Ford energy from waste

FORD ENERGY RECOVERY FACILITY AND WASTE SORTING AND TRANSFER FACILITY, FORD CIRCULAR TECHNOLOGY PARK

ENVIRONMENTAL STATEMENT
TECHNICAL APPENDIX J:
NOISE AND VIBRATION ASSESSMENT

MARCH 2021

RAMBOLL Viridor GRUNDON

Intended for
Ford Energy from Waste Limited
Grundon Waste Management Limited
Viridor Energy Limited

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FORD ENERGY RECOVERY FACILITY AND WASTE SORTING AND TRANSFER FACILITY, FORD CIRCULAR TECHNOLOGY PARK

NOISE AND VIBRATION ASSESSMENT

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NOISE AND VIBRATION ASSESSMENT

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Prepared by	**Alec Higgins**
Checked by	**David Harbon**
Approved by	**Craig Barson**
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Ramboll
Cornerblock
Two Cornwall Street
Birmingham
West Midlands B3 2DX
United Kingdom

T +44 121 230 1650
https://uk.ramboll.com

Ramboll UK Limited
Registered in England & Wales
Company No: 03659970
Registered office:
240 Blackfriars Road
London
SE1 8NW

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1. INTRODUCTION

Ford Energy from Waste (EfW) Limited, a joint venture between Grundon Waste Management Limited (Grundon) and Viridor Energy Limited (Viridor), is proposing to build and operate a conventional energy recovery facility (ERF) at the site. Grundon Waste Management, the sole owner/operator of the existing WTS, is proposing to continue this operation in a new, purpose built waste sorting and transfer facility (WSTF) on site. A full planning application, including the ERF and WSTF and ancillary uses, will be submitted. As part of this, Ramboll UK Limited (Ramboll) was appointed by Ford EfW Ltd, Grundon and Viridor to undertake a Noise and Vibration Assessment.

Ford CTP is identified in the adopted West Sussex Waste Local Plan (2014) as a Strategic Waste Site. In 2015, Grundon Waste Management Ltd secured planning permission for a residual waste treatment facility at the site (based on a gasification process) and a materials recovery facility. The application was subject to environmental impact assessment (EIA) and accompanied by an environmental statement (ES). The approved facilities have not been built, although the permission has been implemented and the site currently operates as a waste transfer station (WTS) that handles typically 20-25,000 tonnes per annum (tpa).

Planning permission was granted in August 2019 for a new access road that has replaced the previous one-way circulation system. The permission also increases the permitted heavy goods vehicle (HGV) movements to / from the site and amends the approved waste delivery hours. Construction of the road was completed in January 2020 and vehicles are no longer using Rollaston Park Road to access the site or the private access road to the north of Rodney Crescent to egress the site onto Ford Road. The access road application was also subject to EIA and accompanied by an ES.

The site is located 475 m west of Ford Road, 300 m south of Ford Lane and 740 m north of Horsemere Green Lane. The red line boundary for the site can be seen in Figure 1.1.

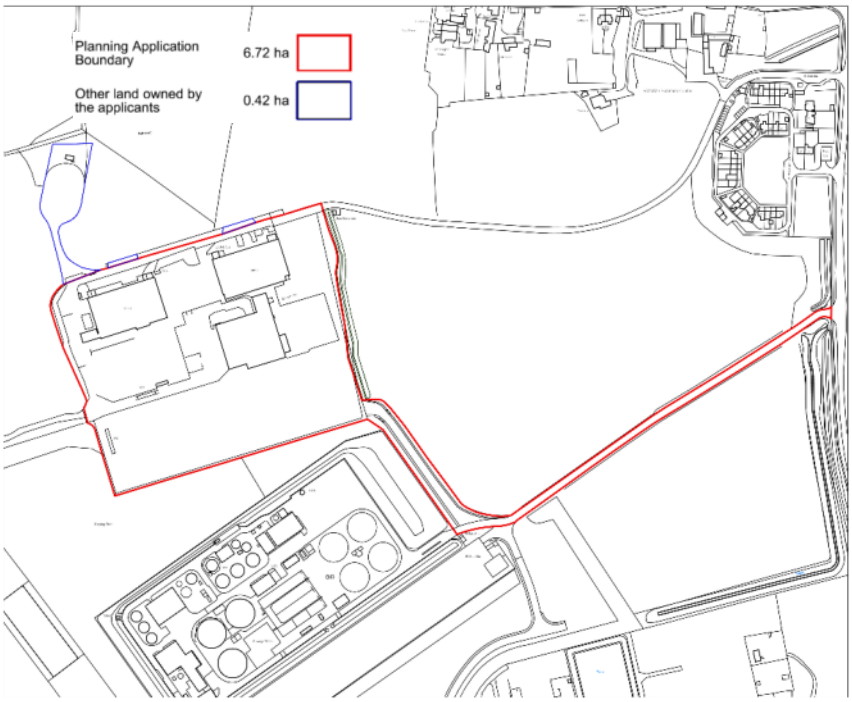


Figure 1.1: Site Boundary (source: Terence O'Rourke)

2. PLANNING POLICY CONTEXT

2.1 National Planning Policy Framework, 2019

No specific noise criteria are set out in the National Planning Policy Framework (NPPF)[1] or in the Noise Policy Statement for England[2] (NPSE) to which it refers. Regarding noise, the NPPF states that the planning system should contribute to and enhance the natural and local environment by preventing both new and existing development from contributing to, or being put at unacceptable risk from, or being adversely affected by, unacceptable levels of noise pollution.

Paragraph 180 of the NPPF states that:

> *Planning policies and decisions should also ensure that new development is appropriate for its location taking into account the likely effects (including cumulative effects) of pollution on health, living conditions and the natural environment, as well as the potential sensitivity of the site or the wider area to impacts that could arise from the development. In doing so they should:*
>
> *a) mitigate and reduce to a minimum potential adverse impacts resulting from noise from new development – and avoid noise giving rise to significant adverse impacts on health and the quality of life;*
> *b) identify and protect tranquil areas which have remained relatively undisturbed by noise and are prized for their recreational and amenity value for this reason…'*

To achieve these aims, the NPPF refers to the explanatory note to the NPSE.

2.2 Noise Policy Statement for England, 2010

The NPSE sets out the long-term vision of Government noise policy which is to promote good health and a good quality of life through the effective management of noise within the context of Government policy on sustainable development.

The NPSE outlines the following three aims for the effective management and control of mental, neighbour and neighbourhood noise:

i. Avoid significant adverse impacts on health and quality of life;
ii. Mitigate and minimise adverse impacts on health and quality of life; and
iii. Where possible, contribute to the improvement of health and quality of life.

2.3 Planning Practice Guidance

Planning Practice Guidance[3] (PPG) is a web-based resource, which includes a section on noise. This resource provides guidance on how to determine the noise impact in terms of whether a significant adverse effect is likely to occur and/or whether a good standard of amenity can be achieved.

In line with the Noise Policy Statement for England, Planning Practice Guidance introduces the following concepts:

i. Significant observed adverse effect level (SOAEL): This is the level of noise exposure above which significant adverse effects on health and quality of life occur;

[1] Department for Communities and Local Government, 2019. National Planning Policy Framework. HMSO
[2] Department of Environment, Food and Rural Affairs, 2010. Noise Policy Statement for England
[3] GOV.UK. 2018. Noise. [ONLINE] Available at: https://www.gov.uk/guidance/noise--2. [Accessed 12 May 2020]

ii. Lowest observed adverse effect level (LOAEL): this is the level of noise exposure above which adverse effects on health and quality of life can be detected;
iii. No observed adverse effect level (NOAEL): this is the level of noise exposure where noise can be heard, but does not cause any change in behaviour, attitude or other physiological response; and
iv. No observed effect level (NOEL): this is the level of noise exposure below which no effect at all on health or quality of life can be detected.

Table 2.1 summarises the noise exposure hierarchy, based on the likely average response.

Table 2.1: Noise Exposure Hierarchy

Perception	Examples of Outcome	Increasing Effect Level	Action
Not noticeable	No effect	No Observed Effect	No specific measures
No Observed Adverse Effect Level			
Noticeable and not intrusive	Noise can be heard but does not cause any change in behaviour or attitude. Can slightly affect the acoustic character of the area but not such that there is a perceived change in the quality of life.	No Observed Adverse Effect	No specific measures required
Lowest Observed Adverse Effect Level			
Noticeable and intrusive	Noise can be heard and causes small changes in behaviour and/or attitude, e.g. turning up volume of television; speaking more loudly; where there is no alternative ventilation, having to close windows for some of the time because of the noise. Potential for some reported sleep disturbance. Affects the acoustic character of the area such that there is a perceived change in the quality of life.	Observed Adverse Effect	Mitigate and reduce to a minimum
Significant Observed Adverse Effect Level			
Noticeable and disruptive	The noise causes a material change in behaviour and/or attitude, e.g. avoiding certain activities during periods of intrusion; where there is no alternative ventilation, having to keep windows closed most of the time because of the noise. Potential for sleep disturbance resulting in difficulty in getting to sleep, premature awakening and difficulty in getting back to sleep. Quality of life diminished due to change in acoustic character of the area.	Significant Observed Adverse Effect	Avoid
Noticeable and very disruptive	Extensive and regular changes in behaviour and/or an inability to mitigate effect of noise leading to psychological stress or physiological effects, e.g. regular sleep deprivation/awakening; loss of appetite, significant, medically definable harm, e.g. auditory and non-auditory	Unacceptable Adverse Effect	Prevent

2.4 Other Guidance

British Standard 4142:2014+A1:2019 Method for Rating and Assessing Industrial and Commercial Sound

BS 4142:2014+A1:2019[4] provides a method for rating industrial and commercial sound and method for assessing resulting impacts upon people. The method is applicable to fixed plant installations, sound from industrial and manufacturing process and other associated activities.

The basis of BS4142 is a comparison between the background noise level in the vicinity of residential locations and the rating level of the noise source under consideration. The relevant parameters in this instance are as follows:

i. Background Level, $L_{A90,T}$: defined in the Standard as the 'A' weighted sound pressure level that is exceeded by the residual sound at the assessment location for 90% of a given time interval, T, and quoted to the nearest whole number of decibels;
ii. Specific Level, $L_{Aeq,T}$: the equivalent continuous 'A' weighted sound pressure level at the assessment location in the absence of the specific sound source under consideration, over a given time interval, T; and
iii. Rating Level, $L_{Ar,T}$: the specific sound level plus any adjustment made for the characteristic features of the noise.

Potential impacts are predicted from the difference between the representative background level at a noise sensitive receptor and the rating level from the noise source considered. The standard suggests that the greater the difference, the greater the magnitude of impact.

In determining the significance of the impact, BS 4142 requires a consideration of the context of the assessment i.e. the nature of the existing acoustic environment and the new noise source, and the sensitivity of the affected receptors.

British Standard 5228: 2009+A1: 2014 Code of Practice for Noise and Vibration Control on Construction and Open Sites Parts 1 and 2

BS 5228:2009[5] gives recommendations for basic methods of noise and vibration control relating to construction work. It also provides guidance concerning methods of predicting and measuring noise and vibration and assessing their impacts on those exposed to it. The prediction method considers the noise emission level of proposed plant, the separation distance between the source and the receiver and the effect of the intervening topography and structures.

Part 2 of the standard gives recommendations for basic methods of vibration control relating to construction and open sites where work activities/operations generate significant vibration.

The legislative background to vibration control is described and recommendations are given regarding procedures for the establishment of effective liaison between developers, site operators and local authorities. The standard also provides guidance on measuring vibration and assessing its effects on the environment.

[4] British Standards Institute, 2014 and 2019. British Standard BS 4142+A1:2019: Methods for rating and assessing industrial and commercial sound. BSI

[5] British Standards Institution, 2009 and 2014. British Standard 5228: 2009 +A1 2014 Code of practice for noise and vibration control on construction and open sites. BSI

Calculation of Road Traffic Noise (1988)

Calculation of Road Traffic Noise[6] (CRTN) sets out standard procedures for calculating noise levels from road traffic. The calculation method uses a number of input variables, including traffic flow volume, average vehicle speed and percentage of heavy goods vehicles (HGVs), to predict the $L_{A10,18hour}$ or $L_{A10,1hour}$ noise level for a notional receptor at 10 m from the road.

Design Manual for Roads and Bridges – Sustainability & Environment Appraisal - LA 111 Noise and Vibration

The Design Manual for Roads and Bridges[7] (DMRB) provides advice on the assessment of noise and vibration impacts due to road traffic. The guidance provides a classification of magnitude of impacts related to changes in road traffic noise levels. As people are less sensitive to noise level changes over time, the classification of impacts is provided in the short term and in the long term. Receptors typically acclimatise to road traffic noise over time, so that the effects are reduced in the long-term.

3. METHODOLOGY

The following section outlines the methodology applied to identify and assess the potential noise impacts likely to result from the proposed development.

3.1 Receptor Locations

The receptors considered in this assessment are detailed in Table 3.1 and Figure 3.1.

