

**Noise Impact Assessment
Proposed Extension
Fothergills Coated Fabrics, Riverside Drive,
Rochdale, OL16 2SH**

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This document has been prepared for the client only and solely for the purposes expressly defined herein. We owe no duty of care to any third parties in respect of its content. Therefore, unless expressly agreed by us in signed writing, we hereby exclude all liability to third parties, including liability for negligence, save only for liabilities that cannot be so excluded by operation of applicable law.

This report has been prepared based upon a scope of works and associated resources agreed between the client and Philip Dunbavin Acoustics Ltd (PDA). This report has been prepared with all reasonable skill, care and diligence and has been based upon the interpretation of data collected. This has been accepted in good faith as being accurate and valid at the time of the collection. This report has been based solely on the specific design assumptions and criteria stated herein.

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1.0 SUMMARY

At the request of Fothergill Coated Fabrics Ltd, PDA has undertaken an assessment to determine the likely noise impact associated with the proposed extension to the existing production facility.

The site is located within the grounds of the existing Fothergills Coated Fabrics facility on Riverside Drive in Rochdale, OL16 2SH. The existing site comprises a main production building housing several coating lines and ancillary plant associated with the coating process. In addition, the existing site includes a storage facility for raw materials and finished products with an external service yard used for goods deliveries and collections.

The proposal is to extend the existing premises to provide additional internal floor space. It has not been confirmed whether the extension to expand production capacity or for additional storage. As such, for the purposes of this assessment we have considered both potential uses.

A noise survey has been conducted at site to establish the existing acoustic climate at the nearest noise sensitive receivers (NSR's). In addition a number of short term measurements were undertaken in the existing production and storage/delivery areas to determine source levels for activities on the site

Our assessment has been undertaken in accordance with the methods described in BS4142:2014 – 'Methods for rating and assessing industrial and commercial sound'. We have considered the potential impact associated with both storage and production use within the proposed extension.

Our assessment has indicated that the rating level at the worst affected noise sensitive receiver is likely to be at least 17 dB below the background sound level. In accordance with BS4142:2014 this is an indication that noise emissions from the scheme will have a low impact.

Noise emissions from the existing use dominated the noise climate at the nearby dwellings. Operations associated with the proposed extension (whether for storage or expansion of production capacity) are not expected to be significantly different in character to existing use at the site which we would consider will further reduce the impact.

The NPPF requires that significant adverse impacts due to a new development should be avoided and other adverse impact should be mitigated and reduced to a minimum. Our assessment has indicated that the sound levels arising from the operations of the proposed development will not result in an adverse impact and will therefore comply with the requirements of the NPPF. On this basis we see no reason that the development should be refused on the grounds of noise.

2.0 SITE DESCRIPTION

The site is located within the grounds of the existing Fothergills Coated Fabrics facility on Riverside Drive in Rochdale, OL16 2SH.

Fothergill Coated Fabrics is a specialist manufacturer of PTFE-coated fabrics, adhesive tapes, and conveyor belt materials for various industrial, food processing and specialist engineering applications.

The existing site comprises a main production building housing several coating lines and ancillary plant associated with the coating process. In addition, the existing site includes a storage facility for raw materials and finished products with an external service yard used for goods deliveries and collections.

We are informed that production operations at the site are continuous, operating on a 24-hour basis. Deliveries and dispatch activities however, are restricted to daytime hours only typically between approximately 08:30 and 16:30 hours Monday to Friday. At present, the site experiences relatively low levels of delivery traffic typically no more than two deliveries per day. Whilst deliveries are limited to daytime hours only, we understand that forklift truck movements within the storage area may occur outside of these hours as required, for example to transfer materials or products within the storage area.

The proposal is to extend the existing premises to provide additional internal floor space. It has not been confirmed whether the extension is to expand production capacity or for additional storage. As such, for the purposes of this assessment we have considered both potential uses.

If the additional floor space is to be used for production purposes, it is understood that the plant and equipment to be installed will be of a similar type and scale to that already in operation within the existing production area.

The area surrounding the site predominantly comprises existing industrial uses. The nearest noise sensitive residential receivers (NSR's) are considered to be the dwellings on Spokeshave Way and Spring Mill Walk approximately 40m to the north west of the site.

An overview of the proposed site and development is provided below:

