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Re: PP-032014SS 2<sup>nd</sup> Dwelling  
20 KNOWLES ST, PENISTONE  
NOISE ASSESSMENT.

F.A.O. Lindsay  
Painwry  
Dept. Bayler

With Compliments.....

*[Handwritten signature]*

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B.M.D.C.

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CARLTON BUILDERS LIMITED

LAND OFF KNOWLES STREET  
PENISTONE, BARNSLEY

ENVIRONMENTAL NOISE ASSESSMENT

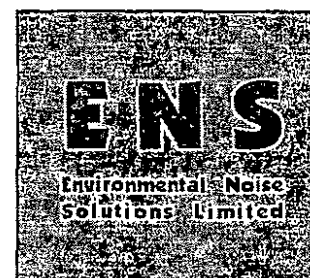
**ENS**

Environmental Noise  
Solutions Limited

LAND OFF KNOWLES STREET,  
PENISTONE, SHEFFIELD

## ENVIRONMENTAL NOISE ASSESSMENT

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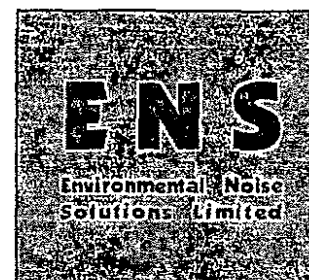
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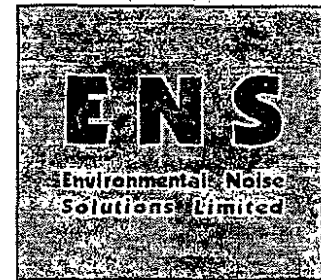
### SECTION 1 INTRODUCTION

- 1.1 *Carlton Builders Limited proposes the erection of a detached dwelling house with integral double garage at land off Knowles Street, Penistone, Sheffield. In September 2001 an outline application for residential development was refused planning permission by Barnsley Metropolitan Borough Council (BMBC), with one of the reasons for refusal being that the occupants of the new dwelling would be subject to an unacceptable level of noise from Argo Foods Limited. It is understood, however, that no noise data was available to support this reason.*
- 1.2 *Environmental Noise Solutions Limited (ENS) has been commissioned by Carlton Builders Limited through its architect, Mr Peter Thompson, to assess the implications of the existing noise climate on the proposed development.*
- 1.3 *The objectives of the investigation were to:*
  - i. Determine the ambient noise climate at the site during regular operations from Argo Foods Limited;*
  - ii. Assess the noise impact at the site; and*
  - iii. Provide recommendations for the building envelope construction, window specification and acoustic ventilation, as required.*
- 1.4 *This report has been prepared to examine the suitability of the site from a noise perspective and, if the site is suitable, to ensure the proposed development will achieve a good standard of internal noise levels.*
- 1.5 *A glossary of acoustic terms used within the main body of the text is contained in Appendix 1.*
- 1.6 *This report has been prepared for Carlton Builders Limited and Mr Peter Thompson for the sole purpose described above and no extended duty of care to any third party is implied or offered. Third parties making reference to the report should consult Mr Peter Thompson and ENS as to the extent to which the findings may be appropriate for their use.*

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### SECTION 2 SITE SETTING

#### 2.1 CURRENT SITE LAYOUT

2.1.1 The site is located on land off Knowles Street, Penistone, as indicated on drawing MPL/01 in Appendix 2.

2.1.2 The site is bounded by the following:

- i. To the south by the B6462 Sheffield Road;
- ii. To the north by "The Bungalow";
- iii. To the west by residential dwellings on Knowles Street; and
- iv. To the east by Argo Foods Limited, located at the top of an embankment, approximately 10 metres above the site.

#### 2.2 KEY FEATURES OF THE PROPOSED DEVELOPMENT

2.2.1 The proposed development is a detached dwelling house with an integral double garage, as indicated on drawing MPL/02 in Appendix 2.

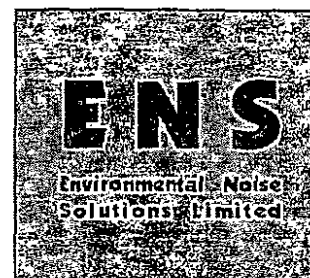
#### 2.3 POTENTIAL NOISE IMPACTS ON THE PROPOSED DEVELOPMENT

2.3.1 A number of key issues have been identified with respect to noise impact on the proposed residential development, namely:

- i. The potential impact of road traffic noise from the B6462 Sheffield Road;
- ii. The potential impact of noise derived from operations at Argo Foods Limited; and
- iii. The potential impact of Heavy Goods Vehicles (HGVs) and other vehicles accessing Argo Foods Limited.

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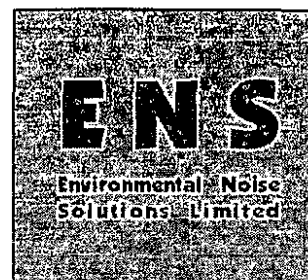
### SECTION 3 ENVIRONMENTAL NOISE SURVEY

