservative (worst-case) basis that predicts the noise effects of the maximum number of vehicles all using one road (i.e. 240 cars and 60 HGVs per day assessed on every link). In fact, vehicle movements would be spread across the network using routes defined within a Traffic Management Plan such that effects would be lower than described here.
- 12.63 The results of the assessment indicate that the noise change would not exceed 1 dB, which is at least 5 dB below the threshold of significance. On this basis, the significance of noise effects associated with delivery HGVs attending the site during the construction of the SEP is considered to be neutral.

Vibration from Construction Activities

- 12.64 The assessment has considered the effects of vibration from a hydraulic impact hammer piling rig inserting precast concrete piles upon the closest building to the site. The closest building within the adjoining Brunner Mond site is approximately 75 m from the nearest structure within the project, which is the tipping hall. Vibration emissions during demolition activities, including use of hydraulic breakers, would be expected to be lower than those from the piling rig assessed.
- 12.65 The results of a prediction of freefield vibration levels from vibratory piling based upon the methodology contained within BS 5228-2 are provided in Appendix 12.3. Vibration levels within the foundations of a building are expected to be less than the freefield levels at the same location due to the mass loading of the building. The level of vibration attenuation varies, but levels in the foundations of a large industrial building, such as those on the existing Brunner Mond site, may be 50 – 70% of the freefield levels.

- 12.66 With regards to the assessment of effects to structures, impact driven piling is a ‘transient’ vibration source. With reference to Appendix 12.3, the results of the assessment indicate that the vibration levels in the foundations of a building 75 m from the piling rig would be expected to be 4 mm/s, or less, which is a less than a tenth of the level at which BS 5228-2 suggests is commensurate with the level above which cosmetic damage may occur in industrial buildings. On this basis, vibration effects are considered to be neutral.

Recreational Receptors

- 12.67 The assessment has predicted noise levels at Griffiths Park. The results of the assessment indicate that the noise emission levels from daytime construction/decommissioning activities are not expected to exceed 65 dB $L_{Aeq, 12h}$, which is the cut-off for significant effects at residential receptors, within the park during the construction and decommissioning of the proposed facility. Daytime ambient noise levels, during dry and calm weather, are predicted to be increase by up to 1 dB from approximately 54 to 55 dB $L_{Aeq, 12h}$. GCN suggests that:

‘To protect the majority of people from being seriously annoyed during the daytime, the outdoor sound level from steady, continuous noise should not exceed 55 dB L_{Aeq} on balconies, terraces, and outdoor living areas. To protect the majority of people from being moderately annoyed during the daytime, the outdoor sound level should not exceed 50 dB L_{Aeq} .’

- 12.68 On the basis of the above, and considering that receptors at this location will be temporary and transitory, as will the sources of noise, it is unlikely that users of Griffiths Park will be ‘seriously’ annoyed by noise associated with the construction and decommissioning of the SEP. Overall, the significance of noise effects to users of Griffiths Park during construction and decommissioning of the project is considered to be neutral.

Grid Connection

- 12.69 The construction works associated with provision of the connection of the project to the National Grid would comprise a buried cable between the SEP at Lostock and the substation at Hartford. The route is anticipated to be along Griffiths Road (A530) and then the A556 to Hartford, using the existing cycle path/road verges.
- 12.70 Construction plant and equipment required for these works are likely to be similar to those used for buried infrastructure (water, electricity and gas) and road surface repairs. The most significant noise generating plant and equipment are likely to be an excavator, handheld breaker (where cycle path/road penetration is required), horizontal directional drilling rig (may be required where the cable crosses beneath a river), Wacker plate and a generator/compressor.
- 12.71 The construction site would be mobile and, therefore, noise effects to NSRs would be temporally limited. The anticipated route is along major roads and, therefore, baseline noise

levels at NSRs potentially affected by grid connection works would be dominated by road traffic noise during the daytime. It is likely that works would not be required during the evening or night-time.