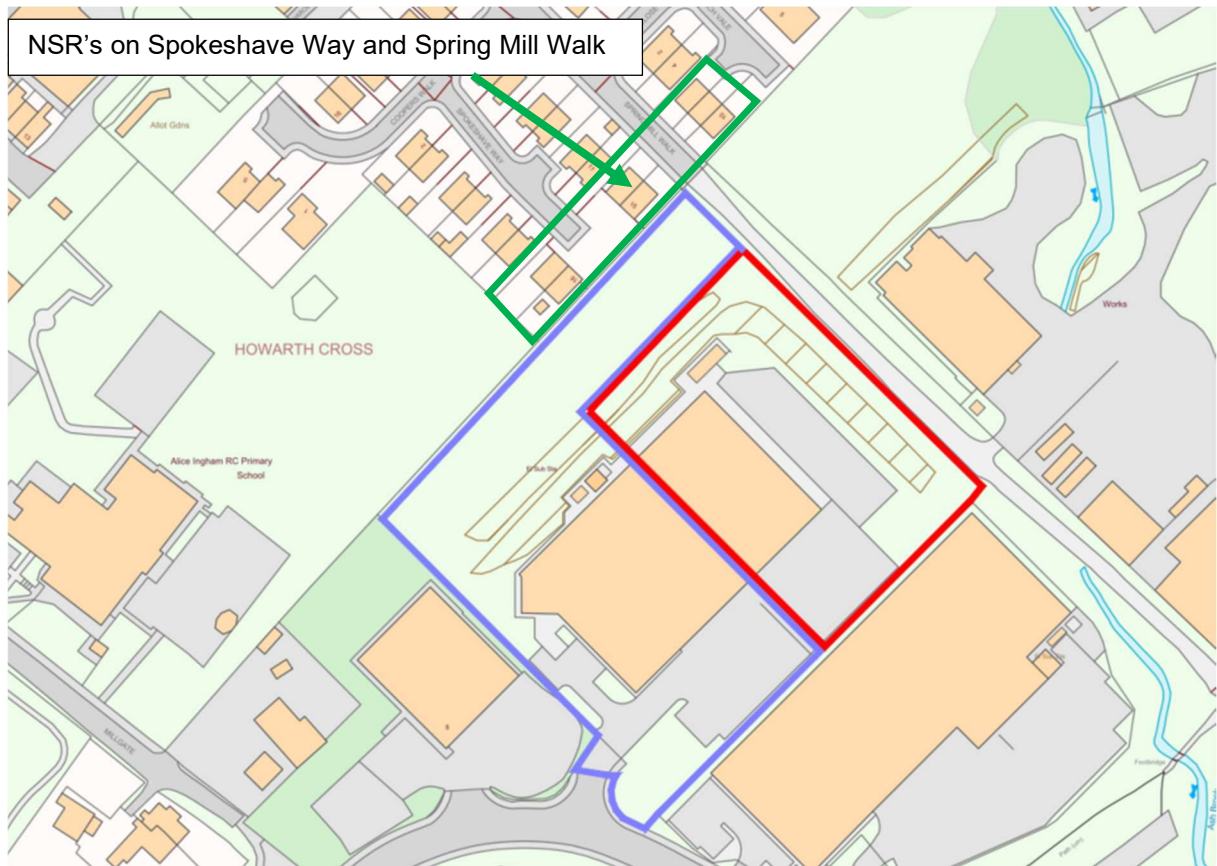


Figure 1: Site Location and Surroundings

The proposed site layout can be seen in Figure 2 overleaf.

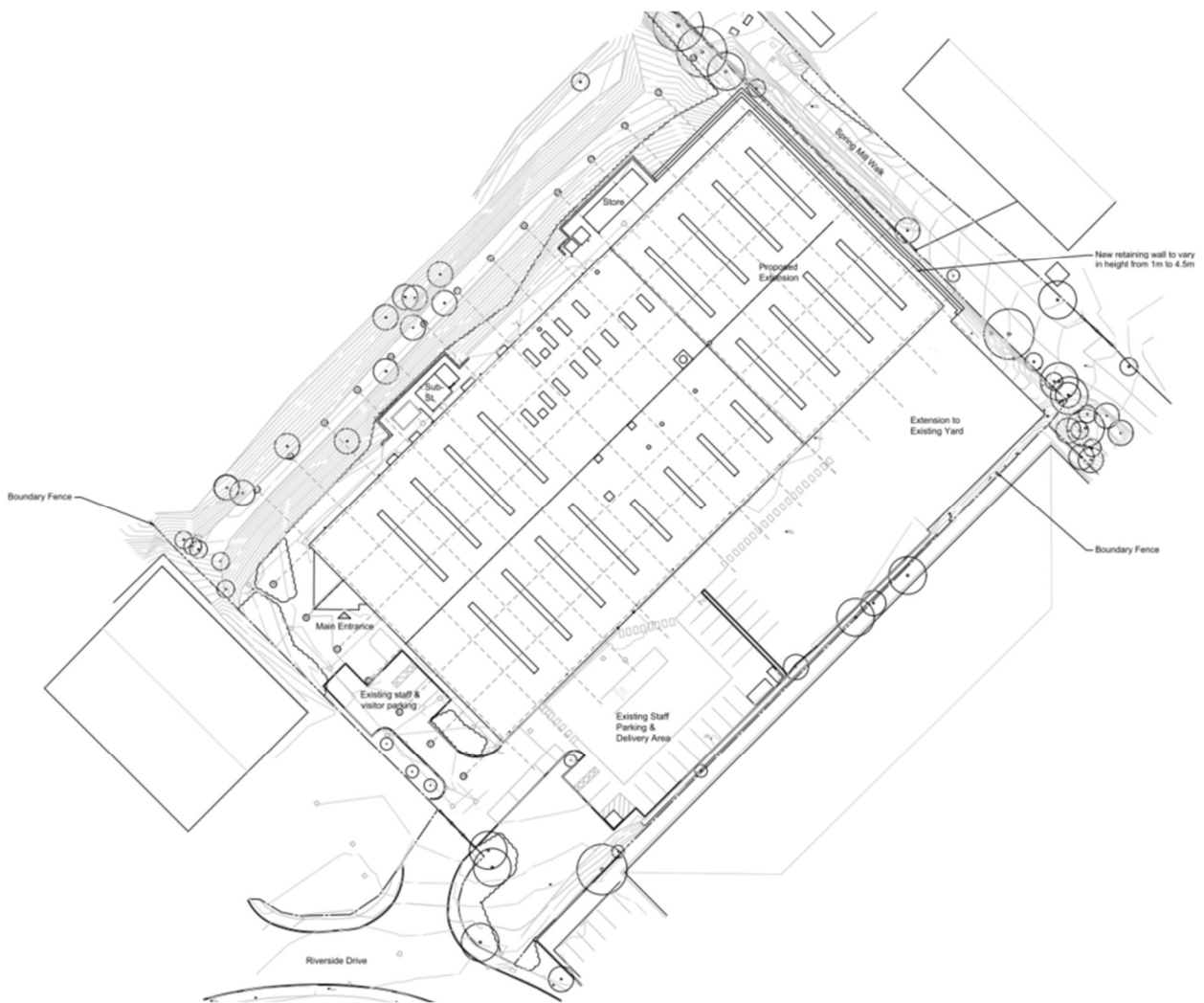


Figure 2: Proposed Site Layout

3.0 ASSESSMENT CRITERIA

3.1 National Planning Policy Framework

National Planning Policy is guided by the National Planning Policy Framework (NPPF) updated on 7th February 2025. With regard to Noise the Framework states the following;