- 3.1 In order to assess the ambient noise climate at the site, and obtain design data for a noise attenuation scheme, noise measurements were taken on Monday 29<sup>th</sup> March 2004 from 13:00 to 15:00. During the monitoring period noise from the continuous running of extraction fans to the rear of Argo Foods Limited was captured, along with numerous vehicles movements (HGVs, LGVs and cars) in and out of their premises.
- 3.1.1 Three monitoring positions were selected as follows (as indicated on drawing MPL/02 in Appendix 2):
- MP1 – Towards the centre of the site, at the proposed dwelling house façade nearest to the main noise sources at the rear of Argo Foods Limited;
  - MP2 – At the northern boundary of the site, but with the main noise sources at the rear of Argo Foods Limited being partially screened by a fence and evergreen mature trees; and
  - MP3 – At the northern boundary of the site, in line with the existing facades of "The Bungalow" and No 20 Knowles Street. This location was not screened from the main noise sources at the rear of Argo Foods Limited.
- 3.2 Noise measurements were undertaken using a Bruel & Kjaer 2260 Investigator Type 1 Sound Level Meter fitted with an all weather microphone and a windshield. The microphone was positioned at a height of 1.5 metres above ground level.
- 3.3 Measurements consisted of consecutive 5-minute broadband A-weighted parameters, together with linear octave band  $L_{eq}$  levels. In addition, all other common acoustic parameters were measured by the Bruel & Kjaer 2260. Calibration checks were carried out both before and after the measurement sessions with no variance observed.
- 3.4 Weather conditions throughout the survey were fine, with no rain and very low wind speed.
- 3.5 The tabulated measurement results for the duration of the survey are presented in Appendix 3. A summary of the recorded noise levels (rounded to the nearest decibel) is provided in Tables 3.1 – 3.3.
- 3.6 The  $L_{Aeq, 5 \text{ minute}}$  values have been logarithmically averaged to obtain an overall  $L_{Aeq}$  value for the monitoring period.
- 3.7 Octave analysis of the recorded noise measurements (shown in Appendix 3) indicates that the majority of sound energy is located at the lower end of the frequency spectrum (31 Hz to 250 Hz), which is typical of both industrial fans (centrifugal, axial and mixed flow) and road traffic noise.

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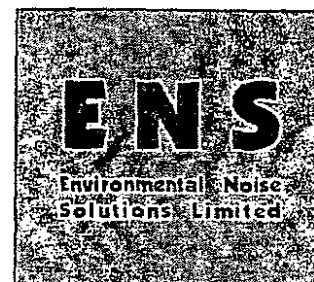
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- 3.8 The A-weighted sound pressure level in the 250 Hz octave centre frequency band is in excess of 10 dB higher than the sound pressure level in any other individual octave band. As such, the specific noise relating to the extraction fans is considered to be tonal and, in accordance with BS 4142 'Method for Rating Industrial Noise Affecting Mixed Residential and Industrial Areas', a + 5 dB correction is added to the specific noise level. Additionally, Planning Policy Guidance Note 24 'Planning and Noise' states, "the rating level should be used when stipulating the level of noise that can be permitted."
- 3.9 The average noise level recorded at the proposed dwelling façade (MP1) was 57 dB  $L_{Aeq}$  with a tonal correction applied. The dominant noise source at this position was the extraction fans located towards the rear of Argo Foods Limited, although a clear line of sight did not exist. Vehicle movements in and out of Argo were subjectively just audible above background noise levels; however, passing traffic on Sheffield Road was distinctly more audible.
- 3.10 The average noise level recorded at the northern site boundary (MP2) was 61 dB  $L_{Aeq}$  with a tonal correction applied. In comparison to MP1, at this location there was a clearer line of sight with the extraction fans located towards the rear of Argo Foods Limited. Vehicle movements in and out of Argo were subjectively not audible above background noise levels. Passing traffic on Sheffield Road was still audible.
- 3.11 The average noise level recorded in between the existing façades of "The Bungalow" and No 20 Knowles Street (MP3) was 63 dB  $L_{Aeq}$  with a tonal correction applied. At this location there was a much clearer line of sight with the extraction fans at the rear of Argo Foods Limited and there was no screening provided by a fence or mature evergreen trees (unlike at MP1 and MP2). Vehicle movements in and out of Argo were subjectively not audible. Passing traffic on Sheffield Road was still audible.

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**Table 3.1 Summary of Recorded Noise Levels at MP1, Proposed Dwelling Façade (Not Including a Tonal Correction)**

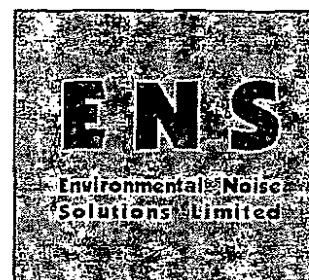
| Time          | LAeq (dB)     | LA90 (dB)      | LAFMax (dB)   | Noise Sources                                                                                                                                            |
|---------------|---------------|----------------|---------------|----------------------------------------------------------------------------------------------------------------------------------------------------------|
| 13:02 – 13:07 | 52            | 50             | 65            | Fans, Sheffield Road traffic                                                                                                                             |
| 13:07 – 13:12 | 52            | 51             | 56            | Fans, HGV out of Argo, Sheffield Road traffic                                                                                                            |
| 13:12 – 13:17 | 52            | 51             | 65            | Fans, HGV into Argo, Sheffield Road traffic                                                                                                              |
| 13:17 – 13:22 | 52            | 50             | 61            | Fans, HGV out, car into Argo, Sheffield Road traffic                                                                                                     |
| 13:22 – 13:27 | 51            | 50             | 59            | Fans, HGV and car into Argo, Sheffield Road traffic                                                                                                      |
| 13:27 – 13:32 | 54            | 51             | 65            | Fans, HGVs on Sheffield Road                                                                                                                             |
| 13:32 – 13:37 | 52            | 50             | 57            | Fans, Sheffield Road traffic                                                                                                                             |
| 13:37 – 13:42 | 51            | 50             | 57            | Fans, car in, HGV out of Argo, Sheffield Road traffic                                                                                                    |
| 13:42 – 13:47 | 52            | 51             | 58            | Fans, HGV in and out of Argo, Sheffield Road traffic                                                                                                     |
| 13:47 – 13:52 | 52            | 51             | 60            | Fans, HGV into Argo, Sheffield Road traffic                                                                                                              |
| 13:52 – 13:57 | 53            | 51             | 61            | Fans, car into Argo, Sheffield Road traffic, plane overhead                                                                                              |
| 13:57 – 14:02 | 53            | 51             | 66            | Fans, HGV and LGV out of Argo, Sheffield road traffic                                                                                                    |
| Summary       | Average<br>52 | Range<br>50–51 | Maximum<br>66 | Fans at the rear of Argo Foods Limited are the dominant noise source. HGV movements in/out of Argo are subjectively just audible above background noise. |