Table 3.1: Receptor Locations

Location	Description	Approximate Distance from Site (M) at Closest Point
R1	Residential dwellings along Ford Lane	200
R2	Residential dwelling set back from Ford Lane	290
R3	Residential dwellings along Rodney Crescent	385
R4	Residential dwellings along Rollaston Park	400
R5	Proposed residential dwellings to the north west of the site[8]	105
R6	Proposed residential dwellings to the south of the site[9]	245
R7	Properties along Nelson Row	505
R8	Non-residential use at Ford Prison	510
R9	Residential use at Ford Prison	700
R10	Residential property along Ford Road	840

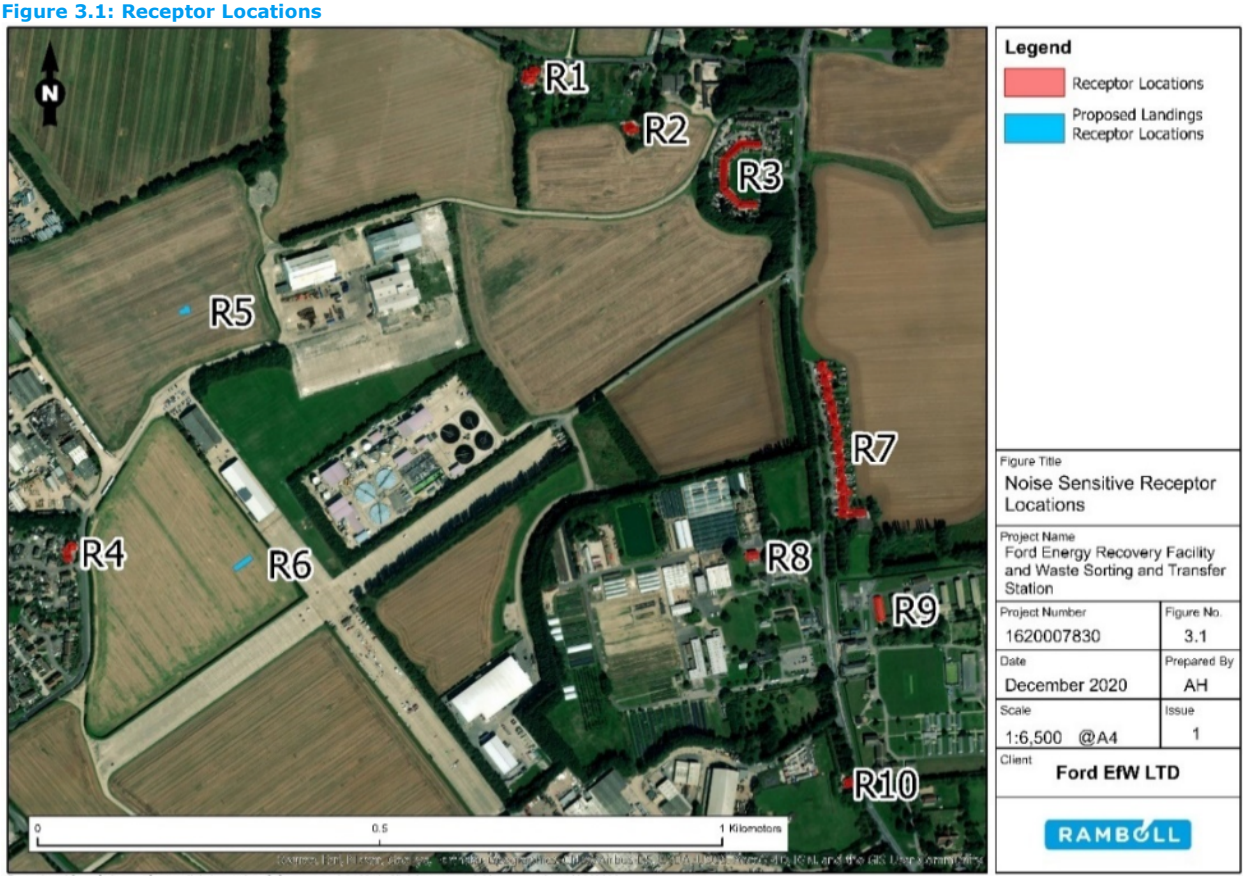
[6] Department of Environment, 1988. Calculation of Road Traffic Noise, HMSO

[7] Design Manual for Roads and Bridges – Sustainability & Environment Appraisal LA111 Noise and vibration Revision 1 (2020)

[8] As part of current planning application Land at Ford Airfield, Ford (F/4/20/OUT)

[9] As part of current planning application Land at Ford Airfield, Ford (F/4/20/OUT)

Figure 3.1: Receptor Locations



3.2 Consultation

The Environmental Health team at Arun District Council were consulted by email on 17 January 2020 and 20 January 2020 to agree the assessment methodology and criteria.

The Environmental Health team at West Sussex County Council were also consulted by email on 17 January 2020 to agree assessment methodology and criteria.

Details of both consultations are provided in Appendix 2.

A subsequent email was issued to Arun District Council on 05 February 2021 to respond to comments and requests made by Arun District Council in a Regulation 25 request (dated 20 November 2020). The Regulation 25 request was made by West Sussex County Council for application number WSCC/036/20. A copy of this email is provided in Appendix 2.

3.3 Baseline Characterisation

A baseline noise survey was carried out at the nearest noise sensitive receptors (NSRs) and across the application site, to quantify the prevailing ambient and background noise levels during daytime and night-time periods. The purpose of the baseline survey was to establish the ambient noise level to inform the assessment criteria for construction noise effects and operational plant noise effects.

Benchmarking measurements from an existing energy from waste facility (i.e. the Lakeside EfW facility at Slough) have been used to inform the operational noise assessment.

3.4 Demolition and Construction Noise and Vibration Assessment

Demolition and Construction Noise

The demolition and construction works associated with the proposed development will involve the use of a variety of working methods which will change throughout the construction period. Therefore, noise levels from the works are likely to vary significantly over time as the type of construction activities change.

The exact working methodology and plant to be employed during construction has not been established at this stage in the design. However, following best practice, an estimate of the expected noise levels over a representative period had been undertaken using assumed plant items and the associated noise emission data from BS 5228:2009+A1:2014.

The significance criteria for construction noise levels at the NSRs have been established by reference to ABC method described in BS 5228:2009+A1:2014. The thresholds are made relative to the pre-existing ambient noise levels at assessment locations, as shown in Table 3.2.

Table 3.2: BS5228 'ABC' Method for Construction Noise

Assessment Period	Threshold Values, $L_{Aeq,T}$ (dB)		
	Category A	Category B	Category C
Daytime (07:00 – 19:00) Saturday (07:00 – 13:00)	65	70	75
Evenings (19:00 – 23:00) Saturday (13:00 – 23:00)	55	60	65
Night-time (23:00-07:00)	45	50	55

A potential significant noise effect is indicated when the demolition or construction noise exceeds the threshold level for the category appropriate to the ambient noise level:

i. Threshold values of Category A for construction noise should be used when the pre-existing ambient noise level, rounded to the nearest 5 dB, is less than those values shown under Category A;
ii. Threshold values of Category B should be used when pre-existing ambient noise level, rounded to the nearest 5 dB, is equal to values in Category A; and
iii. Threshold values of Category C should be used when pre-existing ambient noise level, rounded to the nearest 5 dB, is more than values in Category A.

Demolition and construction noise predictions have been based on the methodology contained within BS 5228:2009+A1:2014. This enables predictions to be made of the noise emissions from the construction activities for given distances from the application site boundary.

Construction Traffic Noise

Noise levels generated by construction traffic on the local highways have been calculated using the haul route method set out in Annex E3.2 of BS 5228:2009+A1:2014.

Construction Vibration

Vibration levels from piling may be perceptible at distances up to 100 m from the works. Of the receptors identified, the closest existing receptor is 200 m away from the site boundary. The nearest proposed residential receptor (R5) is 105 m from the western site boundary.

Section 5.3 of Chapter 5 *Construction Methodology and Phasing* of the Environmental Statement for Ford Airfield (application F/4/20/OUT) states that, 'Demolition and Construction of the Development is anticipated to commence in 2020/2021, subject to gaining planning permission, and span approximately 10 years. The construction works would begin in the north and south of the Site and progress to the centre of the Site. Overall, the construction process is expected to be completed by 2030/2031.'

As receptor R5 is deemed to be within the centre of the proposed residential site, it is not expected that dwellings at this location will be built until late in the construction programme, e.g. 2030/2031. The construction of the proposed ERF and WSTF is expected to be completed within a 51-month programme, with the demolition and construction works for the WSTF being completed in Phases 1 and 2 which are expected to be a total of 9 months in duration. Although vibration from piling could be perceptible at distances of up to 100m from the works, it remains unlikely that piling works associated with the ERF or WSTF would occur once the residential dwellings are occupied at this distance from the works.

Therefore, significant effects are not expected to occur due to demolition and construction vibration at this receptor, or any other receptor location. No further assessment of demolition and construction vibration is provided in this report.

3.5 Operational Noise Assessment

The operational noise assessment will comprise:

i. Setting noise limits from fixed plant and site processes, using the methodology of BS 4142:2014+A1:2019;
ii. Prediction of plant and site process noise emissions to the nearest sensitive receptors; and
iii. Assessment of the changes in road traffic noise levels due to the operation of the site.

Operational Noise Limits

Operational noise limits will be set based on the background noise levels measured during the baseline survey. In accordance with BS4142:2014+A1:2019, the rating noise level limits will be set equal to the representative background noise levels, allowing for any penalties for acoustic characteristics of the noise.

Noise Emissions from Plant and Site Processes

Using the benchmarking measurement results and data provided by the engineering design team, a noise prediction model of the site has been built to predict noise emissions to the nearest receptor locations. The model uses the calculation method of ISO9613-2:1996 and allows for the effects of building massing, site topography, ground absorption and any screening.

Road Traffic Noise Levels

The changes in road traffic noise levels were calculated following the methodology set out in CRTN.

To determine the change in road traffic noise level, the Basic Noise Level (as defined in CRTN) prediction has been completed for a notional receptor located 10 m from the edge of the carriageway, at a height 1.5 m above ground level (magl) The change in Basic Noise Level was then assessed against the long term DMRB LA111 criteria.

3.6 Significance Criteria

Effects that are described as SOAEL are considered to be significant effects.

Demolition and Construction Noise

Table 3.3 details the significance of effects for demolition and construction noise.

Table 3.3: Demolition and Construction Noise Significance Criteria

Description	Magnitude of Impact	Adverse Effect Level
Predicted construction noise levels are less than or equal to the threshold value at receptor	Negligible	NOAEL
Predicted construction noise levels are ≤5 dB above the threshold value at receptor	Slight	LOAEL
Predicted construction noise levels are 5-10 dB above the threshold value at receptor	Moderate	SOAEL
Predicted construction noise levels are above the threshold value at receptor by 10 dB or more	Substantial	SOAEL

Operational Noise

Table 3.4 details the significance of effects for operational noise based on:

i. The numerical difference between predicted Rating Level and the prevailing Background Level at a receptor and the criteria from BS4142:2014+A1:2019.

Table 3.4: Operational Noise Significance Criteria

Description	Magnitude of Impact	Adverse Effect Level
Predicted Rating Level is 10 dB or more below the prevailing Background Level at the receptor.	No Effect	NOEL
Predicted Rating Level is between 10 dB and -0.1 dB below the prevailing Background Level at the receptor.	Negligible	NOAEL
Predicted Rating Level is between 0 dB and 4.9 dB above the prevailing Background Level at the receptor.	Slight	LOAEL
Predicted Rating Level is between 5 dB and 9.9 dB above the prevailing Background Level at the receptor.	Moderate	SOAEL
Predicted Rating Level is ≥10 dB or more above the prevailing Background Level at the receptor.	Substantial	SOAEL

Changes in Road Traffic Noise Levels

The proposed development, when completed, has a potential to change traffic flows on the existing roads in the area surrounding the application site.
The results have been assessed using the guidance on long-term changes in traffic noise levels in LA111. The magnitude of the predicted impact in noise levels uses the scale shown in Table 3.5.

Table 3.5: Magnitude of Impact - Road Traffic Noise Changes (long term)

Change in Traffic Basic Noise Level $L_{A10,18h}$ dB	Magnitude of Impact	Adverse Effect Level
≥ 10.0	Substantial	SOAEL
5.0 to 9.9	Moderate	SOAEL
3.0 to 4.9	Slight	LOAEL
< 3.0	Negligible	NOAEL

The change in noise levels between the baseline year (2018) and 2025 with committed development and construction of the proposed development, have been assessed against the short-term criteria of LA111. The magnitude of the predicted impact in noise levels uses the short-term scale shown in Table 3.6.

Table 3.6: Magnitude of Impact - Road Traffic Noise Changes (short term)

Change in Traffic Basic Noise Level $L_{A10,18h}$ dB	Magnitude of Impact	Adverse Effect Level
≥ 5.0	Substantial	SOAEL
3.0 to 4.9	Moderate	SOAEL
1.0 to 2.9	Slight	LOAEL
< 1.0	Negligible	NOAEL

3.7 Assumptions and Limitations

All reasonable measures have been undertaken to reduce uncertainty in the baseline noise survey data and the calculations detailed in this report.

Uncertainty has been minimised by completing unattended measurements over daytime, evening, weekend and night-time periods. Attended measurements were completed (where possible) at the nearest receptor locations to support the unattended measurements. Results have been rounded to the nearest A-weighted decibel.

The baseline noise prediction model was calibrated to the noise survey results for road traffic noise sources, and accounts for intervening topography and existing building massing. The model uses the calculation method of ISO9613-2:1996.

Plant noise emissions are based on benchmarking measurements from an existing energy recovery facility and based on indicative plant noise emission levels stated by the engineering design team.

The assessments and calculations undertaken in this report are based on data and plans of the proposed development provided by the client and consultees. Should any of this change, the results of the assessments may not be valid and would need to be updated.

4. BASELINE NOISE SURVEY

4.1 Survey Methodology

Unattended noise monitors were installed at LT1, LT2 and LT3 (as shown on Figure 4.1) between Friday 7 February 2020 and Friday 14 February 2020.

All unattended monitors were installed at a height of 1.5 m above local ground level and under free-field conditions.

Noise levels were monitored continuously over the survey period and averaged over 15-minute intervals.

The sound level meter calibration was checked upon installation and upon completion of the surveys. No significant drift in calibration was recorded.

Attended measurements of 15 minutes in duration were taken at seven positions (as shown on Figure 4.1) on 7 February 2020:

i. ST1: representative of noise levels affecting the nearest noise sensitive receptors on Ford Lane;
i. ST2: representative of noise levels at noise sensitive receivers along Rodney Crescent;
ii. ST3: representative of noise levels at the south east corner of the site;
iii. ST4: representative of noise levels at the north west corner of the site;
iv. ST5: representative of noise levels at the nearby industrial units;
v. ST6: representative of noise levels at noise sensitive receivers along Rollaston Park; and
vi. ST7: representative of noise levels at noise sensitive receivers along Yapton Road

Each measurement was taken at a height of 1.5 m above local ground level and under free-field conditions.