- 12.72 It is considered that daytime ambient noise levels are likely to be approximately 60 dB $L_{Aeq, 12h}$ 100 m from the A556. Noise emissions from the connection works are likely to be approximately 57 - 62 dB $L_{Aeq, 12h}$ 100 m from the worksite. On this basis, a noise change of more than 5 dB is unlikely to occur and, therefore, the significance of the temporary noise effects associated with the grid connection construction works is considered to be neutral.
- 12.73 Vibration levels from handheld breakers, horizontal directional drilling rigs and Wacker plates are unlikely to be perceptible within buildings unless undertaken immediately adjacent and levels at building foundations will be below those commensurate with the possibility of cosmetic damage at any distance. Vibration effects associated with the grid connection construction works are considered to be neutral.

Operational Assessment

SEP

- 12.74 The plant noise source terms and SRIs of building facades upon which the assessment has been based are provided in Appendix 12.4. The model includes the terrain of the area. The results of the operational assessment are provided in Appendix 12.5. The assessment has considered two options, as described in Chapter 3 of this ES:
- Option 1: Likely scenario - 2/3rd waste delivered by rail and 1/3rd waste delivered by road; and
 - Option 2: Worst case scenario - All waste delivered by road.
- 12.75 Noise contours of the predicted noise emission level at 1.5 m above ground level are provided in Figures 12.4 and 12.5. Noise contours of the predicted rating level at 4.1 m above ground level (the approximate height of first floor windows) are provided in Figures 12.6 and 12.7.
- 12.76 The noise model has included deliveries by freight train and unloading/loading of containers occurring during the daytime and night-time, on a 'worst-case' basis. It is considered that there is a potential for the noise emissions from the facility to contain 'a *distinguishable, discrete, continuous note (whine, hiss, screech, hum, etc.)*' and, therefore, a +5 dB correction has been applied to the predicted specific noise level at NSRs, in accordance with BS 4142.

Option 1

- 12.77 The results of the assessment indicate that, at residential NSRs closest to the development in Cottage Close, St John's Close and James Street, the rating levels exceed the background noise levels during the daytime and night-time. However, at all residential NSRs, rating levels

do not exceed 50 dB $L_{Ar, 1h}$ during the daytime; or 45 dB $L_{Ar, 5min}$ during the night-time; and no daytime ambient noise change is predicted to occur.

- 12.78 The rating levels at NSRs in Cottage Close, St John's Close and James Street have been predicted to exceed the background noise level by up to 1 dB during the daytime. The greatest effects have been predicted to occur at NSRs in St John's Close during the night-time. The rating level at NSRs in St John's Close has been predicted to exceed the background noise level by up to 4 dB during the night-time. With reference to Table 12.4, noise effects due to the operation of the SEP may be of up to moderate adverse significance. However, these effects could be reduced through adoption of mitigation measures (see Recommendations for Further Mitigation section below).

Noise from Off-site Operational Activities (Delivery HGVs) – option 1

- 12.79 Appendix 12.5 contains the results of an assessment of the noise change on local roads associated with operational traffic. The traffic flow data has been provided by the authors of the Transport Assessment (TA) and takes account of traffic generated by committed development in the area. Details are provided in the transport chapter of this ES (Chapter 6) and in the TA.
- 12.80 The results of the assessment indicate that, on all assessed links, the noise change would not exceed 0.4 dB, which is at least 2.5 dB below the threshold of significance. On this basis, noise effects associated with delivery HGVs attending the site during the operation of the SEP are considered to be of neutral significance.

Option 2

- 12.81 The results of the assessment indicate that, at residential NSRs closest to the development in Cottage Close, St John's Close and James Street, the rating levels would exceed the background noise levels during the daytime and night-time. However, at all residential NSRs, rating levels would not exceed 50 dB $L_{Ar, 1h}$ during the daytime; or 45 dB $L_{Ar, 5min}$ during the night-time; and no daytime ambient noise change is predicted to occur.
- 12.82 The rating levels at NSRs in Cottage Close and St John's Close have been predicted to exceed the background noise level by up to 1 dB during the daytime. The greatest effects have been predicted to occur at NSRs in St John's Close during the night-time. The rating level at NSRs in St John's Close has been predicted to exceed the background noise level by up to 3 dB during the night-time. With reference to Table 12.4, noise effects due to the operation of the SEP are considered to be of minor adverse significance.