**Table 3.2 Summary of Recorded Noise Levels at MP2, Northern Site Boundary (Not Including a Tonal Correction)**

| Time          | LAeq (dB)     | LA90 (dB)      | LAFMax (dB)   | Noise Sources                                                                                                                                          |
|---------------|---------------|----------------|---------------|--------------------------------------------------------------------------------------------------------------------------------------------------------|
| 14:03 – 14:08 | 56            | 54             | 67            | Fans, car out of Argo not audible, Sheffield Road traffic                                                                                              |
| 14:08 – 14:13 | 55            | 53             | 59            | Fans, HGV into Argo not audible, Sheffield Road traffic                                                                                                |
| 14:13 – 14:18 | 56            | 53             | 66            | Fans, HGV out of Argo not audible, Sheffield Road traffic                                                                                              |
| 14:18 – 14:23 | 55            | 52             | 65            | Fans, HGV into Argo not audible, Sheffield Road traffic                                                                                                |
| 14:23 – 14:28 | 53            | 52             | 58            | Fans, cars in and out of Argo not audible, Sheffield Road traffic                                                                                      |
| 14:28 – 14:33 | 54            | 53             | 62            | Fans, HGV into Argo not audible, Sheffield Road traffic                                                                                                |
| Summary       | Average<br>56 | Range<br>52–54 | Maximum<br>67 | Fans at the rear of Argo Foods Limited are the dominant noise source, but now much more audible than at MP1. HGV movements in/out of Argo not audible. |

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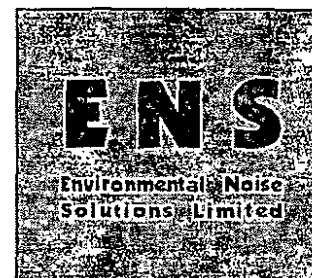


**Table 3.3** Summary of Recorded Noise Levels at MP3, in line with Existing Façades of "The Bungalow" and No 20 Knowles Street (Not Including a Tonal Correction)

| Time          | LAeq<br>(dB)  | LA90<br>(dB) | LAFMax<br>(dB) | Noise Sources                                                                                                                                          |
|---------------|---------------|--------------|----------------|--------------------------------------------------------------------------------------------------------------------------------------------------------|
| 14:33 – 14:38 | 58            | 58           | 60             | Fans, HGV into Argo not audible, Sheffield Road traffic                                                                                                |
| 14:38 – 14:43 | 58            | 58           | 60             | Fans, HGV out of Argo not audible, Sheffield Road traffic                                                                                              |
| 14:43 – 14:48 | 58            | 58           | 61             | Fans, Sheffield Road traffic                                                                                                                           |
| 14:48 – 14:53 | 58            | 58           | 60             | Fans, Sheffield Road traffic                                                                                                                           |
| 14:53 – 14:58 | 58            | 58           | 60             | Fans, LGV a rear of Argo not audible, Sheffield Road traffic                                                                                           |
| 14:58 – 15:03 | 59            | 58           | 61             | Fans, HGV into Argo not audible, Sheffield Road traffic                                                                                                |
| Summary       | Average<br>58 | Range<br>58  | Maximum<br>61  | Fans at the rear of Argo Foods Limited are the dominant noise source, but now much more audible than at MP1. HGV movements in/out of Argo not audible. |

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### SECTION 4 ASSESSMENT OF RESULTS

#### 4.1 PPG24

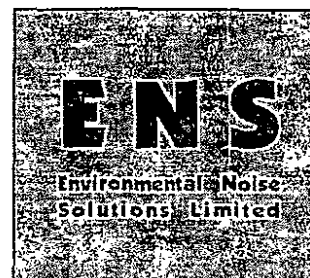
- 4.1.1 Principles and specific guidelines on noise and planning issues are given in Planning Policy Guidance Note 24, 'Planning and Noise' (PPG24), published by the Department of the Environment in 1994. This document deals with the introduction of new residential development near to existing noise sources, as is the case with this proposed development.
- 4.1.2 PPG24 recommends that the daytime period is 07:00 to 23:00 hours and the night time period is 23:00 to 07:00 hours for assessment of noise levels.
- 4.1.3 PPG24 defines four noise exposure categories, which indicate to what extent noise should be considered in the granting of planning permission. PPG24 also defines noise levels for each category, for a variety of noise sources.
- 4.1.4 The following table shows a summary of the recommended noise exposure categories for new residential development near to existing noise sources in line with PPG24.