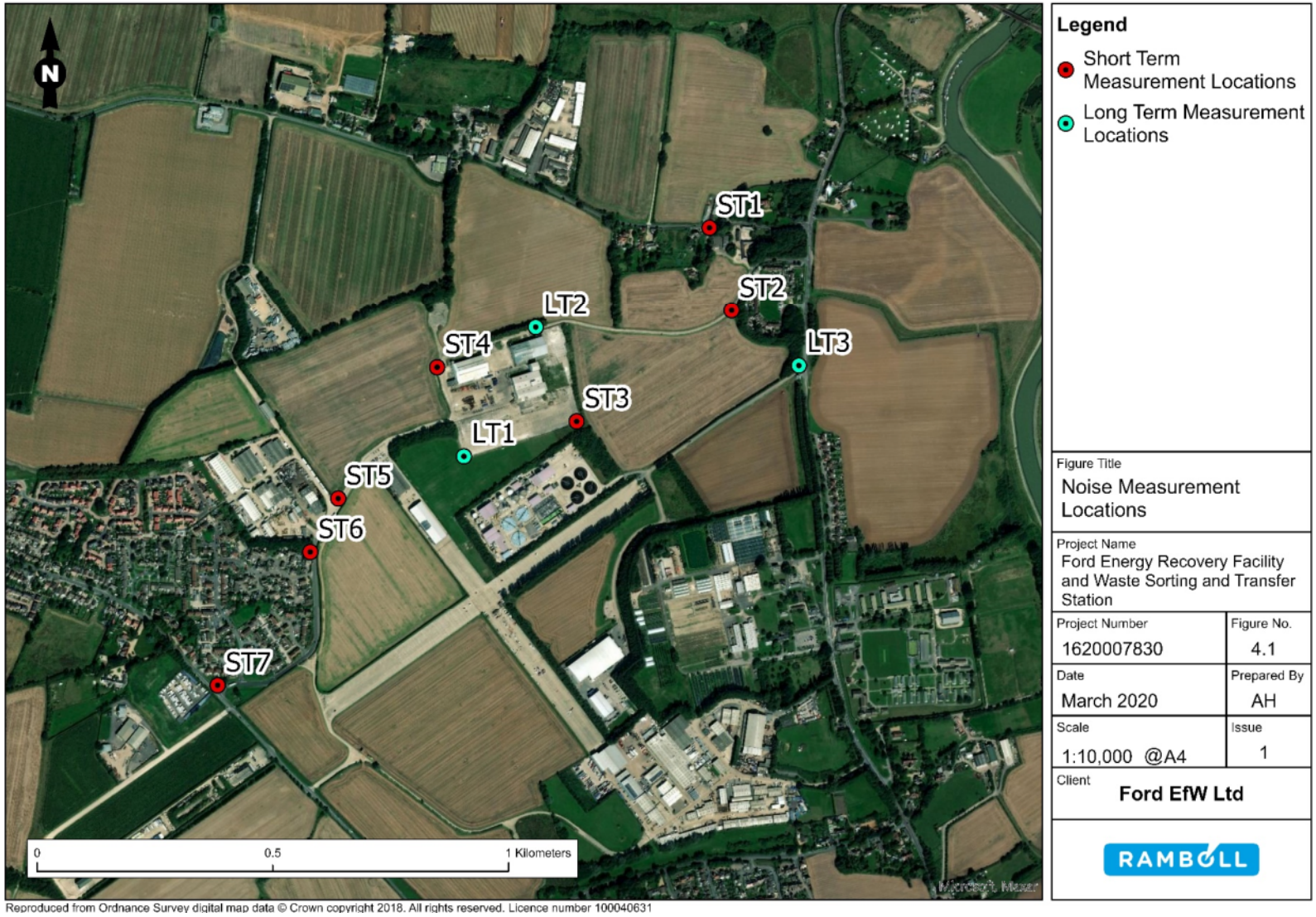


Figure 4.1: Baseline Monitoring Locations

4.2 Weather

Unattended Survey

Start of unattended survey: Friday 7 February 2020
Dry, sunny, approximately 8°C, wind speed (average) 5 m/s, precipitations 0 mm

Temperatures in the range of 5°C-12°C.
Some periods of wind speeds >5 m/s occurred on each day. Winds were in variable direction.
Some periods of heavy rain occurred on Sunday 9 February 2020, Periods of heavy wind were also experienced on Sunday 9 February 2020 and Monday 10 February 2020 which have been excluded from the survey.

End of unattended survey: Friday 14 February 2020
Dry, partly sunny, approximately 10°C, wind speed (average) 6 m/s, no precipitations.

Attended Survey

Friday 7 February/2020
Dry, mostly sunny, approximately 8°C, wind speed (average) 4 m/s, no precipitations.
Some periods of high wind speeds (>5 m/s) and heavy rainfall may have affected the results of the unattended measurements. These periods of measurement have been excluded from the assessment.

4.3 Equipment

The following measurement equipment was used.

Unattended Survey

i. Three 01dB CUBE Class 1 Sound Level Meter (Serial Nos 10414, 11165 and 11119); and
ii. 01dB CAL21 Sound Calibrator (Serial No 34323957).

Attended Survey

i. Norsonic Class 1 Sound Analyser Nor140 (Serial No 1403396) and associated microphone Nor1225 (Serial No 112825);
ii. Norsonic Class 1 Field Calibrator type 1251 (Serial No 32853);
iii. Brüel & Kjær 2270 Class 1 Sound Analyser (Serial No 2644605) and associated microphone 4189 (Serial No 287722);
iv. Brüel & Kjær 4231 Class 1 Calibrator (Serial No 2642788);
v. Rion NA-28 Class 1 Sound Analyser (Serial No 01070571); and
vi. Rion NC-74 Class 1 Field Calibrator (Serial No 35125833).

Calibration certificates are available upon request.

4.4 Attended Noise Survey Results

A summary of the attended survey results is shown in Table 4.1.

Table 4.1: Summary of Attended Noise Survey Results

Measurement Position	Representative $L_{Aeq,T}$ (dB)	Highest L_{AFmax} (dB)	Lowest $L_{A90,15mins}$ (dB)
ST1 (Ford Lane)	68	86	38
ST2 (Rodney Crescent)	46	60	43
ST3 (southeast corner of site)	58	86	40
ST4 (northwest corner of site)	52	75	39
ST5 (Industrial units along Rollaston Park)	55	77	47
ST6 (Residential along Rollaston Park/Beagle Drive)	65	87	45
ST7 (Yapton Road)	66	88	52

The noise climate at ST1 was dominated by traffic noise from Ford Lane. Some noise from vehicles on Ford Road was also audible. No noise from the existing waste management site was audible.

The noise climate at ST2 was dominated by site traffic noise from the industrial park, some traffic noise from Ford Road and birdsong was also audible. No noise from the existing waste management site was audible.

The noise climate at ST3 was dominated by site traffic movements at the Grundon waste management site. Traffic from surrounding roads was audible, along with noise from a loud drain cover when vehicles drove over it directly opposite the measuring position at LT3. Occasional air traffic was also audible.

The noise climate at ST4 was dominated by site traffic movements and birdsong. Some works from nearby industrial units was audible along with distant road traffic noise. Occasional train passbys were also audible along with occasional aircraft noise.

The noise climate at ST5 was dominated by works noise from industrial units, and occasional traffic along Rollaston Park. Distant road traffic noise and occasional aircraft noise was also audible.

The noise climate at ST6 was dominated by birdsong, and traffic along Rollaston Park. Works noise audible from industrial units along with distant traffic noise and occasional air traffic.

The noise climate at ST7 was dominated by road traffic noise along Yapton Road. Distant traffic noise and occasional aircraft noise was also audible.

Noise measurements were not completed at Ford Prison. However, the noise climate receptors R8 and R9 is expected to comprise road traffic noise from Ford Road, and other prison site activity.

4.5 Unattended Noise Survey Results

The unattended survey results are shown in Figures 4.2 to 4.4. A summary of the results of attended and unattended measurements is provided in Appendix 3.

The noise climate LT1 was dominated by site traffic movements from the existing Grundon waste management site. Some aircraft noise from Gatwick Airport was audible.

Typical daytime average noise levels ranged from 52-56 dB $L_{Aeq,16hour.}$ Daytime background noise levels ranged from 46-49 dB $L_{A90,\ 16hour.}$ Daytime maximum noise levels were dictated by individual vehicle movements on and off the Grundon waste management site.

Night-time average noise levels ranged from 48-58 dB $L_{Aeq,8hour}$. Night-time background noise levels ranged from 44-49 dB $L_{A90,8hour}$. Night-time maximum noise levels were expected to be dictated by traffic noise along surrounding roads.

The noise climate LT2 was dominated by air traffic movements and train passbys. Occasional site traffic was audible.

Typical daytime average noise levels ranged from 47-55 dB $L_{Aeq,16hour}$. Daytime background noise levels ranged from 39-47 dB $L_{A90,16hour.}$ Daytime maximum noise levels were dictated by individual vehicle movements on and off the Grundon waste management site.

Night-time average noise levels ranged from 41-59 dB $L_{Aeq,8hour}$. Night-time background noise levels ranged from 31-47 dB $L_{A90,8hour}$. Night-time maximum noise levels were expected to be dictated by traffic noise along surrounding roads.

The noise climate LT3 was dominated by traffic along Ford Road and site movements on and off site. A loud drain cover directly opposite measuring position also caused loud, impulsive events.

Typical daytime average noise levels ranged from 64-67 dB $L_{Aeq,16hour}$. Daytime background noise levels ranged from 41-53 dB $L_{A90,16hour.}$ Daytime maximum noise levels were dictated by traffic along Ford Road, and noise from a loud drain cover directly opposite the measurement position, when vehicles drove over it.

Night-time average noise levels ranged from 56-63 dB $L_{Aeq,8hour}$. Night-time background noise levels ranged from 34-48 dB $L_{A90,8hour}$. Night-time maximum noise levels were expected to be dictated by traffic along Ford Road, the loud drain cover directly opposite the measurement position, and traffic from surrounding roads.

Note that the blue shaded areas on each graph show where the data has been omitted from the results of the survey, due to Storm Ciara which had elevated wind speeds and increased rainfall between 9 February 2020 and 10 February 2020. The results are not deemed to be representative of typical conditions. Therefore, the data has not been used for analysis in the assessments contained in this report.