Noise from Off-site Operational Activities (Delivery HGVs) – option 2

- 12.83 Appendix 12.5 contains the results of an assessment of the noise change on local roads associated with operational traffic. The traffic flow data has been provided by the authors of the Transport Assessment (TA) and takes account of traffic generated by committed

development in the area. Details are provided in the transport chapter of this ES (Chapter 6) and in the TA.

- 12.84 The results of the assessment indicate that, on all assessed links, the noise change would not exceed 0.8 dB, which is at least 2 dB below the threshold of significance. On this basis, noise effects associated with delivery HGVs attending the site during the operation of the SEP are considered to be of neutral significance.

Recreational Receptors

- 12.85 The results of the assessment indicate that the noise emission levels from daytime operation of the SEP are likely to be approximately 6 dB below existing baseline ambient noise levels at Griffiths Park during dry and calm weather and the overall ambient noise level may increase by approximately 1 dB. The baseline noise environment, or soundscape, at Griffiths Park is significantly influenced by industrial noise from the Lostock site.
- 12.86 Human perception of noise from a specific source within a mixture of sources (such as noise from the proposed SEP within the baseline environment of existing industrial, road, rail sources and meteorological/non-anthropogenic noise sources, for example, wind through trees) varies within the population. However, if one considers two continuously emitting sources, A and B, that are tonally similar then one would expect source A not to be individually discernible to many people when the noise level of B exceeds that of A by 10 dB. Source A would become increasingly audible as the noise level of B increases.
- 12.87 PPG 24 states that '*A change of 3 dB(A) is the minimum perceptible under normal conditions...*'. However, this is referring to a change in *sound level* and not to a change in *noise index* (i.e. $L_{Aeq,T}$). Therefore, this does not imply that a change of less than 3 dB in the value of the $L_{Aeq, 16\text{-hours}}$ would necessarily be imperceptible. Nevertheless, it is considered that an increase of 1 dB in the $L_{Aeq, 16\text{-hours}}$ at Griffiths Park due to the introduction of a noise source that is operating continuously (intermittent sources are likely to be more perceptible within a general combination of similar sources), similar to the existing noise sources within the Lostock site and industrial in character and would not be noticed by the majority of users of the park.
- 12.88 The Trent and Mersey Canal runs past the existing Brunner Mond facilities and the site of the project. The results of the assessment indicate that noise emissions from the facility would be approximately 45 – 55 dB $L_{Aeq, 16h}$ for approximately 300 m of canal that is contiguous with the boundary of the site. Based on the results of the noise survey at Griffiths Park, it is considered that the noise environment of the section of canal adjacent to the proposed site would be similar to the existing noise environment adjacent to the existing Brunner Mond facility and any other industrial facility alongside the canal. Whilst it is accepted that continuous industrial noise of 45 – 55 dB $L_{Aeq, 16h}$ is not commensurate with the rural quietness associated with narrow-boating, the noise level is not particularly high compared with many

urban environments and, at a mean speed of 3 mph, boaters would be alongside the site boundary for only approximately 4-minutes.

- 12.89 On the above basis, it is considered that operational noise emissions from the project will not adversely affect the baseline soundscape in this area and noise effects to users of Griffiths Park and the Trent and Mersey Canal are considered to be of neutral significance.

Grid Connection

- 12.90 In operation, the grid connection would be a buried electrical cable and would not give rise to noise or vibration emissions. Consequently, operational noise and vibration effects from the grid connection would be of neutral significance.

Recommendations for Further Mitigation

Construction and Decommissioning Noise and Vibration

- 12.91 The results of the assessment indicate that significant adverse noise and vibration effects would be unlikely to occur. Nevertheless, a Construction Environmental Management Plan (CEMP) would be prepared as set out in the Measures Adopted as Part of the Project section.

