Vistry Group Limited

Imberhorne Farm, East Grinstead

Noise Assessment – Condition 24

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REV	ISSUE PURPOSE	AUTHOR	CHECKED	APPROVED	DATE

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1. Introduction

1.1. Ardent Consulting Engineers have been instructed by Vistry Group Ltd to undertake a Noise Assessment to support the Reserved Matters planning application for a residential development of 550 units (C3 Use Class).

1.2. Condition 24 of the planning permission for the Hybrid planning application (application reference: DM/23/2699) for the site relates to noise and is reproduced below for reference.

24. To support any residential reserved matters application(s), a scheme that addresses the issues of acoustics, ventilation and overheating (AVO) shall be submitted to the Local Planning Authority to demonstrate how the proposals meet the following requirements;

Good acoustic design shall be fully integrated into the scheme. The hierarchy of good acoustic design (GAD) outlined below shall be applied in descending order and the methods utilised shall be clearly outlined in an Acoustic Design Statement (ADS):

i. Maximising the spatial separation of noise source(s) and receptor(s).
ii. Investigating the necessity and feasibility of reducing existing noise levels and relocating existing noise sources
iii. Using existing topography and existing structures (that are likely to last the expected life of the noise-sensitive scheme) to screen the proposed development site from significant sources of noise
iv. Incorporating noise barriers as part of the scheme to screen the proposed development site from significant sources of noise
v. Using the layout of the scheme to reduce noise propagation across the site
vi. Using the orientation of buildings to reduce the noise exposure of noise sensitive rooms
vii. Using façade design e.g. façade barriers, balconies and winter gardens to minimise exposure to noise
viii. Using the building envelope to mitigate noise to acceptable levels

The scheme shall;

a) outline the level of noise exposure for each property and how the noise level within any domestic living room or bedroom, with windows open for normal ventilation, shall comply with the desirable internal noise levels as outlined in Table 2.1 of BS8233:2014 and;

b) outline how the noise level within any domestic bedroom, with windows open, shall not normally exceed 42 dB(A) LAFmax between 23:00 and 07:00, in line with WHO NNGL 2007.

Where the standards in (a) or (b) above cannot be achieved following GAD and with windows open, only then shall the scheme show how those standards will be met with windows closed and how adequate ventilation and cooling will be provided.

Where windows must remain closed to achieve acceptable internal noise levels, an overheating assessment must be undertaken with accordance with CIBSE. The cooling hierarchy below shall be applied to the scheme:

1. *Minimise internal heat generation through energy efficient design*
2. *Reduce the amount of heat entering a building in summer through orientation, shading, albedo, fenestration, insulation and green roofs and walls*
3. *Design the properties to enable passive ventilation (e.g. cross ventilation)*
4. *Provide mechanical ventilation*
5. *Provide active cooling (ensuring they are the lowest carbon options).*

The methods integrated into the design to prevent overheating shall be fully outlined in the AVO scheme and no dwelling hereby permitted shall be occupied until the approved scheme has been implemented in full for that dwelling.

If as a last resort mechanical ventilation is to be used, it must be demonstrated that it still complies with internal noise levels while providing sufficient ventilation. Any amendments to the scheme or alterations to it must be agreed in writing with the Local Planning Authority in advance.

All acoustic reports submitted in relation to the scheme shall include characterisation of uncertainty and shall demonstrate the adoption of good practice to minimise uncertainty.

Reason: To ensure that the layout of the site and the design of the proposed buildings provide a high quality environment for future residents and to accord with policy DP26 of the Mid Sussex District Plan 2014-2031

Site Location

1.3. The site is to the southwest of East Grinstead in a mixed used commercial and residential area. Imberhorne Lane is directly to the east and will be the primary point of access for the site. To the south and west is arable land. A woodland is located to the north of the site, beyond which is Birches Industrial Estate. Gatwick Airport is some 10km to the west and aircraft overfly the site during easterly departures.

1.4. The surrounding area and approximate site boundary (in red) are shown in Figure 1-1.



Figure 1-1: Site Boundary and Surrounding Area

Site Proposals

1.5. The Reserved Matters development comprises 550 residential dwellings, with associated access and landscaping. The mixed use area, primary school, care community, and formal sports provision proposed as part of the wider development do not form part of this application. The site layout is presented in Figure 1-2.



Figure 1-2: Site Layout

2. Planning History

2.1. As part of the Outline planning application for the wider development, an Environmental Statement (ES) was produced, including a Noise and Vibration Chapter.

2.2. A noise survey was undertaken between the 21st October and 3rd November 2021. The ES Noise and Vibration Chapter considered the effects of the construction phase of the development on existing receptors, and the operational effects of the development on existing dwellings and the effects of the existing noise environment on dwellings at the development.

2.3. The ES Noise and Vibration Chapter concluded that with suitable mitigation measures all effects would be negligible, with the exception of traffic generated by the operational development on 3 roads. The ES Noise and Vibration Chapter concluded that the effect of noise from operational development generated traffic would be considered minor adverse on Barcombe Place, Hoathly Road and Imberhorne Lane.

2.4. The ES Noise and Vibration Chapter demonstrated that there would be no adverse effects due to noise and vibration from the development at existing dwellings, including the impact of operational Development generated traffic on Imberhorne Lane.

2.5. There will be no changes to the effects at existing dwellings set out in the ES Noise and Vibration Chapter, and therefore this Noise Assessment focuses on the amenity of future residents at the development and to provide sufficient information to support the discharge of Condition 24.

2.6. Where appropriate, reference is made to the ES Noise and Vibration Chapter.

3. Environmental Noise Levels

3.1. An environmental noise survey was undertaken by Ardent between 10th and 14th November 2022, the survey consisted of long term unattended measurements.

3.2. Since the survey was undertaken, there have been no significant changes in the area around the site which would lead to a change in the noise environment. Therefore the noise survey is considered suitable to inform the assessment.

3.3. The measurement positions are shown in Figure 3-1. Measurement positions were selected to obtain representative baseline noise levels due to road traffic noise on Imberhorne Lane, noise from Birches Industrial Estate and noise from Imberhorne Farm Cottages.



Figure 3-1: Measurement Positions

3.4. A description of the measurements positions is as follows:

- **Measurement Position 1 -** The microphone was mounted at 1.5m above local ground level with an unobstructed path to Imberhorne Lane;

- **Measurement Position 2 -** The microphone was mounted at 1.5m above local ground level;
- **Measurement Position 3 -** The microphone was mounted at 1.5m above local ground level with an unobstructed path to Imberhorne Farm.
- **Measurement Position 4 -** The microphone was mounted at 1.5m above local ground level adjacent to the bridleway.

3.5. The equipment used for the surveys was as follows:

- Svan 957 Sound Level Meter (serial number: 15381);
- Svan 971 Sound Level Meter (serial number: 34787);
- Svan 977 Sound Level Meter x 2 (serial numbers: 34132, 34133);
- Rion NC74 Calibrator (serial number: 34172694).

3.6. All equipment used has been professionally calibrated. Field calibration of the sound level meter (and complete measurement signal chain) was undertaken before and after measurements to ensure minimal drift of the calibration signal. Calibration certificates are available upon request.

3.7. The weather conditions during the survey were suitable for environmental noise measurements. There was an easterly to northeasterly breeze for the majority of the survey period, a westerly breeze occurred on the 10th November and an intermittent easterly to westerly breeze occurred on the 11th November.

3.8. A summary of the measurements taken at the site are shown in Table 3-1 and time histories of measured noise levels are shown in Appendix A.

Monitoring Position	Ambient Sound Level, dB $L_{Aeq, T}$ Range (Average)		Night, dB L_{AFmax} Range (Representative)
	Day	Night	

Table 3-1: Summary of Measured Noise Levels

3.9. The representative L_{AFmax} level is the value which has been exceeded fewer than 10 times in the 8-hour night period, i.e. one which can be considered to be 'not normally exceeded' as per the World Health Organisation (WHO) guidelines.

3.10. The noise environment at the site is dominated by road traffic on Imberhorne Lane. Aircraft, distant road traffic, and birdsong also contributed to the noise environment.

3.11. The noise levels shown in Table 3-1 show good agreement with the noise survey undertaken as part of the ES Noise and Vibration Chapter. Noise levels vary by no more than 2-3dB, with the exception of Position 2 during the day where noise levels were up to 6dB higher.

3.12. An extract of the London Gatwick Airport ECRD Report (2022) is shown below in Figure 3-2, with the approximate location of the site indicated. The figure shows that the number aircraft passing over the area where the site is located exceeded the N65 contour in 2022 increased significantly when compared to 2021, when the N65 contour was not exceeded.

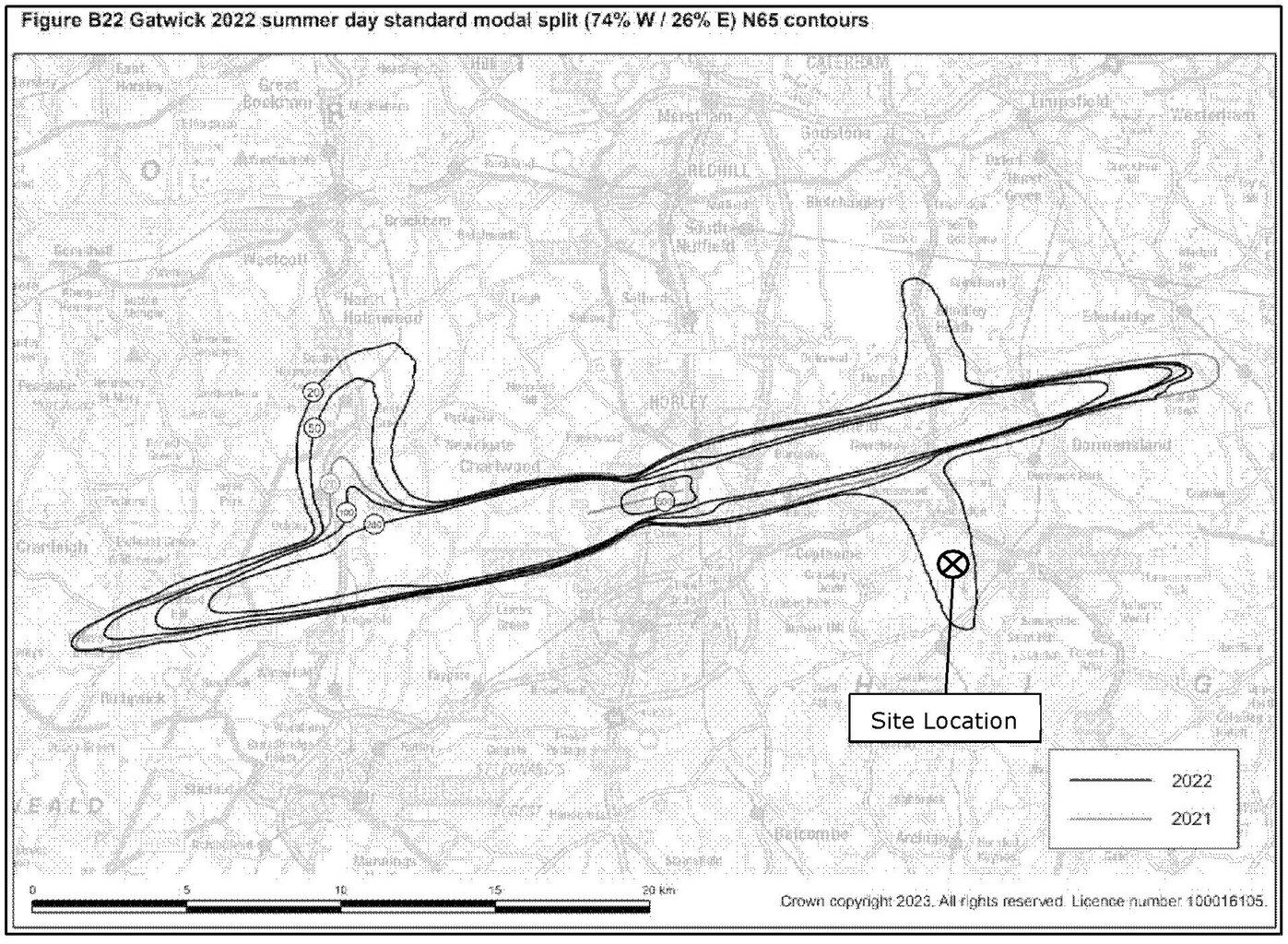


Figure 3-2: Extract of Figure B22 of the London Gatwick Airport ECRD Report (2022)

3.13. The London Gatwick Airport Q4 report for 2021 and 2022 show that there was an increase in the number of total flights during November of 7,211 in 2021 and 14,871 in 2022, which corresponds to a 106% increase in the number of total flights.

3.14. The eastern runway usage during November 2021 was 15% and in 2022 it was 17%. Based on the above, the number of flights departing from the eastern runway was 1082 in 2021 and 2,528 in 2022 which corresponds to a 133% increase in the number of flights on the easterly runway.

3.15. A review of the noise survey data and audio recordings taken during the survey also indicates that passing aircraft influenced the measured noise levels at the site. Therefore it is considered that the influence of passing aircraft from London Gatwick Airport resulted in an increase noise levels at Position 2, where measured noise levels are generally low.

3.16. Based on the Q4 report for 2019, the increase in flights when 2021 is compared to 2022 is due to a return to normal activities in 2022 following the various Covid-19 restrictions which were in place..

3.17. Representative octave band levels from the measurement positions are provided in Table 3-2. Where appropriate, these are used in glazing calculations to ensure a robust assessment of internal noise levels.

		Octave Band Centre Frequency, dB							
		63	125	250	500	1k	2k	4k	8k
MP1	$L_{eq,T}$ (day)								
	$L_{eq,T}$ (night)								
	$L_{max,T}$ (night)								
MP2	$L_{eq,T}$ (day)								
	$L_{eq,T}$ (night)								
	$L_{max,T}$ (night)								
MP3	$L_{eq,T}$ (day)								
	$L_{eq,T}$ (night)								
	$L_{max,T}$ (night)								
MP4	$L_{eq,T}$ (day)								
	$L_{eq,T}$ (night)								
	$L_{max,T}$ (night)								

Table 3-2: Octave Band Data for Noise Monitoring Locations

3.18. Based on the measurements taken on site, traffic flows for the surrounding road network and the proposals for the site, a 3D computer based environmental noise model have been created using the DataKustik 'CadnaA' Noise Mapping software. The following has been taken in account in the generation of the noise model:

- The noise model was set up to apply the noise prediction methodology set out in ISO 9613-2: Acoustics – Attenuation of Sound propagation outdoors – Part 2: General Method of Calculation;
- The model has been set to include up to second order reflected noise from solid structures;
- The existing land topography of the site has been taken into consideration in the assessment;
- Acoustic screening and reflections afforded by nearby buildings, solid structures, and fences/barriers;
- The model has been calibrated and verified using the noise survey data and traffic flows for the surrounding road network.

3.19. Noise contours are as shown in Appendix B, where appropriate these include traffic on the primary site access roads and also consider the increase in noise levels on Imberhorne Lane due to development generated traffic.

3.20. Based on the noise survey results and the noise model, the majority of the site would be low risk in accordance with ProPG Guidance. Only areas closest to Imberhorne Lane would be in the medium risk category during the day and the low risk category during the night, no dwellings are proposed to be located in this area.

3.21. Low risk sites are likely to be acceptable from a noise perspective provided that good acoustic design principles are followed. An acoustic design statement (ADS) has been produced which demonstrates how adverse impacts of noise can be controlled by the finished development. An ADS is shown in Section 5.

Reduction of Uncertainty

3.22. Following the 2021 noise survey which was undertaken to support the ES Noise and Vibration Chapter, a noise survey was undertaken in 2022 to reduce any uncertainty in the measured noise levels.

3.23. A comparison of the 2021 and 2022 noise survey data has been undertaken and with the exception of Position 2, the noise levels at measurement positions show good agreement. Based on the analysis undertaken in this section, the increase in noise levels at Position 2 is due to the increase in air traffic associated with London Gatwick Airport, this was due to a return to pre Covid-19 restrictions flight numbers at the airport.

3.24. All equipment was calibrated before and after the survey were undertaken, the drift was no greater than 0.1dB. The uncertainty in the measured noise levels, due to any drift in the calibration of the sound level meters, the measured noise levels, and subsequent calibration of the noise model have therefore been reduced.

3.25. The noise model of the baseline noise environment has been calibrated using the noise survey data, the calibration has followed a conservative approach, and the modelled noise levels are generally slightly higher than the measured noise levels. Therefore reducing the effects of uncertainty in the predicted noise levels.

4. Noise from Imberhorne Farm Cottages & Birches Industrial Estate

4.1. Imberhorne Farm Cottages and Birches Industrial Estate are located to the north and the southeast of the site as shown in Figure 4-1. The closest proposed dwellings are approximately 80m and 220m from Imberhorne Farm Cottages and Birches Industrial Estate, respectively.

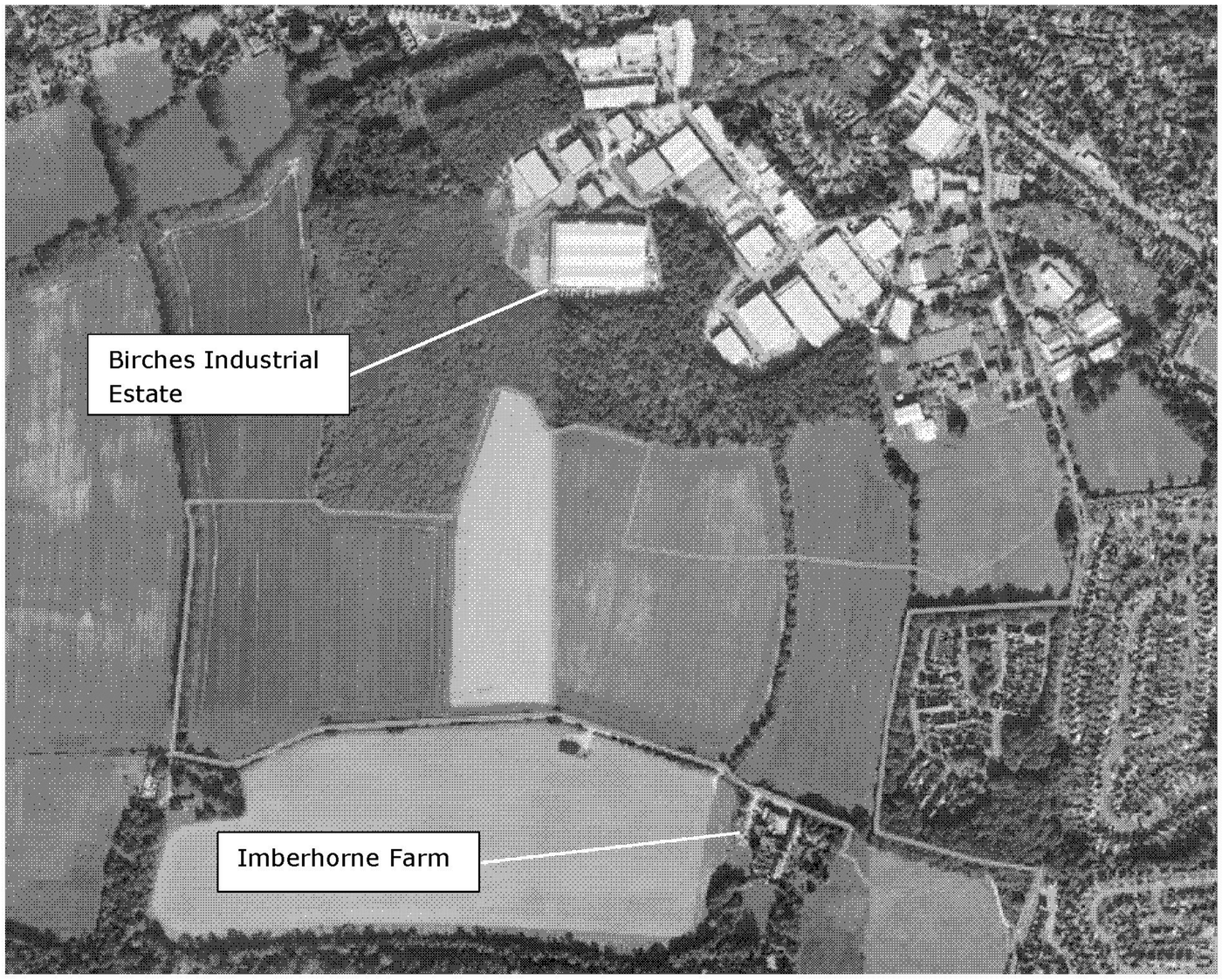


Figure 4-1: Location of Imberhorne Farm Cottages and Birches Industrial Estate

Birches Industrial Estate

4.2. Birches Industrial Estate includes a variety of commercial operators, including a Travis Perkins Store (a builder's merchants), Simply MOTs Limited (a vehicle mechanic), Volume 1 Climbing (an indoor rock climbing facility), International Logistics Group (a logistics service) and Rolls-Royce Solutions UK Ltd (a power plant equipment supplier).

4.3. The ES Noise and Vibration Chapter which accompanied the Hybrid Planning Application noted that during the 2021 noise survey, noise from Birches Industrial

Estate was inaudible against the residual acoustic environment and therefore a BS4142 assessment was not undertaken.

4.4. Similarly during the 2022 noise survey, observations were taken of the noise sources at each measurement position, noise from Birches Industrial Estate was inaudible against birdsong and distant road traffic noise.

4.5. ProPG guidance notes the following:

"…In the special case where industrial or commercial noise is present on the site but is "not dominant" (i.e. where the impact would be rated as lower than adverse (subject to context) if a BS4142:2014 assessment was to be carried out), its contribution may be included in the noise level used to establish the degree of risk (and if included, this should be clearly stated)…"

4.6. It is considered that noise from Birches Industrial Estate is not dominant in the noise environment and has therefore been included in the consideration of the risk categories. The mitigation measures to control road traffic noise and passing aircraft will also be suitable to control noise from Birches Industrial Estate so that no adverse effects will occur.

Imberhorne Farm Cottages

4.7. Commercial operations which were observed at Imberhorne Farm Cottages, and which could generate significant levels of noise include Imberhorne 4x4 which is a car mechanic and Green Machines, a garden machinery supplier. Based on a review of publicly available information both of these businesses typically operate between 08:30-17:00 Monday to Saturday.

4.8. During the noise survey observations were made about activities at Imberhorne Farm Cottages, it was noted that the main noise sources were occasional vehicle movements and a power washer cleaning ride on lawn mowers. No activity was observed at Imberhorne 4x4.

4.9. The equipment at Position 3 was setup to record audio when a specific noise threshold was exceeded, which was setup based on the observations taken whilst attending the site. Based on the audio recording the main noise source associated with Imberhorne Farm Cottages was vehicles traffic for the duration of the survey. Passing aircraft and birdsong also contributed significantly to the measured noise levels.

BS4142 Assessment

4.10. The recordings have been reviewed to identify periods when activities at Imberhorne Farm Cottages occurred and there was minimal influence from other sources, such as passing aircraft and birdsong. Based on the analysis the specific sound level used in the assessment is 48dB $L_{Aeq,T}$.

4.11. The residual and representative background sound levels used to inform the assessment have been derived from Position 4 which was not influenced by noise from Imberhorne Farm Cottages and the residual noise environment was similar to Position 3.

4.12. The residual and representative background sound levels have been derived from periods during which operations at Imberhorne Farm Cottages are understood to occur. A histogram of the background sound levels at Position 4 between 08:30-17:00 is shown in Figure 4-2.

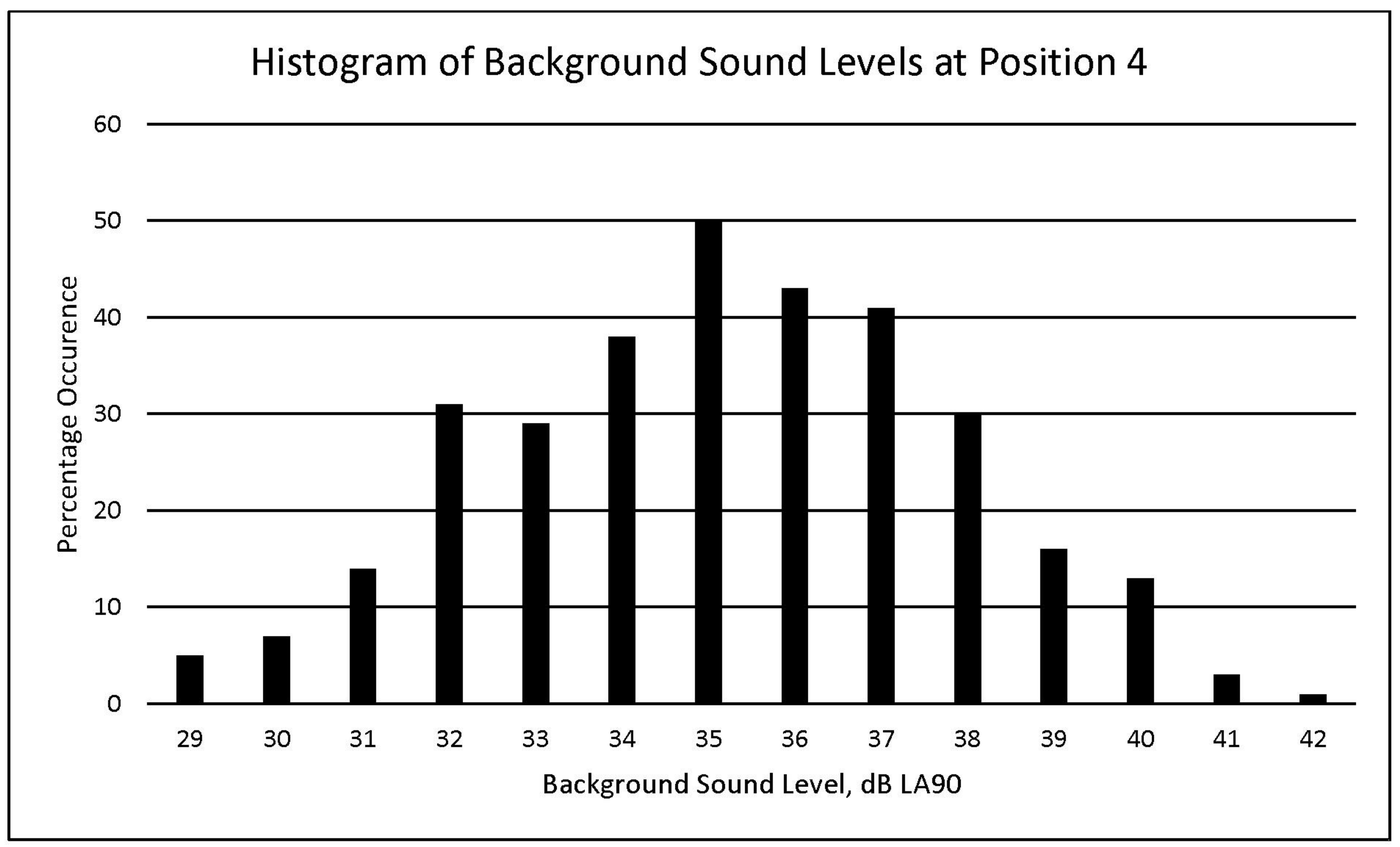


Figure 4-2: Histogram of Background Sound Levels at Position 4

4.13. Based on the statistical analysis, the representative background sound level for use in the assessment is 35dB $L_{A90,T.}$ The residual sound level is 46dB $L_{Aeq,T}$.

4.14. The specific sound level is significantly lower than the residual sound level and slightly higher than the representative background sound level. The main noise source associated with Imberhorne Farm Cottages is vehicle traffic, which will be

similar in nature to noise from the primary site access road associated with the proposed development, therefore no acoustic feature correction has been applied. The initial assessment at the closest proposed dwellings is shown in Table 4-1.

Initial Assessment	Day

Table 4-1: Initial Assessment of Noise from Imberhorne Farm Cottages

4.15. The rating level from Imberhorne Farm is 3dB above and 8dB below the background and residual sound levels, which indicates a low impact, subject to context.

4.16. The residual and background sound levels used in the BS4142 assessments are based on the noise survey data which does not take into account the future noise environment at the site. It is expected that the residual sound level may be higher than that used for assessment due to noise sources such as road traffic which would be associated with a development of this scale.

4.17. There is the potential for intensification of activity at Imberhorne Farm Cottages if there is a change in the operations which occur which falls within the existing planning permission. However given the size of Imberhorne Farm Cottages, it is expected that the change in noise levels would not be significant when compared to the current operations.

4.18. Clause 11 Note 3 of BS4142 is relevant in terms of the context of the proposed development and is duplicated below:

"…Where the initial estimate of the impact needs to be modified due to the context, take all pertinent factors into consideration, including the following….

…3) The sensitivity of the receptor and whether dwellings or other premises used for residential purposes will already incorporate design measures that secure good internal and/or outdoor acoustic conditions, such as:

i) facade insulation treatment;
ii) ventilation and/or cooling that will reduce the need to have windows open so as to provide rapid or purge ventilation; and
iii) acoustic screening"

4.19. The design and mitigation measures to control noise due to the ambient noise environment at proposed dwellings, which includes road traffic and passing aircraft are set out in Section 7. The mitigation measure would also be suitable to control noise from Imberhorne Farm.

4.20. When the context of the proposed development and operations at Imberhorne Farm is taken into account, it is considered that noise from Imberhorne Farm Cottages will result in a low impact at the closest proposed dwellings.

4.21. Noise from Imberhorne Farm Cottages is not dominant and has been included in the consideration of the risk categories in accordance with ProPG guidance.

Reduction of Uncertainty

4.22. Observations about activities at Imberhorne Farm Cottages, along with audio recordings were taken during the survey, to understand the noise sources associated with operations in as much detail as possible. The specific sound level has been derived from the period with the highest noise levels due to activities at Imberhorne Farm Cottages and when the influence of the residual acoustic environment was at its lowest.

4.23. The residual and background sound levels have been derived from Position 4, which was not influenced by noise from operations at Imberhorne Farm Cottages and is located in a similar noise environment. Noise levels tend to be slightly lower at Position 4 when compared to Position 3, the use of this data therefore presents a conservative approach.

4.24. Therefore the uncertainty in the BS4142 assessment presented within this section has been reduced.

5. Good Acoustic Design & Mitigation

Acoustic Design Statement

5.1. The aim of this section is to identify mitigation measures capable of providing suitable levels of attenuation to achieve the criteria of Condition 24. The approach to the ADS is in line with that set out in ProPG: Planning & Noise, May 2017.

Stage 1 Assessment

5.2. The acoustic environment is controlled by road traffic noise on the surrounding road network, most notably Imberhorne Lane, road traffic noise from the primary site access road will also contribute to the noise environment. Noise levels are highest close to Imberhorne Lane and the primary site access road.

5.3. Where new residential receptors are introduced, any change in the predominant noise source is expected to be due to changes in the volume of road traffic. Based on the ES noise and vibration chapter which supported the outline planning application, the number of expected movements will not result in a significant effect at existing dwellings.

Stage 2

Element 1 – Good Acoustic Design

5.4. The design team have sought to follow the best practice principles including the hierarchy of noise control wherever practicable in developing the layout of the Site. This is set out in the wording of Condition 24 and reproduced below for reference:

- *Maximising the spatial separation of noise source(s) and receptor(s).*
- *Investigating the necessity and feasibility of reducing existing noise levels and relocating existing noise sources.*
- *Using existing topography and existing structures (that are likely to last the expected life of the noise-sensitive scheme) to screen the proposed development site from significant sources of noise.*
- *Incorporating noise barriers as part of the scheme to screen the proposed development site from significant sources of noise.*
- *Using the layout of the scheme to reduce noise propagation across the site.*

- *Using the orientation of buildings to reduce the noise exposure of noise sensitive rooms.*

- *Using façade design e.g. façade barriers, balconies, and winter gardens to minimise exposure to noise.*

- *Using the building envelope to mitigate noise to acceptable levels.*

5.5. Dwellings are located in areas of the site which are set back significantly from Imberhorne Lane. Areas of landscaping which are fronted by local site access roads and in some areas, parking are included to maximise the separation distance between dwellings, Birches Industrial Estate and Imberhorne Farm Cottages. Where possible a standoff from the primary site access road is provided via paved and landscaped areas between dwellings.

5.6. With the exception of the primary site access road associated with the development, the noise levels at the site are not considered to be significant enough to require screening between noise sources and proposed dwellings. Screening along the primary site access road would not be viable due to other design considerations and is not a mitigation strategy that is usually applied to access roads at large scale developments.

5.7. The layout provides screening by using relatively continuous intervening buildings adjacent to the primary access road, there are only a handful of gardens which face this road. A similar frontage of dwellings is provided where dwellings are closest to Birches Industrial Estate and Imberhorne Farm Cottages.

5.8. For reference the site layout is shown in Figure 5-1.



Figure 5-1: Site Layout

Element 2 – Internal Noise Levels

5.9. Based on the measured and calculated noise levels the internal noise levels in residential units can be determined. Appropriate façade attenuation will be provided to ensure compliance with Figure 2 ProPG which incorporates the guidance in BS8233:2014. In doing so Element 2 requirements of Stage 2 are met.

5.10. Where possible sensitive rooms are located on the sheltered side of buildings to noise sources. Glazing and ventilation specification are provided in more detail later in this section.

Element 3 – External Amenity Area Noise Levels

5.11. Whilst it is not specifically part of Condition 24, as part of an Acoustic Design Statement it is a requirement to consider noise levels in external amenity spaces.

5.12. External sound level at all gardens at the site will meet the criteria set out in the standards. At balconies associated with apartment blocks which are in close proximity to the primary site access road, noise levels will marginally exceed the criteria. The excess will be no greater than 3dB for a limited number of balconies, with the excess at the majority of balconies being in the range of 1-2dB.

5.13. Private amenity spaces are located on the screened side of building from Imberhorne Lane and the primary access road where possible to reduce noise levels by as much as possible, given other design considerations.