Planning policies and decisions should contribute to and enhance the natural and local environment by:

- *preventing new and existing development from contributing to, being put at unacceptable risk from, or being adversely affected by, unacceptable levels of soil, air, water or noise pollution or land instability.*

Planning policies and decisions should also ensure that new development is appropriate for its location taking into account the likely effects (including cumulative effects) of pollution on health, living conditions and the natural environment, as well as the potential sensitivity of the site or the wider area to impacts that could arise from the development. In doing so they should:

- *mitigate and reduce to a minimum potential adverse impacts resulting from noise from new development – and avoid noise giving rise to significant adverse impacts on health and the quality of life;*
- *identify and protect tranquil areas which have remained relatively undisturbed by noise and are prized for their recreational and amenity value for this reason.*

The terms 'significant adverse impact' and 'adverse impact' are defined in the explanatory notes of the 'Noise Policy Statement for England (NPSE)' which states;

There are two established concepts from toxicology that are currently being applied to noise impacts, for example, by the World Health Organisation. They are:

NOEL – No Observed Effect Level

This is the level below which no effect can be detected. In simple terms, below this level, there is no detectable effect on health and quality of life due to the noise.

LOAEL – Lowest Observed Adverse Effect Level

This is the level above which adverse effects on health and quality of life can be detected.

Extending these concepts for the purpose of this NPSE leads to the concept of a significant observed adverse effect level.

SOAEL – Significant Observed Adverse Effect Level

This is the level above which significant adverse effects on health and quality of life occur.

The notes also offer an explanation of the term 'adverse impacts' as follows;

... refers to the situation where the impact lies somewhere between LOAEL and SOAEL. It requires that all reasonable steps should be taken to mitigate and minimise adverse effects on health and quality of life while also taking into account the guiding principles of sustainable development (paragraph 1.8). This does not mean that such adverse effects cannot occur.

Although no specific noise limits for LOAEL and SOAEL have been defined, in 2014 the UK Government published a planning practice guidance document for noise which indicates where these limits fall with

relation to the perception of noise. A summary is reproduced in Section 4.2 below, and the full document is published at <https://www.gov.uk/guidance/noise--2>. It is considered that guidance from other acoustic standards may be employed to determine suitable levels within the overall principal of the National Planning Policy Framework.

The National Planning Policy Framework also states:

Planning policies and decisions should ensure that new development can be integrated effectively with existing businesses and community facilities (such as places of worship, pubs, music venues and sports clubs). Existing businesses and facilities should not have unreasonable restrictions placed on them as a result of development permitted after they were established. Where the operation of an existing business or community facility could have a significant adverse effect on new development (including changes of use) in its vicinity, the applicant (or 'agent of change') should be required to provide suitable mitigation before the development has been completed.

The focus of planning policies and decisions should be on whether proposed development is an acceptable use of land, rather than the control of processes or emissions (where these are subject to separate pollution control regimes). Planning decisions should assume that these regimes will operate effectively. Equally, where a planning decision has been made on a particular development, the planning issues should not be revisited through the permitting regimes operated by pollution control authorities.

3.2 Planning Practice Guidance – Noise

In March 2014 (updated July 2019) the UK Government published further guidance on the assessment of noise for planning purposes in the form of the on-line publication, Planning Practice Guidance on noise (<http://www.gov.uk/guidance/noise--2>). This document offers further guidance on the typical levels which constitute the NOEL, LOAEL and SOAEL. The relevant section is reproduced in the table below;

Table 1. Planning Practice Noise Level Guidance

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

It is notable from the above planning guidance that development should not normally be permitted above Significant Observed Adverse Effect Levels, and should aim to minimise Other Adverse Effect Levels (below SOAEL but above LOAEL). However, it is clear that noise is permitted to approach and/or exceed the Lowest Observed Adverse Effect Level, providing that noise is mitigated and reduced to a minimum.

3.3 BS 4142:2014 + A1:2019 Methods for rating and assessing industrial and commercial sound'

The effect of plant noise emissions on the nearest noise sensitive residences can be assessed in accordance with BS4142:2014 – '*Methods for rating and assessing industrial and commercial sound*'.

The standard describes a method of determining the level of a noise of commercial or industrial nature, together with procedures for assessing the impact of such a noise outside nearby noise sensitive areas.

The standard provides a procedure for comparing the noise from commercial sources with background noise levels in the absence of the commercial noise and determining the likely impact of the noise on noise sensitive areas.

In accordance with BS 4142 the background noise level is the typical A-weighted sound pressure level at the assessment position that is exceeded for 90% of a given time interval (L_{A90}). The specific noise level is the equivalent continuous (L_{Aeq}) sound pressure level at the assessment position produced by the noise source over a given time interval.

Certain acoustic features can increase the impact over that expected from a simple comparison between the specific noise level and the background level. Where such features are present, these are considered by adding corrections to the specific noise level.

The corrections are applied based on whether the following features occur, or are expected to be present. The correction values can either be determined subjectively, or by various objective measurement procedures.