Operational Noise and Vibration

- 12.92 The results of the assessment indicate that moderate or minor adverse noise effects could occur at NSRs during the operation of the facility for Options 1 or 2, respectively. For both options, the most significant contributor to the overall noise levels at NSRs would noise emissions from the ash treatment facility close to the rail link. Suitable mitigation would be for the walls and roof of the ash treatment facility to be clad in panels with similar acoustic properties to those of the boiler house; structure for flue gas scrubber; steam turbine building; and structure for combustion residues handling, i.e. twin-trapezoidal cross section steel panel for the walls and insulated steel panel for the roof, which Umwelttechnik & Ingenieure GmbH suggest would provide a SRI of 32 dB R_w .
- 12.93 The results of the assessment, including the mitigation described above, are provided in Appendix 12.6 and indicate that with such measures in place no significant effects would be expected to occur. On this basis, the significance of the residual effects would be of neutral significance.

Cumulative Effects

Identification of Potential Cumulative Effects

- 12.94 The assessment has considered the noise and vibration effects of the following developments being constructed and operated in parallel with the project.

Bedminster/Organic Waste Management: Bio-Energy Plant

- 12.95 The proposal has been approved and is a development to manage mixed waste, separate recyclables for treatment elsewhere and to use the organic fraction to generate electricity, including by pyrolysis. The site is at the western end of the Lostock site. The ES for the development states that the applicant has accepted noise limits of 40 dB $L_{A,T,r}$ at Bowden Drive (which is close to James Street) and St John's Close.
- 12.96 The cumulative effects of operational noise emissions from the Bio-Energy Plant, the project and other committed development in the area are assessed below.

Precious and semi-precious metal recovery plant with fertiliser manufacture

- 12.97 The proposal has been approved and is a development is for a facility for waste transfer, recovery of precious and semi-precious metals and production of fertiliser. The site is adjacent to the project and adjoins Griffiths Park to the south and the railway sidings to the north. The ES for the development contains a prediction of noise emissions from the development at NSRs in Bowden Drive and Verdin Street. It states that '*The land in between Cottage Close and the site is made up of lime pits / earth bunds approximately 5 metres high. These bunds will act as noise barriers and will attenuate any noise from the proposed site.*'
- 12.98 The cumulative effects of operational noise emissions from the precious and semi-precious metal recovery plant, the project and other committed development in the area are assessed below.

Waste Treatment Plant: Viridor

- 12.99 The proposal is pending determination and is for a waste treatment plant (WTP), including mechanical and biological treatment (MBT) facility. The WTP would be at the former chlorine works within Brunner Mond site. The ES for the WTP provides predicted specific noise and rating levels at the NSRs that would be affected by cumulative operational noise effects of the WTP with the project.
- 12.100 The cumulative effects of operational noise emissions from the WTP, the project and other committed development in the area are assessed below.

Wincham ACT & MRF

- 12.101 The proposal is pending determination and is for an Advanced Conversion Technology (ACT) facility and Materials Recycling Facility (MRF). The ACT & MRF would be in Wincham, which is approximately 1.6 km north-northwest of the site. The two sites are distant such that NSRs affected by one development are not affected by the other. Consequently, cumulative noise or vibration effects would not occur.

Covanta Middlewich

12.102 The proposal is pending determination and is for an Energy from Waste (EfW) facility. The EfW would be in Middlewich, which is approximately 8 km south of the site. The two sites are distant such that NSRs affected by one development are not affected by the other. Consequently, cumulative noise or vibration effects would not occur.

Lostock Triangle

12.103 Consent has been granted for development at Lostock Triangle, which is an area of Lostock Gramam and approximately 1.5 km to the northeast of the site. Lostock Triangle development includes offices, hotel and pub/diner. The two sites are distant such that NSRs affected by one development are not affected by the other. Consequently, cumulative noise or vibration effects would not occur.

Winnington Urban Village

12.104 Consent has been granted for development of a mixed use urban village in Northwich. The site of Winnington Urban Village is approximately 4 km to the northwest of the Project. The two sites are distant such that NSRs affected by one development are not affected by the other. Consequently, cumulative noise or vibration effects would not occur.

Land at Hargreaves Road

12.105 The proposal is pending determination for redevelopment of land for the residential use at Hargreaves Road, Rudheath. Whilst the development at Hargreaves Road would introduce new NSRs that would potentially be affected by the project, none would be closer (i.e. potentially greater affected) than those already considered within the assessment. Consequently, cumulative noise or vibration effects would not occur.