5.14. There are open amenity spaces across the site which include pedestrian links, and a central open space, as shown in Figure 5-2.



Figure 5-2: Amenity Spaces

5.15. These spaces will have external sound levels which are no greater than 55dB $L_{Aeq,T}$ closest to the primary access road, and lower than 50dB $L_{Aeq,T}$ across the rest of the spaces. Therefore, all residents will have access to communal amenity spaces with external sound levels which are lower than the criteria for private amenity spaces.

Element 4 – Assessment of Other Relevant Issues

5.16. Good acoustic design principles which have been followed mean that the proposed development is in general compliance with the principles of the ProPG.

5.17. Noise associated with Imberhorne Farm has been assessed in accordance with BS 4142, resulting in a low impact on future residents.

5.18. The proposed facade sound insulation performances mean that internal residential noise levels will be in line with the ProPG guidance levels with windows open for the majority of dwellings and windows closed to dwellings where required.

5.19. External sound levels in private amenity spaces are generally compliant with some slight exceedances. The design of the site has reduced noise levels in private amenity spaces as far as practicable, and the residual exceedances are minimal. All residents will also have access to communal amenity spaces.

Recommendation for the Decision Maker

5.20. In the context of the existing acoustic environment the site is considered to be a low risk of adverse noise impact.

5.21. Principles of good acoustic design have been followed to minimise the potential impact of noise though; careful layout and orientation of buildings; use of dual aspect and buffer zones; self-screening and where appropriate façade mitigation.

5.22. It is therefore considered that the proposed development is suitable on noise grounds in accordance with ProPG guidance.

Mitigation Recommendations

5.23. The aim of this section is to identify mitigation measures capable of providing suitable levels of attenuation to achieve the criteria of Condition 24. Where noise levels are not significantly influenced by road traffic noise, the measured data from Position 2 has been used as a baseline due to the influence of passing aircraft from London

Gatwick Airport. Therefore the uncertainty in the recommendations for façade mitigation measures has been reduced.

5.24. Part a) of Condition 24 notes that the noise assessment should set out the level of noise exposure for each property and how the noise level within any domestic living room or bedroom, with windows open for normal ventilation, will meet the desirable internal noise levels as outlined in Table 2.1 of BS8233:2014. There is no Table 2.1 in BS8233, so it is assumed that the condition is referring to Table 4.

5.25. The primary access road is expected to be used predominantly during the day, at night there is not expected to be significant vehicle movements. Therefore ambient noise levels during the day are the main factor in the areas where closed, but not sealed, windows and alternative ventilation will be required.

5.26. Where road traffic noise form the primary access road is not significant at dwellings, the measured noise levels at Position 2 have been considered. At Position 2 noise levels from other localised sources are relatively low and therefore the effects of aircraft from London Gatwick Airport are most prominent.

5.27. A markup of the façade of dwellings which would require closed windows to meet the criteria of part a) of Condition 24 during the day is presented in Figure 5-3. Based on the results of the noise modelling and the measured noise levels, the criteria will be met at night.

5.28. At the majority of dwellings, open windows would be suitable to meet the above criteria, with dwellings closest to the development access road and Imberhorne Lane requiring closed windows and alternative ventilation, such as trickle ventilation. Residents would have the choice to open windows, whilst noting that internal noise levels would be slightly elevated.

5.29. Part b) of Condition 24 also notes that noise levels in bedrooms should not normally exceed 42dB L_{AFmax} between 23:00 and 07:00 with windows open. A 15dB reduction has been considered for a partially open window. Based the measured noise levels at the site, which include noise from all existing sources in the area, the criteria is met at all bedrooms



Figure 5-3: Closed Windows and Alternative Ventilation - Day

Overheating

5.30. Condition 24 requires consideration of overheating where the above noise criteria is exceeded, and windows are required to be closed during normal condition to achieve suitable internal noise levels.

5.31. The criteria of Condition 24 has been derived from BS8233 and WHO NNGL, which do not take into consideration the effects of noise during overheating conditions. Therefore consideration has been given to the noise impact during overheating events in accordance with Acoustics, Ventilation and Overheating (AVO) guidance.

5.32. AVO guidance is the most appropriate guidance for the consideration of the noise impact during overheating conditions at the planning stage of developments and is therefore suitable to support the Reserved Matters planning application. The strategy to provide thermal comfort will be developed further as part of the detailed design of the site to satisfy Approved Document O of the Building Regulations. This will be informed by the noise constraints at the site.

5.33. Based on the noise survey results and the noise model almost all residential facades are in the negligible or low risk categories. For the negligible risk category AVO notes that further consideration of the noise impact during overheating is not required, for the low risk category further consideration is optional.

5.34. Only the facades of Plots 10 & 11 which directly face the primary access road are in the medium risk category at first floor level. As shown in Figure 5-4.

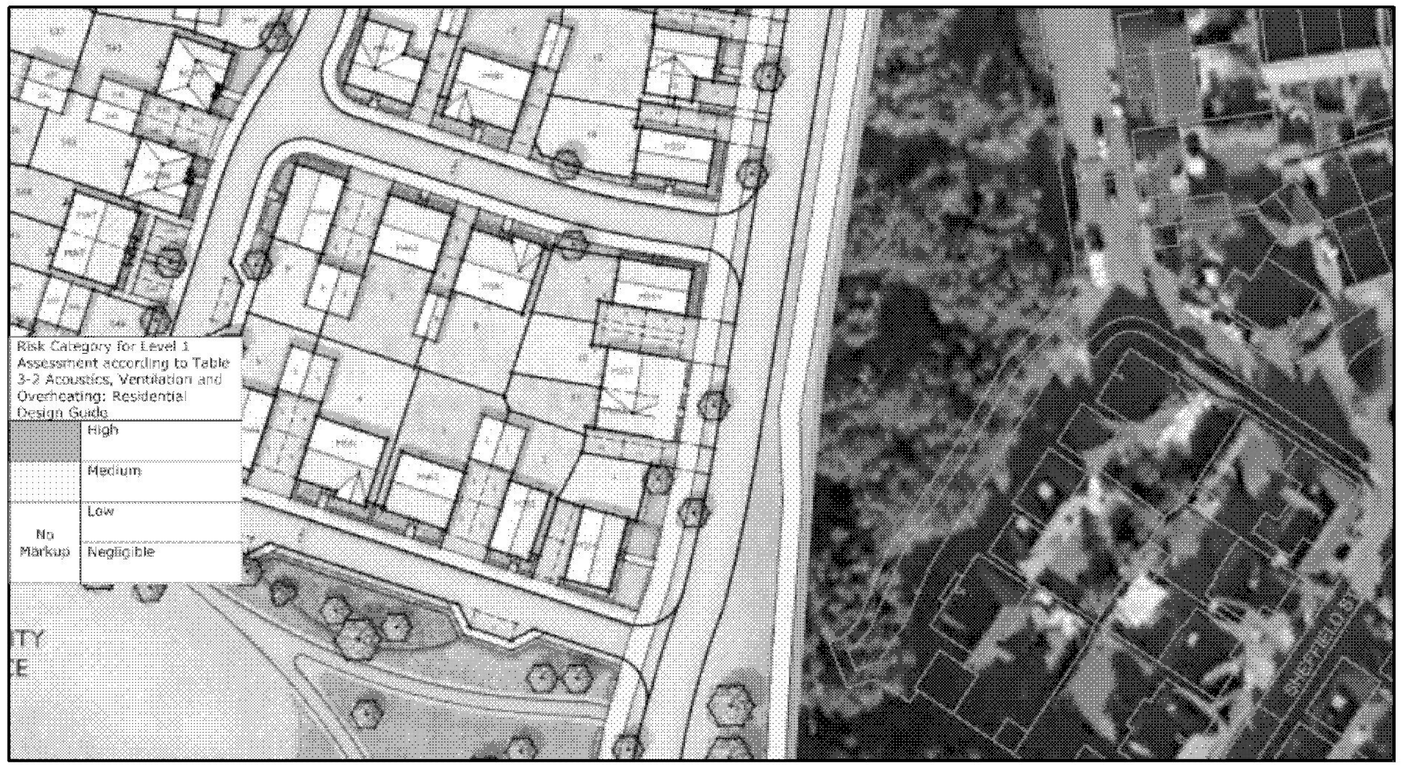


Figure 5-4: Medium Risk Facades

5.35. Only one bedroom façade at each plot falls within the medium risk category. The other two bedrooms are located on the shielded side of the dwellings where noise levels are significantly lower.

5.36. With the exception of Plots 10 & 11 windows can be opened in all rooms at all floors to provide ventilation under overheating events during the day. For Plots 10 and 11 windows can be opened in all rooms at ground floor to provide ventilation.

5.37. It is expected that the large majority of residents would occupy the ground floor of dwellings during the day, where windows can be opened for ventilation. Therefore it is expected that there would be no adverse effects due to noise during overheating events at façade where windows are required to be closed to meet the criteria of Condition 24.

Façade Mitigation Measures

5.38. Glazing and ventilation specifications are based on the measured noise levels and the results of the noise modelling. The calculations take into account the detailed internal layouts of dwellings.

5.39. The calculations show worst case and representative examples to demonstrate that in principle mitigation solutions are available and it is expected that these would be developed at detailed design stage for the site. Examples of the calculations are presented in Appendix C.

5.40. Where rooms have 2 facades with glazing, a summary of the combined internal noise levels are presented within the calculations. Where rooms have 1 façade with glazing, no summary is presented.

5.41. As the site access roads do not currently exist, measured noise data is not available. Therefore, the mitigation measures for dwellings close to the primary access roads are based on the predicted noise levels from the noise modelling during the day and the typical road traffic noise spectrum shown in BS EN 1793-3.

External Building Fabric – Non-Glazed Elements

5.42. It is understood that the non-glazed external building fabric elements comprise masonry cavity walls. This would typically provide a sound reduction performance of at least the figures shown in Table 5-1 when tested in accordance with BS EN ISO 10140-2:2010 (figures derived from: Representative Values of Airborne SRI for Some Common Structures: Appendix B of Flakt Woods 'Guide to Noise Control').

Element	Octave band centre frequency SRI, dB					
	125	250	500	1k	2k	4k

Table 5-1: Non-glazed Elements Sound Reduction Performance

5.43. A number of bedrooms at the highest floor of dwellings will have facades which comprise in part or in whole the roof of dwellings and dormers. Where bedrooms are proposed which have roof and/or dormers as part of the façade a minimum performance specification is proposed. The construction of these façade elements a composite should achieve a sound reduction performance of at least 43dB R_W.

5.44. The minimum octave band performance specification for the combined roof/dormer external wall constructions is set out in Table 5-2 below.

Element	Octave band centre frequency SRI, dB					
	125	250	500	1k	2k	4k

Table 5-2: Roof/Dormer Minimum Required Sound Reduction Performance

5.45. Where the performance is achieved in combination with the minimum glazing and ventilation performance requirements, suitable internal noise levels will be achieved.

External Building Fabric - Glazing

5.46. Table 5-3 sets out the required glazing performance types for residential dwellings, these specifications take into account the glass, frame, seals, and associated fittings.

Glazing Type	Room Type	Sound Reduction Index, R_w	Octave band centre frequency SRI, dB					
			125	250	500	1k	2k	4k

Table 5-3: Required Minimum Sound Reduction Performance for Glazing

External Building Fabric – Ventilation

5.47. Table 5-4 sets out the required ventilation performance for residential dwellings.

Ventilation Type	Room Type	Element Normalised level difference, D_{new}	Octave band centre frequency SRI, dB					
			125	250	500	1k	2k	4k

Table 5-4: Required Minimum Sound Reduction Performance for Ventilation

5.48. Type 2 glazing and ventilation is only required to control noise levels from the primary access road during the day at a limited number of facades where rooms have relatively high areas of glazing and/or have multiple facades with glazing.

5.49. Tables 5-3 and 5-4 should be viewed in conjunction with Figures 5-5 and 5-6, which set out the locations where each glazing and ventilation performance types are required. Internal noise levels which meet the criteria of Condition 24 can be achieved at all dwellings with relatively standard thermal glazing and trickle ventilation.



Figure 5-5: Glazing & Ventilation Markup (Ground Floor)



Figure 5-6: Glazing & Ventilation Markup (1st Floor and above)

5.50. Where non-sensitive rooms and sensitive rooms form part of an open plan area, for example a living room, dining and kitchen area, the glazing specification for the more sensitive room should be used across the combined area.

5.51. All major building elements should be tested in accordance with BS EN ISO 10140-2:2010. Glass performance data alone would not necessarily demonstrate compliance with this specification.

5.52. It should be noted that there may be additional considerations for glazing such as overheating, security, thermal performance, and air quality. Alternative glazing could be used assuming the minimum acoustic performance is met, and the specifications will be developed further as part of the detailed design of the site.

6. Conclusions

6.1. An environmental noise survey has been undertaken at the site, the measured noise levels and results of the noise model have been used to calculate and assess suitable glazing and ventilation specifications, demonstrating the internal noise level criteria of Condition 24 can be met.

6.2. An acoustic design review has been produced to demonstrate how the site layout has been influenced by good acoustic design principles. Noise levels have been reduced by as much as practicably possible whilst also taking other design considerations into account.

6.3. An assessment of noise from commercial operations at Imberhorne Farm has been undertaken in accordance with BS4142, noise from operations results in a low impact at the closest proposed dwellings.

6.4. Noise from Imberhorne Farm and Birches Industrial Estate are considered not dominant when considered in accordance with ProPG guidance. The mitigation measures which have been designed to control road traffic noise and passing aircraft will also control noise from these sources and there will be no adverse effects.

6.5. To achieve the criteria of Condition 24 some properties will be designed so that windows can remain closed, but not sealed, and an alternative means of ventilation will be provided. This applies only to dwellings closest to the primary access road during the day.

6.6. Where windows are required to be closed alternative ventilation, such as trickle ventilation, will provide background ventilation. Windows are not required to be sealed shut and residents will have the choice to open them whilst noting internal sound levels will be slightly elevated.

6.7. Where windows are required to be closed to meet the criteria of Condition 24, consideration has been given to the noise impact during overheating events in accordance with AVO guidance.

6.8. Almost all residential facades fall into the negligible or low risk categories, with the exception of two bedroom facade which face the primary access road and are in the medium risk category. Residents would be able to open windows to provide ventilation in negligible and low risk areas, and residents will generally occupy the

ground floor of dwellings during the day. Therefore it is expected that there would be no adverse effects due to noise during overheating events.

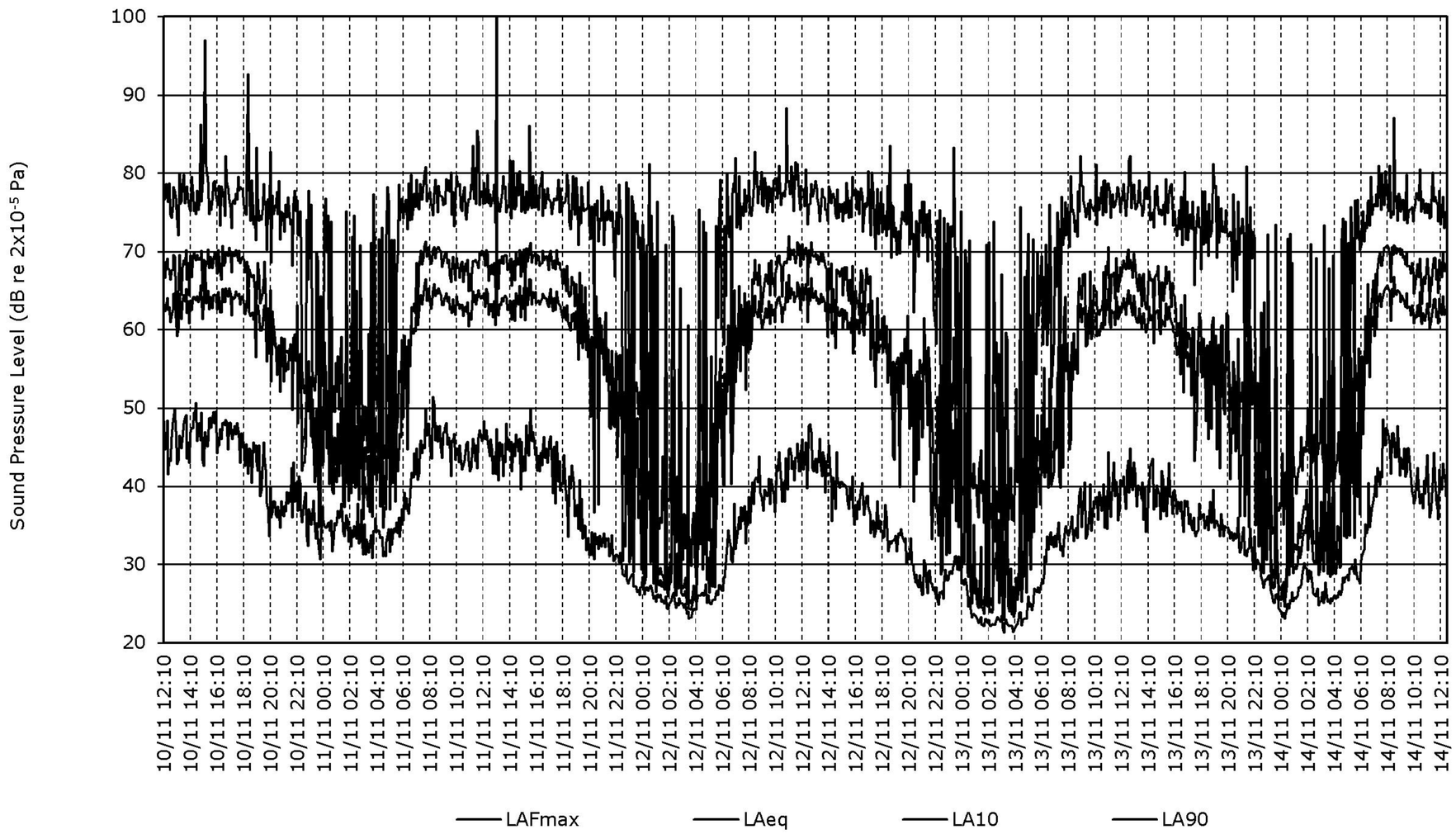
6.9. As part of the detailed design of the site and to satisfy Approved Document O of the Building Regulations, the strategy to provide thermal comfort and suitable internal noise levels will be developed further.

6.10. Uncertainty in the noise survey data, noise modelling and assessments has been reduced by as much as practicably possible and where appropriate worst case approaches to assessment have been adopted.

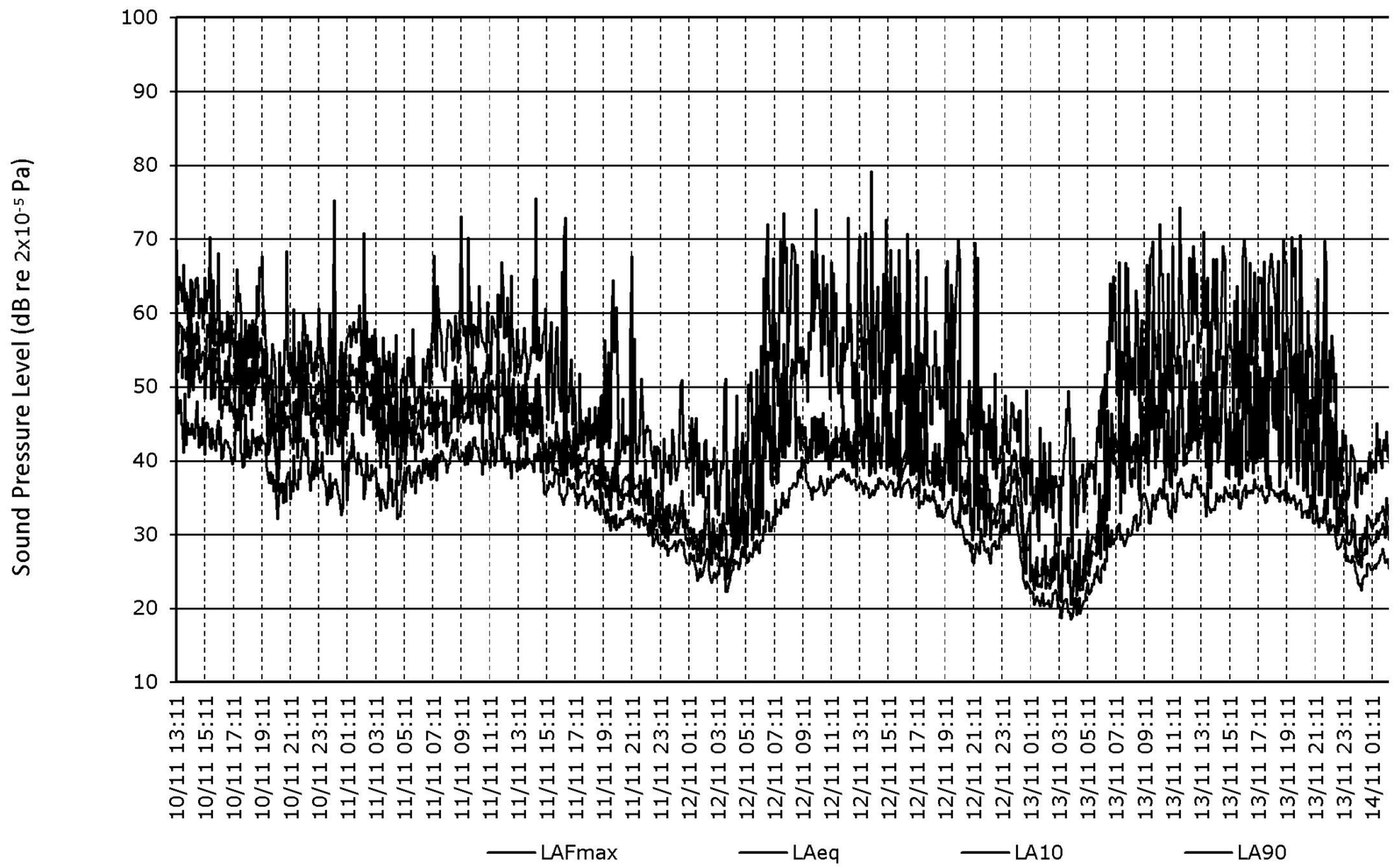
6.11. Subject to the recommendations in this report, it is considered that the requirements of Condition 24 have been met.

APPENDIX A

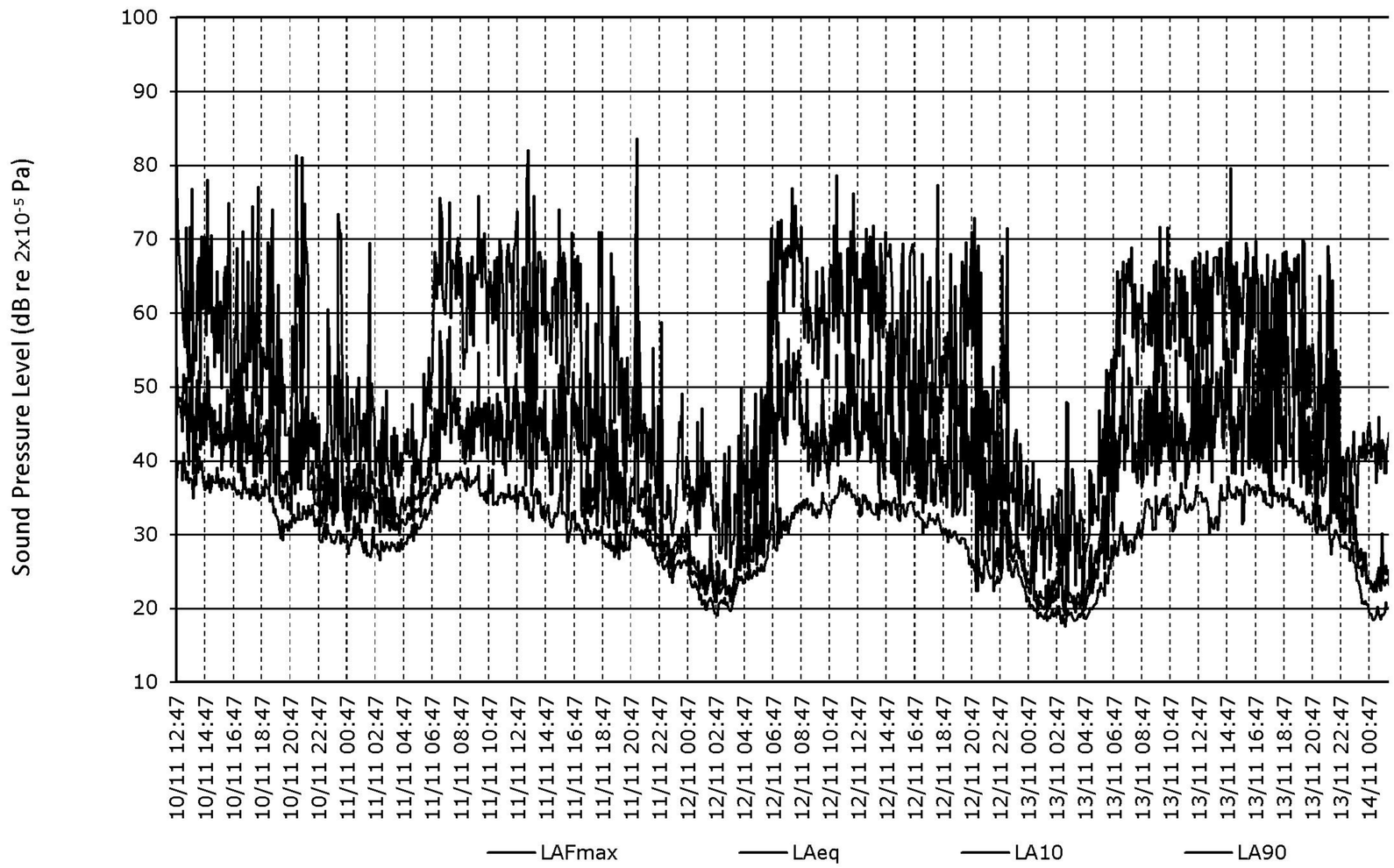
Position 1
Environmental Noise Time History
10 November 2022 to 14 November 2022



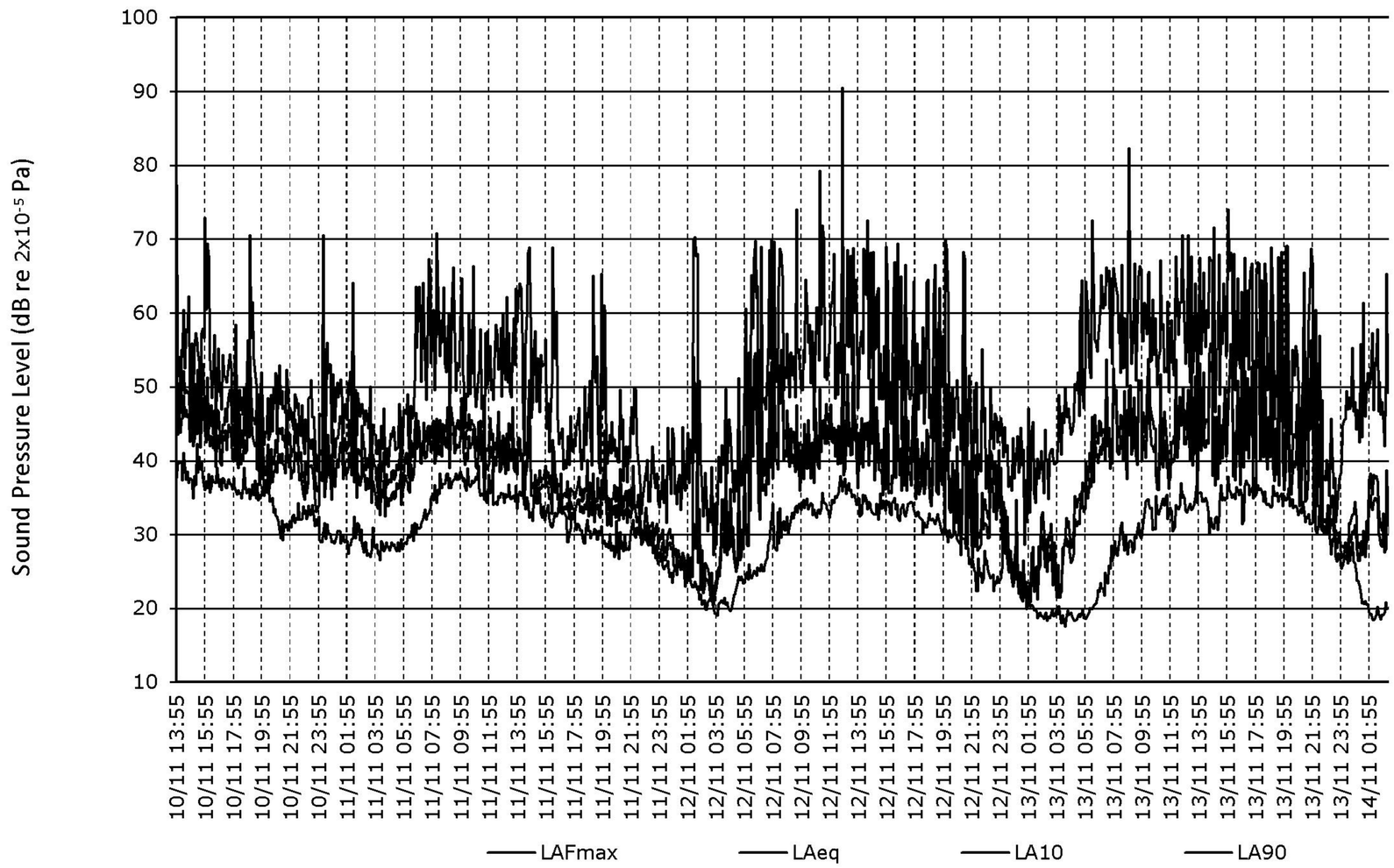
Position 2
Environmental Noise Time History
10 November 2022 to 14 November 2022



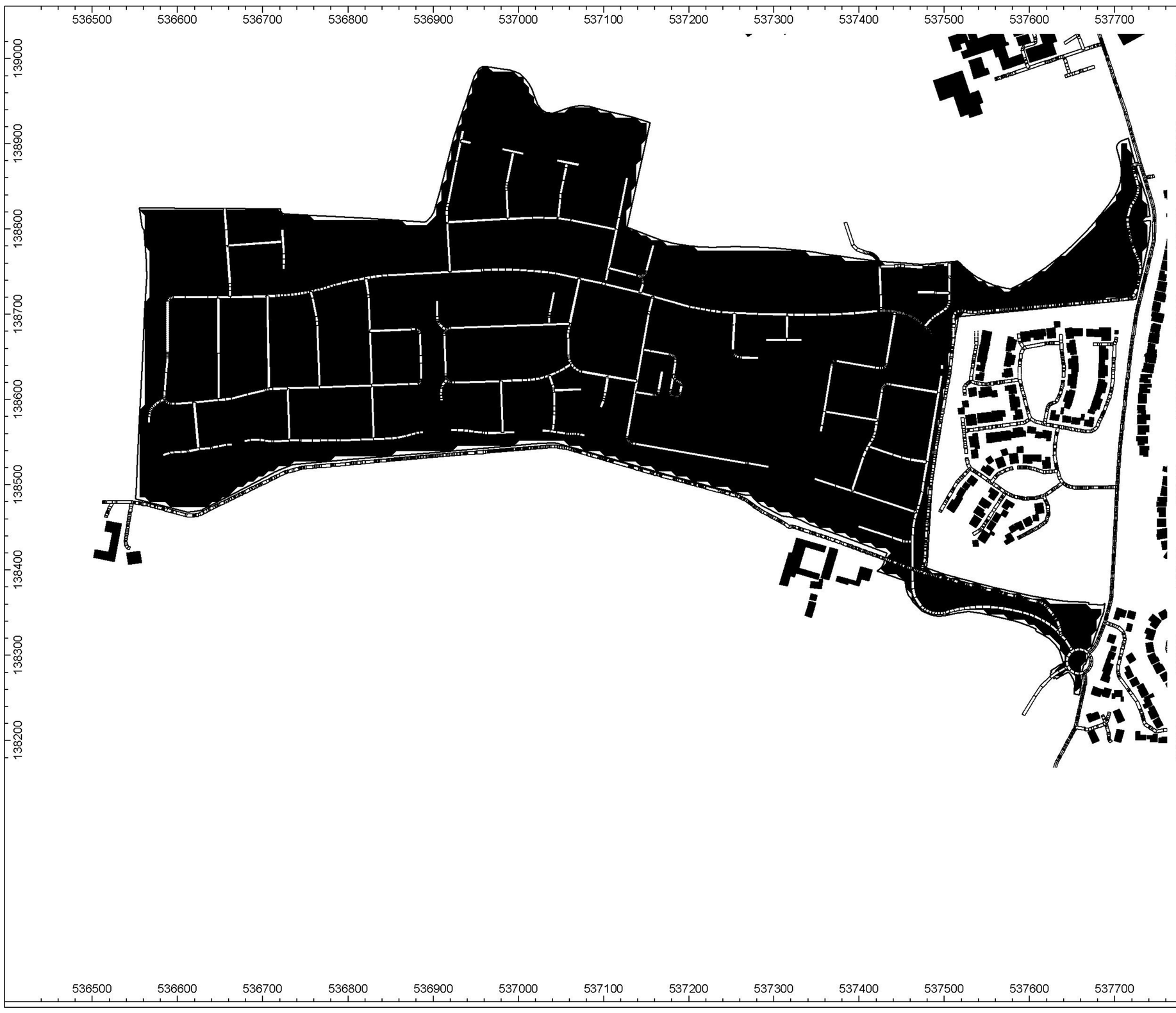
Position 3
Environmental Noise Time History
10 November 2022 to 14 November 2022