- The noise contains a distinguishable, discrete, continuous tone (whine, hiss, screech, hum, etc.). 0 – 6 dB penalty
- The noise contains distinct impulses (bangs, clicks, clatters, or thumps). 0 – 9 dB penalty.
- The noise is irregular enough to attract attention. 0 – 3 dB penalty.
- Other features. 0 – 3 dB penalty.

From the addition of the above penalties where appropriate the rating level is established, this being the value that is compared with the background noise.

According to BS 4142 an initial estimate of the impact is given for a rating level of:

- 10 dB(A) or more above the background is an indication of significant adverse impact, depending on the context.
- 5 dB(A) above the background is an indication of an adverse impact, depending on the context.
- where the rating level does not exceed the background level, this is an indication of the specific sound source having a low impact, depending on the context.

The above initial assessment may then be modified depending on the context to take into account;

- The absolute level of the sound.
- The character and level of the residual sound compared to the character and level of the specific sound.
- 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:
 1. Façade insulation treatment
 2. Ventilation and / or cooling that will reduce the need to have windows open so as to provide rapid or purge ventilation; and
 3. Acoustic screening

3.4 BS 8233:2014 Guidance on Sound Insulation and Noise reduction for Buildings

Dwelling houses, flats and rooms in residential use

British Standard 8233:2014, Guidance on Sound Insulation and noise reduction for buildings, gives guidance on internal noise levels within both non-domestic and residential uses when unoccupied. The following criteria are for Living and Dining Rooms for daytime use and Bedrooms for night time.

Table 2. BS 8233 Recommended Indoor Ambient Noise Levels

Activity	Location	07:00 to 23:00	23:00 to 07:00
Resting	Living room	35 $L_{Aeq,16hour}$	–
Dining	Dining room/area	40 $L_{Aeq,16hour}$	–
Sleeping (daytime resting)	Bedrooms	35 $L_{Aeq,16hour}$	30 $L_{Aeq,8hour}$

With regard to gardens and external areas, BS 8233:2014 (section 7.7.3.2) gives the following advice:

For traditional external areas that are used for amenity space, such as gardens and patios, it is desirable that the external noise level does not exceed 50dB $L_{Aeq,T}$, with an upper guideline value of 55dB $L_{Aeq,T}$ which would be acceptable in noisier environments. However, it is also recognized that these guideline values are not achievable in all circumstances where development might be desirable. In higher noise areas, such as city centres or urban areas adjoining the strategic transport network, a compromise between elevated noise levels and other factors, such as the convenience of living in these locations or making efficient use of land resources to ensure development needs can be met, might be warranted. In such a situation, development should be designed to achieve the lowest practicable levels in these external amenity spaces, but should not be prohibited.

3.5 WHO Guidelines for Community Noise

In 1999, the WHO (World Health Organisation) published Guidelines for Community Noise, stating the following internal noise levels are applicable to dwellings.

Table 3. WHO Guidelines for Community Noise criteria

Specific Environment	Critical Health Effect(s)	L_{Aeq} dB	Time Base (hours)*
Outdoor living area	Serious annoyance, daytime and evening	55	16
	Moderate annoyance, daytime and evening	50	16
Outside Bedrooms	Sleep disturbance, window open (outdoor values) night time	45	8

* Typically taken to be daytime/evening - 07:00 – 23:00 hours, and night time 23:00 – 07:00 hours.

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

4.0 SURVEY DETAILS AND RESULTS

4.1 Survey Time and Dates

In order to determine the existing ambient noise climate in the vicinity of the nearby noise sensitive dwellings a noise survey was undertaken at the site. Measurements were made continuously for a period of approximately 25 hours between 10:30 hours on Thursday 14th and 11:00 hours on Friday 15th August 2025. The measurement period was selected to be representative of day and night time operating hours at the site. All measurements were made and partially attended by Mr C Wright BSc (Hons) MIOA of PDA Ltd.

In addition, a number of short term measurements were undertaken in the production and storage/delivery areas to determine source levels for activities on the site. These measurements are discussed in Section 5.1 below.

4.2 Equipment Used

Throughout the survey measurements were undertaken using an NTi XL2 sound level meter. The meter is precision grade Class 1 (as per BS EN 61672-1: 2002) for which current calibration certificates are held. The meter was set to A-Weighted, fast response and measured continuously in 15-minute and 1-second time periods. The meters were calibrated directly before any measurement took place and immediately afterwards and no significant drift was observed.

The equipment used is detailed as follows:

Table 4. Equipment List

Equipment Type	Make	Model	Serial Number	Certificate Number	Last Lab Calibrated
Sound Level Meter	NTi	XL2	A2A-25279-E1	UK-24-049	15/05/2024

4.3 Weather Conditions

Weather conditions during the survey period were deemed to be conducive to noise measurements. Conditions were dry with no significant wind observed.

4.4 Measurement Positions & Procedure

The long term measurements were undertaken from a single position at the north west site boundary deemed to be representative of the noise climate in the vicinity of the nearby noise sensitive dwellings.

The microphone was mounted 1.5m above ground and at least 3.5m from any reflecting surface. A range of statistical noise indicators was measured, including L_{Aeq} and L_{A90} . Measurements were setup to log every 15-minutes.

Definitions of the above terms are listed below:

L_{Aeq} : The equivalent A-weighted noise level containing the same energy within the measured time period.

L_{A90} : This is a statistical parameter that is equivalent to the noise level that is exceeded 90% of the measurement period.

The measurement location is highlighted in the following figure:



Figure 3: Noise Survey Monitoring Position

4.5 Measured Noise Levels (existing noise climate)

A summary of the noise level measurements is given below. The levels presented in Table 5 have been rounded to the nearest decibel. The L_{Aeq} levels are the logarithmic average of all the measured noise levels. The L_{A90} levels have been shown as a minimum to maximum range.