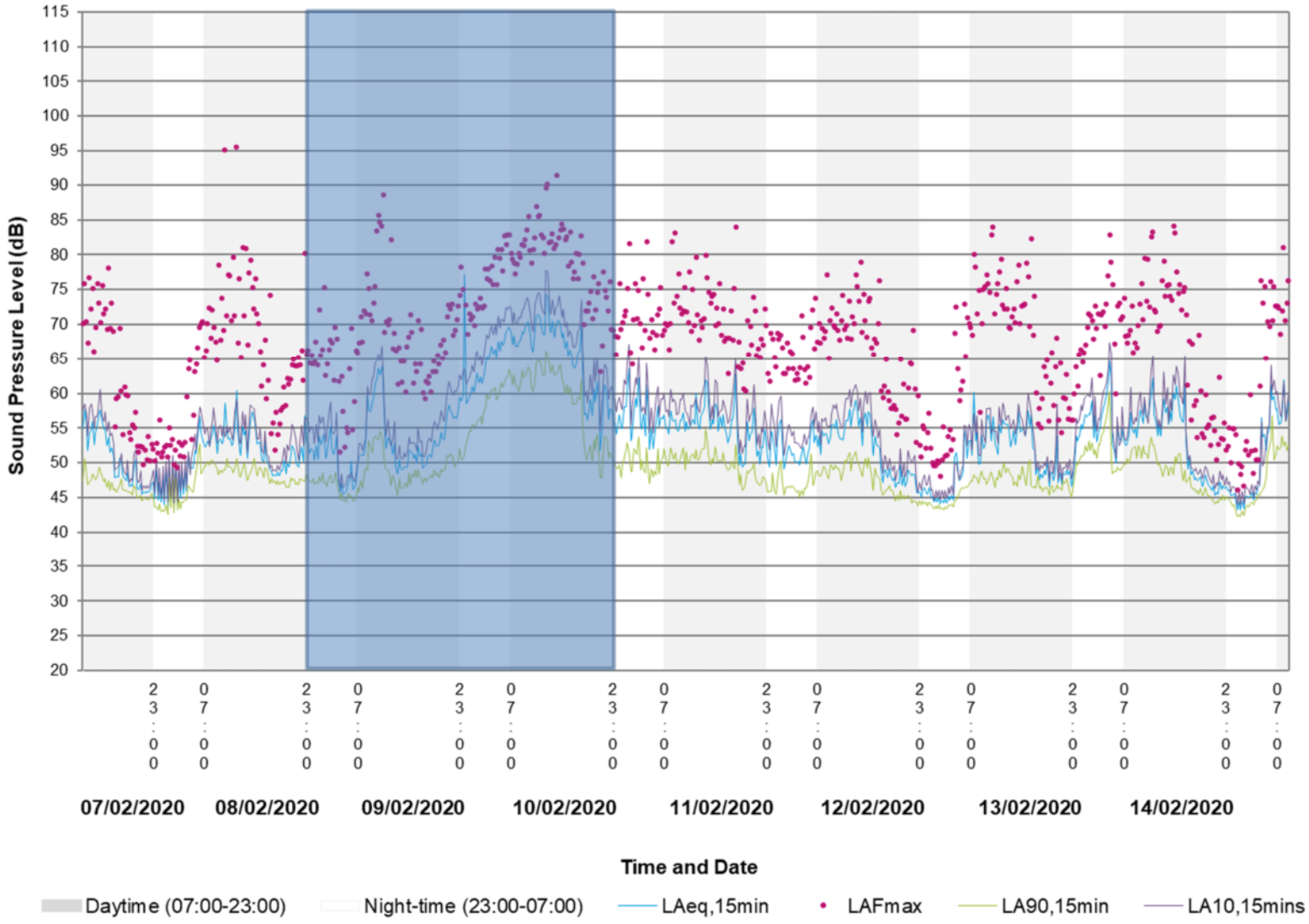


Figure 4.2: Unattended Survey Results at LT1

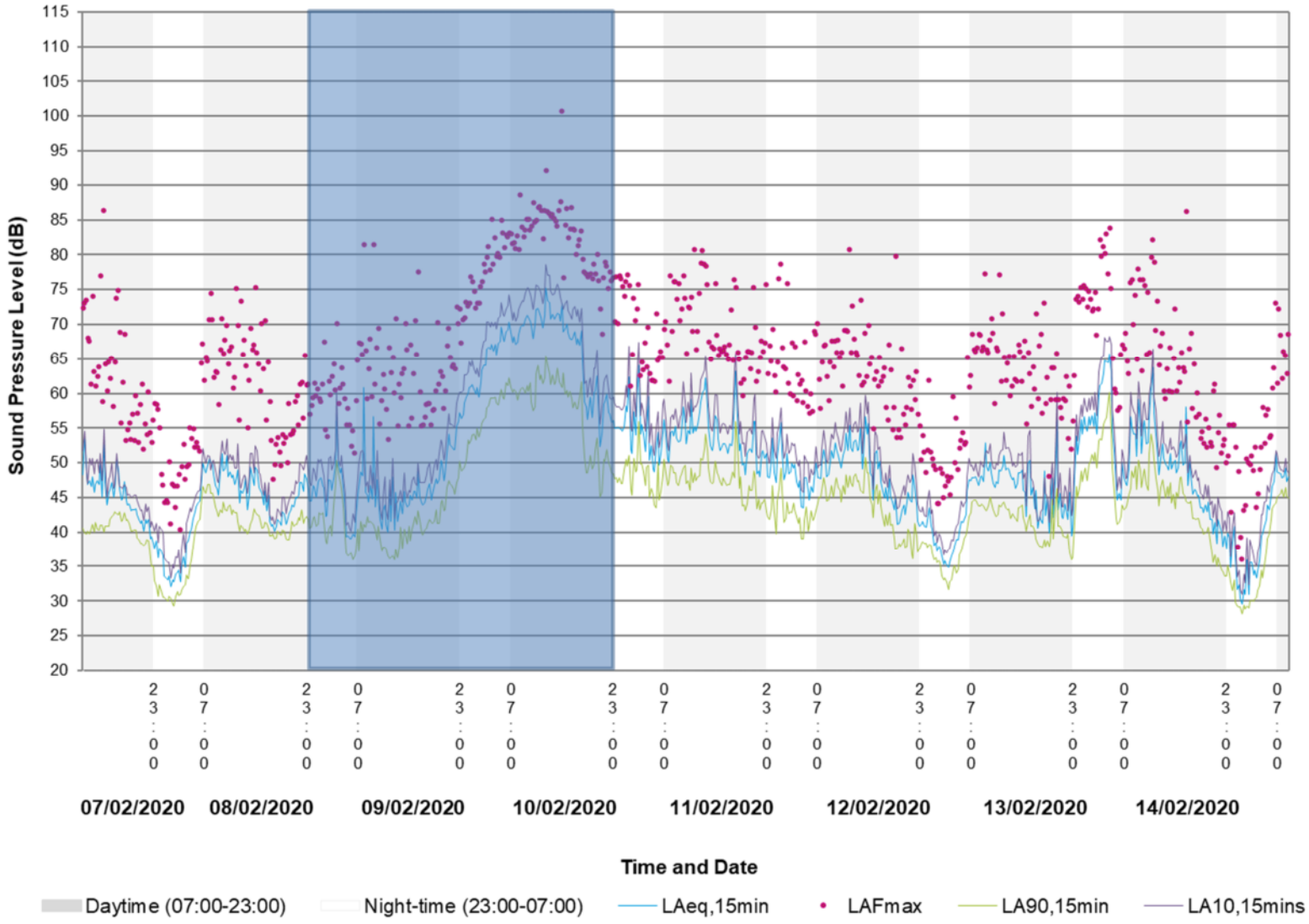


Figure 4.3: Unattended Survey Results at LT2

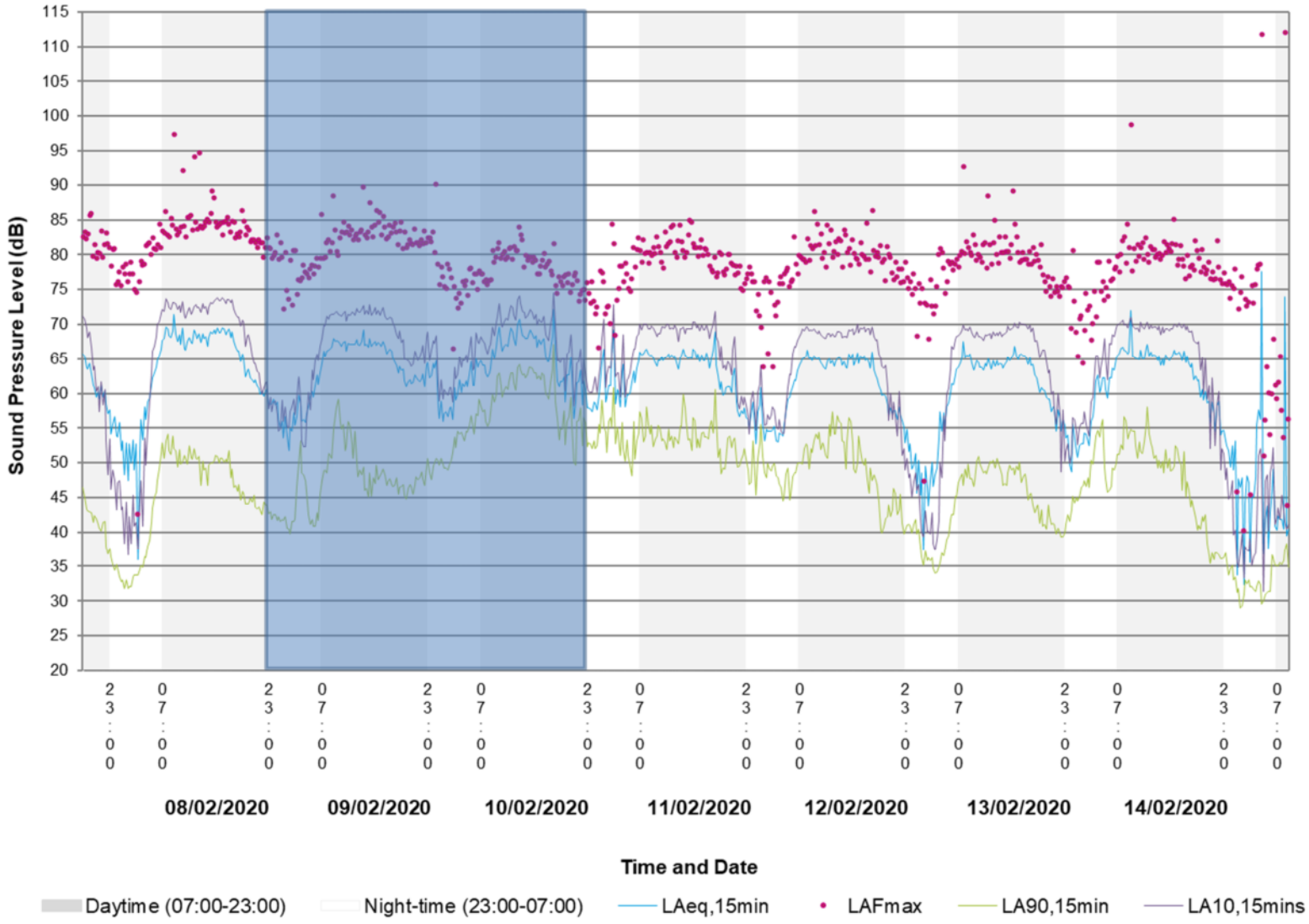


Figure 4.4: Unattended Survey Results at LT3

5. DEMOLITION AND CONSTRUCTION NOISE ASSESSMENT

5.1 Demolition and construction noise emission thresholds

Demolition and construction noise emission thresholds have been determined based on the methodology set out in BS 5228:2009+A1:2014 and measured ambient noise levels on site. The thresholds are summarised in Table 5.1.

Table 5.1: Demolition and Construction Noise Thresholds at NSR

NSR Considered	Prevailing Ambient Noise Level During Daytime Period $L_{Aeq,T}$ (dB)	BS5228 Noise Emission Category	Construction Noise Threshold at NSR, dB $L_{Aeq,T}$ Daytime (07:00-19:00) and Saturday (07:00-13:00)	Construction Noise Threshold at NSR, dB $L_{Aeq,T}$ Saturday (13:00-19:00)
R1: Ford Lane	68	C	75	65
R2: Ford Lane				
R3: Rodney Crescent*	46	A	65	55
R4: Residential dwellings along Rollaston Park/Beagle Drive	62			
R5: Proposed residential dwellings to the north west of site	43			
R6: Proposed residential dwellings to the south of site	42			
R7: Residential dwellings along Nelson Row	65	B	70	60
R8: Non-residential use at Ford Prison**	52	A	65	55
R9: Residential use at Ford Prison**	56			
R10: Residential dwelling along Ford Road***	68	C	75	65

* Based on rear façade levels taken from the noise prediction model, and verified against the results of the attended survey at measurement position ST2

** Predicted from the noise prediction model

***Noise level is assumed to be the same as noise data measured at survey location LT3. It is believed noise levels will be similar to those at receptor location R10

Noise emissions during demolition and construction activities have been calculated at the nearest NSRs. The emissions were calculated based on a number of assumptions relating to construction methods and plant. The actual construction noise levels may vary depending on the type of activity,

periods of operation, and distances between source of noise and receivers. However, conservative assumptions have been made regarding these parameters.

Noise emissions from each of the following anticipated construction activities was calculated:

- Demolition
- Substructure;
- Superstucture;
- Earthworks; and
- External Works.

5.2 Demolition and Construction Noise Assessment

Demolition and construction noise modelling have been completed to predict the likely noise levels for existing and proposed receptors.

Based on the construction programme, seven scenarios have been identified:

1. Scenario 1 – Build WSTF
2. Scenario 2 – Build WSTF and demolish existing WTS
3. Scenario 3 – Demolish existing WTS
4. Scenario 4 – Construct ERF and excavate to lower ground level
5. Scenario 5 – Construct ERF
6. Scenario 6 – Construct ERF and landscaping
7. Scenario 7 – Landscaping

Each scenario presents a typical construction day based on the likely activities on site, rather than individual discrete activities.

Details of the plant items used in the calculations for each activity are shown in Appendix 4.

The calculations are based on the following assumptions and inputs:

- Build WSTF
  - Existing WTS is in place
  - Noise source uses the "Superstructure" plant of Appendix 4
  - Noise source height 1.5 m

- Build WSTF and demolish existing WTS
  - Existing WTS buildings at 8 m height
  - Noise sources use the "Superstructure" and "Demolition" plant of Appendix 4
  - Noise source heights of 1.5 m

- Demolish existing WTS
  - New WTS built to 10 m height
  - Existing WTS buildings at 4 m height
  - Noise source uses the "Demolition" plant of Appendix 4
  - Noise source height 1.5 m

- Construct ERF and excavation to lower ground level
  - Noise source uses the "Substructure" plant of Appendix 4
  - Noise source height 0 m, with a ground height of -1.5 m

- Construct ERF

  - Noise source uses the "Superstructure" plant of Appendix 4
  - Noise source height 1.5 m
  - Nearest proposed residential receptors are built (worst case scenario)

- Construct ERF and landscaping
  - ERF buildings are in place
  - Noise source uses the "Superstructure" and "Landscaping" plant of Appendix 4
  - Noise source heights of 1.5 m
  - Nearest proposed residential receptors are built (worst case scenario)

- Landscaping
  - ERF buildings are in place
  - Noise source uses the "Landscaping" and "External Works" plant of Appendix 4
  - Noise source heights of 1.5 m
  - Nearest proposed residential receptors are built (worst case scenario)

All modelled scenarios allow for 2.4 m site hoarding around the site perimeter.

The noise contours for each scenario are provided in Appendix 4. Note that the noise levels shown are the free-field noise levels, and do not include a +3 dB façade reflection, whereas residential receptors in Table 5.2 include a +3 dB façade reflection. The noise contours represent noise levels that are predicted to be ≥55 dB $L_{Aeq,T}$ at a height of 1.5 magl. This threshold has been selected as this is the lowest of the construction noise thresholds for Saturday working (13:00-19:00) and demonstrates a worst-case scenario. Therefore, the noise contours would reduce in size for construction working between Monday to Friday (07:00-19:00) and Saturday (07:00-13:00).

The assumed work areas have been input to the model at the height stated in the assumptions above. Each area assumes that all plant associated with the designated activity would operate within that area. Where there are two activities operating in a given scenario, this may be an overprediction of the total number of plant items that are operating on site. For example, scenario 2 (Build WTSF and demolish existing WTS) would allow for all plant associated with superstructure and demolition activities, as detailed in Appendix 4.

The results of the construction noise assessment are shown in Table 5.2Table 5.2. A +3 dB façade reflection has been applied to the predicted results for residential receptors. The levels are predicted at a height of 1.5 magl to represent ground floor level.

Table 5.2: Demolition and Construction Noise Assessment Results (Ground Floor)

Scenario	Receptor Location and Predicted Noise Level ($L_{Aeq,T}$ dB) at Ground Floor Level (1.5 m height)									
	R1	**R2**	**R3**	**R4**	**R5**	**R6**	**R7**	**R8**	**R9**	**R10**
i. Build WSTF	39	43	43	43	**56**	47	46	40	37	37
ii. Build WSTF and demolish existing WTS	51	51	50	46	**58**	49	49	43	41	39
iii. Demolish existing WTS	52	51	51	43	**57**	46	48	42	42	39
iv. Construct ERF and excavate to lower ground level	**56**	55	53	45	**59**	53	51	46	47	43
v. Construct ERF	51	51	49	40	54	48	47	41	42	38
vi. Construct ERF and landscaping	48	47	45	43	54	41	42	36	35	33

Scenario	Receptor Location and Predicted Noise Level ($L_{Aeq,T}$ dB) at Ground Floor Level (1.5 m height)									
	R1	**R2**	**R3**	**R4**	**R5**	**R6**	**R7**	**R8**	**R9**	**R10**
vii.Landscaping	48	48	46	46	54	47	45	39	38	37

The results of the calculations show that the predicted construction noise levels are below the thresholds set in Table 5.1, except for at receptor R1 (due to Scenario 4) and for proposed residential receptor R5 (due to Scenarios 1-4) where the Saturday (13:00-19:00) threshold may be exceeded.