Table 4.1 – Summary of PPG24 Noise Exposure Categories for New Dwellings

| NOISE LEVELS AND ADVICE CORRESPONDING TO THE NOISE EXPOSURE CATEGORIES FOR NEW DWELLINGS $L_{Aeq}$ dB, PPG24 |                                                                                    |                                                                                                                                                                             |                                                                                                                                                                                                                                                                |                                                 |
|--------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------|
| NOISE SOURCE                                                                                                 | NOISE EXPOSURE CATEGORY                                                            |                                                                                                                                                                             |                                                                                                                                                                                                                                                                |                                                 |
|                                                                                                              | A                                                                                  | B                                                                                                                                                                           | C                                                                                                                                                                                                                                                              | D                                               |
| Mixed Sources                                                                                                |                                                                                    |                                                                                                                                                                             |                                                                                                                                                                                                                                                                |                                                 |
| 07:00 – 23:00                                                                                                | <55                                                                                | 55 – 63                                                                                                                                                                     | 63 – 72                                                                                                                                                                                                                                                        | >72                                             |
| 23:00 – 07:00                                                                                                | <45                                                                                | 45 – 57                                                                                                                                                                     | 57 – 66                                                                                                                                                                                                                                                        | >66                                             |
| Advice                                                                                                       | Noise need not be considered a determining factor in granting planning permission. | Noise should be taken into account when determining planning applications and where appropriate conditions imposed to ensure an adequate level of protection against noise. | Planning permission should not normally be granted. Where it is considered that permission should be given, for example because there are no quieter sites available, conditions should be imposed to ensure a commensurate level of protection against noise. | Planning permission should normally be refused. |

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- 4.1.5 Noise levels of 57 dB  $L_{Aeq}$  (with a tonal correction) recorded at MP1 place the proposed residential dwelling within Noise Exposure Category B for daytime hours, which indicates that noise should be taken into account when determining planning applications and where appropriate conditions imposed to ensure an adequate level of protection against noise.
- 4.1.6 At this stage it is not known whether Argo Foods Limited operates during the night time period (23:00 to 07:00). If operations did continue into the night this would place the proposed residential dwelling at the top end of Noise Exposure Category B.
- 4.2 **BS 8233**
- 4.2.1 BS 8233 (1999) 'Sound Insulation and Noise Reduction for Buildings – Code of Practice' defines a range of ambient noise levels for design criteria, in order that good or reasonable conditions are achieved in certain internal environments.
- 4.2.2 Table 4.2 shows a summary of the levels recommended in BS 8233 for habitable rooms.

**Table 4.2 – Indoor Ambient Noise Levels as Recommended in BS 8233**

| CRITERION                     | TYPICAL SITUATION | DESIGN RANGE dB $L_{Aeq, T}$ |            |
|-------------------------------|-------------------|------------------------------|------------|
|                               |                   | GOOD                         | REASONABLE |
| Resting / sleeping conditions | Living rooms      | 30                           | 40         |
|                               | Bedrooms*         | 30                           | 35         |

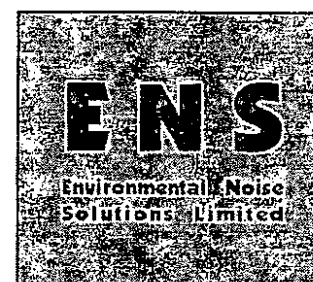
\* For a reasonable standard in bedrooms at night, BS 8233 states that individual noise events should not normally exceed 45 dB  $L_{AFMax}$ .

Considering that the potentially worse case external rated noise level at the site of the proposed residential dwelling is 57 dB  $L_{Aeq}$  (assuming Argo Foods Limited continues to operate into the night time period), then an sound reduction of at least 22 dB is required from the proposed building envelope to achieve reasonable resting / sleeping conditions in the bedrooms.

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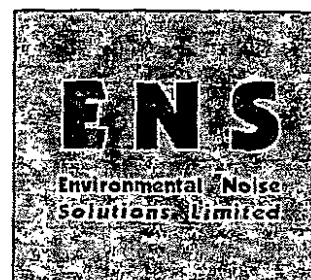


### 4.3 WORLD HEALTH ORGANISATION GUIDELINES

- 4.3.1 The World Health Organisation (WHO) Guidelines for Community Noise (2000) considers that to avoid sleep disturbance, indoor guideline values for bedrooms should not exceed 30 dB  $L_{Aeq}$  for continuous noise and 45 dB  $L_{Amax}$  for single sound events.
- 4.3.2 At night, sound pressure levels at the outside façades of the living spaces should not exceed 45 dB  $L_{Aeq}$  and 60 dB  $L_{Amax}$ , so that people may sleep with bedroom windows open. These values have been obtained by assuming that the noise reduction from outside to inside with the window partly open is 15 dB. If sound pressure levels at the outside facades of the living spaces exceed 45 dB  $L_{Aeq}$  and 60 dB  $L_{Amax}$ , an alternative source of background ventilation should be provided.
- 4.3.3 To protect the majority of people from being seriously annoyed during the daytime, the sound pressure level on balconies, terraces and outdoor living areas should not exceed 55 dB  $L_{Aeq}$  for a steady continuous noise.
- 4.3.4 These guidelines also indicate that a sound reduction of at least 22 dB is required from the proposed building envelope to achieve reasonable sleeping conditions in the bedrooms. An additional source of background ventilation (such as trickle ventilation) should be available as the occupants of the proposed development might suffer some slight sleep disturbance if their windows were open whilst Argo Foods Limited continued to operate during the night time period.
- 4.3.5 It should be noted, however, that the application of WHO Guidelines to UK planning was questioned in 1998 by the Department of the Environment, Transport and the Regions in their review of 'Health Effect Based Noise Assessment Methods: A Review and Feasibility Study'. The review states that WHO guidelines do not have any official status in the UK and that perhaps their main weakness is that they fail to consider the practicality of actually being able to achieve any of the stated guideline values. Further to this it states that noise levels above the WHO guideline values do not necessarily imply significant noise impact and indeed it may be that significant impacts do not occur until much higher degrees of noise exposure are reached.