Table 5. Ambient Noise Measurements

Period	$L_{Aeq,T}$ (dB)	Range of $L_{A90,15mins}$ (dB)
Daytime (07:00 – 23:00)	56	55 – 59
Night (23:00 – 07:00)	56	56 – 56

The full measurement result charts can be found within Appendix B.

4.6 Description of Background Sound

The dominant noise source in the vicinity of the nearby noise sensitive dwellings was due to plant noise from the existing production facility which had a constant and steady contribution during both the day and night time periods. Fork lift truck movements also had an intermittent contribution to the noise climate with reversing alarms and horns sounding occasionally audible.

4.7 Discussion of Results

In accordance with the requirements of BS4142 the determination of background is not simply to ascertain a lowest measured background sound level, but rather to quantify what is typical during relevant time periods.

BS4142 States the following:

8.1.3 Ensure that the measurement time interval is sufficient to obtain a representative value of the background sound level for the period of interest. This should comprise continuous measurements of normally not less than 15 min intervals, which can be contiguous or disaggregated.

8.1.4 The monitoring duration should reflect the range of background sound levels for the period being assessed. In practice, there is no "single" background sound level as this is a fluctuating parameter. However, the background sound level used for the assessment should be representative of the period being assessed.

NOTE 1 To obtain a representative background sound level a series of either sequential or disaggregated measurements ought to be carried out for the period(s) of interest, possibly on more than one occasion. A representative level ought to account for the range of background sound levels and ought not automatically to be assumed to be either the minimum or modal value.

The existing noise climate at the NSRs was dominated by plant noise emissions from the existing production facility, which had a steady and continuous contribution during both the day and night time periods. This is reflected in the measurement data where it can be seen that there was no significant variation in the noise level throughout the survey period. As such, we have taken the lowest measured L_{A90} to be representative of the typical background sound level at the NSRs.

The representative background noise levels are considered to be:

- Daytime – 55 dB L_{A90}
- Night-time – 55 dB L_{A90}

5.0 NOISE SOURCES ASSOCIATED WITH THE DEVELOPMENT

The proposal is to extend the existing premises to provide additional internal floor space. It has not been confirmed whether the extension is to expand production capacity or for additional storage. As such, for the purposes of this assessment we have considered both options.

If the additional floor space is to be used for production purposes, it is understood that the plant and equipment to be installed will be of a similar type and scale to that already in operation within the existing production area.

In order to determine likely noise emissions associated with the proposed extension, measurements were taken of existing operations on the site. The following noise sources were measured:

- Coating machines and associated plant within the production area.
- Operations in the storage area including fork lift movements.
- Forklift unloading pallets from a HGV in delivery yard.

The measured noise levels for the above activities are summarised in the Table below:

Table 6. Measured Noise Levels of on Site Operations.

Description	Octave Band (Hz) Sound Pressure Level (dB)							L _p , dB(A)
	63	125	250	500	1000	2000	4000	
Production Area	76	79	77	76	76	73	68	80
Storage Area	67	65	64	67	67	62	57	70
Unloading Pallets*	60	58	55	60	54	57	56	63

Notes:

* – Measured at a distance of 5m.

5.1 Delivery Noise Levels

We are informed that deliveries / dispatches typically occur between approximately 08:30 and 16:30 hours Monday to Friday with typically no more than two deliveries per day.

Whilst deliveries are limited to daytime hours only we understand that forklift truck movements within the storage area may occur outside of these hours as required, for example to transfer materials or products within the storage area.

For the purposes of this assessment we have allowed for up to 4 deliveries per day, this is considered to be conservative and should account for any potential increase in delivery volume associated with the extended storage area.

It is considered unlikely that typically all deliveries will be made during the same 1-hour reference period. Therefore, on a reasonably conservative basis we have assumed that typically there will be up to 2no HGV deliveries to site within the same 1-hour reference period.

For each delivery we estimated the following times for each stage of the delivery.

- Approximately 1.5 minutes HGV driving in and out of delivery area
- 15 minutes unloading HGV (opening of delivery doors, pallets being loaded in and out HGV, Forklift movements including reversing alarms and horn sounding).
- Continuous operation within the internal storage area (see section 5.2).

Noise egress from the movement of HGV's on site and the unloading of HGV's have been modelled based on the following reference noise levels.

Table 7. Noise egress from delivery activity, L_w

Noise Source	Octave Band L_w dB								dBA
	63	125	250	500	1000	2000	4000	8000	
*HGV driving in and out of delivery area	92	87	86	85	83	79	76	70	88
**Unloading HGV with Forklift	86	82	82	82	80	76	69	61	84

Notes:

*We were not able to measure a specific HGV movement whilst on the Fothergills site as the vehicle had already arrived. Therefore, we have utilised measurements conducted by PDA of a HGV entering a similar site which are considered to be representative for the purposes of this assessment. L_w s have been time corrected for a 1.5 minute travel time for each of the 2 HGVs within a given 1-hour reference period.

** L_w s calculated based on measurements undertaken on site. Noise sources from HGV being unloaded included doors being opened and closed, movement of pallets, reversing sirens and horns sounding. L_w s have been time corrected for a 30-minute unloading time within a given 1-hour reference period corresponding to 2 no. deliveries.

5.2 Building Envelope, Noise Breakout

Whilst on site measurements were undertaken in the existing storage area. Noise sources included forklift trucks moving pallets and materials between the racking. In addition, music from a radio and plant noise had a contribution. Should the proposed extension be used for storage purposes it is expected that similar noise levels would be generated internally.

If the additional floor space is to be used for production purposes, it is understood that the plant and equipment to be installed will be of a similar type and scale to that already in operation within the existing production area. Therefore, should the proposed extension be used to expand production capacity it is expected that similar noise levels would be generated internally.