The effect level for Scenario 4 at receptor R1 ground floor level for Saturday working (13:00-19:00) would be LOAEL.

The effect level for Scenarios 1-4 at receptor R5 ground floor level for Saturday working (13:00-19:00) would be LOAEL.

However, it is considered unlikely that residential dwellings will be built at receptor location R5 during demolition and construction Scenarios 1-4.

Chapter 5 *Construction Methodology and Phasing* of the Environmental Statement for Ford Airfield (application F/4/20/OUT) states that, '*Demolition and Construction of the Development is anticipated to commence in 2020/2021, subject to gaining planning permission, and span approximately 10 years. The construction works would begin in the north and south of the Site and progress to the centre of the Site. Overall, the construction process is expected to be completed by 2030/2031*.'

Receptor R5 is deemed to be within the centre of the proposed housing development site, i.e. within Phase 3 of the proposed residential development. It is not expected that dwellings at this location will be built until late in the construction programme, e.g. 2030/2031. The construction of the proposed ERF and WSTF is expected to be completed within a 51-month programme, with the demolition and construction works for the WSTF being completed in Phases 1 and 2 which are expected to be a total of 9 months in duration, at the closest point to receptor location R5.

The lowest threshold of 65 dB $L_{Aeq,T}$ that applies between Monday to Friday (07:00-19:00) and Saturday (07:00-13:00) is not predicted to be exceeded at any receptor location.

The effect level at all ground-floor receptor locations for Monday to Friday (07:00-19:00) and Saturday (07:00-13:00) working would be NOAEL.

The results of the construction noise assessment, predicted at 4 magl to represent first floor level, are shown in
Table **5.3**. A +3 dB façade reflection has been applied to the predicted results for residential receptors.

Table 5.3: Demolition and Construction Noise Assessment Results (First Floor)

Scenario	Receptor Location and Predicted Noise Level ($L_{Aeq,T}$ dB) at First Floor Level (4m height)									
	R1	**R2***	**R3**	**R4**	**R5**	**R6**	**R7**	**R8**	**R9**	**R10**
1. Build WSTF	39	43	46	44	**58**	49	47	44	39	39

Scenario	Receptor Location and Predicted Noise Level ($L_{Aeq,T}$ dB) at First Floor Level (4m height)									
	R1	**R2***	**R3**	**R4**	**R5**	**R6**	**R7**	**R8**	**R9**	**R10**
2. Build WSTF and demolish existing WTS	52	51	51	46	**60**	50	50	47	43	41
3. Demolish existing WTS	53	51	52	44	**59**	47	49	46	43	40
4. Construct ERF and excavate to lower ground level	**58**	55	54	47	**62**	54	52	49	48	45
5. Construct ERF	52	51	49	41	**56**	49	47	44	43	39
6. Construct ERF and landscaping	49	47	45	44	55	43	43	39	36	34
7. Landscaping	49	48	47	46	55	48	46	42	39	38

* Predicted at a height of 1.5 m as R2 is understood to be single-storey

The results of the calculations show that the predicted construction noise levels are below the thresholds set in Table 5.1, except for at receptor R1 (due to Scenario 4) and for proposed residential receptor R5 (due to Scenarios 1-5) where the Saturday (13:00-19:00) threshold may be exceeded.

The effect level for Scenario 4 at receptor R1 first-floor level for Saturday working (13:00-19:00) would be LOAEL.

At receptor R5 first-floor level for Saturday working (13:00-19:00), the effect level for Scenarios 1-3 and 5 would be LOAEL. The effect level would be SOAEL (moderate) for Scenario 4.

However, it is considered unlikely that residential dwellings will be built at receptor location R5 during demolition and construction Scenarios 1-4. Dwellings at receptor location R5 are included in Scenarios 5-7 of the modelling, and the expected effect levels for Scenarios 5-7 would be NOAEL-LOAEL.

The lowest threshold of 65 dB $L_{Aeq,T}$ that applies between Monday to Friday (07:00-19:00) and Saturday (07:00-13:00) is not predicted to be exceeded at any receptor location.

The effect level at all first-floor receptor locations for Monday to Friday (07:00-19:00) and Saturday (07:00-13:00) working would be NOAEL.

BPM as defined by the Control of Pollution Act 1974, will be implemented as part of the working methodology. This will serve to minimise the noise and vibration effects at receptors nearest to the construction works. The reduction in noise levels provided through the implementation of BPM will vary depending on the nature of the works.

Typical BPM measures which will be considered, where reasonably practical, include:

- Programming noisy works so that these do not occur during Saturday working hours of 13:00-19:00;
- Plan working hours to take account of the effects of noise and vibration upon persons in areas surrounding site operations and upon persons working on-site;
- Adopt quiet working methods, using plant with lower noise emissions;
- Adopt working methods that minimise vibration generation;
- Locate plant away from noise and vibration sensitive receptors, where feasible;

- Use silenced and well-maintained plant conforming with the relevant EU directives relating to noise and vibration;
- Avoid unnecessary revving of engines and switch off equipment when not required;
- Keep internal haul routes well maintained;
- Start-up plant and vehicles sequentially rather than all together;
- Carry out regular inspections of noise mitigation measures to ensure integrity is maintained at all times;
- Provide briefings for all site-based personnel so that noise and vibration issues are understood, and mitigation measures are adhered to; and
- Manage plant movement to take account of surrounding receptors, as far as is reasonably practicable.

If work is required to extend into periods beyond the agreed hours, separate authorisation will be requested from with the local authority.

If residential dwellings are occupied at and around the receptor locations R5 and R6 during the construction phase of the proposed development, community liaison and communication regarding construction works will be undertaken throughout the construction stage. This will be done to inform receptors of the nature of the works and to reduce the likelihood of adverse effects and complaints. The level of engagement required will vary during the construction period, depending upon the expected effects experienced by individual receptors due to the construction works.

Details relating to liaison with the local community will be managed by the contractor. It is envisaged that community liaison will provide local residents with the following information in relation to the construction works:

- The nature of the works being undertaken;
- The expected duration of the works;
- The contractor's working hours;
- Mitigation measures that will be adopted to minimise noise and vibration; and
- Contact details in the event of a noise disturbance.

Given the predicted demolition and construction noise levels, along with the phasing of the proposed residential development and the implementation of BPM, is not expected that significant effects will occur at the proposed residential receptor locations, or any other existing receptor location.

Vehicles and cranes used in the construction works will be fitted with reversing alarms and horns for safety. Reversing alarms can generate a sound level of up to 90 dB(A) at 1 m from the source. Assuming unscreened hemispherical propagation over 200 m, the resulting noise level at the NSR would be up to 44 dB(A) at the nearest receptor (R1). This is significantly below the construction noise threshold and therefore noise impacts are not expected from reversing alarms.

As part of the construction phase, a grid connection will need to be made so that the ERF can supply energy to the National Grid. The local distribution network operator (Scottish and Southern Electricity (SSE)) will be responsible for connecting the ERF to the National Grid. As such the planning application boundary does not include the grid connection route from the proposed development site to the existing substation to the north of Arundel Road / A27 near Crockerhill, which is the closest available point of connection for the ERF.

The construction noise emissions along the grid connection route are expected to be similar in nature and duration to those of typical road and utilities works, and so temporary significant effects are not expected.

5.3 Construction Traffic Assessment

Noise from construction traffic was calculated using the haul route method set out in BS 5228:2009+A1:2014. Details of the lorry type used in the calculations can be found in Appendix 4. It is assumed that lorries will travel at a speed of 40 kph (25 mph). A lower speed (relative to the speed limit) will result in higher noise levels due to a prolonged exposure to the HGV noise.

The receptors most exposed to construction traffic noise will be the receptors along Ford Road, on Nelson Row (R7), and further along Ford Road (R10). The receptors at R7 and R10 are approximately 23m and 10m from the centre of the carriageway respectively.

During Saturday hours of 13:00-19:00, HGV movement numbers will be reduced when lower construction noise thresholds apply, to reduce the potential effect levels experienced by the receptors.

Table 5.4: Construction Traffic Noise Assessment

Receptor	Period	Speed (km/h)	Distance from Centre of Haul Route (m)	Two-way HGV Movements per Period	Noise Level (dB $L_{Aeq,T}$)
Nelson Row (R7)	Weekday Daytime 07:00-19:00	40	23	102	61
	Peak Weekday Hour			15	63
	Saturday 07:00-13:00			13	62
	Saturday 13:00-19:00			4	58
Ford Road (R10)	Working Daytime 07:00-19:00		10	102	65
	Peak Weekday Hour 08:00-09:00			15	67
	Saturday 07:00-13:00			13	66
	Saturday 13:00-19:00			4	61

Calculated noise levels from Table 5.4 include a + 3 dB façade correction.

HGV noise levels at the receptors are below the construction noise thresholds set out in BS 5228:2009+A1:2014. Therefore, it is expected that effects from demolition and construction HGV movements will be negligible (NOAEL).

6. OPERATIONAL NOISE ASSESSMENT

6.1 Plant Noise Assessment

A 3D noise prediction model was prepared to calculate the plant and activity noise emissions from the proposed facility at each NSR. Daytime levels were predicted at a height of 1.5 m and night-time noise levels were predicted at a height of 4 m at the façade. The exceptions to this are receptors R2, R8 and R9.

R2 is understood to be single-storey. The levels predicted for receptor location R2 are therefore at a height of 1.5 magl for both daytime and night-time periods.

R8 and R9 are modelled at a height of 4 m for daytime and night-time periods. For R8, it is assumed that both storeys of the building could be used, although this is expected to be for daytime hours only if the building is for non-residential use. Both storey levels of R9 will be occupied during daytime and night-time periods and so the levels are predicted at 4m to represent the first floor, which will have the least screening to the existing and proposed noise sources.

The noise model was done using the proprietary software Cadna-A. The software implements the common European methods of noise prediction. The noise predictions have been undertaken in accordance with ISO9613-2[10].

The noise sources associated with the facility used in the model are detailed in Table 6.1.

Table 6.1: Operational Noise Assessment Input Levels

Area/Plant Item	Noise Level	Reference
Process Areas	85 dB L_{Aeq} reverberant level	Benchmarking measurements
Turbine Hall	85 dB L_{Aeq} reverberant level	Benchmarking measurements
Tipping Hall	80 dB L_{Aeq} reverberant level	Benchmarking measurements
Air cooled condensers	80 dB L_{wA} per m^2	Benchmarking measurements
Stacks	89 dB L_{wA} at the top of stacks	Assumed from previous schemes
Transformer	87 dB L_{wA}	Benchmarking measurements
Lorries (44 t)	106 dB L_{wA} moving point sources	BS 5228:2009+A1:2014 C8.19
Refuse Collection Vehicles (26 t)	107 dB L_{wA} moving point sources	BS 5228:2009+A1:2014 C11.16
WTSF (Loading shovel)	81 dB L_{Aeq} reverberant level	BS 5228:2009+A1:2014 C6.34

Where the results of benchmark noise measurements have been used, the highest measured ambient reverberant sound level in each area of the facility has been used. This is considered representative of a worst-case scenario, as variations of noise levels are expected to occur within each area of the facility.

It is assumed that attenuators would be fitted in the stack to reduce noise emissions. Based on experience on similar projects, we have assumed a sound power of 89 dB L_{wA} at the top of each stack in the noise prediction model.

The following external envelope and inherent mitigation measures were assumed in the model:

- An external envelope to be a composite cladding panel system (or equivalent) rated at least R_w 35 dB will be installed;
- The roof will provide a performance of R_w 23 dB;
- Non-acoustic weather louvres to the ERF and WSTF (assuming to provide R_w 4 dB attenuation);
- The boundary screening (bunds and fencing) provide up to 10.4m screening;
- The screen around the Air Cooled Condensers and boundary screening (fences) comprise a minimum density of 10kg/m^2. All boundary screens must contain no gaps and must extend

[10] International Standards Organisation, 1996. Acoustics - Attenuation of sound during propagation outdoors - Part 2: General method of calculation. ISO

down to ground level (where applicable). The noise from the condensers is modelled as emitting from just below the bottom of the screen to provide a worst case assessment; and
- Standard roller shutter doors rated at least R_w 15 dB.

The number of HGVs accessing the site during evening and night-time periods have been input to the model as advised by the transport assessment. However, night-time HGV movements are understood to be confined to the hours of 06:00-07:00, Monday to Friday.

Saturday HGV movements are expected to be confined to 08:00-18:00. Therefore, the daytime operational noise assessment is applicable to the likely noise emissions for Saturdays.

Daytime HGV movements (44 t lorries and 26 t refuse collection vehicles (RCV)) in the model have been input based on the results of the transport assessment but have been factored to account for the baseline daytime HGV movements. This includes 100 baseline two-way HGV movements (67 RCVs and 33 44 t lorries) as would have been present during the baseline noise survey. It is understood that more typically, baseline HGV movements are 72 two-way HGV movements. The model therefore considers the increase over the baseline HGV movements along the site access road off Ford Road, and the total number of HGV movements serving both the ERF and WSTF on site.

Of the HGVs serving the ERF, the model assumes that 90% will use the Tipping Hall. 10% of HGVs are assumed to use the site perimeter road and enter the IBA loading and/or residue areas before leaving site. All HGVs serving the ERF between the hours of 06:00-07:00 have been modelled to use the Tipping Hall. The model does not consider any HGVs using the site perimeter road during these hours.

Lorry and RCV speeds were assumed to be 20 mph on the site access road and 10 mph on site. These are conservative assumptions as noise exposure will increase with lower HGV speeds.

Following BS 4142:2014+A1:2019, penalties should be added to the specific noise level at a receptor to account for acoustic features such as tonality, intermittency and impulsivity, if such features are discernible at the receptor.