Position 4
Environmental Noise Time History
10 November 2022 to 14 November 2022



APPENDIX B



Client:
Vistry Group Limited

Project:
Imberhorne Farm,
East Grinstead

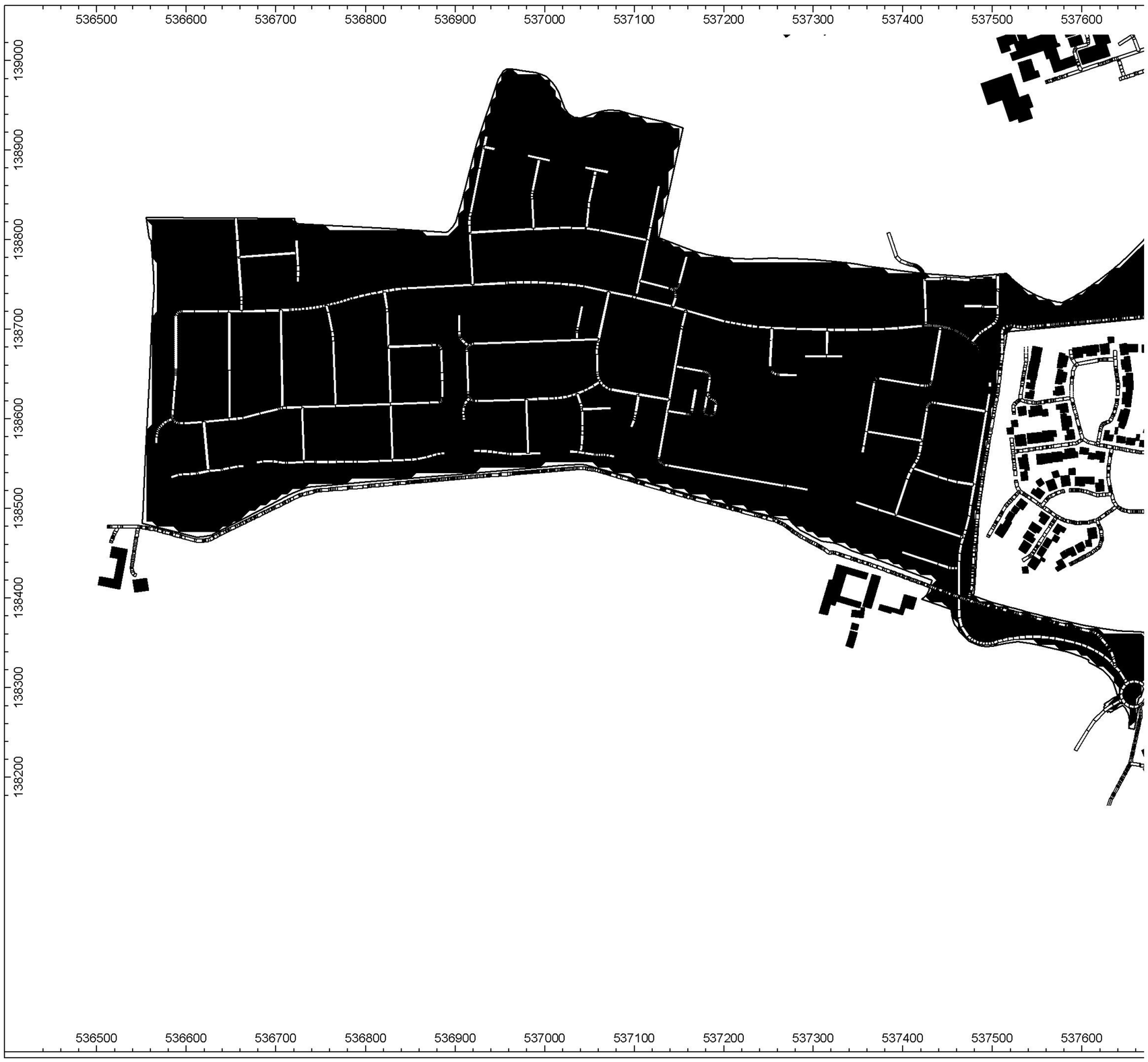
Date:
15/12/25

Figure B1:
Noise Levels during the Day
dB LAeq, 16 hour
1.5m Grid Height

- > -99.0 dB
- > 35.0 dB
- > 40.0 dB
- > 45.0 dB
- > 50.0 dB
- > 55.0 dB
- > 60.0 dB
- > 65.0 dB
- > 70.0 dB
- > 75.0 dB
- > 80.0 dB
- > 85.0 dB

Red Line Boundary

ARDENT
CONSULTING ENGINEERS
AN EMPLOYEE OWNED COMPANY


536500
536600
536700
536800
536900
537000
537100
537200
537300
537400
537500
537600
139000
138900
138800
138700
138600
138500
138400
138300
138200

APPENDIX C

ARDENT

Noise Break-in Calculation - Plot 1 House Type M354 Living Room, Façade 1

Description	
Ardent CE Project No.	**2206781_A**
Property Address	**Imberhorne Farm**
Room Type	**Bedroom**
Parameter	**Leq, 16h**

Room Dimensions and Areas	
Room volume	44.20
Total Surface area	80.30
Wall façade area	5.60
Roof façade area	0.00
Glazing area	2.50
Dne Ref Area, A0	10.00

Total façade area	8.10

Room Absorption Calcuation	63	125	250	500	1000	2000	4000	8000	
Estimated Reverberation time	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	
Alpha bar	0.18	0.18	0.18	0.18	0.18	0.18	0.18	0.18	
Total Absorption	14.23	14.23	14.23	14.23	14.23	14.23	14.23	14.23	
10Log S/A	-2.45	-2.45	-2.45	-2.45	-2.45	-2.45	-2.45	-2.45	

Façade level	63	125	250	500	1000	2000	4000	8000	A
Predicted Noise Level	61	59	56	53	53	50	44	41	57
Façade to free field	0	0	0	0	0	0	0	0	
Angle of view	0	0	0	0	0	0	0	0	
Screening (Maekewa)	0	0	0	0	0	0	0	0	
Distance correction	0	0	0	0	0	0	0	0	
Other	0	0	0	0	0	0	0	0	
Noise level at façade (Leq)	61	59	56	53	53	50	44	41	57

- Based on typical specturm provided in BS EN 1793-3

Composite SRI	63	125	250	500	1000	2000	4000	8000	Rw
Glazing SRI	18	21	17	25	35	37	31	40	29
Transmission Coefficient	0.015849	0.007943	0.019953	0.003162	0.000316	0.000200	0.000794	0.000100	
Wall SRI	28	34	43	55	66	77	85	85	55
Transmission Coefficient	0.001585	0.000398	0.000050	0.000003	0.000000	0.000000	0.000000	0.000000	
Roof SRI	23	26	43	52	60	65	65	65	51
Transmission Coefficient	0.005012	0.002512	0.000050	0.000006	0.000001	0.000000	0.000000	0.000000	
Ventilation, Dne	18	19	34	34	30	31	36	36	32
Transmission Coefficient	0.015849	0.012589	0.000398	0.000417	0.001000	0.000794	0.000251	0.000251	
Average Transmission Coeff	0.025554	0.018269	0.006684	0.001493	0.001332	0.001042	0.000555	0.000341	
Average SRI	16	17	22	28	29	30	33	35	29

Calculated Internal Noise Level, dB	63	125	250	500	1000	2000	4000	8000	A
Lp (Reverberant), line source	43.6	40.2	32.8	23.3	22.8	18.7	10.0	4.9	30
Lp (Direct)	45.1	41.6	34.3	24.7	24.2	20.2	11.4	6.3	31
BS8233	46	42	35	25	25	21	12	7	32

Criteria

≤ 35

ARDENT

Noise Break-in Calculation - Plot 1 House Type M354 Living Room, Façade 2

Description	
Ardent CE Project No.	**2206781_A**
Property Address	**Imberhorne Farm**
Room Type	**Bedroom**
Parameter	**Leq, 16h**

Room Dimensions and Areas	
Room volume	44.20
Total Surface area	80.30
Wall façade area	11.50
Roof façade area	0.00
Glazing area	1.60
Dne Ref Area, A0	10.00

Total façade area	13.10

Room Absorption Calcuation	63	125	250	500	1000	2000	4000	8000	
Estimated Reverberation time	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	
Alpha bar	0.18	0.18	0.18	0.18	0.18	0.18	0.18	0.18	
Total Absorption	14.23	14.23	14.23	14.23	14.23	14.23	14.23	14.23	
10Log S/A	-0.36	-0.36	-0.36	-0.36	-0.36	-0.36	-0.36	-0.36	

Façade level	63	125	250	500	1000	2000	4000	8000	A	
Predicted Noise Level	59	57	54	51	51	48	42	39	55	- Based on typ
Façade to free field	0	0	0	0	0	0	0	0		
Angle of view	0	0	0	0	0	0	0	0		
Screening (Maekewa)	0	0	0	0	0	0	0	0		
Distance correction	0	0	0	0	0	0	0	0		
Other	0	0	0	0	0	0	0	0		
Noise level at façade (Leq)	59	57	54	51	51	48	42	39	55	

Composite SRI	63	125	250	500	1000	2000	4000	8000	Rw
Glazing SRI	18	21	17	25	35	37	31	40	29
Transmission Coefficient	0.015849	0.007943	0.019953	0.003162	0.000316	0.000200	0.000794	0.000100	
Wall SRI	28	34	43	55	66	77	85	85	55
Transmission Coefficient	0.001585	0.000398	0.000050	0.000003	0.000000	0.000000	0.000000	0.000000	
Roof SRI	23	26	43	52	60	65	65	65	51
Transmission Coefficient	0.005012	0.002512	0.000050	0.000006	0.000001	0.000000	0.000000	0.000000	
Ventilation, Dne	18	19	34	34	30	31	36	36	32
Transmission Coefficient	0.015849	0.012589	0.000398	0.000417	0.001000	0.000794	0.000251	0.000251	
Average Transmission Coeff	0.015425	0.010930	0.002785	0.000707	0.000802	0.000631	0.000289	0.000204	
Average SRI	18	20	26	32	31	32	35	37	32

Calculated Internal Noise Level, dB	63	125	250	500	1000	2000	4000	8000	A
Lp (Reverberant), line source	41.5	38.0	29.1	20.1	20.7	16.6	7.2	2.7	27
Lp (Direct)	40.9	37.4	28.4	19.5	20.0	16.0	6.6	2.1	27
BS8233	44	40	31	22	23	19	9	5	29

Living Room Combined Internal Noise Level

	Façade 1							
	63	125	250	500	1000	2000	4000	8000
dB LAeq,T Day	46	42	35	25	25	21	12	7

	Façade 2							
	63	125	250	500	1000	2000	4000	8000
dB LAeq,T Day	44	40	31	22	23	19	9	5

	Combined Internal Noise Level							
	63	125	250	500	1000	2000	4000	8000
dB LAeq,T Day	48	44	36	27	27	23	14	9

ARDENT

Noise Break-in Calculation - Plot 1 House Type M354 Dining Room, Façade 1

Description	
Ardent CE Project No.	**2206781_A**
Property Address	**Imberhorne Farm**
Room Type	**Bedroom**
Parameter	**Leq, 16h**

Room Dimensions and Areas	
Room volume	43.50
Total Surface area	79.70
Wall façade area	5.10
Roof façade area	0.00
Glazing area	2.50
Dne Ref Area, A0	10.00

Total façade area	7.60

Room Absorption Calcuation	63	125	250	500	1000	2000	4000	8000	
Estimated Reverberation time	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	
Alpha bar	0.18	0.18	0.18	0.18	0.18	0.18	0.18	0.18	
Total Absorption	14.01	14.01	14.01	14.01	14.01	14.01	14.01	14.01	
10Log S/A	-2.66	-2.66	-2.66	-2.66	-2.66	-2.66	-2.66	-2.66	

Façade level	63	125	250	500	1000	2000	4000	8000	A	
Predicted Noise Level	61	59	56	53	53	50	44	41	57	- Based on typ
Façade to free field	0	0	0	0	0	0	0	0		
Angle of view	0	0	0	0	0	0	0	0		
Screening (Maekewa)	0	0	0	0	0	0	0	0		
Distance correction	0	0	0	0	0	0	0	0		
Other	0	0	0	0	0	0	0	0		
Noise level at façade (Leq)	61	59	56	53	53	50	44	41	57	

Composite SRI	63	125	250	500	1000	2000	4000	8000	Rw
Glazing SRI	18	21	17	25	35	37	31	40	29
Transmission Coefficient	0.015849	0.007943	0.019953	0.003162	0.000316	0.000200	0.000794	0.000100	
Wall SRI	28	34	43	55	66	77	85	85	55
Transmission Coefficient	0.001585	0.000398	0.000050	0.000003	0.000000	0.000000	0.000000	0.000000	
Roof SRI	23	26	43	52	60	65	65	65	51
Transmission Coefficient	0.005012	0.002512	0.000050	0.000006	0.000001	0.000000	0.000000	0.000000	
Ventilation, Dne	18	19	34	34	30	31	36	36	32
Transmission Coefficient	0.015849	0.012589	0.000398	0.000417	0.001000	0.000794	0.000251	0.000251	
Average Transmission Coeff	0.027131	0.019445	0.007121	0.001591	0.001420	0.001111	0.000592	0.000363	
Average SRI	16	17	21	28	28	30	32	34	29

Calculated Internal Noise Level, dB	63	125	250	500	1000	2000	4000	8000	A
Lp (Reverberant), line source	43.7	40.2	32.9	23.4	22.9	18.8	10.1	4.9	30
Lp (Direct)	45.3	41.9	34.5	25.0	24.5	20.5	11.7	6.6	32
BS8233	46	42	35	25	25	21	12	7	32

ARDENT

Noise Break-in Calculation - Plot 1 House Type M354 Dining Room, Façade 2

Description	
Ardent CE Project No.	**2206781_A**
Property Address	**Imberhorne Farm**
Room Type	**Bedroom**
Parameter	**Leq, 16h**

Room Dimensions and Areas	
Room volume	43.50
Total Surface area	79.70
Wall façade area	8.80
Roof façade area	0.00
Glazing area	4.30
Dne Ref Area, A0	10.00

Total façade area	13.10

Room Absorption Calcuation	63	125	250	500	1000	2000	4000	8000	
Estimated Reverberation time	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	
Alpha bar	0.18	0.18	0.18	0.18	0.18	0.18	0.18	0.18	
Total Absorption	14.01	14.01	14.01	14.01	14.01	14.01	14.01	14.01	
10Log S/A	-0.29	-0.29	-0.29	-0.29	-0.29	-0.29	-0.29	-0.29	

Façade level	63	125	250	500	1000	2000	4000	8000	A	
Predicted Noise Level	57	55	52	49	49	46	40	37	53	- Based on typ
Façade to free field	0	0	0	0	0	0	0	0		
Angle of view	0	0	0	0	0	0	0	0		
Screening (Maekewa)	0	0	0	0	0	0	0	0		
Distance correction	0	0	0	0	0	0	0	0		
Other	0	0	0	0	0	0	0	0		
Noise level at façade (Leq)	57	55	52	49	49	46	40	37	53	

Composite SRI	63	125	250	500	1000	2000	4000	8000	Rw
Glazing SRI	18	21	17	25	35	37	31	40	29
Transmission Coefficient	0.015849	0.007943	0.019953	0.003162	0.000316	0.000200	0.000794	0.000100	
Wall SRI	28	34	43	55	66	77	85	85	55
Transmission Coefficient	0.001585	0.000398	0.000050	0.000003	0.000000	0.000000	0.000000	0.000000	
Roof SRI	23	26	43	52	60	65	65	65	51
Transmission Coefficient	0.005012	0.002512	0.000050	0.000006	0.000001	0.000000	0.000000	0.000000	
Ventilation, Dne	18	19	34	34	30	31	36	36	32
Transmission Coefficient	0.015849	0.012589	0.000398	0.000417	0.001000	0.000794	0.000251	0.000251	
Average Transmission Coeff	0.018365	0.012485	0.006887	0.001358	0.000867	0.000672	0.000452	0.000225	
Average SRI	17	19	22	29	31	32	33	36	30

Calculated Internal Noise Level, dB	63	125	250	500	1000	2000	4000	8000	A
Lp (Reverberant), line source	40.3	36.7	31.1	21.0	19.1	15.0	7.3	1.2	27
Lp (Direct)	39.6	36.0	30.4	20.3	18.4	14.3	6.6	0.5	26
BS8233	42	39	33	23	21	17	9	3	29

Dining Room Combined Internal Noise Level

	Façade 1							
	63	125	250	500	1000	2000	4000	8000
dB LAeq,T Day	46	42	35	25	25	21	12	7

	Façade 2							
	63	125	250	500	1000	2000	4000	8000
dB LAeq,T Day	42	39	33	23	21	17	9	3

	Combined Internal Noise Level							
	63	125	250	500	1000	2000	4000	8000
dB LAeq,T Day	47	44	37	27	26	22	14	9

ARDENT

Noise Break-in Calculation - Plot 1 House Type M354 Bedroom 1, Façade 1

Description	
Ardent CE Project No.	**2206781_A**
Property Address	**Imberhorne Farm**
Room Type	**Bedroom**
Parameter	**Leq, 16h**

Room Dimensions and Areas	
Room volume	23.20
Total Surface area	51.70
Wall façade area	6.90
Roof façade area	0.00
Glazing area	2.10
Dne Ref Area, A0	10.00

Total façade area	9.00

Room Absorption Calcuation	63	125	250	500	1000	2000	4000	8000	
Estimated Reverberation time	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	
Alpha bar	0.14	0.14	0.14	0.14	0.14	0.14	0.14	0.14	
Total Absorption	7.47	7.47	7.47	7.47	7.47	7.47	7.47	7.47	
10Log S/A	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81	

Façade level	63	125	250	500	1000	2000	4000	8000	A	
Predicted Noise Level	61	59	56	53	53	50	44	41	57	- Based on typ
Façade to free field	0	0	0	0	0	0	0	0		
Angle of view	0	0	0	0	0	0	0	0		
Screening (Maekewa)	0	0	0	0	0	0	0	0		
Distance correction	0	0	0	0	0	0	0	0		
Other	0	0	0	0	0	0	0	0		
Noise level at façade (Leq)	61	59	56	53	53	50	44	41	57	

Composite SRI	63	125	250	500	1000	2000	4000	8000	Rw
Glazing SRI	18	21	20	26	38	37	39	44	31
Transmission Coefficient	0.015849	0.007943	0.010000	0.002512	0.000158	0.000200	0.000126	0.000040	
Wall SRI	28	34	43	55	66	77	85	85	55
Transmission Coefficient	0.001585	0.000398	0.000050	0.000003	0.000000	0.000000	0.000000	0.000000	
Roof SRI	23	26	43	52	60	65	65	65	51
Transmission Coefficient	0.005012	0.002512	0.000050	0.000006	0.000001	0.000000	0.000000	0.000000	
Ventilation, Dne	36	36	34	31	34	38	38	38	35
Transmission Coefficient	0.000251	0.000251	0.000398	0.000794	0.000398	0.000158	0.000158	0.000158	
Average Transmission Coeff	0.005192	0.002438	0.002814	0.001471	0.000480	0.000223	0.000205	0.000185	
Average SRI	23	26	26	28	33	37	37	37	33

Calculated Internal Noise Level, dB	63	125	250	500	1000	2000	4000	8000	A
Lp (Reverberant), line source	40.0	34.7	32.3	26.5	21.6	15.3	8.9	5.5	29
Lp (Direct)	38.2	32.9	30.5	24.7	19.8	13.5	7.1	3.7	27
BS8233	42	37	34	28	24	17	11	7	31

ARDENT

Noise Break-in Calculation - Plot 1 House Type M354 Bedroom 1, Façade 1

Description	
Ardent CE Project No.	**2206781_A**
Property Address	**Imberhorne Farm**
Room Type	**Bedroom**
Parameter	**LAeq, 8h**

Room Dimensions and Areas	
Room volume	23.20
Total Surface area	51.70
Wall façade area	6.90
Roof façade area	0.00
Glazing area	2.10
Dne Ref Area, A0	10.00

Total façade area	9.00

Room Absorption Calcuation	63	125	250	500	1000	2000	4000	8000	
Estimated Reverberation time	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	
Alpha bar	0.14	0.14	0.14	0.14	0.14	0.14	0.14	0.14	
Total Absorption	7.47	7.47	7.47	7.47	7.47	7.47	7.47	7.47	
10Log S/A	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81	

Façade level	63	125	250	500	1000	2000	4000	8000	A
Measured Noise Level	49	43	41	39	36	32	32	30	42
Façade to free field	0	0	0	0	0	0	0	0	
Angle of view	0	0	0	0	0	0	0	0	
Screening (Maekewa)	0	0	0	0	0	0	0	0	
Distance correction	0	0	0	0	0	0	0	0	
Other	0	0	0	0	0	0	0	0	
Noise level at façade (Leq)	49	43	41	39	36	32	32	30	42

Composite SRI	63	125	250	500	1000	2000	4000	8000	Rw
Glazing SRI	18	21	20	26	38	37	39	44	31
Transmission Coefficient	0.015849	0.007943	0.010000	0.002512	0.000158	0.000200	0.000126	0.000040	
Wall SRI	28	34	43	55	66	77	85	85	55
Transmission Coefficient	0.001585	0.000398	0.000050	0.000003	0.000000	0.000000	0.000000	0.000000	
Roof SRI	23	26	43	52	60	65	65	65	51
Transmission Coefficient	0.005012	0.002512	0.000050	0.000006	0.000001	0.000000	0.000000	0.000000	
Ventilation, Dne	36	36	34	31	34	38	38	38	35
Transmission Coefficient	0.000251	0.000251	0.000398	0.000794	0.000398	0.000158	0.000158	0.000158	
Average Transmission Coeff	0.005192	0.002438	0.002814	0.001471	0.000480	0.000223	0.000205	0.000185	
Average SRI	23	26	26	28	33	37	37	37	33

Calculated Internal Noise Level, dB	63	125	250	500	1000	2000	4000	8000	A
Lp (Reverberant), line source	28.0	18.7	17.3	12.5	4.6	-2.7	-3.1	-5.5	14
Lp (Direct)	26.2	16.9	15.5	10.7	2.8	-4.5	-4.9	-7.3	12
BS8233	30	21	19	14	7	-1	-1	-4	16

ARDENT

Noise Break-in Calculation - Plot 1 House Type M354 Bedroom 1, Façade 1

Description	
Ardent CE Project No.	**2206781_A**
Property Address	**Imberhorne Farm**
Room Type	**Bedroom**
Parameter	**LAmax**

Room Dimensions and Areas	
Room volume	23.20
Total Surface area	51.70
Wall façade area	6.90
Roof façade area	0.00
Glazing area	2.10
Dne Ref Area, A0	10.00

Total façade area	9.00

Room Absorption Calcuation	63	125	250	500	1000	2000	4000	8000	
Estimated Reverberation time	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	
Alpha bar	0.14	0.14	0.14	0.14	0.14	0.14	0.14	0.14	
Total Absorption	7.47	7.47	7.47	7.47	7.47	7.47	7.47	7.47	
10Log S/A	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81	

Façade level	63	125	250	500	1000	2000	4000	8000	A
Measured Noise Level	69	56	55	52	49	45	45	45	55
Façade to free field	0	0	0	0	0	0	0	0	
Angle of view	0	0	0	0	0	0	0	0	
Screening (Maekewa)	0	0	0	0	0	0	0	0	
Distance correction	0	0	0	0	0	0	0	0	
Other	0	0	0	0	0	0	0	0	
Noise level at façade (Lmax)	69	56	55	52	49	45	45	45	55

Composite SRI	63	125	250	500	1000	2000	4000	8000	Rw
Glazing SRI	18	21	20	26	38	37	39	44	31
Transmission Coefficient	0.015849	0.007943	0.010000	0.002512	0.000158	0.000200	0.000126	0.000040	
Wall SRI	28	34	43	55	66	77	85	85	55
Transmission Coefficient	0.001585	0.000398	0.000050	0.000003	0.000000	0.000000	0.000000	0.000000	
Roof SRI	23	26	43	52	60	65	65	65	51
Transmission Coefficient	0.005012	0.002512	0.000050	0.000006	0.000001	0.000000	0.000000	0.000000	
Ventilation, Dne	36	36	34	31	34	38	38	38	35
Transmission Coefficient	0.000251	0.000251	0.000398	0.000794	0.000398	0.000158	0.000158	0.000158	
Average Transmission Coeff	0.005192	0.002438	0.002814	0.001471	0.000480	0.000223	0.000205	0.000185	
Average SRI	23	26	26	28	33	37	37	37	33

Calculated Internal Noise Level, dB	63	125	250	500	1000	2000	4000	8000	A
Lp (Reverberant), line source	48.0	31.7	31.3	25.5	17.6	10.3	9.9	9.5	28
Lp (Direct)	46.2	29.9	29.5	23.7	15.8	8.5	8.1	7.7	26
BS8233	50	34	33	27	20	12	12	11	30

ARDENT

Noise Break-in Calculation - Plot 1 House Type M354 Bedroom 1, Façade 2

Description	
Ardent CE Project No.	**2206781_A**
Property Address	**Imberhorne Farm**
Room Type	**Bedroom**
Parameter	**Leq, 16h**

Room Dimensions and Areas	
Room volume	23.20
Total Surface area	51.70
Wall façade area	6.80
Roof façade area	0.00
Glazing area	0.80
Dne Ref Area, A0	10.00

Total façade area	7.60

Room Absorption Calcuation	63	125	250	500	1000	2000	4000	8000	
Estimated Reverberation time	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	
Alpha bar	0.14	0.14	0.14	0.14	0.14	0.14	0.14	0.14	
Total Absorption	7.47	7.47	7.47	7.47	7.47	7.47	7.47	7.47	
10Log S/A	0.07	0.07	0.07	0.07	0.07	0.07	0.07	0.07	

Façade level	63	125	250	500	1000	2000	4000	8000	A	
Predicted Noise Level	59	57	54	51	51	48	42	39	55	- Based on typ
Façade to free field	0	0	0	0	0	0	0	0		
Angle of view	0	0	0	0	0	0	0	0		
Screening (Maekewa)	0	0	0	0	0	0	0	0		
Distance correction	0	0	0	0	0	0	0	0		
Other	0	0	0	0	0	0	0	0		
Noise level at façade (Leq)	59	57	54	51	51	48	42	39	55	

Composite SRI	63	125	250	500	1000	2000	4000	8000	Rw
Glazing SRI	18	21	17	25	35	37	31	40	29
Transmission Coefficient	0.015849	0.007943	0.019953	0.003162	0.000316	0.000200	0.000794	0.000100	
Wall SRI	28	34	43	55	66	77	85	85	55
Transmission Coefficient	0.001585	0.000398	0.000050	0.000003	0.000000	0.000000	0.000000	0.000000	
Roof SRI	23	26	43	52	60	65	65	65	51
Transmission Coefficient	0.005012	0.002512	0.000050	0.000006	0.000001	0.000000	0.000000	0.000000	
Ventilation, Dne	18	19	34	34	30	31	36	36	32
Transmission Coefficient	0.015849	0.012589	0.000398	0.000417	0.001000	0.000794	0.000251	0.000251	
Average Transmission Coeff	0.023940	0.017757	0.002669	0.000884	0.001349	0.001066	0.000414	0.000341	
Average SRI	16	18	26	31	29	30	34	35	30

Calculated Internal Noise Level, dB	63	125	250	500	1000	2000	4000	8000	A
Lp (Reverberant), line source	43.9	40.6	29.3	21.5	23.4	19.4	9.2	5.4	29
Lp (Direct)	42.8	39.5	28.3	20.5	22.3	18.3	8.2	4.3	28
BS8233	46	43	31	24	25	21	11	7	31

ARDENT

Noise Break-in Calculation - Plot 1 House Type M354 Bedroom 1, Façade 2

Description	
Ardent CE Project No.	**2206781_A**
Property Address	**Imberhorne Farm**
Room Type	**Bedroom**
Parameter	**LAeq, 8h**

Room Dimensions and Areas	
Room volume	23.20
Total Surface area	51.70
Wall façade area	6.80
Roof façade area	0.00
Glazing area	0.80
Dne Ref Area, A0	10.00

Total façade area	7.60

Room Absorption Calcuation	63	125	250	500	1000	2000	4000	8000	
Estimated Reverberation time	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	
Alpha bar	0.14	0.14	0.14	0.14	0.14	0.14	0.14	0.14	
Total Absorption	7.47	7.47	7.47	7.47	7.47	7.47	7.47	7.47	
10Log S/A	0.07	0.07	0.07	0.07	0.07	0.07	0.07	0.07	

Façade level	63	125	250	500	1000	2000	4000	8000	A
Measured Noise Level	49	43	41	39	36	32	32	30	42
Façade to free field	0	0	0	0	0	0	0	0	
Angle of view	0	0	0	0	0	0	0	0	
Screening (Maekewa)	0	0	0	0	0	0	0	0	
Distance correction	0	0	0	0	0	0	0	0	
Other	0	0	0	0	0	0	0	0	
Noise level at façade (Leq)	49	43	41	39	36	32	32	30	42

Composite SRI	63	125	250	500	1000	2000	4000	8000	Rw
Glazing SRI	18	21	17	25	35	37	31	40	29
Transmission Coefficient	0.015849	0.007943	0.019953	0.003162	0.000316	0.000200	0.000794	0.000100	
Wall SRI	28	34	43	55	66	77	85	85	55
Transmission Coefficient	0.001585	0.000398	0.000050	0.000003	0.000000	0.000000	0.000000	0.000000	
Roof SRI	23	26	43	52	60	65	65	65	51
Transmission Coefficient	0.005012	0.002512	0.000050	0.000006	0.000001	0.000000	0.000000	0.000000	
Ventilation, Dne	18	19	34	34	30	31	36	36	32
Transmission Coefficient	0.015849	0.012589	0.000398	0.000417	0.001000	0.000794	0.000251	0.000251	
Average Transmission Coeff	0.023940	0.017757	0.002669	0.000884	0.001349	0.001066	0.000414	0.000341	
Average SRI	16	18	26	31	29	30	34	35	30

Calculated Internal Noise Level, dB	63	125	250	500	1000	2000	4000	8000	A
Lp (Reverberant), line source	33.9	26.6	16.3	9.5	8.4	3.4	-0.8	-3.6	16
Lp (Direct)	32.8	25.5	15.3	8.5	7.3	2.3	-1.8	-4.7	15
BS8233	36	29	18	12	10	5	1	-2	18

ARDENT

Noise Break-in Calculation - Plot 1 House Type M354 Bedroom 1, Façade 2

Description	
Ardent CE Project No.	**2206781_A**
Property Address	**Imberhorne Farm**
Room Type	**Bedroom**
Parameter	**LAmax**

Room Dimensions and Areas	
Room volume	23.20
Total Surface area	51.70
Wall façade area	6.80
Roof façade area	0.00
Glazing area	0.80
Dne Ref Area, A0	10.00

Total façade area	7.60

Room Absorption Calcuation	63	125	250	500	1000	2000	4000	8000	
Estimated Reverberation time	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	
Alpha bar	0.14	0.14	0.14	0.14	0.14	0.14	0.14	0.14	
Total Absorption	7.47	7.47	7.47	7.47	7.47	7.47	7.47	7.47	
10Log S/A	0.07	0.07	0.07	0.07	0.07	0.07	0.07	0.07	

Façade level	63	125	250	500	1000	2000	4000	8000	A
Measured Noise Level	69	56	55	52	49	45	45	45	55
Façade to free field	0	0	0	0	0	0	0	0	
Angle of view	0	0	0	0	0	0	0	0	
Screening (Maekewa)	0	0	0	0	0	0	0	0	
Distance correction	0	0	0	0	0	0	0	0	
Other	0	0	0	0	0	0	0	0	
Noise level at façade (Lmax)	69	56	55	52	49	45	45	45	55

Composite SRI	63	125	250	500	1000	2000	4000	8000	Rw
Glazing SRI	18	21	17	25	35	37	31	40	29
Transmission Coefficient	0.015849	0.007943	0.019953	0.003162	0.000316	0.000200	0.000794	0.000100	
Wall SRI	28	34	43	55	66	77	85	85	55
Transmission Coefficient	0.001585	0.000398	0.000050	0.000003	0.000000	0.000000	0.000000	0.000000	
Roof SRI	23	26	43	52	60	65	65	65	51
Transmission Coefficient	0.005012	0.002512	0.000050	0.000006	0.000001	0.000000	0.000000	0.000000	
Ventilation, Dne	18	19	34	34	30	31	36	36	32
Transmission Coefficient	0.015849	0.012589	0.000398	0.000417	0.001000	0.000794	0.000251	0.000251	
Average Transmission Coeff	0.023940	0.017757	0.002669	0.000884	0.001349	0.001066	0.000414	0.000341	
Average SRI	16	18	26	31	29	30	34	35	30

Calculated Internal Noise Level, dB	63	125	250	500	1000	2000	4000	8000	A
Lp (Reverberant), line source	53.9	39.6	30.3	22.5	21.4	16.4	12.2	11.4	31
Lp (Direct)	52.8	38.5	29.3	21.5	20.3	15.3	11.2	10.3	30
BS8233	56	42	32	25	23	18	14	13	33

Bedroom 1 Combined Internal Noise Level

	Façade 1							
	63	125	250	500	1000	2000	4000	8000
dB LAeq,T Day	46	42	35	25	25	21	12	7
dB LAeq,T Night	30	21	19	14	7	-1	-1	-4
dB LAFmax, Night	50	34	33	27	20	12	12	11

	Façade 2							
	63	125	250	500	1000	2000	4000	8000
dB LAeq,T Day	42	39	33	23	21	17	9	3
dB LAeq,T Night	36	29	18	12	10	5	1	-2
dB LAFmax, Night	56	42	32	25	23	18	14	13

	Combined Internal Noise Level							
	63	125	250	500	1000	2000	4000	8000
dB LAeq,T Day	47	44	37	27	26	22	14	9
dB LAeq,T Night	37	29	22	16	12	6	3	1
dB LAFmax, Night	57	42	36	29	25	19	16	16

ARDENT

Noise Break-in Calculation - Plot 1 House Type M354 Bedroom 2, Façade 1

Description	
Ardent CE Project No.	**2206781_A**
Property Address	**Imberhorne Farm**
Room Type	**Bedroom**
Parameter	**Leq, 16h**