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### 4.4 SUMMARY

4.4.1 Given the limitations associated with the WHO guidelines, most local authorities stipulate that the sound insulation of building facades should be designed to secure an internal noise environment of 35 dB  $L_{Aeq}$  or less within bedrooms between 23:00 hours and 07:00 hours.

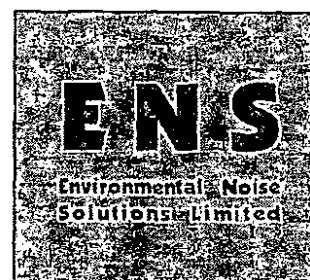
4.4.2 In the interests of the amenity of the future occupiers of the proposed dwelling house, a sound insulation scheme will be required in accordance with the following criteria, which are commonly accepted as good practice:

- i. 35 dB  $L_{Aeq}$  or less within bedrooms between 23:00 hours and 07:00 hours;  
and
- ii. 40 dB  $L_{Aeq}$  or less within living rooms between 07:00 hours and 23:00 hours.

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### SECTION 5 SOUND ATTENUATION SCHEME PROPOSALS

5.1 The average rated noise level recorded during the survey at the proposed dwelling façade was 57 dB  $L_{Aeq}$ . In order to achieve reasonable resting / sleeping conditions of 35 dB  $L_{Aeq}$  in bedrooms, a weighted sound reduction index ( $R_w$ ) of 22 dB is required for the building façade. It should be noted that this is considered to be a worst case scenario as it is based on Argo Foods Limited continuing to operate into the night time period.

5.2 Since the dominant noise source at the development site was found to be extraction fan noise and road traffic from Sheffield Road, which both contain significant low frequencies (31 Hz to 250 Hz), an A-weighted urban traffic noise spectrum adaptation term ( $C_{tr}$ ) should be applied. Therefore, the sound reduction for individual elements of the building envelope must be at least 22 dB  $R_w + C_{tr}$ .

5.3 Accordingly, the following sound attenuation measures are recommended.

#### Windows

5.4 Conventional thermal double glazed units with an air filled cavity (4-(6-16)-4) will give a sound reduction of at least 25 dB  $R_w + C_{tr}$ .

#### Ventilation

5.5 Windows will only give the quoted sound reduction when closed. A partially open window will give a weighted sound reduction index of 10 – 15 dB. Considering the existing noise levels at the development site, reasonable internal noise levels in bedrooms might not be achieved with windows open if Argo Foods Limited operated during the night time period. Therefore, to achieve reasonable background ventilation without a loss of sound insulation, trickle ventilation is required for bedroom windows. Conventional trickle vents fitted to windows will give a sound reduction of at least 32 dB  $R_w + C_{tr}$ .

#### Roof

5.6 A conventional tiled roof, 12 mm plasterboard ceiling and a sound absorbing layer (e.g. 100 mm mineral wool) will give a sound reduction of at least 36 dB  $R_w + C_{tr}$ .

#### Walls

5.7 A conventional brick / block cavity wall will give a sound reduction of at least 47 dB  $R_w + C_{tr}$ .

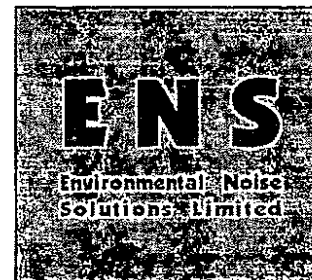
#### Overall Building Envelope

5.8 For a standard dwelling façade with thermal windows set in a brick/block wall, PPG24 quotes an overall free field sound reduction of 30 dB  $R_w + C_{tr}$ .

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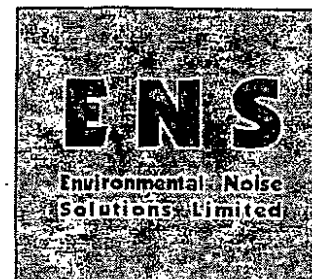
### Summary

- 5.9 Even if Argo Foods Limited operated into the night time period, a conventional building envelope specification would achieve good resting / sleeping conditions in bedrooms (less than 30 dB  $L_{Aeq}$ ).

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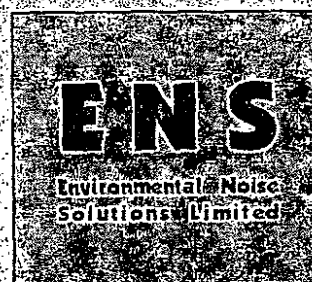
### SECTION 6 CONCLUSIONS

- 6.1 An environmental noise assessment has been undertaken at land off Knowles Street, Penistone to determine the potential noise impact of operations at Argo Foods Limited on the residents of the proposed dwelling house.
- 6.2 Noise levels at the site of the proposed dwelling house are 6 dB lower than those at the existing residential properties nearest to Argo Foods Limited ("The Bungalow" and No 20 Knowles Street). This is because there is not a clear line of sight to the extraction fans at the rear of Argo Foods Limited.
- 6.3 A scheme of sound insulation works has been developed to protect the proposed dwelling house from external noise from both Argo Foods Limited and the B6462 Sheffield Road. This scheme is based on a worse case scenario that Argo Foods Limited operates during the night time period.
- 6.4 The sound insulation works consist of a conventional building envelope specification which will achieve good resting / sleeping conditions (less than 30 dB  $L_{Aeq}$  or less within bedrooms between 23:00 hours and 07:00 hours), even if Argo Foods Limited operates throughout the night time period.
- 6.5 The sound insulation works also reduce any instantaneous peak noise levels to well below 45 dB  $L_{AFMax}$ , as stipulated by BS 8233.