From the noise input data, no plant items have been deemed to be tonal. Therefore, a tonality penalty has not been applied to the calculated specific noise levels. The facility will therefore be designed so that tonal plant is not operated on the site.

A 3 dB penalty has been applied for impulsivity which may just be perceptible at the noise receptor to obtain the resultant rating levels. This penalty has been applied to account for HGV movements on site and on the access road, and noise activity from the WTSF, e.g. handling of waste which may be audible over the typical noise climate. However, it should be noted that these noise sources and impulsive noise characteristics are already present on site.

The results of the noise model are summarised in Table 6.2. Background noise levels have been determined using the noise prediction model that is calibrated to road traffic noise sources. The predicted levels have been verified for receptor location R3 using the noise survey data from locations LT3 and ST2. The background levels for receptor R7 are taken from the results of the baseline survey.

Rating levels are at the receptor façade location and do not include a façade reflection.

The specific and rating noise levels are in terms of daytime 1-hour periods and night-time 15-minute periods.

Table 6.2: Operational Noise Assessment

Receptor	Background Level $L_{A90,T}$ (dB)		Predicted Specific Noise Level $L_{Aeq,T}$ (dB)		Resulting Rating Level $L_{Ar,T}$ (dB)		Excess of Rating Level Over Background Level (dB)	
	Daytime	Night-time	Daytime	Night-time	Daytime	Night-time	Daytime	Night-time
R1	40	35	34	30	37	33	-3	-2
R2	39	32	37	31	40	34	1	2
R3	41	36	31	29	34	32	-7	-4
R4	37	31	32	30	35	33	-2	2
R5	41	36	36	36	39	39	-2	3
R6	40	35	36	35	39	38	-1	3
R7	45	34	40	29	43	32	-2	-2
R8	41	36	35	29	38	32	-3	-4
R9	40	35	32	26	35	29	-5	-6
R10	40	36	27	25	30	28	-10	-8

The following daytime effect levels are predicted:

- NOEL at R10;
- NOAEL at R1, R3, R4, R5, R6, R7, R8 and R9; and
- LOAEL at R2.

The following night-time effect levels are predicted:

- NOAEL at R1, R3, R7, R8, R9 and R10; and
- LOAEL at R2, R4, R5 and R6.

The results of the noise model for 06:00-07:00 Monday to Friday when HGVs are operational during night-time periods are summarised in Table 6.3.

Table 6.3: Operational Night-time Noise Levels Between 06:00-07:00

Receptor	Background Level $L_{A90,T}$ (dB)	Predicted Specific Noise Level $L_{Aeq,1\text{-}hour}$ (dB)	Resulting Rating Level $L_{Ar,1\text{-}hour}$ (dB)	Excess of Rating Level Over Background Level (dB)
R1	37	35	38	1
R2	37	37	40	3
R3	39	35	38	-1
R4	35	32	35	0
R5	37	36	39	2

R6	37	37	40	3
R7	41	41	44	3
R8	37	35	38	1
R9	37	32	35	-2
R10	40	29	32	-8

The following night-time effect levels are predicted between 06:00-07:00:

- NOAEL at R3, R9 and R10; and
- LOAEL at R1, R2, R4, R5, R6, R7 and R8.

It should be noted that the existing site comprises noise from the waste transfer station and the arrival and departure of lorries/refuse collection vehicles. Therefore, the magnitude of impact may be lessened for the nearest noise sensitive receptors due to the current context of the site, i.e. there are already impulsive characteristics to the noise.

With the proposed employment use to the east of the site boundary (as part of application F/4/20/OUT), the predicted magnitude of impact would not change for any of the assessed receptor locations.

Inherent mitigation measures designed into the scheme include high performance (R_w 35 dB) cladding to the ERF and WSTF, and site boundary screening of up to 10.4 m in height. Screening has also been allowed for around the Air Cooled Condensers.

All reasonable measures have been taken in the site layout design to reduce noise exposure to the nearest receptors.

During the detailed design of the facilities, low noise emission plant would be sought to further reduce operational noise levels at the nearest receptors.

As such, additional mitigation is not proposed.

A daytime noise propagation map of the proposed facility is shown on Figure 6.1.

Note that the figure shows the predicted daytime specific noise levels in terms of $L_{Aeq,T}$ dB.

A night-time noise propagation map of the proposed facility is shown on Figure 6.2. Note that the figure shows the predicted night-time specific noise levels in terms of $L_{Aeq,T}$ dB.

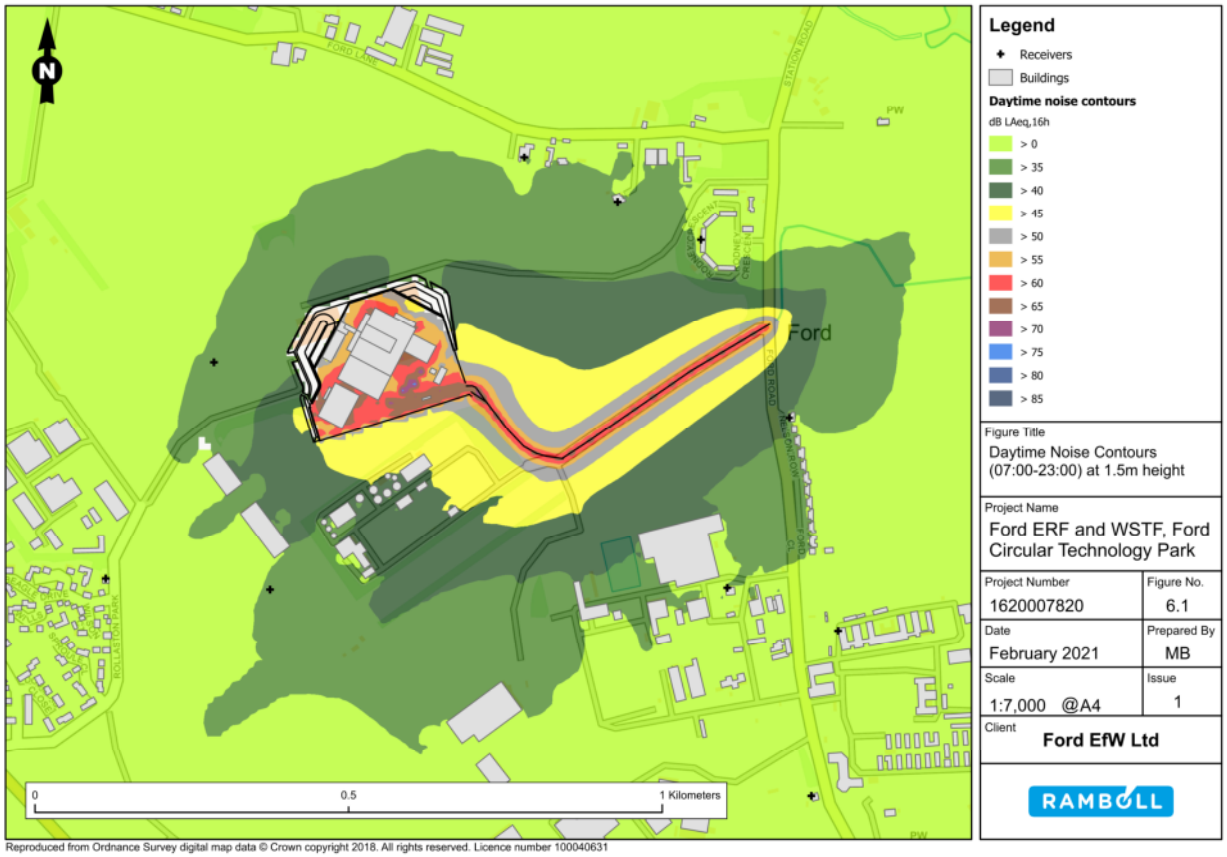


Figure 6.1: Predicted Daytime Noise Levels at 1.5 m Height

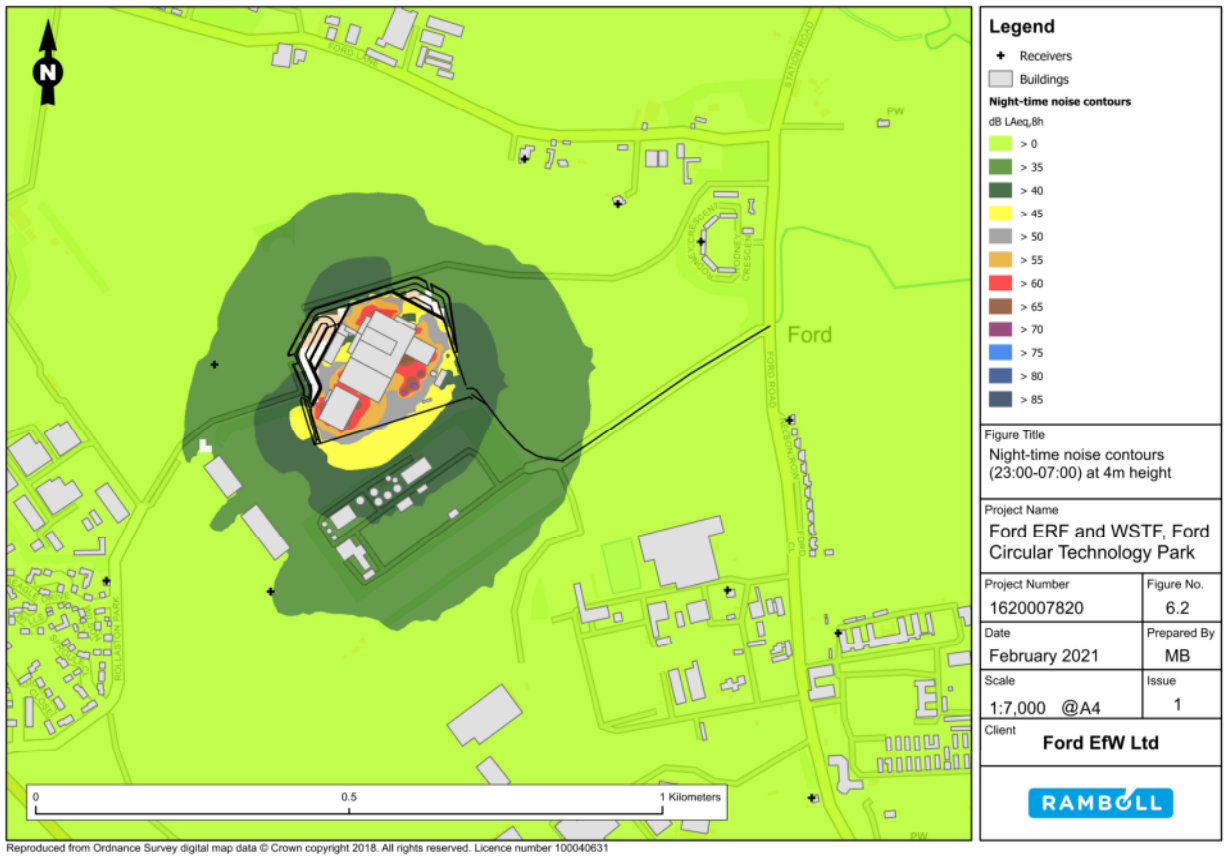


Figure 6.2: Predicted Night-time Noise Levels at 4 m Height

A noise propagation map of the proposed facility between 06:00-07:00, Monday to Friday, is shown on Figure 6.3. Note that the figure shows the predicted specific noise levels in terms of $L_{Aeq,T}$ dB.

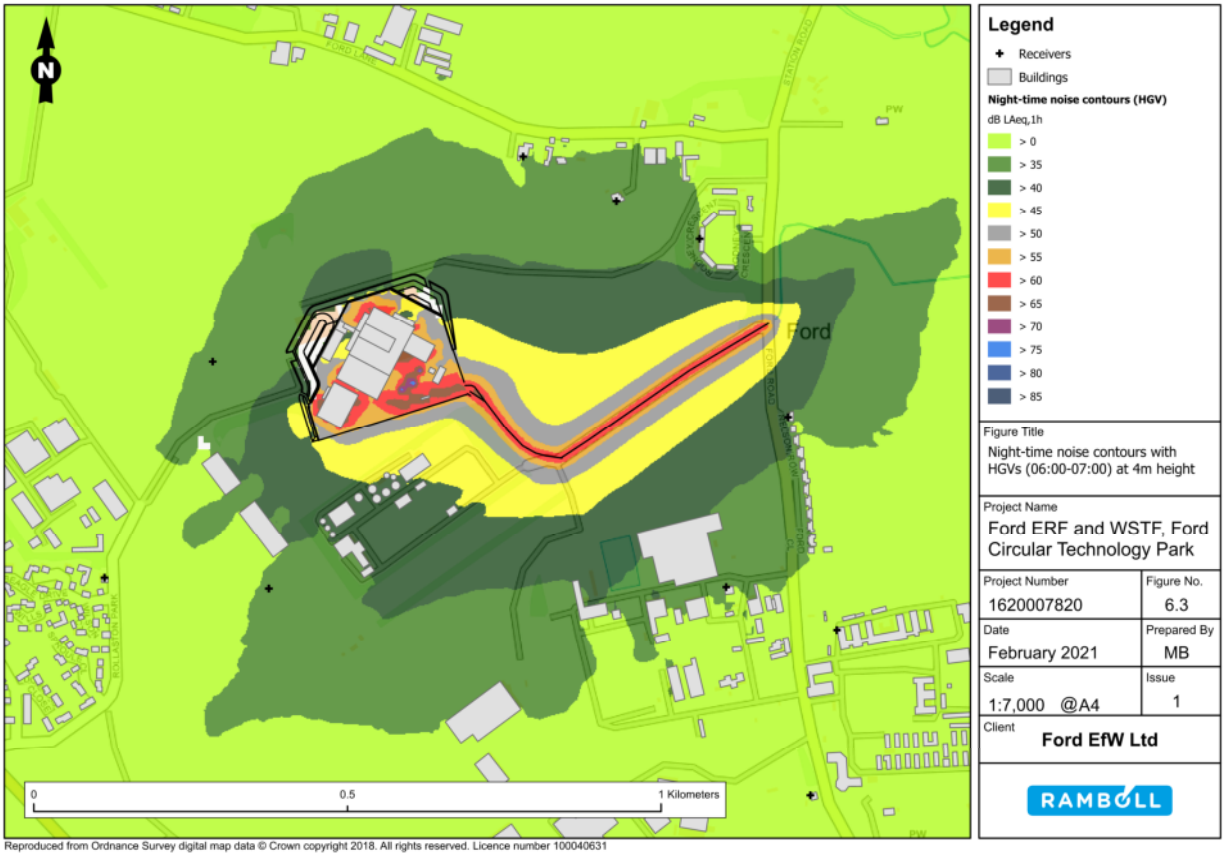


Figure 6.3: Predicted Noise Levels at 4 m Height Between 06:00-7:00

6.2 Changes in Road Traffic Noise Levels

Road traffic noise levels have been calculated in accordance with the data provided by the Traffic Consultant. Table 6.4 details the calculated baseline and future noise levels using the Annual Average Weekday Traffic (18-hour) data for the following scenarios:

- 2018 Baseline year;
- 2025 Do Nothing (future baseline year);
- 2026 Do Nothing (future baseline year) with committed development;
- 2026 Do Something with committed and proposed development; and
- 2025 Baseline year with committed development and construction of the proposed development.