Room Dimensions and Areas	
Room volume	26.70
Total Surface area	55.40
Wall façade area	7.30
Roof façade area	0.00
Glazing area	2.10
Dne Ref Area, A0	10.00

Total façade area	9.40

Room Absorption Calcuation	63	125	250	500	1000	2000	4000	8000	
Estimated Reverberation time	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	
Alpha bar	0.16	0.16	0.16	0.16	0.16	0.16	0.16	0.16	
Total Absorption	8.60	8.60	8.60	8.60	8.60	8.60	8.60	8.60	
10Log S/A	0.39	0.39	0.39	0.39	0.39	0.39	0.39	0.39	

Façade level	63	125	250	500	1000	2000	4000	8000	A	
Predicted Noise Level	61	59	56	53	53	50	44	41	57	- Based on typ
Façade to free field	0	0	0	0	0	0	0	0		
Angle of view	0	0	0	0	0	0	0	0		
Screening (Maekewa)	0	0	0	0	0	0	0	0		
Distance correction	0	0	0	0	0	0	0	0		
Other	0	0	0	0	0	0	0	0		
Noise level at façade (Leq)	61	59	56	53	53	50	44	41	57	

Composite SRI	63	125	250	500	1000	2000	4000	8000	Rw
Glazing SRI	18	21	20	26	38	37	39	44	31
Transmission Coefficient	0.015849	0.007943	0.010000	0.002512	0.000158	0.000200	0.000126	0.000040	
Wall SRI	28	34	43	55	66	77	85	85	55
Transmission Coefficient	0.001585	0.000398	0.000050	0.000003	0.000000	0.000000	0.000000	0.000000	
Roof SRI	23	26	43	52	60	65	65	65	51
Transmission Coefficient	0.005012	0.002512	0.000050	0.000006	0.000001	0.000000	0.000000	0.000000	
Ventilation, Dne	36	36	34	31	34	38	38	38	35
Transmission Coefficient	0.000251	0.000251	0.000398	0.000794	0.000398	0.000158	0.000158	0.000158	
Average Transmission Coeff	0.005039	0.002351	0.002696	0.001409	0.000459	0.000213	0.000197	0.000178	
Average SRI	23	26	26	29	33	37	37	38	33

Calculated Internal Noise Level, dB	63	125	250	500	1000	2000	4000	8000	A
Lp (Reverberant), line source	39.4	34.1	31.7	25.9	21.0	14.7	8.3	4.9	28
Lp (Direct)	38.0	32.7	30.3	24.5	19.6	13.3	6.9	3.5	27
BS8233	41	36	34	28	23	17	10	7	30

ARDENT

Noise Break-in Calculation - Plot 1 House Type M354 Bedroom 2, Façade 1

Description	
Ardent CE Project No.	**2206781_A**
Property Address	**Imberhorne Farm**
Room Type	**Bedroom**
Parameter	**LAeq, 8h**

Room Dimensions and Areas	
Room volume	26.70
Total Surface area	55.40
Wall façade area	7.30
Roof façade area	0.00
Glazing area	2.10
Dne Ref Area, A0	10.00

Total façade area	9.40

Room Absorption Calcuation	63	125	250	500	1000	2000	4000	8000	
Estimated Reverberation time	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	
Alpha bar	0.16	0.16	0.16	0.16	0.16	0.16	0.16	0.16	
Total Absorption	8.60	8.60	8.60	8.60	8.60	8.60	8.60	8.60	
10Log S/A	0.39	0.39	0.39	0.39	0.39	0.39	0.39	0.39	

Façade level	63	125	250	500	1000	2000	4000	8000	A
Measured Noise Level	49	43	41	39	36	32	32	30	42
Façade to free field	0	0	0	0	0	0	0	0	
Angle of view	0	0	0	0	0	0	0	0	
Screening (Maekewa)	0	0	0	0	0	0	0	0	
Distance correction	0	0	0	0	0	0	0	0	
Other	0	0	0	0	0	0	0	0	
Noise level at façade (Leq)	49	43	41	39	36	32	32	30	42

Composite SRI	63	125	250	500	1000	2000	4000	8000	Rw
Glazing SRI	18	21	20	26	38	37	39	44	31
Transmission Coefficient	0.015849	0.007943	0.010000	0.002512	0.000158	0.000200	0.000126	0.000040	
Wall SRI	28	34	43	55	66	77	85	85	55
Transmission Coefficient	0.001585	0.000398	0.000050	0.000003	0.000000	0.000000	0.000000	0.000000	
Roof SRI	23	26	43	52	60	65	65	65	51
Transmission Coefficient	0.005012	0.002512	0.000050	0.000006	0.000001	0.000000	0.000000	0.000000	
Ventilation, Dne	36	36	34	31	34	38	38	38	35
Transmission Coefficient	0.000251	0.000251	0.000398	0.000794	0.000398	0.000158	0.000158	0.000158	
Average Transmission Coeff	0.005039	0.002351	0.002696	0.001409	0.000459	0.000213	0.000197	0.000178	
Average SRI	23	26	26	29	33	37	37	38	33

Calculated Internal Noise Level, dB	63	125	250	500	1000	2000	4000	8000	A
Lp (Reverberant), line source	27.4	18.1	16.7	11.9	4.0	-3.3	-3.7	-6.1	13
Lp (Direct)	26.0	16.7	15.3	10.5	2.6	-4.7	-5.1	-7.5	12
BS8233	29	20	19	14	6	-1	-2	-4	15

ARDENT

Noise Break-in Calculation - Plot 1 House Type M354 Bedroom 2, Façade 1

Description	
Ardent CE Project No.	**2206781_A**
Property Address	**Imberhorne Farm**
Room Type	**Bedroom**
Parameter	**LAmax**

Room Dimensions and Areas	
Room volume	26.70
Total Surface area	55.40
Wall façade area	7.30
Roof façade area	0.00
Glazing area	2.10
Dne Ref Area, A0	10.00

Total façade area	9.40

Room Absorption Calcuation	63	125	250	500	1000	2000	4000	8000	
Estimated Reverberation time	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	
Alpha bar	0.16	0.16	0.16	0.16	0.16	0.16	0.16	0.16	
Total Absorption	8.60	8.60	8.60	8.60	8.60	8.60	8.60	8.60	
10Log S/A	0.39	0.39	0.39	0.39	0.39	0.39	0.39	0.39	

Façade level	63	125	250	500	1000	2000	4000	8000	A
Measured Noise Level	69	56	55	52	49	45	45	45	55
Façade to free field	0	0	0	0	0	0	0	0	
Angle of view	0	0	0	0	0	0	0	0	
Screening (Maekewa)	0	0	0	0	0	0	0	0	
Distance correction	0	0	0	0	0	0	0	0	
Other	0	0	0	0	0	0	0	0	
Noise level at façade (Lmax)	69	56	55	52	49	45	45	45	55

Composite SRI	63	125	250	500	1000	2000	4000	8000	Rw
Glazing SRI	18	21	20	26	38	37	39	44	31
Transmission Coefficient	0.015849	0.007943	0.010000	0.002512	0.000158	0.000200	0.000126	0.000040	
Wall SRI	28	34	43	55	66	77	85	85	55
Transmission Coefficient	0.001585	0.000398	0.000050	0.000003	0.000000	0.000000	0.000000	0.000000	
Roof SRI	23	26	43	52	60	65	65	65	51
Transmission Coefficient	0.005012	0.002512	0.000050	0.000006	0.000001	0.000000	0.000000	0.000000	
Ventilation, Dne	36	36	34	31	34	38	38	38	35
Transmission Coefficient	0.000251	0.000251	0.000398	0.000794	0.000398	0.000158	0.000158	0.000158	
Average Transmission Coeff	0.005039	0.002351	0.002696	0.001409	0.000459	0.000213	0.000197	0.000178	
Average SRI	23	26	26	29	33	37	37	38	33

Calculated Internal Noise Level, dB	63	125	250	500	1000	2000	4000	8000	A
Lp (Reverberant), line source	47.4	31.1	30.7	24.9	17.0	9.7	9.3	8.9	27
Lp (Direct)	46.0	29.7	29.3	23.5	15.6	8.3	7.9	7.5	26
BS8233	49	33	33	27	19	12	11	11	29

ARDENT

Noise Break-in Calculation - Plot 1 House Type M354 Bedroom 2, Façade 2

Description	
Ardent CE Project No.	**2206781_A**
Property Address	**Imberhorne Farm**
Room Type	**Bedroom**
Parameter	**Leq, 16h**

Room Dimensions and Areas	
Room volume	26.70
Total Surface area	55.40
Wall façade area	6.10
Roof façade area	0.00
Glazing area	1.50
Dne Ref Area, A0	10.00

Total façade area	7.60

Room Absorption Calcuation	63	125	250	500	1000	2000	4000	8000	
Estimated Reverberation time	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	
Alpha bar	0.16	0.16	0.16	0.16	0.16	0.16	0.16	0.16	
Total Absorption	8.60	8.60	8.60	8.60	8.60	8.60	8.60	8.60	
10Log S/A	-0.54	-0.54	-0.54	-0.54	-0.54	-0.54	-0.54	-0.54	

Façade level	63	125	250	500	1000	2000	4000	8000	A	
Predicted Noise Level	58	56	53	50	50	47	41	38	54	- Based on typ
Façade to free field	0	0	0	0	0	0	0	0		
Angle of view	0	0	0	0	0	0	0	0		
Screening (Maekewa)	0	0	0	0	0	0	0	0		
Distance correction	0	0	0	0	0	0	0	0		
Other	0	0	0	0	0	0	0	0		
Noise level at façade (Leq)	58	56	53	50	50	47	41	38	54	

Composite SRI	63	125	250	500	1000	2000	4000	8000	Rw
Glazing SRI	18	21	17	25	35	37	31	40	29
Transmission Coefficient	0.015849	0.007943	0.019953	0.003162	0.000316	0.000200	0.000794	0.000100	
Wall SRI	28	34	43	55	66	77	85	85	55
Transmission Coefficient	0.001585	0.000398	0.000050	0.000003	0.000000	0.000000	0.000000	0.000000	
Roof SRI	23	26	43	52	60	65	65	65	51
Transmission Coefficient	0.005012	0.002512	0.000050	0.000006	0.000001	0.000000	0.000000	0.000000	
Ventilation, Dne	18	19	34	34	30	31	36	36	32
Transmission Coefficient	0.015849	0.012589	0.000398	0.000417	0.001000	0.000794	0.000251	0.000251	
Average Transmission Coeff	0.025254	0.018452	0.004502	0.001175	0.001378	0.001085	0.000487	0.000350	
Average SRI	16	17	23	29	29	30	33	35	30

Calculated Internal Noise Level, dB	63	125	250	500	1000	2000	4000	8000	A
Lp (Reverberant), line source	42.5	39.1	30.0	21.2	21.9	17.8	8.3	3.9	28
Lp (Direct)	42.0	38.7	29.5	20.7	21.4	17.4	7.9	3.4	28
BS8233	44	41	32	23	24	20	10	6	30

ARDENT

Noise Break-in Calculation - Plot 1 House Type M354 Bedroom 2, Façade 2

Description	
Ardent CE Project No.	**2206781_A**
Property Address	**Imberhorne Farm**
Room Type	**Bedroom**
Parameter	**LAeq, 8h**

Room Dimensions and Areas	
Room volume	26.70
Total Surface area	55.40
Wall façade area	6.10
Roof façade area	0.00
Glazing area	1.50
Dne Ref Area, A0	10.00

Total façade area	7.60

Room Absorption Calcuation	63	125	250	500	1000	2000	4000	8000	
Estimated Reverberation time	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	
Alpha bar	0.16	0.16	0.16	0.16	0.16	0.16	0.16	0.16	
Total Absorption	8.60	8.60	8.60	8.60	8.60	8.60	8.60	8.60	
10Log S/A	-0.54	-0.54	-0.54	-0.54	-0.54	-0.54	-0.54	-0.54	

Façade level	63	125	250	500	1000	2000	4000	8000	A
Measured Noise Level	49	43	41	39	36	32	32	30	42
Façade to free field	0	0	0	0	0	0	0	0	
Angle of view	0	0	0	0	0	0	0	0	
Screening (Maekewa)	0	0	0	0	0	0	0	0	
Distance correction	0	0	0	0	0	0	0	0	
Other	0	0	0	0	0	0	0	0	
Noise level at façade (Leq)	49	43	41	39	36	32	32	30	42

Composite SRI	63	125	250	500	1000	2000	4000	8000	Rw
Glazing SRI	18	21	17	25	35	37	31	40	29
Transmission Coefficient	0.015849	0.007943	0.019953	0.003162	0.000316	0.000200	0.000794	0.000100	
Wall SRI	28	34	43	55	66	77	85	85	55
Transmission Coefficient	0.001585	0.000398	0.000050	0.000003	0.000000	0.000000	0.000000	0.000000	
Roof SRI	23	26	43	52	60	65	65	65	51
Transmission Coefficient	0.005012	0.002512	0.000050	0.000006	0.000001	0.000000	0.000000	0.000000	
Ventilation, Dne	18	19	34	34	30	31	36	36	32
Transmission Coefficient	0.015849	0.012589	0.000398	0.000417	0.001000	0.000794	0.000251	0.000251	
Average Transmission Coeff	0.025254	0.018452	0.004502	0.001175	0.001378	0.001085	0.000487	0.000350	
Average SRI	16	17	23	29	29	30	33	35	30

Calculated Internal Noise Level, dB	63	125	250	500	1000	2000	4000	8000	A
Lp (Reverberant), line source	33.5	26.1	18.0	10.2	7.9	2.8	-0.7	-4.1	16
Lp (Direct)	33.0	25.7	17.5	9.7	7.4	2.4	-1.1	-4.6	16
BS8233	35	28	20	12	10	5	1	-2	18

ARDENT

Noise Break-in Calculation - Plot 1 House Type M354 Bedroom 2, Façade 2

Description	
Ardent CE Project No.	**2206781_A**
Property Address	**Imberhorne Farm**
Room Type	**Bedroom**
Parameter	**LAmax**

Room Dimensions and Areas	
Room volume	26.70
Total Surface area	55.40
Wall façade area	6.10
Roof façade area	0.00
Glazing area	1.50
Dne Ref Area, A0	10.00

Total façade area	7.60

Room Absorption Calcuation	63	125	250	500	1000	2000	4000	8000	
Estimated Reverberation time	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	
Alpha bar	0.16	0.16	0.16	0.16	0.16	0.16	0.16	0.16	
Total Absorption	8.60	8.60	8.60	8.60	8.60	8.60	8.60	8.60	
10Log S/A	-0.54	-0.54	-0.54	-0.54	-0.54	-0.54	-0.54	-0.54	

Façade level	63	125	250	500	1000	2000	4000	8000	A
Measured Noise Level	69	56	55	52	49	45	45	45	55
Façade to free field	0	0	0	0	0	0	0	0	
Angle of view	0	0	0	0	0	0	0	0	
Screening (Maekewa)	0	0	0	0	0	0	0	0	
Distance correction	0	0	0	0	0	0	0	0	
Other	0	0	0	0	0	0	0	0	
Noise level at façade (Lmax)	69	56	55	52	49	45	45	45	55

Composite SRI	63	125	250	500	1000	2000	4000	8000	Rw
Glazing SRI	18	21	17	25	35	37	31	40	29
Transmission Coefficient	0.015849	0.007943	0.019953	0.003162	0.000316	0.000200	0.000794	0.000100	
Wall SRI	28	34	43	55	66	77	85	85	55
Transmission Coefficient	0.001585	0.000398	0.000050	0.000003	0.000000	0.000000	0.000000	0.000000	
Roof SRI	23	26	43	52	60	65	65	65	51
Transmission Coefficient	0.005012	0.002512	0.000050	0.000006	0.000001	0.000000	0.000000	0.000000	
Ventilation, Dne	18	19	34	34	30	31	36	36	32
Transmission Coefficient	0.015849	0.012589	0.000398	0.000417	0.001000	0.000794	0.000251	0.000251	
Average Transmission Coeff	0.025254	0.018452	0.004502	0.001175	0.001378	0.001085	0.000487	0.000350	
Average SRI	16	17	23	29	29	30	33	35	30

Calculated Internal Noise Level, dB	63	125	250	500	1000	2000	4000	8000	A
Lp (Reverberant), line source	53.5	39.1	32.0	23.2	20.9	15.8	12.3	10.9	31
Lp (Direct)	53.0	38.7	31.5	22.7	20.4	15.4	11.9	10.4	31
BS8233	55	41	34	25	23	18	14	13	33

Bedroom 2 Combined Internal Noise Level

	Façade 1							
	63	125	250	500	1000	2000	4000	8000
dB LAeq,T Day	41	36	34	28	23	17	10	7
dB LAeq,T Night	29	20	19	14	6	-1	-2	-4
dB LAFmax, Night	49	33	33	27	19	12	11	11

	Façade 2							
	63	125	250	500	1000	2000	4000	8000
dB LAeq,T Day	44	41	32	23	24	20	10	6
dB LAeq,T Night	35	28	20	12	10	5	1	-2
dB LAFmax, Night	55	41	34	25	23	18	14	13

	Combined Internal Noise Level							
	63	125	250	500	1000	2000	4000	8000
dB LAeq,T Day	46	42	36	29	27	22	13	9
dB LAeq,T Night	36	29	22	16	11	6	3	0
dB LAFmax, Night	56	42	36	29	24	19	16	15

ARDENT

Noise Break-in Calculation - Plot 1 House Type M354 Bedroom 3

Description	
Ardent CE Project No.	**2206781_A**
Property Address	**Imberhorne Farm**
Room Type	**Bedroom**
Parameter	**Leq, 16h**

Room Dimensions and Areas	
Room volume	17.30
Total Surface area	42.10
Wall façade area	3.60
Roof façade area	0.00
Glazing area	1.50
Dne Ref Area, A0	10.00

Total façade area	5.10

Room Absorption Calcuation	63	125	250	500	1000	2000	4000	8000	
Estimated Reverberation time	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	
Alpha bar	0.13	0.13	0.13	0.13	0.13	0.13	0.13	0.13	
Total Absorption	5.57	5.57	5.57	5.57	5.57	5.57	5.57	5.57	
10Log S/A	-0.38	-0.38	-0.38	-0.38	-0.38	-0.38	-0.38	-0.38	

Façade level	63	125	250	500	1000	2000	4000	8000	A	
Predicted Noise Level	57	55	52	49	49	46	40	37	53	- Based on typ
Façade to free field	0	0	0	0	0	0	0	0		
Angle of view	0	0	0	0	0	0	0	0		
Screening (Maekewa)	0	0	0	0	0	0	0	0		
Distance correction	0	0	0	0	0	0	0	0		
Other	0	0	0	0	0	0	0	0		
Noise level at façade (Leq)	57	55	52	49	49	46	40	37	53	

Composite SRI	63	125	250	500	1000	2000	4000	8000	Rw
Glazing SRI	18	21	17	25	35	37	31	40	29
Transmission Coefficient	0.015849	0.007943	0.019953	0.003162	0.000316	0.000200	0.000794	0.000100	
Wall SRI	28	34	43	55	66	77	85	85	55
Transmission Coefficient	0.001585	0.000398	0.000050	0.000003	0.000000	0.000000	0.000000	0.000000	
Roof SRI	23	26	43	52	60	65	65	65	51
Transmission Coefficient	0.005012	0.002512	0.000050	0.000006	0.000001	0.000000	0.000000	0.000000	
Ventilation, Dne	18	19	34	34	30	31	36	36	32
Transmission Coefficient	0.015849	0.012589	0.000398	0.000417	0.001000	0.000794	0.000251	0.000251	
Average Transmission Coeff	0.036857	0.027302	0.006684	0.001750	0.002054	0.001616	0.000726	0.000522	
Average SRI	14	16	22	28	27	28	31	33	28

Calculated Internal Noise Level, dB	63	125	250	500	1000	2000	4000	8000	A
Lp (Reverberant), line source	43.3	40.0	30.9	22.0	22.7	18.7	9.2	4.8	29
Lp (Direct)	42.7	39.4	30.3	21.4	22.1	18.1	8.6	4.2	29
BS8233	45	42	33	24	25	21	11	7	31

ARDENT

Noise Break-in Calculation - Plot 1 House Type M354 Bedroom 3

Description	
Ardent CE Project No.	**2206781_A**
Property Address	**Imberhorne Farm**
Room Type	**Bedroom**
Parameter	**LAeq, 8h**

Room Dimensions and Areas	
Room volume	17.30
Total Surface area	42.10
Wall façade area	3.60
Roof façade area	0.00
Glazing area	1.50
Dne Ref Area, A0	10.00

Total façade area	5.10

Room Absorption Calcuation	63	125	250	500	1000	2000	4000	8000	
Estimated Reverberation time	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	
Alpha bar	0.13	0.13	0.13	0.13	0.13	0.13	0.13	0.13	
Total Absorption	5.57	5.57	5.57	5.57	5.57	5.57	5.57	5.57	
10Log S/A	-0.38	-0.38	-0.38	-0.38	-0.38	-0.38	-0.38	-0.38	

Façade level	63	125	250	500	1000	2000	4000	8000	A
Measured Noise Level	49	43	41	39	36	32	32	30	42
Façade to free field	0	0	0	0	0	0	0	0	
Angle of view	0	0	0	0	0	0	0	0	
Screening (Maekewa)	0	0	0	0	0	0	0	0	
Distance correction	0	0	0	0	0	0	0	0	
Other	0	0	0	0	0	0	0	0	
Noise level at façade (Leq)	49	43	41	39	36	32	32	30	42

Composite SRI	63	125	250	500	1000	2000	4000	8000	Rw
Glazing SRI	18	21	17	25	35	37	31	40	29
Transmission Coefficient	0.015849	0.007943	0.019953	0.003162	0.000316	0.000200	0.000794	0.000100	
Wall SRI	28	34	43	55	66	77	85	85	55
Transmission Coefficient	0.001585	0.000398	0.000050	0.000003	0.000000	0.000000	0.000000	0.000000	
Roof SRI	23	26	43	52	60	65	65	65	51
Transmission Coefficient	0.005012	0.002512	0.000050	0.000006	0.000001	0.000000	0.000000	0.000000	
Ventilation, Dne	18	19	34	34	30	31	36	36	32
Transmission Coefficient	0.015849	0.012589	0.000398	0.000417	0.001000	0.000794	0.000251	0.000251	
Average Transmission Coeff	0.036857	0.027302	0.006684	0.001750	0.002054	0.001616	0.000726	0.000522	
Average SRI	14	16	22	28	27	28	31	33	28

Calculated Internal Noise Level, dB	63	125	250	500	1000	2000	4000	8000	A
Lp (Reverberant), line source	35.3	28.0	19.9	12.0	9.7	4.7	1.2	-2.2	18
Lp (Direct)	34.7	27.4	19.3	11.4	9.1	4.1	0.6	-2.8	17
BS8233	37	30	22	14	12	7	3	0	20

ARDENT

Noise Break-in Calculation - Plot 1 House Type M354 Bedroom 3

Description	
Ardent CE Project No.	**2206781_A**
Property Address	**Imberhorne Farm**
Room Type	**Bedroom**
Parameter	**LAmax**

Room Dimensions and Areas	
Room volume	17.30
Total Surface area	42.10
Wall façade area	3.60
Roof façade area	0.00
Glazing area	1.50
Dne Ref Area, A0	10.00

Total façade area	5.10

Room Absorption Calcuation	63	125	250	500	1000	2000	4000	8000	
Estimated Reverberation time	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	
Alpha bar	0.13	0.13	0.13	0.13	0.13	0.13	0.13	0.13	
Total Absorption	5.57	5.57	5.57	5.57	5.57	5.57	5.57	5.57	
10Log S/A	-0.38	-0.38	-0.38	-0.38	-0.38	-0.38	-0.38	-0.38	

Façade level	63	125	250	500	1000	2000	4000	8000	A
Measured Noise Level	69	56	55	52	49	45	45	45	55
Façade to free field	0	0	0	0	0	0	0	0	
Angle of view	0	0	0	0	0	0	0	0	
Screening (Maekewa)	0	0	0	0	0	0	0	0	
Distance correction	0	0	0	0	0	0	0	0	
Other	0	0	0	0	0	0	0	0	
Noise level at façade (Lmax)	69	56	55	52	49	45	45	45	55

Composite SRI	63	125	250	500	1000	2000	4000	8000	Rw
Glazing SRI	18	21	17	25	35	37	31	40	29
Transmission Coefficient	0.015849	0.007943	0.019953	0.003162	0.000316	0.000200	0.000794	0.000100	
Wall SRI	28	34	43	55	66	77	85	85	55
Transmission Coefficient	0.001585	0.000398	0.000050	0.000003	0.000000	0.000000	0.000000	0.000000	
Roof SRI	23	26	43	52	60	65	65	65	51
Transmission Coefficient	0.005012	0.002512	0.000050	0.000006	0.000001	0.000000	0.000000	0.000000	
Ventilation, Dne	18	19	34	34	30	31	36	36	32
Transmission Coefficient	0.015849	0.012589	0.000398	0.000417	0.001000	0.000794	0.000251	0.000251	
Average Transmission Coeff	0.036857	0.027302	0.006684	0.001750	0.002054	0.001616	0.000726	0.000522	
Average SRI	14	16	22	28	27	28	31	33	28

Calculated Internal Noise Level, dB	63	125	250	500	1000	2000	4000	8000	A
Lp (Reverberant), line source	55.3	41.0	33.9	25.0	22.7	17.7	14.2	12.8	33
Lp (Direct)	54.7	40.4	33.3	24.4	22.1	17.1	13.6	12.2	32
BS8233	57	43	36	27	25	20	16	15	35

ARDENT

Noise Break-in Calculation - Plot 219 House Type M464 Living Room

Description	
Ardent CE Project No.	**2206781_A**
Property Address	**Imberhorne Farm**
Room Type	**Bedroom**
Parameter	**Leq, 16h**

Room Dimensions and Areas	
Room volume	33.10
Total Surface area	65.10
Wall façade area	4.20
Roof façade area	0.00
Glazing area	2.50
Dne Ref Area, A0	10.00

Total façade area	6.70

Room Absorption Calcuation	63	125	250	500	1000	2000	4000	8000	
Estimated Reverberation time	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	
Alpha bar	0.16	0.16	0.16	0.16	0.16	0.16	0.16	0.16	
Total Absorption	10.66	10.66	10.66	10.66	10.66	10.66	10.66	10.66	
10Log S/A	-2.02	-2.02	-2.02	-2.02	-2.02	-2.02	-2.02	-2.02	

Façade level	63	125	250	500	1000	2000	4000	8000	A	
Predicted Noise Level	59	57	54	51	51	48	42	39	55	- Based on typ
Façade to free field	0	0	0	0	0	0	0	0		
Angle of view	0	0	0	0	0	0	0	0		
Screening (Maekewa)	0	0	0	0	0	0	0	0		
Distance correction	0	0	0	0	0	0	0	0		
Other	0	0	0	0	0	0	0	0		
Noise level at façade (Leq)	59	57	54	51	51	48	42	39	55	

Composite SRI	63	125	250	500	1000	2000	4000	8000	Rw
Glazing SRI	18	21	17	25	35	37	31	40	29
Transmission Coefficient	0.015849	0.007943	0.019953	0.003162	0.000316	0.000200	0.000794	0.000100	
Wall SRI	28	34	43	55	66	77	85	85	55
Transmission Coefficient	0.001585	0.000398	0.000050	0.000003	0.000000	0.000000	0.000000	0.000000	
Roof SRI	23	26	43	52	60	65	65	65	51
Transmission Coefficient	0.005012	0.002512	0.000050	0.000006	0.000001	0.000000	0.000000	0.000000	
Ventilation, Dne	18	19	34	34	30	31	36	36	32
Transmission Coefficient	0.015849	0.012589	0.000398	0.000417	0.001000	0.000794	0.000251	0.000251	
Average Transmission Coeff	0.030562	0.022003	0.008071	0.001804	0.001611	0.001260	0.000671	0.000412	
Average SRI	15	17	21	27	28	29	32	34	28

Calculated Internal Noise Level, dB	63	125	250	500	1000	2000	4000	8000	A
Lp (Reverberant), line source	42.8	39.4	32.1	22.5	22.1	18.0	9.3	4.1	29
Lp (Direct)	43.9	40.4	33.1	23.6	23.1	19.0	10.3	5.2	30
BS8233	45	41	34	25	24	20	11	6	31

ARDENT

Noise Break-in Calculation - Plot 219 House Type M464 Dining Room

Description	
Ardent CE Project No.	**2206781_A**
Property Address	**Imberhorne Farm**
Room Type	**Bedroom**
Parameter	**Leq, 16h**

Room Dimensions and Areas	
Room volume	40.30
Total Surface area	79.20
Wall façade area	5.40
Roof façade area	0.00
Glazing area	5.70
Dne Ref Area, A0	10.00

Total façade area	11.10

Room Absorption Calcuation	63	125	250	500	1000	2000	4000	8000	
Estimated Reverberation time	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	
Alpha bar	0.16	0.16	0.16	0.16	0.16	0.16	0.16	0.16	
Total Absorption	12.98	12.98	12.98	12.98	12.98	12.98	12.98	12.98	
10Log S/A	-0.68	-0.68	-0.68	-0.68	-0.68	-0.68	-0.68	-0.68	

Façade level	63	125	250	500	1000	2000	4000	8000	A
Measured Noise Level	56	50	47	45	41	38	36	33	47
Façade to free field	0	0	0	0	0	0	0	0	
Angle of view	0	0	0	0	0	0	0	0	
Screening (Maekewa)	0	0	0	0	0	0	0	0	
Distance correction	0	0	0	0	0	0	0	0	
Other	0	0	0	0	0	0	0	0	
Noise level at façade (Leq)	56	50	47	45	41	38	36	33	47

Composite SRI	63	125	250	500	1000	2000	4000	8000	Rw
Glazing SRI	18	21	17	25	35	37	31	40	29
Transmission Coefficient	0.015849	0.007943	0.019953	0.003162	0.000316	0.000200	0.000794	0.000100	
Wall SRI	28	34	43	55	66	77	85	85	55
Transmission Coefficient	0.001585	0.000398	0.000050	0.000003	0.000000	0.000000	0.000000	0.000000	
Roof SRI	23	26	43	52	60	65	65	65	51
Transmission Coefficient	0.005012	0.002512	0.000050	0.000006	0.000001	0.000000	0.000000	0.000000	
Ventilation, Dne	18	19	34	34	30	31	36	36	32
Transmission Coefficient	0.015849	0.012589	0.000398	0.000417	0.001000	0.000794	0.000251	0.000251	
Average Transmission Coeff	0.023188	0.015614	0.010629	0.002001	0.001063	0.000818	0.000634	0.000278	
Average SRI	16	18	20	27	30	31	32	36	29

Calculated Internal Noise Level, dB	63	125	250	500	1000	2000	4000	8000	A
Lp (Reverberant), line source	40.0	32.4	28.0	18.0	11.7	7.6	4.6	-1.8	23
Lp (Direct)	39.7	32.0	27.7	17.7	11.4	7.3	4.3	-2.2	23
BS8233	42	34	30	20	14	10	7	0	25

ARDENT

Noise Break-in Calculation - Plot 219 House Type M464 Bedroom 1

Description	
Ardent CE Project No.	**2206781_A**
Property Address	**Imberhorne Farm**
Room Type	**Bedroom**
Parameter	**Leq, 16h**

Room Dimensions and Areas	
Room volume	26.70
Total Surface area	55.40
Wall façade area	5.00
Roof façade area	0.00
Glazing area	2.10
Dne Ref Area, A0	10.00

Total façade area	7.10

Room Absorption Calcuation	63	125	250	500	1000	2000	4000	8000	
Estimated Reverberation time	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	
Alpha bar	0.16	0.16	0.16	0.16	0.16	0.16	0.16	0.16	
Total Absorption	8.60	8.60	8.60	8.60	8.60	8.60	8.60	8.60	
10Log S/A	-0.83	-0.83	-0.83	-0.83	-0.83	-0.83	-0.83	-0.83	

Façade level	63	125	250	500	1000	2000	4000	8000	A	
Predicted Noise Level	60	58	55	52	52	49	43	40	56	- Based on typ
Façade to free field	0	0	0	0	0	0	0	0		
Angle of view	0	0	0	0	0	0	0	0		
Screening (Maekewa)	0	0	0	0	0	0	0	0		
Distance correction	0	0	0	0	0	0	0	0		
Other	0	0	0	0	0	0	0	0		
Noise level at façade (Leq)	60	58	55	52	52	49	43	40	56	

Composite SRI	63	125	250	500	1000	2000	4000	8000	Rw
Glazing SRI	18	21	17	25	35	37	31	40	29
Transmission Coefficient	0.015849	0.007943	0.019953	0.003162	0.000316	0.000200	0.000794	0.000100	
Wall SRI	28	34	43	55	66	77	85	85	55
Transmission Coefficient	0.001585	0.000398	0.000050	0.000003	0.000000	0.000000	0.000000	0.000000	
Roof SRI	23	26	43	52	60	65	65	65	51
Transmission Coefficient	0.005012	0.002512	0.000050	0.000006	0.000001	0.000000	0.000000	0.000000	
Ventilation, Dne	18	19	34	34	30	31	36	36	32
Transmission Coefficient	0.015849	0.012589	0.000398	0.000417	0.001000	0.000794	0.000251	0.000251	
Average Transmission Coeff	0.028126	0.020361	0.006497	0.001525	0.001502	0.001178	0.000589	0.000383	
Average SRI	16	17	22	28	28	29	32	34	29

Calculated Internal Noise Level, dB	63	125	250	500	1000	2000	4000	8000	A
Lp (Reverberant), line source	44.7	41.3	33.3	24.0	23.9	19.9	10.9	6.0	31
Lp (Direct)	44.5	41.1	33.1	23.8	23.8	19.7	10.7	5.8	31
BS8233	47	43	35	26	26	22	13	8	33