LAND OFF KNOWLES STREET,  
PENISTONE, SHEFFIELD

## ENVIRONMENTAL NOISE ASSESSMENT

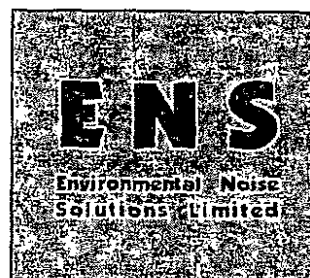
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### APPENDIX 1    ■    Glossary of Acoustic Terms

LAND OFF KNOWLES STREET,  
PENISTONE, SHEFFIELD

## ENVIRONMENTAL NOISE ASSESSMENT



### APPENDIX 1 GLOSSARY OF TERMS

#### Sound Pressure Level ( $L_p$ )

The basic unit of sound measurement is the sound pressure level. As the pressures to which the human ear responds can range from 20 mPa to 200 Pa, a linear measurement of sound levels would involve many orders of magnitude. Consequently, the pressures are converted to a logarithmic scale and expressed in decibels (dB) as follows:

$$L_p = 20 \log_{10}(p/p_0)$$

Where  $L_p$  = sound pressure level in dB;  $p$  = rms sound pressure in Pa; and  $p_0$  = reference sound pressure (20  $\mu$ Pa).

#### A-weighting Network

A frequency filtering system in a sound level meter, which approximates under defined conditions the frequency response of the human ear. The A-weighted sound pressure level, expressed in dB(A), has been shown to correlate well with subjective response to noise.

#### Equivalent continuous A-weighted sound pressure level, $L_{Aeq, T}$

The value of the A-weighted sound pressure level in decibels of continuous steady sound that within a specified time interval,  $T$ , has the same mean-square sound pressure as a sound that varies with time.  $L_{Aeq, 16h}$  (07:00 to 23:00 hours) and  $L_{Aeq, 8h}$  (23:00 to 07:00 hours) are used to qualify daytime and night time noise levels.

#### $L_{A10, T}$

The A-weighted sound pressure level in decibels exceeded for 10% of the measurement period,  $T$ .  $L_{A10, 18h}$  is the arithmetic mean of the 18 hourly values from 06:00 to 24:00 hours.

#### $L_{A90, T}$

The A-weighted sound pressure level of the residual noise in decibels exceeded 90% of a given time interval,  $T$ .  $L_{A90}$  is typically taken as representative of background noise.

#### $L_{AF \max}$

The maximum A-weighted noise level recorded during the measurement period. The subscript 'F' denotes fast time weighting, slow time weighting 'S' is also used.

#### Sound Exposure Level (SEL or $L_{AE}$ )

The energy produced by a discrete noise event averaged over one second, no matter how long the event actually took. This allows for comparison between different noise events which occur over different lengths of time.

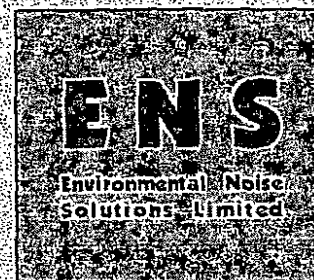
#### Weighted Sound Reduction Index ( $R_w$ )

Single number quantity which characterises the airborne sound insulation properties of a material or building element over a defined range of frequencies ( $R_w$  is used to characterise the insulation of a material or product that has been measured in a laboratory).