Calculations have not been completed for the site access road as HGV vehicles on the site access road have been included in the plant noise and activity noise assessment.

Calculations have not been completed for road traffic links that are predicted to have flows less than 1000 vehicles (the site access road and Crookthorn Lane south of the A259), as the calculation methodology of CRTN is not appropriate for predicted flows less than 1000 movements in an 18-hour period.

Table 6.4: Road Traffic Noise Levels

Road	Basic Noise Level at 10 m dB L_{A10}				
	2018 Baseline	2025 Do Nothing	2026 Do Nothing with Committed Development	2026 Do Something with Committed Development	2025 Baseline with Committed Development and Construction
North End Road (North of Ford Lane)	66.5	67.3	67.3	67.3	67.3
Ford Lane (North End Road – Ford Lane)	66.1	67.9	67.9	67.9	67.9
Ford Lane (Ford Lane-Station Road/Ford Road)	65.5	66.3	66.3	66.3	66.3
Station Road	66.6	67.1	67.2	67.2	67.2
Ford Road (Ford Lane/Station Road to Access Road)	68.1	68.6	68.6	68.6	68.6
Rollaston Park	61.1	61.4	61.4	61.4	61.4
Church Lane (South of Horsemere Green Lane)	69.4	71.0	71.0	71.3	71.4
A259 Crookthorn Lane (West of Ford Road)	72.1	73.1	73.1	73.2	73.2
A259 Crookthorn Lane (East of Ford Road)	73.2	73.9	73.9	74.0	74.0
B2233 Yapton Road	67.0	68.1	68.1	68.1	68.1
A259 Grevatt's Lane (West of B2233 Yapton Road)	71.2	72.0	72.1	72.2	72.2
B2233 Yapton Road (South of Rollaston Park)	67.7	68.5	68.5	68.5	68.5
A259 Burndell Road	66.5	67.3	67.3	67.3	67.3
Bilsham Road	65.1	66.1	66.1	66.1	66.1
B2233 Main Road	67.6	68.6	68.6	68.6	68.6
North End Road (south of Ford Lane)	63.7	65.5	65.5	65.5	65.5

The resultant change in road traffic noise levels are detailed in Table 6.5.

Table 6.5: Changes in Road Traffic Noise Levels

Road	Change in Basic Noise Level at 10 m dB L_{A10}				
	2018 Baseline to 2025 Do Nothing	2018 Baseline to 2026 Do Nothing with Committed Development	2018 Baseline to 2026 Do Something with Committed Development	2026 Do Nothing with Committed Development to 2026 Do Something	2018 Baseline to 2025 Baseline with Committed Development and Construction
North End Road (North of Ford Lane)	0.8	0.8	0.8	0.0	0.8
Ford Lane (North End Road – Ford Lane)	1.8	1.8	1.8	0.0	1.8
Ford Lane (Ford Lane-Station Road/Ford Road)	0.8	0.8	0.8	0.0	0.8
Station Road	0.5	0.6	0.6	0.0	0.6
Ford Road (Ford Lane/Station Road to Access Road)	0.5	0.5	0.5	0.0	0.5
Rollaston Park	0.3	0.3	0.3	0.0	0.3
Church Lane (South of Horsemere Green Lane)	1.6	1.6	1.9	0.3	2.0
A259 Crookthorn Lane (West of Ford Road)	1.0	1.0	1.1	0.1	1.1
A259 Crookthorn Lane (East of Ford Road)	0.7	0.7	0.8	0.1	0.8
B2233 Yapton Road	1.1	1.1	1.1	0.0	1.1
A259 Grevatt's Lane (West of B2233 Yapton Road)	0.8	0.9	1.0	0.1	1.0
B2233 Yapton Road (South of Rollaston Park)	0.8	0.8	0.8	0.0	0.8
A259 Burndell Road	0.8	0.8	0.8	0.0	0.8
Bilsham Road	1.0	1.0	1.0	0.0	1.0
B2233 Main Road	1.0	1.0	1.0	0.0	1.0
North End Road (south of Ford Lane)	1.8	1.8	1.8	0.0	1.8

The predicted change in road traffic noise levels on all road links in the long term, due to the proposed development, is negligible (NOAEL).

The predicted change in road traffic noise levels between the baseline year (2018) and 2025 with committed development and construction of the proposed development, presents a short term LOAEL on:

- Ford Lane (North End Road - Ford Lane) Church Lane (south of Horsemere Green Lane);
- A259 Crookthorn Lane (west of Ford Road);
- B2233 Yapton Road;
- A259 Grevatt's Lane (west of B2233 Yapton Road);
- Bilsham Road;
- B2233 Main Road;
- North End Road (south of Ford Lane).

However, it should be noted that the increase in noise level is mostly due to traffic growth and committed development between 2018 and 2025. The construction traffic in 2025 does not cause an increase in the noise level over the 2018 baseline to 2026 'Do Nothing' with committed development scenario, except for:

- Church Lane (South of Horsemere Green Lane) where the noise level in 2025 is +0.4 dB higher than the noise level predicted in 2026;
- A259 Crookthorn Lane (West of Ford Road) where the noise level in 2025 is +0.1 dB higher than the noise level predicted in 2026;
- A259 Crookthorn Lane (East of Ford Road) where the noise level in 2025 is +0.1 dB higher than the noise level predicted in 2026; and
- A259 Grevatt's Lane (West of B2233 Yapton Road) where the noise level in 2025 is +0.1 dB higher than the noise level predicted in 2026.

These noise level increases due to construction noise would be considered to represent a short term NOAEL.

The short-term change in noise levels on all other road links to those discussed above present a short term NOAEL.

7. CONCLUSION

The potential demolition, construction and operational noise impacts associated with the proposed ERF and WSTF have been assessed.

Demolition and construction noise and vibration levels, and construction HGV noise levels are expected to result in negligible effects at existing noise sensitive receptors. Construction vibration is expected to be negligible at proposed residential receptor locations.

The predicted demolition and construction noise levels could result in a LOAEL effect level for one existing residential receptor location, for works completed on Saturday (13:00-19:00).

The predicted demolition and construction noise effect level for all works between Monday to Friday (07:00-19:00) and Saturday (07:00-13:00) would be NOAEL for all existing and proposed receptor locations.

The predicted demolition and construction noise levels could result in LOAEL effect levels for the nearest dwellings of the proposed residential development, for works completed on Saturday (13:00-19:00). An effect level of SOAEL (moderate) could occur for the first-floor level of the nearest proposed dwellings, for works completed on Saturday (13:00-19:00), if dwellings are built closest to the proposed development site during substructure works for the ERF. However, given the

proposed phasing of the proposed residential development, it is expected that the construction of the proposed ERF and WSTF will be completed prior to construction and occupation of the nearest proposed dwellings to the proposed development site.

It is therefore expected that demolition and construction noise will not give rise to significant effects at any assessed receptor location.

Operational noise from the proposed facility is expected to result in NOEL-LOAEL effect levels during daytime periods, at all assessed receptor locations.

Night-time operational noise from the proposed facility is expected to result in NOAEL-LOAEL effect levels, at all assessed receptor locations.

Night-time operational noise including HGV movements between 06:00-07:00 has the potential to result in NOAEL-LOAEL effect levels, at all assessed receptor locations.

No additional mitigation measures other than the inherent mitigation design measures are proposed to reduce noise impacts. Low noise emission plant will be sought at the detailed design stage to further minimise operational noise levels at the nearest receptor locations.

The predicted increase in road traffic noise levels on all road links, due to the proposed development, is negligible in the long term. The change in road traffic noise levels in the short term, including committed development and construction traffic, has the potential to result in NOAEL-LOAEL effect levels. However, the increase in noise level due to the contribution of construction traffic in 2025 alone is expected to be negligible on all road links.

APPENDIX 1
ACOUSTIC TERMINOLOGY

Term	Definition
$L_{eq,T}$ or Ambient noise	A noise level index called the equivalent continuous noise level over the time period T. Often described as the average.
$L_{90,T}$ or Background Noise Level	A noise level index defined as the noise level exceeded for 90% of the time over the time period T. L_{90} is used to describe the background noise.
Vibration	The periodic movements of structures transferred by ground and parts of the building, due to events such as train pass-by, piling, blasting or use of heavy machinery.
Decibel (dB)	A scale for comparing the ratios of two quantities, including sound pressure and sound power. The difference in level between two sounds s1 and s2 is given by 20 log10 (s1/s2). The decibel can also be used to measure absolute quantities by specifying a reference value that fixes one point on the scale. For sound pressure, the reference value is 20μPa.
A-weighting, dB(A)	The unit of sound level, weighted according to the A-scale, which takes into account the increased sensitivity of the human ear at some frequencies.
BNL	The Basic Noise Level is the road traffic noise at a reference distance of 10 m from the road edge, expressed in terms of the L_{A10} statistical level (18-hour or 1-hour), and calculated according by Calculation of Road Traffic Noise (CRTN) based on the traffic flow.
AAWT	Annual Average Weekday Traffic is the total number of vehicles annually (on Monday – Fridays) divided by the total number of weekdays in this period.
Rating Level ($L_{Ar,Tr}$)	To BS 4142:2014+A1:2019, the rating level is defined as the equivalent continuous A-weighted sound pressure level produced by the specific sound source over a given reference time interval, Tr plus any adjustment for the characteristic features of the sound (tonality, impulsivity, etc).
NSR	A Noise Sensitive Receiver is any receiver that is classed as being sensitive to noise sources, (residential properties, churches, music studios etc.)

APPENDIX 2
RECORD OF CONSULTATION

CONSULTATION WITH ARUN DISTRICT COUNCIL

This appendix contains three emails, reproduced in chronological order. Sensitive information (including email addresses and phone numbers) have been removed. The body of the emails remain unchanged.

Consultation to Respond to Regulation 25 Requests

Note:
- a response was not received from Arun District Council; and
- The comment regarding the definition of 'relatively short duration' is no longer applicable to the updated construction noise assessment contained in this report.

From: David Harbon of Ramboll
Date: Friday, 5 February 2021, 16:47
To: Fiona Fitzgerald of Arun District Council
Subject: Ford Circular Technology Park - Regulation 25 Additional Noise Requests

Dear Fiona,

I hope you're well.

We last spoke in January 2020 regarding the noise survey and assessment methodology for the proposed development at Ford Circular Technology Park.

A planning application was made in July 2020 (application F/15/20/WS) and additional information has been requested from West Sussex County Council via a Regulation 25 request (please see attached).

I would be grateful if you could please provide any response to the comments outlined below, which are in response the comments made by Arun District Council. Our comments are provided in red below.

(Page 8) *They advise that the Acoustic Report (Technical Appendix J: Noise and Vibration Assessment) June 2020 and the ES Chapter 14 need to be amended to take account of the development right across the Ford Strategic Housing Allocation site and not just the defined R5 receptor and that it should take into account the phasing of the development and include Ford Prison as a noise sensitive receptor. They advise that greater clarity needs to be provided of effect of the phasing of development on the adjacent Ford Strategic Housing Allocation site, so that the impact, particularly of the construction phase (which will be lengthy) is fully understood. Noise contours should be provided illustrating impact of the construction phase and the operation phase on the Ford Strategic Housing Allocation site:*

- We cannot provide a more detailed assessment of the operational noise on the wider Ford Strategic Housing Allocation (and not just the defined R5 receptor). We can provide the operational noise contour plots, as was done for the earlier planning application. We cannot assess further receptor locations without additional baseline noise surveys, to determine the background noise levels. We don't feel that additional surveys and assessment at this stage would be beneficial as a fixed future layout of the housing allocation is not available. We will however provide commentary on the likely effect of operational noise on the wider Ford Strategic Housing Allocation, but detailed assessment to a greater number of assessment locations will not be provided.

- We will consider Ford Prison as a receptor location in the revised assessment.

- We will allow for construction noise modelling and provide construction noise contour plots for each construction phase. However, the earlier assessment did assess the likely construction noise effect levels with increased distance from the proposed development site, to determine the likely effects on the wider Ford Strategic Housing Allocation site. The noise contour plots will provide a visual means of evaluating likely effects. However, a detailed assessment against the phasing of the Ford Strategic Housing allocation cannot be made, as detailed construction phasing information has not been made available by the applicant for the development on the housing allocation land.

(Page 8) *Revision of the Acoustic Report to explain why the entire 24-hour period on the 9th and 10th February 2020 has been excluded from the long-term noise survey, provide definition of the "relatively short duration";*

- We will include the previously excluded survey data, but note again in our reports that this is excluded from our assessment due to storm weather. Higher wind speeds and rainfall would not have provided representative baseline noise survey results and therefore these were excluded from our assessment to determine representative background noise levels.

- We will provide clarification on terminology in the assessment.

(Page 10) *The provision of noise, odour and lighting contours and mapping of sun light/overshadowing on the Ford Strategic Housing Allocation site needs to be explicitly addressed, showing which, if any areas of the allocation would be affected or the use of which would be sterilised.*

- We will provide noise contour plots during the operational phase, as done for the earlier planning application.