In order to determine the likely noise egress from proposed storage area we have calculated the noise transmission through the building envelope. Based on the following calculation methodology:

$$L_w = L_p + 10 \cdot \log(S) - R - 6$$

Where;

L_w = Total sound power of building facade element

L_p = Internal reverberant sound pressure level as measured in the existing facility

S = Surface area of facade element

R = Sound reduction of facade element

6 = Correction for reverberant to free field transmission

For the purposes of this assessment we have assumed the following facade elements:

External Walls / Roof

Light weight cladding e.g. Kingspan AWP/60 or similar.

Roller Shutter Door

The drawings provided to us indicate there is a roller shutter door on the eastern facade overlooking the yard with a surface area approximately 24m². Where the extension is to be used for storage purposes we have assumed that the roller shutter door will remain open for the majority of the time and will therefore not provide any sound insulation. However, should the extension be used to expand production capacity it is recommended that the roller shutter door remains closed.

The sound insulation performance of these elements are summarised below:

Table 8. Sound insulation performance of external envelope

Element	Sound Insulation R, dB							R _w , dB
	63	125	250	500	1000	2000	4000	
Walls / Roof	15	16	19	23	25	22	39	25
Roller Shutter Door Open	0	0	0	0	0	0	0	0
Roller Shutter Door Closed	16	11	16	16	18	19	19	18

Based on the internal noise levels as presented in Table 6 we have calculated the noise level radiating from the external walls and roofs by applying corrections to account for the sound insulation properties of each surface element and to account for transfer from the reverberant to direct sound field.

The sound power per m² for the roof, walls and roller shutter door are presented in the Table below.

Table 9. Sound power per m² of warehouse external envelope (storage use)

Element	Octave Band L _w per m ² dB							L _{WA} , dB
	63	125	250	500	1000	2000	4000	
Roller shutter door (open)	61	59	58	61	61	56	51	47
Roof / walls	46	43	39	38	35	34	21	41

Table 10. Sound power per m² of warehouse external envelope (production use)

Element	Octave Band L _w per m ² dB							L _{WA} , dB
	63	125	250	500	1000	2000	4000	
Roller shutter door (closed)	54	62	55	54	52	48	43	57
Roof / walls	55	57	52	47	44	45	32	51

6.0 NOISE IMPACT ASSESSMENT

6.1 Noise Modelling

In order to predict the noise level at the façade of the nearby noise sensitive dwellings due to the proposed development, the site and its surroundings have been modelled in Soundplan Noise Propagation software. The software uses the method of ISO 9613 '*Acoustics – attenuation of sound during propagation outdoors – general method of calculation*' and takes into account geometric spreading, ground effects, air attenuation, barrier attenuation and reflections. A ground absorption coefficient of 0 has been used representative of hard surfaces (hardstanding, roads, etc.) which would likely provide a worst-case assessment.

The model is based on the sound power levels and frequency spectra detailed above with vehicle movements being modelled as a line source with an acoustic centre of 0.5m, loading/unloading activities modelled as an area source at a height of 1m and noise egress through the façade of the warehouses as an area source at the relevant facade location.

The following situations have been modelled:

1. Deliveries/dispatch during daytime hours only (07:00 – 23:00) includes 24 hour internal operation within storage area.
2. Production use 24 hour operation.

An overview of the noise model results can be seen in Appendix C. The results of the noise models have been used to assess the likely noise impact of the proposed development in accordance with BS4142.

6.2 Initial BS4142 Assessment

An assessment has been carried out in accordance with BS4142:2014 with respect to the closest residential receivers. This assessment is based on the results of the modelling calculation described above and has been carried out to the highest calculated noise levels. See the Tables below:

Table 10: Comparison of rating noise level with background sound levels during the day-time

Proposed Use	Predicted Specific Sound Level L _{Aeq,T} (dB)	Feature Correction (dB) ¹	Rating Level L _{Ar} (dB)	Representative Background L _{A90(15-min)} (dB)	Difference between Rating Level and Background (dB)
Storage	29	0dB	29	55	-26
Production	38	0dB	38	55	-17

Table 11: Comparison of rating noise level with background sound levels during the night-time

Proposed Use	Predicted Specific Sound Level L _{Aeq,T} (dB)	Feature Correction (dB) ¹	Rating Level L _{Ar} (dB)	Representative Background L _{A90(15-min)} (dB)	Difference between Rating Level and Background (dB)
Storage	28	0dB	28	55	-27
Production	38	0dB	38	55	-17

Notes:

- 1 It is noted that whilst HGV and forklift movements during deliveries may emit noise with a tonal characteristic (e.g. reversing alarms) it was noted during our noise survey that reversing alarms/horns associated with the existing use have a contribution to the noise climate. Therefore, delivery noise associated with the proposed extension will be similar in

character and as such, would not be distinguishable against the existing ambient noise climate. The same is true of noise emissions associated with potential production activity within the proposed extension.

During our survey it was noted that noise emissions from the existing production facility dominated the noise climate in the vicinity of the NSRs. Consequently, if the proposed extension is used to expand production capacity at the site noise emissions are expected to be similar in character and therefore, would not be readily distinguishable against the existing noise climate. As such it was not deemed appropriate to apply a feature correction.

It is noted that BS4142 indicates the following:

10 dB(A) or more above the background is an indication of significant adverse impact, depending on the context.

5 dB(A) above the background is an indication of an adverse impact, depending on the context.

Where the rating level does not exceed the background level, this is an indication of the specific sound source having a low impact, depending on the context.

Our assessment has indicated that the Rating Level at least 26 dB below background (storage use) and at least 17 dB below background (production use). In accordance with BS4142:2014 an initial assessment estimate impact would indicate that the specific sound associated with the proposed develop is likely to have a low impact depending on context.