ARDENT

Noise Break-in Calculation - Plot 219 House Type M464 Bedroom 1

Description	
Ardent CE Project No.	**2206781_A**
Property Address	**Imberhorne Farm**
Room Type	**Bedroom**
Parameter	**LAeq, 8h**

Room Dimensions and Areas	
Room volume	26.70
Total Surface area	55.40
Wall façade area	5.00
Roof façade area	0.00
Glazing area	2.10
Dne Ref Area, A0	10.00

Total façade area	7.10

Room Absorption Calcuation	63	125	250	500	1000	2000	4000	8000	
Estimated Reverberation time	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	
Alpha bar	0.16	0.16	0.16	0.16	0.16	0.16	0.16	0.16	
Total Absorption	8.60	8.60	8.60	8.60	8.60	8.60	8.60	8.60	
10Log S/A	-0.83	-0.83	-0.83	-0.83	-0.83	-0.83	-0.83	-0.83	

Façade level	63	125	250	500	1000	2000	4000	8000	A
Measured Noise Level	49	43	41	39	36	32	32	30	42
Façade to free field	0	0	0	0	0	0	0	0	
Angle of view	0	0	0	0	0	0	0	0	
Screening (Maekewa)	0	0	0	0	0	0	0	0	
Distance correction	0	0	0	0	0	0	0	0	
Other	0	0	0	0	0	0	0	0	
Noise level at façade (Leq)	49	43	41	39	36	32	32	30	42

Composite SRI	63	125	250	500	1000	2000	4000	8000	Rw
Glazing SRI	18	21	17	25	35	37	31	40	29
Transmission Coefficient	0.015849	0.007943	0.019953	0.003162	0.000316	0.000200	0.000794	0.000100	
Wall SRI	28	34	43	55	66	77	85	85	55
Transmission Coefficient	0.001585	0.000398	0.000050	0.000003	0.000000	0.000000	0.000000	0.000000	
Roof SRI	23	26	43	52	60	65	65	65	51
Transmission Coefficient	0.005012	0.002512	0.000050	0.000006	0.000001	0.000000	0.000000	0.000000	
Ventilation, Dne	18	19	34	34	30	31	36	36	32
Transmission Coefficient	0.015849	0.012589	0.000398	0.000417	0.001000	0.000794	0.000251	0.000251	
Average Transmission Coeff	0.028126	0.020361	0.006497	0.001525	0.001502	0.001178	0.000589	0.000383	
Average SRI	16	17	22	28	28	29	32	34	29

Calculated Internal Noise Level, dB	63	125	250	500	1000	2000	4000	8000	A
Lp (Reverberant), line source	33.7	26.3	19.3	11.0	7.9	2.9	-0.1	-4.0	16
Lp (Direct)	33.5	26.1	19.1	10.8	7.8	2.7	-0.3	-4.2	16
BS8233	36	28	21	13	10	5	2	-2	18

ARDENT

Noise Break-in Calculation - Plot 219 House Type M464 Bedroom 1

Description	
Ardent CE Project No.	**2206781_A**
Property Address	**Imberhorne Farm**
Room Type	**Bedroom**
Parameter	**LAmax**

Room Dimensions and Areas	
Room volume	26.70
Total Surface area	55.40
Wall façade area	5.00
Roof façade area	0.00
Glazing area	2.10
Dne Ref Area, A0	10.00

Total façade area	7.10

Room Absorption Calcuation	63	125	250	500	1000	2000	4000	8000	
Estimated Reverberation time	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	
Alpha bar	0.16	0.16	0.16	0.16	0.16	0.16	0.16	0.16	
Total Absorption	8.60	8.60	8.60	8.60	8.60	8.60	8.60	8.60	
10Log S/A	-0.83	-0.83	-0.83	-0.83	-0.83	-0.83	-0.83	-0.83	

Façade level	63	125	250	500	1000	2000	4000	8000	A
Measured Noise Level	69	56	55	52	49	45	45	45	55
Façade to free field	0	0	0	0	0	0	0	0	
Angle of view	0	0	0	0	0	0	0	0	
Screening (Maekewa)	0	0	0	0	0	0	0	0	
Distance correction	0	0	0	0	0	0	0	0	
Other	0	0	0	0	0	0	0	0	
Noise level at façade (Lmax)	69	56	55	52	49	45	45	45	55

Composite SRI	63	125	250	500	1000	2000	4000	8000	Rw
Glazing SRI	18	21	17	25	35	37	31	40	29
Transmission Coefficient	0.015849	0.007943	0.019953	0.003162	0.000316	0.000200	0.000794	0.000100	
Wall SRI	28	34	43	55	66	77	85	85	55
Transmission Coefficient	0.001585	0.000398	0.000050	0.000003	0.000000	0.000000	0.000000	0.000000	
Roof SRI	23	26	43	52	60	65	65	65	51
Transmission Coefficient	0.005012	0.002512	0.000050	0.000006	0.000001	0.000000	0.000000	0.000000	
Ventilation, Dne	18	19	34	34	30	31	36	36	32
Transmission Coefficient	0.015849	0.012589	0.000398	0.000417	0.001000	0.000794	0.000251	0.000251	
Average Transmission Coeff	0.028126	0.020361	0.006497	0.001525	0.001502	0.001178	0.000589	0.000383	
Average SRI	16	17	22	28	28	29	32	34	29

Calculated Internal Noise Level, dB	63	125	250	500	1000	2000	4000	8000	A
Lp (Reverberant), line source	53.7	39.3	33.3	24.0	20.9	15.9	12.9	11.0	31
Lp (Direct)	53.5	39.1	33.1	23.8	20.8	15.7	12.7	10.8	31
BS8233	56	41	35	26	23	18	15	13	33

ARDENT

Noise Break-in Calculation - Plot 219 House Type M464 Bedroom 2

Description	
Ardent CE Project No.	**2206781_A**
Property Address	**Imberhorne Farm**
Room Type	**Bedroom**
Parameter	**Leq, 16h**

Room Dimensions and Areas	
Room volume	27.60
Total Surface area	57.60
Wall façade area	0.00
Roof façade area	2.80
Glazing area	2.00
Dne Ref Area, A0	10.00

Total façade area	4.80

Room Absorption Calcuation	63	125	250	500	1000	2000	4000	8000	
Estimated Reverberation time	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	
Alpha bar	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15	
Total Absorption	8.89	8.89	8.89	8.89	8.89	8.89	8.89	8.89	
10Log S/A	-2.68	-2.68	-2.68	-2.68	-2.68	-2.68	-2.68	-2.68	

Façade level	63	125	250	500	1000	2000	4000	8000	A	
Predicted Noise Level	60	58	55	52	52	49	43	40	56	- Based on typ
Façade to free field	0	0	0	0	0	0	0	0		
Angle of view	0	0	0	0	0	0	0	0		
Screening (Maekewa)	0	0	0	0	0	0	0	0		
Distance correction	0	0	0	0	0	0	0	0		
Other	0	0	0	0	0	0	0	0		
Noise level at façade (Leq)	60	58	55	52	52	49	43	40	56	

Composite SRI	63	125	250	500	1000	2000	4000	8000	Rw
Glazing SRI	18	21	17	25	35	37	31	40	29
Transmission Coefficient	0.015849	0.007943	0.019953	0.003162	0.000316	0.000200	0.000794	0.000100	
Wall SRI	28	34	43	55	66	77	85	85	55
Transmission Coefficient	0.001585	0.000398	0.000050	0.000003	0.000000	0.000000	0.000000	0.000000	
Roof SRI	27	31	35	40	43	46	55	55	43
Transmission Coefficient	0.001995	0.000794	0.000316	0.000100	0.000050	0.000025	0.000003	0.000003	
Ventilation, Dne	18	19	34	34	30	31	36	36	32
Transmission Coefficient	0.015849	0.012589	0.000398	0.000417	0.001000	0.000794	0.000251	0.000251	
Average Transmission Coeff	0.040786	0.030001	0.009327	0.002244	0.002244	0.001753	0.000856	0.000567	
Average SRI	14	15	20	26	26	28	31	32	27

Calculated Internal Noise Level, dB	63	125	250	500	1000	2000	4000	8000	A
Lp (Reverberant), line source	44.4	41.1	33.0	23.8	23.8	19.8	10.7	5.9	31
Lp (Direct)	46.1	42.8	34.7	25.5	25.5	21.4	12.3	7.5	32
BS8233	46	43	35	26	26	22	13	8	33

ARDENT

Noise Break-in Calculation - Plot 219 House Type M464 Bedroom 2

Description	
Ardent CE Project No.	**2206781_A**
Property Address	**Imberhorne Farm**
Room Type	**Bedroom**
Parameter	**LAeq, 8h**

Room Dimensions and Areas	
Room volume	27.60
Total Surface area	57.60
Wall façade area	0.00
Roof façade area	2.80
Glazing area	2.00
Dne Ref Area, A0	10.00

Total façade area	4.80

Room Absorption Calcuation	63	125	250	500	1000	2000	4000	8000	
Estimated Reverberation time	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	
Alpha bar	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15	
Total Absorption	8.89	8.89	8.89	8.89	8.89	8.89	8.89	8.89	
10Log S/A	-2.68	-2.68	-2.68	-2.68	-2.68	-2.68	-2.68	-2.68	

Façade level	63	125	250	500	1000	2000	4000	8000	A
Measured Noise Level	49	43	41	39	36	32	32	30	42
Façade to free field	0	0	0	0	0	0	0	0	
Angle of view	0	0	0	0	0	0	0	0	
Screening (Maekewa)	0	0	0	0	0	0	0	0	
Distance correction	0	0	0	0	0	0	0	0	
Other	0	0	0	0	0	0	0	0	
Noise level at façade (Leq)	49	43	41	39	36	32	32	30	42

Composite SRI	63	125	250	500	1000	2000	4000	8000	Rw
Glazing SRI	18	21	17	25	35	37	31	40	29
Transmission Coefficient	0.015849	0.007943	0.019953	0.003162	0.000316	0.000200	0.000794	0.000100	
Wall SRI	28	34	43	55	66	77	85	85	55
Transmission Coefficient	0.001585	0.000398	0.000050	0.000003	0.000000	0.000000	0.000000	0.000000	
Roof SRI	27	31	35	40	43	46	55	55	43
Transmission Coefficient	0.001995	0.000794	0.000316	0.000100	0.000050	0.000025	0.000003	0.000003	
Ventilation, Dne	18	19	34	34	30	31	36	36	32
Transmission Coefficient	0.015849	0.012589	0.000398	0.000417	0.001000	0.000794	0.000251	0.000251	
Average Transmission Coeff	0.040786	0.030001	0.009327	0.002244	0.002244	0.001753	0.000856	0.000567	
Average SRI	14	15	20	26	26	28	31	32	27

Calculated Internal Noise Level, dB	63	125	250	500	1000	2000	4000	8000	A
Lp (Reverberant), line source	33.4	26.1	19.0	10.8	7.8	2.8	-0.3	-4.1	16
Lp (Direct)	35.1	27.8	20.7	12.5	9.5	4.4	1.3	-2.5	18
BS8233	35	28	21	13	10	5	2	-2	18

ARDENT

Noise Break-in Calculation - Plot 219 House Type M464 Bedroom 2

Description	
Ardent CE Project No.	**2206781_A**
Property Address	**Imberhorne Farm**
Room Type	**Bedroom**
Parameter	**LAmax**

Room Dimensions and Areas	
Room volume	27.60
Total Surface area	57.60
Wall façade area	0.00
Roof façade area	2.80
Glazing area	2.00
Dne Ref Area, A0	10.00

Total façade area	4.80

Room Absorption Calcuation	63	125	250	500	1000	2000	4000	8000	
Estimated Reverberation time	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	
Alpha bar	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15	
Total Absorption	8.89	8.89	8.89	8.89	8.89	8.89	8.89	8.89	
10Log S/A	-2.68	-2.68	-2.68	-2.68	-2.68	-2.68	-2.68	-2.68	

Façade level	63	125	250	500	1000	2000	4000	8000	A
Measured Noise Level	69	56	55	52	49	45	45	45	55
Façade to free field	0	0	0	0	0	0	0	0	
Angle of view	0	0	0	0	0	0	0	0	
Screening (Maekewa)	0	0	0	0	0	0	0	0	
Distance correction	0	0	0	0	0	0	0	0	
Other	0	0	0	0	0	0	0	0	
Noise level at façade (Lmax)	69	56	55	52	49	45	45	45	55

Composite SRI	63	125	250	500	1000	2000	4000	8000	Rw
Glazing SRI	18	21	17	25	35	37	31	40	29
Transmission Coefficient	0.015849	0.007943	0.019953	0.003162	0.000316	0.000200	0.000794	0.000100	
Wall SRI	28	34	43	55	66	77	85	85	55
Transmission Coefficient	0.001585	0.000398	0.000050	0.000003	0.000000	0.000000	0.000000	0.000000	
Roof SRI	27	31	35	40	43	46	55	55	43
Transmission Coefficient	0.001995	0.000794	0.000316	0.000100	0.000050	0.000025	0.000003	0.000003	
Ventilation, Dne	18	19	34	34	30	31	36	36	32
Transmission Coefficient	0.015849	0.012589	0.000398	0.000417	0.001000	0.000794	0.000251	0.000251	
Average Transmission Coeff	0.040786	0.030001	0.009327	0.002244	0.002244	0.001753	0.000856	0.000567	
Average SRI	14	15	20	26	26	28	31	32	27

Calculated Internal Noise Level, dB	63	125	250	500	1000	2000	4000	8000	A
Lp (Reverberant), line source	53.4	39.1	33.0	23.8	20.8	15.8	12.7	10.9	31
Lp (Direct)	55.1	40.8	34.7	25.5	22.5	17.4	14.3	12.5	33
BS8233	55	41	35	26	23	18	15	13	33

ARDENT

Noise Break-in Calculation - Plot 219 House Type M464 Bedroom 3

Description	
Ardent CE Project No.	**2206781_A**
Property Address	**Imberhorne Farm**
Room Type	**Bedroom**
Parameter	**Leq, 16h**

Room Dimensions and Areas	
Room volume	22.80
Total Surface area	51.80
Wall façade area	5.60
Roof façade area	0.00
Glazing area	1.50
Dne Ref Area, A0	10.00

Total façade area	7.10

Room Absorption Calcuation	63	125	250	500	1000	2000	4000	8000	
Estimated Reverberation time	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	
Alpha bar	0.14	0.14	0.14	0.14	0.14	0.14	0.14	0.14	
Total Absorption	7.34	7.34	7.34	7.34	7.34	7.34	7.34	7.34	
10Log S/A	-0.15	-0.15	-0.15	-0.15	-0.15	-0.15	-0.15	-0.15	

Façade level	63	125	250	500	1000	2000	4000	8000	A
Measured Noise Level	56	50	47	45	41	38	36	33	47
Façade to free field	0	0	0	0	0	0	0	0	
Angle of view	0	0	0	0	0	0	0	0	
Screening (Maekewa)	0	0	0	0	0	0	0	0	
Distance correction	0	0	0	0	0	0	0	0	
Other	0	0	0	0	0	0	0	0	
Noise level at façade (Leq)	56	50	47	45	41	38	36	33	47

Composite SRI	63	125	250	500	1000	2000	4000	8000	Rw
Glazing SRI	18	21	17	25	35	37	31	40	29
Transmission Coefficient	0.015849	0.007943	0.019953	0.003162	0.000316	0.000200	0.000794	0.000100	
Wall SRI	28	34	43	55	66	77	85	85	55
Transmission Coefficient	0.001585	0.000398	0.000050	0.000003	0.000000	0.000000	0.000000	0.000000	
Roof SRI	23	26	43	52	60	65	65	65	51
Transmission Coefficient	0.005012	0.002512	0.000050	0.000006	0.000001	0.000000	0.000000	0.000000	
Ventilation, Dne	18	19	34	34	30	31	36	36	32
Transmission Coefficient	0.015849	0.012589	0.000398	0.000417	0.001000	0.000794	0.000251	0.000251	
Average Transmission Coeff	0.026921	0.019724	0.004816	0.001258	0.001475	0.001161	0.000522	0.000375	
Average SRI	16	17	23	29	28	29	33	34	29

Calculated Internal Noise Level, dB	63	125	250	500	1000	2000	4000	8000	A
Lp (Reverberant), line source	41.2	33.9	25.1	16.6	13.6	9.7	4.3	0.0	23
Lp (Direct)	40.3	33.0	24.2	15.7	12.8	8.8	3.5	-0.9	22
BS8233	43	36	27	19	16	12	6	2	25

ARDENT

Noise Break-in Calculation - Plot 219 House Type M464 Bedroom 3

Description	
Ardent CE Project No.	**2206781_A**
Property Address	**Imberhorne Farm**
Room Type	**Bedroom**
Parameter	**LAeq, 8h**

Room Dimensions and Areas	
Room volume	22.80
Total Surface area	51.80
Wall façade area	5.60
Roof façade area	0.00
Glazing area	1.50
Dne Ref Area, A0	10.00

Total façade area	7.10

Room Absorption Calcuation	63	125	250	500	1000	2000	4000	8000	
Estimated Reverberation time	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	
Alpha bar	0.14	0.14	0.14	0.14	0.14	0.14	0.14	0.14	
Total Absorption	7.34	7.34	7.34	7.34	7.34	7.34	7.34	7.34	
10Log S/A	-0.15	-0.15	-0.15	-0.15	-0.15	-0.15	-0.15	-0.15	

Façade level	63	125	250	500	1000	2000	4000	8000	A
Measured Noise Level	49	43	41	39	36	32	32	30	42
Façade to free field	0	0	0	0	0	0	0	0	
Angle of view	0	0	0	0	0	0	0	0	
Screening (Maekewa)	0	0	0	0	0	0	0	0	
Distance correction	0	0	0	0	0	0	0	0	
Other	0	0	0	0	0	0	0	0	
Noise level at façade (Leq)	49	43	41	39	36	32	32	30	42

Composite SRI	63	125	250	500	1000	2000	4000	8000	Rw
Glazing SRI	18	21	17	25	35	37	31	40	29
Transmission Coefficient	0.015849	0.007943	0.019953	0.003162	0.000316	0.000200	0.000794	0.000100	
Wall SRI	28	34	43	55	66	77	85	85	55
Transmission Coefficient	0.001585	0.000398	0.000050	0.000003	0.000000	0.000000	0.000000	0.000000	
Roof SRI	23	26	43	52	60	65	65	65	51
Transmission Coefficient	0.005012	0.002512	0.000050	0.000006	0.000001	0.000000	0.000000	0.000000	
Ventilation, Dne	18	19	34	34	30	31	36	36	32
Transmission Coefficient	0.015849	0.012589	0.000398	0.000417	0.001000	0.000794	0.000251	0.000251	
Average Transmission Coeff	0.026921	0.019724	0.004816	0.001258	0.001475	0.001161	0.000522	0.000375	
Average SRI	16	17	23	29	28	29	33	34	29

Calculated Internal Noise Level, dB	63	125	250	500	1000	2000	4000	8000	A
Lp (Reverberant), line source	34.5	27.1	18.5	10.4	8.0	3.9	0.4	-3.4	17
Lp (Direct)	33.6	26.2	17.6	9.5	7.2	3.0	-0.4	-4.3	16
BS8233	36	29	20	12	10	6	2	-1	19

ARDENT

Noise Break-in Calculation - Plot 219 House Type M464 Bedroom 3

Description	
Ardent CE Project No.	**2206781_A**
Property Address	**Imberhorne Farm**
Room Type	**Bedroom**
Parameter	**LAmax**

Room Dimensions and Areas	
Room volume	22.80
Total Surface area	51.80
Wall façade area	5.60
Roof façade area	0.00
Glazing area	1.50
Dne Ref Area, A0	10.00

Total façade area	7.10

Room Absorption Calcuation	63	125	250	500	1000	2000	4000	8000	
Estimated Reverberation time	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	
Alpha bar	0.14	0.14	0.14	0.14	0.14	0.14	0.14	0.14	
Total Absorption	7.34	7.34	7.34	7.34	7.34	7.34	7.34	7.34	
10Log S/A	-0.15	-0.15	-0.15	-0.15	-0.15	-0.15	-0.15	-0.15	

Façade level	63	125	250	500	1000	2000	4000	8000	A
Measured Noise Level	69	56	55	52	49	45	45	45	55
Façade to free field	0	0	0	0	0	0	0	0	
Angle of view	0	0	0	0	0	0	0	0	
Screening (Maekewa)	0	0	0	0	0	0	0	0	
Distance correction	0	0	0	0	0	0	0	0	
Other	0	0	0	0	0	0	0	0	
Noise level at façade (Lmax)	69	56	55	52	49	45	45	45	55

Composite SRI	63	125	250	500	1000	2000	4000	8000	Rw
Glazing SRI	18	21	17	25	35	37	31	40	29
Transmission Coefficient	0.015849	0.007943	0.019953	0.003162	0.000316	0.000200	0.000794	0.000100	
Wall SRI	28	34	43	55	66	77	85	85	55
Transmission Coefficient	0.001585	0.000398	0.000050	0.000003	0.000000	0.000000	0.000000	0.000000	
Roof SRI	23	26	43	52	60	65	65	65	51
Transmission Coefficient	0.005012	0.002512	0.000050	0.000006	0.000001	0.000000	0.000000	0.000000	
Ventilation, Dne	18	19	34	34	30	31	36	36	32
Transmission Coefficient	0.015849	0.012589	0.000398	0.000417	0.001000	0.000794	0.000251	0.000251	
Average Transmission Coeff	0.026921	0.019724	0.004816	0.001258	0.001475	0.001161	0.000522	0.000375	
Average SRI	16	17	23	29	28	29	33	34	29

Calculated Internal Noise Level, dB	63	125	250	500	1000	2000	4000	8000	A
Lp (Reverberant), line source	54.2	39.8	32.7	23.9	21.5	16.5	13.0	11.6	32
Lp (Direct)	53.3	38.9	31.8	23.0	20.7	15.6	12.2	10.7	31
BS8233	56	42	35	26	24	19	15	14	34

ARDENT

Noise Break-in Calculation - Plot 219 House Type M464 Bedroom 4

Description	
Ardent CE Project No.	**2206781_A**
Property Address	**Imberhorne Farm**
Room Type	**Bedroom**
Parameter	**Leq, 16h**

Room Dimensions and Areas	
Room volume	17.90
Total Surface area	41.40
Wall façade area	5.60
Roof façade area	0.00
Glazing area	1.50
Dne Ref Area, A0	10.00

Total façade area	7.10

Room Absorption Calcuation	63	125	250	500	1000	2000	4000	8000	
Estimated Reverberation time	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	
Alpha bar	0.14	0.14	0.14	0.14	0.14	0.14	0.14	0.14	
Total Absorption	5.76	5.76	5.76	5.76	5.76	5.76	5.76	5.76	
10Log S/A	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	

Façade level	63	125	250	500	1000	2000	4000	8000	A
Measured Noise Level	56	50	47	45	41	38	36	33	47
Façade to free field	0	0	0	0	0	0	0	0	
Angle of view	0	0	0	0	0	0	0	0	
Screening (Maekewa)	0	0	0	0	0	0	0	0	
Distance correction	0	0	0	0	0	0	0	0	
Other	0	0	0	0	0	0	0	0	
Noise level at façade (Leq)	56	50	47	45	41	38	36	33	47

Composite SRI	63	125	250	500	1000	2000	4000	8000	Rw
Glazing SRI	18	21	17	25	35	37	31	40	29
Transmission Coefficient	0.015849	0.007943	0.019953	0.003162	0.000316	0.000200	0.000794	0.000100	
Wall SRI	28	34	43	55	66	77	85	85	55
Transmission Coefficient	0.001585	0.000398	0.000050	0.000003	0.000000	0.000000	0.000000	0.000000	
Roof SRI	23	26	43	52	60	65	65	65	51
Transmission Coefficient	0.005012	0.002512	0.000050	0.000006	0.000001	0.000000	0.000000	0.000000	
Ventilation, Dne	18	19	34	34	30	31	36	36	32
Transmission Coefficient	0.015849	0.012589	0.000398	0.000417	0.001000	0.000794	0.000251	0.000251	
Average Transmission Coeff	0.026921	0.019724	0.004816	0.001258	0.001475	0.001161	0.000522	0.000375	
Average SRI	16	17	23	29	28	29	33	34	29

Calculated Internal Noise Level, dB	63	125	250	500	1000	2000	4000	8000	A
Lp (Reverberant), line source	42.2	35.0	26.1	17.6	14.7	10.8	5.4	1.0	24
Lp (Direct)	40.3	33.0	24.2	15.7	12.8	8.8	3.5	-0.9	22
BS8233	44	37	28	20	17	13	7	3	26

ARDENT

Noise Break-in Calculation - Plot 219 House Type M464 Bedroom 4

Description	
Ardent CE Project No.	**2206781_A**
Property Address	**Imberhorne Farm**
Room Type	**Bedroom**
Parameter	**LAeq, 8h**

Room Dimensions and Areas	
Room volume	17.90
Total Surface area	41.40
Wall façade area	5.60
Roof façade area	0.00
Glazing area	1.50
Dne Ref Area, A0	10.00

Total façade area	7.10

Room Absorption Calcuation	63	125	250	500	1000	2000	4000	8000	
Estimated Reverberation time	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	
Alpha bar	0.14	0.14	0.14	0.14	0.14	0.14	0.14	0.14	
Total Absorption	5.76	5.76	5.76	5.76	5.76	5.76	5.76	5.76	
10Log S/A	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	

Façade level	63	125	250	500	1000	2000	4000	8000	A
Measured Noise Level	49	43	41	39	36	32	32	30	42
Façade to free field	0	0	0	0	0	0	0	0	
Angle of view	0	0	0	0	0	0	0	0	
Screening (Maekewa)	0	0	0	0	0	0	0	0	
Distance correction	0	0	0	0	0	0	0	0	
Other	0	0	0	0	0	0	0	0	
Noise level at façade (Leq)	49	43	41	39	36	32	32	30	42

Composite SRI	63	125	250	500	1000	2000	4000	8000	Rw
Glazing SRI	18	21	17	25	35	37	31	40	29
Transmission Coefficient	0.015849	0.007943	0.019953	0.003162	0.000316	0.000200	0.000794	0.000100	
Wall SRI	28	34	43	55	66	77	85	85	55
Transmission Coefficient	0.001585	0.000398	0.000050	0.000003	0.000000	0.000000	0.000000	0.000000	
Roof SRI	23	26	43	52	60	65	65	65	51
Transmission Coefficient	0.005012	0.002512	0.000050	0.000006	0.000001	0.000000	0.000000	0.000000	
Ventilation, Dne	18	19	34	34	30	31	36	36	32
Transmission Coefficient	0.015849	0.012589	0.000398	0.000417	0.001000	0.000794	0.000251	0.000251	
Average Transmission Coeff	0.026921	0.019724	0.004816	0.001258	0.001475	0.001161	0.000522	0.000375	
Average SRI	16	17	23	29	28	29	33	34	29

Calculated Internal Noise Level, dB	63	125	250	500	1000	2000	4000	8000	A
Lp (Reverberant), line source	35.5	28.2	19.5	11.4	9.1	5.0	1.5	-2.4	18
Lp (Direct)	33.6	26.2	17.6	9.5	7.2	3.0	-0.4	-4.3	16
BS8233	38	30	22	13	11	7	3	0	20

ARDENT

Noise Break-in Calculation - Plot 219 House Type M464 Bedroom 4

Description	
Ardent CE Project No.	**2206781_A**
Property Address	**Imberhorne Farm**
Room Type	**Bedroom**
Parameter	**LAmax**

Room Dimensions and Areas	
Room volume	17.90
Total Surface area	41.40
Wall façade area	5.60
Roof façade area	0.00
Glazing area	1.50
Dne Ref Area, A0	10.00

Total façade area	7.10

Room Absorption Calcuation	63	125	250	500	1000	2000	4000	8000	
Estimated Reverberation time	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	
Alpha bar	0.14	0.14	0.14	0.14	0.14	0.14	0.14	0.14	
Total Absorption	5.76	5.76	5.76	5.76	5.76	5.76	5.76	5.76	
10Log S/A	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	

Façade level	63	125	250	500	1000	2000	4000	8000	A
Measured Noise Level	69	56	55	52	49	45	45	45	55
Façade to free field	0	0	0	0	0	0	0	0	
Angle of view	0	0	0	0	0	0	0	0	
Screening (Maekewa)	0	0	0	0	0	0	0	0	
Distance correction	0	0	0	0	0	0	0	0	
Other	0	0	0	0	0	0	0	0	
Noise level at façade (Lmax)	69	56	55	52	49	45	45	45	55

Composite SRI	63	125	250	500	1000	2000	4000	8000	Rw
Glazing SRI	18	21	17	25	35	37	31	40	29
Transmission Coefficient	0.015849	0.007943	0.019953	0.003162	0.000316	0.000200	0.000794	0.000100	
Wall SRI	28	34	43	55	66	77	85	85	55
Transmission Coefficient	0.001585	0.000398	0.000050	0.000003	0.000000	0.000000	0.000000	0.000000	
Roof SRI	23	26	43	52	60	65	65	65	51
Transmission Coefficient	0.005012	0.002512	0.000050	0.000006	0.000001	0.000000	0.000000	0.000000	
Ventilation, Dne	18	19	34	34	30	31	36	36	32
Transmission Coefficient	0.015849	0.012589	0.000398	0.000417	0.001000	0.000794	0.000251	0.000251	
Average Transmission Coeff	0.026921	0.019724	0.004816	0.001258	0.001475	0.001161	0.000522	0.000375	
Average SRI	16	17	23	29	28	29	33	34	29

Calculated Internal Noise Level, dB	63	125	250	500	1000	2000	4000	8000	A
Lp (Reverberant), line source	55.2	40.9	33.7	24.9	22.6	17.6	14.1	12.6	33
Lp (Direct)	53.3	38.9	31.8	23.0	20.7	15.6	12.2	10.7	31
BS8233	57	43	36	27	25	20	16	15	35

ARDENT

Noise Break-in Calculation - Plot 421 House Type Elmswell Dining Room, Façade 1

Description	
Ardent CE Project No.	**2206781_A**
Property Address	**Imberhorne Farm**
Room Type	**Bedroom**
Parameter	**Leq, 16h**

Room Dimensions and Areas	
Room volume	41.60
Total Surface area	77.10
Wall façade area	4.80
Roof façade area	0.00
Glazing area	3.50
Dne Ref Area, A0	10.00

Total façade area	8.30

Room Absorption Calcuation	63	125	250	500	1000	2000	4000	8000	
Estimated Reverberation time	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	
Alpha bar	0.17	0.17	0.17	0.17	0.17	0.17	0.17	0.17	
Total Absorption	13.40	13.40	13.40	13.40	13.40	13.40	13.40	13.40	
10Log S/A	-2.08	-2.08	-2.08	-2.08	-2.08	-2.08	-2.08	-2.08	

Façade level	63	125	250	500	1000	2000	4000	8000	A	
Predicted Noise Level	57	55	52	49	49	46	40	37	53	- Based on typ
Façade to free field	0	0	0	0	0	0	0	0		
Angle of view	0	0	0	0	0	0	0	0		
Screening (Maekewa)	0	0	0	0	0	0	0	0		
Distance correction	0	0	0	0	0	0	0	0		
Other	0	0	0	0	0	0	0	0		
Noise level at façade (Leq)	57	55	52	49	49	46	40	37	53	

Composite SRI	63	125	250	500	1000	2000	4000	8000	Rw
Glazing SRI	18	21	17	25	35	37	31	40	29
Transmission Coefficient	0.015849	0.007943	0.019953	0.003162	0.000316	0.000200	0.000794	0.000100	
Wall SRI	28	34	43	55	66	77	85	85	55
Transmission Coefficient	0.001585	0.000398	0.000050	0.000003	0.000000	0.000000	0.000000	0.000000	
Roof SRI	23	26	43	52	60	65	65	65	51
Transmission Coefficient	0.005012	0.002512	0.000050	0.000006	0.000001	0.000000	0.000000	0.000000	
Ventilation, Dne	18	19	34	34	30	31	36	36	32
Transmission Coefficient	0.015849	0.012589	0.000398	0.000417	0.001000	0.000794	0.000251	0.000251	
Average Transmission Coeff	0.026695	0.018748	0.008922	0.001838	0.001338	0.001041	0.000638	0.000345	
Average SRI	16	17	20	27	29	30	32	35	29

Calculated Internal Noise Level, dB	63	125	250	500	1000	2000	4000	8000	A
Lp (Reverberant), line source	40.2	36.7	30.4	20.6	19.2	15.1	7.0	1.3	27
Lp (Direct)	41.3	37.7	31.5	21.6	20.3	16.2	8.0	2.4	28
BS8233	42	39	32	23	21	17	9	3	29

ARDENT

Noise Break-in Calculation - Plot 421 House Type Elmswell Dining Room, Façade 2

Description	
Ardent CE Project No.	**2206781_A**
Property Address	**Imberhorne Farm**
Room Type	**Bedroom**
Parameter	**Leq, 16h**

Room Dimensions and Areas	
Room volume	41.60
Total Surface area	77.10
Wall façade area	10.50
Roof façade area	0.00
Glazing area	1.50
Dne Ref Area, A0	10.00

Total façade area	12.00

Room Absorption Calcuation	63	125	250	500	1000	2000	4000	8000	
Estimated Reverberation time	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	
Alpha bar	0.17	0.17	0.17	0.17	0.17	0.17	0.17	0.17	
Total Absorption	13.40	13.40	13.40	13.40	13.40	13.40	13.40	13.40	
10Log S/A	-0.48	-0.48	-0.48	-0.48	-0.48	-0.48	-0.48	-0.48	

Façade level	63	125	250	500	1000	2000	4000	8000	A
Measured Noise Level	56	50	47	45	41	38	36	33	47
Façade to free field	0	0	0	0	0	0	0	0	
Angle of view	0	0	0	0	0	0	0	0	
Screening (Maekewa)	0	0	0	0	0	0	0	0	
Distance correction	0	0	0	0	0	0	0	0	
Other	0	0	0	0	0	0	0	0	
Noise level at façade (Leq)	56	50	47	45	41	38	36	33	47