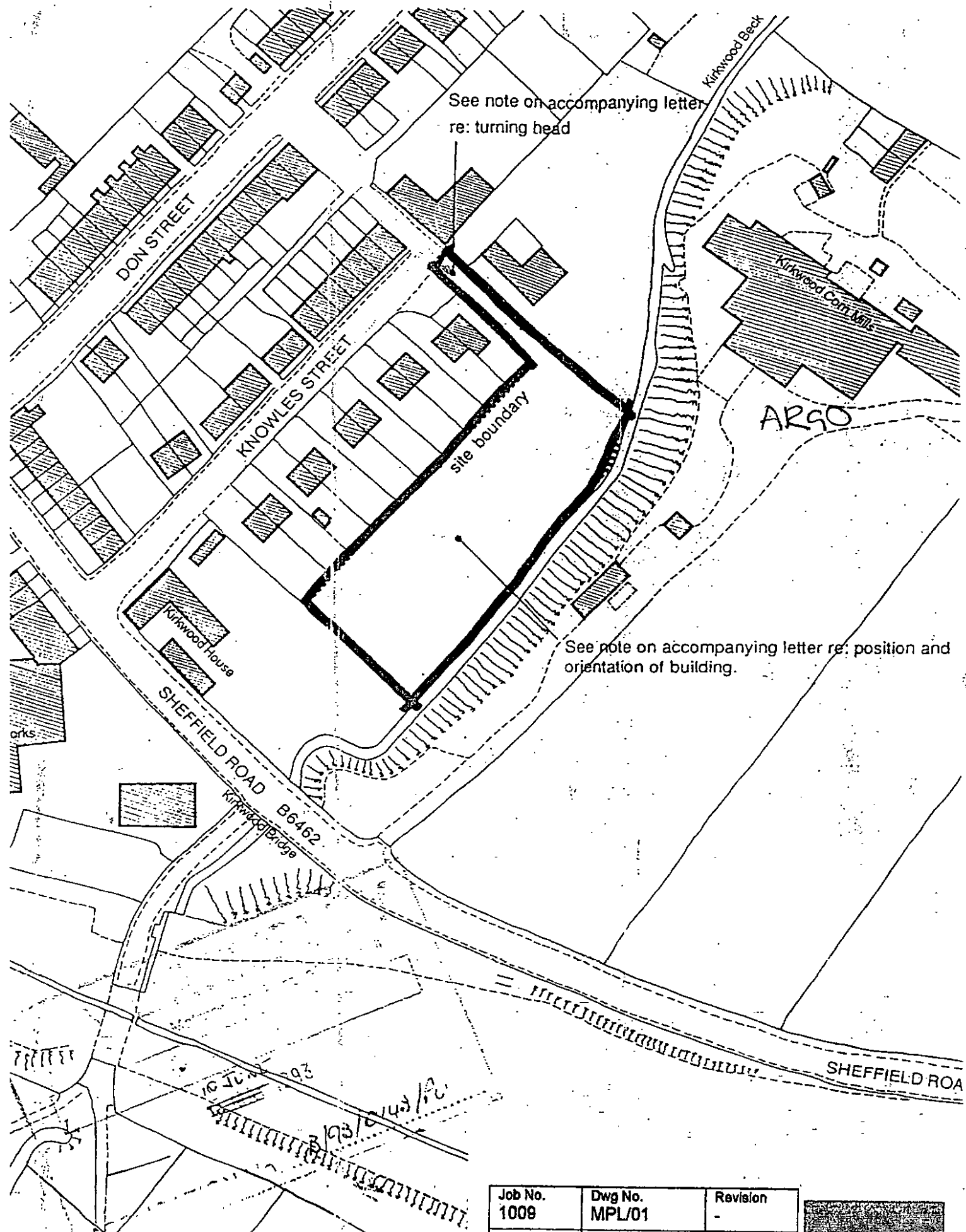
LAND OFF KNOWLES STREET,  
PENISTONE, SHEFFIELD

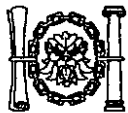
## ENVIRONMENTAL NOISE ASSESSMENT

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### APPENDIX 2 • Drawings





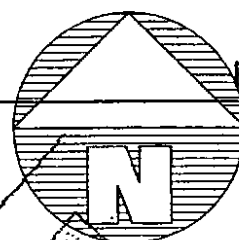
# Peter Thompson M.B.I.A.T.



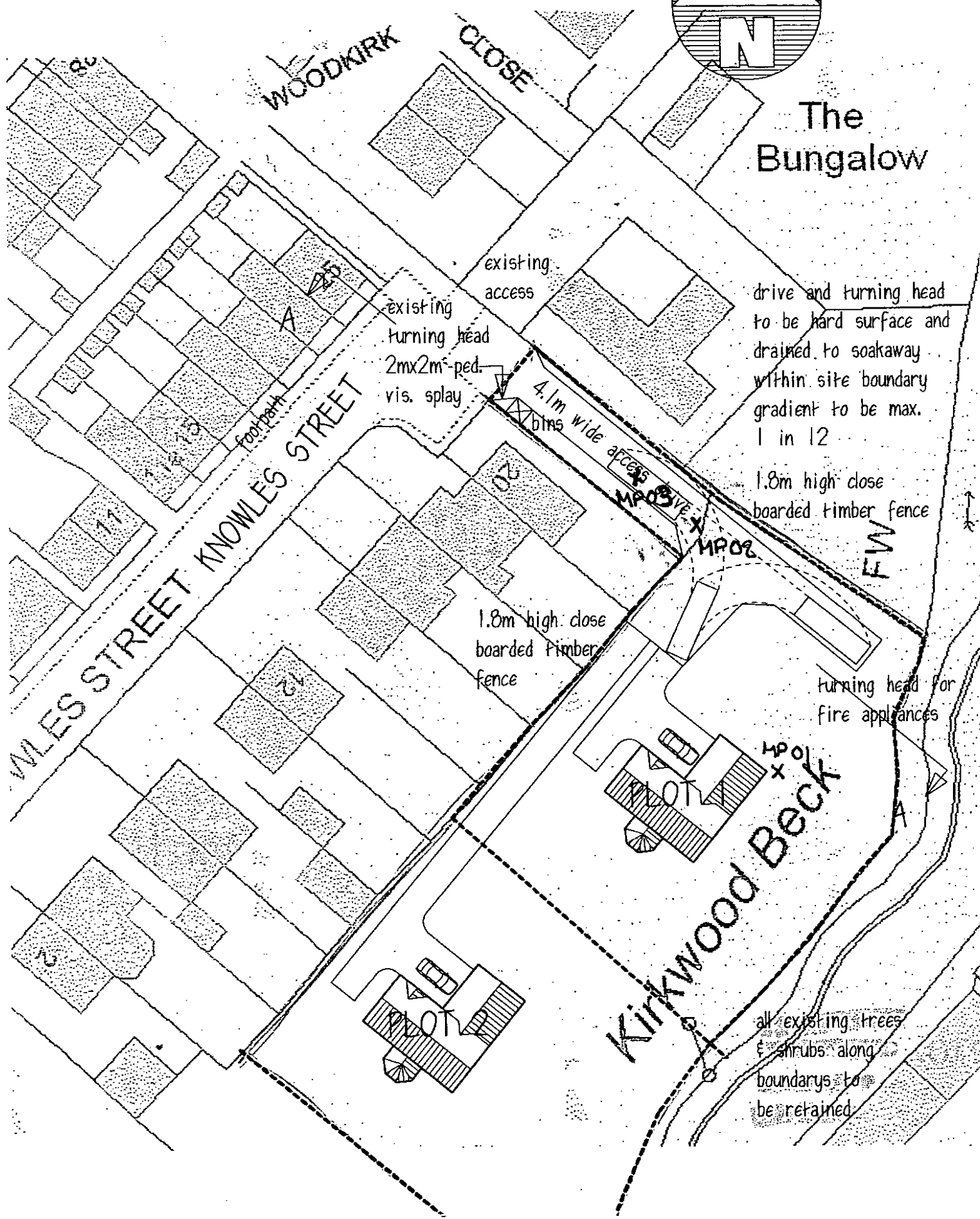
Architectural Design Consultant Ltd.  
Tel & Fax: 01226 201391  
Mobile: 07973 251730  
e-mail: peter.thompson@hotmail.co.uk