It should be noted however that that in accordance with BS4142:2014 this initial impact will need to be modified to account for context of the site. This is further discussed within Section 7.

7.0 CONTEXT

The BS4142 initial estimate is described within Section 6, however it should also be noted that BS4142 indicates that this initial estimate of impact needs to be modified for context. With reference to the context BS4142 indicates that the significance of sound of an industrial and/or commercial nature depends upon both the margin by which the rating level of the specific sound source exceeds the background sound level and the context in which the sound occurs.

BS4142 indicates that pertinent factors that could modify context would include: the absolute level of sound; the character and level of the residual sound compared to the character and level of the specific sound; the sensitivity of the receptor and whether dwellings or other premises used for residential purpose already incorporate design measurements that secure good internal and/or outdoor acoustic conditions.

With reference to context, we would make the following comments:

The rating noise level is predicted to be ≤ 38 dB L_{Aeq} . It should be borne in mind that the existing ambient noise climate which was found to be 56 dB L_{Aeq} and was dominated by noise emissions associated with the existing use which operates 24 hours a day. Therefore, noise emissions associated with the proposed extension will effectively be non-contributory.

It should be borne in mind that operations associated with the proposed extension whether for storage or expansion of production capacity are not expected to be significantly different in character to existing use at the site. As such, it would not be possible to distinguish between noise from the existing use or the new build extension.

Our assessment indicates that the rating noise level is likely to be at least 17 dB below the representative background sound level and therefore, in accordance with BS4142 will have a low impact. We would consider that the contextual factors described above would further reduce the impact of the proposed development, however this would not modify the outcome of the assessment as the impact is already predicted to be low.

The NPPF requires that significant adverse impacts due to a new development should be avoided and other adverse impact should be mitigated and reduced to a minimum. Based upon the above assessment it is concluded that the sound levels arising from the operations of the proposed development will not result in an adverse impact and will therefore comply with the requirements of the NPPF.

8.0 UNCERTAINTY

BS4142 indicates that an assessment of noise impact should consider uncertainty within the assessment. This uncertainty can arise from: uncertainty in measurements; uncertainty in sound emission and sound power level; and uncertainty in calculation method.

8.1 Uncertainty in Measurements

It is noted that the instrumentation used for the assessment conform to Class 1 accuracy in accordance with IEC 61672. In addition, the instrumentation has been calibrated to national standards and were field calibrated at the time of the measurements. The measurements were undertaken adjacent to the nearest residential receiver.

We would therefore consider that the effect of uncertainty on the measurement of background sound would be minimal.

8.2 Uncertainty in Sound Power Levels

With regards to the internal noise levels within the proposed extension, our assessment is based on noise levels measured within the existing units. It is understood that the operations, plant and equipment to be installed will be of a similar type and scale to that already in operation within the existing production area. Therefore, it is expected that noise levels will be similar to those measured on site.

In addition, when calculating potential noise egress through the facade of the proposed extension this has been undertaken on a conservative basis assuming relatively low performance light weight cladding and roller shutter doors left open for delivery/storage use.

Having considered the above, the effect of uncertainty on the sound power levels used for this assessment is likely to be minimal.

8.3 Uncertainty in Calculation Method

Noise levels at the receivers have been calculated based on ISO 9613-2 Acoustics - Attenuation of sound during propagation outdoors – Part 2: General method of calculation, implemented within Sound Plan computer modelling software. The results assume that the receiver is downwind of the source to receiver propagation path (worst case scenario in regards to source to receiver noise attenuation).

We would therefore consider that the prediction method utilised is conservative and would consider that there are no significant sources of uncertainty associated with this assessment.

9.0 CONCLUSION

At the request of Fothergill Coated Fabrics Ltd, PDA has undertaken an assessment to determine the likely noise impact associated with the proposed extension to the existing production facility.

A noise survey has been conducted at site to establish the existing acoustic climate at the nearest noise sensitive receivers (NSR's). In addition a number of short term measurements were undertaken in the existing production and storage/delivery areas to determine source levels for activities on the site

Our assessment has been undertaken in accordance with the methods described in BS4142:2014 – 'Methods for rating and assessing industrial and commercial sound'. We have considered the potential impact associated with both storage and production use within the proposed extension.

Our assessment has indicated that the rating level at the worst affected noise sensitive receiver is likely to be at least 17 dB below the background sound level. In accordance with BS4142:2014 this is an indication that noise emissions from the scheme will have a low impact.

Noise emissions from the existing use dominated the noise climate at the nearby dwellings. Operations associated with the proposed extension (whether for storage or expansion of production capacity) are not expected to be significantly different in character to existing use at the site which we would consider will further reduce the impact.

The NPPF requires that significant adverse impacts due to a new development should be avoided and other adverse impact should be mitigated and reduced to a minimum. Our assessment has indicated that the sound levels arising from the operations of the proposed development will not result in an adverse impact and will therefore comply with the requirements of the NPPF. On this basis we see no reason that the development should be refused on the grounds of noise.

APPENDIX A – DEFINITION OF ACOUSTIC TERMS

The decibel

This is the basic unit of noise, denoted dB.

A Weighting

This is a weighting process which simulates the human ear's different sensitivity at different frequencies. A weighting can be shown two typical ways, 50 dB(A) L_{eq} or 50 dB L_{Aeq} . Both mean the same thing. (See below for a definition of L_{eq}). The dB(A) level can be regarded as the overall level perceived by human beings.