Composite SRI	63	125	250	500	1000	2000	4000	8000	Rw
Glazing SRI	18	21	17	25	35	37	31	40	29
Transmission Coefficient	0.015849	0.007943	0.019953	0.003162	0.000316	0.000200	0.000794	0.000100	
Wall SRI	28	34	43	55	66	77	85	85	55
Transmission Coefficient	0.001585	0.000398	0.000050	0.000003	0.000000	0.000000	0.000000	0.000000	
Roof SRI	23	26	43	52	60	65	65	65	51
Transmission Coefficient	0.005012	0.002512	0.000050	0.000006	0.000001	0.000000	0.000000	0.000000	
Ventilation, Dne	18	19	34	34	30	31	36	36	32
Transmission Coefficient	0.015849	0.012589	0.000398	0.000417	0.001000	0.000794	0.000251	0.000251	
Average Transmission Coeff	0.016575	0.011832	0.002870	0.000745	0.000873	0.000687	0.000309	0.000222	
Average SRI	18	19	25	31	31	32	35	37	32

Calculated Internal Noise Level, dB	63	125	250	500	1000	2000	4000	8000	A
Lp (Reverberant), line source	38.7	31.4	22.5	13.9	11.0	7.1	1.7	-2.6	20
Lp (Direct)	38.2	30.8	22.0	13.4	10.5	6.6	1.2	-3.1	20
BS8233	41	33	25	16	13	9	4	-1	22

Dining Room Combined Internal Noise Level

	Façade 1							
	63	125	250	500	1000	2000	4000	8000
dB LAeq,T Day	42	39	32	23	21	17	9	3

	Façade 2							
	63	125	250	500	1000	2000	4000	8000
dB LAeq,T Day	41	33	25	16	13	9	4	-1

	Combined Internal Noise Level							
	63	125	250	500	1000	2000	4000	8000
dB LAeq,T Day	45	40	33	23	22	18	10	5

ARDENT

Noise Break-in Calculation - Plot 421 House Type Elmswell Living Room, Façade 1

Description	
Ardent CE Project No.	**2206781_A**
Property Address	**Imberhorne Farm**
Room Type	**Bedroom**
Parameter	**Leq, 16h**

Room Dimensions and Areas	
Room volume	45.50
Total Surface area	85.60
Wall façade area	4.10
Roof façade area	0.00
Glazing area	3.50
Dne Ref Area, A0	10.00

Total façade area	7.60

Room Absorption Calcuation	63	125	250	500	1000	2000	4000	8000	
Estimated Reverberation time	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	
Alpha bar	0.17	0.17	0.17	0.17	0.17	0.17	0.17	0.17	
Total Absorption	14.65	14.65	14.65	14.65	14.65	14.65	14.65	14.65	
10Log S/A	-2.85	-2.85	-2.85	-2.85	-2.85	-2.85	-2.85	-2.85	

Façade level	63	125	250	500	1000	2000	4000	8000	A	
Predicted Noise Level	57	55	52	49	49	46	40	37	53	- Based on typ
Façade to free field	0	0	0	0	0	0	0	0		
Angle of view	0	0	0	0	0	0	0	0		
Screening (Maekewa)	0	0	0	0	0	0	0	0		
Distance correction	0	0	0	0	0	0	0	0		
Other	0	0	0	0	0	0	0	0		
Noise level at façade (Leq)	57	55	52	49	49	46	40	37	53	

Composite SRI	63	125	250	500	1000	2000	4000	8000	Rw
Glazing SRI	18	21	17	25	35	37	31	40	29
Transmission Coefficient	0.015849	0.007943	0.019953	0.003162	0.000316	0.000200	0.000794	0.000100	
Wall SRI	28	34	43	55	66	77	85	85	55
Transmission Coefficient	0.001585	0.000398	0.000050	0.000003	0.000000	0.000000	0.000000	0.000000	
Roof SRI	23	26	43	52	60	65	65	65	51
Transmission Coefficient	0.005012	0.002512	0.000050	0.000006	0.000001	0.000000	0.000000	0.000000	
Ventilation, Dne	18	19	34	34	30	31	36	36	32
Transmission Coefficient	0.015849	0.012589	0.000398	0.000417	0.001000	0.000794	0.000251	0.000251	
Average Transmission Coeff	0.029008	0.020438	0.009740	0.002007	0.001462	0.001137	0.000696	0.000377	
Average SRI	15	17	20	27	28	29	32	34	28

Calculated Internal Noise Level, dB	63	125	250	500	1000	2000	4000	8000	A
Lp (Reverberant), line source	39.8	36.3	30.0	20.2	18.8	14.7	6.6	0.9	26
Lp (Direct)	41.6	38.1	31.9	22.0	20.6	16.6	8.4	2.8	28
BS8233	42	38	32	22	21	17	9	3	28

ARDENT

Noise Break-in Calculation - Plot 421 House Type Elmswell Living Room, Façade 2

Description	
Ardent CE Project No.	**2206781_A**
Property Address	**Imberhorne Farm**
Room Type	**Bedroom**
Parameter	**Leq, 16h**

Room Dimensions and Areas	
Room volume	45.50
Total Surface area	85.60
Wall façade area	4.10
Roof façade area	0.00
Glazing area	9.30
Dne Ref Area, A0	10.00

Total façade area	13.40

Room Absorption Calcuation	63	125	250	500	1000	2000	4000	8000	
Estimated Reverberation time	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	
Alpha bar	0.17	0.17	0.17	0.17	0.17	0.17	0.17	0.17	
Total Absorption	14.65	14.65	14.65	14.65	14.65	14.65	14.65	14.65	
10Log S/A	-0.39	-0.39	-0.39	-0.39	-0.39	-0.39	-0.39	-0.39	

Façade level	63	125	250	500	1000	2000	4000	8000	A	
Predicted Noise Level	59	57	54	51	51	48	42	39	55	- Based on typ
Façade to free field	0	0	0	0	0	0	0	0		
Angle of view	0	0	0	0	0	0	0	0		
Screening (Maekewa)	0	0	0	0	0	0	0	0		
Distance correction	0	0	0	0	0	0	0	0		
Other	0	0	0	0	0	0	0	0		
Noise level at façade (Leq)	59	57	54	51	51	48	42	39	55	

Composite SRI	63	125	250	500	1000	2000	4000	8000	Rw
Glazing SRI	18	21	17	25	35	37	31	40	29
Transmission Coefficient	0.015849	0.007943	0.019953	0.003162	0.000316	0.000200	0.000794	0.000100	
Wall SRI	28	34	43	55	66	77	85	85	55
Transmission Coefficient	0.001585	0.000398	0.000050	0.000003	0.000000	0.000000	0.000000	0.000000	
Roof SRI	23	26	43	52	60	65	65	65	51
Transmission Coefficient	0.005012	0.002512	0.000050	0.000006	0.000001	0.000000	0.000000	0.000000	
Ventilation, Dne	18	19	34	34	30	31	36	36	32
Transmission Coefficient	0.015849	0.012589	0.000398	0.000417	0.001000	0.000794	0.000251	0.000251	
Average Transmission Coeff	0.023312	0.015030	0.014160	0.002507	0.000966	0.000731	0.000739	0.000257	
Average SRI	16	18	18	26	30	31	31	36	29

Calculated Internal Noise Level, dB	63	125	250	500	1000	2000	4000	8000	A
Lp (Reverberant), line source	43.3	39.4	36.1	25.6	21.5	17.3	11.3	3.7	31
Lp (Direct)	42.7	38.8	35.5	25.0	20.8	16.6	10.7	3.1	30
BS8233	45	41	38	28	23	19	13	6	33

Living Room Combined Internal Noise Level

	Façade 1							
	63	125	250	500	1000	2000	4000	8000
dB LAeq,T Day	42	38	32	22	21	17	9	3

	Façade 2							
	63	125	250	500	1000	2000	4000	8000
dB LAeq,T Day	45	41	38	28	23	19	13	6

	Combined Internal Noise Level							
	63	125	250	500	1000	2000	4000	8000
dB LAeq,T Day	47	43	39	29	25	21	15	8

ARDENT

Noise Break-in Calculation - Plot 421 House Type Elmswell Study

Description	
Ardent CE Project No.	**2206781_A**
Property Address	**Imberhorne Farm**
Room Type	**Bedroom**
Parameter	**Leq, 16h**

Room Dimensions and Areas	
Room volume	13.60
Total Surface area	33.20
Wall façade area	0.00
Roof façade area	9.40
Glazing area	1.10
Dne Ref Area, A0	10.00

Total façade area	10.50

Room Absorption Calcuation	63	125	250	500	1000	2000	4000	8000	
Estimated Reverberation time	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	
Alpha bar	0.13	0.13	0.13	0.13	0.13	0.13	0.13	0.13	
Total Absorption	4.38	4.38	4.38	4.38	4.38	4.38	4.38	4.38	
10Log S/A	3.80	3.80	3.80	3.80	3.80	3.80	3.80	3.80	

Façade level	63	125	250	500	1000	2000	4000	8000	A	
Predicted Noise Level	57	55	52	49	49	46	40	37	53	- Based on typ
Façade to free field	0	0	0	0	0	0	0	0		
Angle of view	0	0	0	0	0	0	0	0		
Screening (Maekewa)	0	0	0	0	0	0	0	0		
Distance correction	0	0	0	0	0	0	0	0		
Other	0	0	0	0	0	0	0	0		
Noise level at façade (Leq)	57	55	52	49	49	46	40	37	53	

Composite SRI	63	125	250	500	1000	2000	4000	8000	Rw
Glazing SRI	18	21	17	25	35	37	31	40	29
Transmission Coefficient	0.015849	0.007943	0.019953	0.003162	0.000316	0.000200	0.000794	0.000100	
Wall SRI	28	34	43	55	66	77	85	85	55
Transmission Coefficient	0.001585	0.000398	0.000050	0.000003	0.000000	0.000000	0.000000	0.000000	
Roof SRI	27	31	35	40	43	46	55	55	43
Transmission Coefficient	0.001995	0.000794	0.000316	0.000100	0.000050	0.000025	0.000003	0.000003	
Ventilation, Dne	18	19	34	34	30	31	36	36	32
Transmission Coefficient	0.015849	0.012589	0.000398	0.000417	0.001000	0.000794	0.000251	0.000251	
Average Transmission Coeff	0.018541	0.013533	0.002753	0.000818	0.001030	0.000800	0.000325	0.000253	
Average SRI	17	19	26	31	30	31	35	36	31

Calculated Internal Noise Level, dB	63	125	250	500	1000	2000	4000	8000	A
Lp (Reverberant), line source	44.5	41.1	31.2	22.9	23.9	19.8	9.9	5.8	30
Lp (Direct)	39.7	36.3	26.4	18.1	19.1	15.0	5.1	1.0	25
BS8233	46	43	33	25	26	22	12	8	32

ARDENT

Noise Break-in Calculation - Plot 421 House Type Elmswell Bedroom 1

Description	
Ardent CE Project No.	**2206781_A**
Property Address	**Imberhorne Farm**
Room Type	**Bedroom**
Parameter	**Leq, 16h**

Room Dimensions and Areas	
Room volume	31.10
Total Surface area	63.30
Wall façade area	6.60
Roof façade area	0.00
Glazing area	1.50
Dne Ref Area, A0	10.00

Total façade area	8.10

Room Absorption Calcuation	63	125	250	500	1000	2000	4000	8000	
Estimated Reverberation time	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	
Alpha bar	0.16	0.16	0.16	0.16	0.16	0.16	0.16	0.16	
Total Absorption	10.01	10.01	10.01	10.01	10.01	10.01	10.01	10.01	
10Log S/A	-0.92	-0.92	-0.92	-0.92	-0.92	-0.92	-0.92	-0.92	

Façade level	63	125	250	500	1000	2000	4000	8000	A	
Predicted Noise Level	57	55	52	49	49	46	40	37	53	- Based on typ
Façade to free field	0	0	0	0	0	0	0	0		
Angle of view	0	0	0	0	0	0	0	0		
Screening (Maekewa)	0	0	0	0	0	0	0	0		
Distance correction	0	0	0	0	0	0	0	0		
Other	0	0	0	0	0	0	0	0		
Noise level at façade (Leq)	57	55	52	49	49	46	40	37	53	

Composite SRI	63	125	250	500	1000	2000	4000	8000	Rw
Glazing SRI	18	21	17	25	35	37	31	40	29
Transmission Coefficient	0.015849	0.007943	0.019953	0.003162	0.000316	0.000200	0.000794	0.000100	
Wall SRI	28	34	43	55	66	77	85	85	55
Transmission Coefficient	0.001585	0.000398	0.000050	0.000003	0.000000	0.000000	0.000000	0.000000	
Roof SRI	23	26	43	52	60	65	65	65	51
Transmission Coefficient	0.005012	0.002512	0.000050	0.000006	0.000001	0.000000	0.000000	0.000000	
Ventilation, Dne	18	19	34	34	30	31	36	36	32
Transmission Coefficient	0.015849	0.012589	0.000398	0.000417	0.001000	0.000794	0.000251	0.000251	
Average Transmission Coeff	0.023793	0.017338	0.004227	0.001103	0.001293	0.001018	0.000457	0.000329	
Average SRI	16	18	24	30	29	30	33	35	30

Calculated Internal Noise Level, dB	63	125	250	500	1000	2000	4000	8000	A
Lp (Reverberant), line source	40.8	37.5	28.3	19.5	20.2	16.2	6.7	2.2	27
Lp (Direct)	40.8	37.4	28.3	19.4	20.1	16.1	6.6	2.2	27
BS8233	43	39	30	22	22	18	9	4	29

ARDENT

Noise Break-in Calculation - Plot 421 House Type Elmswell Bedroom 1

Description	
Ardent CE Project No.	**2206781_A**
Property Address	**Imberhorne Farm**
Room Type	**Bedroom**
Parameter	**LAeq, 8h**

Room Dimensions and Areas	
Room volume	31.10
Total Surface area	63.30
Wall façade area	6.60
Roof façade area	0.00
Glazing area	1.50
Dne Ref Area, A0	10.00

Total façade area	8.10

Room Absorption Calcuation	63	125	250	500	1000	2000	4000	8000	
Estimated Reverberation time	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	
Alpha bar	0.16	0.16	0.16	0.16	0.16	0.16	0.16	0.16	
Total Absorption	10.01	10.01	10.01	10.01	10.01	10.01	10.01	10.01	
10Log S/A	-0.92	-0.92	-0.92	-0.92	-0.92	-0.92	-0.92	-0.92	

Façade level	63	125	250	500	1000	2000	4000	8000	A
Measured Noise Level	49	43	41	39	36	32	32	30	42
Façade to free field	0	0	0	0	0	0	0	0	
Angle of view	0	0	0	0	0	0	0	0	
Screening (Maekewa)	0	0	0	0	0	0	0	0	
Distance correction	0	0	0	0	0	0	0	0	
Other	0	0	0	0	0	0	0	0	
Noise level at façade (Leq)	49	43	41	39	36	32	32	30	42

Composite SRI	63	125	250	500	1000	2000	4000	8000	Rw
Glazing SRI	18	21	17	25	35	37	31	40	29
Transmission Coefficient	0.015849	0.007943	0.019953	0.003162	0.000316	0.000200	0.000794	0.000100	
Wall SRI	28	34	43	55	66	77	85	85	55
Transmission Coefficient	0.001585	0.000398	0.000050	0.000003	0.000000	0.000000	0.000000	0.000000	
Roof SRI	23	26	43	52	60	65	65	65	51
Transmission Coefficient	0.005012	0.002512	0.000050	0.000006	0.000001	0.000000	0.000000	0.000000	
Ventilation, Dne	18	19	34	34	30	31	36	36	32
Transmission Coefficient	0.015849	0.012589	0.000398	0.000417	0.001000	0.000794	0.000251	0.000251	
Average Transmission Coeff	0.023793	0.017338	0.004227	0.001103	0.001293	0.001018	0.000457	0.000329	
Average SRI	16	18	24	30	29	30	33	35	30

Calculated Internal Noise Level, dB	63	125	250	500	1000	2000	4000	8000	A
Lp (Reverberant), line source	32.8	25.5	17.3	9.5	7.2	2.2	-1.3	-4.8	15
Lp (Direct)	32.8	25.4	17.3	9.4	7.1	2.1	-1.4	-4.8	15
BS8233	35	27	19	12	9	4	1	-3	17

ARDENT

Noise Break-in Calculation - Plot 421 House Type Elmswell Bedroom 1

Description	
Ardent CE Project No.	**2206781_A**
Property Address	**Imberhorne Farm**
Room Type	**Bedroom**
Parameter	**LAmax**

Room Dimensions and Areas	
Room volume	31.10
Total Surface area	63.30
Wall façade area	6.60
Roof façade area	0.00
Glazing area	1.50
Dne Ref Area, A0	10.00

Total façade area	8.10

Room Absorption Calcuation	63	125	250	500	1000	2000	4000	8000	
Estimated Reverberation time	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	
Alpha bar	0.16	0.16	0.16	0.16	0.16	0.16	0.16	0.16	
Total Absorption	10.01	10.01	10.01	10.01	10.01	10.01	10.01	10.01	
10Log S/A	-0.92	-0.92	-0.92	-0.92	-0.92	-0.92	-0.92	-0.92	

Façade level	63	125	250	500	1000	2000	4000	8000	A
Measured Noise Level	69	56	55	52	49	45	45	45	55
Façade to free field	0	0	0	0	0	0	0	0	
Angle of view	0	0	0	0	0	0	0	0	
Screening (Maekewa)	0	0	0	0	0	0	0	0	
Distance correction	0	0	0	0	0	0	0	0	
Other	-6	-6	-6	-6	-6	-6	-6	-6	
Noise level at façade (Lmax)	63	50	49	46	43	39	39	39	49

Composite SRI	63	125	250	500	1000	2000	4000	8000	Rw
Glazing SRI	18	21	17	25	35	37	31	40	29
Transmission Coefficient	0.015849	0.007943	0.019953	0.003162	0.000316	0.000200	0.000794	0.000100	
Wall SRI	28	34	43	55	66	77	85	85	55
Transmission Coefficient	0.001585	0.000398	0.000050	0.000003	0.000000	0.000000	0.000000	0.000000	
Roof SRI	23	26	43	52	60	65	65	65	51
Transmission Coefficient	0.005012	0.002512	0.000050	0.000006	0.000001	0.000000	0.000000	0.000000	
Ventilation, Dne	18	19	34	34	30	31	36	36	32
Transmission Coefficient	0.015849	0.012589	0.000398	0.000417	0.001000	0.000794	0.000251	0.000251	
Average Transmission Coeff	0.023793	0.017338	0.004227	0.001103	0.001293	0.001018	0.000457	0.000329	
Average SRI	16	18	24	30	29	30	33	35	30

Calculated Internal Noise Level, dB	63	125	250	500	1000	2000	4000	8000	A
Lp (Reverberant), line source	46.8	32.5	25.3	16.5	14.2	9.2	5.7	4.2	24
Lp (Direct)	46.8	32.4	25.3	16.4	14.1	9.1	5.6	4.2	24
BS8233	49	34	27	19	16	11	8	6	26

ARDENT

Noise Break-in Calculation - Plot 421 House Type Elmswell Bedroom 2

Description	
Ardent CE Project No.	**2206781_A**
Property Address	**Imberhorne Farm**
Room Type	**Bedroom**
Parameter	**Leq, 16h**

Room Dimensions and Areas	
Room volume	23.70
Total Surface area	50.30
Wall façade area	5.40
Roof façade area	0.00
Glazing area	1.30
Dne Ref Area, A0	10.00

Total façade area	6.70

Room Absorption Calcuation	63	125	250	500	1000	2000	4000	8000	
Estimated Reverberation time	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	
Alpha bar	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15	
Total Absorption	7.63	7.63	7.63	7.63	7.63	7.63	7.63	7.63	
10Log S/A	-0.57	-0.57	-0.57	-0.57	-0.57	-0.57	-0.57	-0.57	

Façade level	63	125	250	500	1000	2000	4000	8000	A	
Predicted Noise Level	57	55	52	49	49	46	40	37	53	- Based on typ
Façade to free field	0	0	0	0	0	0	0	0		
Angle of view	0	0	0	0	0	0	0	0		
Screening (Maekewa)	0	0	0	0	0	0	0	0		
Distance correction	0	0	0	0	0	0	0	0		
Other	0	0	0	0	0	0	0	0		
Noise level at façade (Leq)	57	55	52	49	49	46	40	37	53	

Composite SRI	63	125	250	500	1000	2000	4000	8000	Rw
Glazing SRI	18	21	17	25	35	37	31	40	29
Transmission Coefficient	0.015849	0.007943	0.019953	0.003162	0.000316	0.000200	0.000794	0.000100	
Wall SRI	28	34	43	55	66	77	85	85	55
Transmission Coefficient	0.001585	0.000398	0.000050	0.000003	0.000000	0.000000	0.000000	0.000000	
Roof SRI	27	31	35	40	43	46	55	55	43
Transmission Coefficient	0.001995	0.000794	0.000316	0.000100	0.000050	0.000025	0.000003	0.000003	
Ventilation, Dne	18	19	34	34	30	31	36	36	32
Transmission Coefficient	0.015849	0.012589	0.000398	0.000417	0.001000	0.000794	0.000251	0.000251	
Average Transmission Coeff	0.028008	0.020652	0.004506	0.001238	0.001554	0.001224	0.000529	0.000394	
Average SRI	16	17	23	29	28	29	33	34	29

Calculated Internal Noise Level, dB	63	125	250	500	1000	2000	4000	8000	A
Lp (Reverberant), line source	41.9	38.6	29.0	20.4	21.3	17.3	7.7	3.4	28
Lp (Direct)	41.5	38.1	28.5	19.9	20.9	16.9	7.2	3.0	27
BS8233	44	41	31	22	23	19	10	5	30

ARDENT

Noise Break-in Calculation - Plot 421 House Type Elmswell Bedroom 2

Description	
Ardent CE Project No.	**2206781_A**
Property Address	**Imberhorne Farm**
Room Type	**Bedroom**
Parameter	**LAeq, 8h**

Room Dimensions and Areas	
Room volume	23.70
Total Surface area	50.30
Wall façade area	5.40
Roof façade area	0.00
Glazing area	1.30
Dne Ref Area, A0	10.00

Total façade area	6.70

Room Absorption Calcuation	63	125	250	500	1000	2000	4000	8000	
Estimated Reverberation time	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	
Alpha bar	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15	
Total Absorption	7.63	7.63	7.63	7.63	7.63	7.63	7.63	7.63	
10Log S/A	-0.57	-0.57	-0.57	-0.57	-0.57	-0.57	-0.57	-0.57	

Façade level	63	125	250	500	1000	2000	4000	8000	A
Measured Noise Level	49	43	41	39	36	32	32	30	42
Façade to free field	0	0	0	0	0	0	0	0	
Angle of view	0	0	0	0	0	0	0	0	
Screening (Maekewa)	0	0	0	0	0	0	0	0	
Distance correction	0	0	0	0	0	0	0	0	
Other	0	0	0	0	0	0	0	0	
Noise level at façade (Leq)	49	43	41	39	36	32	32	30	42

Composite SRI	63	125	250	500	1000	2000	4000	8000	Rw
Glazing SRI	18	21	17	25	35	37	31	40	29
Transmission Coefficient	0.015849	0.007943	0.019953	0.003162	0.000316	0.000200	0.000794	0.000100	
Wall SRI	28	34	43	55	66	77	85	85	55
Transmission Coefficient	0.001585	0.000398	0.000050	0.000003	0.000000	0.000000	0.000000	0.000000	
Roof SRI	27	31	35	40	43	46	55	55	43
Transmission Coefficient	0.001995	0.000794	0.000316	0.000100	0.000050	0.000025	0.000003	0.000003	
Ventilation, Dne	18	19	34	34	30	31	36	36	32
Transmission Coefficient	0.015849	0.012589	0.000398	0.000417	0.001000	0.000794	0.000251	0.000251	
Average Transmission Coeff	0.028008	0.020652	0.004506	0.001238	0.001554	0.001224	0.000529	0.000394	
Average SRI	16	17	23	29	28	29	33	34	29

Calculated Internal Noise Level, dB	63	125	250	500	1000	2000	4000	8000	A
Lp (Reverberant), line source	33.9	26.6	18.0	10.4	8.3	3.3	-0.3	-3.6	16
Lp (Direct)	33.5	26.1	17.5	9.9	7.9	2.9	-0.8	-4.0	16
BS8233	36	29	20	12	10	5	2	-2	18

ARDENT

Noise Break-in Calculation - Plot 421 House Type Elmswell Bedroom 2

Description	
Ardent CE Project No.	**2206781_A**
Property Address	**Imberhorne Farm**
Room Type	**Bedroom**
Parameter	**LAmax**

Room Dimensions and Areas	
Room volume	23.70
Total Surface area	50.30
Wall façade area	5.40
Roof façade area	0.00
Glazing area	1.30
Dne Ref Area, A0	10.00

Total façade area	6.70

Room Absorption Calcuation	63	125	250	500	1000	2000	4000	8000	
Estimated Reverberation time	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	
Alpha bar	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15	
Total Absorption	7.63	7.63	7.63	7.63	7.63	7.63	7.63	7.63	
10Log S/A	-0.57	-0.57	-0.57	-0.57	-0.57	-0.57	-0.57	-0.57	

Façade level	63	125	250	500	1000	2000	4000	8000	A
Measured Noise Level	69	56	55	52	49	45	45	45	55
Façade to free field	0	0	0	0	0	0	0	0	
Angle of view	0	0	0	0	0	0	0	0	
Screening (Maekewa)	0	0	0	0	0	0	0	0	
Distance correction	0	0	0	0	0	0	0	0	
Other	-6	-6	-6	-6	-6	-6	-6	-6	
Noise level at façade (Lmax)	63	50	49	46	43	39	39	39	49

Composite SRI	63	125	250	500	1000	2000	4000	8000	Rw
Glazing SRI	18	21	17	25	35	37	31	40	29
Transmission Coefficient	0.015849	0.007943	0.019953	0.003162	0.000316	0.000200	0.000794	0.000100	
Wall SRI	28	34	43	55	66	77	85	85	55
Transmission Coefficient	0.001585	0.000398	0.000050	0.000003	0.000000	0.000000	0.000000	0.000000	
Roof SRI	27	31	35	40	43	46	55	55	43
Transmission Coefficient	0.001995	0.000794	0.000316	0.000100	0.000050	0.000025	0.000003	0.000003	
Ventilation, Dne	18	19	34	34	30	31	36	36	32
Transmission Coefficient	0.015849	0.012589	0.000398	0.000417	0.001000	0.000794	0.000251	0.000251	
Average Transmission Coeff	0.028008	0.020652	0.004506	0.001238	0.001554	0.001224	0.000529	0.000394	
Average SRI	16	17	23	29	28	29	33	34	29

Calculated Internal Noise Level, dB	63	125	250	500	1000	2000	4000	8000	A
Lp (Reverberant), line source	47.9	33.6	26.0	17.4	15.3	10.3	6.7	5.4	25
Lp (Direct)	47.5	33.1	25.5	16.9	14.9	9.9	6.2	5.0	25
BS8233	50	36	28	19	17	12	9	7	27

ARDENT

Noise Break-in Calculation - Plot 421 House Type Elmswell Bedroom 3

Description	
Ardent CE Project No.	**2206781_A**
Property Address	**Imberhorne Farm**
Room Type	**Bedroom**
Parameter	**Leq, 16h**

Room Dimensions and Areas	
Room volume	20.90
Total Surface area	46.00
Wall façade area	0.00
Roof façade area	8.70
Glazing area	1.10
Dne Ref Area, A0	10.00

Total façade area	9.80

Room Absorption Calcuation	63	125	250	500	1000	2000	4000	8000	
Estimated Reverberation time	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	
Alpha bar	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15	
Total Absorption	6.73	6.73	6.73	6.73	6.73	6.73	6.73	6.73	
10Log S/A	1.63	1.63	1.63	1.63	1.63	1.63	1.63	1.63	

Façade level	63	125	250	500	1000	2000	4000	8000	A	
Predicted Noise Level	57	55	52	49	49	46	40	37	53	- Based on typ
Façade to free field	0	0	0	0	0	0	0	0		
Angle of view	0	0	0	0	0	0	0	0		
Screening (Maekewa)	0	0	0	0	0	0	0	0		
Distance correction	0	0	0	0	0	0	0	0		
Other	0	0	0	0	0	0	0	0		
Noise level at façade (Leq)	57	55	52	49	49	46	40	37	53	

Composite SRI	63	125	250	500	1000	2000	4000	8000	Rw
Glazing SRI	18	21	17	25	35	37	31	40	29
Transmission Coefficient	0.015849	0.007943	0.019953	0.003162	0.000316	0.000200	0.000794	0.000100	
Wall SRI	28	34	43	55	66	77	85	85	55
Transmission Coefficient	0.001585	0.000398	0.000050	0.000003	0.000000	0.000000	0.000000	0.000000	
Roof SRI	27	31	35	40	43	46	55	55	43
Transmission Coefficient	0.001995	0.000794	0.000316	0.000100	0.000050	0.000025	0.000003	0.000003	
Ventilation, Dne	18	19	34	34	30	31	36	36	32
Transmission Coefficient	0.015849	0.012589	0.000398	0.000417	0.001000	0.000794	0.000251	0.000251	
Average Transmission Coeff	0.019723	0.014443	0.002927	0.000869	0.001100	0.000855	0.000348	0.000270	
Average SRI	17	18	25	31	30	31	35	36	31

Calculated Internal Noise Level, dB	63	125	250	500	1000	2000	4000	8000	A
Lp (Reverberant), line source	42.6	39.2	29.3	21.0	22.0	18.0	8.1	4.0	28
Lp (Direct)	39.9	36.6	26.7	18.4	19.4	15.3	5.4	1.3	26
BS8233	45	41	31	23	24	20	10	6	30

ARDENT

Noise Break-in Calculation - Plot 421 House Type Elmswell Bedroom 3

Description	
Ardent CE Project No.	**2206781_A**
Property Address	**Imberhorne Farm**
Room Type	**Bedroom**
Parameter	**LAeq, 8h**

Room Dimensions and Areas	
Room volume	20.90
Total Surface area	46.00
Wall façade area	0.00
Roof façade area	8.70
Glazing area	1.10
Dne Ref Area, A0	10.00

Total façade area	9.80

Room Absorption Calcuation	63	125	250	500	1000	2000	4000	8000	
Estimated Reverberation time	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	
Alpha bar	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15	
Total Absorption	6.73	6.73	6.73	6.73	6.73	6.73	6.73	6.73	
10Log S/A	1.63	1.63	1.63	1.63	1.63	1.63	1.63	1.63	

Façade level	63	125	250	500	1000	2000	4000	8000	A
Measured Noise Level	49	43	41	39	36	32	32	30	42
Façade to free field	0	0	0	0	0	0	0	0	
Angle of view	0	0	0	0	0	0	0	0	
Screening (Maekewa)	0	0	0	0	0	0	0	0	
Distance correction	0	0	0	0	0	0	0	0	
Other	0	0	0	0	0	0	0	0	
Noise level at façade (Leq)	49	43	41	39	36	32	32	30	42

Composite SRI	63	125	250	500	1000	2000	4000	8000	Rw
Glazing SRI	18	21	17	25	35	37	31	40	29
Transmission Coefficient	0.015849	0.007943	0.019953	0.003162	0.000316	0.000200	0.000794	0.000100	
Wall SRI	28	34	43	55	66	77	85	85	55
Transmission Coefficient	0.001585	0.000398	0.000050	0.000003	0.000000	0.000000	0.000000	0.000000	
Roof SRI	27	31	35	40	43	46	55	55	43
Transmission Coefficient	0.001995	0.000794	0.000316	0.000100	0.000050	0.000025	0.000003	0.000003	
Ventilation, Dne	18	19	34	34	30	31	36	36	32
Transmission Coefficient	0.015849	0.012589	0.000398	0.000417	0.001000	0.000794	0.000251	0.000251	
Average Transmission Coeff	0.019723	0.014443	0.002927	0.000869	0.001100	0.000855	0.000348	0.000270	
Average SRI	17	18	25	31	30	31	35	36	31

Calculated Internal Noise Level, dB	63	125	250	500	1000	2000	4000	8000	A
Lp (Reverberant), line source	34.6	27.2	18.3	11.0	9.0	4.0	0.1	-3.0	17
Lp (Direct)	31.9	24.6	15.7	8.4	6.4	1.3	-2.6	-5.7	14
BS8233	37	29	20	13	11	6	2	-1	19

ARDENT

Noise Break-in Calculation - Plot 421 House Type Elmswell Bedroom 3

Description	
Ardent CE Project No.	**2206781_A**
Property Address	**Imberhorne Farm**
Room Type	**Bedroom**
Parameter	**LAmax**

Room Dimensions and Areas	
Room volume	20.90
Total Surface area	46.00
Wall façade area	0.00
Roof façade area	8.70
Glazing area	1.10
Dne Ref Area, A0	10.00

Total façade area	9.80

Room Absorption Calcuation	63	125	250	500	1000	2000	4000	8000	
Estimated Reverberation time	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	
Alpha bar	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15	
Total Absorption	6.73	6.73	6.73	6.73	6.73	6.73	6.73	6.73	
10Log S/A	1.63	1.63	1.63	1.63	1.63	1.63	1.63	1.63	

Façade level	63	125	250	500	1000	2000	4000	8000	A
Measured Noise Level	69	56	55	52	49	45	45	45	55
Façade to free field	0	0	0	0	0	0	0	0	
Angle of view	0	0	0	0	0	0	0	0	
Screening (Maekewa)	0	0	0	0	0	0	0	0	
Distance correction	0	0	0	0	0	0	0	0	
Other	-6	-6	-6	-6	-6	-6	-6	-6	
Noise level at façade (Lmax)	63	50	49	46	43	39	39	39	49