Runcorn EfW

12.106 Consent has been granted for an EfW in Runcorn. The EfW site is approximately 20 km to the northwest of the project. The two sites are distant such that NSRs affected by one development are not affected by the other. Consequently, cumulative noise or vibration effects would not occur.

Ince Marshes Resource Recovery Park

12.107 Consent has been granted, following Inquiry, for a Resource Recovery Park (RRP) and an EfW in Frodsham. The RRP & EfW site is approximately 17 km to the west-northwest of the project. The two sites are distant such that NSRs affected by one development are not affected by the other. Consequently, cumulative noise or vibration effects would not occur.

Storage and Recycling of Waste

12.108 The proposal has been approved and is a development of a non-hazardous household, commercial and industrial waste recycling centre (WRC) and mixed waste transfer facility (WTF). The site is on land known as 'Broadthorn Construction Limited Land' that is to the west of the proposed SEP; to the east of the proposed Fuel Reception / Ash Treatment area for the proposed SEP; and to the south of the railway sidings. The planning statement that accompanied the application states:

'The best practicable means will be used in all waste handling and other operations to ensure that noise levels do not exceed background levels by more than 5 dBA. There are no sensitive receptors in the surrounding area.'

12.109 The application does not appear to have been accompanied by a noise assessment to demonstrate how or where the criterion would be achieved. The implication is that noise emissions from the site would not exceed background outwith the site, including at the site boundaries, by more than 5 dB.

12.110 The suggestion that '*There are no sensitive receptors in the surrounding area*' implies that the applicant intends to design and operate the site such that noise emissions will not affect the baseline noise environment beyond '*the surrounding area*'. This area of non-influence includes the nearest NSRs in St John's Close and Cottage Close, which are approximately 350 m to the south of the site. From review of the types of plant that would be used at the site, as provided in the planning statement, and with reference to the daytime baseline noise measurements made at Griffiths Park, we consider that it is reasonable to assume that the WRC and WTF could be designed and operated as stated.

12.111 On the basis of the above, it can be assumed that the WRC and WTF will be designed and operated such that noise emissions would not affect baseline noise levels at the nearest NSRs and, consequently, a cumulative noise or vibration effect would not occur with the project.

Assessment of Cumulative Effects

12.112 It is not possible to determine with certainty whether it is likely that the construction phases of the committed/proposed developments in the area would be concurrent with the construction phase of the project. However, on the basis of the results of the construction assessment undertaken for the project, which are provided in Appendix 12.3, it is considered that the cumulative noise level from all four sites is not likely to exceed the baseline ambient noise level by more than 5 dB at NSRs, should the construction phases of committed developments occur concurrently. In any event, noise from other construction sites would be subject to their own noise control measures. On this basis, significant cumulative effects would not be expected to occur should construction of the project be concurrent with construction of committed/proposed development in the area.

12.113 Appendix 12.7 provides an assessment of the cumulative noise effects of the operation of the project with the committed developments identified above. The results of the assessment indicate that the daytime ambient noise level would not be expected to increase due to the cumulative operational noise from the committed developments, which is commensurate with the guidelines in EA s5.01 that seeks to minimise the effects of ‘creeping ambient’ noise levels due to combustion sector development.

12.114 The assessment uses future baseline ambient and background noise levels that have been predicted using the data contained within the ESs that supported the applications for the committed developments. The results of the assessment indicate that the predicted rating level from the project would not be expected to exceed the background noise level that would be expected to occur during operation of the committed/proposed development in the area. On this basis, significant cumulative effects would not be expected to occur due to the concurrent operation of the project with committed/proposed development in the area.

Conclusion

12.115 The noise and vibration effects of the construction and operation of the proposed SEP on residential and recreational receptors have been predicted and assessed in accordance with international, national and local standards and guidance. Attended short-term and unattended long term surveys have been undertaken to determine the baseline noise levels at locations representative of the potentially most affected noise sensitive receptors.

12.116 The results of the assessments indicate that significant noise and vibration effects would not be expected to occur during the construction, operation and decommissioning of the project whether developed individually or in combination with committed development in the area, provided that the design of the project includes selection of appropriate cladding for proposed buildings.