L_{eq} and $L_{eq(s)}$

This is the equivalent continuous noise level which contains the same acoustic energy as the actual time-varying sound. In other words it is a kind of average noise level. It is denoted dB L_{eq} or, for A-weighted figures dB(A) L_{eq} or dB L_{Aeq} . It can also be expressed in terms of frequency analysis (see later). $L_{eq(s)}$ is the sample L_{eq} level.

L_n

This is the level exceeded for n% of the time. It is denoted dB L_n or, for A-weighted figures dB(A) L_n or dB L_{An} . It can be expressed in terms of frequency analysis (see later). L_{90} is the level exceeded for 90% of the time and is a measure of the lowest level typically reached. L_{10} is the level exceeded for 10% of the time and is the highest level typically reached. L_{50} is the level exceeded for 50% of the time and, mathematically, it is the median.

L_{max}

This is the maximum level reached during a measurement period. The "time constant", or the ability of the equipment to respond to impulses is usually expressed along with it, e.g. "Fast", "Slow", etc. It is denoted dB L_{max} or, for A-weighted figures dB(A) L_{max} , dB L_{Amax} , etc. It can also be expressed in terms of frequency analysis.

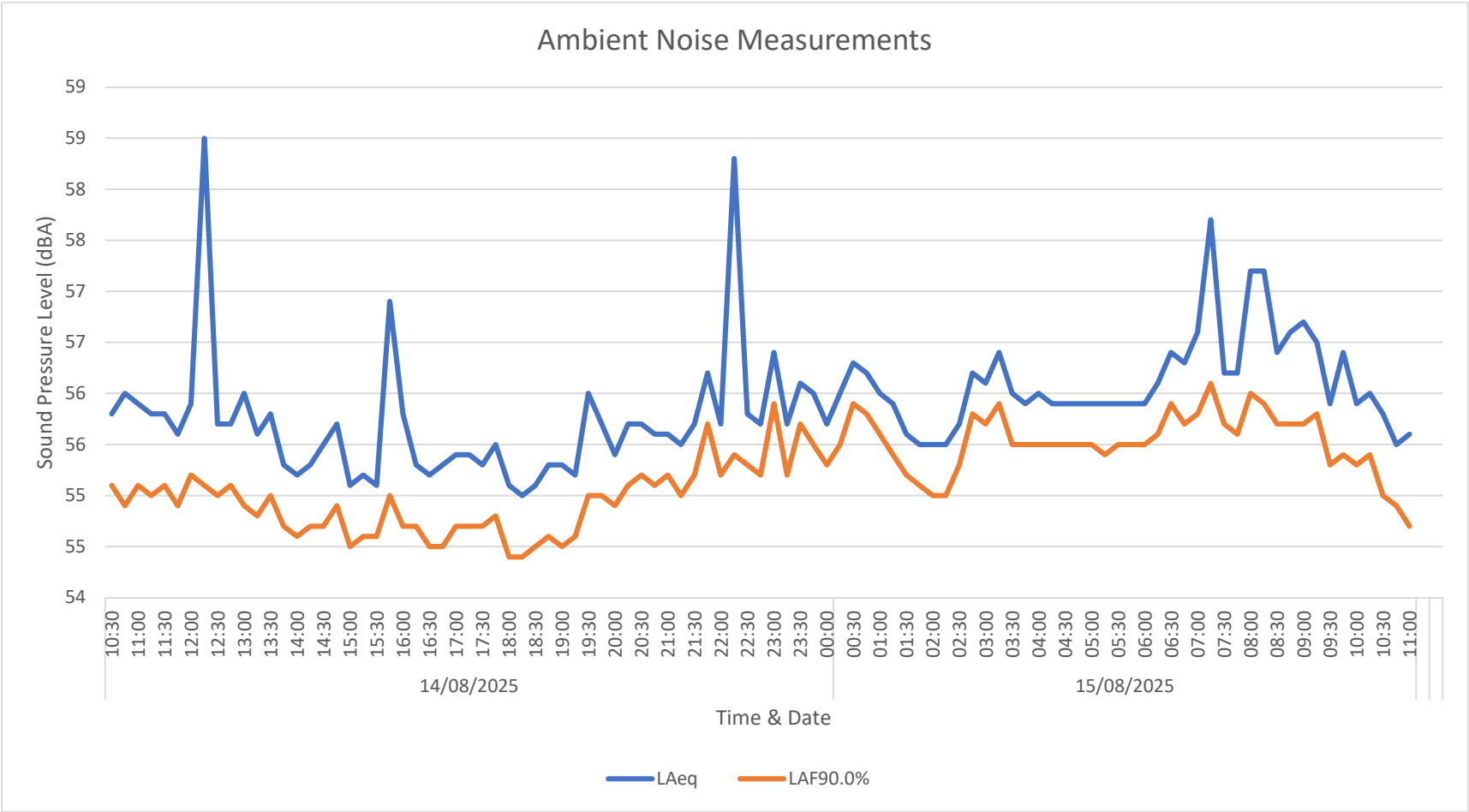
Frequency Analysis

Whereas dB(A) gives a very useful overall figure, it has its limitations in that it cannot be used to model or predict the effect of noise control and mitigation as this nearly always has radically different performance at different frequencies.

Frequency analysis expresses an overall noise level at each frequency or band of frequencies in the audible range. Octave band analysis divides the audible range into 10 bands from 31.5 Hz to 16 kHz and the noise level in each band can be expressed in any form e.g. L_{eq} , L_{90} , L_{max} etc. One third octave band analysis uses 30 bands.

Narrow band analysis takes the process to resolutions of less than 1 Hz. This is useful for identifying the existence of tones (whines, hums, etc.) and in pin-pointing the sources.

APPENDIX B – MEASURED NOISE LEVELS



APPENDIX C – SOUNDPLAN NOISE MODEL RESULTS