Composite SRI	63	125	250	500	1000	2000	4000	8000	Rw
Glazing SRI	18	21	17	25	35	37	31	40	29
Transmission Coefficient	0.015849	0.007943	0.019953	0.003162	0.000316	0.000200	0.000794	0.000100	
Wall SRI	28	34	43	55	66	77	85	85	55
Transmission Coefficient	0.001585	0.000398	0.000050	0.000003	0.000000	0.000000	0.000000	0.000000	
Roof SRI	27	31	35	40	43	46	55	55	43
Transmission Coefficient	0.001995	0.000794	0.000316	0.000100	0.000050	0.000025	0.000003	0.000003	
Ventilation, Dne	18	19	34	34	30	31	36	36	32
Transmission Coefficient	0.015849	0.012589	0.000398	0.000417	0.001000	0.000794	0.000251	0.000251	
Average Transmission Coeff	0.019723	0.014443	0.002927	0.000869	0.001100	0.000855	0.000348	0.000270	
Average SRI	17	18	25	31	30	31	35	36	31

Calculated Internal Noise Level, dB	63	125	250	500	1000	2000	4000	8000	A
Lp (Reverberant), line source	48.6	34.2	26.3	18.0	16.0	11.0	7.1	6.0	26
Lp (Direct)	45.9	31.6	23.7	15.4	13.4	8.3	4.4	3.3	23
BS8233	51	36	28	20	18	13	9	8	28

ARDENT

Noise Break-in Calculation - Apartment Block Type A, Plot 68 Living Room, Façade 1

Description	
Ardent CE Project No.	**2206781_A**
Property Address	**Imberhorne Farm**
Room Type	**Bedroom**
Parameter	**Leq, 16h**

Room Dimensions and Areas	
Room volume	38.40
Total Surface area	73.70
Wall façade area	3.00
Roof façade area	0.00
Glazing area	3.90
Dne Ref Area, A0	10.00

Total façade area	6.90

Room Absorption Calcuation	63	125	250	500	1000	2000	4000	8000	
Estimated Reverberation time	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	
Alpha bar	0.17	0.17	0.17	0.17	0.17	0.17	0.17	0.17	
Total Absorption	12.36	12.36	12.36	12.36	12.36	12.36	12.36	12.36	
10Log S/A	-2.53	-2.53	-2.53	-2.53	-2.53	-2.53	-2.53	-2.53	

Façade level	63	125	250	500	1000	2000	4000	8000	A	
Predicted Noise Level	61	59	56	53	53	50	44	41	57	**- Based on**
Façade to free field	0	0	0	0	0	0	0	0		
Angle of view	0	0	0	0	0	0	0	0		
Screening (Maekewa)	0	0	0	0	0	0	0	0		
Distance correction	0	0	0	0	0	0	0	0		
Other	0	0	0	0	0	0	0	0		
Noise level at façade (Leq)	61	59	56	53	53	50	44	41	57	

Composite SRI	63	125	250	500	1000	2000	4000	8000	Rw
Glazing SRI	18	21	20	26	38	37	39	44	31
Transmission Coefficient	0.015849	0.007943	0.010000	0.002512	0.000158	0.000200	0.000126	0.000040	
Wall SRI	28	34	43	55	66	77	85	85	55
Transmission Coefficient	0.001585	0.000398	0.000050	0.000003	0.000000	0.000000	0.000000	0.000000	
Roof SRI	23	26	43	52	60	65	65	65	51
Transmission Coefficient	0.005012	0.002512	0.000050	0.000006	0.000001	0.000000	0.000000	0.000000	
Ventilation, Dne	36	36	34	31	34	38	38	38	35
Transmission Coefficient	0.000251	0.000251	0.000398	0.000794	0.000398	0.000158	0.000158	0.000158	
Average Transmission Coeff	0.010011	0.005027	0.006251	0.002572	0.000667	0.000342	0.000301	0.000252	
Average SRI	20	23	22	26	32	35	35	36	31

Calculated Internal Noise Level, dB	63	125	250	500	1000	2000	4000	8000	A
Lp (Reverberant), line source	39.5	34.5	32.4	25.6	19.7	13.8	7.3	3.5	28
Lp (Direct)	41.0	36.0	34.0	27.1	21.2	15.3	8.8	5.0	30
BS8233	41	36	34	28	22	16	9	5	30

ARDENT

Noise Break-in Calculation - Apartment Block Type A, Plot 68 Living Room, Façade 2

Description	
Ardent CE Project No.	**2206781_A**
Property Address	**Imberhorne Farm**
Room Type	**Bedroom**
Parameter	**Leq, 16h**

Room Dimensions and Areas	
Room volume	38.40
Total Surface area	73.70
Wall façade area	7.70
Roof façade area	0.00
Glazing area	1.70
Dne Ref Area, A0	10.00

Total façade area	9.40

Room Absorption Calcuation	63	125	250	500	1000	2000	4000	8000	
Estimated Reverberation time	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	
Alpha bar	0.17	0.17	0.17	0.17	0.17	0.17	0.17	0.17	
Total Absorption	12.36	12.36	12.36	12.36	12.36	12.36	12.36	12.36	
10Log S/A	-1.19	-1.19	-1.19	-1.19	-1.19	-1.19	-1.19	-1.19	

Façade level	63	125	250	500	1000	2000	4000	8000	A	
Predicted Noise Level	59	57	54	51	51	48	42	39	55	**- Based on**
Façade to free field	0	0	0	0	0	0	0	0		
Angle of view	0	0	0	0	0	0	0	0		
Screening (Maekewa)	0	0	0	0	0	0	0	0		
Distance correction	0	0	0	0	0	0	0	0		
Other	0	0	0	0	0	0	0	0		
Noise level at façade (Leq)	59	57	54	51	51	48	42	39	55	

Composite SRI	63	125	250	500	1000	2000	4000	8000	Rw
Glazing SRI	18	21	17	25	35	37	31	40	29
Transmission Coefficient	0.015849	0.007943	0.019953	0.003162	0.000316	0.000200	0.000794	0.000100	
Wall SRI	28	34	43	55	66	77	85	85	55
Transmission Coefficient	0.001585	0.000398	0.000050	0.000003	0.000000	0.000000	0.000000	0.000000	
Roof SRI	23	26	43	52	60	65	65	65	51
Transmission Coefficient	0.005012	0.002512	0.000050	0.000006	0.000001	0.000000	0.000000	0.000000	
Ventilation, Dne	18	19	34	34	30	31	36	36	32
Transmission Coefficient	0.015849	0.012589	0.000398	0.000417	0.001000	0.000794	0.000251	0.000251	
Average Transmission Coeff	0.021025	0.015155	0.004073	0.001018	0.001121	0.000881	0.000411	0.000285	
Average SRI	17	18	24	30	30	31	34	35	30

Calculated Internal Noise Level, dB	63	125	250	500	1000	2000	4000	8000	A
Lp (Reverberant), line source	42.0	38.6	29.9	20.9	21.3	17.3	7.9	3.4	28
Lp (Direct)	42.2	38.8	30.1	21.1	21.5	17.5	8.1	3.6	28
BS8233	44	41	32	23	23	19	10	5	30

Living Room Combined Internal Noise Level

	Facade 1							
	63	125	250	500	1000	2000	4000	8000
dB LAeq,T Day	41	36	34	28	22	16	9	5

	Façade 2							
	63	125	250	500	1000	2000	4000	8000
dB LAeq,T Day	44	41	32	23	23	19	10	5

	Combined Internal Noise Level							
	63	125	250	500	1000	2000	4000	8000
dB LAeq,T Day	46	42	36	29	26	21	13	8

ARDENT

Noise Break-in Calculation - Apartment Block Type A, Plot 68 Bedroom 1

Description	
Ardent CE Project No.	**2206781_A**
Property Address	**Imberhorne Farm**
Room Type	**Bedroom**
Parameter	**Leq, 16h**

Room Dimensions and Areas	
Room volume	34.50
Total Surface area	66.80
Wall façade area	5.20
Roof façade area	0.00
Glazing area	1.70
Dne Ref Area, A0	10.00

Total façade area	6.90

Room Absorption Calcuation	63	125	250	500	1000	2000	4000	8000	
Estimated Reverberation time	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	
Alpha bar	0.17	0.17	0.17	0.17	0.17	0.17	0.17	0.17	
Total Absorption	11.11	11.11	11.11	11.11	11.11	11.11	11.11	11.11	
10Log S/A	-2.07	-2.07	-2.07	-2.07	-2.07	-2.07	-2.07	-2.07	

Façade level	63	125	250	500	1000	2000	4000	8000	A	
Predicted Noise Level	61	59	56	53	53	50	44	41	57	- Based on typ
Façade to free field	0	0	0	0	0	0	0	0		
Angle of view	0	0	0	0	0	0	0	0		
Screening (Maekewa)	0	0	0	0	0	0	0	0		
Distance correction	0	0	0	0	0	0	0	0		
Other	0	0	0	0	0	0	0	0		
Noise level at façade (Leq)	61	59	56	53	53	50	44	41	57	

Composite SRI	63	125	250	500	1000	2000	4000	8000	Rw
Glazing SRI	18	21	17	25	35	37	31	40	29
Transmission Coefficient	0.015849	0.007943	0.019953	0.003162	0.000316	0.000200	0.000794	0.000100	
Wall SRI	28	34	43	55	66	77	85	85	55
Transmission Coefficient	0.001585	0.000398	0.000050	0.000003	0.000000	0.000000	0.000000	0.000000	
Roof SRI	23	26	43	52	60	65	65	65	51
Transmission Coefficient	0.005012	0.002512	0.000050	0.000006	0.000001	0.000000	0.000000	0.000000	
Ventilation, Dne	18	19	34	34	30	31	36	36	32
Transmission Coefficient	0.015849	0.012589	0.000398	0.000417	0.001000	0.000794	0.000251	0.000251	
Average Transmission Coeff	0.028069	0.020502	0.005531	0.001386	0.001527	0.001200	0.000560	0.000389	
Average SRI	16	17	23	29	28	29	33	34	29

Calculated Internal Noise Level, dB	63	125	250	500	1000	2000	4000	8000	A
Lp (Reverberant), line source	44.4	41.0	32.4	23.3	23.8	19.7	10.4	5.8	30
Lp (Direct)	45.5	42.1	33.4	24.4	24.8	20.8	11.5	6.9	32
BS8233	46	43	34	25	26	22	12	8	32

ARDENT

Noise Break-in Calculation - Apartment Block Type A, Plot 68 Bedroom 1

Description	
Ardent CE Project No.	**2206781_A**
Property Address	**Imberhorne Farm**
Room Type	**Bedroom**
Parameter	**LAeq, 8h**

Room Dimensions and Areas	
Room volume	34.50
Total Surface area	66.80
Wall façade area	5.20
Roof façade area	0.00
Glazing area	1.70
Dne Ref Area, A0	10.00

Total façade area	6.90

Room Absorption Calcuation	63	125	250	500	1000	2000	4000	8000	
Estimated Reverberation time	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	
Alpha bar	0.17	0.17	0.17	0.17	0.17	0.17	0.17	0.17	
Total Absorption	11.11	11.11	11.11	11.11	11.11	11.11	11.11	11.11	
10Log S/A	-2.07	-2.07	-2.07	-2.07	-2.07	-2.07	-2.07	-2.07	

Façade level	63	125	250	500	1000	2000	4000	8000	A
Measured Noise Level	49	43	41	39	36	32	32	30	42
Façade to free field	0	0	0	0	0	0	0	0	
Angle of view	0	0	0	0	0	0	0	0	
Screening (Maekewa)	0	0	0	0	0	0	0	0	
Distance correction	0	0	0	0	0	0	0	0	
Other	0	0	0	0	0	0	0	0	
Noise level at façade (Leq)	49	43	41	39	36	32	32	30	42

Composite SRI	63	125	250	500	1000	2000	4000	8000	Rw
Glazing SRI	18	21	17	25	35	37	31	40	29
Transmission Coefficient	0.015849	0.007943	0.019953	0.003162	0.000316	0.000200	0.000794	0.000100	
Wall SRI	28	34	43	55	66	77	85	85	55
Transmission Coefficient	0.001585	0.000398	0.000050	0.000003	0.000000	0.000000	0.000000	0.000000	
Roof SRI	23	26	43	52	60	65	65	65	51
Transmission Coefficient	0.005012	0.002512	0.000050	0.000006	0.000001	0.000000	0.000000	0.000000	
Ventilation, Dne	18	19	34	34	30	31	36	36	32
Transmission Coefficient	0.015849	0.012589	0.000398	0.000417	0.001000	0.000794	0.000251	0.000251	
Average Transmission Coeff	0.028069	0.020502	0.005531	0.001386	0.001527	0.001200	0.000560	0.000389	
Average SRI	16	17	23	29	28	29	33	34	29

Calculated Internal Noise Level, dB	63	125	250	500	1000	2000	4000	8000	A
Lp (Reverberant), line source	32.4	25.0	17.4	9.3	6.8	1.7	-1.6	-5.2	15
Lp (Direct)	33.5	26.1	18.4	10.4	7.8	2.8	-0.5	-4.1	16
BS8233	34	27	19	11	9	4	0	-3	17

ARDENT

Noise Break-in Calculation - Apartment Block Type A, Plot 68 Bedroom 1

Description	
Ardent CE Project No.	**2206781_A**
Property Address	**Imberhorne Farm**
Room Type	**Bedroom**
Parameter	**LAmax**

Room Dimensions and Areas	
Room volume	34.50
Total Surface area	66.80
Wall façade area	5.20
Roof façade area	0.00
Glazing area	1.70
Dne Ref Area, A0	10.00

Total façade area	6.90

Room Absorption Calcuation	63	125	250	500	1000	2000	4000	8000	
Estimated Reverberation time	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	
Alpha bar	0.17	0.17	0.17	0.17	0.17	0.17	0.17	0.17	
Total Absorption	11.11	11.11	11.11	11.11	11.11	11.11	11.11	11.11	
10Log S/A	-2.07	-2.07	-2.07	-2.07	-2.07	-2.07	-2.07	-2.07	

Façade level	63	125	250	500	1000	2000	4000	8000	A
Measured Noise Level	69	56	55	52	49	45	45	45	55
Façade to free field	0	0	0	0	0	0	0	0	
Angle of view	0	0	0	0	0	0	0	0	
Screening (Maekewa)	0	0	0	0	0	0	0	0	
Distance correction	0	0	0	0	0	0	0	0	
Other	0	0	0	0	0	0	0	0	
Noise level at façade (Lmax)	69	56	55	52	49	45	45	45	55

Composite SRI	63	125	250	500	1000	2000	4000	8000	Rw
Glazing SRI	18	21	17	25	35	37	31	40	29
Transmission Coefficient	0.015849	0.007943	0.019953	0.003162	0.000316	0.000200	0.000794	0.000100	
Wall SRI	28	34	43	55	66	77	85	85	55
Transmission Coefficient	0.001585	0.000398	0.000050	0.000003	0.000000	0.000000	0.000000	0.000000	
Roof SRI	23	26	43	52	60	65	65	65	51
Transmission Coefficient	0.005012	0.002512	0.000050	0.000006	0.000001	0.000000	0.000000	0.000000	
Ventilation, Dne	18	19	34	34	30	31	36	36	32
Transmission Coefficient	0.015849	0.012589	0.000398	0.000417	0.001000	0.000794	0.000251	0.000251	
Average Transmission Coeff	0.028069	0.020502	0.005531	0.001386	0.001527	0.001200	0.000560	0.000389	
Average SRI	16	17	23	29	28	29	33	34	29

Calculated Internal Noise Level, dB	63	125	250	500	1000	2000	4000	8000	A
Lp (Reverberant), line source	52.4	38.0	31.4	22.3	19.8	14.7	11.4	9.8	30
Lp (Direct)	53.5	39.1	32.4	23.4	20.8	15.8	12.5	10.9	31
BS8233	54	40	33	24	22	17	13	12	32

ARDENT

Noise Break-in Calculation - Apartment Block Type A, Plot 68 Bedroom 2

Description	
Ardent CE Project No.	**2206781_A**
Property Address	**Imberhorne Farm**
Room Type	**Bedroom**
Parameter	**Leq, 16h**

Room Dimensions and Areas	
Room volume	27.80
Total Surface area	59.90
Wall façade area	4.70
Roof façade area	0.00
Glazing area	1.70
Dne Ref Area, A0	10.00

Total façade area	6.40

Room Absorption Calcuation	63	125	250	500	1000	2000	4000	8000	
Estimated Reverberation time	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	
Alpha bar	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15	
Total Absorption	8.95	8.95	8.95	8.95	8.95	8.95	8.95	8.95	
10Log S/A	-1.46	-1.46	-1.46	-1.46	-1.46	-1.46	-1.46	-1.46	

Façade level	63	125	250	500	1000	2000	4000	8000	A	
Predicted Noise Level	61	59	56	53	53	50	44	41	57	- Based on typ
Façade to free field	0	0	0	0	0	0	0	0		
Angle of view	0	0	0	0	0	0	0	0		
Screening (Maekewa)	0	0	0	0	0	0	0	0		
Distance correction	0	0	0	0	0	0	0	0		
Other	0	0	0	0	0	0	0	0		
Noise level at façade (Leq)	61	59	56	53	53	50	44	41	57	

Composite SRI	63	125	250	500	1000	2000	4000	8000	Rw
Glazing SRI	18	21	17	25	35	37	31	40	29
Transmission Coefficient	0.015849	0.007943	0.019953	0.003162	0.000316	0.000200	0.000794	0.000100	
Wall SRI	28	34	43	55	66	77	85	85	55
Transmission Coefficient	0.001585	0.000398	0.000050	0.000003	0.000000	0.000000	0.000000	0.000000	
Roof SRI	23	26	43	52	60	65	65	65	51
Transmission Coefficient	0.005012	0.002512	0.000050	0.000006	0.000001	0.000000	0.000000	0.000000	
Ventilation, Dne	18	19	34	34	30	31	36	36	32
Transmission Coefficient	0.015849	0.012589	0.000398	0.000417	0.001000	0.000794	0.000251	0.000251	
Average Transmission Coeff	0.030138	0.022073	0.005959	0.001494	0.001647	0.001294	0.000603	0.000419	
Average SRI	15	17	22	28	28	29	32	34	29

Calculated Internal Noise Level, dB	63	125	250	500	1000	2000	4000	8000	A
Lp (Reverberant), line source	45.3	42.0	33.3	24.3	24.7	20.7	11.3	6.8	31
Lp (Direct)	45.8	42.4	33.8	24.7	25.2	21.1	11.8	7.2	32
BS8233	47	44	35	26	27	23	13	9	33

ARDENT

Noise Break-in Calculation - Apartment Block Type A, Plot 68 Bedroom 2

Description	
Ardent CE Project No.	**2206781_A**
Property Address	**Imberhorne Farm**
Room Type	**Bedroom**
Parameter	**LAeq, 8h**

Room Dimensions and Areas	
Room volume	27.80
Total Surface area	59.90
Wall façade area	4.70
Roof façade area	0.00
Glazing area	1.70
Dne Ref Area, A0	10.00

Total façade area	6.40

Room Absorption Calcuation	63	125	250	500	1000	2000	4000	8000	
Estimated Reverberation time	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	
Alpha bar	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15	
Total Absorption	8.95	8.95	8.95	8.95	8.95	8.95	8.95	8.95	
10Log S/A	-1.46	-1.46	-1.46	-1.46	-1.46	-1.46	-1.46	-1.46	

Façade level	63	125	250	500	1000	2000	4000	8000	A
Measured Noise Level	49	43	41	39	36	32	32	30	42
Façade to free field	0	0	0	0	0	0	0	0	
Angle of view	0	0	0	0	0	0	0	0	
Screening (Maekewa)	0	0	0	0	0	0	0	0	
Distance correction	0	0	0	0	0	0	0	0	
Other	0	0	0	0	0	0	0	0	
Noise level at façade (Leq)	49	43	41	39	36	32	32	30	42

Composite SRI	63	125	250	500	1000	2000	4000	8000	Rw
Glazing SRI	18	21	17	25	35	37	31	40	29
Transmission Coefficient	0.015849	0.007943	0.019953	0.003162	0.000316	0.000200	0.000794	0.000100	
Wall SRI	28	34	43	55	66	77	85	85	55
Transmission Coefficient	0.001585	0.000398	0.000050	0.000003	0.000000	0.000000	0.000000	0.000000	
Roof SRI	23	26	43	52	60	65	65	65	51
Transmission Coefficient	0.005012	0.002512	0.000050	0.000006	0.000001	0.000000	0.000000	0.000000	
Ventilation, Dne	18	19	34	34	30	31	36	36	32
Transmission Coefficient	0.015849	0.012589	0.000398	0.000417	0.001000	0.000794	0.000251	0.000251	
Average Transmission Coeff	0.030138	0.022073	0.005959	0.001494	0.001647	0.001294	0.000603	0.000419	
Average SRI	15	17	22	28	28	29	32	34	29

Calculated Internal Noise Level, dB	63	125	250	500	1000	2000	4000	8000	A
Lp (Reverberant), line source	33.3	26.0	18.3	10.3	7.7	2.7	-0.7	-4.2	16
Lp (Direct)	33.8	26.4	18.8	10.7	8.2	3.1	-0.2	-3.8	16
BS8233	35	28	20	12	10	5	1	-2	18

ARDENT

Noise Break-in Calculation - Apartment Block Type A, Plot 68 Bedroom 2

Description	
Ardent CE Project No.	**2206781_A**
Property Address	**Imberhorne Farm**
Room Type	**Bedroom**
Parameter	**LAmax**

Room Dimensions and Areas	
Room volume	27.80
Total Surface area	59.90
Wall façade area	4.70
Roof façade area	0.00
Glazing area	1.70
Dne Ref Area, A0	10.00

Total façade area	6.40

Room Absorption Calcuation	63	125	250	500	1000	2000	4000	8000	
Estimated Reverberation time	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	
Alpha bar	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15	
Total Absorption	8.95	8.95	8.95	8.95	8.95	8.95	8.95	8.95	
10Log S/A	-1.46	-1.46	-1.46	-1.46	-1.46	-1.46	-1.46	-1.46	

Façade level	63	125	250	500	1000	2000	4000	8000	A
Measured Noise Level	69	56	55	52	49	45	45	45	55
Façade to free field	0	0	0	0	0	0	0	0	
Angle of view	0	0	0	0	0	0	0	0	
Screening (Maekewa)	0	0	0	0	0	0	0	0	
Distance correction	0	0	0	0	0	0	0	0	
Other	0	0	0	0	0	0	0	0	
Noise level at façade (Lmax)	69	56	55	52	49	45	45	45	55

Composite SRI	63	125	250	500	1000	2000	4000	8000	Rw
Glazing SRI	18	21	17	25	35	37	31	40	29
Transmission Coefficient	0.015849	0.007943	0.019953	0.003162	0.000316	0.000200	0.000794	0.000100	
Wall SRI	28	34	43	55	66	77	85	85	55
Transmission Coefficient	0.001585	0.000398	0.000050	0.000003	0.000000	0.000000	0.000000	0.000000	
Roof SRI	23	26	43	52	60	65	65	65	51
Transmission Coefficient	0.005012	0.002512	0.000050	0.000006	0.000001	0.000000	0.000000	0.000000	
Ventilation, Dne	18	19	34	34	30	31	36	36	32
Transmission Coefficient	0.015849	0.012589	0.000398	0.000417	0.001000	0.000794	0.000251	0.000251	
Average Transmission Coeff	0.030138	0.022073	0.005959	0.001494	0.001647	0.001294	0.000603	0.000419	
Average SRI	15	17	22	28	28	29	32	34	29

Calculated Internal Noise Level, dB	63	125	250	500	1000	2000	4000	8000	A
Lp (Reverberant), line source	53.3	39.0	32.3	23.3	20.7	15.7	12.3	10.8	31
Lp (Direct)	53.8	39.4	32.8	23.7	21.2	16.1	12.8	11.2	31
BS8233	55	41	34	25	23	18	14	13	33

ARDENT

Noise Break-in Calculation - Apartment Block Type A, Plot 69 Living Room, Façade 1

Description	
Ardent CE Project No.	**2206781_A**
Property Address	**Imberhorne Farm**
Room Type	**Bedroom**
Parameter	**Leq, 16h**

Room Dimensions and Areas	
Room volume	38.20
Total Surface area	73.70
Wall façade area	3.00
Roof façade area	0.00
Glazing area	3.90
Dne Ref Area, A0	10.00

Total façade area	6.90

Room Absorption Calcuation	63	125	250	500	1000	2000	4000	8000	
Estimated Reverberation time	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	
Alpha bar	0.17	0.17	0.17	0.17	0.17	0.17	0.17	0.17	
Total Absorption	12.30	12.30	12.30	12.30	12.30	12.30	12.30	12.30	
10Log S/A	-2.51	-2.51	-2.51	-2.51	-2.51	-2.51	-2.51	-2.51	

Façade level	63	125	250	500	1000	2000	4000	8000	A	
Predicted Noise Level	57	55	52	49	49	46	40	37	53	- Based on
Façade to free field	0	0	0	0	0	0	0	0		
Angle of view	0	0	0	0	0	0	0	0		
Screening (Maekewa)	0	0	0	0	0	0	0	0		
Distance correction	0	0	0	0	0	0	0	0		
Other	0	0	0	0	0	0	0	0		
Noise level at façade (Leq)	57	55	52	49	49	46	40	37	53	

Composite SRI	63	125	250	500	1000	2000	4000	8000	Rw
Glazing SRI	18	21	17	25	35	37	31	40	29
Transmission Coefficient	0.015849	0.007943	0.019953	0.003162	0.000316	0.000200	0.000794	0.000100	
Wall SRI	28	34	43	55	66	77	85	85	55
Transmission Coefficient	0.001585	0.000398	0.000050	0.000003	0.000000	0.000000	0.000000	0.000000	
Roof SRI	23	26	43	52	60	65	65	65	51
Transmission Coefficient	0.005012	0.002512	0.000050	0.000006	0.000001	0.000000	0.000000	0.000000	
Ventilation, Dne	18	19	34	34	30	31	36	36	32
Transmission Coefficient	0.015849	0.012589	0.000398	0.000417	0.001000	0.000794	0.000251	0.000251	
Average Transmission Coeff	0.032617	0.022908	0.011876	0.002393	0.001628	0.001264	0.000813	0.000421	
Average SRI	15	16	19	26	28	29	31	34	28

Calculated Internal Noise Level, dB	63	125	250	500	1000	2000	4000	8000	A
Lp (Reverberant), line source	40.6	37.1	31.2	21.3	19.6	15.5	7.6	1.7	27
Lp (Direct)	42.1	38.6	32.7	22.8	21.1	17.0	9.1	3.2	29
BS8233	43	39	33	23	22	18	10	4	29

ARDENT

Noise Break-in Calculation - Apartment Block Type A, Plot 69 Living Room, Façade 2

Description	
Ardent CE Project No.	**2206781_A**
Property Address	**Imberhorne Farm**
Room Type	**Bedroom**
Parameter	**Leq, 16h**

Room Dimensions and Areas	
Room volume	38.20
Total Surface area	73.70
Wall façade area	8.90
Roof façade area	0.00
Glazing area	1.70
Dne Ref Area, A0	10.00

Total façade area	10.60

Room Absorption Calcuation	63	125	250	500	1000	2000	4000	8000	
Estimated Reverberation time	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	
Alpha bar	0.17	0.17	0.17	0.17	0.17	0.17	0.17	0.17	
Total Absorption	12.30	12.30	12.30	12.30	12.30	12.30	12.30	12.30	
10Log S/A	-0.65	-0.65	-0.65	-0.65	-0.65	-0.65	-0.65	-0.65	

Façade level	63	125	250	500	1000	2000	4000	8000	A
Measured Noise Level	57	51	47	46	42	36	36	31	47
Façade to free field	0	0	0	0	0	0	0	0	
Angle of view	0	0	0	0	0	0	0	0	
Screening (Maekewa)	0	0	0	0	0	0	0	0	
Distance correction	0	0	0	0	0	0	0	0	
Other	0	0	0	0	0	0	0	0	
Noise level at façade (Leq)	57	51	47	46	42	36	36	31	47

Composite SRI	63	125	250	500	1000	2000	4000	8000	Rw
Glazing SRI	18	21	17	25	35	37	31	40	29
Transmission Coefficient	0.015849	0.007943	0.019953	0.003162	0.000316	0.000200	0.000794	0.000100	
Wall SRI	28	34	43	55	66	77	85	85	55
Transmission Coefficient	0.001585	0.000398	0.000050	0.000003	0.000000	0.000000	0.000000	0.000000	
Roof SRI	23	26	43	52	60	65	65	65	51
Transmission Coefficient	0.005012	0.002512	0.000050	0.000006	0.000001	0.000000	0.000000	0.000000	
Ventilation, Dne	18	19	34	34	30	31	36	36	32
Transmission Coefficient	0.015849	0.012589	0.000398	0.000417	0.001000	0.000794	0.000251	0.000251	
Average Transmission Coeff	0.018824	0.013485	0.003618	0.000903	0.000994	0.000781	0.000364	0.000253	
Average SRI	17	19	24	30	30	31	34	36	31

Calculated Internal Noise Level, dB	63	125	250	500	1000	2000	4000	8000	A
Lp (Reverberant), line source	39.6	33.1	23.2	15.5	11.9	5.6	1.8	-4.2	22
Lp (Direct)	39.2	32.7	22.9	15.2	11.6	5.2	1.4	-4.6	21
BS8233	42	35	25	18	14	8	4	-2	24

Living Room Combined Internal Noise Level

	Facade 1							
	63	125	250	500	1000	2000	4000	8000
dB LAeq,T Day	43	39	33	23	22	18	10	4

	Façade 2							
	63	125	250	500	1000	2000	4000	8000
dB LAeq,T Day	42	35	25	18	14	8	4	-2

	Combined Internal Noise Level							
	63	125	250	500	1000	2000	4000	8000
dB LAeq,T Day	45	41	34	24	22	18	11	5

ARDENT

Noise Break-in Calculation - Apartment Block Type A, Plot 69 Bedroom 1

Description	
Ardent CE Project No.	**2206781_A**
Property Address	**Imberhorne Farm**
Room Type	**Bedroom**
Parameter	**Leq, 16h**

Room Dimensions and Areas	
Room volume	34.30
Total Surface area	66.80
Wall façade area	5.20
Roof façade area	0.00
Glazing area	1.70
Dne Ref Area, A0	10.00

Total façade area	6.90

Room Absorption Calcuation	63	125	250	500	1000	2000	4000	8000	
Estimated Reverberation time	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	
Alpha bar	0.17	0.17	0.17	0.17	0.17	0.17	0.17	0.17	
Total Absorption	11.04	11.04	11.04	11.04	11.04	11.04	11.04	11.04	
10Log S/A	-2.04	-2.04	-2.04	-2.04	-2.04	-2.04	-2.04	-2.04	

Façade level	63	125	250	500	1000	2000	4000	8000	A	
Predicted Noise Level	58	56	53	50	50	47	41	38	54	- Based on typ
Façade to free field	0	0	0	0	0	0	0	0		
Angle of view	0	0	0	0	0	0	0	0		
Screening (Maekewa)	0	0	0	0	0	0	0	0		
Distance correction	0	0	0	0	0	0	0	0		
Other	0	0	0	0	0	0	0	0		
Noise level at façade (Leq)	58	56	53	50	50	47	41	38	54	

Composite SRI	63	125	250	500	1000	2000	4000	8000	Rw
Glazing SRI	18	21	17	25	35	37	31	40	29
Transmission Coefficient	0.015849	0.007943	0.019953	0.003162	0.000316	0.000200	0.000794	0.000100	
Wall SRI	28	34	43	55	66	77	85	85	55
Transmission Coefficient	0.001585	0.000398	0.000050	0.000003	0.000000	0.000000	0.000000	0.000000	
Roof SRI	23	26	43	52	60	65	65	65	51
Transmission Coefficient	0.005012	0.002512	0.000050	0.000006	0.000001	0.000000	0.000000	0.000000	
Ventilation, Dne	18	19	34	34	30	31	36	36	32
Transmission Coefficient	0.015849	0.012589	0.000398	0.000417	0.001000	0.000794	0.000251	0.000251	
Average Transmission Coeff	0.028069	0.020502	0.005531	0.001386	0.001527	0.001200	0.000560	0.000389	
Average SRI	16	17	23	29	28	29	33	34	29

Calculated Internal Noise Level, dB	63	125	250	500	1000	2000	4000	8000	A
Lp (Reverberant), line source	41.4	38.1	29.4	20.4	20.8	16.8	7.4	2.9	27
Lp (Direct)	42.5	39.1	30.4	21.4	21.8	17.8	8.5	3.9	29
BS8233	43	40	31	22	23	19	9	5	29

ARDENT

Noise Break-in Calculation - Apartment Block Type A, Plot 69 Bedroom 1

Description	
Ardent CE Project No.	**2206781_A**
Property Address	**Imberhorne Farm**
Room Type	**Bedroom**
Parameter	**LAeq, 8h**

Room Dimensions and Areas	
Room volume	34.30
Total Surface area	66.80
Wall façade area	5.20
Roof façade area	0.00
Glazing area	1.70
Dne Ref Area, A0	10.00

Total façade area	6.90

Room Absorption Calcuation	63	125	250	500	1000	2000	4000	8000	
Estimated Reverberation time	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	
Alpha bar	0.17	0.17	0.17	0.17	0.17	0.17	0.17	0.17	
Total Absorption	11.04	11.04	11.04	11.04	11.04	11.04	11.04	11.04	
10Log S/A	-2.04	-2.04	-2.04	-2.04	-2.04	-2.04	-2.04	-2.04	

Façade level	63	125	250	500	1000	2000	4000	8000	A
Measured Noise Level	49	43	41	39	36	32	32	30	42
Façade to free field	0	0	0	0	0	0	0	0	
Angle of view	0	0	0	0	0	0	0	0	
Screening (Maekewa)	0	0	0	0	0	0	0	0	
Distance correction	0	0	0	0	0	0	0	0	
Other	0	0	0	0	0	0	0	0	
Noise level at façade (Leq)	49	43	41	39	36	32	32	30	42