(Page 10) *Provide an assessment of the impacts on amenity for properties and highway footpath users along the route of HGVs in the light of the changes as a result of use of larger HGVs now proposed. This point does not appear to have been addressed or is not apparent in the submitted noise and vibration assessment…*

- Construction HGV was included in the earlier assessment and the predictions of the changes in road traffic noise levels (including HGVs) was provided for the operational phase. Negligible effects were predicted for both construction and operational HGVs. There is no accepted standard assessment methodology for the impact of HGVs for highway footpath users and we believe that this would be covered by the assessments already provided. Any additional assessment would be bespoke and could not be assessed against relevant criteria. Therefore, further assessment of HGV noise for highway footpath users will not be provided.

I would be grateful if you could please provide any comments and agreement to the approach outlined above, so that we can progress with our updated assessments. Please let me know if you have any questions. Thank you.

Kind regards
David Harbon
MSc CEng MIOA
Principal Consultant
Acoustics

Consultation to Inform the ES

EMAIL 1 – INITIAL CONTACT FROM RAMBOLL ACOUSTICS TO ADC

From: David Harbon of Ramboll
Date: Friday, 17 January 2020, 14:40:00
To: Environmental Health Team at Arun District Council
Subject: Ford Circular Technology Park - Noise and Vibration Assessment Methodology [CSE: Pp8tKH, TKT: AR7q8f]

Good afternoon,

Ramboll have been commissioned to complete a noise and vibration impact assessment of the proposed Ford Circular Technology Park (the former Tarmac blockworks site) to the west of the village of Ford. I would be grateful for your review and comment on the proposed survey and assessment methodologies outlined below.

The 7.14 ha site is partially used for existing waste transfer station (WSTF) operations and is partially vacant. The existing WSTF building is located towards the centre of the site and portacabins, parking and containers associated with this operation are situated to the west of the WSTF. There are two vacant former hangar buildings towards the north of the site and a large area of hardstanding is situated towards the south and east of the site.

Ford EfW Ltd, a joint venture between Grundon Waste Management Limited and Viridor, is now proposing to build and operate a conventional energy recovery facility (ERF) at the site. Grundon Waste Management, the sole owner/operator of the existing WSTF, is proposing to continue this operation in a new, purpose built facility on site. A full planning application, including the ERF and WSTF and ancillary uses, will be submitted later this year. As part of this application Ramboll will be providing the noise and vibration impact assessment.

Baseline Survey
We propose to complete unattended noise monitoring at up to three locations (depicted as LT locations in the figure below – each location is subject to review of suitability on site). Monitoring will be completed for up to one week, to include daytime, evening, night-time and weekend periods.

Attended noise measurements will be completed at the indicative ST locations shown in the figure below. Measurements may not be taken at all of the ST locations shown, but these are indicative locations that are subject to review of their suitability once on site. Measurements at each of the chosen locations will be 15 minutes in duration.

Vibration measurements will not be completed as we have not identified any vibration sources on or around the site. Therefore, operational vibration will be scoped out of our assessments.

Assessment Methodology
We will:

- Review national/local legislation, policy and guidance applicable to the development;
- Consult with the Environmental Health Departments at West Sussex County Council (WSCC) and Arun District Council (ADC) to confirm assessment methodology and criteria;
- Assess demolition and construction noise and vibration in outline terms, in accordance with the methodology of BS 5228:2009+A1:2014 *Code of practice for noise and vibration control on construction and open sites*. Construction noise thresholds will be set to the ABC Method and assessment of HGV noise will be carried out in accordance with the Haul Route Method of BS 5228:2009+A1:2014;

- Assess the predicted changes in traffic noise levels on the nearby road network at notional receptor locations, based on data provided by the Transport Consultant and using the methodology set out in the *Calculation of Road Traffic Noise* (CRTN) 1988 and the *Design Manual for Roads and Bridges* (2013);
- Set noise emission limits from proposed fixed plant based on local policy and BS 4142:2014 *Methods for rating and assessing industrial and commercial sound*. Plant rating noise level limits will be set equal to the representative background noise levels, with penalties applied based on the expected future characteristics of the site noise emissions;
- Complete noise prediction modelling of the proposed facility to predict plant noise emissions levels at the nearest noise sensitive receptors to be assessed against the plant noise limits;
- Recommend suitable mitigation measures in outline terms for cladding, ventilation strategy, and plant screens/barriers to mitigate noise impacts during the construction and operational phases of the facility; and
- Provide a noise and vibration assessment report, including cumulative assessments on existing and future noise sensitive receptors.

I would be grateful for your comments and approval of the methodology outlined above. Please let me know if you have any questions.

Subject to suitable weather conditions, we hope to start the baseline noise survey measurements shortly and so your earliest response would be appreciated.

Thank you and I hope to hear from you shortly.

Kind regards
David Harbon

MSc CEng MIOA
Principal Consultant
Acoustics

EMAIL 2 – RESPONSE FROM ADC TO RAMBOLL

From: Environmental Health at Arun District Council
Sent: 17 January 2020 14:58
To: David Harbon from Ramboll
Subject: RE: Ford Circular Technology Park - Noise and Vibration Assessment Methodology [CSE: Pp8tKH, TKT: AR7q8f]

Good afternoon,

I have logged this to the Environmental Health team for a response, the reference is 237959.

Kind regards

Zoe

EMAIL 3 – FURTHER RESPONSE FROM ADC TO RAMBOLL

From: Fiona Fitzgerald of Arun District Council
Sent: 20 January 2020 11:44
To: David Harbon of Ramboll
Subject: FW: Ford Circular Technology Park - Noise and Vibration Assessment Methodology [CSE: Pp8tKH, TKT: AR7q8f]

Dear David,

Thank you for your email below and proposed methodology. Environmental Health are happy with the methodology as it stands, I would just ask you to ensure that you take account of any school holidays in your monitoring to ensure that the results are representative.

Regards

Fiona Fitzgerald

EMAIL 4 – ANSWER FROM RAMBOLL TO ADC REGARDING COMMENTS ON METHODOLOGY

From: David Harbon of Ramboll
Sent: 20 January 2020 12:25
To: Fiona Fitzgerald of Arun District Council
Subject: RE: Ford Circular Technology Park - Noise and Vibration Assessment Methodology [CSE: Pp8tKH, TKT: AR7q8f]

Dear Fiona,

Thank you for your prompt response.

School holidays will be avoided to ensure representative noise monitoring conditions.

Kind regards
David Harbon
Principal Consultant

EMAIL 5 – FINAL RESPONSE FROM ADC

From: Fiona Fitzgerald of Arun District Council
Sent: 20 January 2020 12:25
To: David Harbon of Ramboll
Subject: RE: Ford Circular Technology Park - Noise and Vibration Assessment Methodology [CSE: Pp8tKH, TKT: AR7q8f]

Great, many thanks.

Fiona

Consultation with West Sussex County Council

EMAIL 1 – INITIAL CONTACT FROM RAMBOLL ACOUSTICS TO ADC

From: David Harbon of Ramboll
Sent: 17 January 2020 14:44
To: ENV Preappadvice
Subject: Ford Circular Technology Park - Noise and Vibration Assessment Methodology

Good afternoon,

Ramboll have been commissioned to complete a noise and vibration impact assessment of the proposed Ford Circular Technology Park (the former Tarmac blockworks site) to the west of the village of Ford. I would be grateful for your review and comment on the proposed survey and assessment methodologies outlined below.

The 7.14 ha site is partially used for existing waste transfer station (WSTF) operations and is partially vacant. The existing WSTF building is located towards the centre of the site and portacabins, parking and containers associated with this operation are situated to the west of the WSTF. There are two vacant former hangar buildings towards the north of the site and a large area of hardstanding is situated towards the south and east of the site.

Ford EfW Ltd, a joint venture between Grundon Waste Management Limited and Viridor, is now proposing to build and operate a conventional energy recovery facility (ERF) at the site. Grundon Waste Management, the sole owner/operator of the existing WSTF, is proposing to continue this operation in a new, purpose built facility on site. A full planning application, including the ERF and WSTF and ancillary uses, will be submitted later this year. As part of this application Ramboll will be providing the noise and vibration impact assessment.

Baseline Survey
We propose to complete unattended noise monitoring at up to three locations (depicted as LT locations in the figure below – each location is subject to review of suitability on site). Monitoring will be completed for up to one week, to include daytime, evening, night-time and weekend periods.

Attended noise measurements will be completed at the indicative ST locations shown in the figure below. Measurements may not be taken at all of the ST locations shown, but these are indicative locations that are subject to review of their suitability once on site. Measurements at each of the chosen locations will be 15 minutes in duration.

Vibration measurements will not be completed as we have not identified any vibration sources on or around the site. Therefore, operational vibration will be scoped out of our assessments.

Assessment Methodology

We will:

- Review national/local legislation, policy and guidance applicable to the development;
- Consult with the Environmental Health Departments at West Sussex County Council (WSCC) and Arun District Council (ADC) to confirm assessment methodology and criteria;
- Assess demolition and construction noise and vibration in outline terms, in accordance with the methodology of BS 5228:2009+A1:2014 *Code of practice for noise and vibration control on construction and open sites*. Construction noise thresholds will be set to the ABC Method and assessment of HGV noise will be carried out in accordance with the Haul Route Method of BS 5228:2009+A1:2014;
- Assess the predicted changes in traffic noise levels on the nearby road network at notional receptor locations, based on data provided by the Transport Consultant and using the methodology set out in the *Calculation of Road Traffic Noise* (CRTN) 1988 and the *Design Manual for Roads and Bridges* (2013);
- Set noise emission limits from proposed fixed plant based on local policy and BS 4142:2014 *Methods for rating and assessing industrial and commercial sound*. Plant rating noise level limits will be set equal to the representative background noise levels, with penalties applied based on the expected future characteristics of the site noise emissions;
- Complete noise prediction modelling of the proposed facility to predict plant noise emissions levels at the nearest noise sensitive receptors to be assessed against the plant noise limits;
- Recommend suitable mitigation measures in outline terms for cladding, ventilation strategy, and plant screens/barriers to mitigate noise impacts during the construction and operational phases of the facility; and
- Provide a noise and vibration assessment report, including cumulative assessments on existing and future noise sensitive receptors.

I would be grateful for your comments and approval of the methodology outlined above. Please let me know if you have any questions. Subject to suitable weather conditions, we hope to start the

baseline noise survey measurements shortly and so your earliest response would be appreciated. Thank you and I hope to hear from you shortly.

Kind regards
David Harbon

MSc CEng MIOA
Principal Consultant
Acoustics

EMAIL 2 – RESPONSE FROM WSCC TO RAMBOLL

From: Mark Penny on Behalf of ENV Preappadvice
Sent: 17 January 2020 14:58
To: James Neave
Subject: FW: Ford Circular Technology Park - Noise and Vibration Assessment Methodology

Hi James,

I understand that you have previously been involved in an enquiry regarding noise.

Would you be able to advise on the methodology listed below?

Kind Regards,

Mark Penny

Mark Penny | Administrator, Business Services supporting Highways Planning
West Sussex County Council, County Hall, Chichester, PO19 1RQ

EMAIL 3 – FURTHER RESPONSE FROM WSCC TO RAMBOLL

From: James Neave
Sent: 20 January 2020 09:07
To: Steve Molnar; David Harbon
Cc: Mark Penny
Subject: RE: Ford Circular Technology Park - Noise and Vibration Assessment Methodology

Steve,

With regard to the specific noise assessment advice sought below, this will be something for EHO officers at Arun to comment, most likely as part of the scoping process. I have passed contact details as required already. The only thing I additional thing I would add., is to ensure that HGV noise is dealt with as may be necessary (and any surveys carried out if thresholds triggered). Be aware of the approved outline permission (Policy SD10 at 'Climping' for the provision of 300 new homes). that could affect the HGV route to the A259 (and the context).

Regards,

James

James Neave| Principal Planner, Planning Services, West Sussex County Council

EMAIL 4 – ANSWER FROM RAMBOLL TO WSCC REGARDING COMMENTS ON METHODOLOGY
James,

Thank you for your prompt response. We have started consulting with Arun District Council but we sent you the email to see if you had any specific queries regarding road traffic noise/HGVs.

Thank you for your comments.

Kind regards
David Harbon

MSc CEng MIOA
Principal Consultant
Acoustics

APPENDIX 3
BASELINE NOISE SURVEY RESULTS

The results of the baseline attended measurements are shown in the table below.

Location of Measurement	Start Time	Duration mm:ss	L_{AFmax} (dB)	$L_{Aeq,T}$ (dB)	$L_{A90,T}$ (dB)
Daytime Period (07:00-23:00)					
ST1 – Ford Lane	06/02/2020 13:35	15:00	83	67	42
	06/02/2020 14:14	15:00	86	67	39
	06/02/2020 16:02	15:00	81	68	38
	06/02/2020 16:19	15:00	82	68	40
ST2 – Rodney Crescent	06/02/2020 14:46	15:00	60	47	43
	06/02/2020 15:06	15:00	60	46	43
	06/02/2020 16:43	15:00	58	47	44
	06/02/2020 16:59	15:00	58	47	45
ST3 – Southeast Corner of Site	06/02/2020 12:54	15:00	86	60	41
	06/02/2020 13:10	15:00	86	60	40
	06/02/2020 17:36	15:00	60	46	43
	06/02/2020 17:51	15:00	84	56	42
ST4 – Northwest Corner of Site	06/02/2020 12:24	15:00	58	44	41
	06/02/2020 12:47	15:00	70	48	39
	06/02/2020 15:19	15:00	75	53	41
	06/02/2020 15:35	15:00	74	55	41
ST5 – Industrial Units	06/02/2020 13:57	15:00	64	51	48
	06/02/2020 14:12	15:00	75	56	47
	06/02/2020 16:02	15:00	77	57	47
	06/02/2020 16:17	15:00	74	55	48
ST6 – Rollaston Park	06/02/2020 13:21	15:00	85	64	50
	06/02/2020 13:37	15:00	82	62	45
	06/02/2020 18:34	15:00	86	63	45
	06/02/2020 18:50	15:00	87	68	46