PROPOSED 2 No DWELLINGS  
REAR OF KNOWLES STREET  
PENISTONE  
SITE PLAN 1:500

Linwood  
Barnsley Road  
Dodworth  
Barnsley S75 3JR



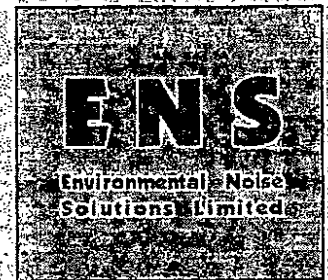
The Bungalow



LAND OFF KNOWLES STREET,  
PENISTONE, SHEFFIELD

## ENVIRONMENTAL NOISE ASSESSMENT

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### APPENDIX 3 • Noise Survey Data

## Broadband Survey Data

Site:

Knowles St, Penistone

29/03/04

| Start Time | Location | L <sub>Aeq, 5min</sub> (dB) | L <sub>AFmax</sub> (dB) | L <sub>A10</sub> (dB) | L <sub>A90</sub> (dB) | L <sub>AFmin</sub> (dB) |
|------------|----------|-----------------------------|-------------------------|-----------------------|-----------------------|-------------------------|
| 13:02:12   | MP1      | 52.0                        | 65.1                    | 53.0                  | 50.4                  | 49.6                    |
| 13:07:12   | MP1      | 51.8                        | 56.0                    | 52.4                  | 51.0                  | 50.2                    |
| 13:12:12   | MP1      | 52.2                        | 65.3                    | 53.0                  | 50.8                  | 49.8                    |
| 13:17:12   | MP1      | 51.6                        | 61.2                    | 52.4                  | 50.4                  | 49.4                    |
| 13:22:12   | MP1      | 51.3                        | 59.4                    | 52.0                  | 50.2                  | 49.3                    |
| 13:27:12   | MP1      | 53.6                        | 64.9                    | 55.6                  | 50.8                  | 49.8                    |
| 13:32:12   | MP1      | 51.7                        | 57.4                    | 52.8                  | 50.4                  | 49.7                    |
| 13:37:12   | MP1      | 51.2                        | 56.8                    | 52.0                  | 50.0                  | 49.4                    |
| 13:42:12   | MP1      | 51.6                        | 57.5                    | 52.4                  | 50.6                  | 49.9                    |
| 13:47:12   | MP1      | 51.6                        | 60.4                    | 52.4                  | 50.6                  | 49.6                    |
| 13:52:12   | MP1      | 52.5                        | 60.7                    | 54.2                  | 50.6                  | 49.6                    |
| 13:57:12   | MP1      | 52.8                        | 66.1                    | 54.2                  | 50.6                  | 49.9                    |
| 14:03:17   | MP2      | 56.3                        | 66.6                    | 58.8                  | 54.0                  | 52.6                    |
| 14:08:17   | MP2      | 54.7                        | 58.5                    | 55.6                  | 53.2                  | 51.8                    |
| 14:13:17   | MP2      | 55.5                        | 66.3                    | 57.2                  | 52.8                  | 51.3                    |
| 14:18:17   | MP2      | 54.5                        | 64.9                    | 57.0                  | 52.0                  | 51.3                    |
| 14:23:17   | MP2      | 53.0                        | 57.9                    | 53.6                  | 52.2                  | 51.3                    |
| 14:28:17   | MP2      | 53.7                        | 62.3                    | 54.4                  | 52.6                  | 51.7                    |
| 14:33:17   | MP3      | 58.4                        | 59.9                    | 59.0                  | 57.8                  | 52.1                    |
| 14:39:14   | MP3      | 58.3                        | 60.1                    | 58.8                  | 57.6                  | 56.6                    |
| 14:44:14   | MP3      | 58.1                        | 60.8                    | 58.4                  | 57.6                  | 56.3                    |
| 14:49:14   | MP3      | 58.4                        | 60.4                    | 58.8                  | 57.8                  | 57.1                    |
| 14:54:14   | MP3      | 58.3                        | 59.9                    | 58.8                  | 57.6                  | 57.0                    |
| 14:59:14   | MP3      | 58.5                        | 60.6                    | 58.8                  | 57.8                  | 56.0                    |

Octave Band Spectrum - MP3, 14:59