Composite SRI	63	125	250	500	1000	2000	4000	8000	Rw
Glazing SRI	18	21	17	25	35	37	31	40	29
Transmission Coefficient	0.015849	0.007943	0.019953	0.003162	0.000316	0.000200	0.000794	0.000100	
Wall SRI	28	34	43	55	66	77	85	85	55
Transmission Coefficient	0.001585	0.000398	0.000050	0.000003	0.000000	0.000000	0.000000	0.000000	
Roof SRI	23	26	43	52	60	65	65	65	51
Transmission Coefficient	0.005012	0.002512	0.000050	0.000006	0.000001	0.000000	0.000000	0.000000	
Ventilation, Dne	18	19	34	34	30	31	36	36	32
Transmission Coefficient	0.015849	0.012589	0.000398	0.000417	0.001000	0.000794	0.000251	0.000251	
Average Transmission Coeff	0.028069	0.020502	0.005531	0.001386	0.001527	0.001200	0.000560	0.000389	
Average SRI	16	17	23	29	28	29	33	34	29

Calculated Internal Noise Level, dB	63	125	250	500	1000	2000	4000	8000	A
Lp (Reverberant), line source	32.4	25.1	17.4	9.4	6.8	1.8	-1.6	-5.1	15
Lp (Direct)	33.5	26.1	18.4	10.4	7.8	2.8	-0.5	-4.1	16
BS8233	34	27	19	11	9	4	0	-3	17

ARDENT

Noise Break-in Calculation - Apartment Block Type A, Plot 69 Bedroom 1

Description	
Ardent CE Project No.	**2206781_A**
Property Address	**Imberhorne Farm**
Room Type	**Bedroom**
Parameter	**LAmax**

Room Dimensions and Areas	
Room volume	34.30
Total Surface area	66.80
Wall façade area	5.20
Roof façade area	0.00
Glazing area	1.70
Dne Ref Area, A0	10.00

Total façade area	6.90

Room Absorption Calcuation	63	125	250	500	1000	2000	4000	8000	
Estimated Reverberation time	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	
Alpha bar	0.17	0.17	0.17	0.17	0.17	0.17	0.17	0.17	
Total Absorption	11.04	11.04	11.04	11.04	11.04	11.04	11.04	11.04	
10Log S/A	-2.04	-2.04	-2.04	-2.04	-2.04	-2.04	-2.04	-2.04	

Façade level	63	125	250	500	1000	2000	4000	8000	A
Measured Noise Level	69	56	55	52	49	45	45	45	55
Façade to free field	0	0	0	0	0	0	0	0	
Angle of view	0	0	0	0	0	0	0	0	
Screening (Maekewa)	0	0	0	0	0	0	0	0	
Distance correction	0	0	0	0	0	0	0	0	
Other	0	0	0	0	0	0	0	0	
Noise level at façade (Lmax)	69	56	55	52	49	45	45	45	55

Composite SRI	63	125	250	500	1000	2000	4000	8000	Rw
Glazing SRI	18	21	17	25	35	37	31	40	29
Transmission Coefficient	0.015849	0.007943	0.019953	0.003162	0.000316	0.000200	0.000794	0.000100	
Wall SRI	28	34	43	55	66	77	85	85	55
Transmission Coefficient	0.001585	0.000398	0.000050	0.000003	0.000000	0.000000	0.000000	0.000000	
Roof SRI	23	26	43	52	60	65	65	65	51
Transmission Coefficient	0.005012	0.002512	0.000050	0.000006	0.000001	0.000000	0.000000	0.000000	
Ventilation, Dne	18	19	34	34	30	31	36	36	32
Transmission Coefficient	0.015849	0.012589	0.000398	0.000417	0.001000	0.000794	0.000251	0.000251	
Average Transmission Coeff	0.028069	0.020502	0.005531	0.001386	0.001527	0.001200	0.000560	0.000389	
Average SRI	16	17	23	29	28	29	33	34	29

Calculated Internal Noise Level, dB	63	125	250	500	1000	2000	4000	8000	A
Lp (Reverberant), line source	52.4	38.1	31.4	22.4	19.8	14.8	11.4	9.9	30
Lp (Direct)	53.5	39.1	32.4	23.4	20.8	15.8	12.5	10.9	31
BS8233	54	40	33	24	22	17	13	12	32

ARDENT

Noise Break-in Calculation - Apartment Block Type A, Plot 69 Bedroom 2

Description	
Ardent CE Project No.	**2206781_A**
Property Address	**Imberhorne Farm**
Room Type	**Bedroom**
Parameter	**Leq, 16h**

Room Dimensions and Areas	
Room volume	28.50
Total Surface area	60.70
Wall façade area	4.70
Roof façade area	0.00
Glazing area	1.70
Dne Ref Area, A0	10.00

Total façade area	6.40

Room Absorption Calcuation	63	125	250	500	1000	2000	4000	8000	
Estimated Reverberation time	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	
Alpha bar	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15	
Total Absorption	9.18	9.18	9.18	9.18	9.18	9.18	9.18	9.18	
10Log S/A	-1.57	-1.57	-1.57	-1.57	-1.57	-1.57	-1.57	-1.57	

Façade level	63	125	250	500	1000	2000	4000	8000	A	
Predicted Noise Level	57	55	52	49	49	46	40	37	53	- Based on typ
Façade to free field	0	0	0	0	0	0	0	0		
Angle of view	0	0	0	0	0	0	0	0		
Screening (Maekewa)	0	0	0	0	0	0	0	0		
Distance correction	0	0	0	0	0	0	0	0		
Other	0	0	0	0	0	0	0	0		
Noise level at façade (Leq)	57	55	52	49	49	46	40	37	53	

Composite SRI	63	125	250	500	1000	2000	4000	8000	Rw
Glazing SRI	18	21	17	25	35	37	31	40	29
Transmission Coefficient	0.015849	0.007943	0.019953	0.003162	0.000316	0.000200	0.000794	0.000100	
Wall SRI	28	34	43	55	66	77	85	85	55
Transmission Coefficient	0.001585	0.000398	0.000050	0.000003	0.000000	0.000000	0.000000	0.000000	
Roof SRI	23	26	43	52	60	65	65	65	51
Transmission Coefficient	0.005012	0.002512	0.000050	0.000006	0.000001	0.000000	0.000000	0.000000	
Ventilation, Dne	18	19	34	34	30	31	36	36	32
Transmission Coefficient	0.015849	0.012589	0.000398	0.000417	0.001000	0.000794	0.000251	0.000251	
Average Transmission Coeff	0.030138	0.022073	0.005959	0.001494	0.001647	0.001294	0.000603	0.000419	
Average SRI	15	17	22	28	28	29	32	34	29

Calculated Internal Noise Level, dB	63	125	250	500	1000	2000	4000	8000	A
Lp (Reverberant), line source	41.2	37.9	29.2	20.2	20.6	16.6	7.2	2.7	27
Lp (Direct)	41.8	38.4	29.8	20.7	21.2	17.1	7.8	3.2	28
BS8233	43	40	31	22	23	19	9	5	29

ARDENT

Noise Break-in Calculation - Apartment Block Type A, Plot 69 Bedroom 2

Description	
Ardent CE Project No.	**2206781_A**
Property Address	**Imberhorne Farm**
Room Type	**Bedroom**
Parameter	**LAeq, 8h**

Room Dimensions and Areas	
Room volume	28.50
Total Surface area	60.70
Wall façade area	4.70
Roof façade area	0.00
Glazing area	1.70
Dne Ref Area, A0	10.00

Total façade area	6.40

Room Absorption Calcuation	63	125	250	500	1000	2000	4000	8000	
Estimated Reverberation time	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	
Alpha bar	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15	
Total Absorption	9.18	9.18	9.18	9.18	9.18	9.18	9.18	9.18	
10Log S/A	-1.57	-1.57	-1.57	-1.57	-1.57	-1.57	-1.57	-1.57	

Façade level	63	125	250	500	1000	2000	4000	8000	A
Measured Noise Level	49	43	41	39	36	32	32	30	42
Façade to free field	0	0	0	0	0	0	0	0	
Angle of view	0	0	0	0	0	0	0	0	
Screening (Maekewa)	0	0	0	0	0	0	0	0	
Distance correction	0	0	0	0	0	0	0	0	
Other	0	0	0	0	0	0	0	0	
Noise level at façade (Leq)	49	43	41	39	36	32	32	30	42

Composite SRI	63	125	250	500	1000	2000	4000	8000	Rw
Glazing SRI	18	21	17	25	35	37	31	40	29
Transmission Coefficient	0.015849	0.007943	0.019953	0.003162	0.000316	0.000200	0.000794	0.000100	
Wall SRI	28	34	43	55	66	77	85	85	55
Transmission Coefficient	0.001585	0.000398	0.000050	0.000003	0.000000	0.000000	0.000000	0.000000	
Roof SRI	23	26	43	52	60	65	65	65	51
Transmission Coefficient	0.005012	0.002512	0.000050	0.000006	0.000001	0.000000	0.000000	0.000000	
Ventilation, Dne	18	19	34	34	30	31	36	36	32
Transmission Coefficient	0.015849	0.012589	0.000398	0.000417	0.001000	0.000794	0.000251	0.000251	
Average Transmission Coeff	0.030138	0.022073	0.005959	0.001494	0.001647	0.001294	0.000603	0.000419	
Average SRI	15	17	22	28	28	29	32	34	29

Calculated Internal Noise Level, dB	63	125	250	500	1000	2000	4000	8000	A
Lp (Reverberant), line source	33.2	25.9	18.2	10.2	7.6	2.6	-0.8	-4.3	16
Lp (Direct)	33.8	26.4	18.8	10.7	8.2	3.1	-0.2	-3.8	16
BS8233	35	28	20	12	10	5	1	-2	18

ARDENT

Noise Break-in Calculation - Apartment Block Type A, Plot 69 Bedroom 2

Description	
Ardent CE Project No.	**2206781_A**
Property Address	**Imberhorne Farm**
Room Type	**Bedroom**
Parameter	**LAmax**

Room Dimensions and Areas	
Room volume	28.50
Total Surface area	60.70
Wall façade area	4.70
Roof façade area	0.00
Glazing area	1.70
Dne Ref Area, A0	10.00

Total façade area	6.40

Room Absorption Calcuation	63	125	250	500	1000	2000	4000	8000	
Estimated Reverberation time	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	
Alpha bar	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15	
Total Absorption	9.18	9.18	9.18	9.18	9.18	9.18	9.18	9.18	
10Log S/A	-1.57	-1.57	-1.57	-1.57	-1.57	-1.57	-1.57	-1.57	

Façade level	63	125	250	500	1000	2000	4000	8000	A
Measured Noise Level	69	56	55	52	49	45	45	45	55
Façade to free field	0	0	0	0	0	0	0	0	
Angle of view	0	0	0	0	0	0	0	0	
Screening (Maekewa)	0	0	0	0	0	0	0	0	
Distance correction	0	0	0	0	0	0	0	0	
Other	0	0	0	0	0	0	0	0	
Noise level at façade (Lmax)	69	56	55	52	49	45	45	45	55

Composite SRI	63	125	250	500	1000	2000	4000	8000	Rw
Glazing SRI	18	21	17	25	35	37	31	40	29
Transmission Coefficient	0.015849	0.007943	0.019953	0.003162	0.000316	0.000200	0.000794	0.000100	
Wall SRI	28	34	43	55	66	77	85	85	55
Transmission Coefficient	0.001585	0.000398	0.000050	0.000003	0.000000	0.000000	0.000000	0.000000	
Roof SRI	23	26	43	52	60	65	65	65	51
Transmission Coefficient	0.005012	0.002512	0.000050	0.000006	0.000001	0.000000	0.000000	0.000000	
Ventilation, Dne	18	19	34	34	30	31	36	36	32
Transmission Coefficient	0.015849	0.012589	0.000398	0.000417	0.001000	0.000794	0.000251	0.000251	
Average Transmission Coeff	0.030138	0.022073	0.005959	0.001494	0.001647	0.001294	0.000603	0.000419	
Average SRI	15	17	22	28	28	29	32	34	29

Calculated Internal Noise Level, dB	63	125	250	500	1000	2000	4000	8000	A
Lp (Reverberant), line source	53.2	38.9	32.2	23.2	20.6	15.6	12.2	10.7	31
Lp (Direct)	53.8	39.4	32.8	23.7	21.2	16.1	12.8	11.2	31
BS8233	55	41	34	25	23	18	14	13	33

ARDENT

Noise Break-in Calculation - Apartment Block Type A, Plot 70 Living Room

Description	
Ardent CE Project No.	**2206781_A**
Property Address	**Imberhorne Farm**
Room Type	**Bedroom**
Parameter	**Leq, 16h**

Room Dimensions and Areas	
Room volume	38.40
Total Surface area	73.70
Wall façade area	3.00
Roof façade area	0.00
Glazing area	3.90
Dne Ref Area, A0	10.00

Total façade area	6.90

Room Absorption Calcuation	63	125	250	500	1000	2000	4000	8000	
Estimated Reverberation time	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	
Alpha bar	0.17	0.17	0.17	0.17	0.17	0.17	0.17	0.17	
Total Absorption	12.36	12.36	12.36	12.36	12.36	12.36	12.36	12.36	
10Log S/A	-2.53	-2.53	-2.53	-2.53	-2.53	-2.53	-2.53	-2.53	

Façade level	63	125	250	500	1000	2000	4000	8000	A	
Predicted Noise Level	61	59	56	53	53	50	44	41	57	- Based on typ
Façade to free field	0	0	0	0	0	0	0	0		
Angle of view	0	0	0	0	0	0	0	0		
Screening (Maekewa)	0	0	0	0	0	0	0	0		
Distance correction	0	0	0	0	0	0	0	0		
Other	0	0	0	0	0	0	0	0		
Noise level at façade (Leq)	61	59	56	53	53	50	44	41	57	

Composite SRI	63	125	250	500	1000	2000	4000	8000	Rw
Glazing SRI	18	21	17	25	35	37	31	40	29
Transmission Coefficient	0.015849	0.007943	0.019953	0.003162	0.000316	0.000200	0.000794	0.000100	
Wall SRI	28	34	43	55	66	77	85	85	55
Transmission Coefficient	0.001585	0.000398	0.000050	0.000003	0.000000	0.000000	0.000000	0.000000	
Roof SRI	23	26	43	52	60	65	65	65	51
Transmission Coefficient	0.005012	0.002512	0.000050	0.000006	0.000001	0.000000	0.000000	0.000000	
Ventilation, Dne	18	19	34	34	30	31	36	36	32
Transmission Coefficient	0.015849	0.012589	0.000398	0.000417	0.001000	0.000794	0.000251	0.000251	
Average Transmission Coeff	0.032617	0.022908	0.011876	0.002393	0.001628	0.001264	0.000813	0.000421	
Average SRI	15	16	19	26	28	29	31	34	28

Calculated Internal Noise Level, dB	63	125	250	500	1000	2000	4000	8000	A
Lp (Reverberant), line source	44.6	41.1	35.2	25.3	23.6	19.5	11.6	5.7	31
Lp (Direct)	46.1	42.6	36.7	26.8	25.1	21.0	13.1	7.2	33
BS8233	47	43	37	27	26	21	14	8	33

ARDENT

Noise Break-in Calculation - Apartment Block Type A, Plot 70 Bedroom 1

Description	
Ardent CE Project No.	**2206781_A**
Property Address	**Imberhorne Farm**
Room Type	**Bedroom**
Parameter	**Leq, 16h**

Room Dimensions and Areas	
Room volume	34.50
Total Surface area	66.80
Wall façade area	5.20
Roof façade area	0.00
Glazing area	1.70
Dne Ref Area, A0	10.00

Total façade area	6.90

Room Absorption Calcuation	63	125	250	500	1000	2000	4000	8000	
Estimated Reverberation time	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	
Alpha bar	0.17	0.17	0.17	0.17	0.17	0.17	0.17	0.17	
Total Absorption	11.11	11.11	11.11	11.11	11.11	11.11	11.11	11.11	
10Log S/A	-2.07	-2.07	-2.07	-2.07	-2.07	-2.07	-2.07	-2.07	

Façade level	63	125	250	500	1000	2000	4000	8000	A	
Predicted Noise Level	61	59	56	53	53	50	44	41	57	- Based on typ
Façade to free field	0	0	0	0	0	0	0	0		
Angle of view	0	0	0	0	0	0	0	0		
Screening (Maekewa)	0	0	0	0	0	0	0	0		
Distance correction	0	0	0	0	0	0	0	0		
Other	0	0	0	0	0	0	0	0		
Noise level at façade (Leq)	61	59	56	53	53	50	44	41	57	

Composite SRI	63	125	250	500	1000	2000	4000	8000	Rw
Glazing SRI	18	21	17	25	35	37	31	40	29
Transmission Coefficient	0.015849	0.007943	0.019953	0.003162	0.000316	0.000200	0.000794	0.000100	
Wall SRI	28	34	43	55	66	77	85	85	55
Transmission Coefficient	0.001585	0.000398	0.000050	0.000003	0.000000	0.000000	0.000000	0.000000	
Roof SRI	23	26	43	52	60	65	65	65	51
Transmission Coefficient	0.005012	0.002512	0.000050	0.000006	0.000001	0.000000	0.000000	0.000000	
Ventilation, Dne	18	19	34	34	30	31	36	36	32
Transmission Coefficient	0.015849	0.012589	0.000398	0.000417	0.001000	0.000794	0.000251	0.000251	
Average Transmission Coeff	0.028069	0.020502	0.005531	0.001386	0.001527	0.001200	0.000560	0.000389	
Average SRI	16	17	23	29	28	29	33	34	29

Calculated Internal Noise Level, dB	63	125	250	500	1000	2000	4000	8000	A
Lp (Reverberant), line source	44.4	41.0	32.4	23.3	23.8	19.7	10.4	5.8	30
Lp (Direct)	45.5	42.1	33.4	24.4	24.8	20.8	11.5	6.9	32
BS8233	46	43	34	25	26	22	12	8	32

ARDENT

Noise Break-in Calculation - Apartment Block Type A, Plot 70 Bedroom 1

Description	
Ardent CE Project No.	**2206781_A**
Property Address	**Imberhorne Farm**
Room Type	**Bedroom**
Parameter	**LAeq, 8h**

Room Dimensions and Areas	
Room volume	34.50
Total Surface area	66.80
Wall façade area	5.20
Roof façade area	0.00
Glazing area	1.70
Dne Ref Area, A0	10.00

Total façade area	6.90

Room Absorption Calcuation	63	125	250	500	1000	2000	4000	8000	
Estimated Reverberation time	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	
Alpha bar	0.17	0.17	0.17	0.17	0.17	0.17	0.17	0.17	
Total Absorption	11.11	11.11	11.11	11.11	11.11	11.11	11.11	11.11	
10Log S/A	-2.07	-2.07	-2.07	-2.07	-2.07	-2.07	-2.07	-2.07	

Façade level	63	125	250	500	1000	2000	4000	8000	A
Measured Noise Level	49	43	41	39	36	32	32	30	42
Façade to free field	0	0	0	0	0	0	0	0	
Angle of view	0	0	0	0	0	0	0	0	
Screening (Maekewa)	0	0	0	0	0	0	0	0	
Distance correction	0	0	0	0	0	0	0	0	
Other	0	0	0	0	0	0	0	0	
Noise level at façade (Leq)	49	43	41	39	36	32	32	30	42

Composite SRI	63	125	250	500	1000	2000	4000	8000	Rw
Glazing SRI	18	21	17	25	35	37	31	40	29
Transmission Coefficient	0.015849	0.007943	0.019953	0.003162	0.000316	0.000200	0.000794	0.000100	
Wall SRI	28	34	43	55	66	77	85	85	55
Transmission Coefficient	0.001585	0.000398	0.000050	0.000003	0.000000	0.000000	0.000000	0.000000	
Roof SRI	23	26	43	52	60	65	65	65	51
Transmission Coefficient	0.005012	0.002512	0.000050	0.000006	0.000001	0.000000	0.000000	0.000000	
Ventilation, Dne	18	19	34	34	30	31	36	36	32
Transmission Coefficient	0.015849	0.012589	0.000398	0.000417	0.001000	0.000794	0.000251	0.000251	
Average Transmission Coeff	0.028069	0.020502	0.005531	0.001386	0.001527	0.001200	0.000560	0.000389	
Average SRI	16	17	23	29	28	29	33	34	29

Calculated Internal Noise Level, dB	63	125	250	500	1000	2000	4000	8000	A
Lp (Reverberant), line source	32.4	25.0	17.4	9.3	6.8	1.7	-1.6	-5.2	15
Lp (Direct)	33.5	26.1	18.4	10.4	7.8	2.8	-0.5	-4.1	16
BS8233	34	27	19	11	9	4	0	-3	17

ARDENT

Noise Break-in Calculation - Apartment Block Type A, Plot 70 Bedroom 1

Description	
Ardent CE Project No.	**2206781_A**
Property Address	**Imberhorne Farm**
Room Type	**Bedroom**
Parameter	**LAmax**

Room Dimensions and Areas	
Room volume	34.50
Total Surface area	66.80
Wall façade area	5.20
Roof façade area	0.00
Glazing area	1.70
Dne Ref Area, A0	10.00

Total façade area	6.90

Room Absorption Calcuation	63	125	250	500	1000	2000	4000	8000	
Estimated Reverberation time	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	
Alpha bar	0.17	0.17	0.17	0.17	0.17	0.17	0.17	0.17	
Total Absorption	11.11	11.11	11.11	11.11	11.11	11.11	11.11	11.11	
10Log S/A	-2.07	-2.07	-2.07	-2.07	-2.07	-2.07	-2.07	-2.07	

Façade level	63	125	250	500	1000	2000	4000	8000	A
Measured Noise Level	69	56	55	52	49	45	45	45	55
Façade to free field	0	0	0	0	0	0	0	0	
Angle of view	0	0	0	0	0	0	0	0	
Screening (Maekewa)	0	0	0	0	0	0	0	0	
Distance correction	0	0	0	0	0	0	0	0	
Other	0	0	0	0	0	0	0	0	
Noise level at façade (Lmax)	69	56	55	52	49	45	45	45	55

Composite SRI	63	125	250	500	1000	2000	4000	8000	Rw
Glazing SRI	18	21	17	25	35	37	31	40	29
Transmission Coefficient	0.015849	0.007943	0.019953	0.003162	0.000316	0.000200	0.000794	0.000100	
Wall SRI	28	34	43	55	66	77	85	85	55
Transmission Coefficient	0.001585	0.000398	0.000050	0.000003	0.000000	0.000000	0.000000	0.000000	
Roof SRI	23	26	43	52	60	65	65	65	51
Transmission Coefficient	0.005012	0.002512	0.000050	0.000006	0.000001	0.000000	0.000000	0.000000	
Ventilation, Dne	18	19	34	34	30	31	36	36	32
Transmission Coefficient	0.015849	0.012589	0.000398	0.000417	0.001000	0.000794	0.000251	0.000251	
Average Transmission Coeff	0.028069	0.020502	0.005531	0.001386	0.001527	0.001200	0.000560	0.000389	
Average SRI	16	17	23	29	28	29	33	34	29

Calculated Internal Noise Level, dB	63	125	250	500	1000	2000	4000	8000	A
Lp (Reverberant), line source	52.4	38.0	31.4	22.3	19.8	14.7	11.4	9.8	30
Lp (Direct)	53.5	39.1	32.4	23.4	20.8	15.8	12.5	10.9	31
BS8233	54	40	33	24	22	17	13	12	32

ARDENT

Noise Break-in Calculation - Apartment Block Type A, Plot 70 Bedroom 2

Description	
Ardent CE Project No.	**2206781_A**
Property Address	**Imberhorne Farm**
Room Type	**Bedroom**
Parameter	**Leq, 16h**

Room Dimensions and Areas	
Room volume	27.80
Total Surface area	59.90
Wall façade area	4.70
Roof façade area	0.00
Glazing area	1.70
Dne Ref Area, A0	10.00

Total façade area	6.40

Room Absorption Calcuation	63	125	250	500	1000	2000	4000	8000	
Estimated Reverberation time	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	
Alpha bar	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15	
Total Absorption	8.95	8.95	8.95	8.95	8.95	8.95	8.95	8.95	
10Log S/A	-1.46	-1.46	-1.46	-1.46	-1.46	-1.46	-1.46	-1.46	

Façade level	63	125	250	500	1000	2000	4000	8000	A	
Predicted Noise Level	61	59	56	53	53	50	44	41	57	- Based on typ
Façade to free field	0	0	0	0	0	0	0	0		
Angle of view	0	0	0	0	0	0	0	0		
Screening (Maekewa)	0	0	0	0	0	0	0	0		
Distance correction	0	0	0	0	0	0	0	0		
Other	0	0	0	0	0	0	0	0		
Noise level at façade (Leq)	61	59	56	53	53	50	44	41	57	

Composite SRI	63	125	250	500	1000	2000	4000	8000	Rw
Glazing SRI	18	21	17	25	35	37	31	40	29
Transmission Coefficient	0.015849	0.007943	0.019953	0.003162	0.000316	0.000200	0.000794	0.000100	
Wall SRI	28	34	43	55	66	77	85	85	55
Transmission Coefficient	0.001585	0.000398	0.000050	0.000003	0.000000	0.000000	0.000000	0.000000	
Roof SRI	23	26	43	52	60	65	65	65	51
Transmission Coefficient	0.005012	0.002512	0.000050	0.000006	0.000001	0.000000	0.000000	0.000000	
Ventilation, Dne	18	19	34	34	30	31	36	36	32
Transmission Coefficient	0.015849	0.012589	0.000398	0.000417	0.001000	0.000794	0.000251	0.000251	
Average Transmission Coeff	0.030138	0.022073	0.005959	0.001494	0.001647	0.001294	0.000603	0.000419	
Average SRI	15	17	22	28	28	29	32	34	29

Calculated Internal Noise Level, dB	63	125	250	500	1000	2000	4000	8000	A
Lp (Reverberant), line source	45.3	42.0	33.3	24.3	24.7	20.7	11.3	6.8	31
Lp (Direct)	45.8	42.4	33.8	24.7	25.2	21.1	11.8	7.2	32
BS8233	47	44	35	26	27	23	13	9	33

ARDENT

Noise Break-in Calculation - Apartment Block Type A, Plot 70 Bedroom 2

Description	
Ardent CE Project No.	**2206781_A**
Property Address	**Imberhorne Farm**
Room Type	**Bedroom**
Parameter	**LAeq, 8h**

Room Dimensions and Areas	
Room volume	27.80
Total Surface area	59.90
Wall façade area	4.70
Roof façade area	0.00
Glazing area	1.70
Dne Ref Area, A0	10.00

Total façade area	6.40

Room Absorption Calcuation	63	125	250	500	1000	2000	4000	8000	
Estimated Reverberation time	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	
Alpha bar	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15	
Total Absorption	8.95	8.95	8.95	8.95	8.95	8.95	8.95	8.95	
10Log S/A	-1.46	-1.46	-1.46	-1.46	-1.46	-1.46	-1.46	-1.46	

Façade level	63	125	250	500	1000	2000	4000	8000	A
Measured Noise Level	49	43	41	39	36	32	32	30	42
Façade to free field	0	0	0	0	0	0	0	0	
Angle of view	0	0	0	0	0	0	0	0	
Screening (Maekewa)	0	0	0	0	0	0	0	0	
Distance correction	0	0	0	0	0	0	0	0	
Other	0	0	0	0	0	0	0	0	
Noise level at façade (Leq)	49	43	41	39	36	32	32	30	42

Composite SRI	63	125	250	500	1000	2000	4000	8000	Rw
Glazing SRI	18	21	17	25	35	37	31	40	29
Transmission Coefficient	0.015849	0.007943	0.019953	0.003162	0.000316	0.000200	0.000794	0.000100	
Wall SRI	28	34	43	55	66	77	85	85	55
Transmission Coefficient	0.001585	0.000398	0.000050	0.000003	0.000000	0.000000	0.000000	0.000000	
Roof SRI	23	26	43	52	60	65	65	65	51
Transmission Coefficient	0.005012	0.002512	0.000050	0.000006	0.000001	0.000000	0.000000	0.000000	
Ventilation, Dne	18	19	34	34	30	31	36	36	32
Transmission Coefficient	0.015849	0.012589	0.000398	0.000417	0.001000	0.000794	0.000251	0.000251	
Average Transmission Coeff	0.030138	0.022073	0.005959	0.001494	0.001647	0.001294	0.000603	0.000419	
Average SRI	15	17	22	28	28	29	32	34	29

Calculated Internal Noise Level, dB	63	125	250	500	1000	2000	4000	8000	A
Lp (Reverberant), line source	33.3	26.0	18.3	10.3	7.7	2.7	-0.7	-4.2	16
Lp (Direct)	33.8	26.4	18.8	10.7	8.2	3.1	-0.2	-3.8	16
BS8233	35	28	20	12	10	5	1	-2	18

ARDENT

Noise Break-in Calculation - Apartment Block Type A, Plot 70 Bedroom 2

Description	
Ardent CE Project No.	**2206781_A**
Property Address	**Imberhorne Farm**
Room Type	**Bedroom**
Parameter	**LAmax**

Room Dimensions and Areas	
Room volume	27.80
Total Surface area	59.90
Wall façade area	4.70
Roof façade area	0.00
Glazing area	1.70
Dne Ref Area, A0	10.00

Total façade area	6.40

Room Absorption Calcuation	63	125	250	500	1000	2000	4000	8000	
Estimated Reverberation time	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	
Alpha bar	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15	
Total Absorption	8.95	8.95	8.95	8.95	8.95	8.95	8.95	8.95	
10Log S/A	-1.46	-1.46	-1.46	-1.46	-1.46	-1.46	-1.46	-1.46	

Façade level	63	125	250	500	1000	2000	4000	8000	A
Measured Noise Level	69	56	55	52	49	45	45	45	55
Façade to free field	0	0	0	0	0	0	0	0	
Angle of view	0	0	0	0	0	0	0	0	
Screening (Maekewa)	0	0	0	0	0	0	0	0	
Distance correction	0	0	0	0	0	0	0	0	
Other	0	0	0	0	0	0	0	0	
Noise level at façade (Lmax)	69	56	55	52	49	45	45	45	55

Composite SRI	63	125	250	500	1000	2000	4000	8000	Rw
Glazing SRI	18	21	17	25	35	37	31	40	29
Transmission Coefficient	0.015849	0.007943	0.019953	0.003162	0.000316	0.000200	0.000794	0.000100	
Wall SRI	28	34	43	55	66	77	85	85	55
Transmission Coefficient	0.001585	0.000398	0.000050	0.000003	0.000000	0.000000	0.000000	0.000000	
Roof SRI	23	26	43	52	60	65	65	65	51
Transmission Coefficient	0.005012	0.002512	0.000050	0.000006	0.000001	0.000000	0.000000	0.000000	
Ventilation, Dne	18	19	34	34	30	31	36	36	32
Transmission Coefficient	0.015849	0.012589	0.000398	0.000417	0.001000	0.000794	0.000251	0.000251	
Average Transmission Coeff	0.030138	0.022073	0.005959	0.001494	0.001647	0.001294	0.000603	0.000419	
Average SRI	15	17	22	28	28	29	32	34	29

Calculated Internal Noise Level, dB	63	125	250	500	1000	2000	4000	8000	A
Lp (Reverberant), line source	53.3	39.0	32.3	23.3	20.7	15.7	12.3	10.8	31
Lp (Direct)	53.8	39.4	32.8	23.7	21.2	16.1	12.8	11.2	31
BS8233	55	41	34	25	23	18	14	13	33

APPENDIX D

ACOUSTIC TERMINOLOGY

The effects of noise on human beings may be expressed in terms of physiological damage and annoyance. It is, however, only the annoyance impacts that need to be considered in detail when addressing environmental noise impacts. Annoyance also includes the immediate effects of activity interference, for example sleep disturbance and speech interference.

The practice has become to measure sound levels in decibels (dB). The decibel scale is logarithmic rather than linear and it is useful to bear in mind that a noise level change of 3dB would be equivalent to doubling the energy level (for example doubling the volume of traffic) and that an increase of 10 dB is perceived, subjectively, as a doubling of loudness. The human ear responds differently to sounds of different frequency. The ear perceives high frequency sound of a given sound pressure level more loudly than a low frequency sound at the same level. The A-weighted sound level, dB(A), takes this response into consideration and is commonly used for measurement of environmental noise in UK. It thus indicates the subjective human response to sound.

Environmental noise levels vary continuously from second to second, it is clearly impractical to specify the sound level continuously and thus time averaging is required. In practice human response has been related to various units which include allowance for the fluctuating nature of sound with time. For the purpose of this report these include:

$L_{Aeq,T}$: the equivalent A-weighted continuous sound level.

This unit relates to the equivalent level of continuous sound for a specific time period T, for example 16 hours for daytime noise. It contains all the sound energy of the varying sound levels over the same time period and expresses it as a continuous sound level over that period.

$L_{A10,T}$: the A-weighted level of sound exceeded for 10% of the time period T.

This unit is used for traffic noise measurement and is the preferred unit for prediction of traffic noise in the publication, 'Calculation of Road Traffic Noise'.

$L_{A90,T}$: the A-weighted level of sound exceeded for 90% of the time period T.

This unit is commonly used to represent the background noise and is used in assessing the effects of industrial noise in UK.

L_{Amax} : the maximum A-weighted level of sound over a period of measurement.

$L_{Ar,T}$: the rating level.

The specific Noise plus any adjustments for the characteristic features of the noise. Used for comparison between background levels with the noise source off.

SEL : the Sound Exposure Level.

Sound exposure level abbreviated as SEL and LAE, is the total noise energy produced from a single noise event condensed into a 1 second time period.

R_w : weighted sound reduction index.

A laboratory-measured value as defined in ISO717 Part 1.

D_{nTw} :

The equivalent of Rw, but measured onsite as oppose to in a laboratory